METROPOLITAN
COUNCIL

SOUTHWEST
Green Line LRT Extension

CIVIL CONSTRUCTION

VOLUME 4E
BRIDGES

PLAN PACKAGE INDEX / DESCRIPTION	
CIVIL CONSTRUCTION	BID ALTERNATES
VOLUME 1 - EXISTING CONDITIONS & REMOVALS	VOLUME A - NOT USED
VOLUME 2A - CIVIL	VOLUME B - NOT USED
VOLUME 2B - CIVIL	VOLUME C - BID ALTERNATE 3 (LRCI 5) ▲
VOLUME 3A - TRACKWORK	VOLUME D - BID ALTERNATE 4 (LRCI 6) ▲
VOLUME 3B - TRACKWORK	VOLUME E - BID ALTERNATE 5 (LRCI 7) ▲
VOLUME 3C - TRACKWORK DETAILS	VOLUME F - BID ALTERNATE 6 (LRCI 8) ▲
VOLUME 4A - BRIDGES	VOLUME G - BID ALTERNATE 7 (LRCI 4) ▲
VOLUME 4B - BRIDGES	VOLUME H - BID ALTERNATE 8 (LRCI 10) ▲
VOLUME 4C - BRIDGES	VOLUME I - BID ALTERNATE 9 (LRCI 11) ▲
VOLUME 4D - BRIDGES	VOLUME J - BID ALTERNATE 10 (LRCI 12)
VOLUME 4E - BRIDGES	VOLUME K - BID ALTERNATE 11 (LRCI 13)
VOLUME 4F - BRIDGES	VOLUME L - BID ALTERNATE 12 (LRCI 14)
VOLUME 4G - BRIDGES	VOLUME M - BID ALTERNATE 13 (LRCI 26)
VOLUME 5 - TUNNELS	VOLUME N - BID ALTERNATE 14 (LRCI 27)
VOLUME 6 - RETAINING WALLS	VOLUME O - BID ALTERNATE 15 (LRCI 17)
VOLUME 7 - UTILITIES	VOLUME P - BID ALTERNATE 20 (LRCI 32)
VOLUME 8 - DRAINAGE	VOLUME Q - BID ALTERNATE 21 (LRCI 33)
VOLUME 9 - URBAN DESIGN / LANDSCAPE	
VOLUME 10A - TRAFFIC	
VOLUME 10B - LIGHTING *	
VOLUME 11A - STATIONS ▲	
VOLUME 11B - STATIONS	
VOLUME 11C - STATIONS	
VOLUME 11D - STATIONS	
VOLUME 11E - STATIONS	
VOLUME 12 - SYSTEMS	

* TO BE SUBMITTED AT A LATER DATE
▲ SUBMITTED AT 75%, NOT INCLUDED IN 90%

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.

90% SUBMISSION
DATE : 01/22/16

AECOM

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
		VOLUME 4E - BRIDGES			
1	00-GEN-CVR-001	COVER SHEET			
2	00-GEN-IDX-001	VOLUME INDEX OF PLAN SHEETS SHEET 1			
3	00-GEN-IDX-002	VOLUME INDEX OF PLAN SHEETS SHEET 2			
4	W0-GEN-KEY-001	GENERAL KEY MAP SHEET 1			
5	E0-GEN-KEY-002	GENERAL KEY MAP SHEET 2			
6	00-GEN-NTS-001	GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS SHEET 1			
7	00-GEN-NTS-002	GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS SHEET 2			
		LOUISIANA AVE S FREIGHT - BRIDGE 27C12			
1	CBR27C12-BRG-GPE-001	GENERAL PLAN AND ELEVATION			
2	CBR27C12-BRG-SUP-001	TRANSVERSE SECTION AND QUANTITIES			
3	CBR27C12-BRG-SUP-003	BRIDGE LAYOUT			
4	CBR27C12-BRG-ABT-002	WEST ABUTMENT DETAILS 1			
5	CBR27C12-BRG-ABT-001	WEST ABUTMENT DETAILS 2			
6	CBR27C12-BRG-ABT-003	WEST ABUTMENT DETAILS 3			
7	CBR27C12-BRG-ABT-007	WEST ABUTMENT REINFORCEMENT 1			
8	CBR27C12-BRG-ABT-008	WEST ABUTMENT REINFORCEMENT 2			
9	CBR27C12-BRG-ABT-009	WEST ABUTMENT REINFORCEMENT 3			
10	CBR27C12-BRG-ABT-010	WEST ABUTMENT REINFORCEMENT 4			
11	CBR27C12-BRG-ABT-004	EAST ABUTMENT DETAILS 1			
12	CBR27C12-BRG-ABT-005	EAST ABUTMENT DETAILS 2			
13	CBR27C12-BRG-ATB-006	EAST ABUTMENT DETAILS 3			
14	CBR27C12-BRG-ABT-011	EAST ABUTMENT REINFORCEMENT 1			
15	CBR27C12-BRG-ABT-012	EAST ABUTMENT REINFORCEMENT 2			
16	CBR27C12-BRG-ABT-013	EAST ABUTMENT REINFORCEMENT 3			
17	CBR27C12-BRG-ABT-014	EAST ABUTMENT REINFORCEMENT 4			
18	CBR27C12-BRG-PIR-001	PIER DETAILS 1			
19	CBR27C12-BRG-PIR-002	PIER DETAILS 2			
20	CBR27C12-BRG-PIR-003	PIER REINFORCEMENT 1			
21	CBR27C12-BRG-PIR-004	PIER REINFORCEMENT 2			
22	CBR27C12-BRG-PIR-005	PIER REINFORCEMENT 3			
23	CBR27C12-BRG-SUP-004	FRAMING PLAN			
24	CBR27C12-BRG-STL-001	GIRDER ELEVATION			
25	CBR27C12-BRG-STL-003	GIRDER DETAILS 1			
26	CBR27C12-BRG-STL-004	GIRDER DETAILS 2			
27	CBR27C12-BRG-SUP-009	SUPERSTRUCTURE DETAILS 1			
28	CBR27C12-BRG-SUP-005	SUPERSTRUCTURE DETAILS 2			
29	CBR27C12-BRG-SUP-006	SUPERSTRUCTURE DETAILS 3			
30	CBR27C12-BRG-SUP-007-1	SUPERSTRUCTURE DETAILS 4			
31	CBR27C12-BRG-SUP-007-2	SUPERSTRUCTURE DETAILS 5			
32	CBR27C12-BRG-SUP-012	SUPERSTRUCTURE DETAILS 6			
33	CBR27C12-BRG-SUP-010	SUPERSTRUCTURE DETAILS 7			
34	CBR27C12-BRG-SUP-011	SUPERSTRUCTURE DETAILS 8			
35	CBR27C12-BRG-DTL-003	WIRE FENCE (DESIGN W-1)			
36	CBR27C12-BRG-EXP-001	JOINT DETAILS 1			
37	CBR27C12-BRG-EXP-002	JOINT DETAILS 2			
38	CBR27C12-BRG-DTL-004-1	DECK DRAINAGE AND WATERPROOFING 1			
39	CBR27C12-BRG-DTL-004-2	DECK DRAINAGE AND WATERPROOFING 2			
40	CBR27C12-BRG-EXP-003	BEARING ASSEMBLY DETAILS			
41	CBR27C12-BRG-DTL-008	CONCRETE SLOPE PAVING			
42	CBR27C12-BRG-DTL-005	BRIDGE DETAILS 1			
43	CBR27C12-BRG-DTL-006	BRIDGE DETAILS 2			
44	CBR27C12-BRG-DTL-007	AS-BUILT BRIDGE DATA			
45	CBR27C12-BRG-SUR-001	BRIDGE SURVEY 1			
46	CBR27C12-BRG-SUR-002	BRIDGE SURVEY 2			
47	CBR27C12-BRG-BOR-001	BRIDGE SURVEY PLAN			
48	CBR27C12-BRG-BOR-002	BRIDGE SURVEY PROFILE 1			
49	CBR27C12-BRG-BOR-003	BRIDGE SURVEY PROFILE 2			
50	CBR27C12-BRG-STG-001	STAGING PLAN 1			
51	CBR27C12-BRG-STG-002	STAGING PLAN 2			
52	CBR27C12-BRG-STG-003	STAGING PLAN 3			
53	CBR27C12-BRG-STG-004	STAGING PLAN 4			
		LOUISIANA AVE S TRAIL - BRIDGE 27C11			
1	CBR27C11-BRG-GPE-001	GENERAL PLAN AND ELEVATION			
2	CBR27C11-BRG-TRN-001	TRANSVERSE SECTION AND QUANTITIES			
3	CBR27C11-BRG-LYT-001	BRIDGE LAYOUT			
4	CBR27C11-BRG-ABT-001	WEST ABUTMENT DETAILS 1			
5	CBR27C11-BRG-ABT-002	WEST ABUTMENT DETAILS 2			
6	CBR27C11-BRG-ABT-003	WEST ABUTMENT DETAILS 3			

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
7	CBR27C11-BRG-ABT-004	WEST ABUTMENT DETAILS 4			
8	CBR27C11-BRG-ABT-005	WEST ABUTMENT REINFORCEMENT 1			
9	CBR27C11-BRG-ABT-006	WEST ABUTMENT REINFORCEMENT 2			
10	CBR27C11-BRG-ABT-007	WEST ABUTMENT REINFORCEMENT 3			
11	CBR27C11-BRG-ABT-008	WEST ABUTMENT REINFORCEMENT 4			
12	CBR27C11-BRG-ABT-009	WEST ABUTMENT REINFORCEMENT 5			
13	CBR27C11-BRG-ABT-010	WEST ABUTMENT REINFORCEMENT 6			
14	CBR27C11-BRG-ABT-011	WEST ABUTMENT REINFORCEMENT 7			
15	CBR27C11-BRG-ABT-012	EAST ABUTMENT DETAILS 1			
16	CBR27C11-BRG-ABT-013	EAST ABUTMENT DETAILS 2			
17	CBR27C11-BRG-ABT-014	EAST ABUTMENT DETAILS 3			
18	CBR27C11-BRG-ABT-015	EAST ABUTMENT DETAILS 4			
19	CBR27C11-BRG-ABT-016	EAST ABUTMENT REINFORCEMENT 1			
20	CBR27C11-BRG-ABT-017	EAST ABUTMENT REINFORCEMENT 2			
21	CBR27C11-BRG-ABT-018	EAST ABUTMENT REINFORCEMENT 3			
22	CBR27C11-BRG-ABT-019	EAST ABUTMENT REINFORCEMENT 4			
23	CBR27C11-BRG-ABT-020	EAST ABUTMENT REINFORCEMENT 5			
24	CBR27C11-BRG-ABT-021	EAST ABUTMENT REINFORCEMENT 6			
25	CBR27C11-BRG-ABT-022	EAST ABUTMENT REINFORCEMENT 7			
26	CBR27C11-BRG-PIR-001	PIER DETAILS 1			
27	CBR27C11-BRG-PIR-002	PIER DETAILS 2			
28	CBR27C11-BRG-PIR-003	PIER REINFORCEMENT 1			
29	CBR27C11-BRG-PIR-004	PIER REINFORCEMENT 2			
30	CBR27C11-BRG-PIR-005	PIER REINFORCEMENT 3			
31	CBR27C11-BRG-SUP-001	FRAMING PLAN			
32	CBR27C11-BRG-PCB-001	36" PRESTRESSED CONCRETE BEAM DETAILS			
33	CBR27C11-BRG-SUP-002	SUPERSTRUCTURE DETAILS 1			
34	CBR27C11-BRG-SUP-003	SUPERSTRUCTURE DETAILS 2			
35	CBR27C11-BRG-SUP-004	SUPERSTRUCTURE DETAILS 3			
36	CBR27C11-BRG-SUP-005	SUPERSTRUCTURE DETAILS 4			
37	CBR27C11-BRG-SUP-006	SUPERSTRUCTURE DETAILS 5			
38	CBR27C11-BRG-DTL-001	CONCRETE PARPAPET (TYPE P-1)			
39	CBR27C11-BRG-DTL-002	WIRE FENCE (DESIGN W-1)			
40	CBR27C11-BRG-DTL-003	WATERPROOF EXPANSION DEVICE			
41	CBR27C11-BRG-DTL-004	APPROACH PANEL DETAILS			
42	CBR27C11-BRG-DTL1	CONCRETE SLOPE PAVING			
43	CBR27C11-BRG-DTL-005	BRIDGE DETAILS 1			
44	CBR27C11-BRG-DTL-006	BRIDGE DETAILS 2			
45	CBR27C11-BRG-DTL-007	BRIDGE DETAILS 3			
46	CBR27C11-BRG-DTL-008	BRIDGE DETAILS 4			
47	CBR27C11-BRG-DTL-009	BRIDGE DETAILS 5			
48	CBR27C11-BRG-DTL-010	AS-BUILT BRIDGE DATA			
49	CBR27C11-BRG-SUR-001	BRIDGE SURVEY 1			
50	CBR27C11-BRG-SUR-002	BRIDGE SURVEY 2			
51	CBR27C11-BRG-BOR-001	BRIDGE SURVEY PLAN			
52	CBR27C11-BRG-BOR-002	BRIDGE SURVEY PROFILE 1			
53	CBR27C11-BRG-BOR-003	BRIDGE SURVEY PROFILE 2			
54	CBR27C11-BRG-STG-001	STAGING PLAN 1			
55	CBR27C11-BRG-STG-002	STAGING PLAN 2			
56	CBR27C11-BRG-STG-003	STAGING PLAN 3			
57	CBR27C11-BRG-STG-004	STAGING PLAN 4			
		LOUISIANA AVE S LRT - BRIDGE 27C13			
1	CBR27C13-BRG-GPE-001	GENERAL PLAN AND ELEVATION			
2	CBR27C13-BRG-TRN-001	TRANSVERSE SECTION AND QUANTITIES			
3	CBR27C13-BRG-TRN-002	STRAY CURRENT/CORROSION CONTROL NOTES			
4	CBR27C13-BRG-SUP-001	BRIDGE LAYOUT			
5	CBR27C13-BRG-ABT-001	WEST ABUTMENT DETAILS 1			
6	CBR27C13-BRG-ABT-002	WEST ABUTMENT DETAILS 2			
7	CBR27C13-BRG-ABT-003	WEST ABUTMENT DETAILS 3			
8	CBR27C13-BRG-ABT-004	WEST ABUTMENT DETAILS 4			
9	CBR27C13-BRG-ABT-005	WEST ABUTMENT DETAILS 5			
10	CBR27C13-BRG-ABT-006	WEST ABUTMENT DETAILS 6			
11	CBR27C13-BRG-ABT-007	WEST ABUTMENT REINFORCEMENT 1			
12	CBR27C13-BRG-ABT-008	WEST ABUTMENT REINFORCEMENT 2			
13	CBR27C13-BRG-ABT-009	WEST ABUTMENT REINFORCEMENT 3			
14	CBR27C13-BRG-ABT-010	WEST ABUTMENT REINFORCEMENT 4			
15	CBR27C13-BRG-ABT-011	WEST ABUTMENT REINFORCEMENT 5			
16	CBR27C13-BRG-ABT-012	WEST ABUTMENT REINFORCEMENT 6			
17	CBR27C13-BRG-ABT-013	WEST ABUTMENT REINFORCEMENT 7			
18	CBR27C13-BRG-ABT-014	EAST ABUTMENT DETAILS 1			
19	CBR27C13-BRG-ABT-015	EAST ABUTMENT DETAILS 2			
20	CBR27C13-BRG-ABT-016	EAST ABUTMENT DETAILS 3			

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
21	CBR27C13-BRG-ABT-017	EAST ABUTMENT DETAILS 4			
22	CBR27C13-BRG-ABT-018	EAST ABUTMENT DETAILS 5			
23	CBR27C13-BRG-ABT-019	EAST ABUTMENT DETAILS 6			
24	CBR27C13-BRG-ABT-020	EAST ABUTMENT REINFORCEMENT 1			
25	CBR27C13-BRG-ABT-021	EAST ABUTMENT REINFORCEMENT 2			
26	CBR27C13-BRG-ABT-022	EAST ABUTMENT REINFORCEMENT 3			
27	CBR27C13-BRG-ABT-023	EAST ABUTMENT REINFORCEMENT 4			
28	CBR27C13-BRG-ABT-024	EAST ABUTMENT REINFORCEMENT 5			
29	CBR27C13-BRG-ABT-025	EAST ABUTMENT REINFORCEMENT 6			
30	CBR27C13-BRG-ABT-026	EAST ABUTMENT REINFORCEMENT 7			
31	CBR27C13-BRG-PIR-001	PIER DETAILS 1			
32	CBR27C13-BRG-PIR-002	PIER DETAILS 2			
33	CBR27C13-BRG-PIR-003	PIER REINFORCEMENT 1			
34	CBR27C13-BRG-PIR-004	PIER REINFORCEMENT 2			
35	CBR27C13-BRG-PIR-005	PIER REINFORCEMENT 3			
36	CBR27C13-BRG-SUP-002	FRAMING PLAN			
37	CBR27C13-BRG-PCB-001	MN45 PRESTRESSED CONCRETE BEAM DETAILS			
38	CBR27C13-BRG-SUP-003	SUPERSTRUCTURE DETAILS 1			
39	CBR27C13-BRG-SUP-004	SUPERSTRUCTURE DETAILS 2			
40	CBR27C13-BRG-SUP-005	SUPERSTRUCTURE DETAILS 3			
41	CBR27C13-BRG-SUP-005	SUPERSTRUCTURE DETAILS 4			
42	CBR27C13-BRG-RAL-001	CONCRETE PARAPET (TYPE P-1)			
43	CBR27C13-BRG-RAL-002	WIRE FENCE (DESIGN W-1)			
44	CBR27C13-BRG-EXP-001	WATERPROOF EXPANSION DEVICE			
45	CBR27C13-BRG-DTL-001	DECK DRAINAGE AND WATERPROOFING 1			
46	CBR27C13-BRG-DTL-002	DECK DRAINAGE AND WATERPROOFING 2			
47	CBR27C13-BRG-DTL-003	CONCRETE SLOPE PAVING			
48	CBR27C13-BRG-DTL-004	BRIDGE DETAILS 1			
49	CBR27C13-BRG-DTL-005	BRIDGE DETAILS 2			
50	CBR27C13-BRG-DTL-006	BRIDGE DETAILS 3			
51	CBR27C13-BRG-DTL-007	BRIDGE DETAILS 4			
52	CBR27C13-BRG-DTL-008	BRIDGE DETAILS 5			
53	CBR27C13-BRG-DTL-009	AS-BUILT BRIDGE DATA			
54	CBR27C13-BRG-SUR-001	BRIDGE SURVEY 1			
55	CBR27C13-BRG-SUR-002	BRIDGE SURVEY 2			
56	CBR27C13-BRG-BOR-001	BRIDGE SURVEY PLAN			
57	CBR27C13-BRG-BOR-002	BRIDGE SURVEY PROFILE 1			
58	CBR27C13-BRG-BOR-003	BRIDGE SURVEY PROFILE 2			
59	CBR27C13-BRG-STG-001	STAGING PLAN 1			
60	CBR27C13-BRG-STG-002	STAGING PLAN 2			
		LOUISIANA STATION UNDERPASS - BRIDGE R0690			
1	CBRR0690-BRG-GPE-001	GENERAL PLAN AND ELEVATION			
2	CBRR0690-BRG-SUP-001	TRANSVERSE SECTION AND QUANTITIES			
3	CBRR0690-BRG-SUP-002	UNDERPASS LAYOUT			
4	CBRR0690-BRG-SUP-003	FOOTING LAYOUT			
5	CBRR0690-BRG-SUP-004	UNDERPASS DETAILS 1			
6	CBRR0690-BRG-SUP-005	UNDERPASS DETAILS 2			
7	CBRR0690-BRG-SUP-006	UNDERPASS DETAILS 3			
8	CBRR0690-BRG-SUP-007	UNDERPASS DETAILS 4			
9	CBRR0690-BRG-SUP-008-1	UNDERPASS REINFORCEMENT 1			
10	CBRR0690-BRG-SUP-008-2	UNDERPASS REINFORCEMENT 2			
11	CBRR0690-BRG-SUP-008-3	UNDERPASS REINFORCEMENT 3			
12	CBRR0690-BRG-SUP-008-4	UNDERPASS REINFORCEMENT 4			
13	CBRR0690-BRG-SUP-008-5	UNDERPASS REINFORCEMENT 5			
14	CBRR0690-BRG-DTL-002	WIRE FENCE (DESIGN W-1)			
15	CBRR0690-BRG-DTL-001	BRIDGE DETAILS 1			
16	CBRR0690-BRG-DTL-003	BRIDGE DETAILS 2			
17	CBRR0690-BRG-DTL-004	AS-BUILT BRIDGE DATA			
18	CBRR0690-BRG-SUR-001	BRIDGE SURVEY			
19	CBRR0690-BRG-BOR-001	BRIDGE SURVEY PLAN			
20	CBRR0690-BRG-BOR-002	BRIDGE SURVEY PROFILE			
21	CBRR0690-BRG-STG-001	STAGING PLAN 1			
22	CBRR0690-BRG-STG-002	STAGING PLAN 2			
23	CBRR0690-BRG-STG-003	STAGING PLAN 3			
		SOUTHERLY CONNECTOR OVER LRT - BRIDGE R0691			
1	CBRR0691-BRG-GPE-001	GENERAL PLAN AND ELEVATION			
2	CBRR0691-BRG-TRN-001	TRANSVERSE SECTION AND QUANTITIES			
3	CBRR0691-BRG-TRN-002	STRAY CURRENT/CORROSION CONTROL NOTES			
4	CBRR0691-BRG-SUP-001	BRIDGE LAYOUT			
5	CBRR0691-BRG-ABT-001	WEST ABUTMENT DETAILS 1			
6	CBRR0691-BRG-ABT-002	WEST ABUTMENT DETAILS 2			

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
GENERAL
VOLUME INDEX OF PLAN SHEETS
SHEET 1

DISCIPLINE: **GENERAL**

SHEET NAME: **00-GEN-IDX-001**

Jan. 21 2016 05:35 pm V:\3400_ADC\CAD\CAD MANAGEMENT\DRAWING LIST\COVER SHEETS 90%\90% GEN-IDX_VOL_04.dwg By: v-kriewamr

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
		VOLUME 4E - BRIDGES (cont'd)			
7	CBRR0691-BRG-ABT-003	WEST ABUTMENT DETAILS 3			
8	CBRR0691-BRG-ABT-004	WEST ABUTMENT DETAILS 4			
9	CBRR0691-BRG-ABT-005	WEST ABUTMENT DETAILS 5			
10	CBRR0691-BRG-ABT-006	WEST ABUTMENT DETAILS 6			
11	CBRR0691-BRG-ABT-007	WEST ABUTMENT REINFORCEMENT 1			
12	CBRR0691-BRG-ABT-008	WEST ABUTMENT REINFORCEMENT 2			
13	CBRR0691-BRG-ABT-009	WEST ABUTMENT REINFORCEMENT 3			
14	CBRR0691-BRG-ABT-010	WEST ABUTMENT REINFORCEMENT 4			
15	CBRR0691-BRG-ABT-011	WEST ABUTMENT REINFORCEMENT 5			
16	CBRR0691-BRG-ABT-012	WEST ABUTMENT REINFORCEMENT 6			
17	CBRR0691-BRG-ABT-013	WEST ABUTMENT REINFORCEMENT 7			
18	CBRR0691-BRG-ABT-014	EAST ABUTMENT DETAILS 1			
19	CBRR0691-BRG-ABT-015	EAST ABUTMENT DETAILS 2			
20	CBRR0691-BRG-ABT-016	EAST ABUTMENT DETAILS 3			
21	CBRR0691-BRG-ABT-017	EAST ABUTMENT DETAILS 4			
22	CBRR0691-BRG-ABT-018	EAST ABUTMENT DETAILS 5			
23	CBRR0691-BRG-ABT-019	EAST ABUTMENT DETAILS 6			
24	CBRR0691-BRG-ABT-020	EAST ABUTMENT REINFORCEMENT 1			
25	CBRR0691-BRG-ABT-021	EAST ABUTMENT REINFORCEMENT 2			
26	CBRR0691-BRG-ABT-022	EAST ABUTMENT REINFORCEMENT 3			
27	CBRR0691-BRG-ABT-023	EAST ABUTMENT REINFORCEMENT 4			
28	CBRR0691-BRG-ABT-024	EAST ABUTMENT REINFORCEMENT 5			
29	CBRR0691-BRG-ABT-025	EAST ABUTMENT REINFORCEMENT 6			
30	CBRR0691-BRG-ABT-026	EAST ABUTMENT REINFORCEMENT 7			
31	CBRR0691-BRG-PIR-001	PIER DETAILS 1			
32	CBRR0691-BRG-PIR-002	PIER DETAILS 2			
33	CBRR0691-BRG-PIR-003	PIER REINFORCEMENT 1			
34	CBRR0691-BRG-PIR-004	PIER REINFORCEMENT 2			
35	CBRR0691-BRG-PIR-005	PIER REINFORCEMENT 3			
36	CBRR0691-BRG-SUP-002	FRAMING PLAN			
37	CBRR0691-BRG-STL-001	GIRDER ELEVATION			
38	CBRR0691-BRG-STL-002	GIRDER DETAILS 1			
39	CBRR0691-BRG-STL-003	GIRDER DETAILS 2			
40	CBRR0691-BRG-SUP-003	SUPERSTRUCTURE DETAILS 1			
41	CBRR0691-BRG-SUP-004	SUPERSTRUCTURE DETAILS 2			
42	CBRR0691-BRG-SUP-005	SUPERSTRUCTURE DETAILS 3			
43	CBRR0691-BRG-SUP-006	SUPERSTRUCTURE DETAILS 4			
44	CBRR0691-BRG-SUP-007	SUPERSTRUCTURE DETAILS 5			
45	CBRR0691-BRG-SUP-008	SUPERSTRUCTURE DETAILS 6			
46	CBRR0691-BRG-SUP-009	SUPERSTRUCTURE DETAILS 7			
47	CBRR0691-BRG-SUP-010	SUPERSTRUCTURE DETAILS 8			
48	CBRR0691-BRG-RAL-001	WIRE FENCE (DESIGN W-1)			
49	CBRR0691-BRG-EXP-001	JOINT DETAILS 1			
50	CBRR0691-BRG-EXP-002	JOINT DETAILS 2			
51	CBRR0691-BRG-DTL-001	DECK DRAINAGE AND WATERPROOFING 1			
52	CBRR0691-BRG-DTL-002	DECK DRAINAGE AND WATERPROOFING 2			
53	CBRR0691-BRG-EXP-003	BEARING ASSEMBLY DETAILS			
54	CBRR0691-BRG-DTL-003	BRIDGE DETAILS 1			
55	CBRR0691-BRG-DTL-004	BRIDGE DETAILS 2			
56	CBRR0691-BRG-DTL-005	AS-BUILT BRIDGE DATA			
57	CBRR0691-BRG-SUR-001	BRIDGE SURVEY			
58	CBRR0691-BRG-BOR-001	BRIDGE SURVEY PLAN			
59	CBRR0691-BRG-BOR-002	BRIDGE SURVEY PROFILE			
60	CBRR0691-BRG-STG-001	STAGING PLAN			
		SOUTHERLY CONNECTOR AT OXFORD ST - BRIDGE 27C14			
1	CBR27C14-BRG-GPE-001	GENERAL PLAN AND ELEVATION			
2	CBR27C14-BRG-TRN-001	TRANSVERSE SECTION AND QUANTITIES			
3	CBR27C14-BRG-SUP-001	BRIDGE LAYOUT			
4	CBR27C14-BRG-ABT-001	WEST ABUTMENT DETAILS 1			
5	CBR27C14-BRG-ABT-002	WEST ABUTMENT DETAILS 2			
6	CBR27C14-BRG-ABT-003	WEST ABUTMENT DETAILS 3			
7	CBR27C14-BRG-ABT-004	WEST ABUTMENT DETAILS 4			
8	CBR27C14-BRG-ABT-005	WEST ABUTMENT DETAILS 5			
9	CBR27C14-BRG-ABT-006	WEST ABUTMENT DETAILS 6			
10	CBR27C14-BRG-ABT-007	WEST ABUTMENT REINFORCEMENT 1			
11	CBR27C14-BRG-ABT-008	WEST ABUTMENT REINFORCEMENT 2			
12	CBR27C14-BRG-ABT-009	WEST ABUTMENT REINFORCEMENT 3			
13	CBR27C14-BRG-ABT-010	WEST ABUTMENT REINFORCEMENT 4			
14	CBR27C14-BRG-ABT-011	WEST ABUTMENT REINFORCEMENT 5			
15	CBR27C14-BRG-ABT-012	WEST ABUTMENT REINFORCEMENT 6			
16	CBR27C14-BRG-ABT-013	WEST ABUTMENT REINFORCEMENT 7			

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
17	CBR27C14-BRG-ABT-014	EAST ABUTMENT DETAILS 1			
18	CBR27C14-BRG-ABT-015	EAST ABUTMENT DETAILS 2			
19	CBR27C14-BRG-ABT-016	EAST ABUTMENT DETAILS 3			
20	CBR27C14-BRG-ABT-017	EAST ABUTMENT DETAILS 4			
21	CBR27C14-BRG-ABT-018	EAST ABUTMENT DETAILS 5			
22	CBR27C14-BRG-ABT-019	EAST ABUTMENT DETAILS 6			
23	CBR27C14-BRG-ABT-020	EAST ABUTMENT REINFORCEMENT 1			
24	CBR27C14-BRG-ABT-021	EAST ABUTMENT REINFORCEMENT 2			
25	CBR27C14-BRG-ABT-022	EAST ABUTMENT REINFORCEMENT 3			
26	CBR27C14-BRG-ABT-023	EAST ABUTMENT REINFORCEMENT 4			
27	CBR27C14-BRG-ABT-024	EAST ABUTMENT REINFORCEMENT 5			
28	CBR27C14-BRG-ABT-025	EAST ABUTMENT REINFORCEMENT 6			
29	CBR27C14-BRG-ABT-026	EAST ABUTMENT REINFORCEMENT 7			
30	CBR27C14-BRG-SUP-002	FRAMING PLAN			
31	CBR27C14-BRG-STL-001	GIRDER ELEVATION			
32	CBR27C14-BRG-STL-002	GIRDER DETAILS 1			
33	CBR27C14-BRG-STL-003	GIRDER DETAILS 2			
34	CBR27C14-BRG-SUP-003	SUPERSTRUCTURE DETAILS 1			
35	CBR27C14-BRG-SUP-004	SUPERSTRUCTURE DETAILS 2			
36	CBR27C14-BRG-SUP-005	SUPERSTRUCTURE DETAILS 3			
37	CBR27C14-BRG-SUP-006	SUPERSTRUCTURE DETAILS 4			
38	CBR27C14-BRG-SUP-007	SUPERSTRUCTURE DETAILS 5			
39	CBR27C14-BRG-SUP-008	SUPERSTRUCTURE DETAILS 6			
40	CBR27C14-BRG-RAL-001	WIRE FENCE (DESIGN W-1)			
41	CBR27C14-BRG-EXP-001	JOINT DETAILS 1			
42	CBR27C14-BRG-EXP-002	JOINT DETAILS 2			
43	CBR27C14-BRG-DTL-001	DECK DRAINAGE AND WATERPROOFING 1			
44	CBR27C14-BRG-DTL-002	DECK DRAINAGE AND WATERPROOFING 2			
45	CBR27C14-BRG-EXP-003	BEARING ASSEMBLY DETAILS			
46	CBR27C14-BRG-DTL-003	BRIDGE DETAILS 1			
47	CBR27C14-BRG-DTL-004	BRIDGE DETAILS 2			
48	CBR27C14-BRG-DTL-005	AS-BUILT BRIDGE DATA			
49	CBR27C14-BRG-SUR-001	BRIDGE SURVEY			
50	CBR27C14-BRG-BOR-001	BRIDGE SURVEY PLAN			
51	CBR27C14-BRG-BOR-002	BRIDGE SURVEY PROFILE			
52	CBR27C14-BRG-STG-001	STAGING PLAN			
		MN&S RR (CP RAIL) CORRIDOR PROTECTION BARRIERS			
1	EX2-STU-PPR-MNSR-FRT-GPE-001	GENERAL PLAN AND ELEVATION			
2	EX2-STU-PPR-MNSR-FRT-SUP-001	LAYOUT AND QUANTITIES			
3	EX2-STU-PPR-MNSR-FRT-PIR-001	DETAILS 1			
4	EX2-STU-PPR-MNSR-FRT-PIR-002	DETAILS 2			
5	EX2-STU-PPR-MNSR-FRT-PIR-003	REINFORCEMENT 1			
6	EX2-STU-PPR-MNSR-FRT-PIR-004	REINFORCEMENT 2			
7	EX2-STU-PPR-MNSR-FRT-PIR-005	REINFORCEMENT 3			
8	EX2-STU-PPR-MNSR-FRT-PIR-006	AESTHETIC DETAILS			
		WOODDALE AVE PEDESTRIAN UNDERPASS - BRIDGE 27J61			
1	CBR27J61-BRG-GPE	GENERAL PLAN AND ELEVATION			
2	CBR27J61-BRG-SEC-001	TRANSVERSE SECTION AND QUANTITIES			
3	CBR27J61-BRG-LAY	UNDERPASS LAYOUT			
4	CBR27J61-BRG-DTL-001	PRECAST CONCRETE BARREL DETAILS			
5	CBR27J61-BRG-HDW-001-1	WEST FOOTING LAYOUT			
6	CBR27J61-BRG-HDW-001-2	WEST FOOTING REINFORCEMENT			
7	CBR27J61-BRG-HDW-001-3	EAST FOOTING LAYOUT			
8	CBR27J61-BRG-HDW-001-4	EAST FOOTING REINFORCEMENT			
9	CBR27J61-BRG-HDW-002-1	HEADWALL DETAILS			
10	CBR27J61-BRG-HDW-002-2	HEADWALL REINFORCEMENT 1			
11	CBR27J61-BRG-HDW-003	HEADWALL REINFORCEMENT 2			
12	CBR27J61-BRG-RNF	REINFORCEMENT BAR LIST			
13	CBR27J61-BRG-DTL-002	CONCRETE PARAPET (TYPE P-1)			
14	CBR27J61-BRG-DTL-003	BRIDGE DETAILS			
15	CBR27J61-BRG-DTL-004	AS-BUILT BRIDGE DATA			
16	CBR27J61-BRG-SUR-001-1	BRIDGE SURVEY 1			
17	CBR27J61-BRG-SUR-001-2	BRIDGE SURVEY 2			
18	CBR27J61-BRG-BOR-001	BRIDGE SURVEY PLAN			
19	CBR27J61-BRG-BOR-002-1	BRIDGE SURVEY PROFILE 1			
20	CBR27J61-BRG-BOR-002-2	BRIDGE SURVEY PROFILE 2			
21	CBR27J61-BRG-BOR-002-3	BRIDGE SURVEY PROFILE 3			
22	CBR27J61-BRG-BOR-002-4	BRIDGE SURVEY PROFILE 4			
23	CBR27J61-BRG-STG-001	STAGING PLAN 1			
24	CBR27J61-BRG-STG-002	STAGING PLAN 2			

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

METROPOLITAN COUNCIL

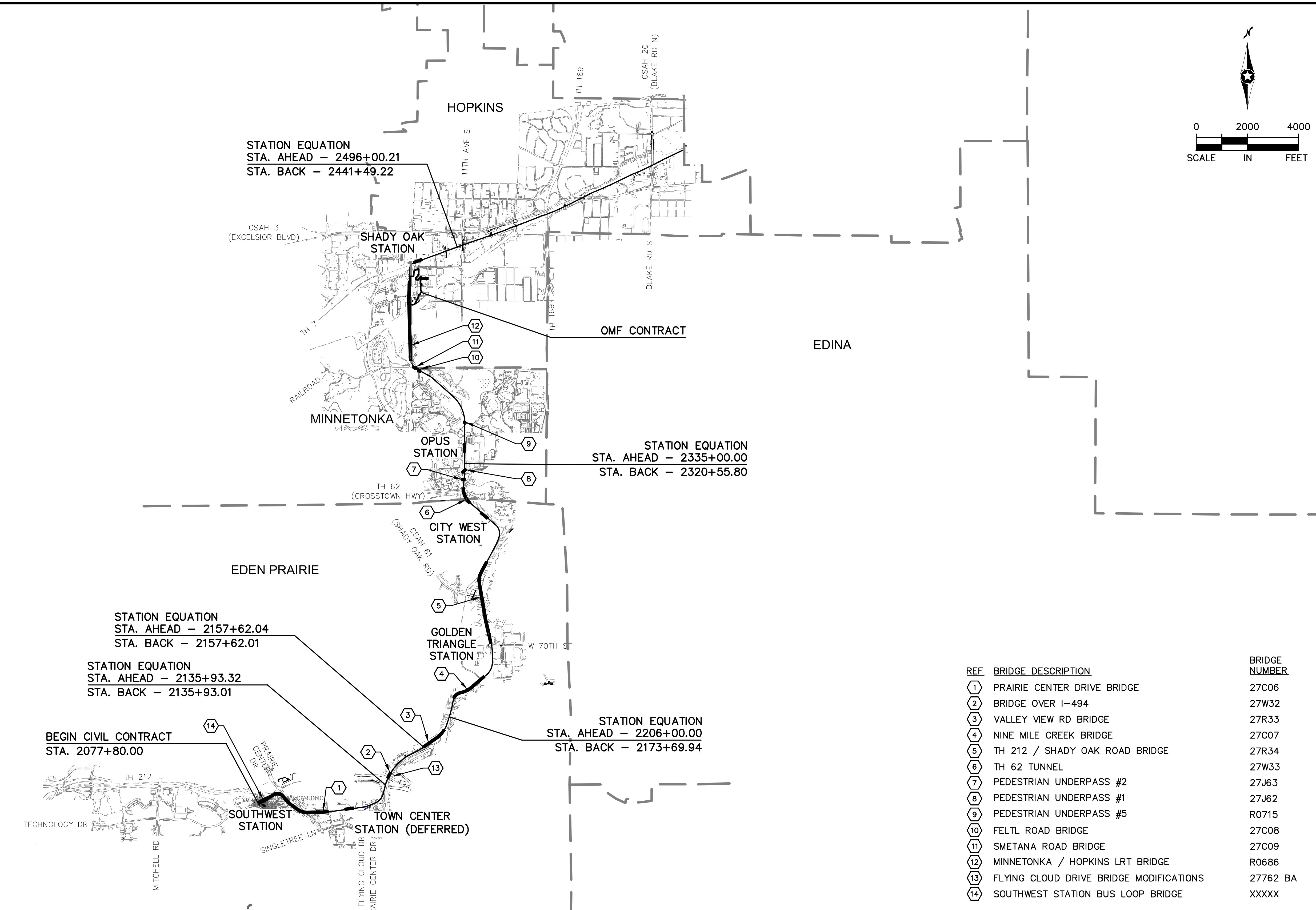
SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4E
GENERAL
VOLUME INDEX OF PLAN SHEETS
SHEET 2

DISCIPLINE: GENERAL

SHEET NAME: 00-GEN-IDX-002



REF	BRIDGE DESCRIPTION	BRIDGE NUMBER
1	PRAIRIE CENTER DRIVE BRIDGE	27C06
2	BRIDGE OVER I–494	27W32
3	VALLEY VIEW RD BRIDGE	27R33
4	NINE MILE CREEK BRIDGE	27C07
5	TH 212 / SHADY OAK ROAD BRIDGE	27R34
6	TH 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
14	SOUTHWEST STATION BUS LOOP BRIDGE	XXXXX

BA – BID ALTERNATE

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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

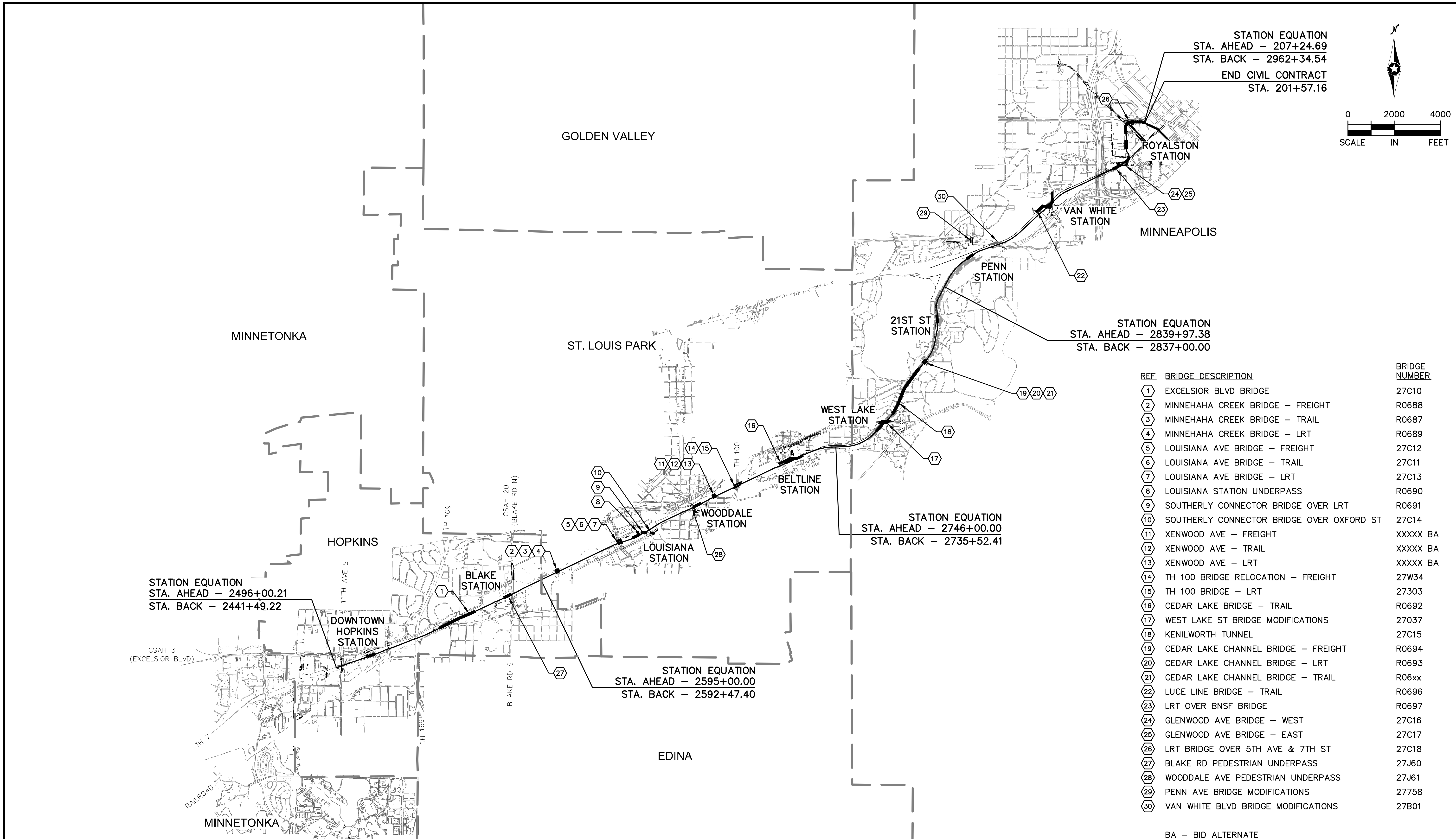
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
GENERAL
KEY MAP
SHEET 1

DISCIPLINE: GENERAL

SHEET NAME: W0-GEN-KEY-001

SHEET 4 OF 344



REF	BRIDGE DESCRIPTION	BRIDGE NUMBER
1	EXCELSIOR BLVD BRIDGE	27C10
2	MINNEHAHA CREEK BRIDGE – FREIGHT	R0688
3	MINNEHAHA CREEK BRIDGE – TRAIL	R0687
4	MINNEHAHA CREEK BRIDGE – LRT	R0689
5	LOUISIANA AVE BRIDGE – FREIGHT	27C12
6	LOUISIANA AVE BRIDGE – TRAIL	27C11
7	LOUISIANA AVE BRIDGE – LRT	27C13
8	LOUISIANA STATION UNDERPASS	R0690
9	SOUTHERLY CONNECTOR BRIDGE OVER LRT	R0691
10	SOUTHERLY CONNECTOR BRIDGE OVER OXFORD ST	27C14
11	XENWOOD AVE – FREIGHT	XXXXX BA
12	XENWOOD AVE – TRAIL	XXXXX BA
13	XENWOOD AVE – LRT	XXXXX BA
14	TH 100 BRIDGE RELOCATION – FREIGHT	27W34
15	TH 100 BRIDGE – LRT	27303
16	CEDAR LAKE BRIDGE – TRAIL	R0692
17	WEST LAKE ST BRIDGE MODIFICATIONS	27037
18	KENILWORTH TUNNEL	27C15
19	CEDAR LAKE CHANNEL BRIDGE – FREIGHT	R0694
20	CEDAR LAKE CHANNEL BRIDGE – LRT	R0693
21	CEDAR LAKE CHANNEL BRIDGE – TRAIL	R06xx
22	LUCE LINE BRIDGE – TRAIL	R0696
23	LRT OVER BNSF BRIDGE	R0697
24	GLENWOOD AVE BRIDGE – WEST	27C16
25	GLENWOOD AVE BRIDGE – EAST	27C17
26	LRT BRIDGE OVER 5TH AVE & 7TH ST	27C18
27	BLAKE RD PEDESTRIAN UNDERPASS	27J60
28	WOODDALE AVE PEDESTRIAN UNDERPASS	27J61
29	PENN AVE BRIDGE MODIFICATIONS	27758
30	VAN WHITE BLVD BRIDGE MODIFICATIONS	27B01

BA – BID ALTERNATE

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
GENERAL
KEY MAP
SHEET 2

DISCIPLINE: GENERAL

SHEET NAME: E0-GEN-KEY-002

SYMBOLS

	PROPOSED DIRECTIONAL LANE USE
	EXISTING DIRECTIONAL LANE USE
	FLASHER (FREIGHT & PEDESTRIAN)
	CROSSING GATE (FREIGHT & LRT)
	CANTILEVER SIGNAL
	RAIL TURNOUT
	RAIL CROSSOVER (DOUBLE)
	RAIL CROSSOVER (SINGLE)
	POINT OF SWITCH (PS)
	OCS POLE FOUNDATION
	RAIL LUBRICATOR
	POINT OF INTERSECTION (PI)
W2-200	RAILROAD CURVE NUMBER
	ACCESSIBLE PEDESTRIAN CURB RAMP (DESIGN VARIES)
	HANDICAP PARKING STALL
	TACTILE WARNING STRIP
	TPSS BUILDING (TPSS-SW###) - NIC TUNNEL SYSTEMS HOUSE (TSY-SW###) - NIC
	SIGNAL / COMMUNICATION HOUSE - NIC
	STORM SEWER MANHOLE
	STORM SEWER CATCH BASIN
	STORM SEWER FLARED END SECTION
	STORM SEWER CLEAN-OUT
	STORM SEWER PUMP STATION
DTXX INV XXX.XX	DRAINTILE ID
XXXX - ST	STORM SEWER STRUCTURE ID
C E	BUS SHELTER
	ROADWAY / PEDESTRIAN LIGHT

LINETYPES

	ROADWAY ℄
	TRACK ℄ (LRT)
	TRACK ℄ (FRT)
	RETAINING WALL
	BALLAST CURB
	TUNNEL WALL
	FENCE
	EX ROW
	PROP ROW
	PROP TCE
	PROP PE
	FENCE / RAILING
ID ID	FREIGHT INTRUSION DETECTION
	CONCRETE CURB AND GUTTER
	TRAIL (WIDTH VARIES)
	SIDEWALK
	DRIVEWAY
	BRIDGE
	SAWCUT
	DELINEATED WETLAND
	BMP (NWL) WATER EDGE
	PROPOSED FLOODPLAIN MITIGATION AREA
	SILT FENCE
	BALE BARRIER
	STORM SEWER
	CASING PIPE
	PIPE REMOVAL
	STRUCTURE REMOVAL
	FLOATING SILT FENCE
	SUPER DUTY SILT FENCE
	CONSTRUCTION LIMITS
	ROCK WEEPER
	DIVERSION DITCH
	OVERLAND FLOW
	CROSSWALK
	STOP BAR
	MEDIAN NOSE
EP-EP-18	WETLAND ID

CONSTRUCTION PACKAGE NOTE

NOTE: THE SWLRT CONSTRUCTION IS BEING IMPLEMENTED THROUGH THREE MAIN CONSTRUCTION PACKAGES; CIVIL, SYSTEMS & TUNNEL FACILITIES (SYS), AND OPERATIONS & MAINTENANCE FACILITY (OMF). CERTAIN SYS AND OMF SYMBOLS ARE SHOWN ON THE CIVIL CONTRACT PLANS FOR INFORMATION ONLY AND CERTAIN FACILITIES ARE NOT PART OF THE CIVIL CONTRACT.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
GENERAL
NOTES, ABBREVIATIONS, AND SYMBOLS
SHEET 1

DISCIPLINE: GENERAL

SHEET NAME: 00-GEN-NTS-001

ABBREVIATIONS

3–2 (EG)	SIGNAL HEAD NUMBER (PHASE 3, NO. 2)
AD	ALGEBRAIC DIFFERENCE
AVE	AVENUE
AWF	ADVANCE WARNING FLASHER
BA	BID ALTERNATE
BGN	BEGIN
BP	BEGINNING POINT
BVCE	BEGINNING VERTICAL CURVE ELEVATION
BVCS	BEGINNING VERTICAL CURVE STATION
BLVD	BOULEVARD
BMP	BEST MANAGEMENT PRACTICE
BNSF	BURLINGTON NORTHERN SANTA FE RAILWAY
C&G	CURB AND GUTTER
℄	CENTERLINE
CB	CATCH BASIN
CE	CLEARANCE ENVELOPE
CIR	CIRCLE
CO	DRAINTILE CLEANOUT STRUCTURE
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
DT	DRAINTILE
DTL	DETAIL
DWY	DRIVEWAY
E	EAST
E_a	ACTUAL SUPERELEVATION (INCHES)
EB	EAST BOUND
EL or ELEV	ELEVATION
EP	ENDING POINT
ESMT	EASEMENT
E_u	UNBALANCED SUPERELEVATION (INCHES)
EVCE	ENDING VERTICAL CURVE ELEVATION
EVCS	ENDING VERTICAL CURVE STATION
EVP	EMERGENCY VEHICLE PRE–EMPTION
EX	EXISTING
FES	FLARED END SECTION
FYA	FLASHING YELLOW ARROW
GR RD	GROUND ROD
GRN	GREEN INDICATION
HCRRA	HENNEPIN COUNTY REGIONAL RAILROAD AUTHORITY
INL	BRIDGE DRAIN INLET
INS GR	INSULATED GROUND
IP	INPLACE
LED	LIGHT EMITTING DIODE
LH	LEFT HAND
LN	LANE
LRCI	LOCALLY REQUESTED CAPITAL INVESTMENT
LRT	LIGHT RAIL TRANSIT
LRV	LIGHT RAIL VEHICLE
LT	LEFT
LUM	LUMINAIRE
L_c	CURVE LENGTH (FEET)
L_s	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
NWL	NORMAL WATER LINE
OCS	OUTLET CONTROL SYSTEM
OCS	OVERHEAD CONTACT SYSTEM
OMF	OPERATIONS AND MAINTENANCE FACILITY
OH	OVERHEAD
P1–1 (EG)	PEDESTRIAN HEAD (PHASE 1, NO. 1)
PB2–1 (EG)	PUSHBUTTON (PHASE 2, NO. 1)
PC	POINT OF CURVE
PE	PERMANENT EASEMENT
PED	PEDESTRIAN
PITO	POINT OF INTERSECTION OF TURNOUT
PKWY	PARKWAY
POB	POINT OF BEGINNING
POE	POINT OF ENDING
POT	POINT ON TANGENT
PROP	PROPOSED
PS	POINT OF SWITCH
PT	POINT OF TANGENT
PVI	POINT OF VERTICAL INTERSECTION
R	RADIUS (FEET)
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RL	RAIL LUBRICATOR
r	RATE OF CHANGE VERTICAL CURVE
RH	RIGHT HAND
ROW	RIGHT OF WAY
RT	RIGHT
S	SOUTH
SB	SOUTH BOUND
SC	SPIRAL TO CURVE
SIG–COMM	SIGNAL COMMUNICATION
SOP	SOURCE OF POWER
ST	STREET
ST	SPIRAL TO TANGENT
ST	STORM MANHOLE STRUCTURE
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
VDE	VEHICLE DYNAMIC ENVELOPE
W	WEST
WB	WEST BOUND
WLK	WALK INDICATION

TRAIL INDEX

ABBREVIATED NAME	FULL NAME / LOCATION
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	NOT USED
TRAIL H	10' CONNECTOR TRAIL/EAST OF PENN STATION TO KENWOOD PKWY
TRAIL I	10' CONNECTOR TRAIL FROM CEDAR LAKE REGIONAL TRAIL TO CSAH 20 (BLAKE RD)
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	10' CONNECTOR TRAIL FROM CEDAR LAKE REGIONAL TRAIL TO CSAH 20 (BLAKE RD)
TRAIL N	8' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO EDGEBROOOK 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	10' CONNECTOR TRAIL FROM CEDAR LAKE REGIONAL TRAIL TO BELTLINE BLVD
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
TRAIL X	NOT USED
TRAIL Y	12' CONNECTOR TRAIL FROM CEDAR LAKE REGIONAL TRAIL TO WOODDALE AVE S
TRAIL Z	12' CONNECTOR TRAIL FROM CEDAR LAKE REGIONAL TRAIL TO WOODDALE AVE S
TRAIL AA	8' PEDESTRIAN CONNECTOR TRAIL FROM TRAIL B TO PENN STATION
TRAIL BB	8' PEDESTRIAN CONNECTOR TRAIL FROM TRAIL B TO PENN STATION
TRAIL CC	10' CONNECTOR TRAIL FROM KENILWORTH TRAIL (MAIN) TO PENN STATION

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

90% SUBMISSION - 01/22/16

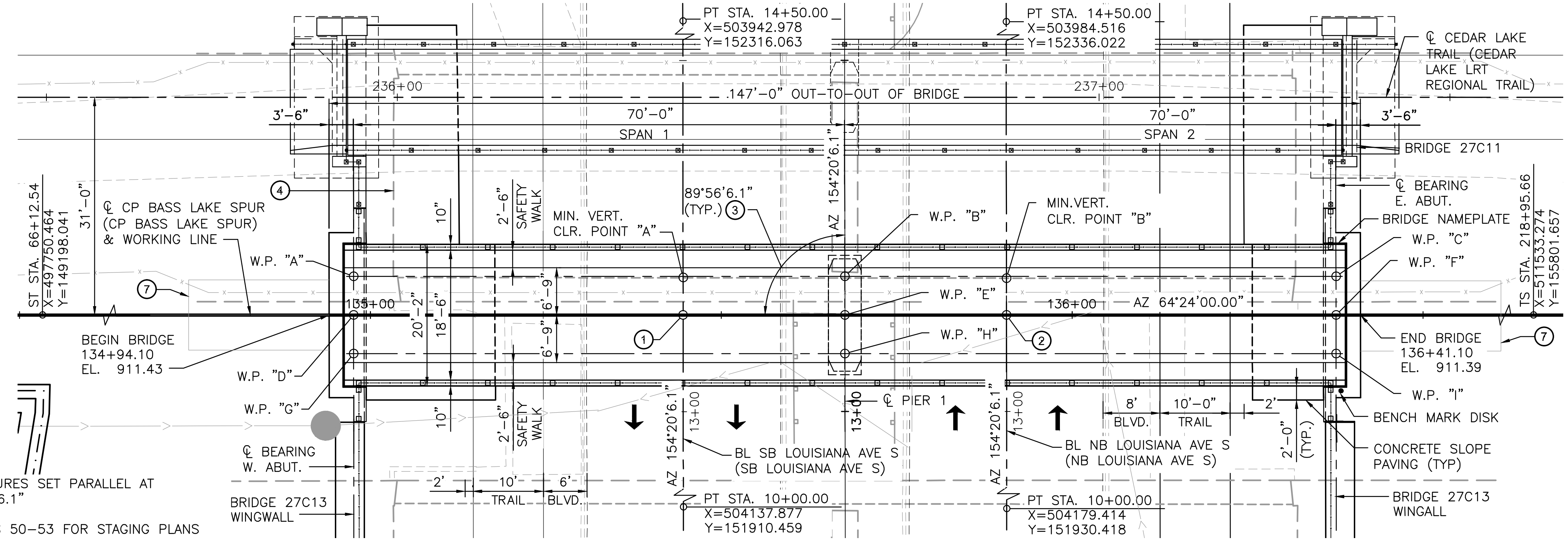
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
GENERAL
NOTES, ABBREVIATIONS, AND SYMBOLS
SHEET 2

DISCIPLINE: GENERAL

SHEET NAME: 00-GEN-NTS-002



NOTES:

SUBSTRUCTURES SET PARALLEL AT AZ=154°20'6.1"

SEE SHEETS 50–53 FOR STAGING PLANS AND SOE.

SEE BRIDGE SURVEY SHEET FOR IN PLACE UTILITIES.

VERTICAL CURVE STATIONS AND ELEVATIONS ARE ALONG CP BASS LAKE SPUR.

HATCHED AREA TO BE REMOVED.

(1) CONTROL POINT #1
BL SB LOUISIANA AVE S (SB LOUISIANA AVE S) STA. 13+13.76
℄ CP BASS LAKE SPUR (CP BASS LAKE SPUR) STA. 135+44.56
X = 504001.983
Y = 152193.267
ANGLE = 89°56'6.1"

(2) CONTROL POINT #2
BL NB LOUISIANA AVE S (NB LOUISIANA AVE S) STA. 13+13.71
℄ CP BASS LAKE SPUR (CP BASS LAKE SPUR) STA. 135+90.64
X = 504043.543
Y = 152213.180
ANGLE = 89°56'6.1"

GENERAL PLAN
0 5' 10' 20'
SCALE IN FEET

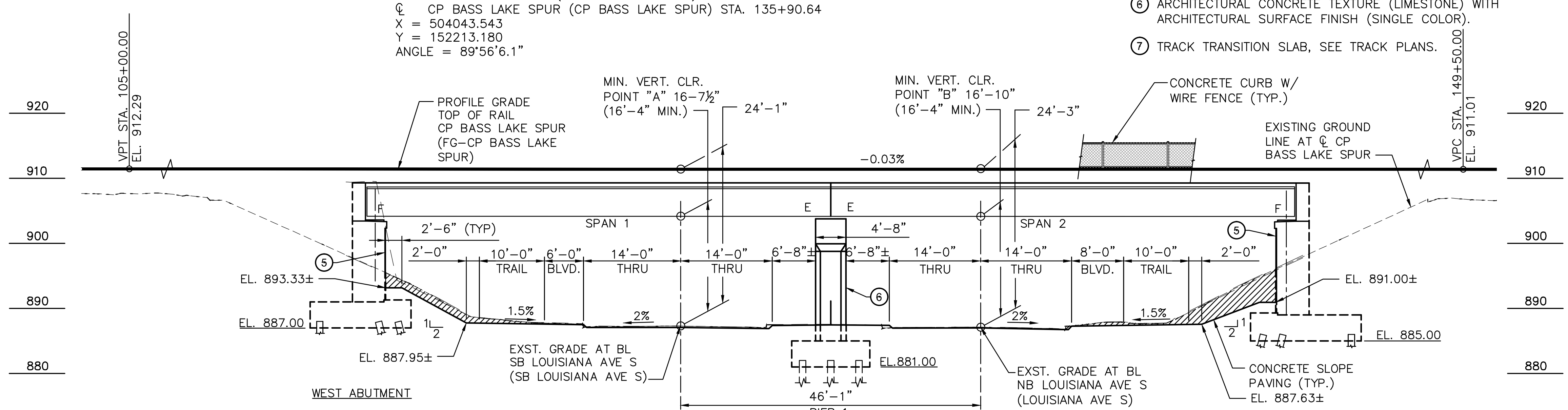
(3) SKEW ANGLE TYPICAL FOR ALL SUBSTRUCTURES.

(4) IN PLACE BRIDGE 27602, A TWO SPAN STEEL BRIDGE CONSTRUCTED IN 1979 SUPPORTED BY STEEL H-PILES 128'-6" LONG AND 35'-6" TO BE REMOVED. SEE STAGING PLANS FOR REMOVAL NOTES.

(5) ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR).

(6) ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR).

(7) TRACK TRANSITION SLAB, SEE TRACK PLANS.



GENERAL ELEVATION
0 5' 10' 20'
SCALE IN FEET

EXISTING GROUND PROFILE

9'-0" LEFT	— — — —
℄ CP BASS LAKE SPUR	- - - - - - - -
9'-0" RIGHT	——— ———

2040 PROJECTED TRAFFIC VOLUMES

ROADWAY OVER		ROADWAY UNDER
NA	A.D.T.	16,300
NA	D.H.V.	1,650
NA	A.D.T.T.	505

DESIGN DATA

2014 AREMA MANUAL FOR RAILWAY ENGINEERING

SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0)

COOPER E 90 LIVE LOAD OR 100 KIP (4 AXLES) ALTERNATIVE LOAD WITH DIESEL IMPACT

MAXIMUM BALLAST DEPTH = 2'-3" (FOR DESIGN)

ALLOWABLE STRESS DESIGN METHOD (STEEL)

LOAD FACTOR DESIGN METHOD (CONCRETE)

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4500 PSI n = 8
fy = 60000 PSI REINFORCEMENT

STRUCTURAL STEEL:
fs = 27500 PSI, fy = 50,000 PSI
ASTM A709 GRADE 50WT3
(MN/DOT 3309)

DESIGN SPEED: OVER = 25 MPH
UNDER = 30 MPH

APPROXIMATE DECK AREA 2884 SQ. FT.

LIST OF SHEETS

NO.	DESCRIPTION
1	GENERAL PLAN AND ELEVATION
2	TRANSVERSE SECTION AND QUANTITIES
3	BRIDGE LAYOUT
4–6	WEST ABUTMENT DETAILS
7–10	WEST ABUTMENT REINFORCEMENT
11–13	EAST ABUTMENT DETAILS
14–17	EAST ABUTMENT REINFORCEMENT
18–19	PIER DETAILS
20–22	PIER REINFORCEMENT
23	FRAMING PLAN
24	GIRDER ELEVATION
25–26	GIRDER DETAILS
27–34	SUPERSTRUCTURE DETAILS
35	WIRE FENCE (DESIGN W-1)
36–37	JOINT DETAILS
38–39	DECK DRAINAGE AND WATERPROOFING
40	BEARING ASSEMBLY DETAILS
41	CONCRETE SLOPE PAVING
42–43	DETAILS
44	AS-BUILT BRIDGE DATA
45–46	BRIDGE SURVEY
47	BRIDGE SURVEY PLAN
48–49	BRIDGE SURVEY PROFILE
50–53	STAGING PLANS

BRIDGE NO. 27C12

CP BASS LAKE SPUR OVER LOUISIANA AVE S
0.3 MI. SOUTH OF JCT. T.H. 7 AND LOUISIANA AVE S
IN ST. LOUIS PARK
70'-0" – 70'-0" STEEL WELDED PLATE GIRDER SPANS
13'-6" RAILWAY
00°-03'-53.9" SKEW
CONCRETE CURB W/ WIRE FENCE

BRIDGE I.D. NO. 301

GENERAL PLAN AND ELEVATION

SEC 20 T 117N R 21W
CITY OF ST LOUIS PARK HENNEPIN COUNTY

JOB NO.: T9N635 | STATE PROJ. NO.: 9909-01 | MNDOT REVIEW: JOE NIETFELD

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: BMS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
GENERAL PLAN AND ELEVATION

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-GPE-001

SHEET 1 OF 53

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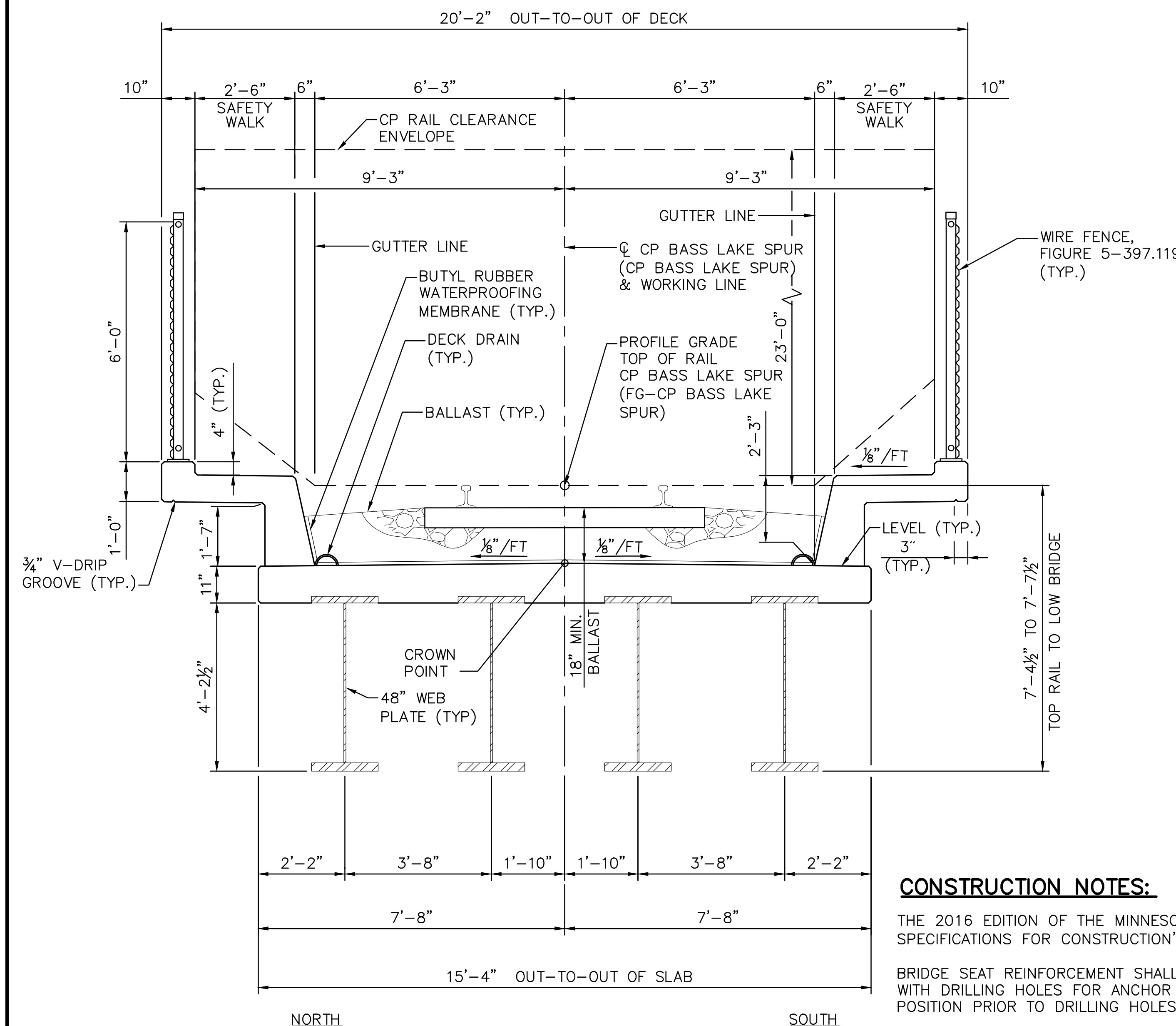


TRANSVERSE SECTION

0 1' 2' 4'
SCALE IN FEET

GROUNDING NOTES:

SEE SHEETS ELE-SITE-SCH-504, ELE-SITE-DTL-600, ELE-SITE-DTL-601 AND ELE-SITE-DTL-602 FOR ADDITIONAL FENCE GROUNDING INFORMATION. FOR BRIDGES, ABUTMENTS, AND RETAINING WALLS THAT DON'T HAVE STRAY CURRENT SYSTEMS, GROUND THE FENCE AS SHOWN IN THE WIRE FENCE DETAIL.

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 TWO DIGITS OF EACH BAR 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 WERE COMPUTED USING SERVICE LOAD 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".

CONCRETE MATERIALS, MIX DESIGN, TESTING AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH CHAPTER 8, PART 1 OF THE 2014 A.R.E.M.A. MANUAL; MnDOT 2461 AND THE SPECIAL PROVISIONS.

SCHEDULE OF QUANTITIES

SPEC. SECTION	COMPONENT ITEM	UNIT	QUANTITY
--	CONSTRUCT BRIDGE 27C12	LUMP SUM	LS

COMPONENT ITEM SUMMARY (BRIDGE 27C12)

	ITEM NO.	COMPONENT ITEM	UNIT (2)	QUANTITY (2)
	2401	STRUCTURAL CONCRETE (1G52)	CU. YD.	
(1)	2461	STRUCTURAL CONCRETE (CP5000)	CU. YD.	
	2401	REINFORCEMENT BARS	POUND	
	2401	REINFORCEMENT BARS (EPOXY COATED)	POUND	
	2401	BRIDGE SLAB CONCRETE (3YHPC-M)	CU. YD.	
	2402	STRUCTURAL STEEL (3306)	POUND	
	2402	STRUCTURAL STEEL (3309)	POUND	
	2402	BEARING ASSEMBLY	EACH	
	SB-XX	ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM)	SQ. FT.	
	SB-XX	ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE)	SQ. FT.	
	2442	REMOVE EXISTING BRIDGE	LUMP SUM	
(4)	SB-XX	STRUCTURAL EXCAVATION CLASS U	CU. YD.	
	SB-XX	STEEL H-PILING 12"	LIN. FT.	
	2452	STEEL H-TEST PILE 75 FT LONG 12"	EACH	
	2452	STEEL H-TEST PILE 80 FT LONG 12"	EACH	
	2452	STEEL H-TEST PILE 90 FT LONG 12"	EACH	
	2452	PILE TIP PROTECTION 12"	EACH	
	SB-XX	STEEL SHEET PILING (TEMPORARY)	LUMP SUM	
	2481	MEMBRANE WATERPROOFING SYSTEM	LIN. FT.	
	2502	DRAINAGE SYSTEM TYPE (B910)	LUMP SUM	
	2502	DRAINAGE SYSTEM (BRIDGE DECK)	LUMP SUM	
	2514	CONCRETE SLOPE PAVING	SQ. YD.	
	2557	WIRE FENCE (DESIGN W-1)	LIN. FT.	

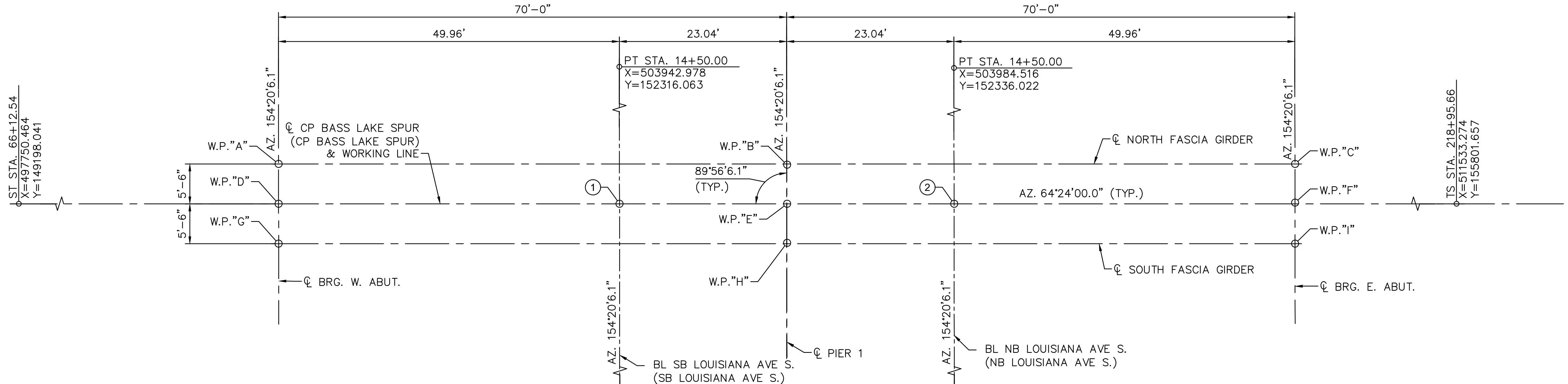
NOTES:

(1) A BENCH MARK IS REQUIRED. LOCATED AT THE SE 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.

(2) QUANTITIES LISTED FOR THE COMPONENT ITEMS OF THE LUMP SUM BR 27C12 ITEM 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 THE BR 27C12. REFER TO MnDOT STANDARD SPECIFICATION OR SPECIAL PROVISION FOR TECHNICAL SPECIFICATION REQUIREMENTS FOR ALL PROVISION OTHER THAN MEASUREMENT AND PAYMENT REQUIREMENTS.

(4) BACKFILL BEHIND ABUTMENTS SHALL BE SELECT GRANULAR BORROW PER SPEC. 3149.2.B.2. BACKFILL DENSITY SHALL BE ATTAINED BY THE SPECIFIED DENSITY METHOD IN ACCORDANCE WITH SPEC. 2105.3.F.1.



NOTES:

SKEW TYPICAL FOR ALL SUBSTRUCTURES.

SUBSTRUCTURES SET PARALLEL AT AZ=154°20'6.1"

(1) CONTROL POINT #1
BL SB LOUISIANA AVENUE S. (SB LOUISIANA AVE S.) STA. 13+13.76
℄ CP BASS LAKE SPUR (CP BASS LAKE SPUR) STA. 135+44.56
X = 504001.983
Y = 152193.267
ANGLE = 89°56'6.1"

(2) CONTROL POINT #2
BL NB LOUISIANA AVE S (NB LOUISIANA AVE S) STA. 13+13.71
℄ CP BASS LAKE SPUR (CP BASS LAKE SPUR) STA. 135+90.64
X = 504043.543
Y = 152213.180
ANGLE = 89°56'6.1"

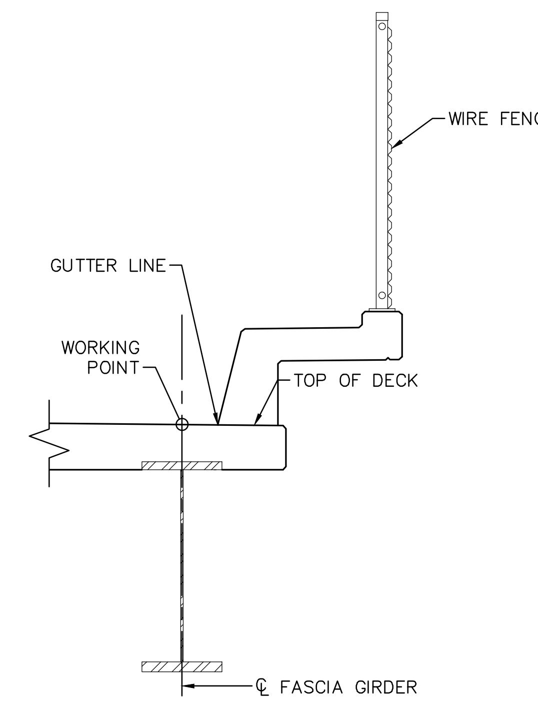
WORKING POINT LAYOUT

DIMENSIONS BETWEEN WORKING POINTS											COORDINATES		ELEVATION				
POINT	STATION	A	B	C	D	E	F	G	H	I	X	Y	TOP OF RAIL	TOP OF DECK	TOP/DECK TO BR. SEAT	BRIDGE SEAT	POINT
A	134+97.60		70.00		5.50	70.22			70.87	140.44	503957.253	152177.935	911.43	908.93	5.52	903.41	A
B	135+67.60			70.00		5.50	70.22	70.85		70.87	504020.381	152208.181	911.41	909.16	5.52	903.64	B
C	136+37.60						5.50	140.42	70.85		504083.509	152238.427	911.39	908.89	5.52	903.37	C
D	134+97.60					70.00		5.50	70.22		503959.635	152172.977	911.43	908.99			D
E	135+67.60						70.00		5.50	70.22	504022.763	152203.223	911.41	909.21			E
F	136+37.60									5.50	504085.891	152233.469	911.39	908.94			F
G	134+97.61								70.00		503962.017	152168.020	911.43	908.93	5.52	903.41	G
H	135+67.61									70.00	504025.145	152198.266	911.41	909.16	5.52	903.64	H
I	136+37.61										504088.274	152228.512	911.39	908.89	5.52	903.37	I

TOP OF BRIDGE DECK TO BRIDGE SEAT						
	W.P. "A"	W.P. "B"	W.P. "C"	W.P. "G"	W.P. "H"	W.P. "I"
SLAB THICKNESS	11 1/8"	11 1/8"	11 1/8"	11 1/8"	11 1/8"	11 1/8"
WEB HEIGHT	48"	48"	48"	48"	48"	48"
BOTTOM FLANGE HEIGHT	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
BEARING HEIGHT	4 5/8"	4 5/8"	4 5/8"	4 5/8"	4 5/8"	4 5/8"
TOTAL	5'-6 1/4"	5'-6 1/4"	5'-6 1/4"	5'-6 1/4"	5'-6 1/4"	5'-6 1/4"
	5.52	5.52	5.52	5.52	5.52	5.52

NOTES:

ALL BEAMS SET PARALLEL TO WORKING LINE, ALL DIAPHRAGMS SET PARALLEL TO SUBSTRUCTURES.



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DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
BRIDGE LAYOUT

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-SUP-003

SHEET 3 OF 53

WEST ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
DEAD LOAD + EARTH PRESSURE	37
LIVE LOAD	26
*DESIGN LOAD	63
* BASED ON GROUP VI LOADING (SERVICE LOAD) PER AREMA CHAPTER 8 SECTION 2.2.4	

REQUIRED PILE TEST LOAD	
FIELD CONTROL METHOD	TEST LOAD
PDA	126

GENERAL PILE NOTES

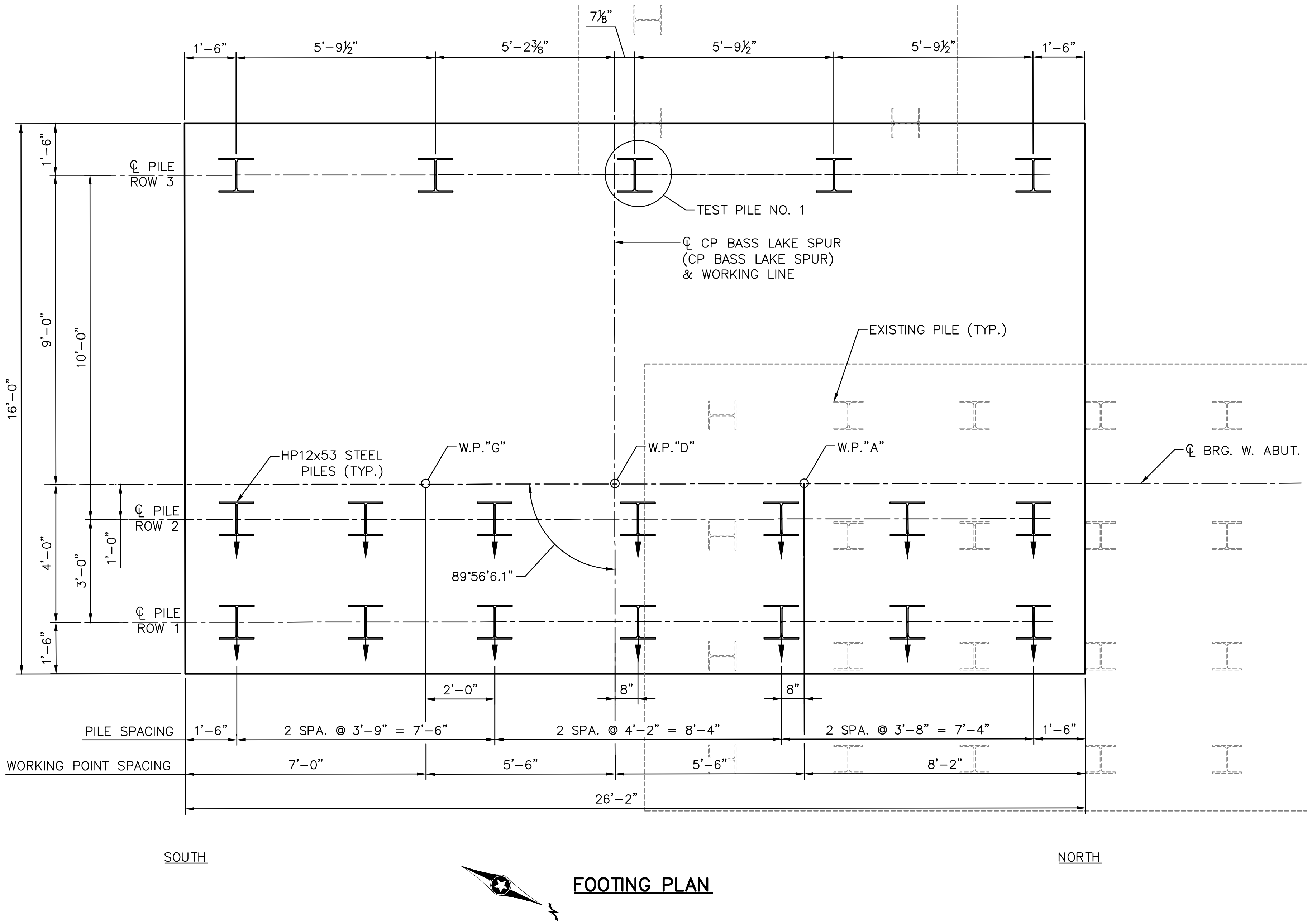
1 HP12x53 STEEL TEST PILES 90 FT. LONG
18 HP12x53 STEEL PILES EST. 90 FT. LONG
19 HP12x53 STEEL PILES REQ'D FOR WEST ABUT.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



FOOTING PLAN

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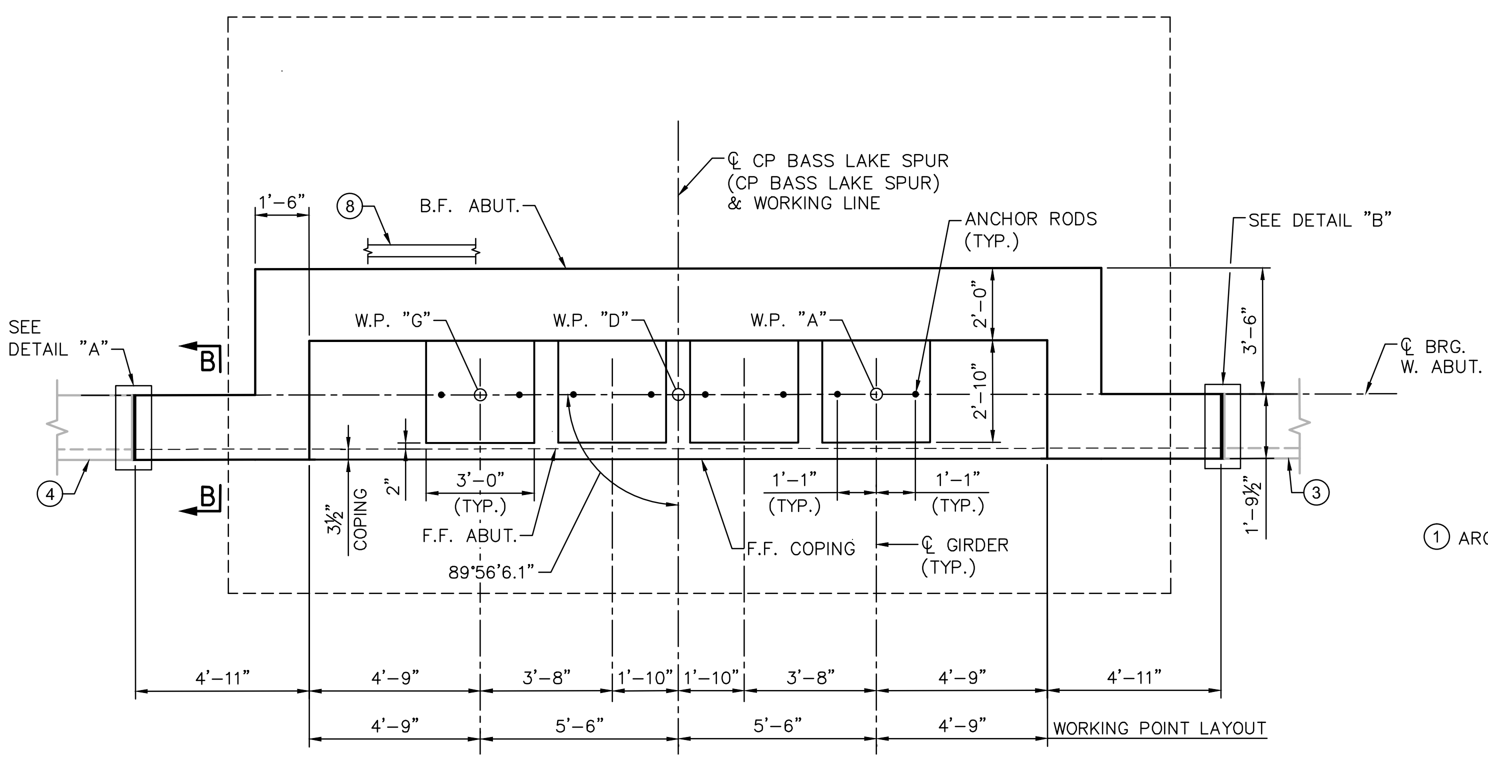
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
WEST ABUTMENT DETAILS 1

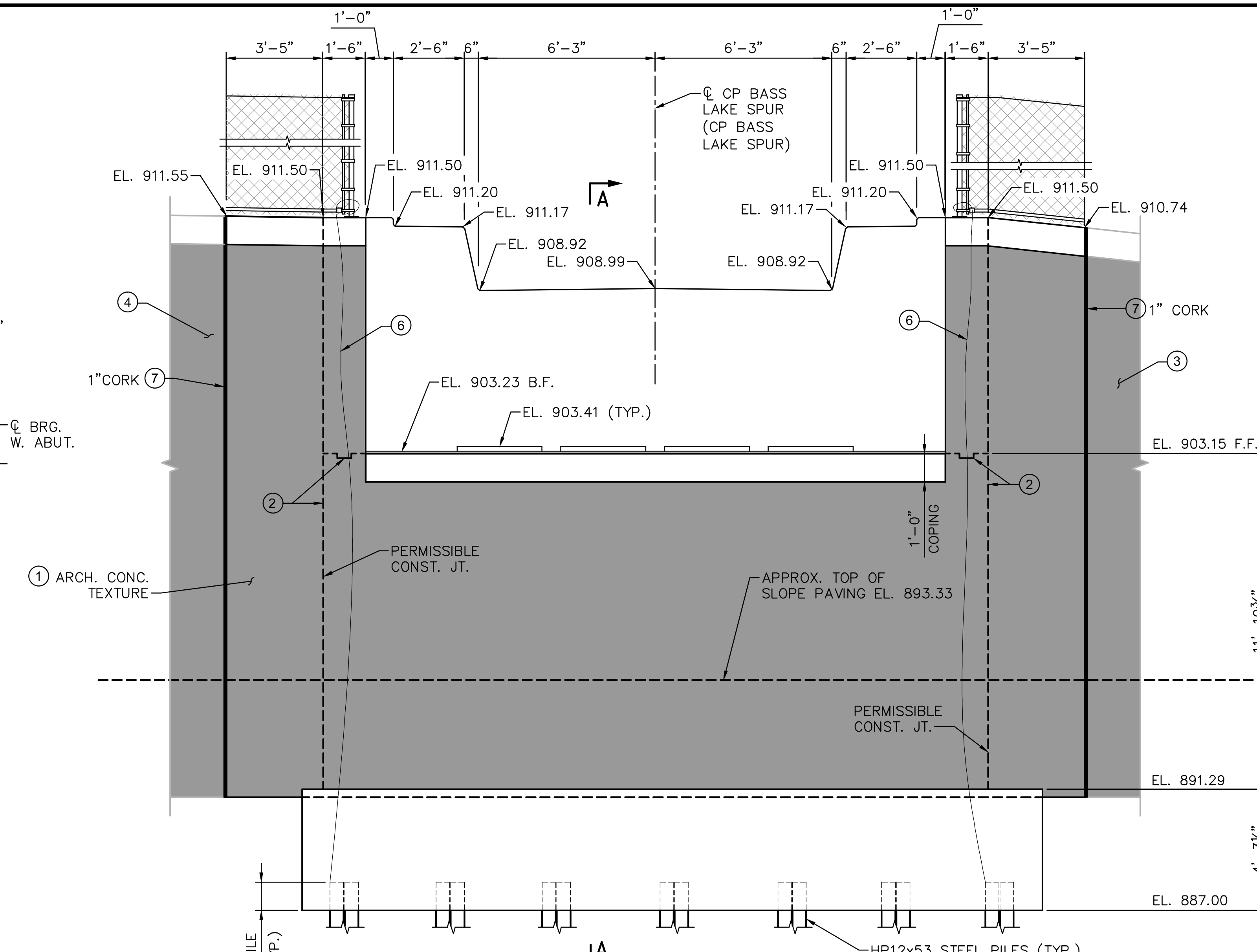
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-ABT-002

SHEET 4 OF 53



PLAN VIEW

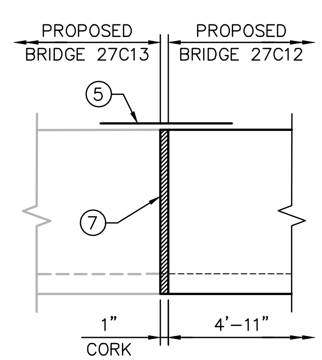


ELEVATION

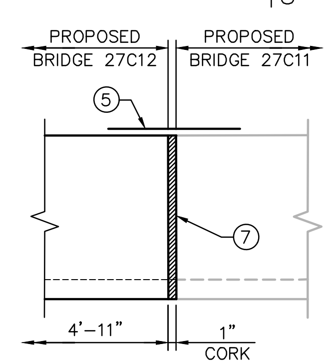
NOTES:

SEE SHEET 6 FOR SECTION A–A & B–B.

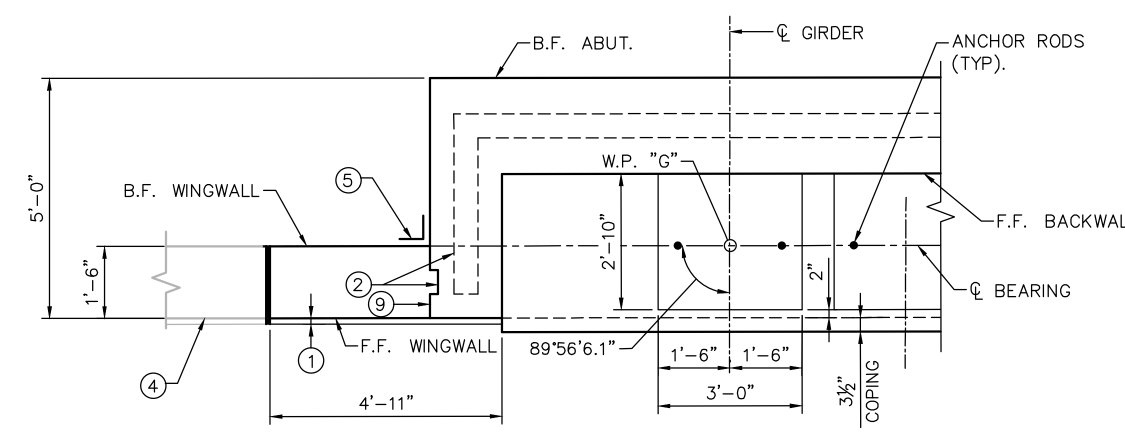
1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. 2"x6" KEY
3. BRIDGE NO. 27C11 WINGWALL. SEE BRIDGE NO. 27C11 PLANS FOR DETAILS.
4. BRIDGE NO. 27C13 WINGWALL. SEE BRIDGE NO. 27C13 PLANS FOR DETAILS.
5. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
6. ATTACH WIRE FENCE ANCHORAGE TO PILE WITH SOLID NO. 6 GAGE COPPER WIRE WITH AN APPROVED TYPE CLAMP OR BRAZING (ONE ANCHORAGE PER END OF RAIL). GROUND BOTH SIDES OF EXPANSION JOINT PIPE SLEEVE IF PRESENT. PAINT EXPOSED WIRE GREY.
7. ELECTRICAL INSULATING CORK BARRIER. CONTRACTOR AND FIELD ENGINEER SHALL VERIFY WINGWALL CONCRETE IS SEPARATED AND CONSTRUCTIVE MATERIAL DOES NOT EXTEND THROUGH CORK.
8. 6" DIA. PERFORATED DRAIN PIPE. SEE SHEET 38 FOR DETAILS.
9. CONSTRUCTION JOINT. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.



DETAIL "A"



DETAIL "B"



SOUTH WINGWALL PLAN VIEW

SECTION ABOVE BEARING SEAT

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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AECOM Kimley»Horn

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
WEST ABUTMENT DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-ABT-001

SHEET 5 OF 53

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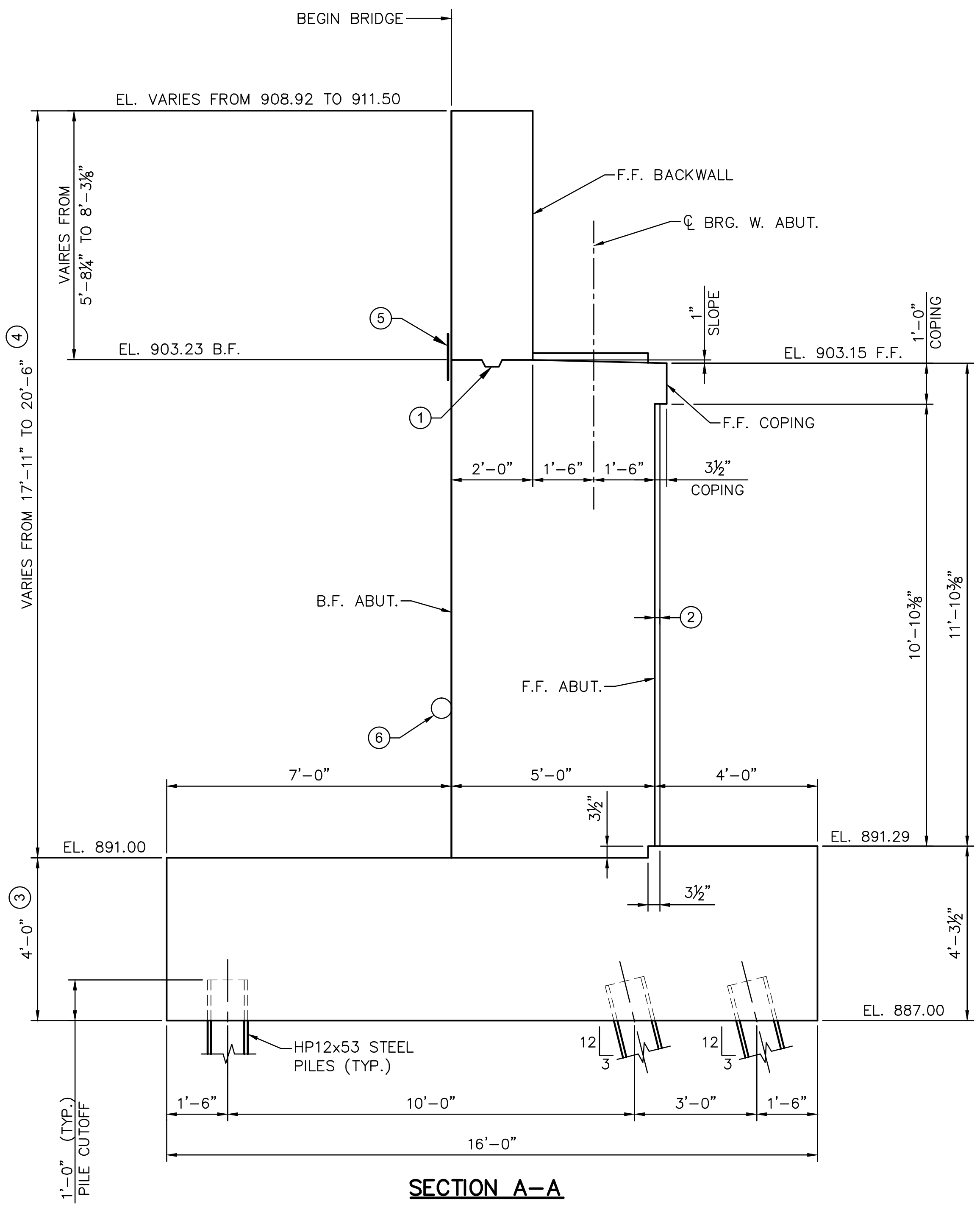
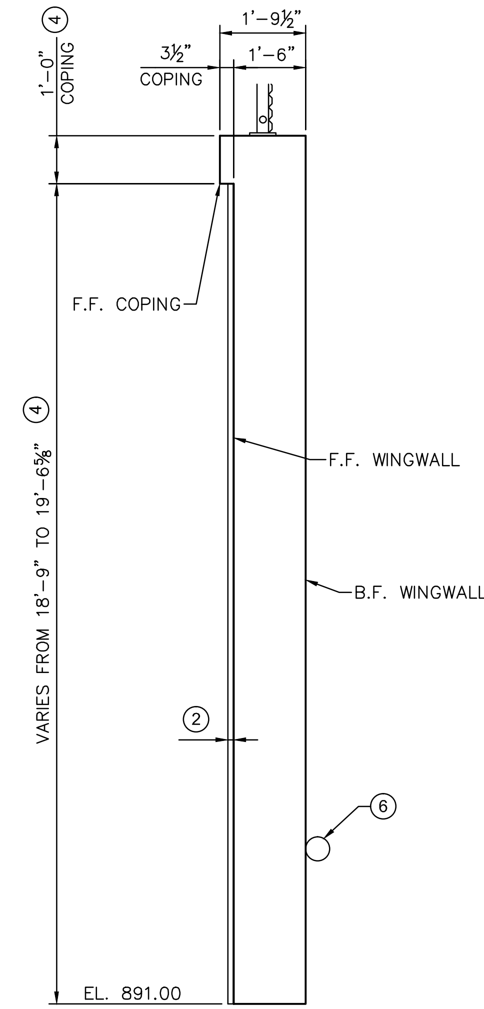


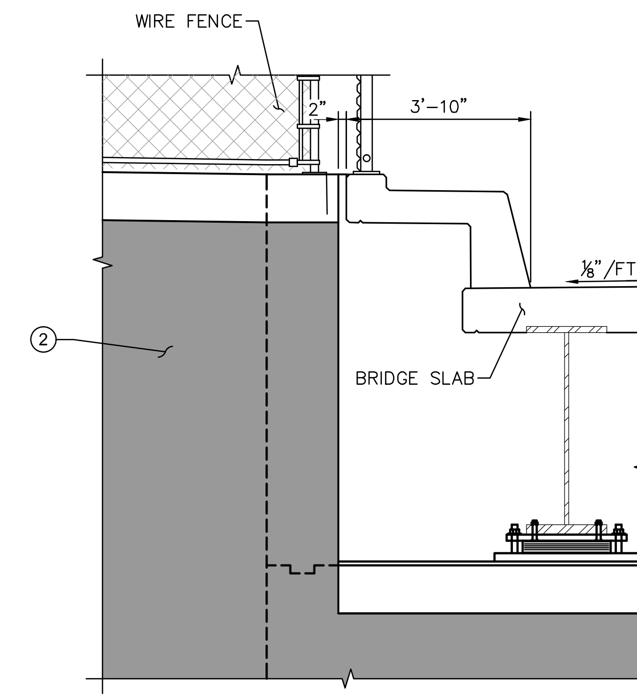
SECTION A–A



SECTION B–B

NOTES:

1. PERMISSIBLE CONSTRUCTION JOINT WITH 2"x6" KEY CENTERED IN WALL.
2. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
3. STRUCTURAL CONCRETE (1G52).
4. STRUCTURAL CONCRETE (CP5000) IS A LEVEL 2 CONTRACTOR MIX DESIGN IN ACCORDANCE WITH MNDOT 2461 WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AND A MAXIMUM WATER/CEMENT RATIO OF 0.40
5. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
6. 6" DIA. PERFORATED DRAIN PIPE. SEE SHEET 38 FOR DETAILS.



SOUTH CORNER ELEVATION VIEW

NORTH CORNER SIMILAR

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DRAWN BY: MSK | CHECKED BY: KJK

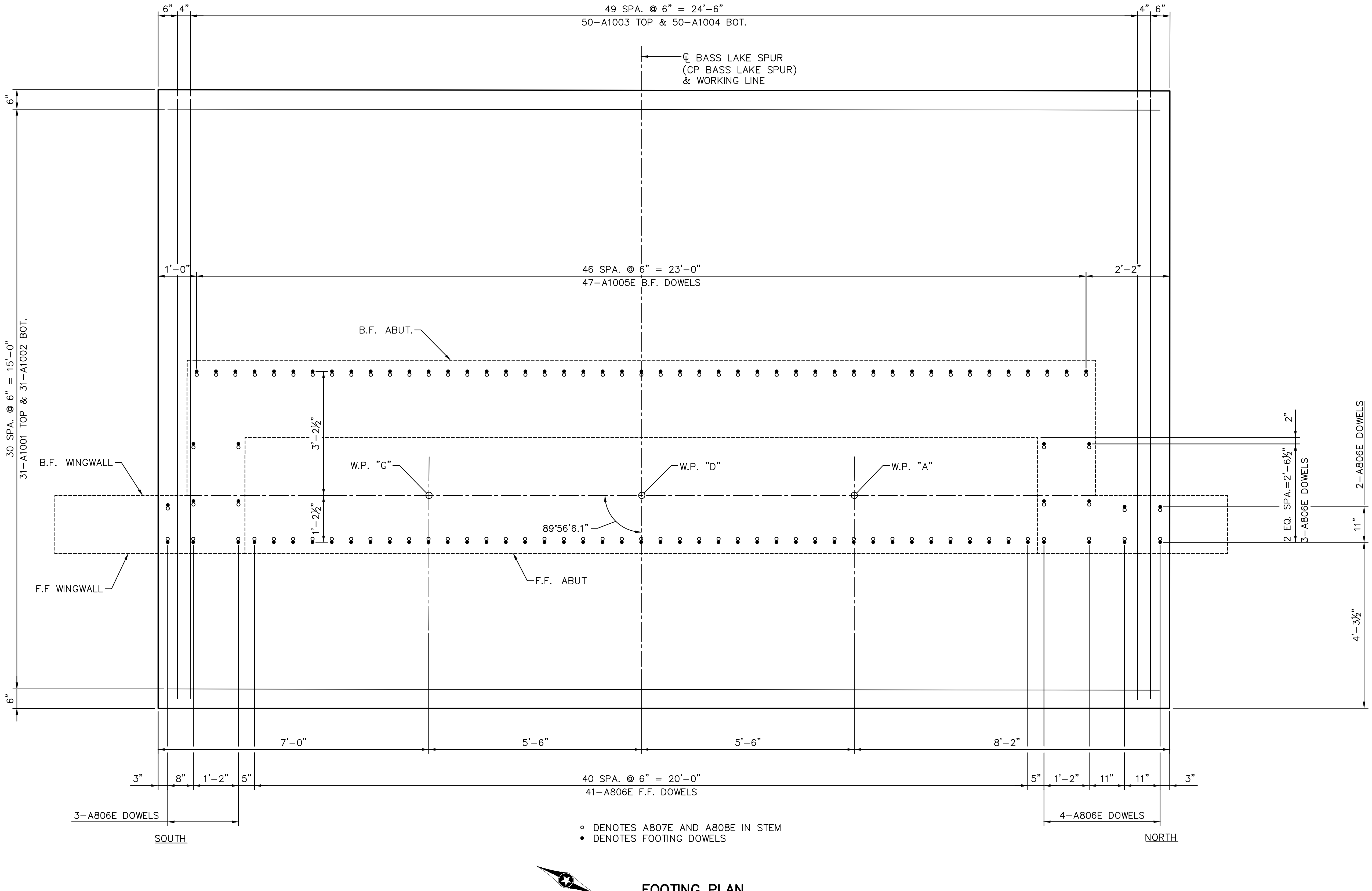
AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
WEST ABUTMENT DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-ABT-003



FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

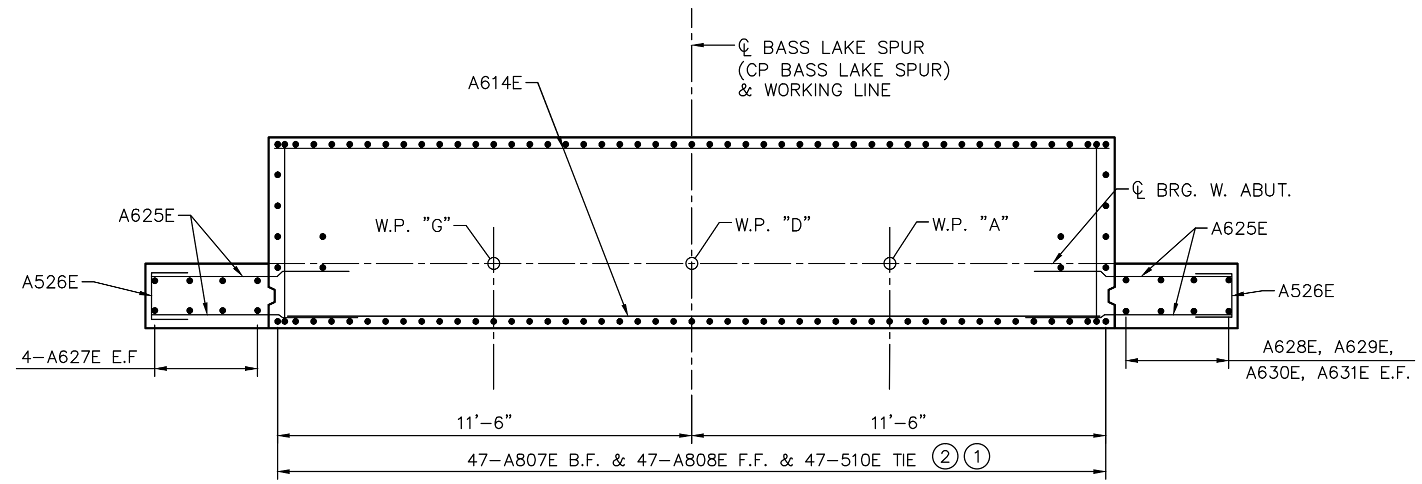
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

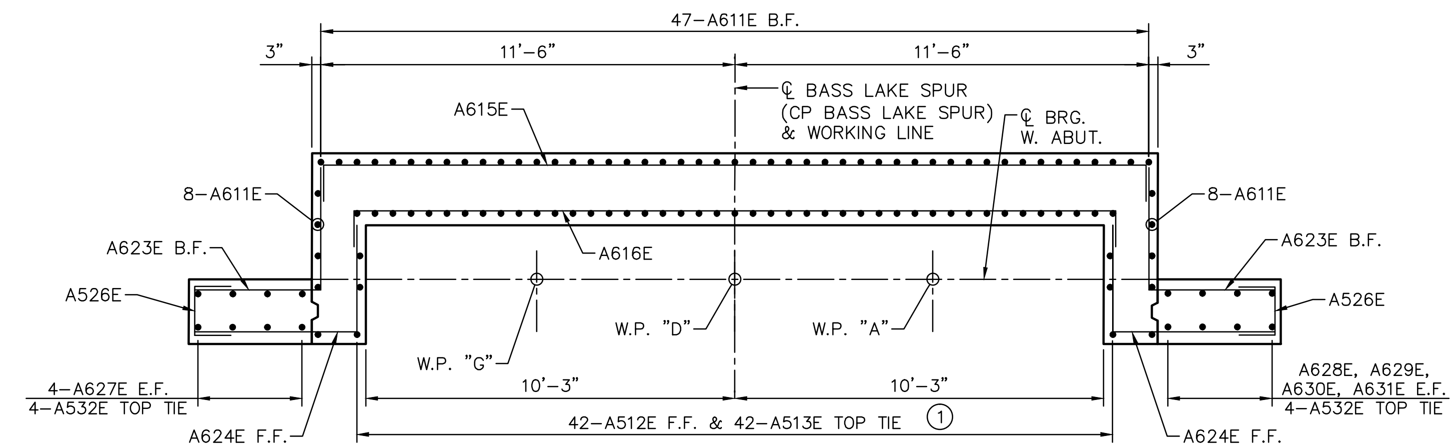
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
WEST ABUTMENT REINFORCEMENT 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-ABT-007

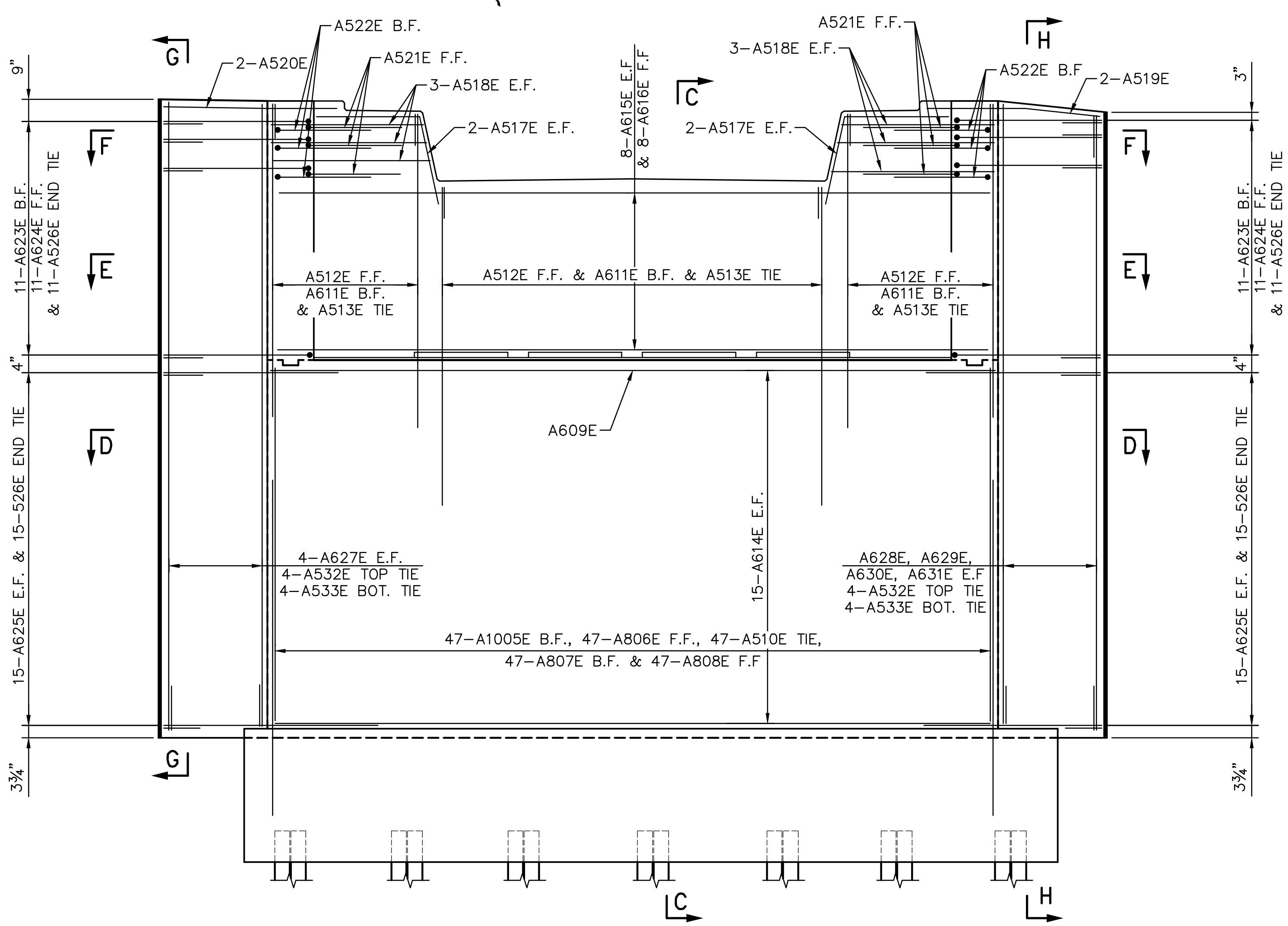
SHEET 7 OF 53



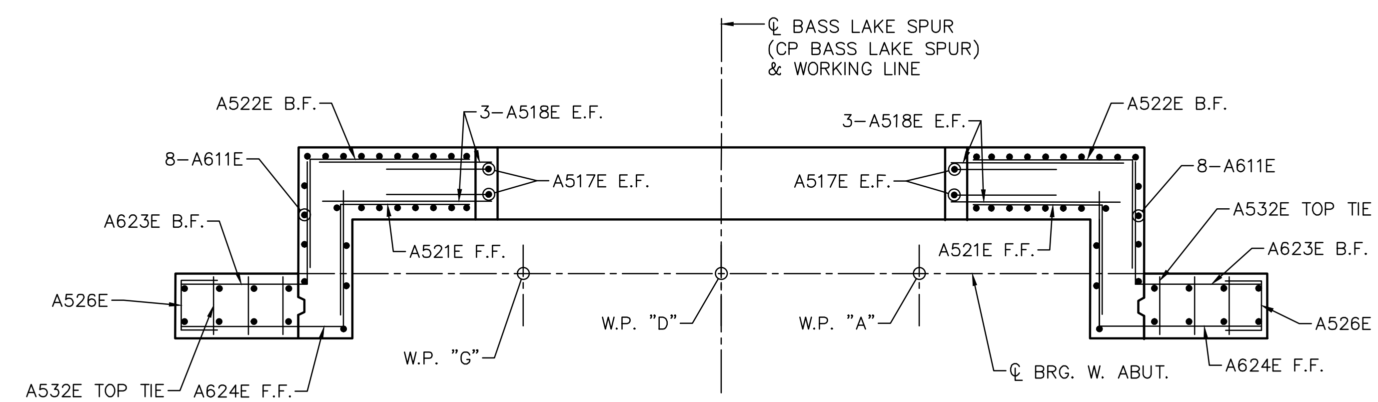
SECTION D–D



SECTION E–E



ELEVATION



SECTION F–F

NOTES:

SEE SHEET 9 FOR SECTIONS C–C, G–G & H–H.

① SPACE WITH DOWEL BARS.

② SEE FOOTING PLAN ON SHEET 7 FOR BAR LAYOUT.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
WEST ABUTMENT REINFORCEMENT 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-ABT-008

SHEET 8 OF 53

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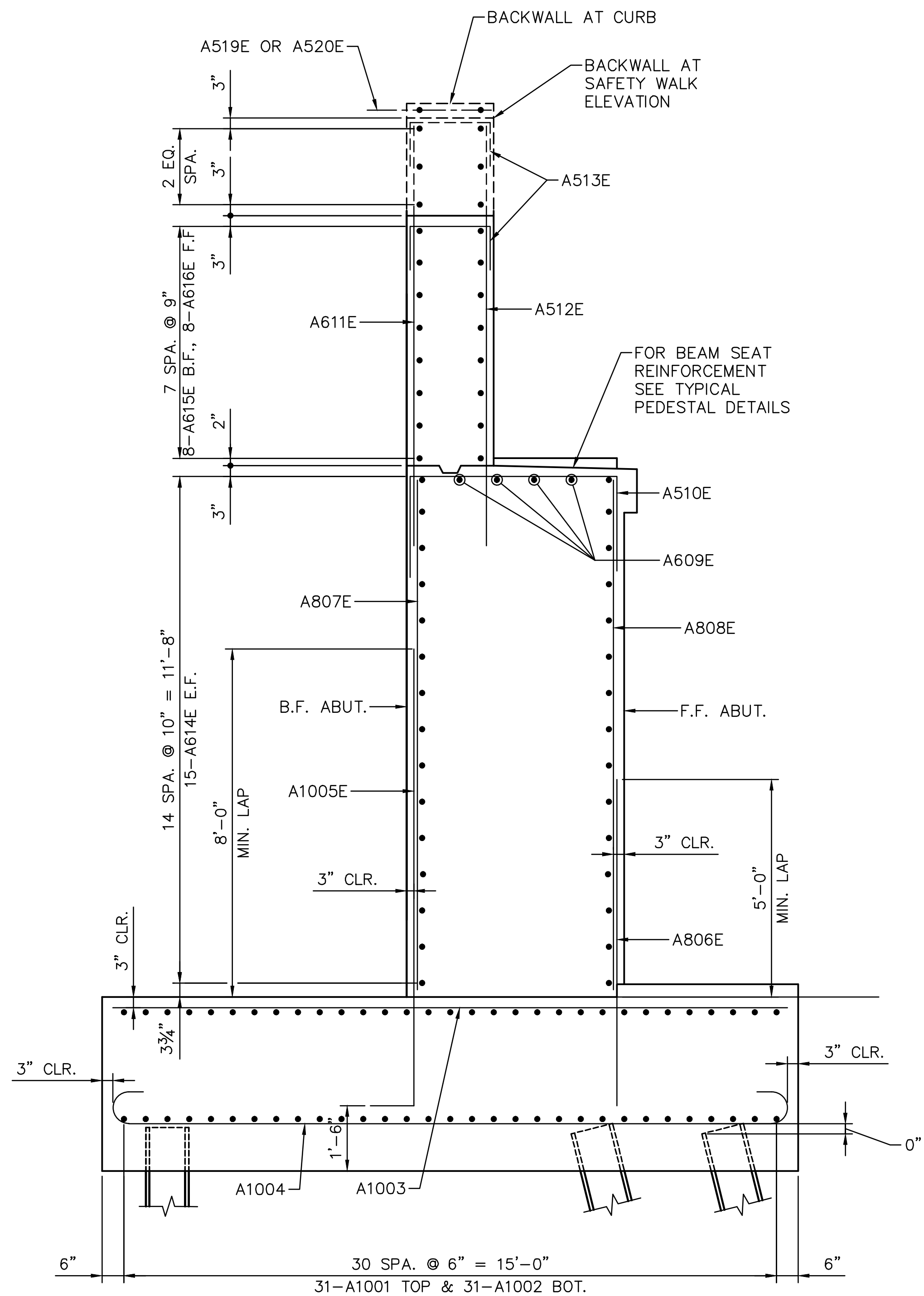
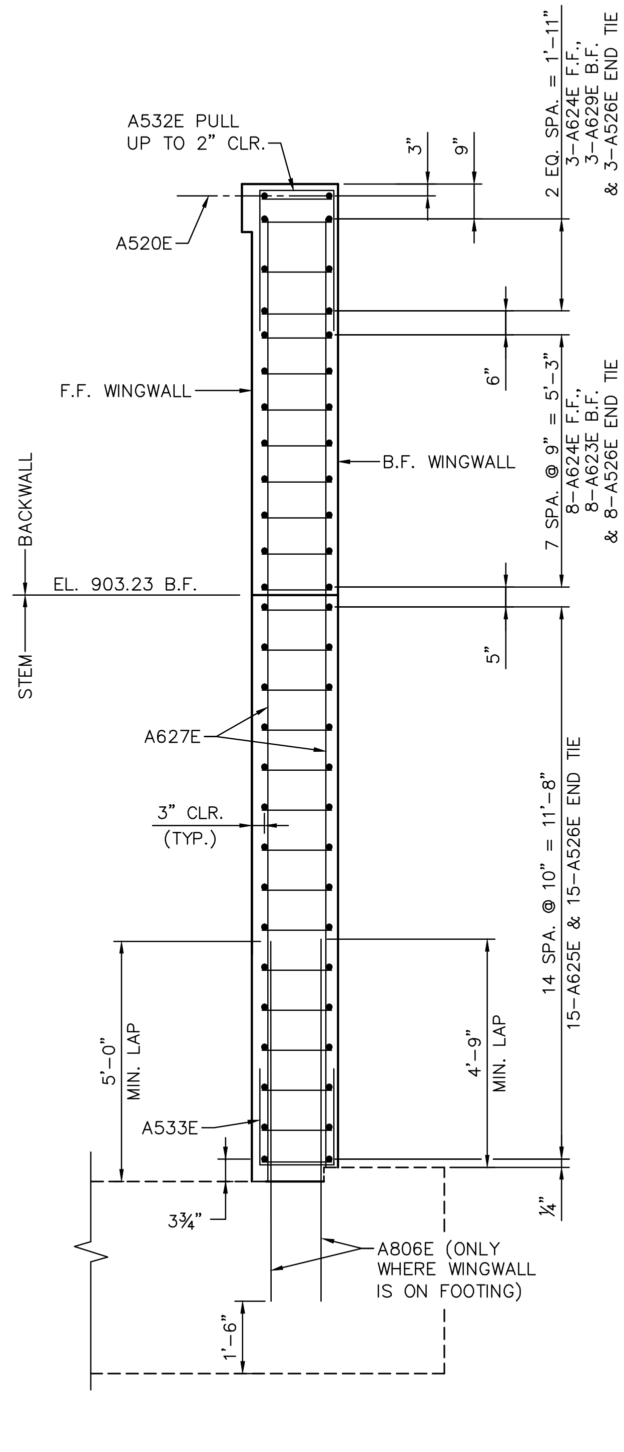


SECTION C–C



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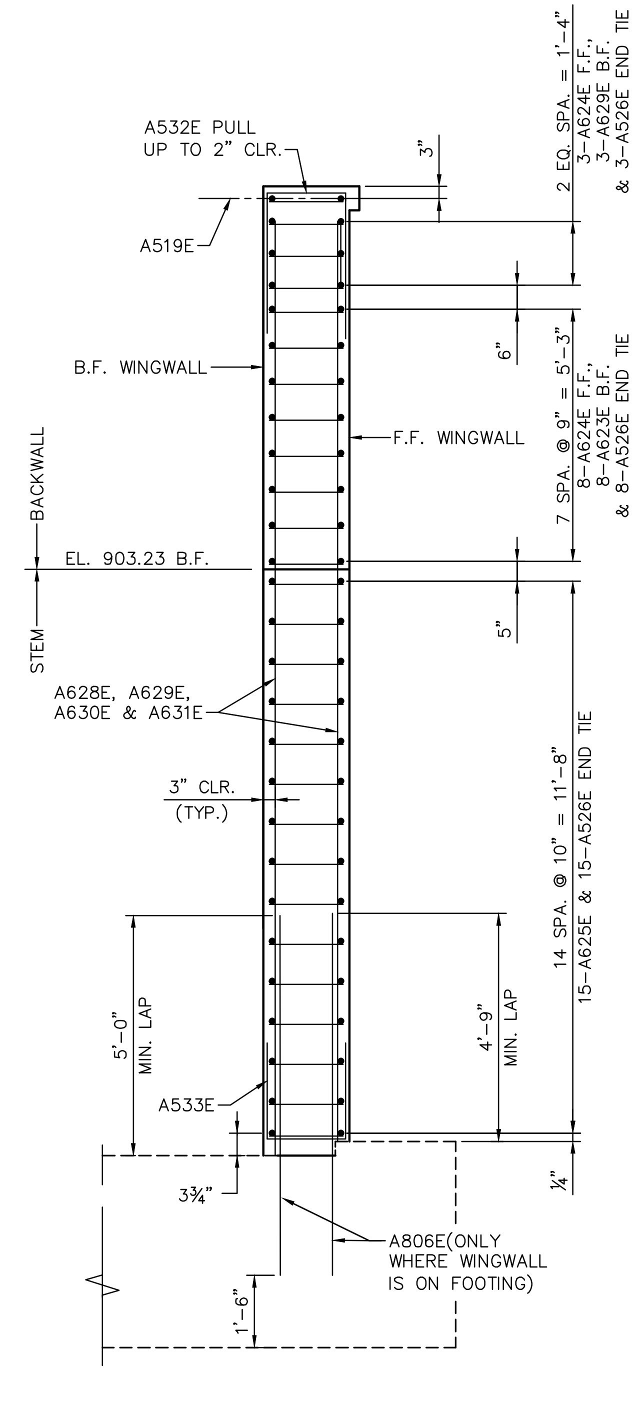
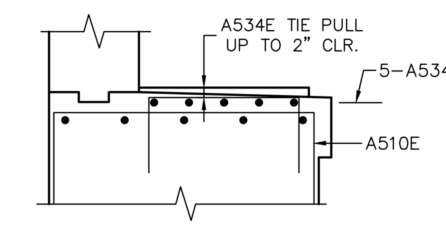
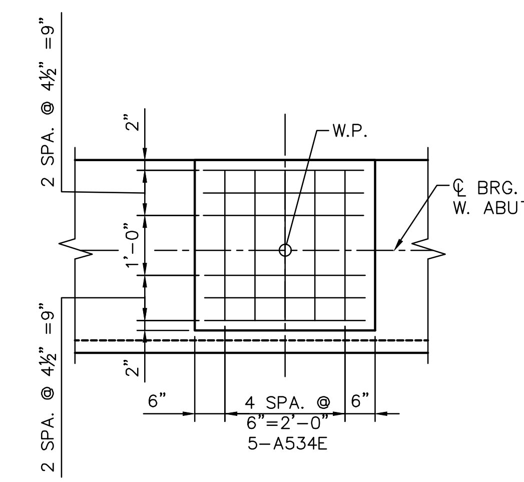


SECTION H–H



TYPICAL PEDESTAL SECTION



TYPICAL PEDESTAL PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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SOUTHWEST Green Line LRT Extension

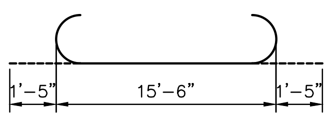
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
WEST ABUTMENT REINFORCEMENT 3

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-ABT-009

SHEET 9 OF 53

Dec. 14 2015 02:41 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-ABT-009.dwg By: kevin.kimm



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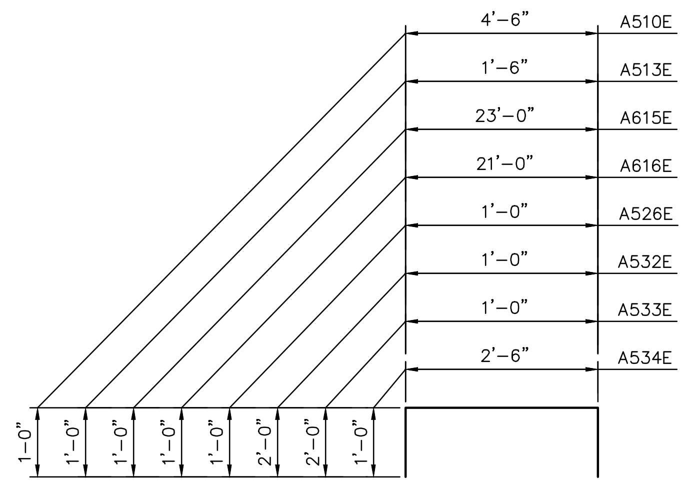

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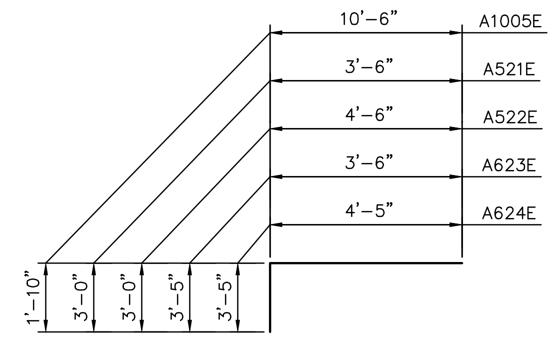

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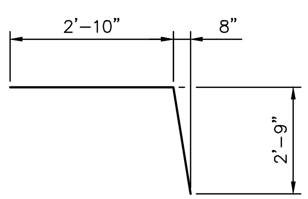

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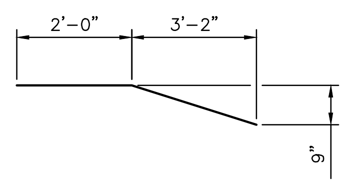

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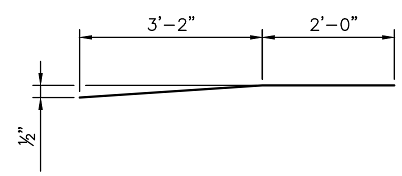

A520E

BILL OF REINFORCEMENT FOR WEST ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
A1001	31	25'-8"	STR.	FOOTING,LONG. TOP
A1002	31	25'-8"	STR.	FOOTING,LONG. BOT.
A1003	52	15'-6"	STR.	FOOTING,TRANS. TOP
A1004	52	18'-4"	BENT	BOOTING,TRANS. BOT.
A1005E	47	12'-4"	BENT	FOOTING,B.F.DOWEL
A806E	59	7'-6"	STR.	FOOTING,F.F.DOWELL
A807E	47	12'-0"	STR.	STEM,VERT.B.F.
A808E	59	12'-0"	STR.	STEM,VERT.F.F.
A609E	4	23'-0"	STR.	STEM,TOP LONG.
A510E	47	6'-6"	BENT	STEM,TOP TIE
A611E	63	9'-9"	STR.	BACKWALL,VERT.B.F.
A512E	42	9'-9"	STR.	BACKWALL,VERT.F.F.
A513E	42	3'-6"	BENT	BACKWALL,TOP TIE
A614E	30	23'-0"	STR.	STEM,HORIZ.E.F.
A615E	8	25'-0"	BENT	BACKWALL,HORIZ.B.F.
A616E	8	23'-0"	BENT	BACKWALL,HORIZ.F.F.
A517E	4	5'-8"	BENT	BACKWALL SWLK TO BOT. E.F.
A518E	12	4'-6"	STR.	BACKWALL E.F.
A519E	2	5'-2"	BENT	HORIZ. TOP BACKWALL E.F.
A520E	2	5'-2"	BENT	HORIZ. TOP BACKWALL E.F.
A521E	6	6'-6"	BENT	BACKWALL F.F.
A522E	6	7'-6"	BENT	BACKWALL B.F.
A623E	22	6'-11"	BENT	WINGWALL B.F.
A624E	22	7'-10"	BENT	WINGWALL F.F.
A625E	60	4'-8"	STR.	WINGWALL HORIZ.E.F.
A526E	52	3'-0"	BENT	WINGWALL END TIE
A627E	8	20'-0"	STR.	WINGWALL VERT. E.F.
A628E	2	20'-0"	STR.	WINGWALL VERT. E.F.
A629E	2	19'-9"	STR.	WINGWALL VERT. E.F.
A630E	2	19'-6"	STR.	WINGWALL VERT. E.F.
A631E	2	19'-3"	STR.	WINGWALL VERT. E.F.
A532E	8	5'-0"	BENT	WINGWALL TOP TIE
A533E	8	5'-0"	BENT	WINGWALL BOT. TIE
A534E	44	4'-6"	BENT	PEDESTAL,TIE

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DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
WEST ABUTMENT REINFORCEMENT 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-ABT-010

SHEET 10 OF 53

EAST ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
DEAD LOAD + EARTH PRESSURE	41
LIVE LOAD	29
*DESIGN LOAD	70
* BASED ON GROUP VI LOADING (SERVICE LOAD) PER AREMA CHAPTER 8 SECTION 2.2.4	

REQUIRED PILE TEST LOAD	
FIELD CONTROL METHOD	TEST LOAD
PDA	140

GENERAL PILE NOTES

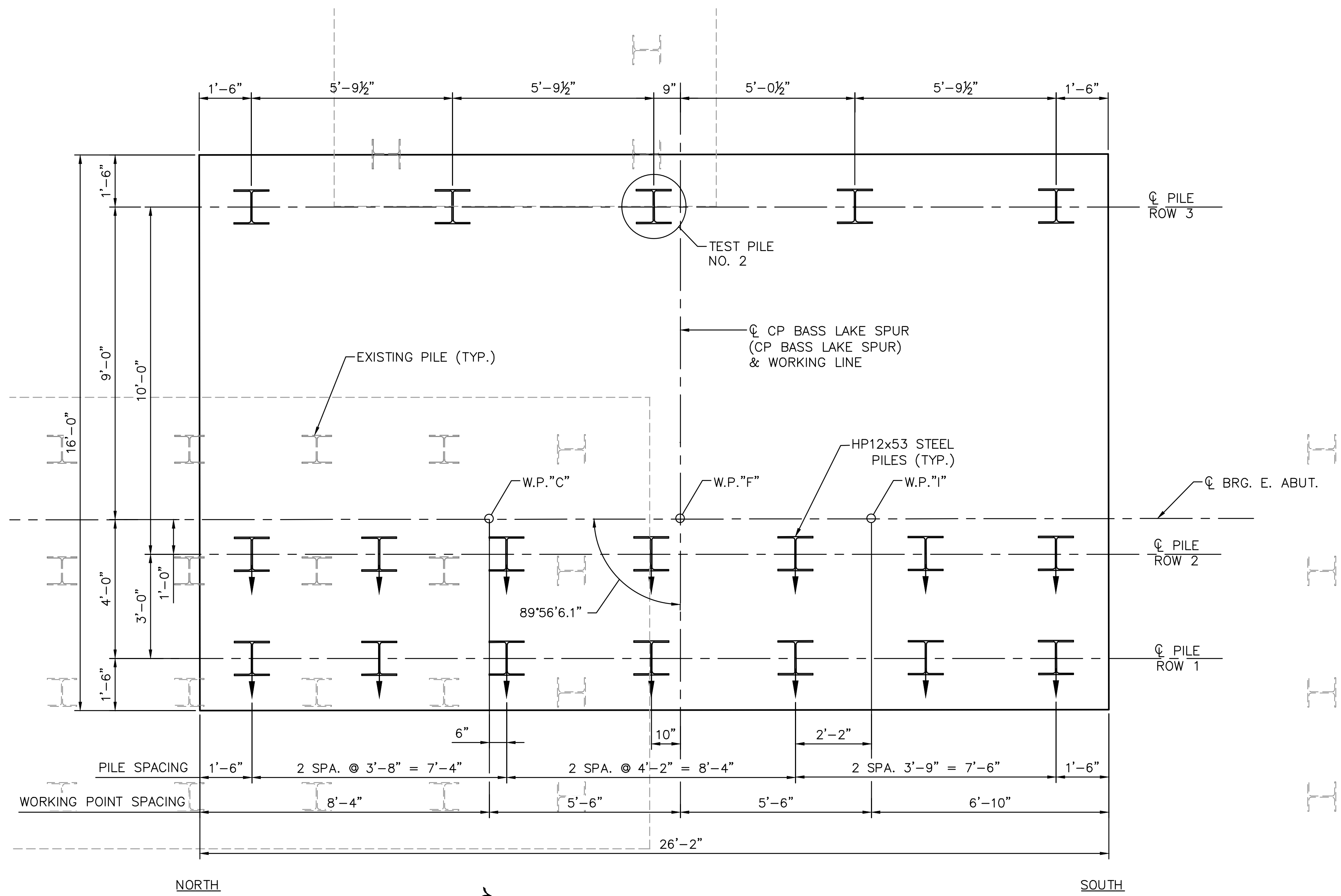
1 HP12x53 STEEL TEST PILES 80 FT. LONG
18 HP12x53 STEEL PILES EST. 80 FT. LENGTH
19 HP12x53 STEEL PILES REQ'D FOR EAST ABUT.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



FOOTING PLAN

Dec. 12 2015 07:29 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-ABT-004.dwg By: kevin.kimm

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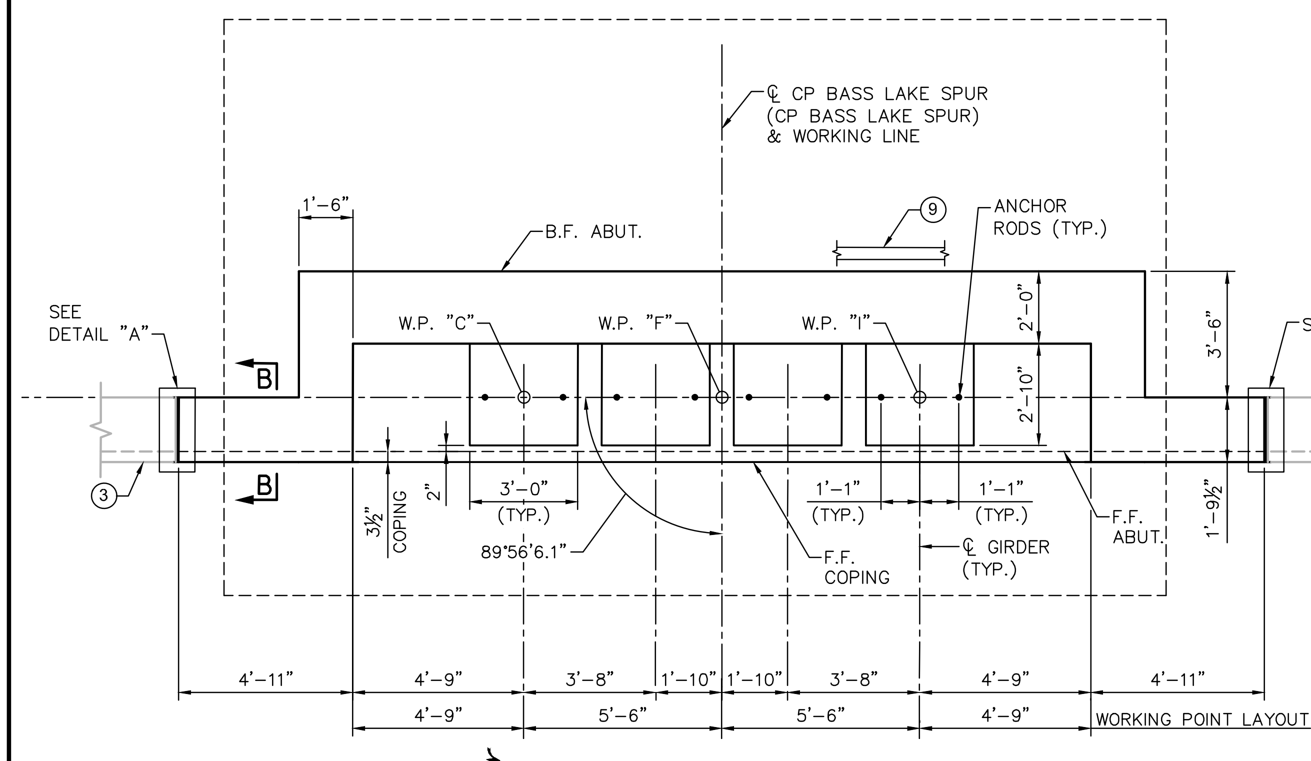
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

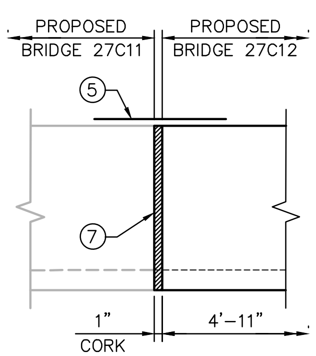
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
EAST ABUTMENT DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-ABT-004

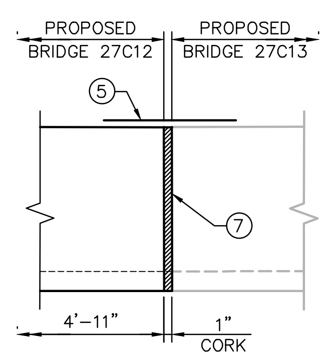
SHEET 11 OF 53



PLAN VIEW



DETAIL "A"



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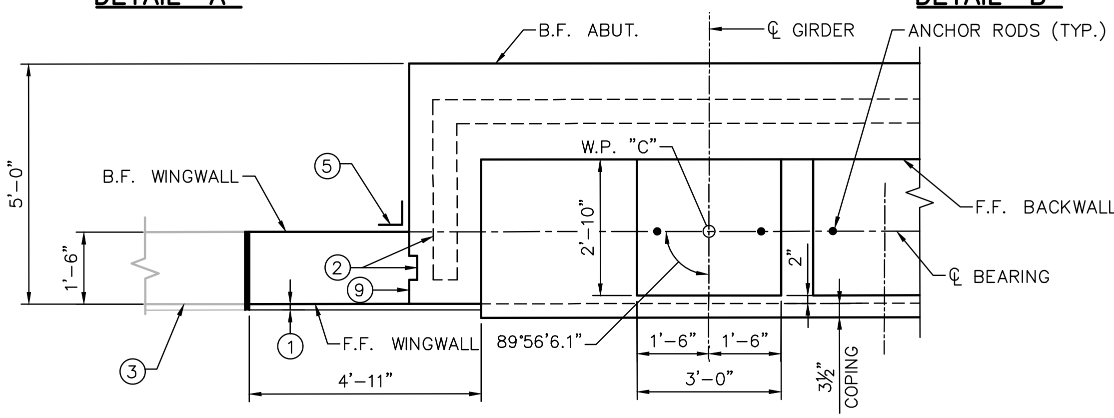
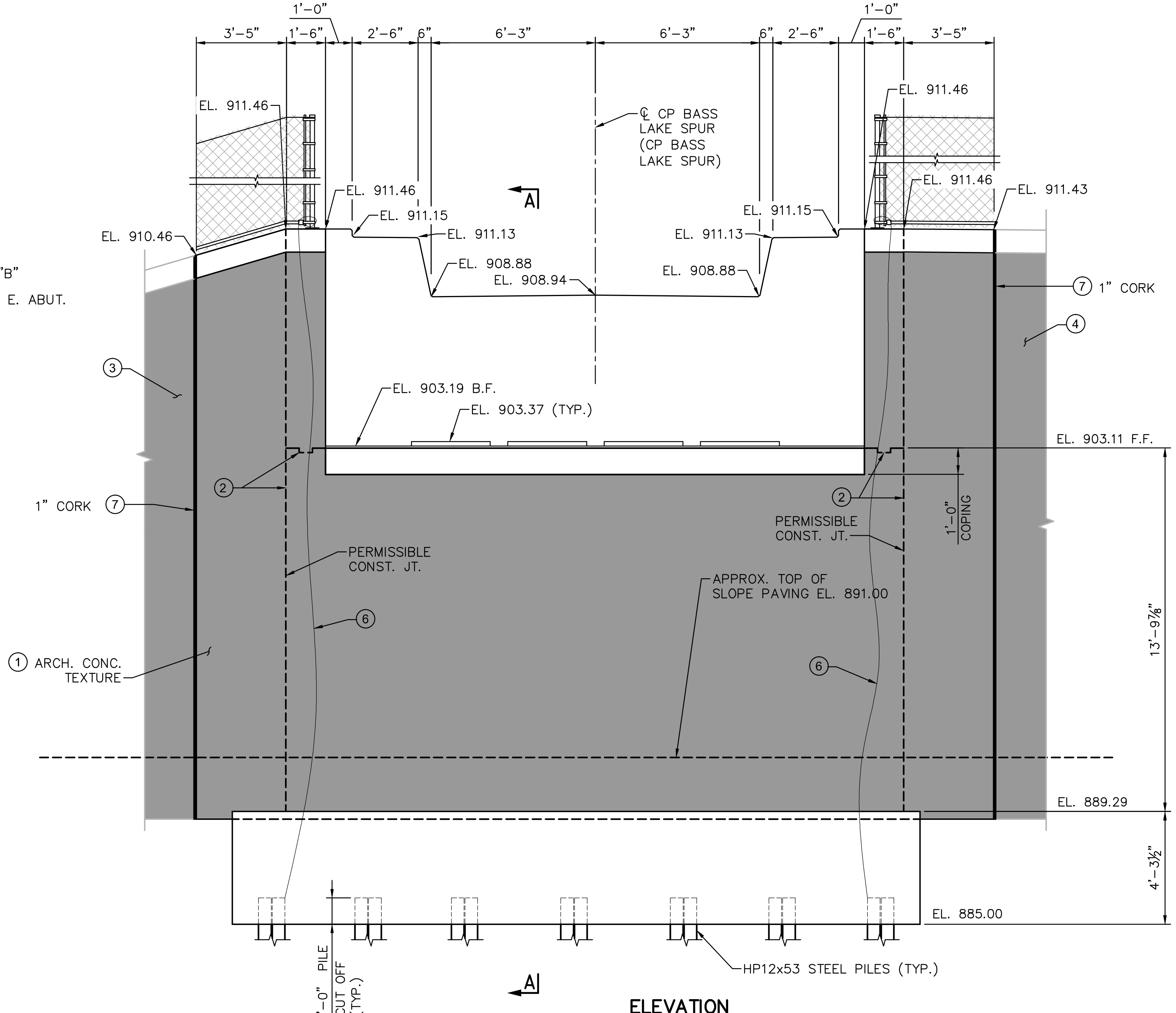


NORTH WINGWALL PLAN VIEW

SECTION ABOVE BEARING SEAT



ELEVATION

NOTES:

SEE SHEET 13 FOR SECTION A-A AND B-B.

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. 2"x6" KEY
3. BRIDGE NO. 27C11 WINGWALL. SEE BRIDGE NO. 27C11 PLANS FOR DETAILS.
4. BRIDGE NO. 27C13 WINGWALL. SEE BRIDGE NO. 27C13 PLANS FOR DETAILS.
5. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
6. ATTACH WIRE FENCE ANCHORAGE TO PILE WITH SOLID NO. 6 GAGE COPPER WIRE WITH AN APPROVED TYPE CLAMP OR BRAZING (ONE ANCHORAGE PER END OF RAIL) (INCIDENTAL). PAINT EXPOSED WIRE GRAY.
7. ELECTRICAL INSULATING CORK BARRIER. CONTRACTOR AND FIELD ENGINEER SHALL VERIFY WINGWALL CONCRETE IS SEPARATED AND CONSTRUCTIVE MATERIAL DOES NOT EXTEND THROUGH CORK.
8. 4" DIA. PERFORATED DRAIN PIPE. SEE DETAIL B910, SEE SHEET 43.
9. CONSTRUCTION JOINT. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.

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DESIGNED BY: BMS CHECKED BY: KJK
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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

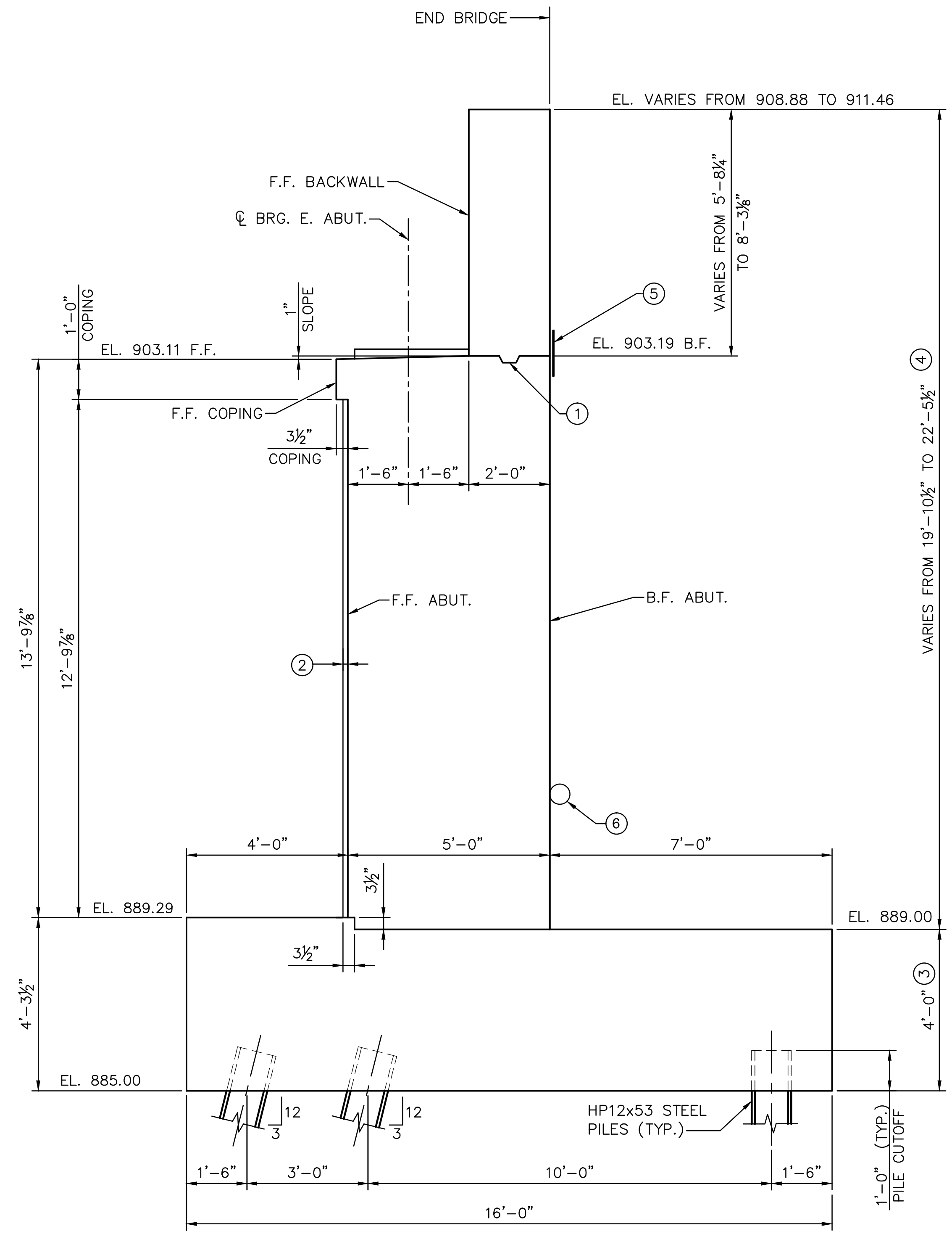
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
EAST ABUTMENT DETAILS 2

DISCIPLINE: STRUCTURES

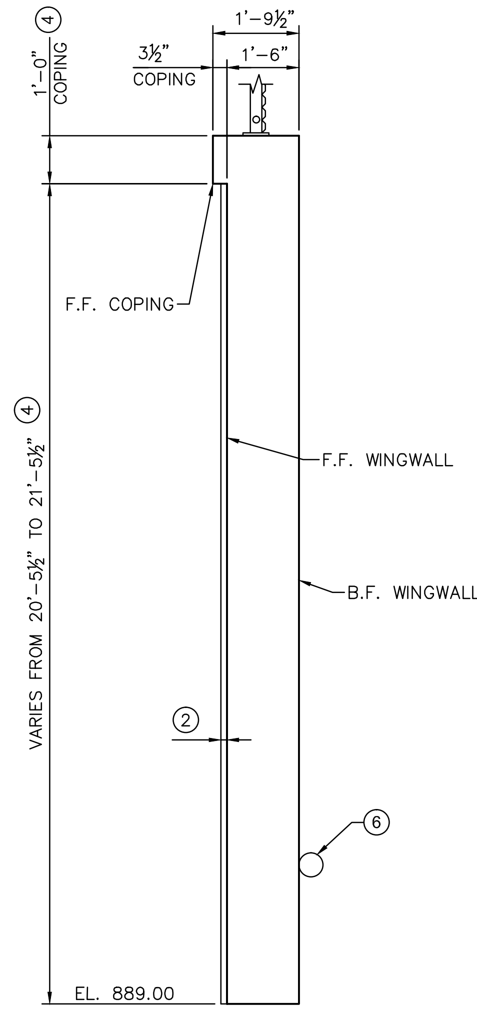
SHEET NAME: CBR27C12-BRG-ABT-005

NOTES:

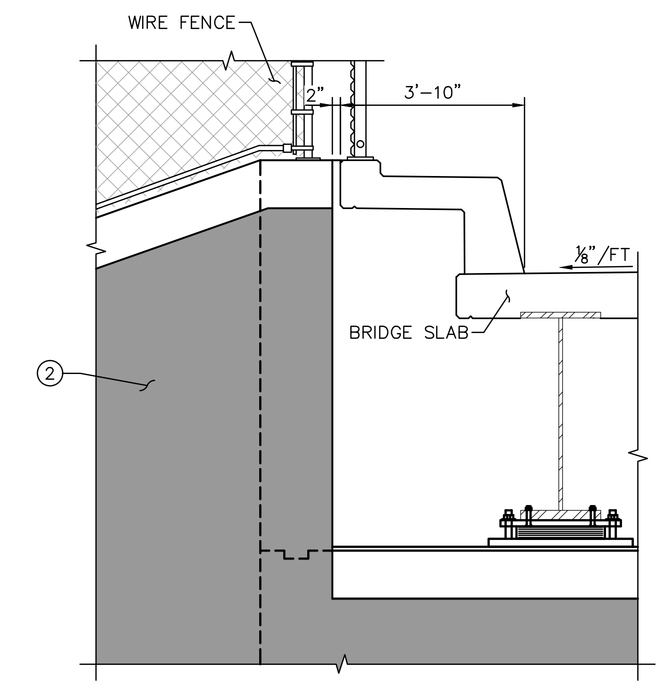
1. PERMISSIBLE CONSTRUCTION JOINT WITH 2"x6" KEY CENTERED IN WALL.
2. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
3. STRUCTURAL CONCRETE (1G52).
4. STRUCTURAL CONCRETE (CP5000) IS A LEVEL 2 CONTRACTOR MIX DESIGN IN ACCORDANCE WITH MNDOT 2461 WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AND A MAXIMUM WATER/CEMENT RATIO OF 0.40.
5. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
6. 4" DIA. PERFORATED DRAIN PIPE. SEE DETAIL B910, SEE SHEET 43.



SECTION A–A



SECTION B–B



NORTH CORNER ELEVATION VIEW

SOUTH CORNER SIMILAR

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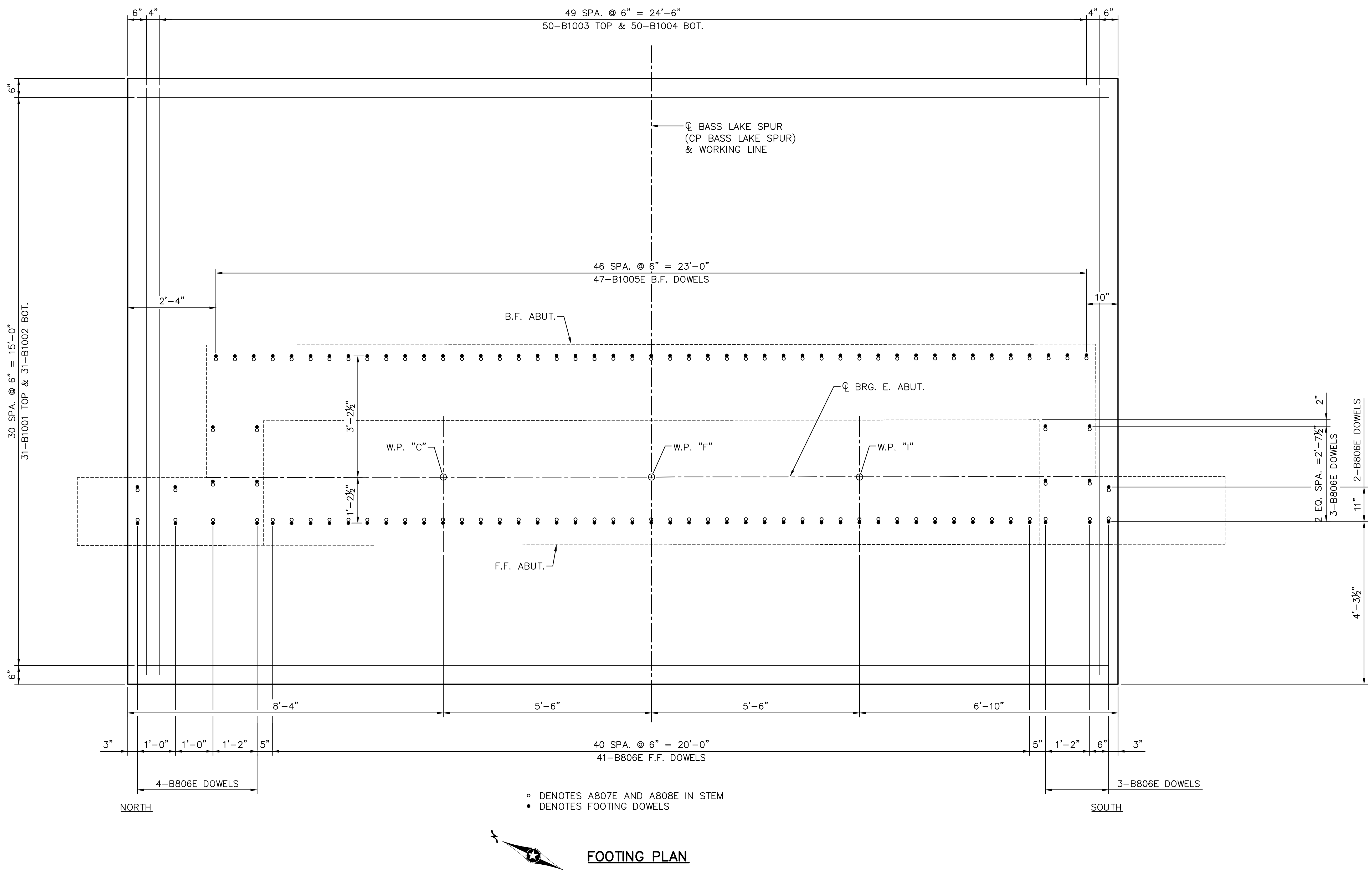
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
EAST ABUTMENT DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-ABT-006



FOOTING PLAN

Dec. 14 2015 02:43 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-ABT-011.dwg By: kevin.kimm

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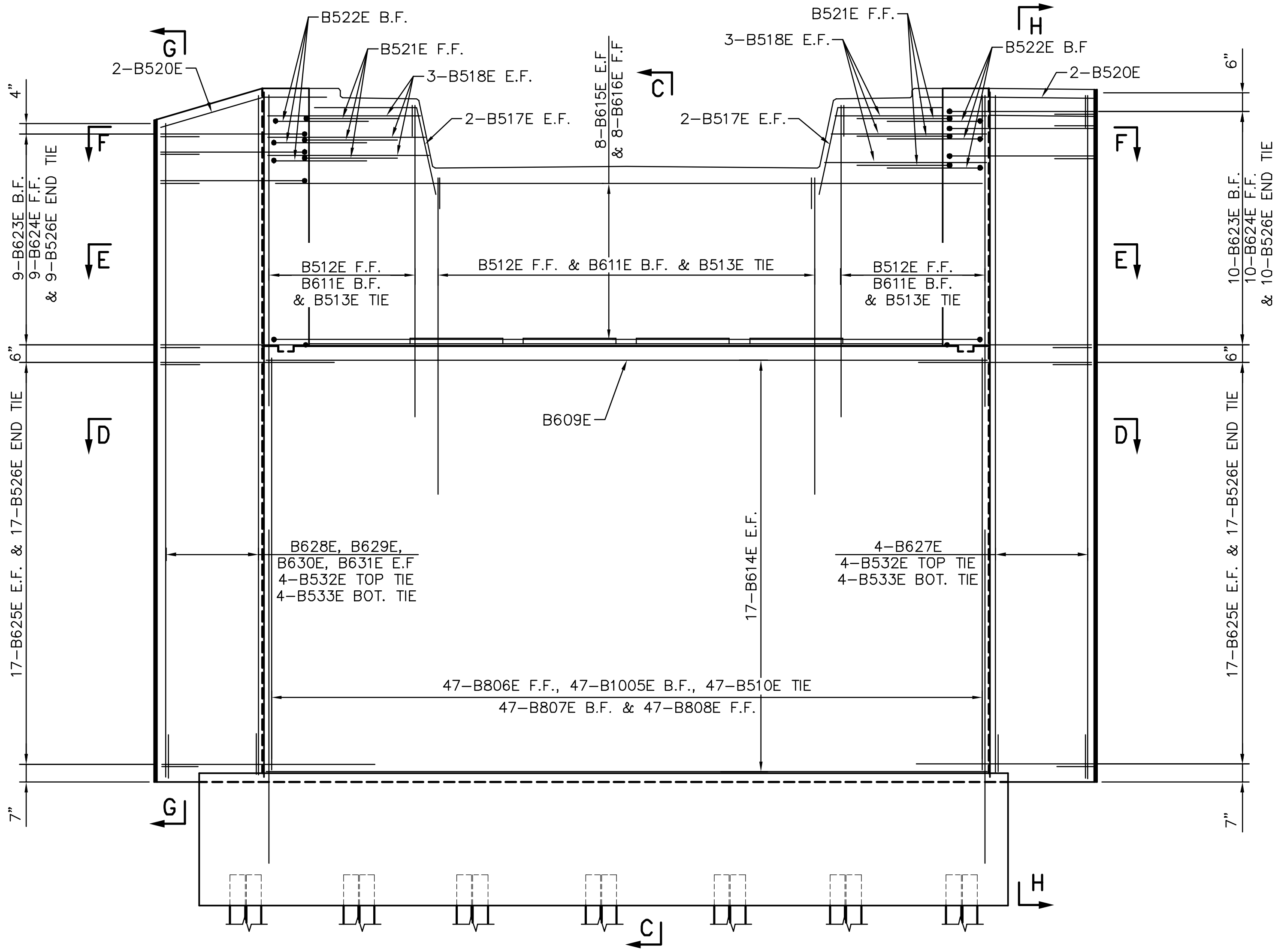
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
EAST ABUTMENT REINFORCEMENT 1

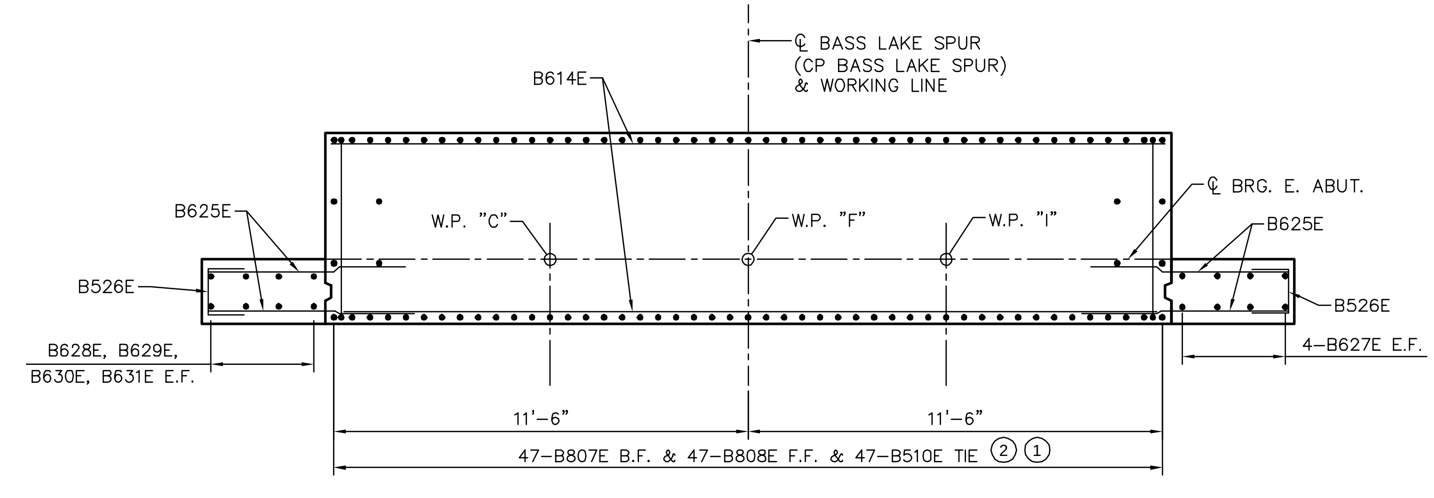
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-ABT-011

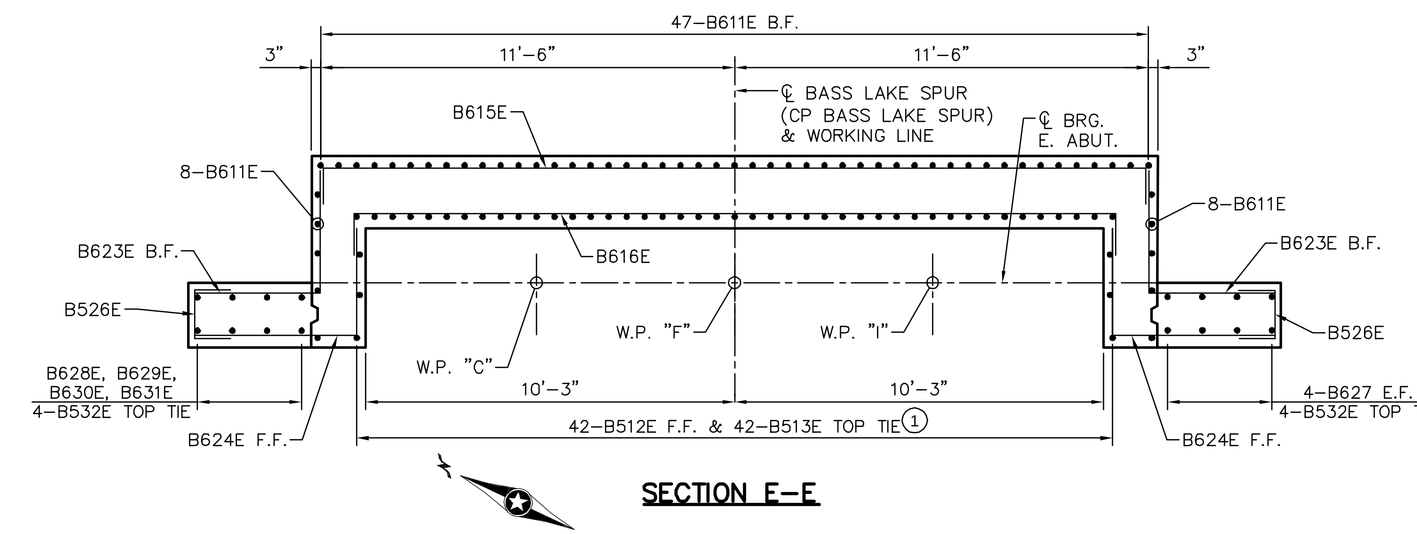
SHEET 14 OF 53



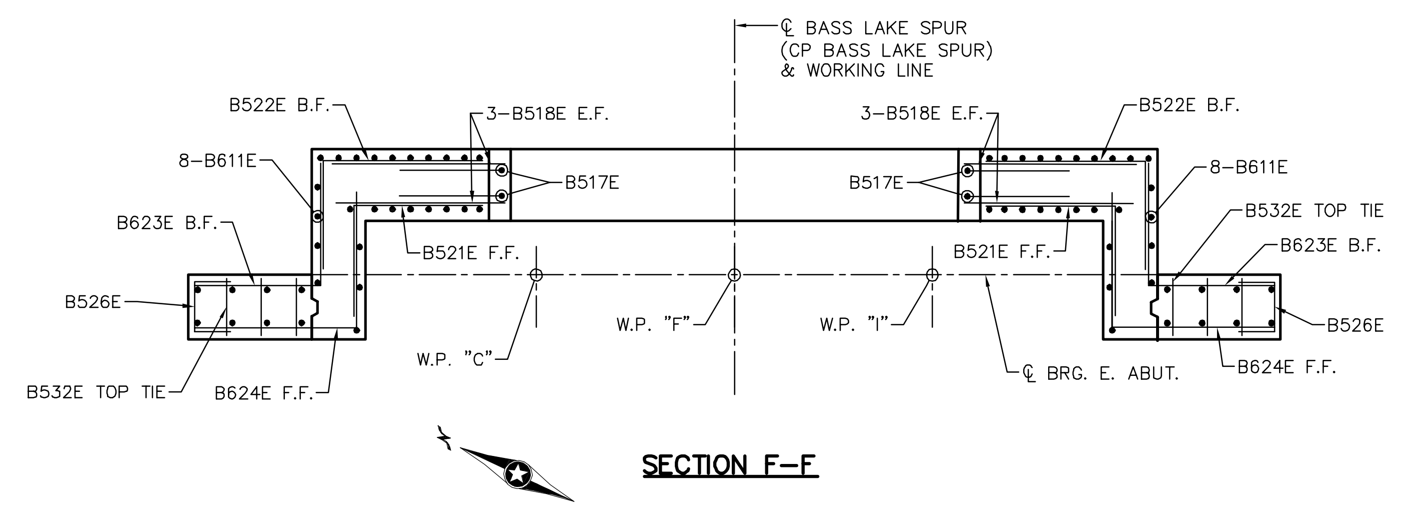
ELEVATION



SECTION D–D



SECTION E–E



SECTION F–F

NOTES:

SEE SHEET 16 FOR SECTIONS C–C, G–G & H–H.

(1) SPACE WITH DOWEL BARS.

(2) SEE FOOTING PLAN ON SHEET 14 FOR BAR LAYOUT.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

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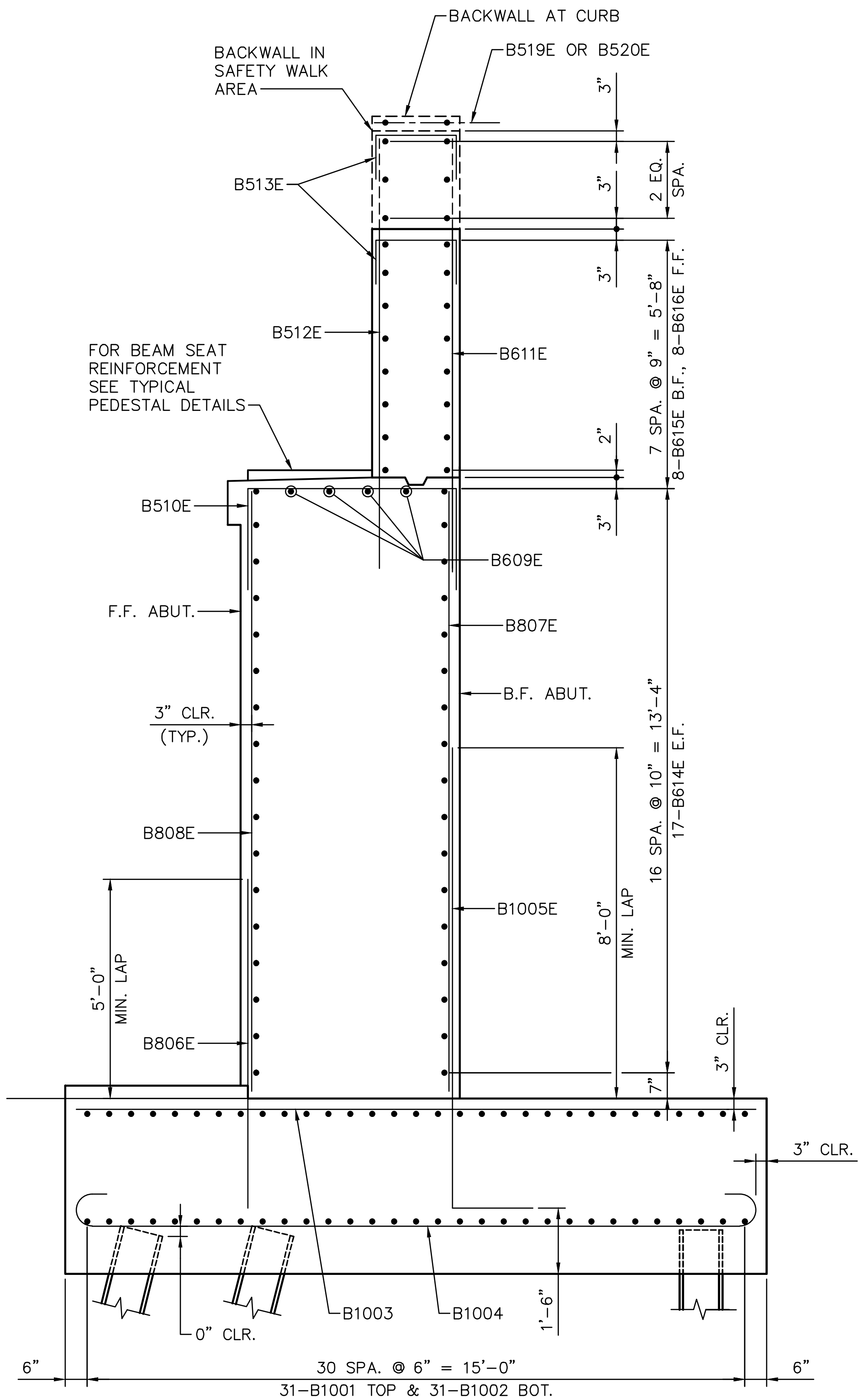
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

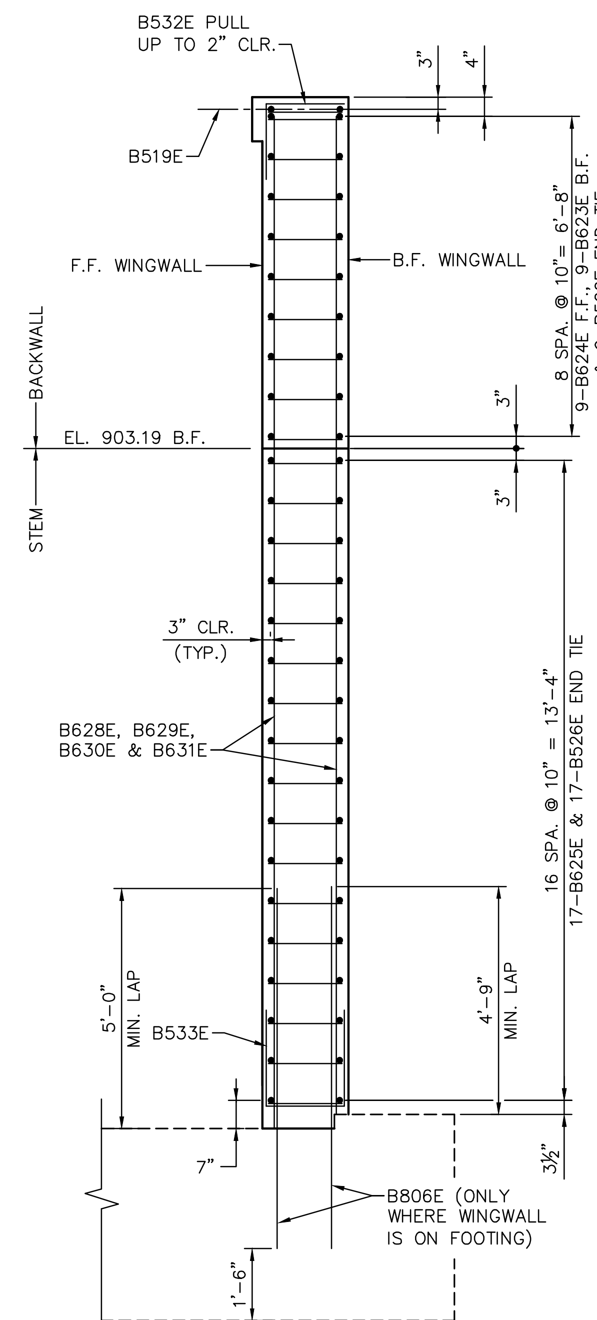
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
EAST ABUTMENT REINFORCEMENT 2

DISCIPLINE: STRUCTURES

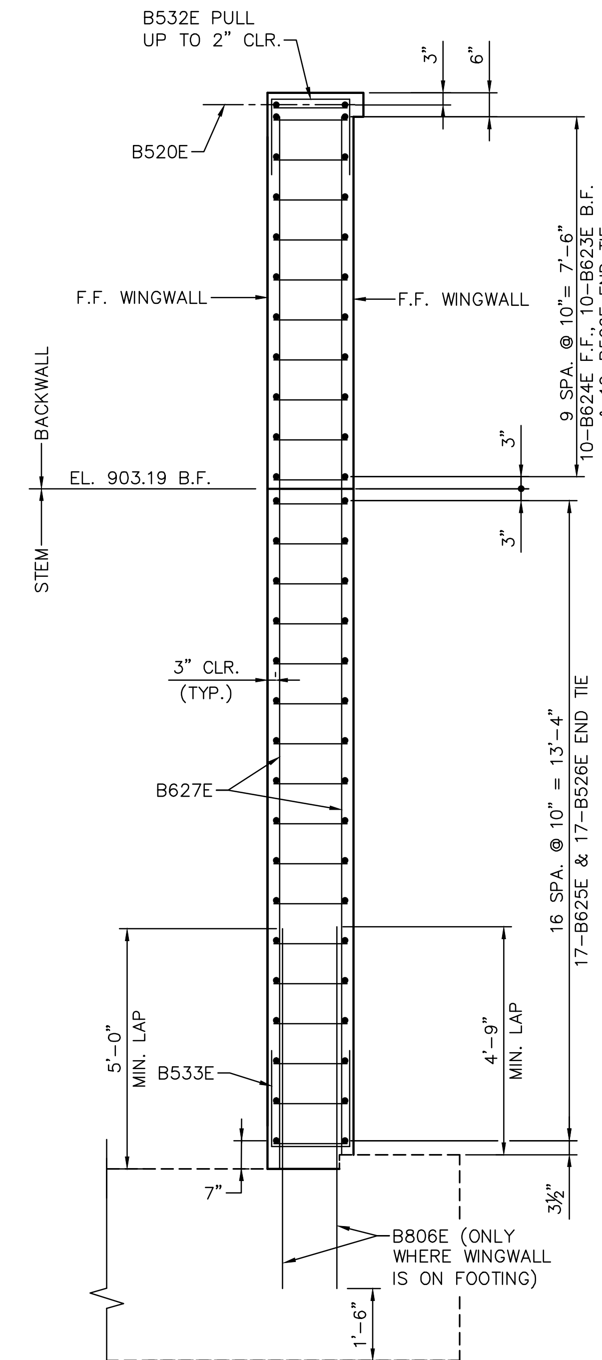
SHEET NAME: CBR27C12-BRG-ABT-012



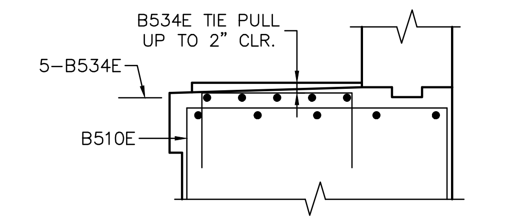
SECTION C-C



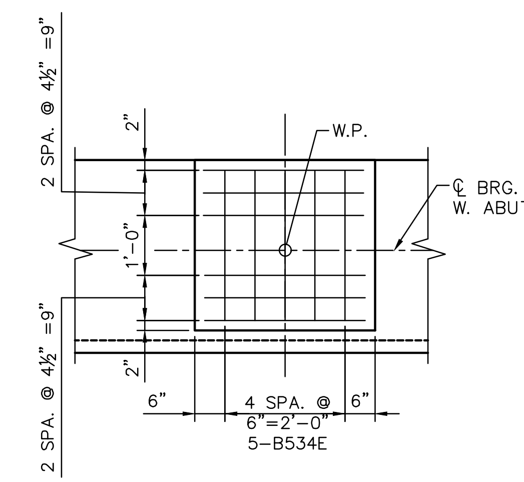
SECTION G-G



SECTION H-H



TYPICAL PEDESTAL SECTION



TYPICAL PEDESTAL PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS | CHECKED BY: KJK
DRAWN BY: MSK | CHECKED BY: KJK

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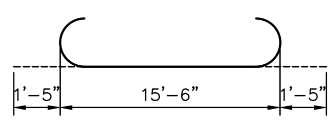
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
EAST ABUTMENT REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-ABT-013

SHEET 16 OF 53



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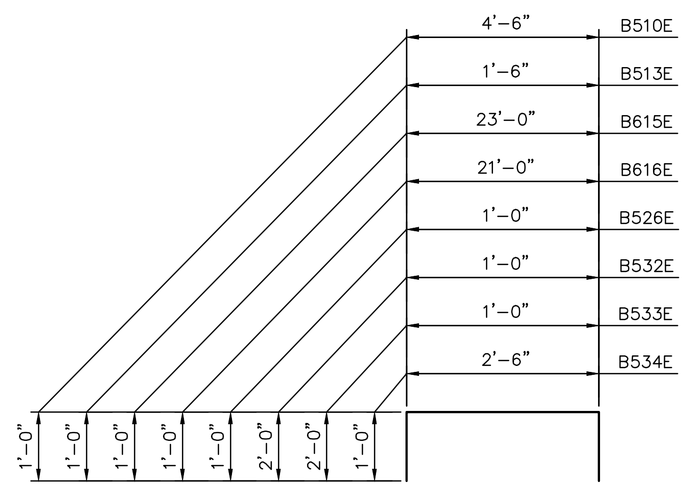

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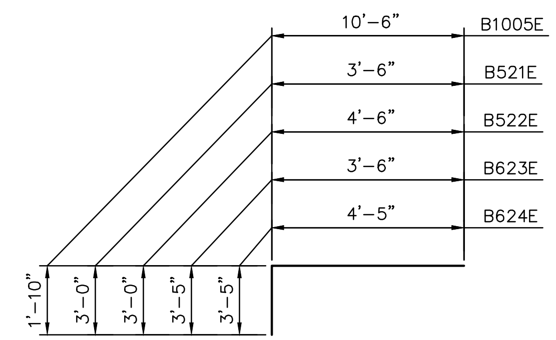
B526E, B532E, B533E & B534E



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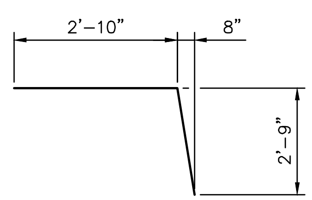
& B624E



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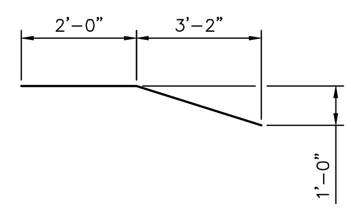


B519E

BILL OF REINFORCEMENT FOR EAST ABUTMENT				
BAR	NO.	LENGTH	SHAPE	LOCATION
B1001	31	25'-8"	STR.	FOOTING,LONG. TOP
B1002	31	25'-8"	STR.	FOOTING,LONG. BOT.
B1003	52	15'-6"	STR.	FOOTING,TRANS. TOP
B1004	52	18'-4"	BENT	BOOTING,TRANS. BOT.
B1005E	47	12'-4"	BENT	FOOTING,B.F.DOWEL
B806E	59	7'-6"	STR.	FOOTING,F.F.DOWELL
B807E	47	13'-11"	STR.	STEM,VERT.B.F.
B808E	59	13'-10"	STR.	STEM,VERT.F.F.
B609E	4	23'-0"	STR.	STEM,TOP LONG.
B510E	47	6'-6"	BENT	STEM,TOP TIE
B611E	63	9'-9"	STR.	BACKWALL,VERT.B.F.
B512E	42	9'-9"	STR.	BACKWALL,VERT.F.F.
B513E	42	3'-6"	BENT	BACKWALL,TOP TIE
B614E	34	23'-0"	STR.	STEM,HORIZ.E.F.
B615E	8	25'-0"	BENT	BACKWALL,HORIZ.B.F.
B616E	8	23'-0"	BENT	BACKWALL,HORIZ.F.F.
B517E	4	5'-8"	BENT	BACKWALL SWLK TO BOT. E.F.
B518E	12	4'-6"	STR.	BACKWALL E.F.
B519E	2	5'-2"	BENT	HORIZ. TOP BACKWALL E.F.
B520E	2	5'-2"	STR.	HORIZ. TOP BACKWALL E.F.
B521E	6	6'-6"	BENT	BACKWALL F.F.
B522E	6	7'-6"	BENT	BACKWALL B.F.
B623E	19	6'-11"	BENT	WINGWALL B.F.
B624E	19	7'-10"	BENT	WINGWALL F.F.
B625E	68	4'-8"	STR.	WINGWALL HORIZ.E.F.
B526E	53	3'-0"	BENT	WINGWALL END TIE
B627E	8	21'-11"	STR.	WINGWALL VERT. E.F.
B628E	2	21'-11"	STR.	WINGWALL VERT. E.F.
B629E	2	21'-8"	STR.	WINGWALL VERT. E.F.
B630E	2	21'-3"	STR.	WINGWALL VERT. E.F.
B631E	2	21'-0"	STR.	WINGWALL VERT. E.F.
B532E	8	5'-0"	BENT	WINGWALL TOP TIE
B533E	8	5'-0"	BENT	WINGWALL BOT. TIE
B534E	44	4'-6"	BENT	PEDESTAL,TIE

PIER 1 COMPUTER PILE LOAD -TONS/PILE	
DEAD LOAD	33
LIVE LOAD	27
OVERTURNING	20
*TOTAL LOAD	79
*BASED ON GROUP I LOADING (SERVICE LOAD) PER AREMA CHAPTER 8 SECTION 2.2.4	

REQUIRED PILE TEST LOAD	
FIELD CONTROL METHOD	TEST LOAD
PDA	150

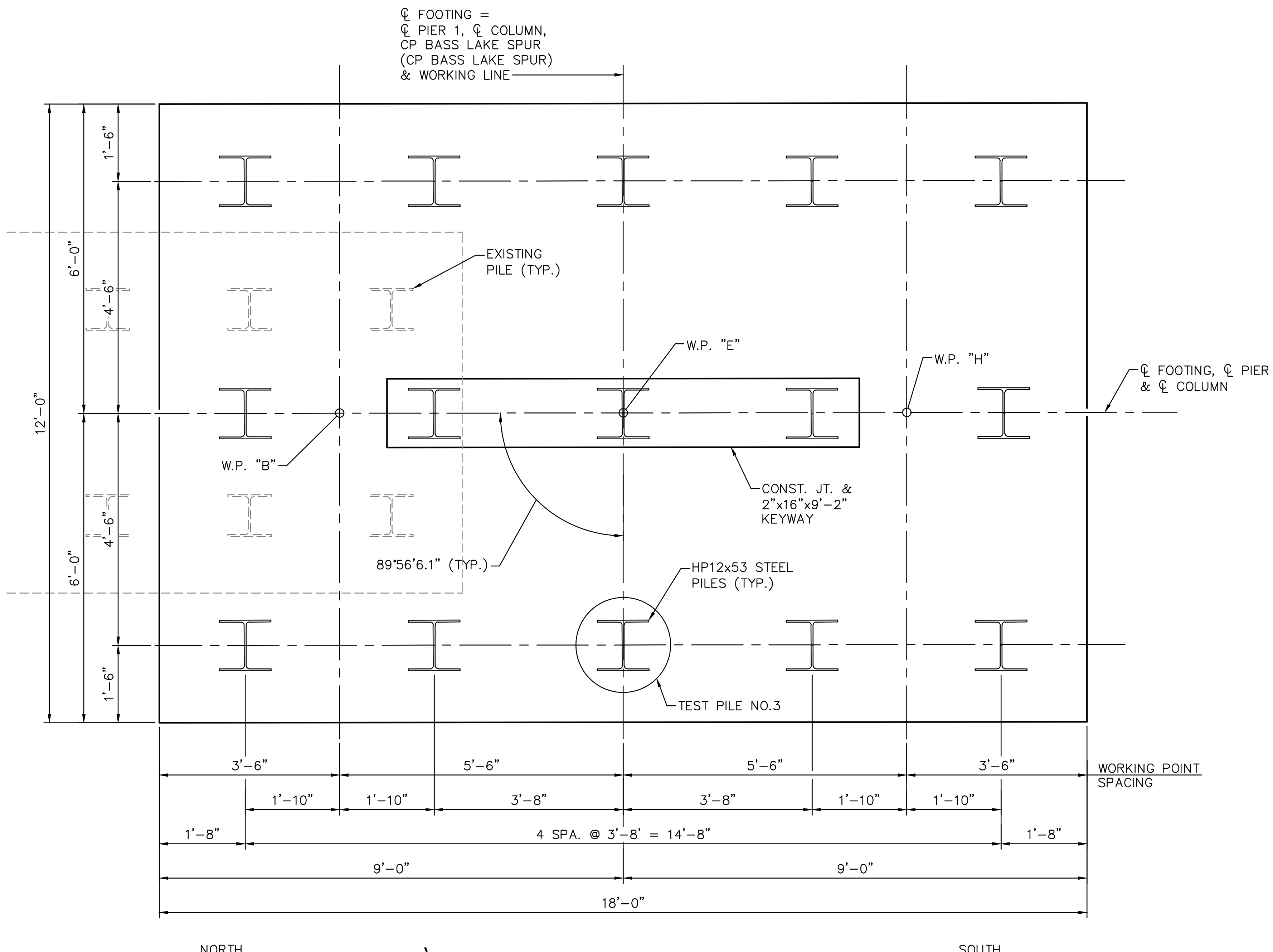
GENERAL PILE NOTES:

1 HP12x53 STEEL TEST PILES 75 FT. LONG
14 HP12x53 STEEL PILES EST. 75 FT. LENGTH
15 HP12x53 STEEL PILES REQ'D FOR PIER 1

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

FOR PILE SPLICE DETAILS SEE DETAIL B202.



FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: MSK CHECKED BY: KJK

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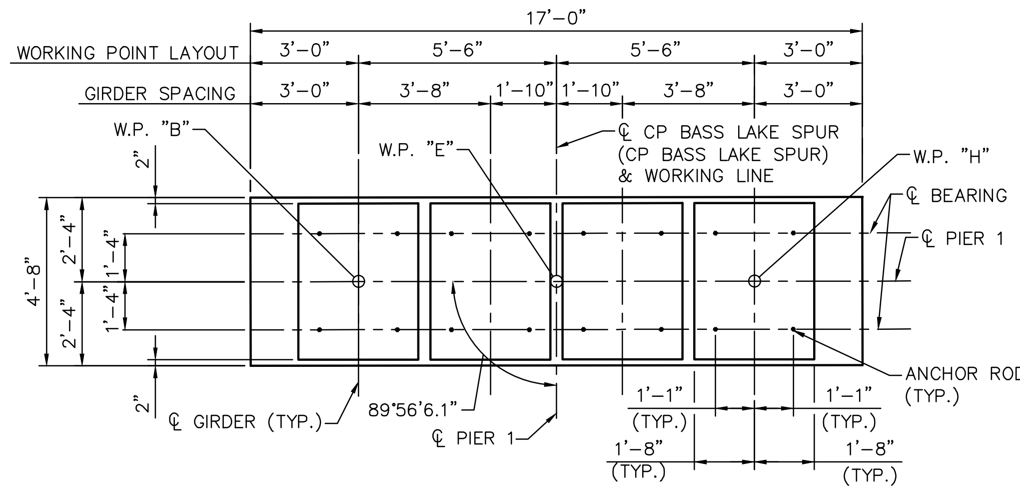
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

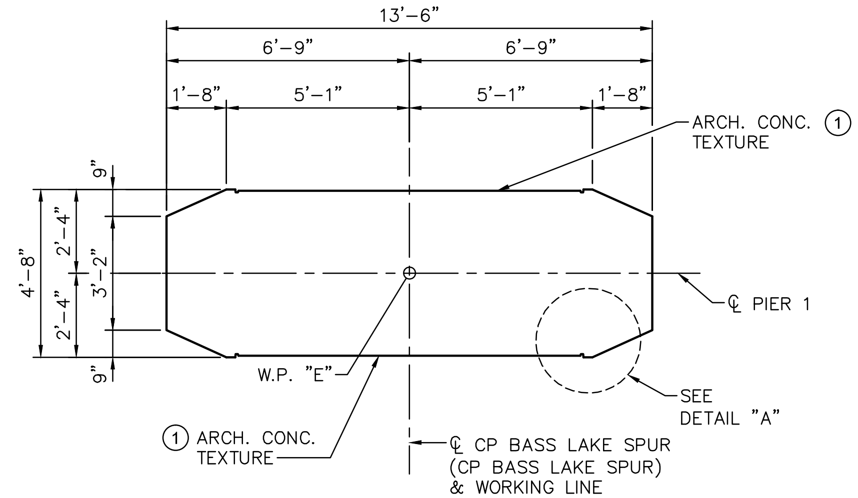
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
PIER DETAILS 1

DISCIPLINE: STRUCTURES

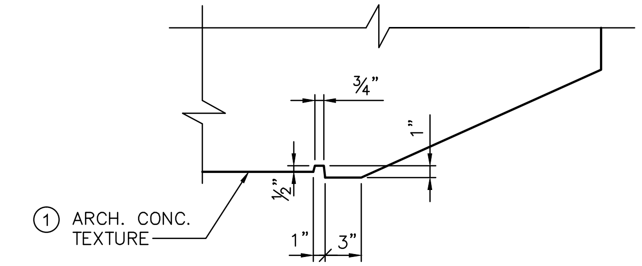
SHEET NAME: CBR27C12-BRG-PIR-001



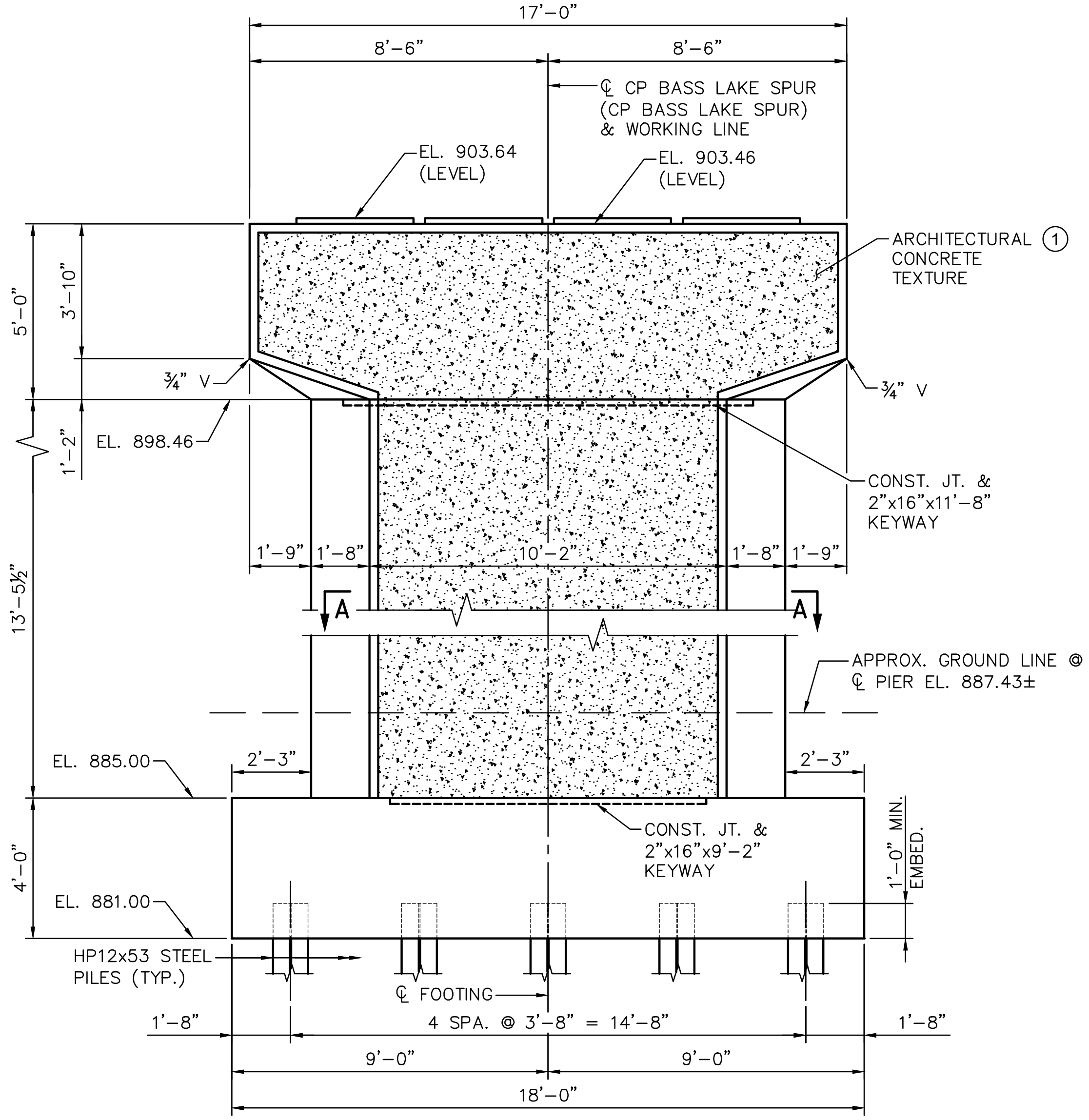
CAP PLAN



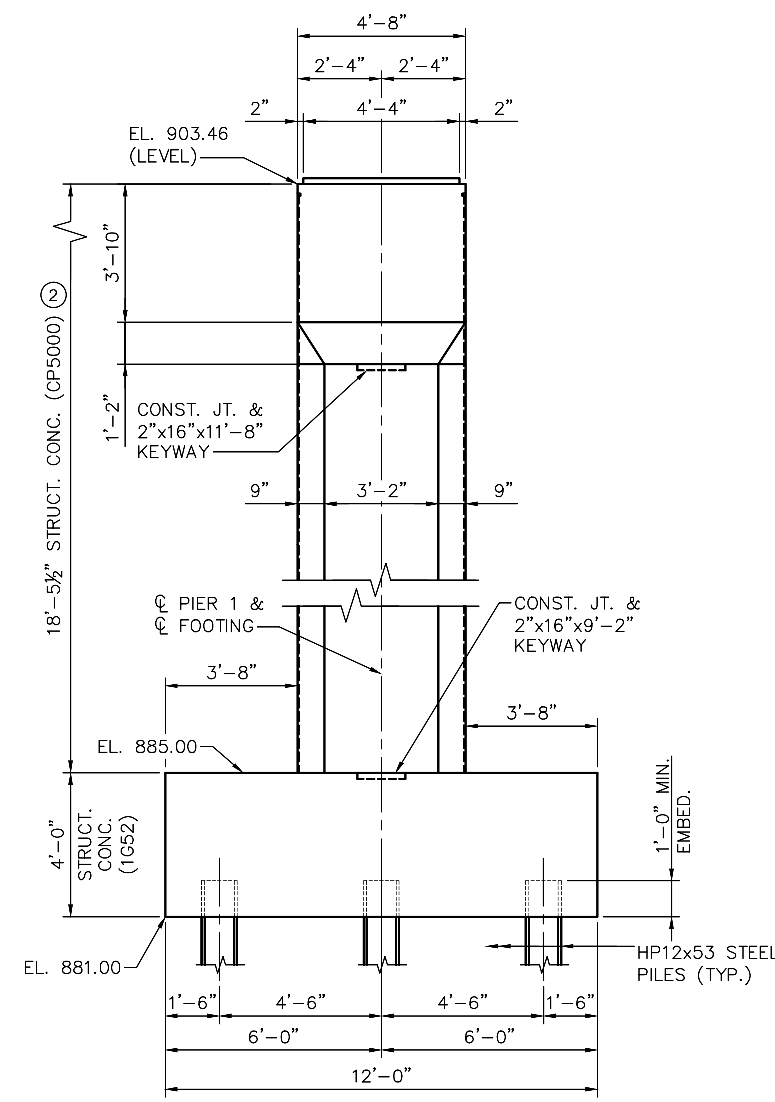
SECTION A–A



DETAIL "A"



ELEVATION



END VIEW

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (LIME STONE) WITH ARCHITECTURAL CONCRETE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 0.35".
2. STRUCTURAL CONCRETE (CP5000) IS A LEVEL 2 CONTRACTOR MIX DESIGN IN ACCORDANCE WITH MNDOT 2461 WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AND A MAXIMUM WATER/CEMENT RATIO OF 0.40.

Dec. 12 2015 07:35 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-PIR-002.dwg By: kevin.kimm

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METROPOLITAN COUNCIL

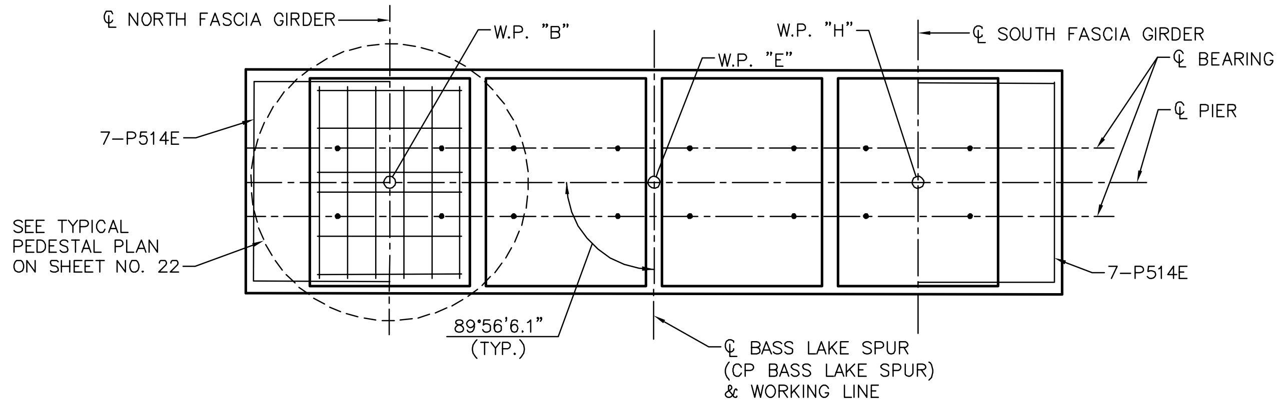
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
PIER DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-PIR-002

SHEET 19 OF 53



NORTH

PIER CAP PLAN

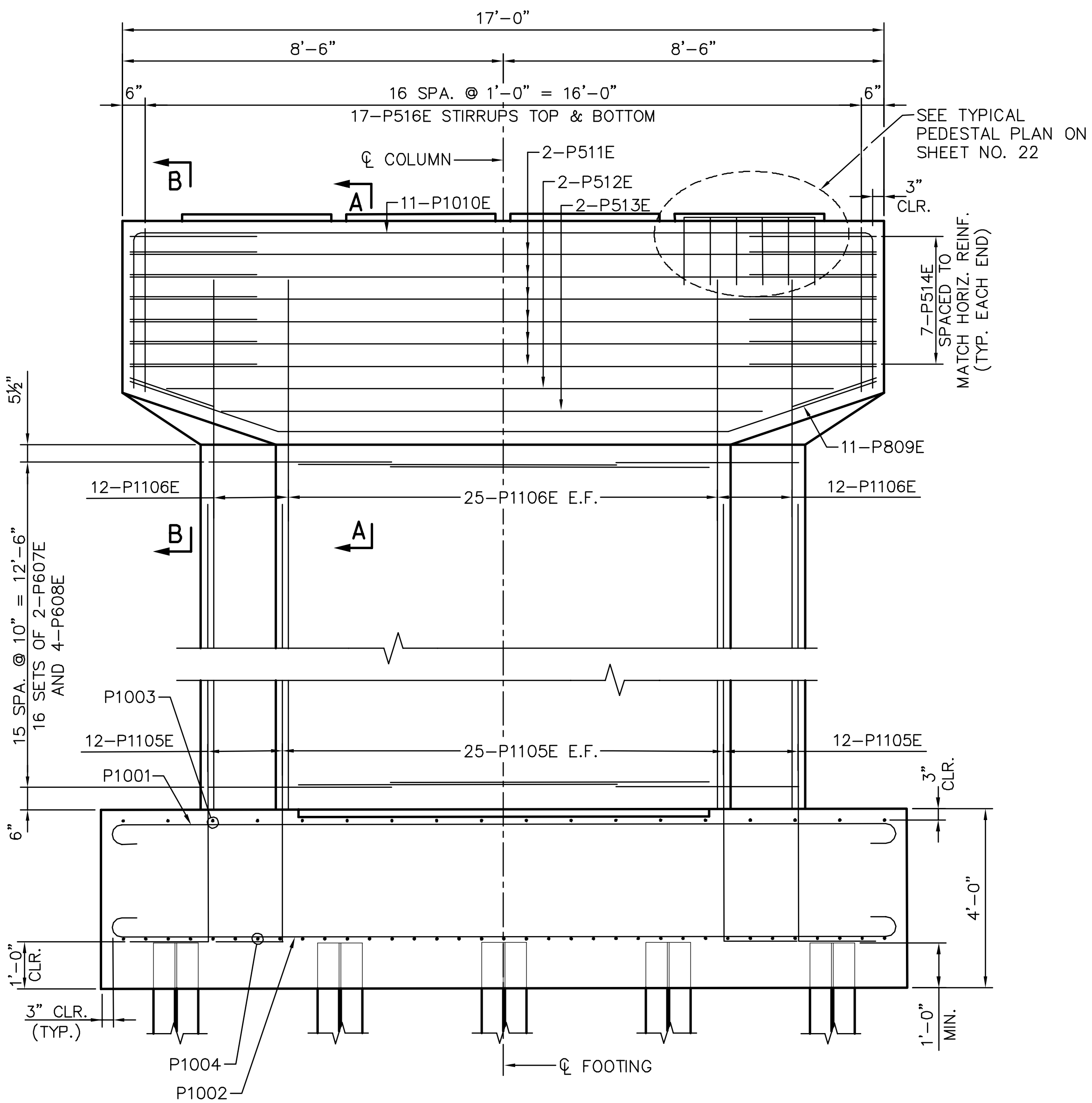
SEE SHEET 22 FOR ANCHOR ROD LAYOUT

SOUTH

NOTES

SEE SHT. NO. 21 FOR TYPICAL COLUMN SECTION.

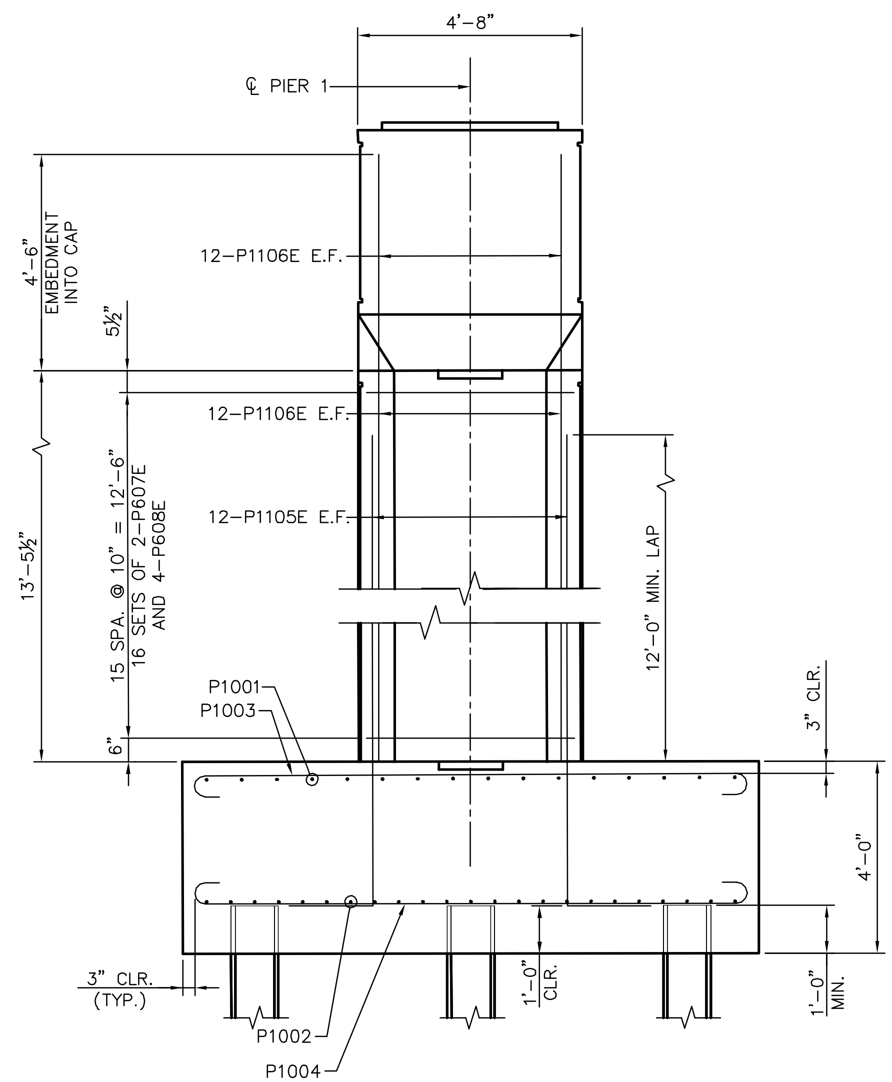
SEE SHT. NO. 22 FOR SECTION A-A AND B-B.



NORTH

PIER ELEVATION

SOUTH



END VIEW

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
PIER REINFORCEMENT 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-PIR-003

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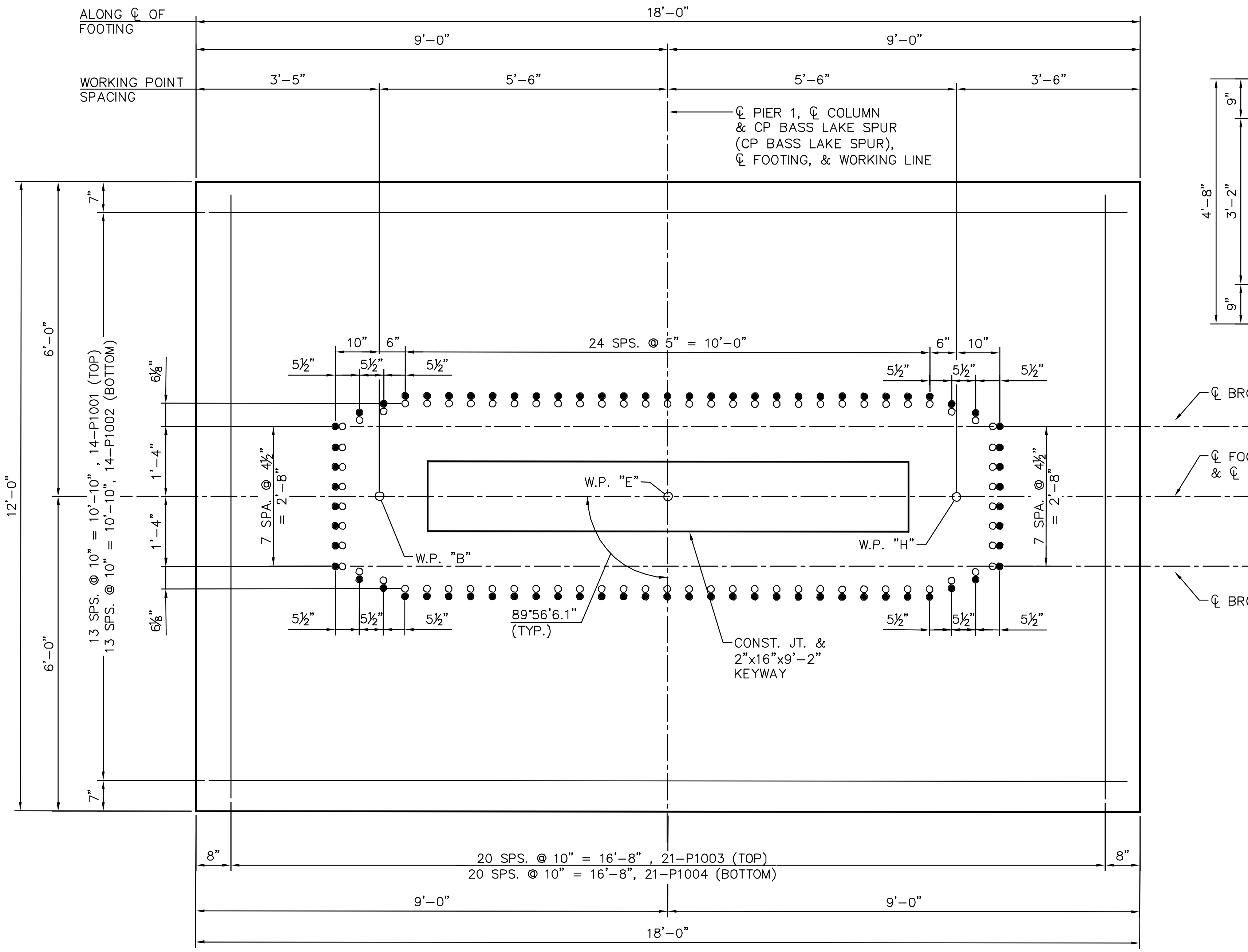
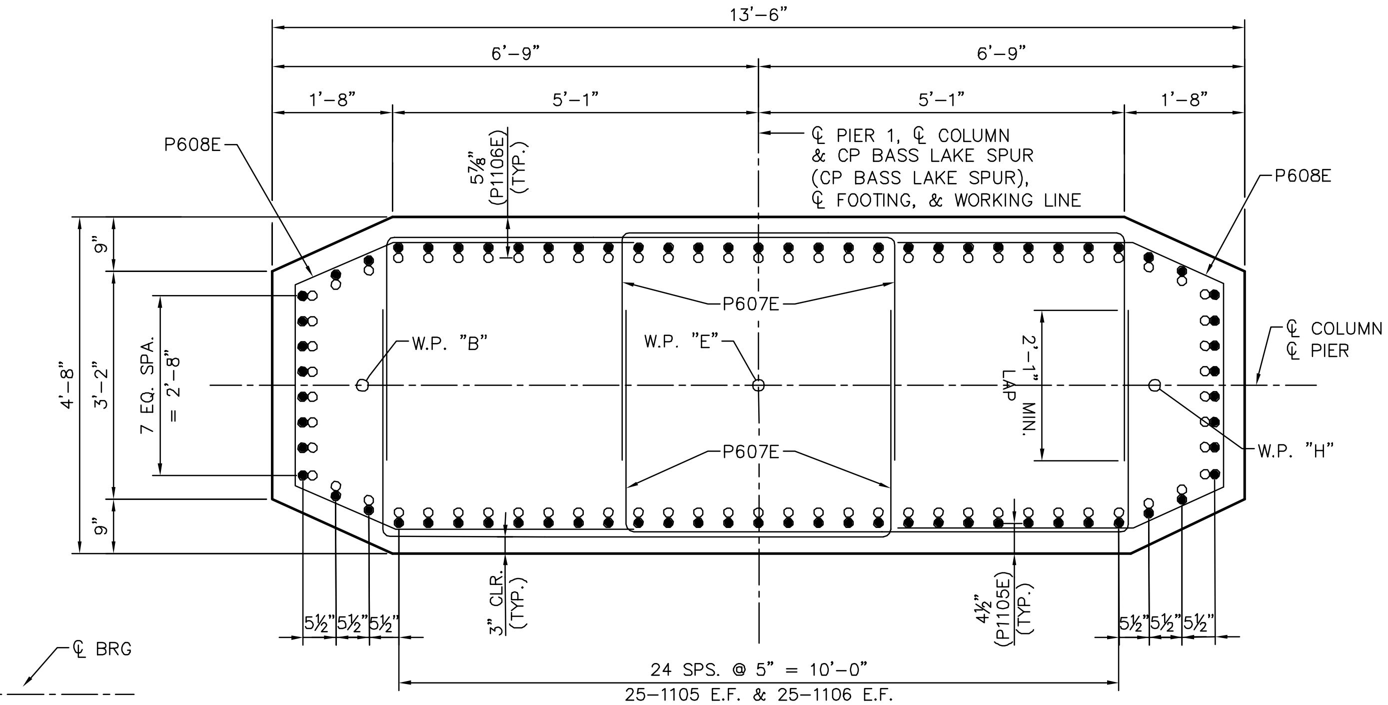


PIER FOOTING PLAN REINFORCEMENT

○ – DENOTES 74-P1106E IN COLUMN

● – DENOTES 74-P1105E IN FOOTING



TYPICAL COLUMN SECTION

○ – DENOTES 74-P1106E IN COLUMN

● – DENOTES 74-P1105E IN FOOTING

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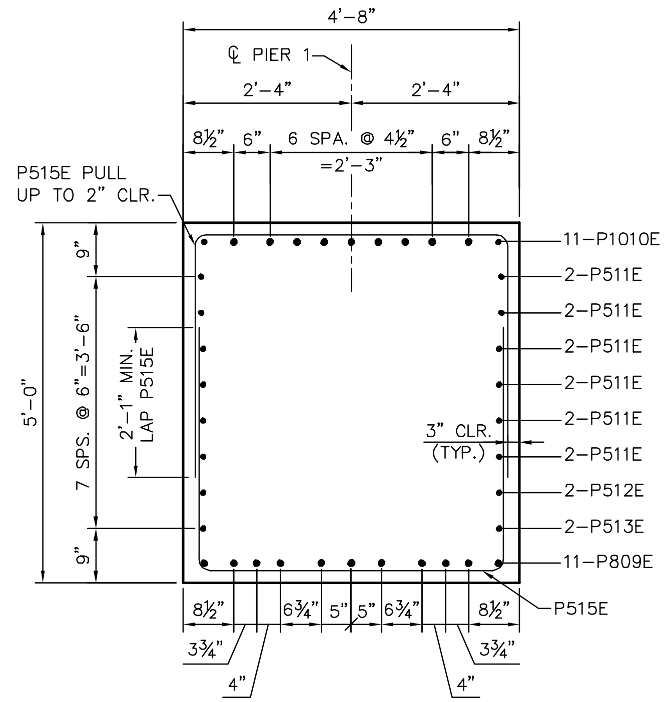
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
PIER REINFORCEMENT 2

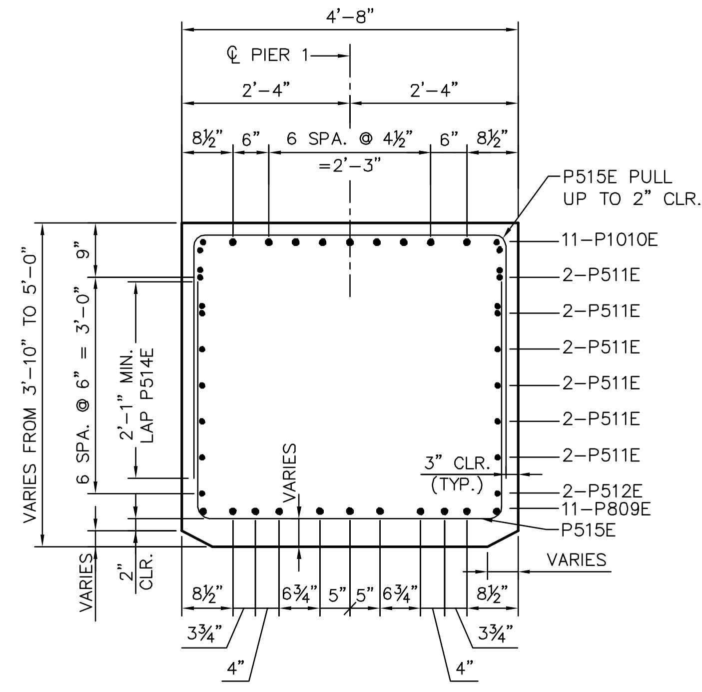
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-PIR-004

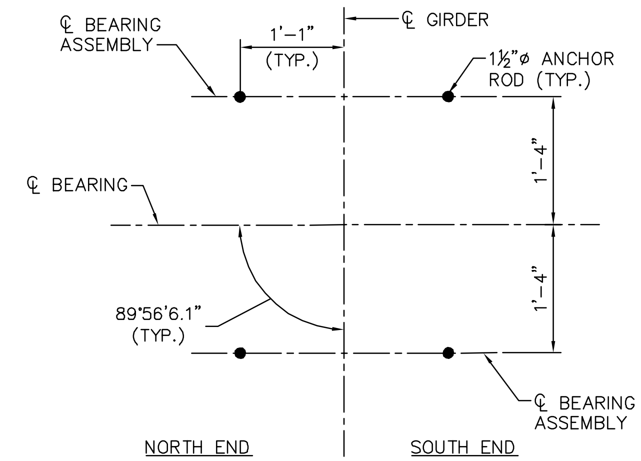
SHEET 21 OF 53



SECTION A–A

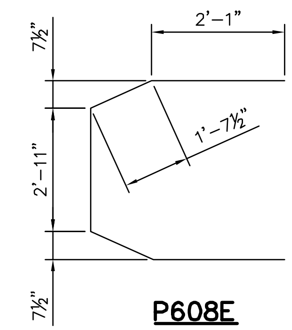


SECTION B–B

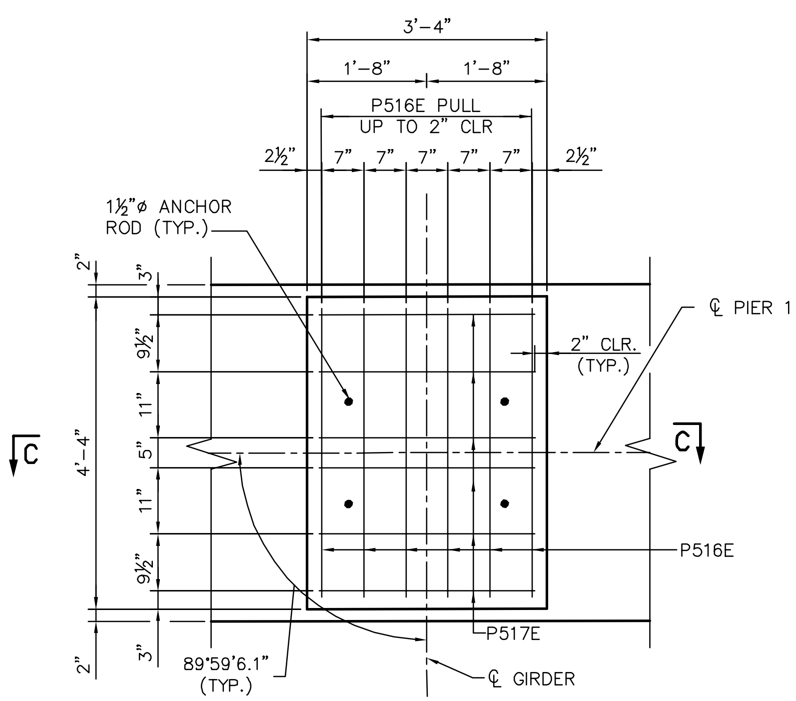


ANCHOR ROD LAYOUT

BILL OF REINFORCEMENT FOR PIER				
BAR	NO.	LENGTH	SHAPE	LOCATION
P1001	14	20'-4"	BENT	FOOTING LONG. TOP
P1002	14	20'-4"	BENT	FOOTING LONG. BOT.
P1003	21	14'-4"	BENT	FOOTING TRANS. TOP
P1004	21	14'-4"	BENT	FOOTING TRANS. BOT.
P1105E	74	14'-0"	BENT	FOOTING DOWEL B.F.
P1106E	74	18'-0"	STR.	COLUMN DOWEL E.F.
P607E	32	13'-10"	BENT	COLUMN TIE
P608E	32	10'-0"	BENT	COLUMN TIE
P809E	11	16'-10"	BENT	CAP BOTTOM LONG.
P1010E	11	16'-6"	STR.	CAP TOP LONG.
P511E	12	16'-6"	STR.	CAP LONG. E.F.
P512E	2	14'-9"	STR.	CAP LONG. E.F.
P513E	2	12'-5"	STR.	CAP LONG. E.F.
P514E	14	8'-2"	BENT	CAP END TIE
P515E	34	10'-10"	BENT	CAP TIE TOP AND BOT.
P516E	24	6'-0"	BENT	PEDESTAL TIE
P517E	24	6'-0"	BENT	PEDESTAL TIE

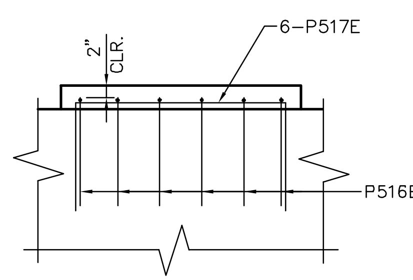


P608E

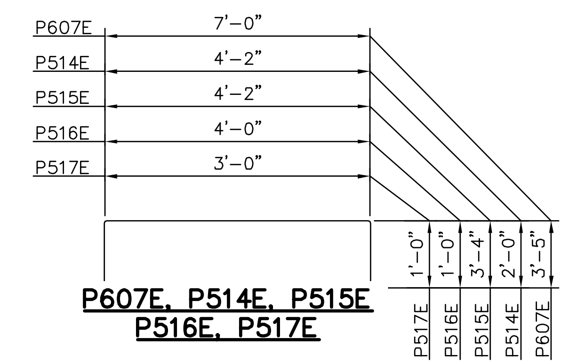


TYPICAL PEDESTAL PLAN

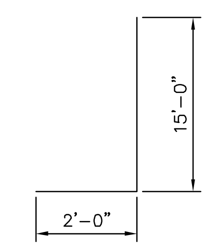
PEDESTAL REINFORCEMENT



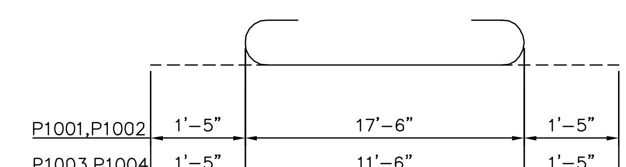
SECTION C–C



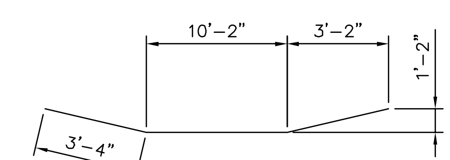
P607E, P514E, P515E
P516E, P517E



P1105E



P1001, P1002,
P1003, P1004



P809E

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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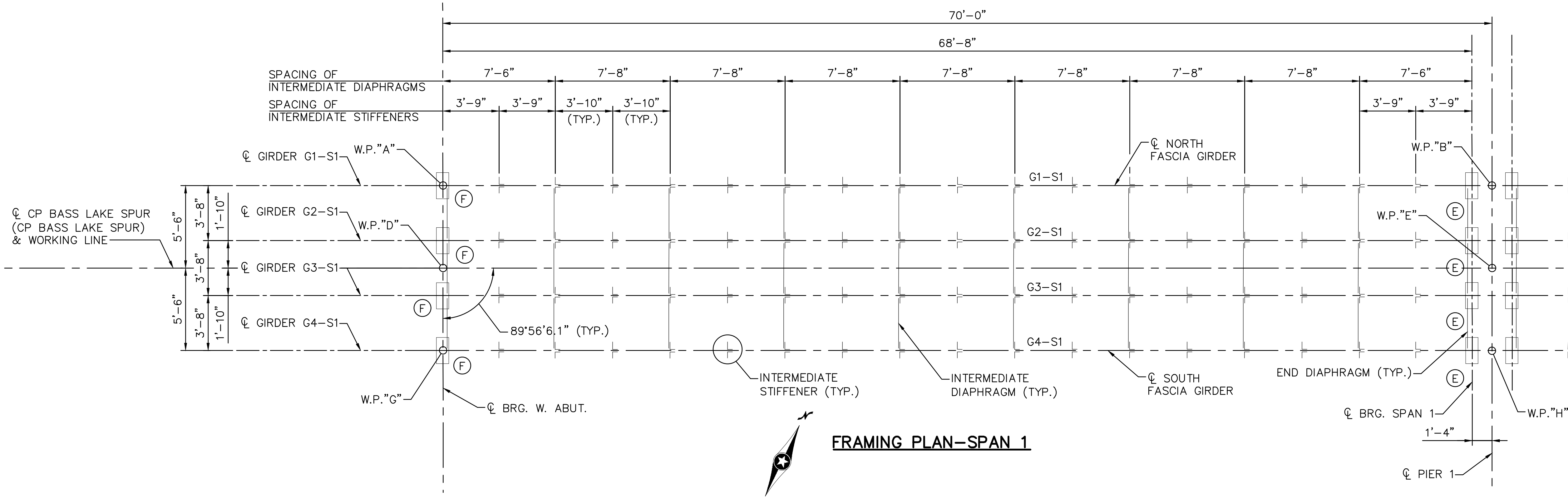
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
PIER REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-PIR-005



FRAMING PLAN-SPAN 1

NOTES:

SPACING OF INTERMEDIATE STIFFENERS IS GIVEN WITH RESPECT TO BACK FACE OF ANGLES.

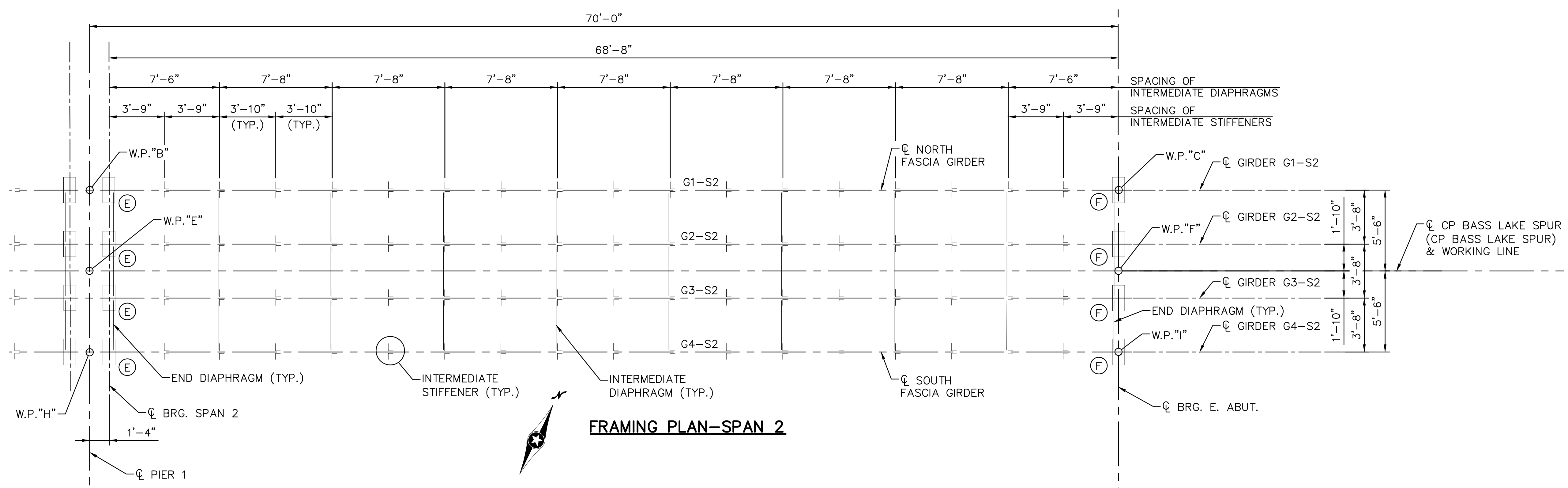
(E) DENOTES EXPANSION BEARING ASSEMBLY.

(F) DENOTES FIXED BEARING ASSEMBLY.

FOR FURTHER INFORMATION ON BEARING ASSEMBLIES, REFER TO GIRDER ELEVATION SHEET AND THE BEARING ASSEMBLY DETAILS SHEET.

ALL GIRDERS SET PARALLEL TO WORKING LINE.

ALL DIAPHRAGMS SET PARALLEL TO SUBSTRUCTURES.



FRAMING PLAN-SPAN 2

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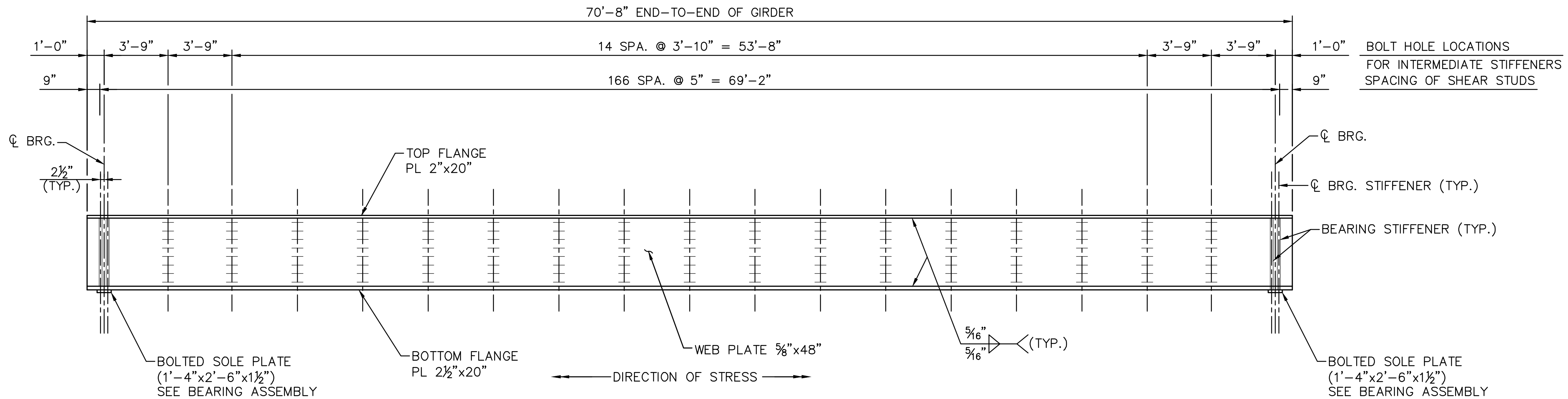
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
FRAMING PLAN

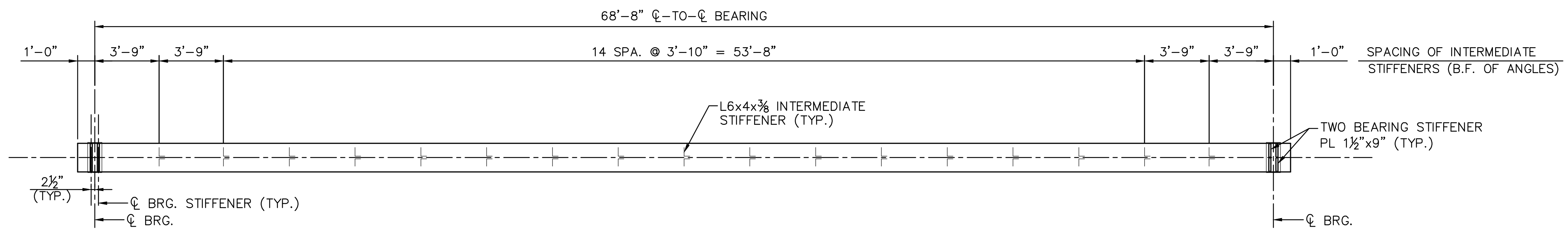
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-SUP-004

SHEET 23 OF 53



ELEVATION VIEW OF GIRDERS G1-G4



PLAN VIEW OF GIRDERS G1-G4

NOTES:

ALL STRUCTURAL STEEL SHALL CONFORM TO MN/DOT 3309 ASTM GRADE 50WT3 UNLESS OTHERWISE NOTED.

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

BOLTED CONNECTIONS SHALL BE MADE WITH ⅞" DIAMETER A325 TYPE 3 HIGH STRENGTH BOLTS, EXCEPT AS NOTED. HOLES FOR ⅞" DIAMETER BOLTS SHALL BE 15⁄16". OVERSIZED HOLES WILL NOT BE PERMITTED.

PLACE NUT AND WASHER ON INSIDE OF GIRDER FOR ALL BOLTS THROUGH GIRDER WEB.

WEB AND FLANGE PLATES SHALL BE FURNISHED IN AVAILABLE MILL LENGTHS WITH A MINIMUM NUMBER OF SPLICES. LOCATION OF SPLICES SHALL BE APPROVED BY ENGINEER. A SPLICE SHALL BE MINIMUM OF 12" FROM ANY STIFFENER. NO SPLICES WILL BE ALLOWED 12'-0" FROM MIDPOINT OF GIRDER.

FOR WELDED FLANGE SPLICES, SEE SPEC. 2471.3F1A.

BEARING STIFFENERS AND ENDS OF BEAMS SHALL BE PERPENDICULAR TO FLANGE.

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

SOLE PLATES SHALL BE BOLTED TO BOTTOM FLANGE PLATES, FOR DETAILS REFER TO BEARING ASSEMBLY DETAILS SHEET.

NO WELDING OR DRILLING OF HOLES FOR TEMPORARY ATTACHMENTS WILL BE PERMITTED.

THE STRUCTURAL STEEL FABRICATOR SHALL BE CERTIFIED UNDER THE A.I.S.C. QUALITY CERTIFICATION PROGRAM, CATEGORY, MAJOR STEEL BRIDGES (Cbr.).

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

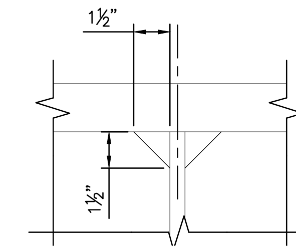
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
GIRDER ELEVATION

DISCIPLINE: STRUCTURES

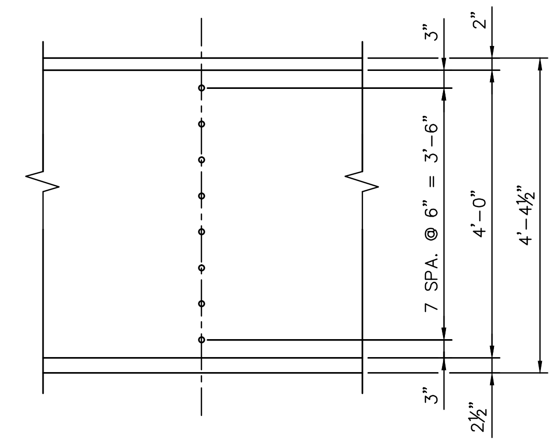
SHEET NAME: CBR27C12-BRG-STL-001

SHEET 24 OF 53

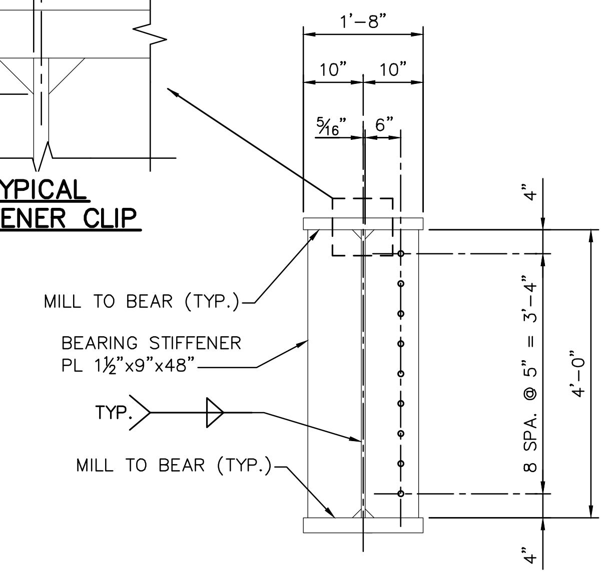
Dec. 12 2015 07:39 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-STL-001.dwg By: kevin.kimm



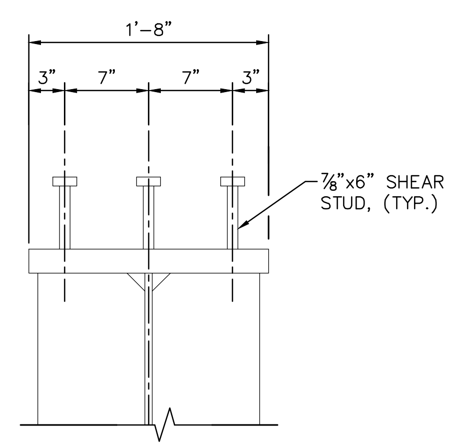
TYPICAL STIFFENER CLIP



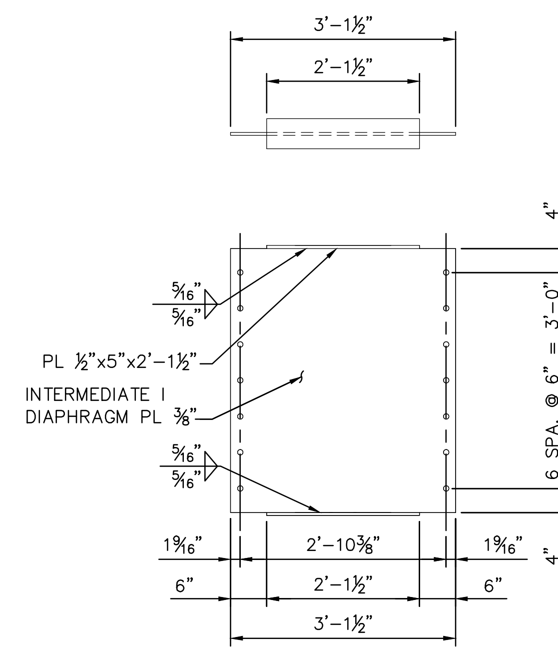
INTERMEDIATE STIFFENER BOLT HOLE LAYOUT



FRONT END BEARING STIFFENER

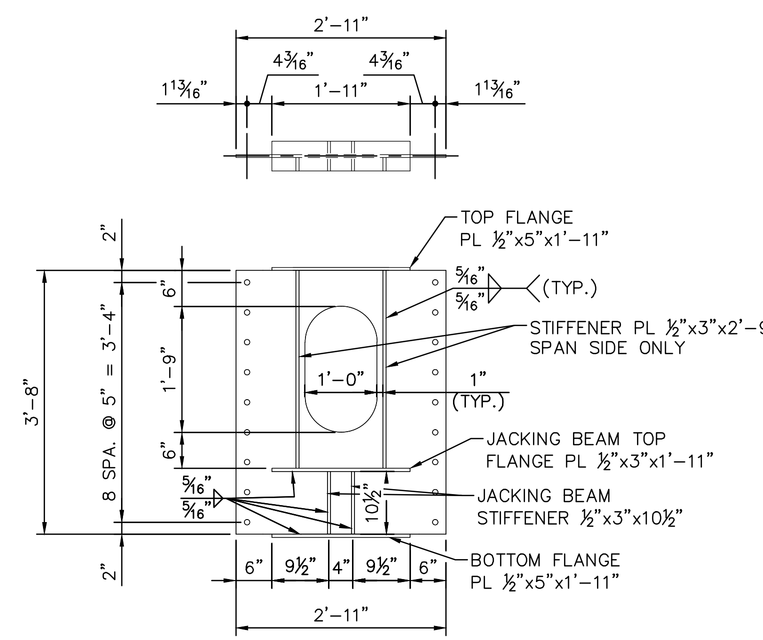


SHEAR STUD DETAIL



INTERMEDIATE DIAPHRAGM DETAIL

(SEE SHEET 26 FOR OTHER DETAILS)



BEARING DIAPHRAGM DETAIL

(SEE SHEET 26 FOR OTHER DETAILS)

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: MSK CHECKED BY: KJK

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METROPOLITAN COUNCIL

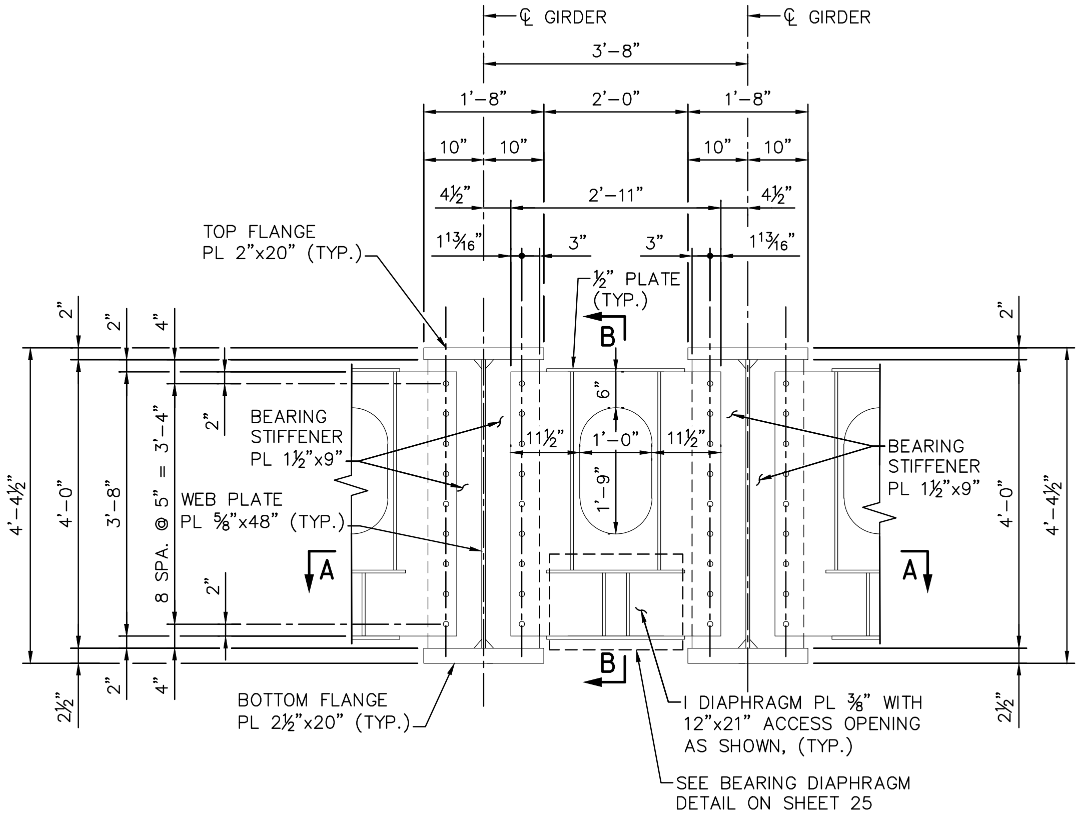
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
GIRDER DETAILS 1

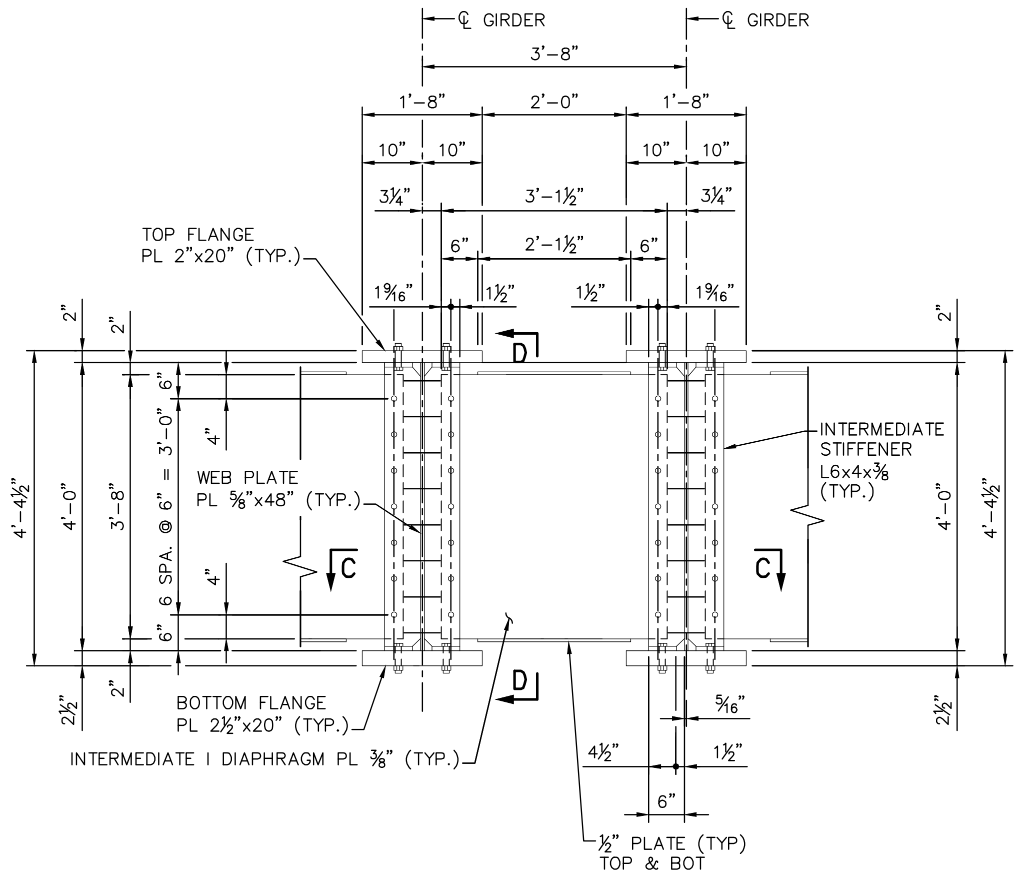
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-STL-003

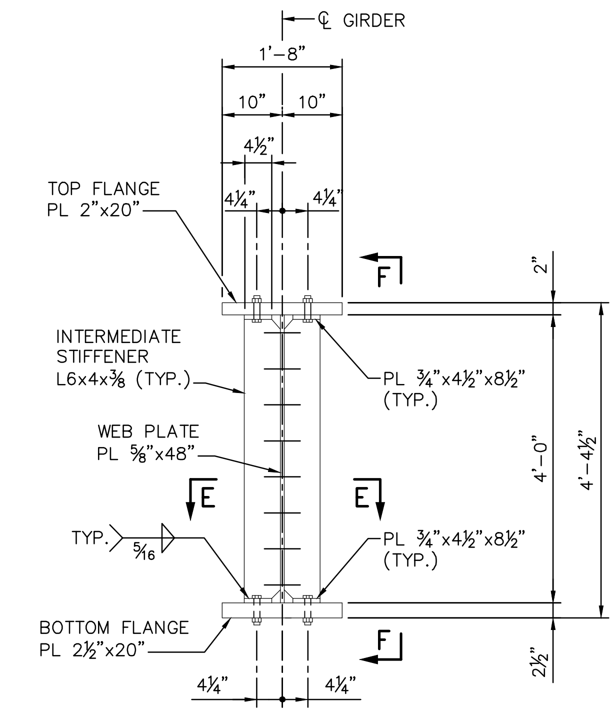
Dec. 12 2015 07:40 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-STL-003.dwg By: kevin.kimm



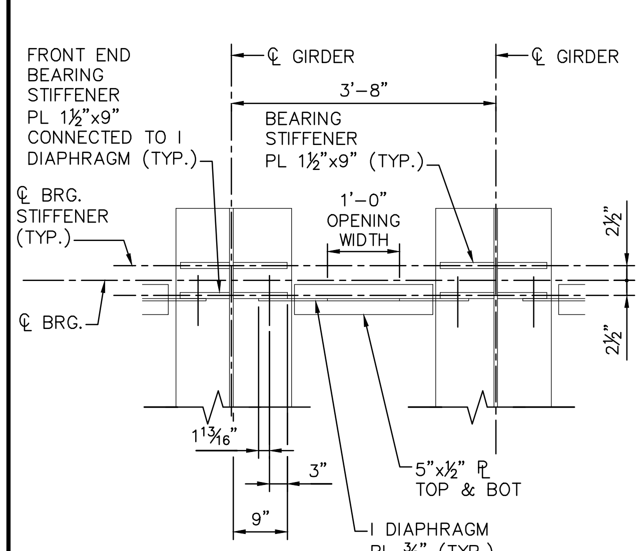
END BEARING STIFFENER AND DIAPHRAGM ELEVATION



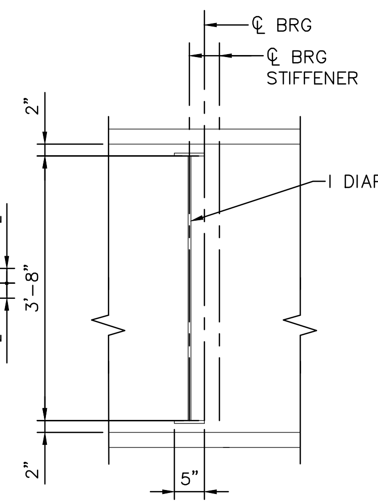
INTERMEDIATE DIAPHRAGM ELEVATION



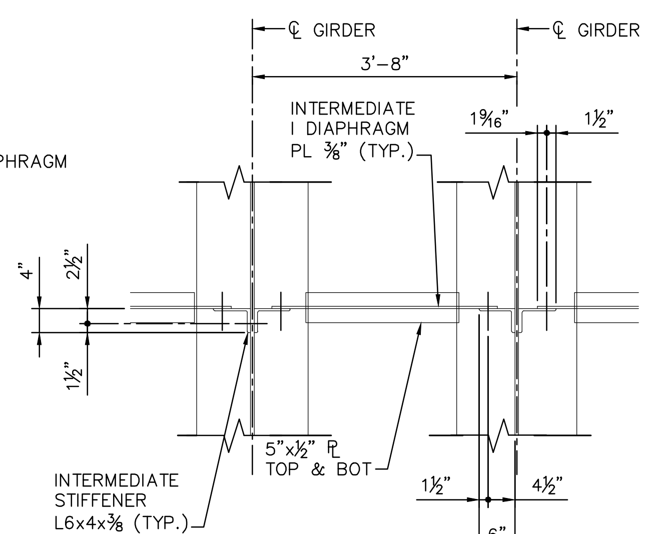
INTERMEDIATE STIFFENER



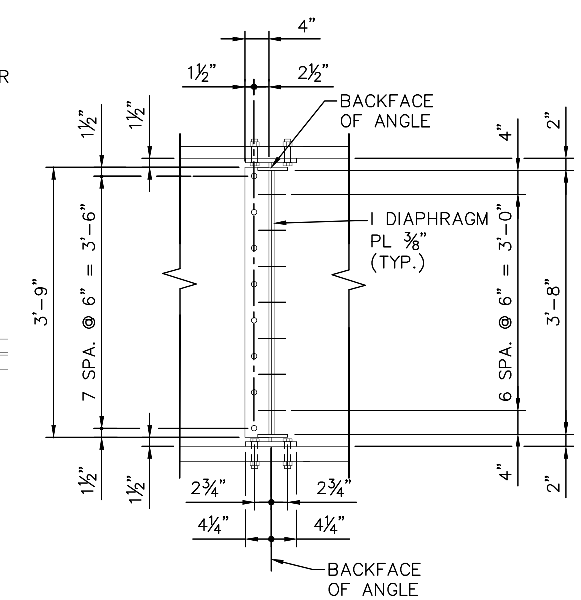
SECTION A–A



SECTION B–B



SECTION C–C



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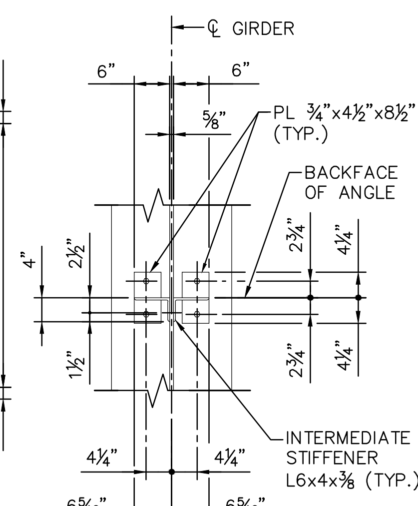

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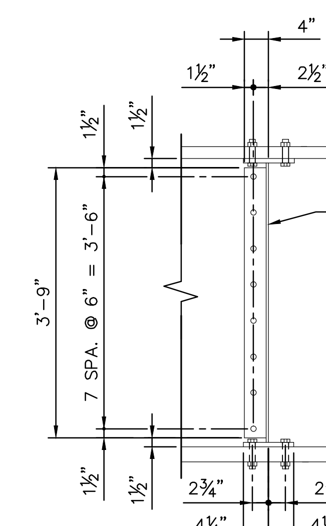


VIEW F–F

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

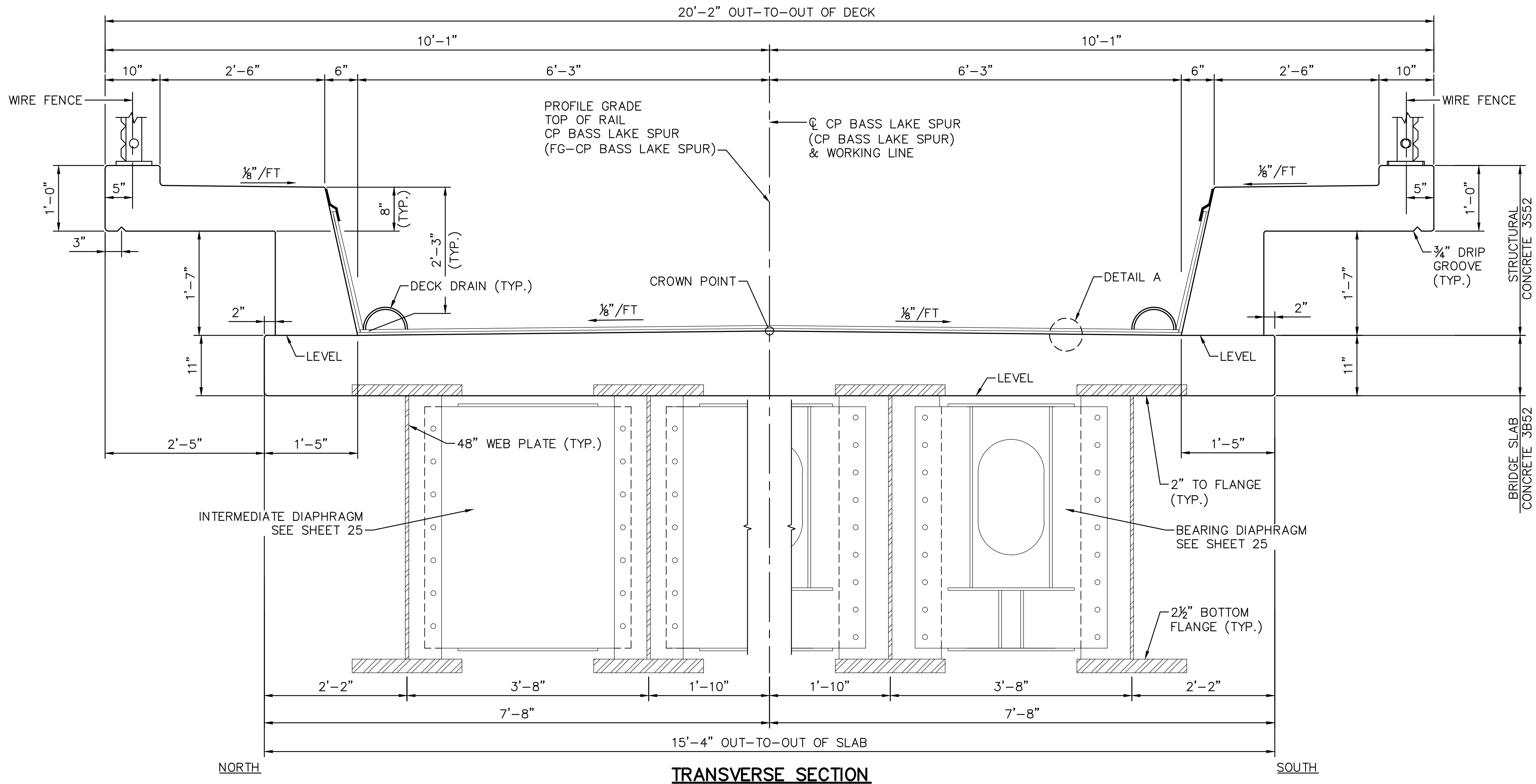
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
GIRDER DETAILS 2

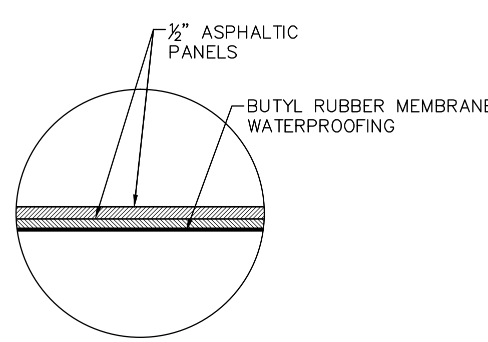
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-STL-004

SHEET 26 OF 53

Dec. 12 2015 07:41 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-STL-004.dwg By: kevin.kimm



TRANSVERSE SECTION



DETAIL A

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DRAWN BY: MSK CHECKED BY: KJK

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METROPOLITAN COUNCIL

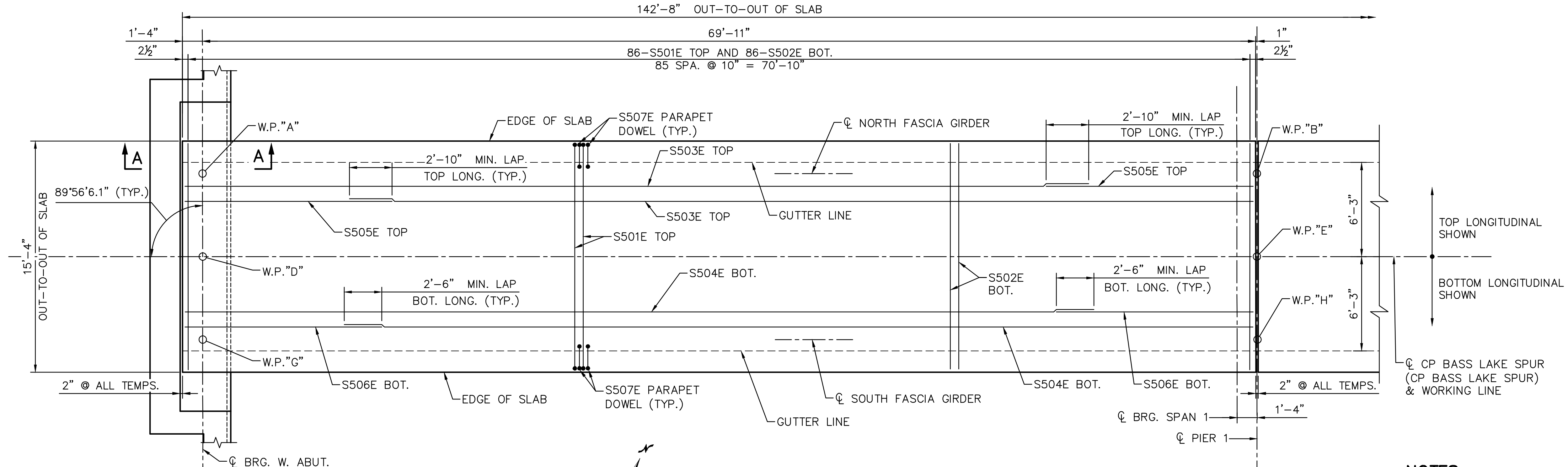
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
SUPERSTRUCTURE DETAILS 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-SUP-009

SHEET 27 OF 53

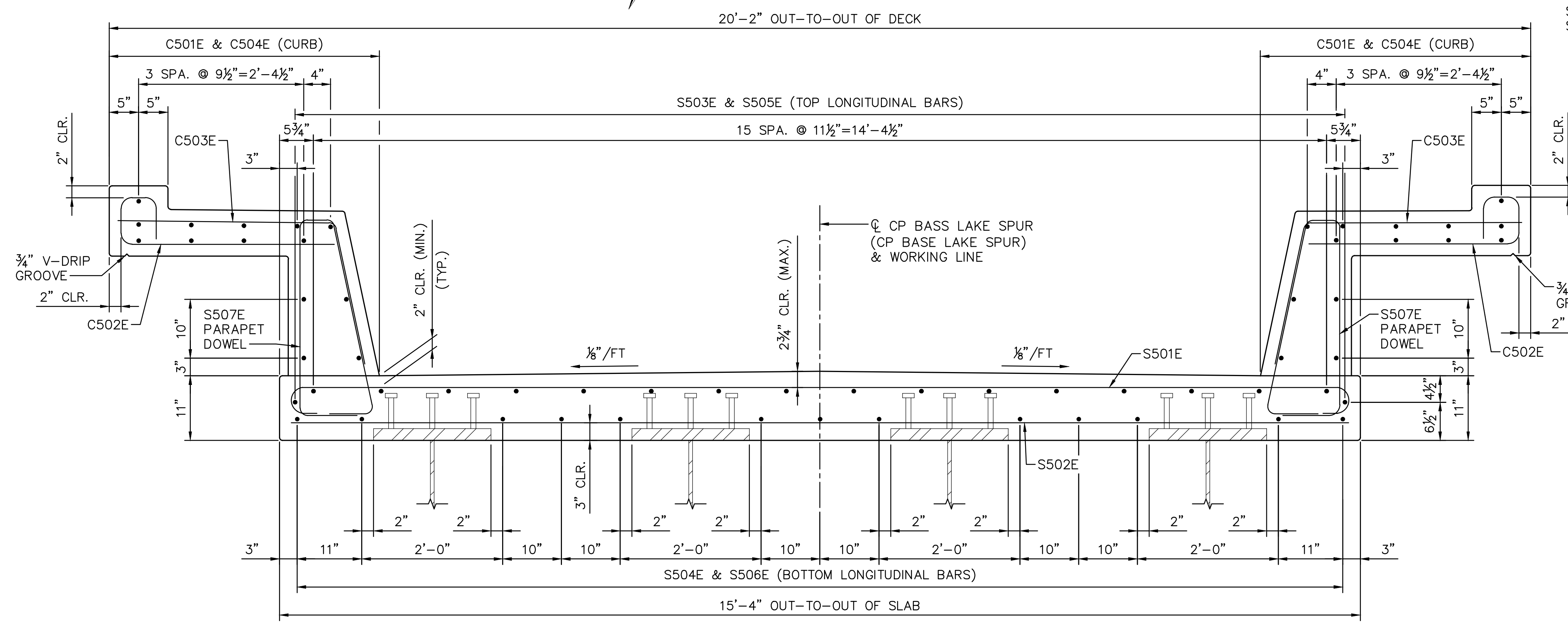


SLAB PLAN – SPAN 1

NOTES:

SEE SHEET 32 FOR SECTION A-A (EDGE BEAM).

SEE SHEET 30 FOR PARAPET SAFETY WALK REINFORCING.



TRANSVERSE SECTION

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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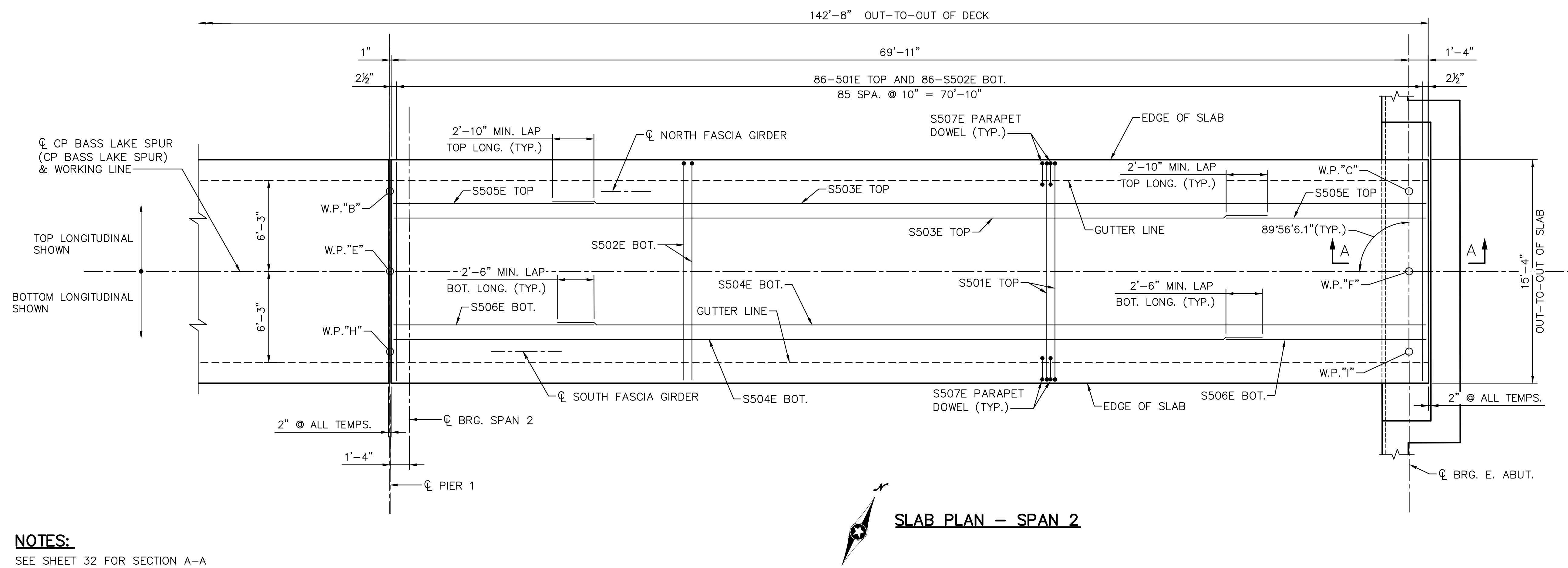
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
SUPERSTRUCTURE DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-SUP-005

SHEET 28 OF 53



SLAB PLAN – SPAN 2

NOTES:

SEE SHEET 32 FOR SECTION A–A (EDGE BEAM).

SEE SHEET 31 FOR PARAPET SAFETY WALK REINFORCING.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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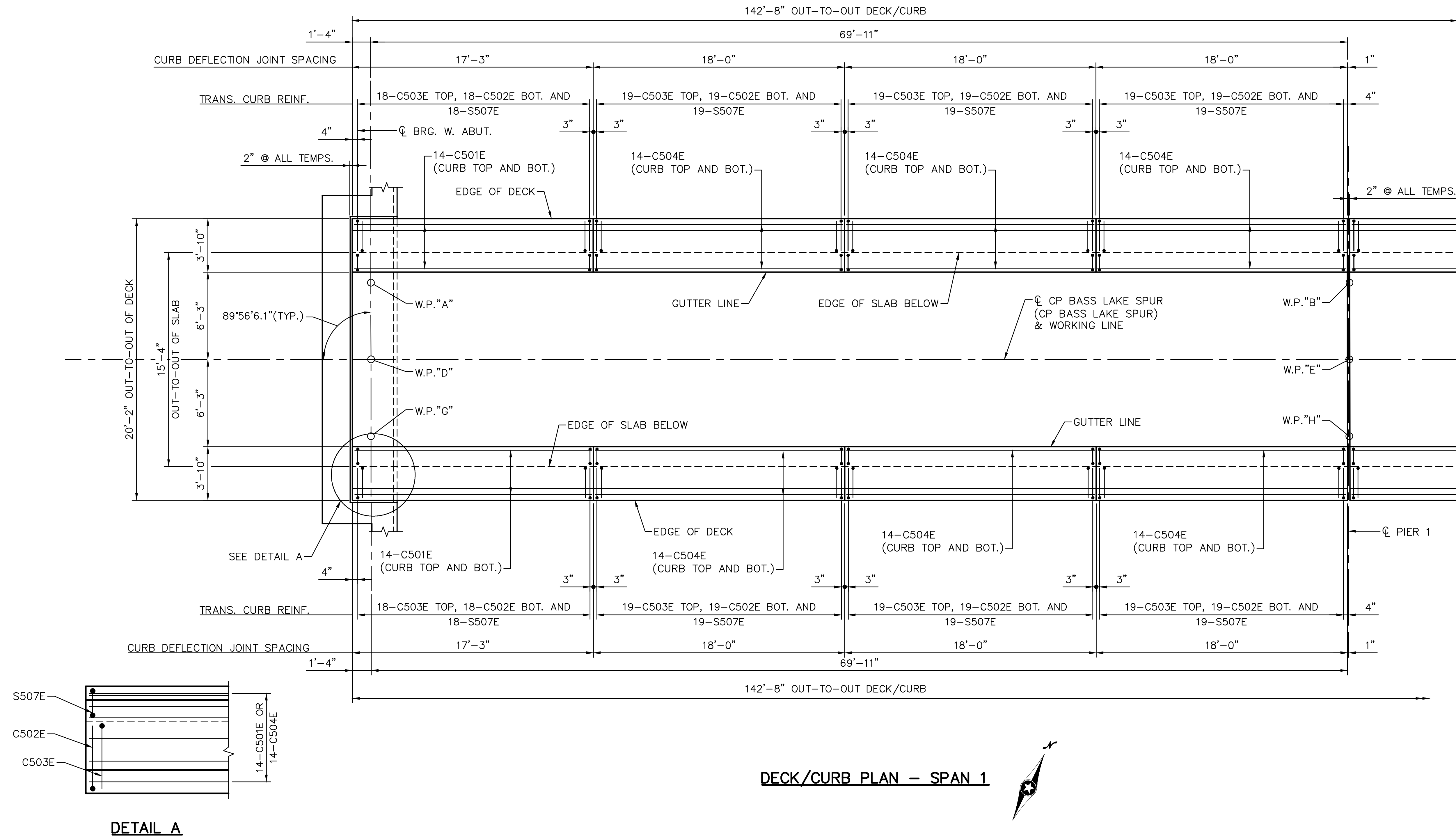
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
SUPERSTRUCTURE DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-SUP-006



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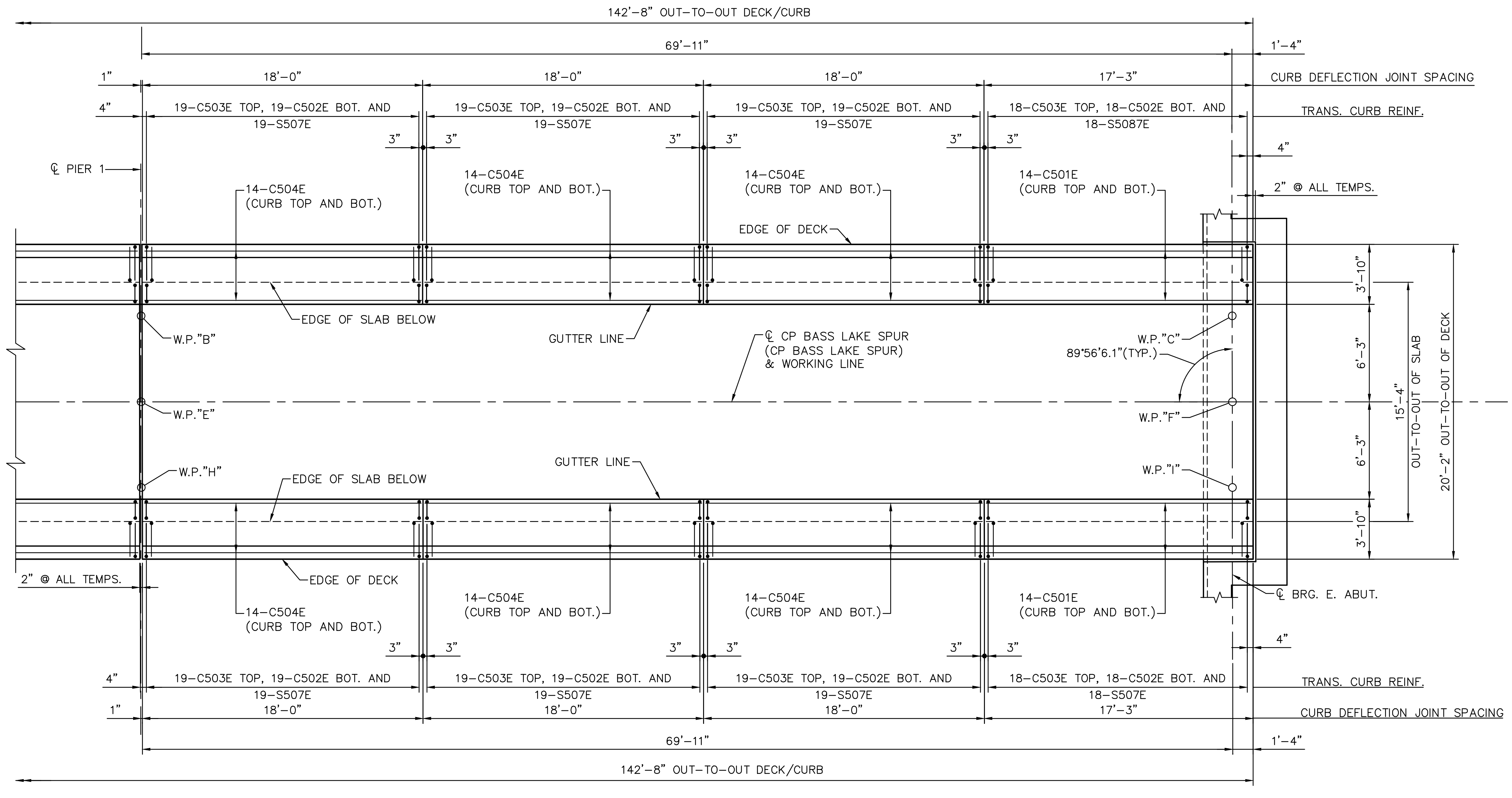
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
SUPERSTRUCTURE DETAILS 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-SUP-007-1

SHEET 30 OF 53



DECK/CURB PLAN – SPAN 2

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

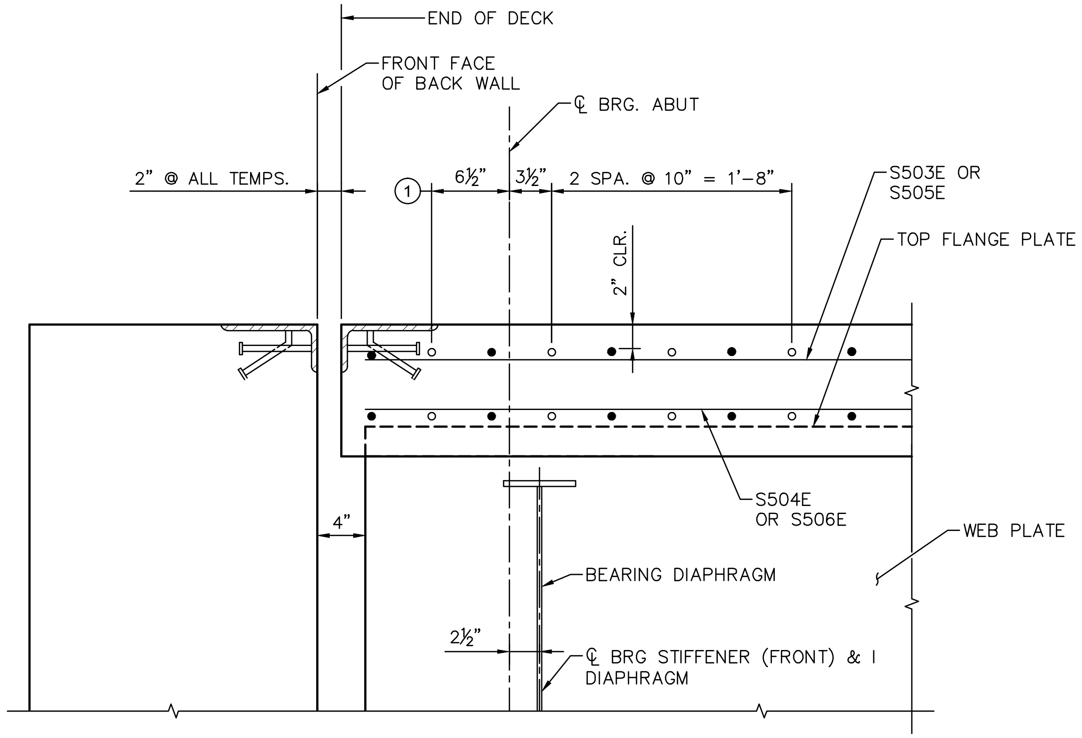
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
SUPERSTRUCTURE DETAILS 5

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-SUP-007-2

SHEET 31 OF 53



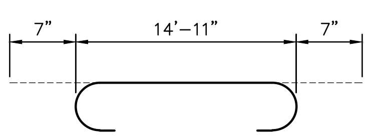
SECTION A–A
(ABUTMENT SHOWN, PIER SIMILAR)

NOTES:

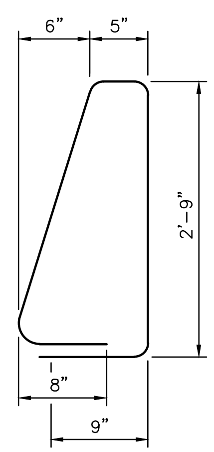
(1) 4 ADDITIONAL S501E AND S502 AT THE END OF EACH SPAN.

BILL OF REINFORCEMENT
FOR SUPERSTRUCTURE

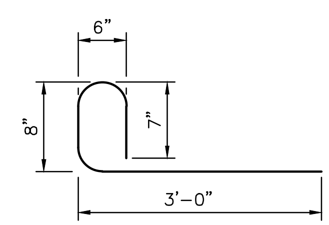
BAR	NO.	LENGTH	SHAPE	LOCATION
S501E	188	16'-1"	BENT	TOP TANS.
S502E	188	15'-0"	STR.	BOT TRANS.
S503E	36	60'-0"	STR.	TOP LONG.
S504E	26	60'-0"	STR.	BOT LONG.
S505E	36	13'-9"	STR.	TOP LONG. LAP
S506E	26	13'-5"	STR.	BOT LONG LAP
S507E	300	7'-7"	BENT	PARAPET DOWEL
C501E	56	16'-11"	STR.	LONG. CURB ENDS
C502E	300	4'-9"	BENT	CURB BOT.
C503E	300	4'-11"	BENT	CURB TOP
C504E	168	17'-8"	STR.	LONG. CURB MID.



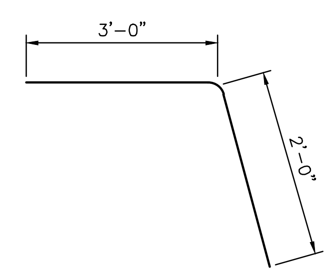
S501E



S507E



C502E



C503E

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

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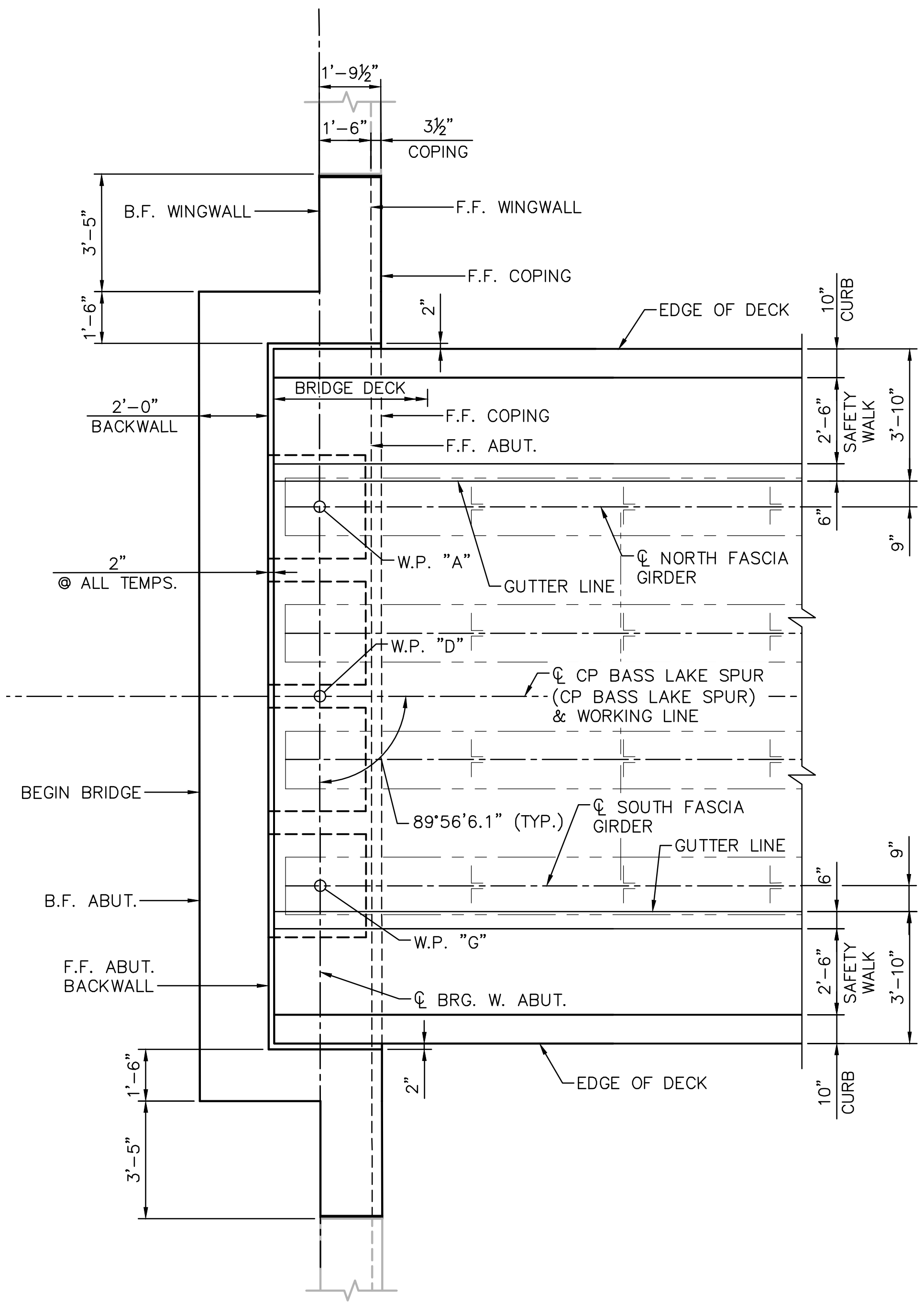
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

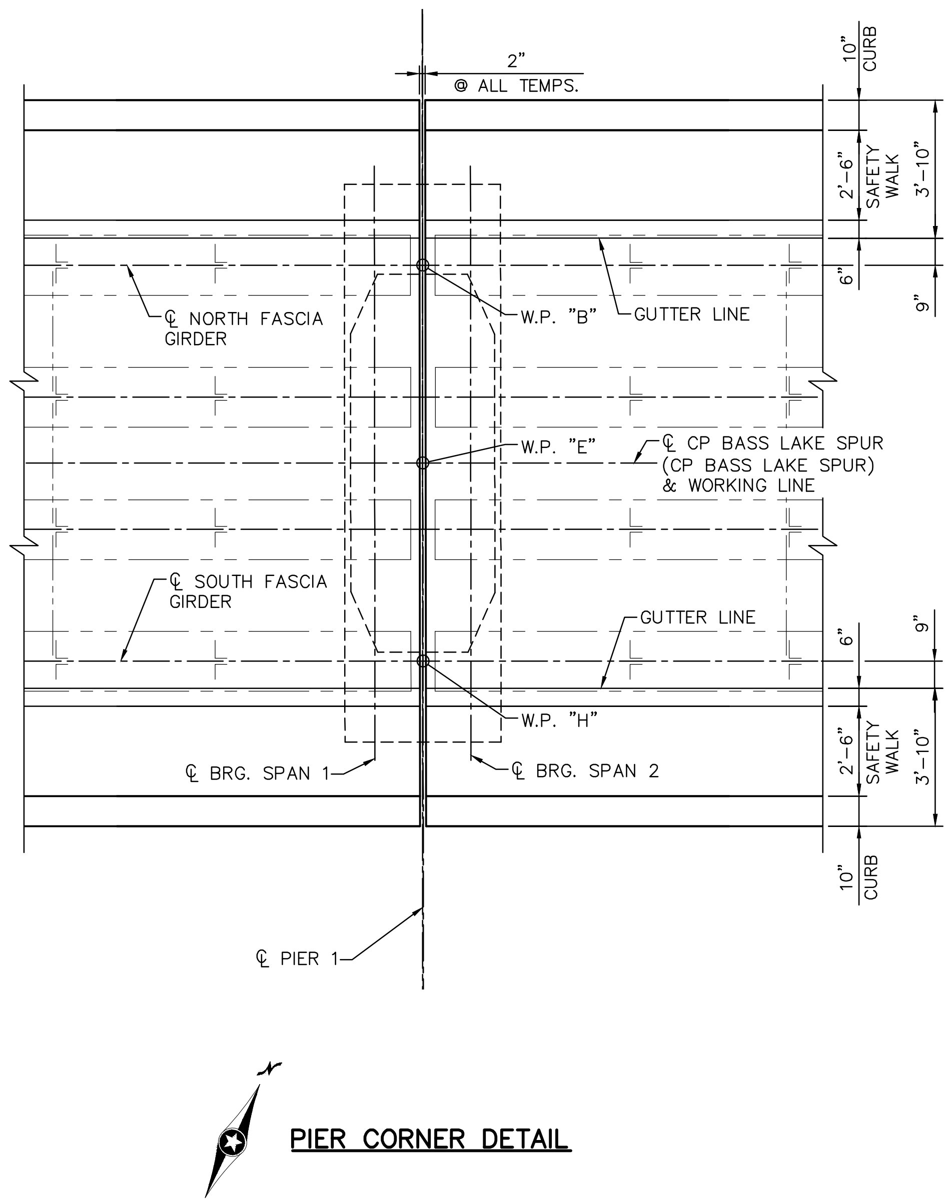
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
SUPERSTRUCTURE DETAILS 6

DISCIPLINE: STRUCTURES

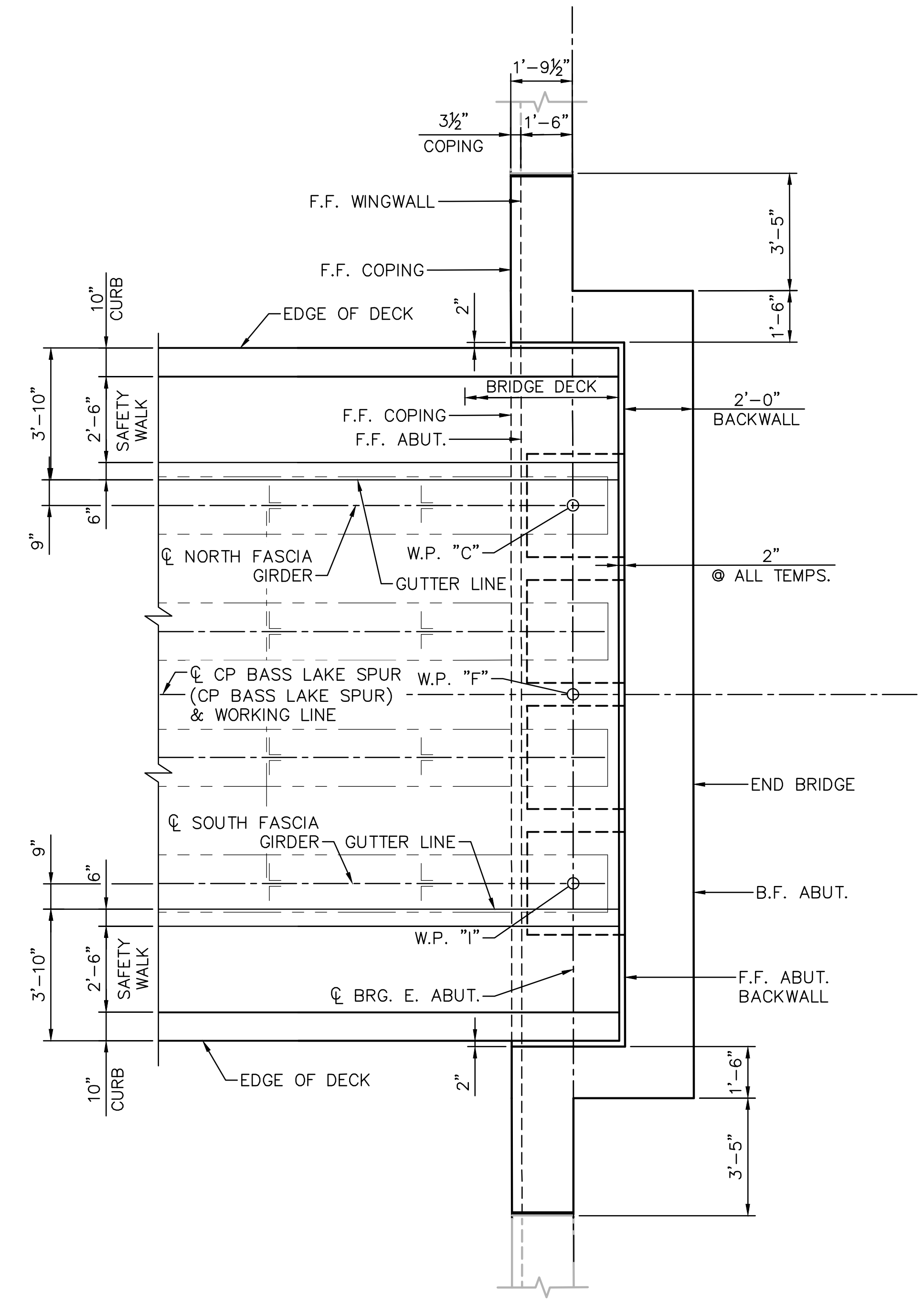
SHEET NAME: CBR27C12-BRG-SUP-012



WEST ABUTMENT CORNER DETAIL



PIER CORNER DETAIL



EAST ABUTMENT CORNER DETAIL

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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SOUTHWEST Green Line LRT Extension

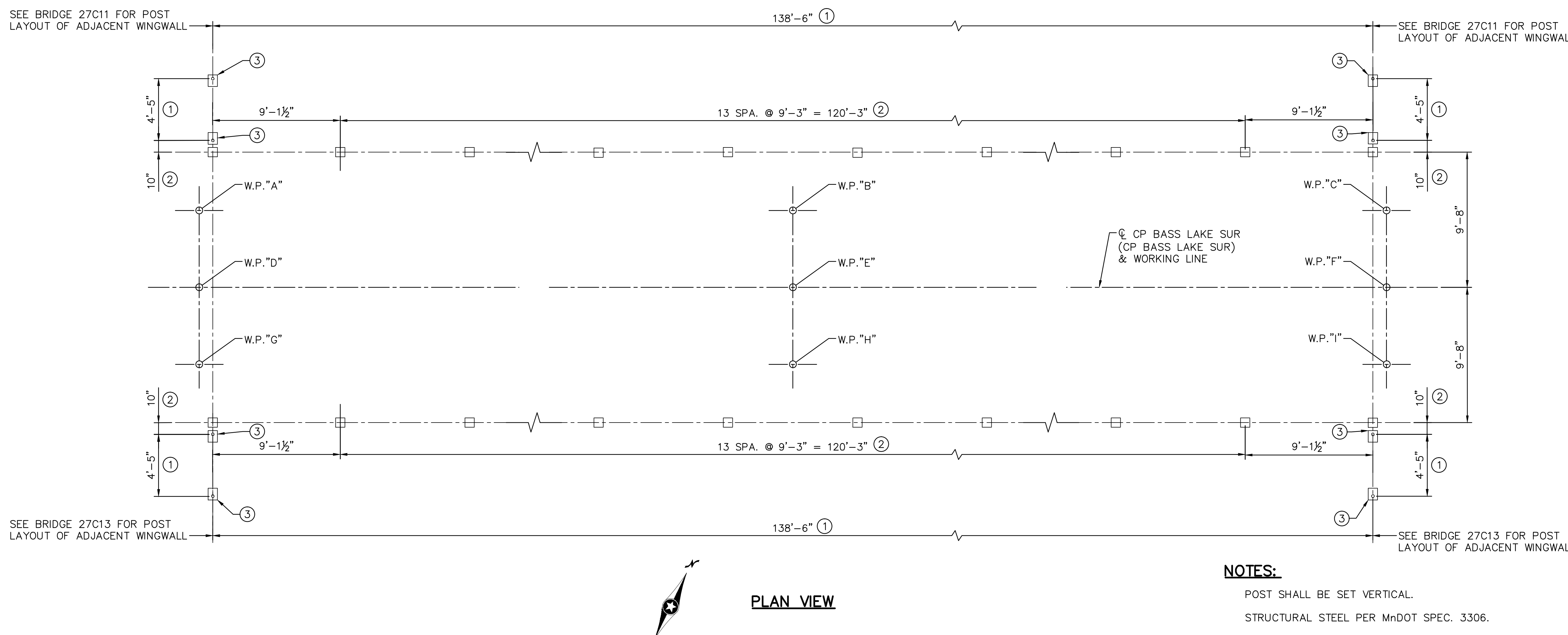
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
SUPERSTRUCTURE DETAILS 7

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-SUP-010

SHEET 33 OF 53

Dec. 12 2015 07:45 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-SUP-010.dwg By: kevin.kimm



PLAN VIEW

NOTES:

POST SHALL BE SET VERTICAL.

STRUCTURAL STEEL PER MnDOT SPEC. 3306.

STRUCTURAL PIPE PER MnDOT SPEC. 3362.

GALVANZING THE FENCE POST ANCHORAGE AFTER FABRICATION PER MnDOT SPEC. 3394. GALVANIZE THE FASTENERS PER SPEC. 3392.

(1) WIRE FENCE, FIGURE 5-397.119 (MOD.).

(2) FENCE POST ANCHORAGES SHALL BE TYPE A. SEE DETAIL B905.

(3) OFFSET FENCE POST ANCHORAGE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

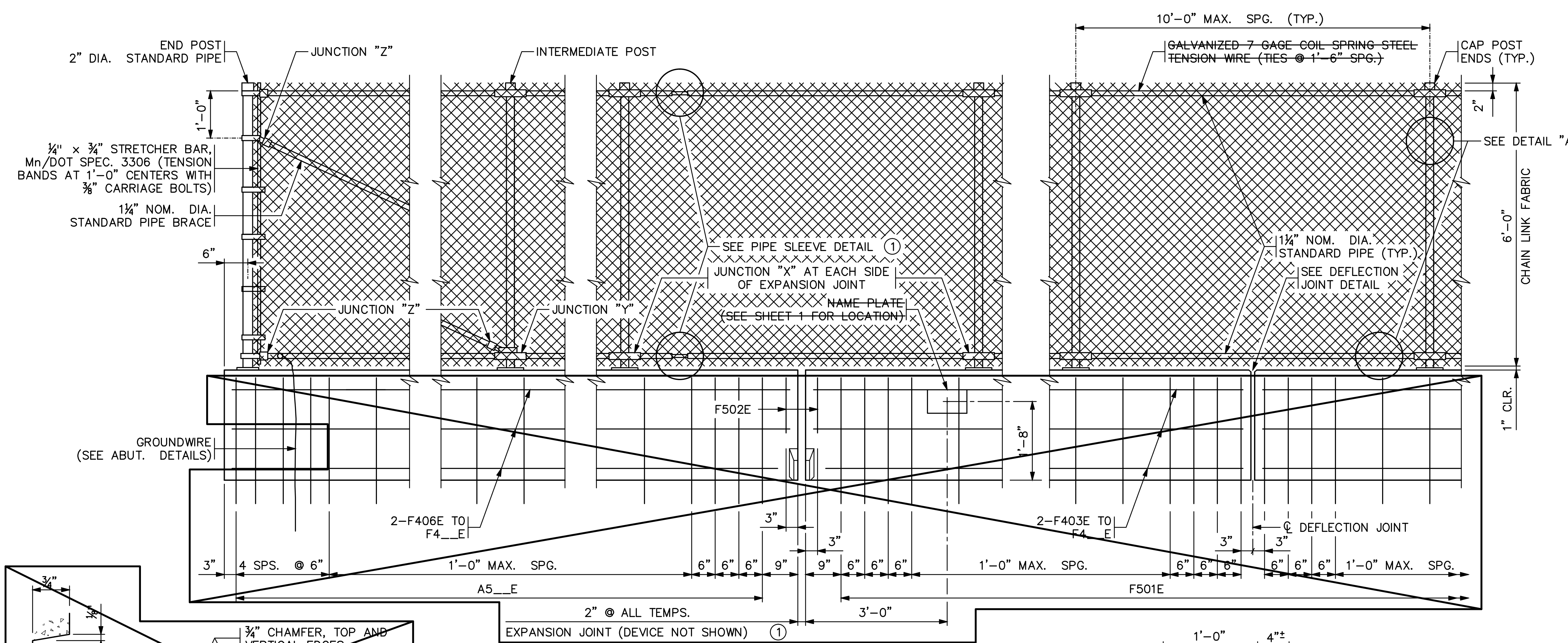
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
SUPERSTRUCTURE DETAILS 8

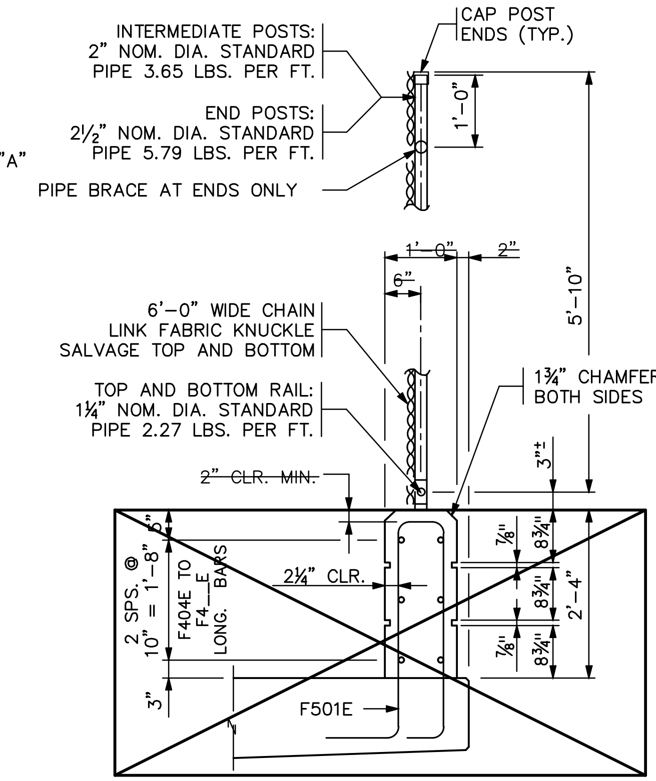
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-SUP-011

SHEET 34 OF 53



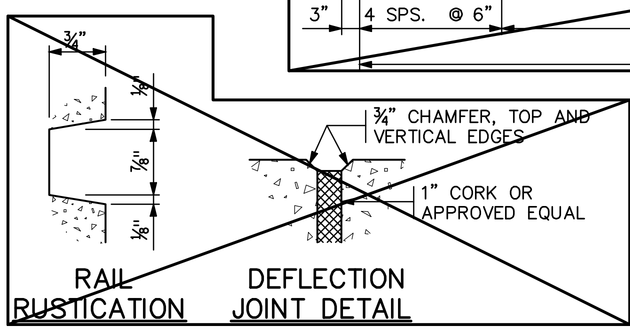
Ⓐ INSIDE ELEVATION OF RAILING



Ⓐ TYPICAL SECTION THROUGH FENCE

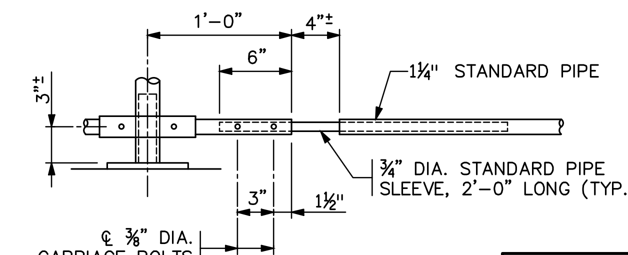
INTERMEDIATE POST SHOWN

SHEET MODIFICATION:
Ⓐ DENOTES MODIFICATION TO STANDARD SHEET



RAIL RUSTICATION

DEFLECTION JOINT DETAIL



PIPE SLEEVE DETAIL ①

GENERAL NOTES

Ⓐ SEE SUPERSTRUCTURE DETAILS SHEETS FOR CURB 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.~~

Ⓐ LENGTH OF "WIRE FENCE" ~~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.

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

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

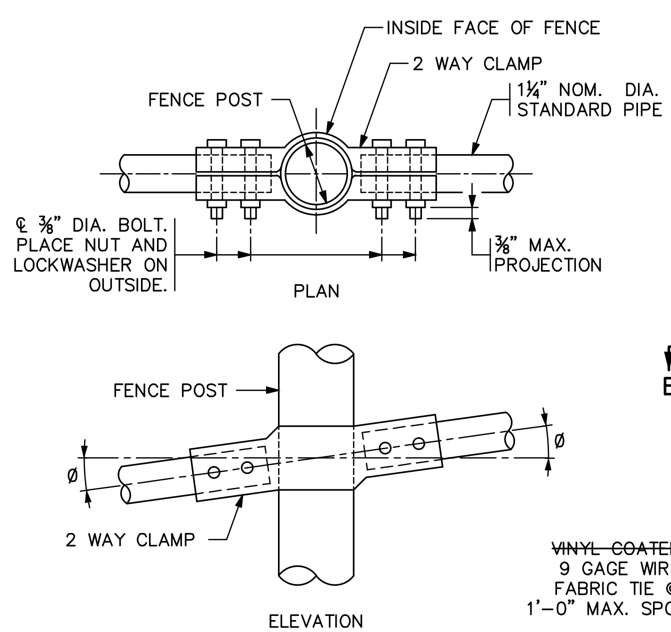
~~ALL POSTS SHALL HAVE A MEANS TO SECURELY HOLD THE TOP TENSION WIRE IN POSITION AND ALLOW FOR THE REMOVAL AND REPLACEMENT OF A POST WITHOUT DAMAGING THE TOP WIRE.~~

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 12½GAGE GALVANIZED HOG RINGS FOR TENSION WIRE TIES.~~

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

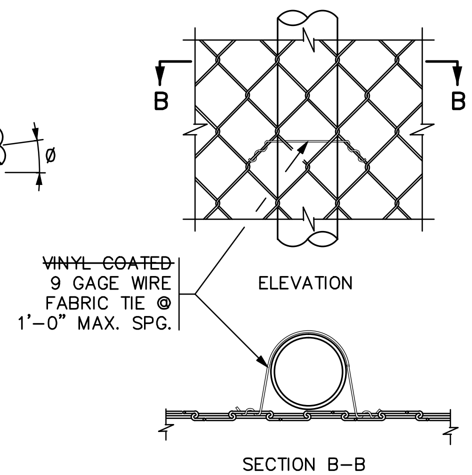
SEE SPECIAL PROVISIONS FOR REQUIREMENTS NOT INCLUDED ON THIS SHEET. ~~AND FOR BASIS OF PAYMENT.~~

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

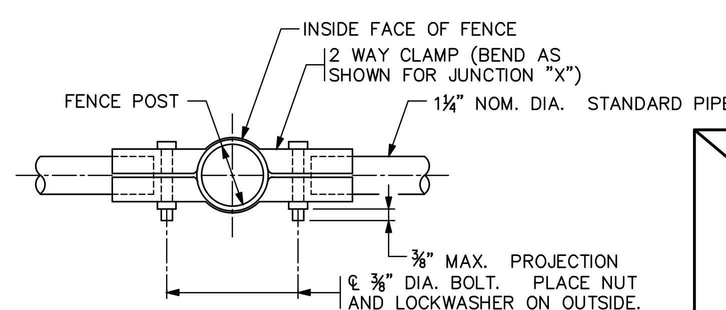


JUNCTION "X"

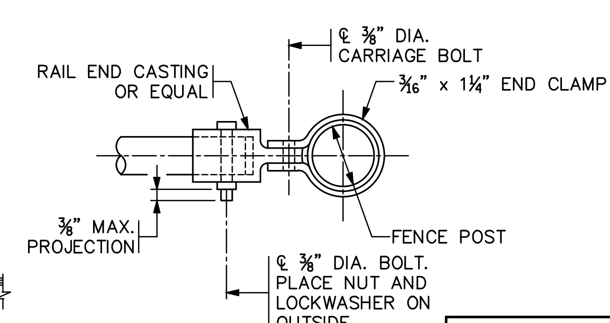
2 WAY CLAMP BENDING TABLE	
GRADE OF FENCE	Ø
0° TO 2°	0°
2° TO 6°	4°
6° TO 10°	8°



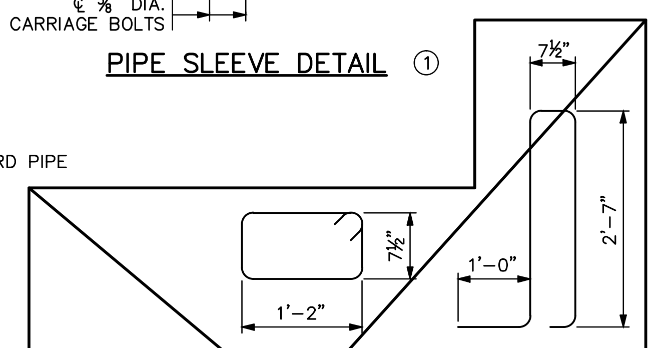
DETAIL "A"



JUNCTION "Y"



JUNCTION "Z"



F502E

F501E

BILL OF REINFORCEMENT FOR PARAPET				
BAR	NO.	LENGTH	SHAPE	LOCATION
F501E		7'-3"		RAIL BASE VERTICAL
F502E		4'-6"		RAIL BASE VERTICAL
F403E				RAIL BASE LONGITUDINAL
F404E				RAIL BASE LONGITUDINAL

REVISED: 04-17-2013

APPROVED: DECEMBER 18, 2003

STATE BRIDGE ENGINEER

CERTIFIED BY ____ LICENSED PROFESSIONAL ENGINEER DATE

NAME: LIC. NO.

TITLE: WIRE FENCE (DESIGN W-1) Ⓐ

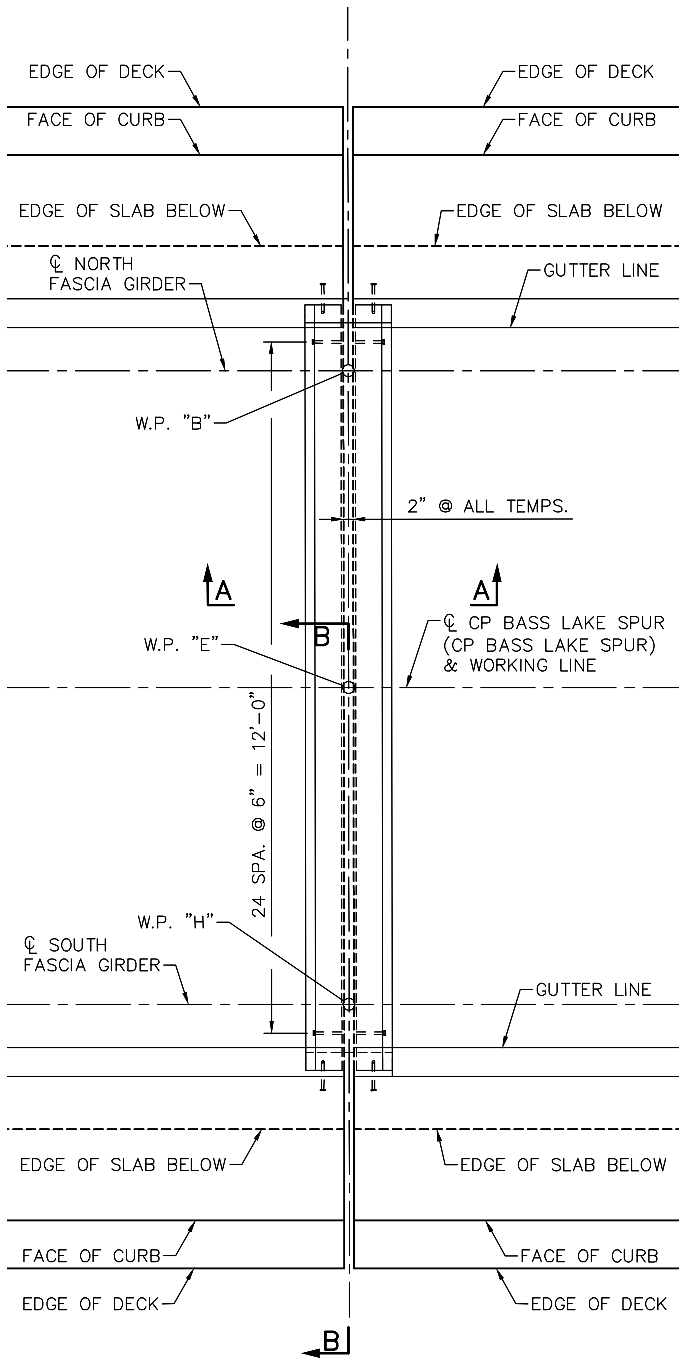
DES:	BMS	DR:	MSK
CHK:	KJK	CHK:	KJK

FIG. 5-397.119 (MOD.)

APPROVED:

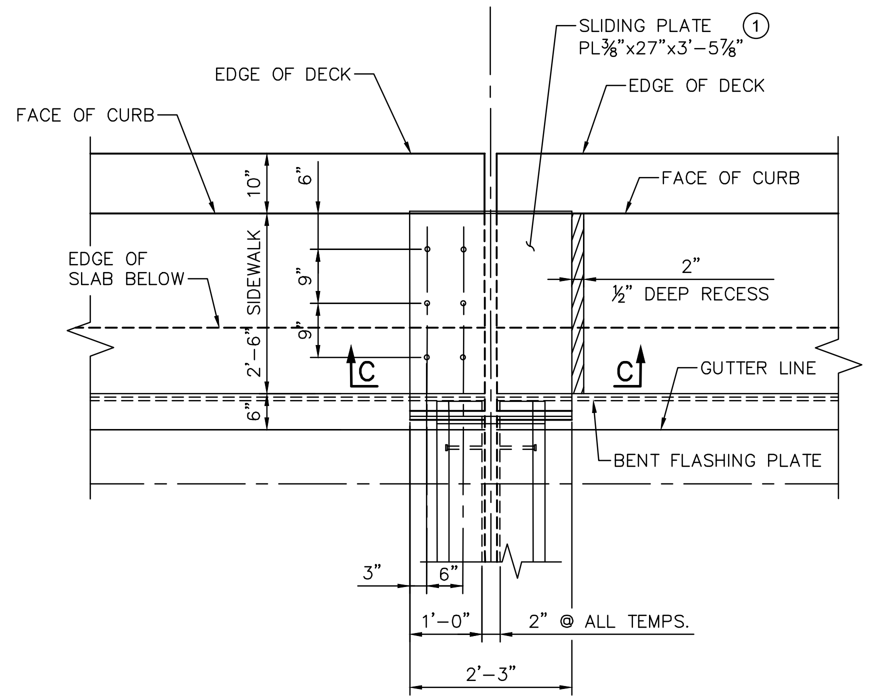
SHEET NO. 35 OF 53 SHEETS

BRIDGE NO. 27C12

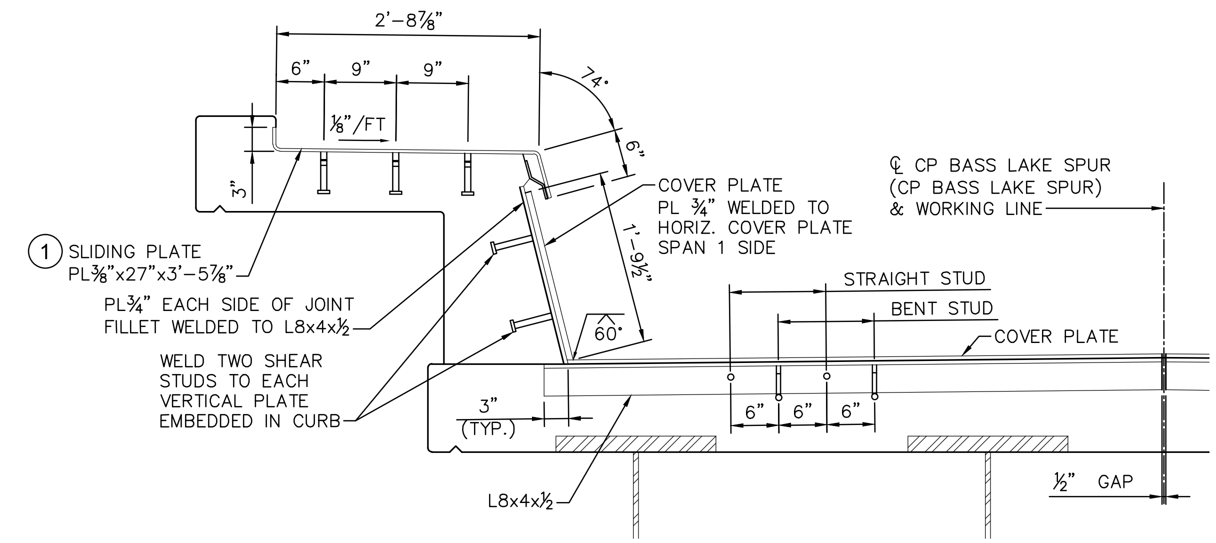


PLAN – EXPANSION JOINT DEVICE AT PIER

WALKPLATE NOT SHOWN FOR CLARITY



PLAN – SLIDING PLATE AT PIER

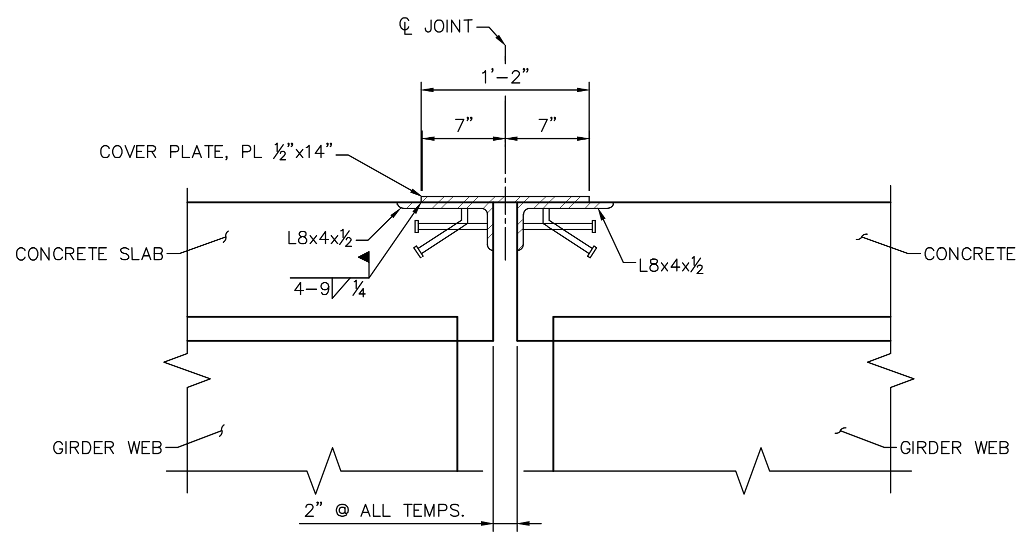


SECTION B–B

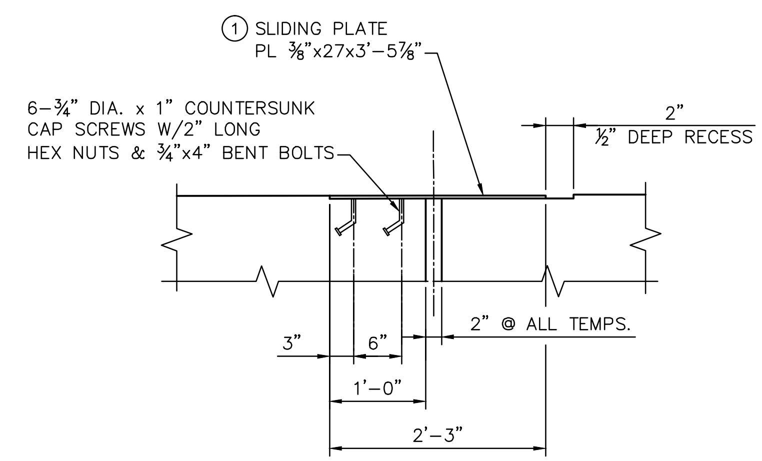
NOTES:

(1) RAISED PATTERN PLATE

STEEL NOTE:
ALL STRUCTURAL SHAPES AND PLATES SHOWN ON JOINT DETAIL SHEETS FOR EXP. AND FIXED JOINTS SHALL BE GALVANIZED PER SPEC. 3394. FASTENERS SHALL BE GALVANIZED PER SPEC. 3392



SECTION A–A



SECTION C–C

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

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METROPOLITAN COUNCIL

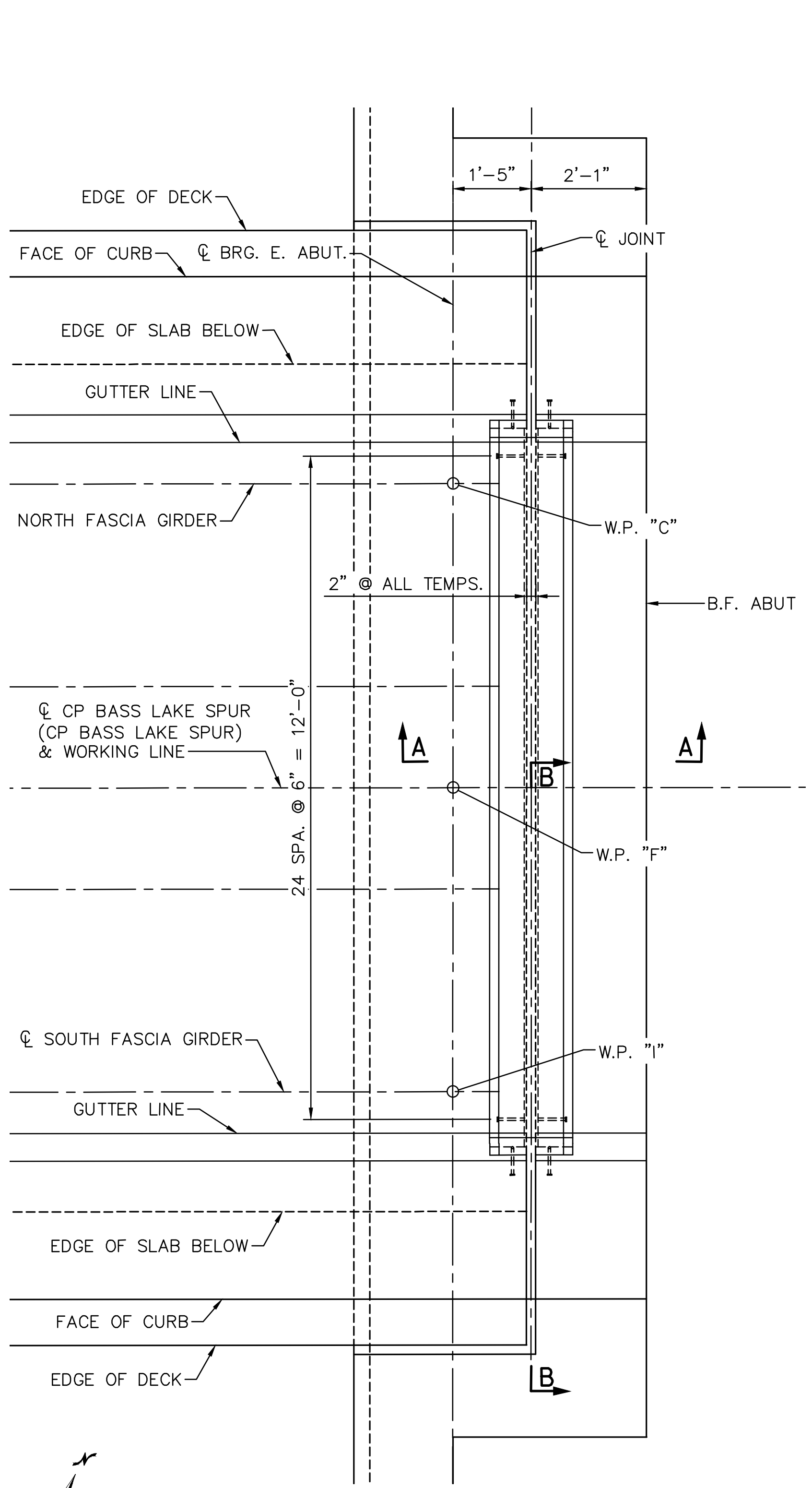
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
JOINT DETAILS 1

DISCIPLINE: STRUCTURES

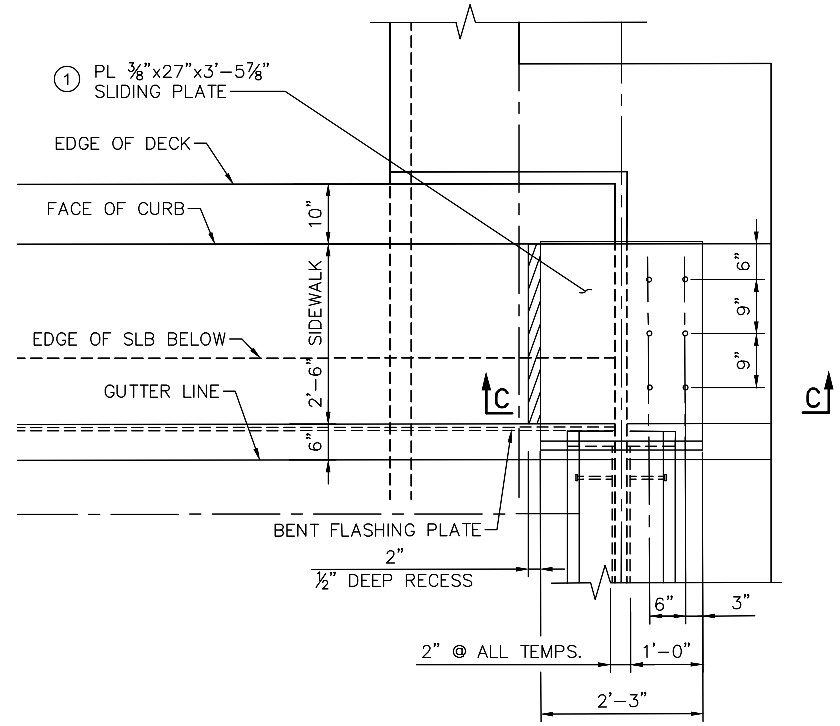
SHEET NAME: CBR27C12-BRG-EXP-001

SHEET 36 OF 53

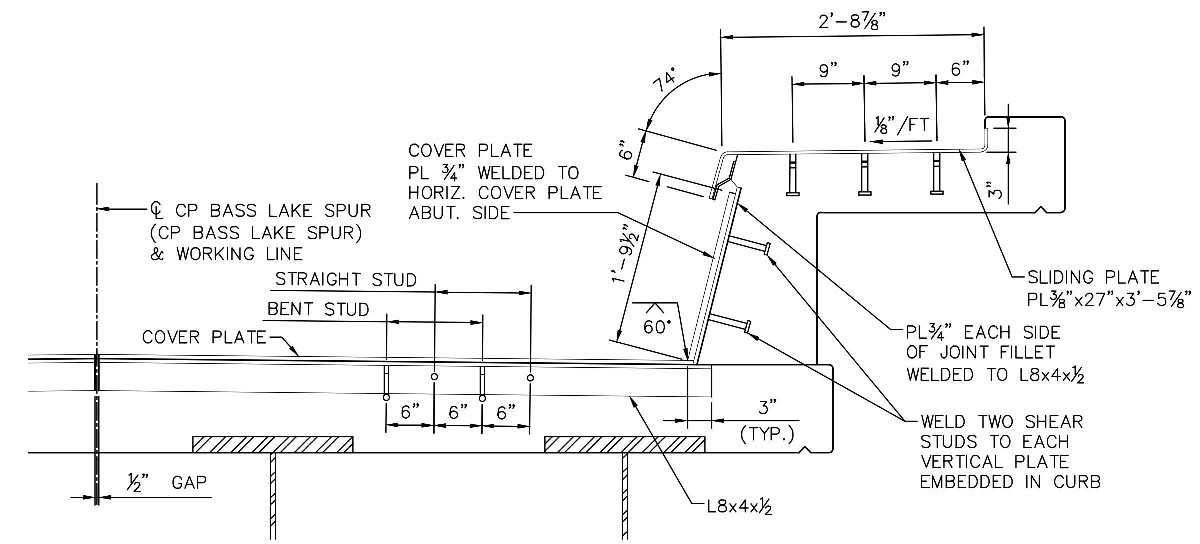


PLAN – FIXED JOINT DEVICE AT ABUTMENT

(EAST ABUT. SHOWN, WEST ABUT. SIM.)
WALKPLATE NOT SHOWN FOR CLARITY



PLAN – SLIDING PLATE AT ABUTMENT

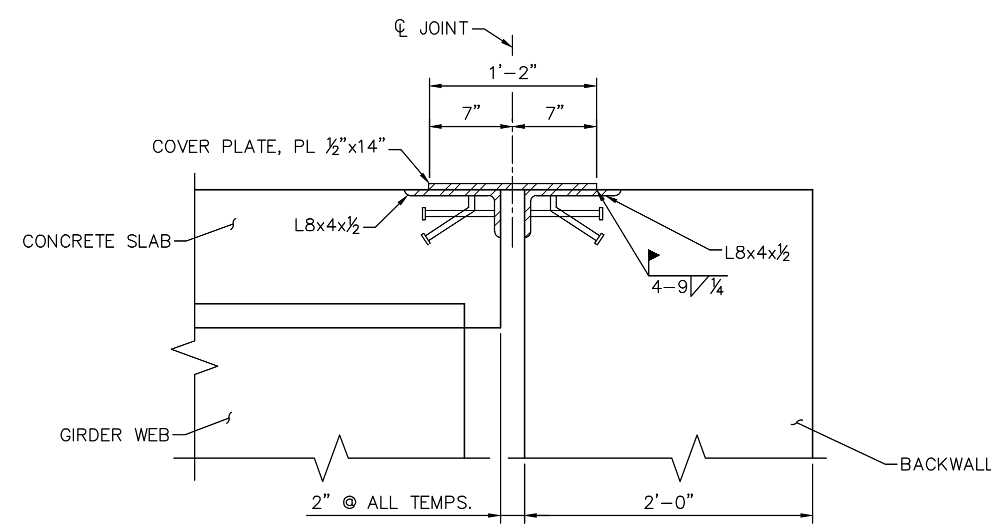


SECTION B–B

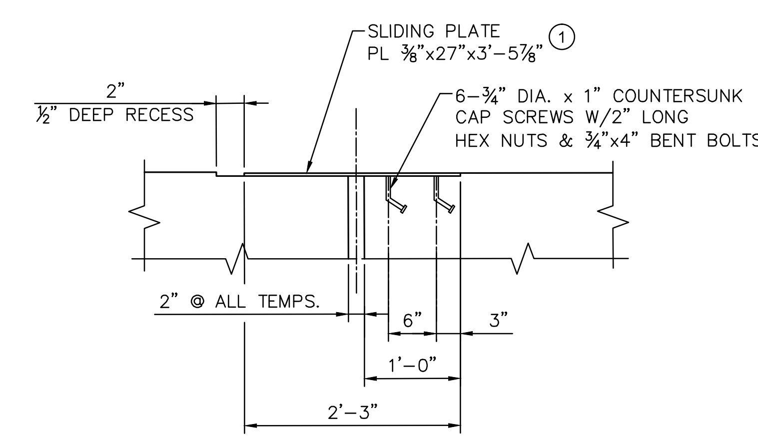
NOTES:

1 RAISED PATTERN PLATE

STEEL NOTE:
ALL STRUCTURAL SHAPES AND PLATES SHOWN ON JOINT DETAIL SHEETS FOR EXP. AND FIXED JOINTS SHALL BE GALVANIZED PER SPEC. 3394. FASTENERS SHALL BE GALVANIZED PER SPEC. 3392



SECTION A–A



SECTION C–C

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

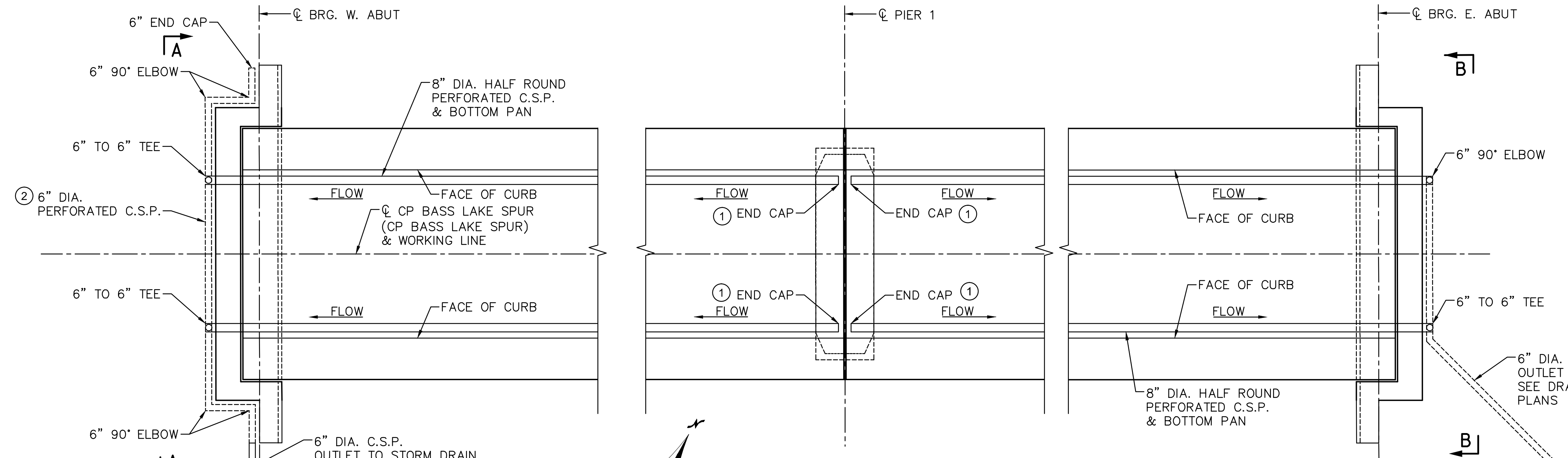
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
JOINT DETAILS 2

DISCIPLINE: STRUCTURES

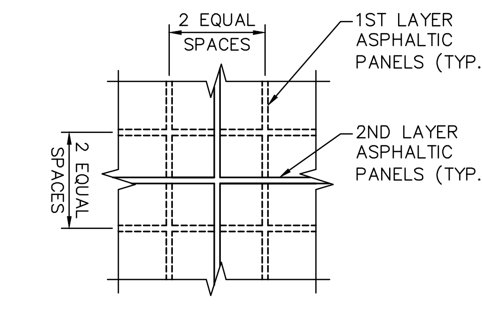
SHEET NAME: CBR27C12-BRG-EXP-002

SHEET 37 OF 53

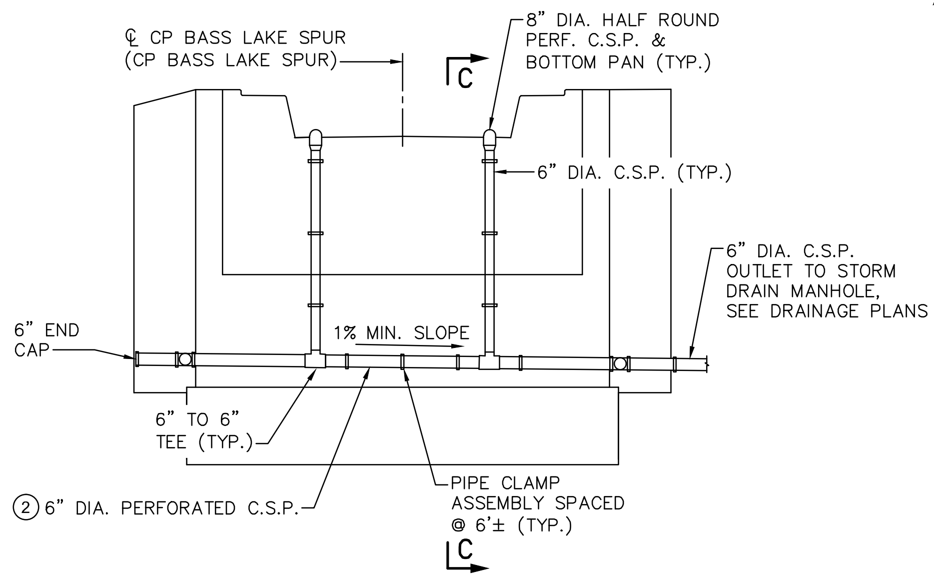
Dec. 12 2015 07:48 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-EXP-002.dwg By: kevin.kimm



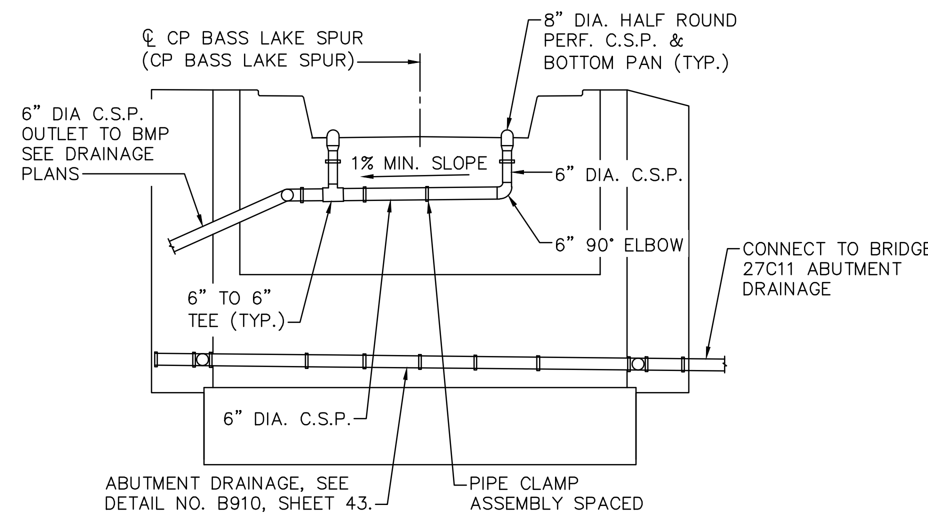
BRIDGE DECK DRAINAGE PLAN



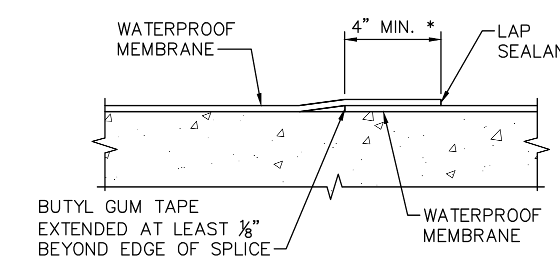
TYPICAL ASPHALT PANEL PLACEMENT



SECTION A–A



SECTION B–B



BUTYL RUBBER MEMBRANE WATERPROOFING SPLICE DETAIL

* ALL CONTACT SURFACES TO BE THOROUGHLY CLEANED & CEMENTED

NOTES:

ALL PIPE SHALL COMPLY WITH SPEC. 3326.

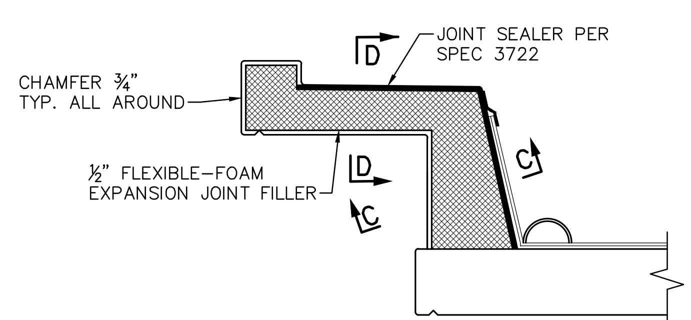
ALL STEEL COMPONENTS OF THE DRAINAGE SYSTEM INCLUDING PIPES, BOTTOM PANS, COVERS, CLAMPS, END PLATES, AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH SPEC. 3392 AND SPEC. 3394.

SEE SHEET 39 FOR SECTION C–C.

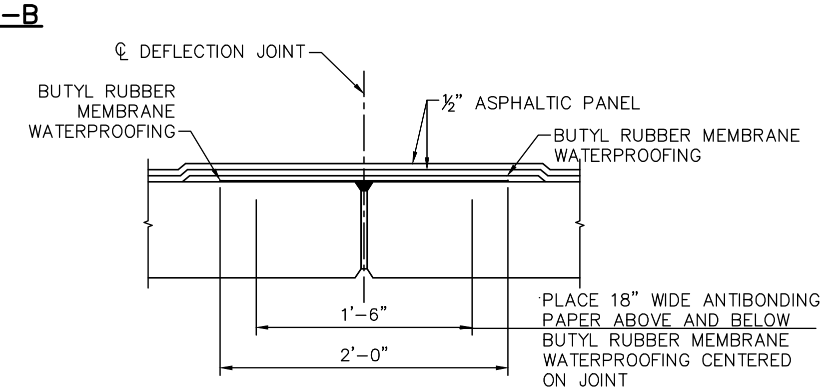
EAST ABUT DRAINAGE SHALL BE PER DETAILS INCLUDED ON THIS SHEET AND DETAIL B910.

(1) TERMINATE DRAIN AT PIER 1 END OF BRIDGE DECK.

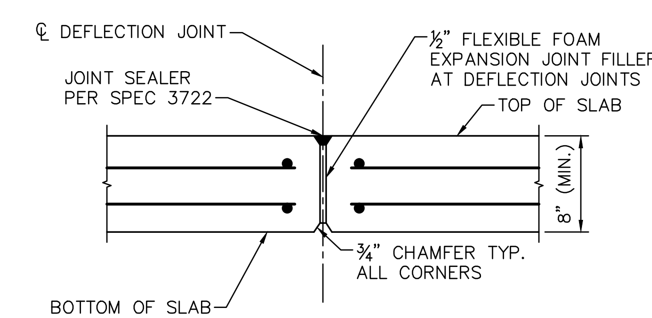
(2) WRAP WITH GEOTEXTILE PER SPEC. 3733, TYPE 1. ATTACH GEOTEXTILE TO PIPE PER SPEC. 2502.



CURB SECTION AT DEFLECTION JOINT



SECTION C–C



SECTION D–D

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS | CHECKED BY: KJK
DRAWN BY: MSK | CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

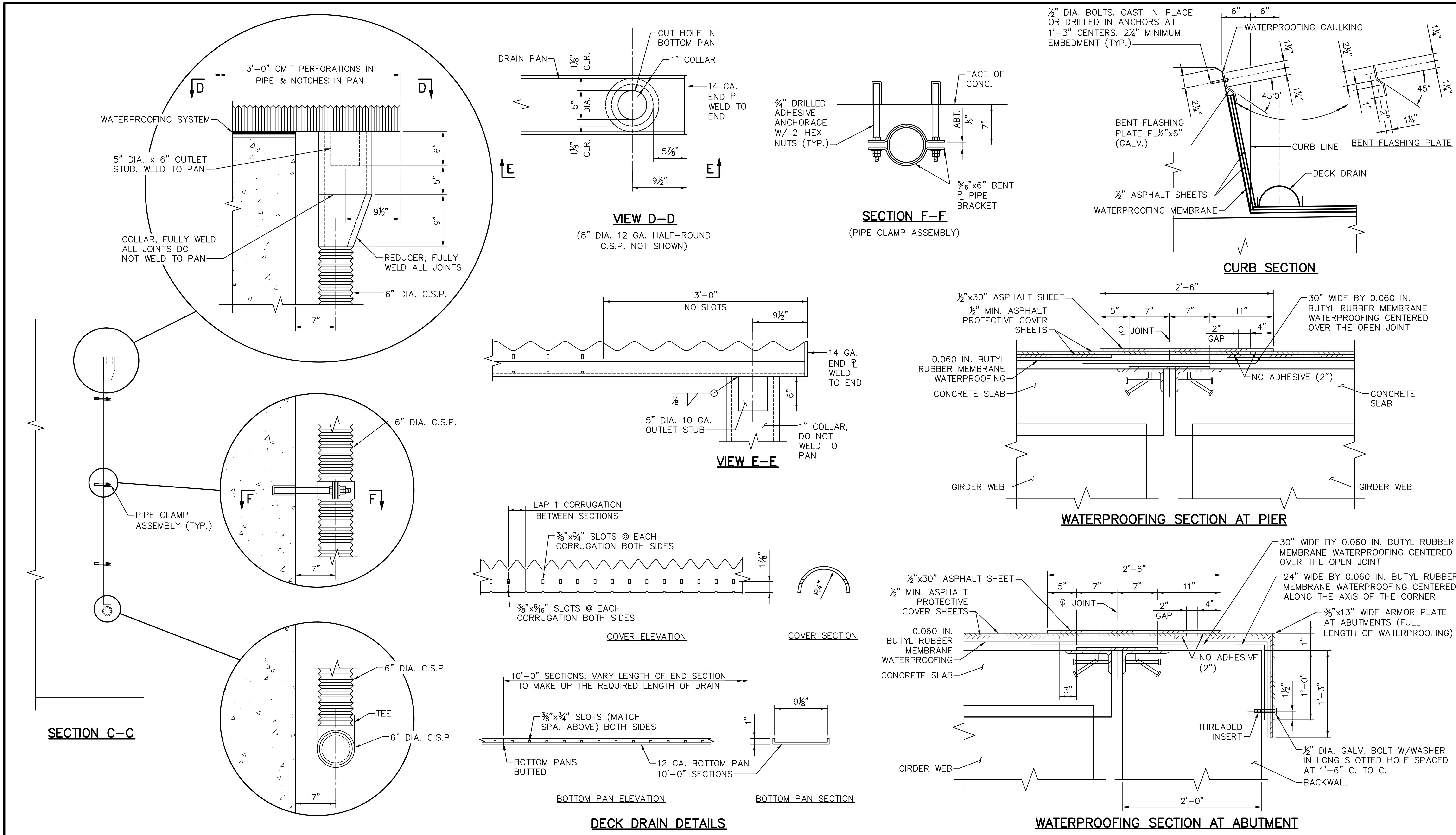
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
DECK DRAINAGE AND WATERPROOFING 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-DTL-004-1

SHEET 38 OF 53



Dec. 12 2015 07:50 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-DTL-004-2.dwg By: kevin.kimm

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

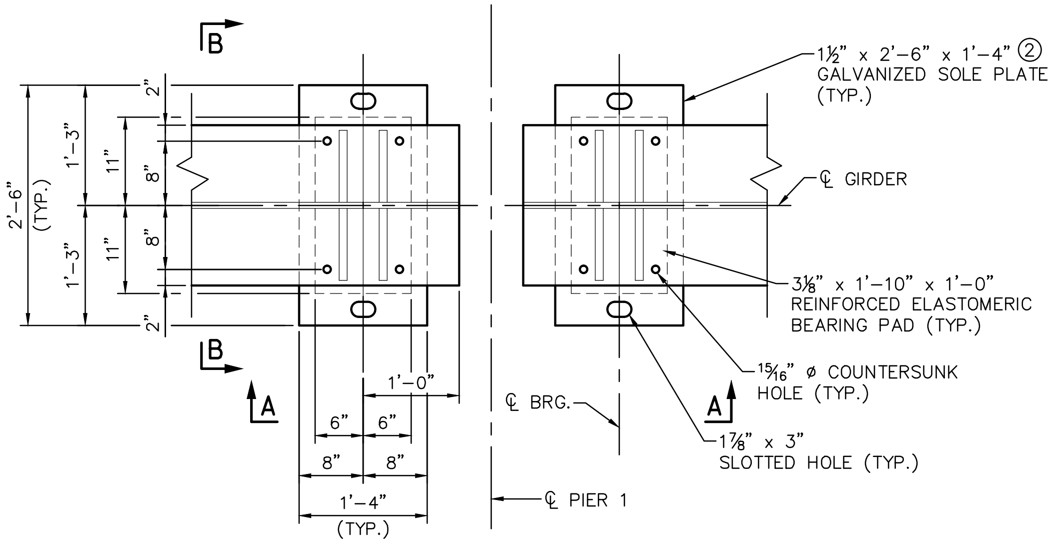
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

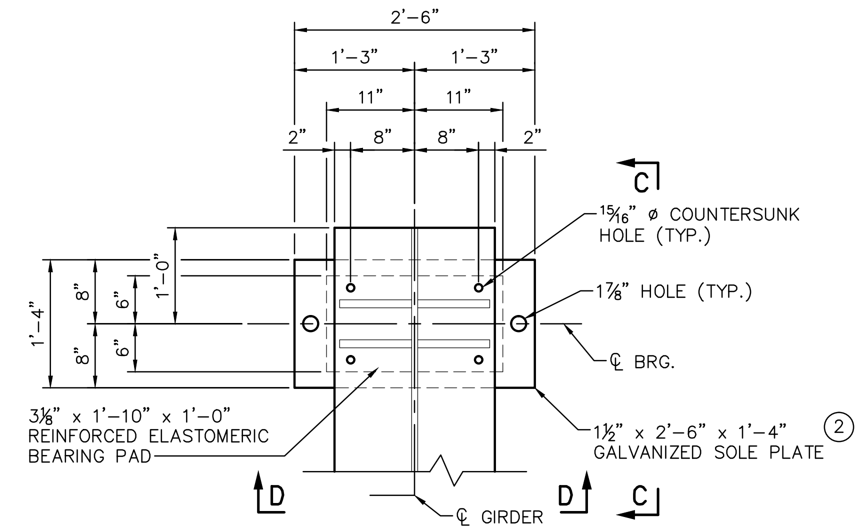
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
DECK DRAINAGE AND WATERPROOFING 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-DTL-004-2

SHEET 39 OF 53



EXPANSION BEARING LAYOUT



FIXED BEARING LAYOUT

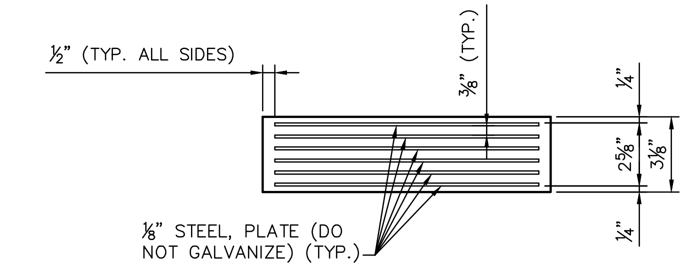
NOTES:

1. ⁵⁄₁₆" ø x ⅜" KNOCK OFF WELD STUDS INSTALLED ON SOLE PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE OF STUD TO EDGE OF PAD DIMENSION IS ½" MAXIMUM. MAXIMUM STUD SPACING IS 4" AND 2" TO THE PAD CORNER.

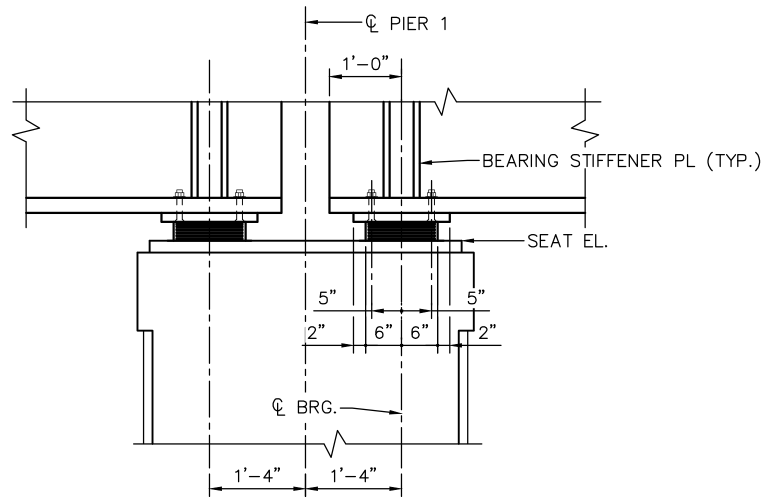
2. GALVANIZED SOLE PLATE SHALL BE STRUCTURAL STEEL (3306) AND GALVANIZED AFTER FABRICATION PER SPEC. 3394, EXCEPT AS NOTED.

ANCHOR RODS SHALL COMPLY WITH SPEC. 3306. GALVANIZE PER SPEC. 3392.

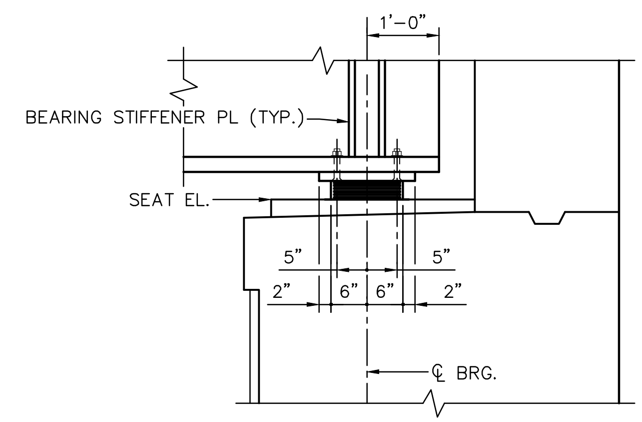
ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH MNDOT SPEC. 3741



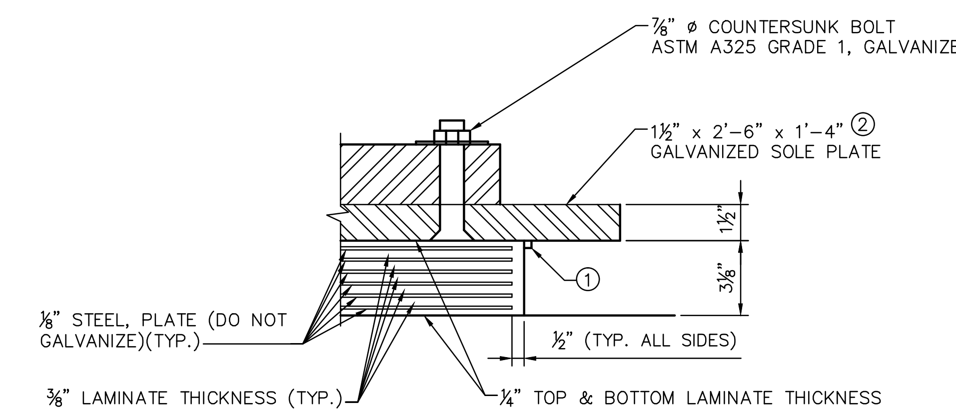
BEARING PAD DETAIL



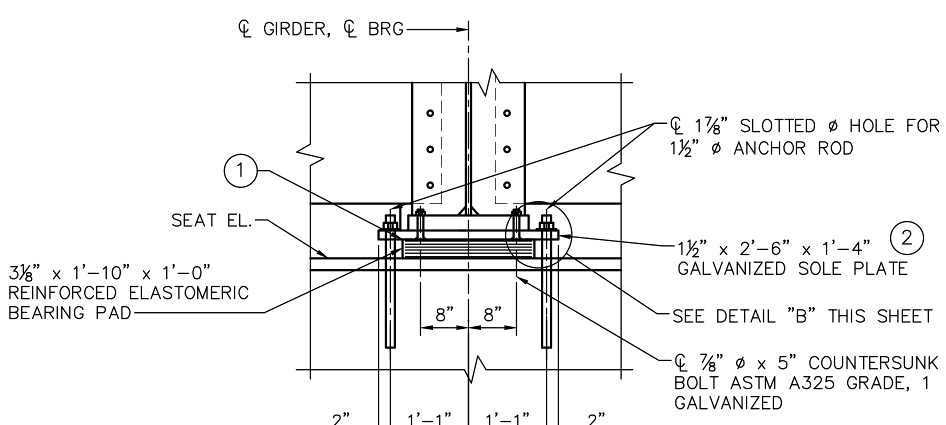
VIEW A–A



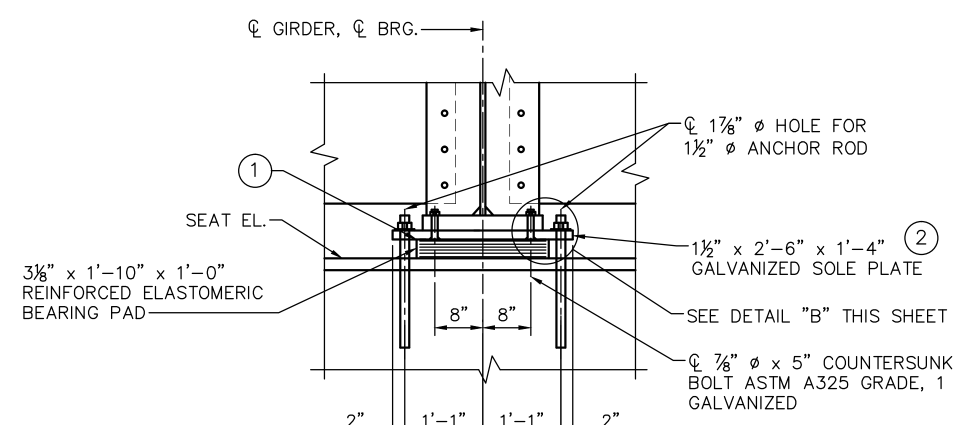
VIEW C–C



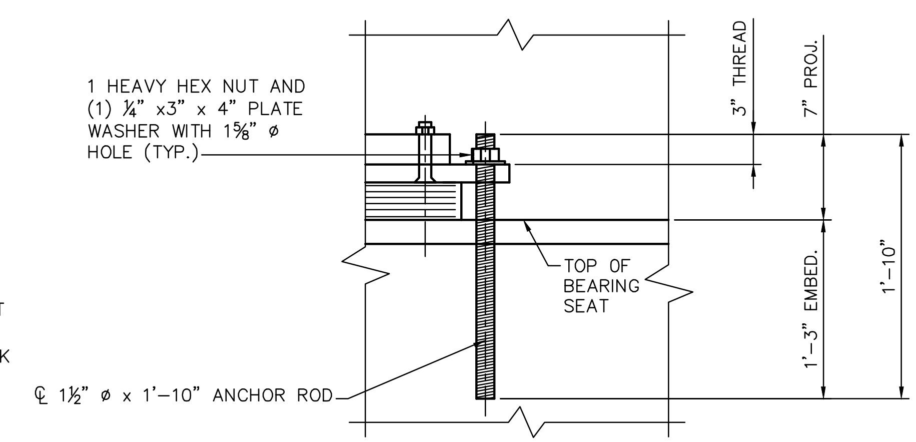
DETAIL "B"



SECTION B–B



SECTION D–D



ANCHOR ROD DETAIL

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS | CHECKED BY: KJK
DRAWN BY: MSK | CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

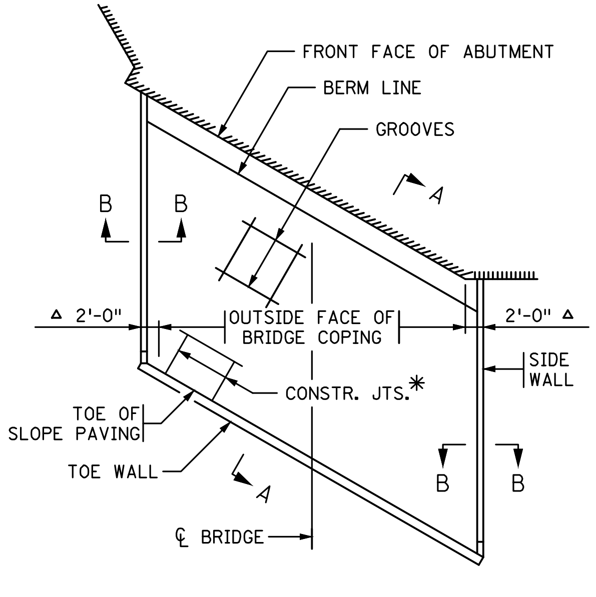
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
BEARING ASSEMBLY DETAILS

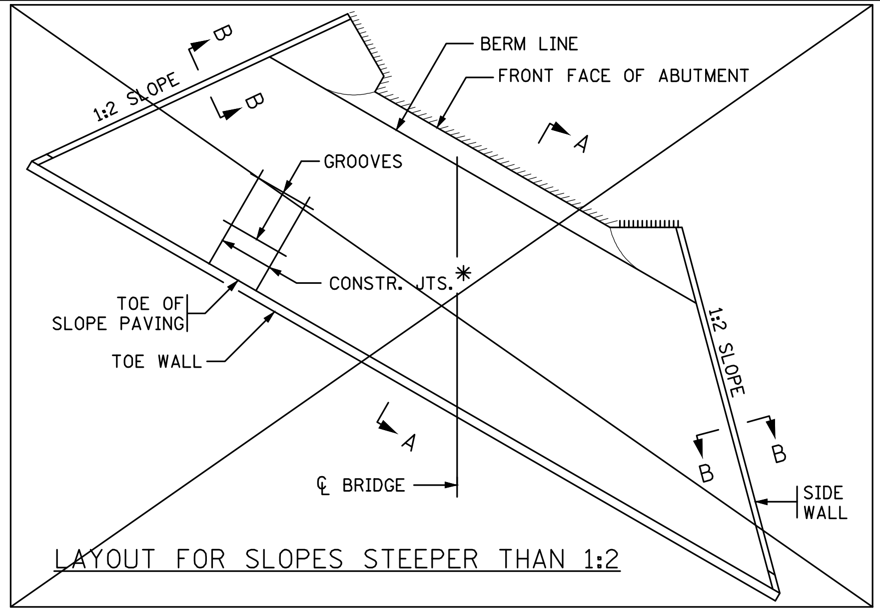
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-EXP-003

SHEET 40 OF 53



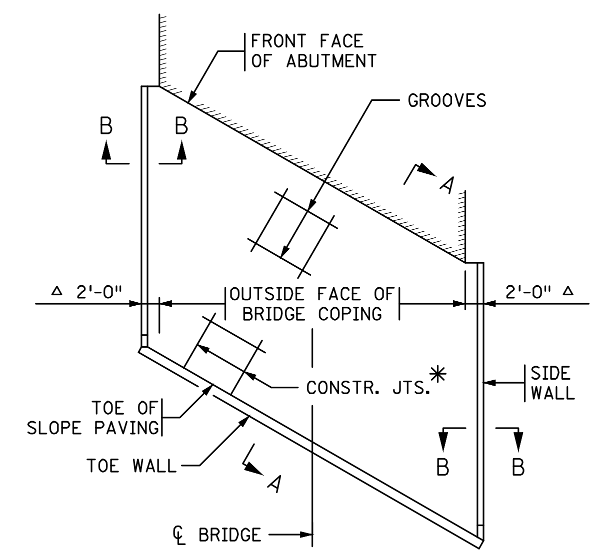
LAYOUT FOR SLOPES
1:2 OR FLATTER



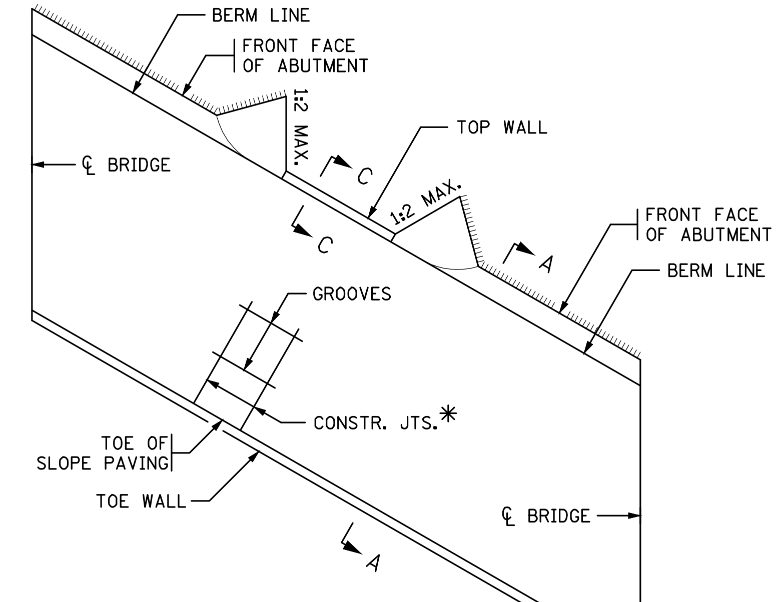
LAYOUT FOR SLOPES STEEPER THAN 1:2

△ 2'-0" FOR TANGENT BRIDGE SUPERSTRUCTURES. VARIES 2'-0" MINIMUM FOR CURVED BRIDGE SUPERSTRUCTURE.

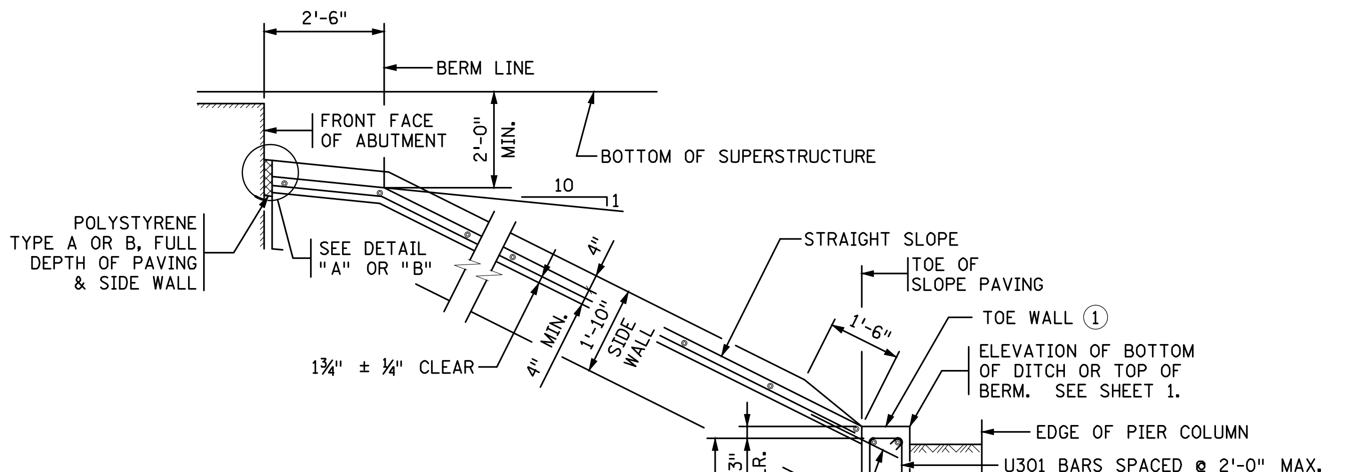
✳ VERTICAL CONSTRUCTION JOINTS MAY BE CONSTRUCTED PARALLEL TO ℄ OF BRIDGE FOR SKEWS TO 10° ONLY.



LAYOUT FOR SLOPES
AT ABUTMENTS WITH
8' OR GREATER EXPOSURE

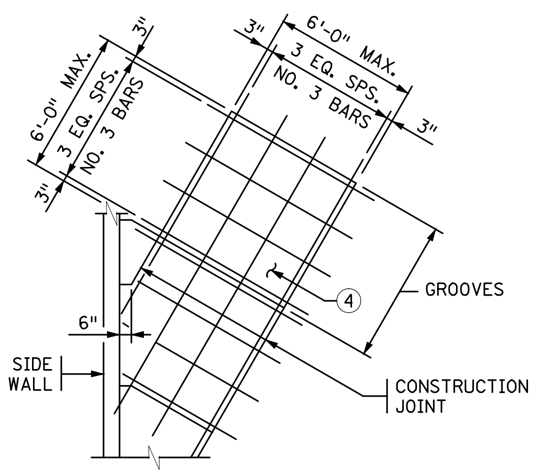


LAYOUT FOR SLOPES
BETWEEN BRIDGES

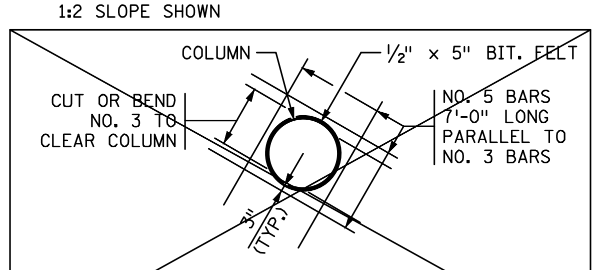


SECTION A-A

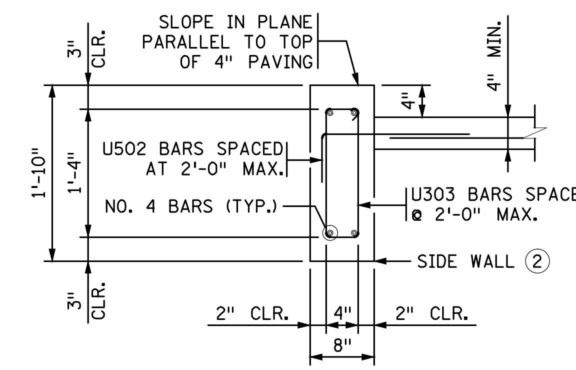
1:2 SLOPE SHOWN



PAVING DETAIL

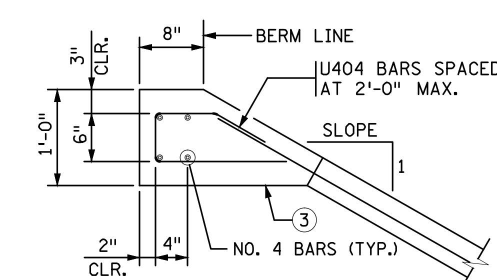


DETAIL WHERE PIER COLUMN
EXTENDS THROUGH SLOPE PAVING



SECTION B-B

NORMAL TO SLOPE



SECTION C-C

CONCRETE & REINFORCEMENT UNIT QUANTITIES

① 0.111 CU. YD. OF CONCRETE/LIN. FT.
8.37 LBS. OF REINFORCEMENT/LIN FT.

② 0.046 CU. YD. OF CONCRETE/LIN. FT.
4.46 LBS. OF REINFORCEMENT/LIN FT.

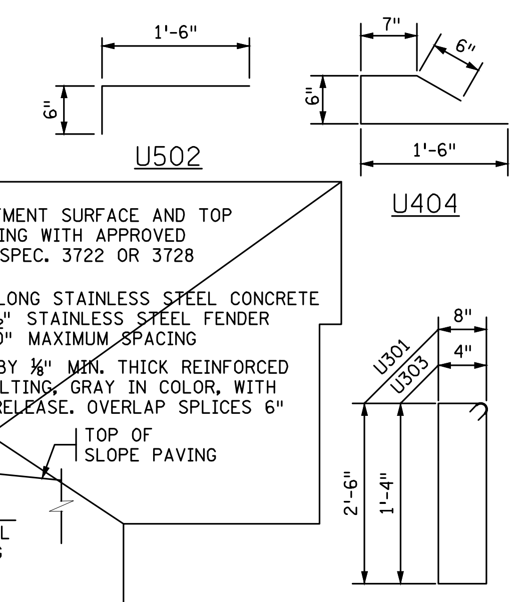
③ 0.058 CU. YD. OF CONCRETE/LIN. FT.
3.70 LBS. OF REINFORCEMENT/LIN FT.
BASED ON A SLOPE OF 1:2.

④ 0.111 CU. YD. OF CONCRETE/SQ. YD.
4.50 LBS. OF REINFORCEMENT/SQ. YD.

GENERAL NOTE

SLOPES ARE EXPRESSED AS A RATIO OF VERTICAL DISTANCE: HORIZONTAL DISTANCE.

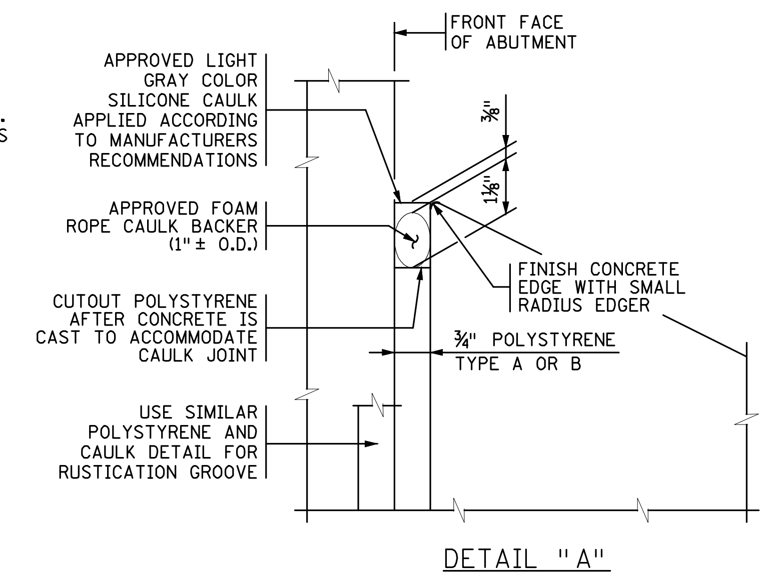
SLOPE PAVING PER SPEC. 2514.



U502

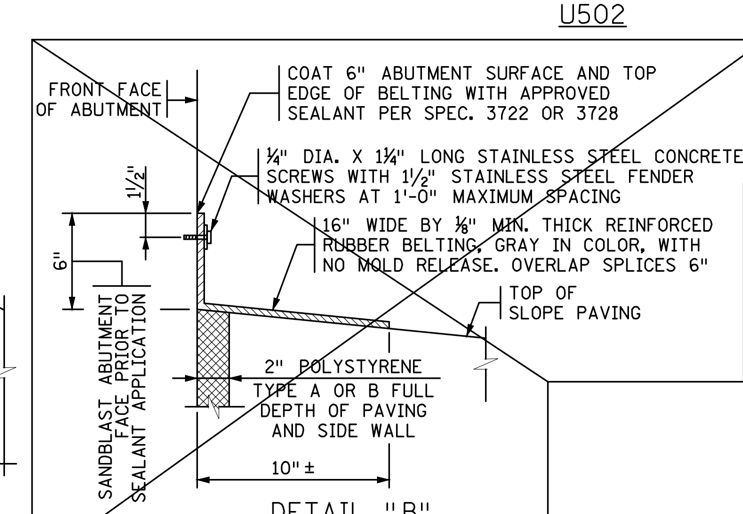
U404

U301 & U303



DETAIL "A"

ABUTMENTS WITH RUSTICATION



DETAIL "B"

ABUTMENTS WITHOUT RUSTICATION

REVISION: 09-11-2014

APPROVED: SEPTEMBER 26, 2003

STATE BRIDGE ENGINEER

CERTIFIED BY

LICENSED PROFESSIONAL ENGINEER   DATE

NAME: LIC. NO.

TITLE: CONCRETE SLOPE PAVING UNDER BRIDGES

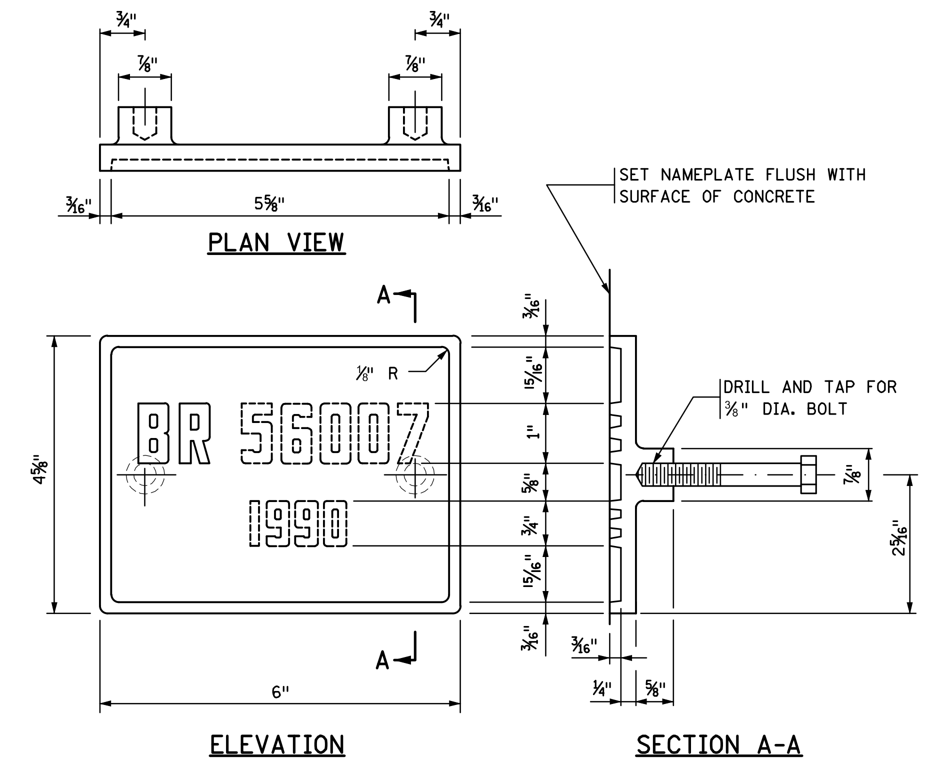
DES:	BMS	DR:	MSK
CHK:	KJK	CHK:	KJK

APPROVED:

FIG. 5-397.301

BRIDGE NO. 27C12

SHEET NO. 41 OF 53 SHEETS



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

BRIDGE 27C12

YEAR (1)

1234567890 — 3/16" — 1"

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.

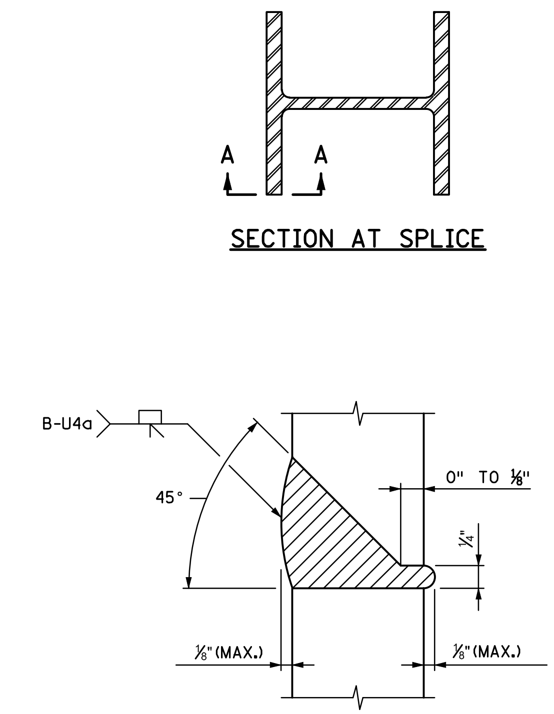
TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.

FURNISH 2 STEEL BOLTS 3/8" DIA. × 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.

(1) YEAR OF CONSTRUCTION

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



NOTES:

CELLULOSIC TYPE ELECTRODES E-6010 OR E-6011 SHALL BE USED FOR 100% BUTT WELDED SPLICES.

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.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION: 11-06-2013	DETAIL NO.
STATE BRIDGE ENGINEER	PILE SPLICE (STEEL H BEARING PILES 10" TO 14")		B202

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

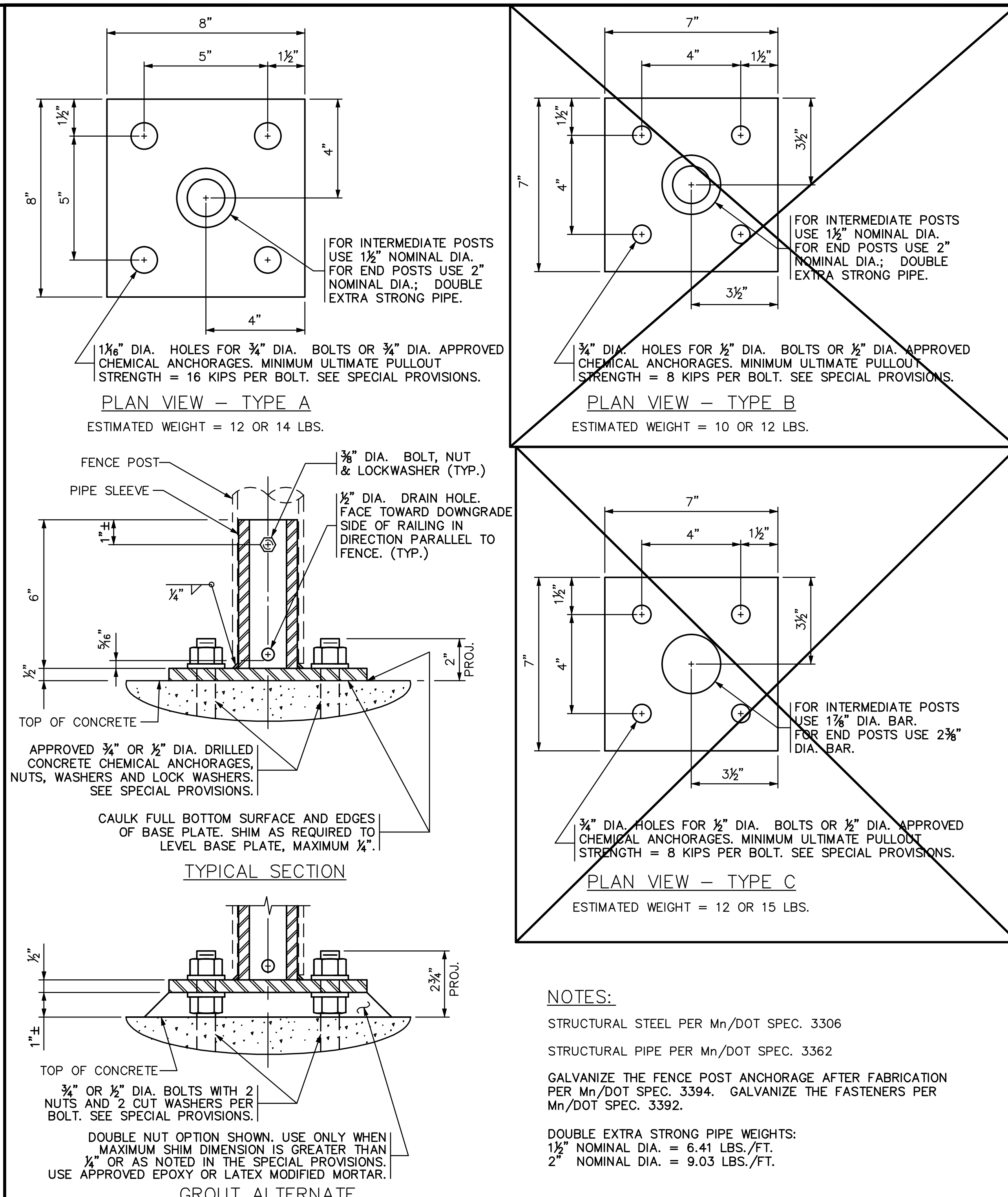
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
BRIDGE DETAILS 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-DTL-005



NOTES:

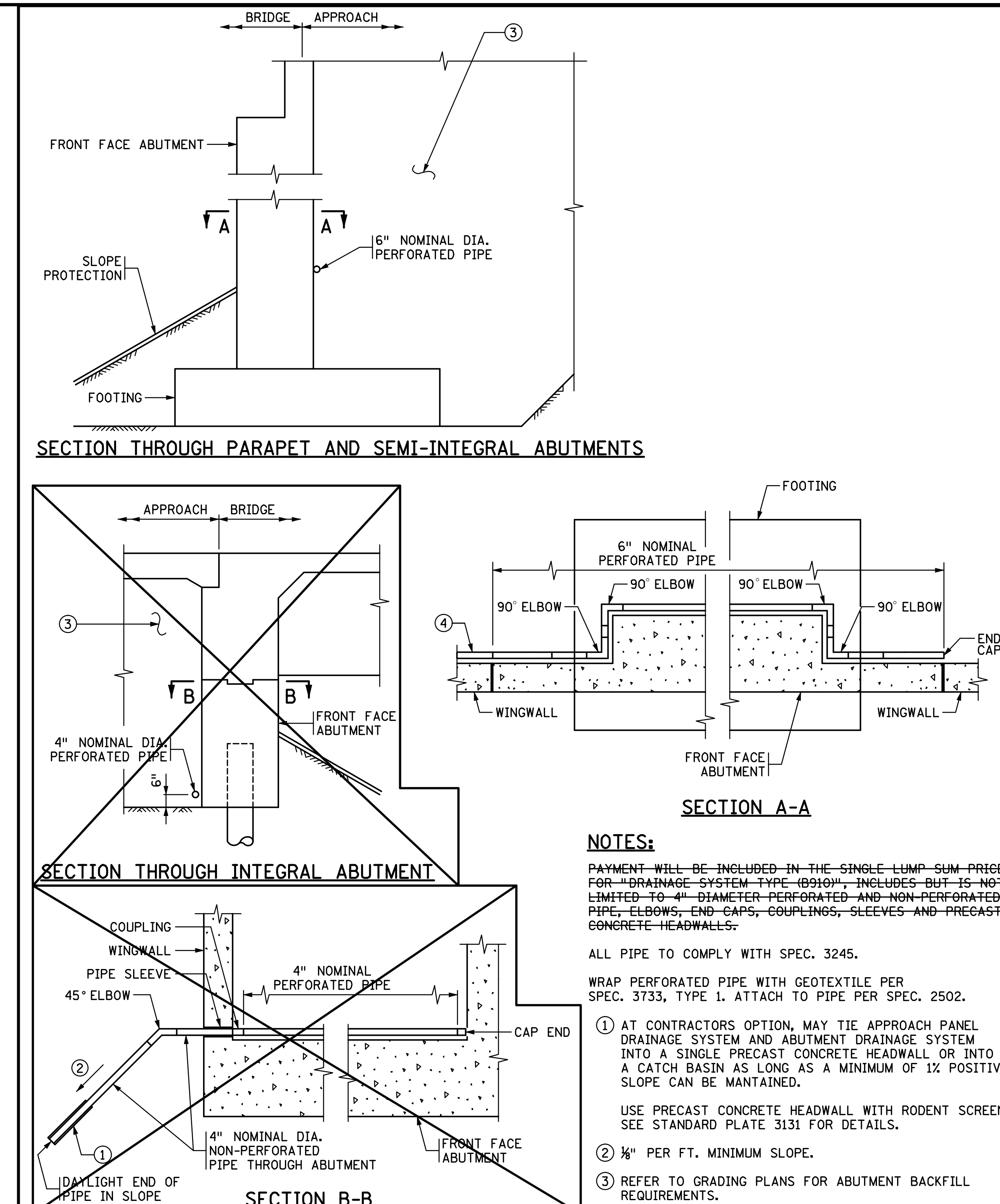
STRUCTURAL STEEL PER Mn/DOT SPEC. 3306

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:
1½" NOMINAL DIA. = 6.41 LBS./FT.
2" NOMINAL DIA. = 9.03 LBS./FT.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
STATE BRIDGE ENGINEER	FENCE POST ANCHORAGE		B905



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 MANTAINED.

   USE PRECAST CONCRETE HEADWALL WITH RODENT SCREEN. SEE STANDARD PLATE 3131 FOR DETAILS.

2. ⅛" PER FT. MINIMUM SLOPE.

3. REFER TO GRADING PLANS FOR ABUTMENT BACKFILL REQUIREMENTS.

4. CONNECT TO BRIDGE 27C11 ABUTMENT DRAINAGE.

APPROVED: JANUARY 13, 2015	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
STATE BRIDGE ENGINEER	DRAINAGE SYSTEM		B910 (MOD.)

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

90% SUBMISSION - 01/22/16

AECOM Kimley»Horn

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
BRIDGE DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-DTL-006

SHEET 43 OF 53

Dec. 12 2015 07:52 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-DTL-006.dwg By: kevin.kimm

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).

AS-BUILT DETAILS

(AS NEEDED)

REVISION: 10-28-2008
APPROVED: SEPTEMBER 26, 2003
Daniel L. Dorgan
STATE BRIDGE ENGINEER

FIG. 5-397.900

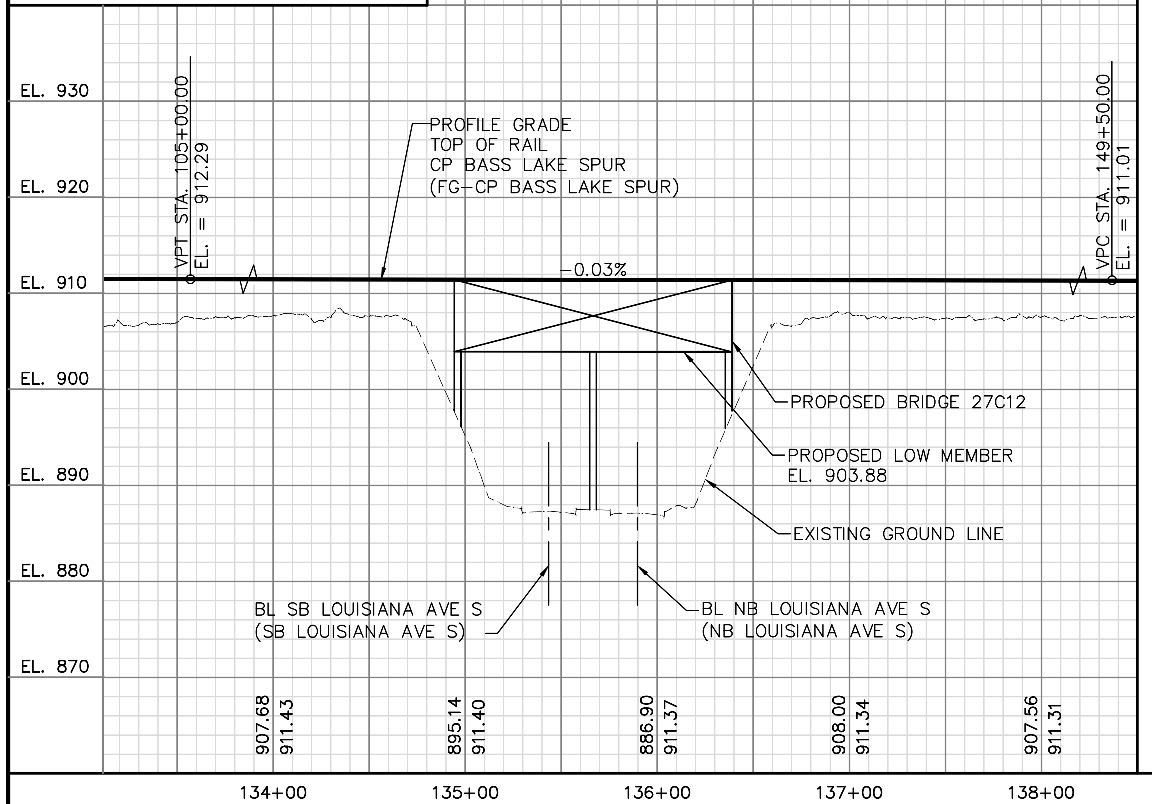
TITLE: AS-BUILT BRIDGE DATA	DES: / CHK:	DR: / CHK:	APPROVED:
SHEET NO. 44 OF 53 SHEETS			BRIDGE NO. 27C12

CONTRACTED PROFILE

SCALE HOR: 0 50'

SCALE VER: 0 10'

PROFILE GRADE CP BASS LAKE SPUR (CP BASS LAKE SPUR)

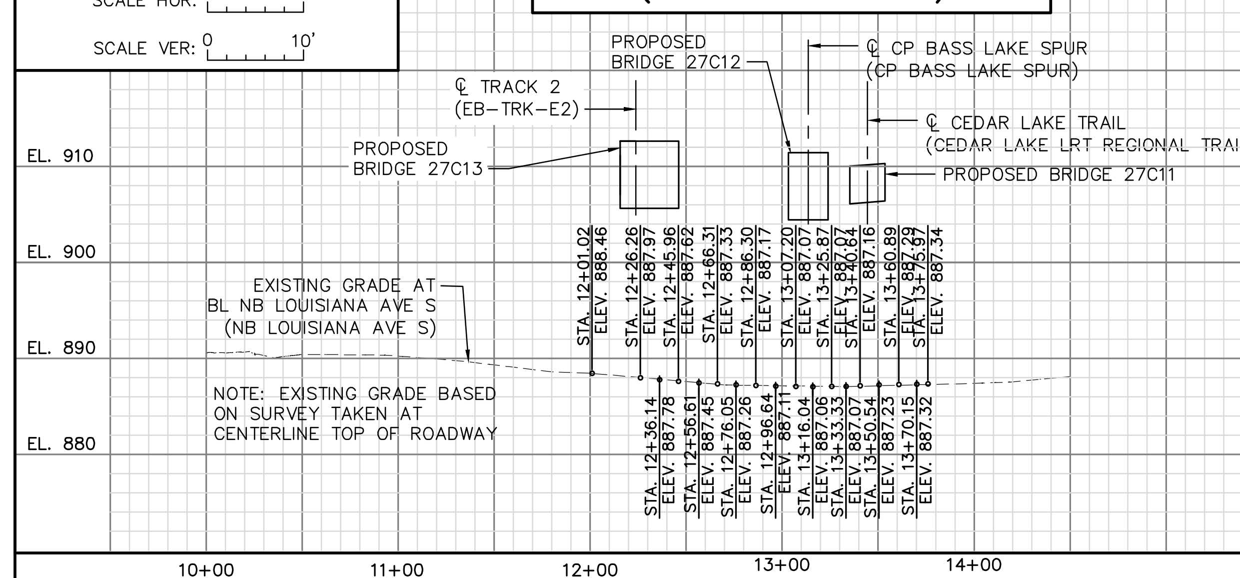


CONTRACTED PROFILE

SCALE HOR: 0 50'

SCALE VER: 0 10'

PROFILE GRADE NB LOUISIANA AVE S (NB LOUISIANA AVE S)



CONTRACTED PROFILE

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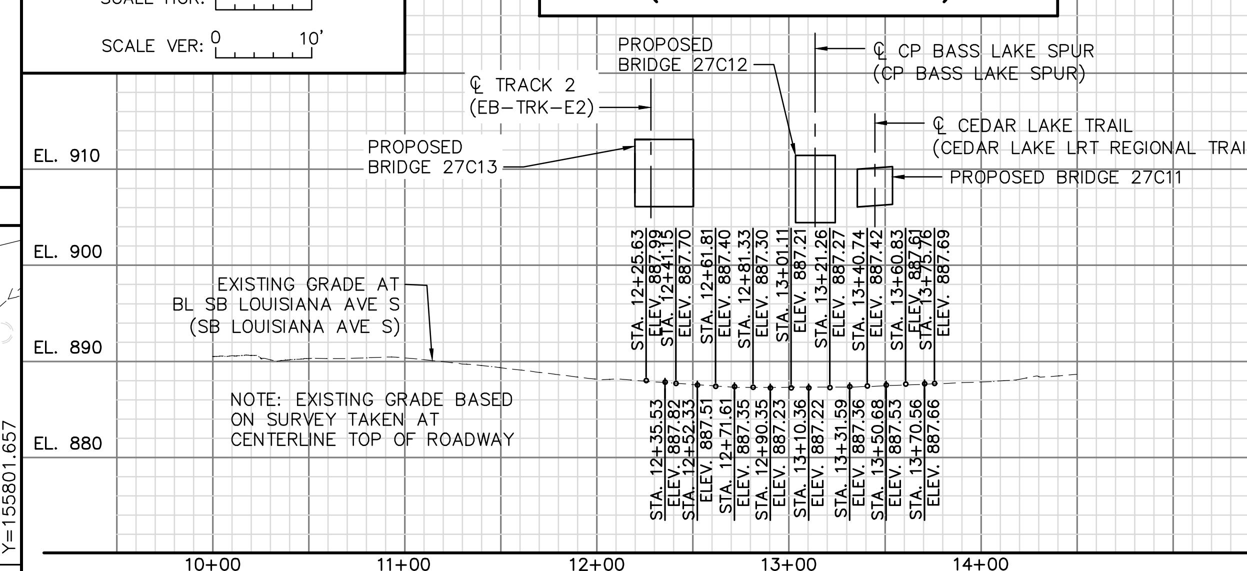
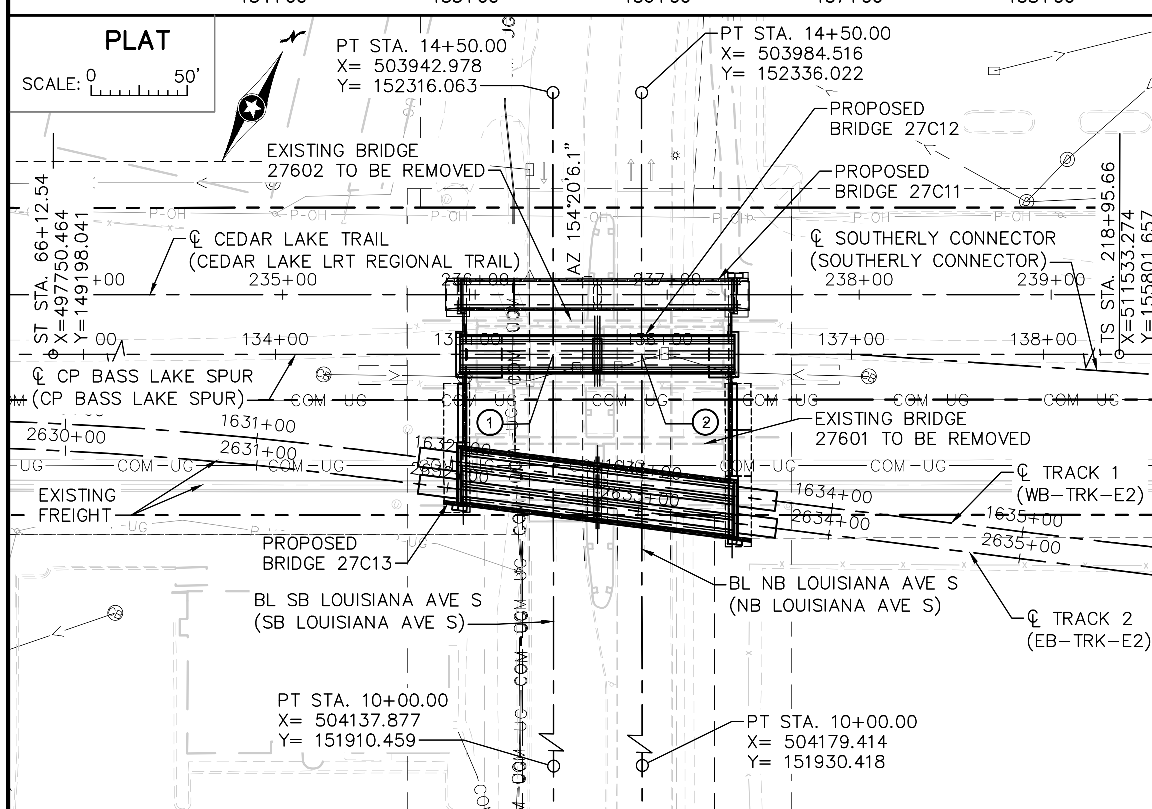
SCALE VER: 0 10'

PROFILE GRADE SB LOUISIANA AVE S (SB LOUISIANA AVE S)



PLAT

SCALE: 0 50'



NOTES:

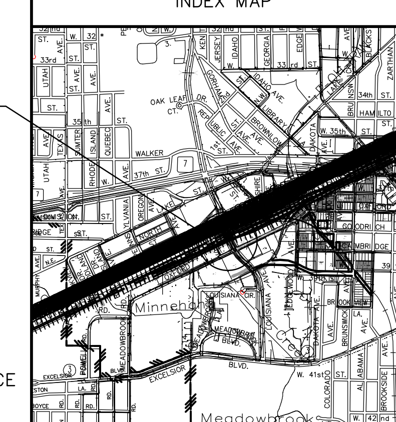
1. CONTROL POINT
BL SB LOUISIANA AVE S (SB LOUISIANA AVE S) STA. 13+13.76
℄ CP BASS LAKE SPUR (CP BASS LAKE SPUR) STA. 135+44.56
X = 504001.983
Y = 152193.267
ANGLE = 89°56'6.1"

2. CONTROL POINT
BL NB LOUISIANA AVE S (NB LOUISIANA AVE S) STA. 13+13.71
℄ CP BASS LAKE SPUR (CP BASS LAKE SPUR) STA. 135+90.64
X = 504043.543
Y = 152213.180
ANGLE = 89°56'6.1"

IN PLACE BRIDGE 27602 A TWO SPAN STEEL BEAM STRUCTURE BUILT IN 1979 SUPPORTED BY STEEL H-PILES TO BE REMOVED.

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."

INDEX MAP



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 (PARTICULARY 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 ENGINEER'S RECOMMENDATION

DATE:

STREAM OR DITCH DESIGNATION

DRAINAGE AREA

MAX FLOOD ON RECORD

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

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

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

FLOWLINE ELEVATION: FT. SKEW ANGLE:

ESTIMATED PRLIMINARY TOTAL SCOUR AT PIER EL.
(500 OR OT YR. FREQ.)

SCOUR CONFIRMATION RECOMMENDATION

DATE:

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

BRIDGE SURVEY SHEETS MADE FROM 2014 MFRA SURVEYS

1ST BENCH MARK
ELEVATION: 887.47 (NAVD88)
NORTHING: 152190.79
EASTING: 504031.01
DESCRIPTION: LARGE SPIKE

2ND BENCH MARK
ELEVATION: 893.52 (NAVD88)
NORTHING: 152551.75
EASTING: 503890.55
DESCRIPTION: NAIL IN CONC. ISLAND

BRIDGE SURVEY 1

PROPOSED BRIDGE LOCATED 0.3 MILES SOUTH OF JCT T.H. 7 AND LOUISIANA AVE S IN ST LOUIS PARK

CP BASS LAKE SPUR OVER LOUISIANA AVE S

SEC 20 T 117N R 21W

CITY OF ST LOUIS PARK HENNEPIN COUNTY

BRIDGE 27C12

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

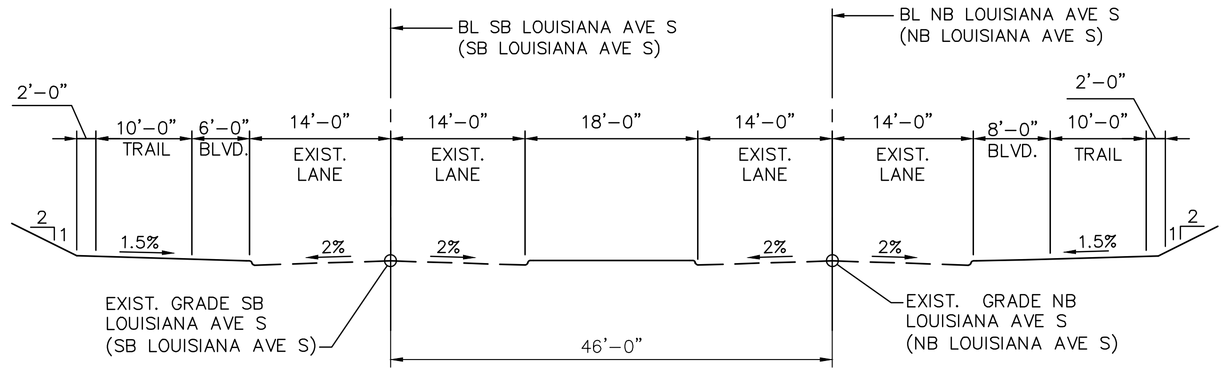
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

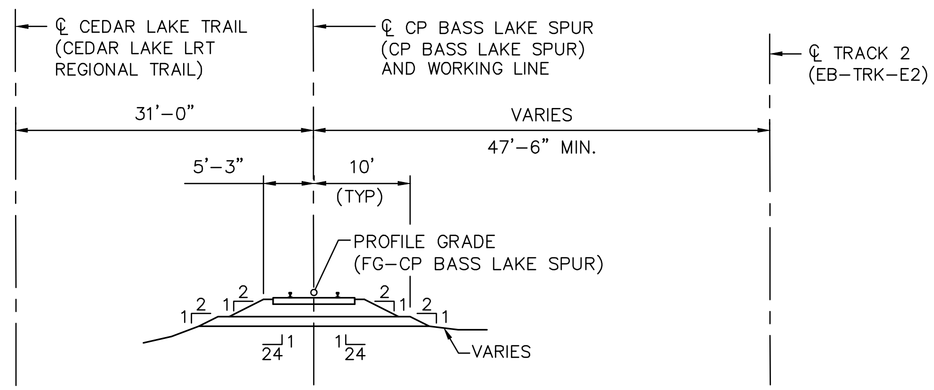
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
BRIDGE SURVEY 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-SUR-001



TYPICAL ROADWAY SECTION LOUISIANA AVE S



TYPICAL SECTION CP BASS LAKE SPUR APPROACH

Dec. 12 2015 07:58 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-SUR-001.dwg By: kevin.kimm

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

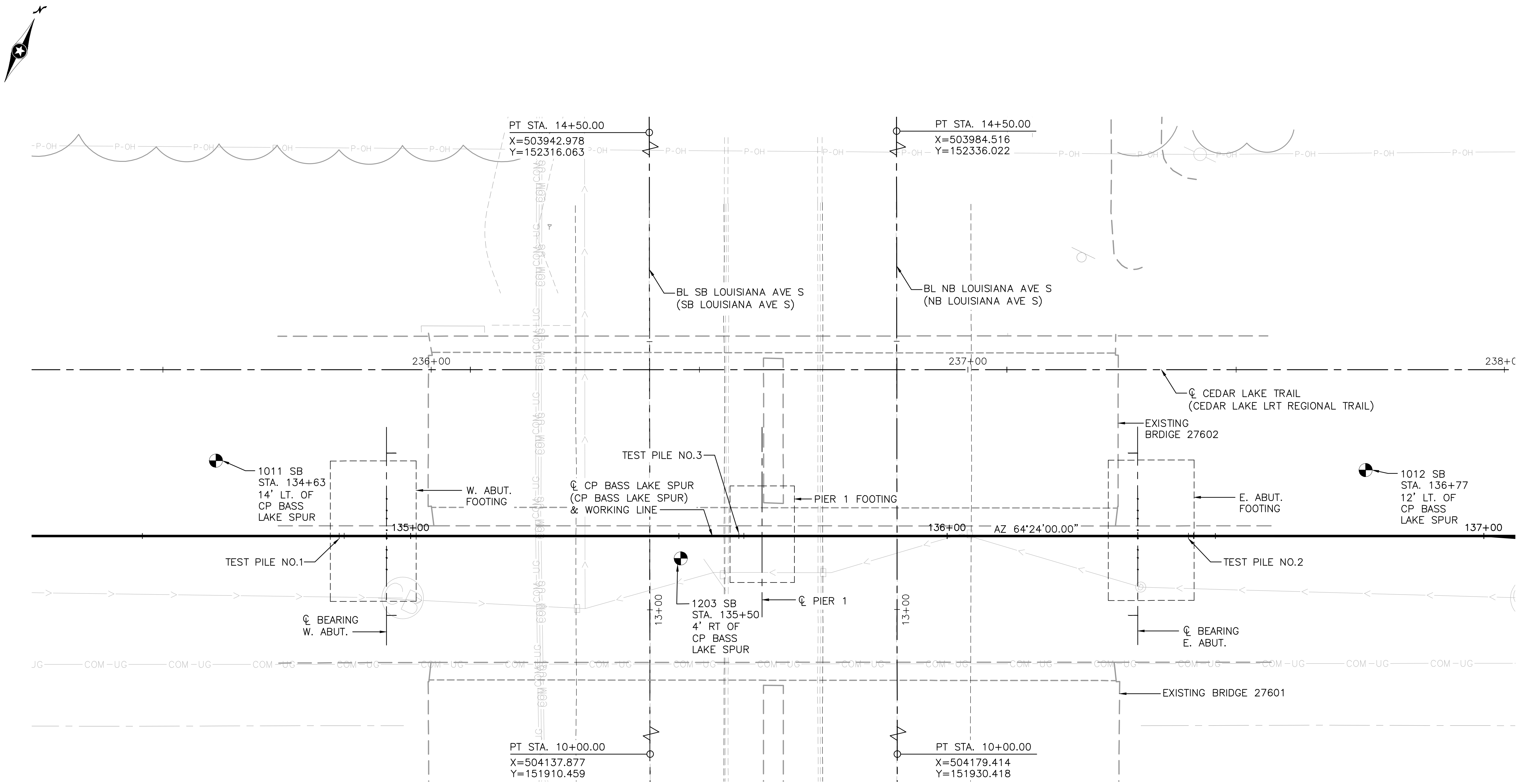
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
BRIDGE SURVEY 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-SUR-002

SHEET 46 OF 53



NOTES:

THE SUBSTRUCTURE 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".

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AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

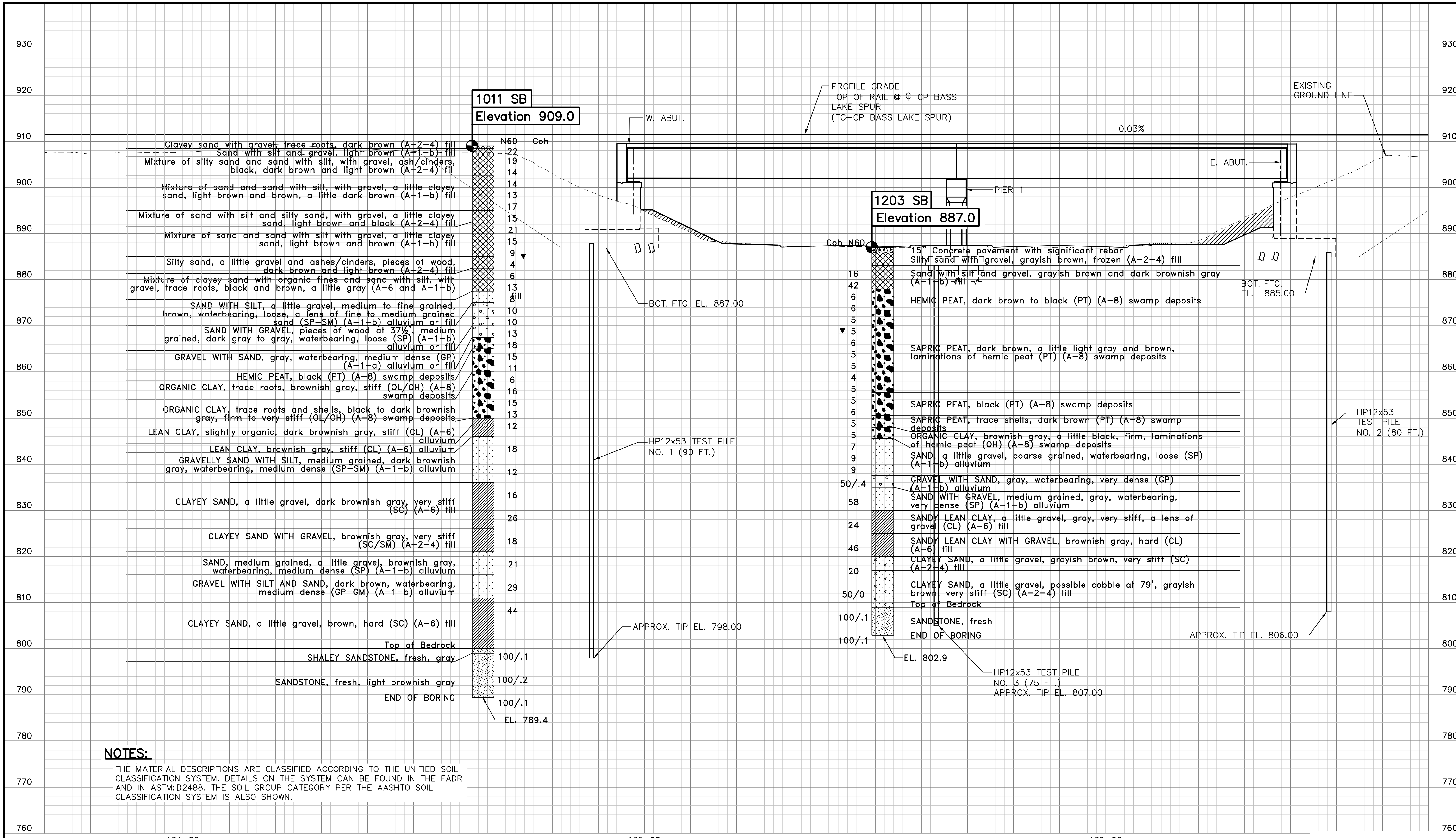
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
BRIDGE SURVEY PLAN

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C12-BRG-BOR-001

SHEET 47 OF 53



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. THE SOIL GROUP CATEGORY PER THE AASHTO SOIL CLASSIFICATION SYSTEM IS ALSO SHOWN.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

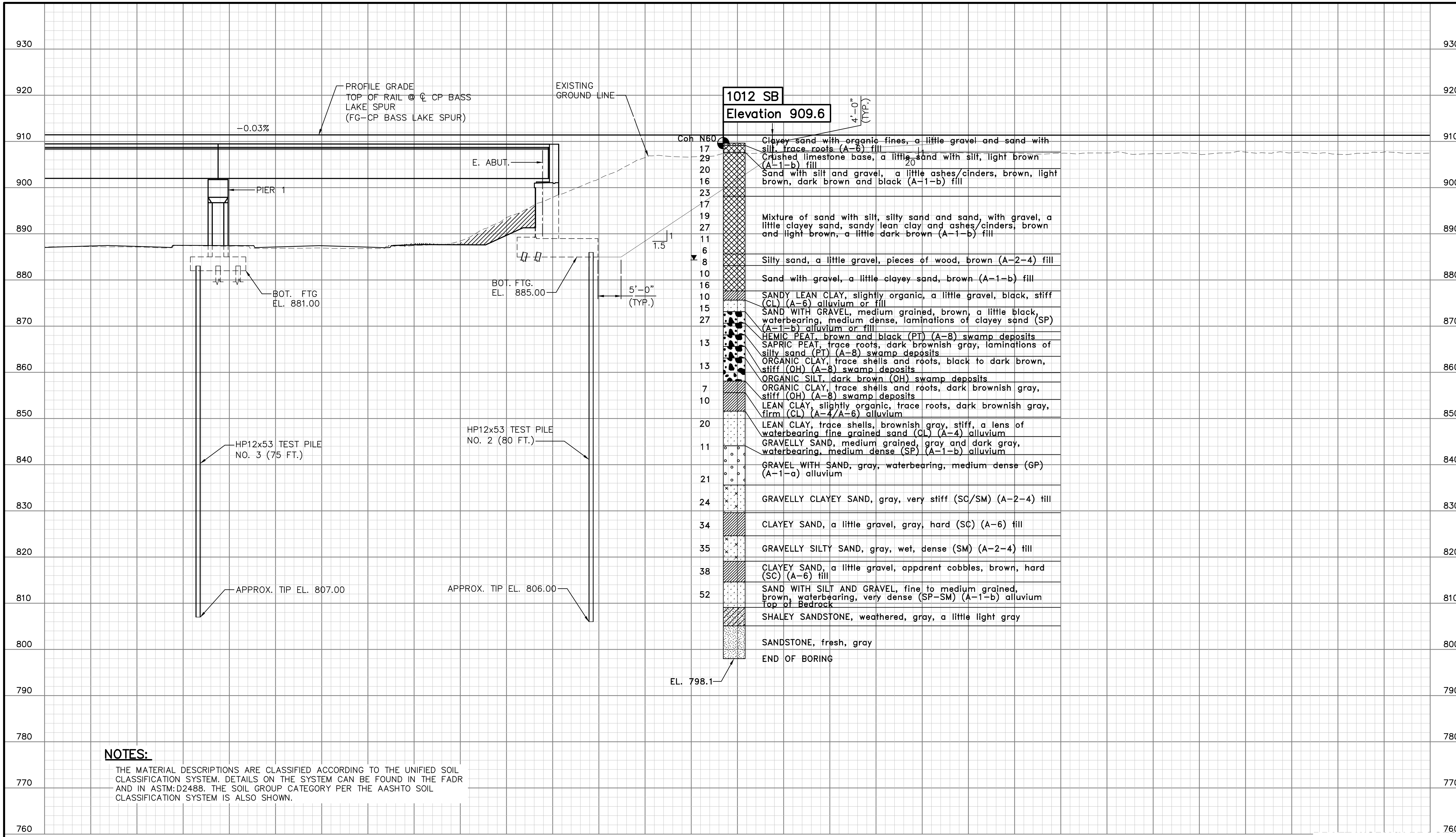
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
BRIDGE SURVEY PROFILE 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-BOR-002

SHEET 48 OF 53

Dec. 14 2015 04:01 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-BOR-002.dwg By: kevin.kimm



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. THE SOIL GROUP CATEGORY PER THE AASHTO SOIL CLASSIFICATION SYSTEM IS ALSO SHOWN.

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DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
BRIDGE SURVEY PROFILE 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-BOR-003

SHEET 49 OF 53

STAGING NOTES:

STAGES 1–4 SHOWN IN THIS PLAN, SEE BRIDGE 27C13 FOR STAGES 5 & 6.

INSTALL TRAFFIC CONTROL TO DIRECT TRAIL USERS REMAIN ON THE EXISTING TRAIL SUPERSTRUCTURE. MAINTAIN A 10'–0" MINIMUM CLEAR WIDTH OF EXISTING BITUMINOUS TRAIL WITH 2'–0" CLEAR ZONE ALONG EACH SIDE. PROVIDE TEMPORARY CHAIN LINK FENCE ALONG LENGTH OF THE SOE.

INSTALL SOE FOR CONSTRUCTION OF PROPOSED FREIGHT BRIDGE 27C12.

REMOVE SOUTH HALF OF EXISTING BRIDGE 27602. EXCAVATE FOR CONSTRUCTION OF FREIGHT BRIDGE 27C12.

1. SOE.
2. EXISTING STORM DRAIN TO BE RELOCATED, SEE DRAINAGE PLANS FOR DETAILS.
3. LIMITS OF REMOVAL FOR EXISTING BRIDGE ABUTMENT STEM AND FOUNDATION.

LIMITS OF REMOVAL FOR EXISTING BRIDGE SUBSTRUCTURE CONCRETE.

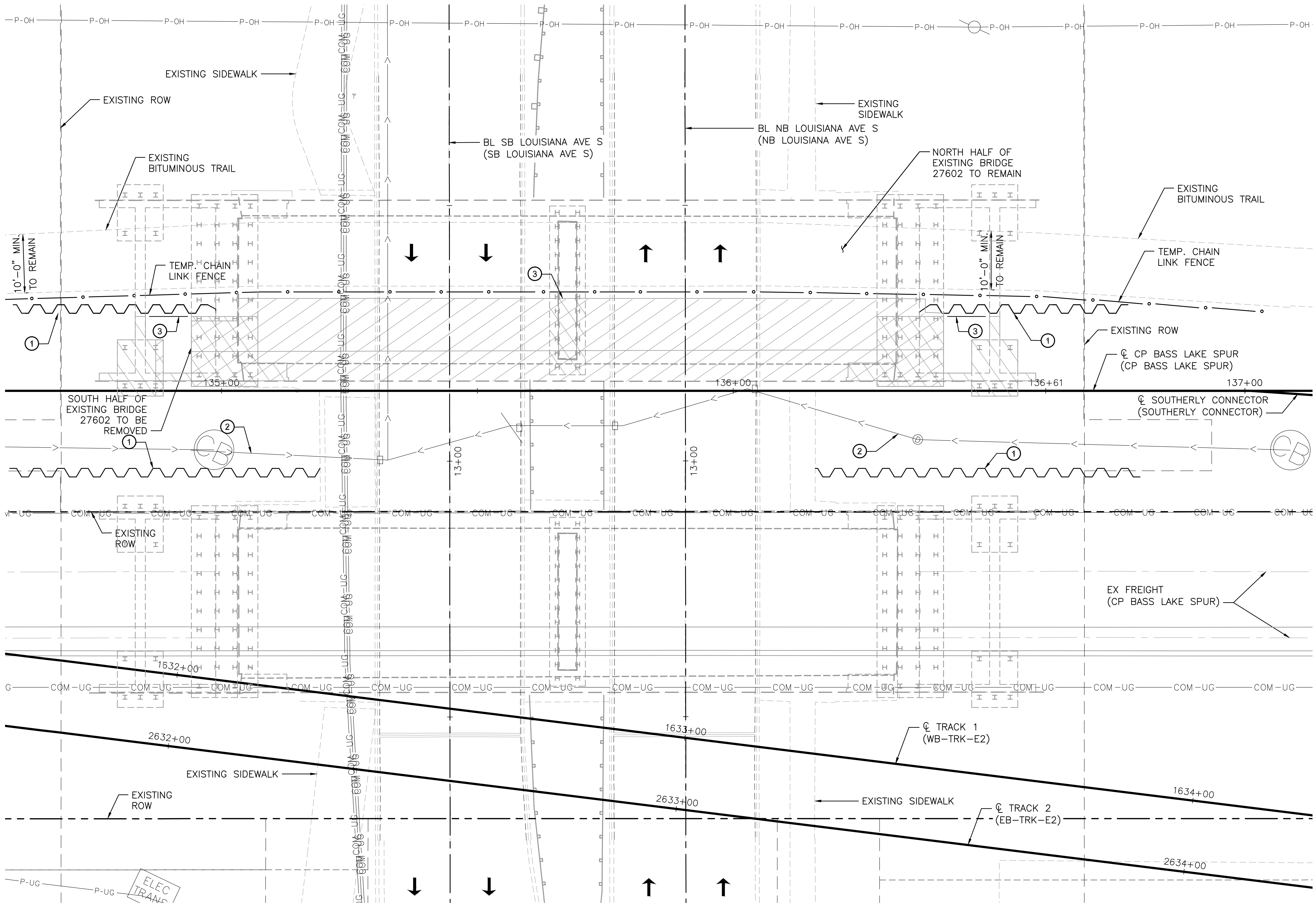
LIMITS OF REMOVAL FOR EXISTING BRIDGE SUPERSTRUCTURE.

STAGING REQUIREMENTS:

ALL TRACKS SHALL BE KEPT OPEN FOR TRAIN USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL. CP SHALL HAVE FINAL AUTHORITY ON PERMITTED TRACK CLOSURES.

CEDAR LAKE TRAIL SHALL BE KEPT OPEN FOR PUBLIC USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL.

SEE SPECIAL PROVISIONS FOR TRAFFIC CONTROL REQUIREMENTS ON LOUISIANA AVE S.



PROPOSED CONSTRUCTION SEQUENCING – STAGE 1

Dec. 14 2015 04:05 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-STG-001.dwg By: kevin.kimm

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DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
STAGING PLAN 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-STG-001

SHEET 50 OF 53

STAGING NOTES:

STAGES 1-4 SHOWN IN THIS PLAN, SEE BRIDGE 27C13 FOR STAGES 5 & 6.

CONSTRUCT FREIGHT BRIDGE 27C12. BACKFILL STRUCTURE.

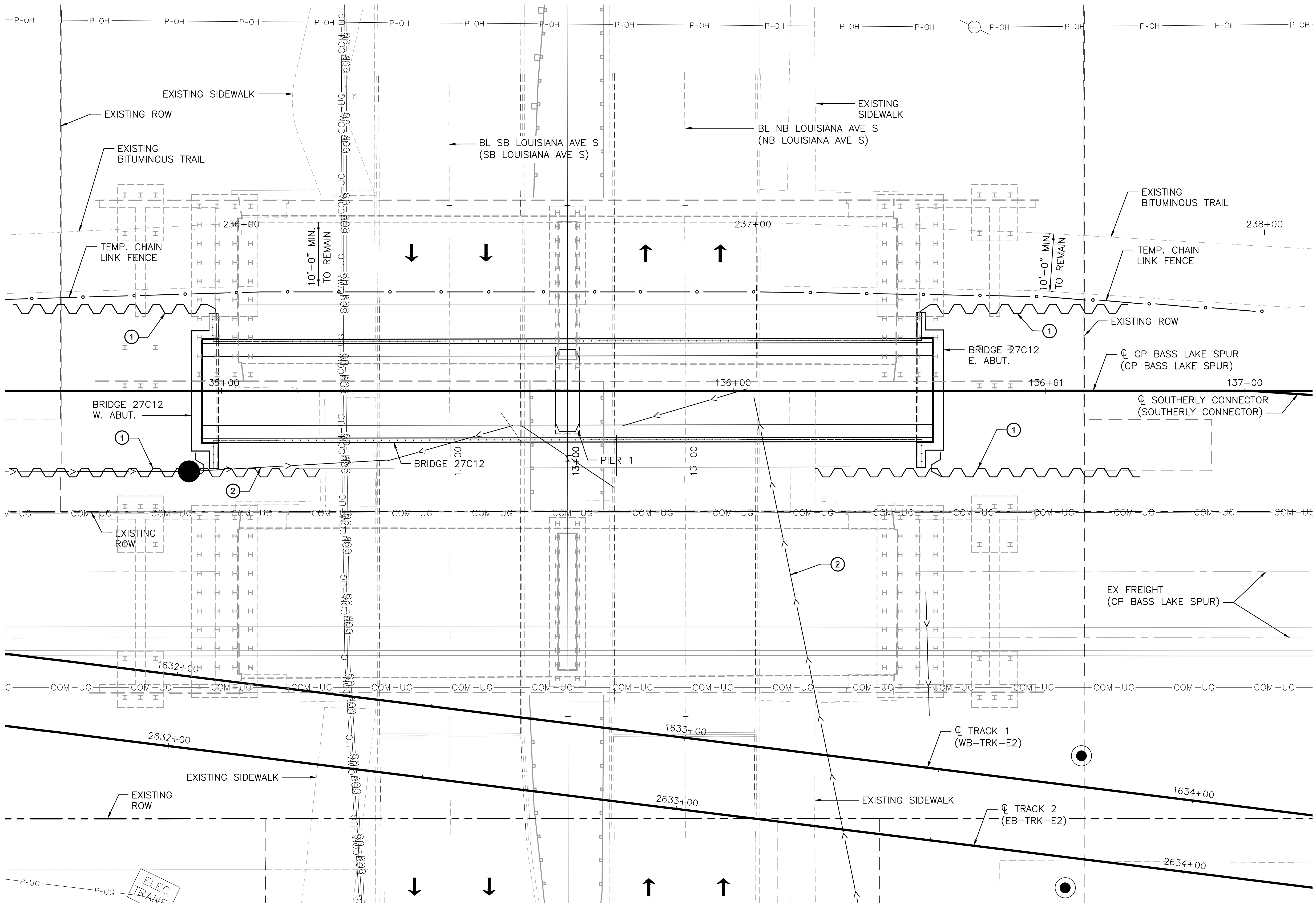
1. SOE.
2. RELOCATED STORM DRAIN, SEE DRAINAGE PLANS FOR DETAILS.

STAGING REQUIREMENTS:

ALL TRACKS SHALL BE KEPT OPEN FOR TRAIN USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL. CP SHALL HAVE FINAL AUTHORITY ON PERMITTED TRACK CLOSURES.

CEDAR LAKE TRAIL SHALL BE KEPT OPEN FOR PUBLIC USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL.

SEE SPECIAL PROVISIONS FOR TRAFFIC CONTROL REQUIREMENTS ON LOUISIANA AVE S.



PROPOSED CONSTRUCTION SEQUENCING – STAGE 2

Dec. 14 2015 04:08 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-STG-002.dwg By: kevin.kimm

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
STAGING PLAN 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-STG-002

SHEET 51 OF 53

STAGING NOTES:

STAGES 1-4 SHOWN IN THIS PLAN, SEE BRIDGE 23C13 FOR STAGES 5 & 6.

CONSTRUCT TEMPORARY TRAIL UP TO ENDS OF BRIDGE 27C12. TEMPORARY TRAIL SHALL HAVE A 10'-0" MINIMUM CLEAR WIDTH, 2'-0" CLEAR ZONE ALONG EACH SIDE AND PROVIDE TEMPORARY CHAIN LINK FENCE ALONG LENGTH OF TEMPORARY TRAIL ALIGNMENT.

REMOVE AND INSTALL TEMPORARY RETAINING SYSTEM AS NECESSARY TO CONSTRUCT PROPOSED TRAIL BRIDGE 27C11 AND RETAINING WALLS.

RELOCATE EXISTING TRAIL TO TEMPORARY TRAIL ALIGNMENT OVER BRIDGE 27C12.

REMOVE REMAINING EXISTING BRIDGE 27602. EXCAVATE FOR CONSTRUCTION OF TRAIL BRIDGE 27C11.

(1) SOE.

(2) RELOCATED STORM DRAIN, SEE DRAINAGE PLANS FOR DETAILS

LIMITS OF REMOVAL FOR EXISTING BRIDGE SUBSTRUCTURE CONCRETE.

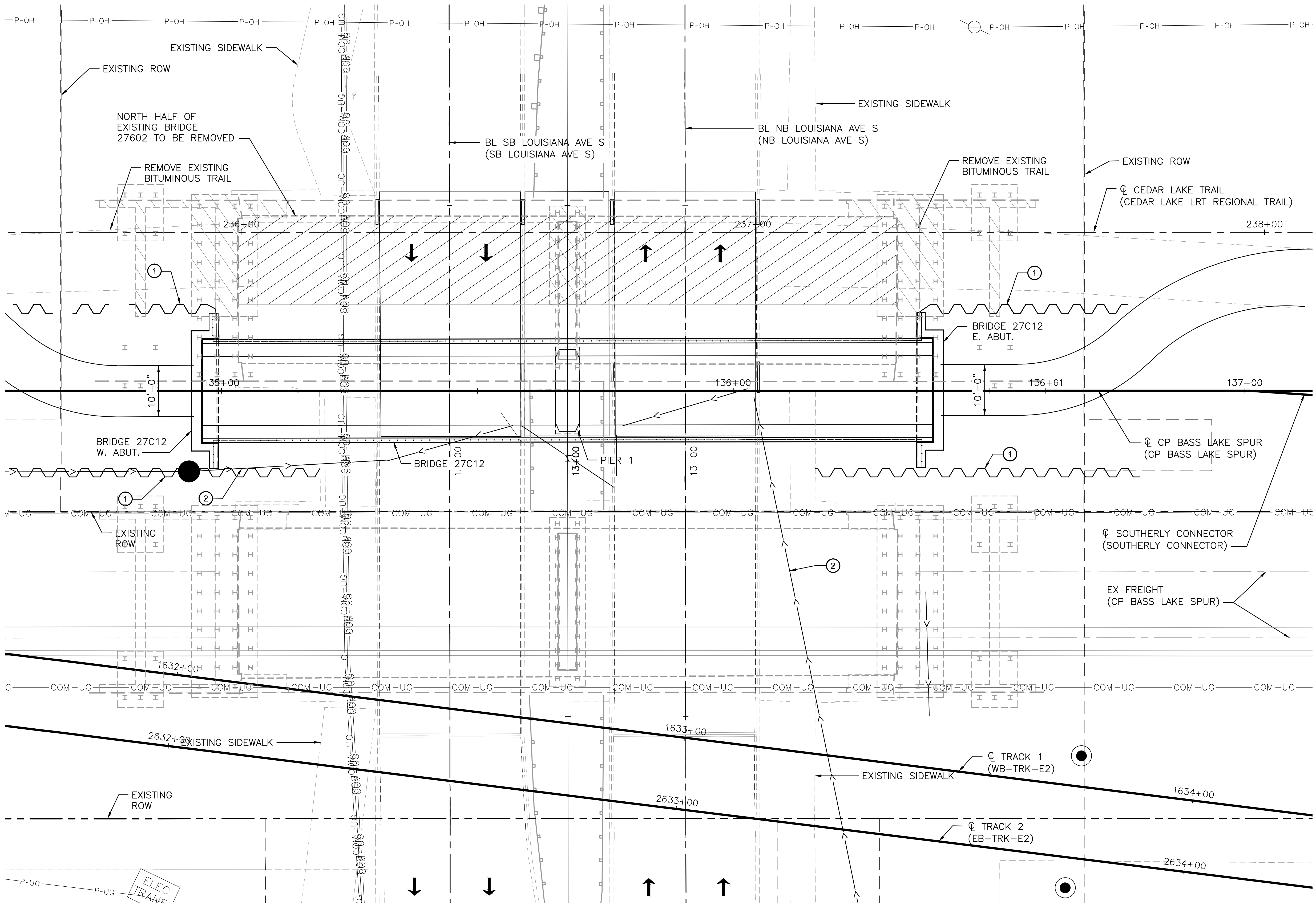
LIMITS OF REMOVAL FOR EXISTING BRIDGE SUPERSTRUCTURE.

STAGING REQUIREMENTS:

ALL TRACKS SHALL BE KEPT OPEN FOR TRAIN USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL. CP SHALL HAVE FINAL AUTHORITY ON PERMITTED TRACK CLOSURES.

CEDAR LAKE TRAIL SHALL BE KEPT OPEN FOR PUBLIC USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL.

SEE SPECIAL PROVISIONS FOR TRAFFIC CONTROL REQUIREMENTS ON LOUISIANA AVE S.



PROPOSED CONSTRUCTION SEQUENCING - STAGE 3

Dec. 14 2015 04:11 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-STG-003.dwg By: kevin.kimm

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
STAGING PLAN 3

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-STG-003

SHEET 52 OF 53

STAGING NOTES:

STAGES 1–4 SHOWN IN THIS PLAN, SEE BRIDGE 27C13 FOR STAGES 5 & 6.

CONSTRUCT PROPOSED BRIDGE 27C11 AND RETAINING WALLS E208 AND E209. BACKFILL STRUCTURES.

REMOVE SOE AS REQUIRED.

RELOCATE TEMPORARY CEDAR LAKE TRAIL TO FINAL ALIGNMENT. REMOVE TEMPORARY TRAIL ALIGNMENT.

RELOCATE EXISTING CP BASE LAKE SPUR TO FINAL ALIGNMENT.

(1) SOE.

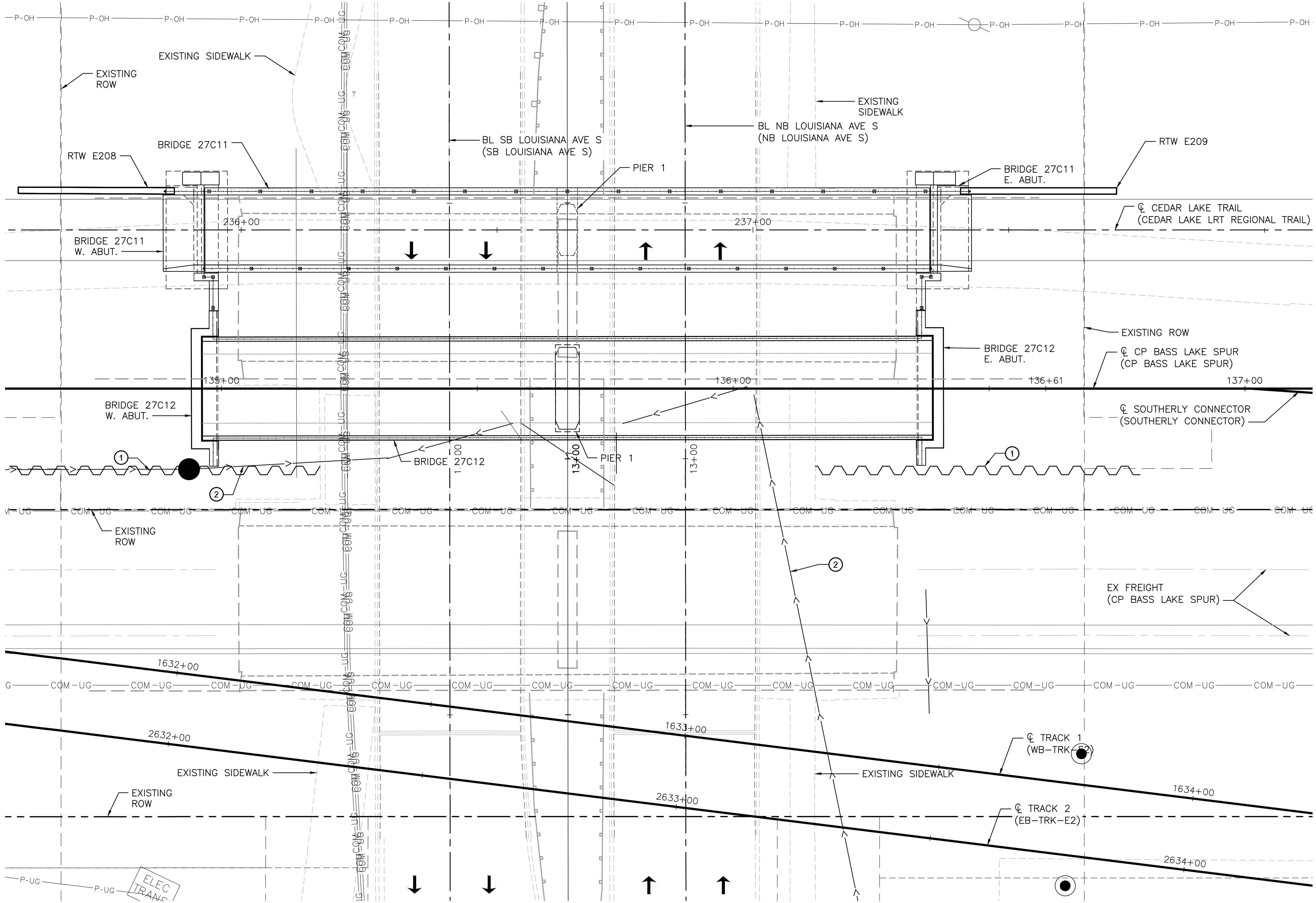
(2) RELOCATED STORM DRAIN, SEE DRAINAGE PLANS FOR DETAILS.

STAGING REQUIREMENTS:

ALL TRACKS SHALL BE KEPT OPEN FOR TRAIN USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL. CP SHALL HAVE FINAL AUTHORITY ON PERMITTED TRACK CLOSURES.

CEDAR LAKE TRAIL SHALL BE KEPT OPEN FOR PUBLIC USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL.

SEE SPECIAL PROVISIONS FOR TRAFFIC CONTROL REQUIREMENTS ON LOUISIANA AVE S.



PROPOSED CONSTRUCTION SEQUENCING – STAGE 4

Dec. 14 2015 04:14 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27C12\CBR27C12-BRG-STG-004.dwg By: kevin.kimm

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: BMS CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

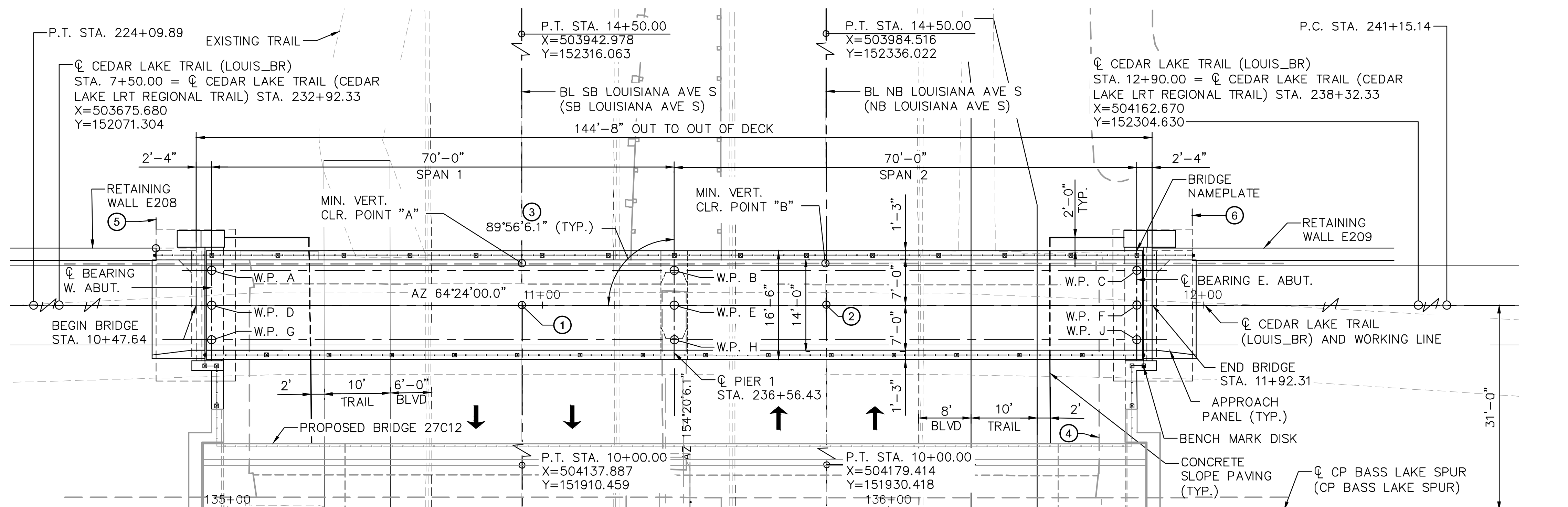
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. FREIGHT BRIDGE
BRIDGE 27C12
STAGING PLAN 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C12-BRG-STG-004

SHEET 53 OF 53



NOTES:

SUBSTRUCTURES SET PARALLEL AT AZ=154°20'6.1"

SEE BRIDGE SURVEY SHEET FOR IN PLACE UTILITIES.

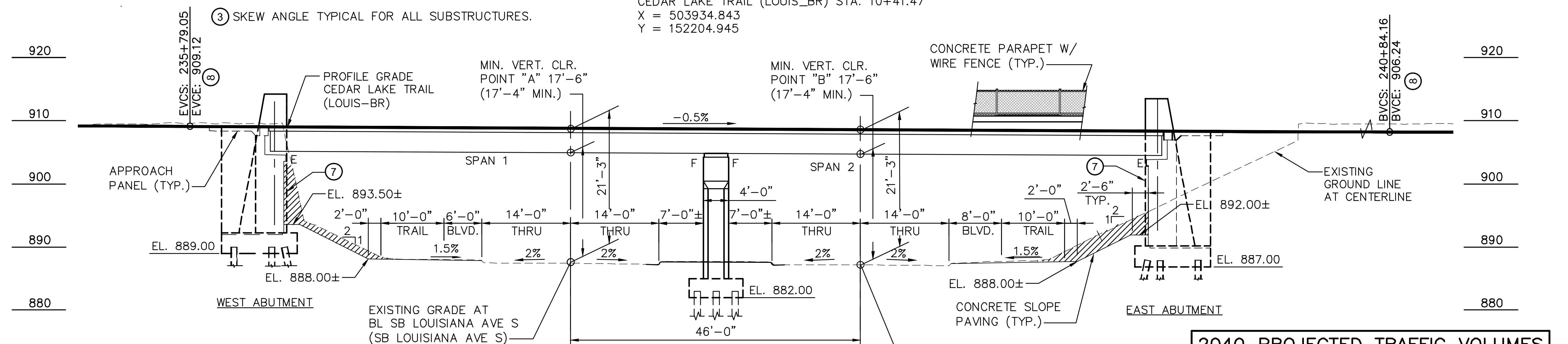
SEE STAGING PLANS FOR SOE.

HATCHED AREA TO BE REMOVED

1. CONTROL POINT
CEDAR LAKE TRAIL (LOUIS_BR) STA. 10+96.93
SB LOUISIANA AVE S (SB LOUISIANA AVE S) STA. 13+44.76
X = 503988.55
Y = 152221.21
∆ = 89°56'6.1"
2. CONTROL POINT
CEDAR LAKE TRAIL (LOUIS_BR) STA. 11+43.02
NB LOUISIANA AVE S (NB LOUISIANA AVE S) STA. 13+44.71
X = 504030.12
Y = 152241.12
∆ = 89°56'6.1"
3. SKEW ANGLE TYPICAL FOR ALL SUBSTRUCTURES.
4. IN PLACE BRIDGE 27602, A 35'–6" WIDE X 128'–6" LONG TWO SPAN STEEL BRIDGE CONSTRUCTED IN 1979 SUPPORTED BY STEEL H-PILES TO BE REMOVED. SEE STAGING PLAN FOR REMOVAL NOTES.
5. END OF RETAINING WALL E208 AND BEGIN NW WINGWALL AT F.F. WINGWALL. CEDAR LAKE TRAIL (CEDAR LAKE LRT REGIONAL TRAIL) STA. 235+83.79 = CEDAR LAKE TRAIL (LOUIS_BR) STA. 10+41.47
X = 503934.843
Y = 152204.945
6. END OF NE WINGWALL AND BEGIN RETAINING WALL E209 AT F.F. WINGWALL. CEDAR LAKE TRAIL (CEDAR LAKE LRT REGIONAL TRAIL) STA. 237+40.79 CEDAR LAKE TRAIL (LOUIS_BR) STA. 11+98.47
X = 504076.431
Y = 152272.783
7. ARCHITECTURAL TEXTURE (SPECIAL). SEE ABUTMENT SHEETS FOR LIMITS.
8. VERTICAL CURVE STATIONS AND ELEVATIONS ARE ALONG THE CEDAR LAKE LRT ALIGNMENT.

GENERAL PLAN

0 5' 10' 20'
SCALE IN FEET



GENERAL ELEVATION

0 5' 10' 20'
SCALE IN FEET

2040 PROJECTED TRAFFIC VOLUMES

ROADWAY OVER		ROADWAY UNDER
NA	A.D.T.	16,300
NA	D.H.V.	1,650
NA	A.D.T.T.	505

DESIGN DATA

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION, 2014 WITH 2015 INTERIM REVISIONS.

2009 INCLUDING 2014 INTERIMS AASHTO LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES

SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0)

LOAD AND RESISTANCE FACTOR DESIGN METHOD

90 PSF PEDESTRIAN LIVE LOAD
H 10 MAINTENANCE VEHICLE LIVE LOAD

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4 KSI n = 8
fy = 60 KSI REINFORCEMENT

ALL REINFORCING STEEL ABOVE THE FOOTING TO BE EPOXY COATED

PRESTRESSED CONCRETE:
f'c = 8 KSI n = 1
fpu = 270 KSI LOW RELAXATION STRANDS FOR 0.6" DIA. LOW RELAXATION STRANDS

STRUCTURAL STEEL:
fy = 36 KSI STRUCTURAL STEEL SPEC. 3306

DESIGN SPEED: OVER = 30 MPH
UNDER = 30 MPH

DECK AREA = 2387 SQ. FT.

LIST OF SHEETS

BRIDGE NO. 27C11

CEDAR LAKE TRAIL OVER LOUISIANA AVE S
0.3 MI. SOUTH OF JCT. T.H. 7 AND LOUISIANA AVE S IN ST. LOUIS PARK
72'–4"–72'–4" PRESTRESSED CONCRETE BEAM SPANS
14'–0" TRAIL, 00°–03'–53.9" SKEW
P-1 PARAPET W/ WIRE FENCE

BRIDGE I.D. NO. 501

GENERAL PLAN AND ELEVATION

SEC 20 T 117N R 21W
CITY OF ST LOUIS PARK HENNEPIN COUNTY

JOB NO.: T9N635 STATE PROJ. NO.: 9909–01 MNDOT REVIEW: JOE NIETFELD

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

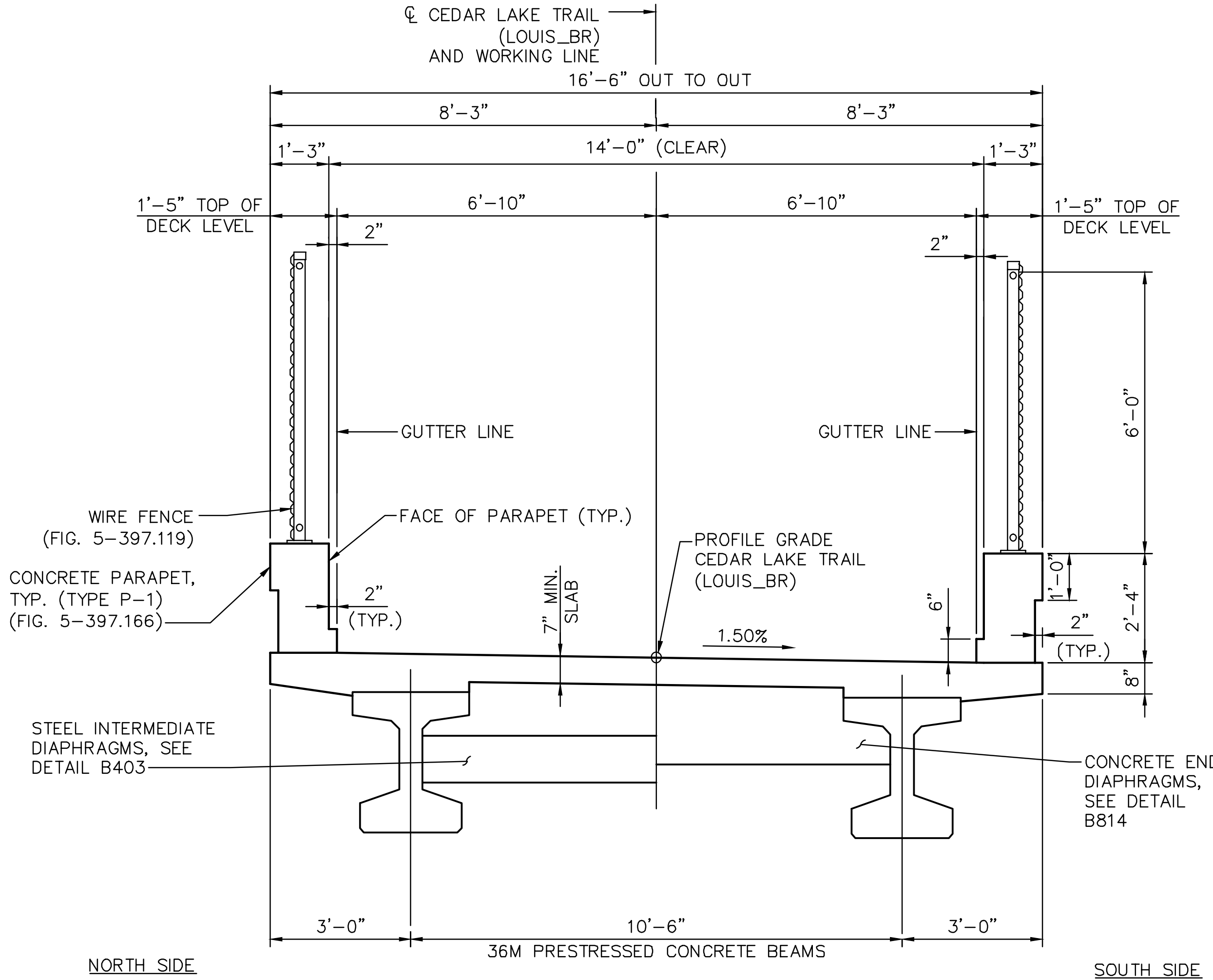
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
GENERAL PLAN AND ELEVATION

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-GPE-001

SHEET 1 OF 57



TRANSVERSE SECTION

0 1' 2' 4'
SCALE IN FEET

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 BAR SIZES SHOWN IN THIS PLAN ARE IN U.S. CUSTOMARY DESIGNATIONS. THE FIRST DIGIT OR THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE.

BARS MARKED WITH THE 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 (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.

GROUNDING NOTES:

SEE SHEETS ELE-SITE-SCH-504, ELE-SITE-DTL-600, ELE-SITE-DTL-601 AND ELE-SITE-DTL-602 FOR ADDITIONAL FENCE GROUNDING INFORMATION. FOR BRIDGES, ABUTMENTS AND RETAINING WALLS THAT DON'T HAVE STRAY CURRENT SYSTEMS, GROUND THE FENCE AS SHOWN IN THE WIRE FENCE DETAIL.

SCHEDULE OF QUANTITIES

SPEC. SECTION	ITEM	UNIT	QUANTITY
---	CONSTRUCT BRIDGE 27C11	LUMP SUM	LS

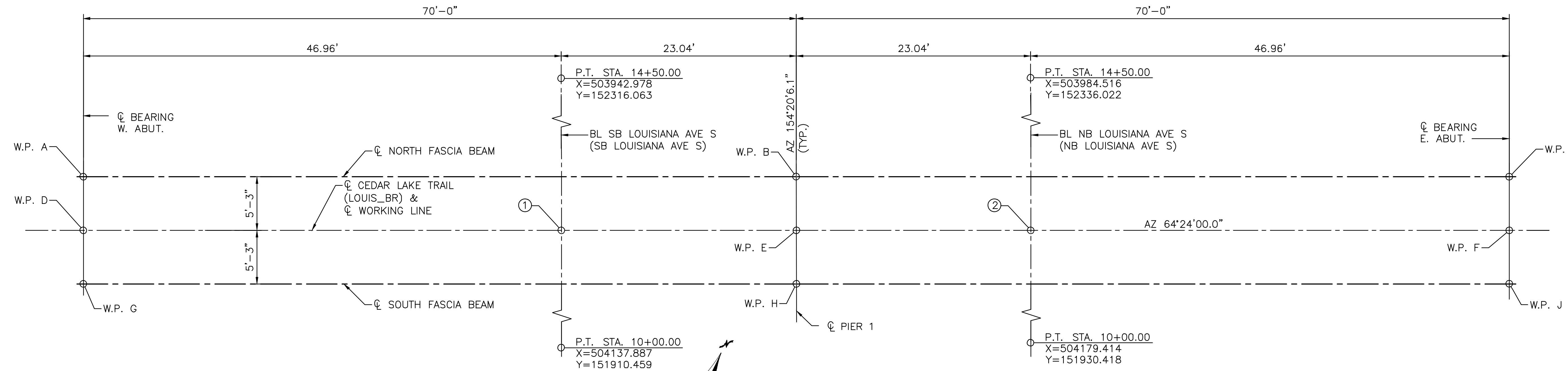
COMPONENT ITEMS SUMMARY (BRIDGE 27C11)

	SPEC. SECTION (3)	COMPONENT ITEM	UNIT (2)	QUANTITY (2)
	2401	STRUCTURAL CONCRETE (1G52)	CU. YD.	
(1)	2401	STRUCTURAL CONCRETE (3B52)	CU. YD.	
	2401	TYPE P-1 RAILING CONCRETE (3S52)	LIN. FT.	
	2401	REINFORCEMENT BARS	POUND	
	2401	REINFORCEMENT BARS (EPOXY COATED)	POUND	
	SB-XX	BRIDGE SLAB CONCRETE (3YHPC-M)	SQ. FT.	
	2402	EXPANSION JOINT DEVICES TYPE 4	LIN. FT.	
	2402	BEARING ASSEMBLY	EACH	
	2405	PRESTRESSED CONCRETE BEAMS 36M	LIN. FT.	
	2405	DIAPHRAGMS FOR TYPE 36M PRESTRESSED BEAMS	LIN. FT.	
	SB-XX	ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM)	SQ. FT.	
	SB-XX	ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE)	SQ. FT.	
	2452	STEEL H-PILING INSTALLED 12"	LIN. FT.	
	2452	STEEL H-TEST PILE 90 FT LONG 12"	EACH	
	2452	STEEL H-TEST PILE 79 FT LONG 12"	EACH	
	2452	STEEL H-TEST PILE 74 FT LONG 12"	EACH	
	2452	PILE TIP PROTECTION 12"	EACH	
	2514	CONCRETE SLOPE PAVING	SQ. YD.	
	2557	WIRE FENCE DESIGN W-1	LIN. FT.	

(1) A BENCH MARK IS REQUIRED. LOCATED AT SE 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.

(2) QUANTITIES LISTED FOR THE COMPONENT ITEMS OF THE LUMP SUM BR 27C11 ARE FOR INFORMATION 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 27C11. REFER TO MNDOT STANDARD SPECIFICATION OR SPECIAL PROVISION FOR TECHNICAL SPECIFICATION REQUIREMENTS FOR ALL PROVISIONS, OTHER THAN MEASUREMENT AND PAYMENT REQUIREMENTS.



WORKING POINT LAYOUT

NOTES:

SKEW TYPICAL FOR ALL SUBSTRUCTURES.

SUBSTRUCTURES SET PARALLEL AT
∡ =154°20'6.1"

(1) CONTROL POINT
CEDAR LAKE TRAIL (LOUIS-BR) STA. 10+96.93
SB LOUISIANA AVE S (SB LOUISIANA AVE S) STA. 13+44.76
X = 503988.55
Y = 152221.21
∡ = 89°56'6.1"

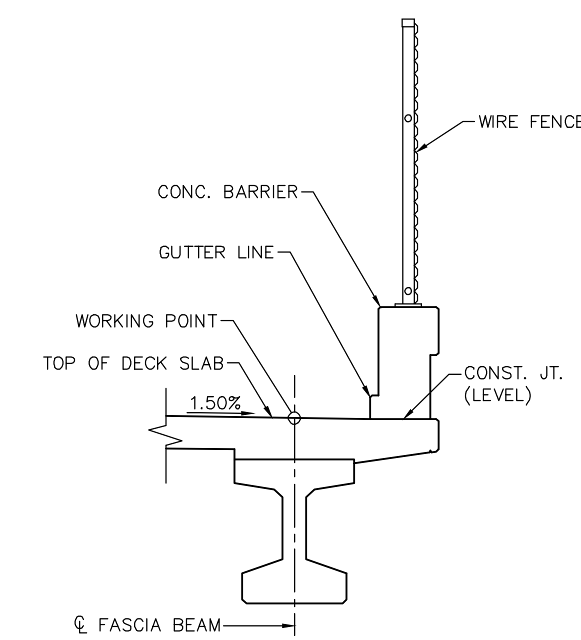
(2) CONTROL POINT
CEDAR LAKE TRAIL (LOUIS-BR) STA. 11+43.02
NB LOUISIANA AVE S (NB LOUISIANA AVE S) STA. 13+44.71
X = 504030.12
Y = 152241.12
∡ = 89°56'6.1"

DIMENSIONS BETWEEN WORKING POINTS											COORDINATES		ELEVATIONS			
POINT	STATION	A	B	C	D	E	F	G	H	J	X	Y	TOP OF SLAB	TOP OF SLAB TO BRIDGE SEAT	BRIDGE SEAT	POINT
A	10+49.97		70.00		5.25	70.20			70.80	14.40	503943.935	152205.651	909.13	4.23	904.90	A
B	11+19.97			70.00		5.25	70.20	70.77		70.80	504007.063	152235.897	908.78	4.06	904.72	B
C	11+89.97						5.25	140.38	70.77		504070.191	152266.143	908.44	4.23	904.21	C
D	10+49.98					70.00		5.25	70.20		503946.209	152200.919	909.05			D
E	11+19.98						70.00		5.25	70.20	504009.337	152231.165	908.70			E
F	11+89.98									5.25	504072.465	152261.411	908.36			F
G	10+49.98								70.00		503948.482	152196.187	908.97	4.23	904.74	G
H	11+19.98									70.00	504011.611	152226.433	908.63	4.06	904.56	H
J	11+89.98										504074.739	152256.679	908.28	4.23	904.05	J

TOP OF ROADWAY TO BRIDGE SEAT						
	DECK THICKNESS	STOOL HEIGHT	BEAM HEIGHT	BEARING HEIGHT	TOTAL	
					INCHES	FEET
WEST ABUTMENT	7"	2 1/2"	36"	5 1/4"	50.75	4.23
PIER	7"	2 1/2"	36"	3 1/4"	48.75	4.06
EAST ABUTMENT	7"	2 1/2"	36"	5 1/4"	50.75	4.23

NOTES:

ALL BEAMS SET PARALLEL TO WORKING LINE, ALL DIAPHRAGMS SET PARALLEL TO SUBSTRUCTURES.



WORKING POINT SCHEMATICS

Jan. 12 2016 12:17 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-TRL\CBR27C11-BRG-LYT.dwg By: Paul.Robbs

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
BRIDGE LAYOUT

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-LYT-001

SHEET 3 OF 57

WEST ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	85.0
FACTORED LIVE LOAD	33.1
*FACTORED DESIGN LOAD	118.1

* BASED ON STRENGTH V LOAD COMBINATION.

WEST ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE FOR H-PILES Rn - TONS/PILE		
FIELD CONTROL METHOD	φdyn	*Rn
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{W \times H}{1000}}x\log\left(\frac{10}{S}\right)$	0.60	197
PDA	0.65	182

* Rn = (FACTORED DESIGN LOAD) / φdyn

GENERAL PILE NOTES

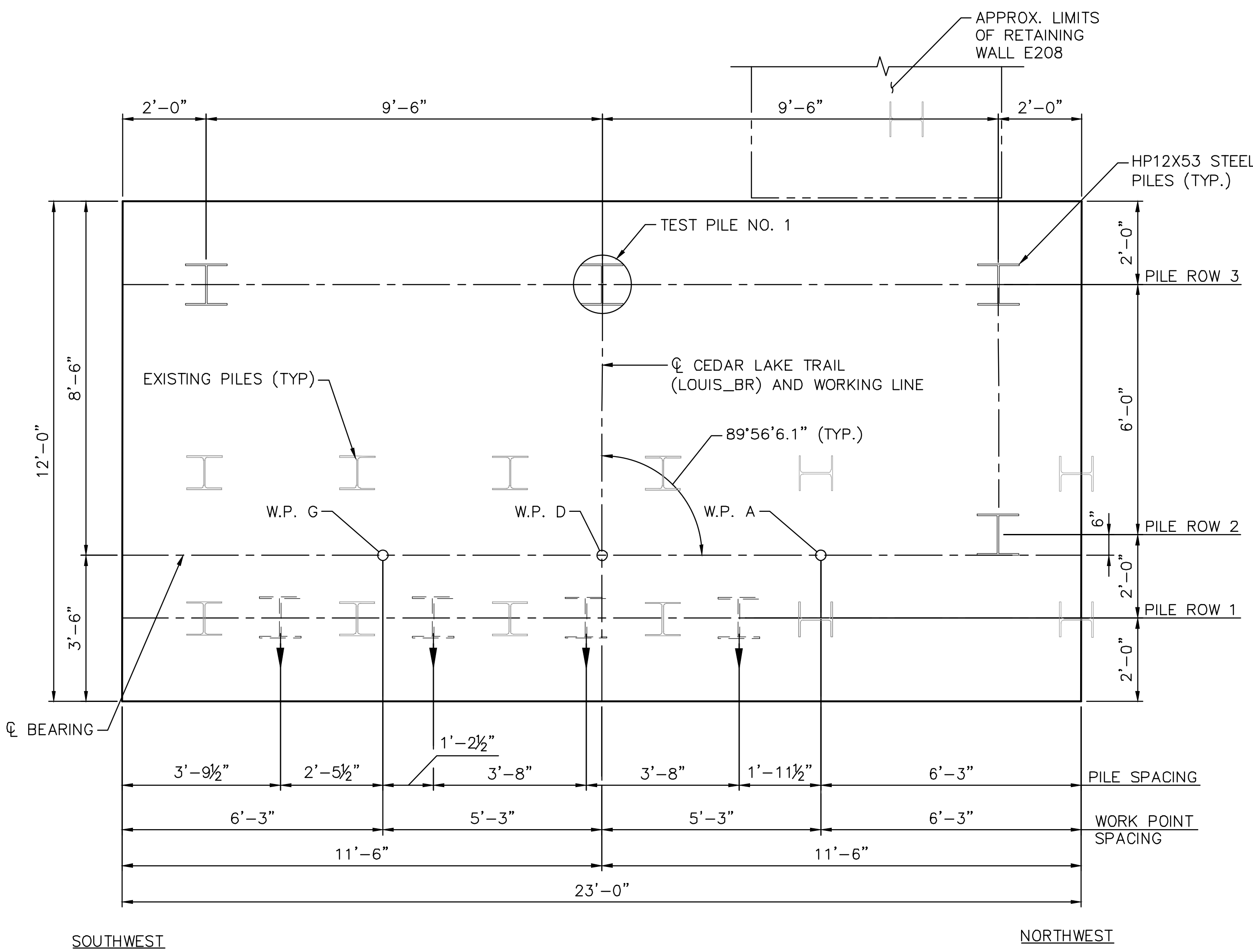
1 HP12x53 STEEL TEST PILES 90 FT. LONG
7 HP12x53 STEEL PILES EST. 90 FT. LENGTH
8 HP12x53 STEEL PILES REQ'D FOR WEST ABUT.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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90% SUBMISSION - 01/22/16

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SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
WEST ABUTMENT DETAILS 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-ABT-001

SHEET 4 OF 57

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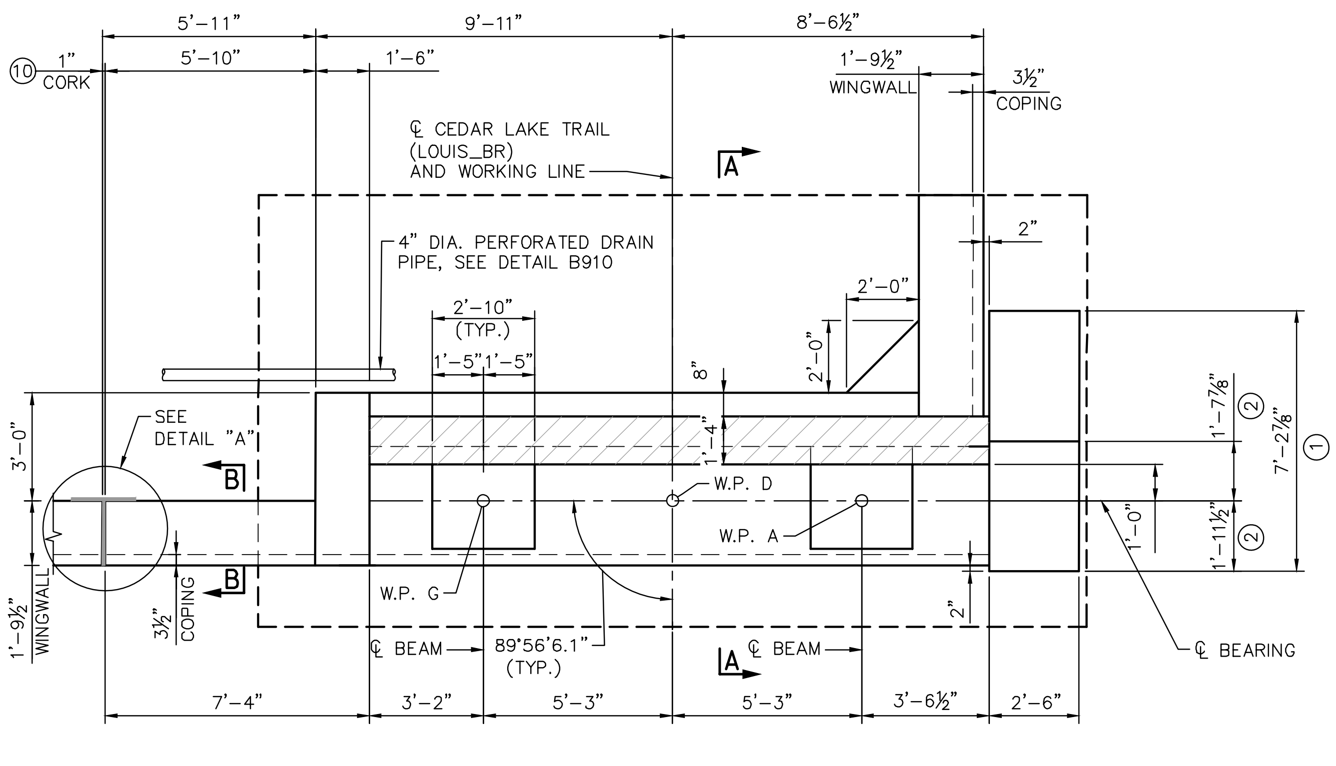
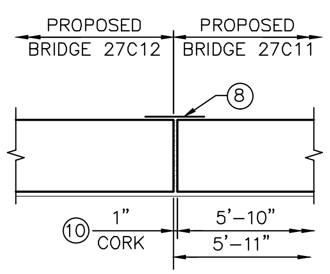
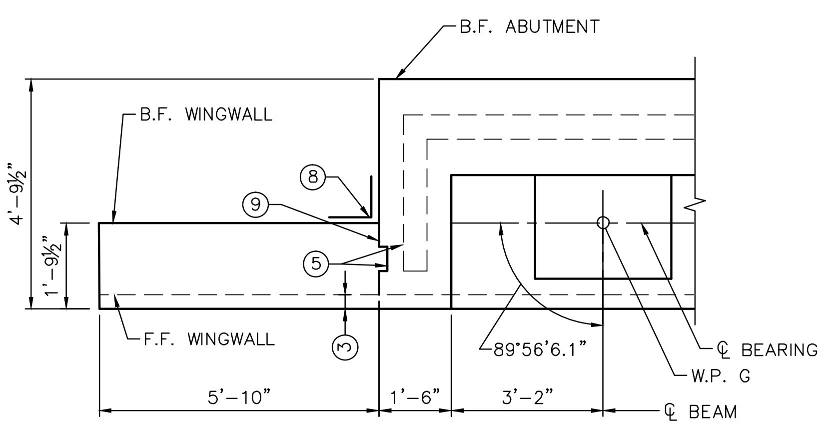


ABUTMENT PLAN

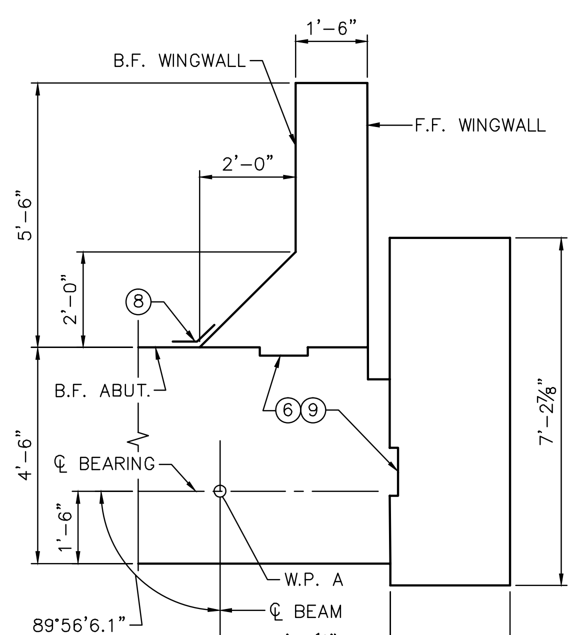


DETAIL "A"



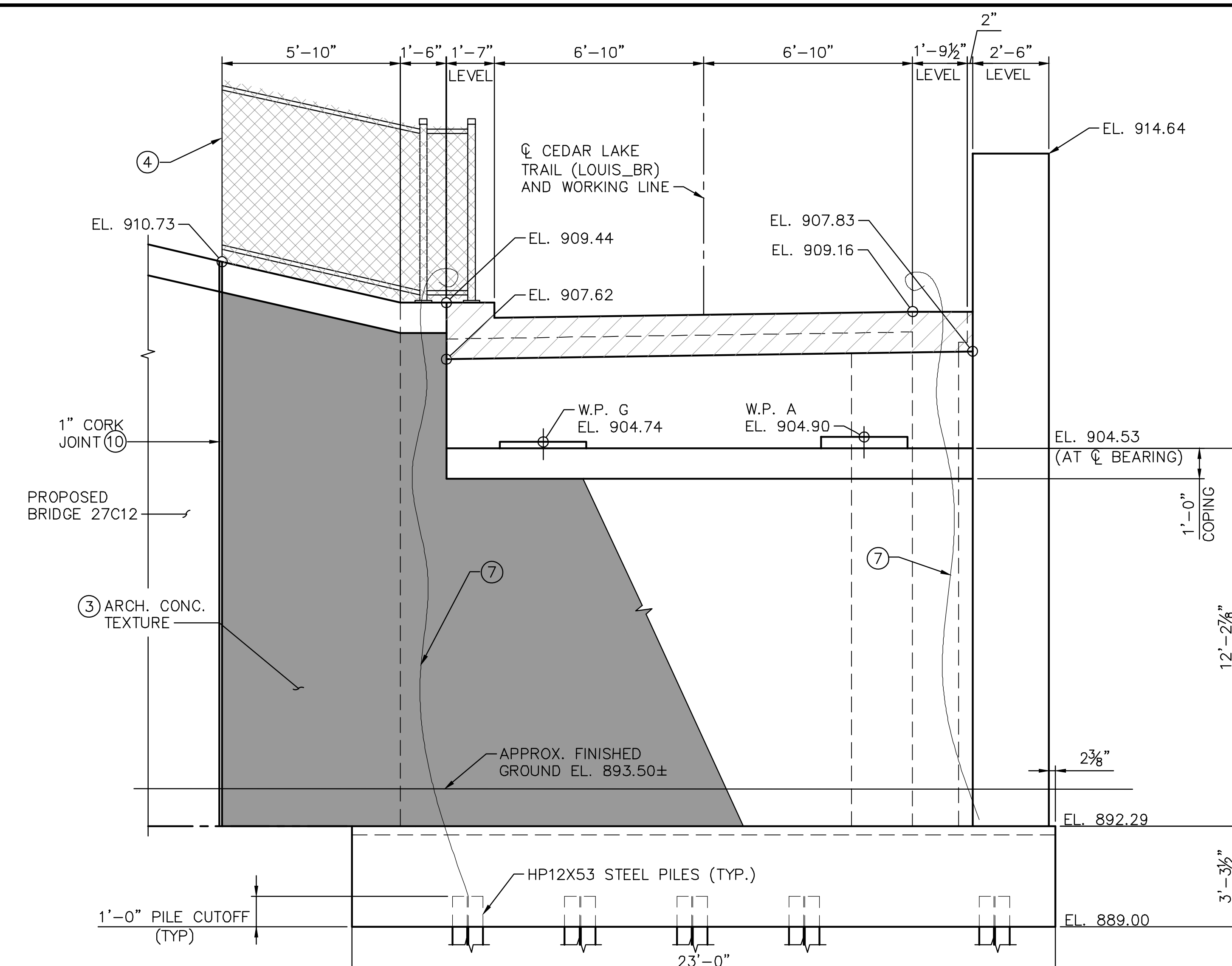
SOUTHWEST WINGWALL PLAN VIEW

SECTION BELOW PAVING BLOCK



NORTHWEST WINGWALL PLAN VIEW

SECTION BELOW ABUTMENT COPING



ABUTMENT ELEVATION

NOTES:

SEE NEXT SHEET FOR SECTIONS A-A AND B-B.

PAVING BLOCK HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

1. DIMENSION AT TOP OF FOOTING.
2. DIMENSION AT TOP OF PILASTER.
3. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1½".
4. WIRE FENCE DESIGN W-1.
5. 2"X6" KEY
6. 2"X12" KEY
7. ATTACH WIRE FENCE ANCHORAGE TO PILE WITH SOLID NO. 6 GAGE COPPER WIRE WITH AN APPROVED TYPE CLAMP OR BRAZING (ONE ANCHORAGE PER END OF RAIL). GROUND BOTH SIDES OF EXPANSION JOINT PIPE SLEEVE IF PRESENT. PAINT EXPOSED PORTION OF WIRE GRAY.
8. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
9. CONSTRUCTION JOINT. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.
10. ELECTRICAL INSULATING CORK BARRIER. CONTRACTOR AND FIELD ENGINEER SHALL VERIFY WINGWALL CONCRETE IS SEPARATED AND CONDUCTIVE MATERIAL DOES NOT EXTEND THROUGH CORK.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW | CHECKED BY: JSM
DRAWN BY: PGR | CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
WEST ABUTMENT DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-ABT-002

SHEET 5 OF 57

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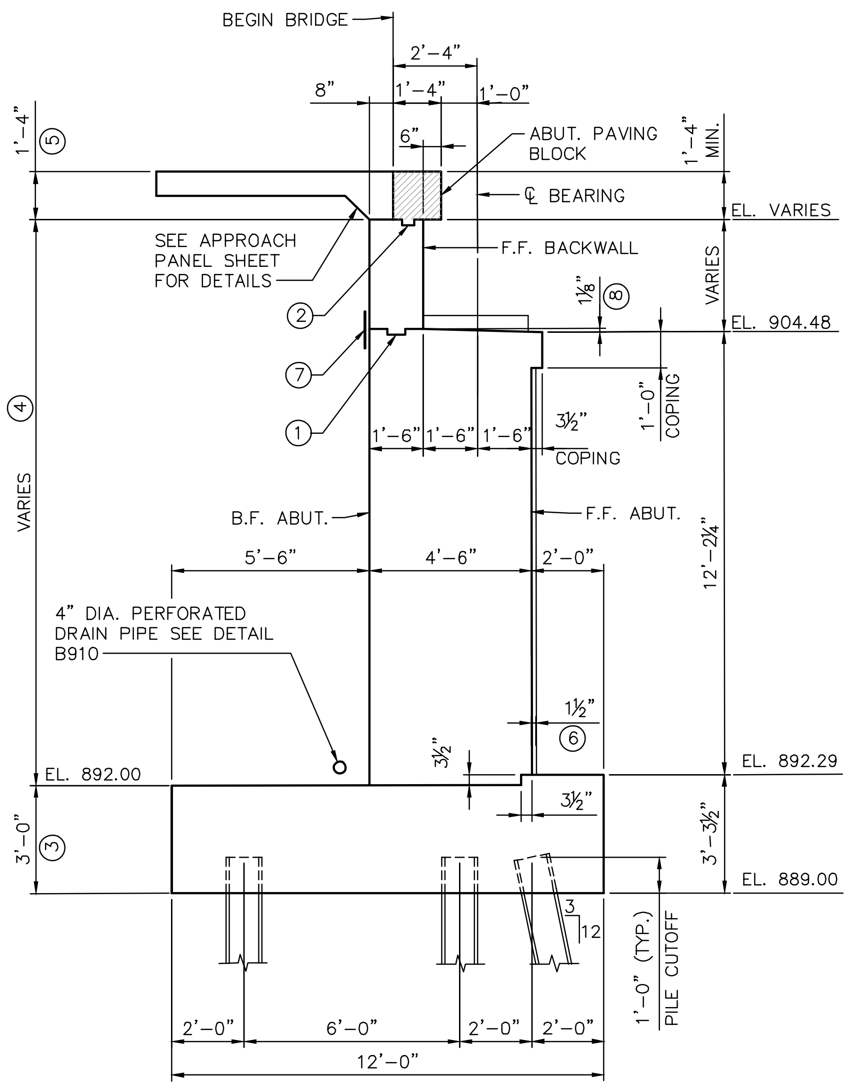
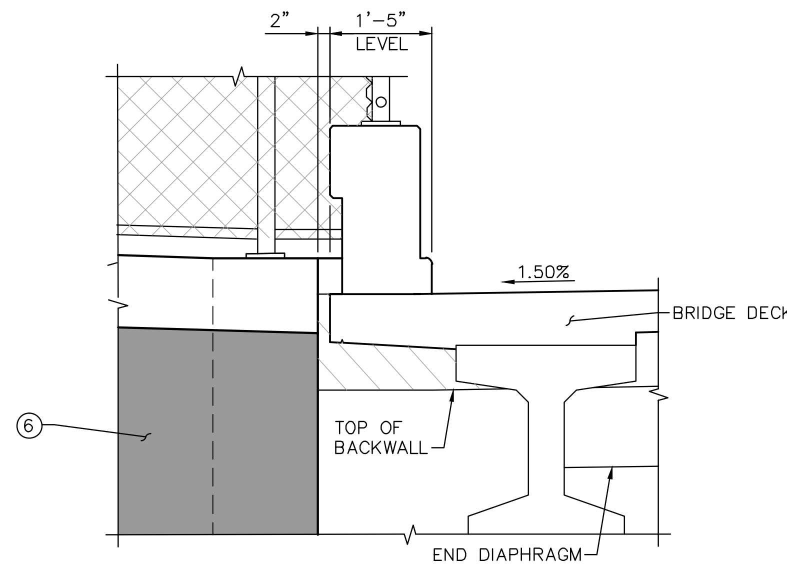
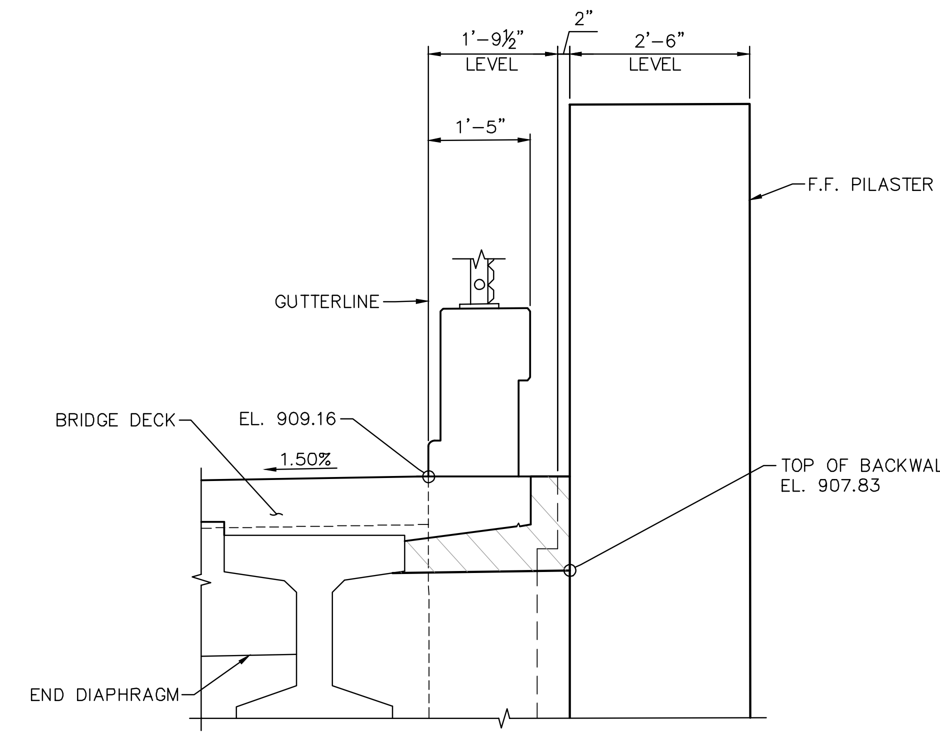


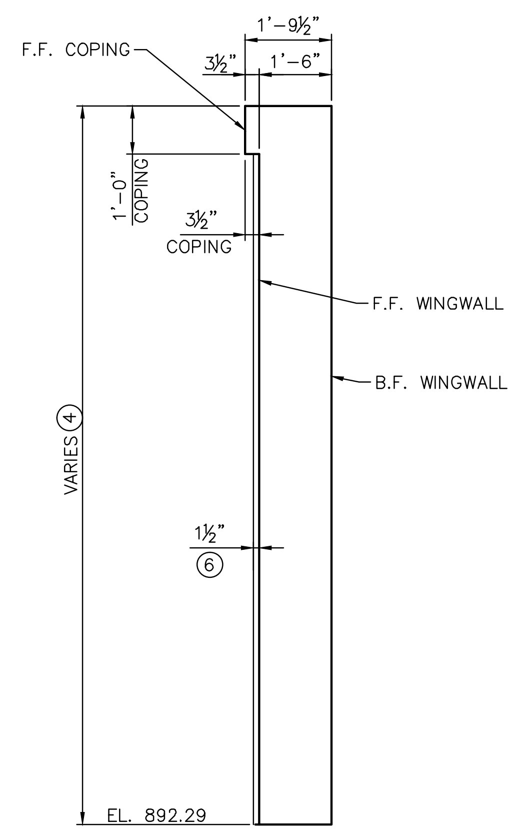
SECTION A–A



SOUTHWEST CORNER ELEVATION VIEW



NORTHWEST CORNER ELEVATION VIEW



SECTION B–B

NOTES:

PAVING BLOCK HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

1. PERMISSIBLE CONSTRUCTION JOINT WITH 2" x 6" KEY CENTERED IN WALL.
2. CONSTRUCTION JOINT WITH 2" x 4" KEY.
3. STRUCTURAL CONCRETE (1G52).
4. STRUCTURAL CONCRETE (3B52).
5. BRIDGE SLAB CONCRETE (3YHPC–M). SEE SUPERSTRUCTURE DETAILS.
6. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1½".
7. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
8. DIMENSION IS TO TOP OF CAP AT F.F. BACKWALL.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

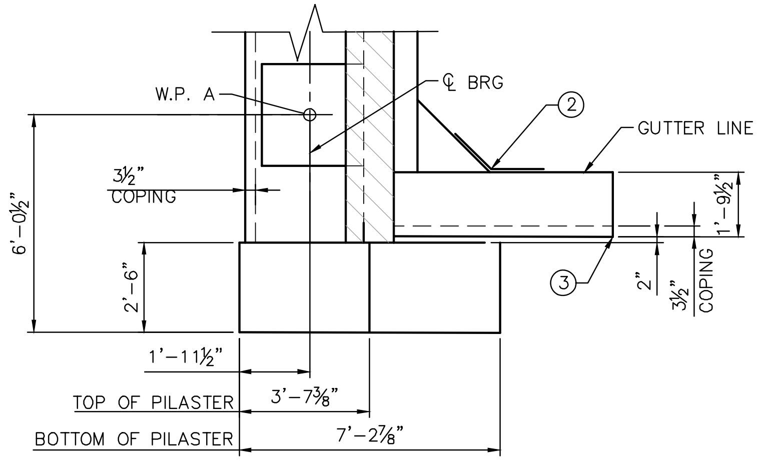
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

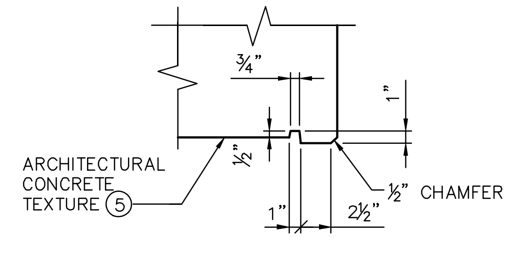
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
WEST ABUTMENT DETAILS 3

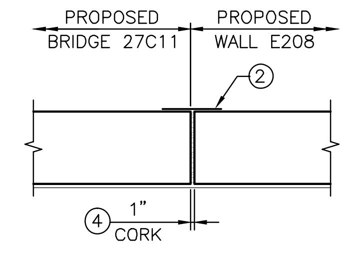
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-ABT-003



PILASTER PLAN



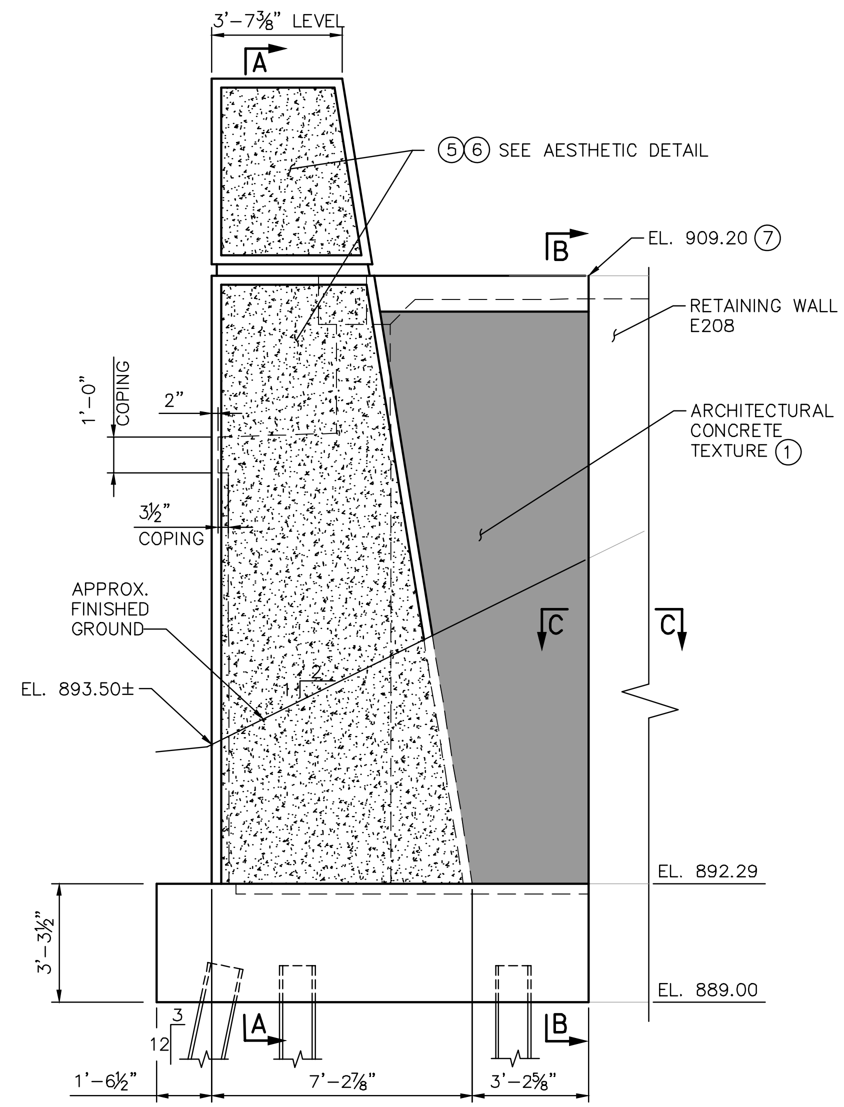
AESTHETIC DETAIL



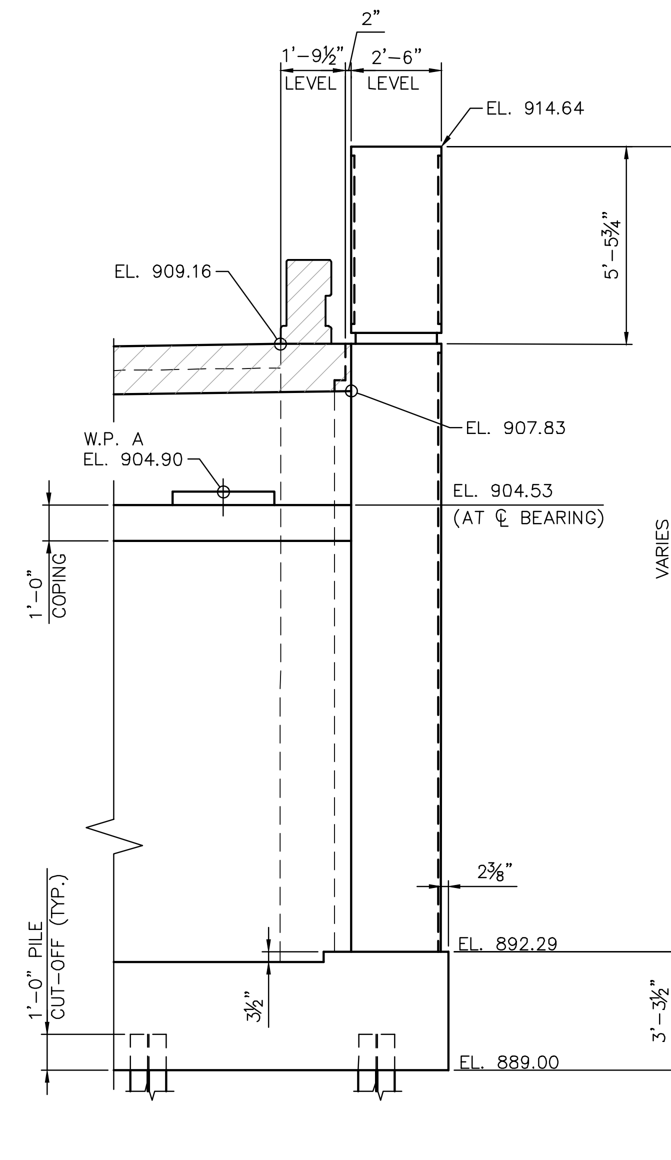
SECTION C–C

NOTES:

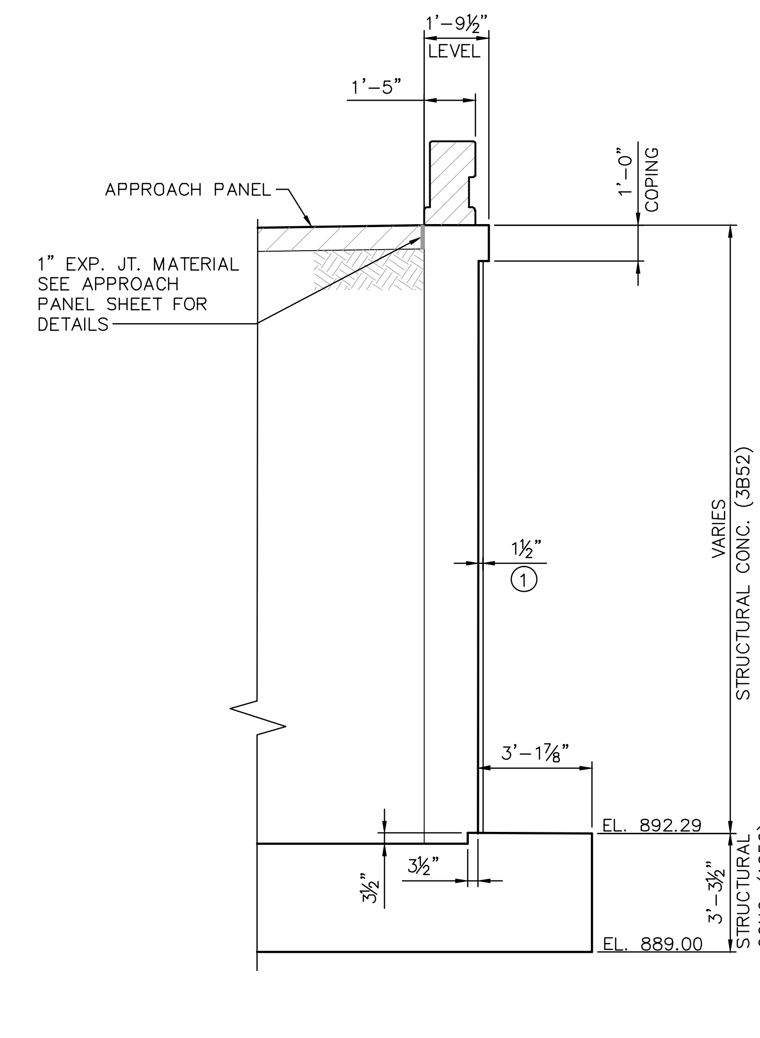
1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1½".
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
3. FRONT FACE OF WINGWALL TO MATCH RETAINING WALL E208 REFERENCE LINE.
4. ELECTRICAL INSULATING CORK BARRIER. CONTRACTOR AND FIELD ENGINEER SHALL VERIFY WINGWALL CONCRETE IS SEPARATED AND CONDUCTIVE MATERIAL DOES NOT EXTEND THROUGH CORK.
5. ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 0.5".
6. ARCHITECTURAL CONCRETE TEXTURE ON BOTH SIDES OF PILASTER CAPITAL.
7. SEE SHEET 1 FOR TIE COORDINATES



PILASTER ELEVATION



SECTION A–A



SECTION B–B

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
WEST ABUTMENT DETAILS 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-ABT-004

SHEET 7 OF 57

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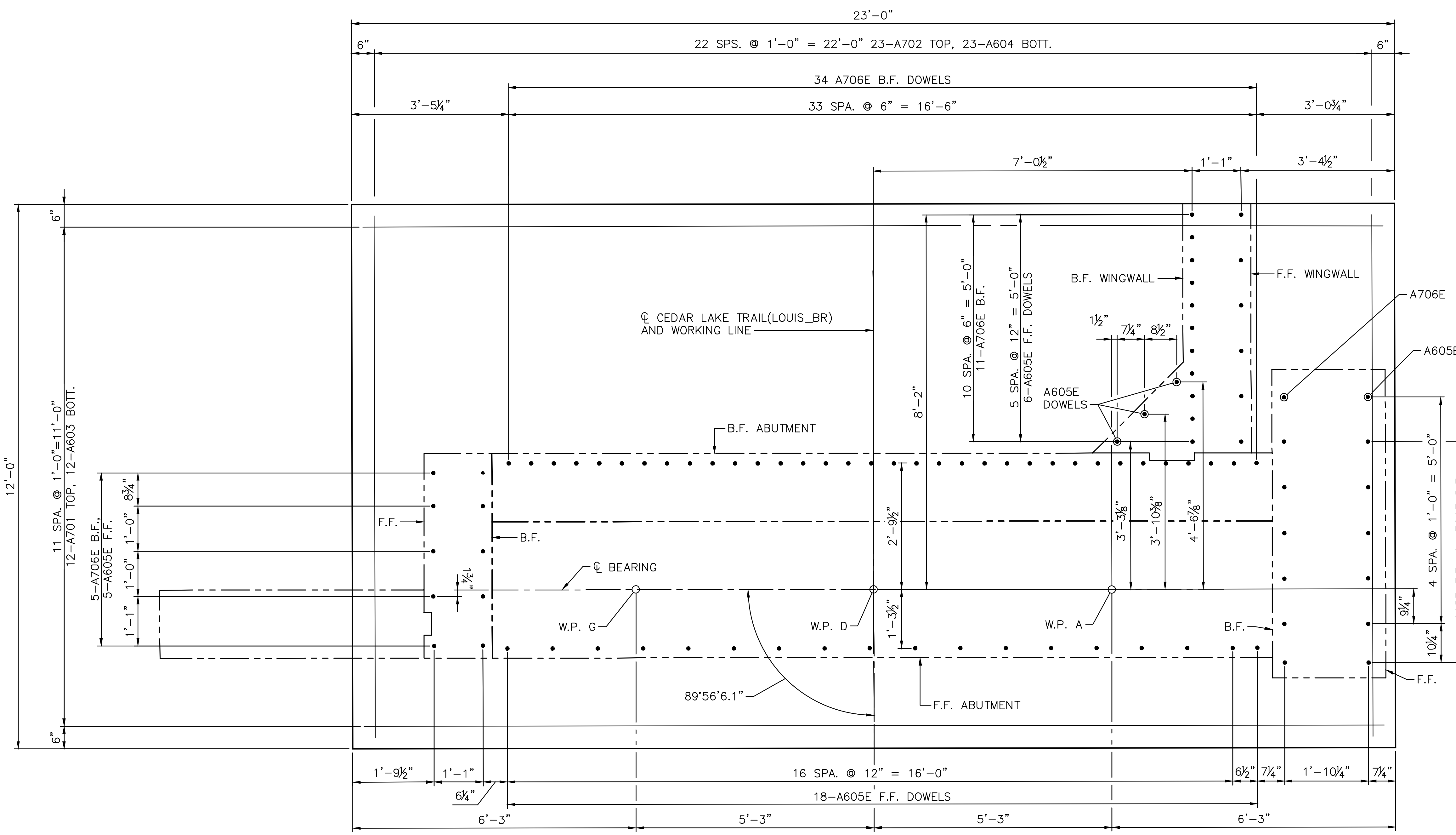

FOOTING PLAN

SOUTHWEST

NORTHWEST

NOTES:
F.F. – DENOTES FRONT FACE
B.F. – DENOTES BACK FACE
E.F – DENOTES EACH FACE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: PGR CHECKED BY: JSM

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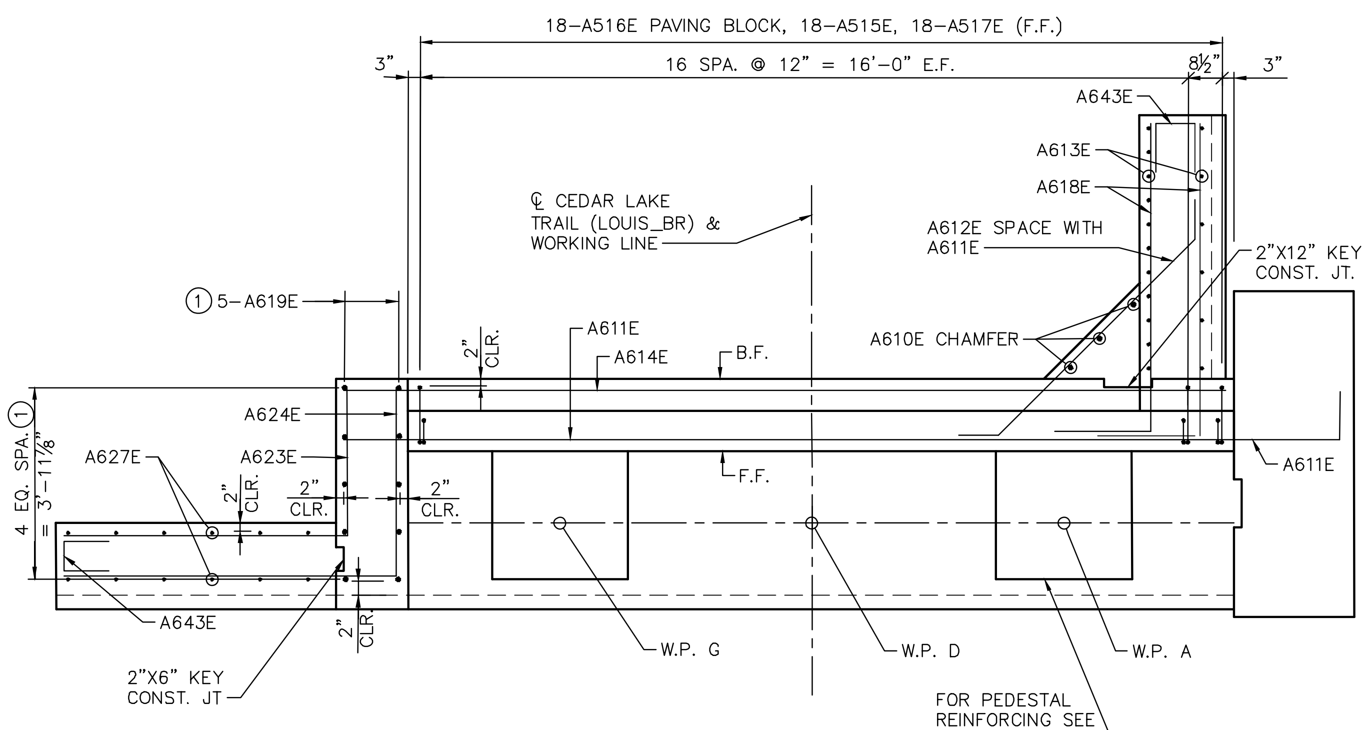
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

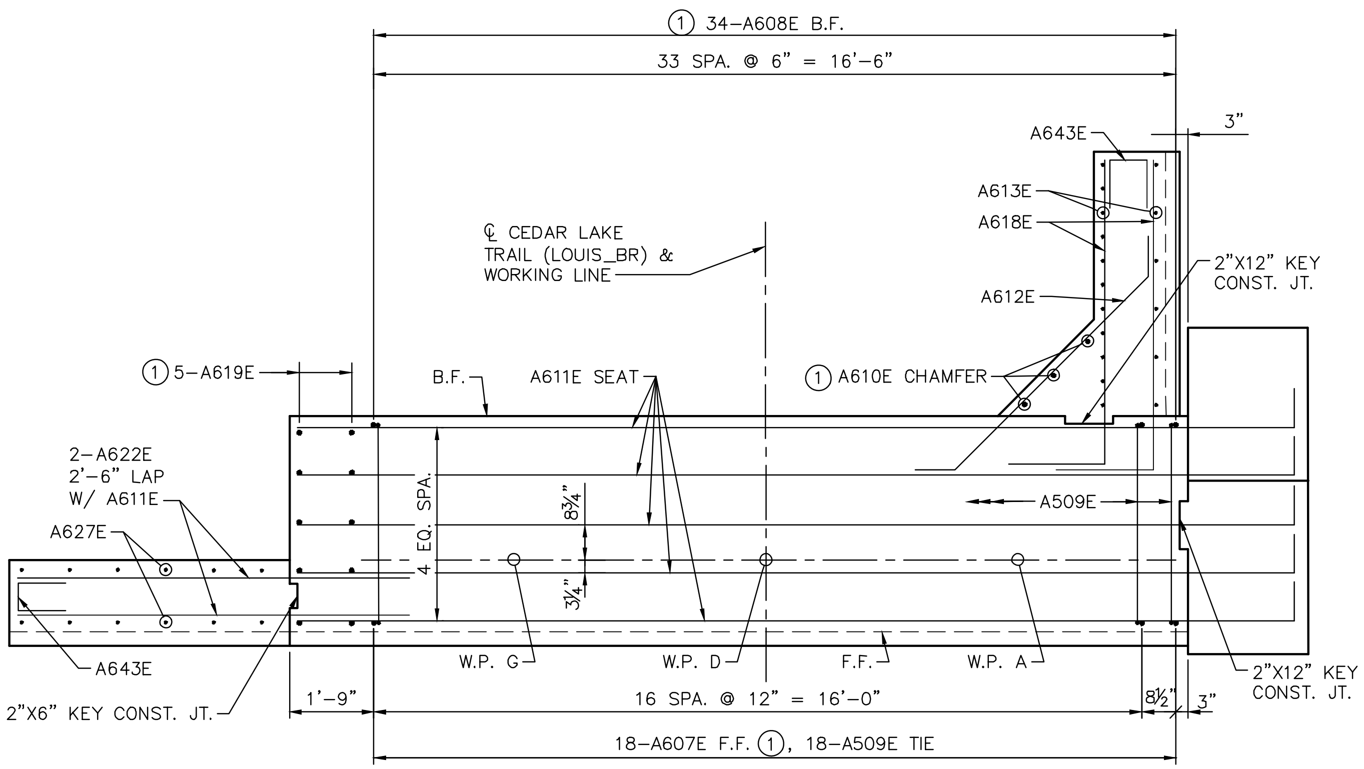
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
WEST ABUTMENT REINFORCEMENT 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-ABT-005

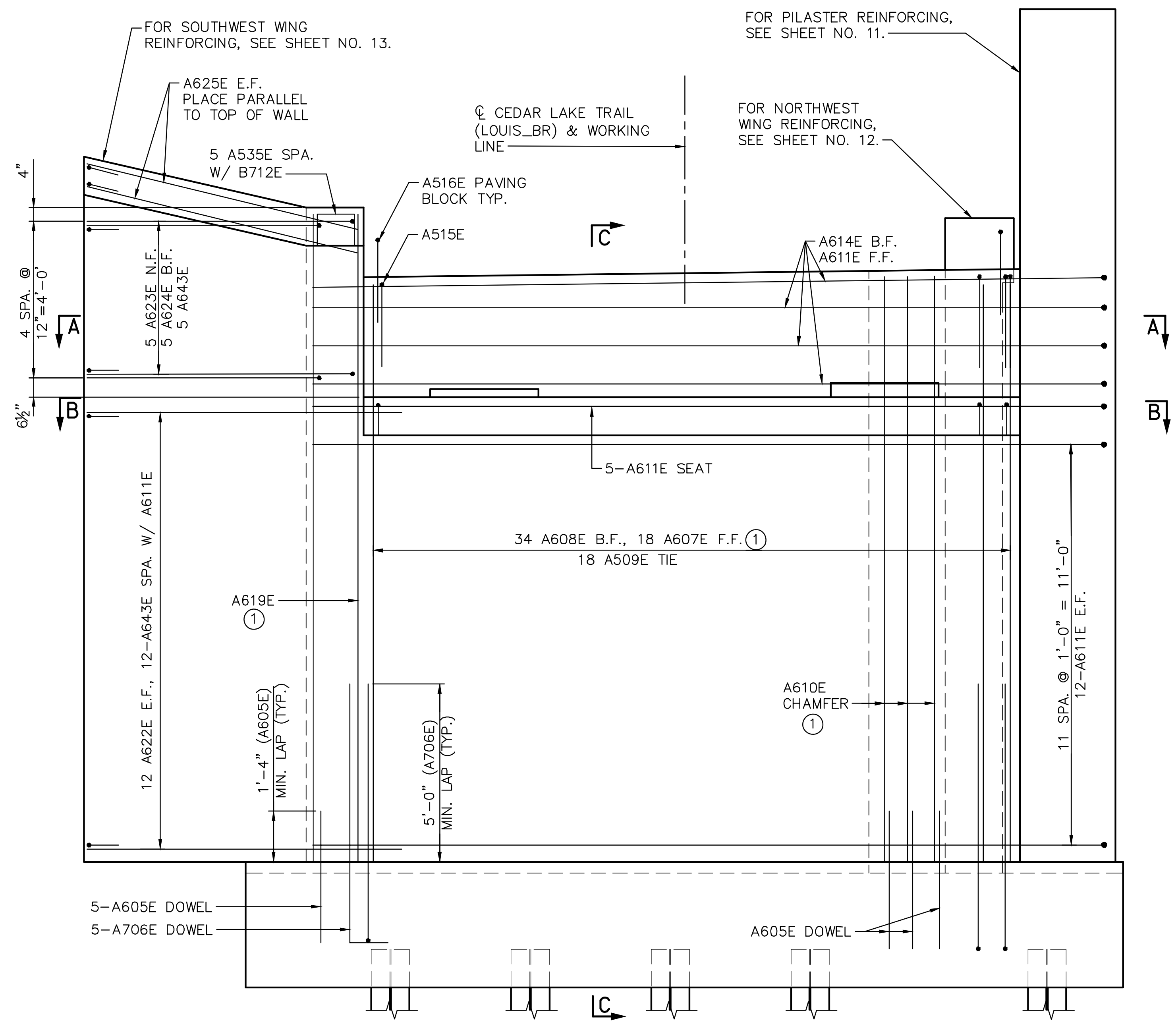
SHEET 8 OF 57



SECTION A–A



SECTION B–B



ABUTMENT ELEVATION

NOTES:

FOR SECTION C-C SEE SHEET NO. 10.

F.F. – DENOTES FRONT FACE
B.F. – DENOTES BACK FACE
E.F – DENOTES EACH FACE

1 SPACE WITH DOWEL BARS.

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

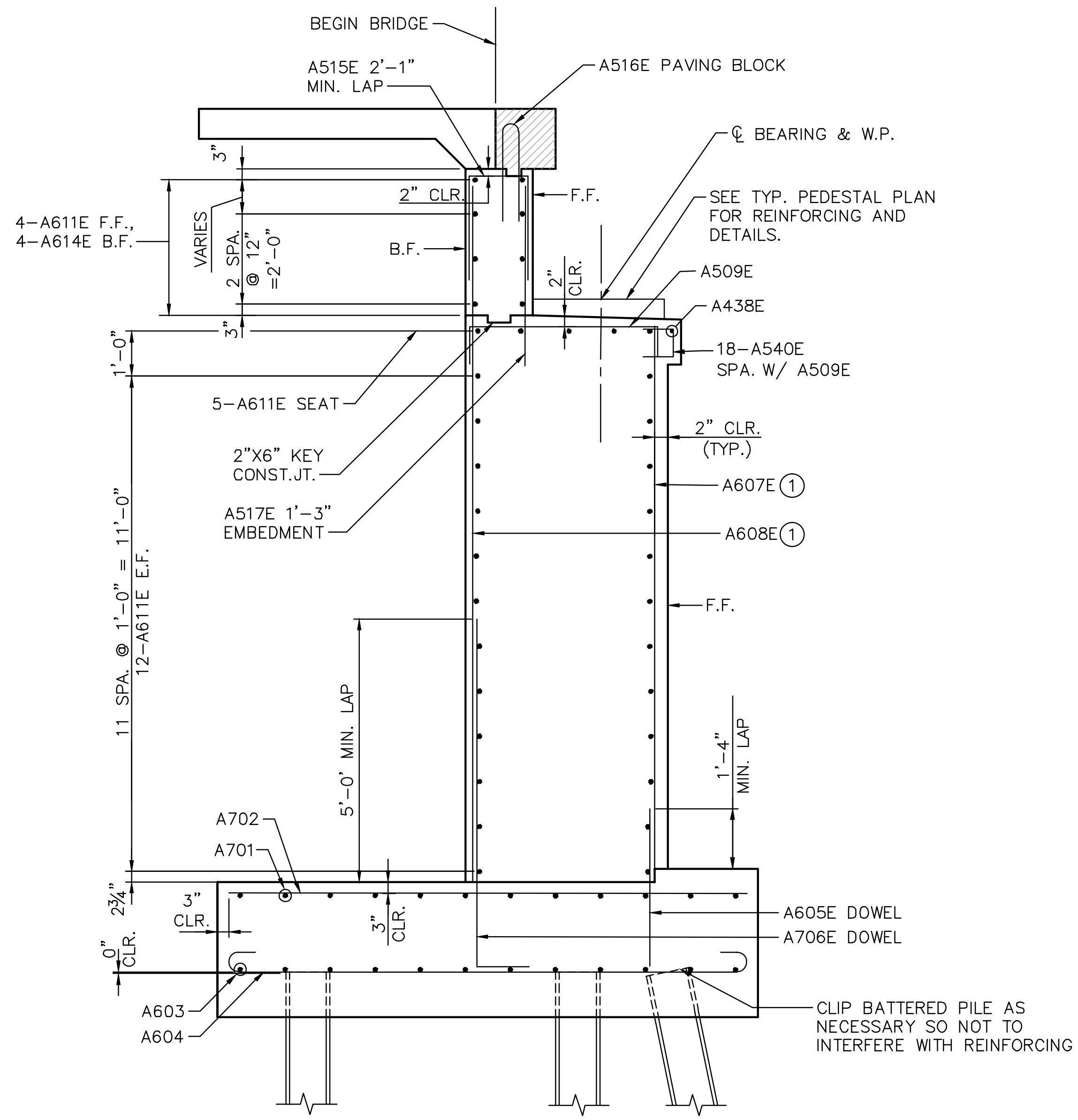
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
WEST ABUTMENT REINFORCEMENT 2

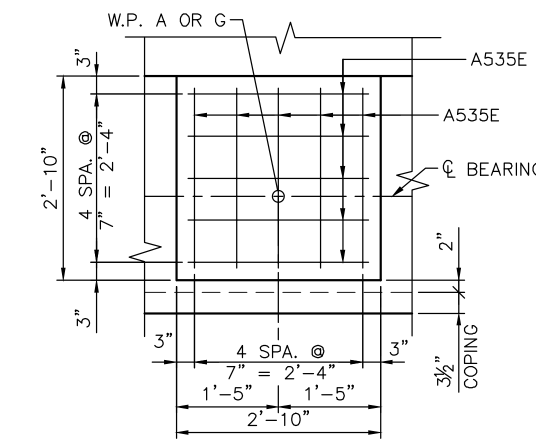
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-ABT-006

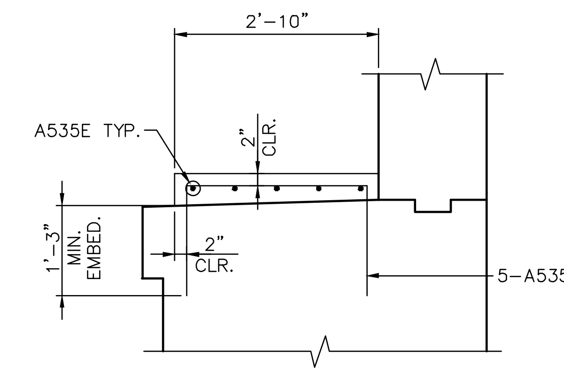
SHEET 9 OF 57



SECTION C-C



TYPICAL PEDESTAL PLAN



TYPICAL PEDESTAL SECTION

NOTES:

F.F. - DENOTES FRONT FACE
B.F. - DENOTES BACK FACE
E.F - DENOTES EACH FACE

(1) SPACE WITH DOWEL BARS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

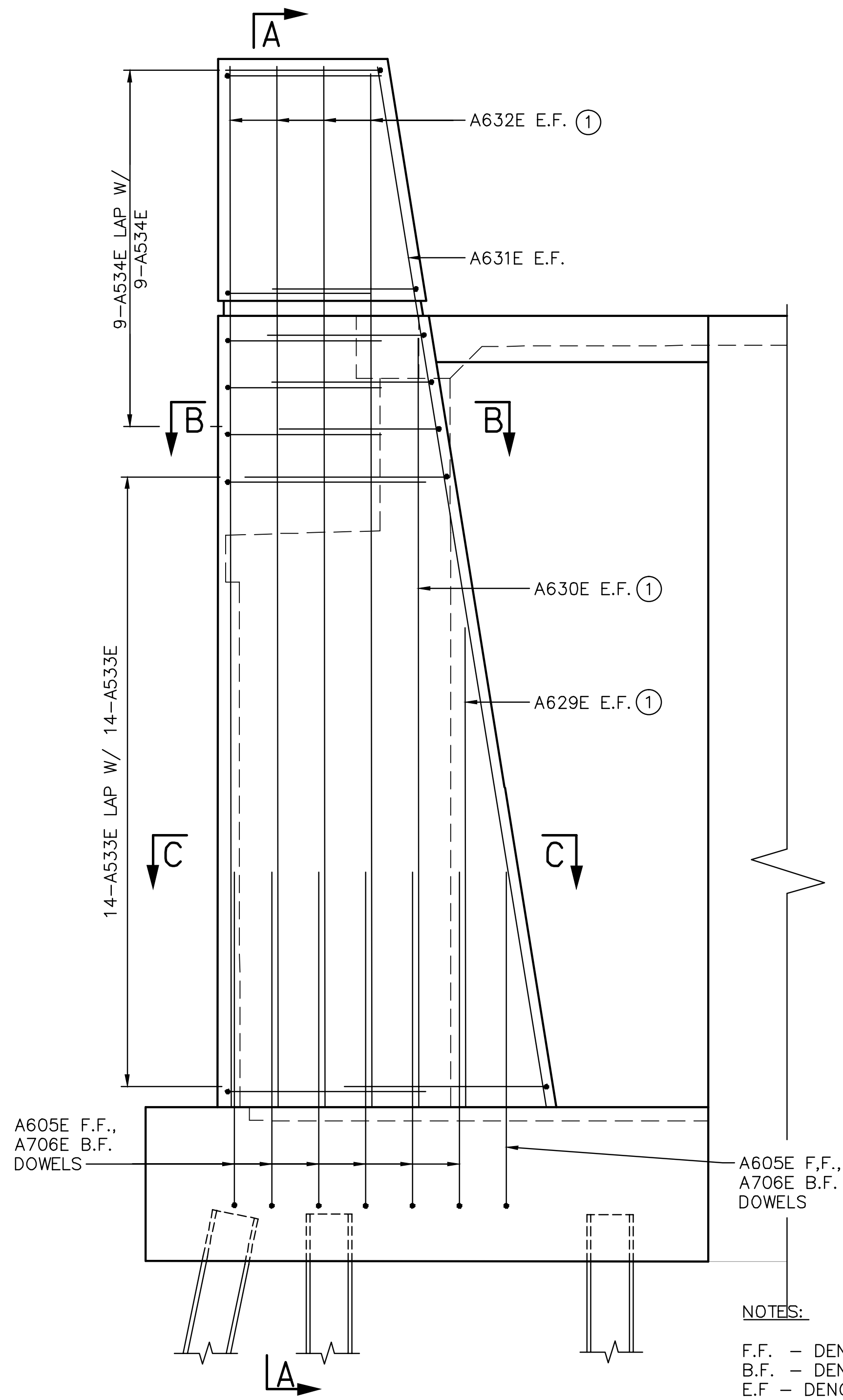
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

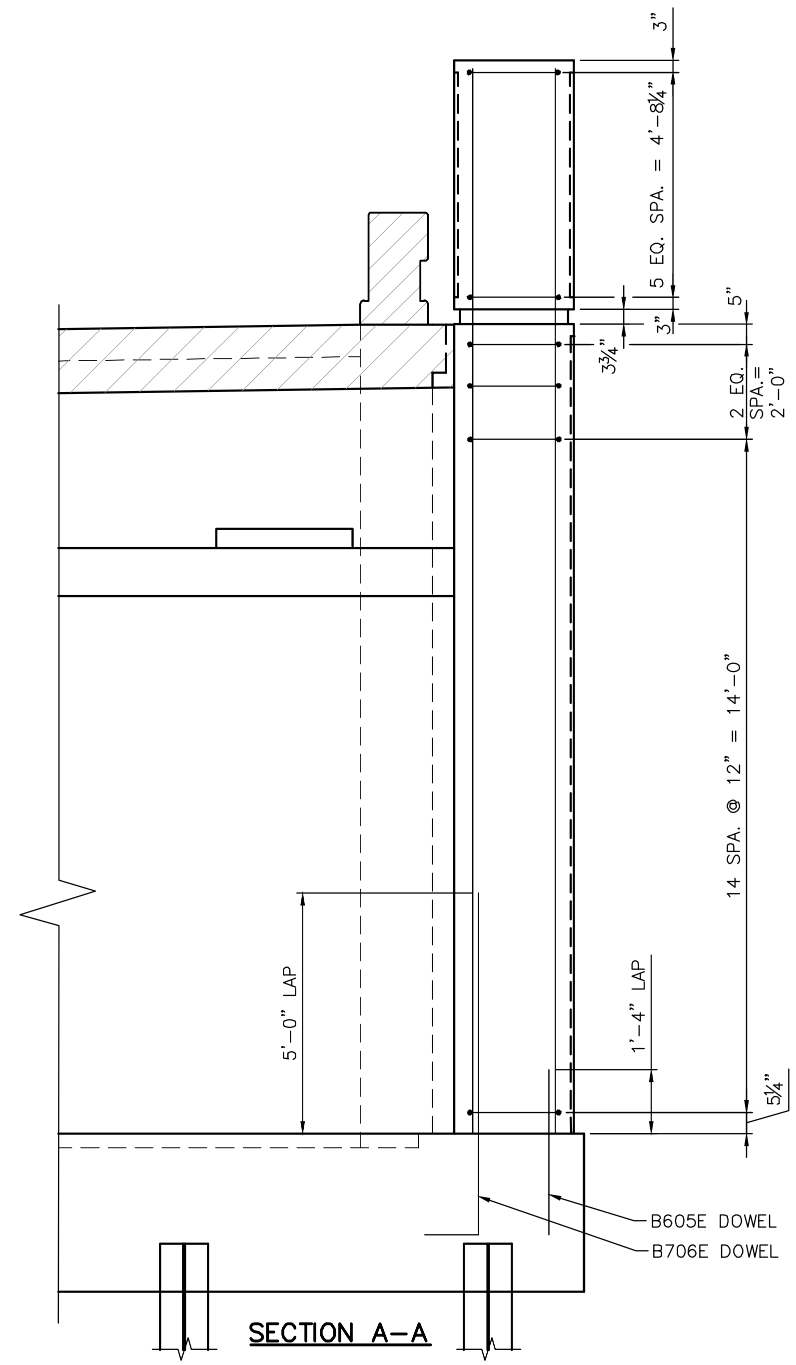
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
WEST ABUTMENT REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-ABT-007

SHEET 10 OF 57



ELEVATION OF PILASTER

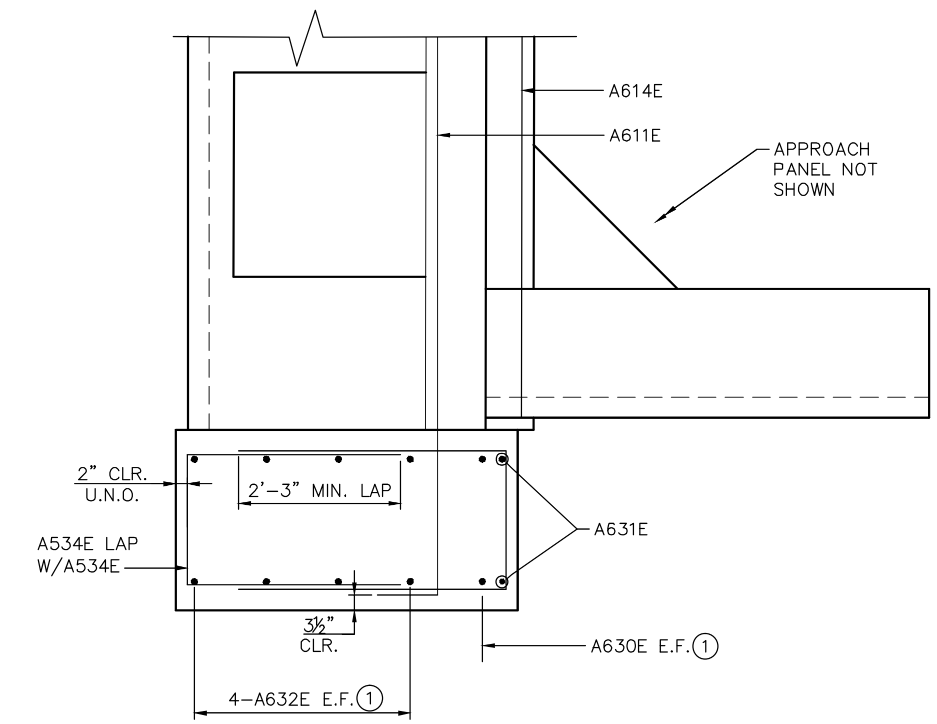


SECTION A–A

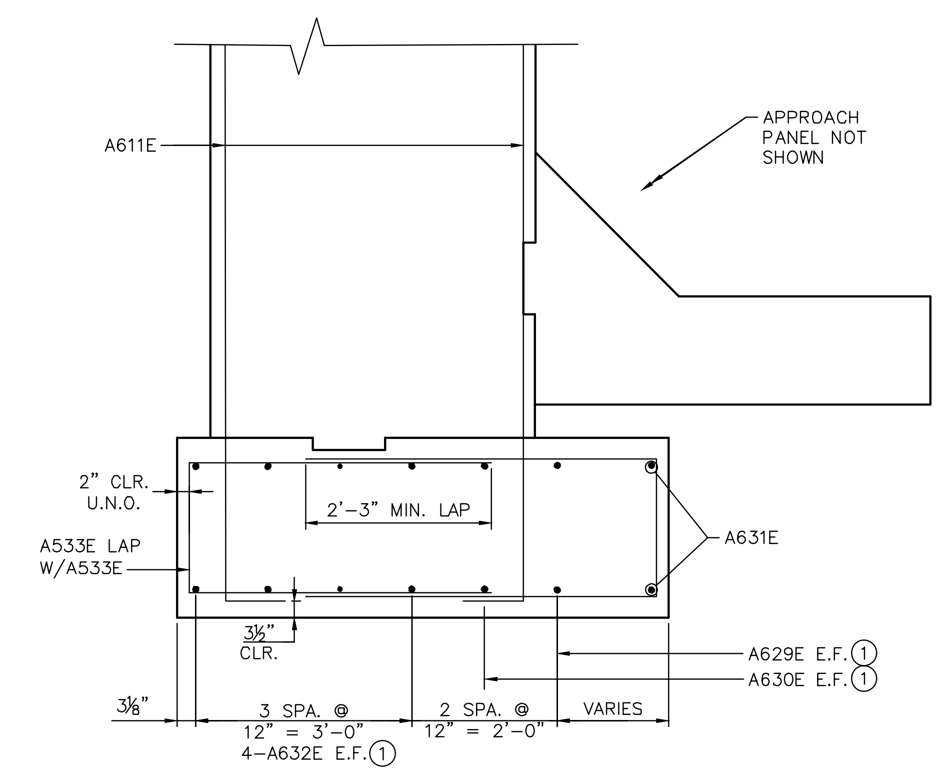
NOTES:

F.F. – DENOTES FRONT FACE
B.F. – DENOTES BACK FACE
E.F – DENOTES EACH FACE

1 SPACE WITH DOWEL BARS.



SECTION B–B



SECTION C–C

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

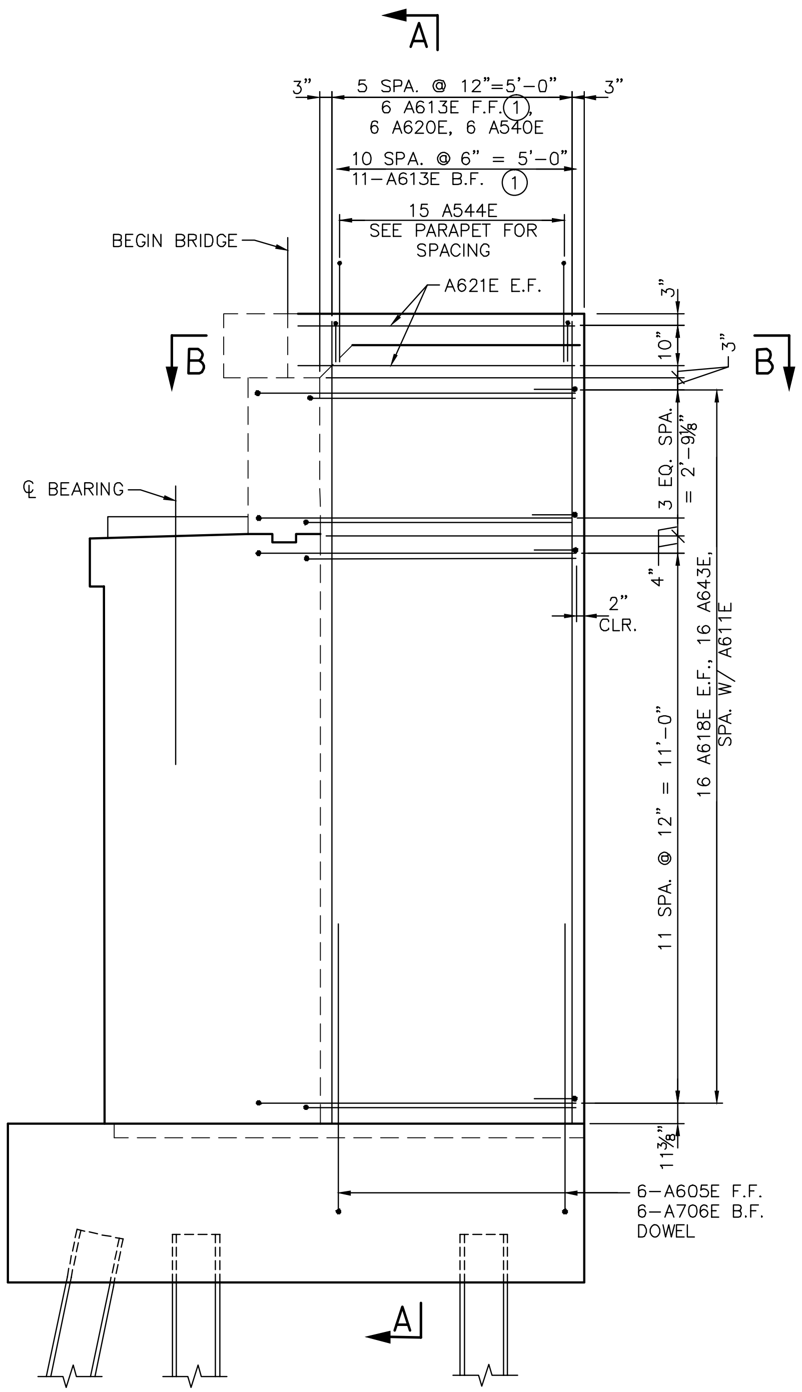
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
WEST ABUTMENT REINFORCEMENT 4

DISCIPLINE: STRUCTURES

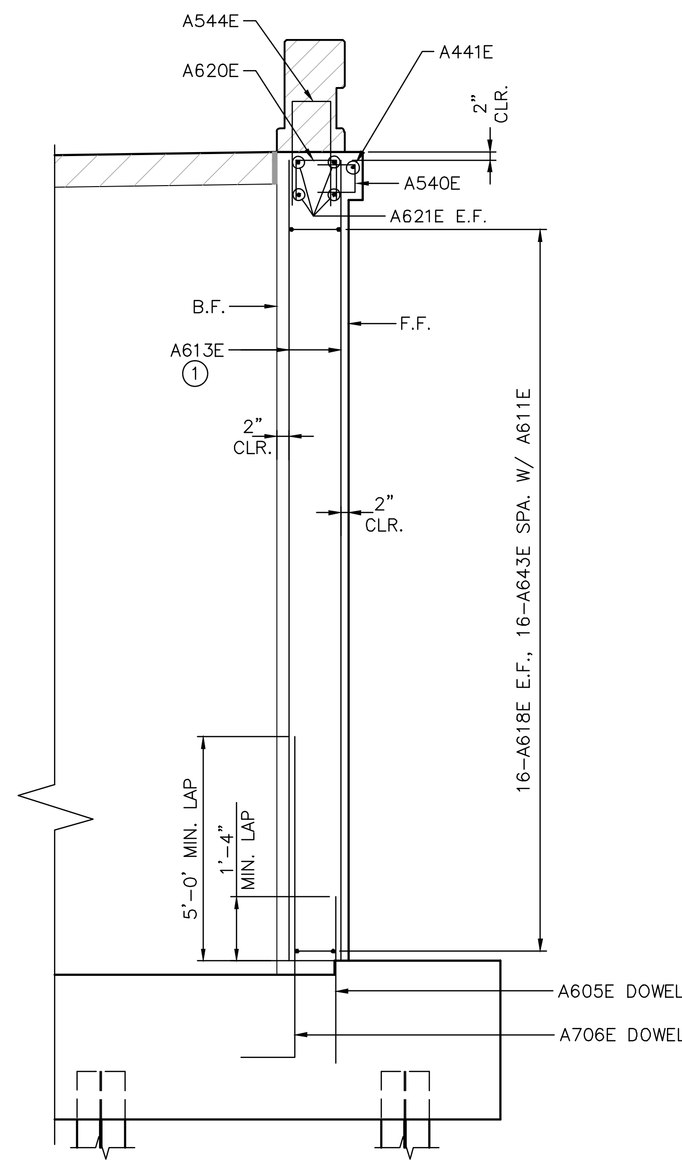
SHEET NAME: CBR27C11-BRG-ABT-008

SHEET 11 OF 57

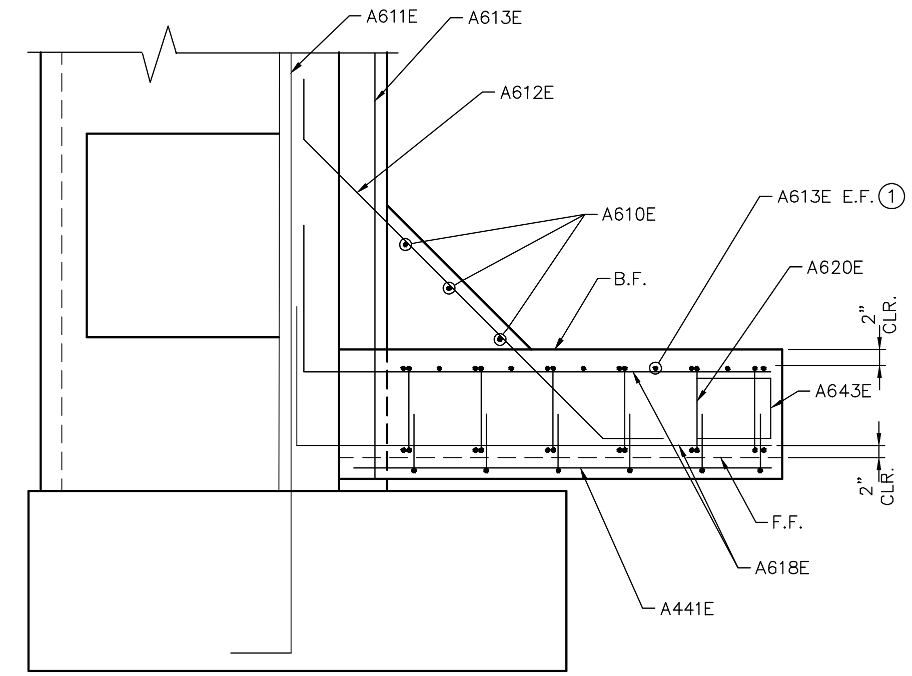
Jan, 12 2016 12:18 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-TRL\CBR27C11-BRG-ABT.dwg By: Paul.Robbs



NORTHWEST WINGWALL ELEVATION



SECTION A-A



SECTION B-B

NOTES:

F.F. - DENOTES FRONT FACE
B.F. - DENOTES BACK FACE
E.F - DENOTES EACH FACE

1 SPACE WITH DOWEL BARS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: PGR CHECKED BY: JSM

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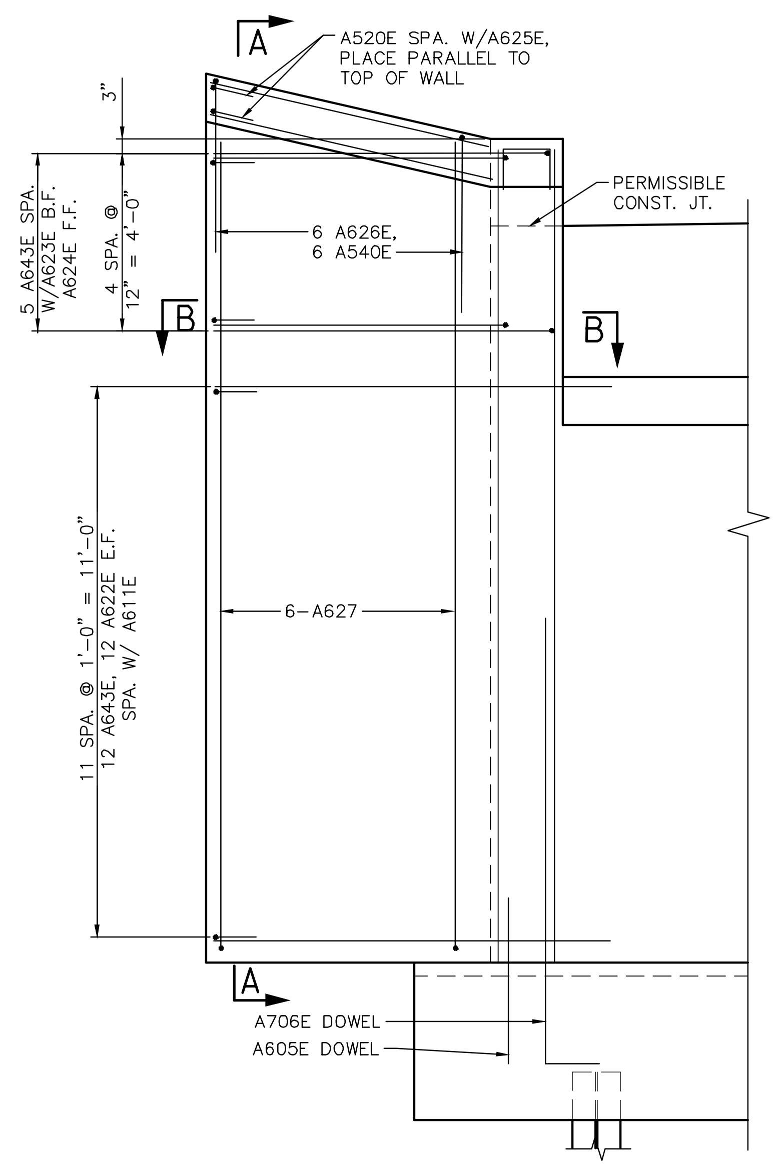
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

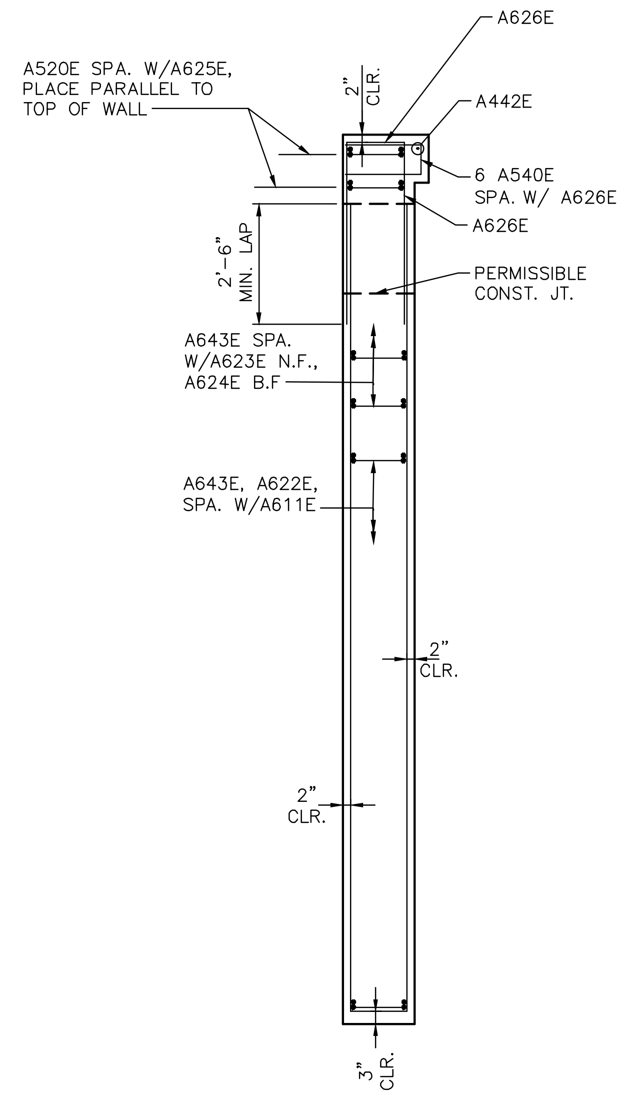
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
WEST ABUTMENT REINFORCEMENT 5

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-ABT-009

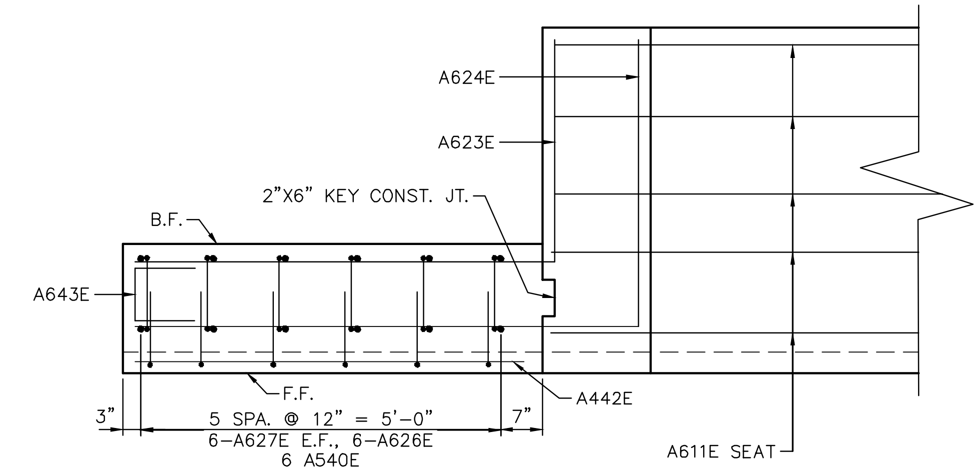
SHEET 12 OF 57



SOUTHWEST WINGWALL ELEVATION



SECTION A–A



SECTTION B–B

NOTES:

F.F. – DENOTES FRONT FACE
B.F. – DENOTES BACK FACE
E.F – DENOTES EACH FACE

1 SPACE WITH DOWEL BARS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

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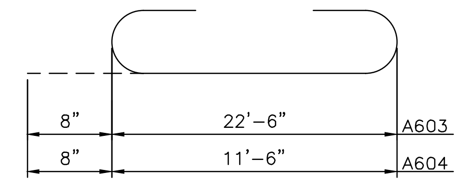
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
WEST ABUTMENT REINFORCEMENT 6

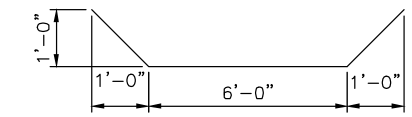
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-ABT-010

SHEET 13 OF 57

BILL OF REINFORCEMENT FOR WEST ABUTMENT				
BAR	NO.	LENGTH	SHAPE	LOCATION
A701	12	22'-6"	STR.	FOOTING TRANS TOP
A702	23	11'-6"	STR.	FOOTING LONG TOP
A603	12	23'-10"	BENT	FOOTING TRANS BOTTOM
A604	23	12'-10"	BENT	FOOTING LONG BOTTOM
A605E	39	3'-8"	STR.	F.F. FOOTING DOWEL
A706E	57	8'-6"	BENT	B.F. FOOTING DOWEL
A607E	18	12'-0"	STR.	ABUT F.F. VERT
A608E	34	15'-2"	STR.	ABUT B.F. VERT
A509E	18	5'-10"	BENT	ABUT. SEAT
A610E	3	15'-7"	STR.	CHAMFER VERT
A611E	33	21'-9"	BENT	ABUT. LONG
A612E	17	8'-10"	BENT	CHAMFER HORZIONTAL
A613E	17	16'-7"	STR.	WING WALL VERTICAL E.F.
A614E	4	18'-1"	STR.	STEM HORZ. B.F.
A515E	18	5'-10"	BENT	STEM TIE
A516E	18	5'-6"	BENT	PAVING BLOCK
A517E	18	4'-2"	STR.	STEM
A618E	32	7'-9"	BENT	NW WING WALL HORZ. E.F.
A619E	10	17'-3"	STR.	SW WING WALL VERT E.F.
A620E	20	3'-6"	BENT	NW WING WALLS
A621E	4	5'-10"	STR.	NW WING WALL E.F.
A622E	24	8'-5"	STR.	SW WING WALL LONG.
A623E	5	9'-1"	BENT	SW WING WALL HORZ.
A624E	5	10'-6"	BENT	SW WING WALL HORZ.
A625E	4	7'-3"	STR.	SW WING WALL VERT
A626E	6	9'-2"	BENT	SW WING WALL VERT
A627E	6	32'-7"	BENT	SW WING WALL VERT
A629E	2	10'-2"	STR.	PILASTER EF VERTICAL
A630E	2	16'-4"	STR.	PILASTER EF VERTICAL
A631E	2	22'-5"	STR.	PILASTER EF VERTICAL
A632E	8	22'-1"	STR.	PILASTER EF VERTICAL
A533E	28	11'-5"	BENT	PILASTER HORIZIONTAL
A534E	18	8'-9"	BENT	PILASTER HORIZIONTAL
A535E	20	5'-6"	BENT	PEDESTAL
A438E	1	16'-10"	STR.	ABUT. CHAMFER HORZ.
A540E	30	2'-4"	BENT	ABUT. CHAMER TIE
A441E	1	5'-10"	STR.	NW WINGWALL CHAFER HORZ.
A442E	1	7'-1"	STR.	SW WINGWALL CHAMFER HORZ.
A643E	33	3'-0"	BENT	NW WINGWALL TIE
A544E	15	5'-9"	BENT	NW WINGWALL BARRIER



A603, A604



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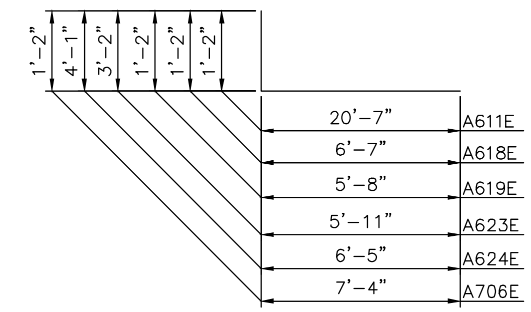

A611E, A618E, A623E,
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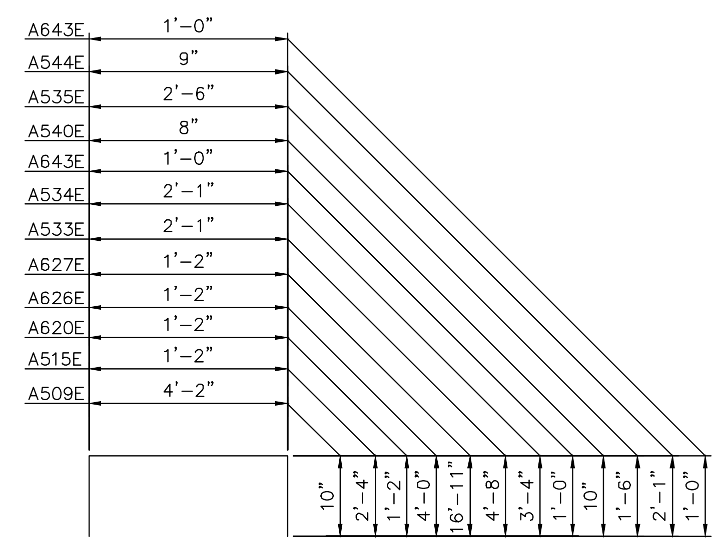

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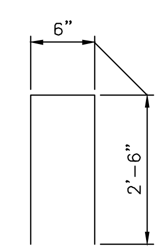


A516E

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
WEST ABUTMENT REINFORCEMENT 7

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-ABT-011

SHEET 14 OF 57

EAST ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	92.4
FACTORED LIVE LOAD	36.0
* FACTORED DESIGN LOAD	128.4

* BASED ON STRENGTH V LOAD COMBINATION.

EAST ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE FOR H-PILES Rn - TONS/PILE		
FIELD CONTROL METHOD	φdyn	*Rn
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{W \times H}{1000}} x\log\left(\frac{10}{S}\right)$	0.60	214
PDA	0.65	198

* Rn = (FACTORED DESIGN LOAD) / φdyn

GENERAL PILE NOTES

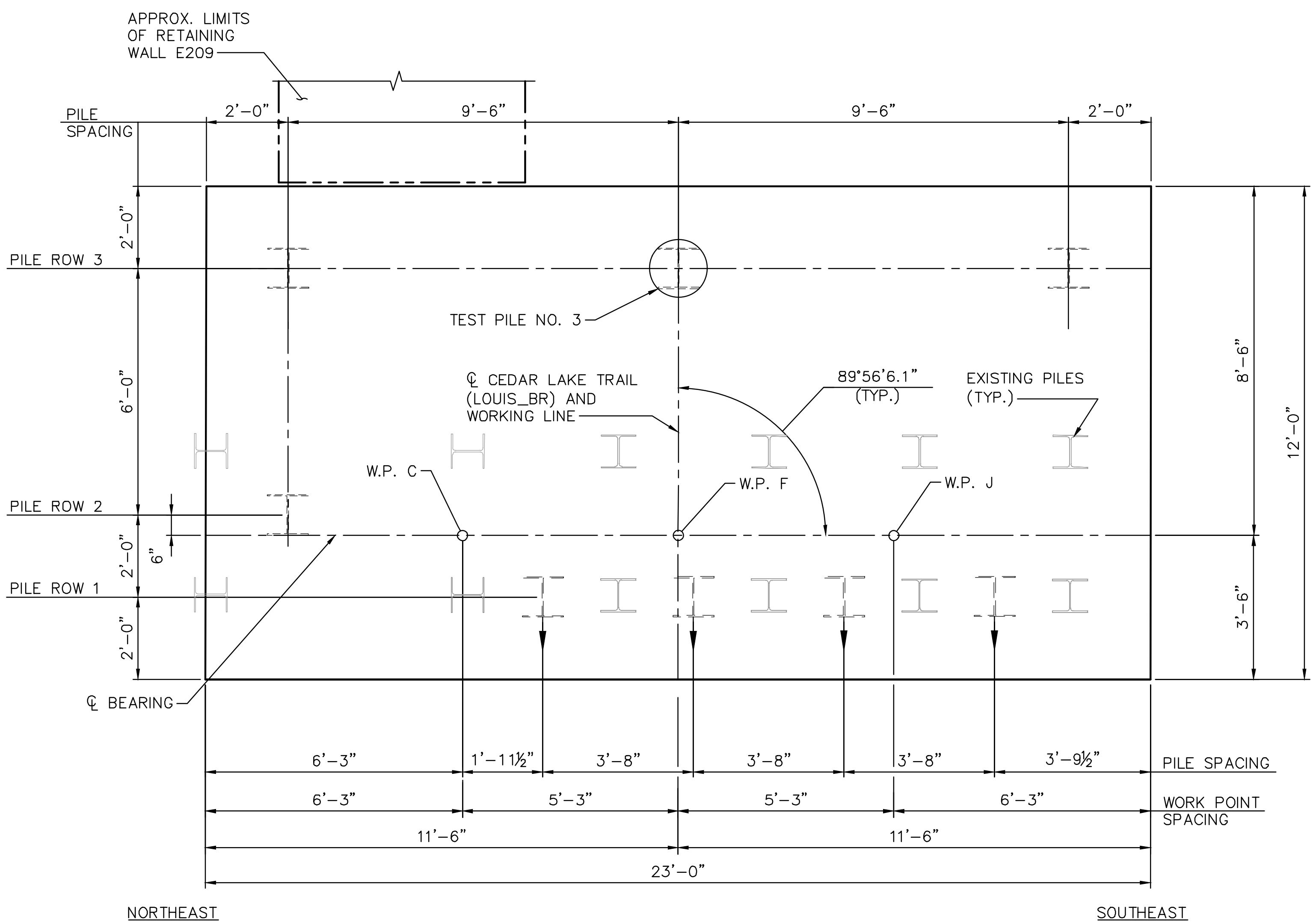
1 HP12x53 STEEL TEST PILES 79 FT. LONG
7 HP12x53 STEEL PILES EST. 79 FT. LENGTH
8 HP12x53 STEEL PILES REQ'D FOR EAST ABUT.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: PGR CHECKED BY: JSM

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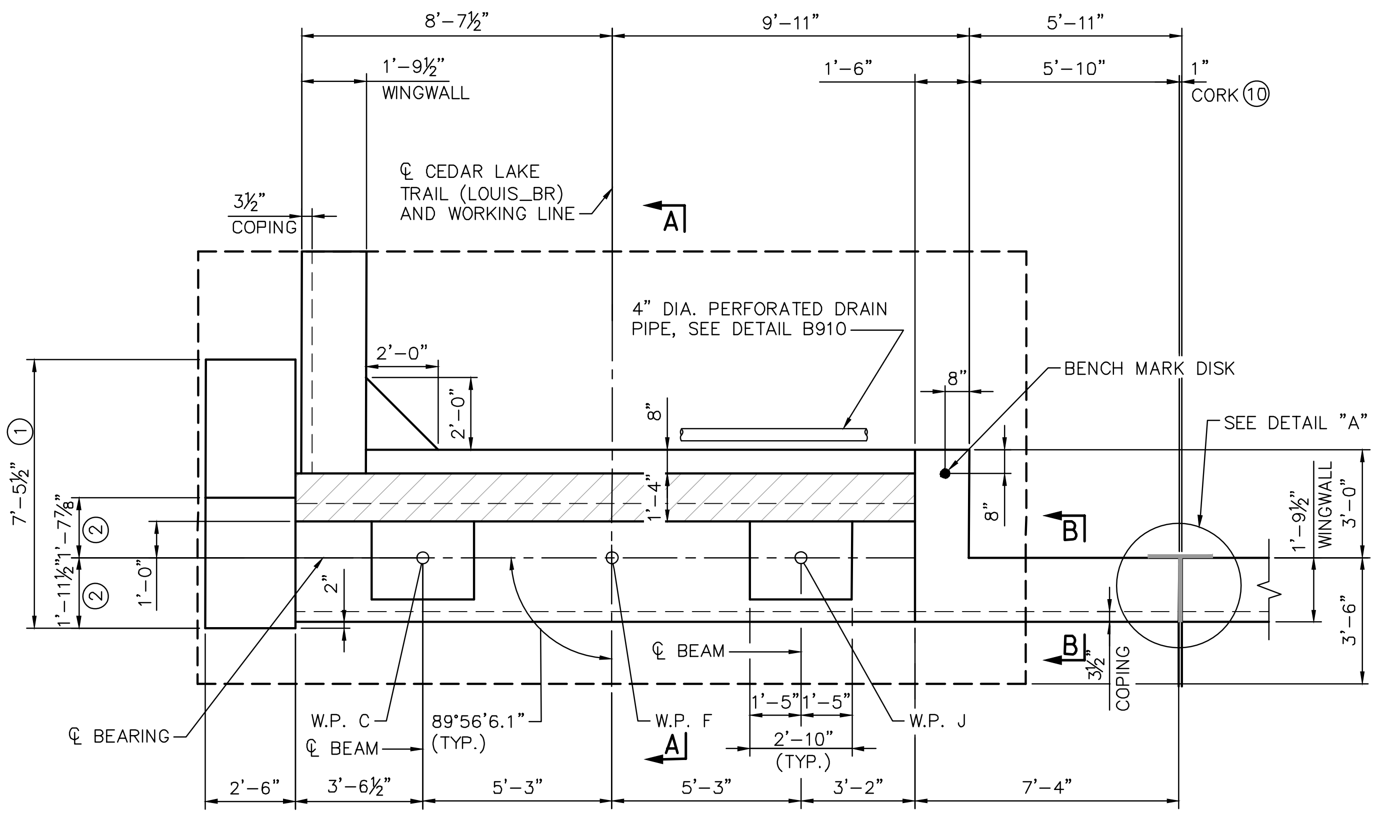
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

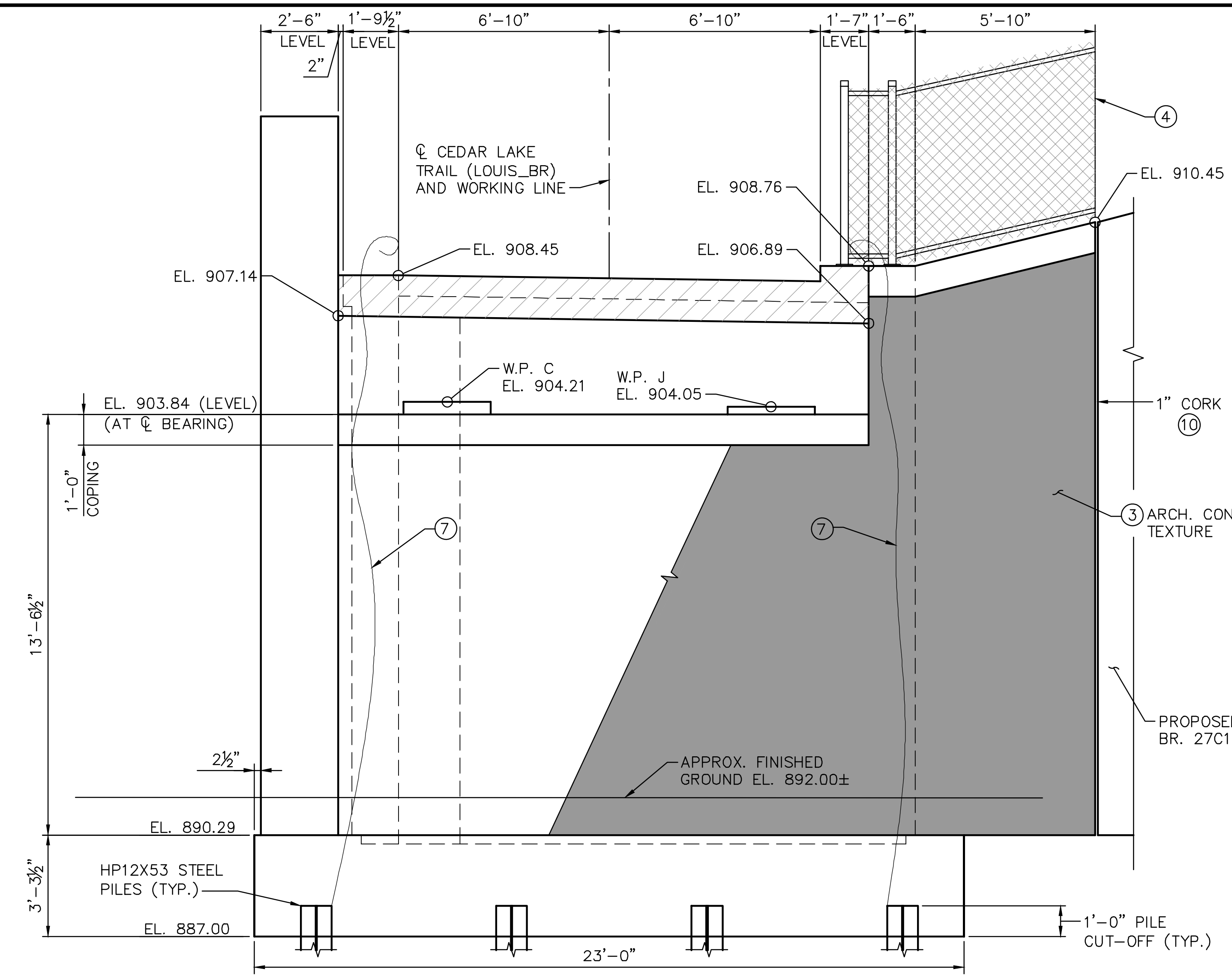
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
EAST ABUTMENT DETAILS 1

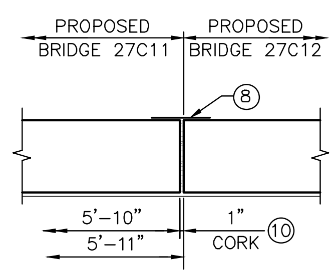
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-ABT-012



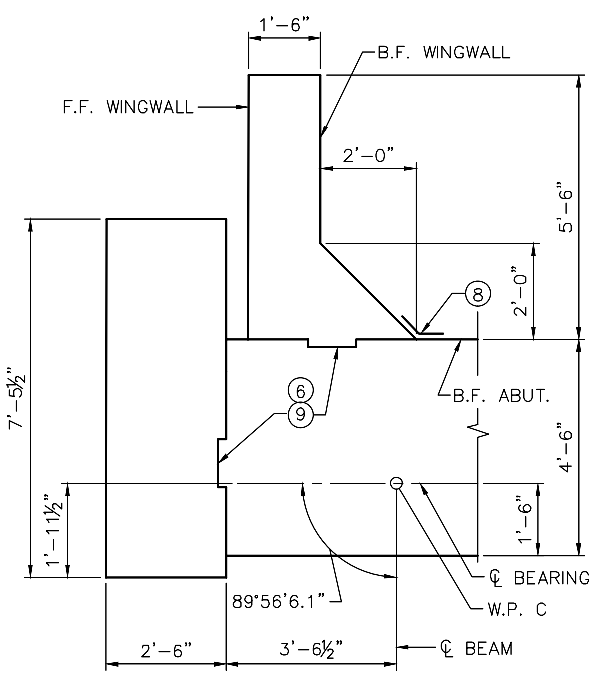
ABUTMENT PLAN



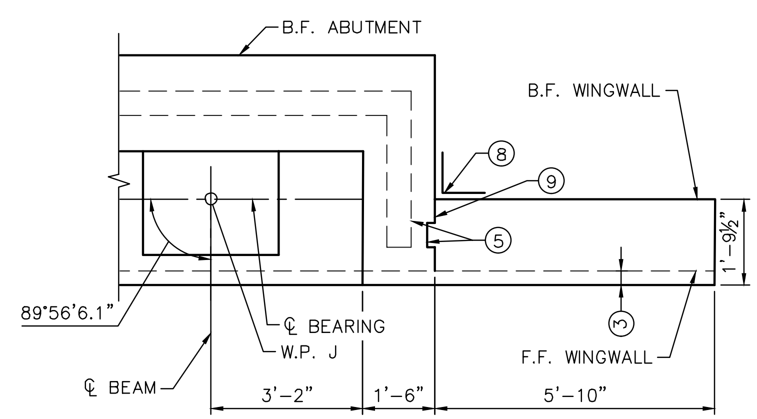
ABUTMENT ELEVATION



DETAIL "A"



NORTHEAST WINGWALL PLANVIEW
SECTION BELOW ABUTMENT COPING



SOUTHEAST WINGWALL PLAN VIEW
SECTION BELOW PAVING BLOCK

NOTES:

SEE NEXT SHEET FOR SECTIONS A-A AND B-B.

PAVING BLOCK HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

(1) DIMENSION AT TOP OF FOOTING.

(2) DIMENSION AT TOP OF PILASTER.

(3) ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1½".

(4) WIRE FENCE DESIGN W-1.

(5) 2"X6" KEY

(6) 2"X12" KEY

(7) ATTACH WIRE FENCE ANCHORAGE TO PILE WITH SOLID NO. 6 GAGE COPPER WIRE WITH AN APPROVED TYPE CLAMP OR BRAZING (ONE ANCHORAGE PER END OF RAIL). GROUND BOTH SIDES OF EXPANSION JOINT PIPE SLEEVE IF PRESENT. PAINT EXPOSED PORTION OF WIRE GRAY.

(8) MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.

(9) CONSTRUCTION JOINT. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.

(10) ELECTRICAL INSULATING CORK BARRIER. CONTRACTOR AND FIELD ENGINEER SHALL VERIFY WINGWALL CONCRETE IS SEPARATED AND CONDUCTIVE MATERIAL DOES NOT EXTEND THROUGH CORK.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW | CHECKED BY: JSM
DRAWN BY: PGR | CHECKED BY: JSM

AECOM Kimley»Horn

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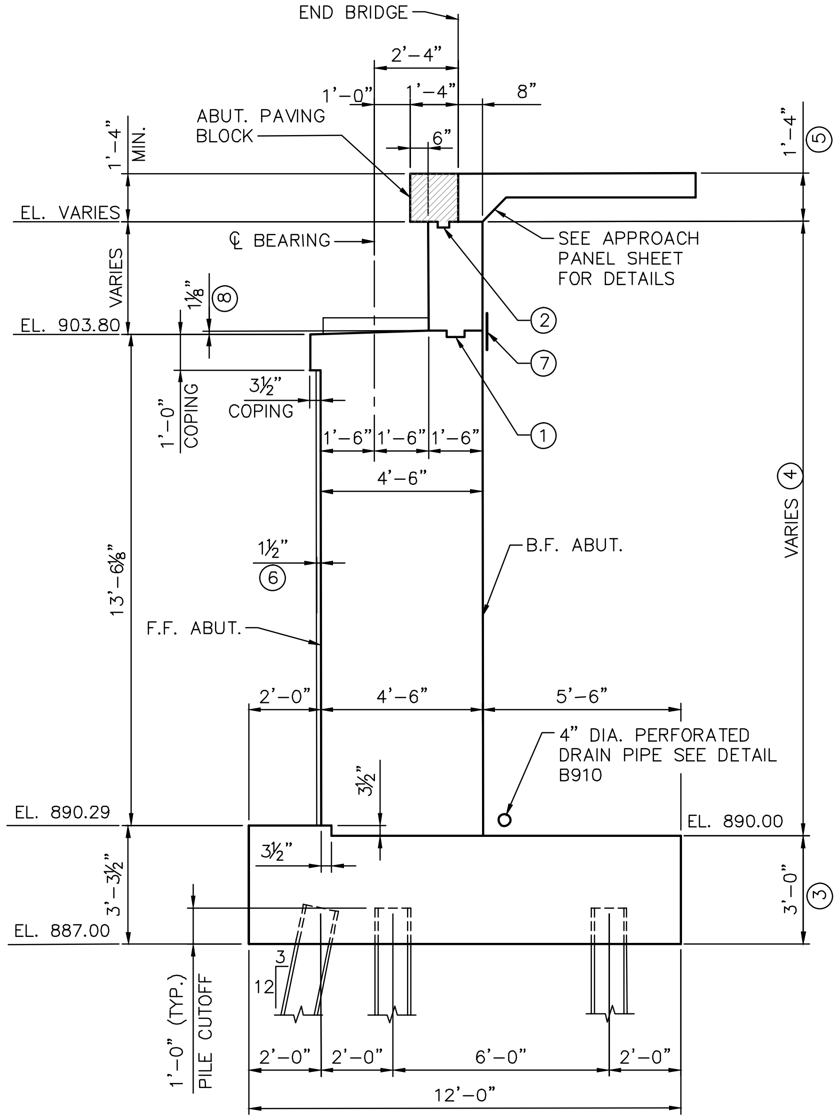
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

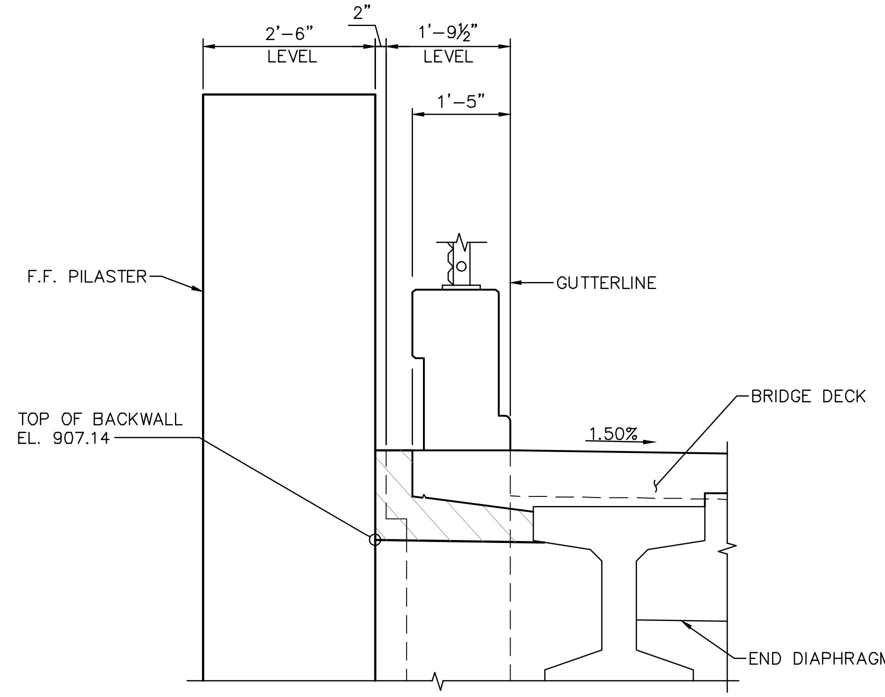
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
EAST ABUTMENT DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-ABT-013

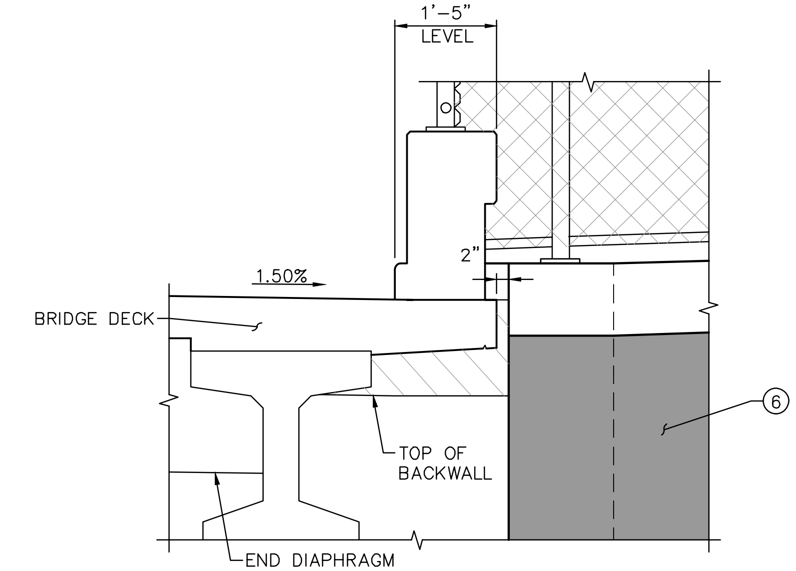
SHEET 16 OF 57



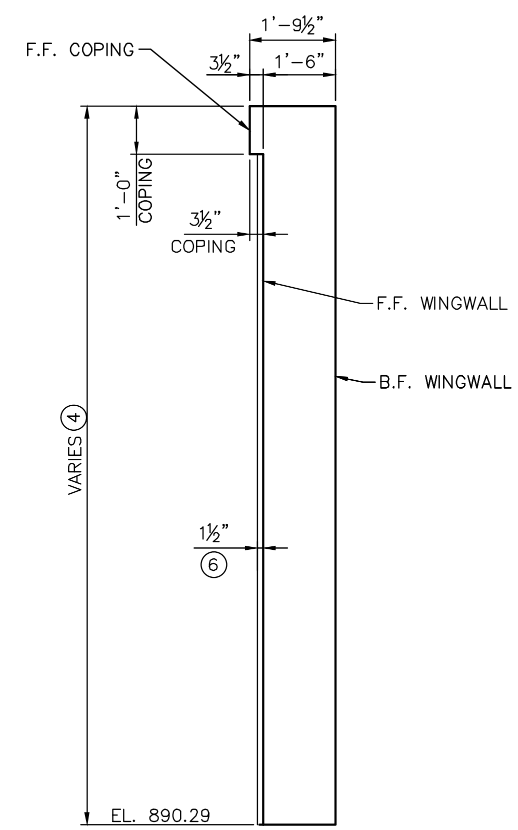
SECTION A–A



NORTHEAST CORNER ELEVATION VIEW



SOUTHEAST CORNER ELEVATION VIEW



SECTION B–B

NOTES:

PAVING BLOCK HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

1. PERMISSIBLE CONSTRUCTION JOINT WITH 2" x 6" KEY CENTERED IN WALL.
2. CONSTRUCTION JOINT WITH 2" x 4" KEY.
3. STRUCTURAL CONCRETE (1G52).
4. STRUCTURAL CONCRETE (3B52).
5. BRIDGE SLAB CONCRETE (3YHPC–M). SEE SUPERSTRUCTURE DETAILS.
6. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1½".
7. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
8. DIMENSION IS TO TOP OF CAP AT F.F. BACKWALL.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

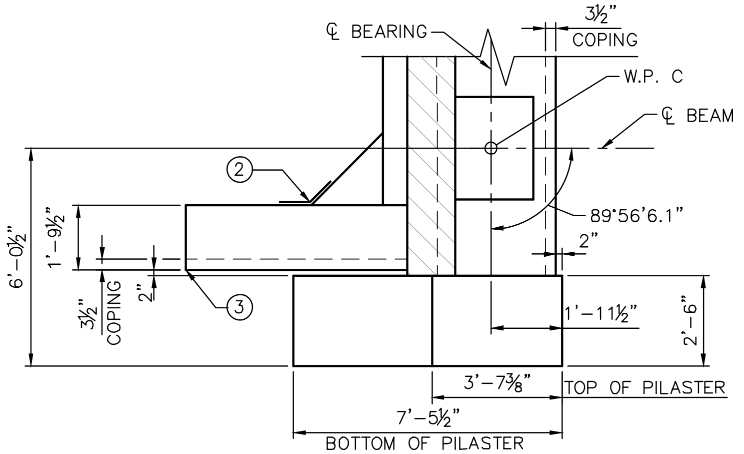
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

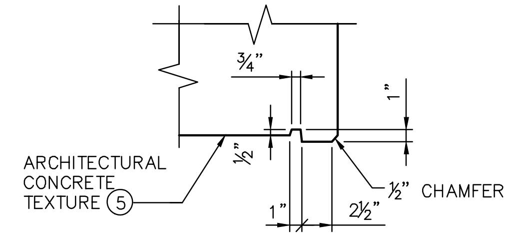
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
EAST ABUTMENT DETAILS 3

DISCIPLINE: STRUCTURES

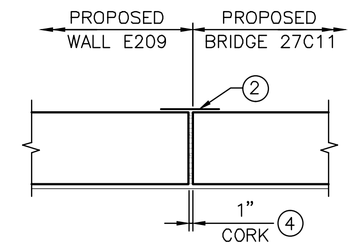
SHEET NAME: CBR27C11-BRG-ABT-014



PILASTER PLAN



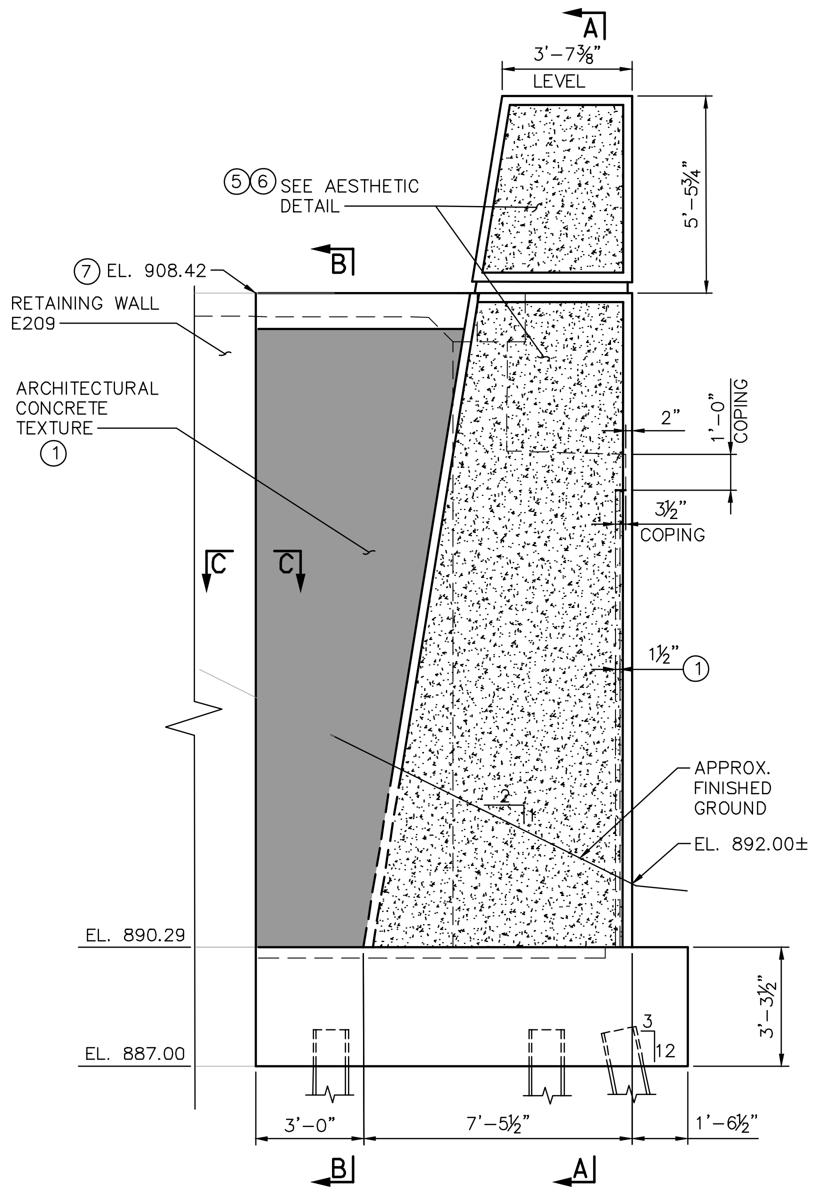
AESTHETIC DETAIL



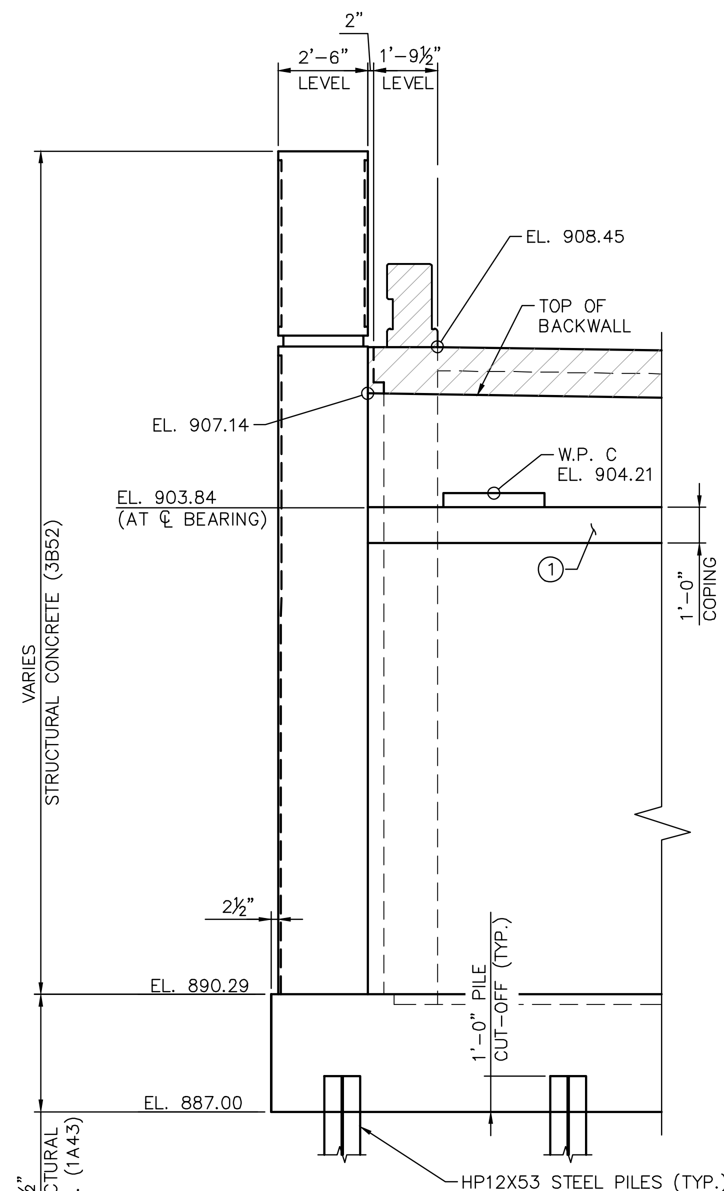
SECTION C–C

NOTES:

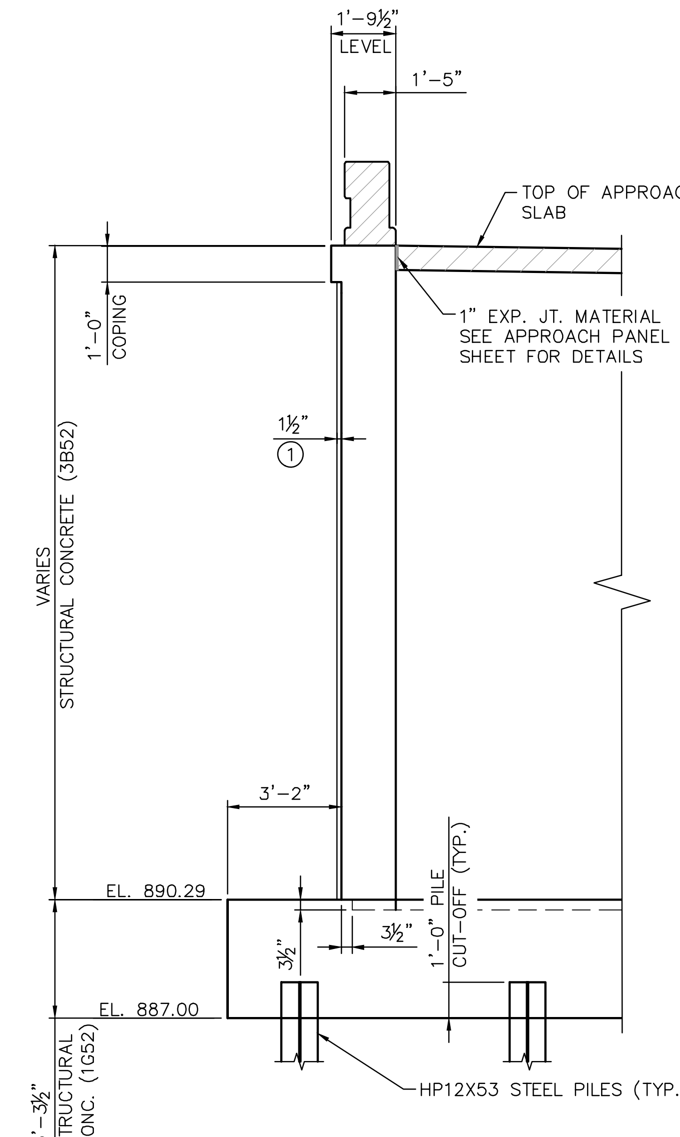
1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1½".
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
3. FRONT FACE OF WINGWALL TO MATCH RETAINING WALL E209 REFERENCE LINE.
4. ELECTRICAL INSULATING CORK BARRIER. CONTRACTOR AND FIELD ENGINEER SHALL VERIFY WINGWALL CONCRETE IS SEPARATED AND CONDUCTIVE MATERIAL DOES NOT EXTEND THROUGH CORK.
5. ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 0.5".
6. ARCHITECTURAL CONCRETE TEXTURE ON BOTH SIDES OF PILASTER CAPITAL.
7. SEE SHEET 1 FOR TIE COORDINATES.



PILASTER ELEVATION



SECTION A–A



SECTION B–B

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

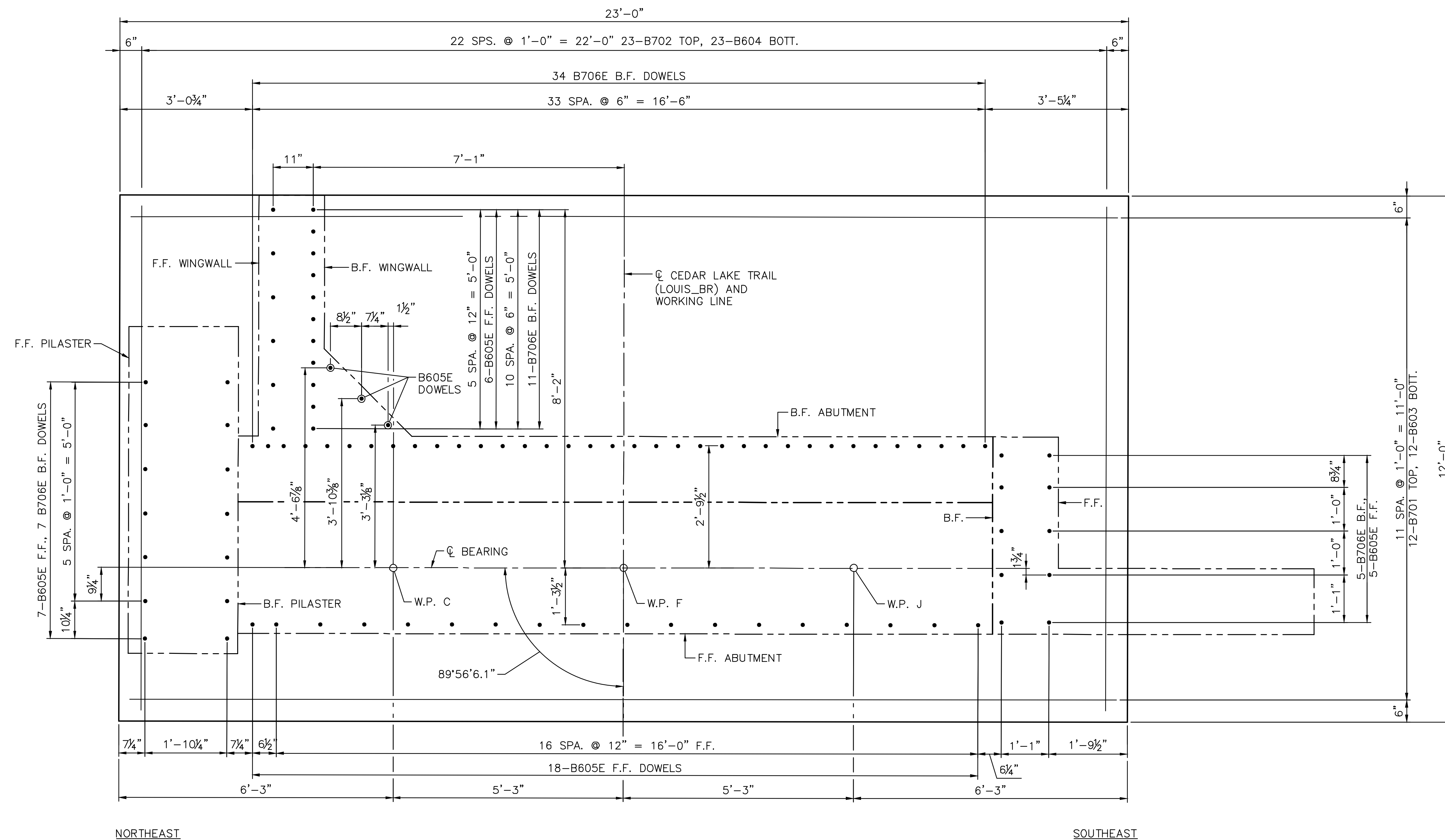
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
EAST ABUTMENT DETAILS 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-ABT-015



NOTES:
F.F. – DENOTES FRONT FACE
B.F. – DENOTES BACK FACE
E.F – DENOTES EACH FACE

FOOTING REINFORCING AND VERTICAL DOWEL LAYOUT PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

90% SUBMISSION - 01/22/16

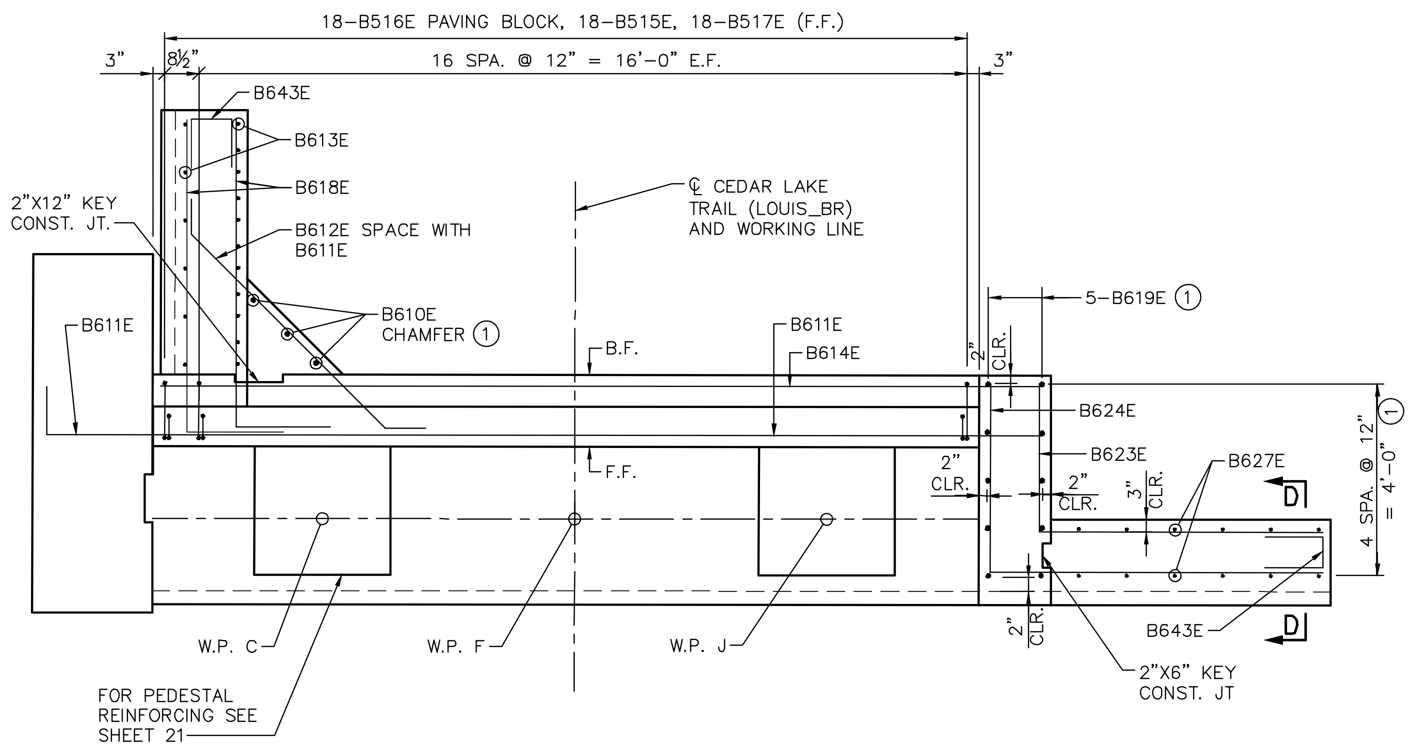
AECOM Kimley»Horn

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

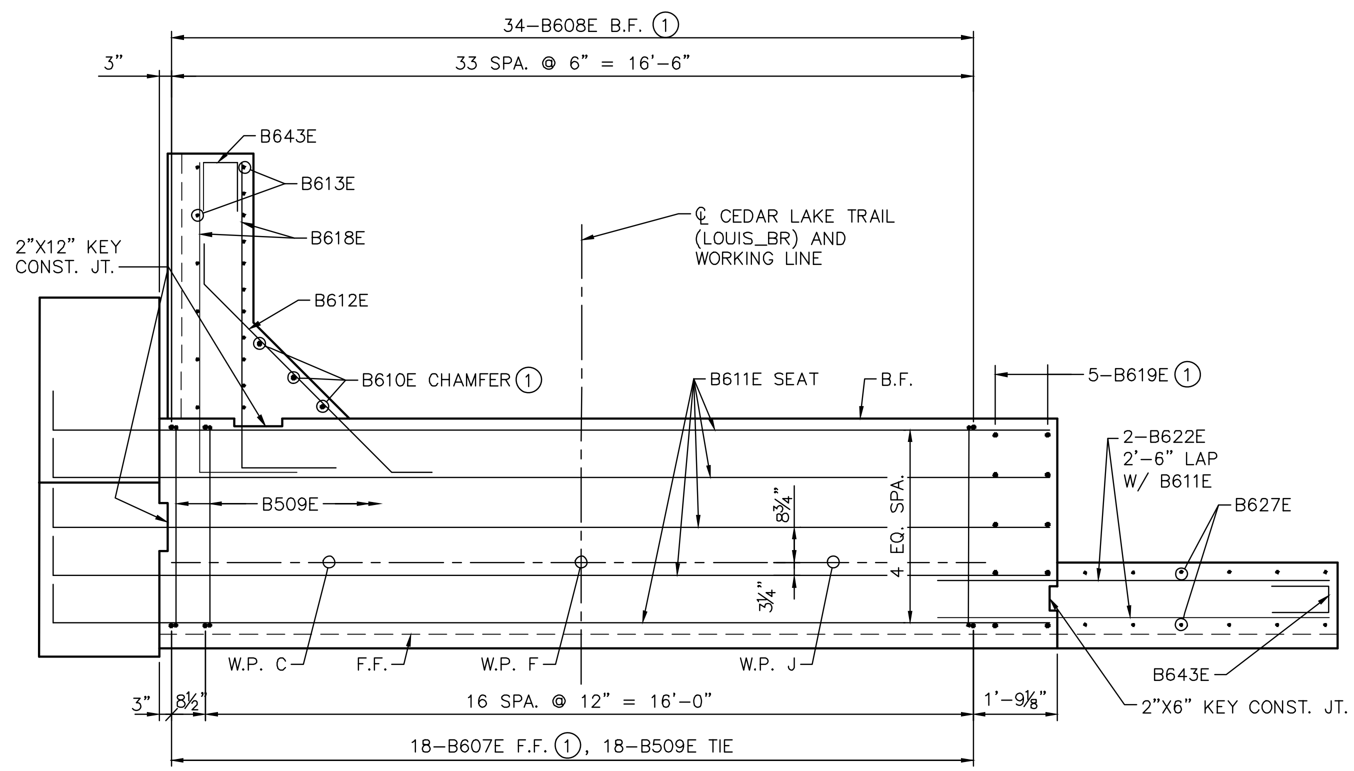
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
EAST ABUTMENT REINFORCEMENT 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-ABT-016

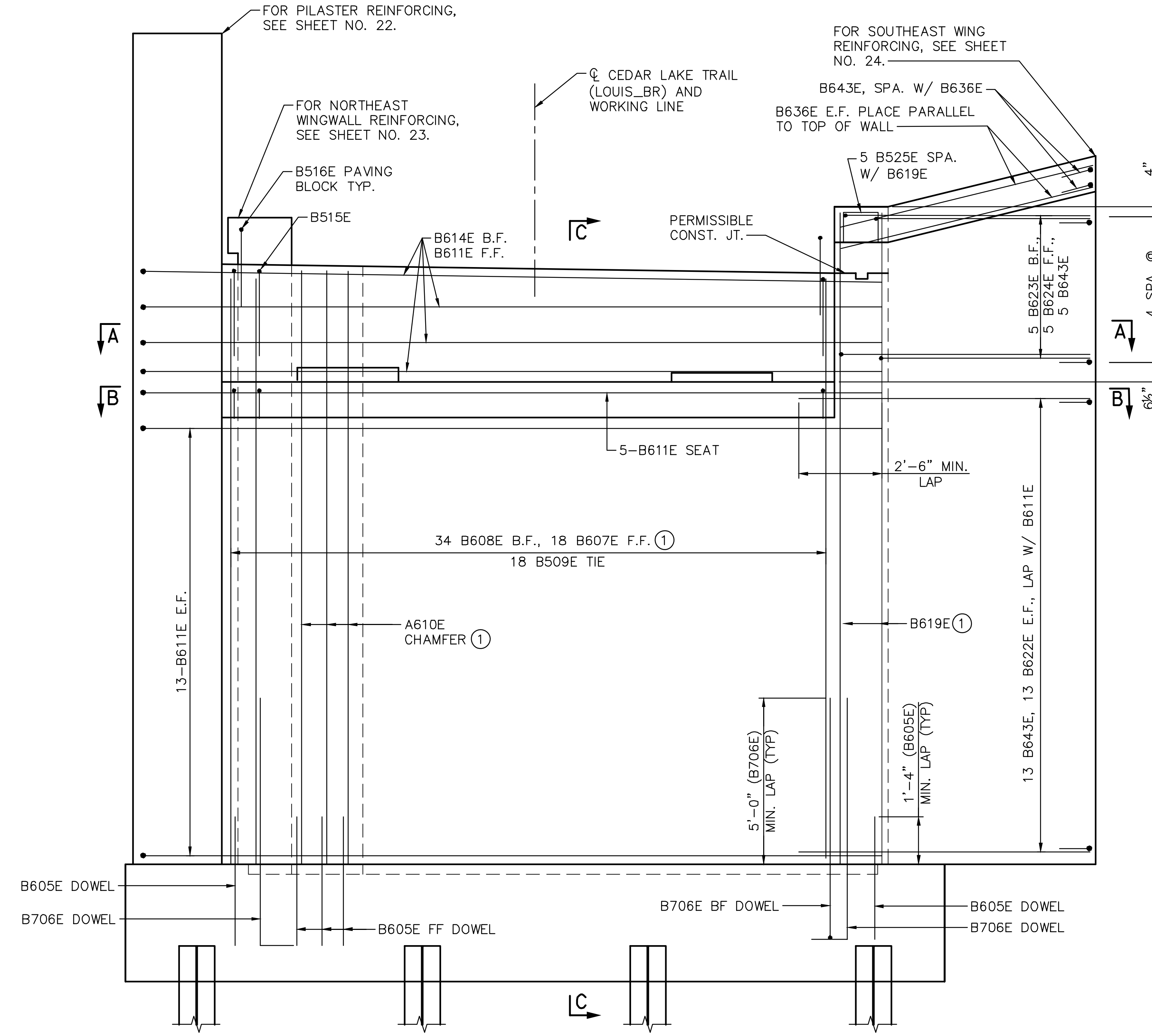
SHEET 19 OF 57



SECTION A–A



SECTION B–B



ABUTMENT ELEVATION

NOTES:

FOR SECTION C–C SEE SHEET NO. 21.

① SPACE WITH DOWEL BARS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

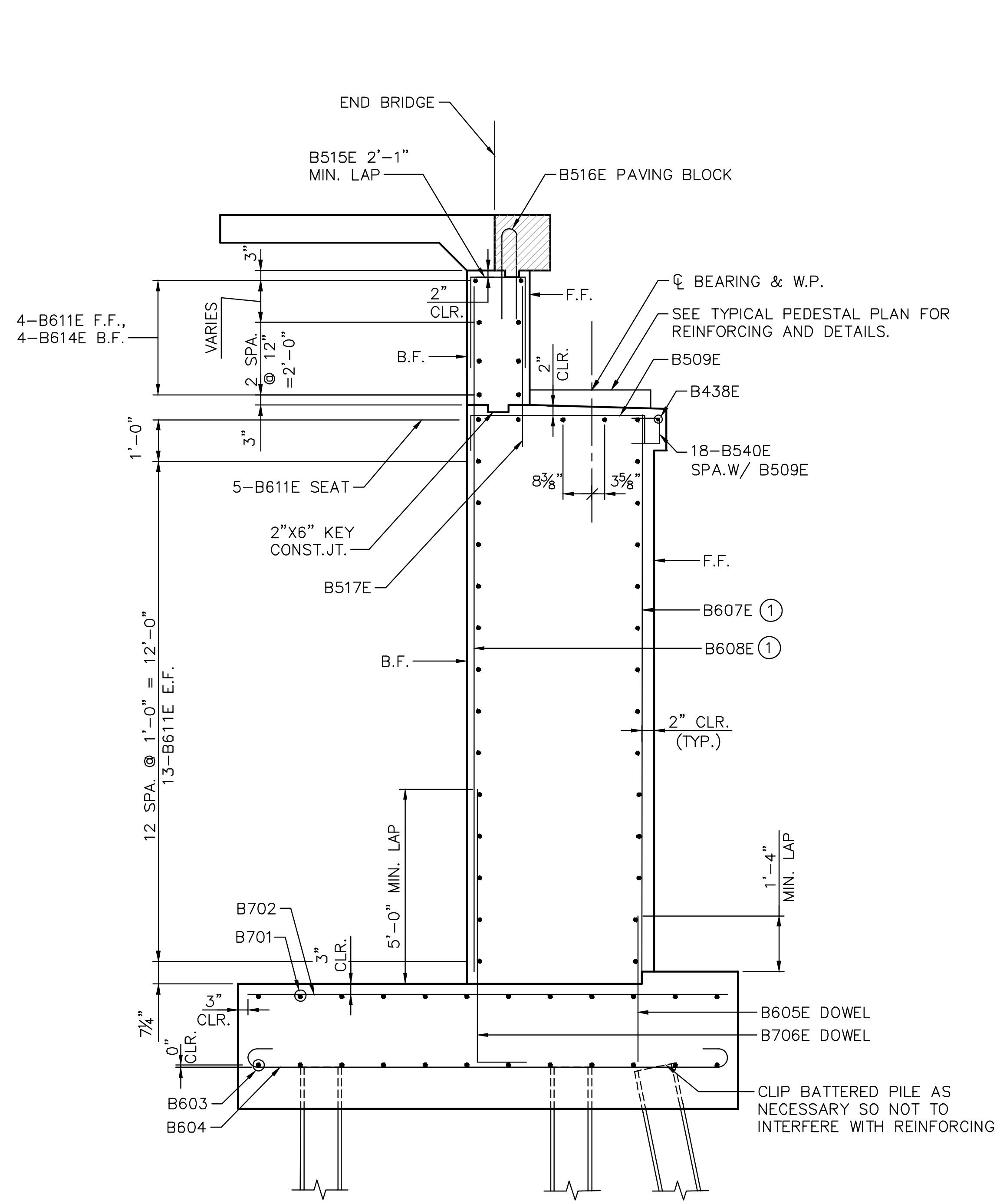
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
EAST ABUTMENT REINFORCEMENT 2

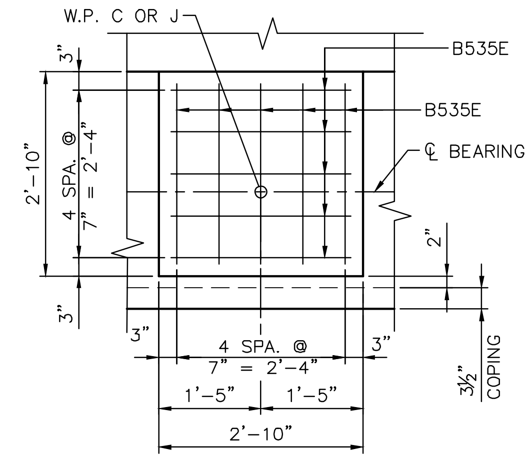
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-ABT-017

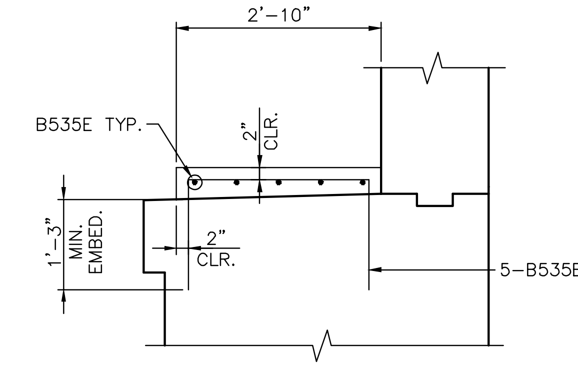
SHEET 20 OF 57



SECTION C–C



TYPICAL PEDESTAL PLAN



TYPICAL PEDESTAL SECTION

NOTES:

(1) SPACE WITH DOWEL BARS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

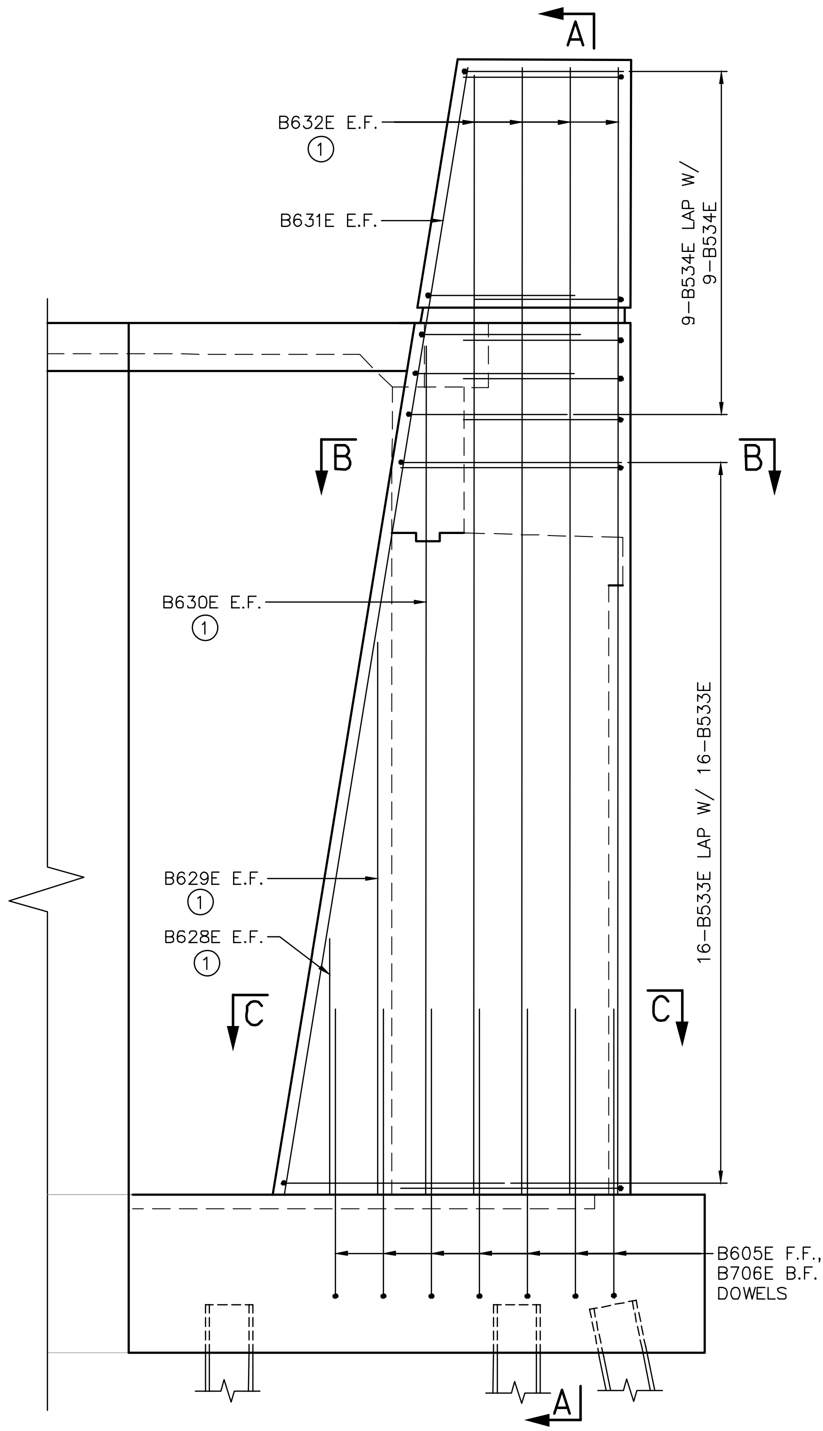
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
EAST ABUTMENT REINFORCEMENT 3

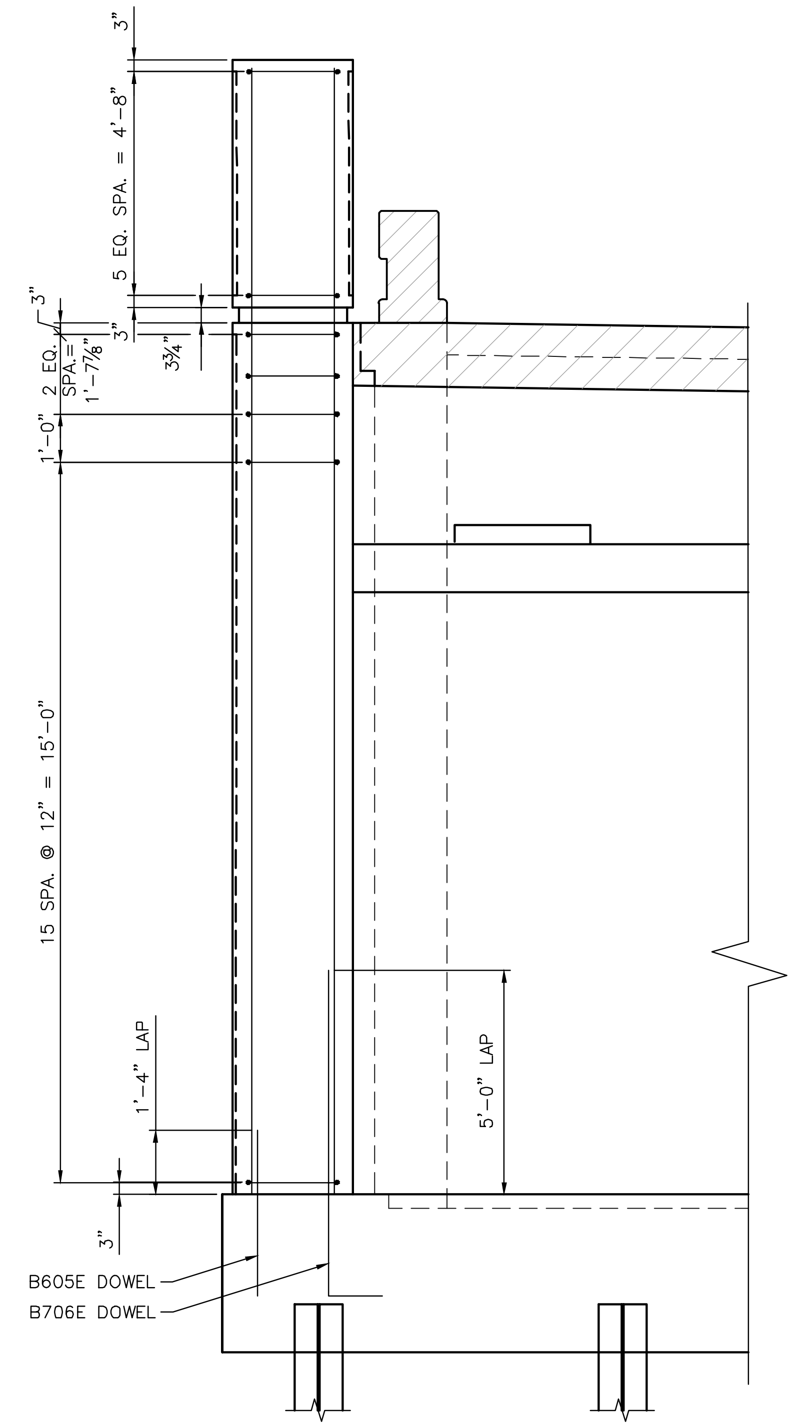
DISCIPLINE: STRUCTURES

SHEET NAME: CBR17C11-BRG-ABT-018

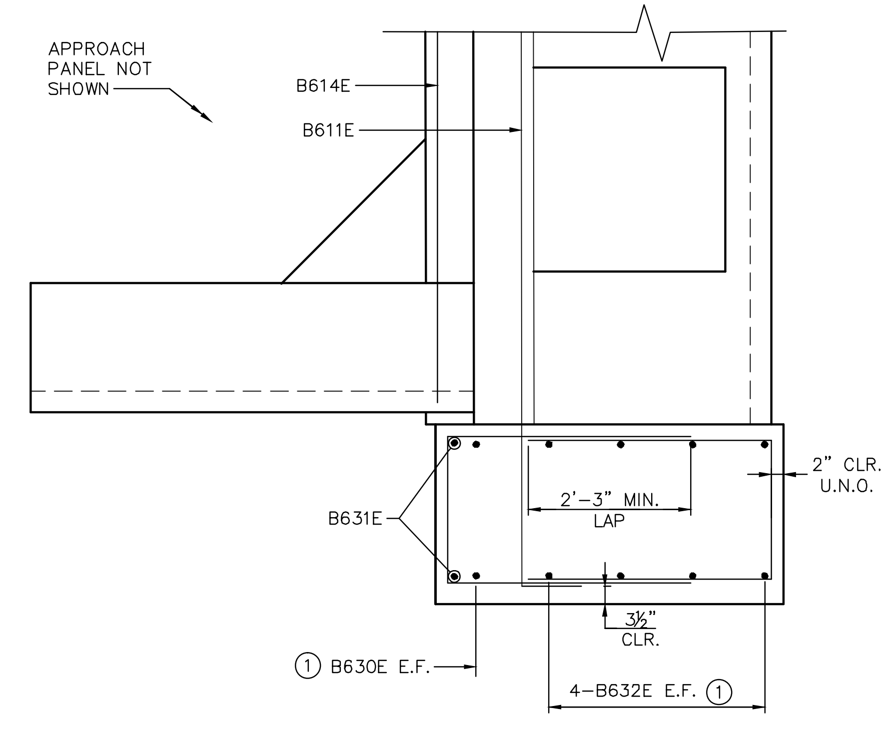
SHEET 21 OF 57



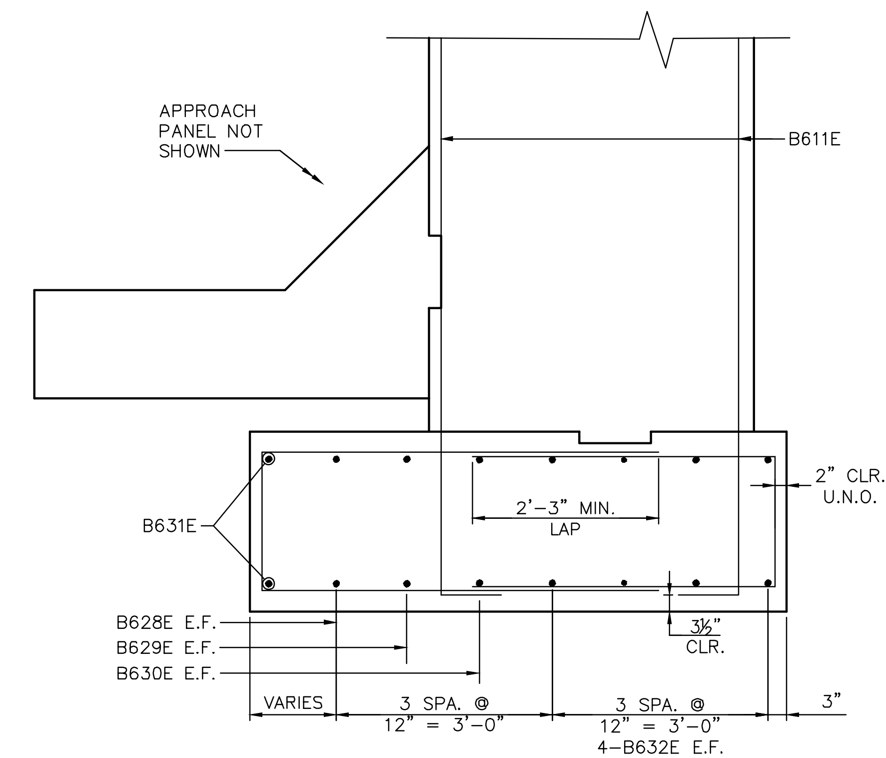
ELEVATION OF PILASTER



SECTION A–A



SECTION B–B



SECTION C–C

NOTES:

1 SPACE WITH DOWEL BARS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
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AECOM Kimley»Horn

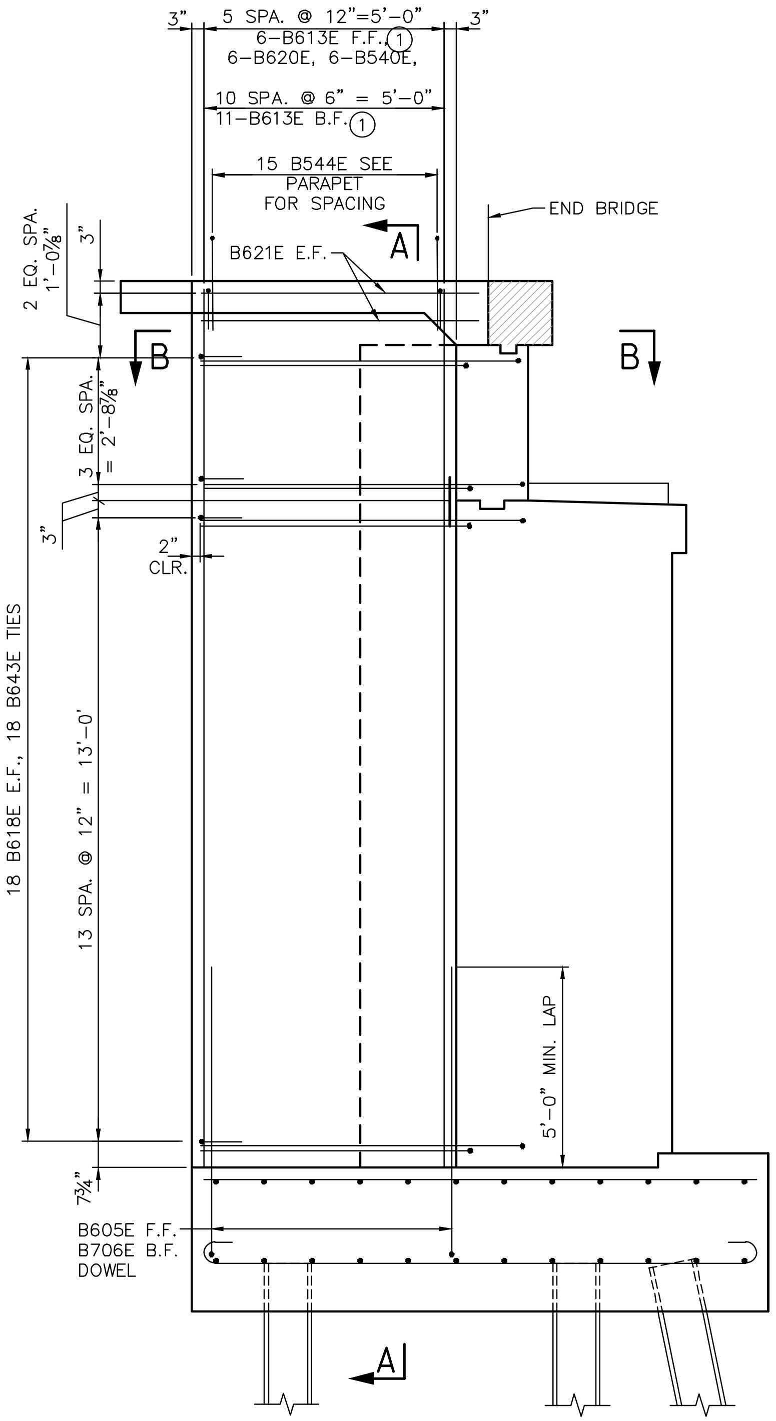
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

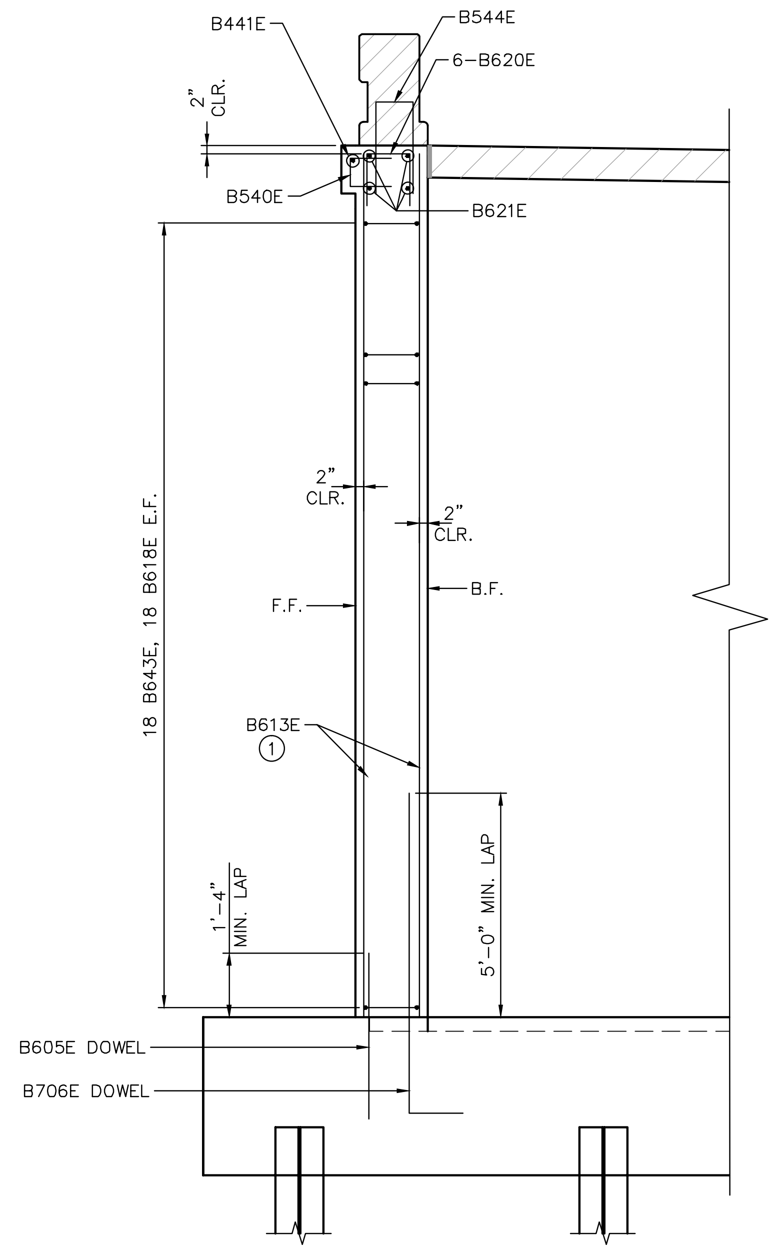
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
EAST ABUTMENT REINFORCEMENT 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-ABT-019

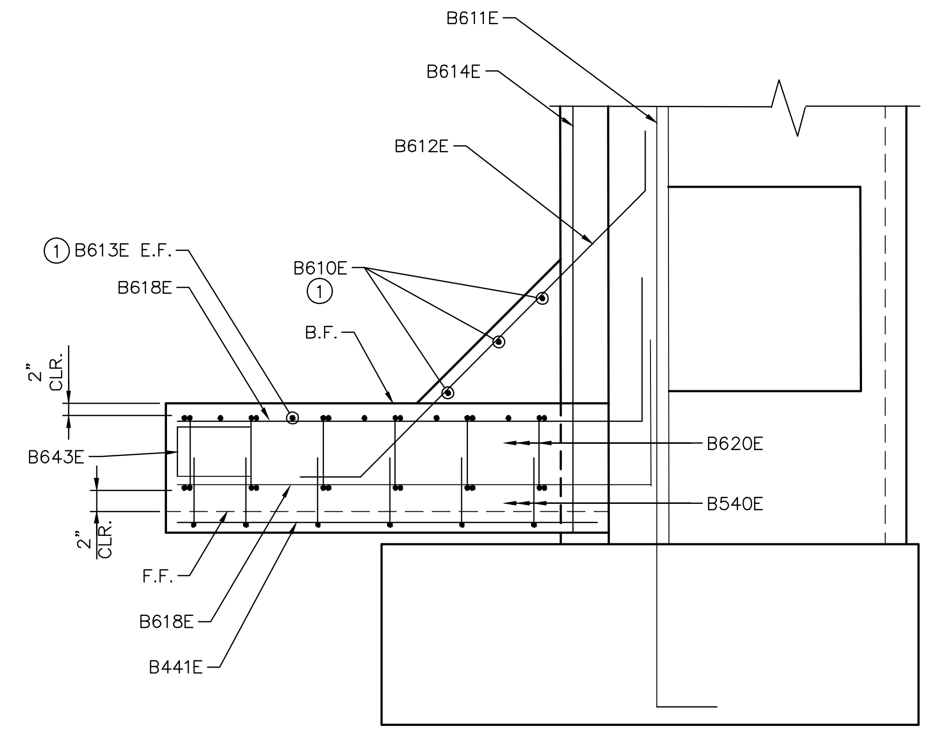
SHEET 22 OF 57



NORTHEAST WINGWALL ELEVATION



SECTION A-A



SECTION B-B

NOTES:

(1) SPACE WITH DOWEL BARS.

Jan, 12 2016 12:19 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-TRL\CBR27C11-BRG-ABT.dwg By: Paul.Robbs

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DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

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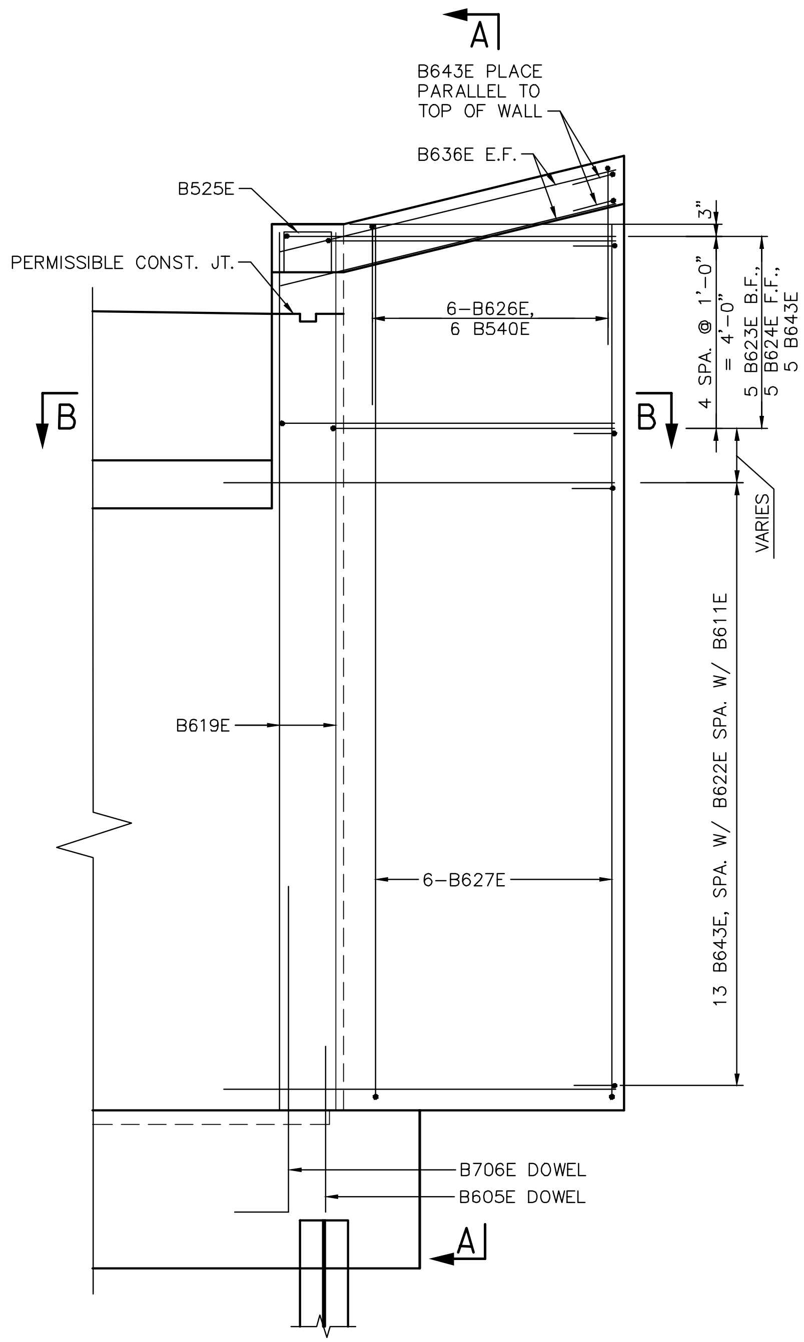
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

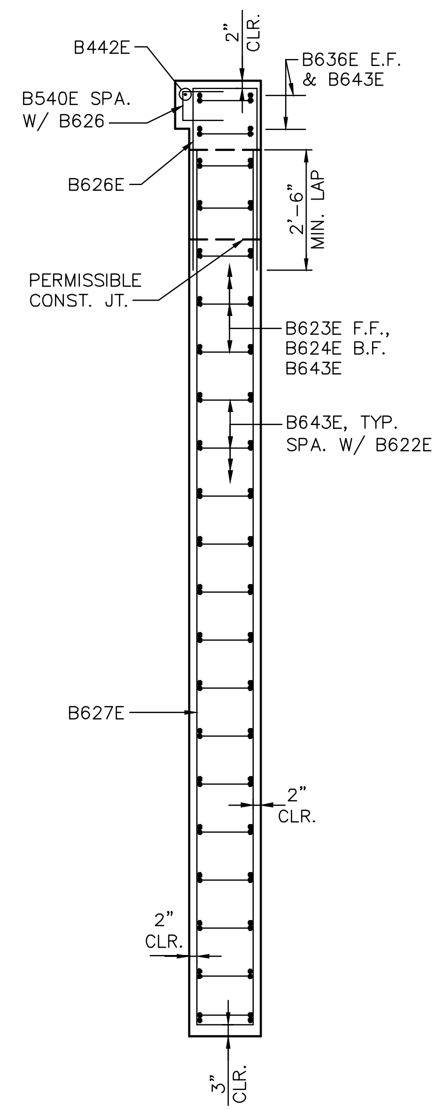
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
EAST ABUTMENT REINFORCEMENT 5

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-ABT-020

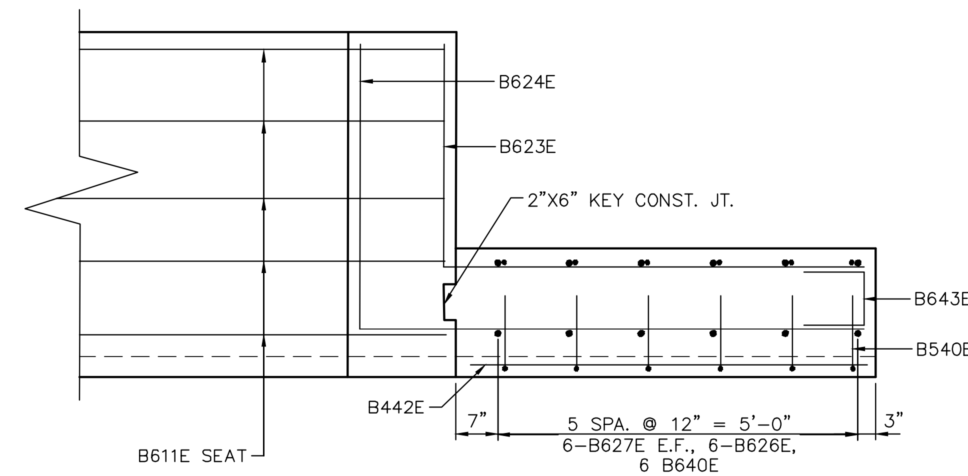
SHEET 23 OF 57



SOUTHEAST WINGWALL ELEVATION



SECTION A–A



SECTION B–B

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: PGR CHECKED BY: JSM

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METROPOLITAN COUNCIL

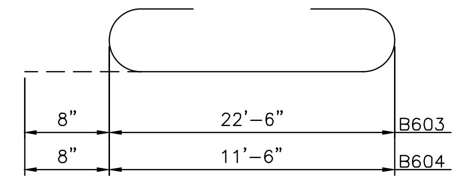
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
EAST ABUTMENT REINFORCEMENT 6

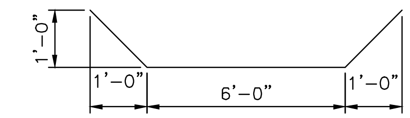
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-ABT-021

SHEET 24 OF 57

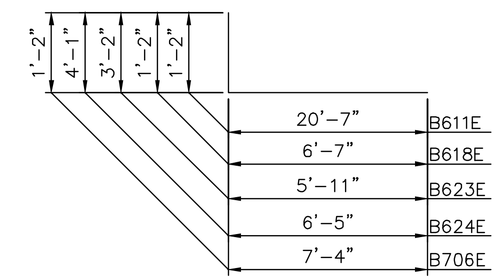
BILL OF REINFORCEMENT FOR EAST ABUTMENT				
BAR	NO.	LENGTH	SHAPE	LOCATION
B701	12	22'-6"	STR.	FOOTING TRANS TOP
B702	23	11'-6"	STR.	FOOTING LONG TOP
B603	12	23'-10"	BENT	FOOTING TRANS BOTTOM
B604	23	12'-10"	BENT	FOOTING LONG BOTTOM
B605E	39	3'-8"	STR.	F.F. FOOTING DOWEL
B706E	57	8'-6"	BENT	B.F. FOOTING DOWEL
B607E	18	13'-4"	STR.	ABUT F.F. VERT
B608E	34	16'-8"	STR.	ABUT B.F. VERT
B509E	18	5'-10"	BENT	ABUT. SEAT
B610E	3	16'-8"	STR.	CHAMFER VERT
B611E	35	21'-9"	BENT	ABUT. LONG
B612E	18	8'-10"	BENT	CHAMFER HORZIONTAL
B613E	17	17'-11"	STR.	WING WALL VERTICAL E.F.
B614E	4	18'-1"	STR.	STEM HORZ. B.F.
B515E	18	5'-10"	BENT	STEM TIE
B516E	18	5'-6"	BENT	PAVING BLOCK
B517E	18	4'-2"	STR.	STEM
B618E	36	7'-9"	BENT	NE WING WALL HORZ. E.F.
B619E	10	18'-3"	STR.	SE WING WALL VERT E.F.
B620E	6	3'-6"	BENT	WING WALLS
B621E	4	5'-10"	STR.	NE WING WALL E.F.
B622E	26	8'-5"	STR.	SE STEM LONG.
B623E	5	9'-1"	BENT	SE WING WALL HORZ.
B624E	5	10'-6"	BENT	SE WING WALL HORZ.
B525E	5	3'-2"	STR.	SE WING WALL VERT
B626E	6	9'-10"	BENT	SE WING WALL VERT
B627E	6	37'-2"	BENT	SE WING WALL VERT
B628E	2	5'-4"	STR.	PILASTER EF VERTICAL
B629E	2	11'-6"	STR.	PILASTER EF VERTICAL
B630E	2	17'-8"	STR.	PILASTER EF VERTICAL
B631E	2	23'-9"	STR.	PILASTER EF VERTICAL
B632E	8	23'-5"	STR.	PILASTER EF VERTICAL
B533E	32	11'-5"	BENT	PILASTER HORIZIONTAL
B534E	18	8'-9"	BENT	PILASTER HORIZIONTAL
B535E	20	5'-6"	BENT	PEDESTAL
B636E	4	7'-2"	STR.	SE WINGWALL HORZ.
B438E	1	16'-10"	STR.	ABUT. CHAMFER HORZ.
B540E	30	2'-4"	BENT	ABUT. CHAMFER TIE
B441E	1	5'-10"	STR.	NE WINGWALL CHAMFER HORZ.
B442E	1	7'-1"	STR.	SE WINGWALL CHAMFER HORZ.
B643E	38	3'-2"	BENT	NE & SE WINGWALL TIE
B544E	15	5'-9"	BENT	NE WINGWALL BARRIER



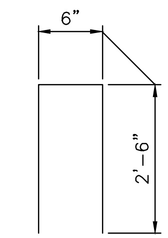
B603, B604



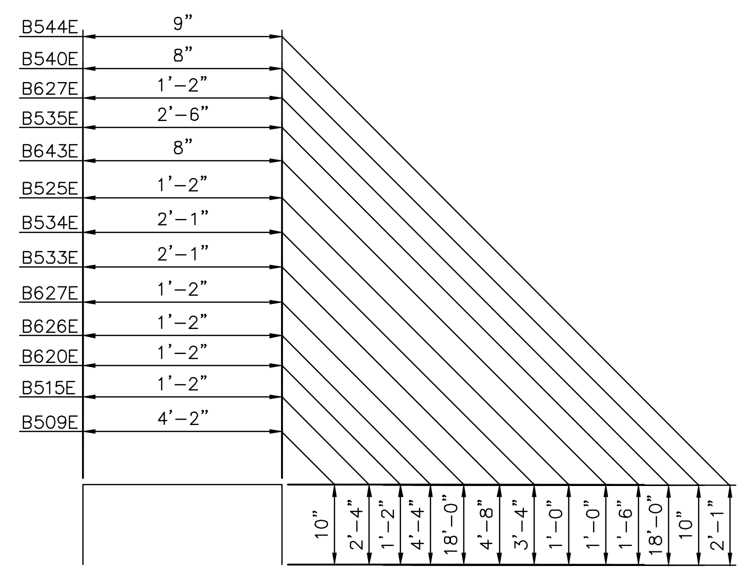
B612E



B611E, B618E, B623E, B624E, B706E



B516E



B509E, B515E, B620E, B626E,
B627E, B533E, B534E, B535E,
B540E, B643E, B544E

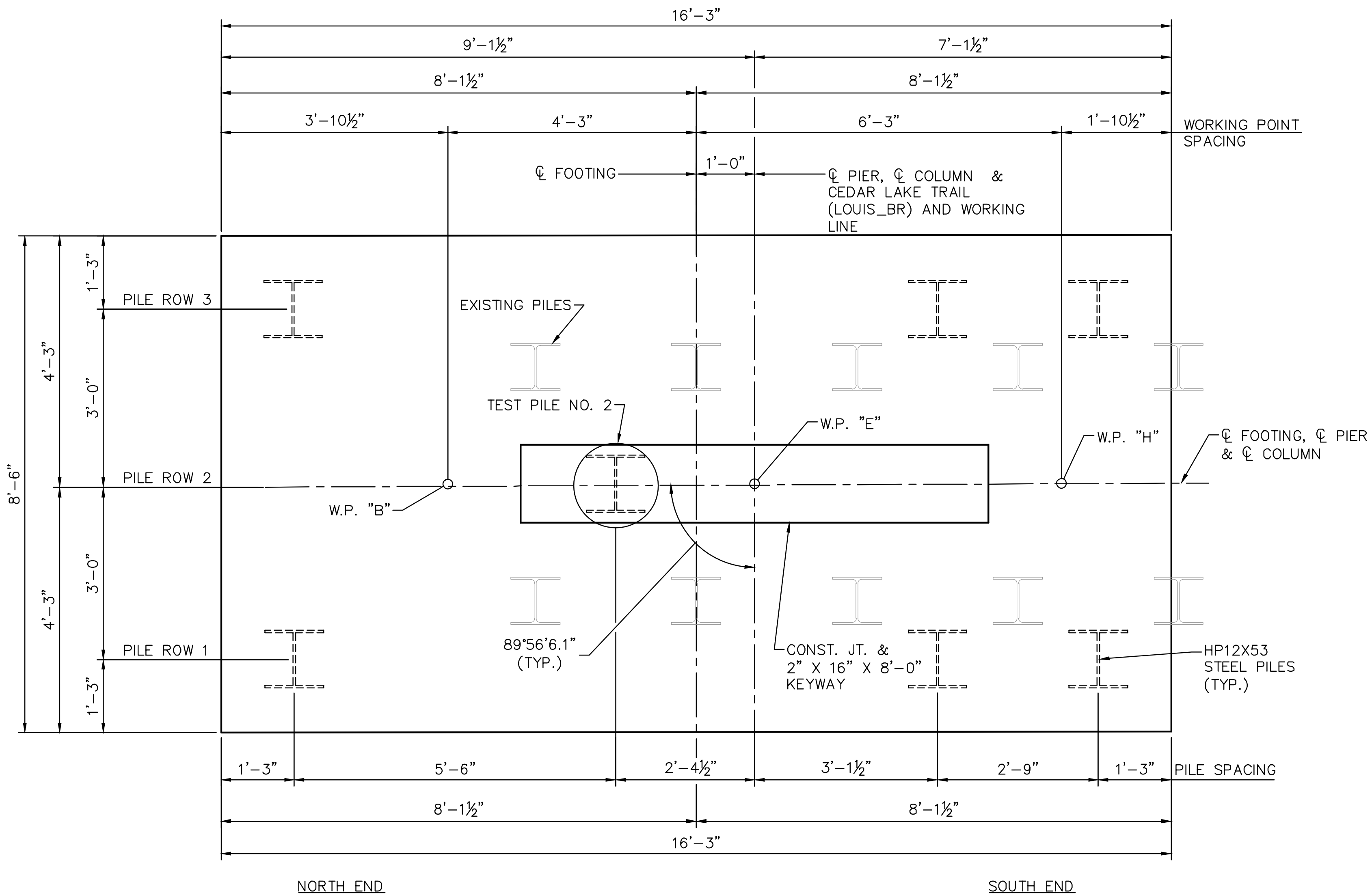
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
EAST ABUTMENT REINFORCEMENT 7

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-ABT-022



FOOTING PLAN

PIER 1 COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD	41.3
FACTORED LIVE LOAD	0.0
FACTORED OVERTURNING	25.8
* FACTORED DESIGN LOAD	67.1
* BASED ON STRENGTH III LOAD COMBINATION.	

PIER 1 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR H-PILES Rn - TONS/PILE		
FIELD CONTROL METHOD	φdyn	* Rn
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{W \times H}{1000}}\, x\log\left(\frac{10}{S}\right)$	0.60	112
PDA	0.65	104
* Rn = (FACTORED DESIGN LOAD) / φdyn		

GENERAL PILE NOTES:

1 HP12x53 STEEL TEST PILES 74 FT. LONG
6 HP12x53 STEEL PILES EST. 74 FT. LENGTH
7 HP12x53 STEEL PILES REQ'D FOR PIER

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

FOR PILE SPLICE DETAILS SEE DETAIL B202.

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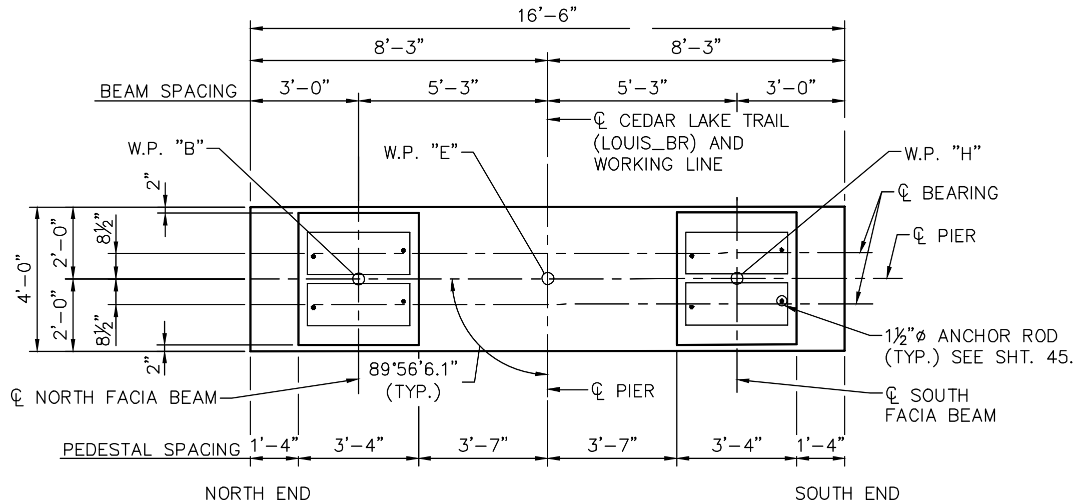
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

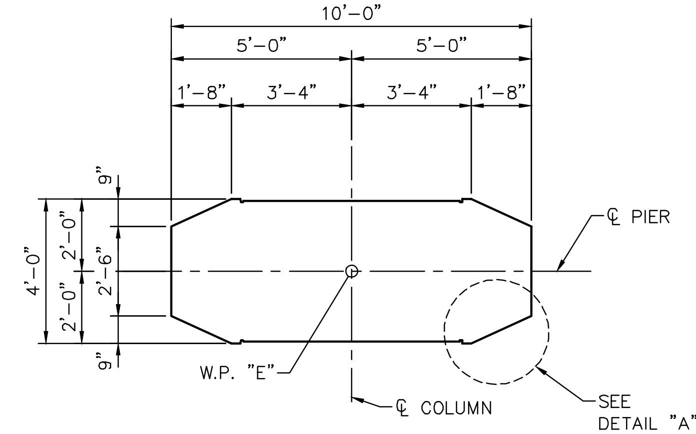
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
PIER DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-PIR-001

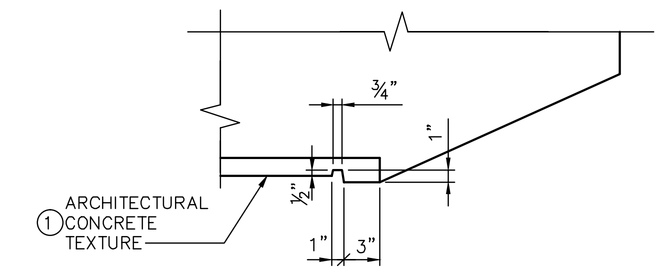
SHEET 26 OF 57



PIER CAP PLAN



TYPICAL COLUMN SECTION A–A

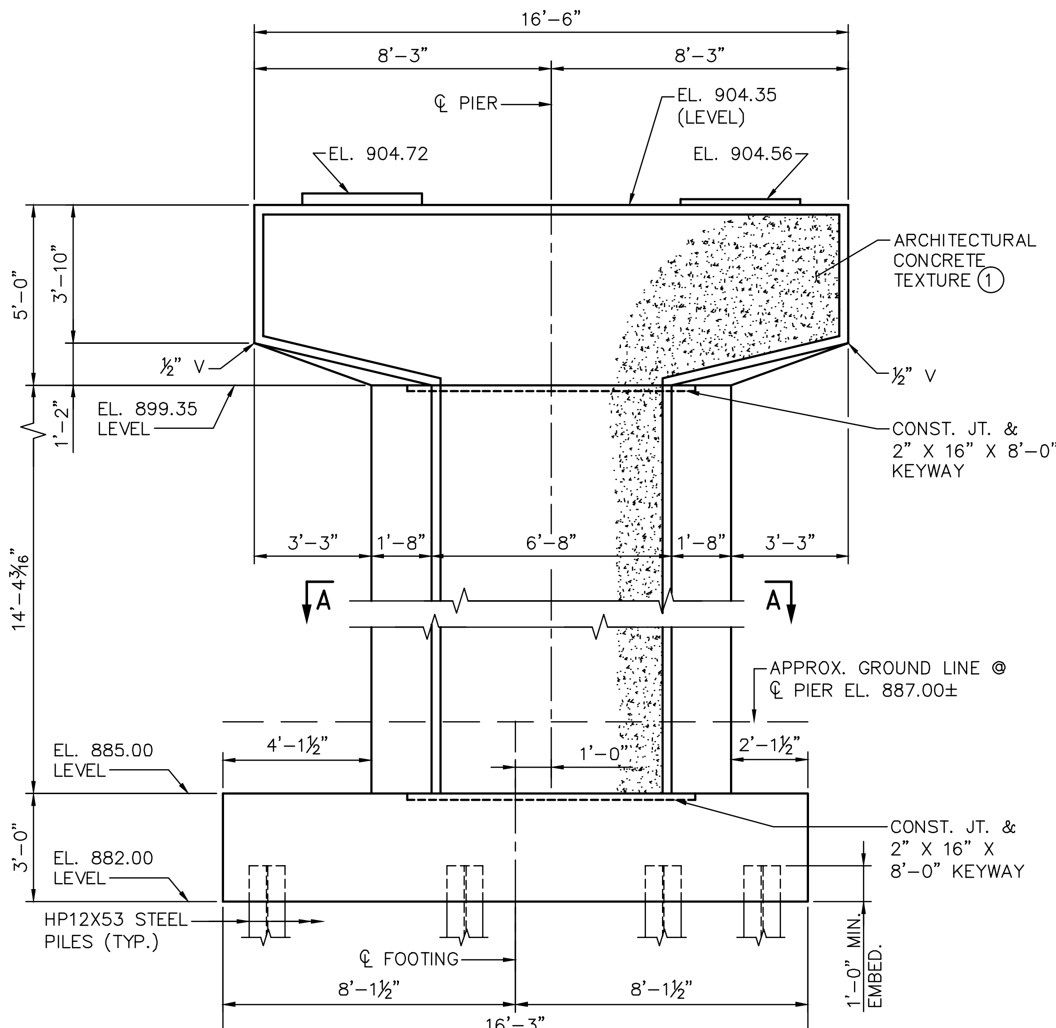


DETAIL "A"

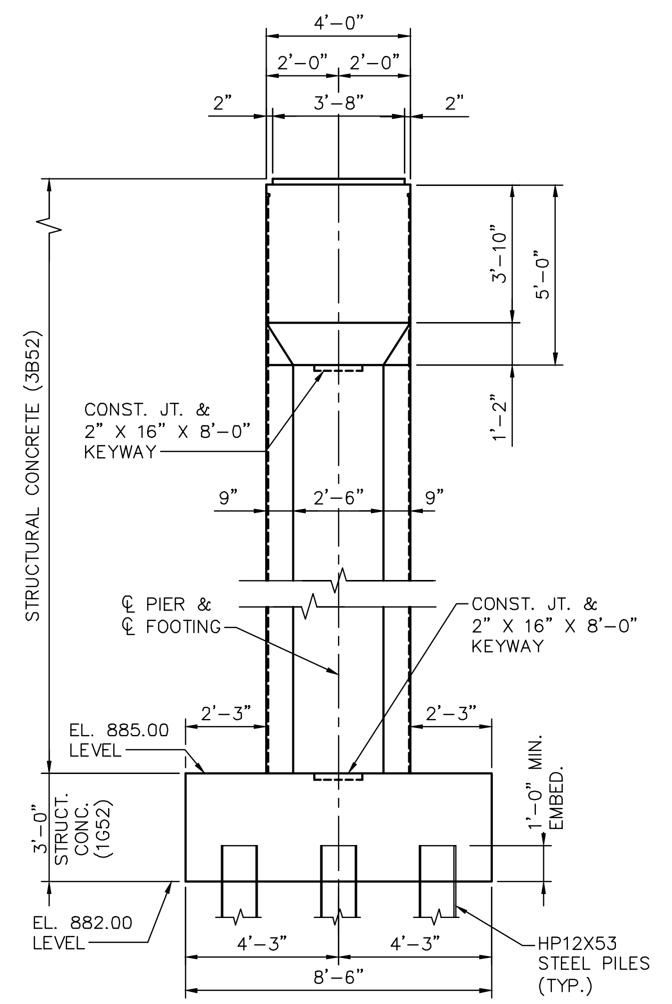
NOTES:

AT CONSTRUCTION JOINTS, A 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.

(1) ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 0.5".



ELEVATION



END VIEW

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
PIER DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-PIR-002

SHEET 27 OF 57

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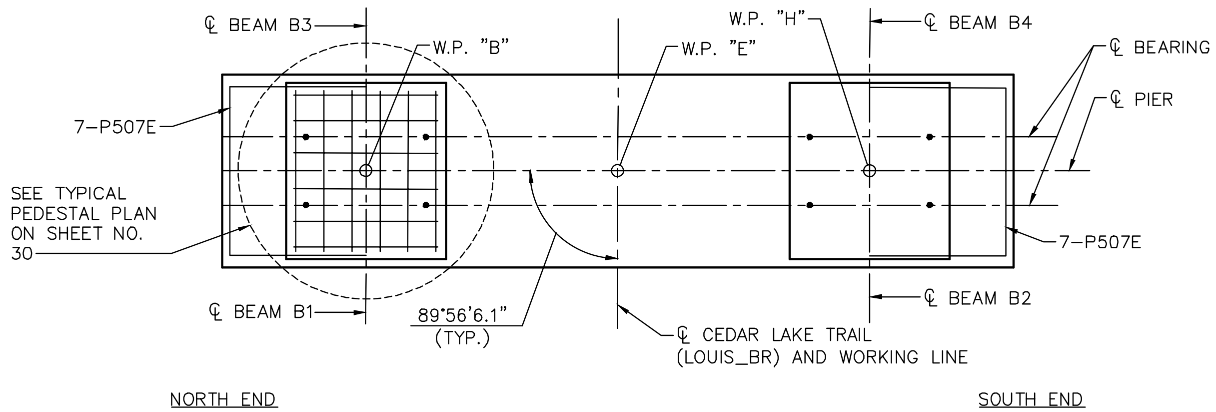


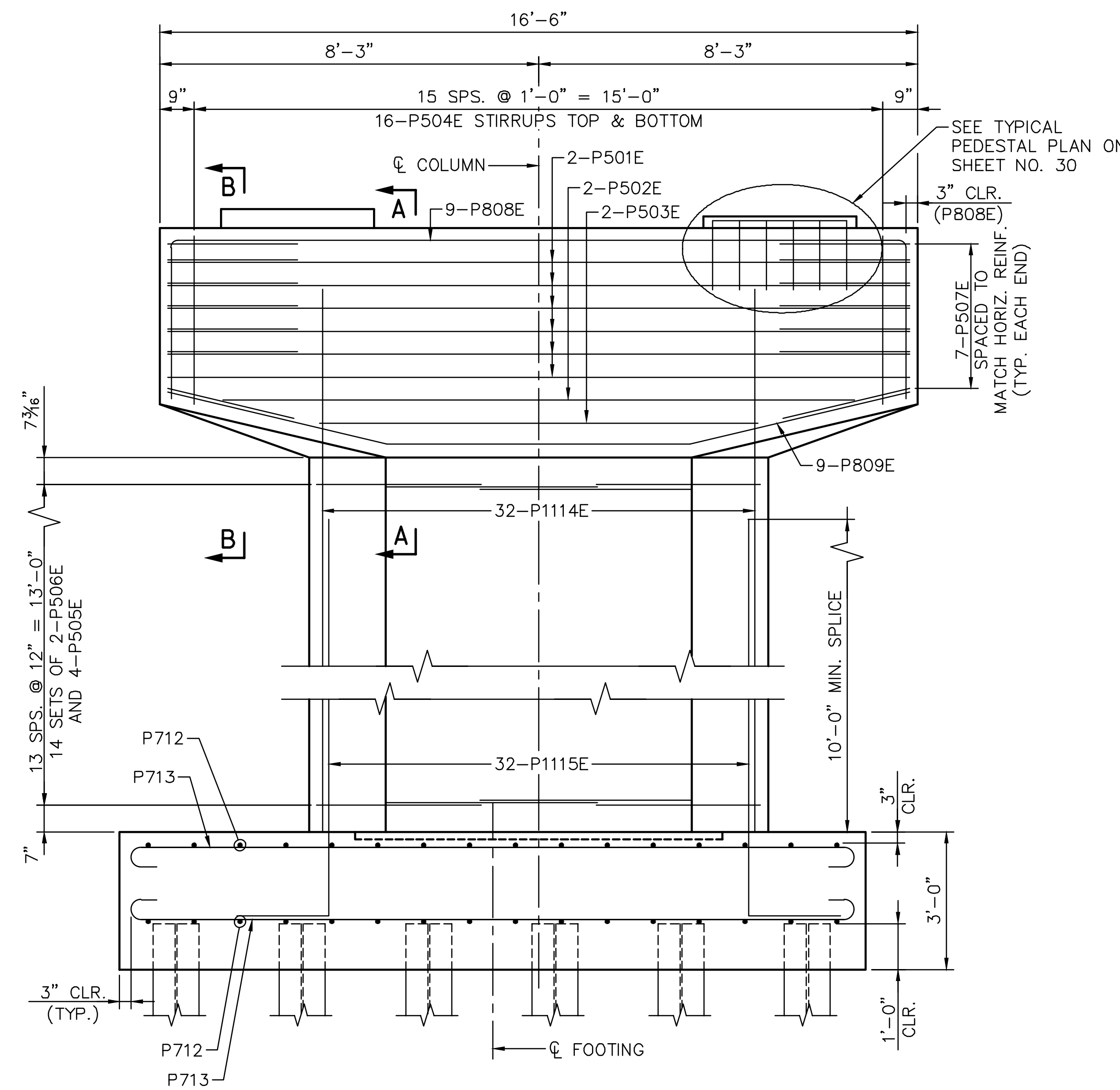
PIER CAP PLAN

SEE SHEET 30 FOR ANCHOR ROD LAYOUT

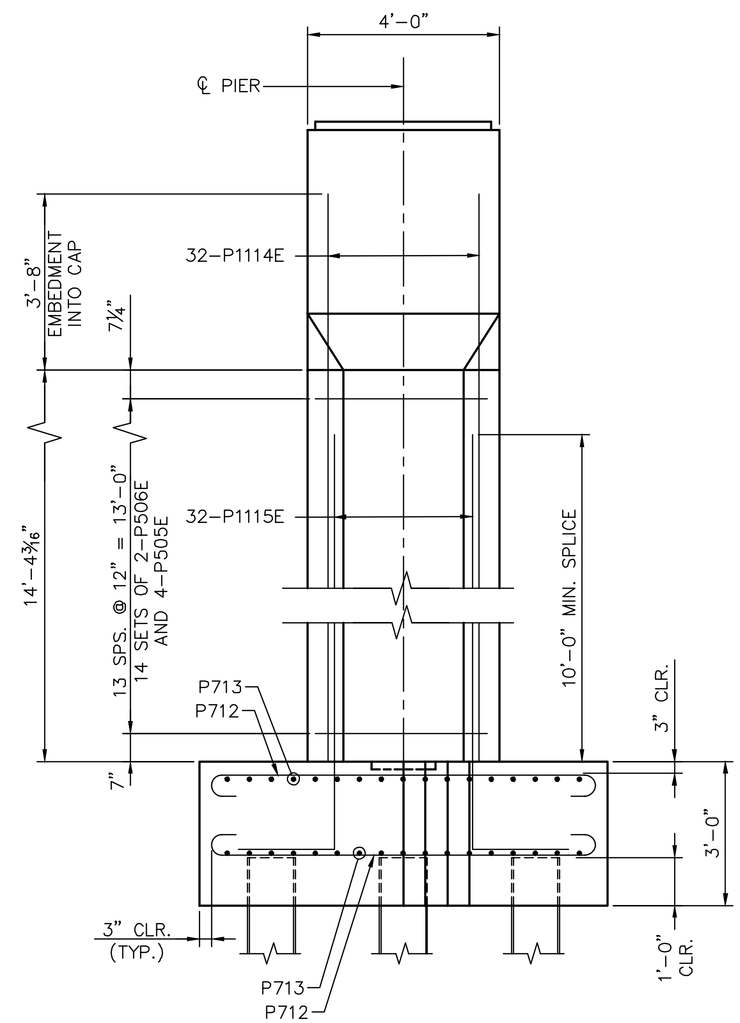
NOTES

SEE SHT. NO. 29 FOR TYPICAL COLUMN SECTION.

SEE SHT. NO. 30 FOR SECTION A–A AND B–B.



PIER ELEVATION



END VIEW

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DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

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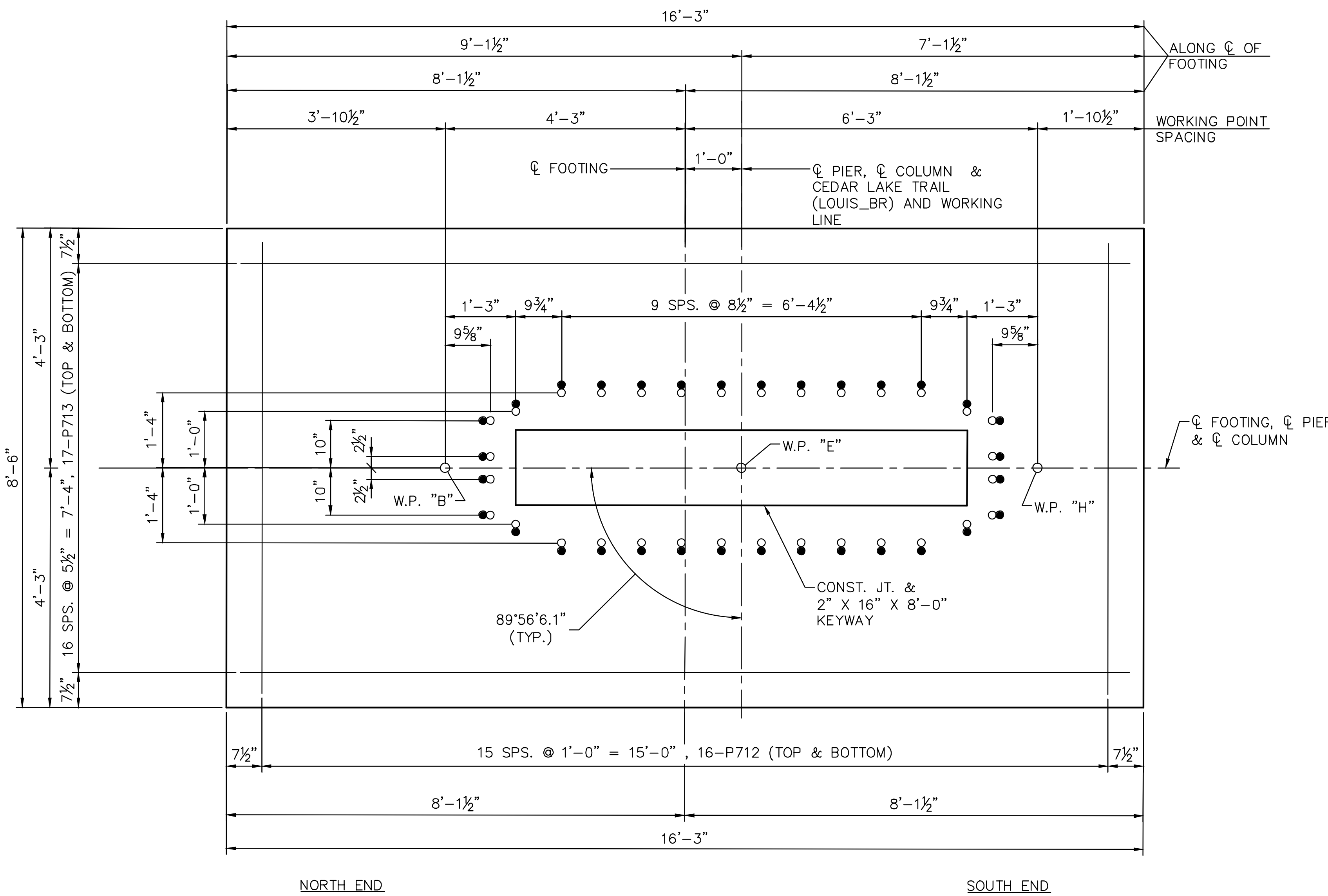
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
PIER REINFORCEMENT 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-PIR-003

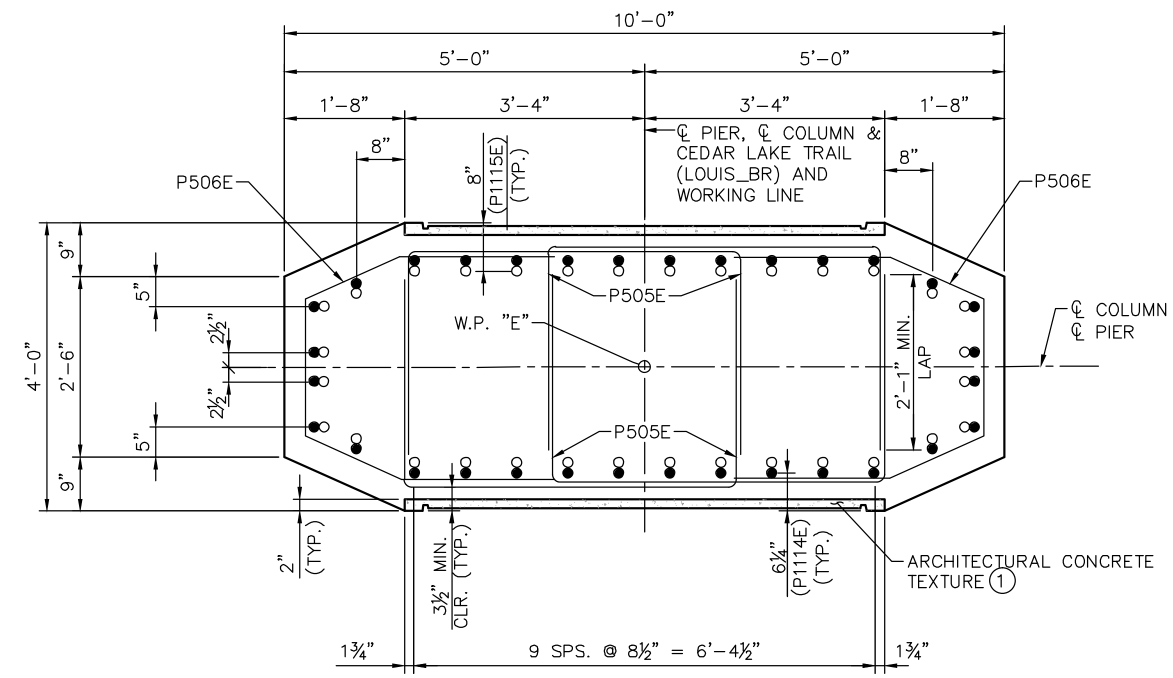
SHEET 28 OF 57



PIER FOOTING PLAN REINFORCEMENT

○ – DENOTES 32-P1115E IN FOOTING

● – DENOTES 32-P1114E IN COLUMN



TYPICAL COLUMN SECTION

○ – DENOTES 32-P1115E IN FOOTING

● – DENOTES 32-P1114E IN COLUMN

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 0.5".

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: PGR | CHECKED BY: JSM

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
PIER REINFORCEMENT 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-PIR-004

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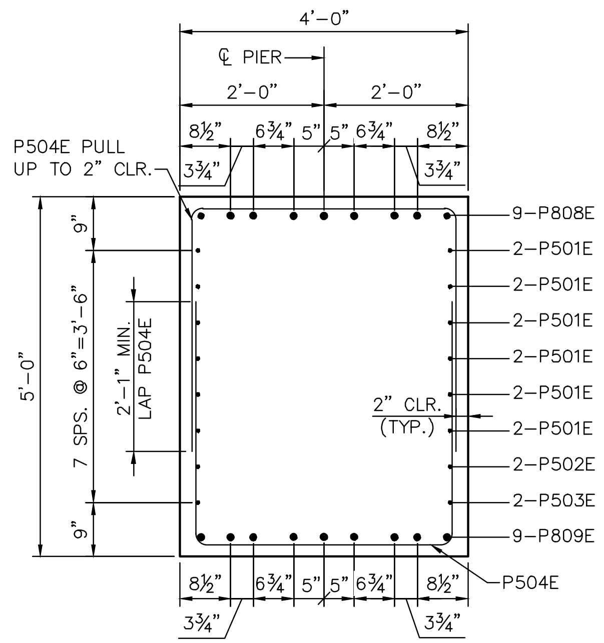
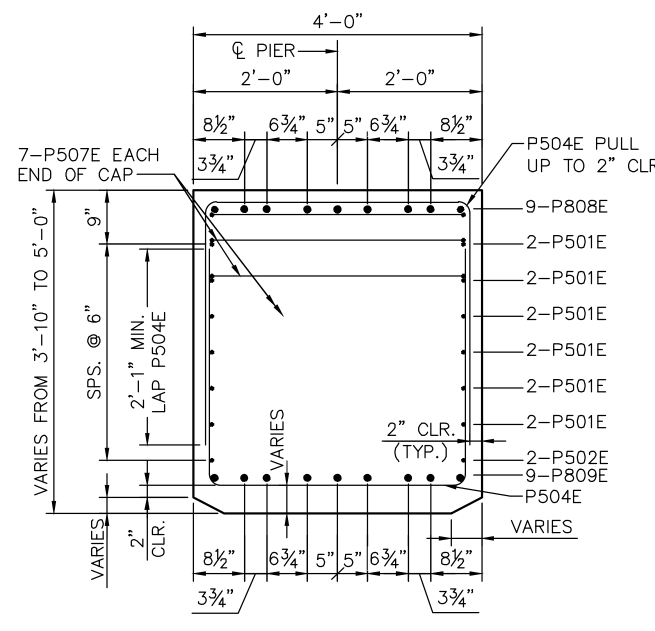
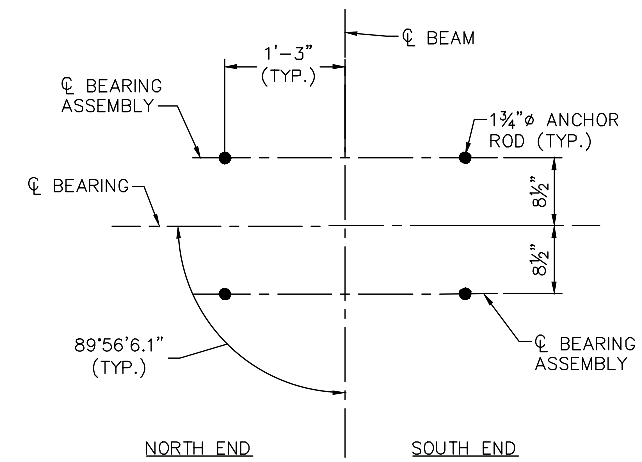


SECTION A-A

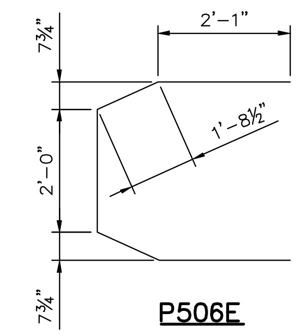


SECTION B-B

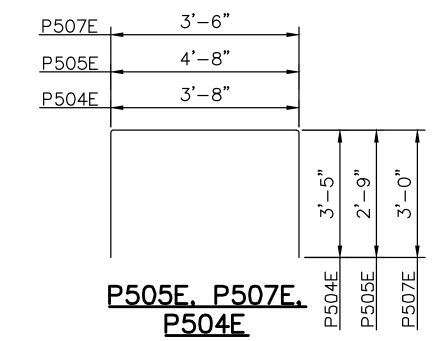


ANCHOR ROD LAYOUT

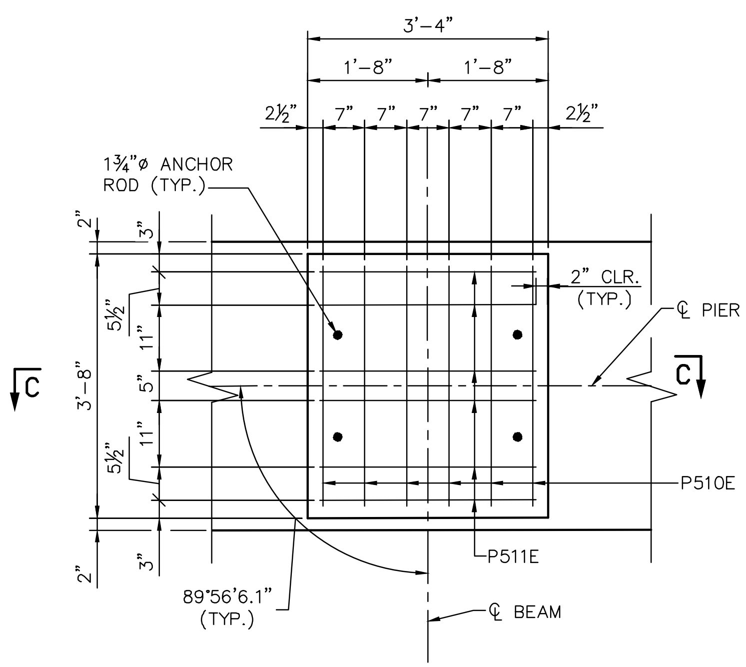
BILL OF REINFORCEMENT FOR PIER				
BAR	NO.	LENGTH	SHAPE	LOCATION
P501E	12	16'-2"	STR.	CAP LONGITUDINAL
P502E	2	13'-9"	STR.	CAP LONGITUDINAL
P503E	2	9'-6"	STR.	CAP LONGITUDINAL
P504E	32	10'-6"	BENT	CAP STURRUPS
P605E	56	10'-2"	BENT	COLUMN HORIZONTAL
P606E	28	9'-7"	BENT	COLUMN HORIZONTAL
P507E	14	9'-6"	BENT	CAP END TIE
P808E	9	23'-0"	BENT	CAP TOP LONGITUDINAL
P809E	9	16'-6"	BENT	CAP BOTTOM LONGITUDINAL
P510E	12	6'-0"	BENT	PEDESTAL LONGITUDINAL
P511E	12	6'-4"	BENT	PEDESTAL LONGITUDINAL
P1012	32	9'-8"	BENT	FOOTING LONGITUDINAL T&B
P1013	34	17'-5"	BENT	FOOTING TRANSVERSE T&B
P1114E	32	18'-2"	STR.	COLUMN VERTICAL
P1115E	32	13'-10"	BENT	COLUMN VERTICAL



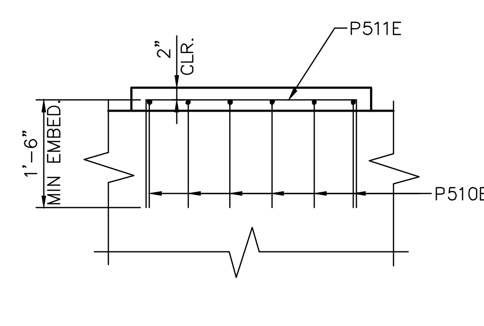
P506E



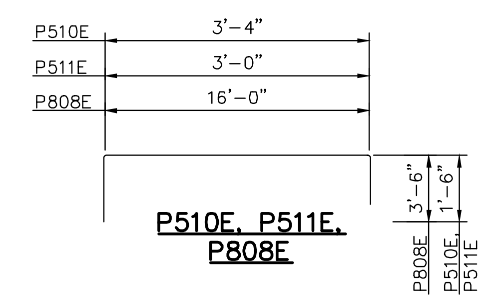
P505E, P507E, P504E



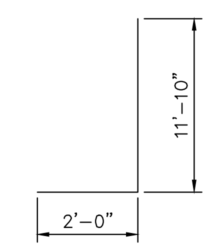
TYPICAL PEDESTAL PLAN
PEDESTAL REINFORCEMENT



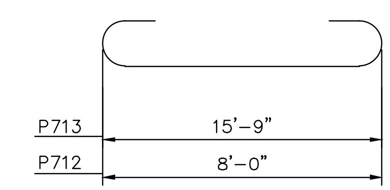
SECTION C-C



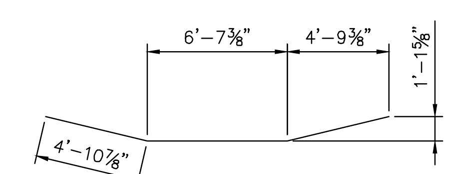
P510E, P511E, P808E



P1115E



P712, P713



P809E

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

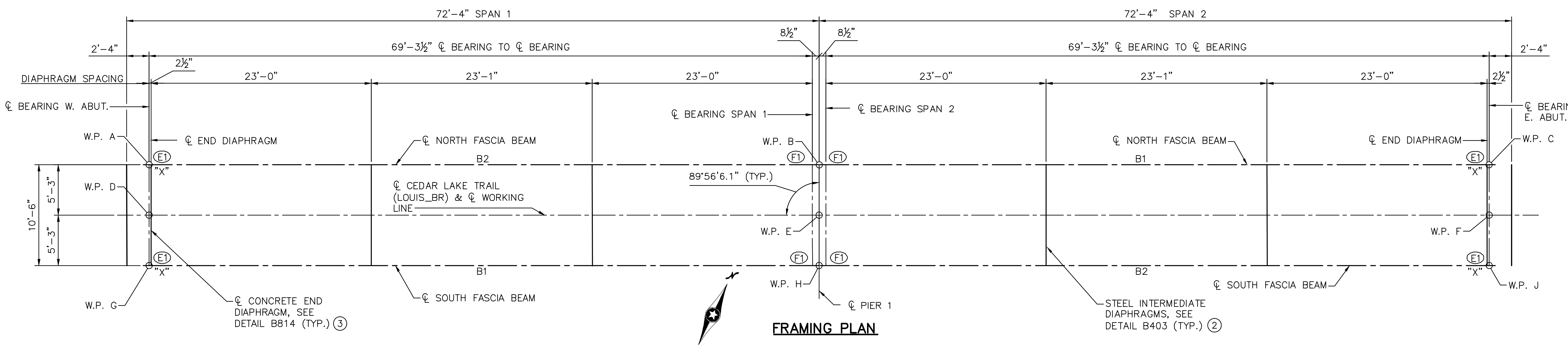
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

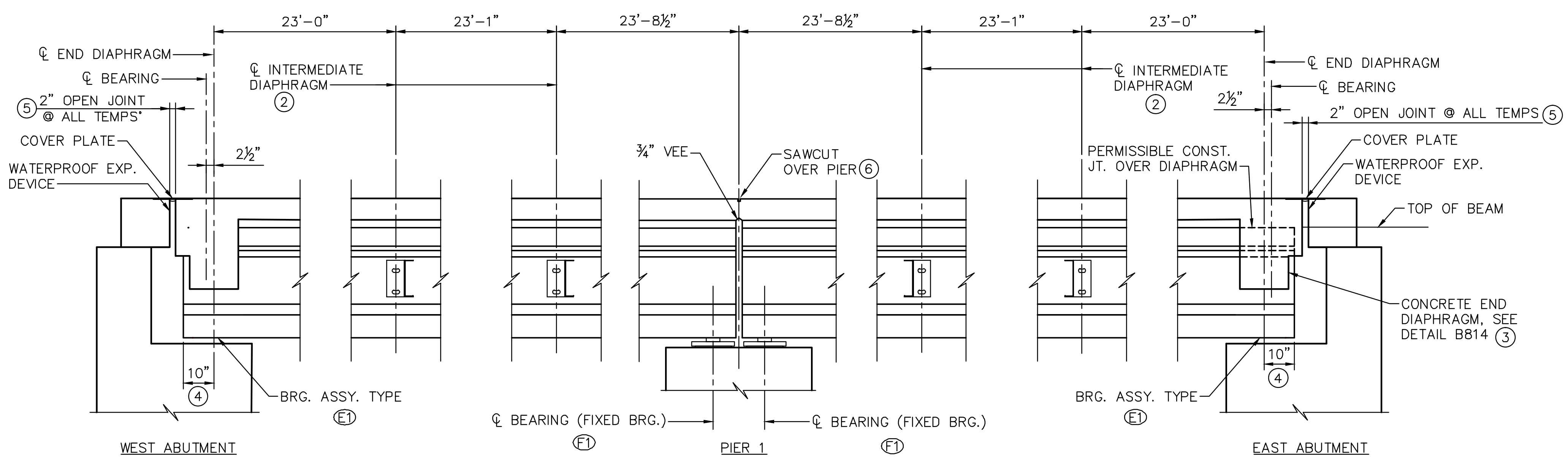
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
PIER REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-PIR-005



FRAMING PLAN

① BEAM TABLE		
SPAN	BEAM	LENGTH
1	B1, B2	70'-6½"
2	B1, B2	70'-6½"



LONGITUDINAL SECTION

NOTES:

(F1) DENOTES FIXED CURVED PLATE BEARING ASSEMBLY, TYPE F1. SEE DETAIL B310.

(E1) DENOTES EXPANSION CURVED PLATE BEARING ASSEMBLY TYPE E1. SEE DETAIL B311.

"X" INDICATES END OF BEAM.

ALL BEAMS SET PARALLEL TO WORKING LINE, ALL DIAPHRAGMS SET PARALLEL TO SUBSTRUCTURES.

ALL DIMENSIONS SHOWN ARE MEASURED ON A HORIZONTAL PLANE.

1. SEE BEAM SHEET FOR DETAILS.
2. SEE SHEET 44 FOR INTERMEDIATE DIAPHRAGM DETAIL B403.
3. SEE SHEET 46 FOR END DIAPHRAGM DETAIL B814.
4. ALONG ℄ OF BEAM.
5. PERDENDICULAR TO ABUTMENT.
6. MAKE SAWCUT AS SOON AS CUTTING CAN BE DONE WITHOUT TRAVELING THE CONCRETE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

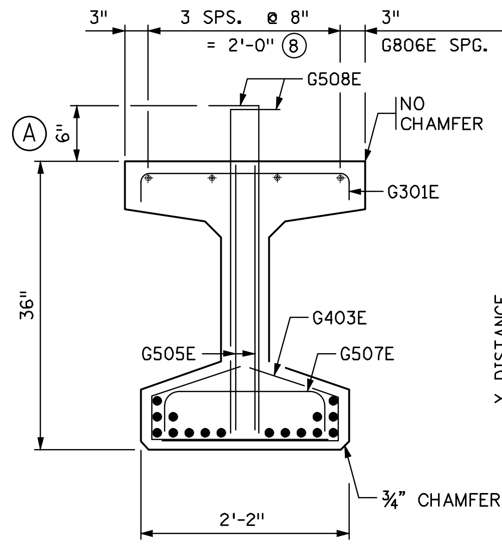
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
FRAMING PLAN

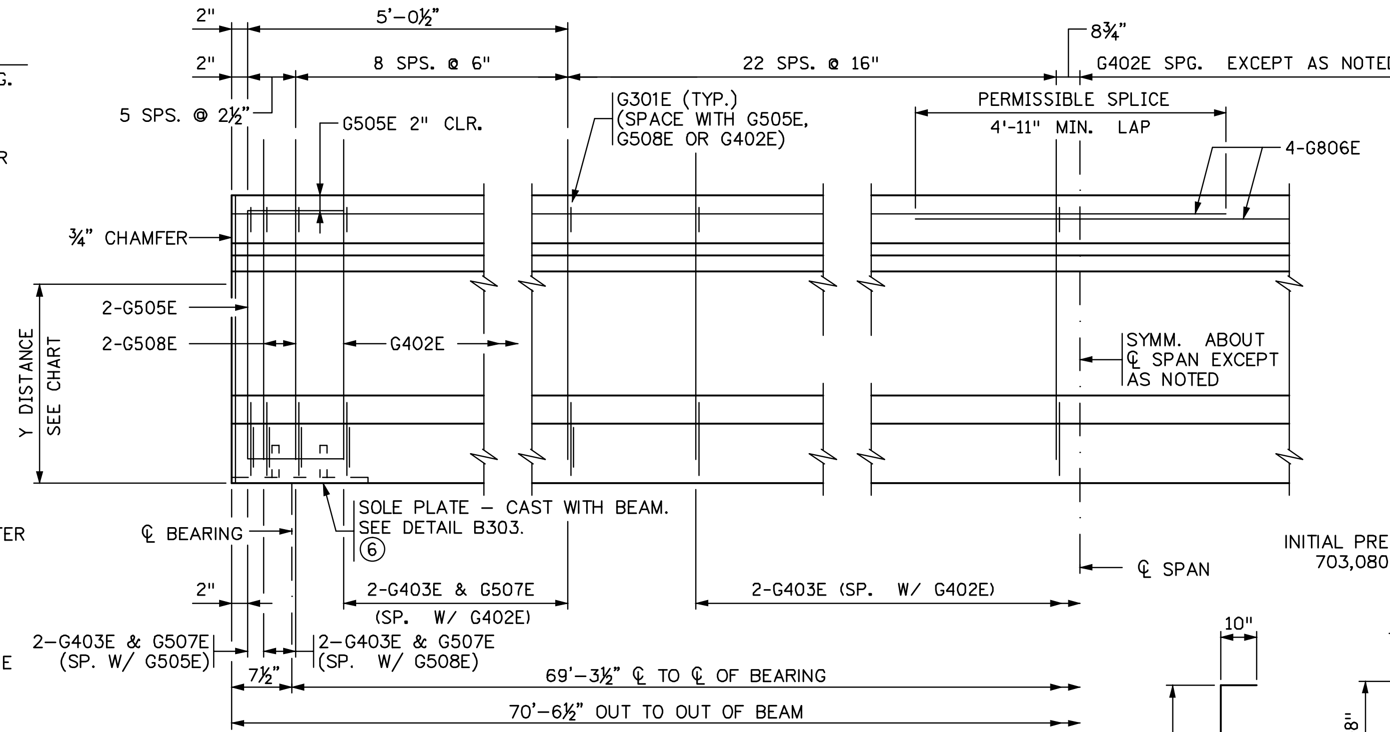
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-SUP-001

SHEET 31 OF 57

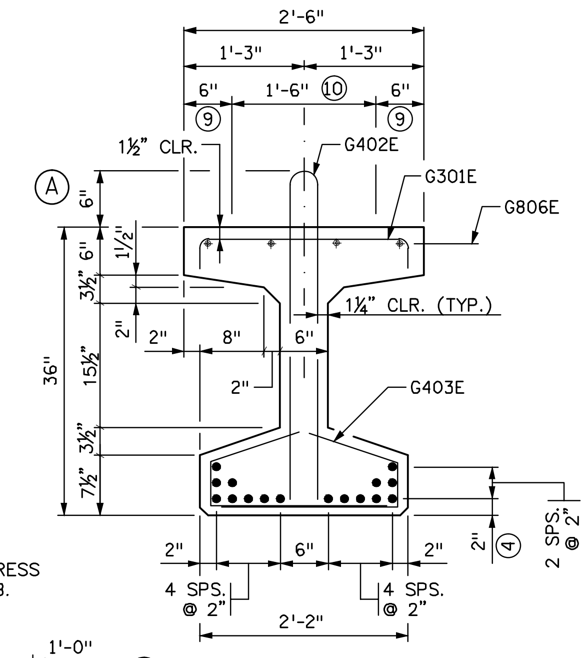


(A) END VIEW

CUT STRANDS FLUSH WITH CONCRETE. COVER ENDS WITH ONE COMPONENT POLYURETHANE SEALANT PER APPROVED PRODUCT LIST.



(A) BEAM ELEVATION



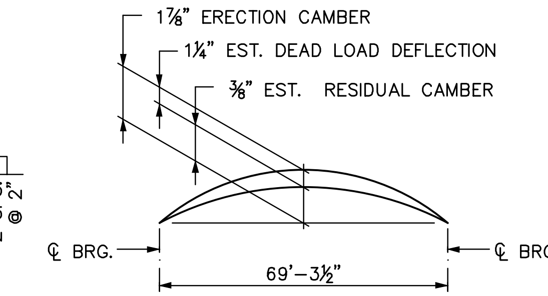
(A) SECTION AT CENTER SPAN

Y DISTANCES (INCHES)

	NO.	℄ SPAN	END
STRAIGHT STRANDS	16	3.0	
DRAPED STRANDS			¤
TOTAL STRANDS	16	3.0	

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.

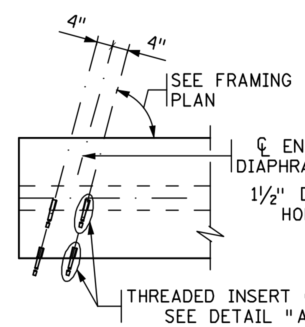


(A) CAMBER DIAGRAM

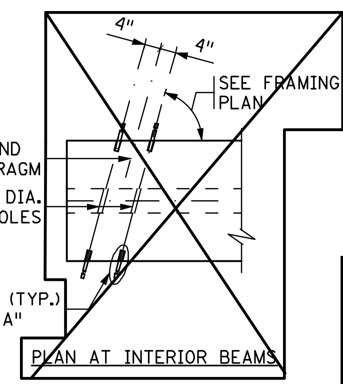
ERECTION CAMBER SHOWN IS AFTER DIAPHRAGMS ARE IN PLACE.

DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB, WEARING COURSE, BARRIER, SIDEWALK AND MEDIAN WHERE APPLICABLE.

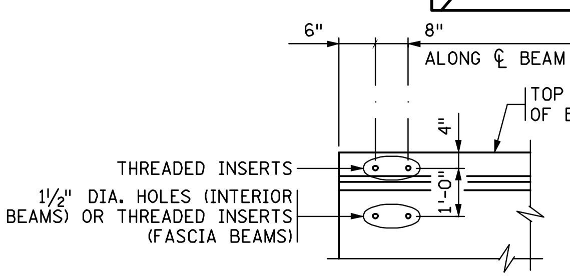
CONTRACTOR WILL TAKE ELEVATIONS AT TOP OF BEAMS AFTER ERECTION AND WILL ALLOW FOR DEFLECTION SHOWN TO ENABLE BUILDING FORMS TO CORRECT GRADE AND SPECIFIED SLAB THICKNESS. PROVIDE COPY OF ELEVATIONS TO THE ENGINEER.



PLAN AT FASCIA BEAMS



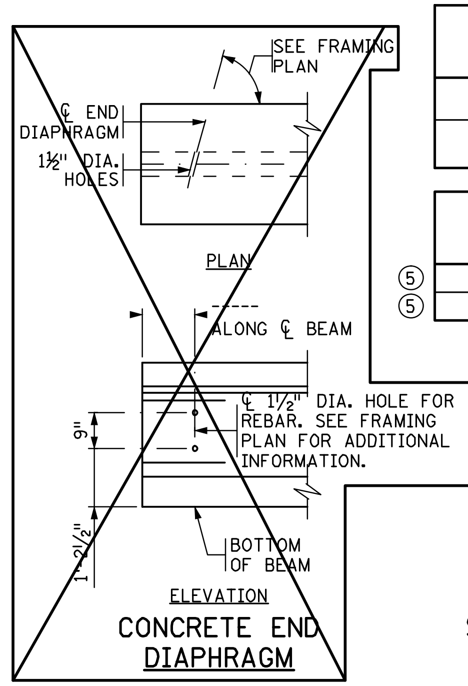
PLAN AT INTERIOR BEAMS



ELEVATION

CONCRETE END DIAPHRAGM

PARAPET ABUTMENT
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)

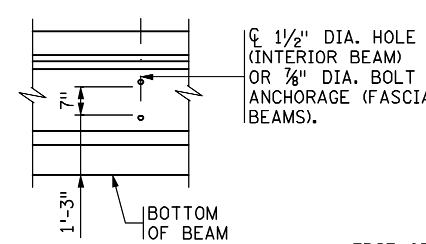


CONCRETE END DIAPHRAGM

CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	13.1 KSI
LONG TERM LOSSES	17.2 KSI
TOTAL LOSSES	30.3 KSI

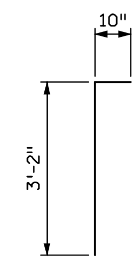
MINIMUM CONCRETE STRENGTH – K.S.I.	
(1) f'ci	(2) f'c
7.0 KSI	8.0 KSI

	PRESTRESSING STRAND DIAMETER
(5)	½" ☐
(5)	0.60" ☒

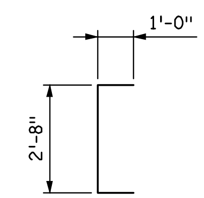


STEEL INTERMEDIATE DIAPHRAGM

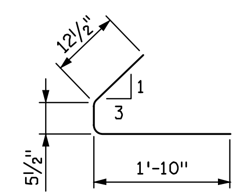
(SEE DETAIL B403 FOR DIAPHRAGM DETAILS)



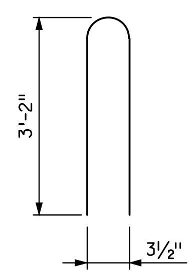
(A) G508E



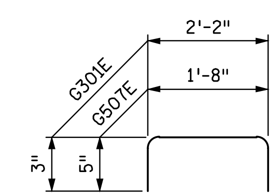
G505E



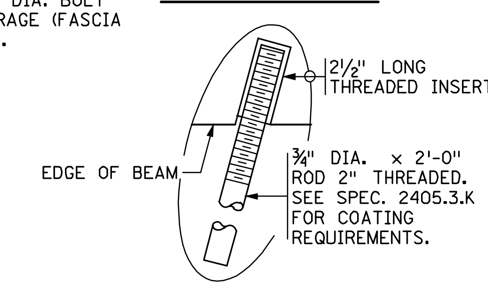
G403E



(A) G402E



G301E & G507E



DETAIL "A"

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 STENCILED 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 22.6 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.

SHEET MODIFICATION:
(A) DENOTES MODIFICATION TO STANDARD SHEET

REVISION:

APPROVED: NOVEMBER 6, 2013
Nancy Daubenberger
STATE BRIDGE ENGINEER

CERTIFIED BY ______ LICENSED PROFESSIONAL ENGINEER 7/13/15 DATE
NAME: ENGINEER LIC. NO. #####

TITLE: 36" PRESTRESSED CONCRETE BEAM (PRETENSIONED) 36M-71

BEAM B1, B2

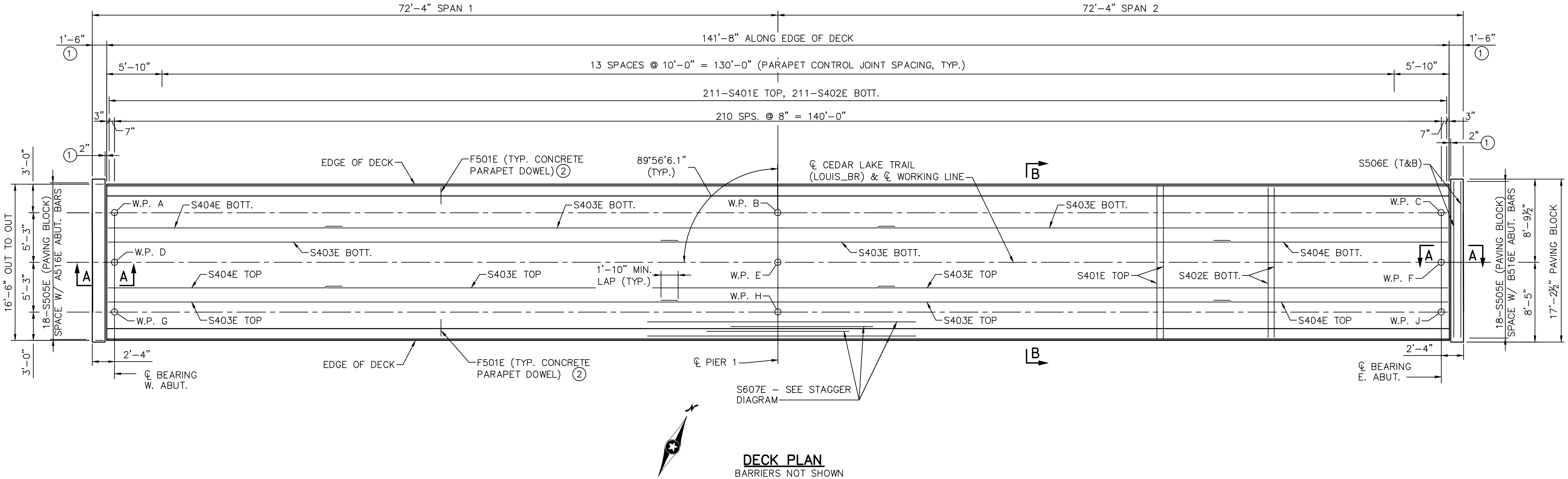
DES: NRW	DR: PGR
CHK: JSM	CHK: JSM

FIG. 5-397.505 (MOD.)

APPROVED:

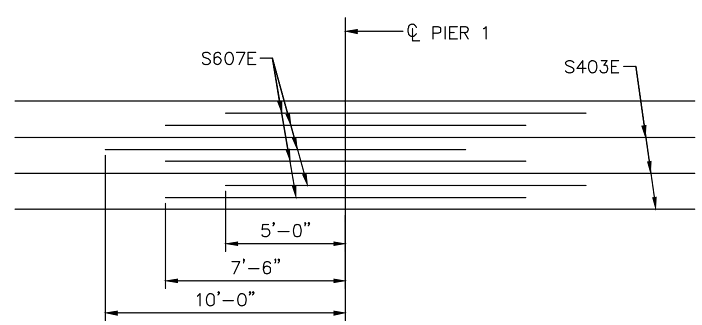
SHEET NO. 32 OF 57 SHEETS

BRIDGE NO. 27C11



DECK PLAN

BARRIERS NOT SHOWN



STAGGER DIAGRAM

LONGITUDINAL REINFORCEMENT FOR CONCRETE DECK WITH MAIN REINFORCEMENT PERPENDICULAR TO TRAFFIC WITH ONLY DECK (NOT BEAMS) CONTINUOUS OVER PIER.

NOTES:

SEE APPROACH PANEL SHEET FOR APPROACH PANEL REINFORCEMENT.

SEE SHEET 35 FOR SECTION A-A

SEE SHEET 34 FOR SECTION B-B

1. SUPERSTRUCTURE DIMENSIONS ARE BASED ON A 2" EXPANSION JOINT OPENING.
2. FOR PARAPET REINFORCING TO BE PLACED IN SLAB, SEE SHEET CONCRETE PARAPET SHEET.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW | CHECKED BY: JSM
DRAWN BY: PGR | CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

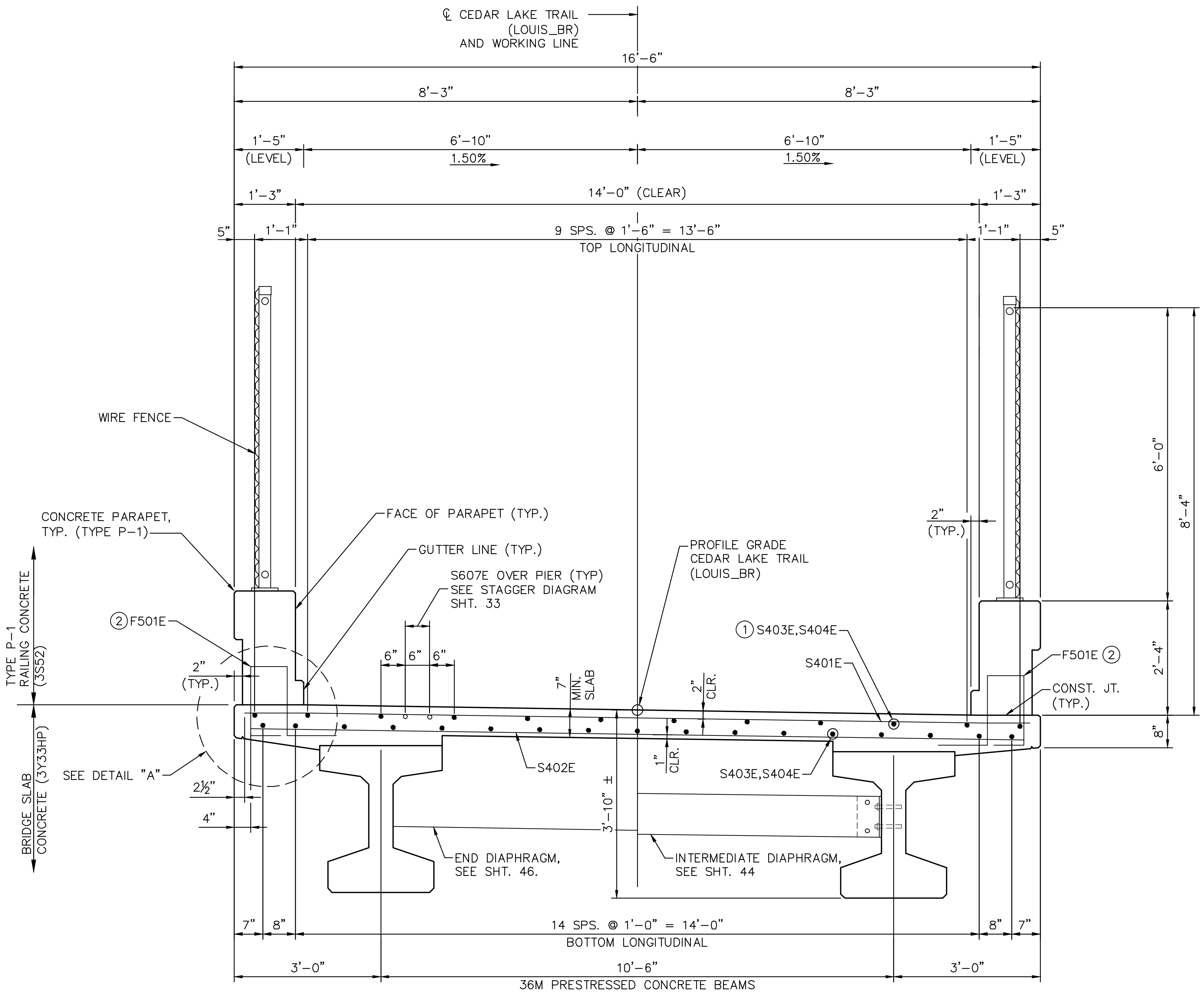
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

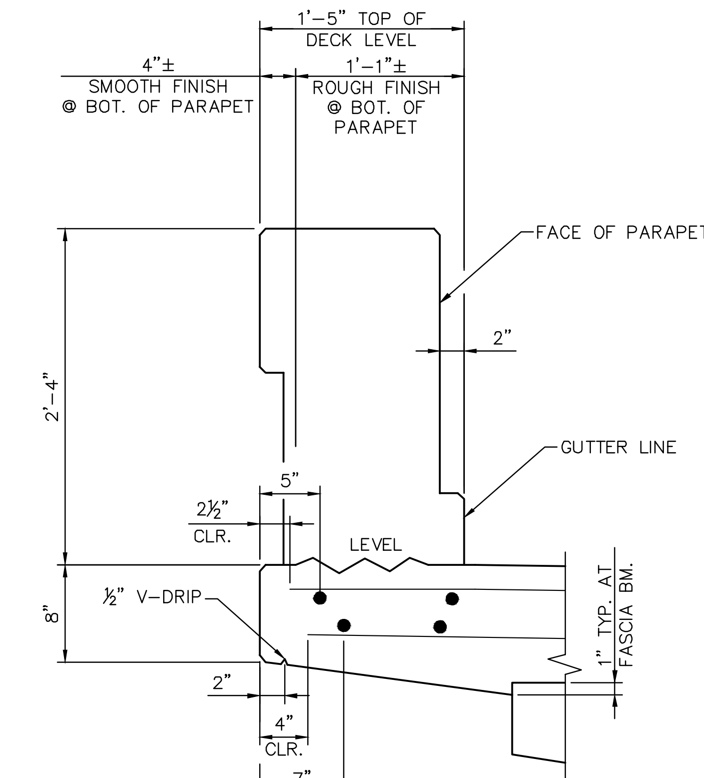
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
SUPERSTRUCTURE DETAILS 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-SUP-002



TRANSVERSE SECTION B-B



DETAIL A

NOTES:

1. ALTERNATE BARS FROM END TO END TO STAGGER LAPS.
2. FOR PARAPET REINFORCING TO BE PLACED IN SLAB, SEE CONCRETE PARAPET SHEET.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

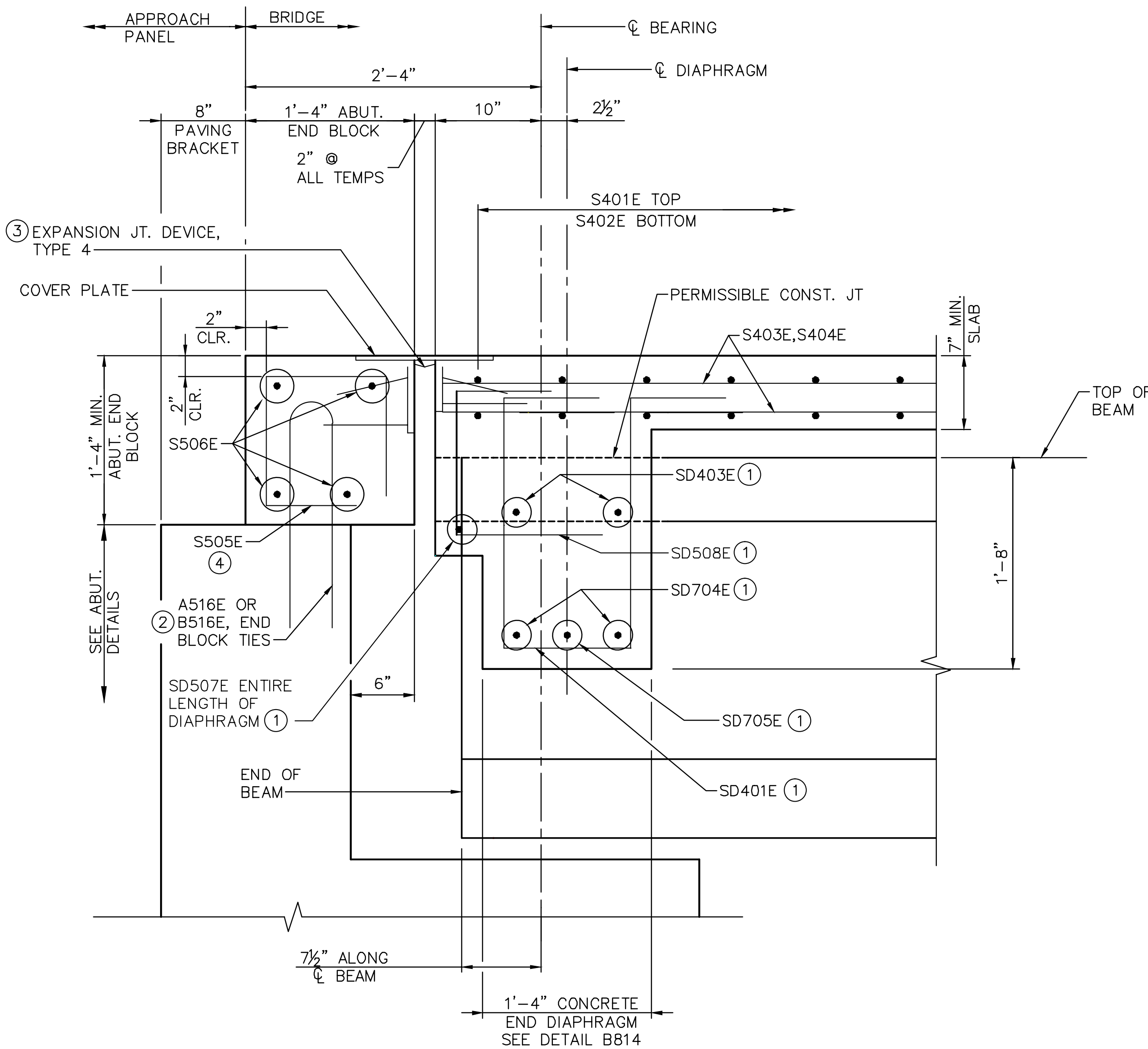
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
SUPERSTRUCTURE DETAILS 2

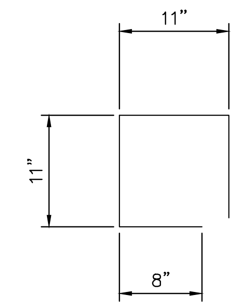
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-SUP-003

SHEET 34 OF 57



SECTION A–A AT ABUTMENT

SECTION IS TAKEN NORMAL TO JOINT



S505E

BILL OF REINFORCEMENT FOR SUPERSTRUCTURE				
BAR	NO.	LENGTH	SHAPE	LOCATION
S401E	211	16'-1"	STR.	TRANSVERSE TOP
S402E	211	15'-10"	STR.	TRANSVERSE BOTTOM
S403E	58	60'-0"	STR.	T & B LONGITUDINAL
S404E	29	25'-0"	STR.	T & B LONGITUDINAL
S505E	36	3'-5"	BENT	PAVING BLOCK
S506E	8	16'-7"	STR.	PAVING BLOCK
S607E	18	15'-0"	STR.	LONGIT. TOP OVER PIER

GENERAL NOTES

ALL DIMENSIONS SHOWN ARE MEASURED ON A HORIZONTAL PLANE.

SUPERSTRUCTURE DIMENSIONS ARE BASED ON A 2" EXPANSIONS JOINT OPENING.

① SEE DETAIL B814 SHT. 46 FOR END DIAPHRAGM DETAILS, END DIAPH. CONCRETE (AT ABUTMENTS), PAID FOR AS "BRIDGE SLAB CONCRETE (3YHPC–M)".

② SEE ABUTMENT SHEETS FOR DETAILS.

③ SEE EXPANSION JOINT SHEET FOR DETAILS.

④ SPACE WITH A516E OR B516E ABUTMENT BARS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

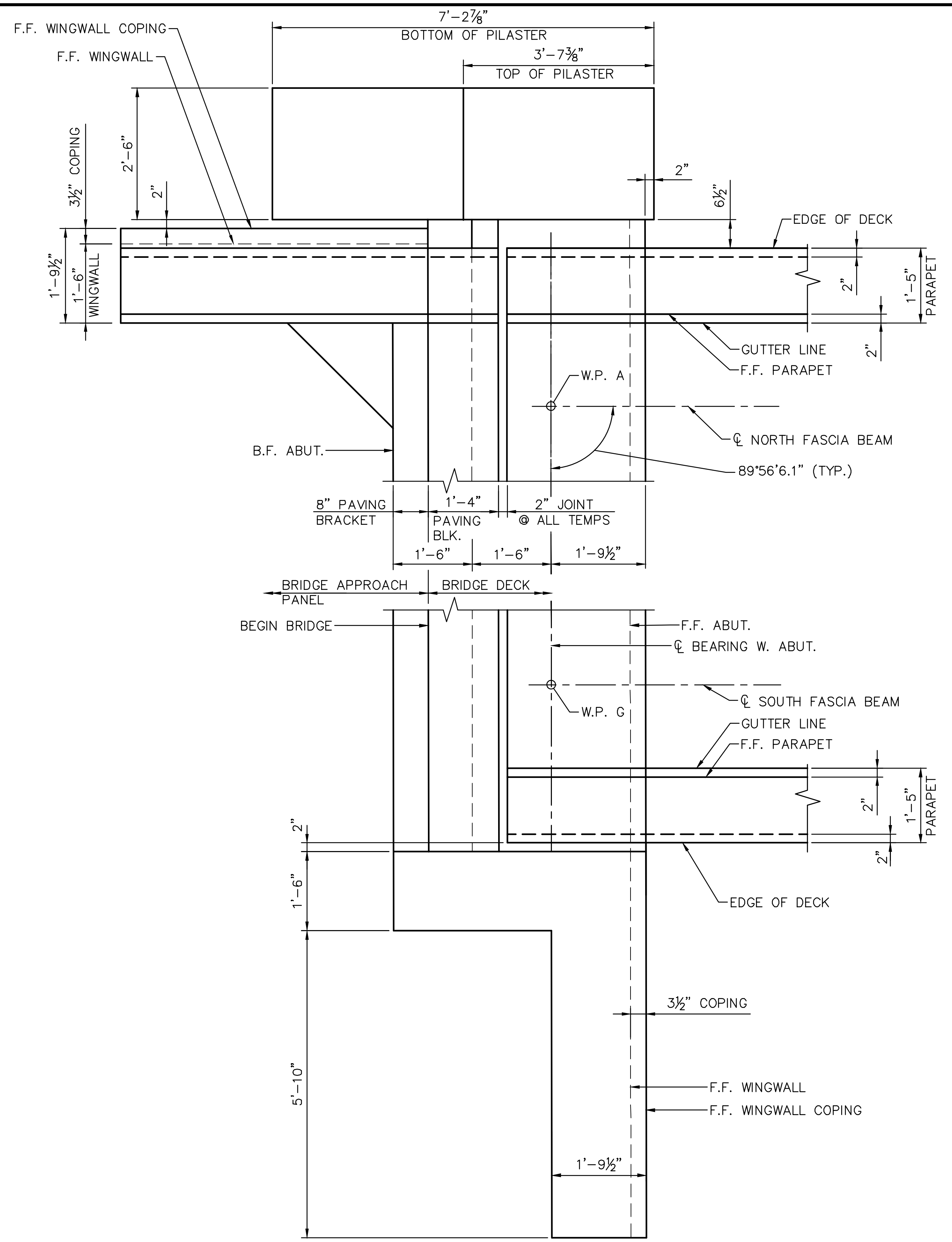
AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

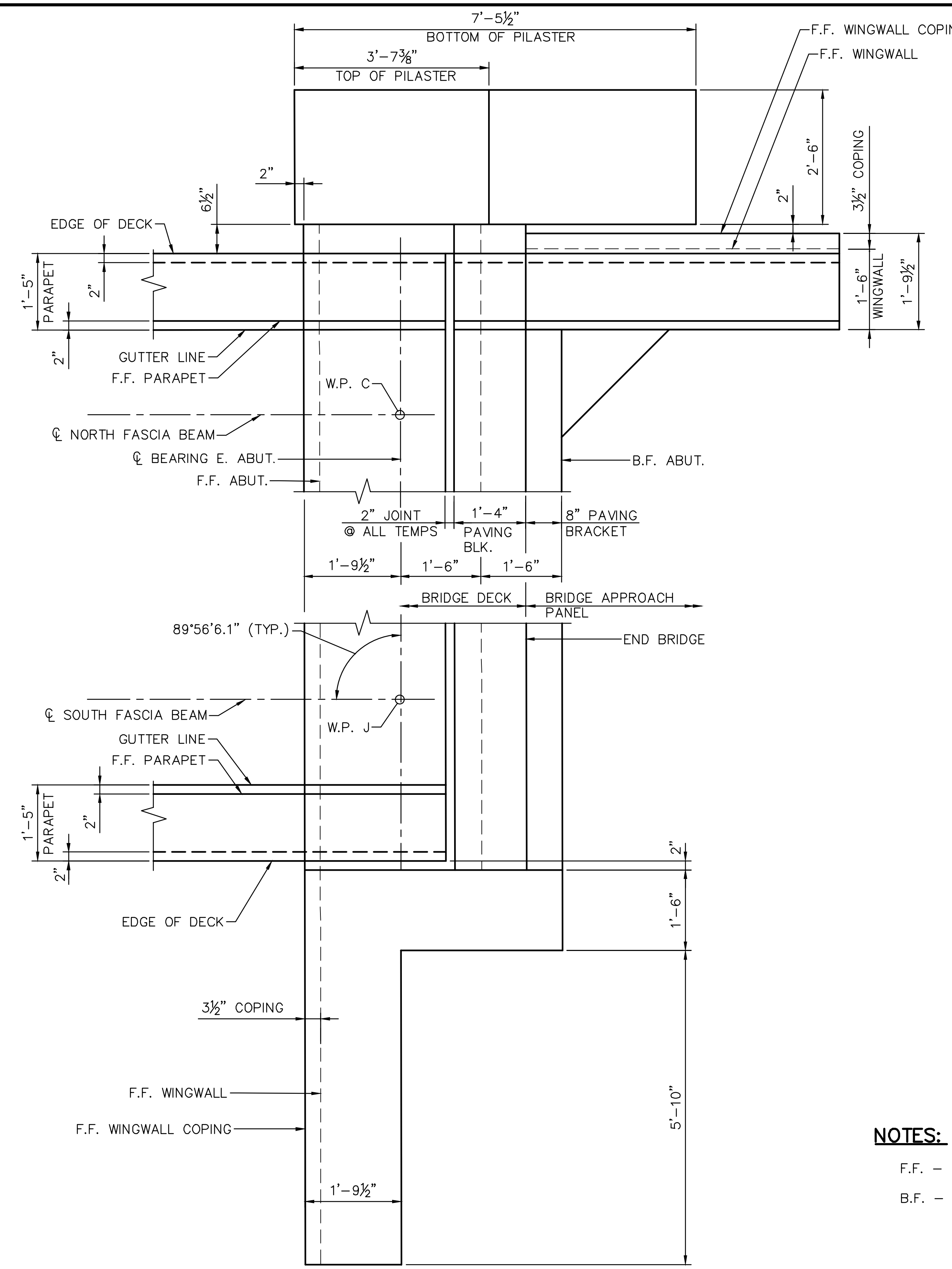
METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
SUPERSTRUCTURE DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-SUP-004



WEST ABUTMENT CORNER DETAIL



EAST ABUTMENT CORNER DETAIL

NOTES:

F.F. – DENOTES FRONT FACE

B.F. – DENOTES BACK FACE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

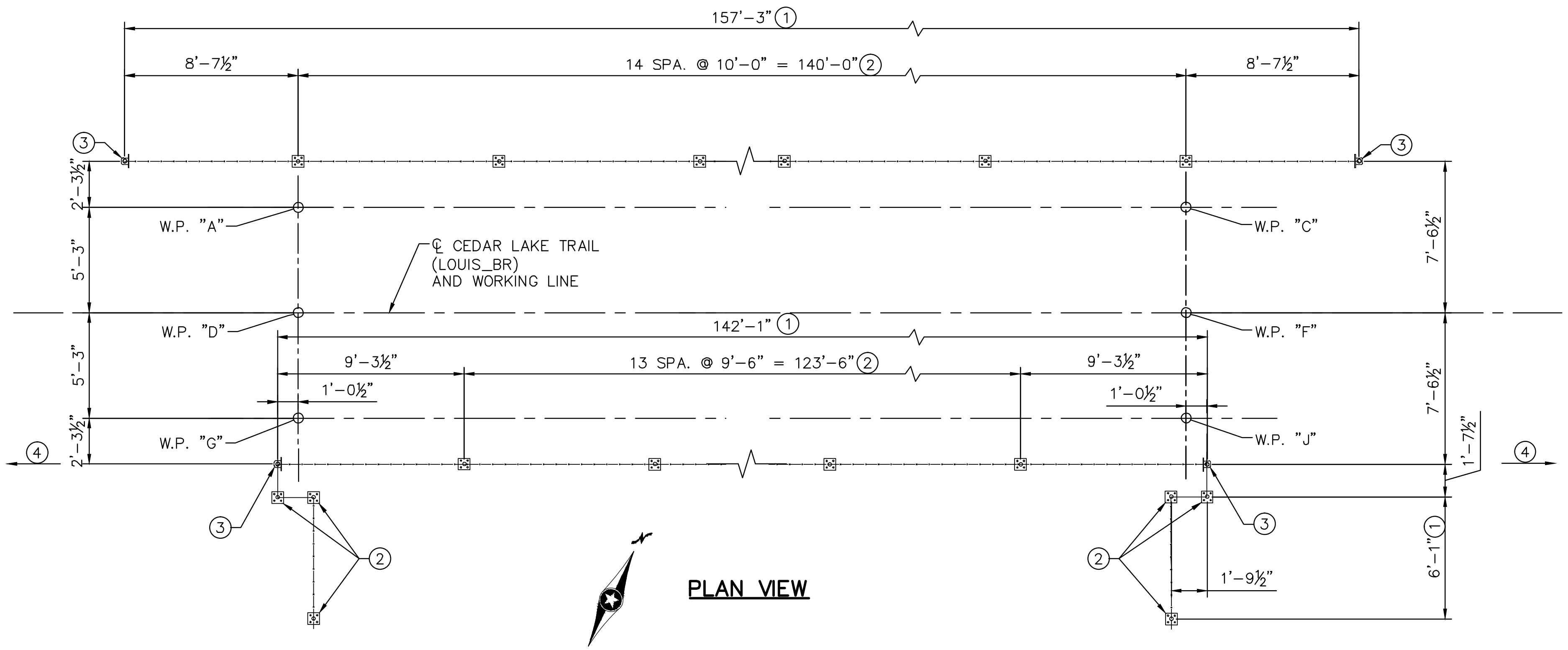
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
SUPERSTRUCTURE DETAILS 4

DISCIPLINE: STRUCTURES

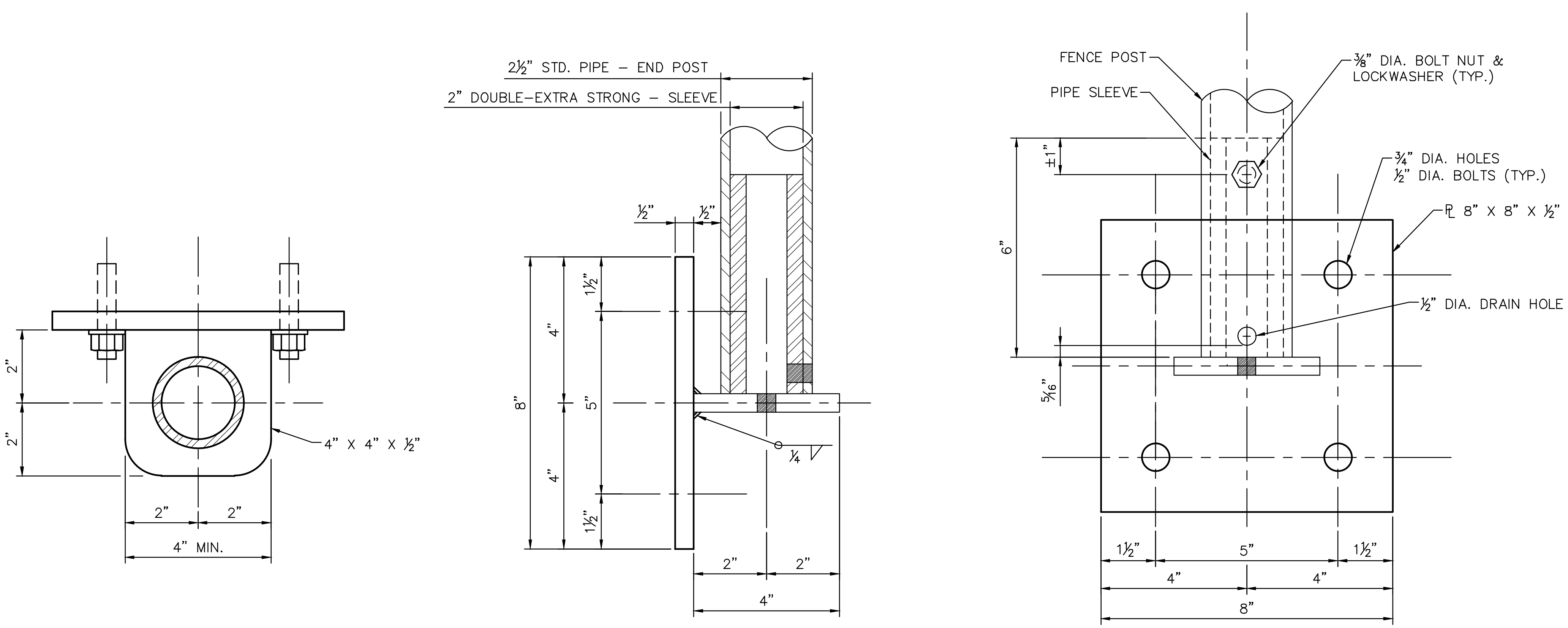
SHEET NAME: CBR27C11-BRG-SUP-005

SHEET 36 OF 57

Jan, 12 2016 12:21 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-TRL\CBR27C11-BRG-SUP-002.dwg By: Paul.Robbs



PLAN VIEW



PLAN VIEW

SECTION

ELEVATION

VERTICAL FENCE POST ANCHORAGE

NOTES:

FENCE SHALL RETAIN A 4" SPHERE.

POST SHALL BE SET VERTICAL.

STRUCTURAL STEEL PER MnDOT SPEC. 3306.

STRUCTURAL PIPE PER MnDOT SPEC. 3362.

GALVANZING THE FENCE POST ANCHORAGE AFTER FABRICATION PER MnDOT SPEC. 3394. GALVANIZE THE FASTENERS PER SPEC. 3392.

(1) WIRE FENCE DESIGN W-1.

(2) FENCE POST ANCHORAGES SHALL BE TYPE A. SEE DETAIL B905.

(3) VERTICAL FENCE POST ANCHORAGE, SEE DETAILS THIS SHEET.

(4) WIRE FENCE DESIGN W-1. SEE CIVIL PLANS FOR QUANTITIES AND INSTALLATION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW | CHECKED BY: JSM
DRAWN BY: PGR | CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

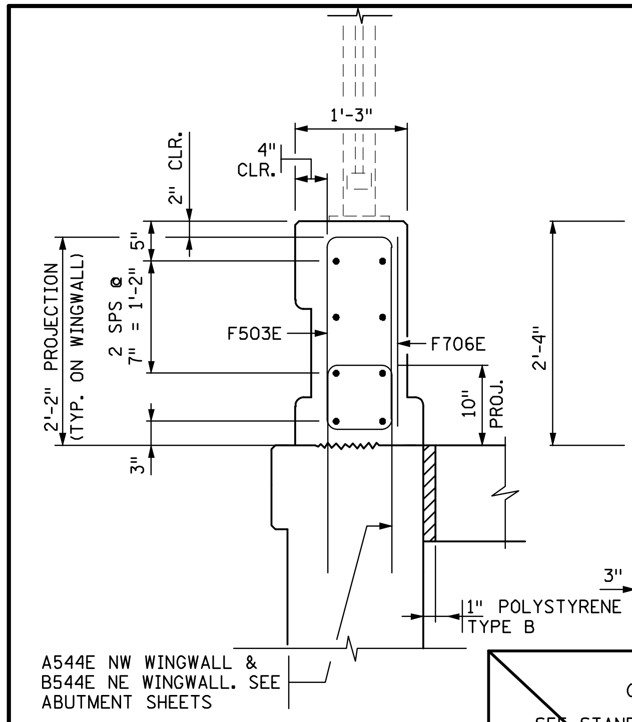
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
SUPERSTRUCTURE DETAILS 5

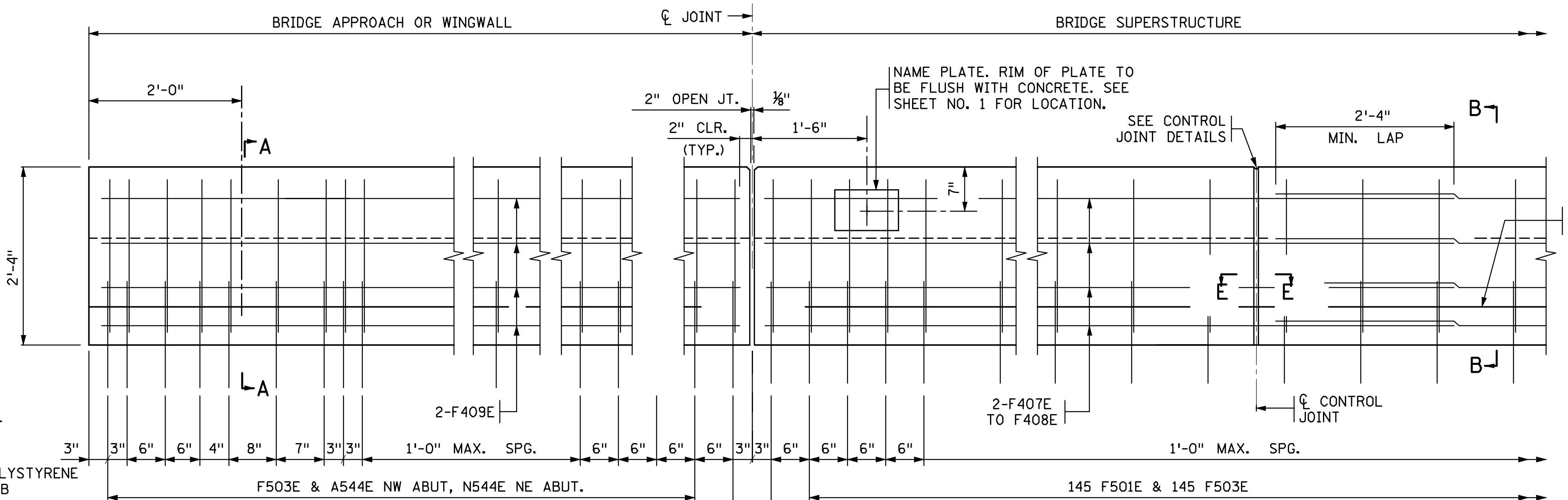
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-SUP-006

Jan, 12 2016 12:22 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-TRL\CBR27C11-BRG-SUP-005.dwg By: Paul.Robbs

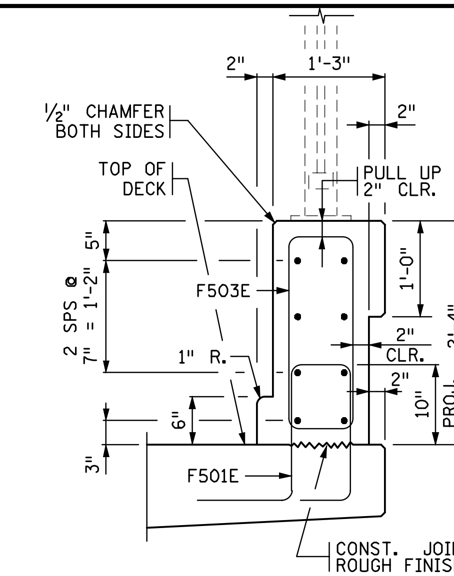


Ⓐ SECTION A-A

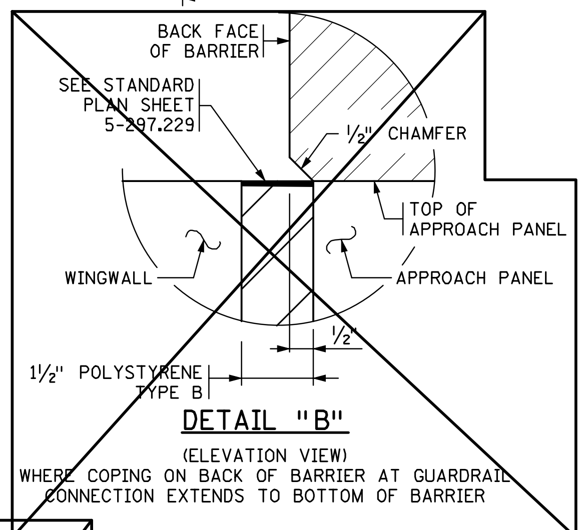


~~(INTEGRAL OR SEMI INTEGRAL ABUTMENT)~~ SEE DETAIL "A" FOR PARAPET ABUTMENT

Ⓐ INSIDE ELEVATION OF PARAPET

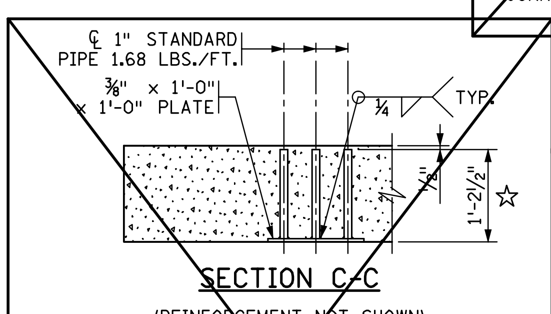


Ⓐ SECTION B-B



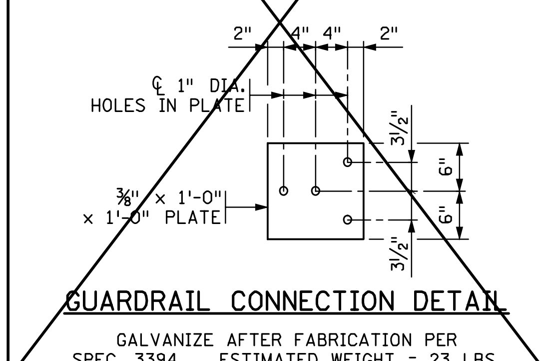
DETAIL "B"

(ELEVATION VIEW)
WHERE COPING ON BACK OF BARRIER AT GUARDRAIL CONNECTION EXTENDS TO BOTTOM OF BARRIER



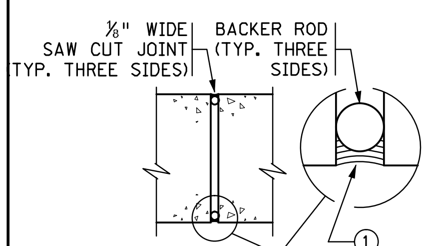
SECTION C-C

(REINFORCEMENT NOT SHOWN)
☆ DIMENSION INCLUDES ⅜" PLATE

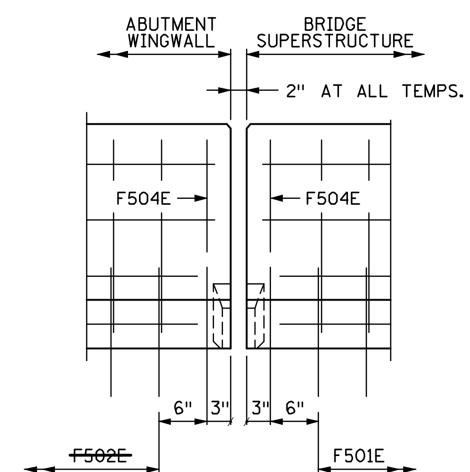


GUARDRAIL CONNECTION DETAIL

GALVANIZE AFTER FABRICATION PER SPEC. 3394. ESTIMATED WEIGHT = 23 LBS.



SECTION F-F



DETAIL "A" ②

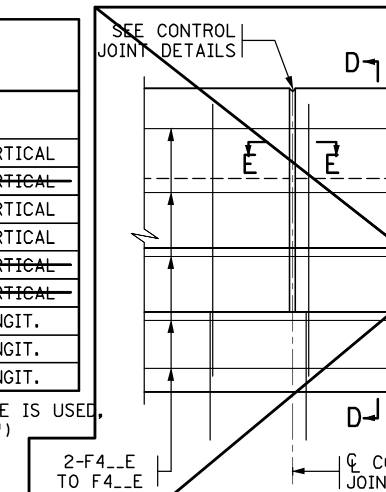
(USE ONLY WITH WATER PROOF EXPANSION DEVICE)
(EXPANSION DEVICE NOT SHOWN)

BILL OF REINFORCEMENT FOR PARAPET

BAR	NO.	LENGTH	SHAPE	LOCATION
F501E	290	5'-2"		PARAPET VERTICAL
~~F502E~~		~~5'-4"~~		~~PARAPET VERTICAL~~
F503E	318	6'-5"		PARAPET VERTICAL
✳ F504E	4	5'-11"		PARAPET VERTICAL
~~F505E~~		~~8'-1"~~		~~PARAPET VERTICAL~~
~~F706E~~		~~6'-7"~~		~~PARAPET VERTICAL~~
F407E	16	60'-0"		PARAPET LONGIT.
F408E	8	26'-4"		PARAPET LONGIT.
F409E	16	7'-2"		PARAPET LONGIT.

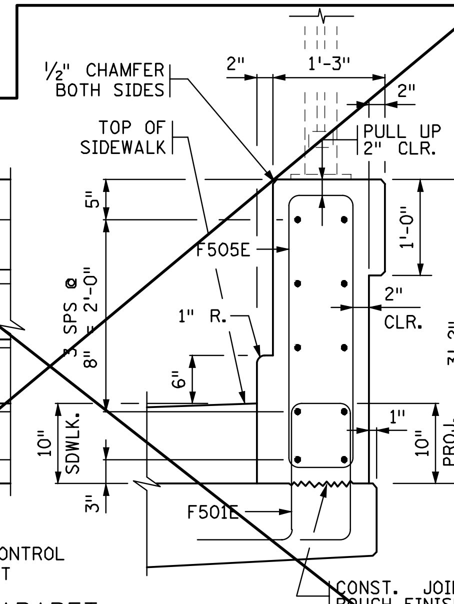
✳ F504E WHEN WATER PROOF EXPANSION DEVICE IS USED, WITHOUT RAISED SIDEWALK. (SEE DETAIL "A")

SHEET MODIFICATION:
Ⓐ DENOTES MODIFICATION TO STANDARD SHEET

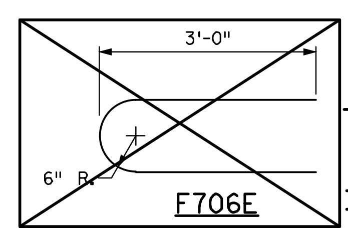


INSIDE ELEVATION OF PARAPET WITH RAISED SIDEWALK

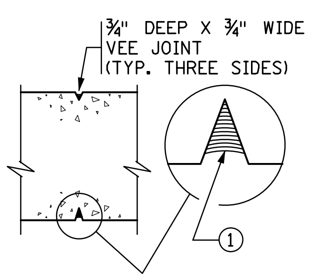
FOR VERTICAL REINFORCEMENT SPACING FOLLOW INSIDE ELEVATION OF PARAPET ABOVE.



SECTION D-D

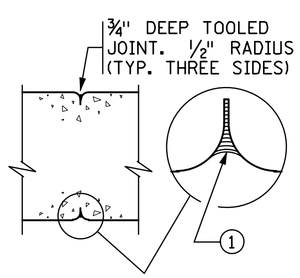


F706E



SECTION E-E

CONTRACTOR OPTION 1

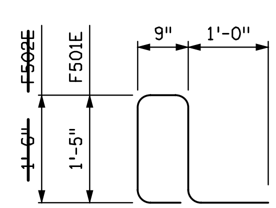


SECTION E-E

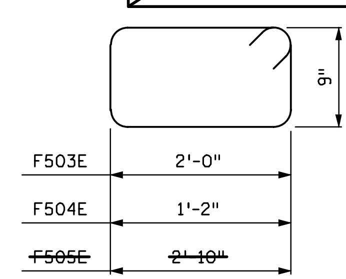
CONTRACTOR OPTION 2

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)



F501E, ~~F502E~~



F503E, F504E ~~AND F505E~~

GENERAL NOTES

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 BETWEEN THE OUTSIDE FACES OF THE CONCRETE PARAPET.~~

CONCRETE PARAPET = 416 LBS./FT. (0.103 CU. YDS./FT.)

~~CONCRETE PARAPET W/ADJACENT SIDEWALK (BASED ON A 10" SIDEWALK HEIGHT) = 573 LBS./FT. (0.141 CU. YDS./FT.)~~

FINISH ALL EDGES OF PARAPET WITH ½" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.

MAXIMUM SPACING OF CONTROL JOINTS ON SUPERSTRUCTURE, APPROACH AND WINGWALL SHALL BE 10 FT. SEE SUPERSTRUCTURE SHEET FOR JOINT SPACING.

Ⓐ GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, SPEC. 3306. ~~GUARDRAIL CONNECTION AND NAME PLATE TO BE CONSIDERED INCIDENTAL TO "TYPE P-1 PARAPET CONCRETE (3Y46)".~~

~~SEE STANDARD FIGURE 5-397.___ FOR LIGHT BLISTER DETAILS.~~

PARAPET QUANTITIES ARE LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

① JOINT SEALANT PER MnDOT APPROVED/QUALIFIED PRODUCTS LIST - CRACK AND JOINT MATERIALS - SILICONE JOINT SEALERS.

② REFER TO EXPANSION JOINT SHEET FOR COVER PLATE DETAILS.

FIG. 5-397.166 (MOD.)

REVISION:

APPROVED: NOVEMBER 6, 2013
Nancy Daubenberger
STATE BRIDGE ENGINEER

CERTIFIED BY ______ LICENSED PROFESSIONAL ENGINEER 7/13/15 DATE
NAME: ENGINEER LIC. NO. #####

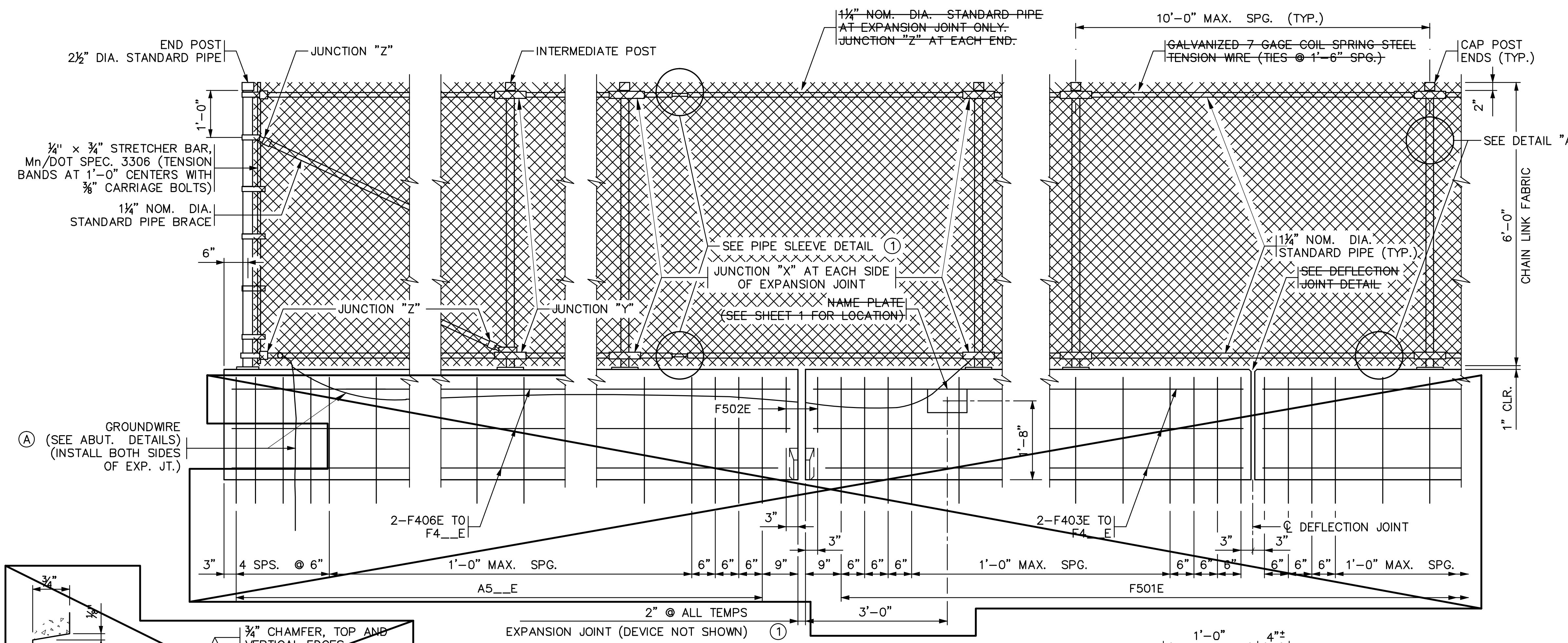
TITLE: CONCRETE PARAPET (TYPE P-1)
WITH INTEGRAL END POST
(WITHOUT CONCRETE WEARING COURSE)

DES: NRW	DR: PGR
CHK: JSM	CHK: JSM

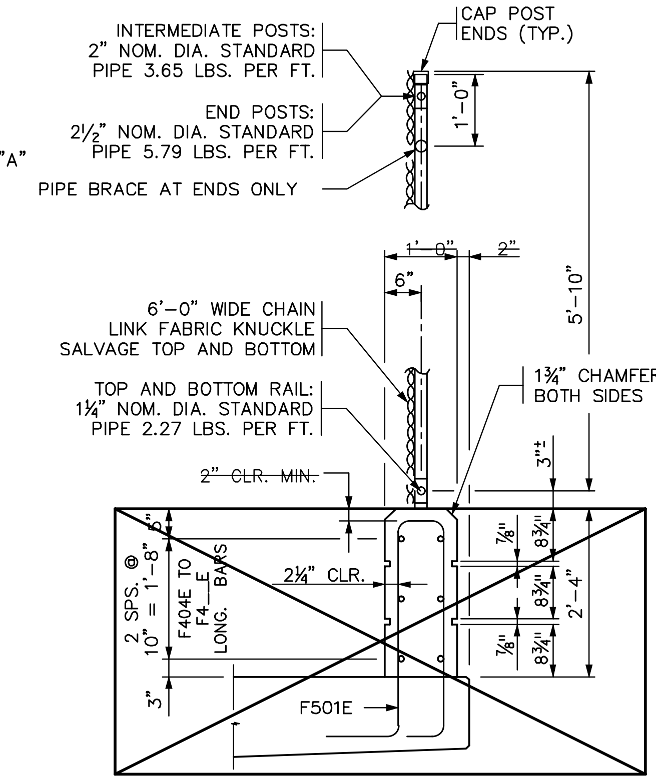
APPROVED:

SHEET NO. 38 OF 57 SHEETS

BRIDGE NO. 27C11



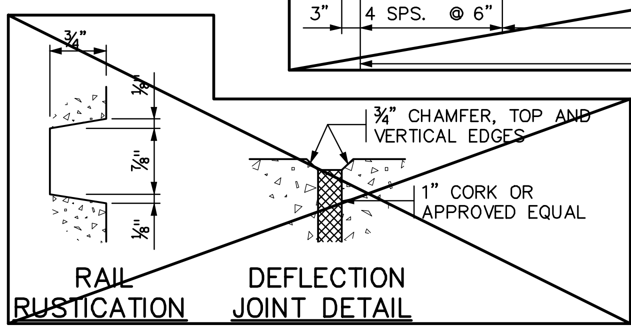
Ⓐ INSIDE ELEVATION OF RAILING



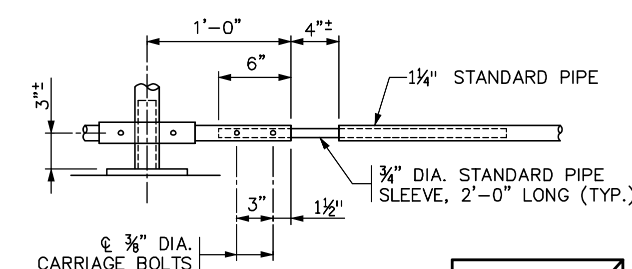
Ⓐ TYPICAL SECTION THROUGH FENCE

INTERMEDIATE POST SHOWN

SHEET MODIFICATION:
Ⓐ DENOTES MODIFICATION TO STANDARD SHEET



RAIL RUSTICATION DEFLECTION JOINT DETAIL



PIPE SLEEVE DETAIL ①

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.~~

Ⓐ LENGTH OF "WIRE FENCE DESIGN W-1 VINYL COATED" ~~FOR PAYMENT~~ SHALL BE MEASURED BETWEEN THE CENTERS OF END RAILPOSTS. SEE SHEET 37.

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

Ⓐ FOR FENCE POST ANCHORAGES, SEE SHEET 37.

~~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.

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

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

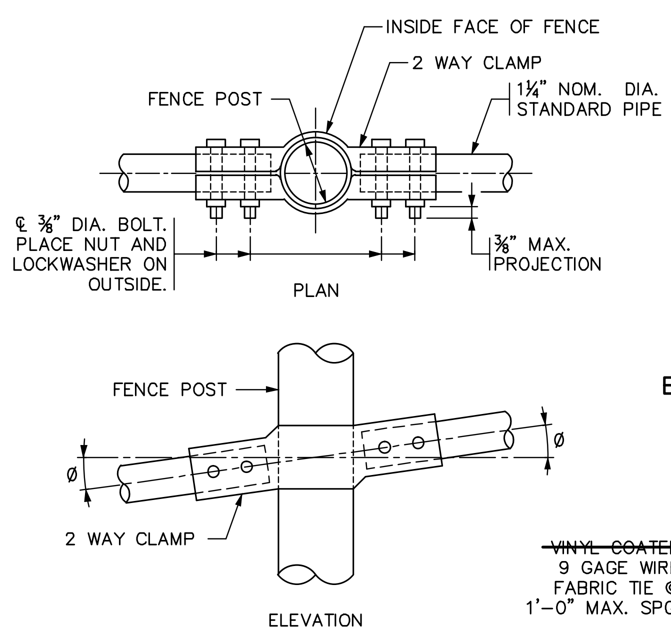
~~ALL POSTS SHALL HAVE A MEANS TO SECURELY HOLD THE TOP TENSION WIRE IN POSITION AND ALLOW FOR THE REMOVAL AND REPLACEMENT OF A POST WITHOUT DAMAGING THE TOP WIRE.~~

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 12½GAGE 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.~~

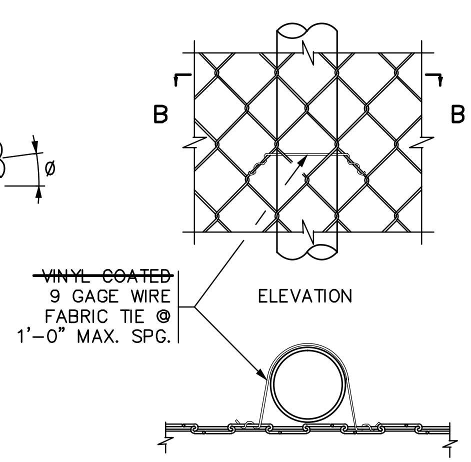
① PROVIDE PIPE SLEEVE IN SPAN BETWEEN THE VERTICAL POSTS AT EXPANSION JOINT. SEE SUPERSTRUCTURE SHEETS FOR LOCATION.



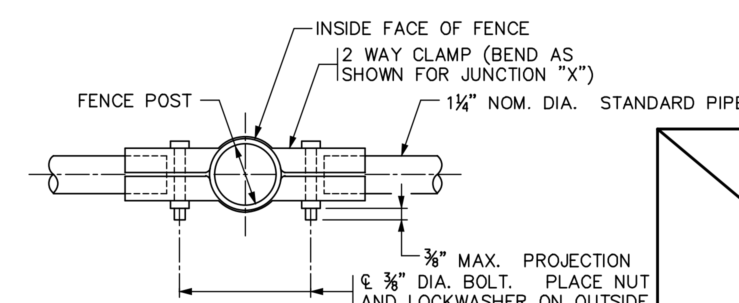
JUNCTION "X"

2 WAY CLAMP BENDING TABLE

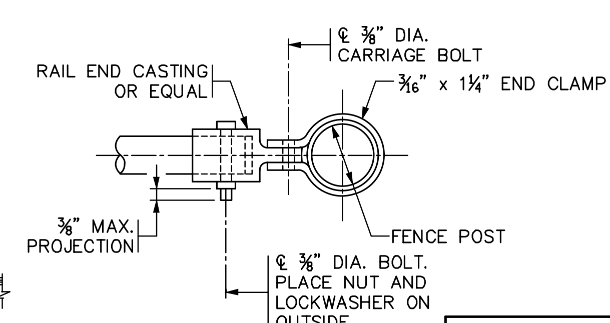
GRADE OF FENCE	Ø
0° TO 2°	0°
2° TO 6°	4°
6° TO 10°	8°



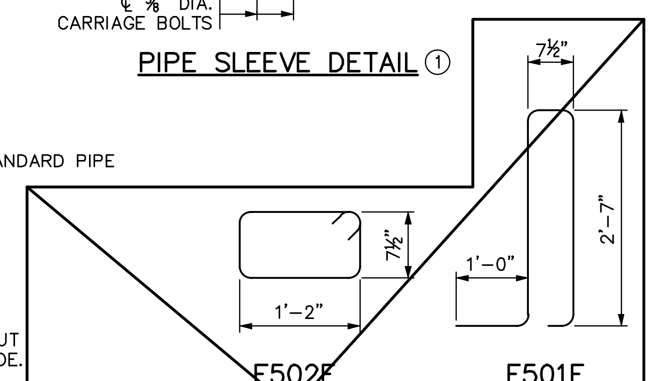
DETAIL "A"



JUNCTION "Y"



JUNCTION "Z"



F502E F501E

BILL OF REINFORCEMENT FOR PARAPET

BAR	NO.	LENGTH	SHAPE	LOCATION
F501E		7'-3"		RAIL BASE VERTICAL
F502E		4'-6"		RAIL BASE VERTICAL
F403E				RAIL BASE LONGITUDINAL
F404E				RAIL BASE LONGITUDINAL

REVISED: 04-17-2013

APPROVED: DECEMBER 18, 2003
STATE BRIDGE ENGINEER

CERTIFIED BY 7/13/15
LICENSED PROFESSIONAL ENGINEER DATE
NAME: ENGINEER LIC. NO. #####

TITLE: WIRE FENCE (DESIGN W-1) Ⓐ

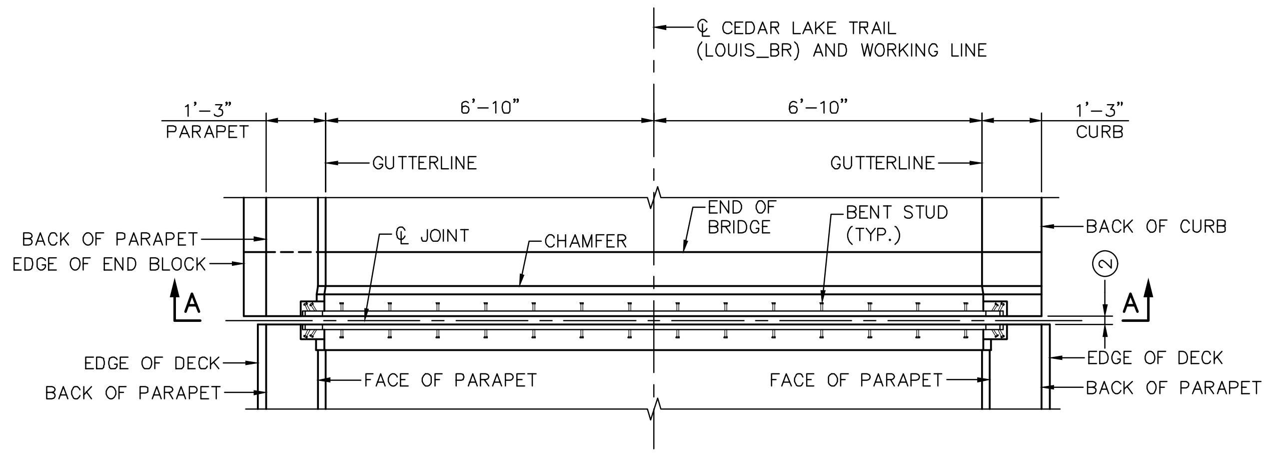
DES: NRW	DR: PGR
CHK: JSM	CHK: JSM

FIG. 5-397.119 (MOD.)

APPROVED:

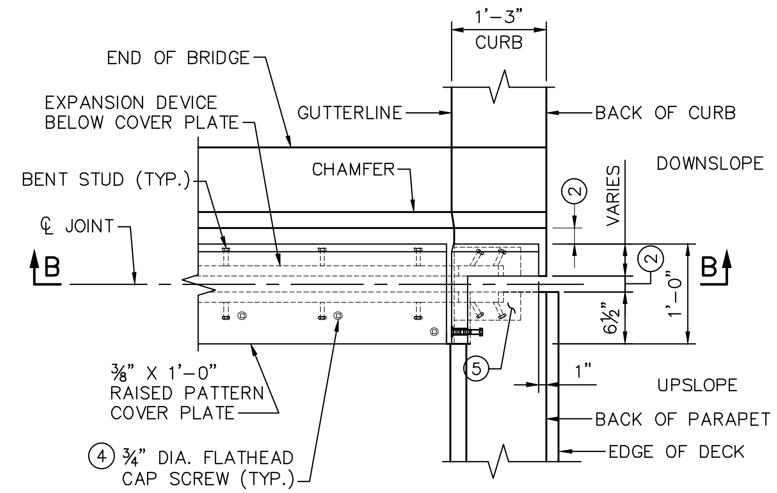
SHEET NO. 39 OF 57 SHEETS

BRIDGE NO. 27C11

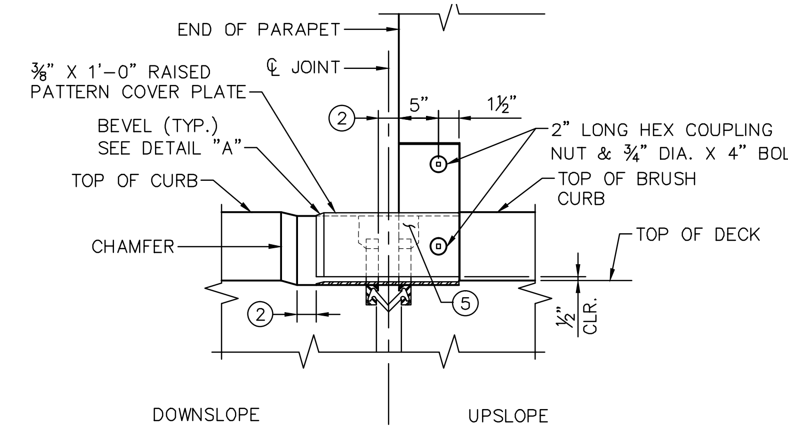


PLAN VIEW @ EXPANSION DEVICE

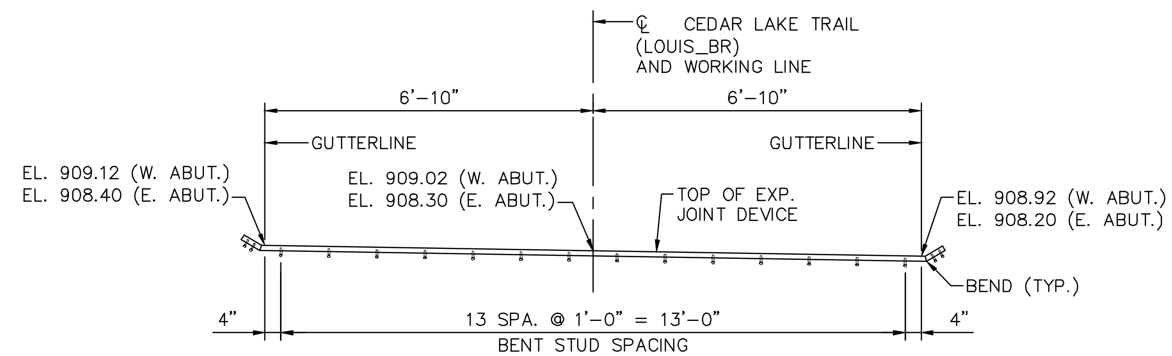
COVER PLATE NOT SHOWN FOR CLARITY



PLAN VIEW @ CURB

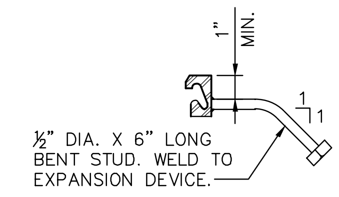


CURB ELEVATION

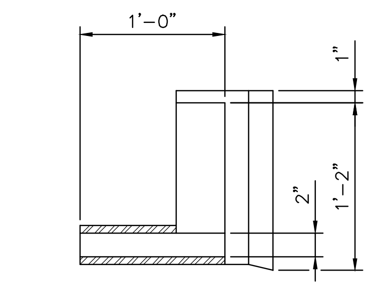


SECTION A-A – ALONG CENTERLINE JOINT

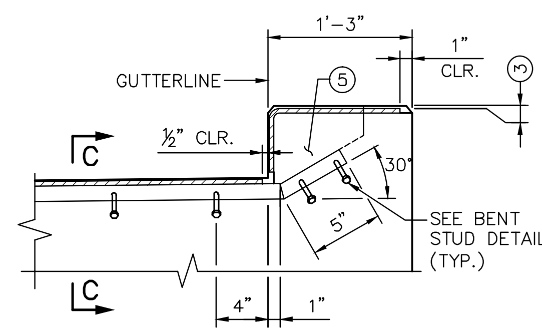
ELEVATIONS SHOWN ARE ½" BELOW TOP OF DECK @ CENTERLINE JOINT (LOOKING UPSTATION)



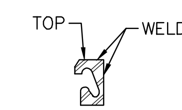
BENT STUD DETAIL



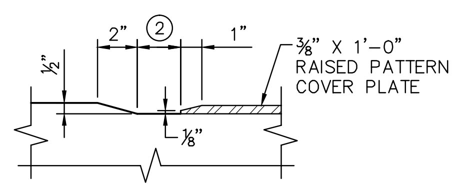
COVER PLATE DETAIL



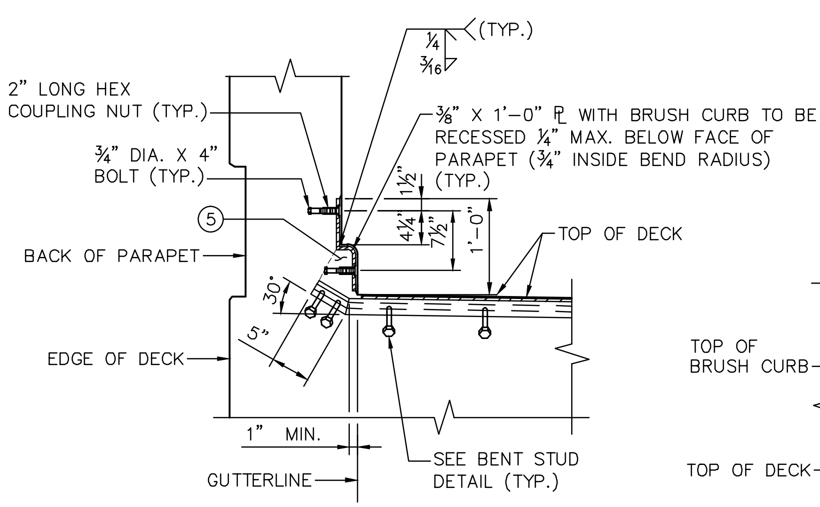
SECTION B-B



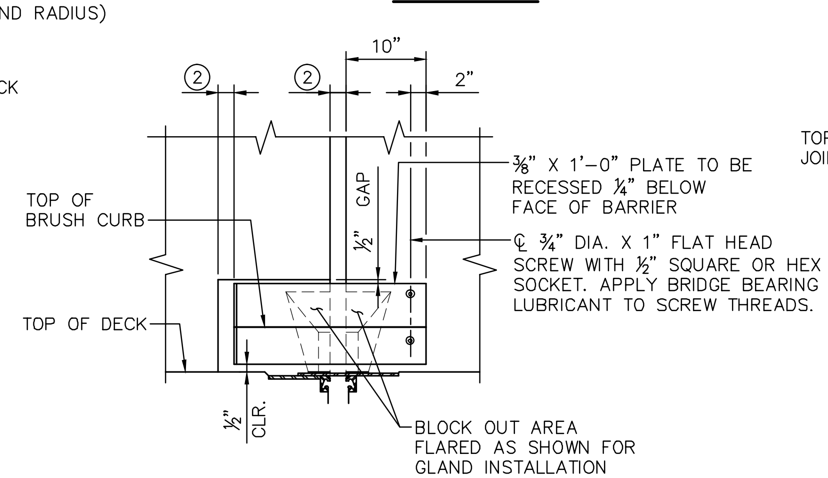
SECTION VIEW @ BEND



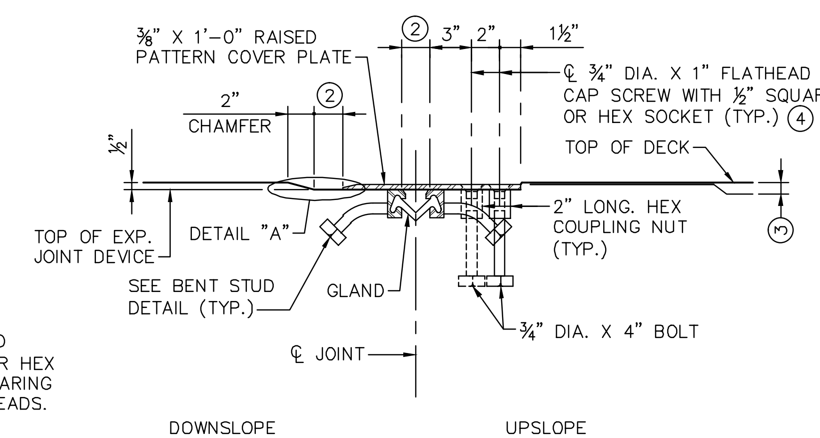
DETAIL "A"



CONCRETE PARAPET SECTION



CONCRETE PARAPET ELEVATION



SECTION C-C

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. 2471.3.L.

STRUCTURAL STEEL SHALL COMPLY WITH SPEC. 3306.

EXPANSION DEVICE SHALL BE STRAIGHTENED TO A TOLERANCE OF ⅛" IN 10 FT.

CAP SCREWS SHALL BE COUNTERSUNK 1⁄16" BELOW TOP OF PLATE.

1. EXPANSION DEVICE ELEVATIONS SHOWN ARE ½" BELOW FINISHED DECK ELEVATIONS. COVER PLATE SHALL BE INSTALLED PER TOLERANCE SHOWN IN SECTION C-C.
2. 2" ALL TEMPERATURES.
3. TOP OF CONCRETE TO TOP OF COVER PLATE ⅛" (¼" MAX.).
4. MAXIMUM TRANSVERSE SPACING OF ¾" DIA. FLATHEAD SCREWS AND COUPLINGS SHALL BE 1'-0".
5. MINIMAL AMOUNT OF CURB CONCRETE ABOVE EXPANSION DEVICE SHALL BE BLOCKED OUT FOR GLAND INSTALLATION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

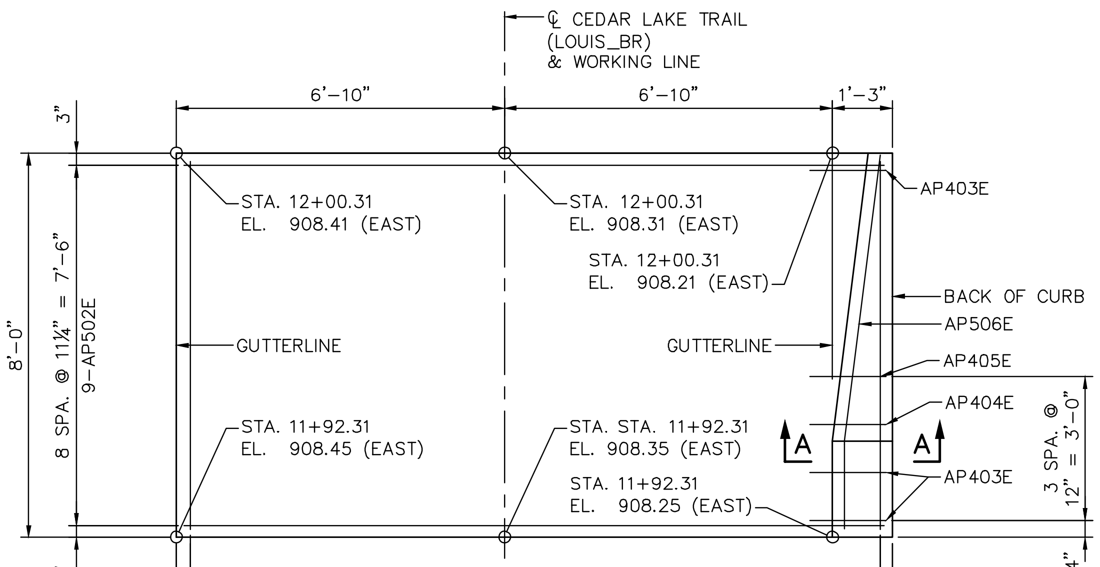
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL | SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
WATERPROOF EXPANSION DEVICE

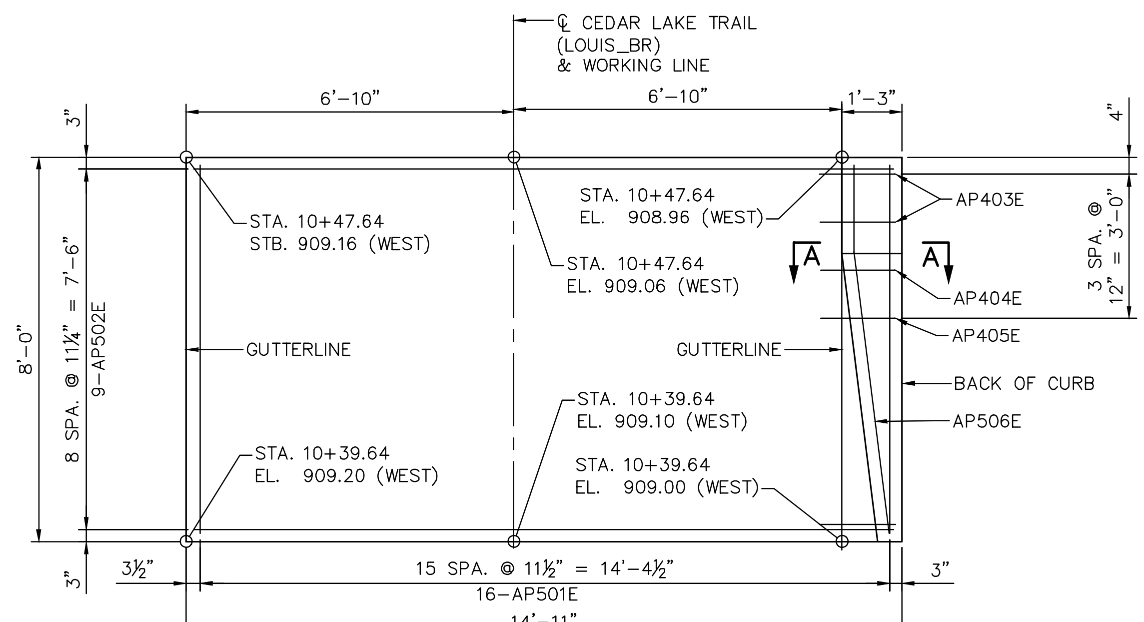
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-DTL-003

SHEET 40 OF 57



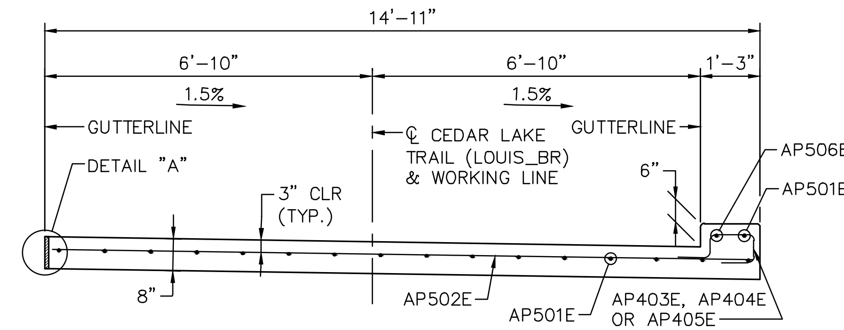
PLAN VIEW

EAST APPROACH PANEL
ELEVATIONS ARE AT TOP OF SLAB



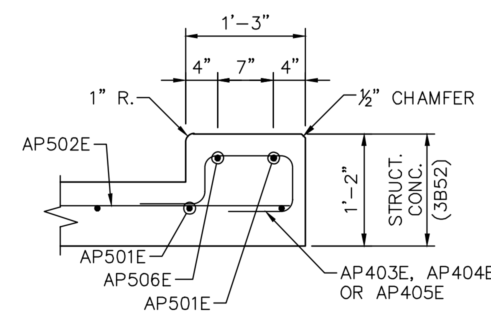
PLAN VIEW

WEST APPROACH PANEL
ELEVATIONS ARE AT TOP OF SLAB

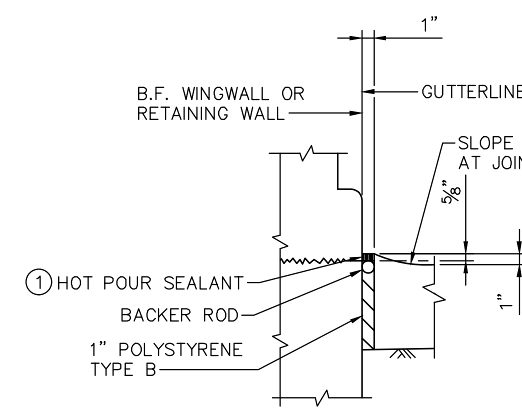


SECTION VIEW

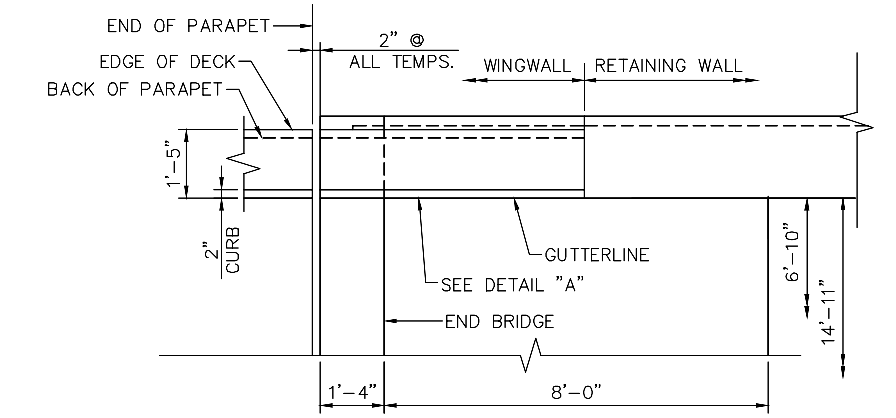
APPROACH PANEL



SECTION A–A

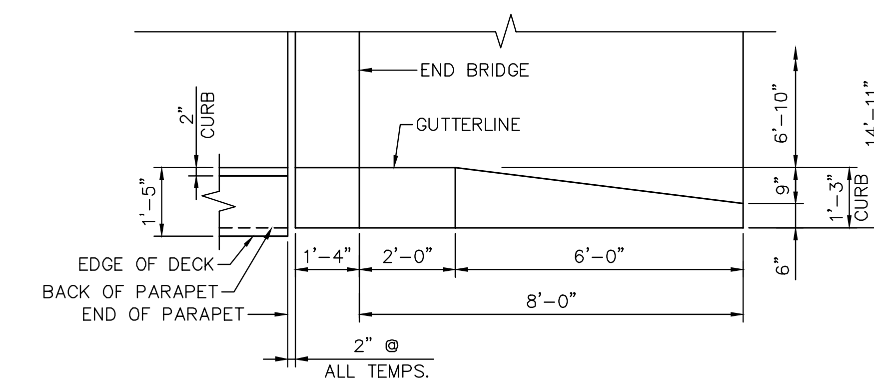


DETAIL "A"



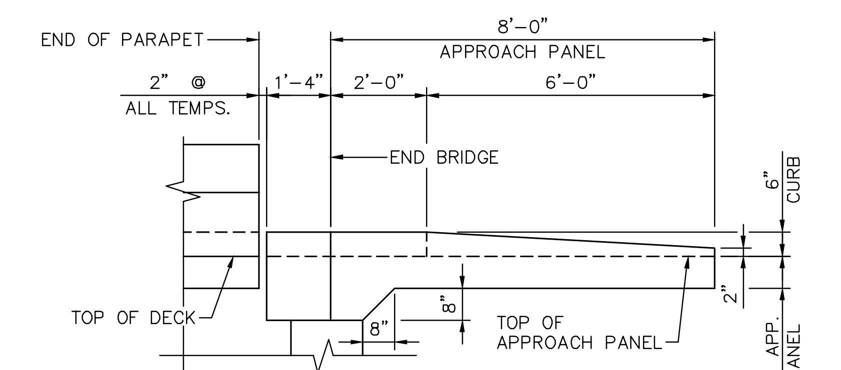
PLAN

EAST PANEL SHOWN
WEST PANEL SIMILAR



PLAN

EAST PANEL SHOWN
WEST PANEL SIMILAR



ELEVATION

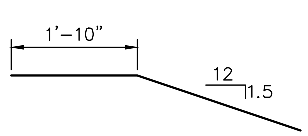
SOUTH CURB EAST
PANEL SHOWN

NOTES:

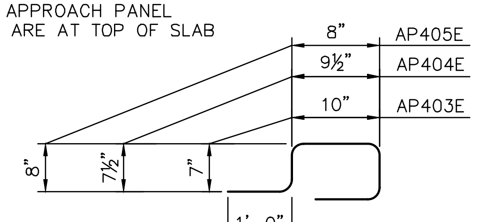
1 HOT POUR SEALANT SPEC. 3725. TOP OF SEALER FLUSH TO ⅛" BELOW TOP OF PAVEMENT SURFACE.

BILL OF REINFORCEMENT FOR APPRAOCH PANELS				
BAR	NO. *	LENGTH	SHAPE	LOCATION
AP501E	32	7'-8"	STR.	LONGITUDINAL
AP502E	18	14'-7"	STR.	TRANSVERSE
AP403E	4	4'-2"	BENT	CURB, VERTICAL
AP404E	2	4'-1"	BENT	CURB, VERTICAL
AP405E	2	4'-0"	BENT	CURB VERTICAL
AP506E	2	7'-8"	BENT	CURB, LONG.

* REINFORCING BAR NO. IS FOR TWO (2) APPROACH SLABS.



AP506E



AP403E, AP404E & AP405E

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

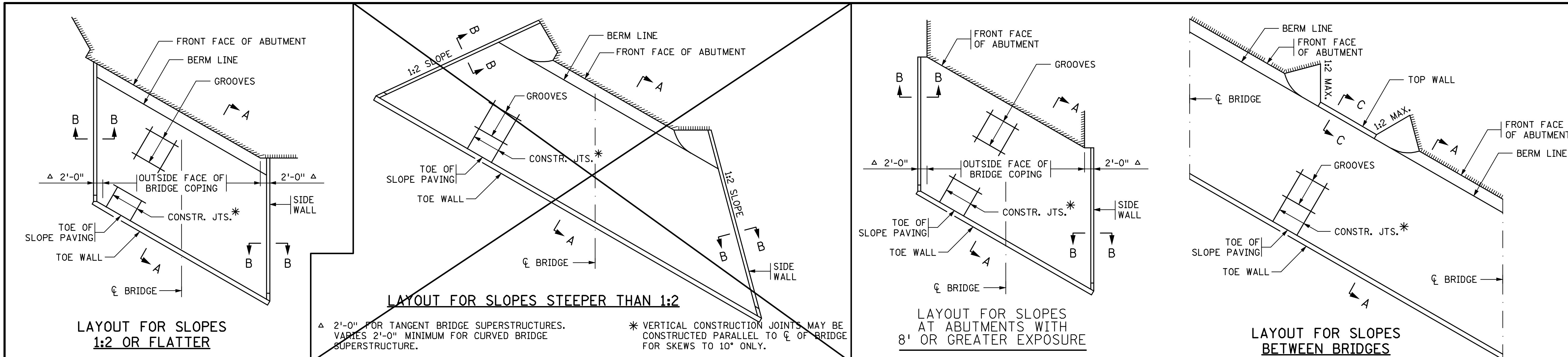
90% SUBMISSION - 01/22/16

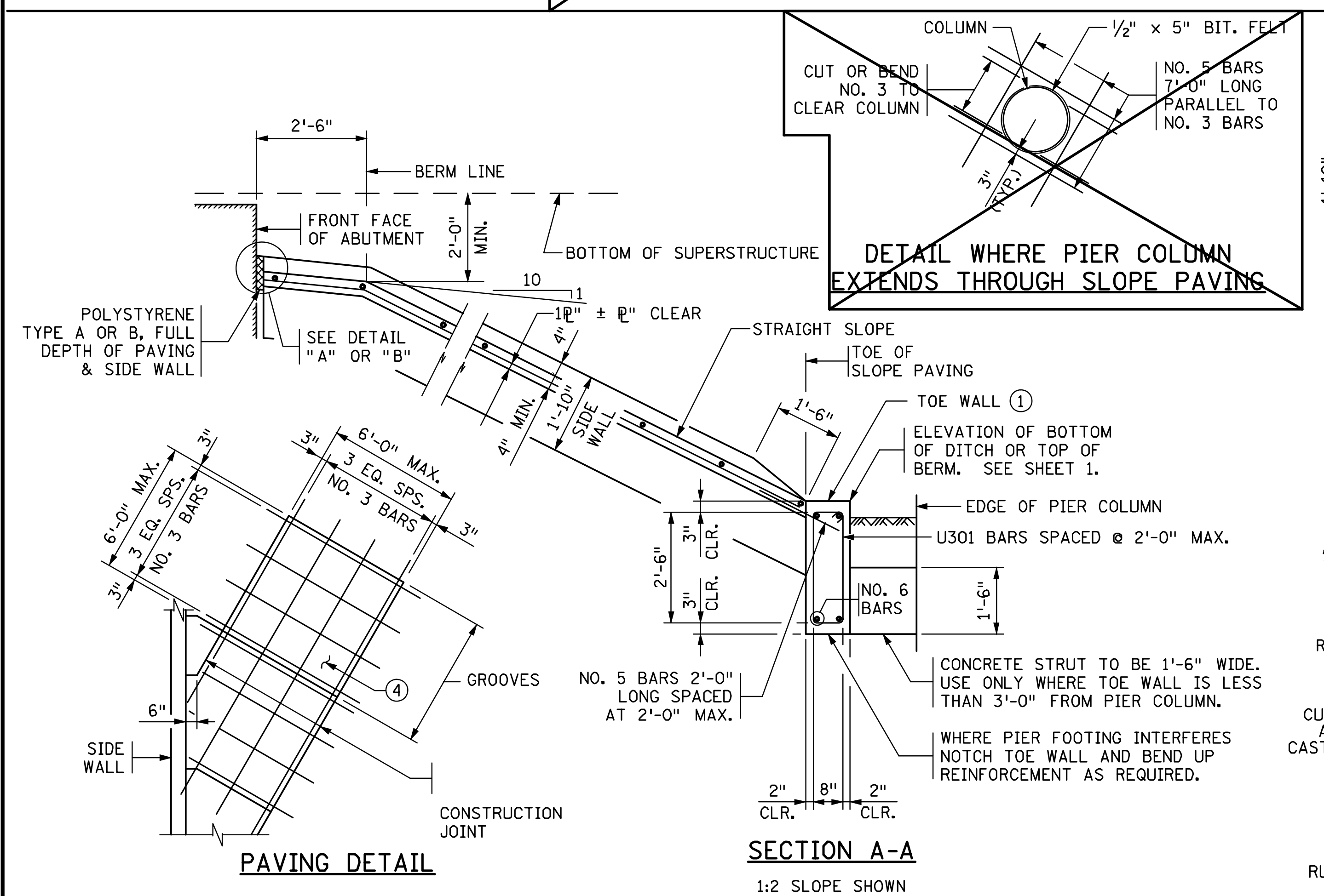
AECOM Kimley»Horn

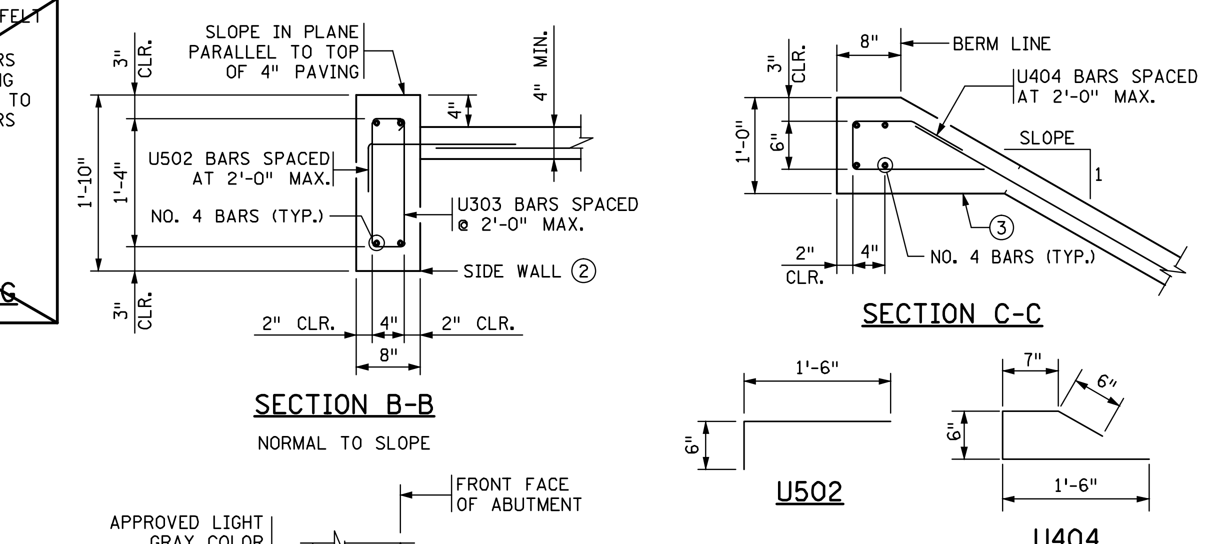
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

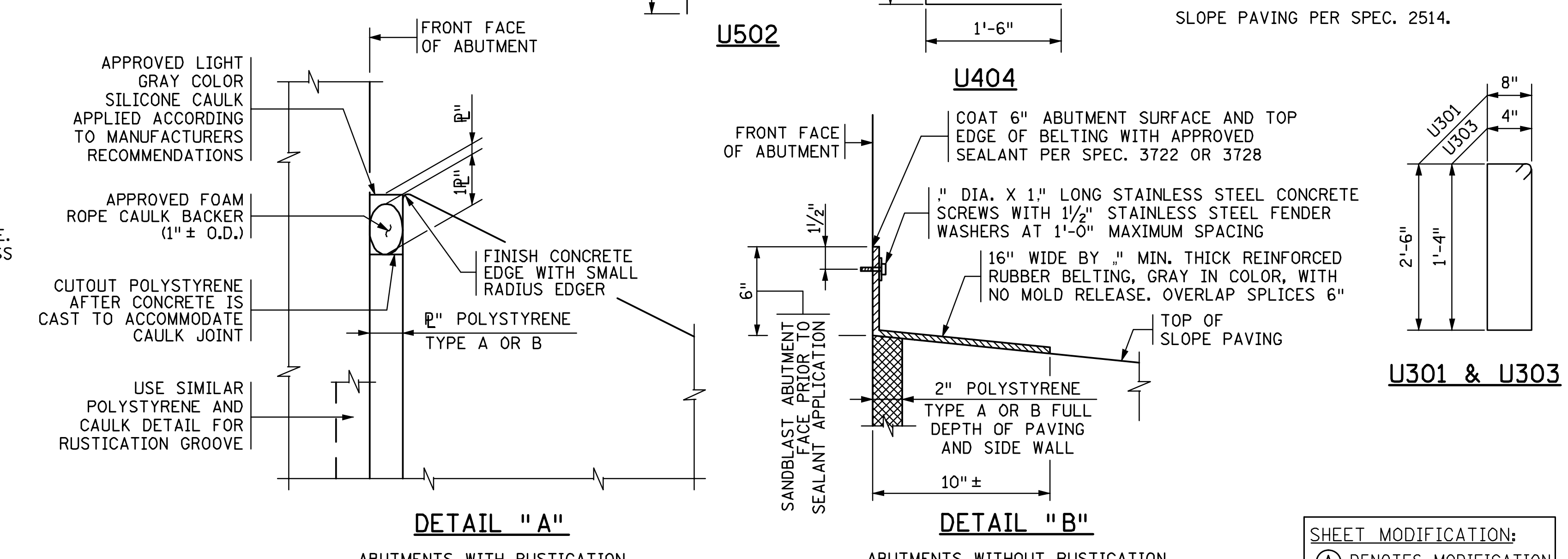
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
APPROACH PANEL DETAILS

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-DTL-004









CONCRETE & REINFORCEMENT UNIT QUANTITIES

① 0.111 CU. YD. OF CONCRETE/LIN. FT.
8.37 LBS. OF REINFORCEMENT/LIN FT.

② 0.046 CU. YD. OF CONCRETE/LIN. FT.
4.46 LBS. OF REINFORCEMENT/LIN FT.

③ 0.058 CU. YD. OF CONCRETE/LIN. FT.
3.70 LBS. OF REINFORCEMENT/LIN FT.
BASED ON A SLOPE OF 1:2.

④ 0.111 CU. YD. OF CONCRETE/SQ. YD.
4.50 LBS. OF REINFORCEMENT/SQ. YD.

GENERAL NOTE

SLOPES ARE EXPRESSED AS A RATIO OF VERTICAL DISTANCE: HORIZONTAL DISTANCE.

SLOPE PAVING PER SPEC. 2514.

SHEET MODIFICATION:
Ⓐ DENOTES MODIFICATION TO STANDARD SHEET

Ⓐ

Jan, 12 2016 12:24 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-TRL\CBR27C11-BRG-DTL1.dwg By: Paul.Robbs

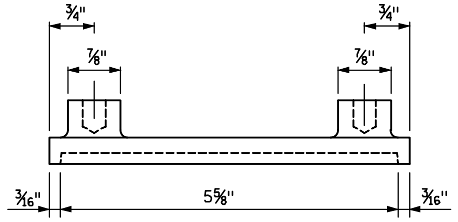
REVISION:
APPROVED: NOVEMBER 6, 2013
Nancy Daubenberger
STATE BRIDGE ENGINEER

CERTIFIED BY ____ LICENSED PROFESSIONAL ENGINEER 7/13/15 DATE
NAME: ENGINEER LIC. NO. #####

TITLE: CONCRETE SLOPE PAVING UNDER BRIDGES

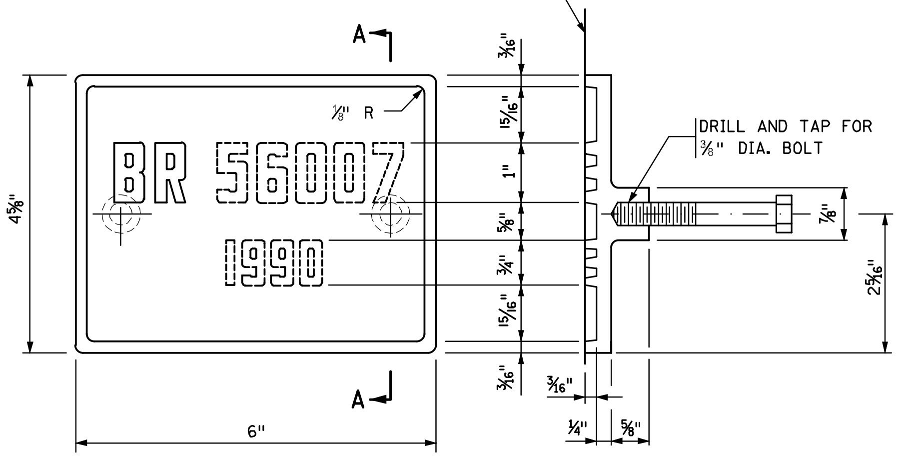
DES: NRW	DR: PGR
CHK: JSM	CHK: JSM

FIG. 5-397.301 (MOD.)
APPROVED:
BRIDGE NO. 27C11
SHEET NO. 42 OF 57 SHEETS



PLAN VIEW

SET NAMEPLATE FLUSH WITH SURFACE OF CONCRETE



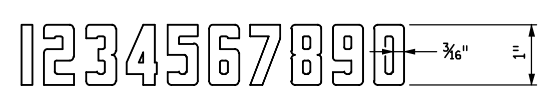
ELEVATION

SECTION A-A

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

BRIDGE 27C11

YEAR (1)



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.

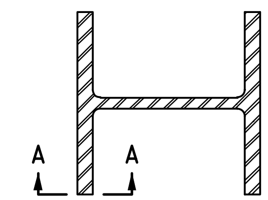
TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.

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

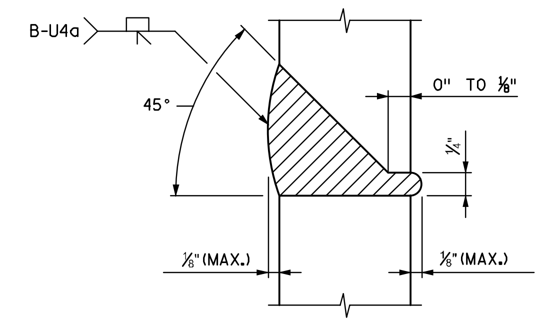
ALL DIMENSIONS FOR 1/2" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

(1) YEAR OF CONSTRUCTION.

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



SECTION AT SPLICE



SECTION A-A

100% BUTT WELDED PILE SPLICE

NOTES:

CELLULOSIC TYPE ELECTRODES E-6010 OR E-6011 SHALL BE USED FOR 100% BUTT WELDED SPLICES.

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.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION: 11-06-2013	DETAIL NO.
STATE BRIDGE ENGINEER	PILE SPLICE (STEEL H BEARING PILES 10" TO 14")		B202

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

90% SUBMISSION - 01/22/16

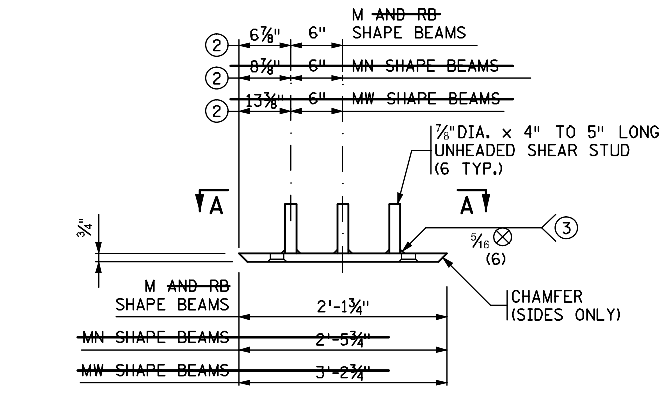
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
BRIDGE DETAILS 1

DISCIPLINE: STRUCTURES

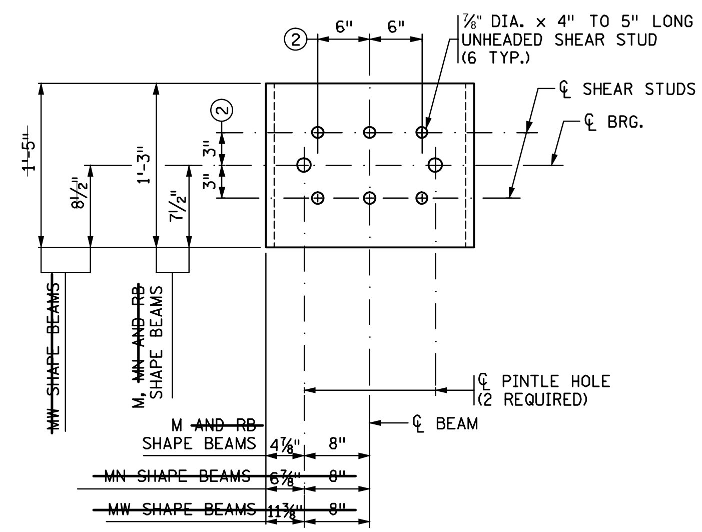
SHEET NAME: CBR27C11-BRG-DTL-006

SHEET 43 OF 57

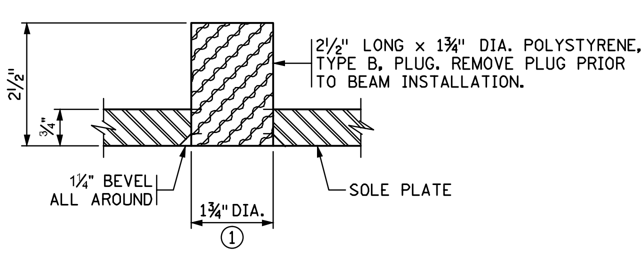
Jan, 12 2016 12:24 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-TRL\CBR27C11-BRG-DTL.dwg By: Paul.Robbs



FRONT ELEVATION



SECTION A-A



PINTLE HOLE DETAIL

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 1½" 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

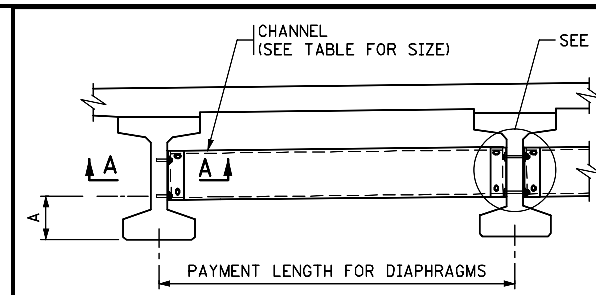
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

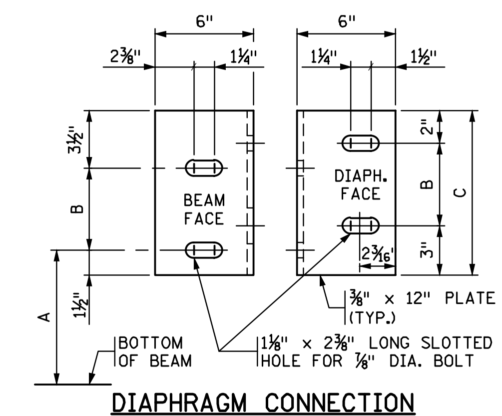
SOLE PLATE
(PRESTRESSED CONCRETE BEAMS)
(FOR BEARINGS WITH PINTLES)

REVISED

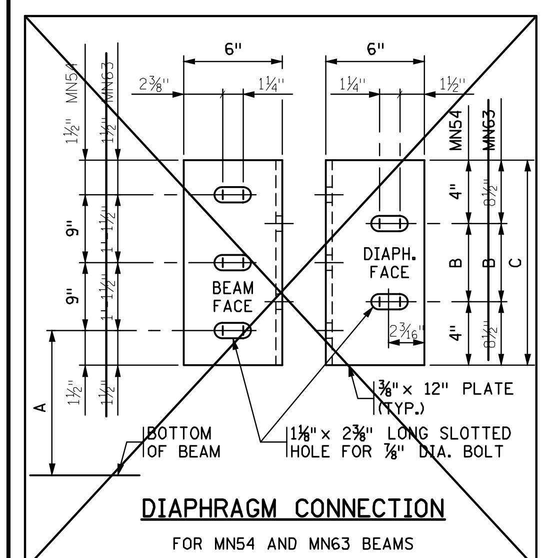
DETAIL NO. B303



PART TRANSVERSE SECTION AT DIAPHRAGM



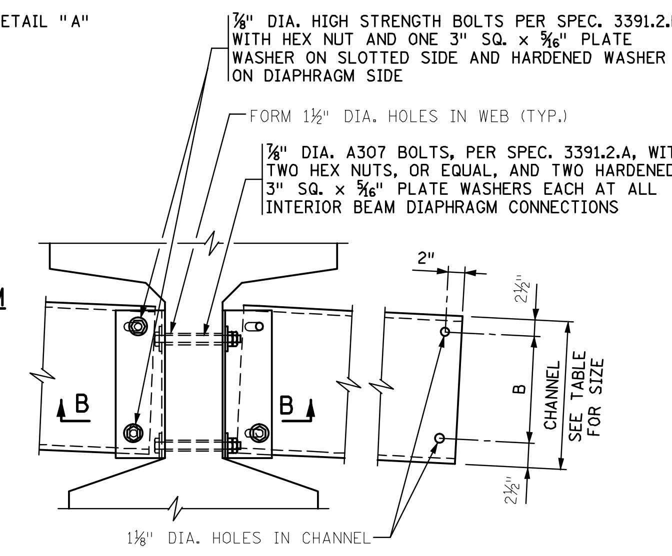
DIAPHRAGM CONNECTION
FOR 36M ~~AND MN45~~ BEAMS



DIAPHRAGM CONNECTION
FOR MN54 AND MN63 BEAMS

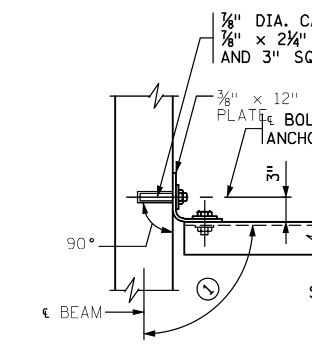
TABLE

BEAM HEIGHT	DISTANCE A	DISTANCE B	DISTANCE C	CHANNEL SIZE
36M	1'-3"	7"	1'-0"	C12×20.7
~~MN45~~	~~1'-7¾"~~	~~7"~~	~~1'-0"~~	~~C12×20.7~~
~~MN54~~	~~1'-7¾"~~	~~1'-1"~~	~~1'-9"~~	~~MC18×42.7~~
~~MN63~~	~~1'-7¾"~~	~~1'-1"~~	~~2'-6"~~	~~MC18×42.7~~



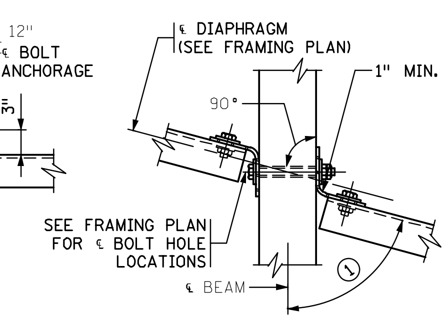
DETAIL "A"

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:

PROVIDE STEEL PER SPEC. 3306.

INSTALL PER SPEC. 2405.3.K.

TORQUE ALL BOLTS, INCLUDING ANCHOR BOLTS TO 80 FT.-LBS.

SHOP BEND THE LEG OF THE 12" PLATE TO CONFORM TO THE DIAPHRAGM. A ⅜" × 6" × 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. IF THE BENT PLATES HAVE THE SAME HEIGHT AS THE CHANNELS THEY REPLACE, ARE 5/16" IN THICKNESS, AND HAVE LEGS 5" LONG.

GALVANIZE STEEL PLATES AND SHAPES PER 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: NOVEMBER 03, 2015

STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

STEEL INTERMEDIATE DIAPHRAGM
(FOR 36M, MN45 - MN63 PRESTRESSED CONCRETE BEAMS)

DETAIL NO. B403

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW | CHECKED BY: JSM
DRAWN BY: PGR | CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

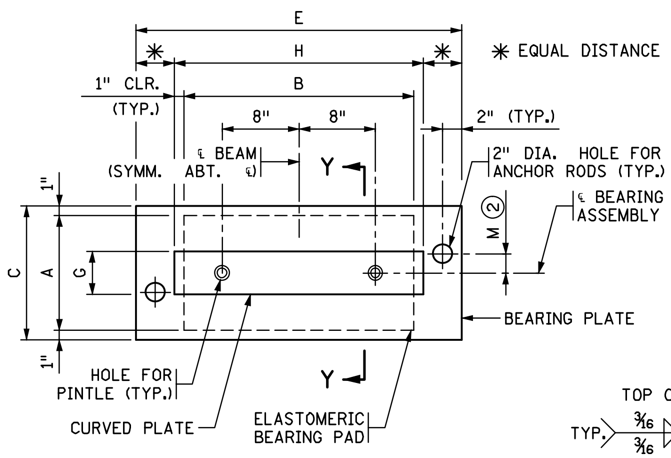
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
BRIDGE DETAILS 2

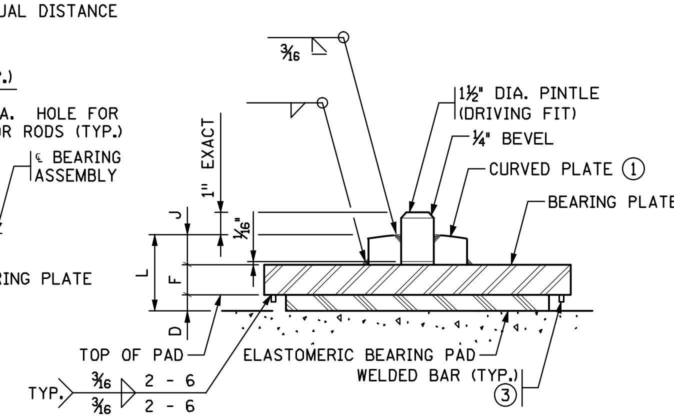
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-DTL-007

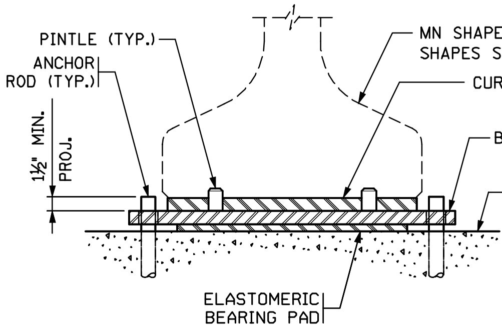
SHEET 44 OF 57



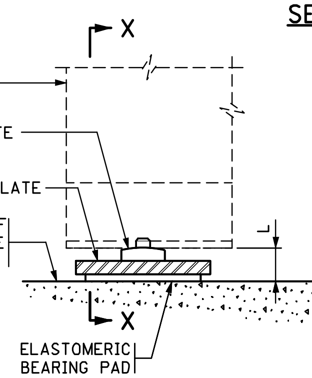
PLAN



SECTION Y-Y

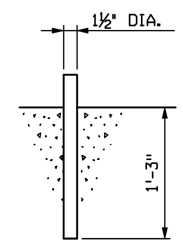


SECTION X-X



SIDE ELEVATION

ANCHOR RODS NOT SHOWN



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	R ①
F1	PIER	36M	12"	24"	½"	8.0	14"	2'-10"	1½"	4½"	26"	1¼"	NA	NA	3¼"	16"

NOTES:

PROVIDE ELASTOMERIC MATERIALS AND PAD CONSTRUCTION PER SPEC. 3741.

PROVIDE STEEL PLATES PER SPEC. 3306.

PROVIDE ANCHOR RODS PER SPEC. 3385, TYPE A. GALVANIZE PER SPEC. 3392.

PROVIDE PINTLES PER SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER SPEC. 3394, EXCEPT AS NOTED.

~~PAYMENT FOR BEARING ASSEMBLY INCLUDES ALL MATERIAL ON THIS DETAIL.~~

① THE MIN. RADIUS IS 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS IS 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 ⅜" X ⅜" BAR INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. BAR LENGTH IS 2" LESS THAN ADJACENT PAD DIMENSION, CENTERED ON PAD. CENTERLINE OF BAR TO EDGE OF PAD DIMENSION = ½".

DESIGN DATA:

MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1½" PINTLES.

APPROVED: SEPTEMBER 22, 2011

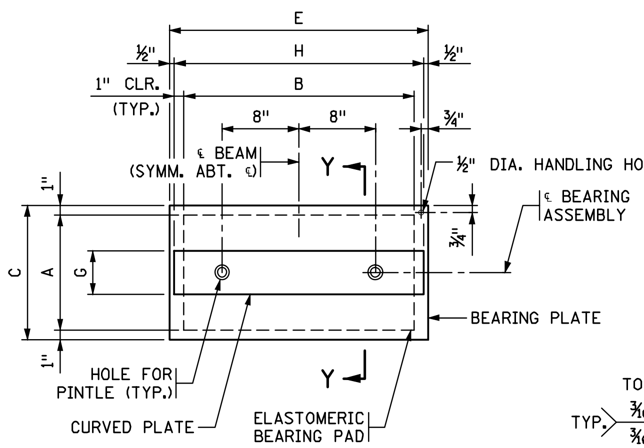
Nancy Daubenberger
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

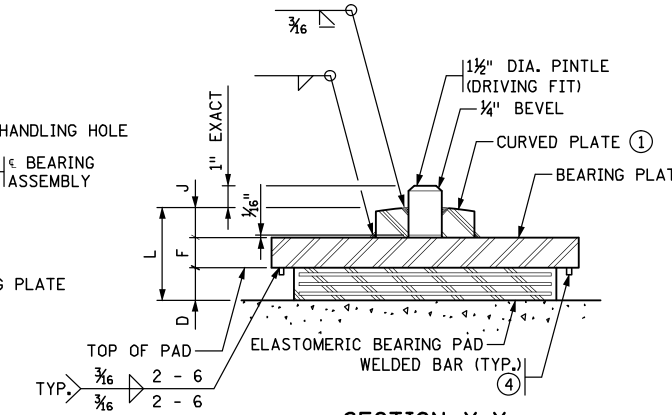
CURVED PLATE BEARING ASSEMBLY
(PRESTRESSED CONCRETE BEAMS)
(FIXED)

REVISED 11-06-2013 11-03-2015

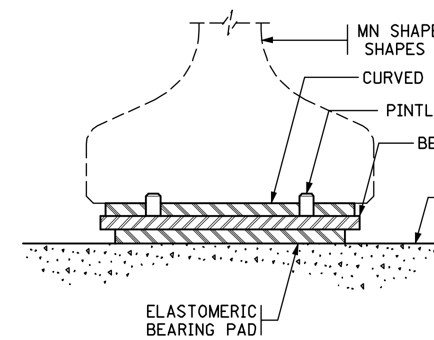
DETAIL NO. B310



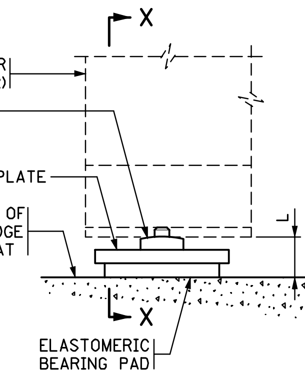
PLAN



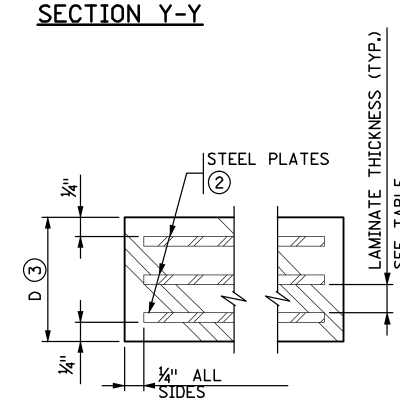
SECTION Y-Y



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	ABUT.	36M	12"	24"	2½"	4	⅛"	3	½"	8.0	14"	27"	1½"	4½"	26"	1¼"	5¼"	16"

NOTES:

PROVIDE ELASTOMERIC MATERIALS AND PAD CONSTRUCTION PER SPEC. 3741.

PROVIDE STEEL PLATES PER SPEC. 3306.

PROVIDE PINTLES PER SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER SPEC. 3394, EXCEPT AS NOTED.

~~PAYMENT FOR BEARING ASSEMBLY INCLUDES ALL MATERIAL ON THIS DETAIL.~~

① THE MIN. RADIUS IS 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS IS 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 ⅜" X ⅜" BAR INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. BAR LENGTH IS 2" LESS THAN ADJACENT PAD DIMENSION, CENTERED ON PAD. CENTERLINE OF BAR TO EDGE OF PAD DIMENSION = ½".

DESIGN DATA:

MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1½" PINTLES.

APPROVED:SEPTEMBER 22, 2011

Nancy Daubenberger
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

CURVED PLATE BEARING ASSEMBLY
(PRESTRESSED CONCRETE BEAMS)
(EXPANSION)

REVISED 11-03-2015

DETAIL NO. B311

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

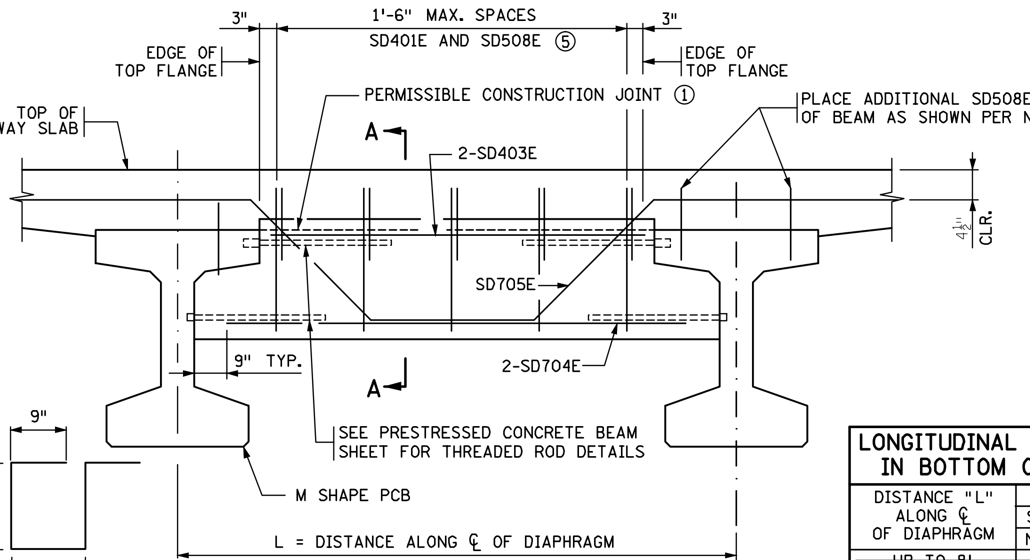
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
BRIDGE DETAILS 3

DISCIPLINE: STRUCTURES

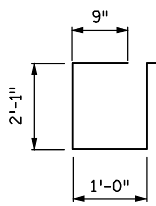
SHEET NAME: CBR27C11-BRG-DTL-008

SHEET 45 OF 57



(A) PART TRANSVERSE SECTION

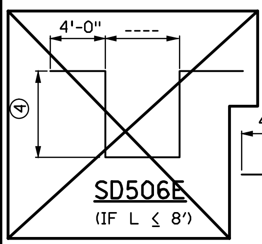
(L > 8' SHOWN)



SD401E

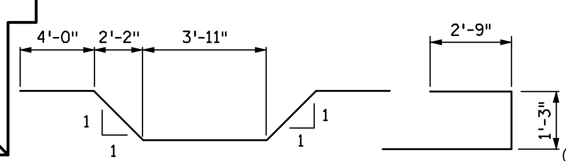
SHEET MODIFICATION:
(A) DENOTES MODIFICATION TO STANDARD SHEET

LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM				
DISTANCE "L" ALONG ℄ OF DIAPHRAGM	BARS REQUIRED			
	STRAIGHT		BENT	
	NO.	SIZE	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~~



SD506E

(IF L ≤ 8')

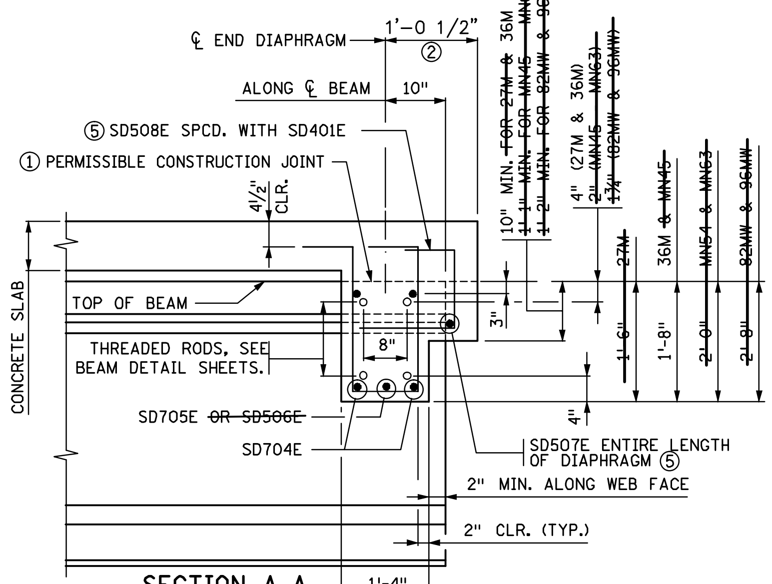


SD605E

(IF L > 8')

SD508E (5)

BILL OF REINFORCEMENT FOR END DIAPHRAGM				
BAR	NO.	LENGTH	SHAPE	LOCATION
SD401E	22	6'-8"		VERTICAL TIE
~~SD702E~~		~~5'-0"~~		~~LONG. THRU BEAM~~
SD403E	4	7'-8"		LONG. TOP
SD704E	4	8'-6"		LONG. BOTTOM
SD605E	4	17'-8"		LONGITUDINAL
~~SD506E~~				~~LONGITUDINAL~~
(5) SD507E	2	16'-2"		LONGITUDINAL
(5) SD508E	22	7'-3"		VERTICAL TIE



SECTION A-A

(M SHAPE PCB SHOWN)

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 INPLACE UNTIL COMPLETION OF SLAB CURING PERIOD.

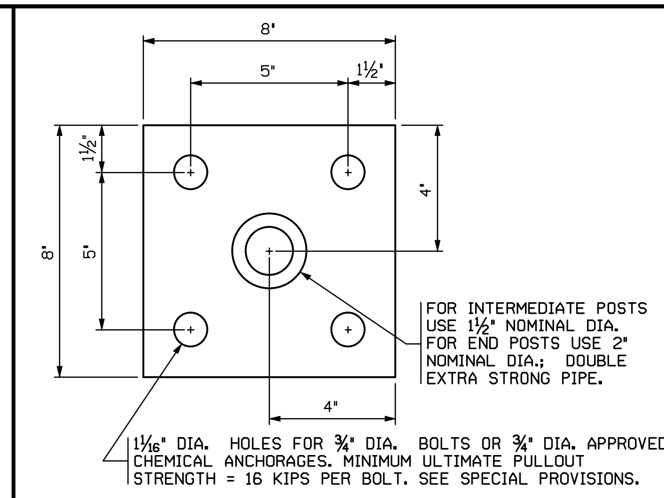
(2) PERPENDICULAR TO CENTERLINE OF DIAPHRAGM.

(3) 1'-11" (27M); 2'-1" (36M AND MN45); 2'-5" (MN54 AND MN63); 3'-1" (82MW AND 96MW). BASED ON 3" STOOL 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.

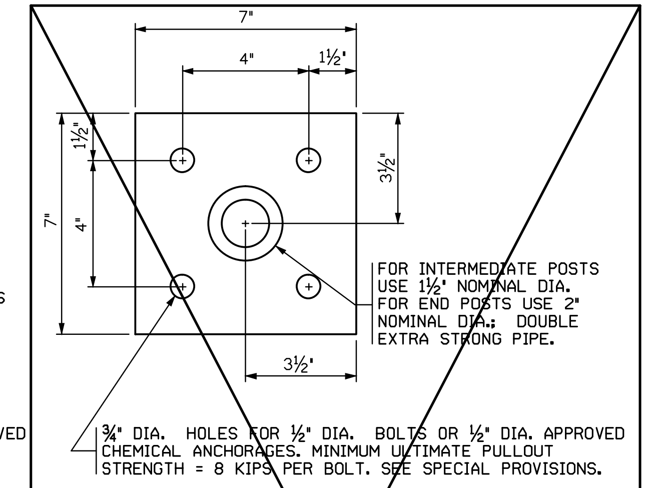
APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CONCRETE END DIAPHRAGM (27M & 36M, MN45 - MN63, 82MW & 96MW PRESTRESSED CONCRETE BEAMS) (PARAPET ABUTMENT)	04-17-2013 11-06-2013	B814



1¹⁄₁₆" DIA. HOLES FOR ¾" DIA. BOLTS OR ¾" DIA. APPROVED CHEMICAL ANCHORAGES. MINIMUM ULTIMATE PULLOUT STRENGTH = 16 KIPS PER BOLT. SEE SPECIAL PROVISIONS.

PLAN VIEW - TYPE A

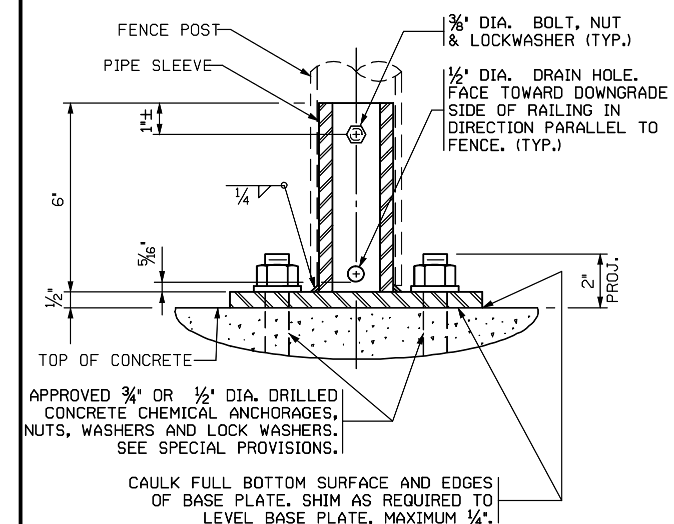
ESTIMATED WEIGHT = 12 OR 14 LBS.



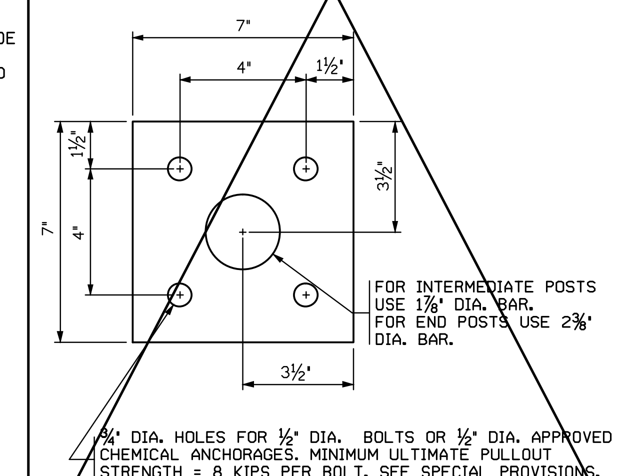
¾" DIA. HOLES FOR ½" DIA. BOLTS OR ½" DIA. APPROVED CHEMICAL ANCHORAGES. MINIMUM ULTIMATE PULLOUT STRENGTH = 8 KIPS PER BOLT. SEE SPECIAL PROVISIONS.

PLAN VIEW - TYPE B

ESTIMATED WEIGHT = 10 OR 12 LBS.



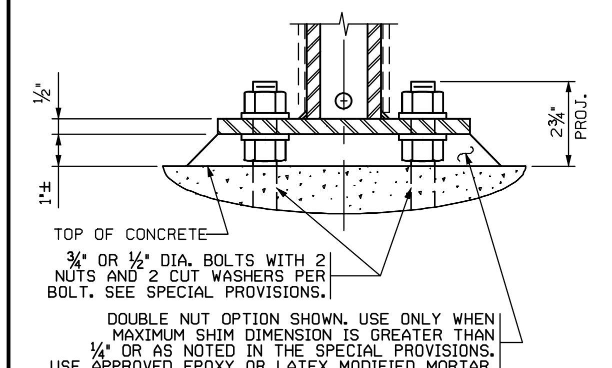
TYPICAL SECTION



¾" DIA. HOLES FOR ½" DIA. BOLTS OR ½" DIA. APPROVED CHEMICAL ANCHORAGES. MINIMUM ULTIMATE PULLOUT STRENGTH = 8 KIPS PER BOLT. SEE SPECIAL PROVISIONS.

PLAN VIEW - TYPE C

ESTIMATED WEIGHT = 12 OR 15 LBS.



GROUT ALTERNATE

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:
1½" NOMINAL DIA. = 6.41 LBS./FT.
2" NOMINAL DIA. = 9.03 LBS./FT.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Daniel L Dorgan STATE BRIDGE ENGINEER	FENCE POST ANCHORAGE		B905

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

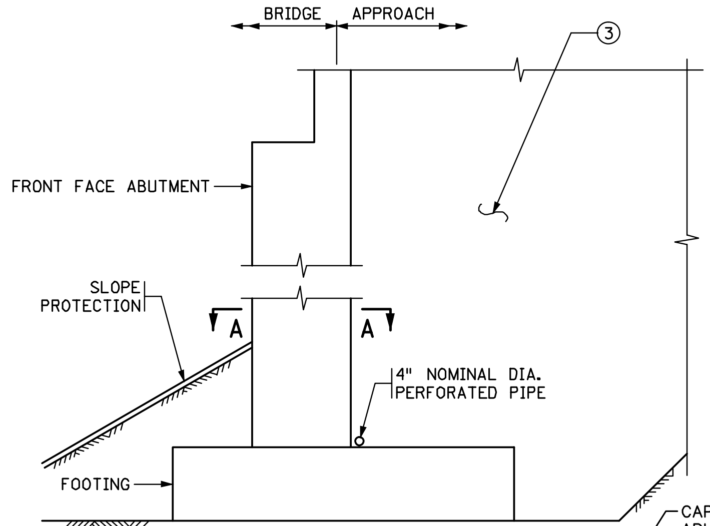
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
BRIDGE DETAILS 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-DTL-009

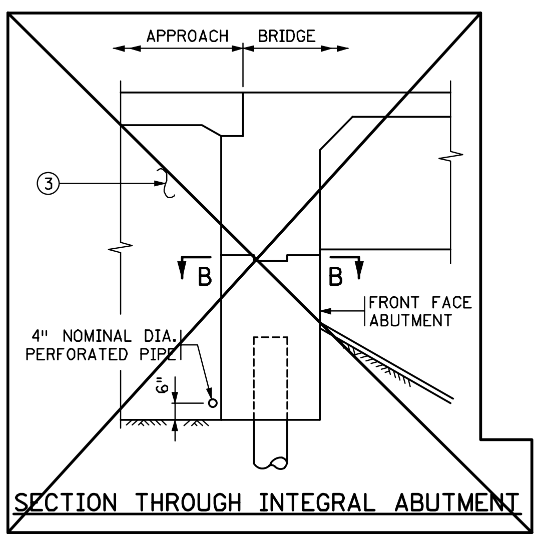
SHEET 46 OF 57

Jan. 12 2016 12:24 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-TRL\CBR27C11-BRG-DTL.dwg By: Paul.Robbs

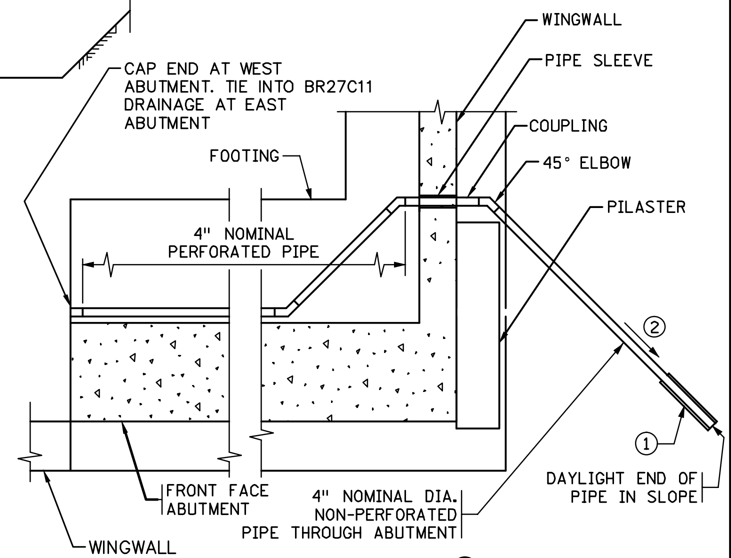


SECTION THROUGH PARAPET
AND SEMI-INTEGRAL ABUTMENTS

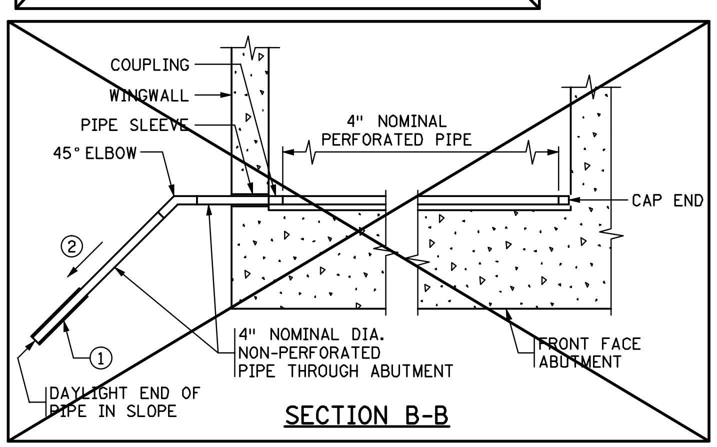
SHEET MODIFICATION:
Ⓐ DENOTES MODIFICATION TO STANDARD SHEET



SECTION THROUGH INTEGRAL ABUTMENT



SECTION A-A Ⓐ



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 MANTAINED.

USE PRECAST CONCRETE HEADWALL WITH RODENT SCREEN. SEE STANDARD PLATE 3131 FOR DETAILS.

② ⅛" 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 Daubenberger STATE BRIDGE ENGINEER	DRAINAGE SYSTEM		B910

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
BRIDGE DETAILS 5

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-DTL-010

SHEET 47 OF 57

Jan, 12 2016 12:24 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-TRL\CBR27C11-BRG-DTL.dwg By: Paul.Robbs

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).

AS-BUILT DETAILS
(AS NEEDED)

REVISION:
APPROVED: NOVEMBER 6, 2013
Nancy Daubenberger
STATE BRIDGE ENGINEER

CERTIFIED BY __________ LICENSED PROFESSIONAL ENGINEER 7/13/15 DATE
NAME: ENGINEER LIC. NO. #####

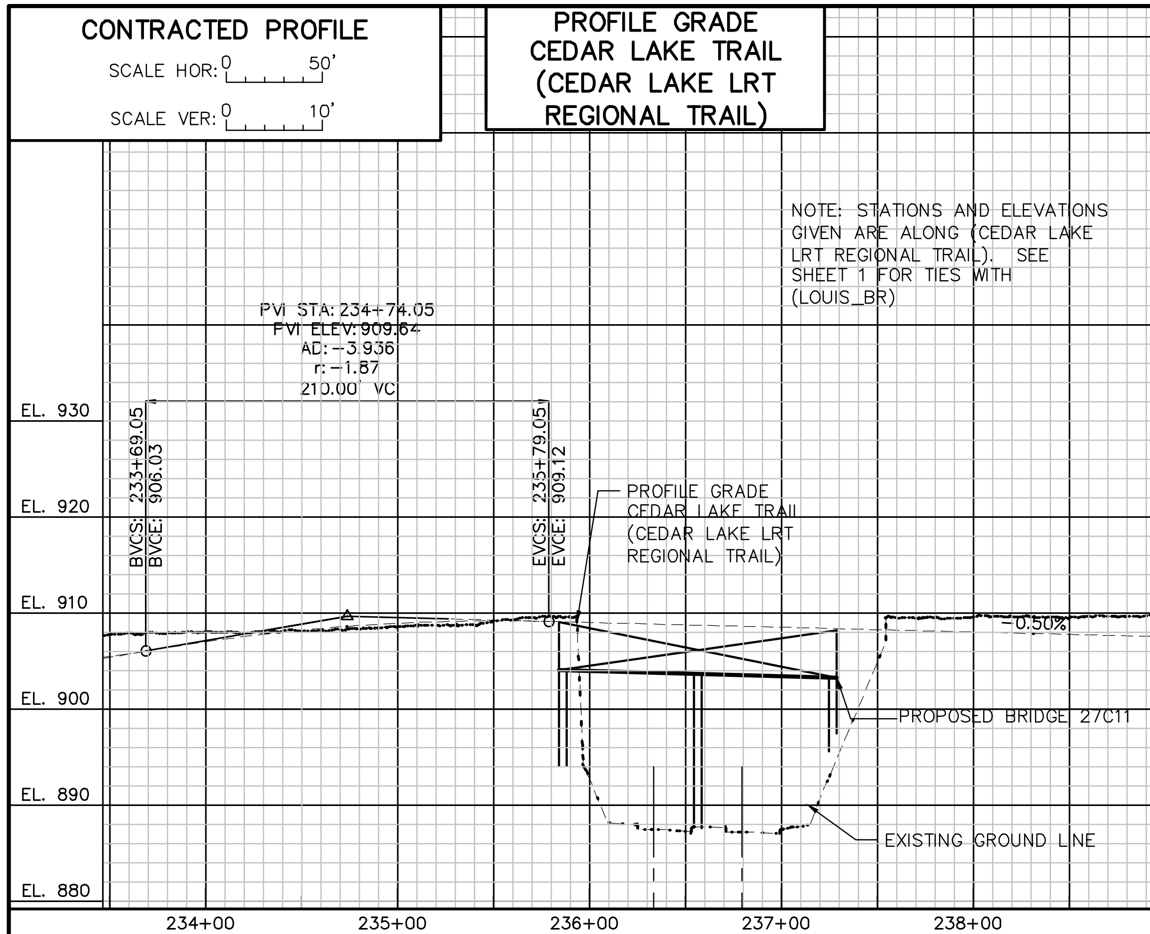
TITLE: AS-BUILT BRIDGE DATA

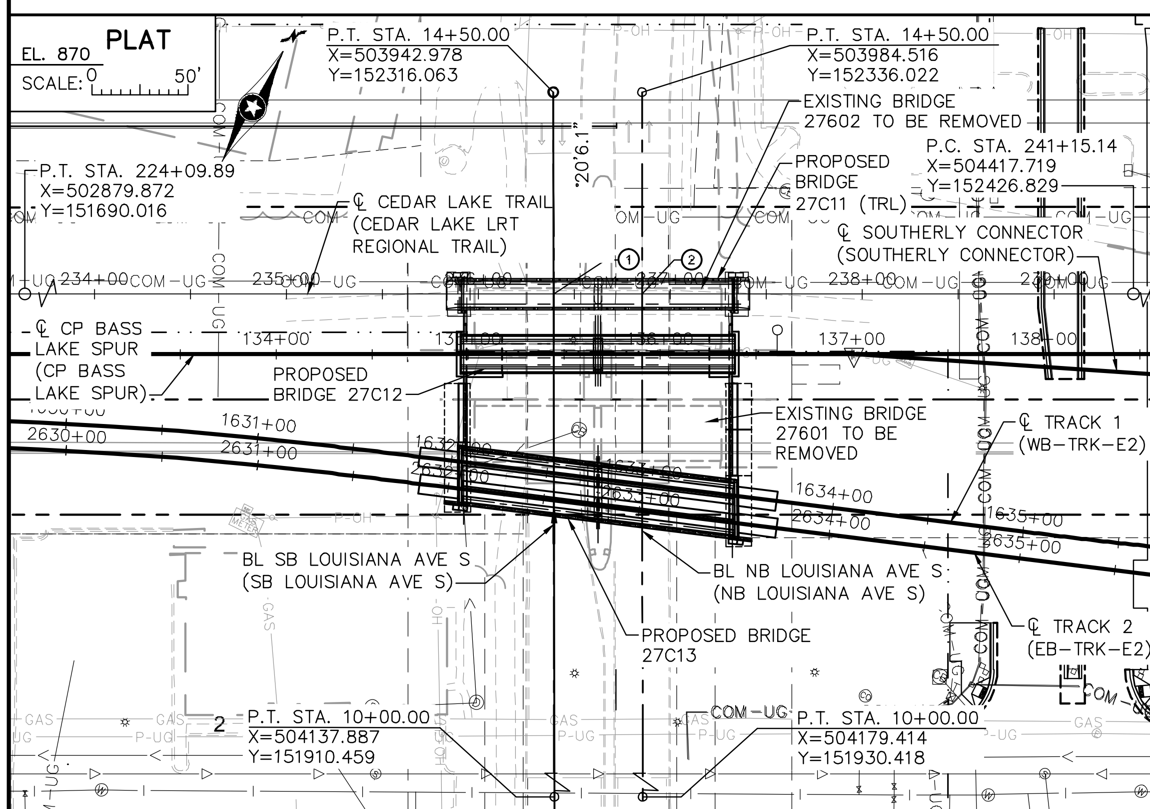
DES: DR: CHK: CHK: APPROVED:

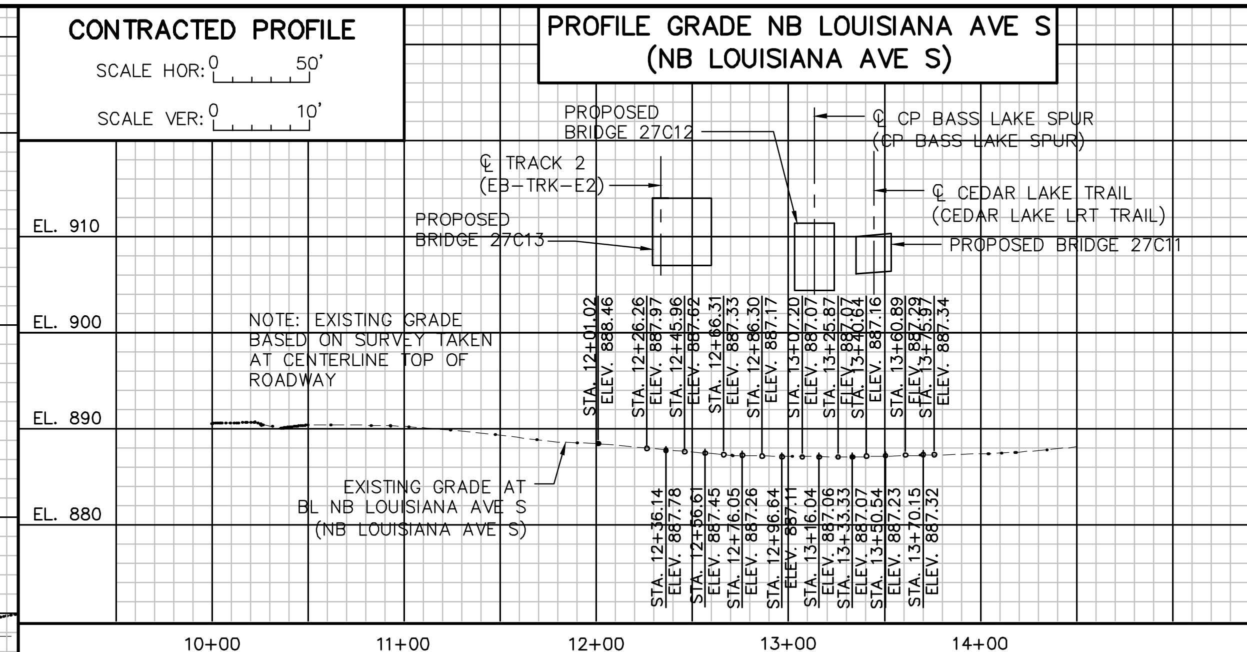
FIG. 5-397.900

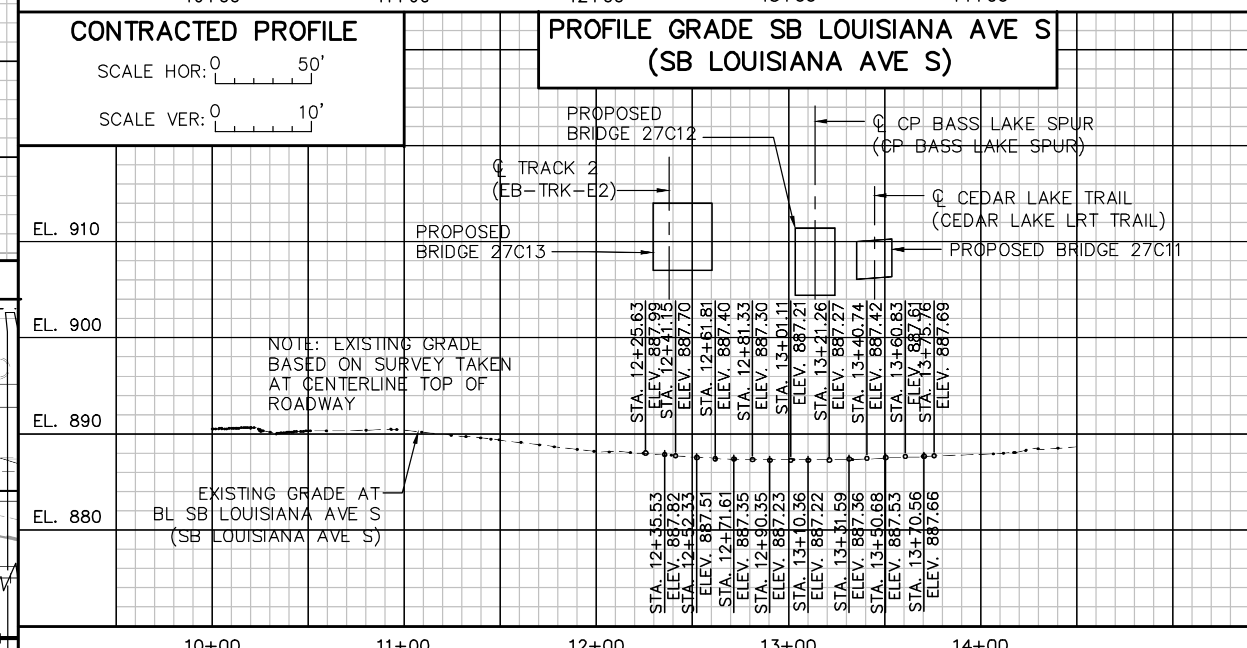
SHEET NO. 48 OF 57 SHEETS

BRIDGE NO. 27C11









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 (PARTICULARY 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 ENGINEER'S RECOMMENDATION

DATE:

STREAM OR DITCH DESIGNATION

DRAINAGE AREA

MAX FLOOD ON RECORD

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

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

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

FLOWLINE ELEVATION: FT. SKEW ANGLE:

ESTIMATED PRLIMINARY TOTAL SCOUR AT PIER EL. (500 OR OT YR. FREQ.)

SCOUR CONFIRMATION RECOMMENDATION

DATE:

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

BRIDGE SURVEY SHEETS MADE FROM 2014 MFRA SURVEYS

1ST BENCH MARK
ELEVATION: 887.47 (NAVD 88)
NORTHING: 152190.79
EASTING: 504031.01
DESCRIPTION: LARGE SPIKE

2ND BENCH MARK
ELEVATION: 893.52 (NAVD 88)
NORTHING: 152551.75
EASTING: 503890.55
DESCRIPTION: NAIL IN CONC. ISLAND

NOTES:

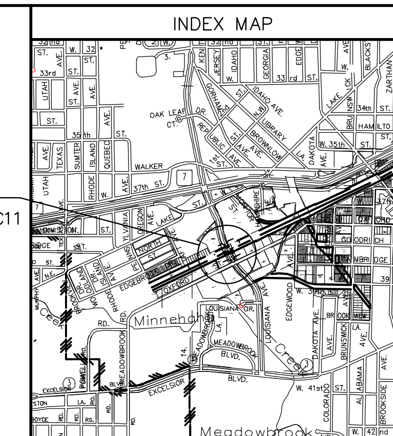
IN PLACE BRIDGE 27602 A TWO SPAN STEEL BEAM BRIDGE CONSTRUCTED IN 1979 SUPPORTED BY STEEL H-PILES TO BE REMOVED.

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."

(1) CONTROL POINT
CEDAR LAKE TRAIL (LOUIS_BR) STA. 10+96.93
SB LOUISIANA AVE S (SB LOUISIANA AVE S) STA. 13+44.76
X = 503988.55
Y = 152221.21
Δ = 89°56'6.1"

(2) CONTROL POINT
CEDAR LAKE TRAIL (LOUIS_BR) STA. 11+43.02
NB LOUISIANA AVE S (NB LOUISIANA AVE S) STA. 13+44.71
X = 504030.12
Y = 152241.12
Δ = 89°56'6.1"

INDEX MAP



BRIDGE SURVEY 1

PROPOSED BRIDGE LOCATED 0.3 MILES SOUTH OF JCT. T.H. 7 AND LOUISIANA AVE S IN ST LOUIS PARK

CEDAR LAKE TRAIL OVER LOUISIANA AVE S

SEC 20 T 117N R 21W

CITY OF ST LOUIS PARK HENNEPIN COUNTY

BRIDGE 27C11

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

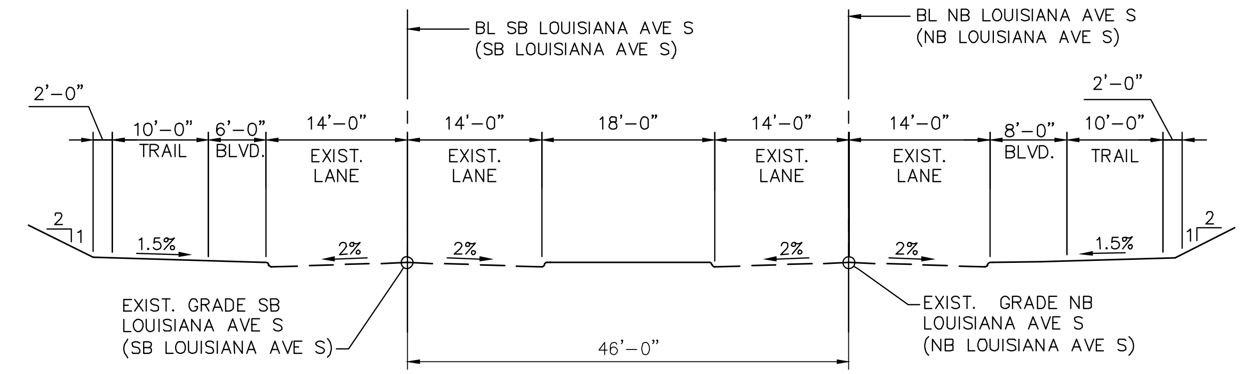
METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
BRIDGE SURVEY 1

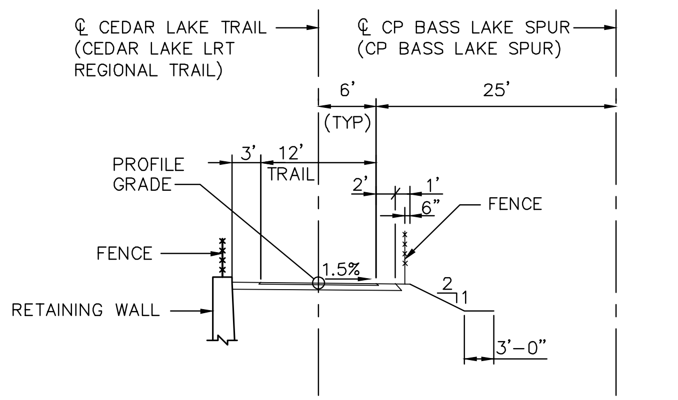
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-SUR-001

SHEET 49 OF 57

Jan. 12 2016 12:30 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-TRL\CBR27C11-BRG-SUR.dwg By: Paul.Robbs



TYPICAL ROADWAY SECTION LOUISIANA AVE S



TYPICAL SECTION CEDAR LAKE TRAIL

Jan. 12 2016 12:30 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-TRL\CBR27C11-BRG-SUR.dwg By: Paul.Robbs

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

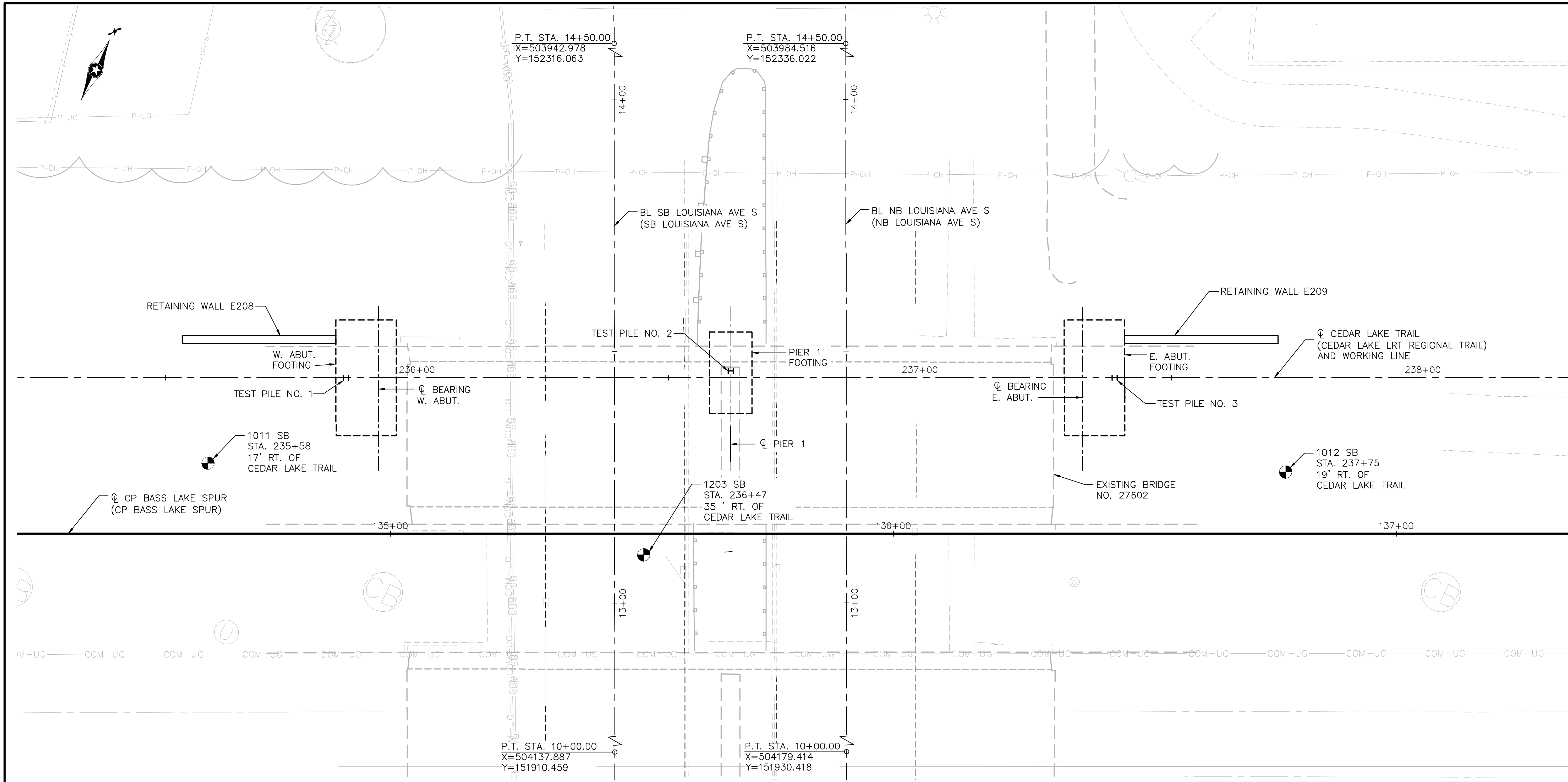
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
BRIDGE SURVEY 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-SUR-002

SHEET 50 OF 57



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: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

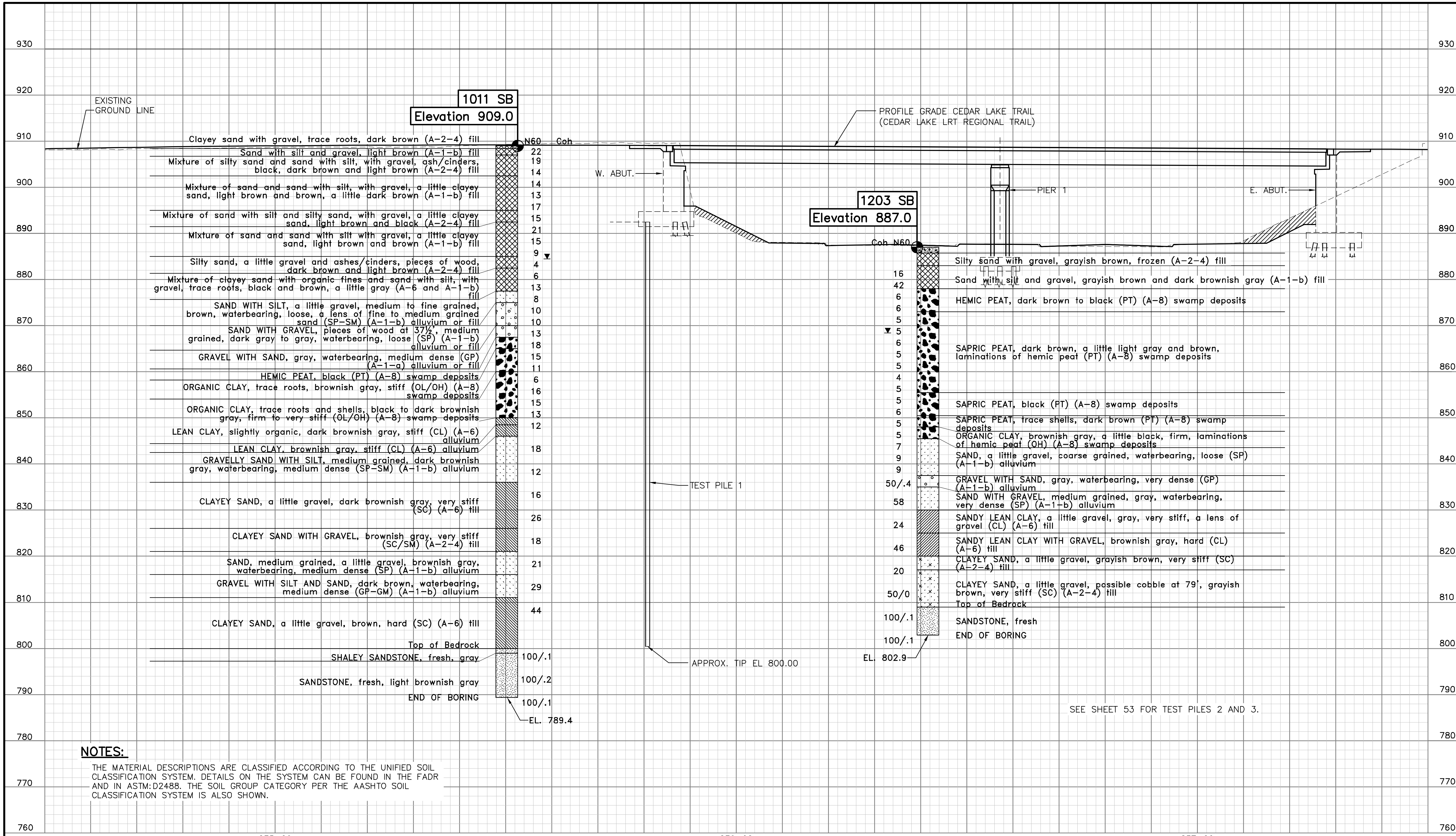
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
BRIDGE SURVEY PLAN

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-BOR-001

SHEET 51 OF 57

Jan. 12 2016 12:33 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-TRL\CBR27C11-BRG-BOR-001.dwg By: Paul.Robbs



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. THE SOIL GROUP CATEGORY PER THE AASHTO SOIL CLASSIFICATION SYSTEM IS ALSO SHOWN.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

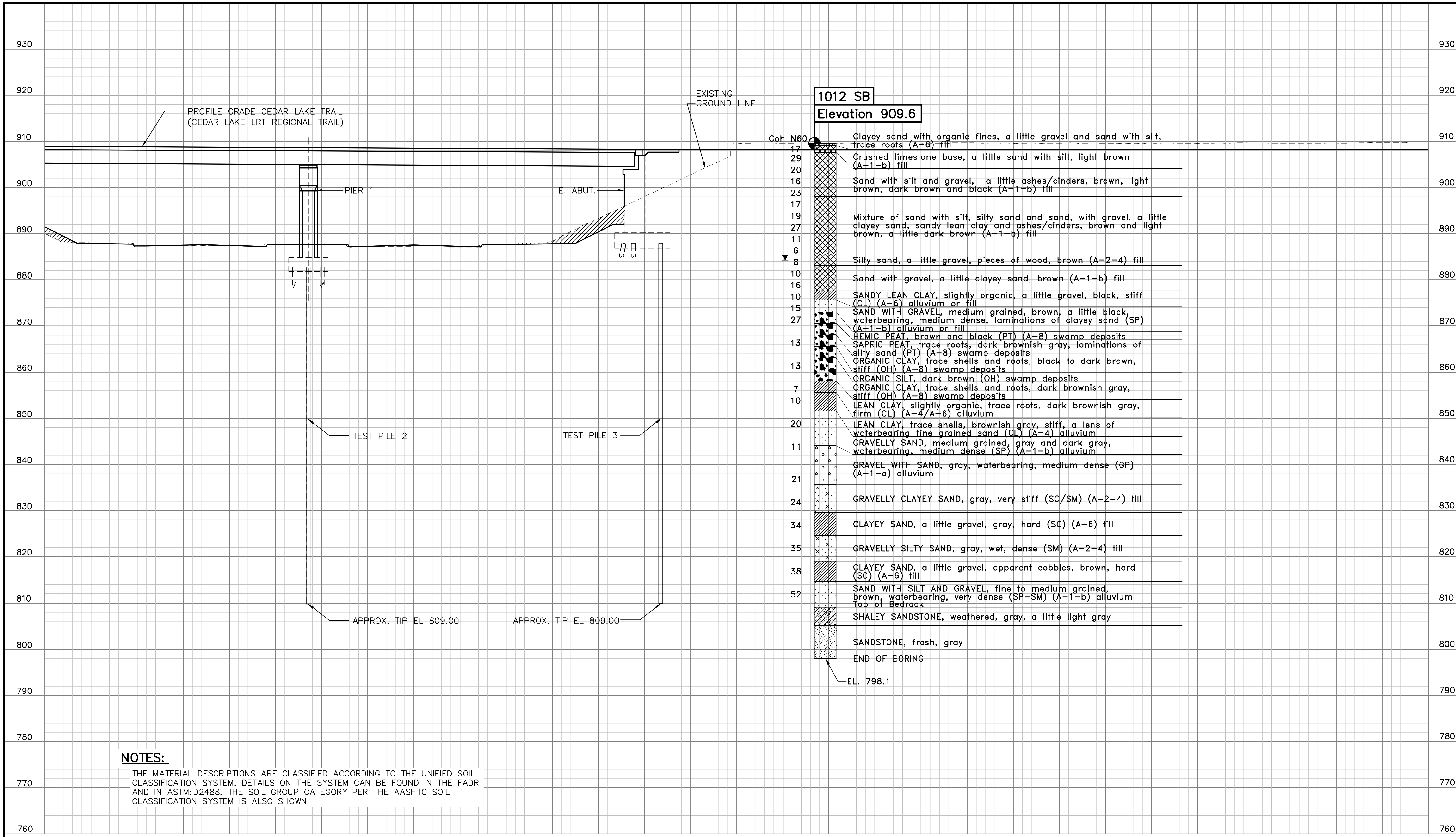
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
BRIDGE SURVEY PROFILE 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-BOR-002

SHEET 52 OF 57



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. THE SOIL GROUP CATEGORY PER THE AASHTO SOIL CLASSIFICATION SYSTEM IS ALSO SHOWN.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
BRIDGE SURVEY PROFILE 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-BOR-003

STAGING NOTES:

STAGES 1–4 SHOWN IN THIS PLAN, SEE BRIDGE 27C13 FOR STAGES 5 & 6.

INSTALL TRAFFIC CONTROL TO DIRECT TRAIL USERS REMAIN ON THE EXISTING TRAIL SUPERSTRUCTURE. MAINTAIN A 10'–0" MINIMUM CLEAR WIDTH OF EXISTING BITUMINOUS TRAIL WITH 2'–0" CLEAR ZONE ALONG EACH SIDE. PROVIDE TEMPORARY CHAIN LINK FENCE ALONG LENGTH OF THE SOE.

INSTALL SOE FOR CONSTRUCTION OF PROPOSED FREIGHT BRIDGE 27C12.

REMOVE SOUTH HALF OF EXISTING BRIDGE 27602. EXCAVATE FOR CONSTRUCTION OF FREIGHT BRIDGE 27C12.

1. SOE.
2. EXISTING STORM DRAIN TO BE RELOCATED, SEE DRAINAGE PLANS FOR DETAILS.
3. LIMITS OF REMOVAL FOR EXISTING BRIDGE ABUTMENT STEM AND FOUNDATION.

LIMITS OF REMOVAL FOR EXISTING BRIDGE SUBSTRUCTURE CONCRETE.

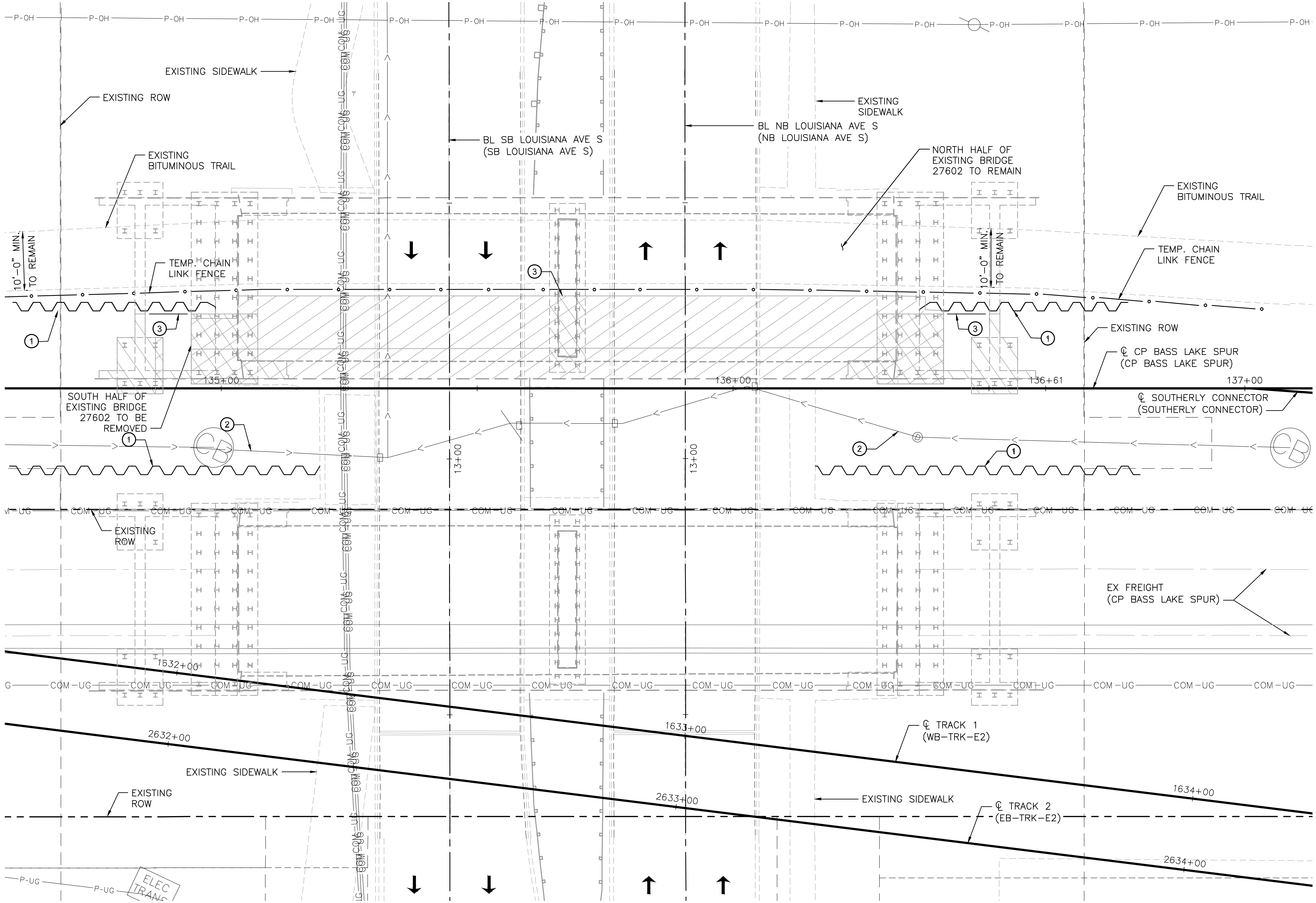
LIMITS OF REMOVAL FOR EXISTING BRIDGE SUPERSTRUCTURE.

STAGING REQUIREMENTS:

ALL TRACKS SHALL BE KEPT OPEN FOR TRAIN USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL. CP SHALL HAVE FINAL AUTHORITY ON PERMITTED TRACK CLOSURES.

CEDAR LAKE TRAIL SHALL BE KEPT OPEN FOR PUBLIC USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL.

SEE SPECIAL PROVISIONS FOR TRAFFIC CONTROL REQUIREMENTS ON LOUISIANA AVE S.



PROPOSED CONSTRUCTION SEQUENCING – STAGE 1

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
STAGING PLAN 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-STG-001

SHEET 54 OF 57

STAGING NOTES:

STAGES 1–4 SHOWN IN THIS PLAN, SEE BRIDGE 27C13 FOR STAGES 5 & 6.

CONSTRUCT FREIGHT BRIDGE 27C12. BACKFILL STRUCTURE.

1 SOE.

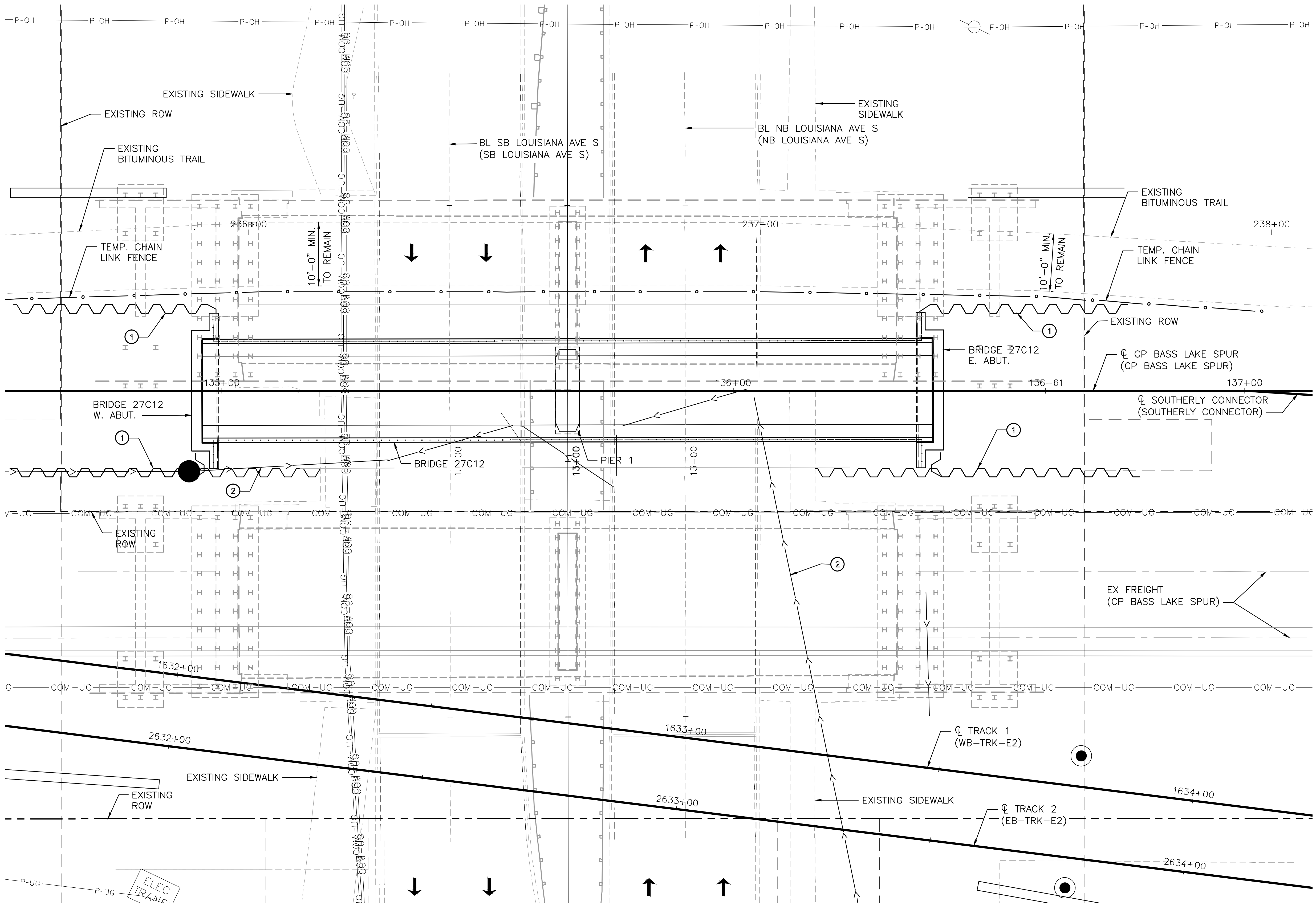
2 RELOCATED STORM DRAIN, SEE DRAINAGE PLANS FOR DETAILS.

STAGING REQUIREMENTS:

ALL TRACKS SHALL BE KEPT OPEN FOR TRAIN USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL. CP SHALL HAVE FINAL AUTHORITY ON PERMITTED TRACK CLOSURES.

CEDAR LAKE TRAIL SHALL BE KEPT OPEN FOR PUBLIC USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL.

SEE SPECIAL PROVISIONS FOR TRAFFIC CONTROL REQUIREMENTS ON LOUISIANA AVE S.



PROPOSED CONSTRUCTION SEQUENCING – STAGE 2

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW CHECKED BY: JSM
DRAWN BY: PGR CHECKED BY: JSM

AECOM Kimley»Horn

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
STAGING PLAN 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-STG-002

SHEET 55 OF 57

STAGING NOTES:

STAGES 1–4 SHOWN IN THIS PLAN, SEE BRIDGE 23C13 FOR STAGES 5 & 6.

CONSTRUCT TEMPORARY TRAIL UP TO ENDS OF BRIDGE 27C12. TEMPORARY TRAIL SHALL HAVE A 10'–0" MINIMUM CLEAR WIDTH, 2'–0" CLEAR ZONE ALONG EACH SIDE AND PROVIDE TEMPORARY CHAIN LINK FENCE ALONG LENGTH OF TEMPORARY TRAIL ALIGNMENT.

REMOVE AND INSTALL TEMPORARY RETAINING SYSTEM AS NECESSARY TO CONSTRUCT PROPOSED TRAIL BRIDGE 27C11 AND RETAINING WALLS.

RELOCATE EXISTING TRAIL TO TEMPORARY TRAIL ALIGNMENT OVER BRIDGE 27C12.

REMOVE REMAINING EXISTING BRIDGE 27602. EXCAVATE FOR CONSTRUCTION OF TRAIL BRIDGE 27C11.

(1) SOE.

(2) RELOCATED STORM DRAIN, SEE DRAINAGE PLANS FOR DETAILS

LIMITS OF REMOVAL FOR EXISTING BRIDGE SUBSTRUCTURE CONCRETE.

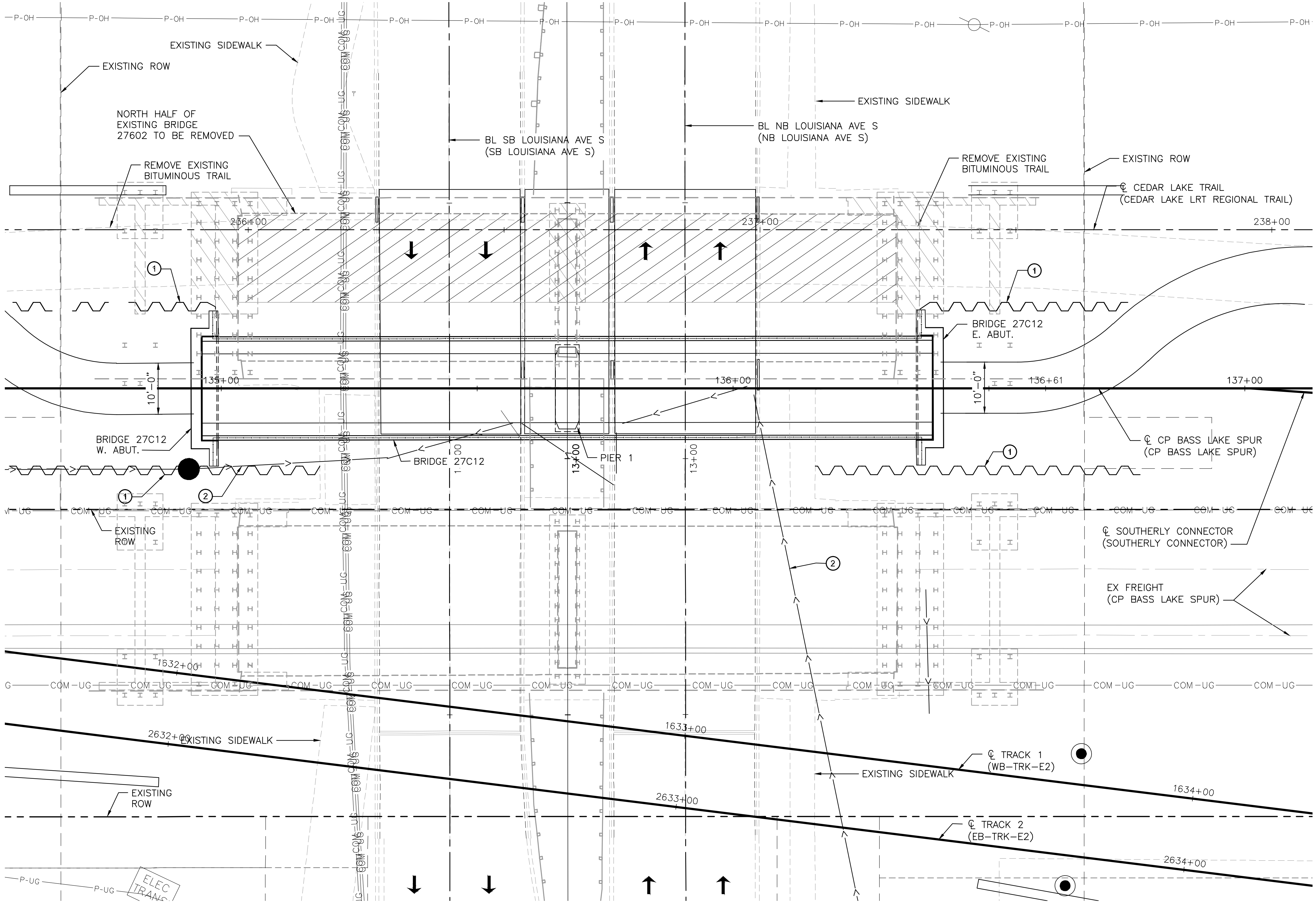
LIMITS OF REMOVAL FOR EXISTING BRIDGE SUPERSTRUCTURE.

STAGING REQUIREMENTS:

ALL TRACKS SHALL BE KEPT OPEN FOR TRAIN USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL. CP SHALL HAVE FINAL AUTHORITY ON PERMITTED TRACK CLOSURES.

CEDAR LAKE TRAIL SHALL BE KEPT OPEN FOR PUBLIC USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL.

SEE SPECIAL PROVISIONS FOR TRAFFIC CONTROL REQUIREMENTS ON LOUISIANA AVE S.



PROPOSED CONSTRUCTION SEQUENCING – STAGE 3

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW | CHECKED BY: JSM
DRAWN BY: PGR | CHECKED BY: JSM

AECOM Kimley»Horn

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METROPOLITAN COUNCIL | SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
STAGING PLAN 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C11-BRG-STG-003

SHEET 56 OF 57

Jan. 12 2016 12:45 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-TRL\CBR27C12-BRG-STG-003.dwg By: Paul.Robbs

STAGING NOTES:

STAGES 1-4 SHOWN IN THIS PLAN, SEE BRIDGE 27C13 FOR STAGES 5 & 6.

CONSTRUCT PROPOSED BRIDGE 27C11 AND RETAINING WALLS E208 AND E209. BACKFILL STRUCTURES.

REMOVE SOE AS REQUIRED.

RELOCATE TEMPORARY CEDAR LAKE TRAIL TO FINAL ALIGNMENT. REMOVE TEMPORARY TRAIL ALIGNMENT.

RELOCATE EXISTING CP BASE LAKE SPUR TO FINAL ALIGNMENT.

1 SOE.

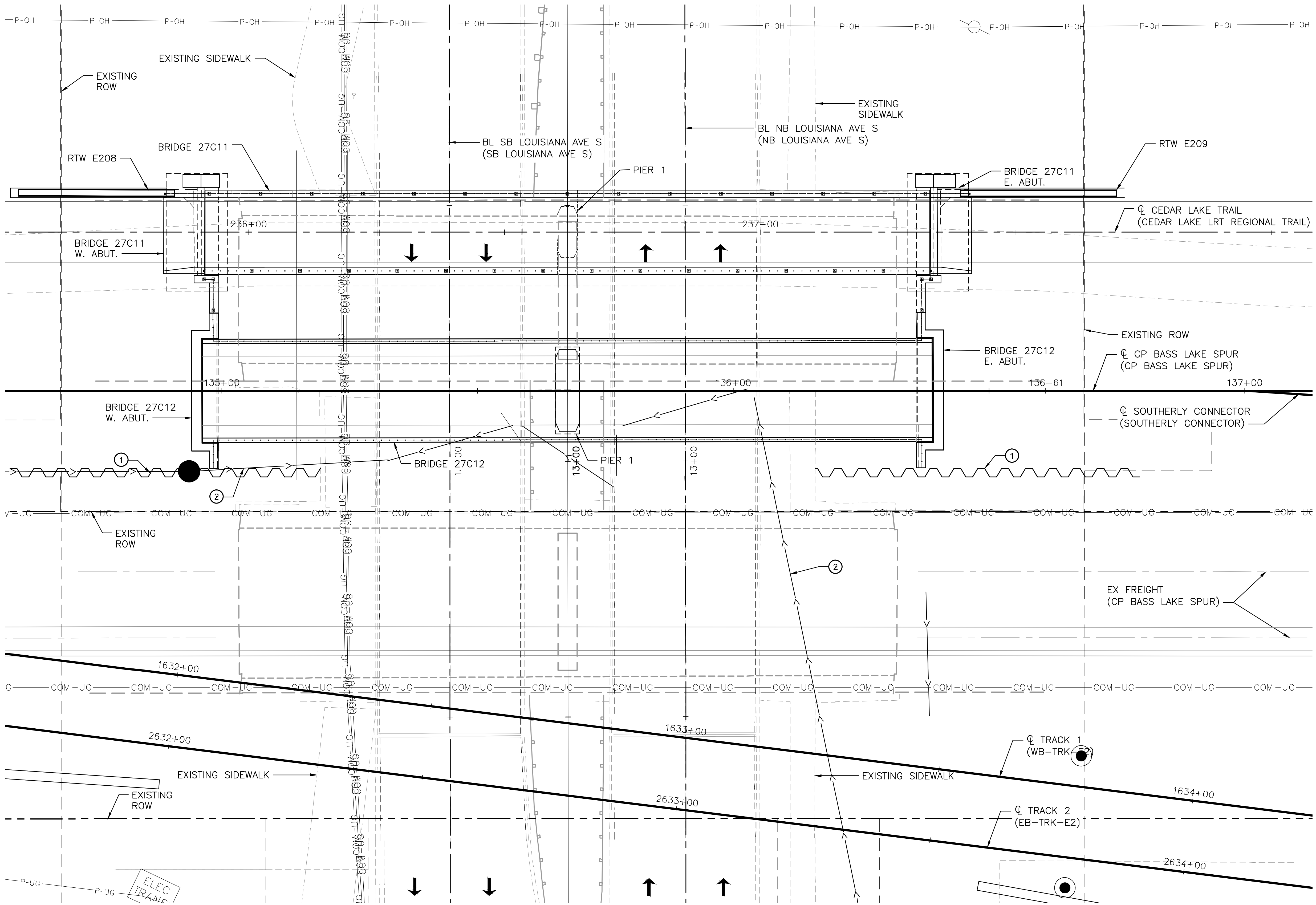
2 RELOCATED STORM DRAIN, SEE DRAINAGE PLANS FOR DETAILS.

STAGING REQUIREMENTS:

ALL TRACKS SHALL BE KEPT OPEN FOR TRAIN USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL. CP SHALL HAVE FINAL AUTHORITY ON PERMITTED TRACK CLOSURES.

CEDAR LAKE TRAIL SHALL BE KEPT OPEN FOR PUBLIC USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL.

SEE SPECIAL PROVISIONS FOR TRAFFIC CONTROL REQUIREMENTS ON LOUISIANA AVE S.



PROPOSED CONSTRUCTION SEQUENCING - STAGE 4

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: NRW | CHECKED BY: JSM
DRAWN BY: PGR | CHECKED BY: JSM

AECOM Kimley»Horn

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METROPOLITAN COUNCIL

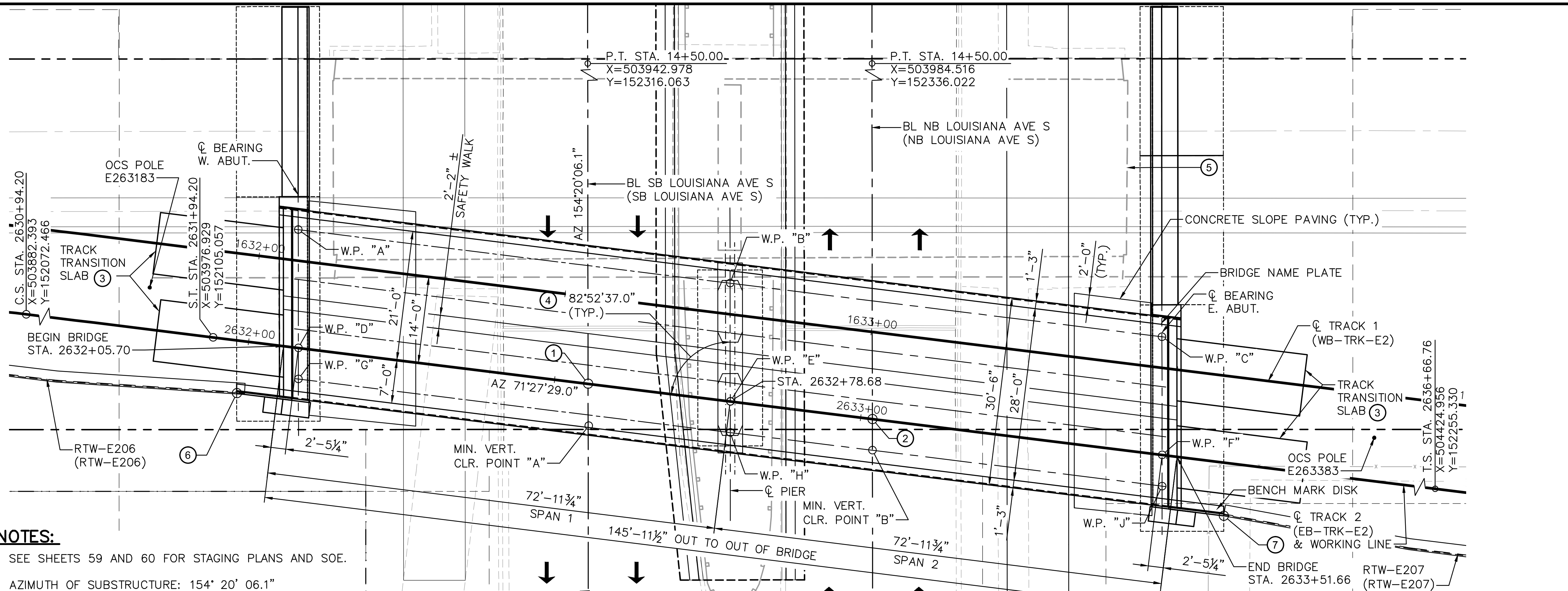
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. TRAIL BRIDGE
BRIDGE 27C11
STAGING PLAN 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C11-BRG-STG-004

SHEET 57 OF 57



GENERAL PLAN

0 5' 10' 20'

SCALE IN FEET

NOTES:

SEE SHEETS 59 AND 60 FOR STAGING PLANS AND SOE.

AZIMUTH OF SUBSTRUCTURE: 154° 20' 06.1"

SEE BRIDGE SURVEY SHEET FOR IN PLACE UTILITIES.

1. CONTROL POINT 1
BL SB LOUISIANA AVE S (SB LOUISIANA AVE S)
STA. 12+37.51
℄ TRACK 2 (EB-TRK-E2) STA. 2632+55.46
X = 504035.009
Y = 152124.538
Δ = 82°52'37.0"

2. CONTROL POINT 2
BL NB LOUISIANA AVE S (NB LOUISIANA AVE S)
STA. 12+31.76
℄ TRACK 2 (EB-TRK-E2) STA. 2633+01.90
X = 504079.040
Y = 152139.306
Δ = 82°52'37.0"

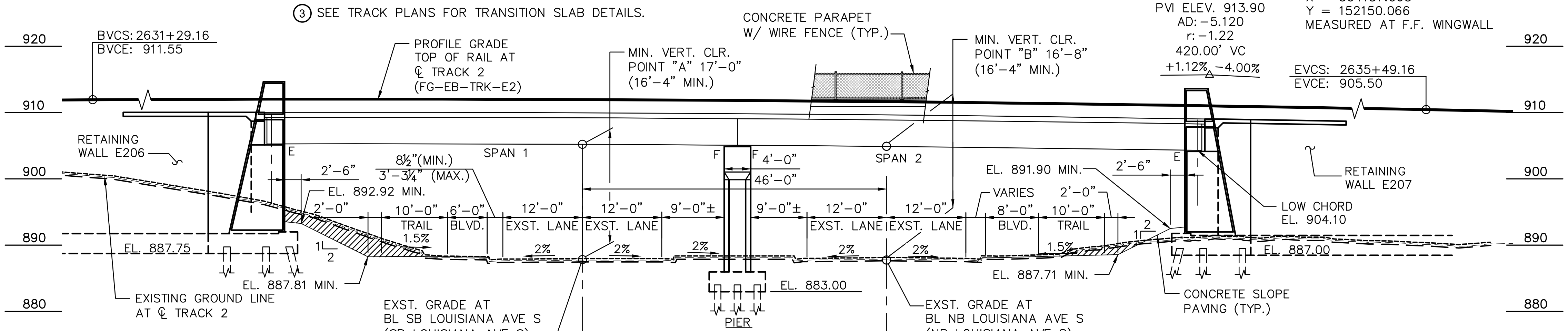
3. SEE TRACK PLANS FOR TRANSITION SLAB DETAILS.

4. SKEW ANGLE TYPICAL FOR ALL SUBSTRUCTURES.

5. IN PLACE BRIDGE 27601 A TWO SPAN STEEL BEAM STRUCTURE BUILT IN 1979 SUPPORTED BY STEEL H-PILES TO BE REMOVED.

6. END RETAINING WALL E206
℄ TRACK 2 (EB-TRK-E2) STA. 2631+99.09
X = 503984.188
Y = 152098.790
MEASURED AT F.F. WINGWALL

7. BEGIN RETAINING WALL E207
℄ TRACK 2 (EB-TRK-E2) STA. 2633+60.34
X = 504137.063
Y = 152150.066
MEASURED AT F.F. WINGWALL



GENERAL ELEVATION

0 5' 10' 20'

SCALE IN FEET

EXISTING GROUND PROFILE
23' LEFT — — — —
℄ TRACK 2 - - - - - -
9' RIGHT ....

HATCHED AREA TO BE REMOVED

DESIGN DATA

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION, 2014 WITH 2015 INTERIM REVISIONS

SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0)

LOAD AND RESISTANCE FACTOR DESIGN METHOD

LRV & MV LOAD DIAGRAM SHOWN ON TRANSVERSE SECTION SHEET

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4 KSI n = 8
fy = 60 KSI REINFORCEMENT

PRESTRESSED CONCRETE:
f'c = 5.5 KSI n = 1
fpu = 270 KSI
FOR 0.6" DIA. LOW RELAXATION STRANDS

DESIGN SPEED: OVER = 45 MPH (LRT)
UNDER = 30 MPH

DECK AREA 4360 SQ. FT.

LIST OF SHEETS

2040 PROJECTED TRAFFIC VOLUMES

ROADWAY OVER		ROADWAY UNDER
NA	A.D.T.	16,300
NA	D.H.V.	1,650
NA	A.D.T.T.	505

BRIDGE NO. 27C13

SOUTHWEST LRT OVER LOUISIANA AVE S
0.3 MI. SOUTH OF JCT. T.H. 7 AND
LOUISIANA AVE S IN ST. LOUIS PARK
73'-73' PRESTRESSED CONCRETE BEAM SPANS
28'-0" LRT
7'-07'-23.0" SKEW
P-1 PARAPET W/ WIRE FENCE
BRIDGE I.D. NO. 501

GENERAL PLAN AND ELEVATION

SEC 20 T 117N R 21W
CITY OF ST LOUIS PARK HENNEPIN COUNTY

JOB NO. T9N635 | STATE PROJ. NO.: 9909-01 | MNDOT REVIEW: JOE NIETFELD

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

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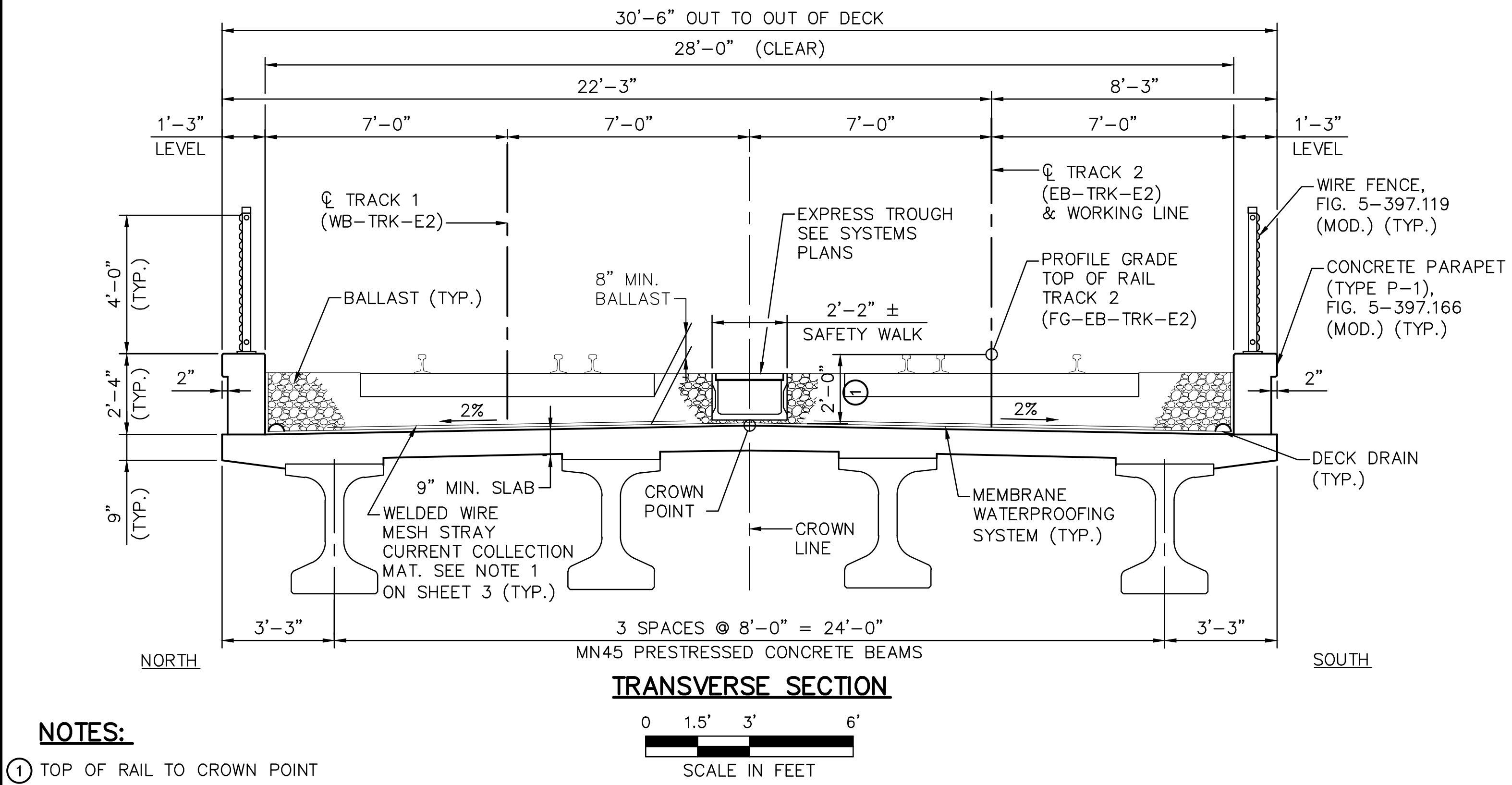
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
GENERAL PLAN AND ELEVATION

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-GPE-001



TRANSVERSE SECTION

NOTES:

① TOP OF RAIL TO CROWN POINT

NO OCS POLES ARE LOCATED ON BRIDGE.

(1) A BENCH MARK IS REQUIRED. LOCATED AT THE SE 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.

(2) QUANTITIES LISTED FOR THE COMPONENT ITEMS OF THE LUMP SUM BR 27C13 ITEM 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 THE BR 27C13. REFER TO MnDOT STANDARD SPECIFICATION OR SPECIAL PROVISION FOR TECHNICAL SPECIFICATION REQUIREMENTS FOR ALL PROVISION OTHER THAN MEASUREMENT AND PAYMENT REQUIREMENTS.

(4) BACKFILL BEHIND ABUTMENTS SHALL BE SELECT GRANULAR BORROW PER SPEC. 3149.2.B.2. SEE SHEETS 57 & 58 FOR PLACEMENT LIMITS. BACKFILL DENSITY SHALL BE ATTAINED BY THE SPECIFIED DENSITY METHOD IN ACCORDANCE WITH SPEC. 2105.3.F.1.

(5) QUANTITY FOR 48" TALL WIRE FENCE FABRIC.

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 BAR SIZES SHOWN IN THIS PLAN ARE IN U.S. CUSTOMARY DESIGNATIONS. THE FIRST DIGIT OR THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE.

BARS MARKED WITH THE 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 (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.

GROUNDING NOTES:

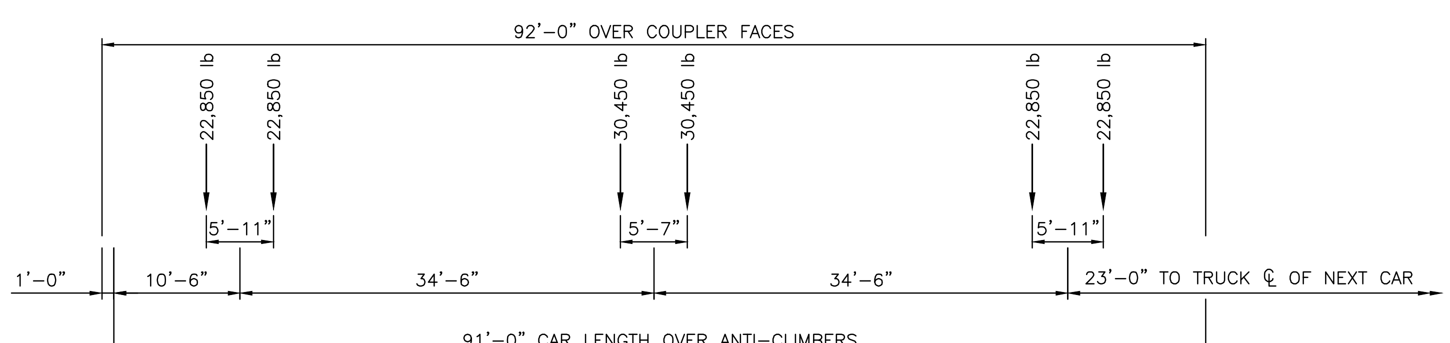
SEE SHEETS ELE-SITE-SCH-504, ELE-SITE-DTL-600, ELE-SITE-DTL-601 AND ELE-SITE-DTL-602 FOR ADDITIONAL FENCE GROUNDING INFORMATION. FOR BRIDGES, ABUTMENTS AND RETAINING WALLS THAT DON'T HAVE STRAY CURRENT SYSTEMS, GROUND THE FENCE AS SHOWN IN THE WIRE FENCE DETAIL.

SCHEDULE OF QUANTITIES

SPEC. SECTION	COMPONENT ITEM	UNIT	QUANTITY
--	CONSTRUCT BRIDGE 27C13	LUMP SUM	LS

COMPONENT ITEM SUMMARY (BRIDGE 27C13)

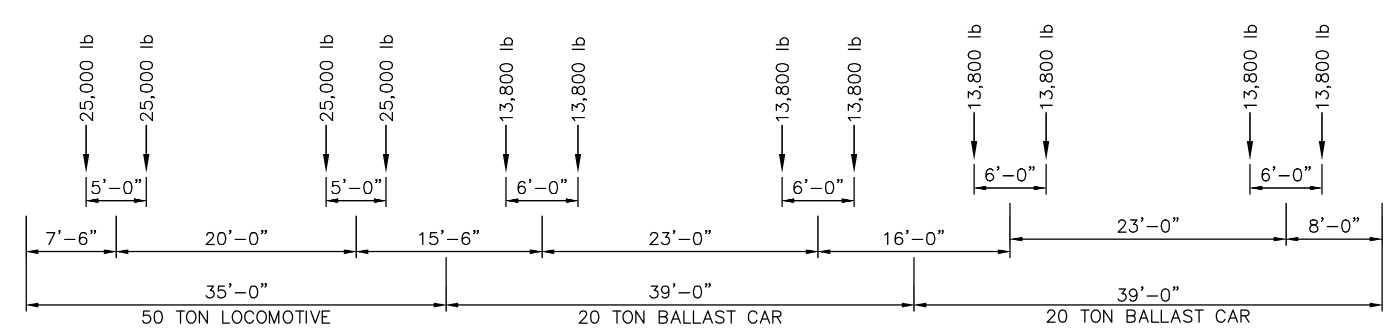
	SPEC. SECTION (3)	COMPONENT ITEM	UNIT (2)	QUANTITY (2)
	2401	STRUCTURAL CONCRETE (1G52)	CU. YD.	
(1)	2401	STRUCTURAL CONCRETE (3B52)	CU. YD.	
	2401	TYPE P-1 BARRIER CONCRETE (3S52)	LIN. FT.	
	2401	REINFORCEMENT BARS	POUND	
	2401	REINFORCEMENT BARS (EPOXY COATED)	POUND	
	SB-XX	BRIDGE SLAB CONCRETE (3YHPC-M)	CU. YD.	
	2402	EXPANSION JOINT DEVICES TYPE 4	LIN. FT.	
	2402	BEARING ASSEMBLY	EACH	
	2405	PRESTRESSED CONCRETE BEAMS MN45	LIN. FT.	
	2405	DIAPHRAGMS FOR TYPE MN45 PRESTRESSED BEAMS	LIN. FT.	
	SB-XX	ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE)	SQ. FT.	
	SB-XX	ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM)	SQ. FT.	
	2442	REMOVE EXISTING BRIDGE	LUMP SUM	
(4)	SB-XX	STRUCTURAL EXCAVATION CLASS U	CU. YD.	
	SB-XX	STEEL H-PILING 12"	LIN. FT.	
	2452	STEEL H-TEST PILE 65 FT LONG 12"	EACH	
	2452	STEEL H-TEST PILE 75 FT LONG 12"	EACH	
	2452	STEEL H-TEST PILE 80 FT LONG 12"	EACH	
	2452	PILE TIP PROTECTION 12"	EACH	
	SB-XX	STEEL SHEET PILING (TEMPORARY)	SQ. FT.	
	2481	MEMBRANE WATERPROOFING SYSTEM	LIN. FT.	
	2502	DRAINAGE SYSTEM TYPE (B910)	EACH	
	2502	DRAINAGE SYSTEM (BRIDGE DECK)	LUMP SUM	
	2514	CONCRETE SLOPE PAVING	SQ. YD.	
(5)	2557	WIRE FENCE DESIGN W-1	LIN. FT.	



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.
2. AXLE LOAD IN POUNDS.
3. LOADING DIAGRAM REPRESENTS MAXIMUM LOAD AT EACH TRUCK.



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. AXLE LOAD IN POUNDS.
3. WEIGHT OF EMPTY BALLAST CAR IS 15,000 POUNDS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS | CHECKED BY: DLS
DRAWN BY: KAG | CHECKED BY: DLS

AECOM Kimley»Horn

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
TRANSVERSE SECTION AND QUANTITIES

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-TRN-001

SHEET 2 OF 60

STRAY CURRENT CONTROL NOTES

THE FOLLOWING STRAY CURRENT CONTROL NOTES ARE A SUPPLEMENT TO THE SYSTEMWIDE ELECTRICAL DRAWINGS – SEE SYSTEMS DRAWINGS, VOLUME 12 FOR ASSOCIATED DETAILS AND DOCUMENT CERTIFICATION RELATED TO STRAY CURRENT REQUIREMENTS.

1. INSTALL ELECTRICALLY CONTINUOUS STRAY CURRENT COLLECTION MAT WITH TEST STATIONS AS SHOWN ON SHEETS E0-SYS-CORR-DTL-004 TO 007 ABOVE DIELECTRIC WATERPROOFING MEMBRANE.
2. ALL EPOXY COATED REBAR IN THE DECK, BEAMS, ABUTMENT WALL AND WINGWALLS SHALL BE SECURED WITH NON-METALLIC OR NON-METALLIC COATED TIES. ALL EPOXY COATED REBAR SHALL BE ISOLATED FROM BLACK REBAR IN THE FOOTINGS AND FROM THE H-PILES.
3. BLACK REBAR IN ABUTMENT FOOTINGS SHALL BE MADE ELECTRICALLY CONTINUOUS WITHIN FOOTINGS. SEE DETAIL 4 ON SHEET E0-SYS-CORR-DTL-001.
4. H-PILES IN ABUTMENT FOOTINGS SHALL BE MADE ELECTRICALLY CONTINUOUS WITH WELDED REBAR IN FOOTINGS. SEE DETAILS ON SHEET E0-SYS-CORR-DTL-008.
5. LONGITUDINAL REBAR IN TRANSITION SLAB SHALL BE MADE ELECTRICALLY CONTINUOUS WITHIN SLAB. SEE DETAIL 6 ON SHEET E0-SYS-CORR-DTL-001. END TRANSVERSE COLLECTOR BARS SHALL BE WELDED TO ALL LONGITUDINAL REBARS AT EACH END AND IN EACH REBAR LAYER OF THE TRANSITION SLAB. TOP AND BOTTOM REBAR LAYERS SHALL BE WELDED TOGETHER USING 1/2" X 2" STEEL STRAPS INSTALLED 2 PER TRACK AT EACH END OF TRANSITION SLAB. #1/0 AWG CABLES (2 PER TRACK) SHALL BE WELDED TO END TRANSVERSE COLLECTOR BAR NEAREST ABUTMENT AND TERMINATED IN JUNCTION BOX ALONG BRIDGE THAT HOUSES WIRES FROM STRAY CURRENT COLLECTION MAT ALONG BRIDGE AND FROM THE GROUND ROD ARRAY. SEE DETAIL 2 ON SHEET E0-SYS-CORR-DTL-007 AND DETAIL 2 ON SHEET E0-SYS-CORR-DTL-013. SUFFICIENT SLACK SHALL BE AVAILABLE IN THE CABLES THAT SPAN THE EXPANSION JOINT TO ACCOUNT FOR MOVEMENT OF THE JOINT. BLACK REBAR IN TRANSITION SLAB SHALL BE ELECTRICALLY ISOLATED FROM EPOXY COATED REBAR IN ABUTMENT.
6. INSTALL STRAY CURRENT TEST STATION ALONG BRIDGE HOUSING TWO #1/0 AWG CABLES FROM STRAY CURRENT COLLECTION MAT, TWO #1/0 AWG CABLES FROM WELDED REBAR IN TRANSITION SLAB, ONE 250 MCM CABLE FROM ADJACENT STRAY CURRENT TEST STATION AND ONE 250 MCM CABLE FROM GROUND ROD ARRAY AT BASE OF ABUTMENT. SEE SHEETS E0-SYS-CORR-DTL-004 TO 007, AND DETAILS 2 TO 4 ON SHEET E0-SYS-CORR-DTL-013. SEE NOTE 9. SUFFICIENT SLACK SHALL BE AVAILABLE IN THE CABLES THAT SPAN THE EXPANSION JOINT TO ACCOUNT FOR MOVEMENT OF THE JOINT.
7. INSTALL STRAY CURRENT TEST STATION HOUSING TWO 1/0 AWG CABLES FROM ELECTRICALLY CONTINUOUS REBAR AND H-PILES IN FOOTING AND ONE #14 AWG HMWPE CABLE FROM COPPER/COPPER SULFATE REFERENCE CELL. SEE DETAIL 4 ON SHEET E0-SYS-CORR-DTL-003 AND DETAIL 2 ON SHEET E0-SYS-CORR-DTL-013. SEE NOTE 9. REFERENCE CELL SHALL BE INSTALLED IN SOIL WITHIN 1' OF PILE AND 1' BELOW BOTTOM OF FOOTING.
8. INSTALL STRAY CURRENT GROUND ROD ARRAY NEAR BASE OF ABUTMENT. GROUND ROD ARRAY SHOULD EXHIBIT A MAXIMUM RESISTANCE TO EARTH OF 25 OHMS. USE 250 MCM THWN CABLE TO INTERCONNECT GROUND RODS AND AS GROUND CABLE TO STRAY CURRENT COLLECTION MAT TEST STATIONS AT END OF BRIDGE STRUCTURE. 250 MCM CABLE SHALL RUN INSIDE 2" SCH 80 PVC CONDUIT THAT IS EMBEDDED WITHIN ABUTMENT. SEE DETAILS 2 TO 4 ON SHEET E0-SYS-CORR-DTL-013.
9. ALL STRAY CURRENT TEST STATIONS SHALL BE INSTALLED AT LOCATIONS WHERE THEY WILL BE ACCESSIBLE AFTER COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND DURING REVENUE LRT OPERATIONS.
10. MAINTAIN ELECTRICAL ISOLATION OF EPOXY COATED REBAR IN ABUTMENT WINGWALLS AND BLACK REBAR IN ABUTMENT FOOTINGS FROM BLACK REBAR IN RETAINING WALLS E206 AND E207.
11. INSTALL STRAY CURRENT BOND TEST STATION HOUSING TWO 1/0 AWG CABLES FROM ELECTRICALLY CONTINUOUS REBAR AND H-PILES IN ABUTMENT FOOTING, TWO 1/0 AWG CABLES FROM ELECTRICALLY CONTINUOUS REBAR AND H-PILES IN RETAINING WALL (E206 & E207) FOOTING AND TWO #14 AWG HMWPE CABLES FROM COPPER/COPPER SULFATE REFERENCE CELLS. SEE NOTE 9. EACH REFERENCE CELL SHALL BE INSTALLED IN SOIL WITHIN 1' OF PILE AND 1' BELOW BOTTOM OF ABUTMENT OR RETAINING FOOTING. SEE DETAIL 3 ON SHEET E0-SYS-CORR-DTL-017.
12. INSTALL STRAY CURRENT BOND TEST STATION HOUSING TWO 1/0 AWG CABLES FROM ELECTRICALLY CONTINUOUS REBAR AND H-PILES IN ABUTMENT FOOTING, TWO 1/0 AWG CABLES FROM ELECTRICALLY CONTINUOUS REBAR AND H-PILES IN WINGWALL (NORTHWEST AND NORTHEAST) FOOTING AND ONE #14 AWG HMWPE CABLE FROM COPPER/COPPER SULFATE REFERENCE CELL. REFERENCE CELL SHALL BE INSTALLED IN SOIL WITHIN 1' OF PILE AND 1' BELOW BOTTOM OF FOOTING. SEE NOTE 9. SEE DETAIL 2 ON SHEET E0-SYS-CORR-DTL-013.
13. THE CONCRETE/SOIL INTERFACE ALONG EACH H-PILE UNDER THE FOOTING FOR THE ABUTMENTS AND CENTER PIER SHALL BE COATED WITH A DIELECTRIC COATING. THE COATING SHALL EXTEND INTO THE CONCRETE FOOTING AT LEAST 6-INCHES AND EXTEND A MINIMUM OF 18-INCHES INTO THE SOIL ALONG THE EXTERNAL PILE SURFACE BELOW THE BOTTOM OF THE FOOTING.
14. MAINTAIN ELECTRICAL ISOLATION OF BLACK AND EPOXY COATED REBAR IN ABUTMENTS FROM BLACK AND EPOXY COATED REBAR IN NORTHEAST AND NORTHWEST WINGWALLS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: JPJ CHECKED BY: IKS
DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

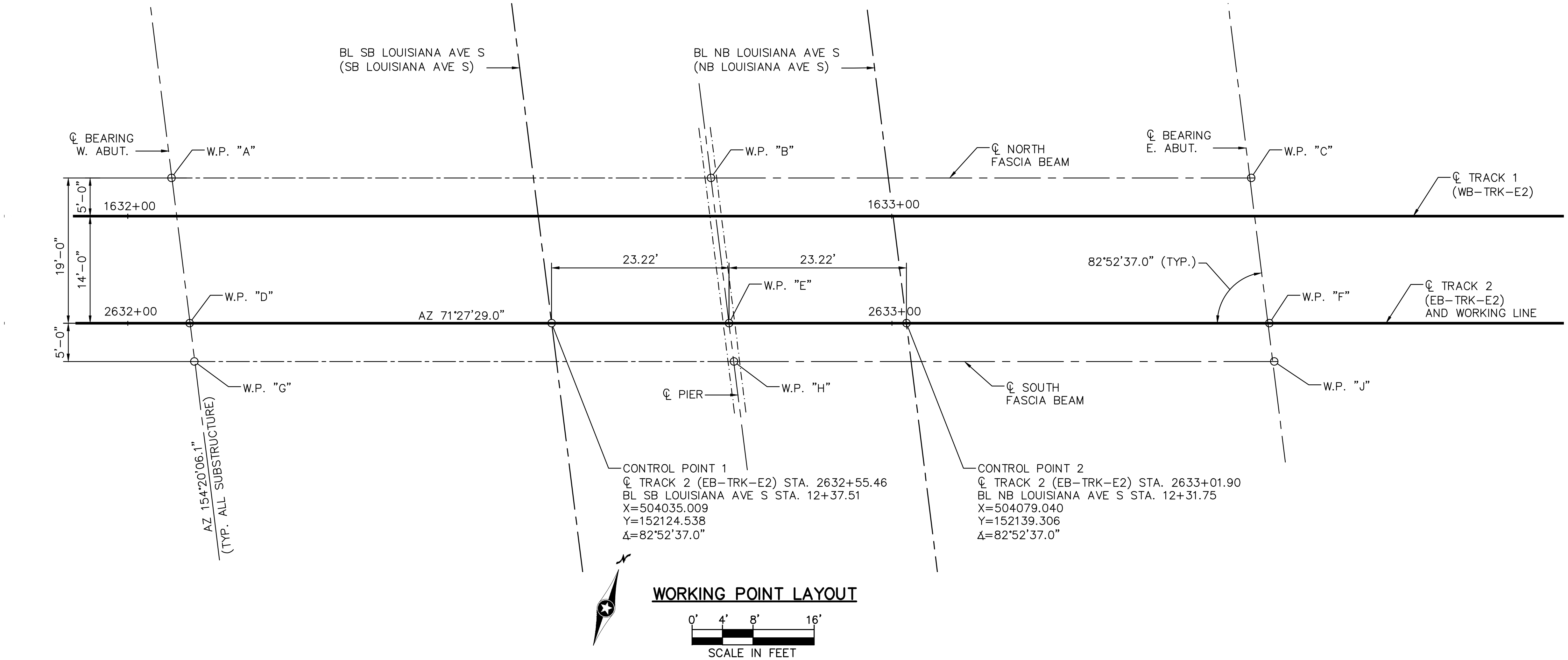
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
STRAY CURRENT/CORROSION CONTROL NOTES

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-TRN-002



WORKING POINT LAYOUT

DIMENSIONS BETWEEN WORKING POINTS											COORDINATES		ELEVATIONS			
POINT	STATION	A	B	C	D	E	F	G	H	J	X	Y	TOP OF SLAB	TOP OF SLAB TO BRIDGE SEAT	BRIDGE SEAT	POINT
A	2632+05.76'	0	70.54		19.15	75.35	144.72		77.36	146.07	503981.849	152126.748	909.81	5.04	904.77	A
B	2632+76.31'			70.54	70.77	19.15	75.35	71.68		77.36	504048.731	152149.181	909.64	4.98	904.66	B
C	2633+46.85'				140.01	70.77	19.15	140.16	71.68		504115.614	152171.614	908.86	5.04	903.82	C
D	2632+08.14'					70.54		5.04	71.34	141.80	503990.142	152109.489	909.91			D
E	2632+78.68'						70.54	70.10	5.04	71.34	504057.025	152131.922	909.72			E
F	2633+49.22'							140.55	70.10	5.04	504123.907	152154.355	908.92			F
G	2632+08.76'								70.54		503992.324	152104.947	909.82	5.04	904.78	G
H	2632+79.31'									70.54	504059.207	152127.380	909.62	4.98	904.64	H
J	2633+49.85'										504126.089	152149.813	908.81	5.04	903.77	J

TOP OF SLAB TO BRIDGE SEAT						
	DECK THICKNESS	STOOL HEIGHT	BEAM HEIGHT	BEARING HEIGHT	TOTAL	
					INCHES	FEET
WEST ABUTMENT	9"	2½"	45"	4"	60½"	5.04
PIER	9"	2½"	45"	3¼"	59¾"	4.98
EAST ABUTMENT	9"	2½"	45"	4"	60½"	5.04

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
BRIDGE LAYOUT

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-SUP-001

SHEET 4 OF 60

WEST ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	78.0
FACTORED LIVE LOAD	36.1
* FACTORED DESIGN LOAD	114.2

* BASED ON STRENGTH I LOAD COMBINATION.

WEST ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE FOR H-PILES Rn - TONS/PILE		
FIELD CONTROL METHOD	φdyn	* Rn
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{W \times H}{1000}}\, x\log\left(\frac{10}{S}\right)$	0.60	191
PDA	0.65	176

* Rn = (FACTORED DESIGN LOAD) / φdyn

GENERAL PILE NOTES:

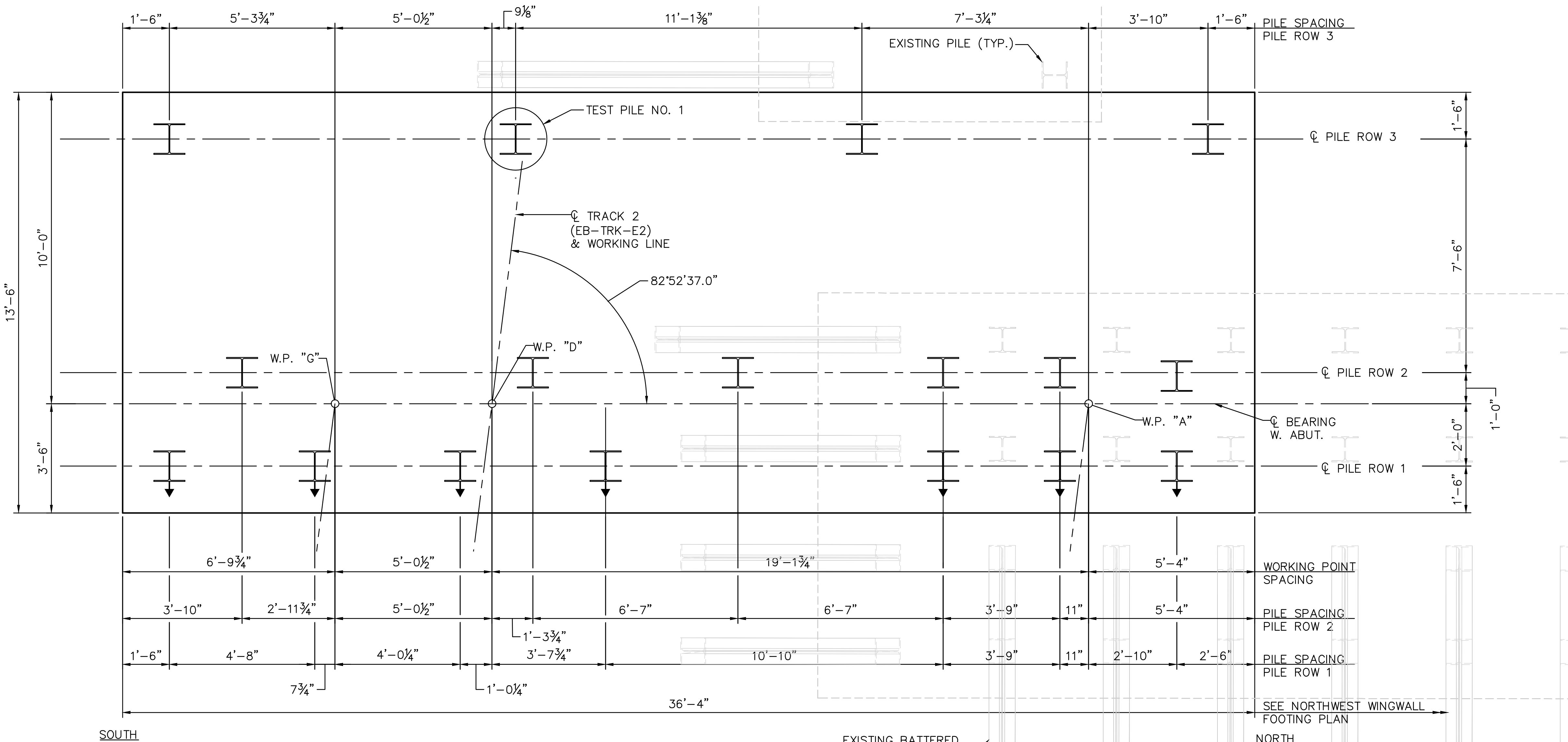
1 HP12x53 STEEL TEST PILE 75 FT. LONG
16 HP12x53 STEEL PILES EST. 75 FT. LENGTH
17 HP12x53 STEEL PILES REQ'D FOR WEST ABUT.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

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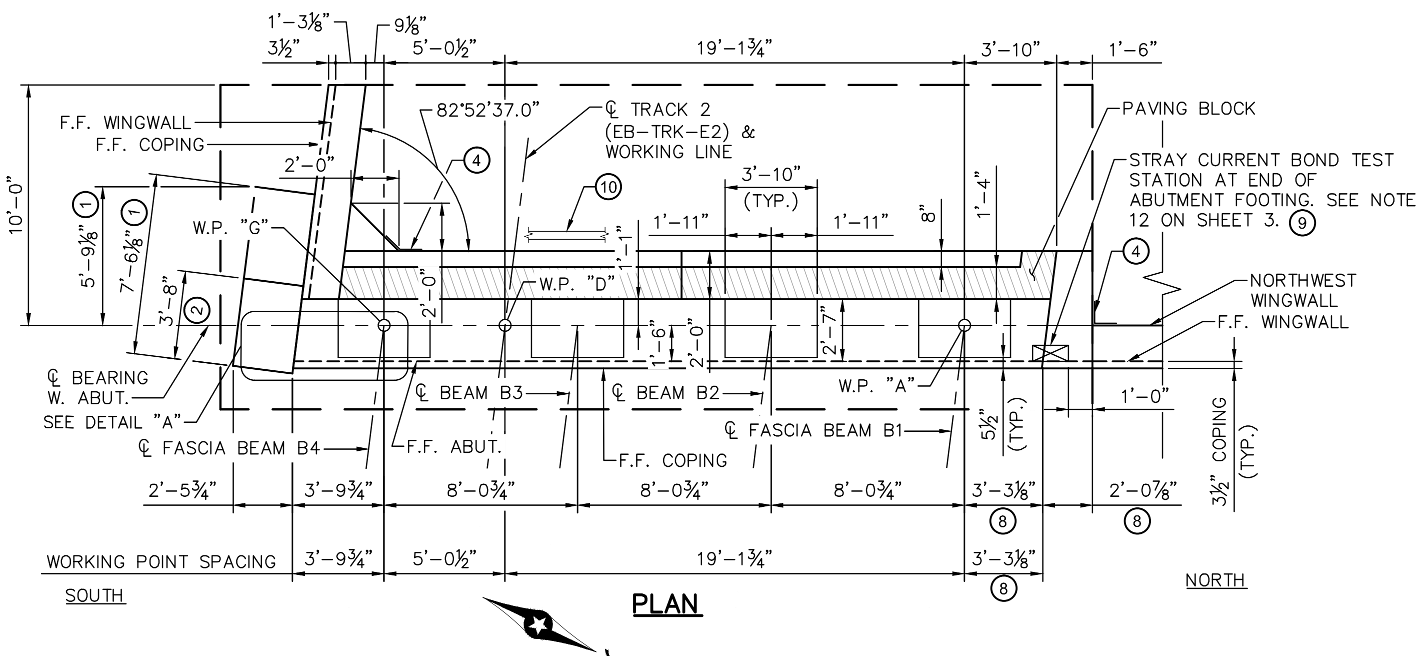
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

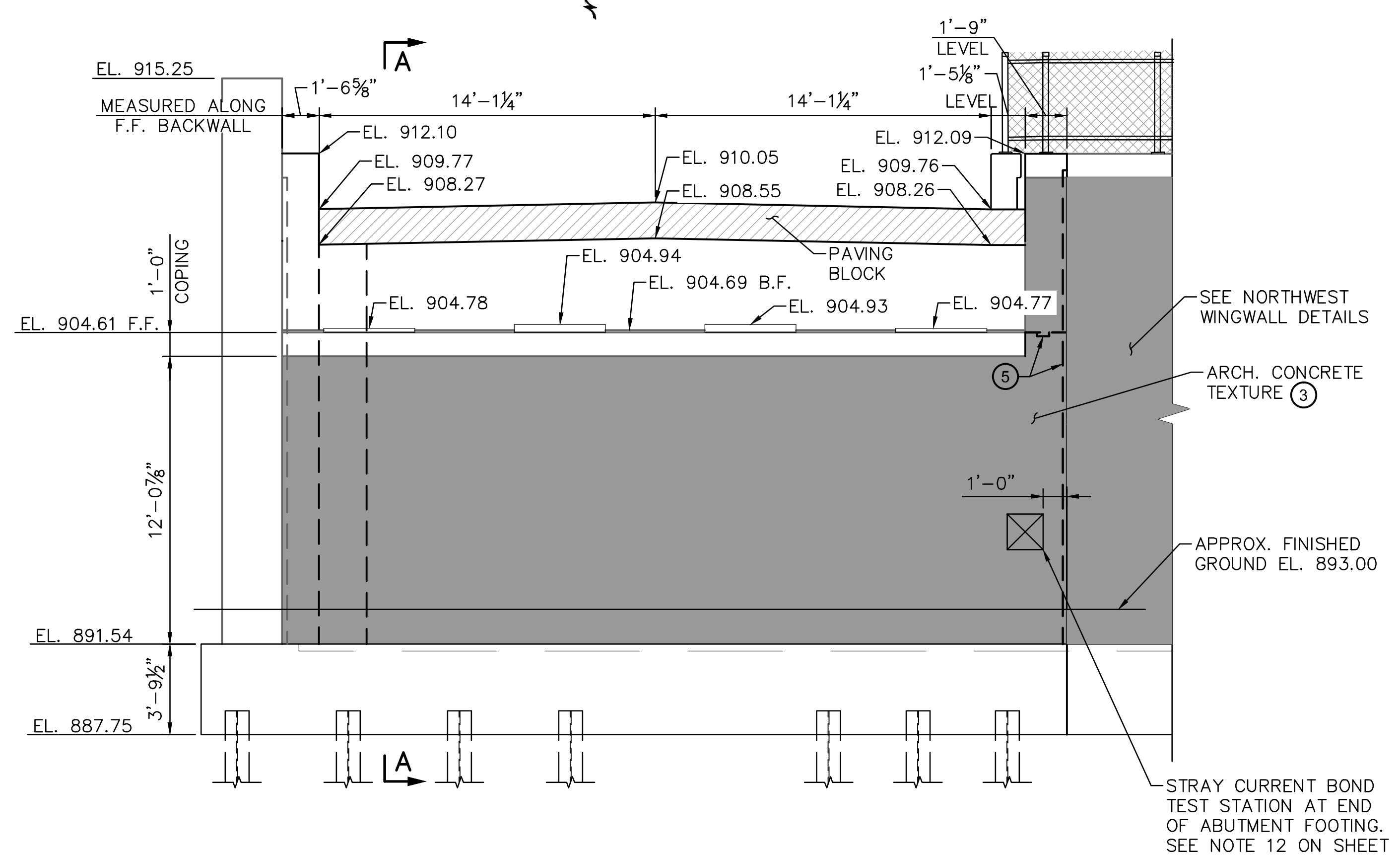
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
WEST ABUTMENT DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-001

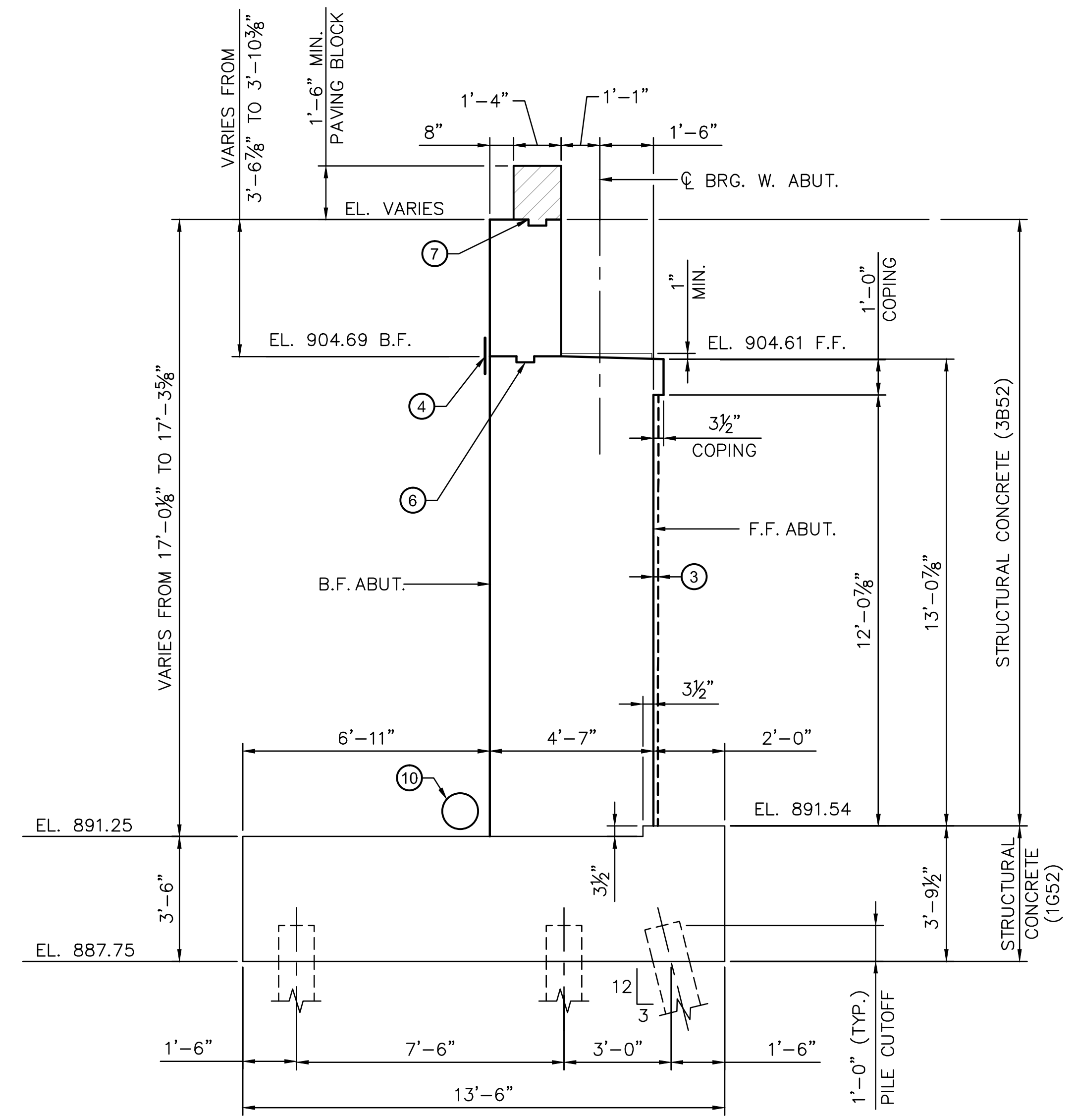
SHEET 5 OF 60



PLAN



ELEVATION



SECTION A-A

NOTES:

PAVING BLOCK HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

SEE SHEET 7 FOR DETAIL "A"

1. DIMENSION AT TOP OF FOOTING.
2. DIMENSION AT TOP OF PILASTER.
3. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
4. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
5. CONSTRUCTION JOINT WITH 2" X 6" KEY.
6. PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY CENTERED IN WALL.
7. CONSTRUCTION JOINT WITH 2" X 4" KEY.
8. MEASURED AT F.F. ABUT.
9. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWINGS E0-SYS-CORR-DTL-001 TO 018. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT (TYP. FOR ALL BLOCKOUTS).
10. 6" DIA. PERFORATED DRAIN PIPE. SEE SHEETS 45 AND 46 FOR DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

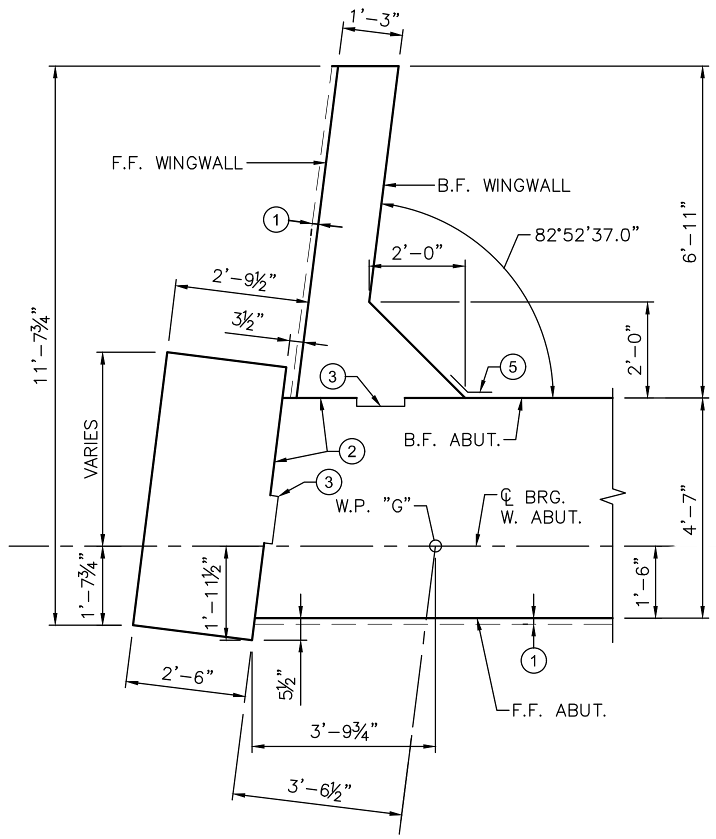
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

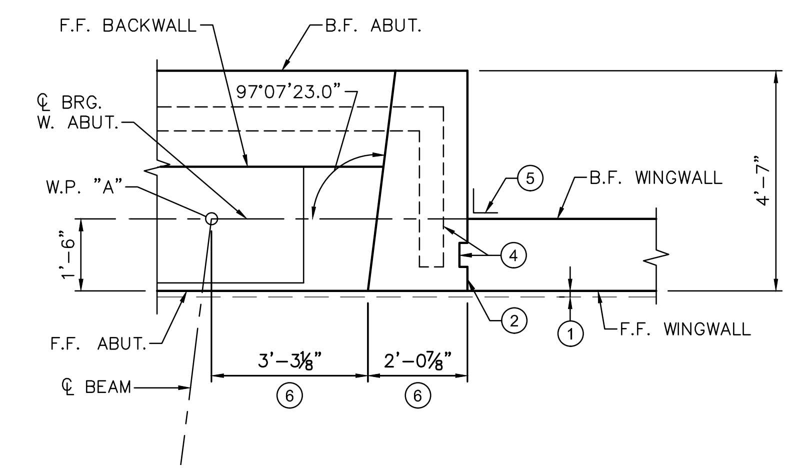
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
WEST ABUTMENT DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-002

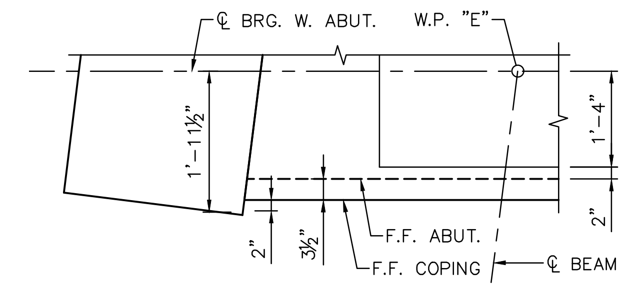
SHEET 6 OF 60



SOUTHWEST WINGWALL PLAN
(SECTION BELOW ABUTMENT COPING)



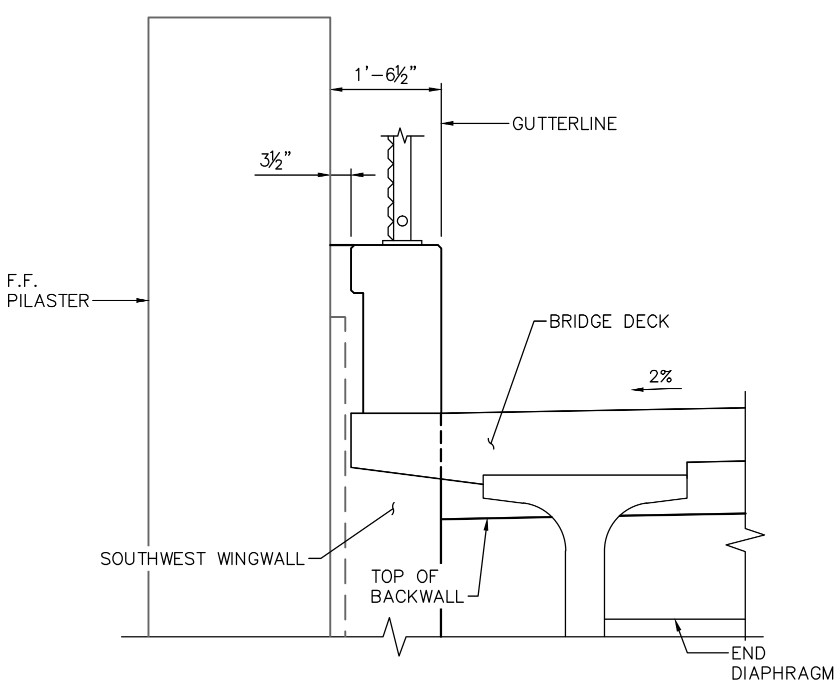
NORTHWEST CORNER PLAN
(SECTION BELOW PAVING BLOCK)



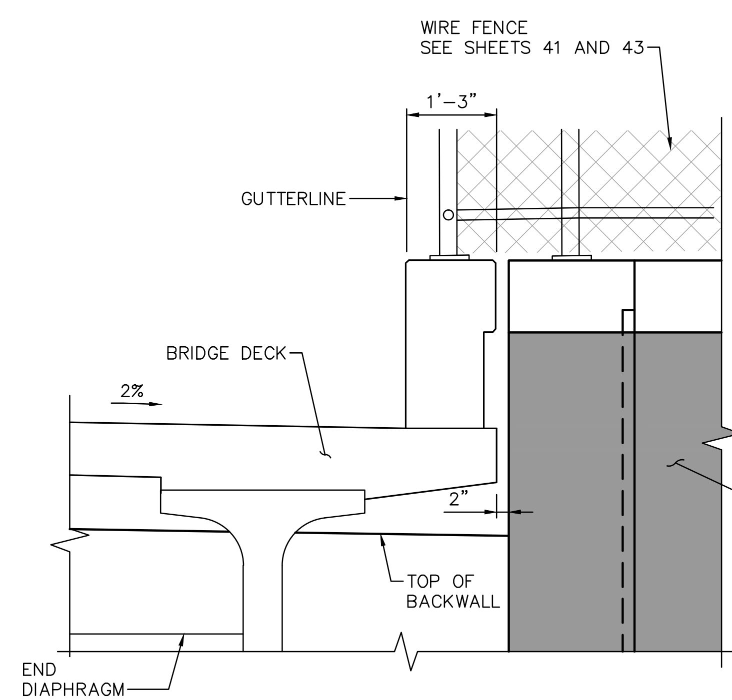
DETAIL "A"

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. CONSTRUCTION JOINT. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.
3. 2" X 12" KEYWAY
4. 2" X 6" KEYWAY
5. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
6. MEASURED AT F.F. ABUT.



SOUTHWEST CORNER ELEVATION



NORTHWEST CORNER ELEVATION

Dec. 14 2015 06:33 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-ABT-003.dwg By: gavin.good

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS | CHECKED BY: DLS
DRAWN BY: KAG | CHECKED BY: DLS

AECOM Kimley»Horn

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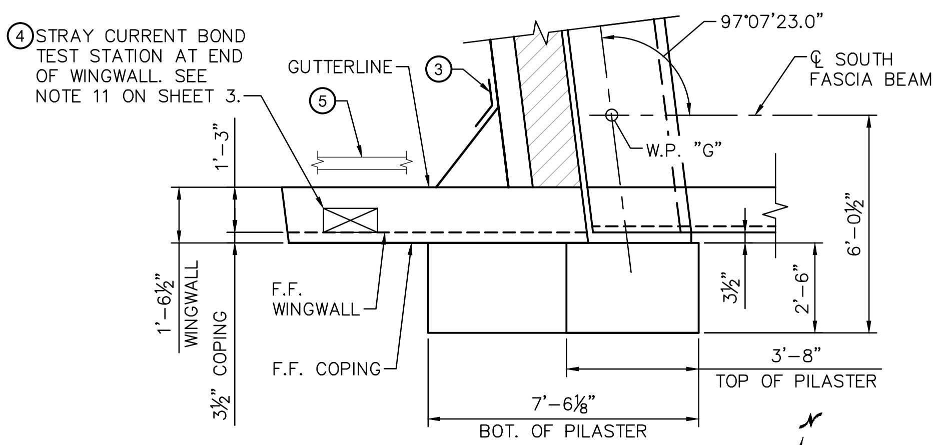
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

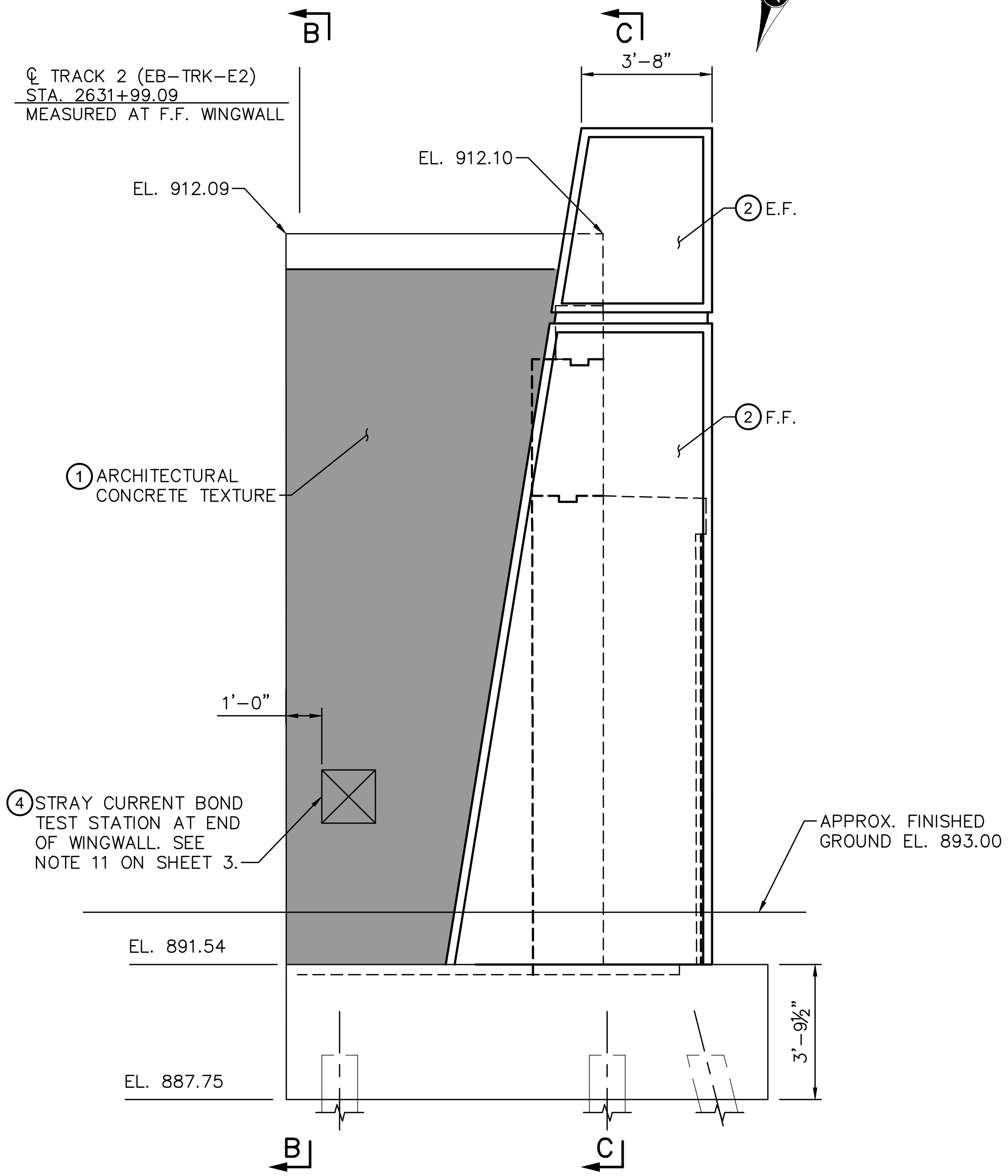
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
WEST ABUTMENT DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-003

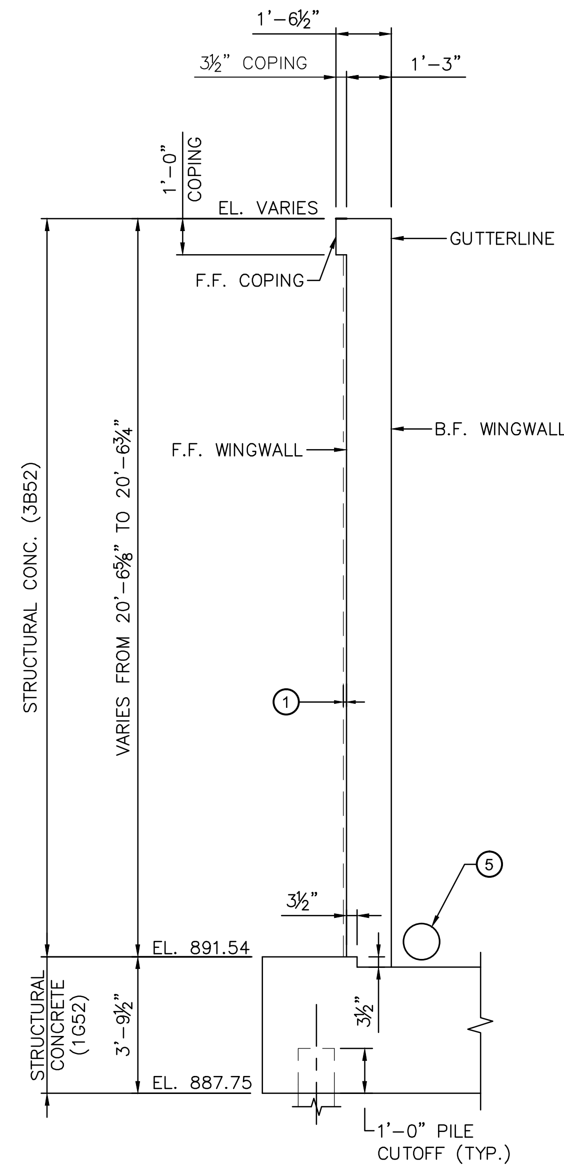
SHEET 7 OF 60



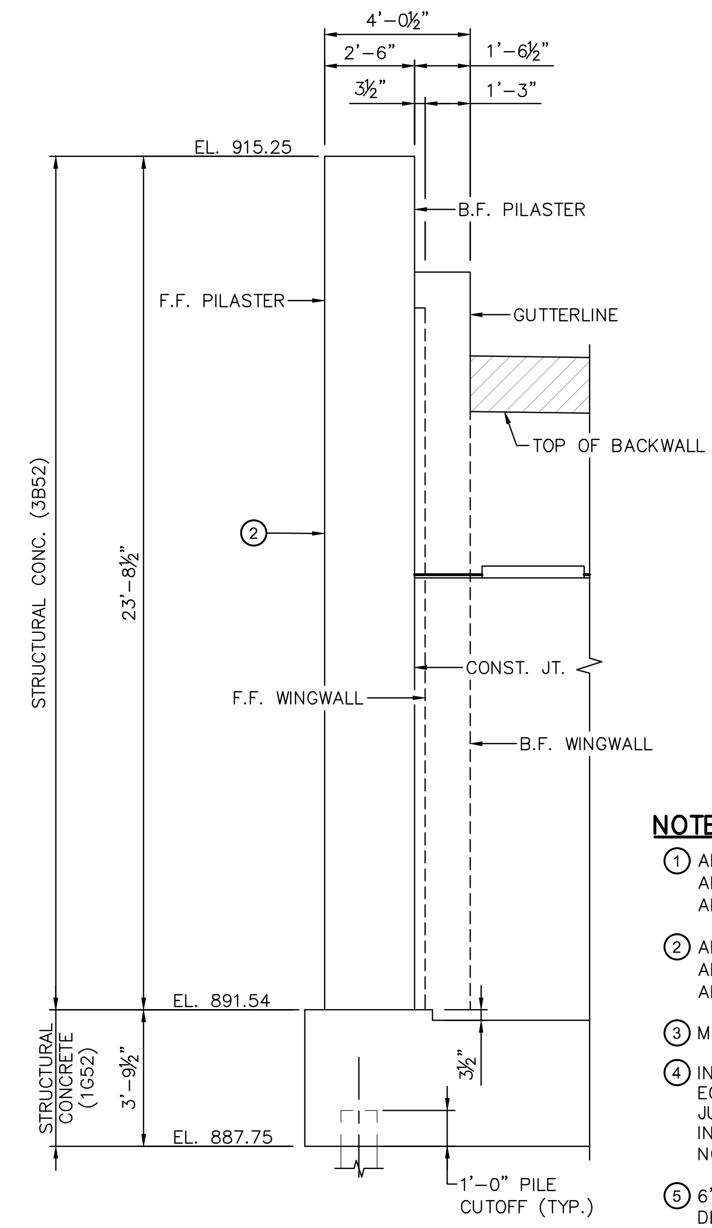
SOUTHWEST WINGWALL PLAN



SOUTHWEST WINGWALL ELEVATION



SECTION B–B



SECTION C–C

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 0.5".
3. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
4. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWINGS E0-SYS-CORR-DTL-001 TO 018. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED WITH NON-SHRINK GROUT (TYP. FOR ALL BLOCKOUTS).
5. 6" DIA. PERFORATED DRAIN PIPE. SEE SHEET 45 AND 46 FOR DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS | CHECKED BY: DLS
DRAWN BY: JFM | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
WEST ABUTMENT DETAILS 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-004

NORTHWEST WINGWALL COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	76.0
FACTORED LIVE LOAD	29.7
* FACTORED DESIGN LOAD	105.7
* BASED ON STRENGTH I LOAD COMBINATION.	

NORTHWEST WINGWALL REQUIRED NOMINAL PILE BEARING RESISTANCE FOR H-PILES Rn - TONS/PILE		
FIELD CONTROL METHOD	φdyn	* Rn
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{W \times H}{1000}} x\log\left(\frac{10}{S}\right)$	0.60	177
PDA	0.65	163
* Rn = (FACTORED DESIGN LOAD) / φdyn		

GENERAL PILE NOTES:

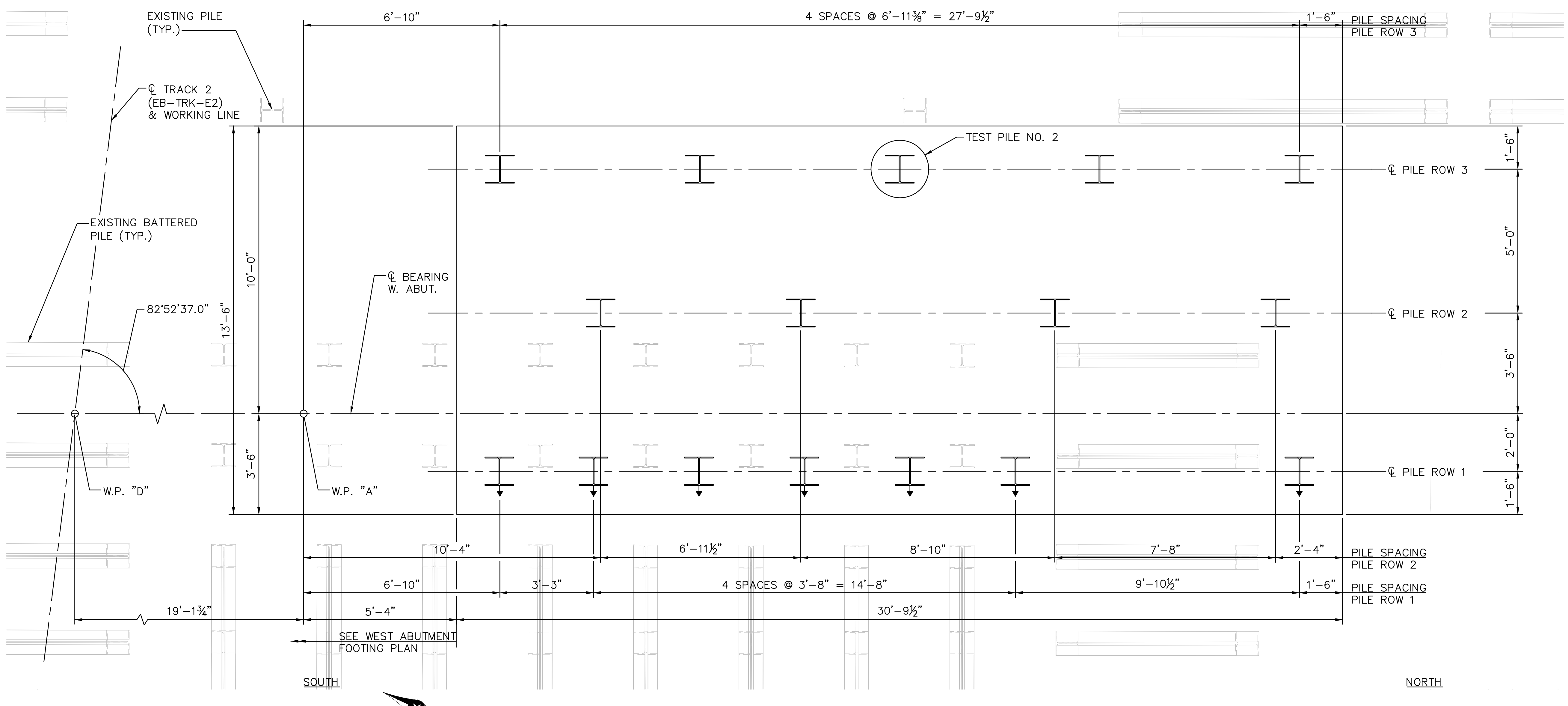
1 HP12x53 STEEL TEST PILE 75 FT. LONG
15 HP12x53 STEEL PILES EST. 75 FT. LENGTH
16 HP12x53 STEEL PILES REQ'D FOR NORTHWEST WINGWALL.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



NORTHWEST WINGWALL FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

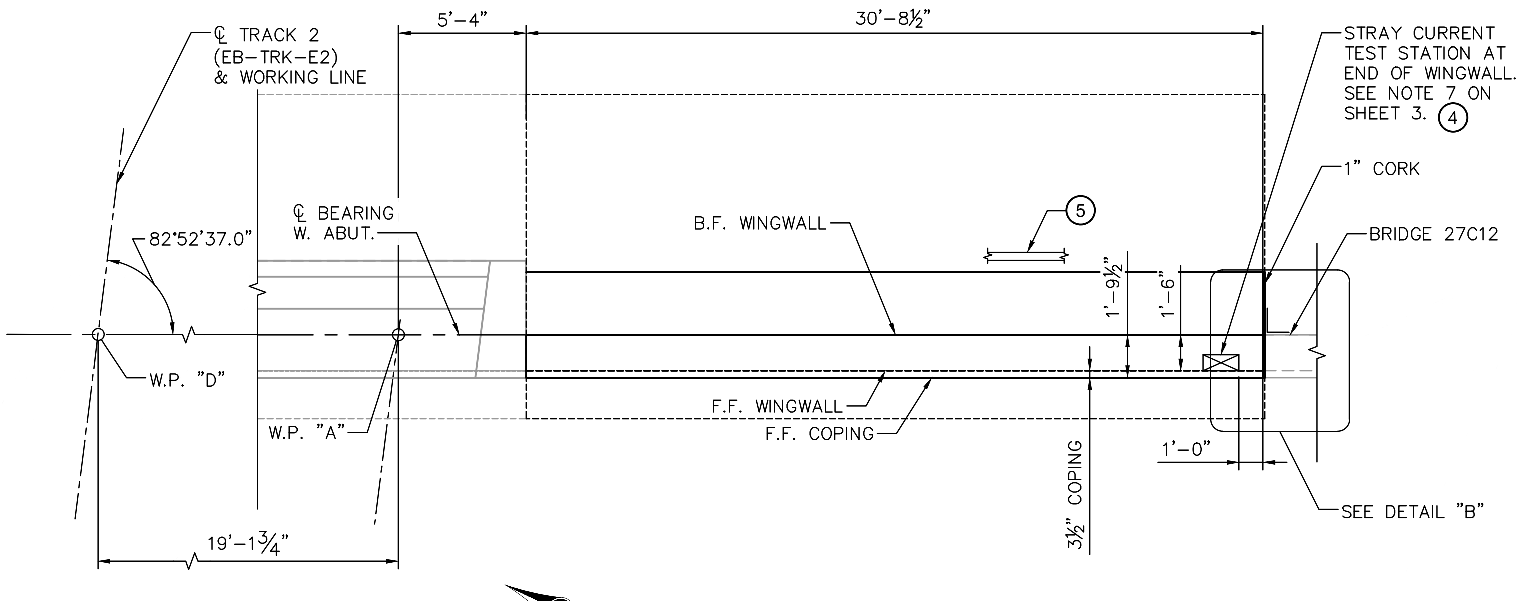
AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

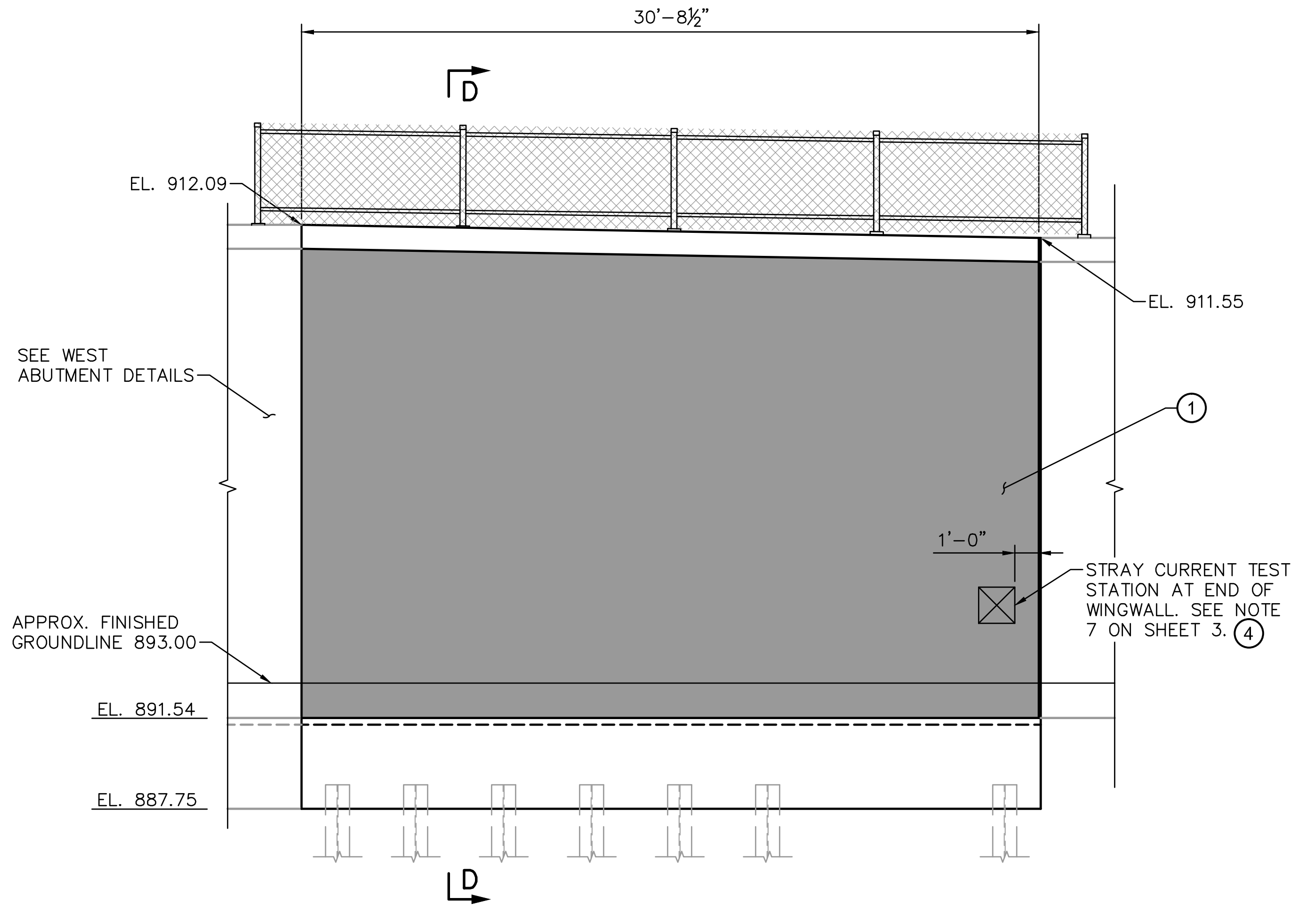
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
WEST ABUTMENT DETAILS 5

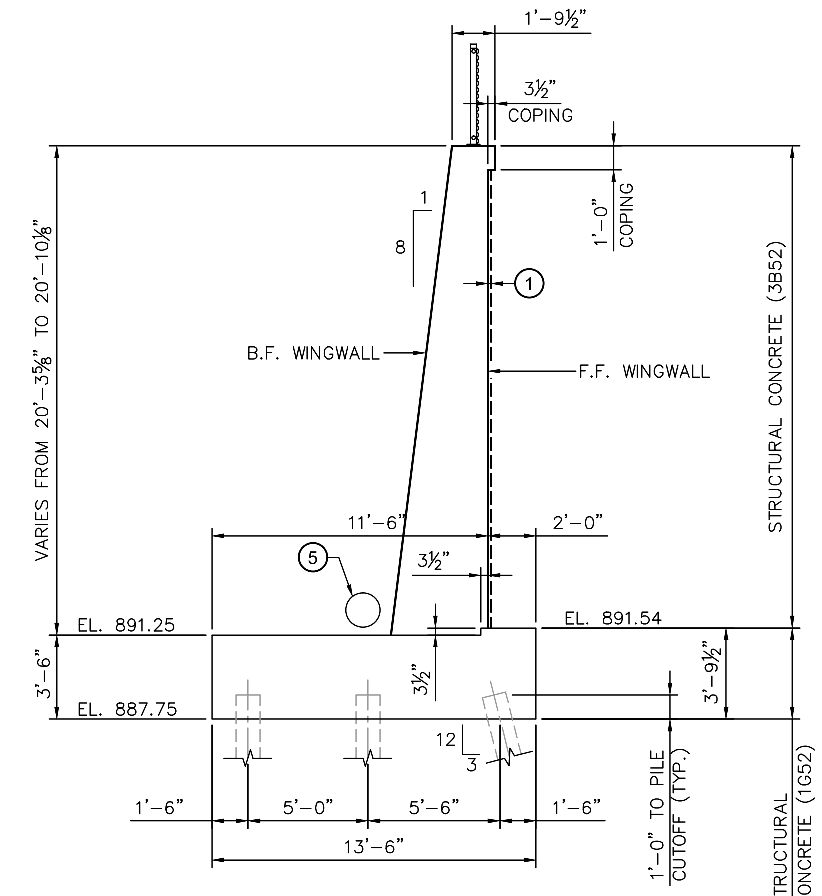
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-005



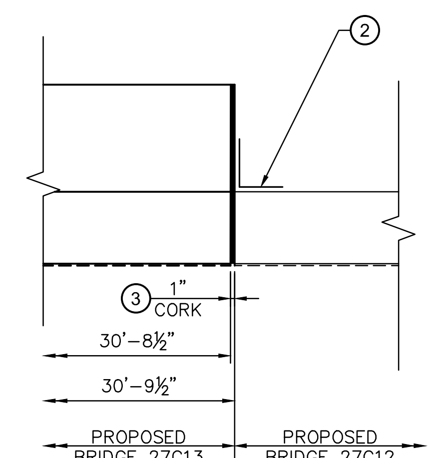
NORTHWEST WINGWALL PLAN



NORTHWEST WINGWALL ELEVATION



SECTION D–D



DETAIL "B"

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
3. ELECTRICAL INSULATING CORK BARRIER. CONTRACTOR AND FIELD ENGINEER SHALL VERIFY WINGWALL CONCRETE IS SEPARATED AND CONDUCTIVE MATERIAL DOES NOT EXTEND THROUGH CORK.
4. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWING EO-SYS-CORR-DTL-001 TO 018. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT (TYP. FOR ALL BLOCKOUTS).
5. 6" DIA. PERFORATED DRAIN PIPE. SEE SHEETS 45 AND 46 FOR DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS | CHECKED BY: DLS
DRAWN BY: JFM | CHECKED BY: DLS

AECOM Kimley»Horn

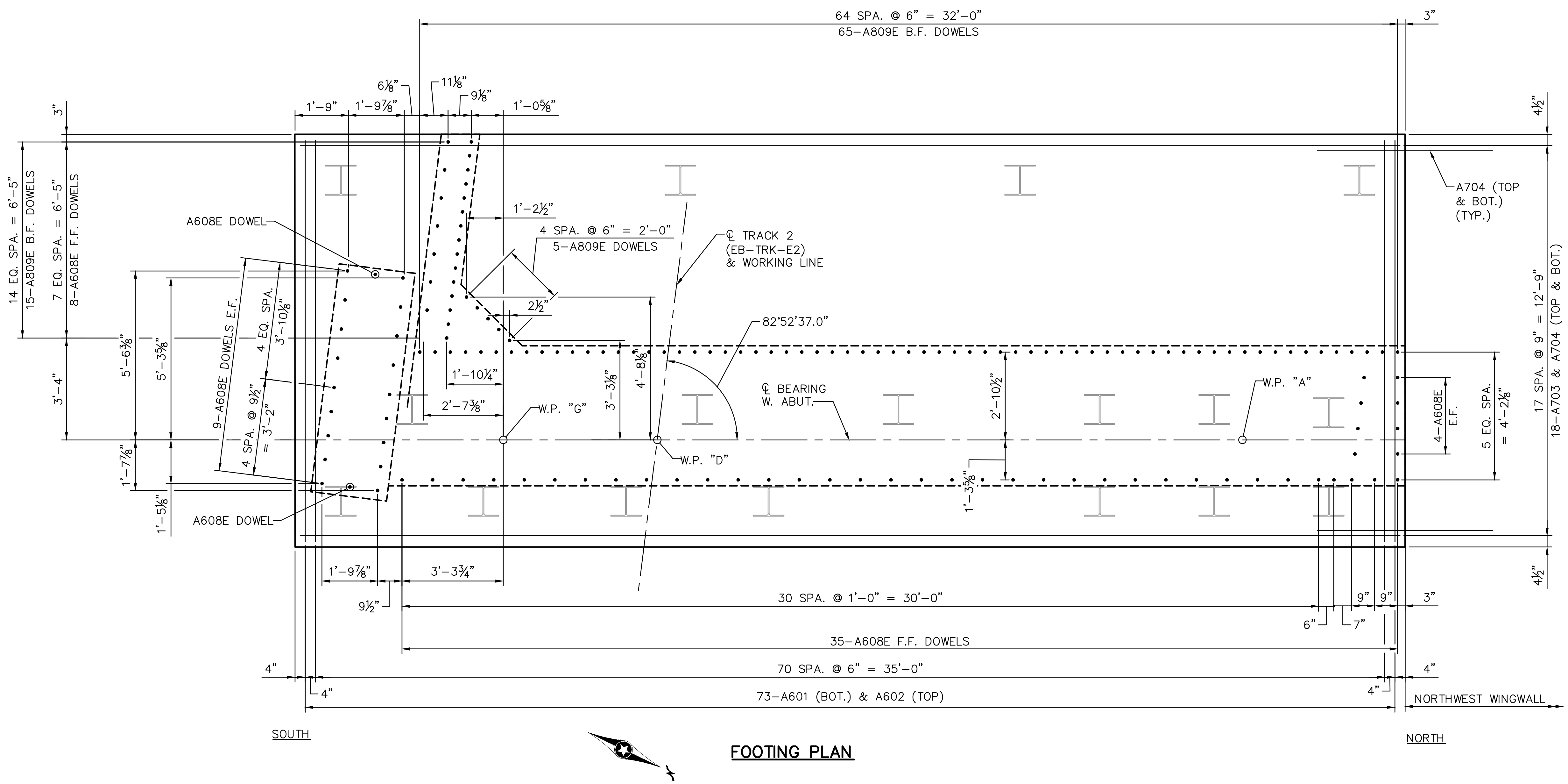
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

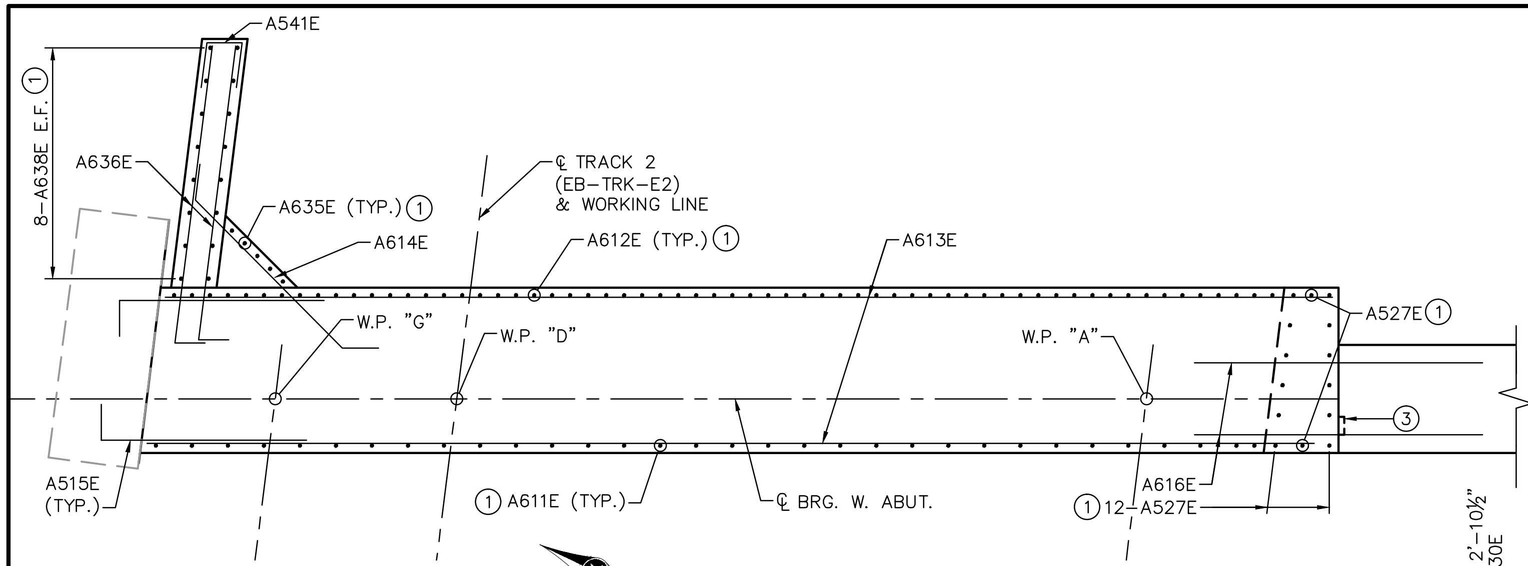
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
WEST ABUTMENT DETAILS 6

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-006

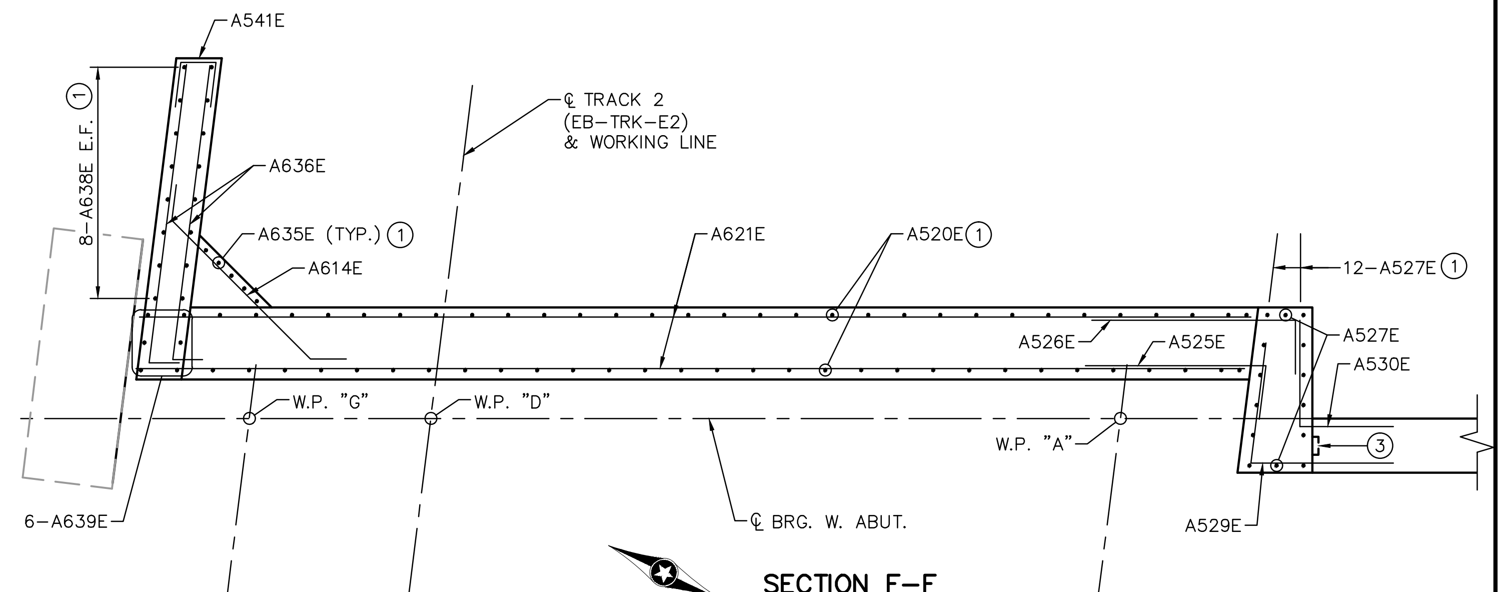
SHEET 10 OF 60



FOOTING PLAN



SECTION E–E



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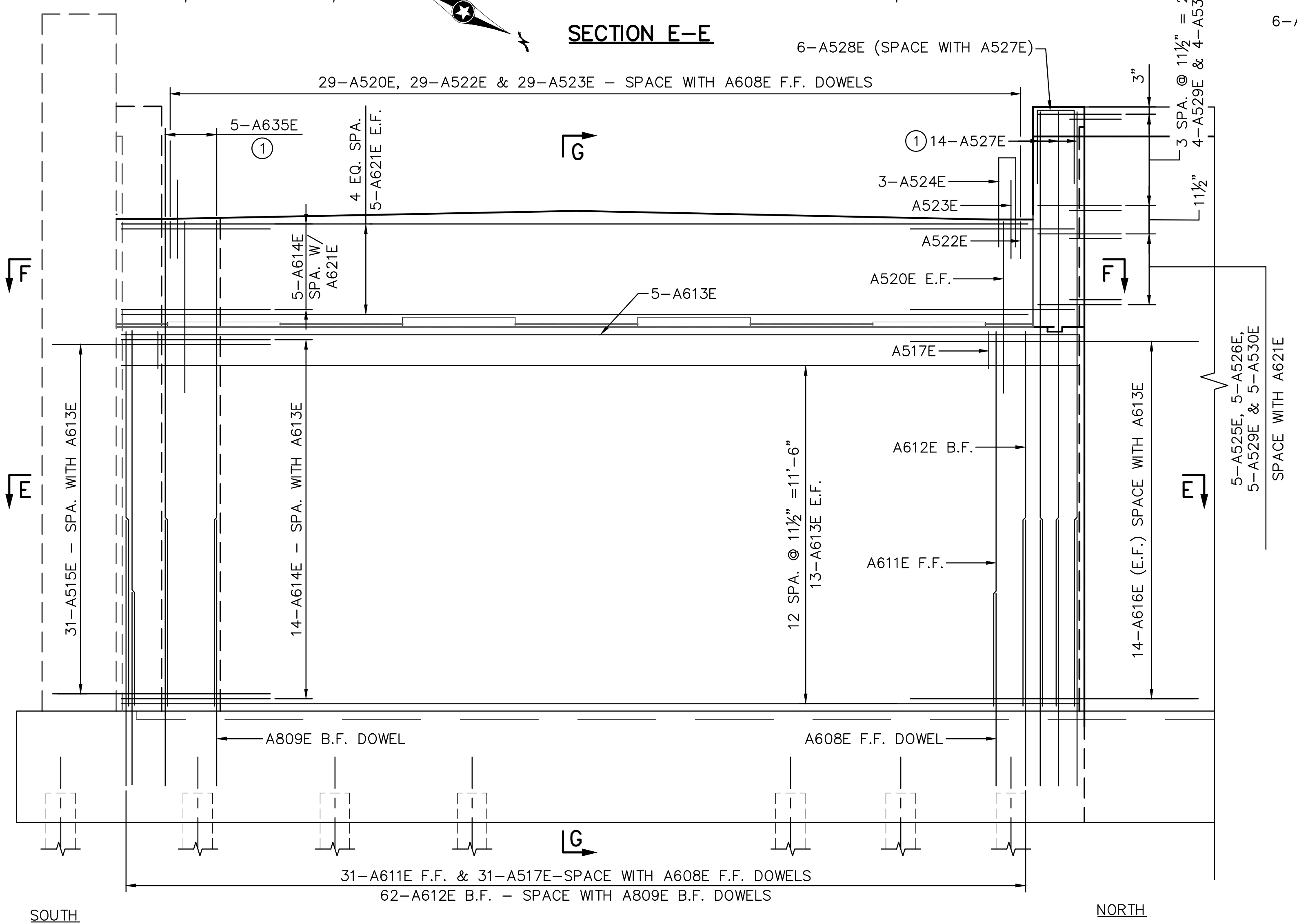
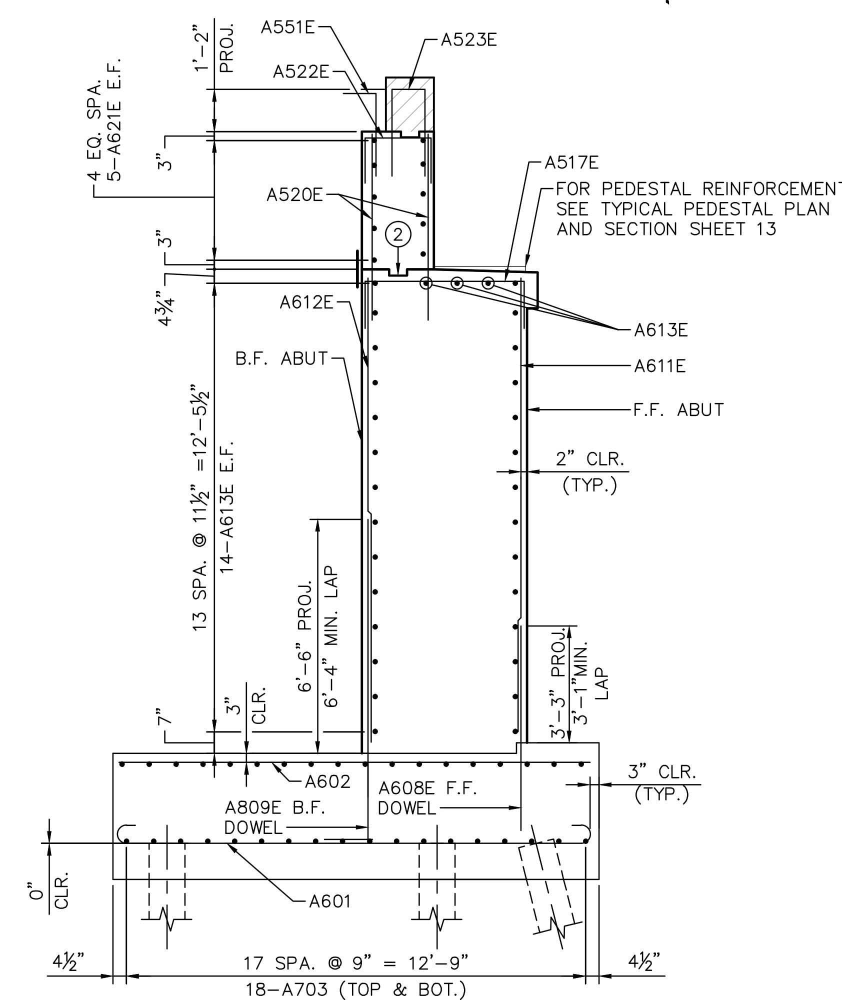


ELEVATION



SECTION G–G

NOTES:

PILASTER REINFORCEMENT EXCLUDED FROM THIS SHEET FOR CLARITY. SEE SHEET 14.

(1) SPACE WITH DOWEL BARS.

(2) PERMISSIBLE CONST. JOINT WITH 2" X 6" KEYWAY.

(3) CONST. JOINT WITH 2" X 6" KEYWAY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

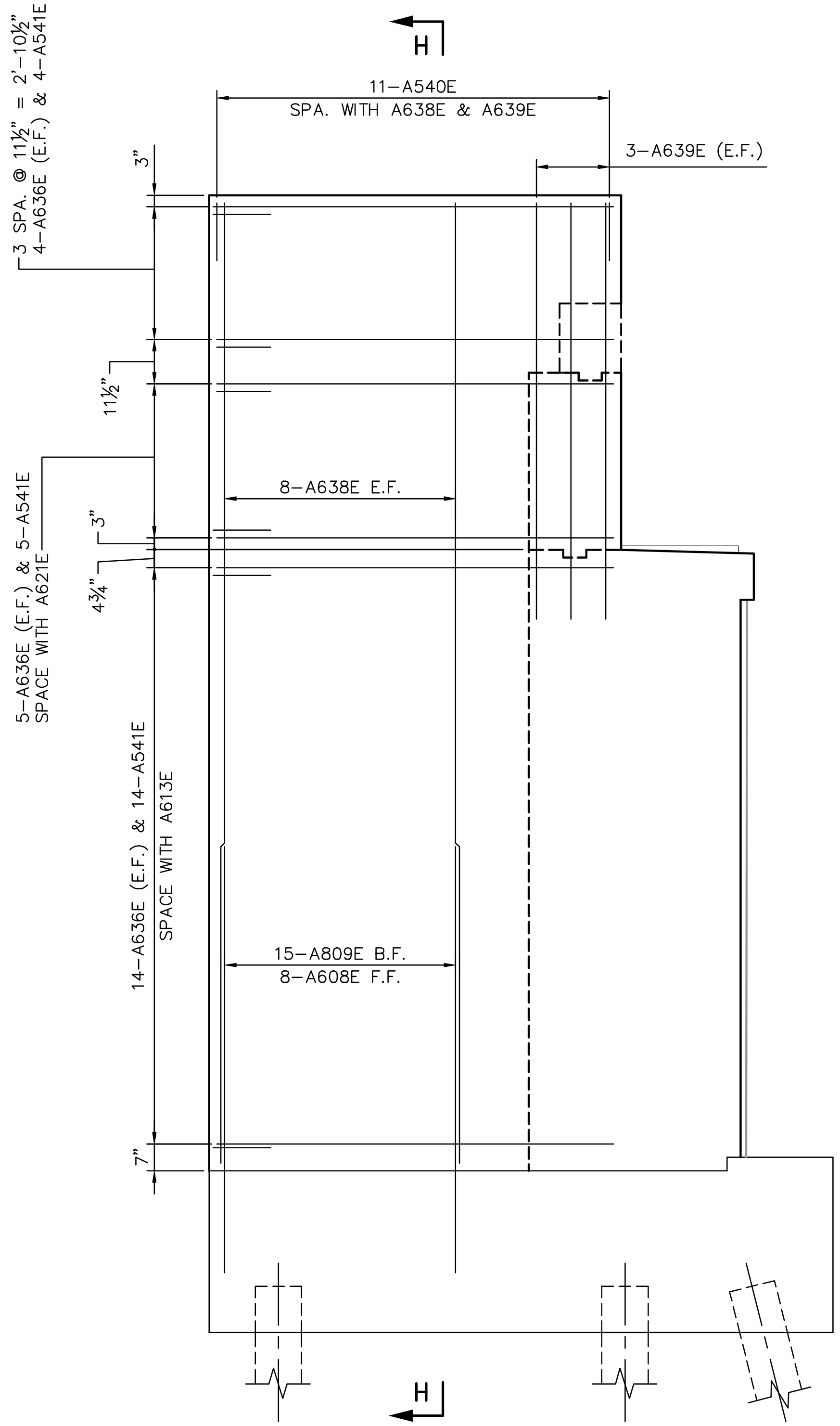
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
WEST ABUTMENT REINFORCEMENT 2

DISCIPLINE: STRUCTURES

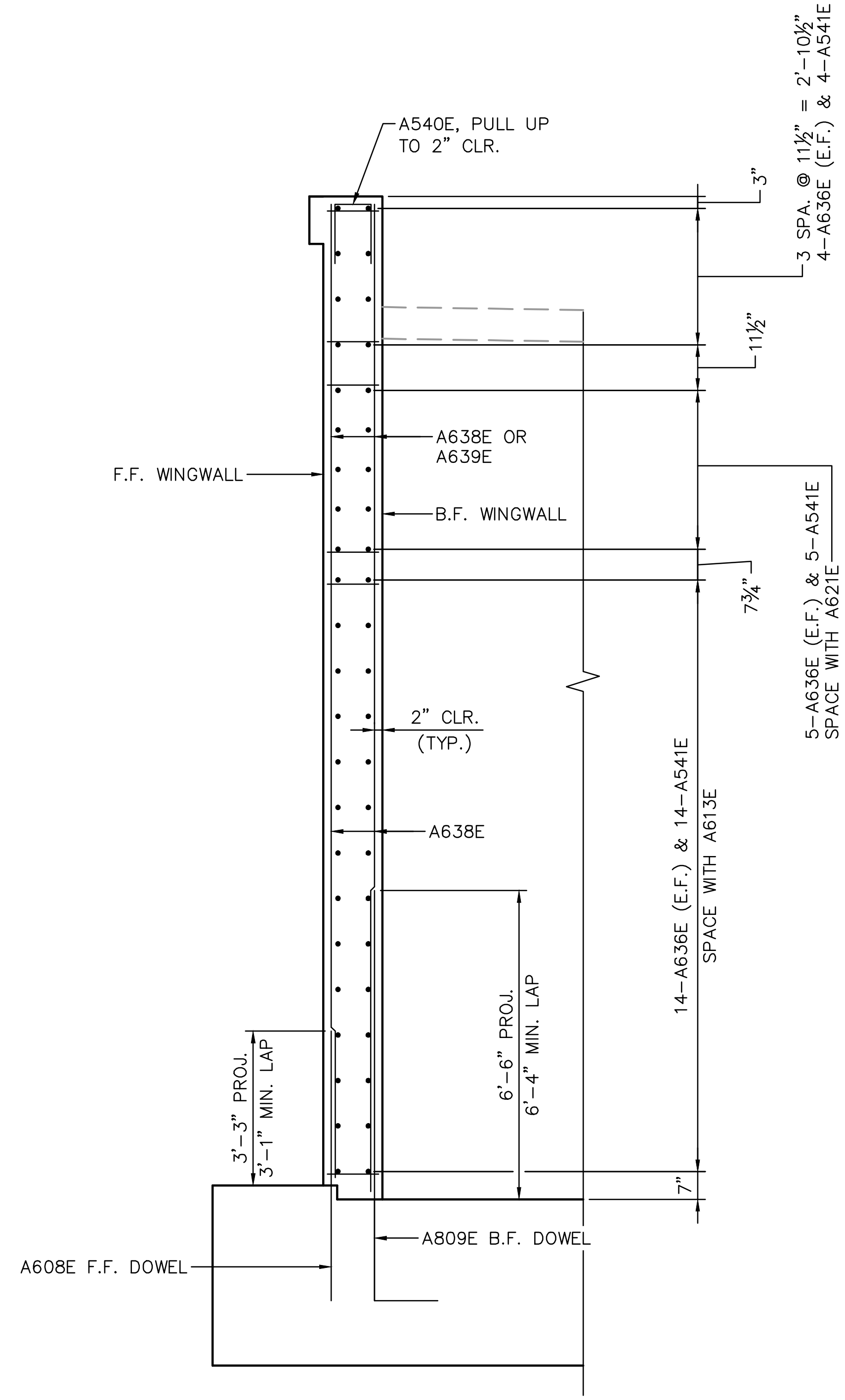
SHEET NAME: CBR27C13-BRG-ABT-008

SHEET 12 OF 60

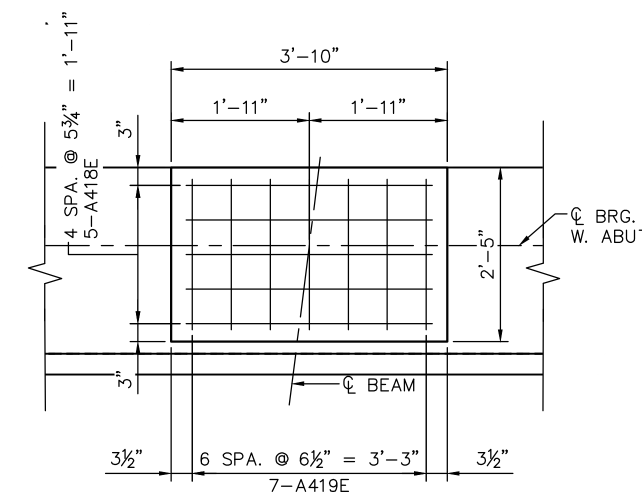
Dec. 14 2015 06:40 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-ABT-008.dwg By: gavin.good



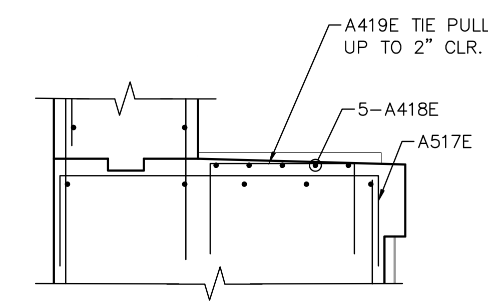
SOUTHWEST WINGWALL ELEVATION



SECTION H–H



TYPICAL PEDESTAL PLAN



TYPICAL PEDESTAL SECTION

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS | CHECKED BY: DLS
DRAWN BY: JFM | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

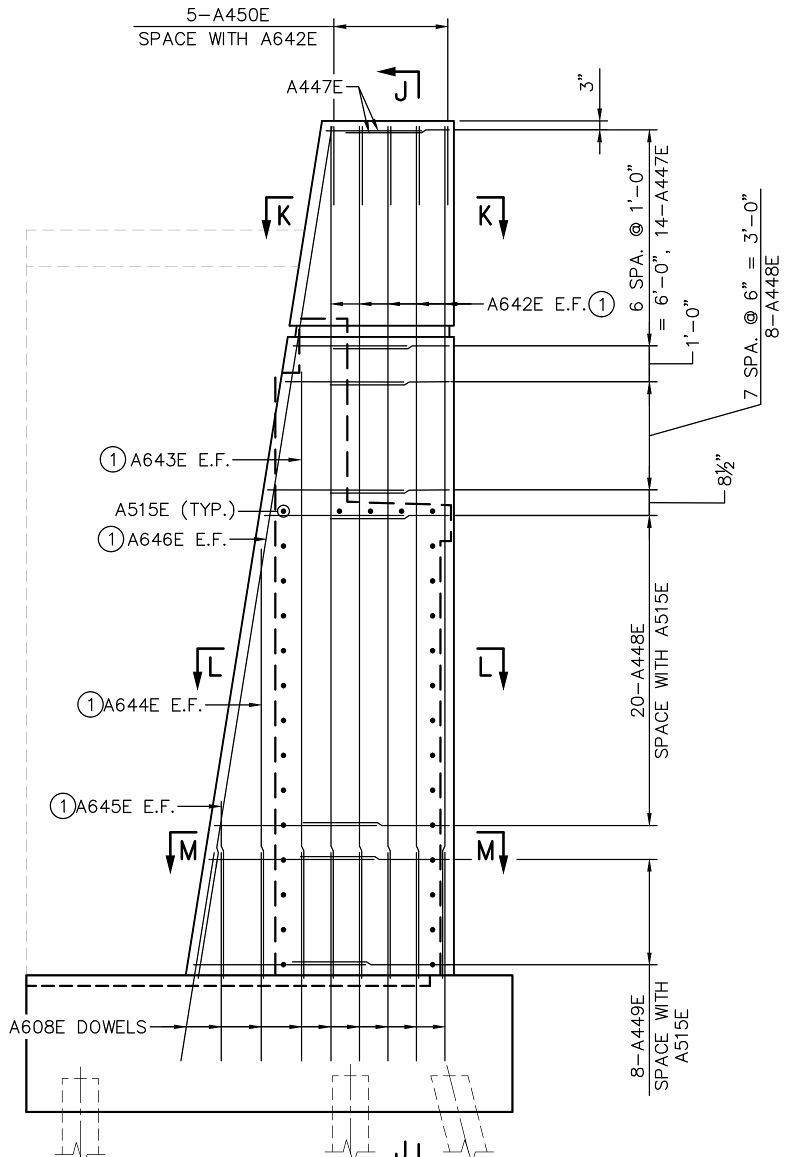
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
WEST ABUTMENT REINFORCEMENT 3

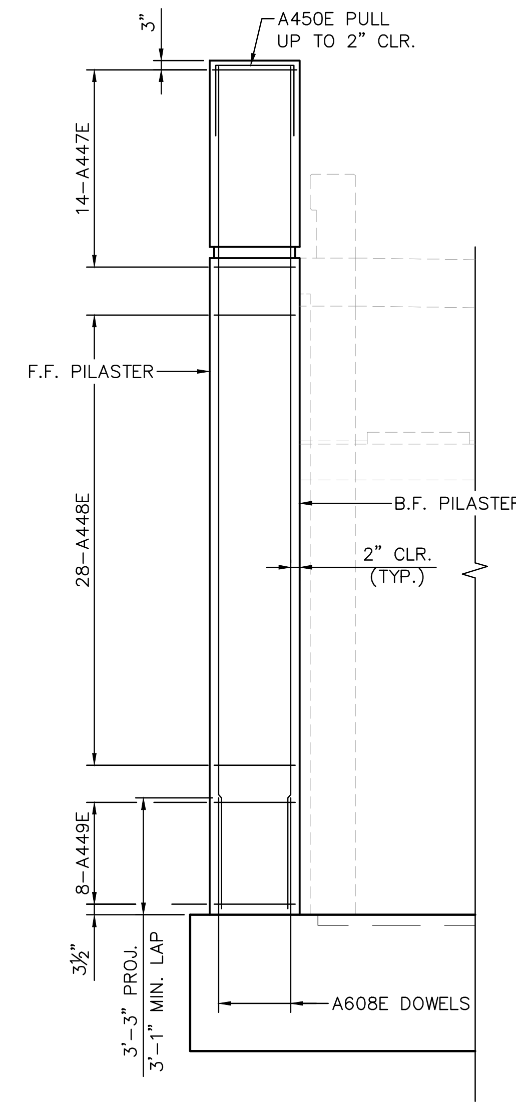
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-ABT-009

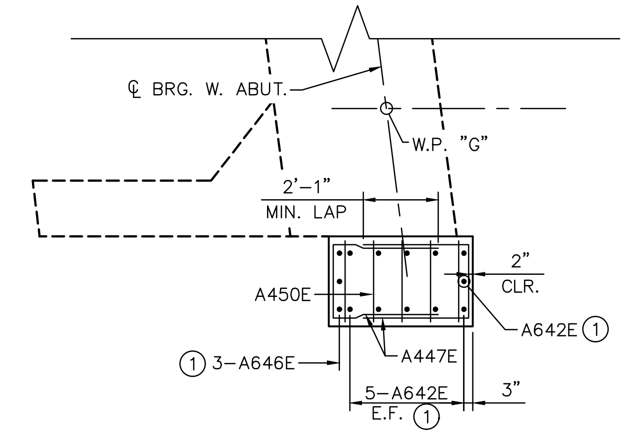
SHEET 13 OF 60



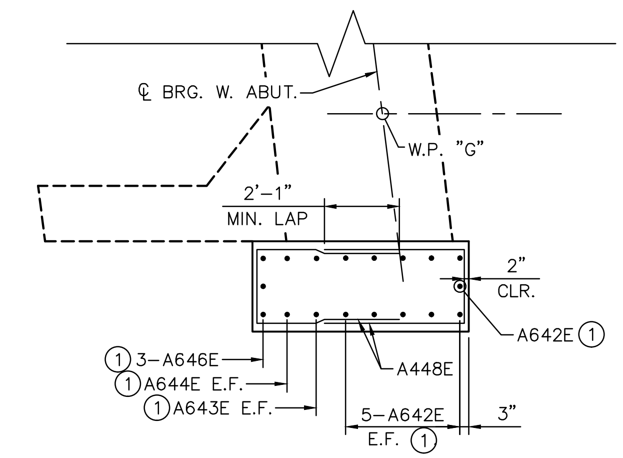
SOUTHWEST PILASTER ELEVATION



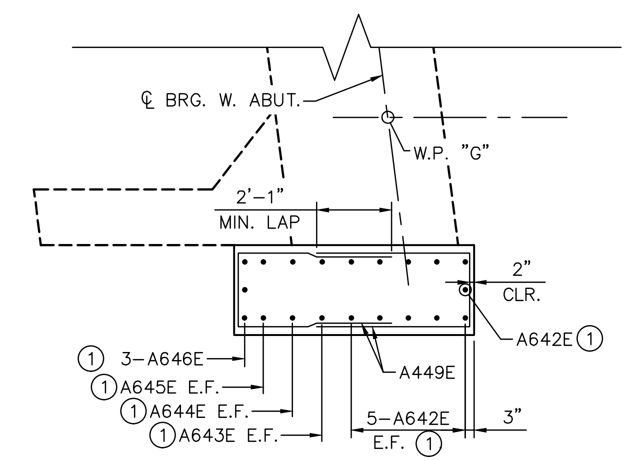
SECTION J-J



SECTION K-K



SECTION L-L



SECTION M-M

NOTES:

1 SPACE WITH DOWEL BARS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

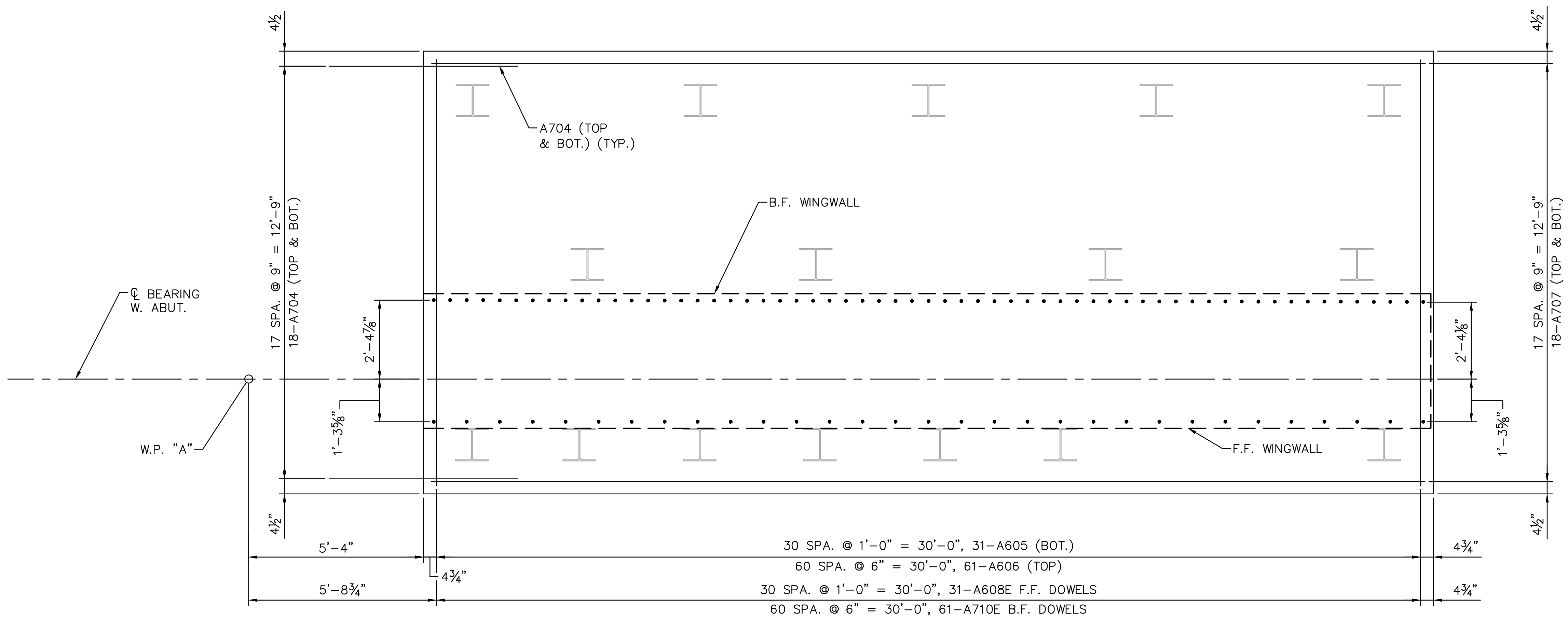
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
WEST ABUTMENT REINFORCEMENT 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-ABT-010

SHEET 14 OF 60



NORTHWEST WINGWALL FOOTING PLAN

Dec. 14 2015 06:43 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-ABT-011.dwg By: gavin.good

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

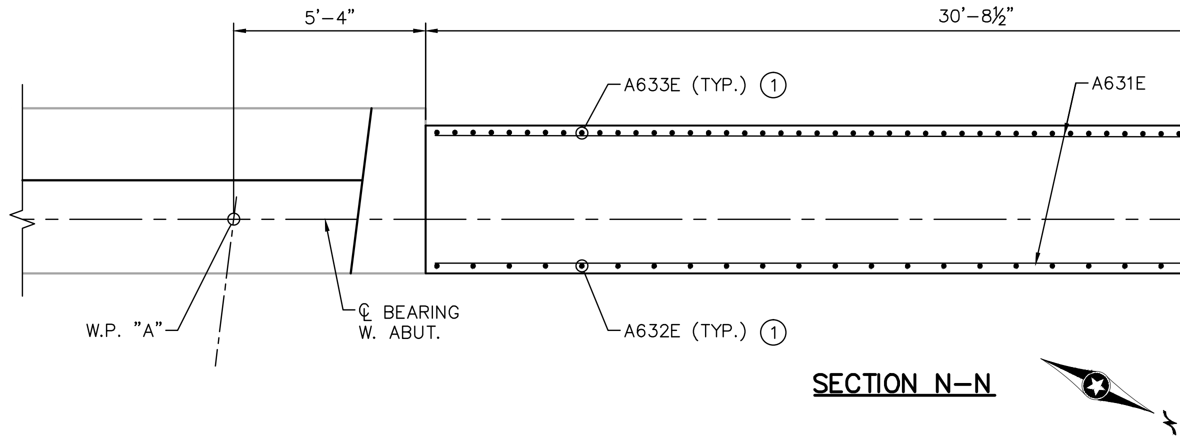
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
WEST ABUTMENT REINFORCEMENT 5

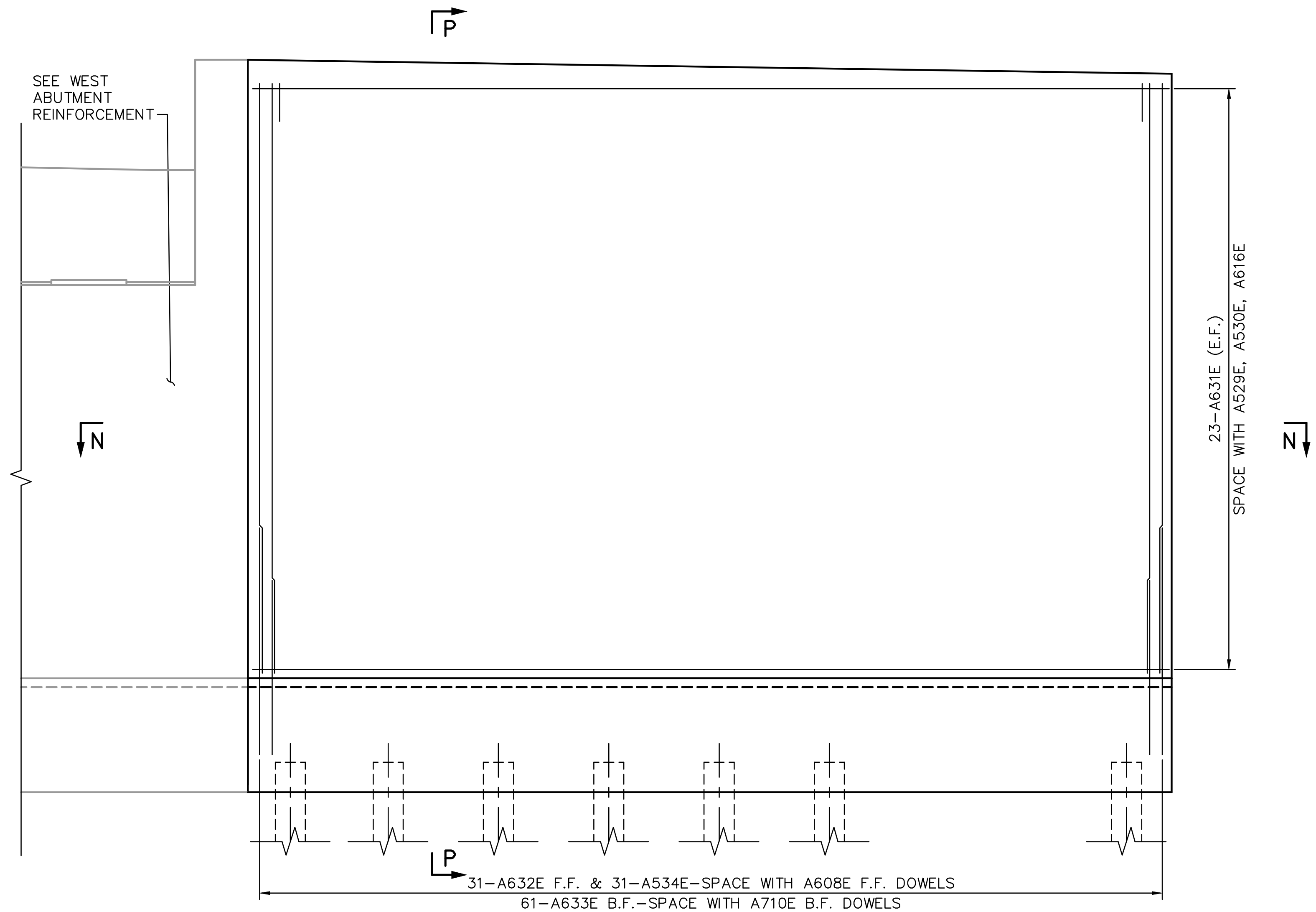
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-ABT-011

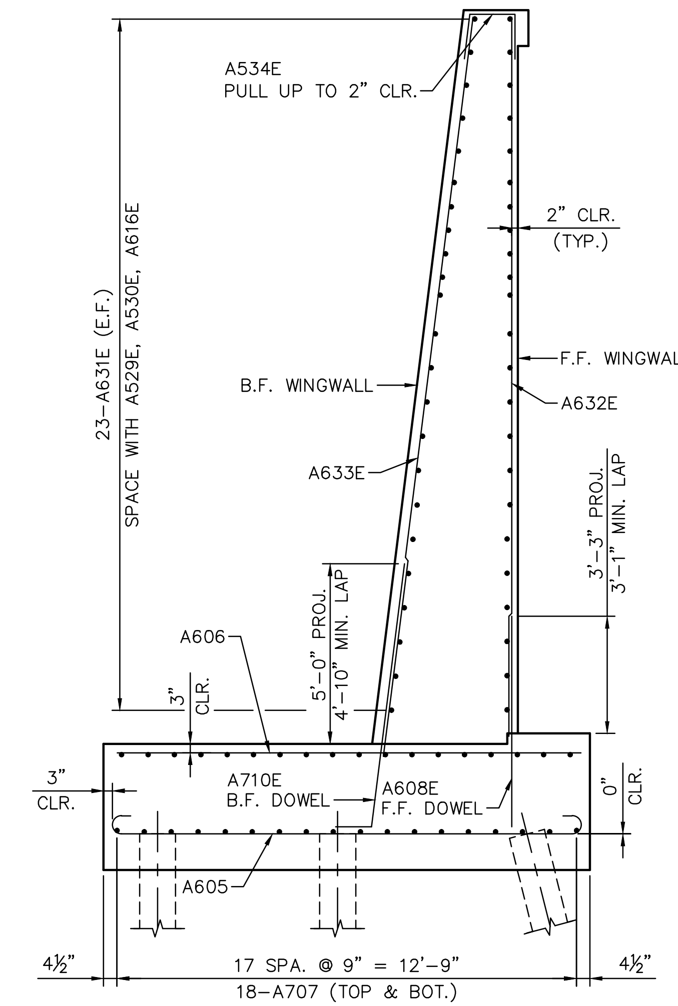
SHEET 15 OF 60



SECTION N-N



NORTHWEST WINGWALL ELEVATION



SECTION P-P

NOTES:
(1) SPACE WITH DOWEL BARS

Dec. 14 2015 06:24 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-ABT-012.dwg By: Joe.Menapace

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS | CHECKED BY: DLS
DRAWN BY: JFM | CHECKED BY: DLS

AECOM Kimley»Horn

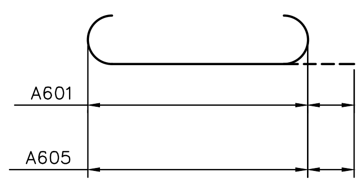
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

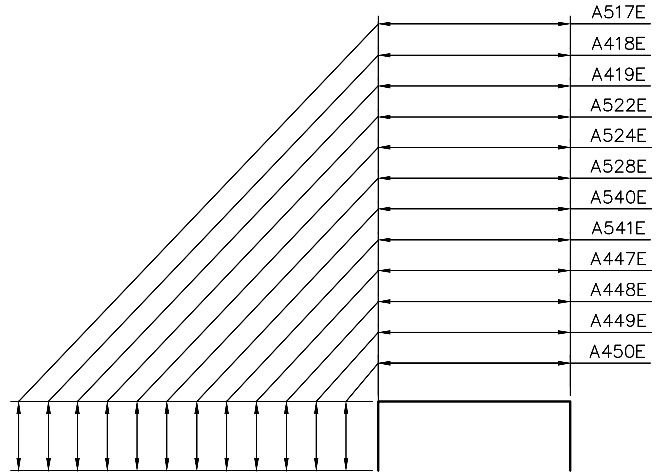
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
WEST ABUTMENT REINFORCEMENT 6

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-012

SHEET 16 OF 60



A601, A605



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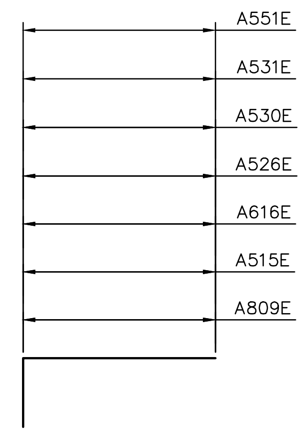

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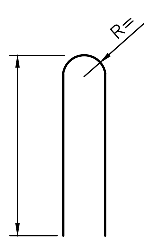

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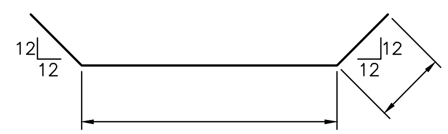

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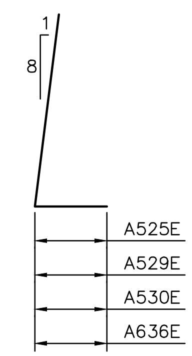

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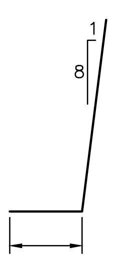

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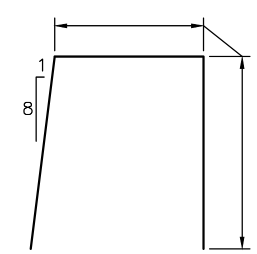


A534E

BILL OF REINFORCEMENT FOR WEST ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
A601	0	'-"	BENT	FOOTING, BOT., TRANS.
A602	0	'-"	STR.	FOOTING, TOP, TRANS.
A703	0	'-"	STR.	FOOTING, LONG.
A704	0	'-"	STR.	FOOTING, LONG. DOWEL
A605	0	'-"	BENT	N WINGWALL FOOTING, BOT., TRANS.
A606	0	'-"	STR.	N WINGWALL FOOTING, TOP, TRANS.
A707	0	'-"	STR.	N WINGWALL FOOTING, LONG.
A608E	0	'-"	STR.	F.F. DOWELS
A809E	0	'-"	BENT	ABUT. B.F. DOWELS
A710E	0	'-"	BENT	N WINGWALL B.F. DOWELS
A611E	0	'-"	STR.	F.F. STEM VERT.
A612E	0	'-"	STR.	B.F. STEM VERT.
A613E	0	'-"	STR.	STEM LONG.
A614E	0	'-"	BENT	B.F. FILLET LONG.
A515E	0	'-"	BENT	PILASTER DOWEL LONG.
A616E	0	'-"	STR.	N WINGWALL STEM LONG. DOWEL
A517E	0	'-"	BENT	STEM TIE
A418E	0	'-"	BENT	PEDESTAL TIE
A419E	0	'-"	BENT	PEDESTAL TIE
A520E	0	'-"	STR.	BACKWALL VERT.
A621E	0	'-"	STR.	BACKWALL LONG.
A522E	0	'-"	BENT	BACKWALL TIE
A523E	0	'-"	BENT	PAVING BLOCK TIE
A524E	0	'-"	BENT	PARAPET TIE
A525E	0	'-"	BENT	MASKWALL LONG. BACKWALL DOWEL
A526E	0	'-"	BENT	MASKWALL LONG. BACKWALL DOWEL
A527E	0	'-"	STR.	MASKWALL VERT.
A528E	0	'-"	BENT	MASKWALL TOP TIE
A529E	0	'-"	STR.	N WINGWALL MASKWALL LONG. DOWEL
A530E	0	'-"	STR.	N WINGWALL MASKWALL LONG. DOWEL
A631E	0	'-"	STR.	N WINGWALL LONG.
A632E	0	'-"	STR.	F.F. N WINGWALL VERT.
A633E	0	'-"	STR.	B.F. N WINGWALL VERT.
A534E	0	'-"	BENT	N WINGWALL TOP TIE
A635E	0	'-"	STR.	B.F. FILLET VERT.
A636E	0	'-"	BENT	S WINGWALL LONG.
A637E	0	'-"	STR.	S WINGWALL LONG.
A638E	0	'-"	STR.	S WINGWALL VERT.
A639E	0	'-"	STR.	S WINGWALL VERT.
A540E	0	'-"	BENT	S WINGWALL TIE
A541E	0	'-"	BENT	S WINGWALL END TIE
A642E	0	'-"	STR.	PILASTER VERT.
A643E	0	'-"	STR.	PILASTER VERT.
A644E	0	'-"	STR.	PILASTER VERT.
A645E	0	'-"	STR.	PILASTER VERT.
A646E	0	'-"	STR.	PILASTER DIAG.
A447E	0	'-"	BENT	PILASTER TIE
A448E	0	'-"	BENT	PILASTER TIE
A449E	0	'-"	BENT	PILASTER TIE
A450E	0	'-"	BENT	PILASTER TOP TIE
A551E	0	'-"	BENT	TRANSITION SLAB TIE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
WEST ABUTMENT REINFORCEMENT 7

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-013

SHEET 17 OF 60

EAST ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	77.2
FACTORED LIVE LOAD	35.7
* FACTORED DESIGN LOAD	112.9

* BASED ON STRENGTH I LOAD COMBINATION.

EAST ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE FOR H-PILES Rn - TONS/PILE		
FIELD CONTROL METHOD	φdyn	* Rn
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{W \times H}{1000}} x log\left(\frac{10}{S}\right)$	0.60	189
PDA	0.65	174

* Rn = (FACTORED DESIGN LOAD) / φdyn

GENERAL PILE NOTES:

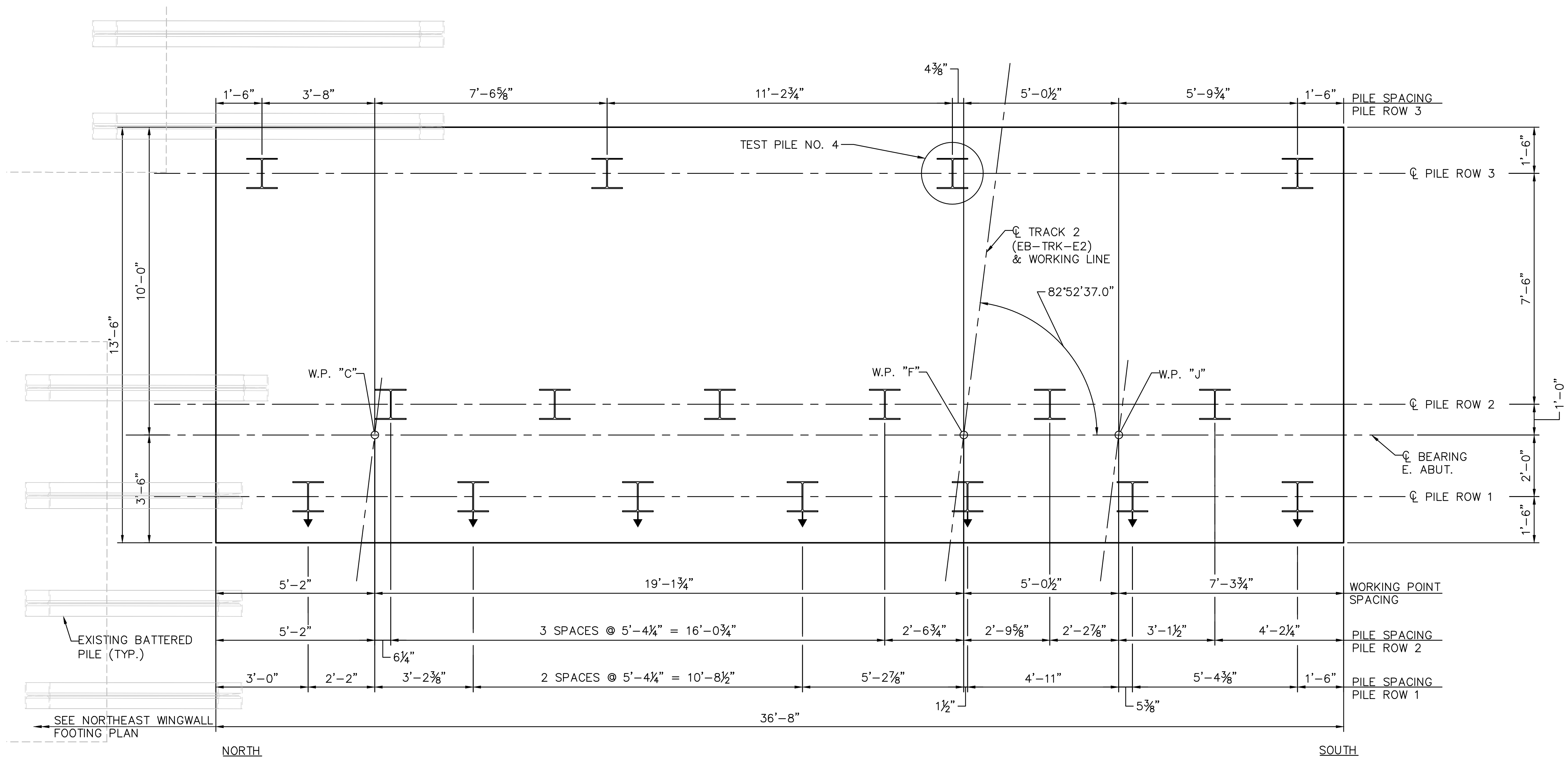
1	HP12x53 STEEL TEST PILE 80 FT. LONG
16	HP12x53 STEEL PILES EST. 80 FT. LENGTH
17	HP12x53 STEEL PILES REQ'D FOR EAST ABUT.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

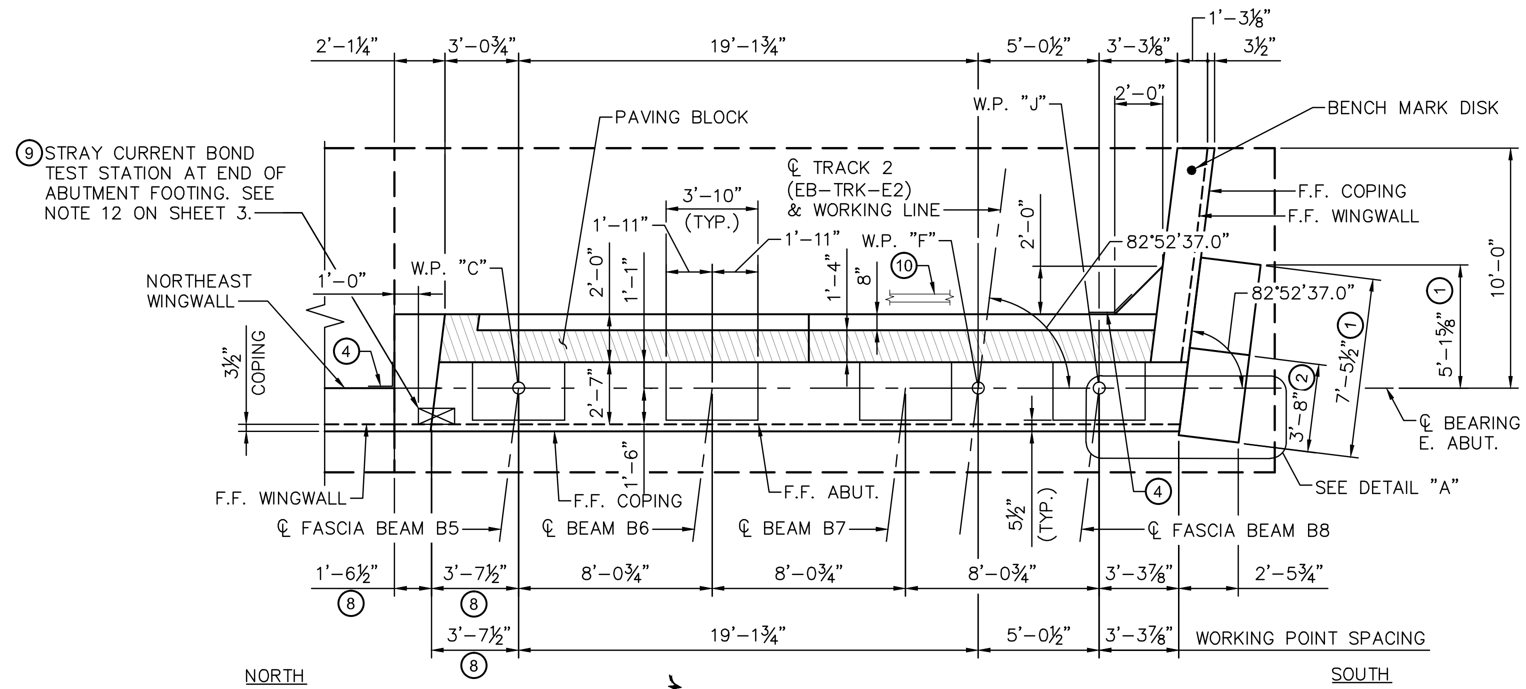
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

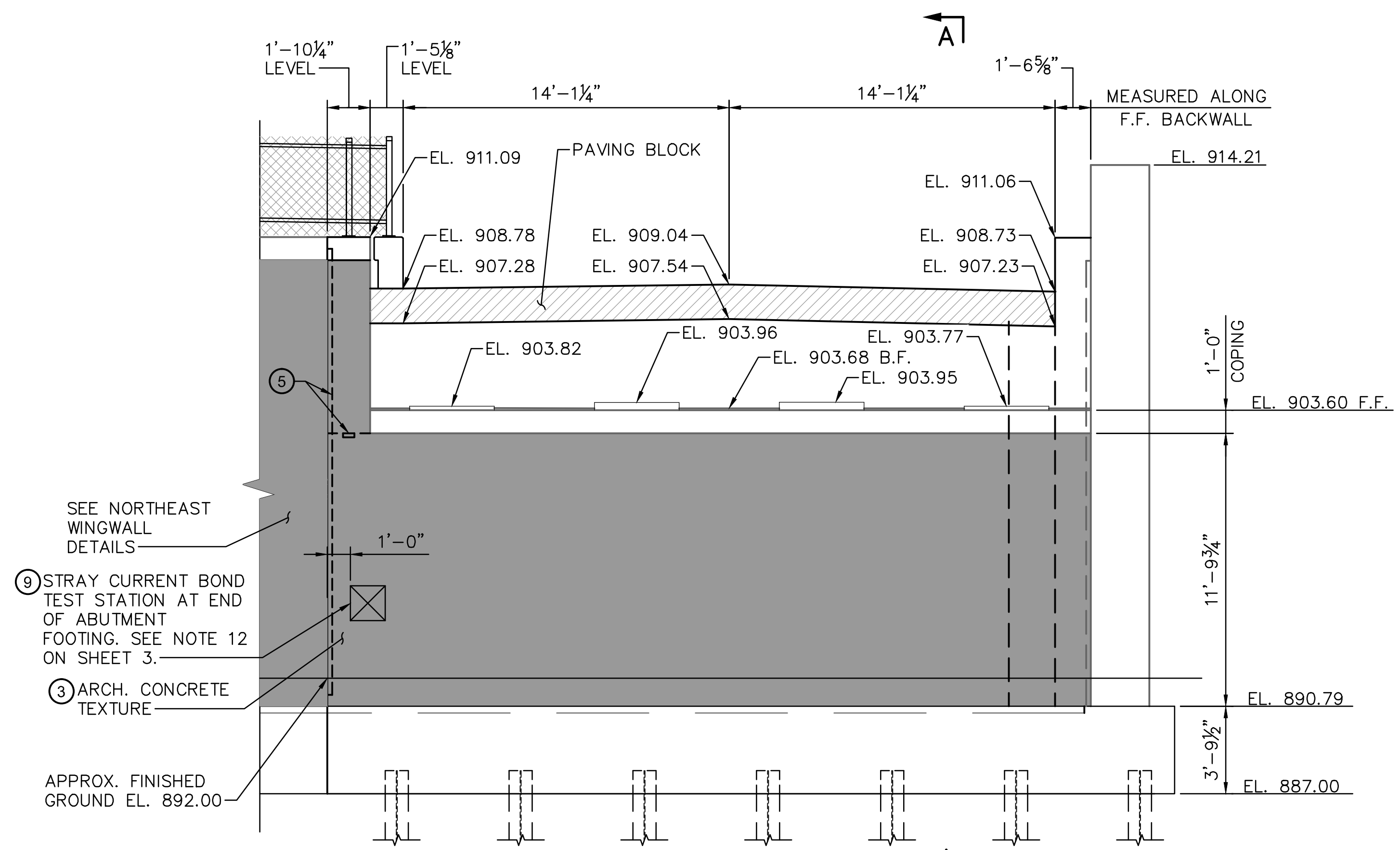
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
EAST ABUTMENT DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-014

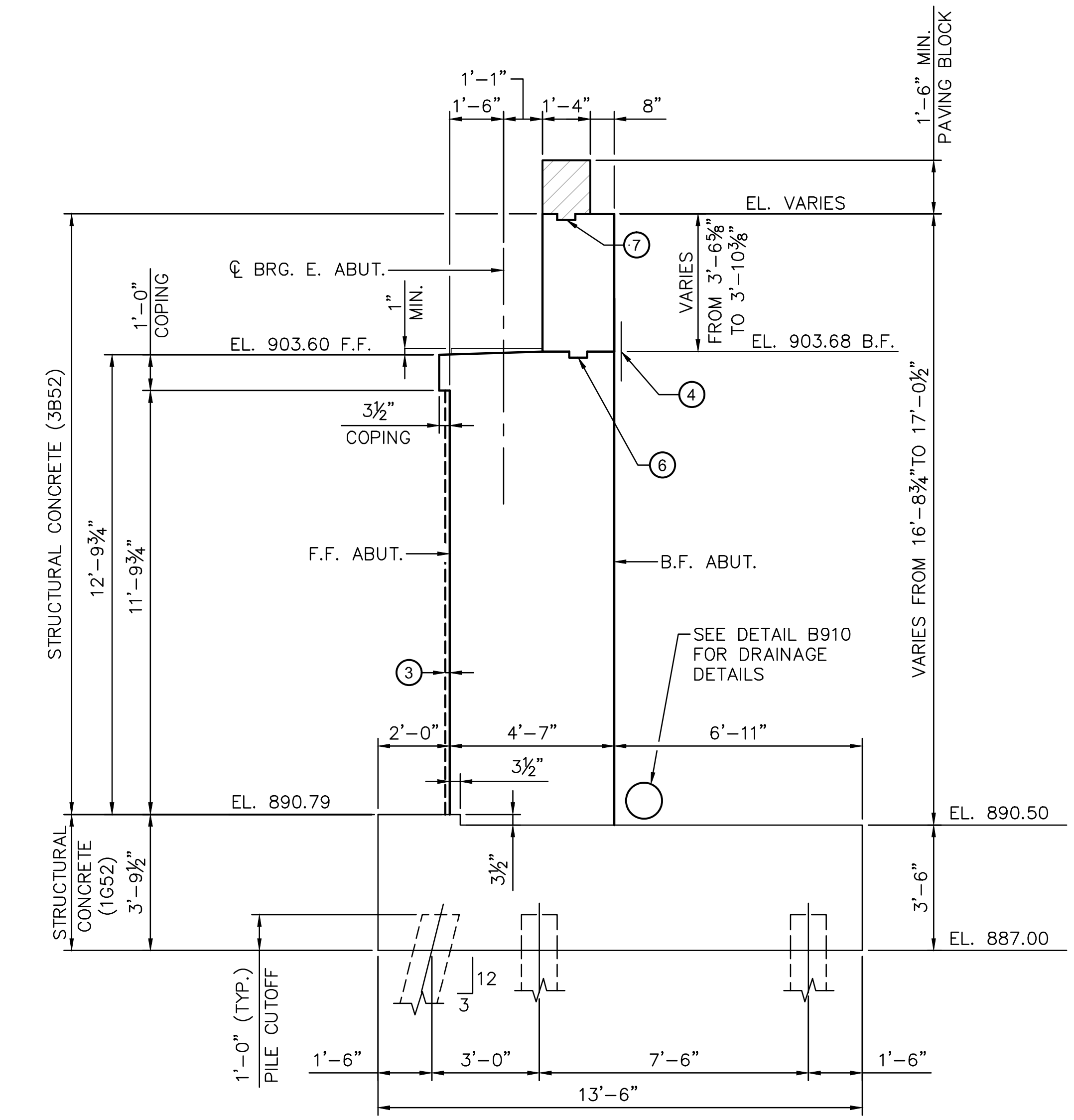
SHEET 18 OF 60



PLAN



ELEVATION



SECTION A-A

NOTES:

PAVING BLOCK HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

SEE SHEET 20 FOR DETAIL "A".

1. DIMENSION AT TOP OF FOOTING.
2. DIMENSION AT TOP OF PILASTER.
3. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
4. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
5. CONSTRUCTION JOINT WITH 2" X 6" KEY.
6. PERMISSIBLE CONSTRUCTION JOINT WITH 2" x 6" KEY CENTERED IN WALL.
7. CONSTRUCTION JOINT WITH 2" X 4" KEY.
8. MEASURED AT F.F. ABUT.
9. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWING E0-SYS-CORR-DTL-001 TO 018. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT (TYP. FOR ALL BLOCKOUTS).
10. 4" DIA. PERFORATED DRAIN PIPE. SEE DETAIL B910.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

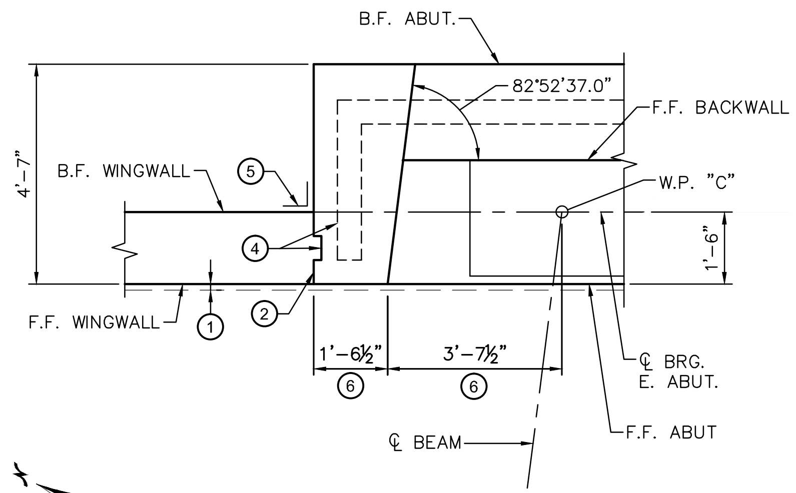
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

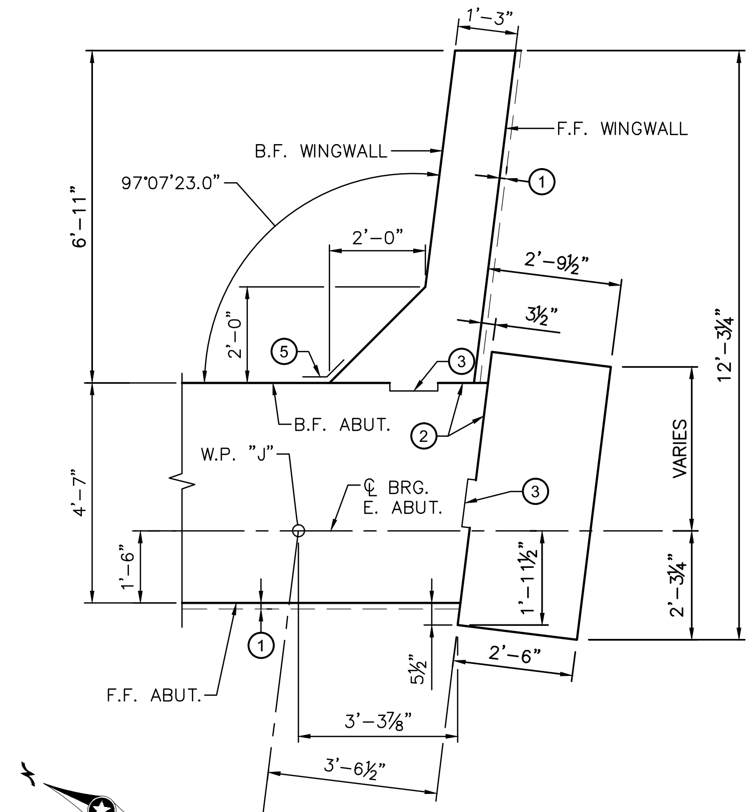
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
EAST ABUTMENT DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-015

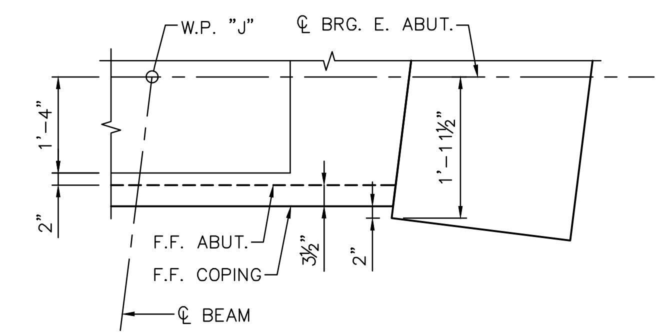
SHEET 19 OF 60



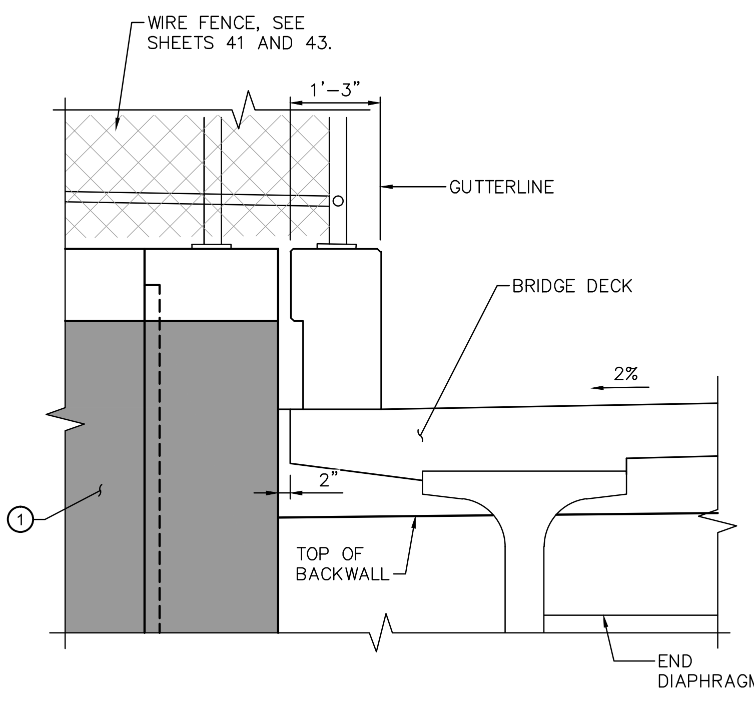
NORTHEAST CORNER PLAN
(SECTION BELOW ABUTMENT COPING)



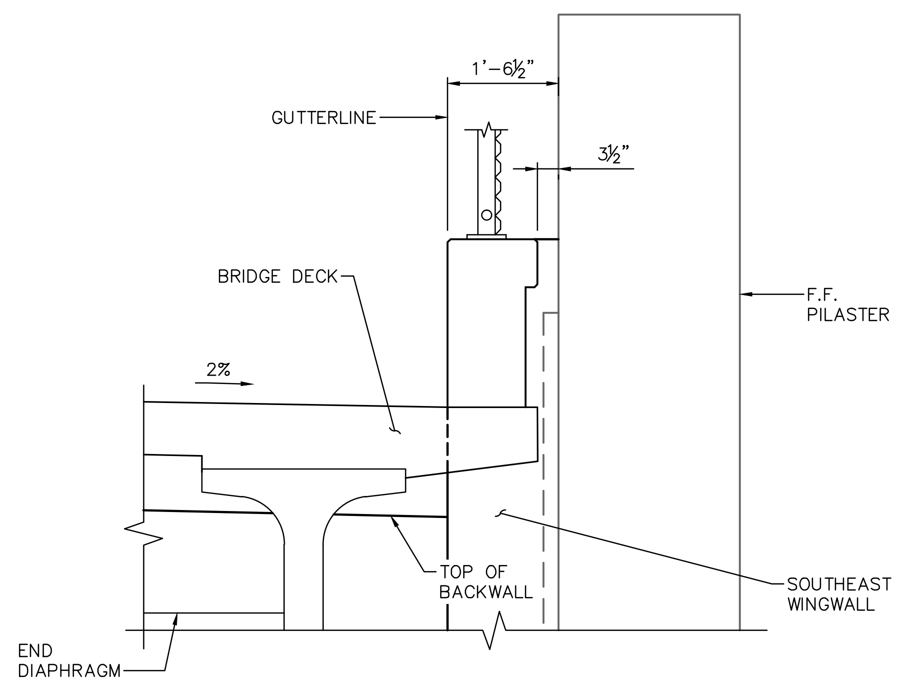
SOUTHEAST WINGWALL PLAN
(SECTION BELOW PAVING BLOCK)



DETAIL "A"



NORTHEAST CORNER ELEVATION



SOUTHEAST CORNER ELEVATION

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. CONSTRUCTION JOINT. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.
3. 2" X 12" KEYWAY
4. 2" X 6" KEYWAY
5. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
6. MEASURED AT F.F. ABUT.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS | CHECKED BY: DLS
DRAWN BY: KAG | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

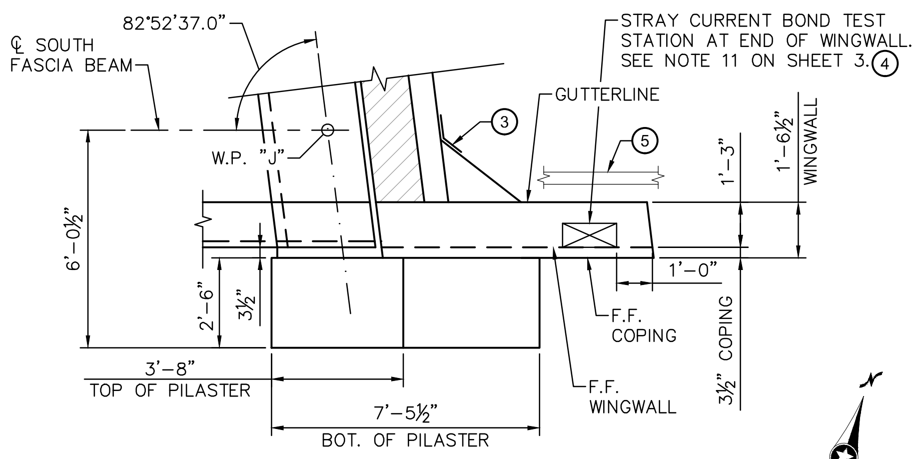
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

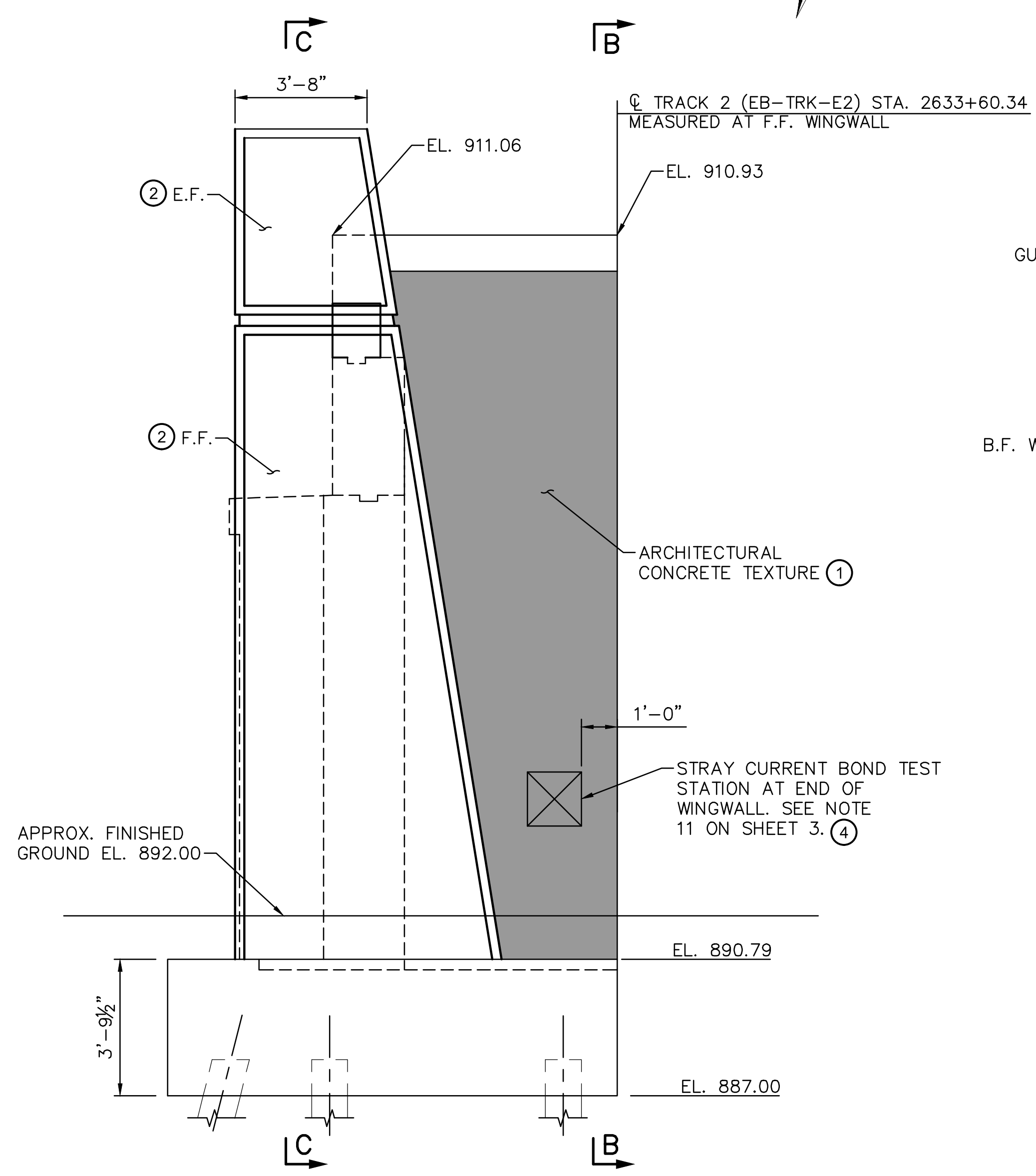
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
EAST ABUTMENT DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-016

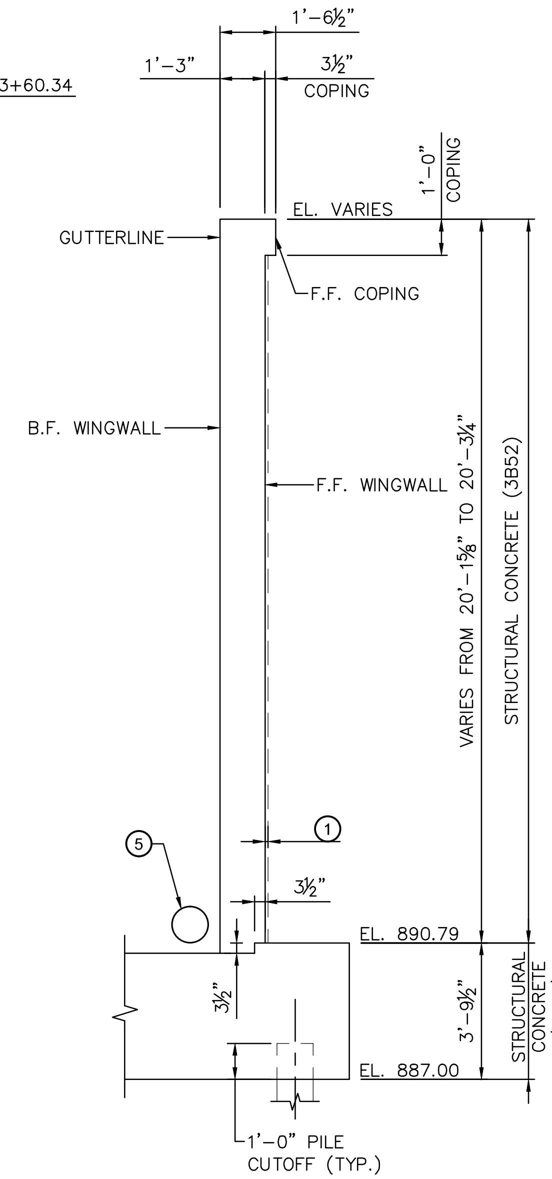
SHEET 20 OF 60



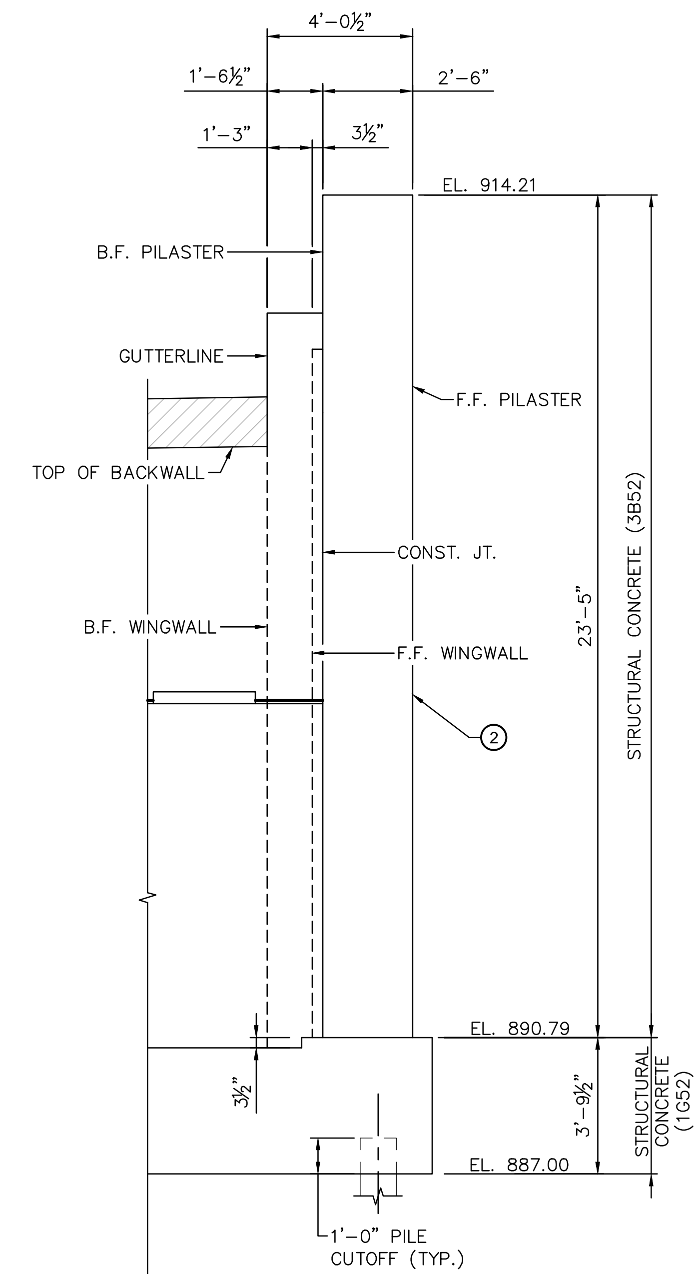
SOUTHEAST WINGWALL PLAN



SOUTHEAST WINGWALL ELEVATION



SECTION B–B



SECTION C–C

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 0.5".
3. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
4. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWING EO-SYS-CORR-DTL-001 TO 018. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT (TYP. FOR ALL BLOCKOUTS).
5. 4" DIA. PERFORATED DRAIN PIPE. SEE DETAIL B910.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
EAST ABUTMENT DETAILS 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-017

SHEET 21 OF 60

NORTHEAST WINGWALL COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	84.3
FACTORED LIVE LOAD	33.0
* FACTORED DESIGN LOAD	117.3
* BASED ON STRENGTH I LOAD COMBINATION.	

NORTHEAST WINGWALL REQUIRED NOMINAL PILE BEARING RESISTANCE FOR H-PILES Rn - TONS/PILE		
FIELD CONTROL METHOD	φdyn	* Rn
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{W \times H}{1000}} x\log\left(\frac{10}{S}\right)$	0.60	196
PDA	0.65	181
* Rn = (FACTORED DESIGN LOAD) / φdyn		

GENERAL PILE NOTES:

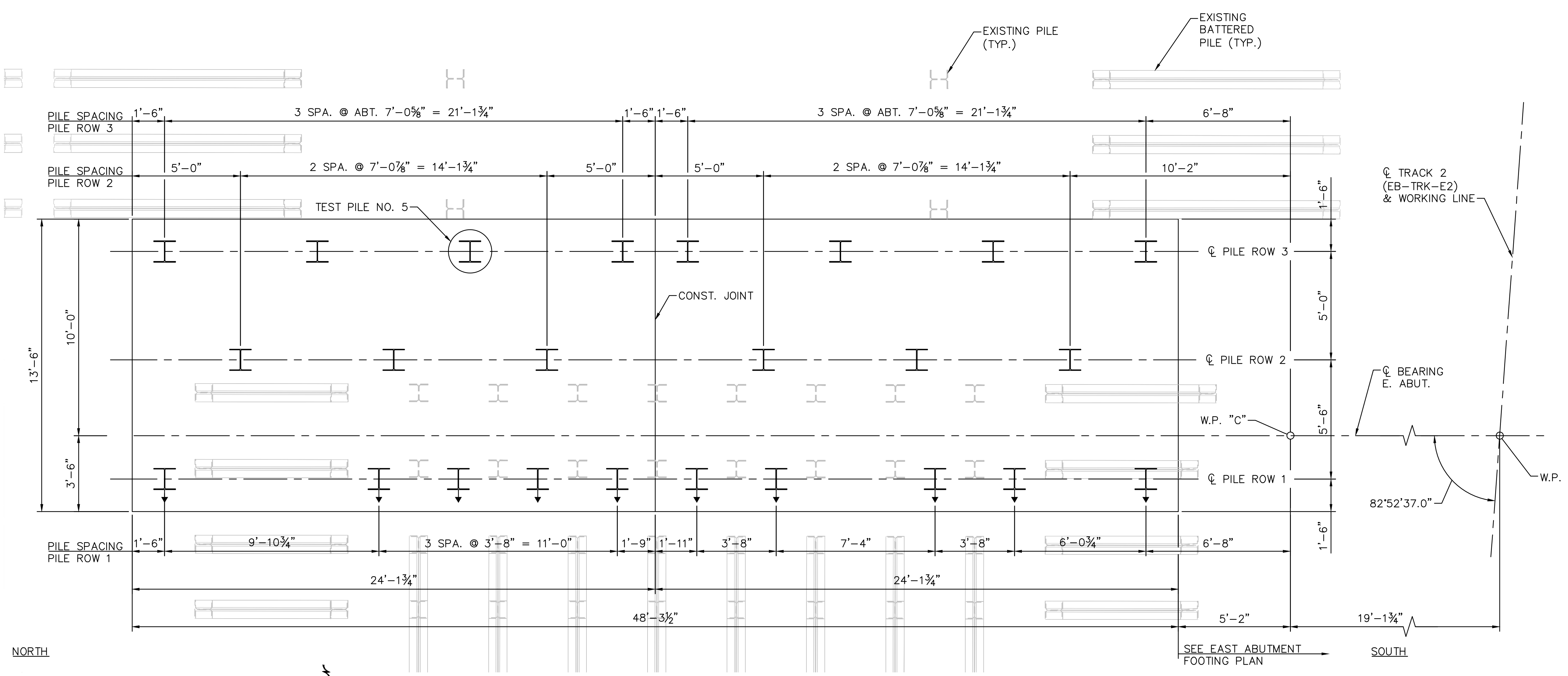
1	HP12x53 STEEL TEST PILE 80 FT. LONG
23	HP12x53 STEEL PILES EST. 80 FT. LENGTH
24	HP12x53 STEEL PILES REQ'D FOR NORTHEAST WING.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



NORTHEAST WINGWALL FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

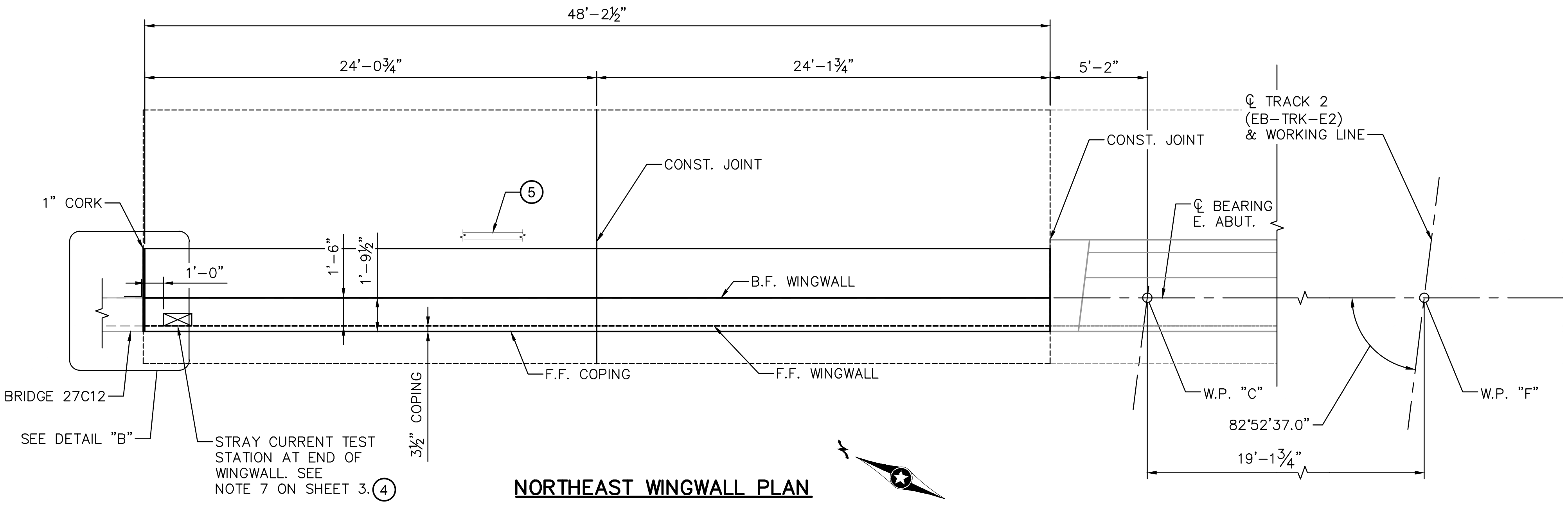
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
EAST ABUTMENT DETAILS 5

DISCIPLINE: STRUCTURES

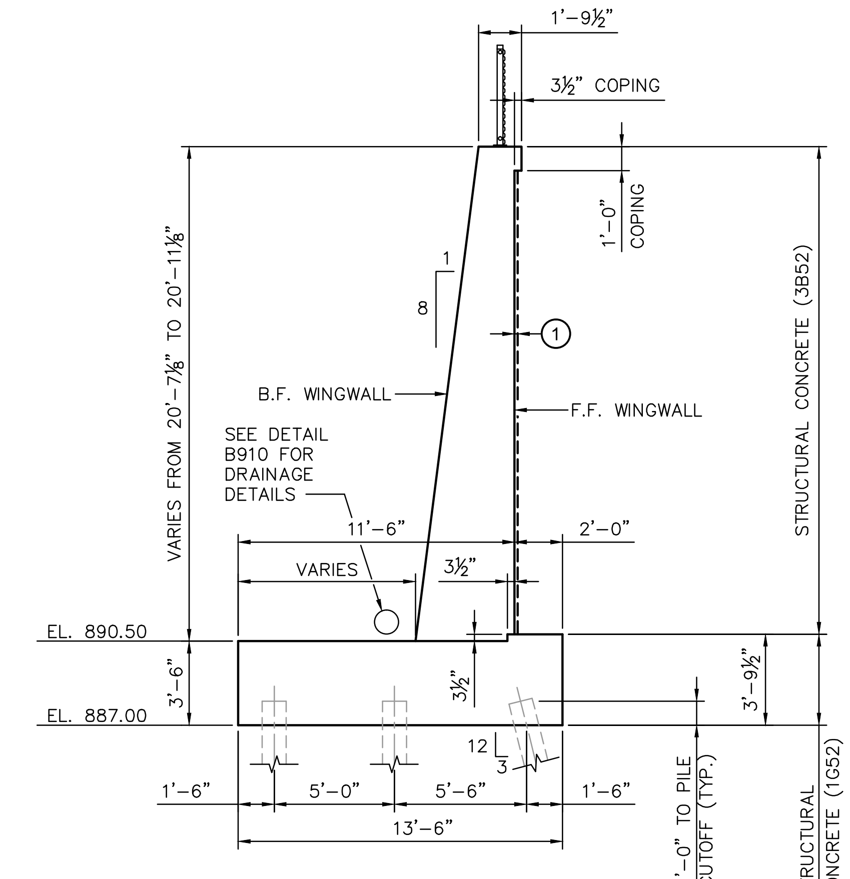
SHEET NAME: CBR27C13-BRG-ABT-018

SHEET 22 OF 60

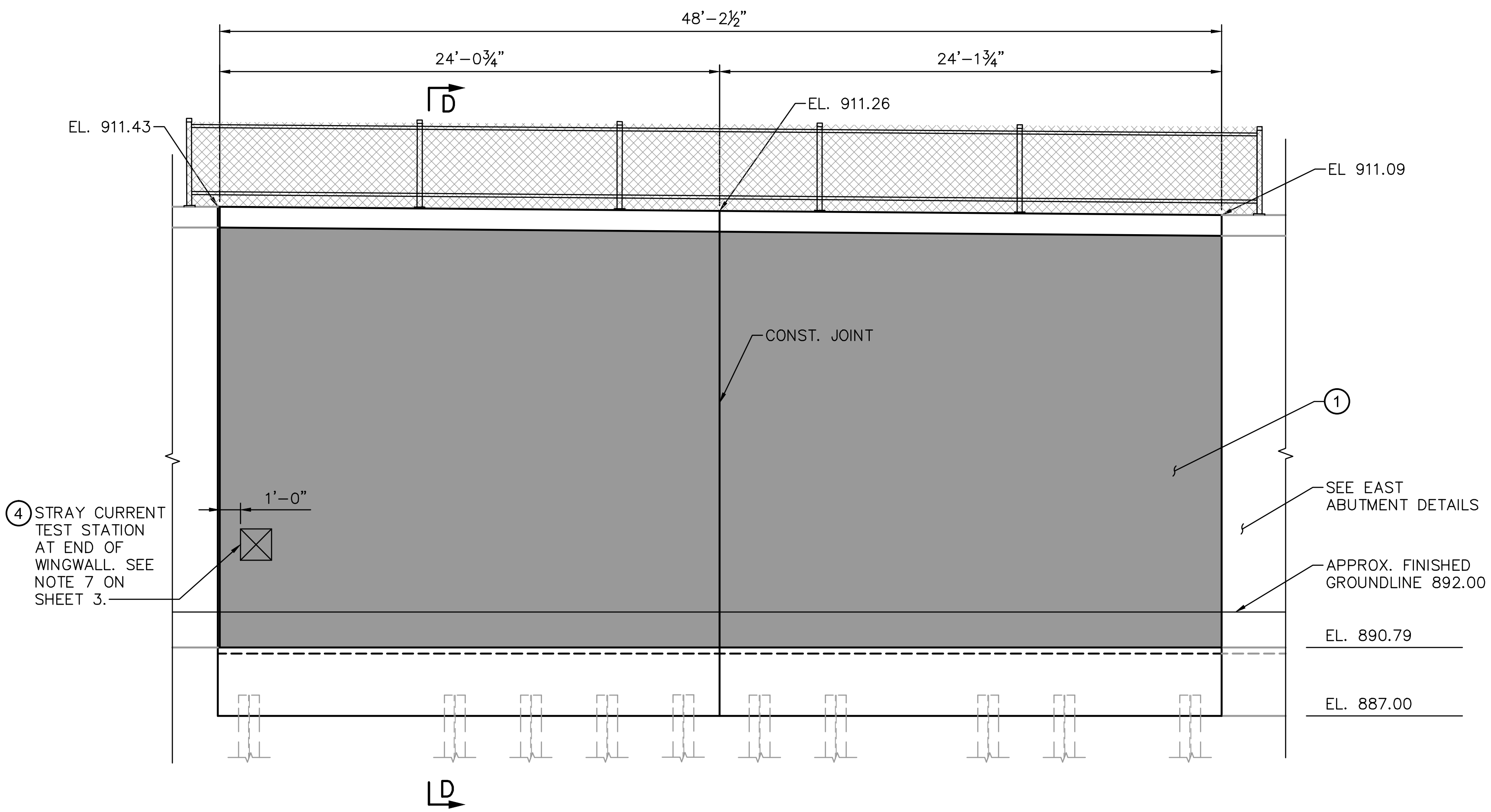
Dec. 14 2015 06:27 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-ABT-018.dwg By: Joe.Menapace



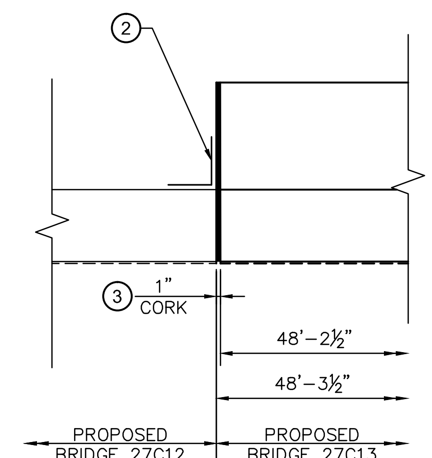
NORTHEAST WINGWALL PLAN



SECTION D-D



NORTHEAST WINGWALL ELEVATION



DETAIL "B"

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
3. ELECTRICAL INSULATING CORK BARRIER. CONTRACTOR AND FIELD ENGINEER SHALL VERIFY WINGWALL CONCRETE IS SEPARATED AND CONDUCTIVE MATERIAL DOES NOT EXTEND THROUGH CORK.
4. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWING EO-SYS-CORR-DTL-001 TO 018. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT (TYP. FOR ALL BLOCKOUTS).
5. 4" DIA. PERFORATED DRAIN PIPE. SEE DETAIL B910.

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DRAWN BY: JFM | CHECKED BY: DLS

AECOM Kimley»Horn

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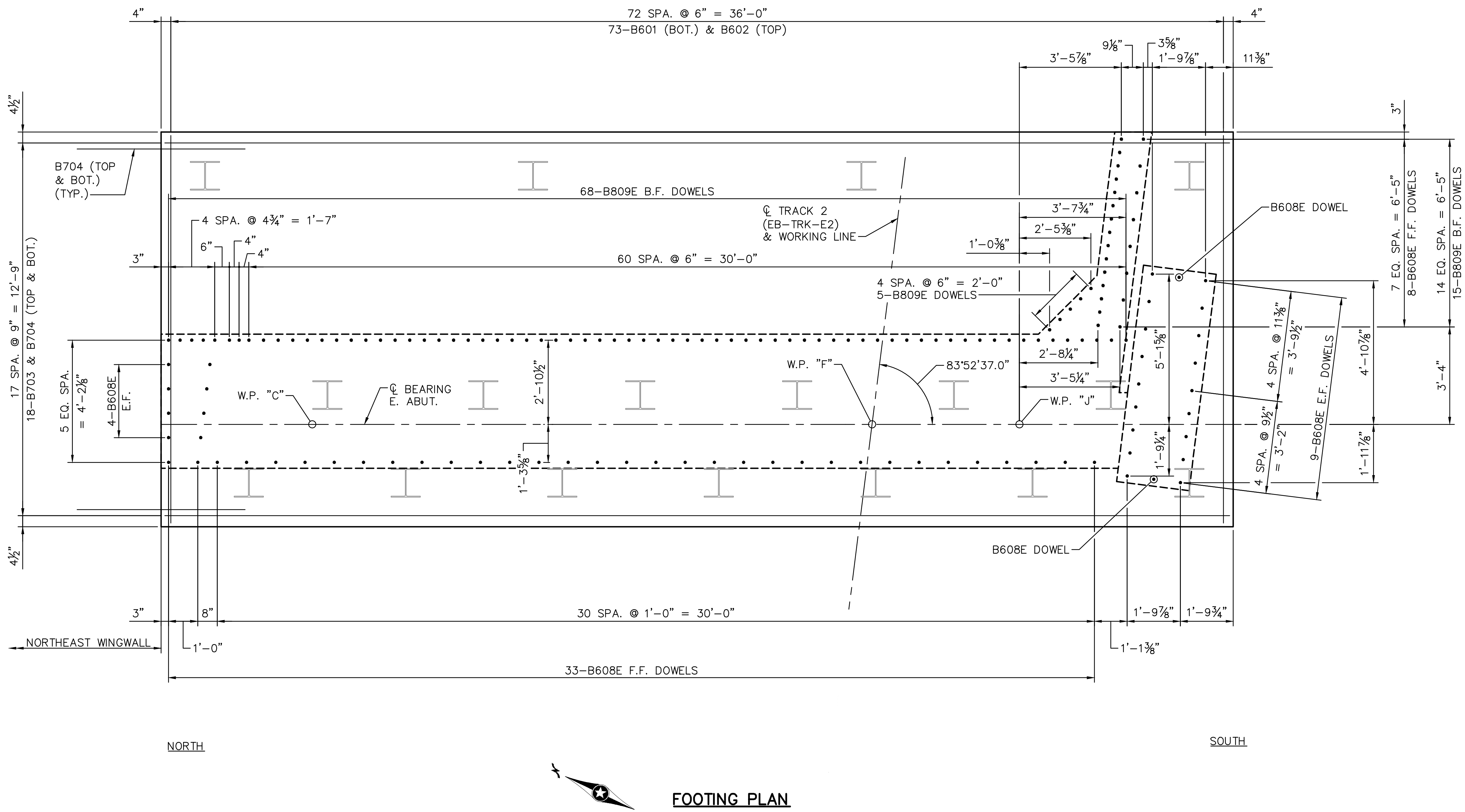
METROPOLITAN COUNCIL | SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
EAST ABUTMENT DETAILS 6

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-019

SHEET 23 OF 60



FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

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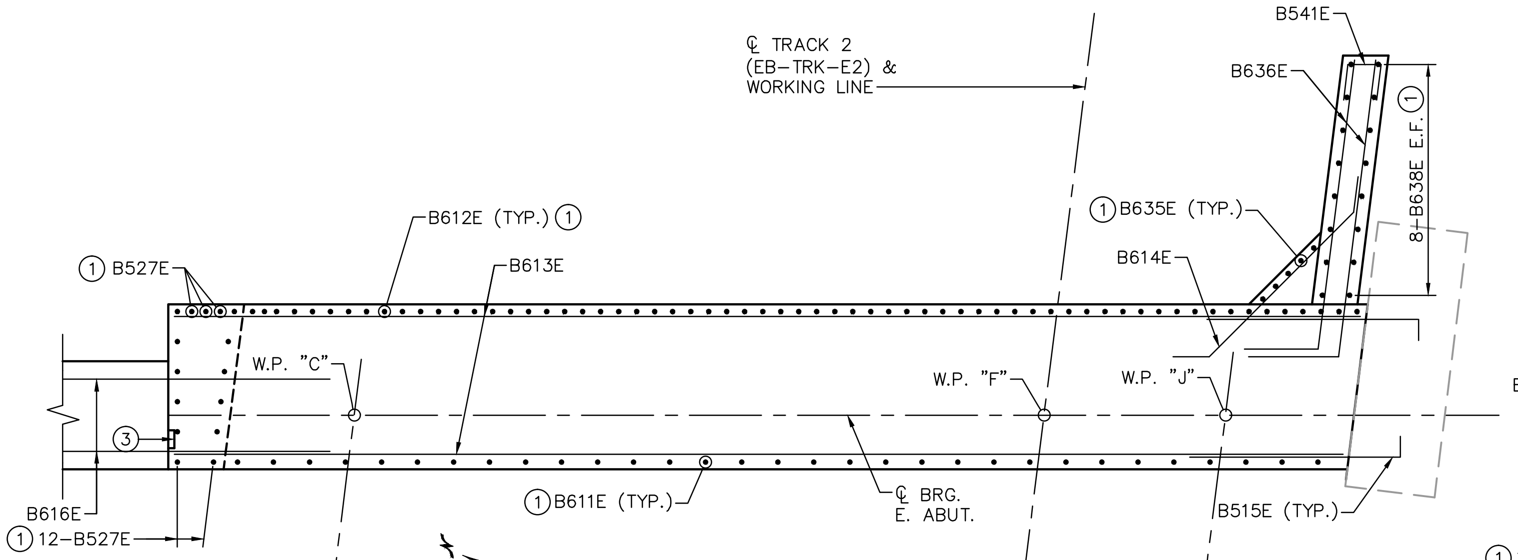
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

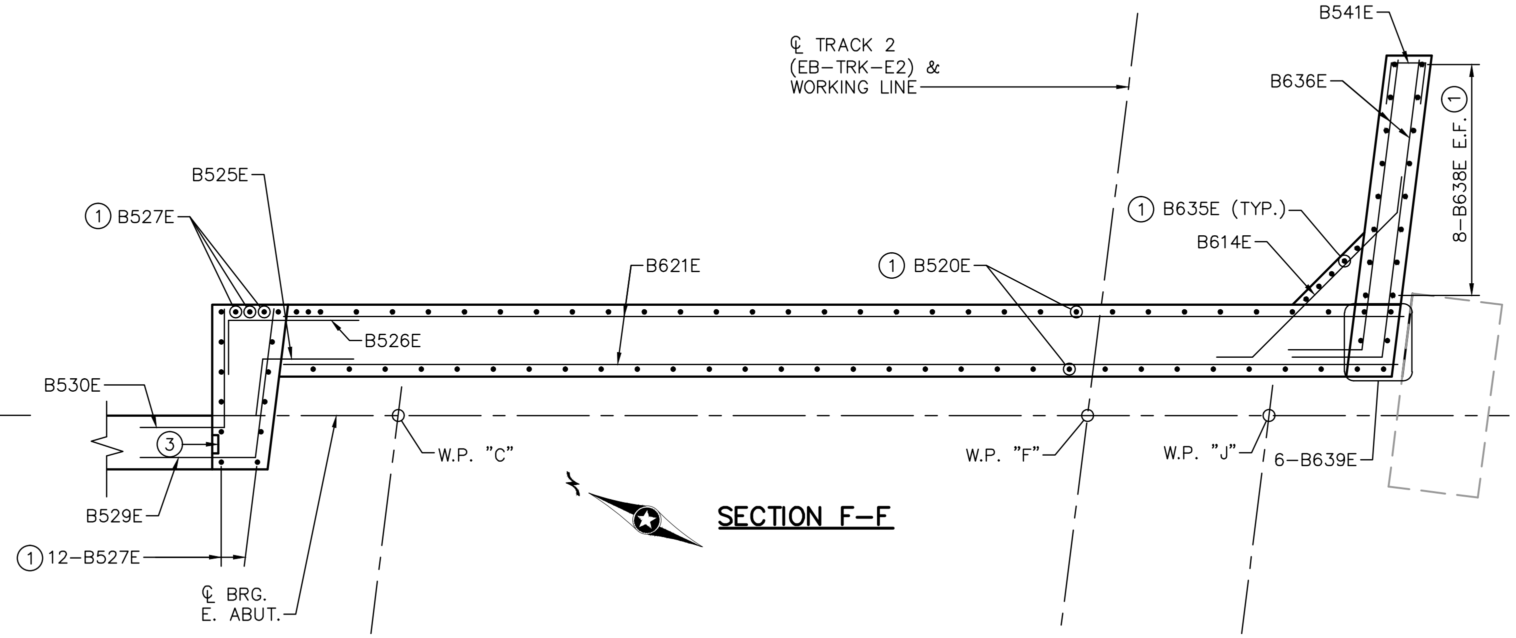
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
EAST ABUTMENT REINFORCEMENT 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-020

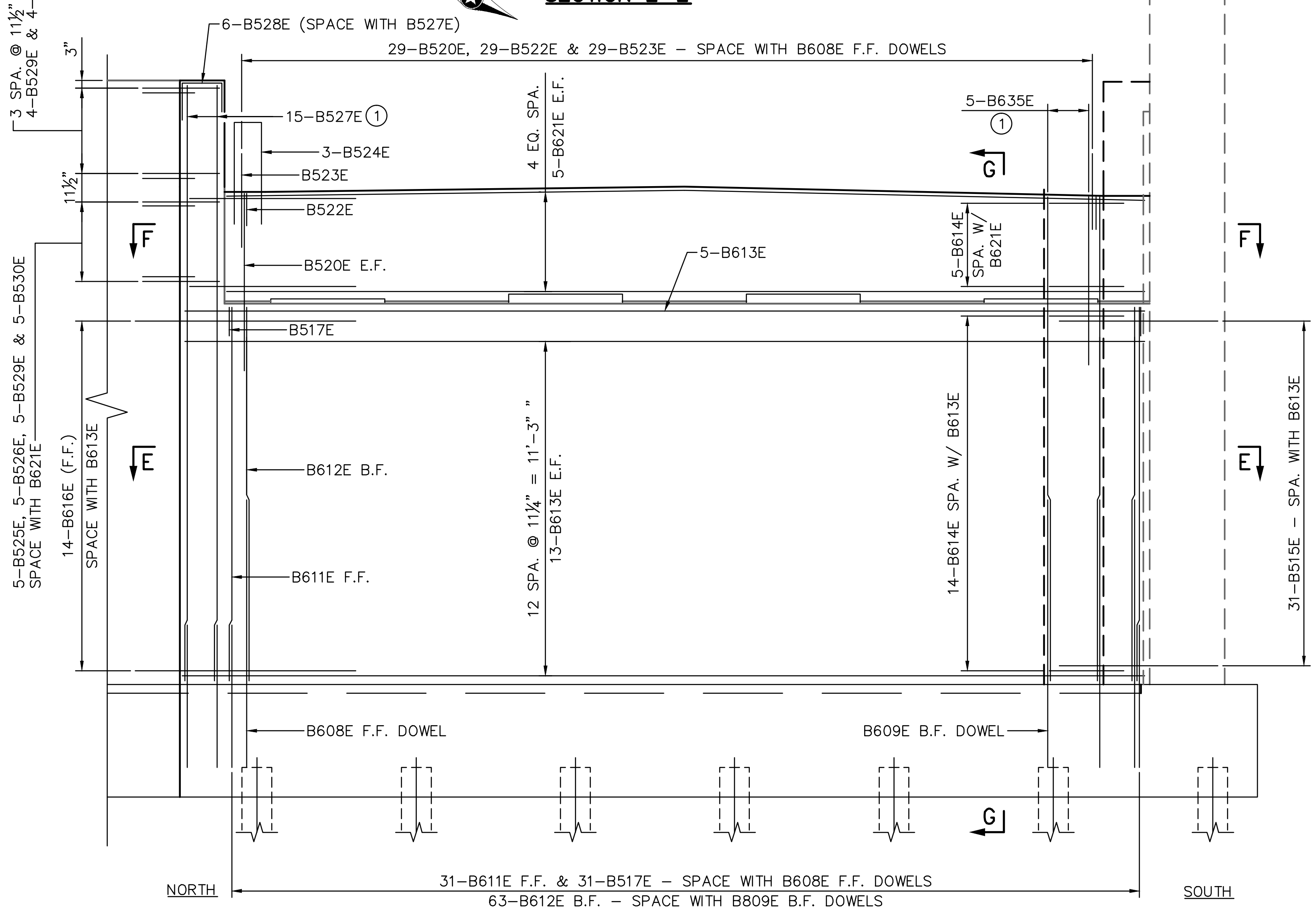
SHEET 24 OF 60



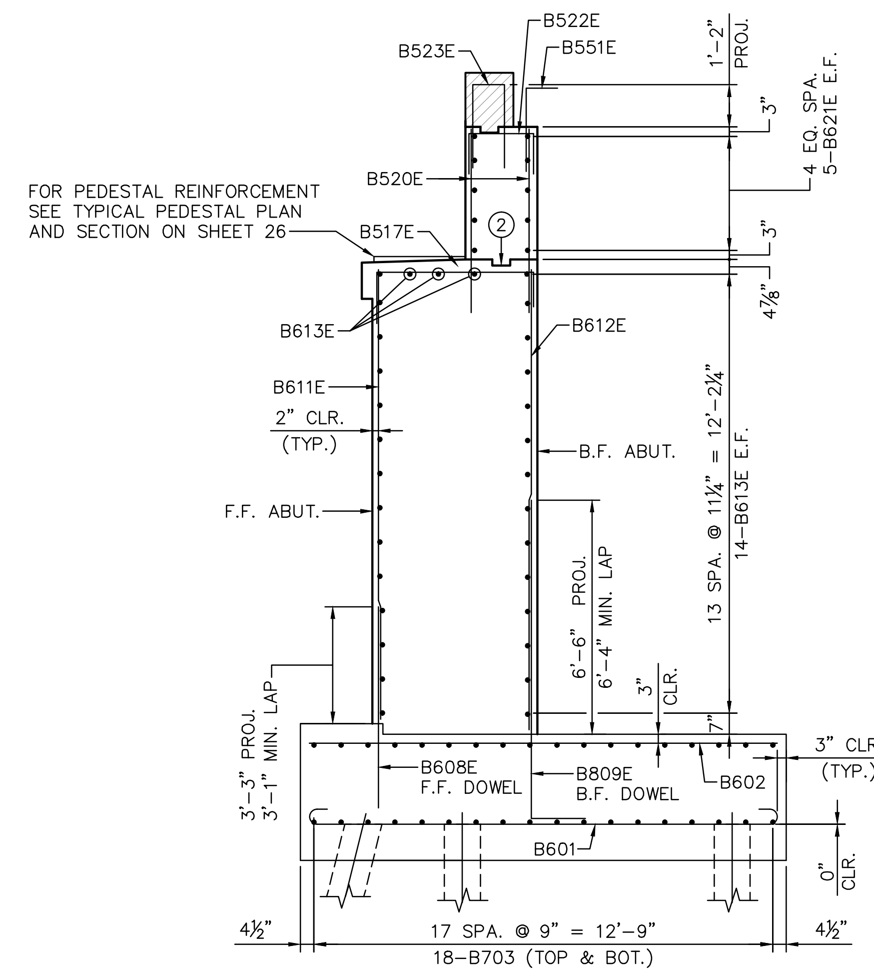
SECTION E-E



SECTION F-F



ELEVATION



SECTION G-G

NOTES:

PILASTER REINFORCEMENT EXCLUDED FROM THIS SHEET FOR CLARITY. SEE SHEET 27.

(1) SPACE WITH DOWEL BARS.

(2) PERMISSIBLE CONST. JOINT WITH 2" X 6" KEYWAY.

(3) CONST. JOINT WITH 2" X 6" KEYWAY.

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DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
EAST ABUTMENT REINFORCEMENT 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-ABT-021

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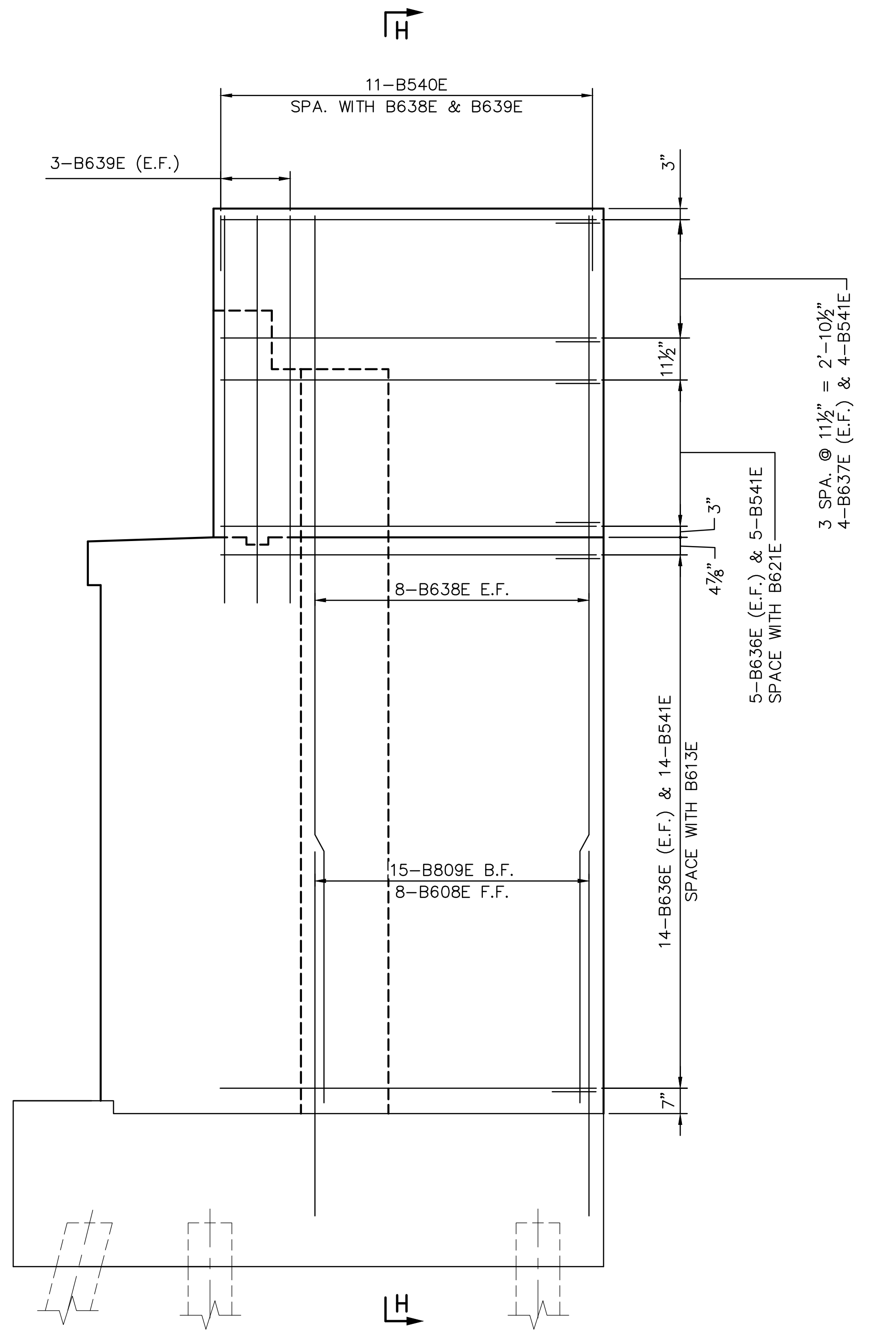
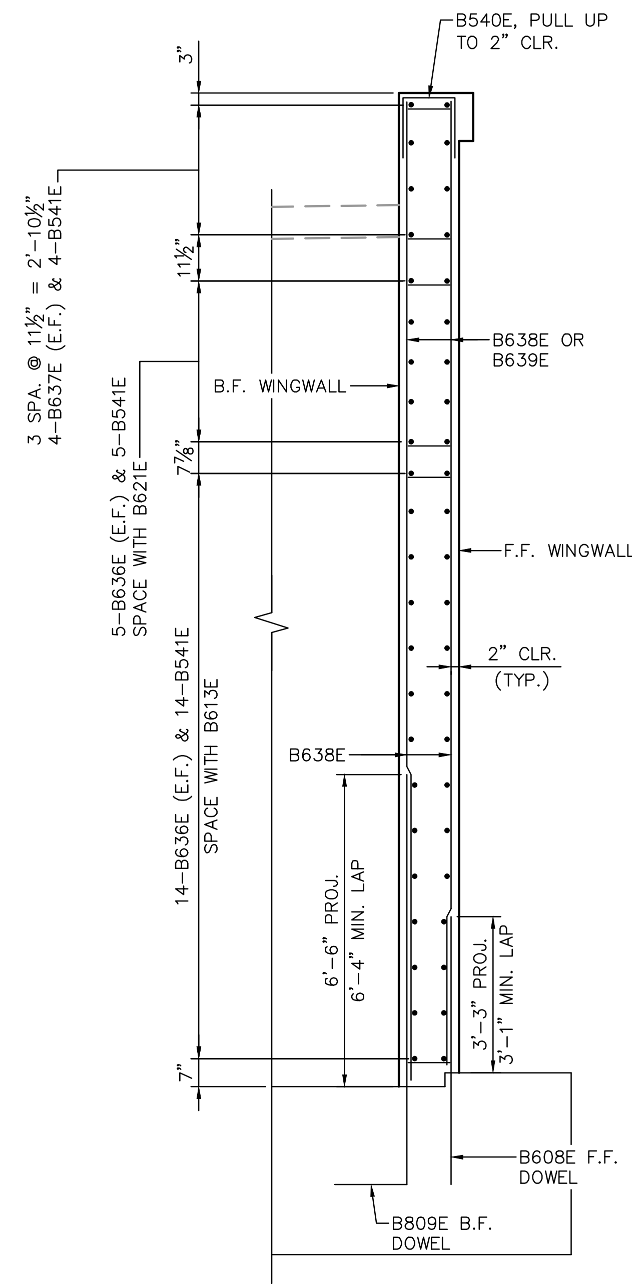
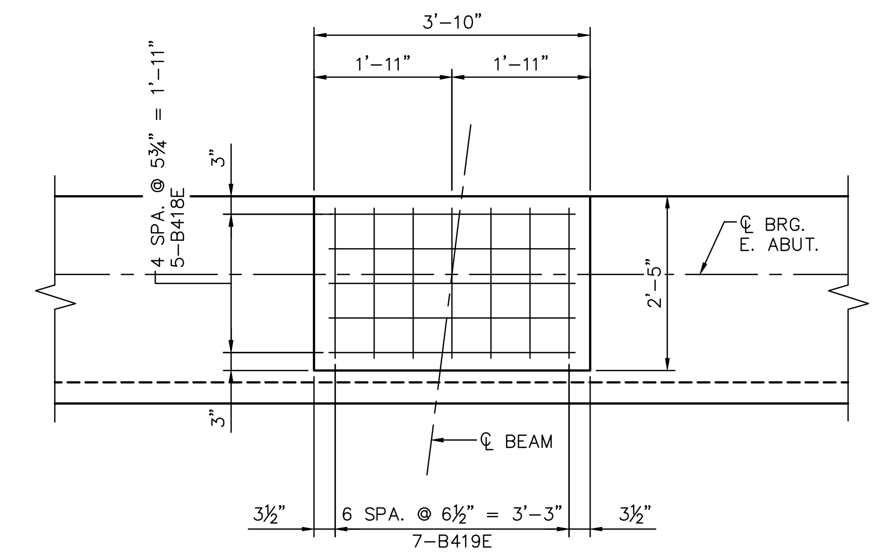


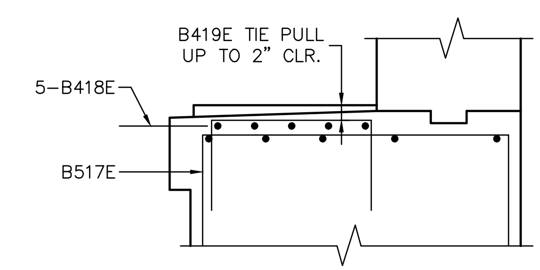
SOUTHEAST WINGWALL ELEVATION



SECTION H-H



TYPICAL PEDESTAL PLAN



TYPICAL PEDESTAL SECTION

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
EAST ABUTMENT REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-022

SHEET 26 OF 60

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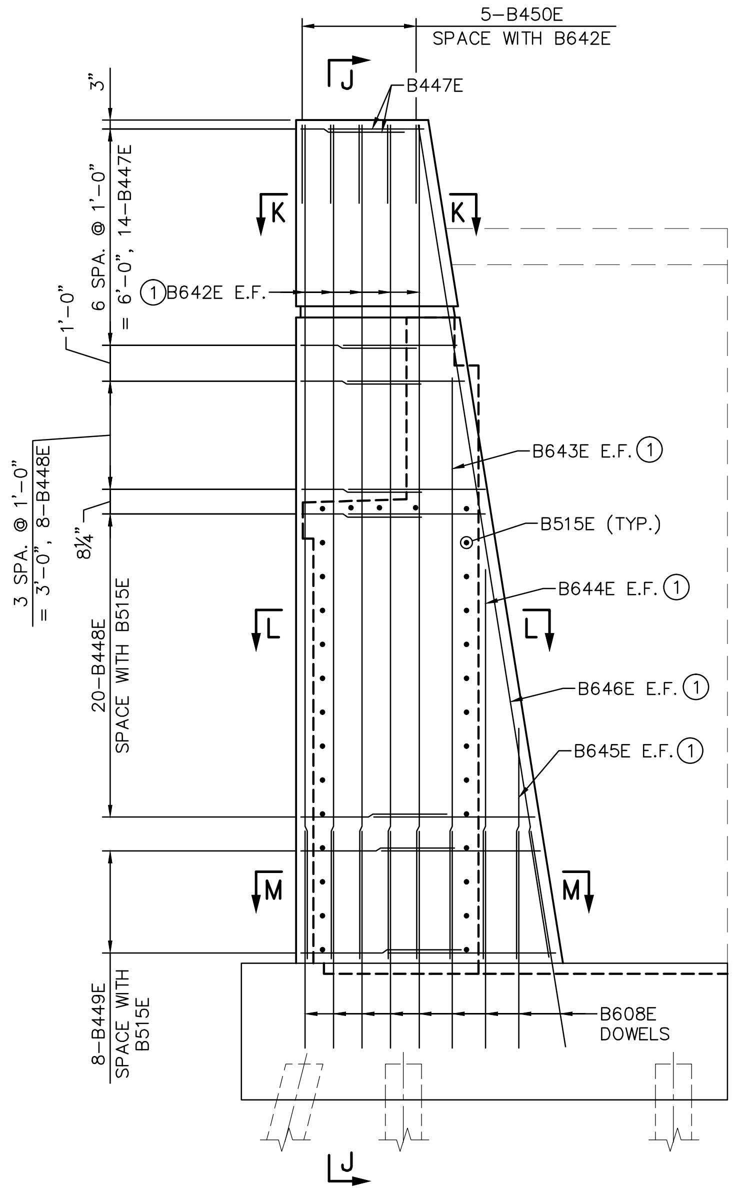
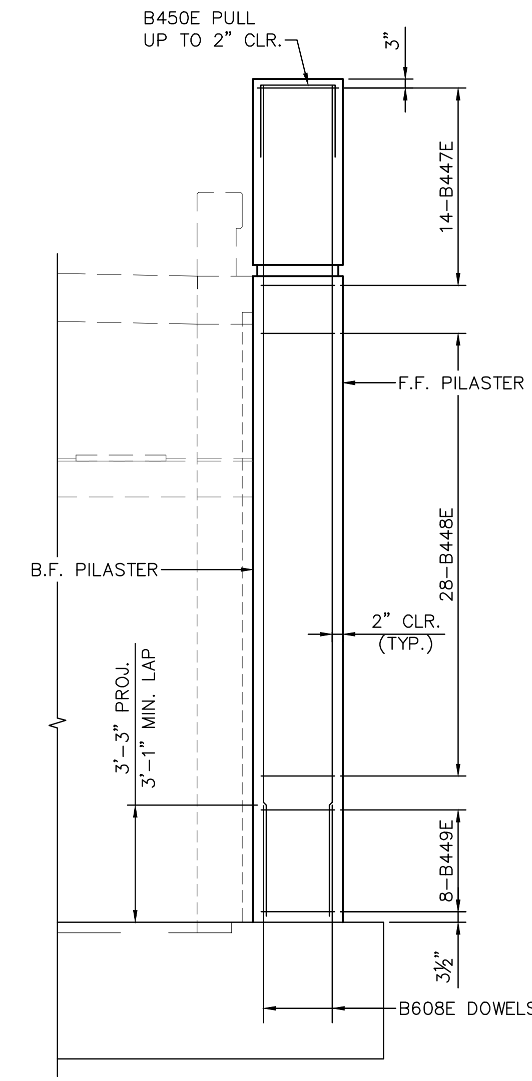
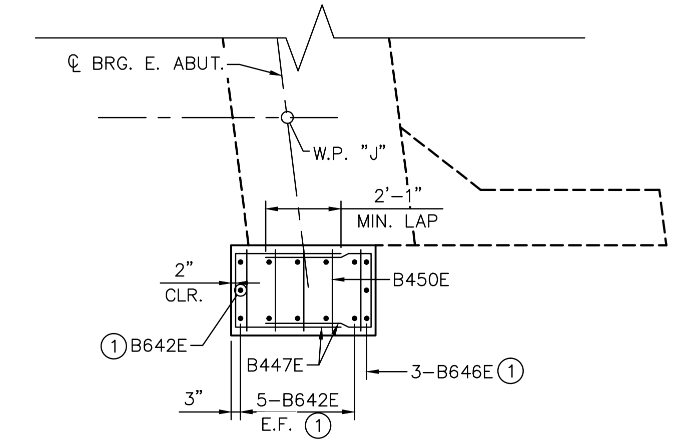


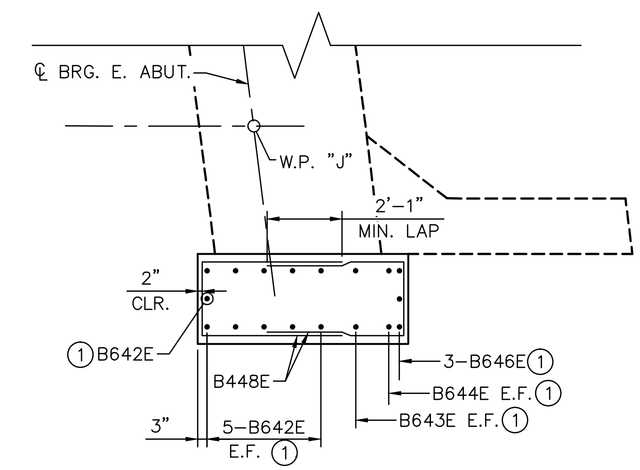
SOUTHEAST PILASTER ELEVATION



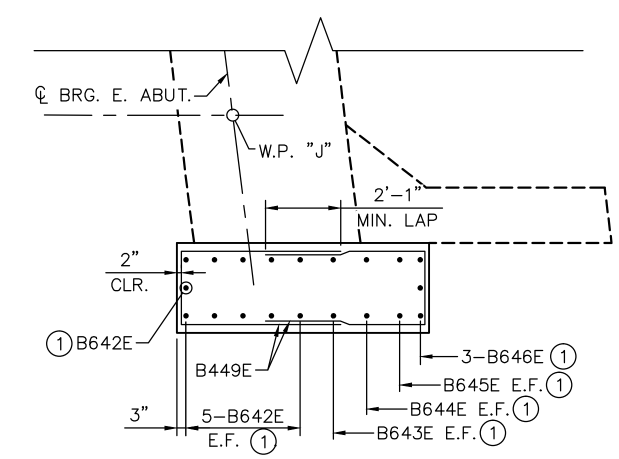
SECTION J–J



SECTION K–K



SECTION L–L



SECTION M–M

NOTES:
1 SPACE WITH DOWEL BARS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

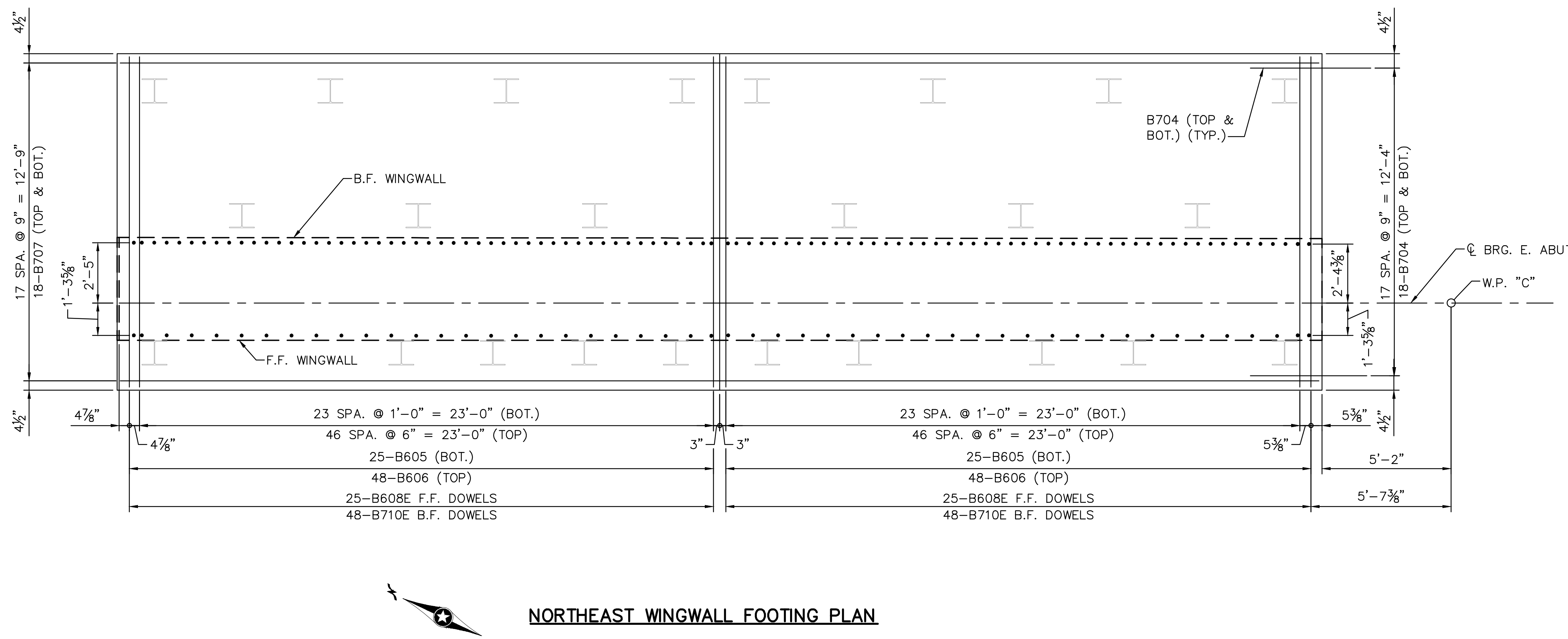
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
EAST ABUTMENT REINFORCEMENT 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-ABT-023

SHEET 27 OF 60

Dec. 14 2015 06:29 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-ABT-023.dwg By: Joe.Menapace



NORTHEAST WINGWALL FOOTING PLAN

Dec. 14 2015 06:30 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-ABT-024.dwg By: Joe.Menapace

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METROPOLITAN COUNCIL

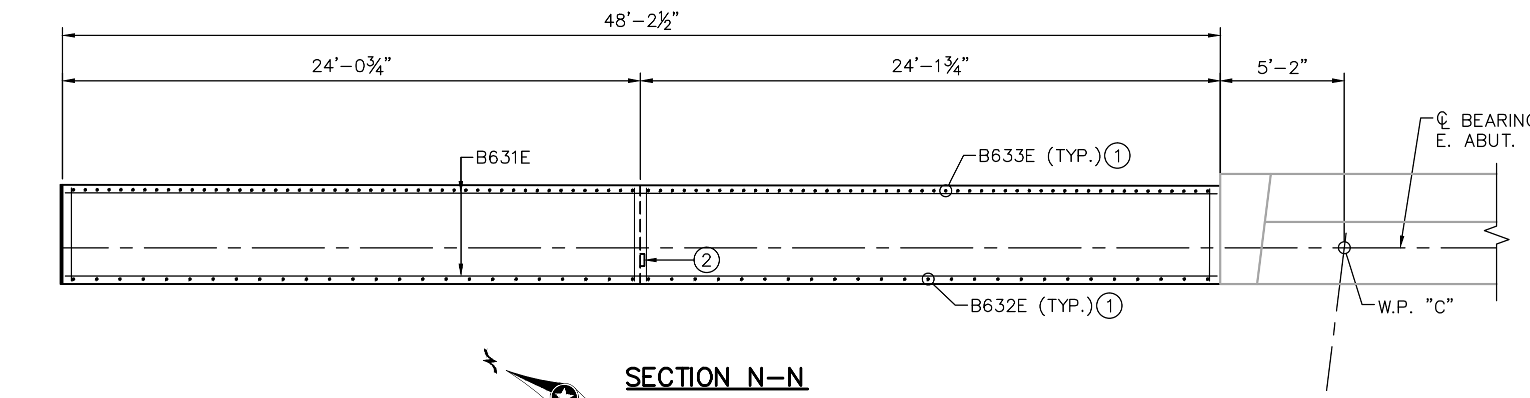
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
EAST ABUTMENT REINFORCEMENT 5

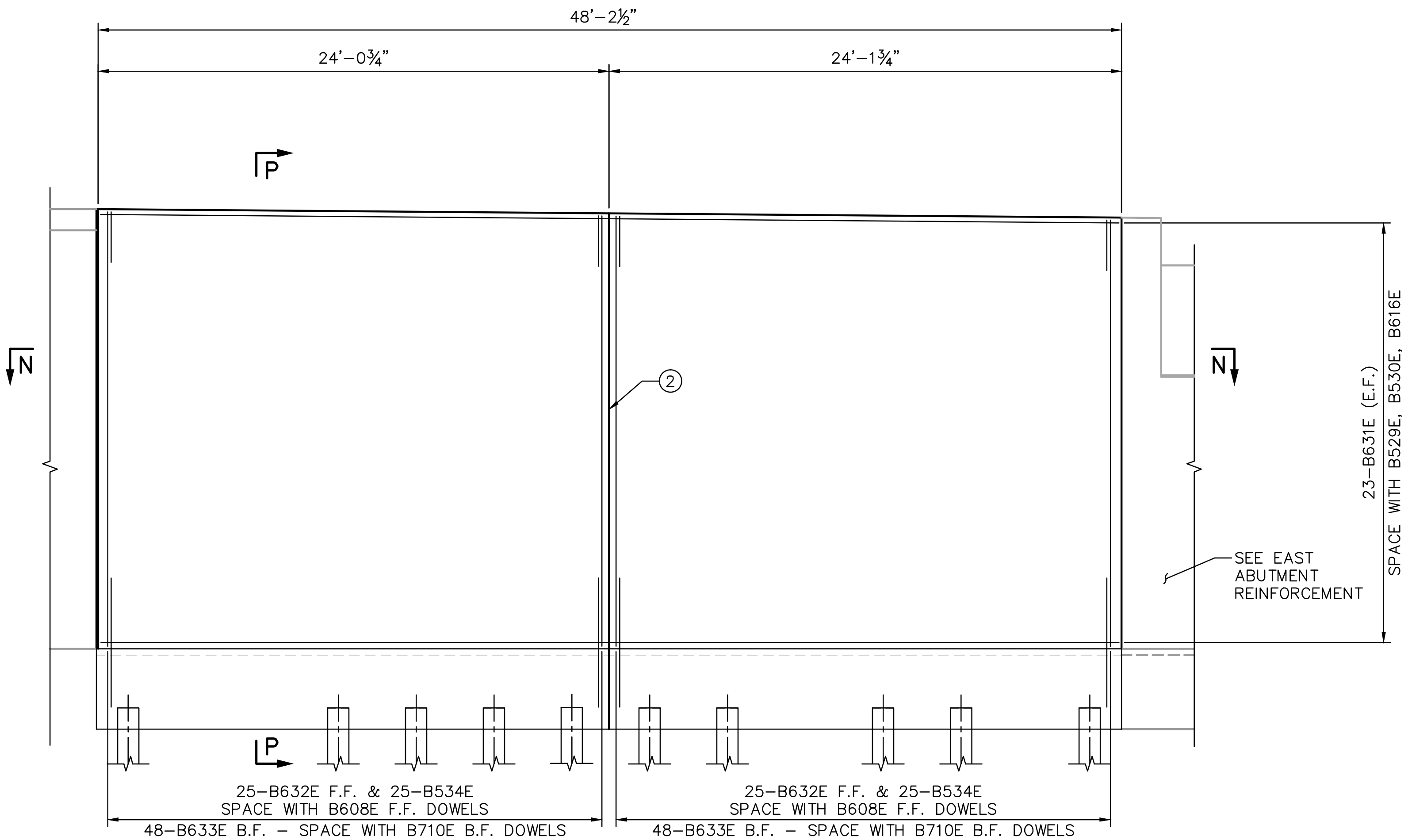
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-ABT-024

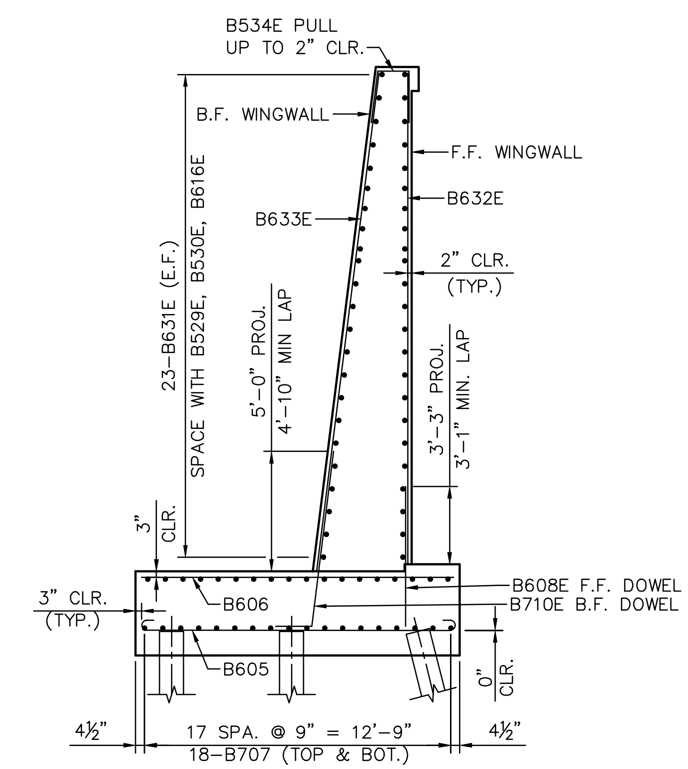
SHEET 28 OF 60



SECTION N-N



NORTHEAST WINGWALL ELEVATION



SECTION P-P

NOTES:

1. SPACE WITH DOWEL BARS.
2. CONST. JOINT WITH 2" X 6" KEYWAY

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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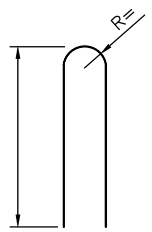
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
EAST ABUTMENT REINFORCEMENT 6

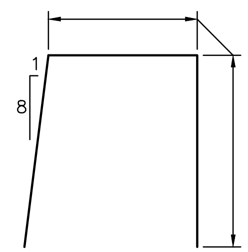
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-ABT-025

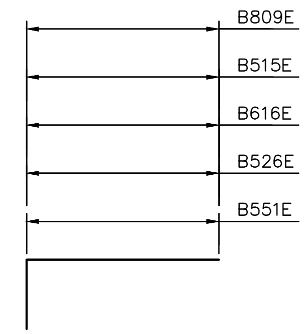
SHEET 29 OF 60



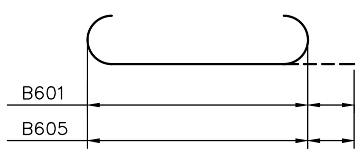
B523E



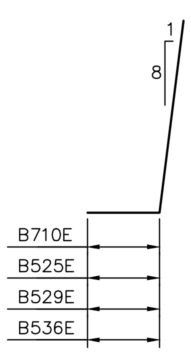
B534E



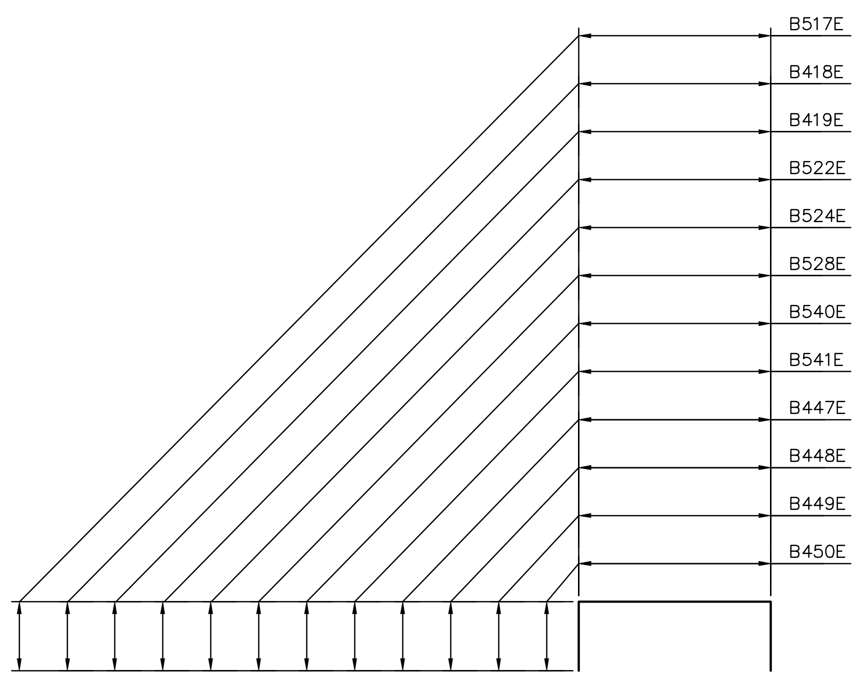
B809E, B515E, B616E, B526E, B551E



B601, B605



B710E, B525E, B529E, B536E



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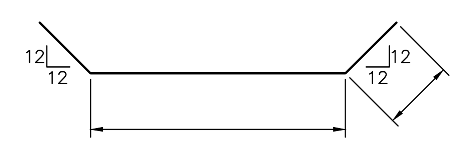

B614E

BILL OF REINFORCEMENT FOR EAST ABUTMENT				
BAR	NO.	LENGTH	SHAPE	LOCATION
B601	0	'-"	BENT	FOOTING, BOT., TRANS.
B602	0	'-"	STR.	FOOTING, TOP, TRANS.
B703	0	'-"	STR.	FOOTING, LONG.
B704	0	'-"	STR.	FOOTING, LONG. DOWEL
B605	0	'-"	BENT	N WINGWALL FOOTING, BOT., TRANS.
B606	0	'-"	STR.	N WINGWALL FOOTING, TOP, TRANS.
B707	0	'-"	STR.	N WINGWALL FOOTING, LONG.
B608E	0	'-"	STR.	F.F. DOWELS
B809E	0	'-"	BENT	ABUT. B.F. DOWELS
B710E	0	'-"	BENT	N WINGWALL B.F. DOWELS
B611E	0	'-"	STR.	F.F. STEM VERT.
B612E	0	'-"	STR.	B.F. STEM VERT.
B613E	0	'-"	STR.	STEM LONG.
B614E	0	'-"	BENT	B.F. FILLET LONG.
B515E	0	'-"	BENT	PILASTER DOWEL LONG.
B616E	0	'-"	STR.	N WINGWALL STEM LONG. DOWEL
B517E	0	'-"	BENT	STEM TIE
B418E	0	'-"	BENT	PEDESTAL TIE
B419E	0	'-"	BENT	PEDESTAL TIE
B520E	0	'-"	STR.	BACKWALL VERT.
B621E	0	'-"	STR.	BACKWALL LONG.
B522E	0	'-"	BENT	BACKWALL TIE
B523E	0	'-"	BENT	PAVING BLOCK TIE
B524E	0	'-"	BENT	PARAPET TIE
B525E	0	'-"	BENT	MASKWALL LONG. BACKWALL DOWEL
B526E	0	'-"	BENT	MASKWALL LONG. BACKWALL DOWEL
B527E	0	'-"	STR.	MASKWALL VERT.
B528E	0	'-"	BENT	MASKWALL TOP TIE
B529E	0	'-"	STR.	N WINGWALL MASKWALL LONG. DOWEL
B530E	0	'-"	STR.	N WINGWALL MASKWALL LONG. DOWEL
B631E	0	'-"	STR.	N WINGWALL LONG.
B632E	0	'-"	STR.	F.F. N WINGWALL VERT.
B633E	0	'-"	STR.	B.F. N WINGWALL VERT.
B534E	0	'-"	BENT	N WINGWALL TOP TIE
B635E	0	'-"	STR.	B.F. FILLET VERT.
B636E	0	'-"	BENT	S WINGWALL LONG.
B637E	0	'-"	STR.	S WINGWALL LONG.
B638E	0	'-"	STR.	S WINGWALL VERT.
B639E	0	'-"	STR.	S WINGWALL VERT.
B540E	0	'-"	BENT	S WINGWALL TIE
B541E	0	'-"	BENT	S WINGWALL END TIE
B642E	0	'-"	STR.	PILASTER VERT.
B643E	0	'-"	STR.	PILASTER VERT.
B644E	0	'-"	STR.	PILASTER VERT.
B645E	0	'-"	STR.	PILASTER VERT.
B646E	0	'-"	STR.	PILASTER DIAG.
B447E	0	'-"	BENT	PILASTER TIE
B448E	0	'-"	BENT	PILASTER TIE
B449E	0	'-"	BENT	PILASTER TIE
B450E	0	'-"	BENT	PILASTER TOP TIE
B551E	0	'-"	BENT	TRANSITION SLAB TIE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
EAST ABUTMENT REINFORCEMENT 7

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-ABT-026

PIER COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD	44.0
FACTORED LIVE LOAD	4.2
FACTORED OVERTURNING	60.3
* FACTORED DESIGN LOAD	108.5

* BASED ON EXTREME EVENT II LOAD COMBINATION.

PIER REQUIRED NOMINAL PILE BEARING RESISTANCE FOR H-PILES Rn - TONS/PILE		
FIELD CONTROL METHOD	φdyn	* Rn
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{W \times H}{1000}} x\log\left(\frac{10}{S}\right)$	0.60	180.8
PDA	0.65	166.9

* Rn = (FACTORED DESIGN LOAD) / φdyn

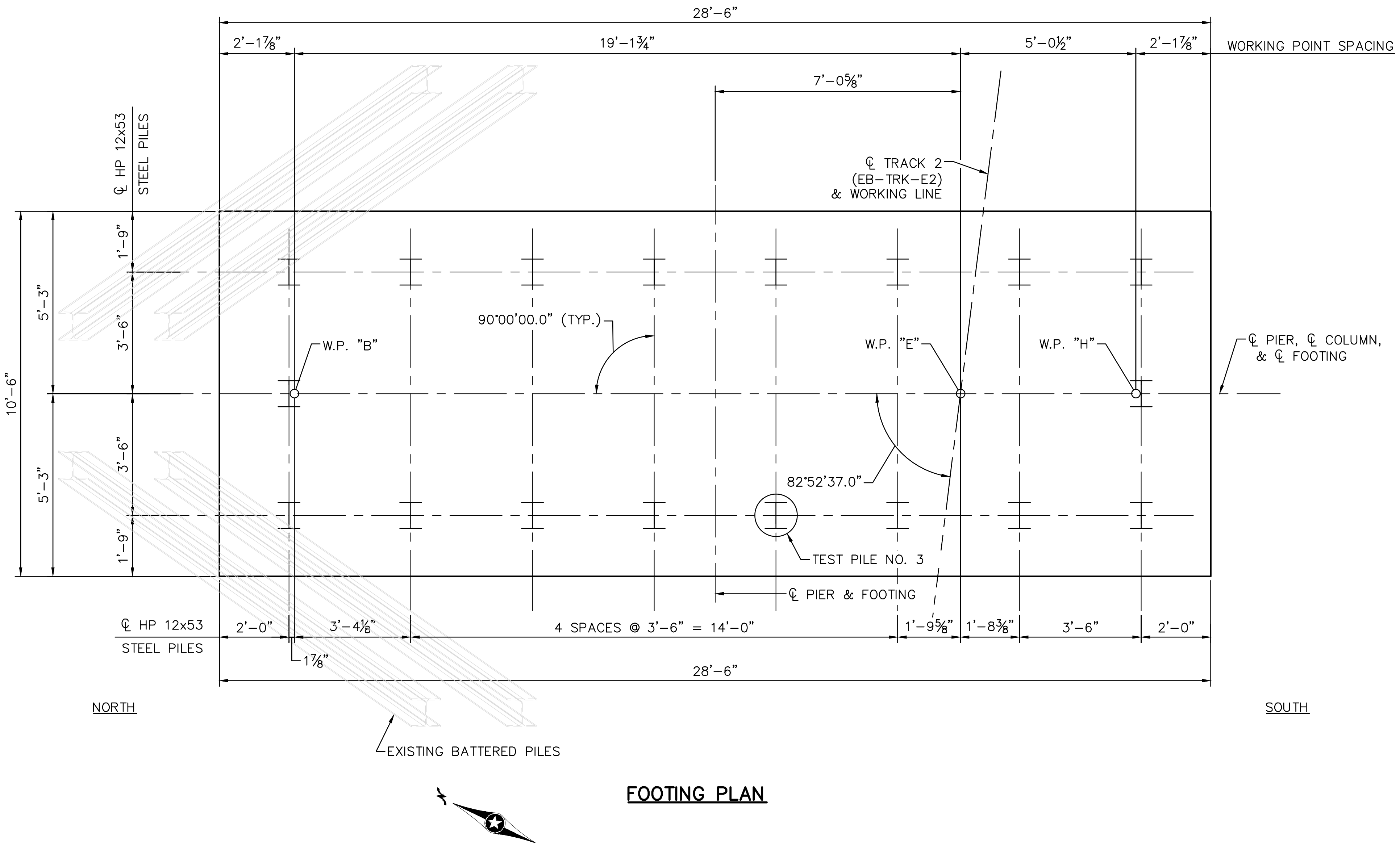
GENERAL PILE NOTES

1	HP12x53 STEEL TEST PILE 65 FT. LONG
17	HP12x53 STEEL PILES EST. 65 FT. LENGTH
18	HP12x53 STEEL PILES REQ'D FOR PIER.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

FOR PILE SPLICE DETAILS SEE DETAIL B202.



FOOTING PLAN

Dec. 14 2015 06:32 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-PIR-001.dwg By: Joe.Menapace

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DESIGNED BY: DJW CHECKED BY: SAD
DRAWN BY: JFM CHECKED BY: DLS

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METROPOLITAN COUNCIL

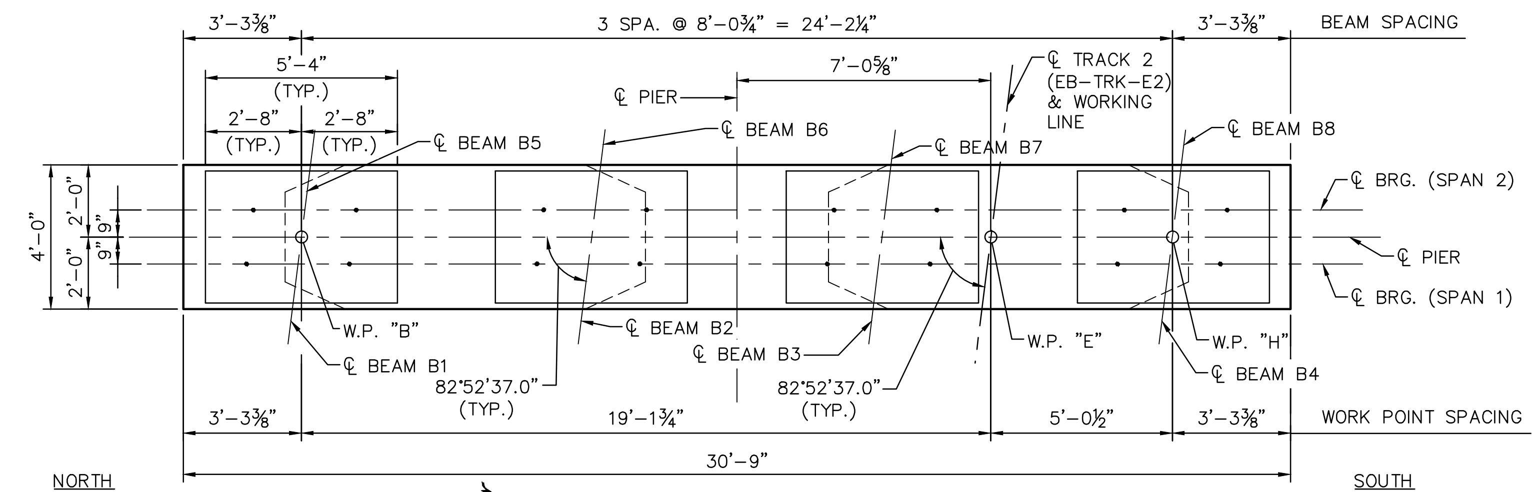
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
PIER DETAILS 1

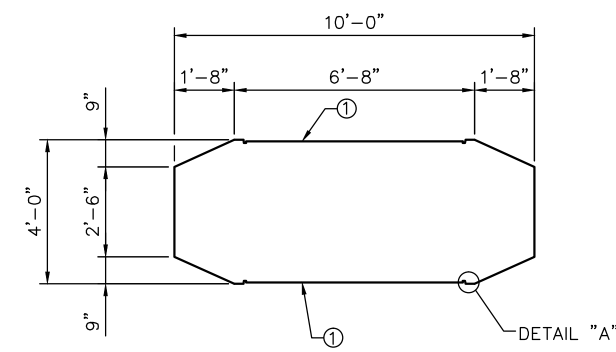
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-PIR-001

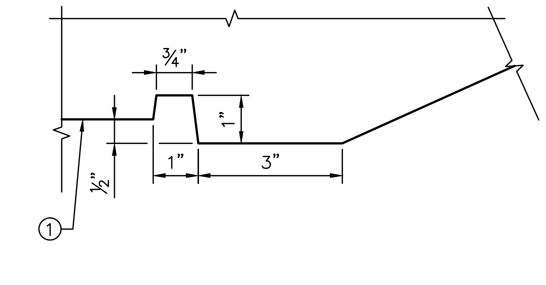
SHEET 31 OF 60



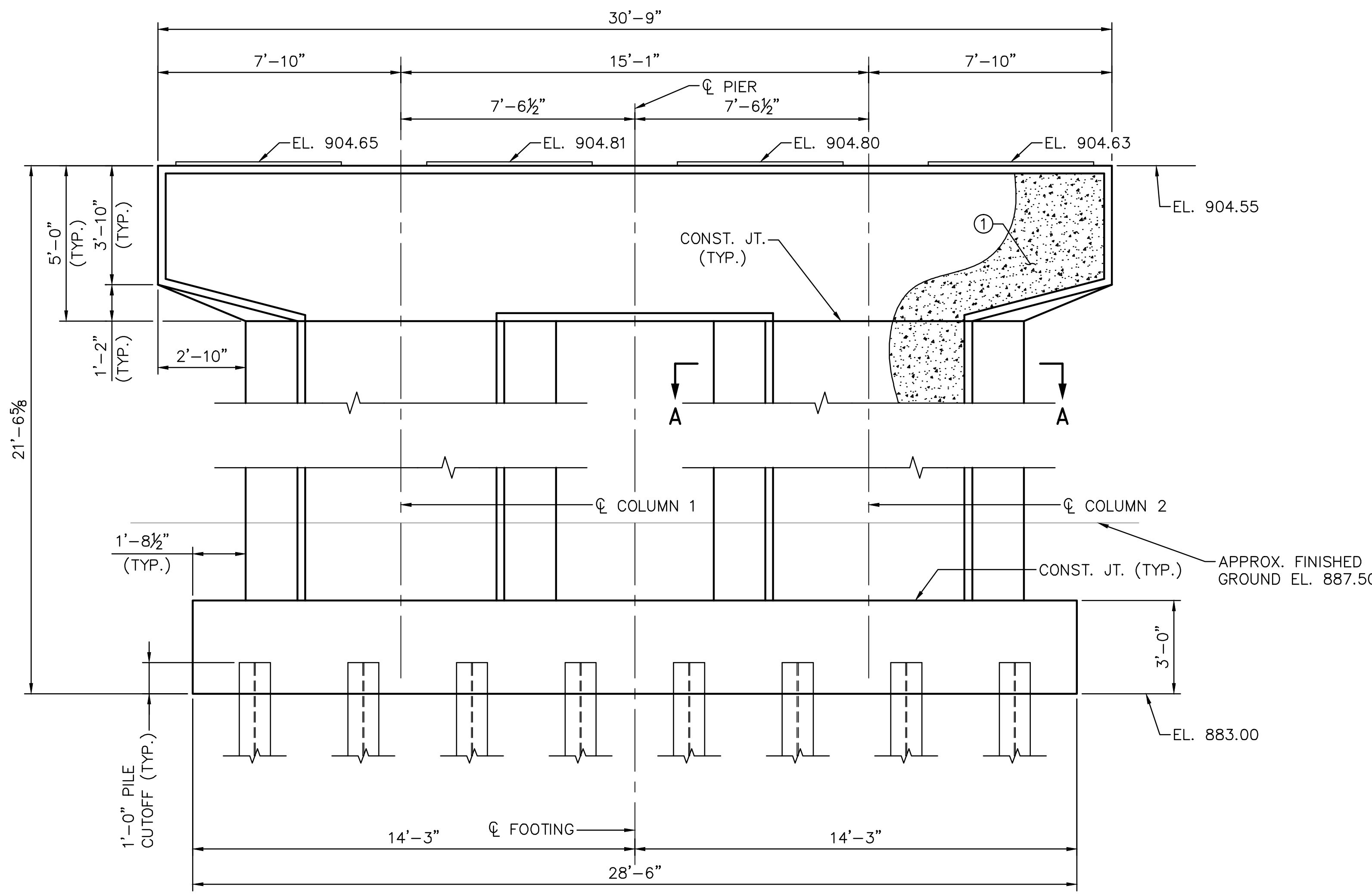
CAP PLAN



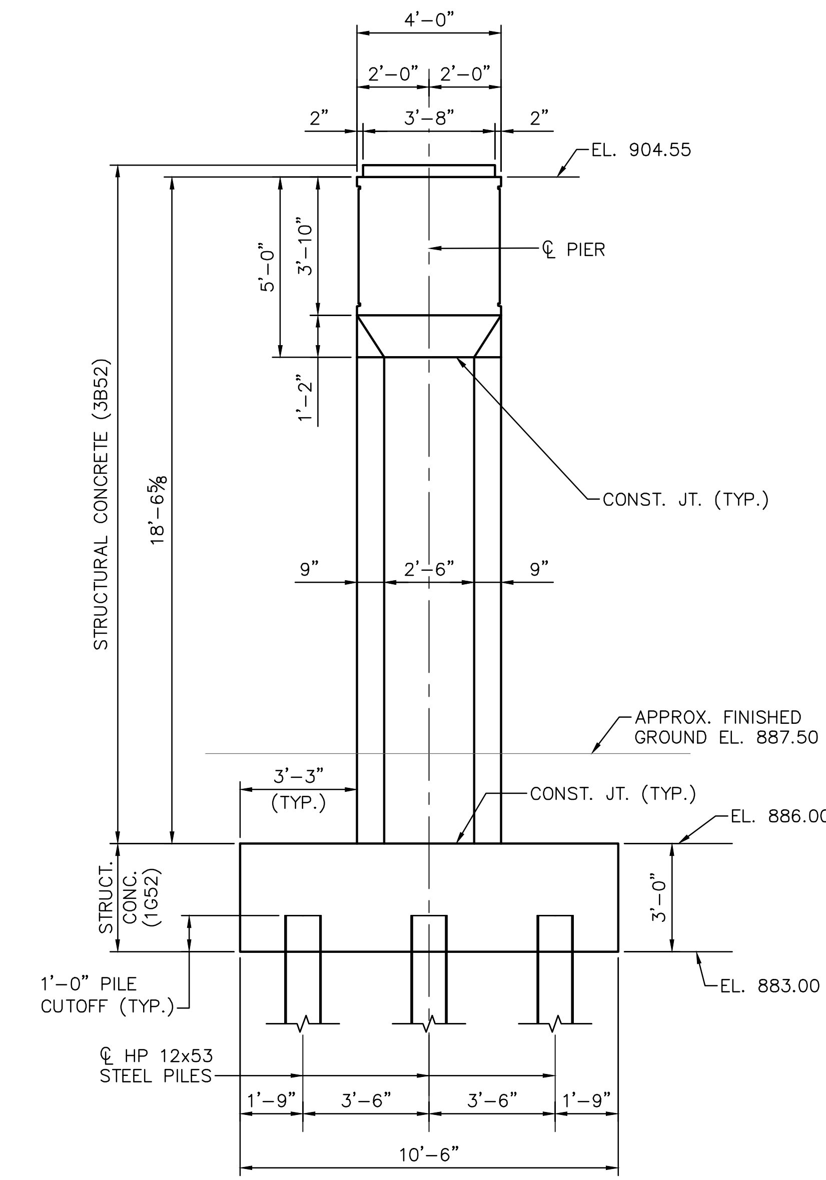
SECTION A-A



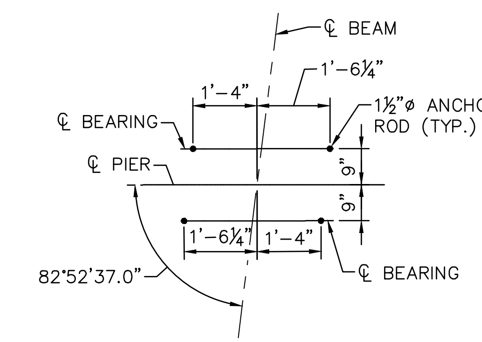
DETAIL "A"



ELEVATION



END ELEVATION



ANCHOR ROD LAYOUT

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 0.5".

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJW CHECKED BY: SAD
DRAWN BY: JFM CHECKED BY: DLS

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METROPOLITAN COUNCIL

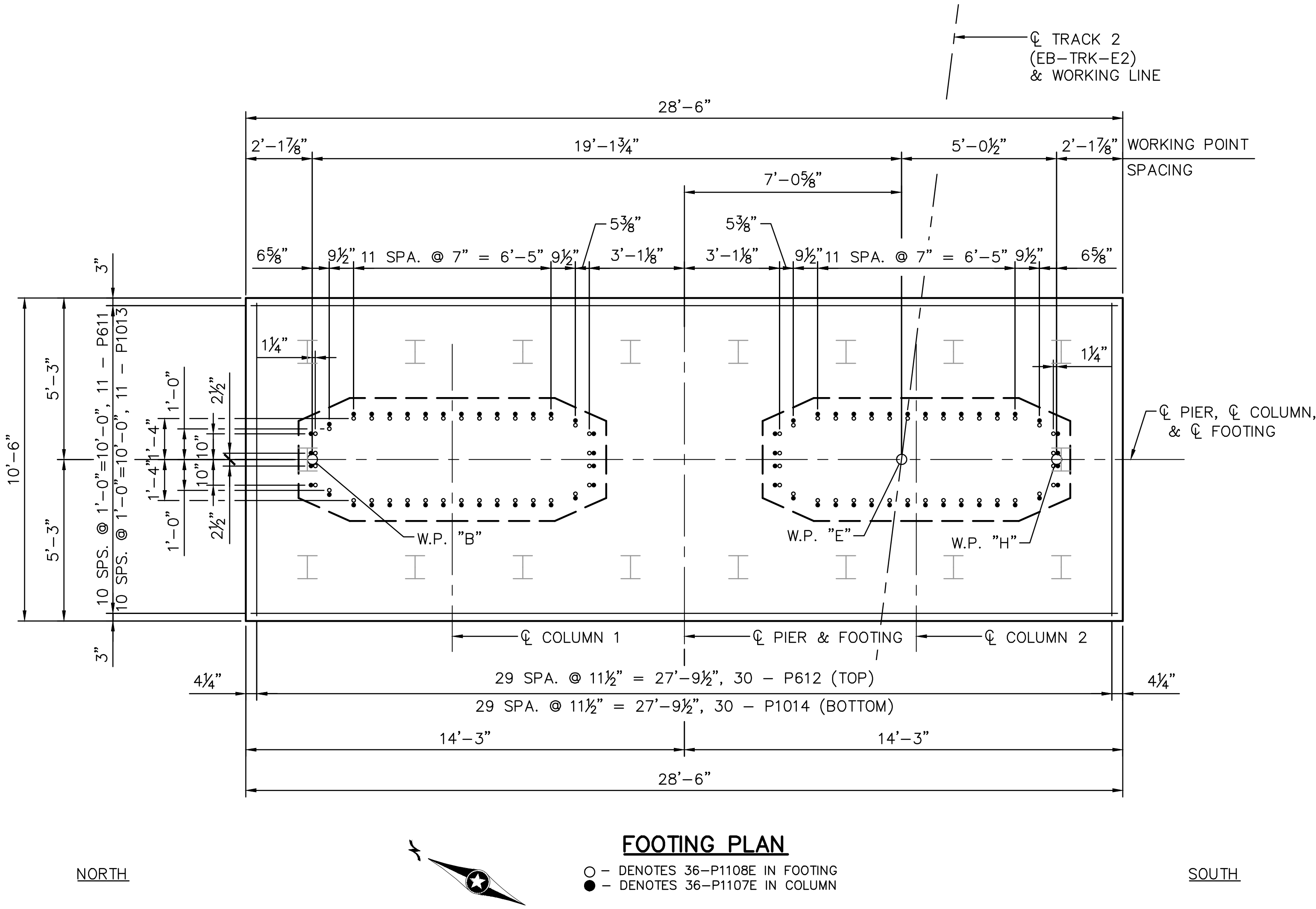
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
PIER DETAILS 2

DISCIPLINE: STRUCTURES

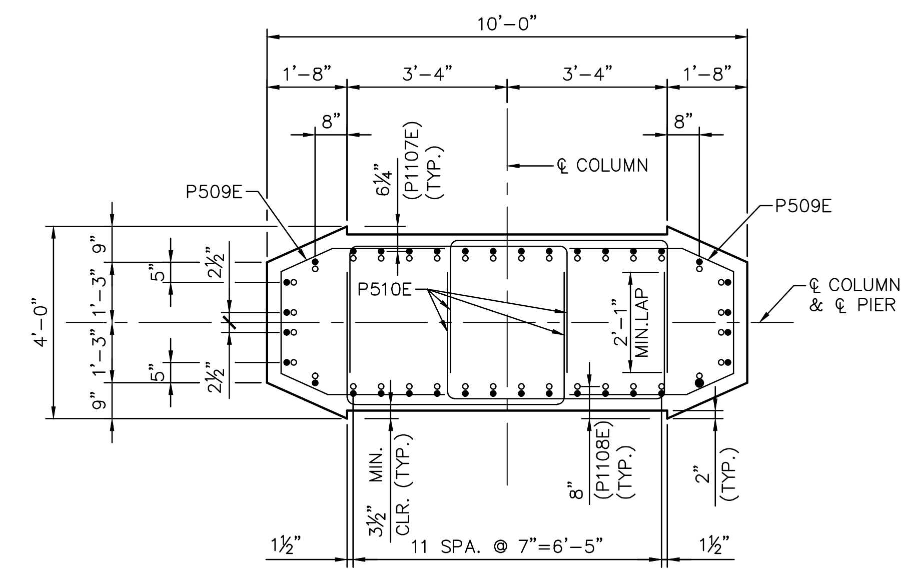
SHEET NAME: CBR27C13-BRG-PIR-002

SHEET 32 OF 60



FOOTING PLAN

○ – DENOTES 36–P1108E IN FOOTING
● – DENOTES 36–P1107E IN COLUMN



TYPICAL COLUMN SECTION

○ – DENOTES 36–P1108E IN FOOTING
● – DENOTES 36–P1107E IN COLUMN

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DRAWN BY: MRD | CHECKED BY: DLS

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METROPOLITAN COUNCIL

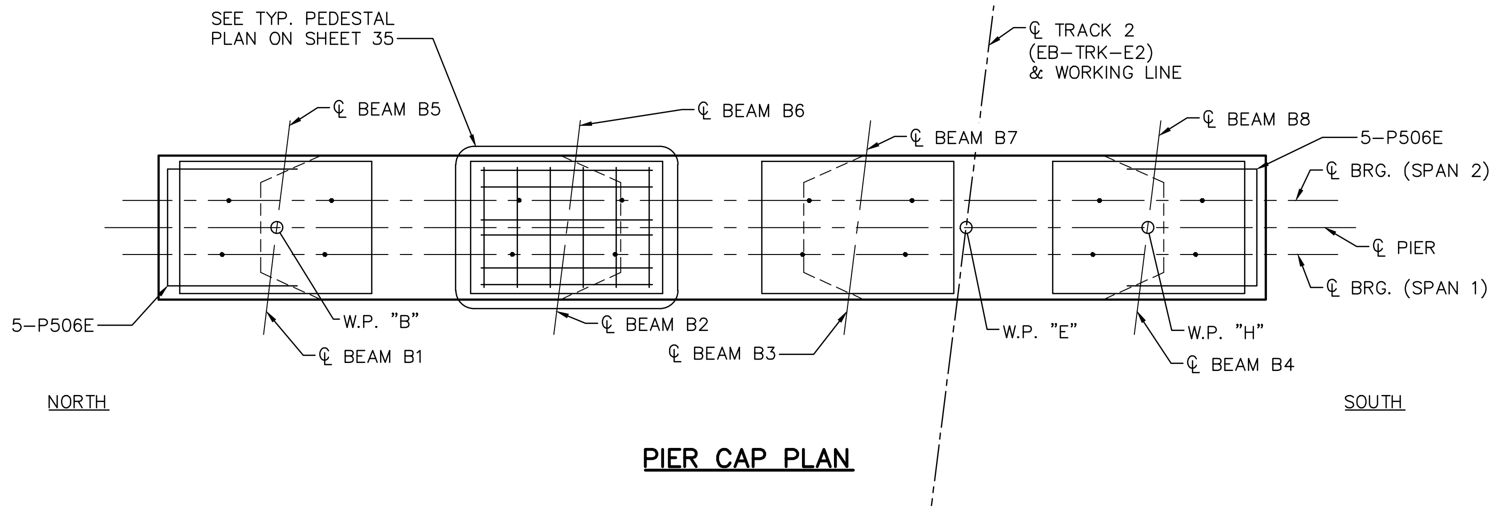
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
PIER REINFORCEMENT 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-PIR-003

SHEET 33 OF 60

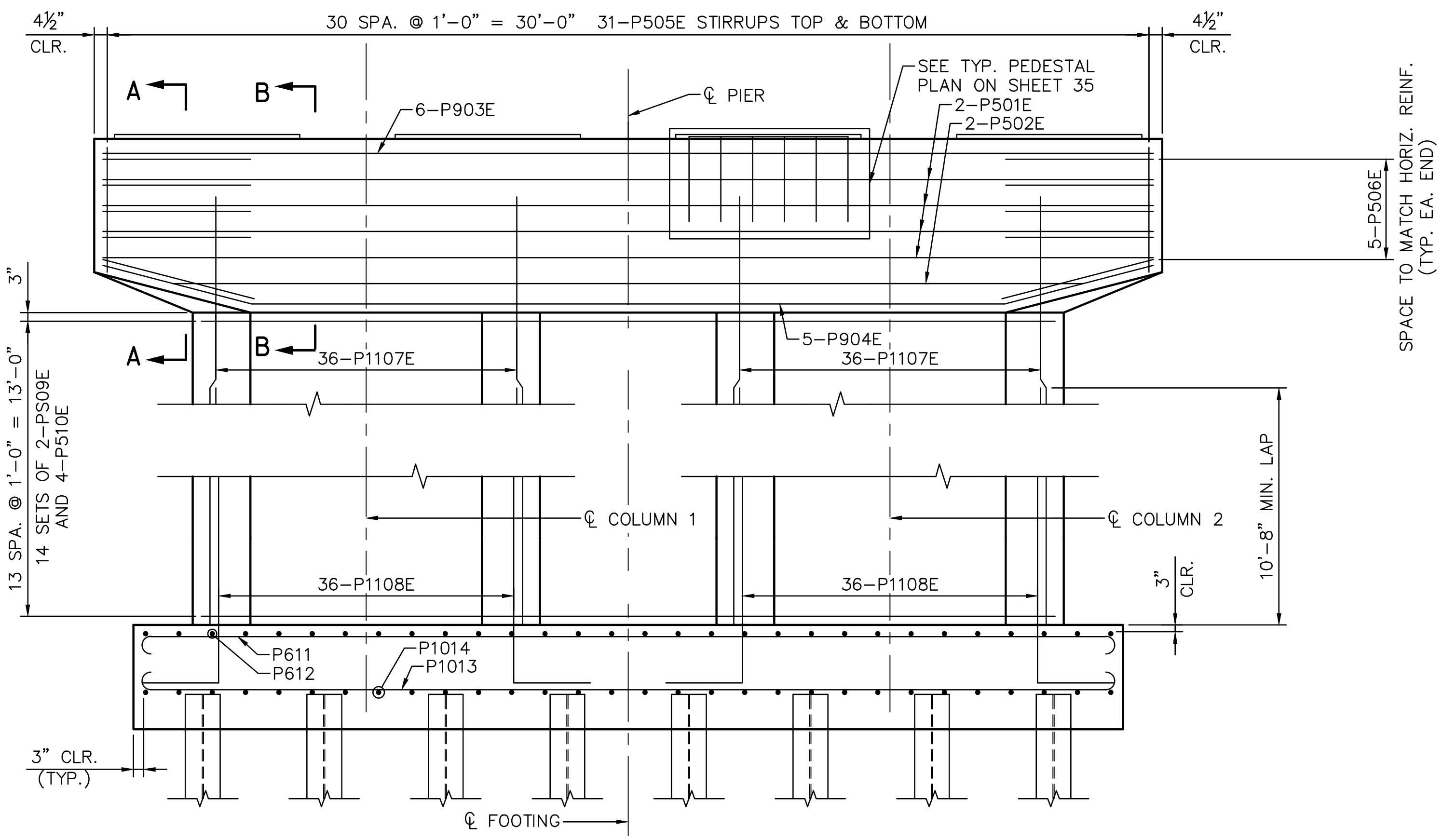


PIER CAP PLAN

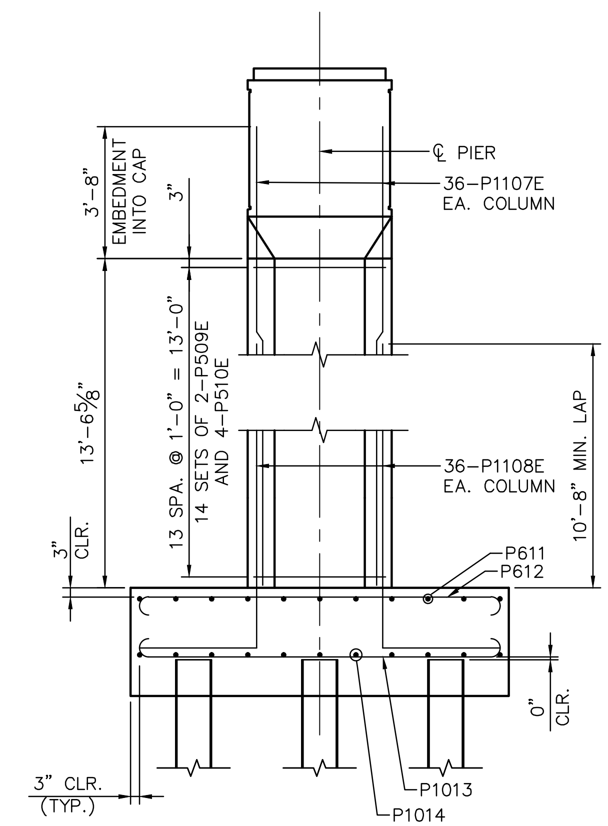
NOTES:

SEE SHEET 32 FOR ANCHOR ROD LAYOUT.

SEE SHEET 35 FOR SECTIONS A-A & B-B.



ELEVATION



END ELEVATION

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJW CHECKED BY: SAD
DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

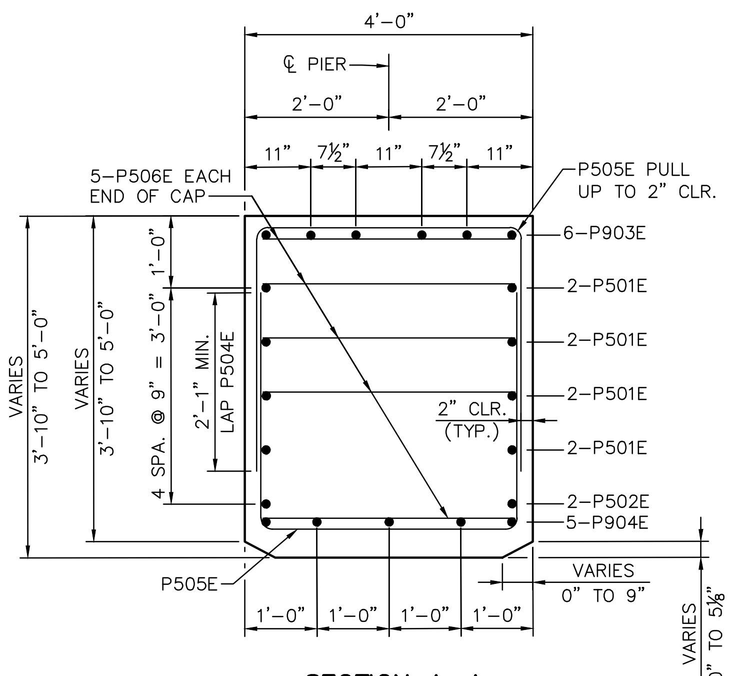
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
PIER REINFORCEMENT 2

DISCIPLINE: STRUCTURES

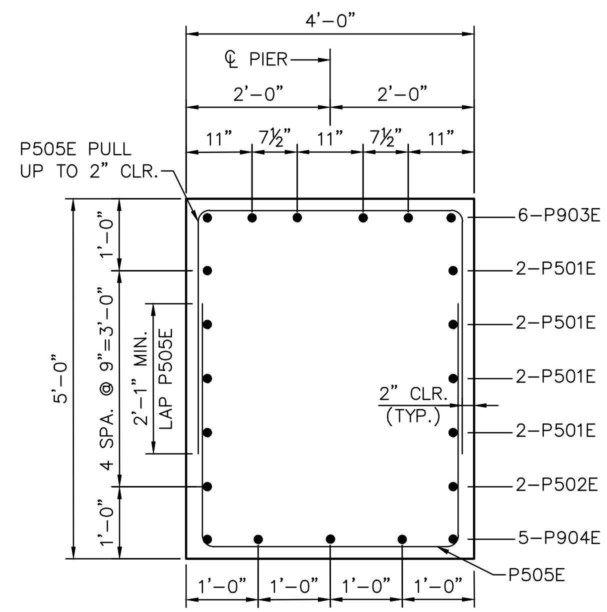
SHEET NAME: CBR27C13-BRG-PIR-004

SHEET 34 OF 60

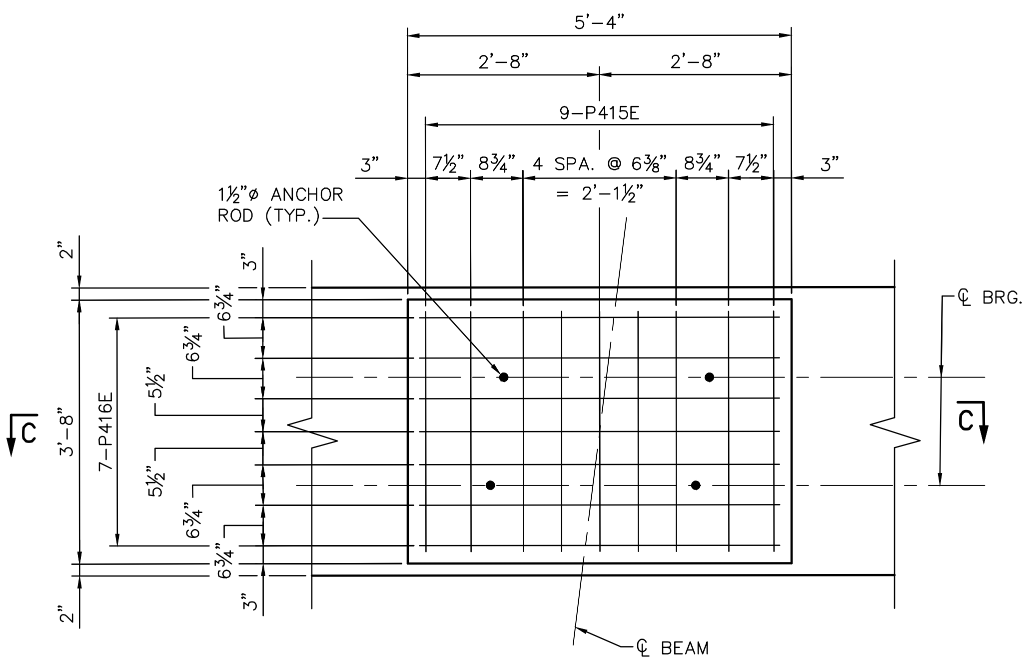
Dec. 14 2015 06:33 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-PIR-004.dwg By: Joe.Menapace



SECTION A–A

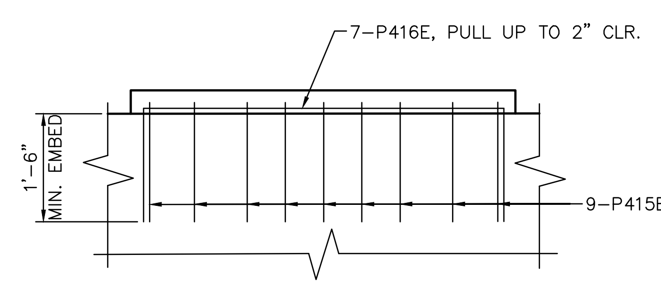


SECTION B–B



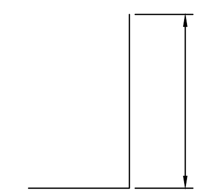
TYPICAL PEDESTAL PLAN

PEDESTAL REINFORCEMENT

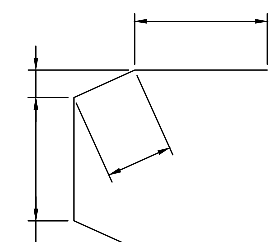


SECTION C–C

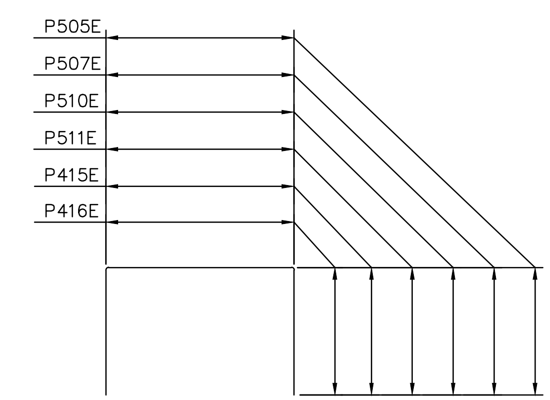
BILL OF REINFORCEMENT FOR PIER				
BAR	NO.	LENGTH	SHAPE	LOCATION



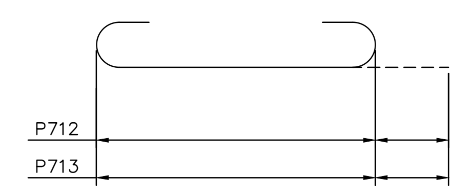
P1115E



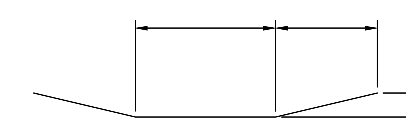
P506E



P505E, P507E, P510E,
P511E, P415E, P416E



P712, P713



P809E

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: MRD | CHECKED BY: DLS

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METROPOLITAN COUNCIL

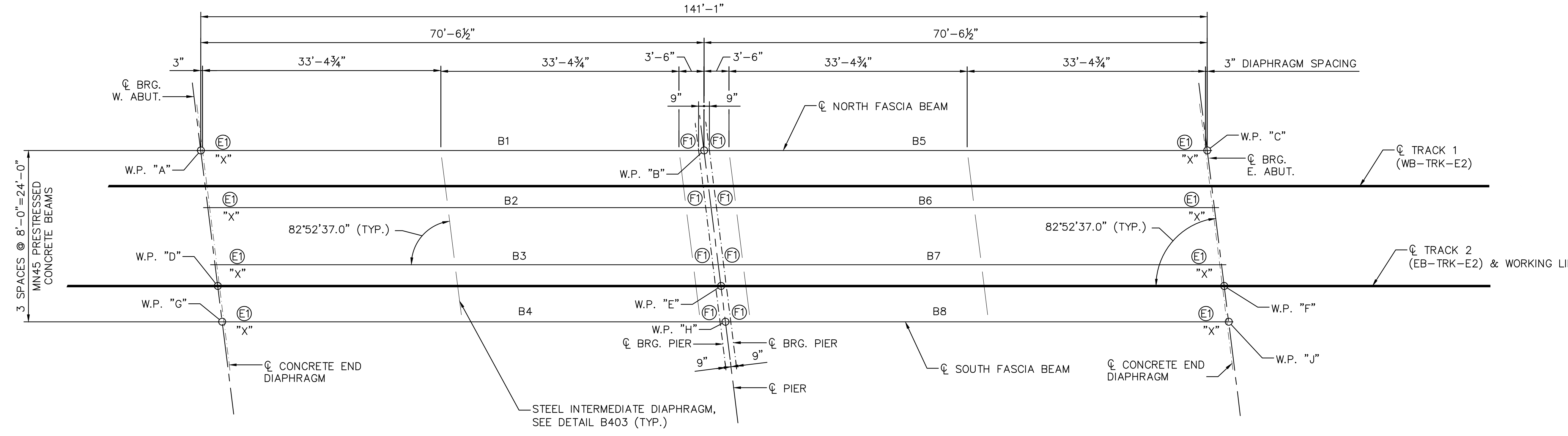
SOUTHWEST Green Line LRT Extension

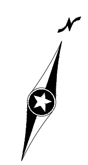
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
PIER REINFORCEMENT 3

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-PIR-005

SHEET 35 OF 60





FRAMING PLAN

NOTES:

(F1) DENOTES FIXED CURVED PLATE BEARING ASSEMBLY, TYPE F1, SEE DETAIL B310.

(E1) DENOTES EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE E1, SEE DETAIL B311.

"X" DENOTES END OF BEAM.

ALL BEAMS SET PARALLEL TO WORKING LINE. ALL DIAPHRAGMS SET PARALLEL TO SUBSTRUCTURE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJW | CHECKED BY: SAD
DRAWN BY: MRD | CHECKED BY: DLS

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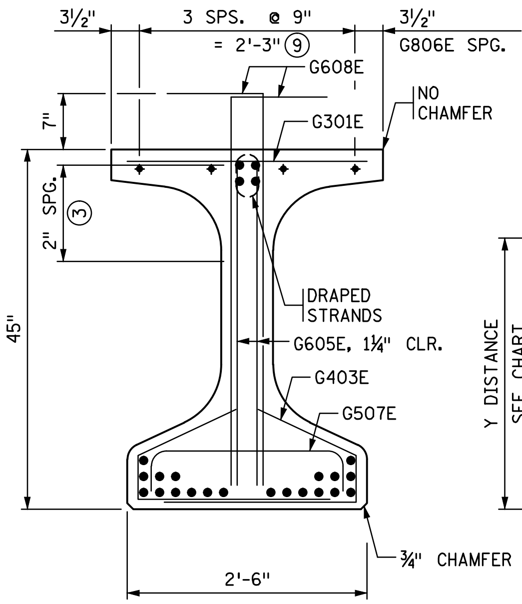
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
FRAMING PLAN

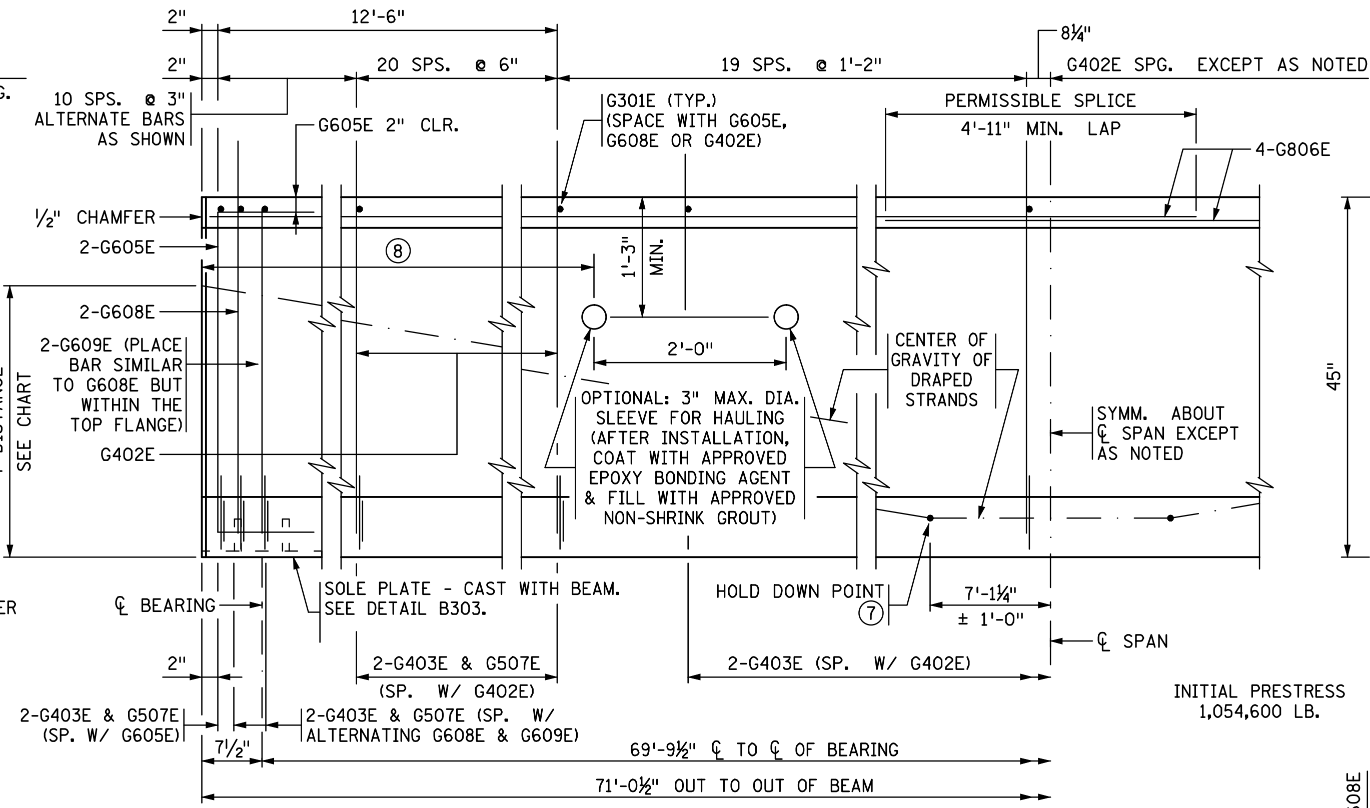
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-SUP-002

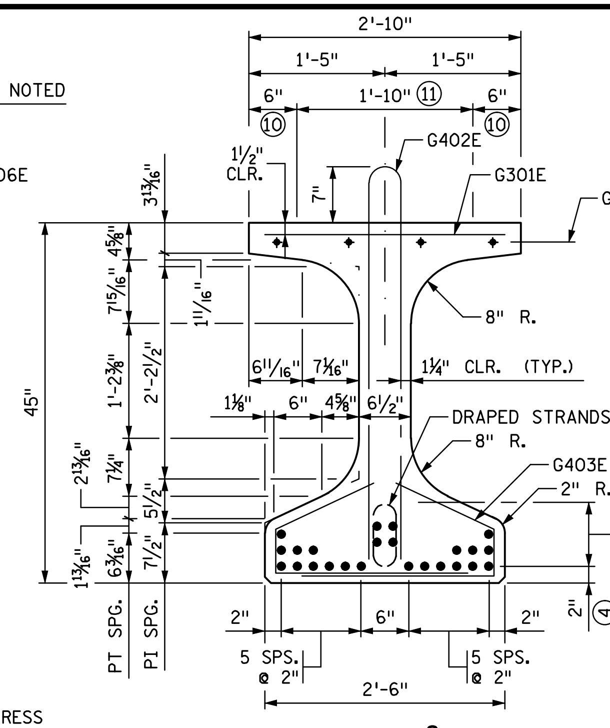


END VIEW

CUT STRANDS FLUSH WITH CONCRETE.
COVER ENDS WITH ONE COMPONENT POLYURETHANE SEALANT PER APPROVED PRODUCT LIST.
(G609E BAR NOT SHOWN)



BEAM ELEVATION

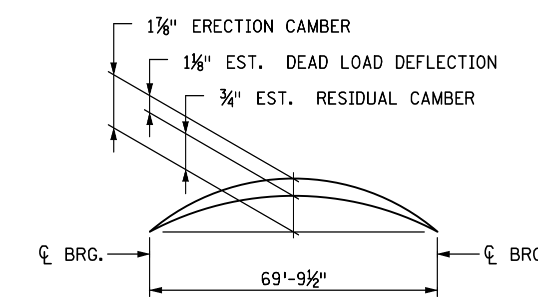


SECTION AT ℄ SPAN

Y DISTANCES (INCHES)			
	NO.	℄ SPAN	END
STRAIGHT STRANDS	20	3"	
DRAPED STRANDS	4	6"	41" ▫
TOTAL STRANDS	24	3.5"	

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.



CAMBER DIAGRAM

ERECTION CAMBER SHOWN IS AFTER DIAPHRAGMS ARE IN PLACE.

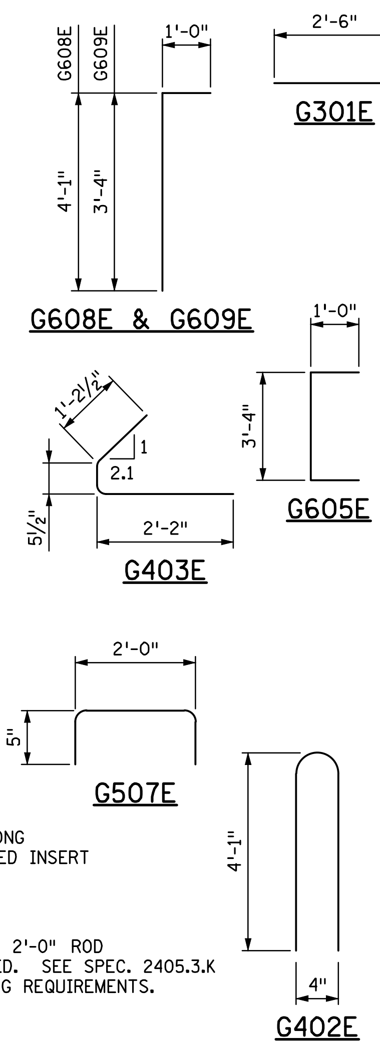
DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB, WEARING COURSE, BALLAST AND TRACK, BARRIER, SIDEWALK AND MEDIAN WHERE APPLICABLE.

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.

CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	17.08 KSI
LONG TERM LOSSES	26.46 KSI
TOTAL LOSSES	43.54 KSI

MINIMUM CONCRETE STRENGTH - K.S.I.	
(1) f'ci	(2) f'c
4.5 KSI	5.5 KSI

PRESTRESSING STRAND DIAMETER	
(5)	½" ☐
(5)	0.60" ☒



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 52.8 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.~~

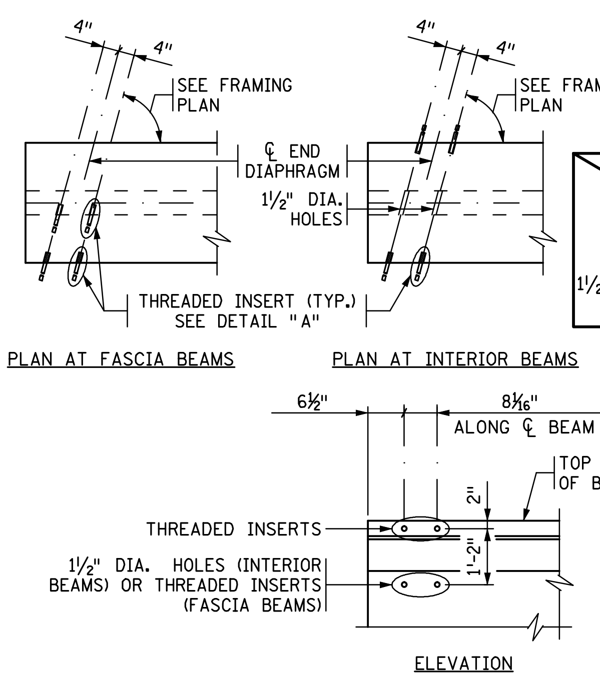
(7) CENTER OF GRAVITY OF HOLD DOWNS WHEN MULTIPLE HOLD DOWNS ARE USED.

(8) DIMENSION DETERMINED BY CONTRACTOR. MAINTAIN 2" MINIMUM CLEAR FROM STRANDS.

(9) TWO INSIDE BARS MAY BE PLACED ADJACENT TO VERTICAL STIRRUP FOR TYING CONVENIENCE.

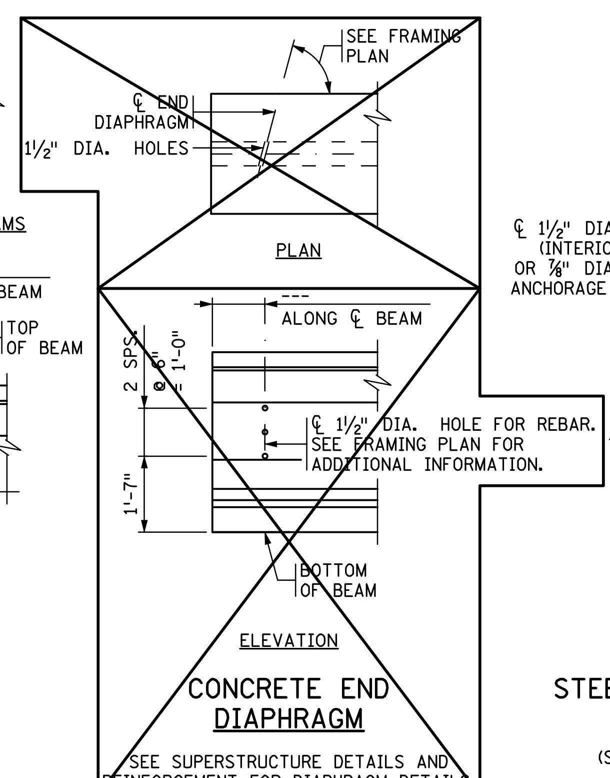
(10) STEEL TROWEL TO SMOOTH FINISH AND APPLY BOND BREAKER PER APPROVED PRODUCTS LIST.

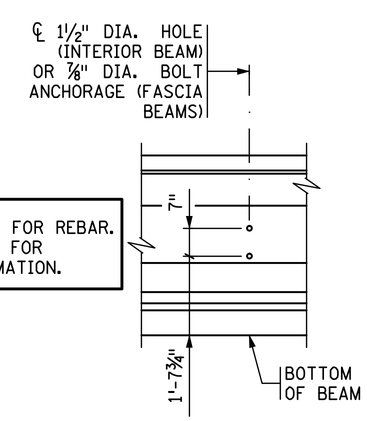
(11) ROUGH FLOAT AND BROOM TRANSVERSELY FOR BOND PER SPEC. 2405.3.D.



CONCRETE END DIAPHRAGM

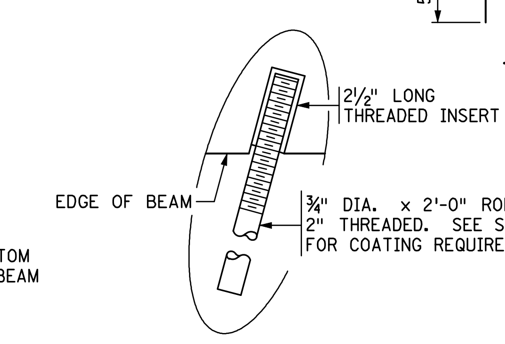
PARAPET ABUTMENT
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)





STEEL INTERMEDIATE DIAPHRAGM

(SEE DETAIL B403 FOR DIAPHRAGM DETAILS)



DETAIL "A"

REVISED:

APPROVED: JANUARY 13, 2015
Nancy Daubenberger
STATE BRIDGE ENGINEER

CERTIFIED BY ______ 01/22/16
LICENSED PROFESSIONAL ENGINEER DATE
NAME: ENGINEER LIC. NO. #####

TITLE: MN45" PRESTRESSED CONCRETE BEAM (PRETENSIONED) MN45-72

BEAMS B1-B8

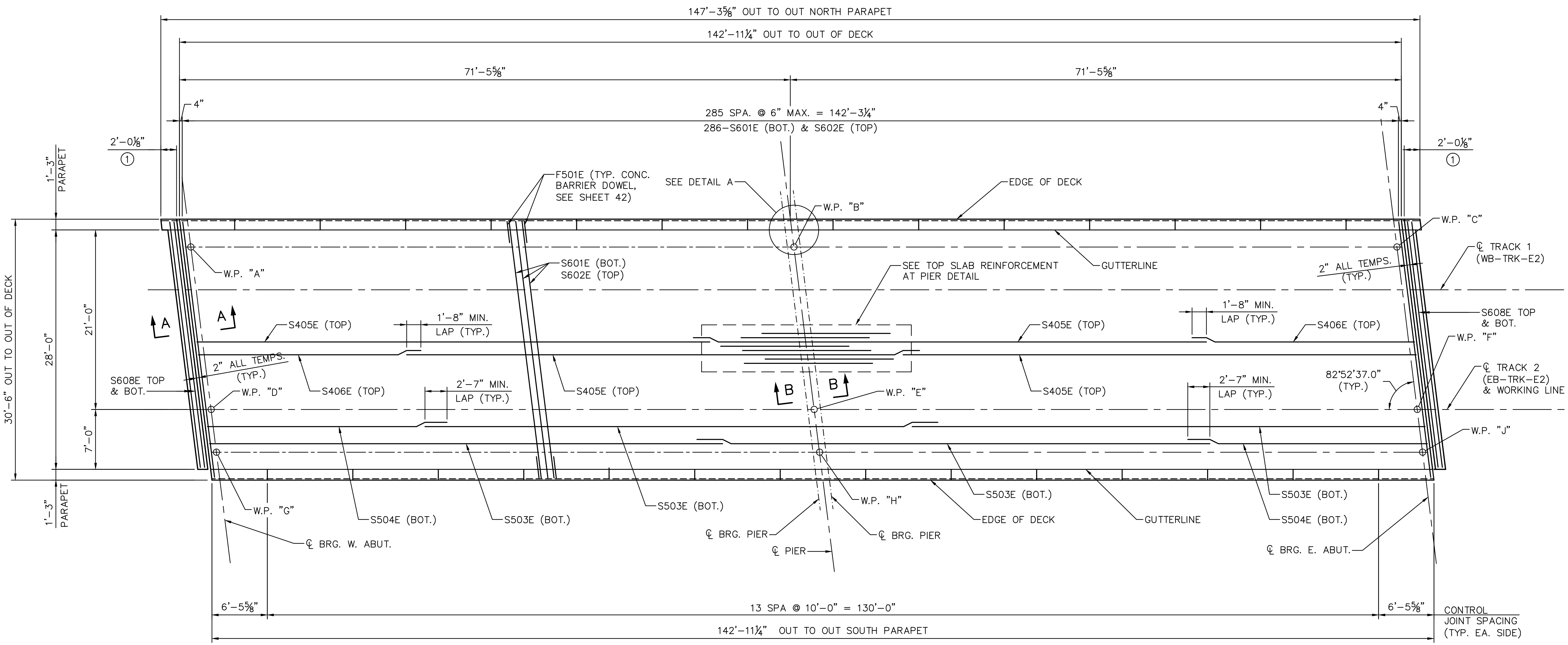
DES:	DJW	DR:	JFM
CHK:	SAD	CHK:	DLS

FIG. 5-397.507

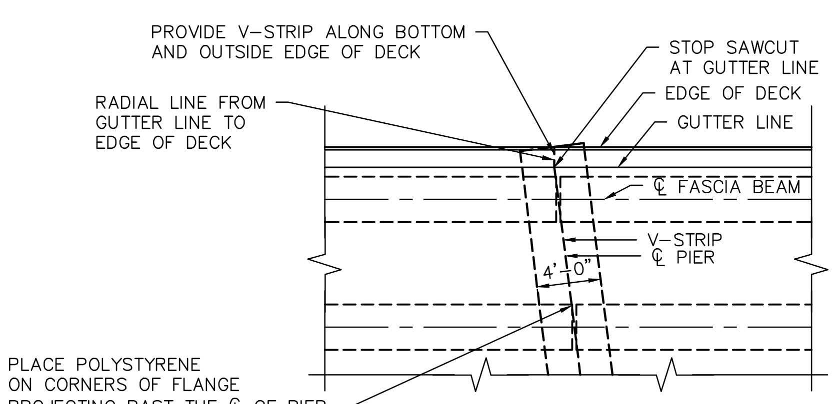
APPROVED:

SHEET NO. 37 OF 60 SHEETS

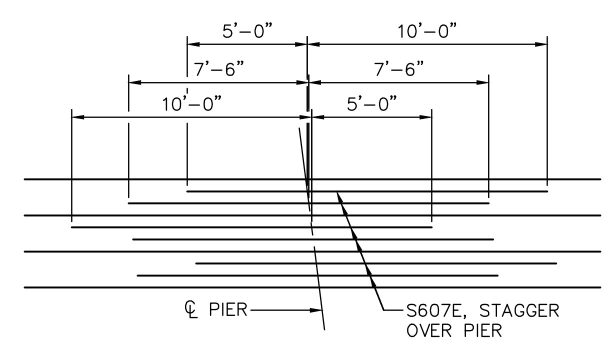
BRIDGE NO. 27C13



DECK PLAN



DETAIL "A"



TOP SLAB REINFORCEMENT AT PIER

NOTES:

SEE SHEET 39 FOR TRANSVERSE SECTION THRU DECK, SECTION A-A, & SECTION B-B

1 CONCRETE PARAPET (TYPE P-1) IS LOCATED ON PAVING BLOCK

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJW CHECKED BY: SAD
DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
SUPERSTRUCTURE DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-SUP-003

SHEET 38 OF 60

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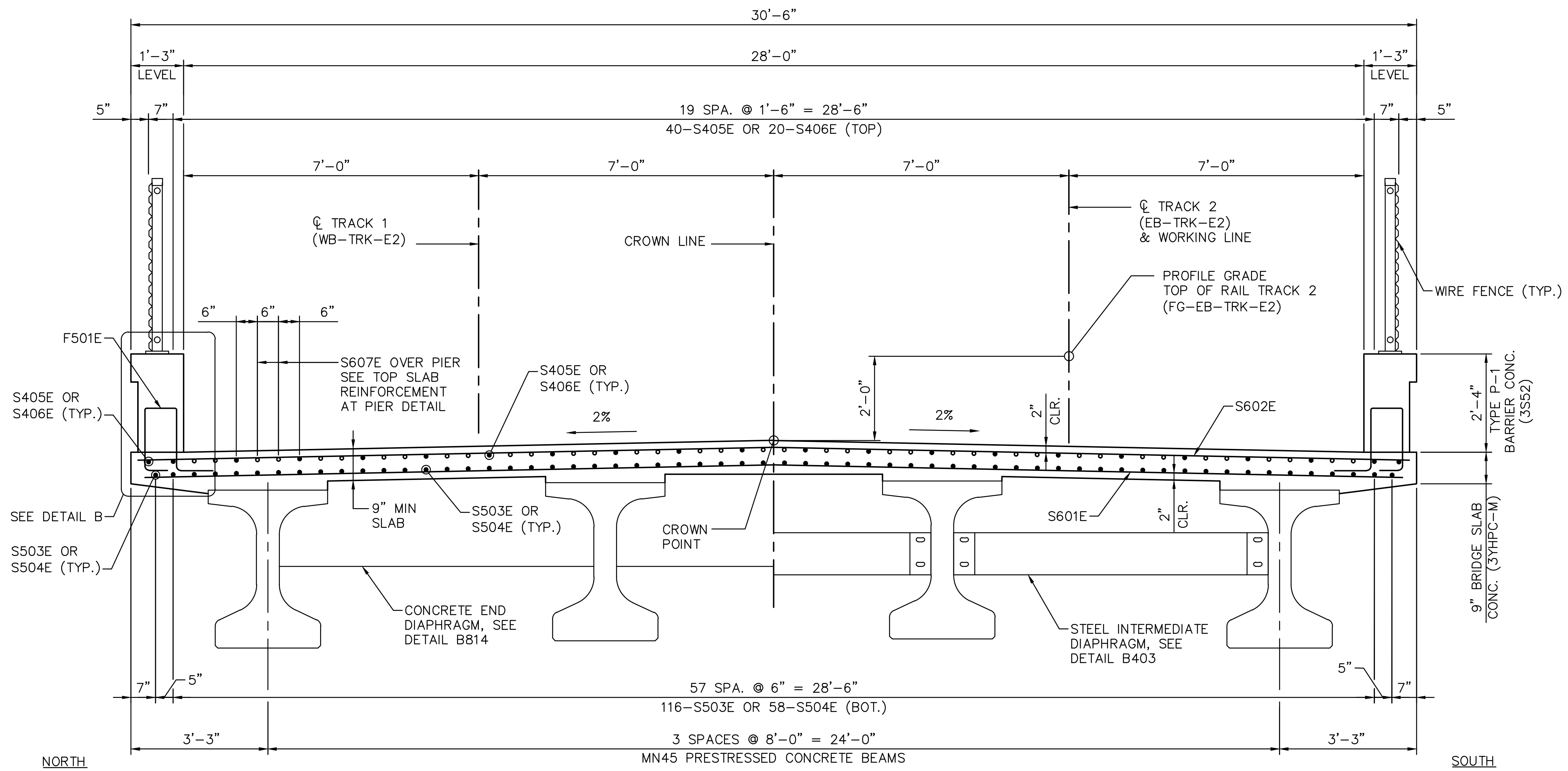
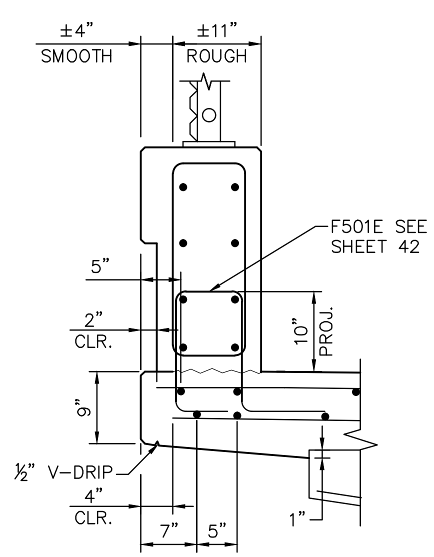
BILL OF REINFORCEMENT FOR SUPERSTRUCTURE

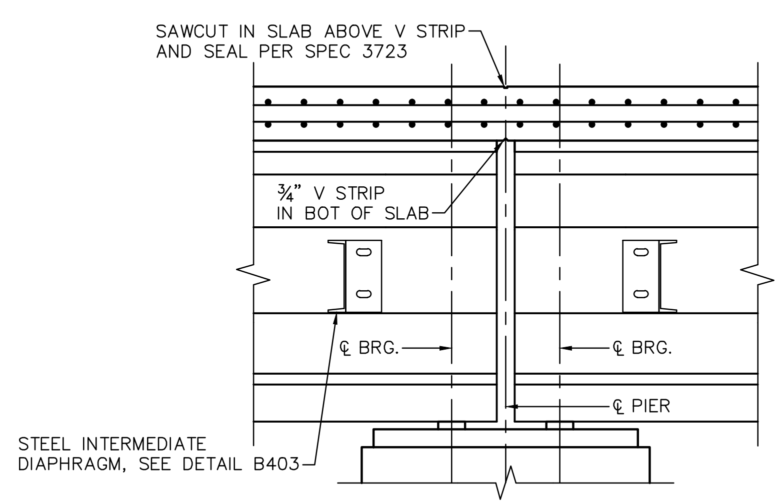
BAR	NO.	LENGTH	SHAPE	LOCATION
S601E	0	'-"	STR.	TRANSVERSE, TOP
S602E	0	'-"	STR.	TRANSVERSE, BOT.
S403E	0	'-"	STR.	LONGITUDINAL, TOP
S404E	0	'-"	STR.	LONGITUDINAL, TOP
S505E	0	'-"	STR.	LONGITUDINAL, BOT.
S506E	0	'-"	STR.	LONGITUDINAL, BOT.
S607E	0	'-"	STR.	LONGITUDINAL, TOP AT PIER
S608E	0	'-"	STR.	PAVING BLOCK, TOP & BOT.



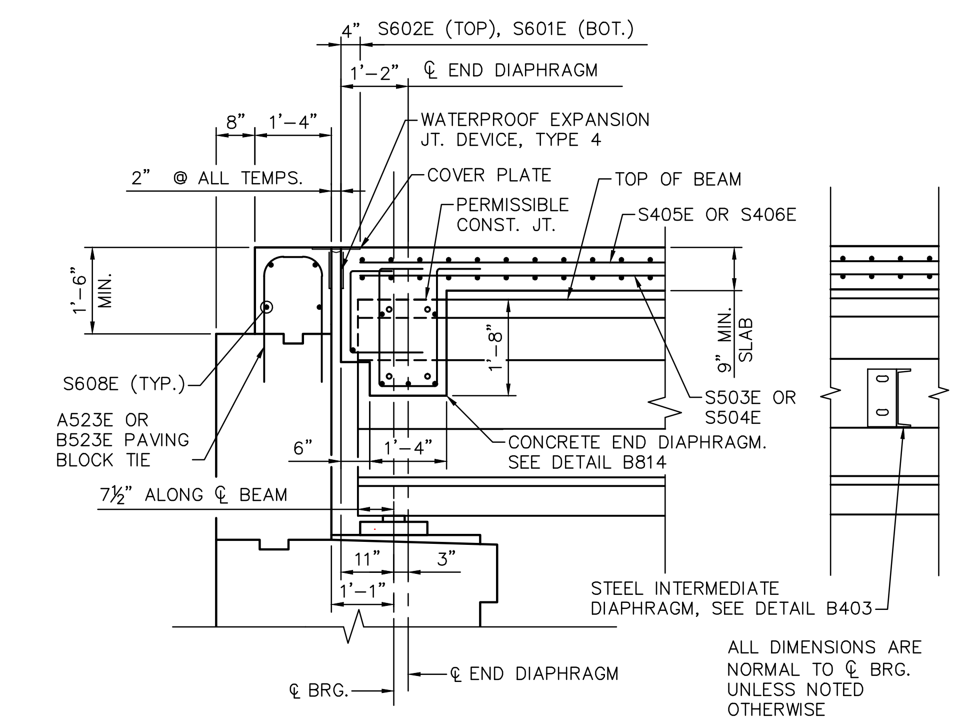
TRANSVERSE SECTION



DETAIL B



SECTION B-B



ALL DIMENSIONS ARE NORMAL TO ℄ BRG. UNLESS NOTED OTHERWISE

SECTION A-A

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJW | CHECKED BY: SAD
DRAWN BY: MRD | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

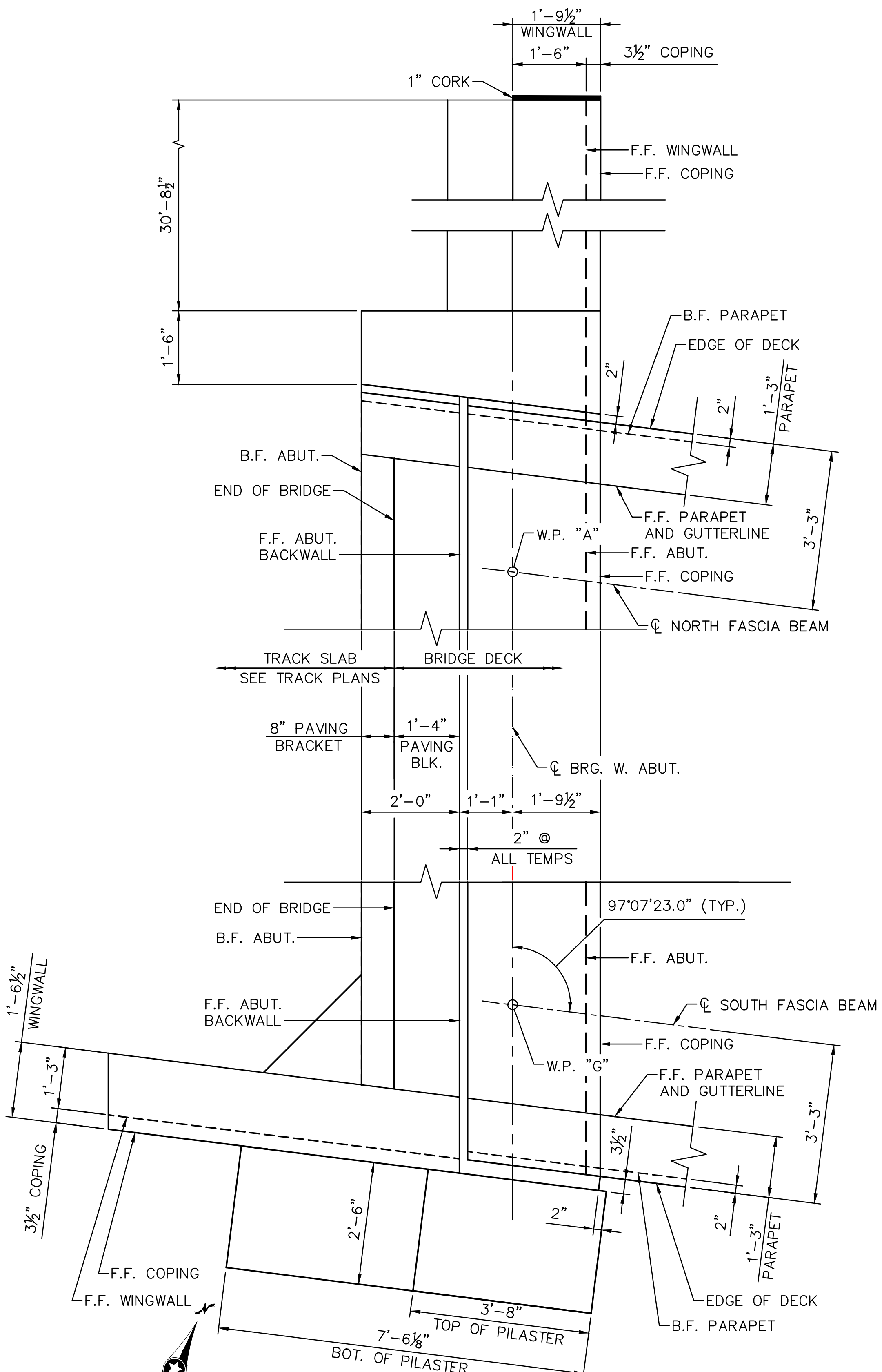
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
SUPERSTRUCTURE DETAILS 2

DISCIPLINE: STRUCTURES

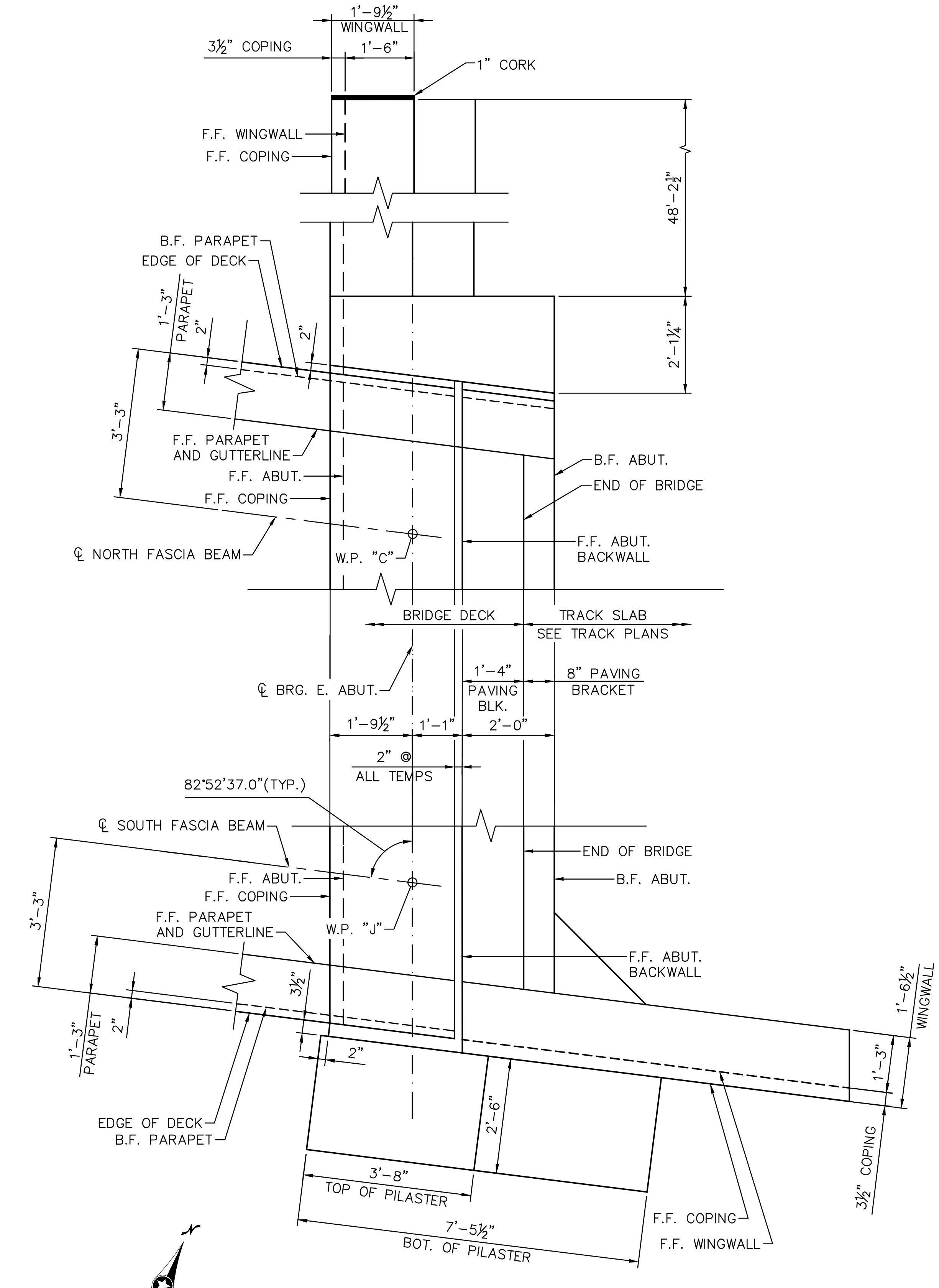
SHEET NAME: CBR27C13-BRG-SUP-004

SHEET 39 OF 60

Dec. 14 2015 06:11 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-SUP-004.dwg By: Zack.Gasse



WEST ABUTMENT CORNER DETAIL



EAST ABUTMENT CORNER DETAIL

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS | CHECKED BY: SAD
DRAWN BY: KAG | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

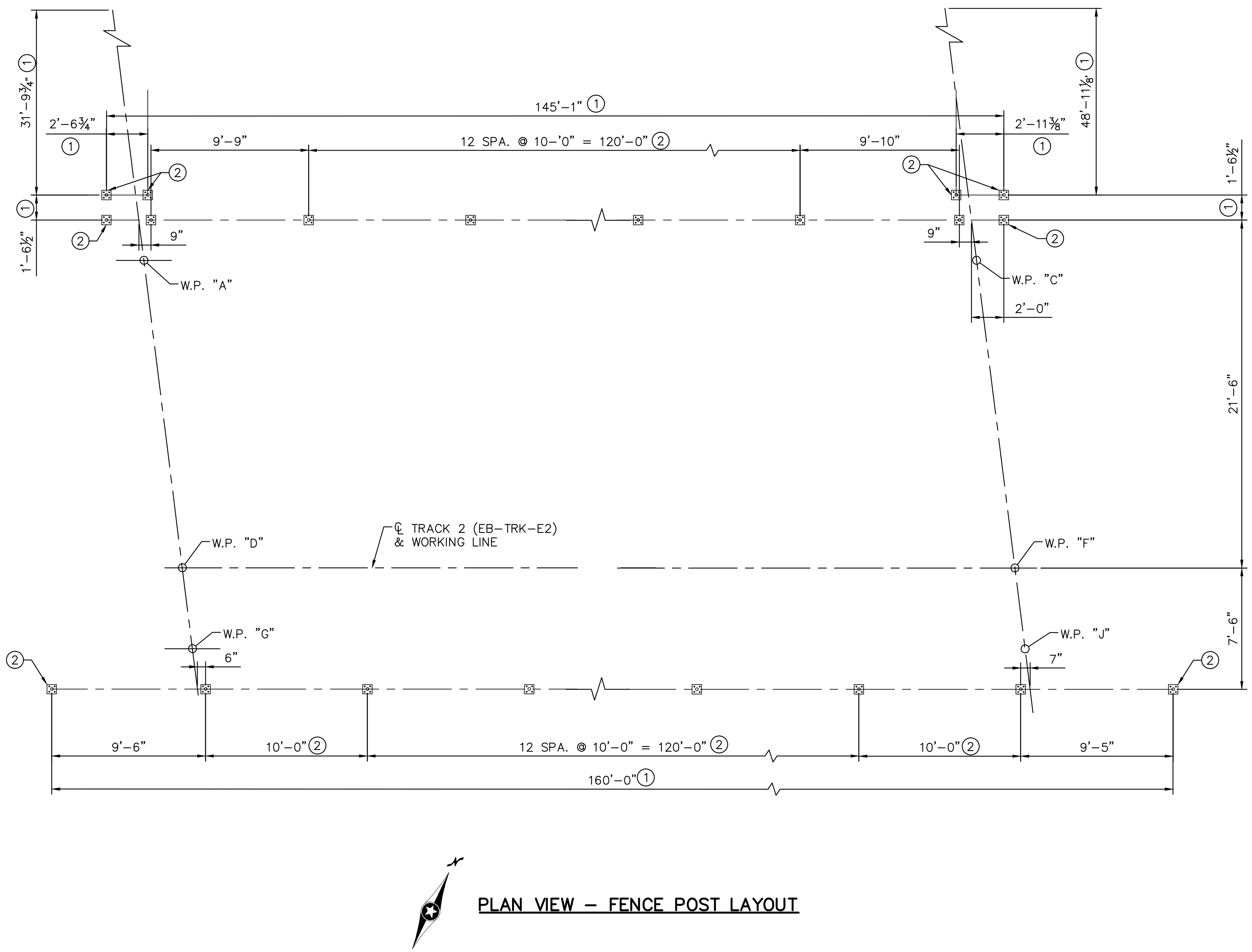
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
SUPERSTRUCTURE DETAILS 3

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-SUP-005

SHEET 40 OF 60

Dec. 14 2015 06:53 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-SUP-005.dwg By: connor.smith



PLAN VIEW – FENCE POST LAYOUT

NOTES:

FENCE SHALL RETAIN A 4" SPHERE UP TO 27" ABOVE GRADE, AND RETAIN A 6" SPHERE FROM 27" ABOVE GRADE TO TOP OF FENCE.

POST SHALL BE SET VERTICAL.

① 48" TALL WIRE FENCE FABRIC.

② FENCE POST ANCHORAGES SHALL BE TYPE A. SEE DETAIL B905.

Dec. 14 2015 06:12 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-SUP-006.dwg By: Zack.Gasse

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJW CHECKED BY: SAD
DRAWN BY: JFM CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

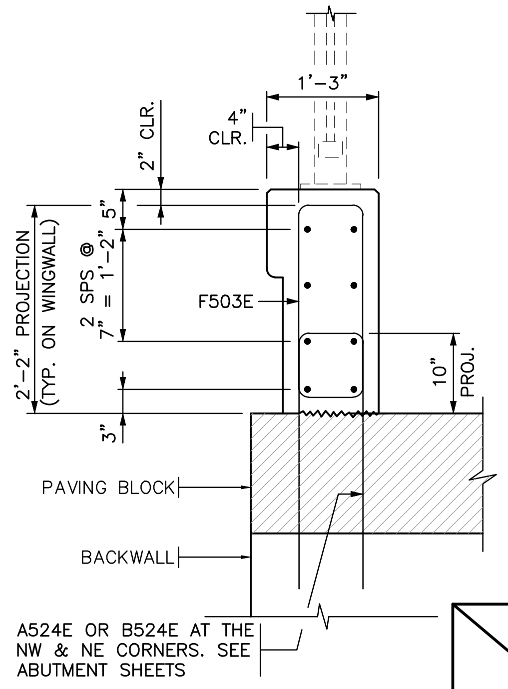
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
SUPERSTRUCTURE DETAILS 4

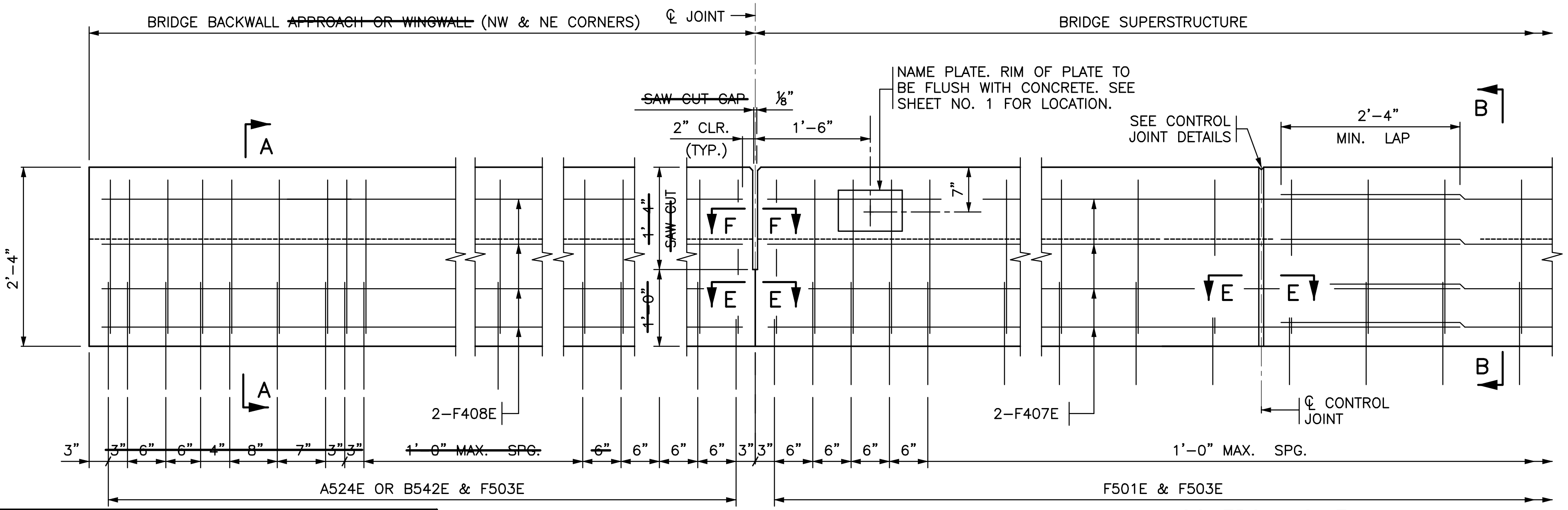
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-SUP-006

SHEET 41 OF 60



Ⓐ SECTION A-A

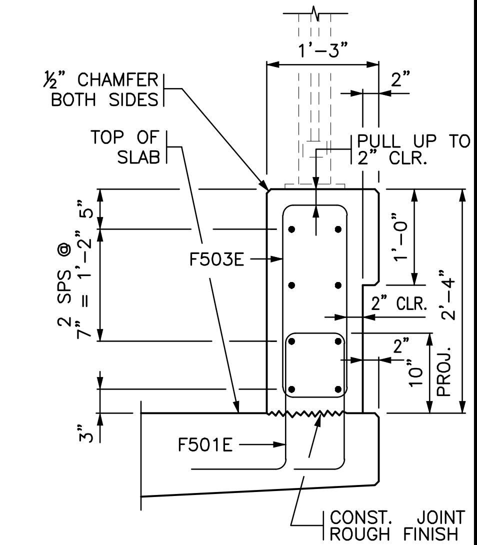


JOINT AT ABUTMENT

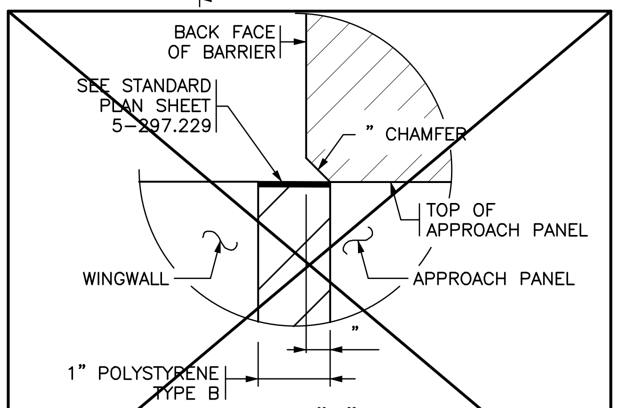
CONTROL JOINT

(INTEGRAL OR SEMI-INTEGRAL ABUTMENT) SEE DETAIL "A" FOR PARAPET ABUTMENT

Ⓐ INSIDE ELEVATION OF PARAPET

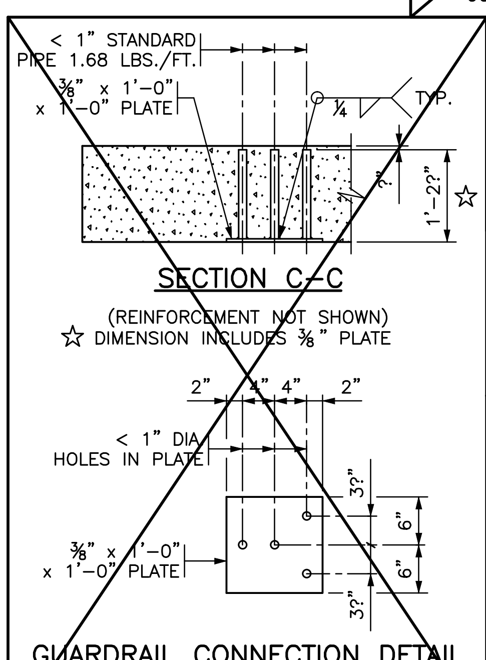


Ⓐ SECTION B-B



DETAIL "B"

(ELEVATION VIEW)
WHERE COPING ON BACK OF BARRIER AT GUARDRAIL CONNECTION EXTENDS TO BOTTOM OF BARRIER

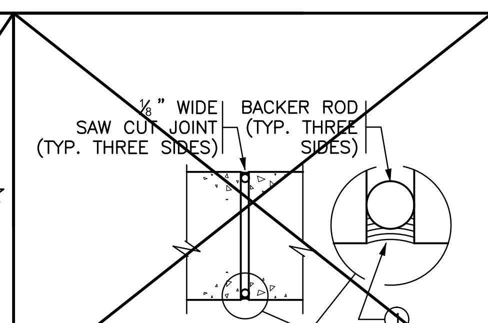


SECTION C-C

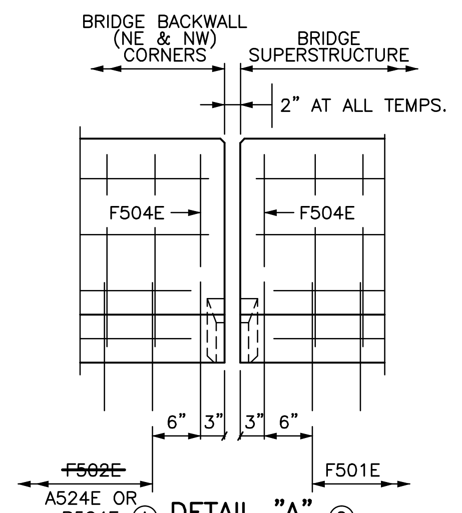
(REINFORCEMENT NOT SHOWN)
☆ DIMENSION INCLUDES ⅜" PLATE

GUARDRAIL CONNECTION DETAIL

GALVANIZE AFTER FABRICATION PER SPEC. 3394. ESTIMATED WEIGHT = 23 LBS.



SECTION F-F



Ⓐ DETAIL "A" ②

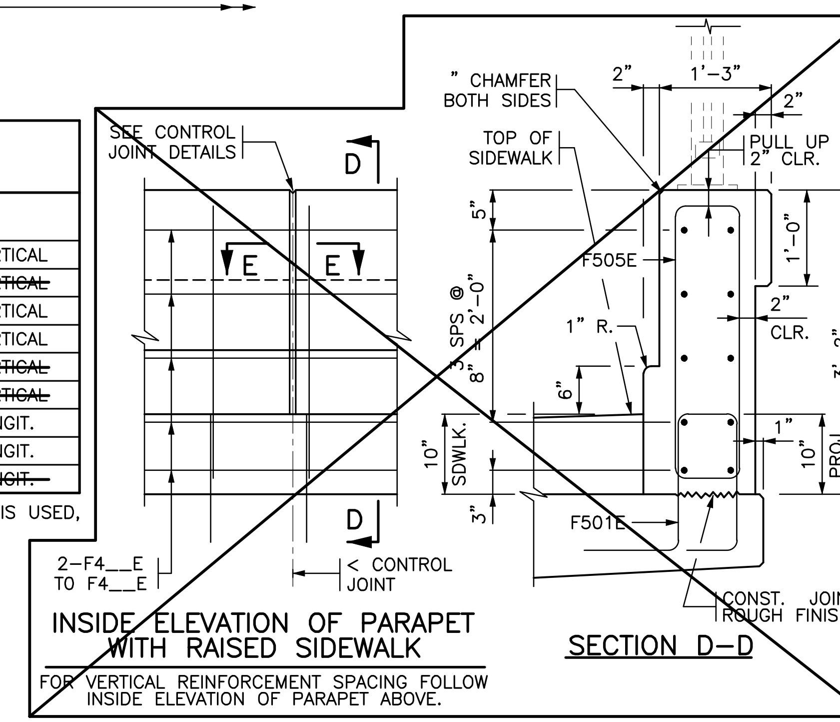
(USE ONLY WITH STRIP SEAL EXPANSION DEVICE)
(EXPANSION DEVICE NOT SHOWN)

BILL OF REINFORCEMENT FOR PARAPET

BAR	NO.	LENGTH	SHAPE	LOCATION
F501E	292	5'-2"		PARAPET VERTICAL
~~F502E~~		~~5'-4"~~		~~PARAPET VERTICAL~~
F503E	298	6'-5"		PARAPET VERTICAL
* F504E	6	4'-9"		PARAPET VERTICAL
~~F505E~~		~~8'-1"~~		~~PARAPET VERTICAL~~
~~F706E~~		~~6'-7"~~		~~PARAPET VERTICAL~~
F407E	48	49'-2"		PARAPET LONGIT.
F408E	16	1'-8"		PARAPET LONGIT.
~~F4__E~~				~~PARAPET LONGIT.~~

* F504E WHEN STRIP SEAL EXPANSION DEVICE IS USED, WITHOUT RAISED SIDEWALK. (SEE DETAIL "A")

SHEET MODIFICATION:
Ⓐ DENOTES MODIFICATION TO STANDARD SHEET



INSIDE ELEVATION OF PARAPET WITH RAISED SIDEWALK

FOR VERTICAL REINFORCEMENT SPACING FOLLOW INSIDE ELEVATION OF PARAPET ABOVE.

SECTION D-D

GENERAL NOTES

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 BETWEEN THE OUTSIDE FACES OF THE CONCRETE PARAPET.

CONCRETE PARAPET = 416 LBS./FT. (0.103 CU. YDS./FT.)

~~CONCRETE PARAPET W/ADJACENT SIDEWALK (BASED ON A 10" SIDEWALK HEIGHT) = 573 LBS./FT. (0.141 CU. YDS./FT.)~~

FINISH ALL EDGES OF PARAPET WITH ½" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.

MAXIMUM SPACING OF CONTROL JOINTS ON SUPERSTRUCTURE, APPROACH AND WINGWALL SHALL BE 10 FT. SEE SUPERSTRUCTURE SHEET FOR JOINT SPACING.

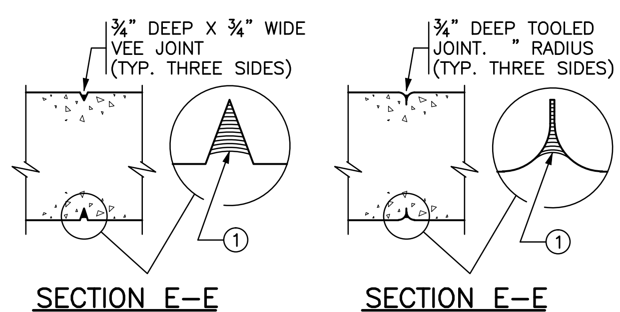
~~GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, SPEC. 3306. GUARDRAIL CONNECTION AND NAME PLATE TO BE CONSIDERED INCIDENTAL TO "TYPE P-1 PARAPET CONCRETE (3S52)".~~

~~SEE STANDARD FIGURE 5-397.___ FOR LIGHT BLISTER DETAILS.~~

~~PARAPET QUANTITIES ARE LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.~~

① JOINT SEALANT PER MnDOT APPROVED/QUALIFIED PRODUCTS LIST – CRACK AND JOINT MATERIALS – SILICONE JOINT SEALERS.

Ⓐ ② REFER TO WATERPROOF EXPANSION DEVICE SHEET FOR COVER PLATE DETAILS.

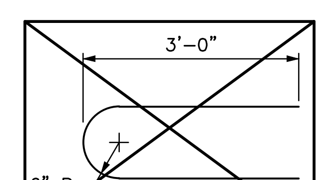


SECTION E-E
CONTRACTOR OPTION 1

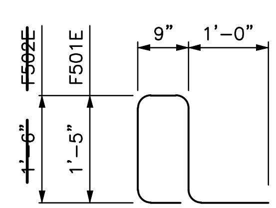
SECTION E-E
CONTRACTOR OPTION 2

CONTROL JOINT DETAILS

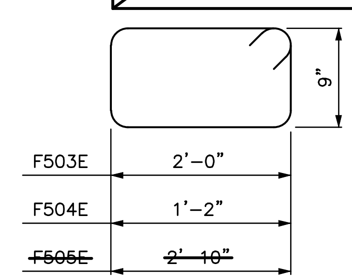
WHEN USING SLIP FORM METHOD TO PLACE THE CONCRETE, CUT JOINT 3 INCHES DEEP USING MARGIN TROWEL OR SIMILAR MEANS IMMEDIATELY AFTER CONCRETE PLACEMENT (TYP. THREE SIDES)



F706E



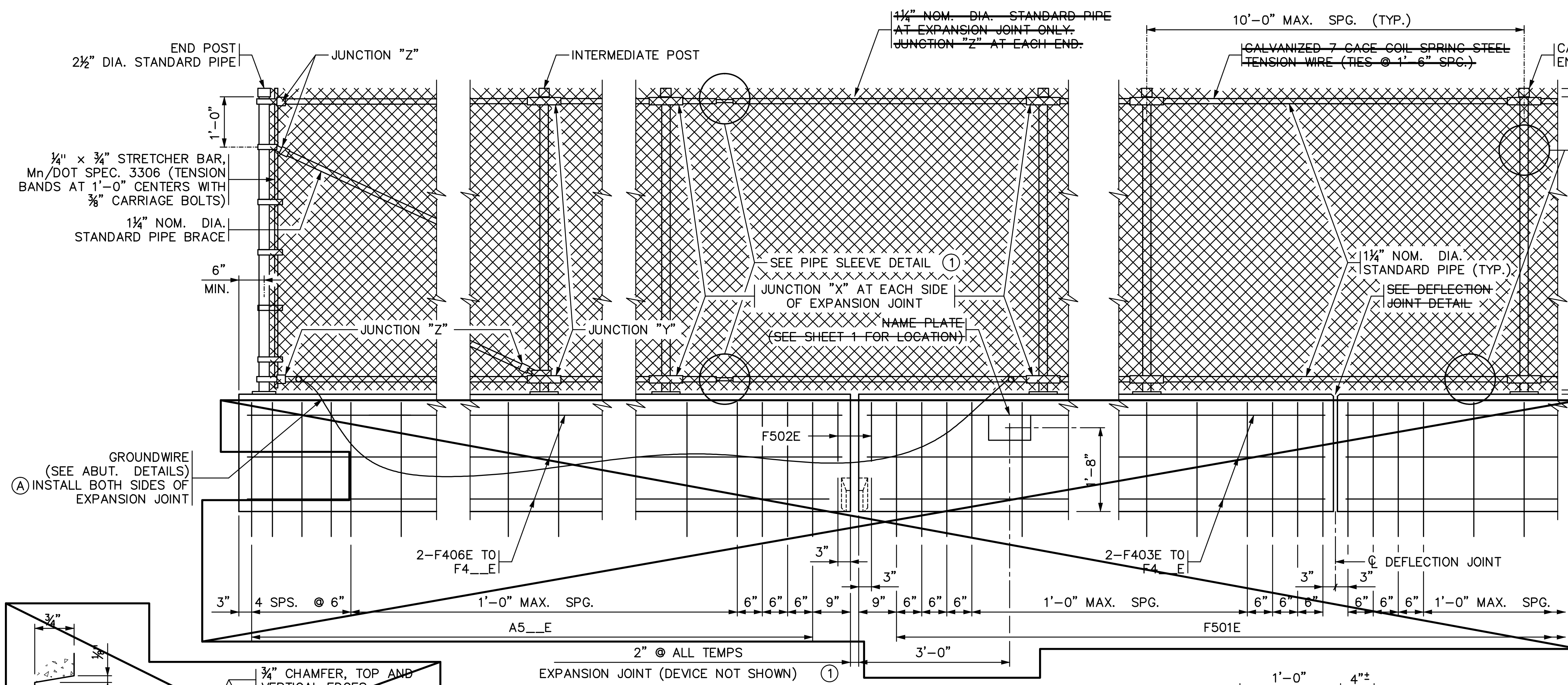
F501E, ~~F502E~~



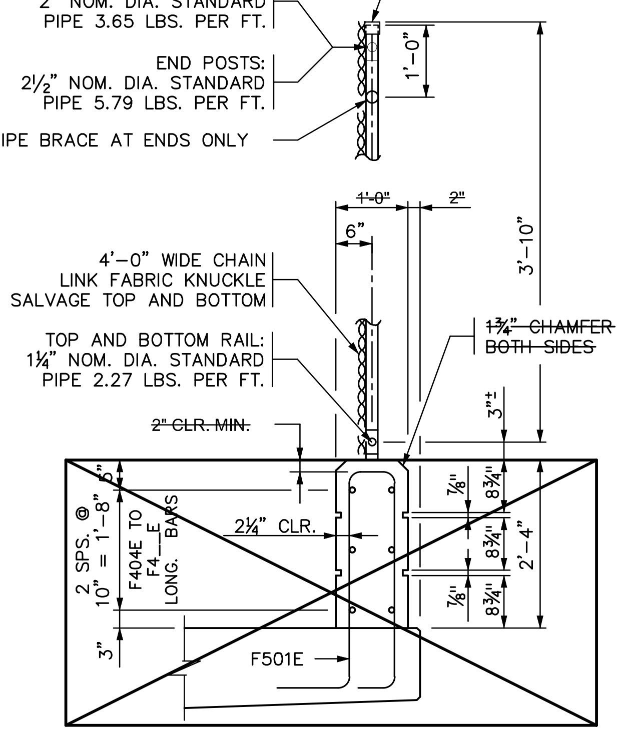
F503E, F504E ~~AND F505E~~

REVISION:		
APPROVED: NOVEMBER 6, 2013 — Nancy Daubenberger, STATE BRIDGE ENGINEER		
CERTIFIED BY ____ LICENSED PROFESSIONAL ENGINEER	01/22/16 DATE	
NAME: #	LIC. NO. #####	
CONCRETE PARAPET (TYPE P-1) ~~WITH INTEGRAL END POST~~ (WITHOUT CONCRETE WEARING COURSE)	DES: BLF DR: JFM CHK: DLS CHK: DLS	FIG. 5-397.166(MOD.) APPROVED:
SHEET NO. 42 OF 60 SHEETS		BRIDGE NO. 27C13

Dec. 14 2015 06:12 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-RAL-001.dwg By: Zack.Gasse



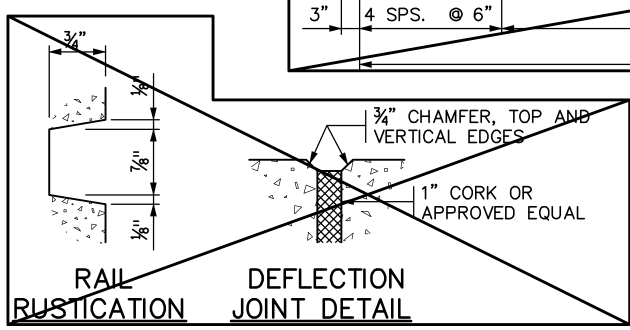
Ⓐ INSIDE ELEVATION OF RAILING



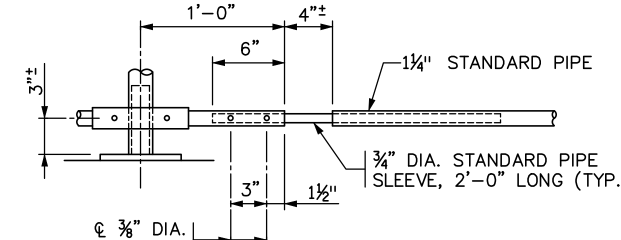
Ⓐ TYPICAL SECTION THROUGH FENCE

INTERMEDIATE POST SHOWN

SHEET MODIFICATION:
Ⓐ DENOTES MODIFICATION TO STANDARD SHEET



RAIL RUSTICATION DEFLECTION JOINT DETAIL



PIPE SLEEVE DETAIL ①

GENERAL NOTES

Ⓐ SEE CONCRETE PARAPET TYPE P-1 SHEET FOR PARAPET DIMENSIONS, 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.~~

Ⓐ LENGTH OF "WIRE FENCE DESIGN W-1" ~~FOR PAYMENT~~ SHALL BE MEASURED BETWEEN THE CENTERS OF END RAILPOSTS. SEE SHEET 41.

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

Ⓐ FOR FENCE POST ANCHORAGES SEE SHEET 41.

~~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.

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

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

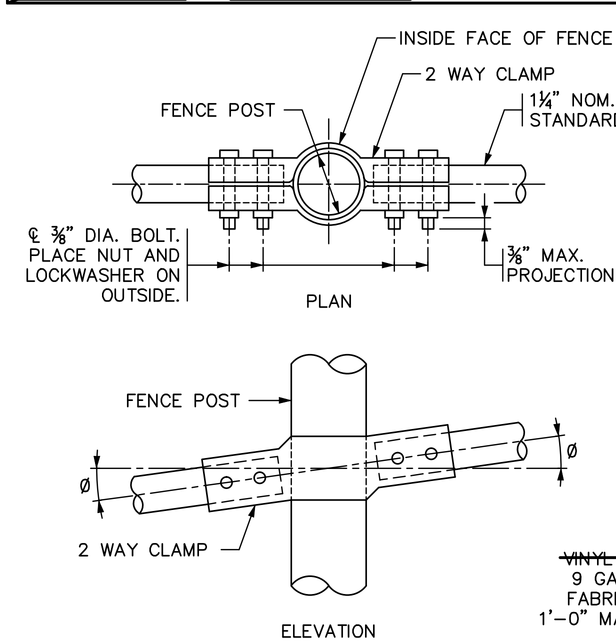
~~ALL POSTS SHALL HAVE A MEANS TO SECURELY HOLD THE TOP TENSION WIRE IN POSITION AND ALLOW FOR THE REMOVAL AND REPLACEMENT OF A POST WITHOUT DAMAGING THE TOP WIRE.~~

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 12½ GAGE GALVANIZED HOG RINGS FOR TENSION WIRE TIES.~~

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

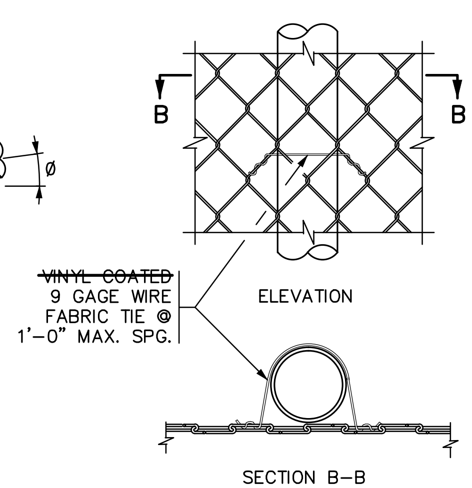
SEE SPECIAL PROVISIONS FOR REQUIREMENTS NOT INCLUDED ON THIS SHEET ~~AND FOR BASIS OF PAYMENT.~~

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

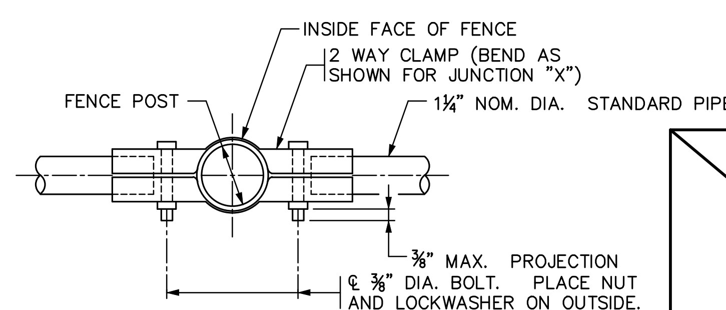


JUNCTION "X"

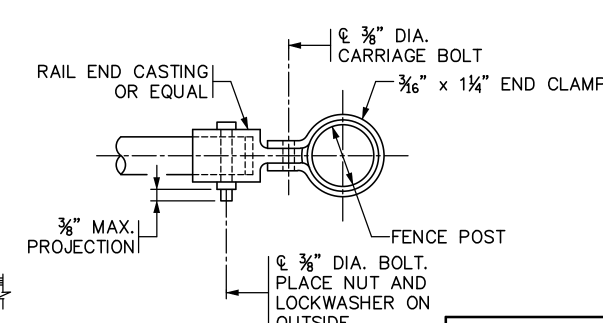
2 WAY CLAMP BENDING TABLE	
GRADE OF FENCE	Ø
0° TO 2°	0°
2° TO 6°	4°
6° TO 10°	8°



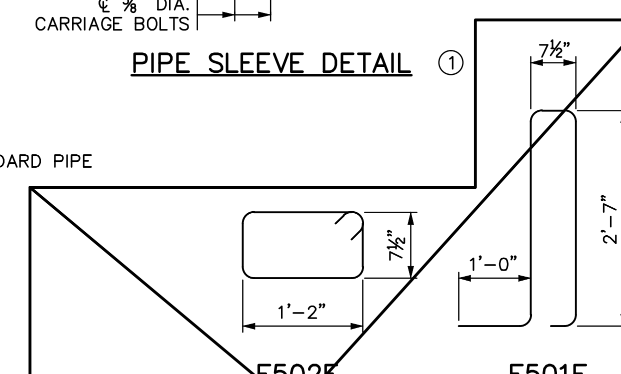
DETAIL "A"



JUNCTION "Y"



JUNCTION "Z"



F502E F501E

BILL OF REINFORCEMENT FOR PARAPET				
BAR	NO.	LENGTH	SHAPE	LOCATION
F501E		7'-3"		RAIL BASE VERTICAL
F502E		4'-6"		RAIL BASE VERTICAL
F403E			—	RAIL BASE LONGITUDINAL
F404E			—	RAIL BASE LONGITUDINAL

REVISED: 04-17-2013

APPROVED: DECEMBER 18, 2003
Daniel L. Dorgan
STATE BRIDGE ENGINEER

CERTIFIED BY
LICENSED PROFESSIONAL ENGINEER 01/22/16 DATE
NAME: # LIC. NO. #####

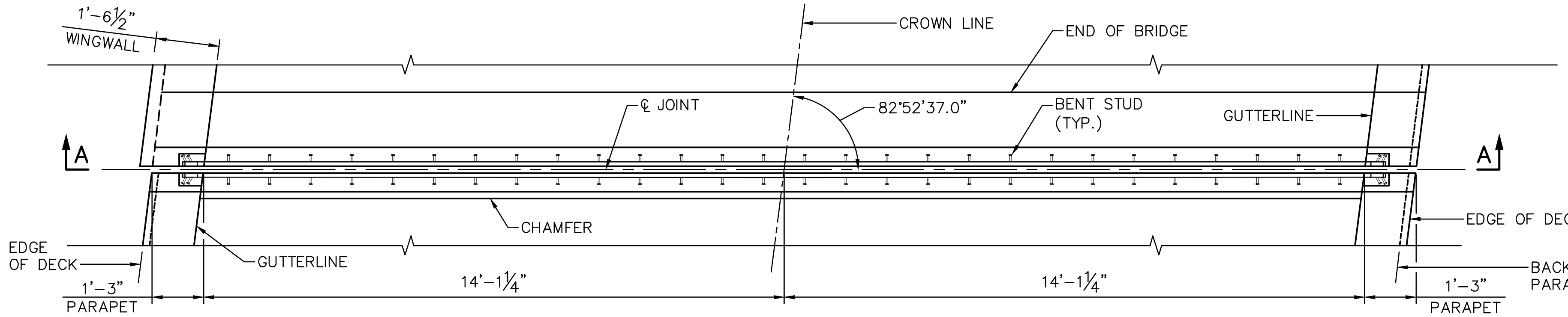
TITLE: WIRE FENCE (DESIGN W-1) Ⓐ

DES:	BLF	DR:	JFM
CHK:	DLS	CHK:	DLS

FIG. 5-397.119 (MOD.)

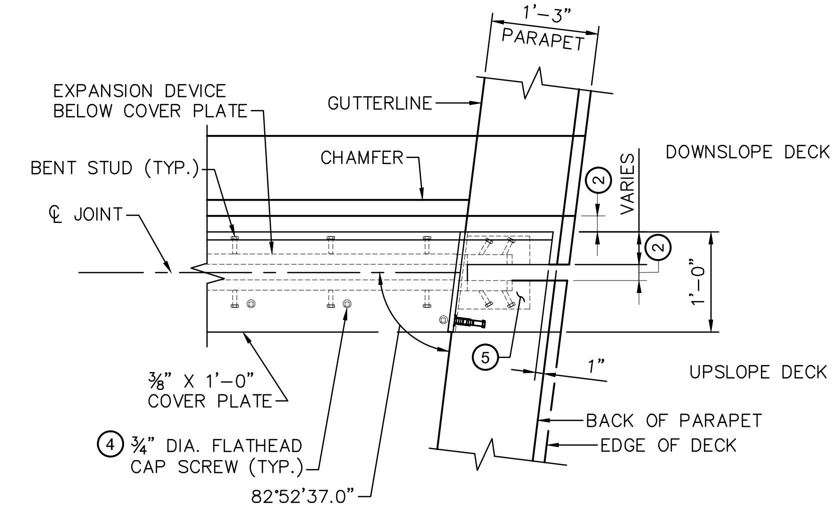
APPROVED:

BRIDGE NO. 27C13

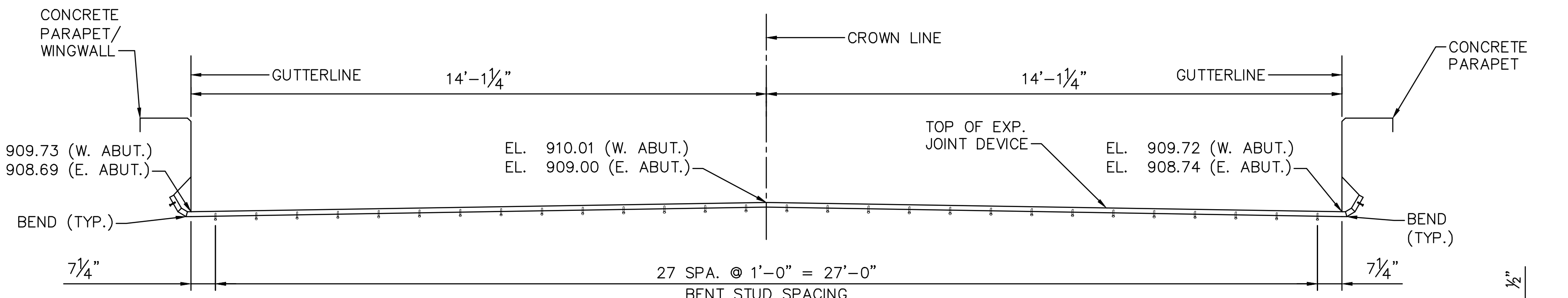


PLAN @ EXPANSION DEVICE

COVER PLATE NOT SHOWN FOR CLARITY
WEST JOINT SHOWN
EAST JOINT SIMILAR

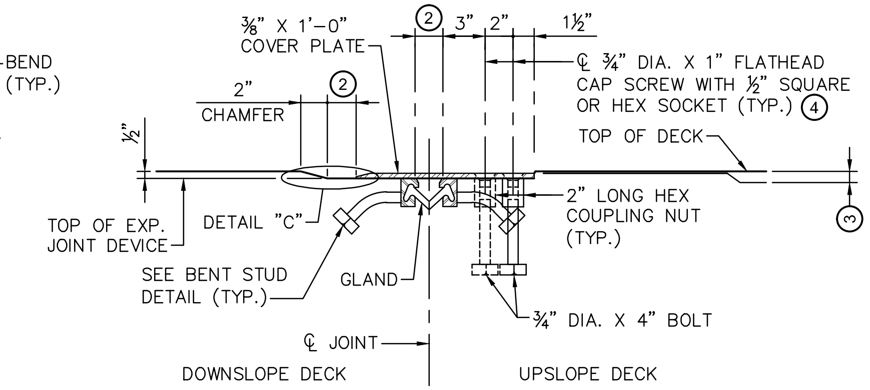


ENLARGED PLAN

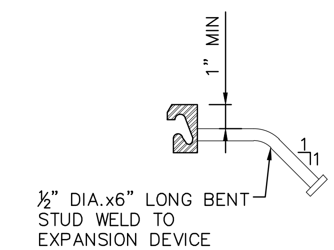


SECTION A–A – ALONG CENTERLINE JOINT

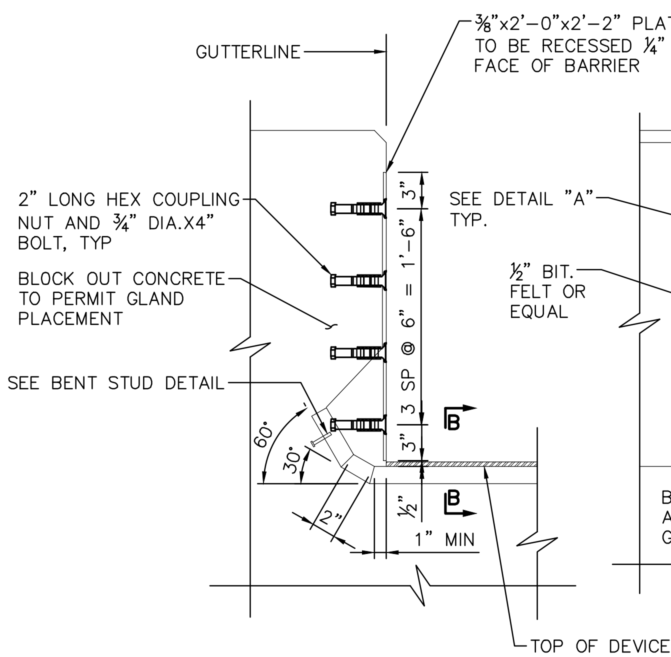
ELEVATIONS SHOWN ARE ½" BELOW TOP OF DECK
@ CENTERLINE JOINT (LOOKING BACKSTATION)



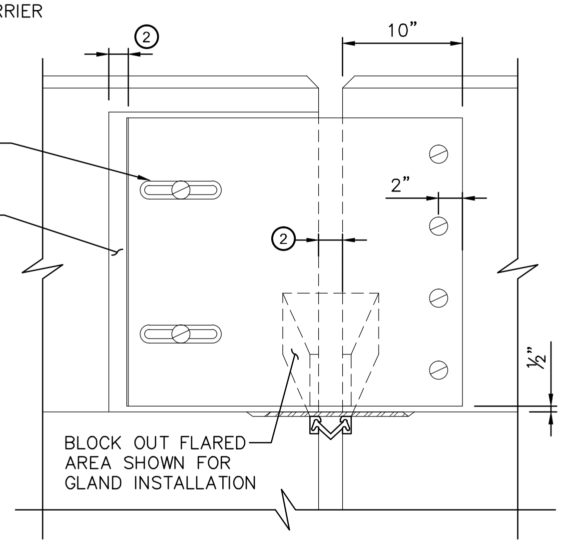
SECTION B–B



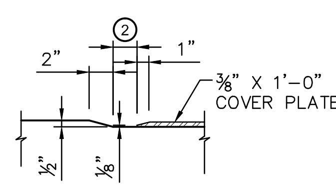
BENT STUD DETAIL



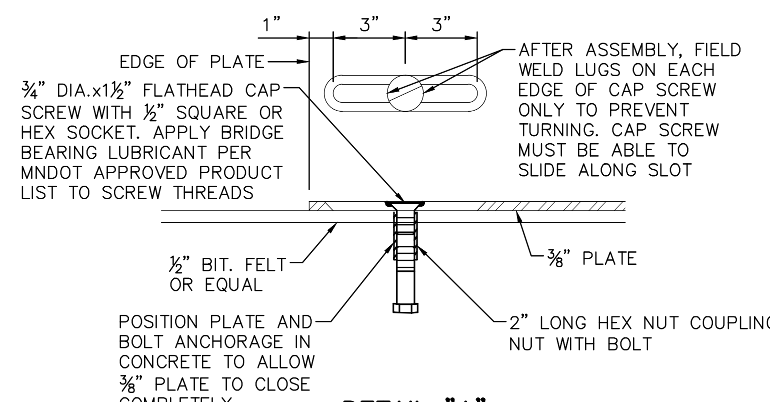
SECTION THROUGH PARAPET



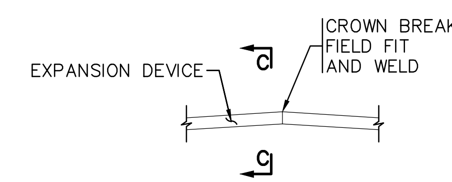
PARAPET ELEVATION



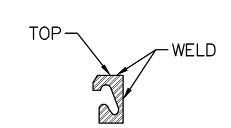
DETAIL "C"



DETAIL "A"



DETAIL "B"



SECTION C–C

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. 2471.3.L.

STRUCTURAL STEEL SHALL COMPLY WITH SPEC. 3306.

EXPANSION DEVICE SHALL BE STRAIGHTENED TO A TOLERANCE OF ⅛" IN 10 FT.

CAP SCREWS SHALL BE COUNTERSUNK 1⁄16" BELOW TOP OF PLATE.

1. EXPANSION DEVICE ELEVATIONS SHOWN ARE ½" BELOW FINISHED DECK ELEVATIONS. COVER PLATE SHALL BE INSTALLED PER TOLERANCE SHOWN IN SECTION B–B.
2. 2" ALL TEMPERATURES.
3. TOP OF CONCRETE TO TOP OF COVER PLATE ⅛" (¼" MAX.).
4. MAXIMUM TRANSVERSE SPACING OF ¾" DIA. FLATHEAD SCREWS AND COUPLINGS SHALL BE 1'-0".
5. MINIMAL AMOUNT OF CURB CONCRETE ABOVE EXPANSION DEVICE SHALL BE BLOCKED OUT FOR GLAND INSTALLATION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS | CHECKED BY: DLS
DRAWN BY: MRD | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

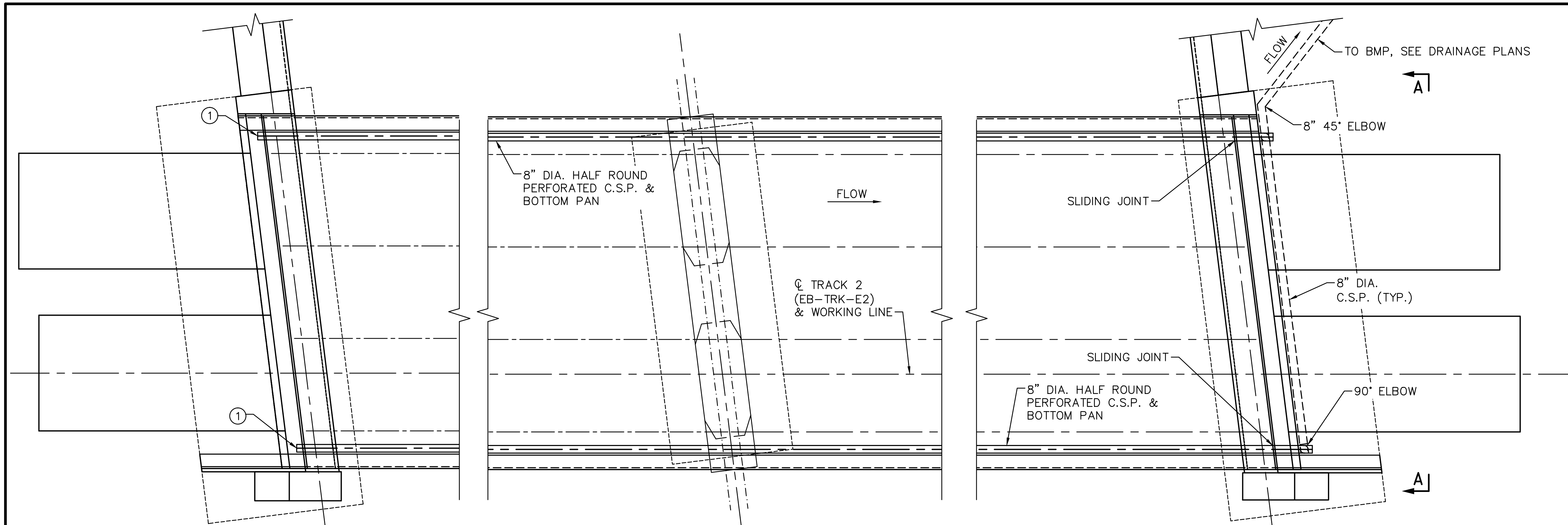
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

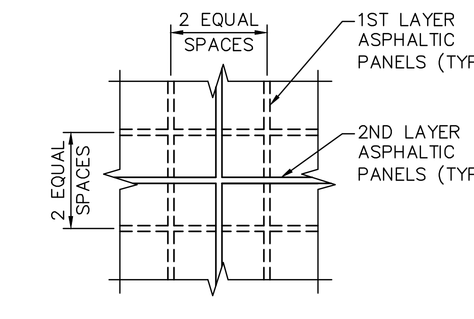
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
WATERPROOF EXPANSION DEVICE

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-EXP-001



BRIDGE DECK DRAINAGE PLAN



TYPICAL ASPHALT PANEL PLACEMENT

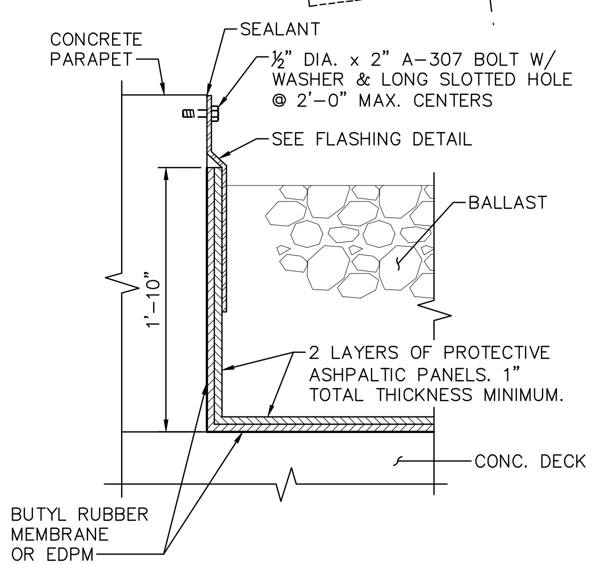
NOTES:

FOR SECTINO A-A, SEE SHEET 46.

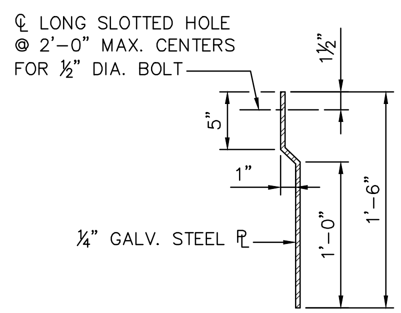
ALL PIPE SHALL COMPLY WITH SPEC. 3326.

ALL STEEL COMPONENTS OF THE DRAINAGE SYSTEM INCLUDING PIPES, BOTTOM PANS, COVERS, CLAMPS, END PLATES, AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH SPEC. 3392 AND SPEC. 3394.

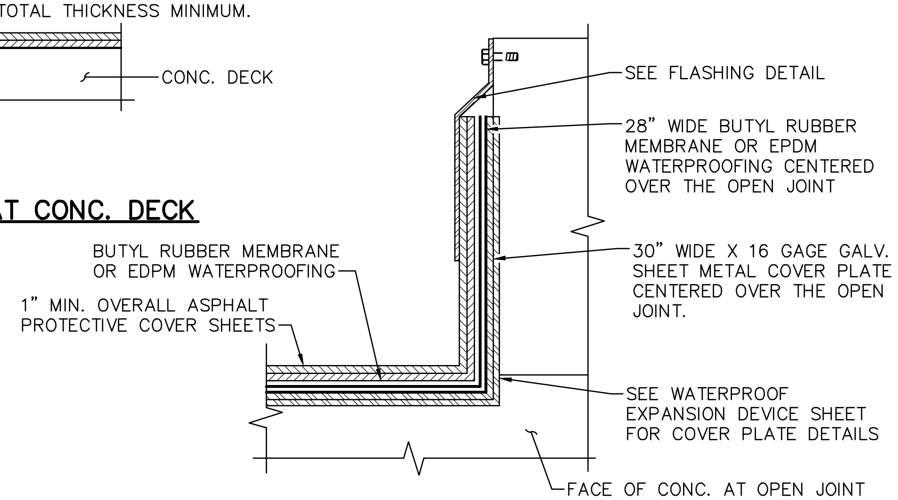
1 TERMINATE DRAIN AT THE BACK OF THE WEST ABUTMENT EXPANSION JOINT BLOCK.



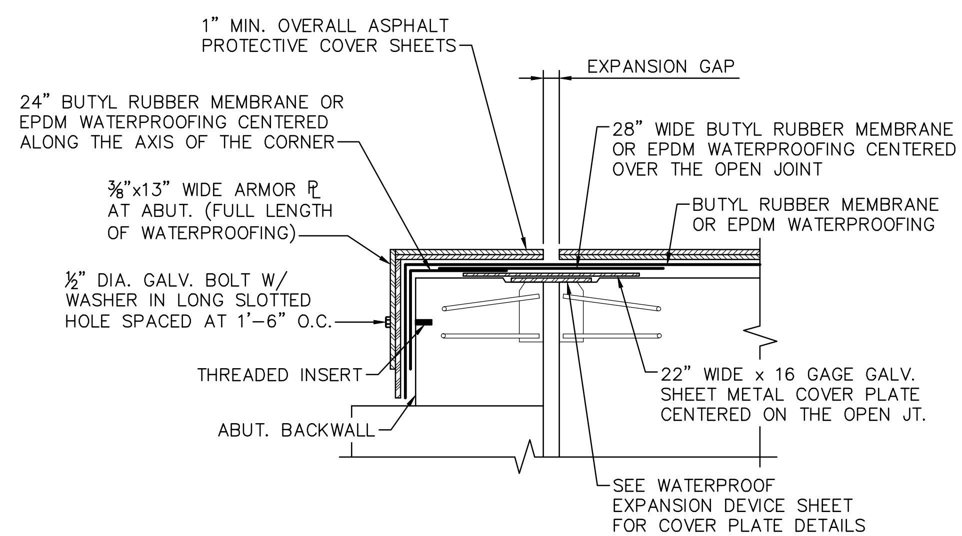
TRANS. SECTION AT CONC. DECK



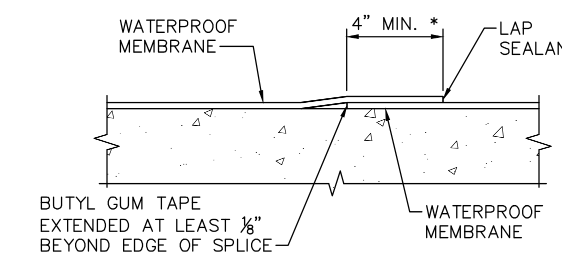
FLASHING DETAIL



TRANS. SECTION AT OPEN JOINT

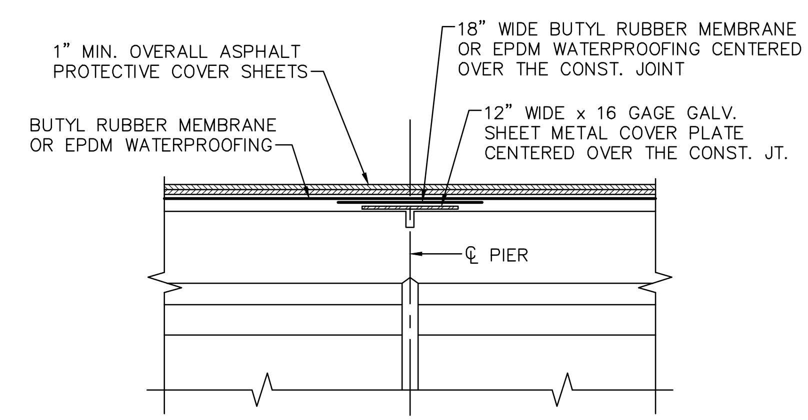


WATERPROOFING AT ABUTMENT



BUTYL RUBBER MEMBRANE OR EPDM WATERPROOFING SPLICE DETAIL

* ALL CONTACT SURFACES TO BE THOROUGHLY CLEANED & CEMENTED



WATERPROOFING AT PIER

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS — CHECKED BY: DLS
DRAWN BY: KAG — CHECKED BY: DLS

AECOM Kimley»Horn

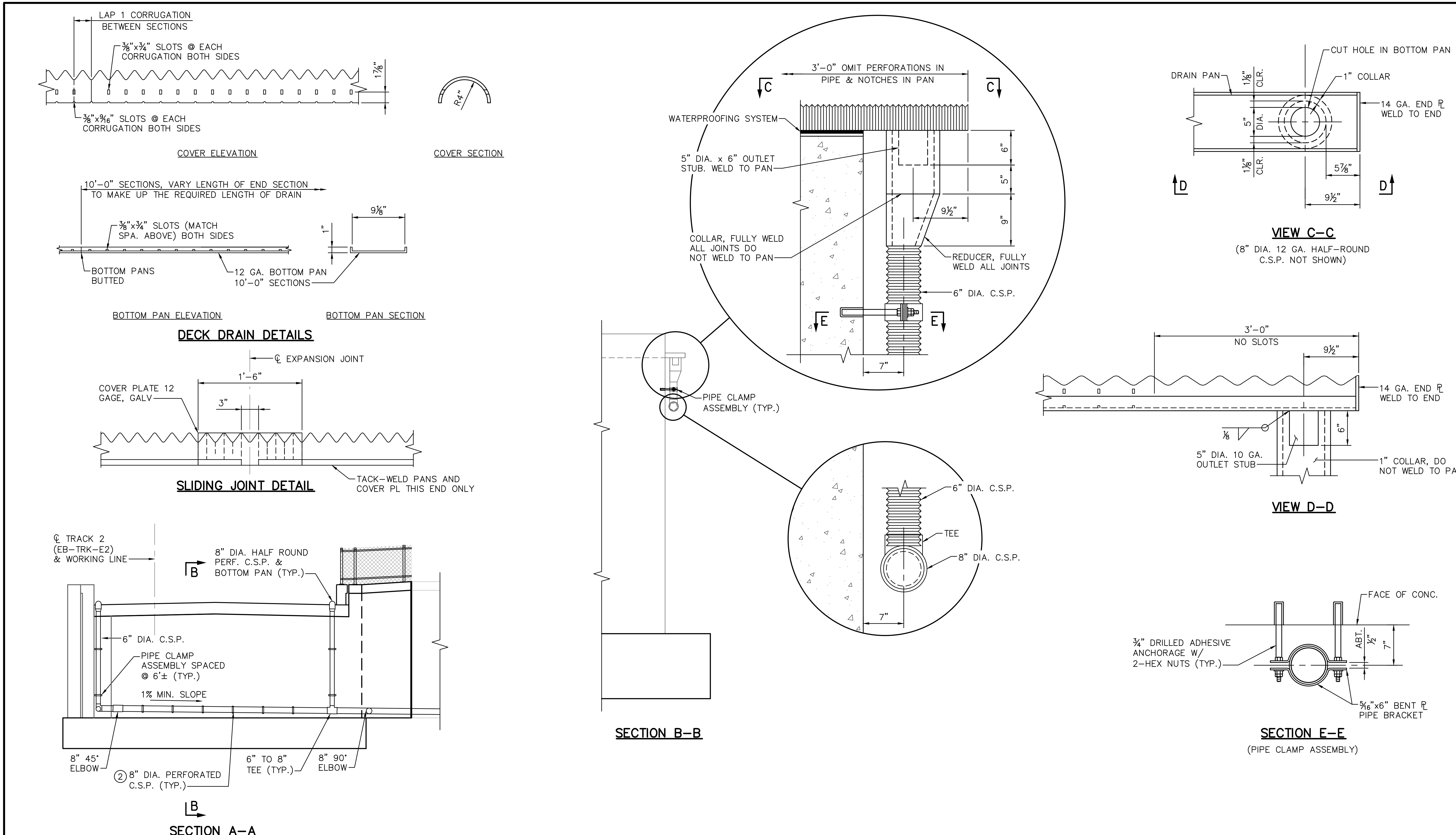
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
DECK DRAINAGE AND WATERPROOFING 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-DTL-001

SHEET 45 OF 60



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

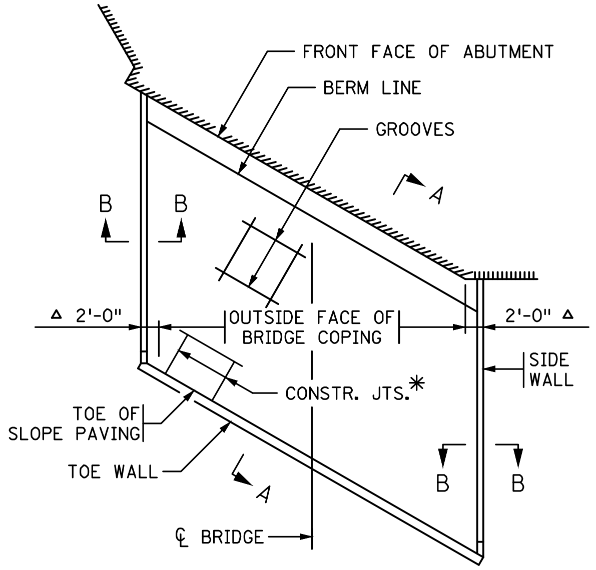
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

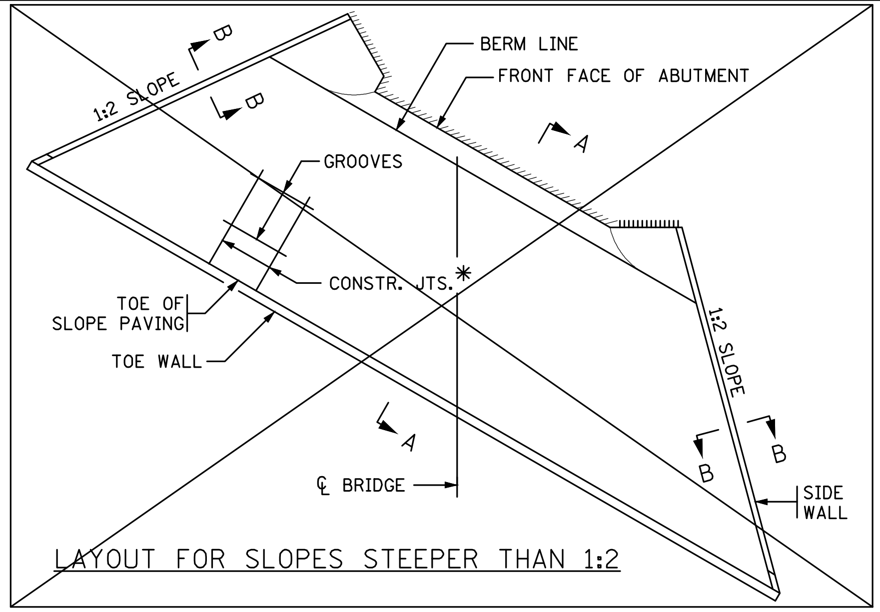
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
DECK DRAINAGE AND WATERPROOFING 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-DTL-002

SHEET 46 OF 60



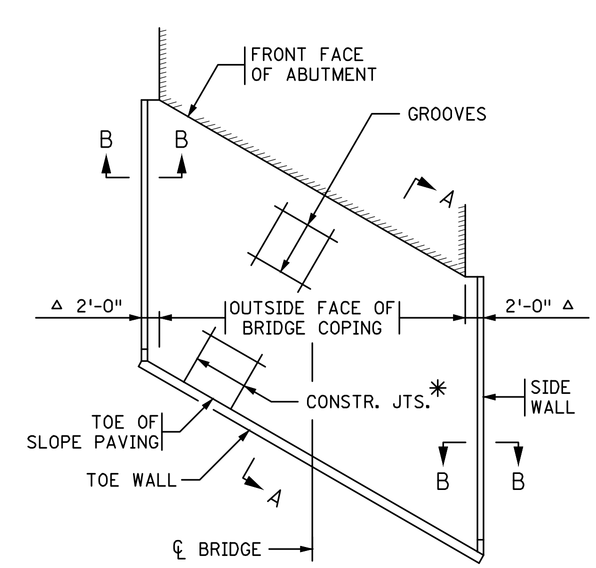
LAYOUT FOR SLOPES
1:2 OR FLATTER



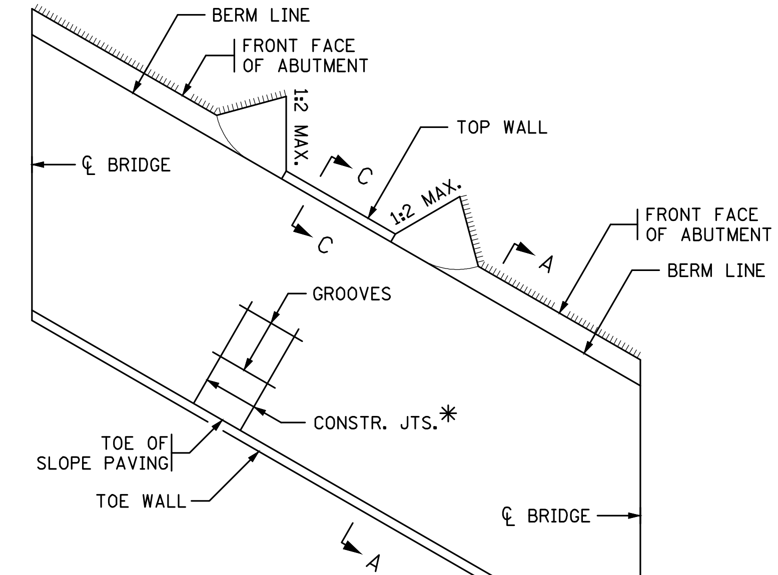
LAYOUT FOR SLOPES STEEPER THAN 1:2

△ 2'-0" FOR TANGENT BRIDGE SUPERSTRUCTURES. VARIES 2'-0" MINIMUM FOR CURVED BRIDGE SUPERSTRUCTURE.

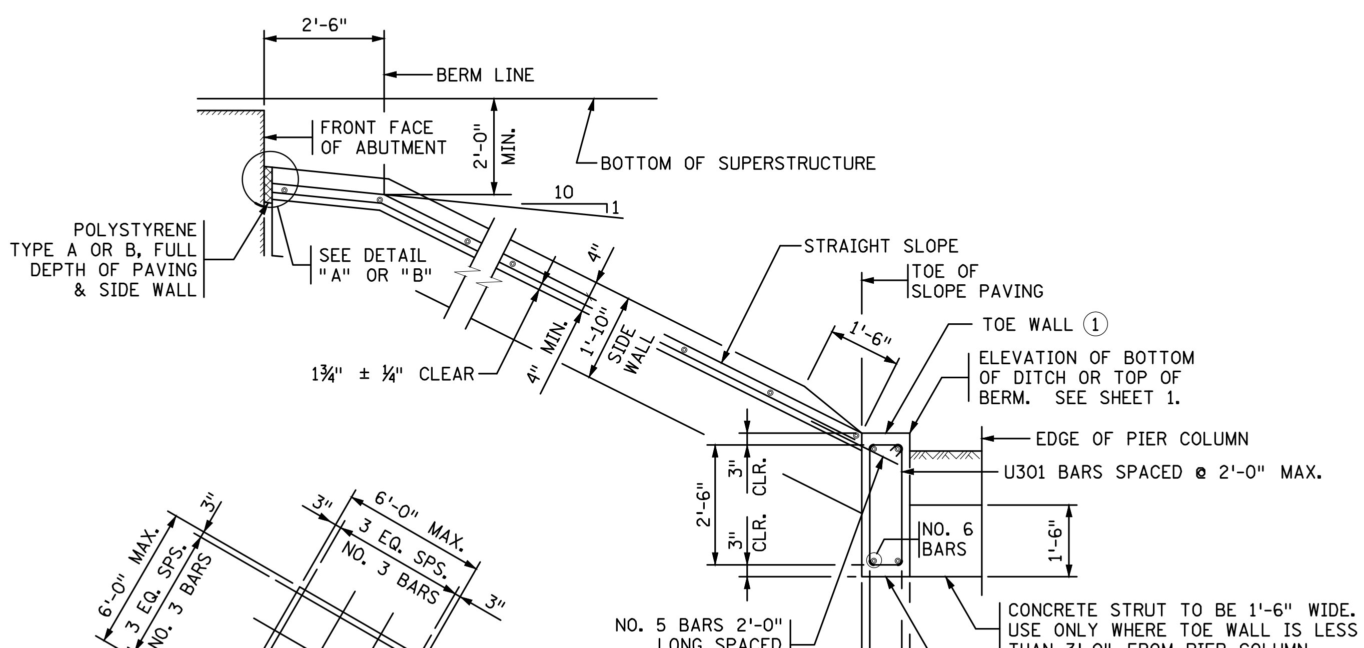
* VERTICAL CONSTRUCTION JOINTS MAY BE CONSTRUCTED PARALLEL TO ℄ OF BRIDGE FOR SKEWS TO 10° ONLY.



LAYOUT FOR SLOPES
AT ABUTMENTS WITH
8' OR GREATER EXPOSURE

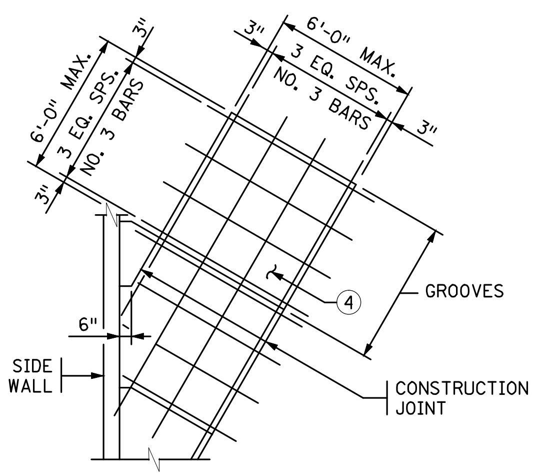


LAYOUT FOR SLOPES
BETWEEN BRIDGES

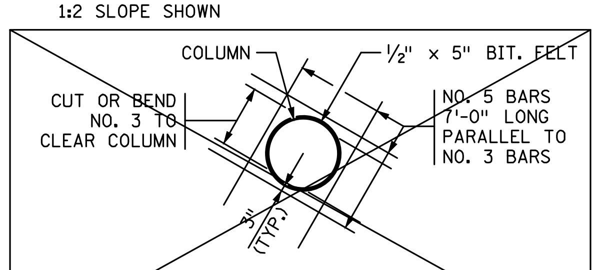


SECTION A-A

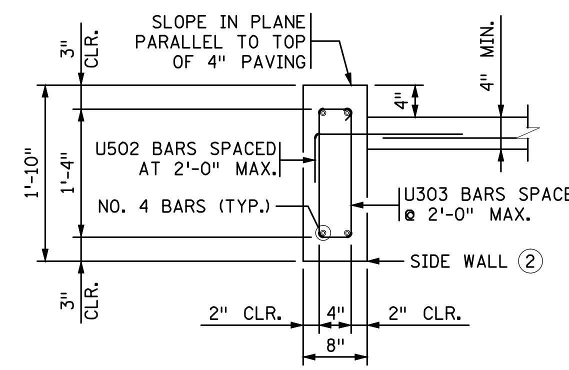
1:2 SLOPE SHOWN



PAVING DETAIL

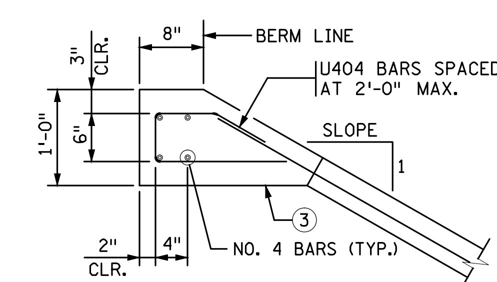


DETAIL WHERE PIER COLUMN
EXTENDS THROUGH SLOPE PAVING



SECTION B-B

NORMAL TO SLOPE



SECTION C-C

CONCRETE & REINFORCEMENT
UNIT QUANTITIES

① 0.111 CU. YD. OF CONCRETE/LIN. FT.
8.37 LBS. OF REINFORCEMENT/LIN FT.

② 0.046 CU. YD. OF CONCRETE/LIN. FT.
4.46 LBS. OF REINFORCEMENT/LIN FT.

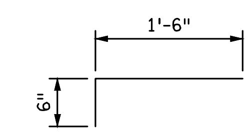
③ 0.058 CU. YD. OF CONCRETE/LIN. FT.
3.70 LBS. OF REINFORCEMENT/LIN FT.
BASED ON A SLOPE OF 1:2.

④ 0.111 CU. YD. OF CONCRETE/SQ. YD.
4.50 LBS. OF REINFORCEMENT/SQ. YD.

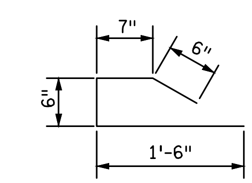
GENERAL NOTE

SLOPES ARE EXPRESSED AS A RATIO OF VERTICAL DISTANCE: HORIZONTAL DISTANCE.

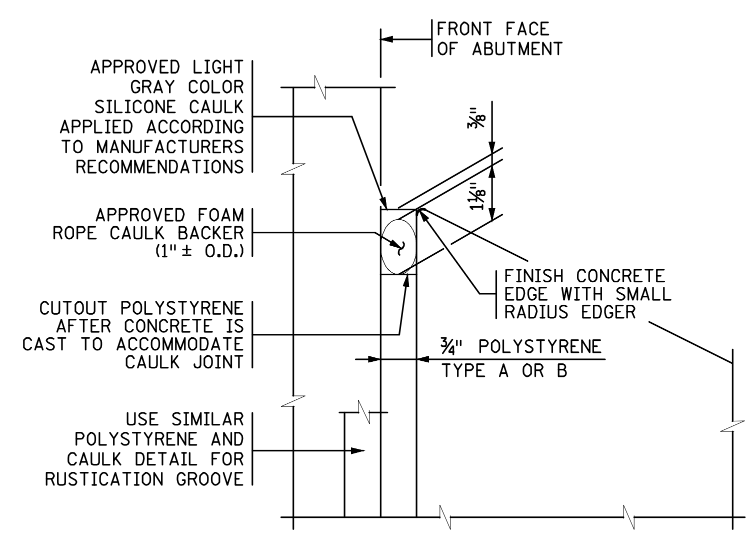
SLOPE PAVING PER SPEC. 2514.



U502

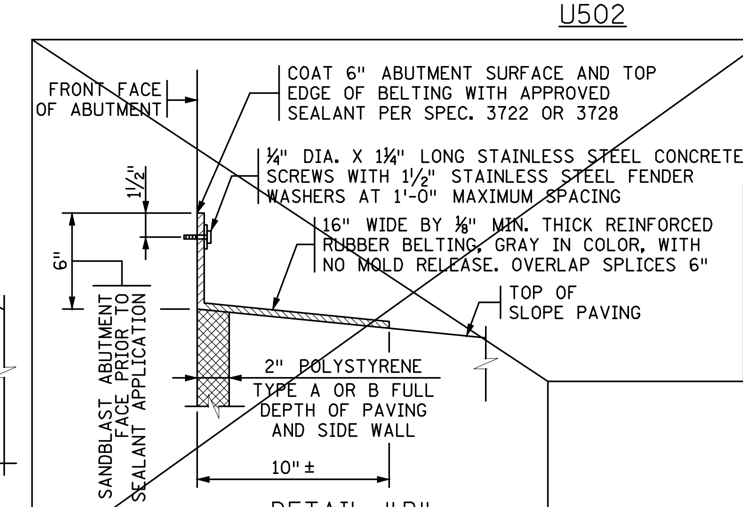


U404



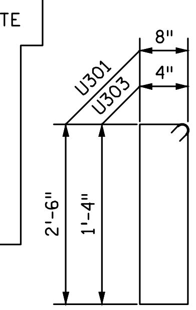
DETAIL "A"

ABUTMENTS WITH RUSTICATION



DETAIL "B"

ABUTMENTS WITHOUT RUSTICATION



U301 & U303

REVISION: 09-11-2014	
APPROVED: SEPTEMBER 26, 2003	
STATE BRIDGE ENGINEER	

CERTIFIED BY ______ LICENSED PROFESSIONAL ENGINEER 01/22/16 DATE

NAME: # LIC. NO. #####

TITLE: CONCRETE SLOPE PAVING UNDER BRIDGES

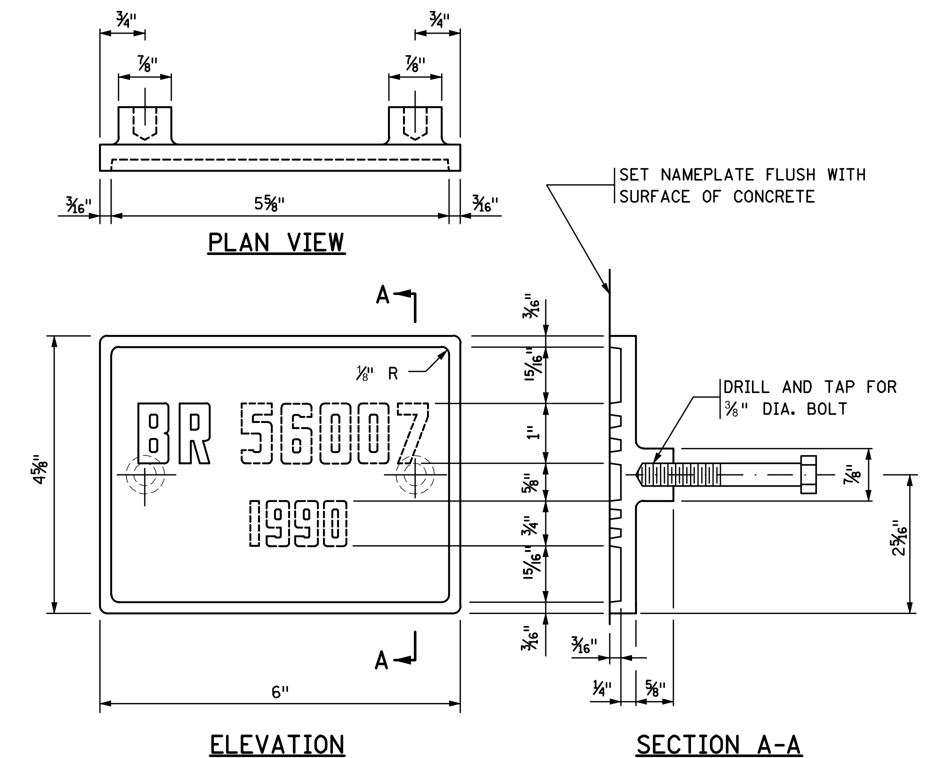
DES:	CJS	DR:	JFM
CHK:	DLS	CHK:	DLS

FIG. 5-397.301

APPROVED:

SHEET NO. 47 OF 60 SHEETS

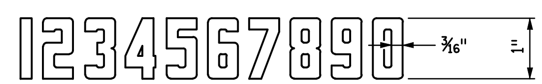
BRIDGE NO. 27C13



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

BRIDGE 27C13

YEAR ①



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.

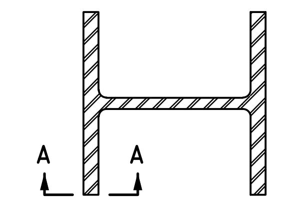
TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.

FURNISH 2 STEEL BOLTS ⅜" DIA. × 3" LONG WITH EACH PLATE.

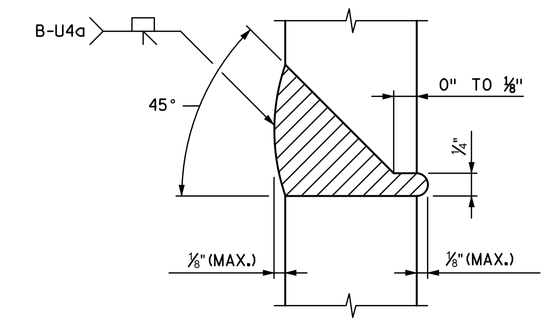
ALL DIMENSIONS FOR ¾" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

① YEAR OF CONSTRUCTION

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



SECTION AT SPLICE



SECTION A-A

100% BUTT WELDED PILE SPLICE

NOTES:

CELLULOSIC TYPE ELECTRODES E-6010 OR E-6011 SHALL BE USED FOR 100% BUTT WELDED SPLICES.

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.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION: 11-06-2013	DETAIL NO.
STATE BRIDGE ENGINEER	PILE SPLICE (STEEL H BEARING PILES 10" TO 14")		B202

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS | CHECKED BY: DLS
DRAWN BY: KAG | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

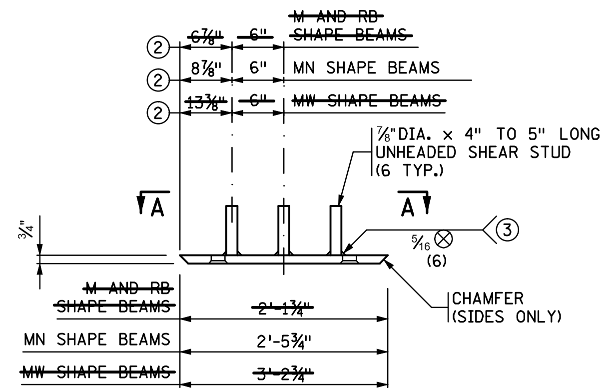
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
BRIDGE DETAILS 1

DISCIPLINE: STRUCTURES

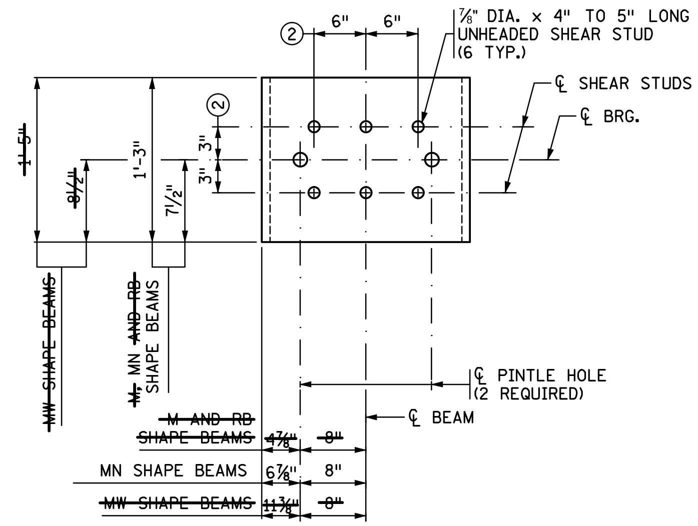
SHEET NAME: CBR27C13-BRG-DTL-004

SHEET 48 OF 60

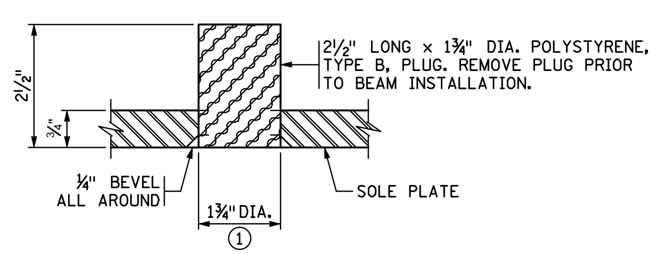
Dec. 14 2015 06:15 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-DTL-004.dwg By: Zack.Gasse



FRONT ELEVATION



SECTION A-A



PINTLE HOLE DETAIL

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 1½" 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

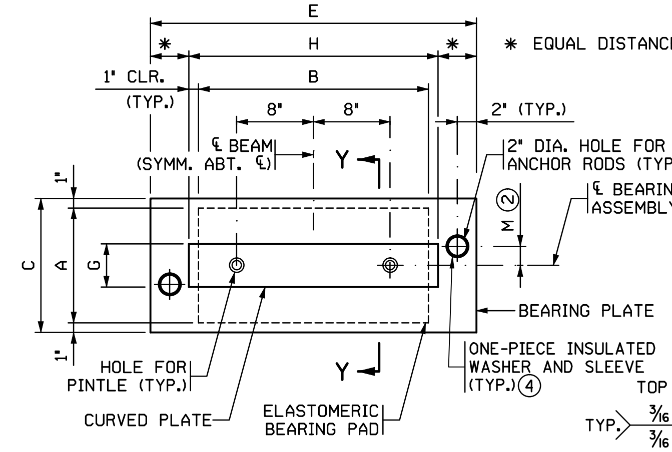
Nancy Daubenberger
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

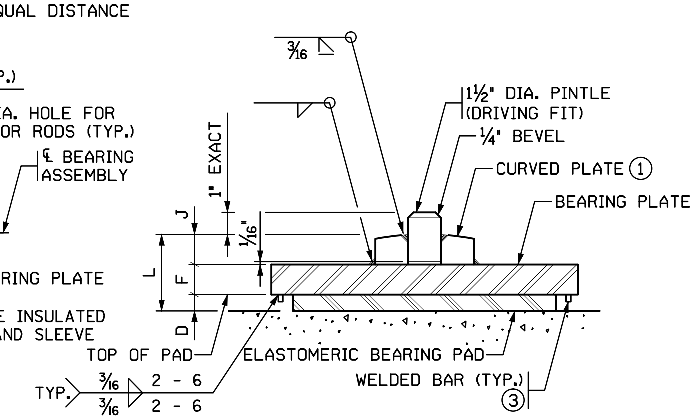
SOLE PLATE
(PRESTRESSED CONCRETE BEAMS)
(FOR BEARINGS WITH PINTLES)

REVISED

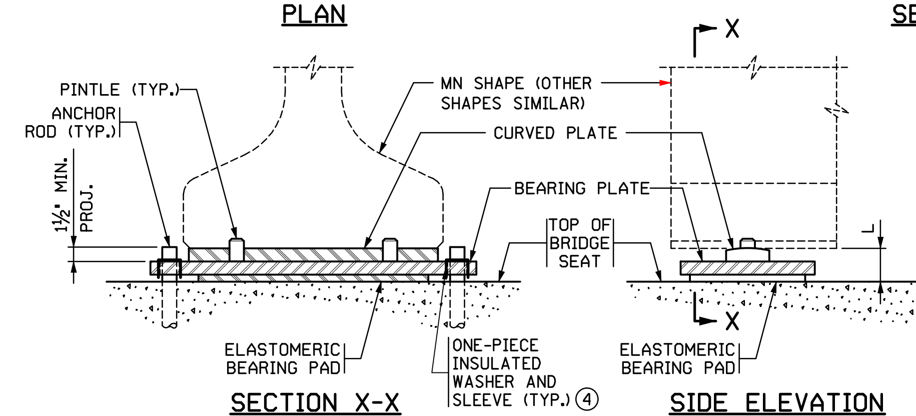
DETAIL NO. B303



PLAN



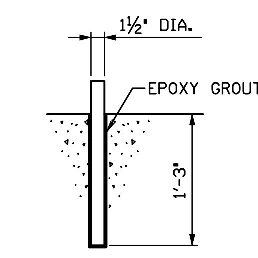
SECTION Y-Y



SECTION X-X

SIDE ELEVATION

ANCHOR RODS NOT SHOWN



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	R (1)
F-1	PIER 1	MN45	12"	24"	½"	8.0	14"	38"	1½"	4½"	26"	1¼"	+	2⅛"	3¼"	16"

NOTES:

PROVIDE ELASTOMERIC MATERIALS AND PAD CONSTRUCTION PER SPEC. 3741.

PROVIDE STEEL PLATES PER SPEC. 3306.

PROVIDE ANCHOR RODS PER SPEC. 3385, TYPE A. GALVANIZE PER SPEC. 3392.

PROVIDE PINTLES PER SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER SPEC. 3394, EXCEPT AS NOTED.

~~PAYMENT FOR BEARING ASSEMBLY INCLUDES ALL MATERIAL ON THIS DETAIL.~~

1. THE MIN. RADIUS IS 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS IS 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. ⅜" X ⅜" BAR INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. BAR LENGTH IS 2" LESS THAN ADJACENT PAD DIMENSION, CENTERED ON PAD. CENTERLINE OF BAR TO EDGE OF PAD DIMENSION = ½"
4. INSULATED SLEEVE SHALL EXTEND A MINIMUM OF ½" BELOW BOTTOM OF BEARING PLATE.

DESIGN DATA:
MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1½" PINTLES.

APPROVED: SEPTEMBER 22, 2011

Nancy Daubenberger
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

CURVED PLATE BEARING ASSEMBLY
(PRESTRESSED CONCRETE BEAMS)
(FIXED)

REVISED: 11-06-2013 11-03-2015

DETAIL NO. B310 (MOD.)

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJW CHECKED BY: SAD
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
BRIDGE DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-DTL-005

SHEET 49 OF 60

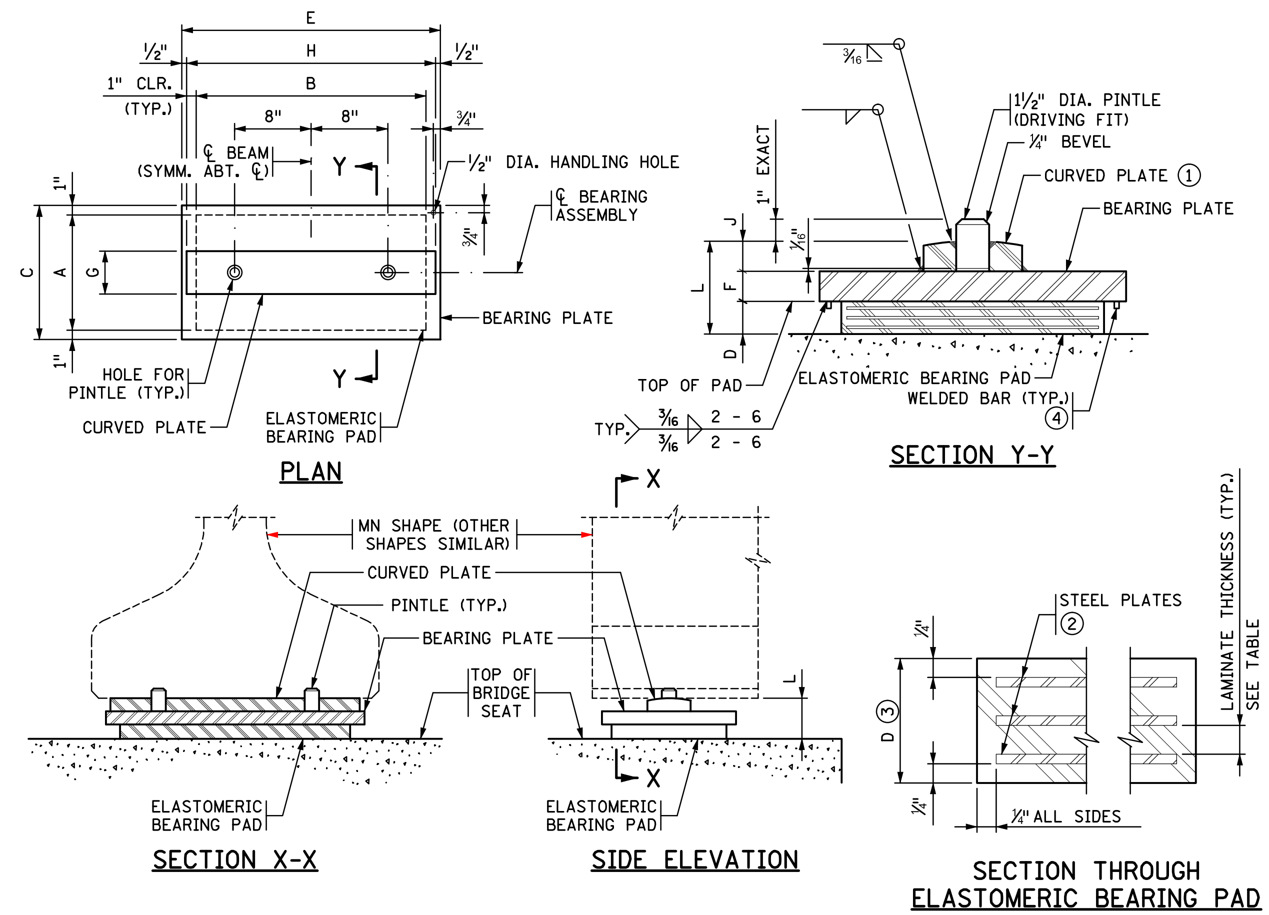


TABLE																	
ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			STEEL PLATES		LAMINATES		SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE			ASSY. HEIGHT	CURVED PLATE
			A	B	D	NO.	THICK.	NO.	THICK.		C	E	F	G	H	J	L	R (1)
E-1	W,E ABUT	MN45	12"	24"	1¼"	2	⅛"	1	½"	8.0	14"	27"	1½"	4½"	26"	1¼"	4"	16"

NOTES:

PROVIDE ELASTOMERIC MATERIALS AND PAD CONSTRUCTION PER SPEC. 3741.

PROVIDE STEEL PLATES PER SPEC. 3306.

PROVIDE PINTLES PER SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER SPEC. 3394, EXCEPT AS NOTED.

~~PAYMENT FOR BEARING ASSEMBLY INCLUDES ALL MATERIAL ON THIS DETAIL.~~

(1) THE MIN. RADIUS IS 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS IS 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) 3/8" X 3/8" BAR INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. BAR LENGTH IS 2" LESS THAN ADJACENT PAD DIMENSION, CENTERED ON PAD. CENTERLINE OF BAR TO EDGE OF PAD DIMENSION = ½".

DESIGN DATA:

MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1½" PINTLES.

APPROVED: SEPTEMBER 22, 2011

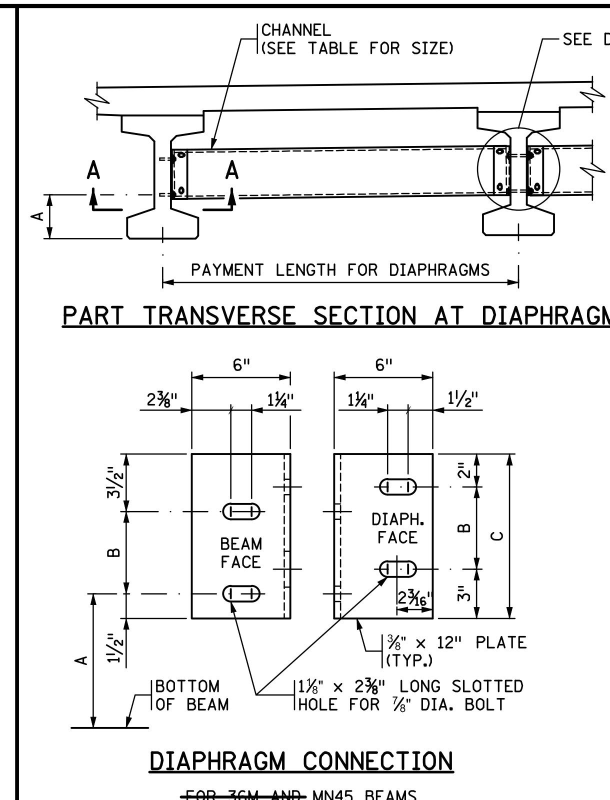
Nancy Daubenberger
STATE BRIDGE ENGINEER

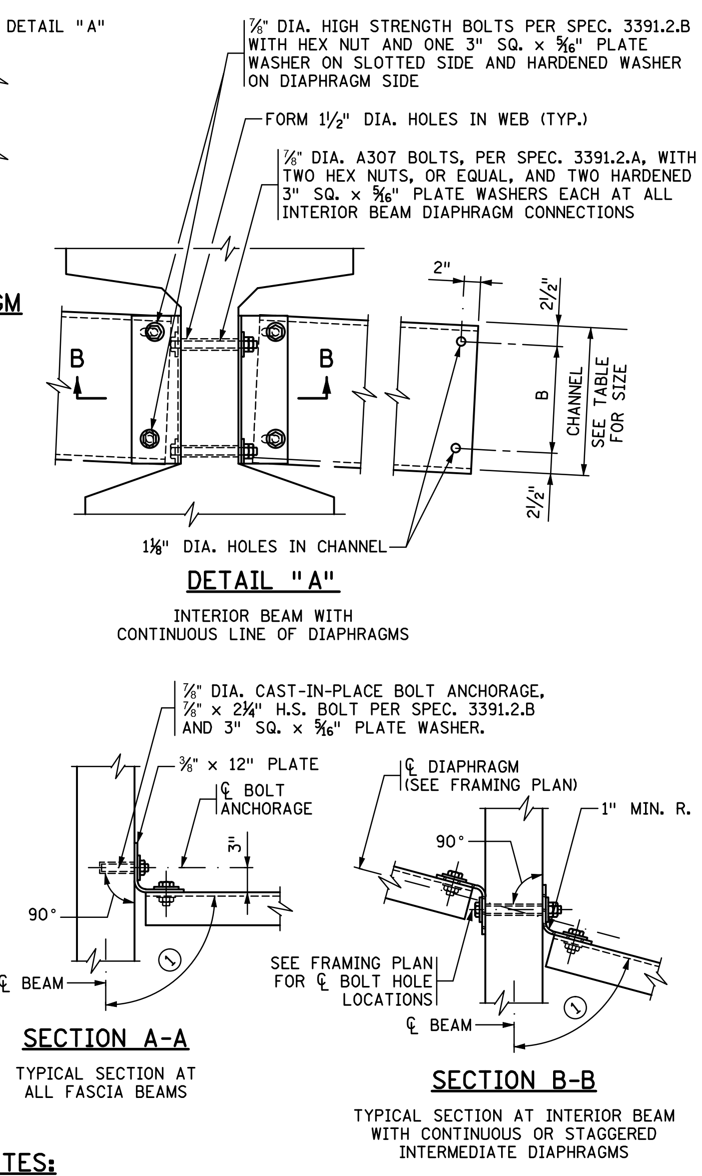
STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

CURVED PLATE BEARING ASSEMBLY
(PRESTRESSED CONCRETE BEAMS)
(EXPANSION)

REVISED 11-03-2015

DETAIL NO. B311





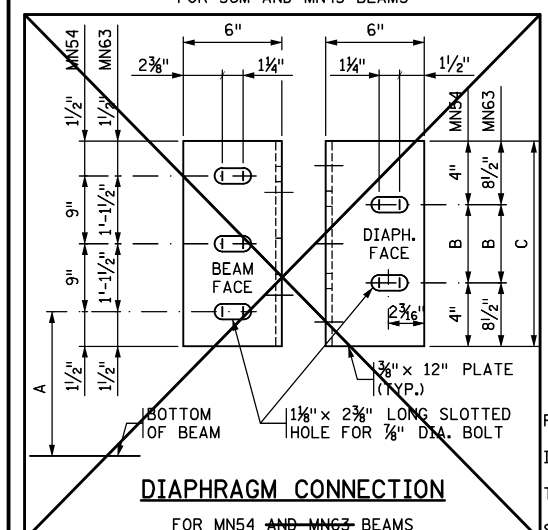


TABLE				
BEAM HEIGHT	DISTANCE			CHANNEL SIZE
	A	B	C	
~~36M~~	~~1'-3"~~	~~7"~~	~~1'-0"~~	~~C12x20.7~~
MN45	1'-7¾"	7"	1'-0"	C12x20.7
~~MN54~~	~~1'-7¾"~~	~~1'-1"~~	~~1'-9"~~	~~MC18x42.7~~
~~MN63~~	~~1'-7¾"~~	~~1'-1"~~	~~2'-6"~~	~~MC18x42.7~~

NOTES:

PROVIDE STEEL PER SPEC. 3306.

INSTALL PER SPEC. 2405.3.K.

TORQUE ALL BOLTS, INCLUDING ANCHOR BOLTS TO 80 FT.-LBS.

SHOP BEND THE LEG OF THE 12" PLATE TO CONFORM TO THE DIAPHRAGM. A ⅜" × 6" × 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 IF THE BENT PLATES HAVE THE SAME HEIGHT AS THE CHANNELS THEY REPLACE, ARE 5/16" IN THICKNESS, AND HAVE LEGS 5" LONG.

GALVANIZE STEEL PLATES AND SHAPES PER 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: NOVEMBER 03, 2015

Beverly A. F. Farraher
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

STEEL INTERMEDIATE DIAPHRAGM
(FOR 36M, MN45 - MN63 PRESTRESSED CONCRETE BEAMS)

REVISED

DETAIL NO. B403

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJW | CHECKED BY: SAD
DRAWN BY: KAG | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

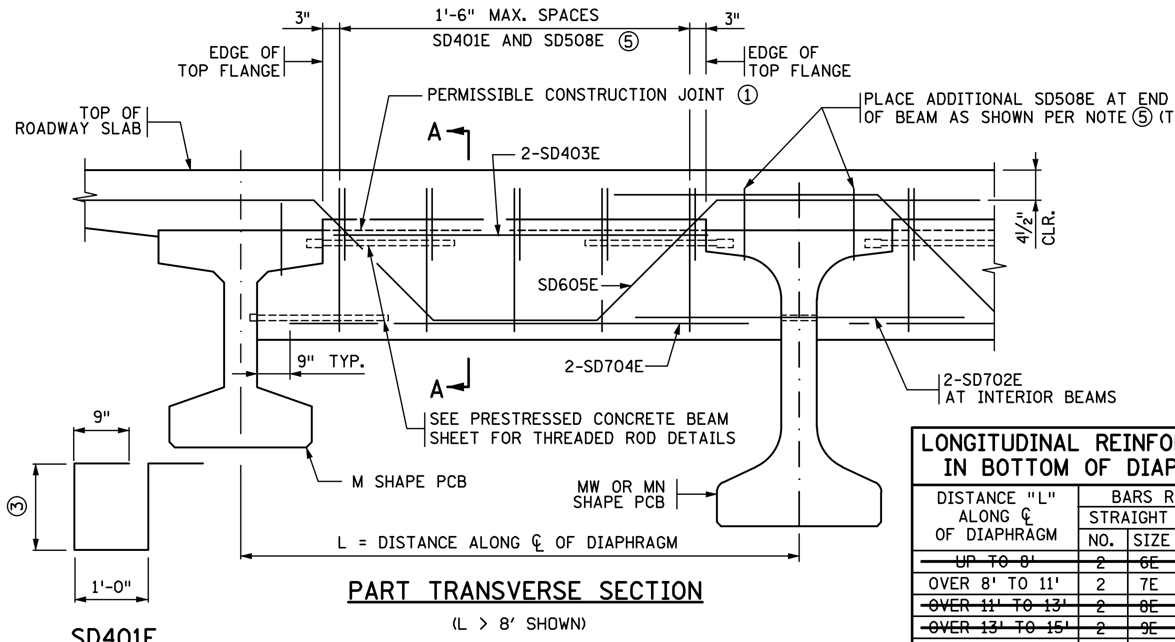
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
BRIDGE DETAILS 3

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-DTL-006

SHEET 50 OF 60

Dec. 14 2015 06:16 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-DTL-006.dwg By: Zack.Gasse

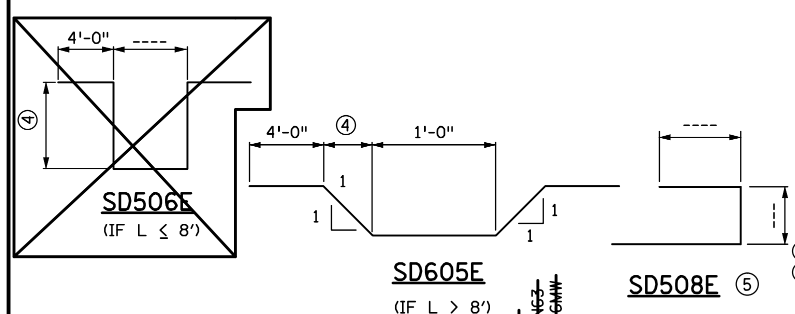


PART TRANSVERSE SECTION

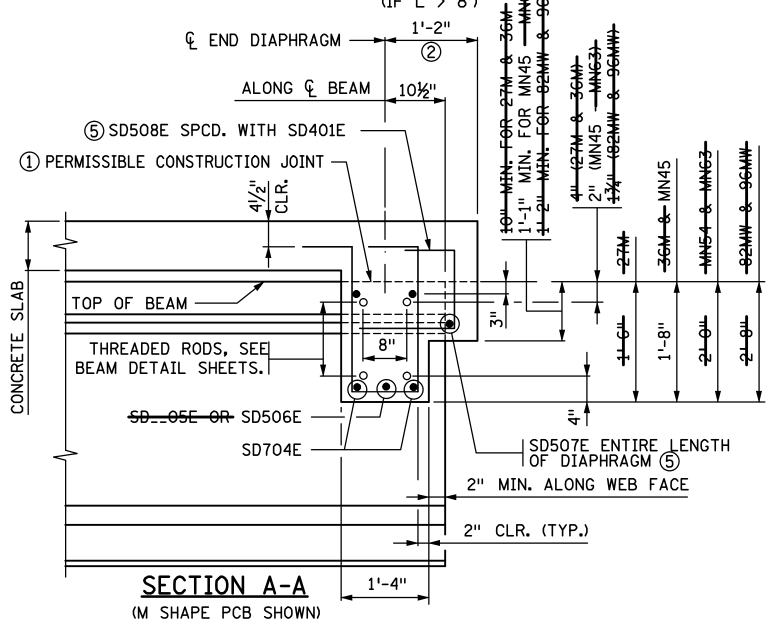
(L > 8' SHOWN)

SD401E

LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM				
DISTANCE "L" ALONG ℄ OF DIAPHRAGM	BARS REQUIRED			
	STRAIGHT		BENT	
	NO.	SIZE	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	30	6'-8"		VERTICAL TIE
SD702E	8	5'-0"		LONG. THRU BEAM
SD403E	12	4'-11"		LONG. TOP
SD704E	12	6'-0"		LONG. BOTTOM
SD605E	6	14'-8"		LONGITUDINAL
~~SD506E~~				~~LONGITUDINAL~~
⑤ SD507E				LONGITUDINAL
⑤ SD508E				VERTICAL TIE



SECTION A-A

(M SHAPE PCB SHOWN)

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 INPLACE UNTIL COMPLETION OF SLAB CURING PERIOD.

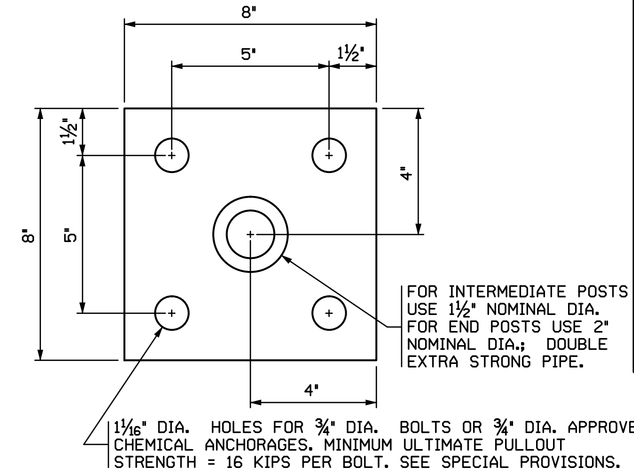
② PERPENDICULAR TO CENTERLINE OF DIAPHRAGM.

③ ~~1'-11" (27M);~~ 2'-1" ~~(36M AND~~ MN45); ~~2'-5" (MN54 AND MN63); 3'-1" (82MW AND 96MW).~~ BASED ON 3" STOOL 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.

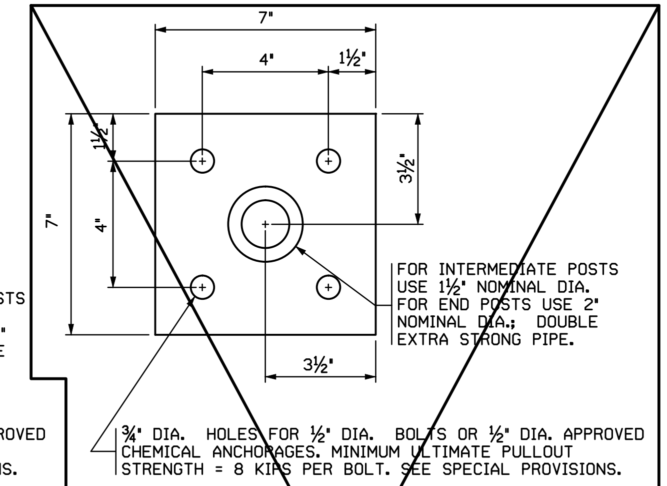
⑤ ADD SD507E AND SD508E ONLY IF NO. OF BARS AND LENGTHS ARE INCLUDED IN BILL OF REINFORCEMENT. SPACE SD508E AT 1'-6" MAX. FOR ENTIRE LENGTH OF DIAPHRAGM. REFER TO "PART TRANSVERSE SECTION" ABOVE.

APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CONCRETE END DIAPHRAGM (27M & 36M, MN45 - MN63, 82MW & 96MW PRESTRESSED CONCRETE BEAMS) (PARAPET ABUTMENT)	04-17-2013 11-06-2013	B814



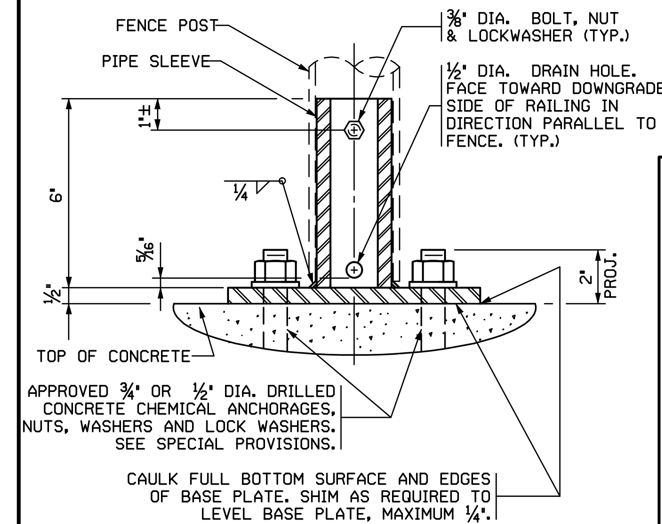
PLAN VIEW - TYPE A

ESTIMATED WEIGHT = 12 OR 14 LBS.

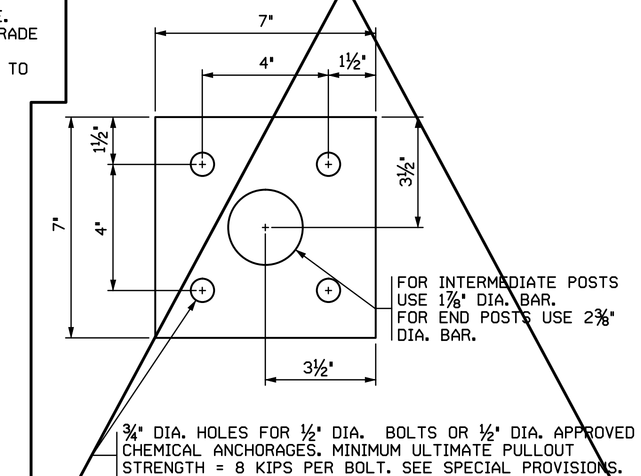


PLAN VIEW - TYPE B

ESTIMATED WEIGHT = 10 OR 12 LBS.

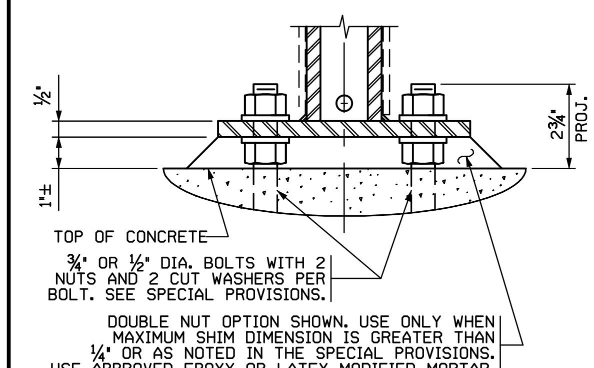


TYPICAL SECTION



PLAN VIEW - TYPE C

ESTIMATED WEIGHT = 12 OR 15 LBS.



GROUT ALTERNATE

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:
1½" NOMINAL DIA. = 6.41 LBS./FT.
2" NOMINAL DIA. = 9.03 LBS./FT.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Daniel L Dorgan STATE BRIDGE ENGINEER	FENCE POST ANCHORAGE		B905

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

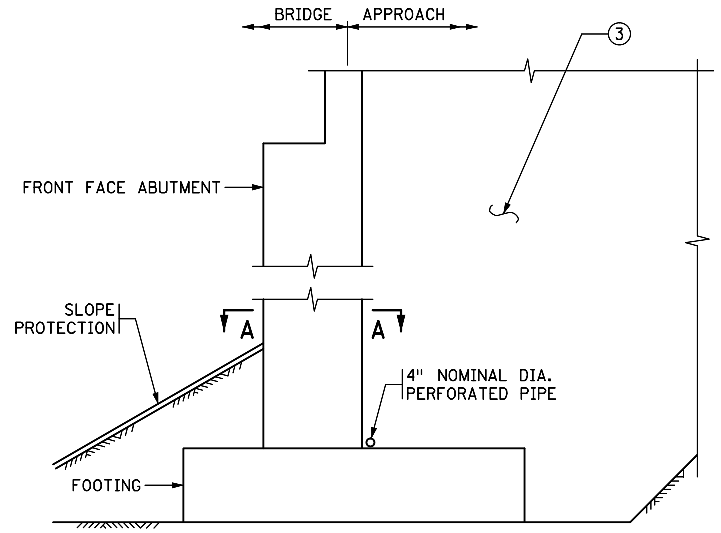
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
BRIDGE DETAILS 4

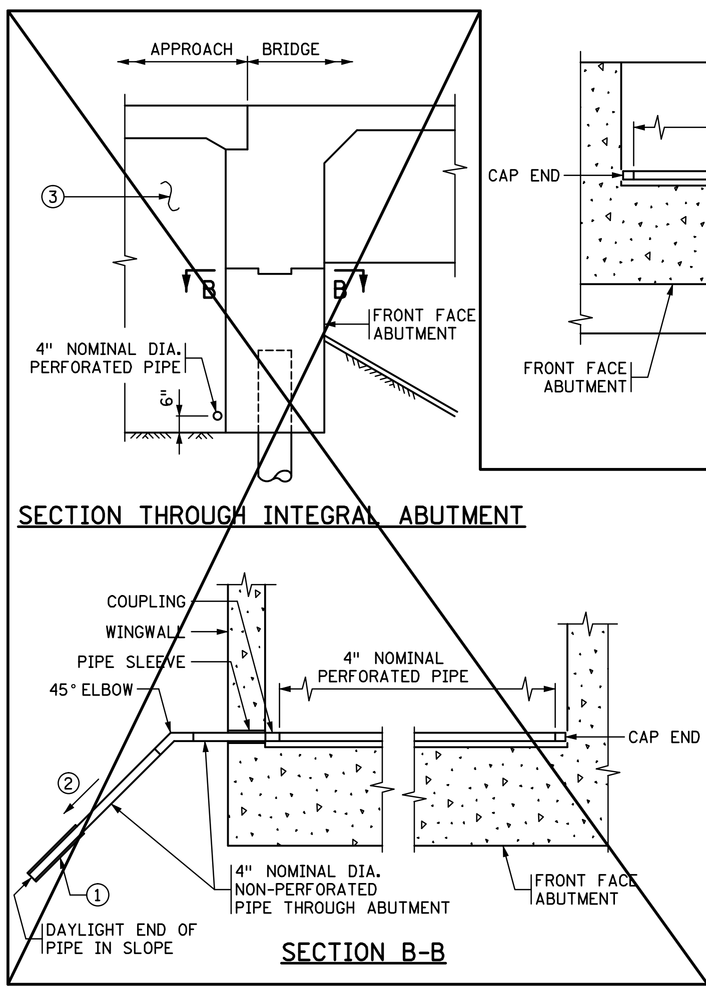
DISCIPLINE: STRUCTURES

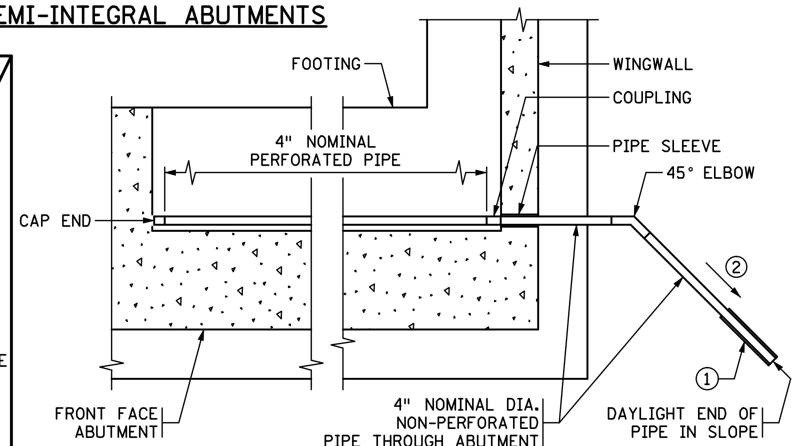
SHEET NAME: CBR27C13-BRG-DTL-007

SHEET 51 OF 60



SECTION THROUGH PARAPET AND SEMI-INTEGRAL ABUTMENTS





SECTION A-A

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 MANTAINED.

USE PRECAST CONCRETE HEADWALL WITH RODENT SCREEN. SEE STANDARD PLATE 3131 FOR DETAILS.

2 ⅛" 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 Daubenberger STATE BRIDGE ENGINEER	DRAINAGE SYSTEM		B910

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
BRIDGE DETAILS 5

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-DTL-008

SHEET 52 OF 60

Dec. 14 2015 06:17 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-DTL-008.dwg By: Zack.Gasse

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:

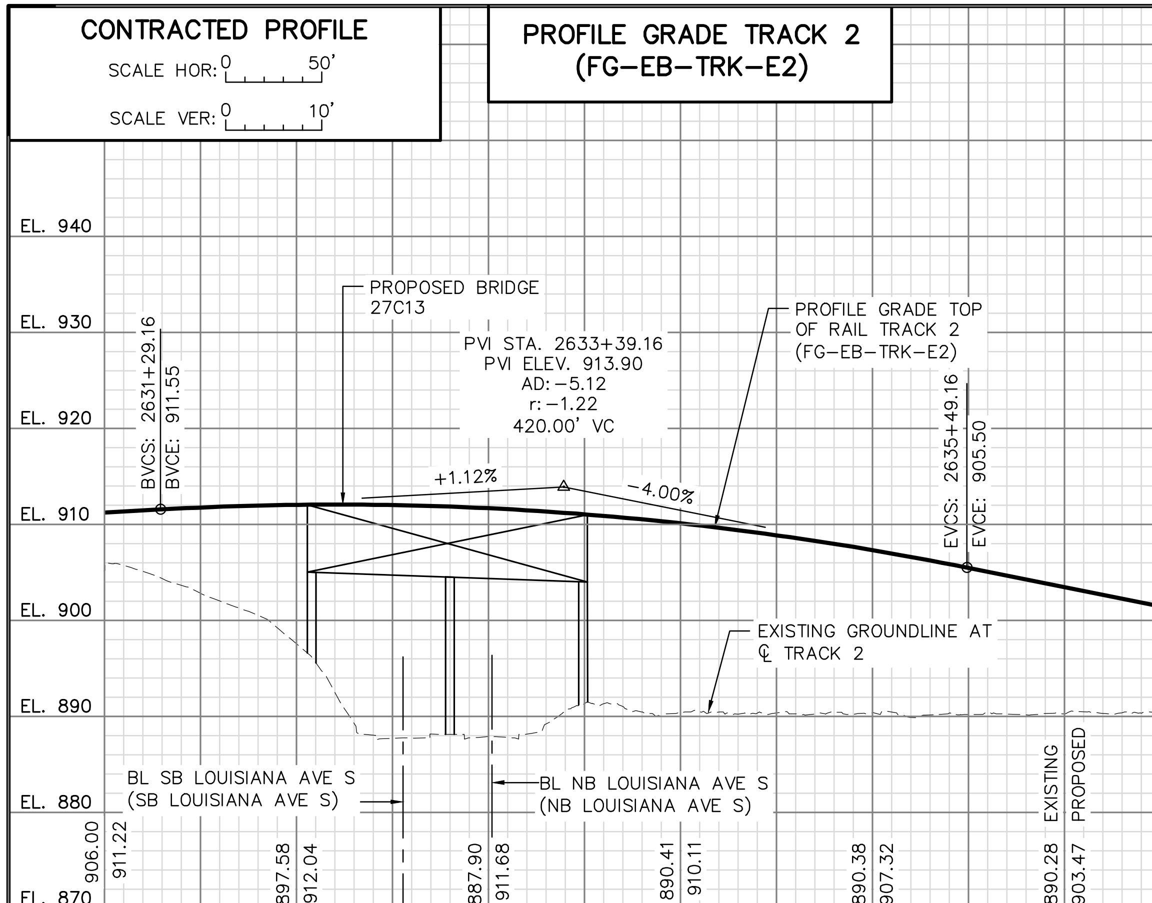
______________________ ____________
INSPECTOR(S) SIGNATURE DATE

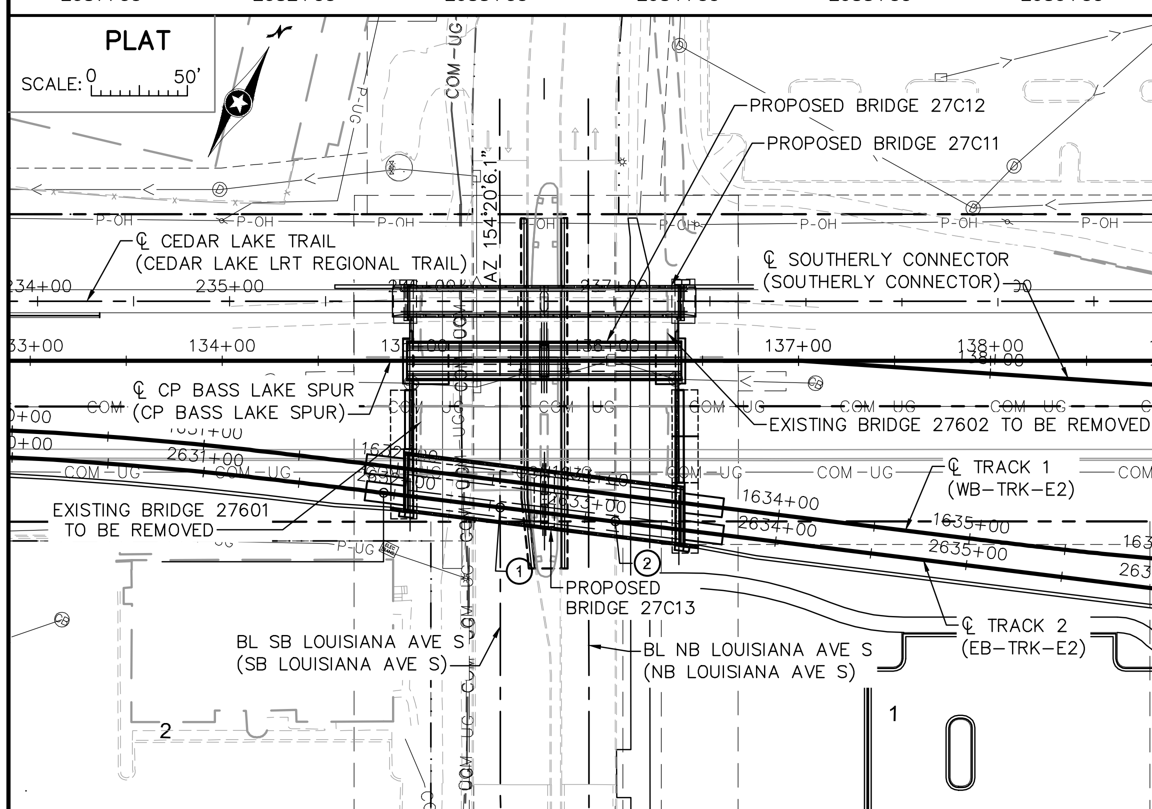
CHECKED BY: ______________________ ____________
PROJECT ENGINEER/SUPERVISOR SIGNATURE DATE

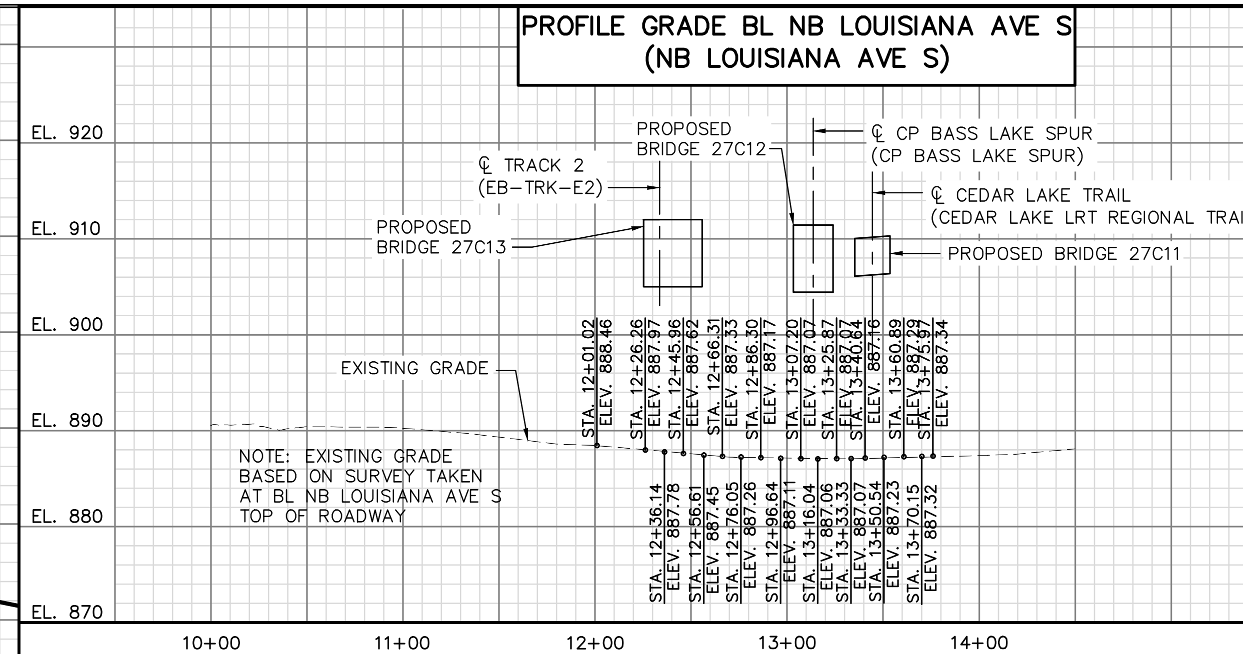
AT THE TIME OF THE FINAL, THIS COMPLETED AS-BUILT BRIDGE DATA SHEET MUST BE SUBMITTED TO THE BRIDGE OFFICE - ATTN: REGIONAL CONSTRUCTION ENGINEER (MS610).

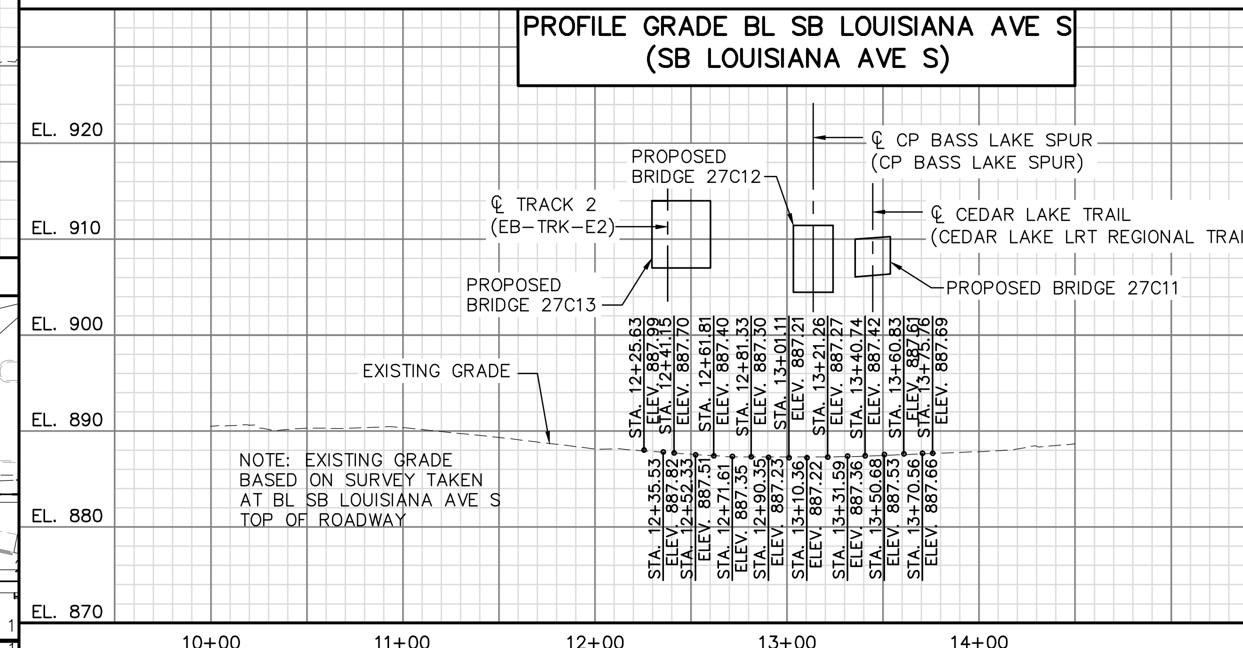
AS-BUILT DETAILS
(AS NEEDED)

REVISION: 10-28-2008				FIG. 5-397.900
APPROVED: SEPTEMBER 26, 2003 Daniel L. Dorgan STATE BRIDGE ENGINEER	TITLE: AS-BUILT BRIDGE DATA	DES: / CHK:	DR: / CHK:	APPROVED:
		SHEET NO. 53 OF 60 SHEETS		BRIDGE NO. 27C13









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 (PARTICULARY 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 ENGINEER'S RECOMMENDATION

DATE:

STREAM OR DITCH DESIGNATION

DRAINAGE AREA

MAX FLOOD ON RECORD

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

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

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

FLOWLINE ELEVATION: FT. SKEW ANGLE:

ESTIMATED PRLIMINARY TOTAL SCOUR AT PIER EL.
(500 OR OT YR. FREQ.)

SCOUR CONFIRMATION RECOMMENDATION

DATE:

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

BRIDGE SURVEY SHEETS MADE FROM 2014 MFRA SURVEYS

1ST BENCH MARK (NAVD88)
ELEVATION: 887.47
NORTHING: 152190.79
EASTING: 504031.01
DESCRIPTION: LARGE SPIKE

2ND BENCH MARK (NAVD88)
ELEVATION: 892.05
NORTHING: 151747.10
EASTING: 504275.16
DESCRIPTION: MAG NAIL IN BIT. ISLAND

NOTES:

IN PLACE BRIDGE 27601 A TWO SPAN STEEL BEAM STRUCTURE BUILT IN 1979 SUPPORTED BY STEEL H-PILES TO BE REMOVED.

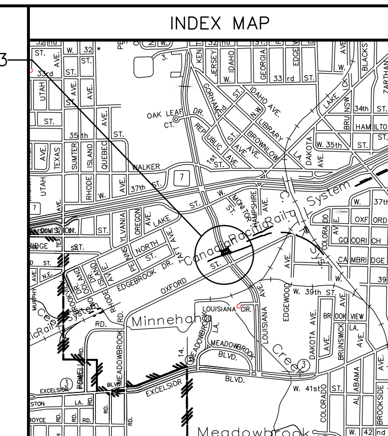
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

PROPOSED BRIDGE 27C13

(1) CONTROL POINT 1
BL SB LOUISIANA AVE S
(SB LOUISIANA AVE S)
STA. 12+37.51
℄ TRACK 2 (EB-TRK-E2)
STA. 2632+55.46
X = 504035.009
Y = 152124.538
Δ = 82°52'37.0"

(2) CONTROL POINT 2
BL NB LOUISIANA AVE S
(NB LOUISIANA AVE S)
STA. 12+31.75
℄ TRACK 2 (EB-TRK-E2)
STA. 2633+01.90
X = 504079.040
Y = 152139.306
Δ = 82°52'37.0"

INDEX MAP



BRIDGE SURVEY 1

SOUTHWEST LRT OVER LOUISIANA AVE S
0.3 MILES SOUTH OF JCT. OF T.H. 7 AND LOUISIANA AVE S IN ST LOUIS PARK

SEC 20 T 117N R 21W

CITY OF ST LOUIS PARK HENNEPIN COUNTY

BRIDGE 27C13

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

90% SUBMISSION - 01/22/16

AECOM Kimley»Horn

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

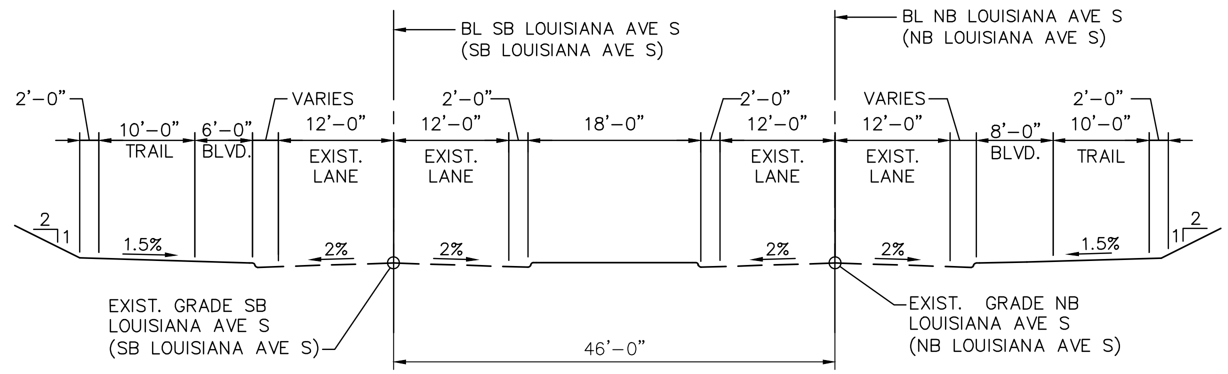
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
BRIDGE SURVEY 1

DISCIPLINE: STRUCTURES

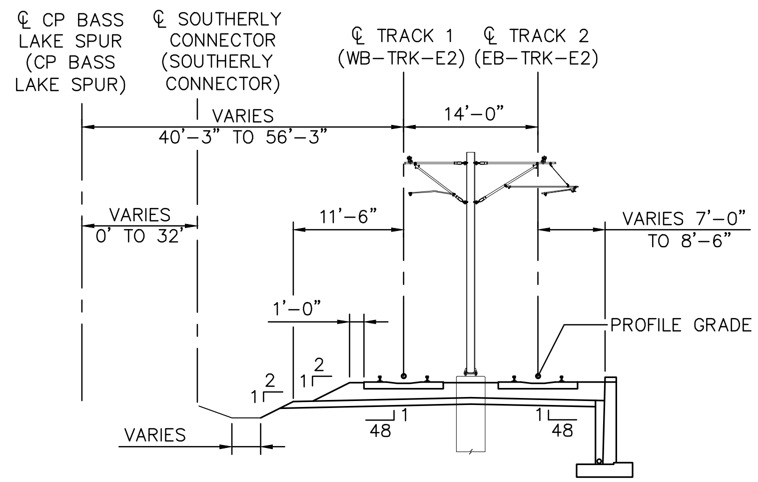
SHEET NAME: CBR27C13-BRG-SUR-001

SHEET 54 OF 60

Dec. 14 2015 06:20 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-SUR-001.dwg By: Zack.Gasse



TYPICAL ROADWAY SECTION LOUISIANA AVE S



TYPICAL APPROACH SECTION LOUISIANA-LRT

Dec. 14 2015 06:21 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-SUR-002.dwg By: Zack.Gasse

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

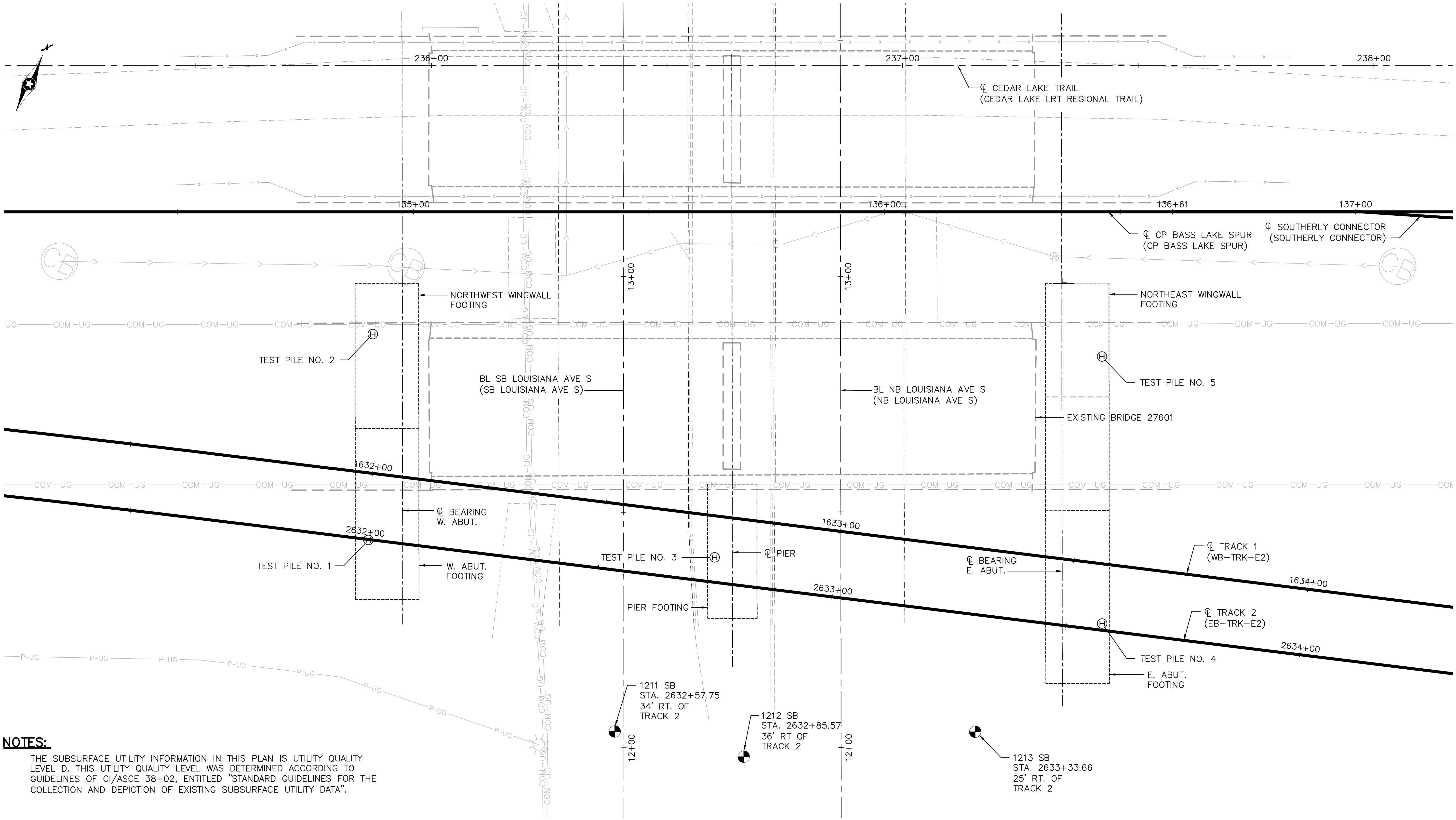
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
BRIDGE SURVEY 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-SUR-002

SHEET 55 OF 60



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: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

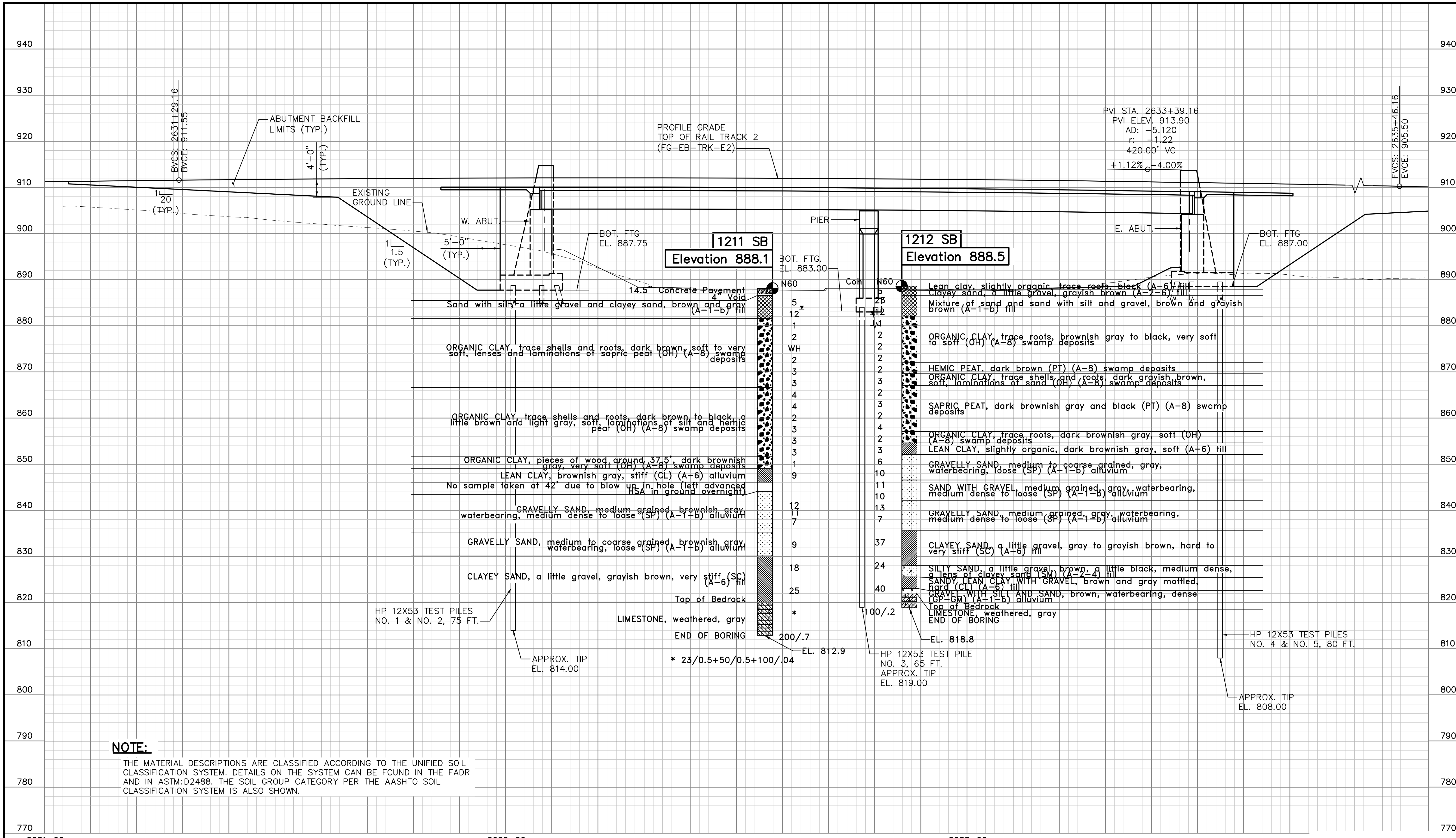
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
BRIDGE SURVEY PLAN

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-BOR-001

SHEET 56 OF 60

Dec. 14 2015 06:25 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-BOR-001.dwg By: Zack.Gasse



NOTE:

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. THE SOIL GROUP CATEGORY PER THE AASHTO SOIL CLASSIFICATION SYSTEM IS ALSO SHOWN.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

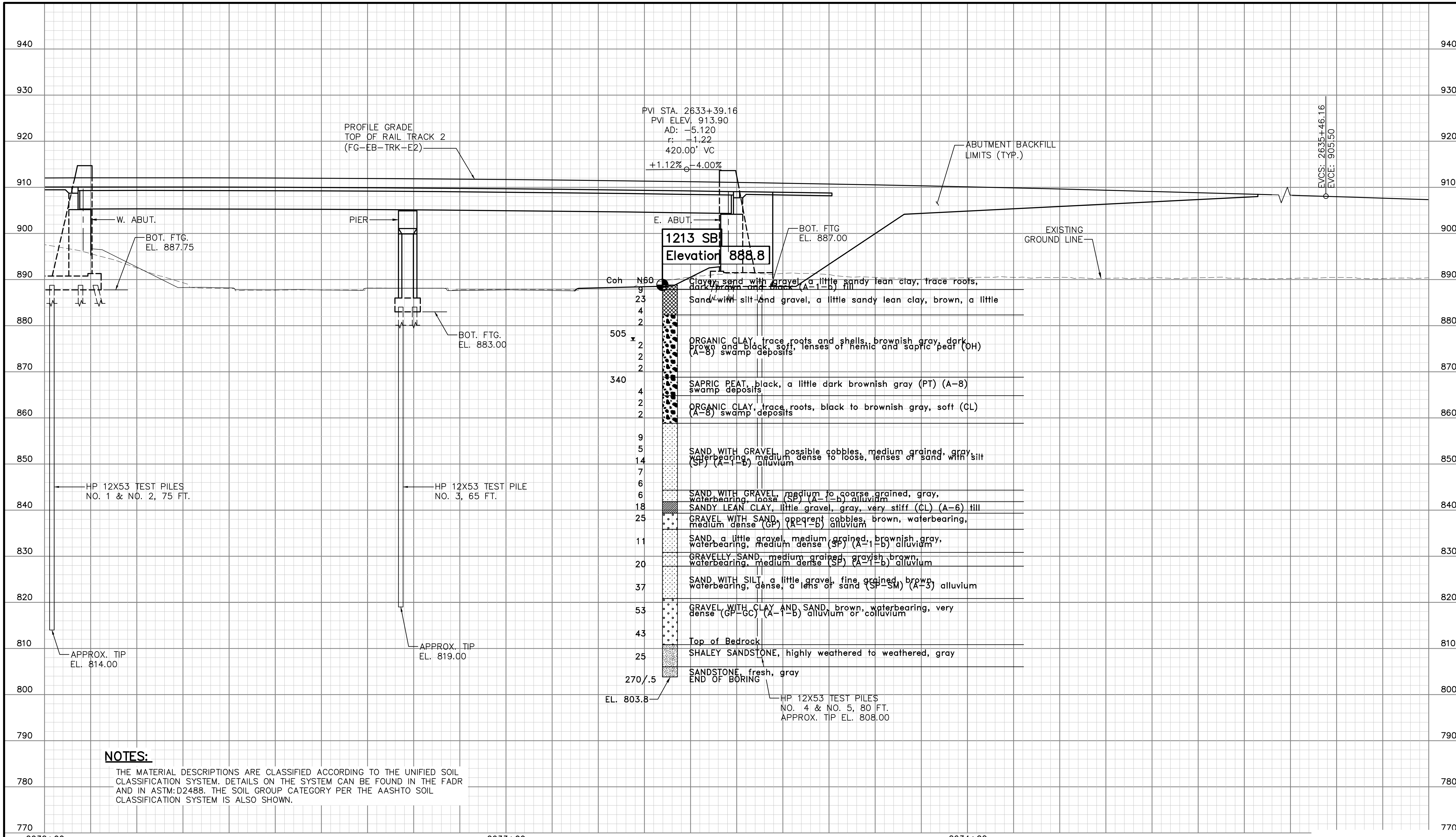
CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
BRIDGE SURVEY PROFILE 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-BOR-002

SHEET 57 OF 60

Dec. 14 2015 06:26 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-BOR-002.dwg By: Zack.Gasse



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. THE SOIL GROUP CATEGORY PER THE AASHTO SOIL CLASSIFICATION SYSTEM IS ALSO SHOWN.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
BRIDGE SURVEY PROFILE 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-BOR-003

SHEET 58 OF 60

STAGING NOTES:

STAGES 5 & 6 SHOWN IN THIS PLAN, SEE BRIDGES 27C11 & 27C12 FOR STAGES 1–4.

REMOVE AND INSTALL SOE AS NECESSARY TO CONSTRUCT PROPOSED LRT BRIDGE 27C13 AND RETAINING WALLS E203 AND E205.

REMOVE EXISTING BRIDGE 27601. EXCAVATE FOR CONSTRUCTION OF LRT BRIDGE 27C13.

REMOVE SOE AS REQUIRED.

1 SOE

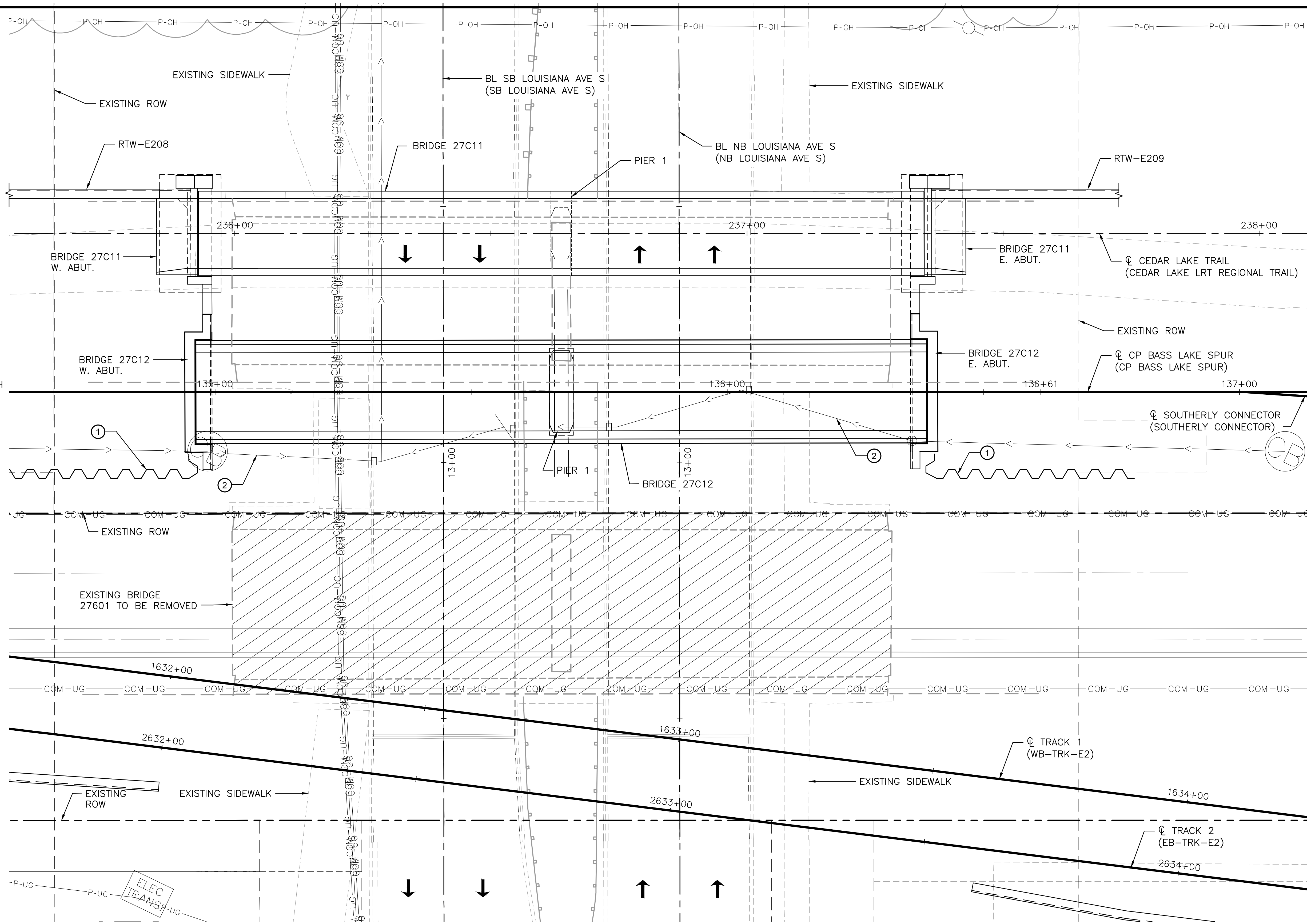
2 EXISTING STORM DRAIN TO BE RELOCATED, SEE DRAINAGE PLANS FOR DETAILS

STAGING REQUIREMENTS:

ALL TRACKS SHALL BE KEPT OPEN FOR TRAIN USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL. CP SHALL HAVE FINAL AUTHORITY ON PERMITTED TRACK CLOSURES.

CEDAR LAKE TRAIL SHALL BE KEPT OPEN FOR PUBLIC USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL.

SEE UTILITY PLANS FOR UTILITIES TO BE RELOCATED PRIOR TO BRIDGE CONSTRUCTION.



PROPOSED CONSTRUCTION
SEQUENCING – STAGE 5

Dec. 14 2015 06:29 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-STG-001.dwg By: Zock.Gasse

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: KJK CHECKED BY: DLS
DRAWN BY: MSK CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
STAGING PLAN 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C13-BRG-STG-001

SHEET 59 OF 60

STAGING NOTES:

STAGES 5 & 6 SHOWN IN THIS PLAN, SEE BRIDGES 27C11 & 27C12 FOR STAGES 1–4.

CONSTRUCT LRT BRIDGE 27C13 AND RETAINING WALLS E206 AND E207. BACKFILL STRUCTURES.

REMOVE ALL SOE.

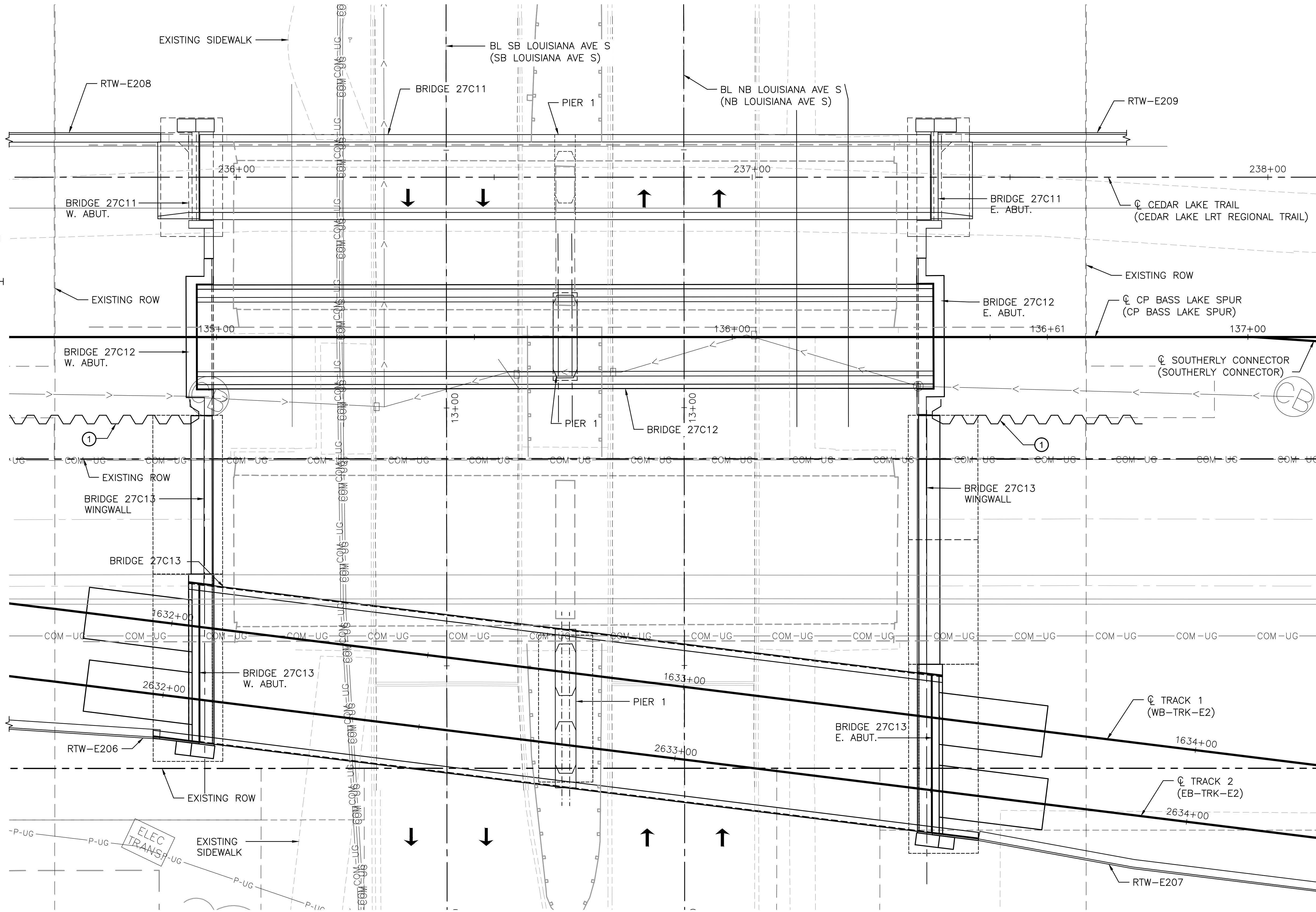
1 SOE

STAGING REQUIREMENTS:

ALL TRACKS SHALL BE KEPT OPEN FOR TRAIN USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL. CP SHALL HAVE FINAL AUTHORITY ON PERMITTED TRACK CLOSURES.

CEDAR LAKE TRAIL SHALL BE KEPT OPEN FOR PUBLIC USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL.

SEE UTILITY PLANS FOR UTILITIES TO BE RELOCATED PRIOR TO BRIDGE CONSTRUCTION.



PROPOSED CONSTRUCTION SEQUENCING – STAGE 6

Dec. 14 2015 06:32 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\LOIS-LRT\CBR27C13-BRG-STG-002.dwg By: Zack.Gasse

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: KJK CHECKED BY: DLS
DRAWN BY: MSK CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

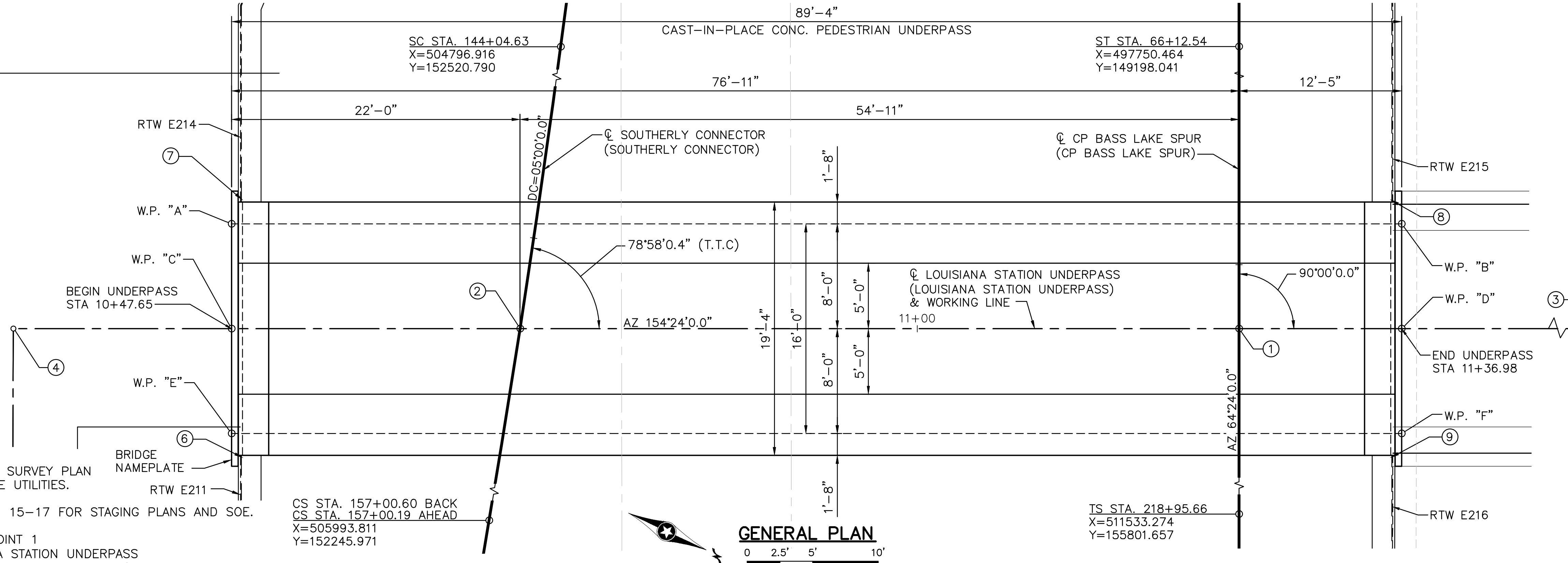
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA AVENUE S. LRT BRIDGE
BRIDGE 27C13
STAGING PLAN 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C13-BRG-STG-002

SHEET 60 OF 60



GENERAL PLAN

0 2.5' 5' 10'
SCALE IN FEET

NOTES:

SEE BRIDGE SURVEY PLAN FOR INPLACE UTILITIES.

SEE SHEETS 15–17 FOR STAGING PLANS AND SOE.

1. CONTROL POINT 1
℄ LOUISIANA STATION UNDERPASS (LOUISIANA STATION UNDERPASS) STA. 11+24.56
℄ CP BASS LAKE SPUR (CP BASS LAKE SPUR) STA. 144+54.89
X = 504822.951
Y = 152586.609
ANGLE = 90°00'0"

2. CONTROL POINT 2
℄ LOUISIANA STATION UNDERPASS (LOUISIANA STATION UNDERPASS) STA. 10+69.67
℄ SOUTHERLY CONNECTOR (SOUTHERLY CONNECTOR) STA. 144+57.00
X = 504846.672
Y = 152537.099
ANGLE = 78°58'0.4" (T.T.C.)

3. PT STA. ℄ LOUISIANA STATION UNDERPASS (LOUISIANA STATION UNDERPASS)
STA. 11+77.06
X = 504800.266
Y = 152633.955

4. PT STA. ℄ LOUISIANA STATION UNDERPASS (LOUISIANA STATION UNDERPASS)
STA. 10+30.98
X = 504863.388
Y = 152502.211

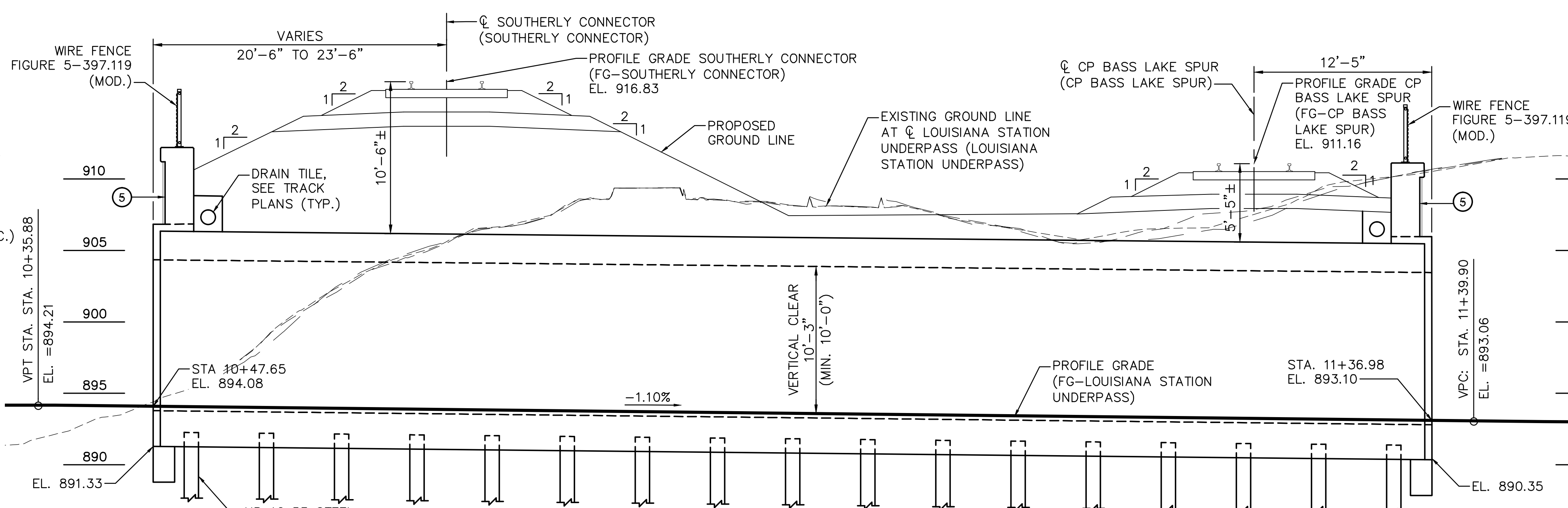
5. ARCHITECTURAL CONCRETE TEXTURE (STACKED STONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). SEE UNDERPASS DETAILS SHEETS FOR LIMITS.

6. EDGE OF UNDERPASS = BEGIN RET. WALL E211.
℄ LOUISIANA STATION UNDERPASS (LOUISIANA STATION UNDERPASS) STA. 10+48.48, 9.71 RT.
X=504864.581; Y=152522.188

7. EDGE OF UNDERPASS = BEGIN RET. WALL E214.
℄ LOUISIANA STATION UNDERPASS (LOUISIANA STATION UNDERPASS) STA. 10+48.48, 9.71' LT.
X=504847.071; Y=152513.799

8. EDGE OF UNDERPASS = BEGIN RET. WALL E215.
℄ LOUISIANA STATION UNDERPASS (LOUISIANA STATION UNDERPASS) STA. 11+36.15, 9.71' LT.
X=504809.191; Y=152592.859

9. EDGE OF UNDERPASS = BEGIN RET. WALL E216.
℄ LOUISIANA STATION UNDERPASS (LOUISIANA STATION UNDERPASS) STA. 11+36.15, 9.71' RT.
X=504826.702; Y=152601.249



GENERAL ELEVATION

0 2.5' 5' 10'
SCALE IN FEET

EXISTING GROUND PROFILE	
9'-0" LEFT	— — — —
℄ LOUISIANA STATION UNDERPASS	- - - - - - -
9'-0" RIGHT	——— ———

DESIGN DATA

2014 AREMA MANUAL FOR RAILWAY ENGINEERING

SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0)

COOPER E 90 LIVE LOAD

DESIGN FILL HEIGHT = 5'-0" (MIN.); 10'-6" (MAX.)
UNIT WEIGHT OF FILL = 120 PCF

LOAD FACTOR AND ALLOWABLE STRESS DESIGN METHOD

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4500 PSI n = 8
fy = 60000 PSI REINFORCEMENT

RISE = 10'-6" (10'-0" MIN. VERT CLR.)
SPAN = 16'-0"

LIST OF SHEETS

BRIDGE NO. R0690

CP BASS LAKE SPUR & SOUTHERLY CONNECTOR OVER LOUISIANA STATION UNDERPASS 0.3 MI. S.E. OF JCT. OF T.H. 7 & LOUISIANA AVE. S. IN ST. LOUIS PARK
89'-4" SINGLE BARREL CONCRETE CULVERT 10'-0" TRAIL,
00°-00'-00.00" SKEW

CONCRETE BOX CULVERT I.D. NO. 113

GENERAL PLAN AND ELEVATION

SEC 20 T 117N R 21W
CITY OF ST LOUIS PARK HENNEPIN COUNTY

JOB NO.: T9N635 | STATE PROJ. NO.: 9909-01 | MNDOT REVIEW: JOE NIETFELD

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

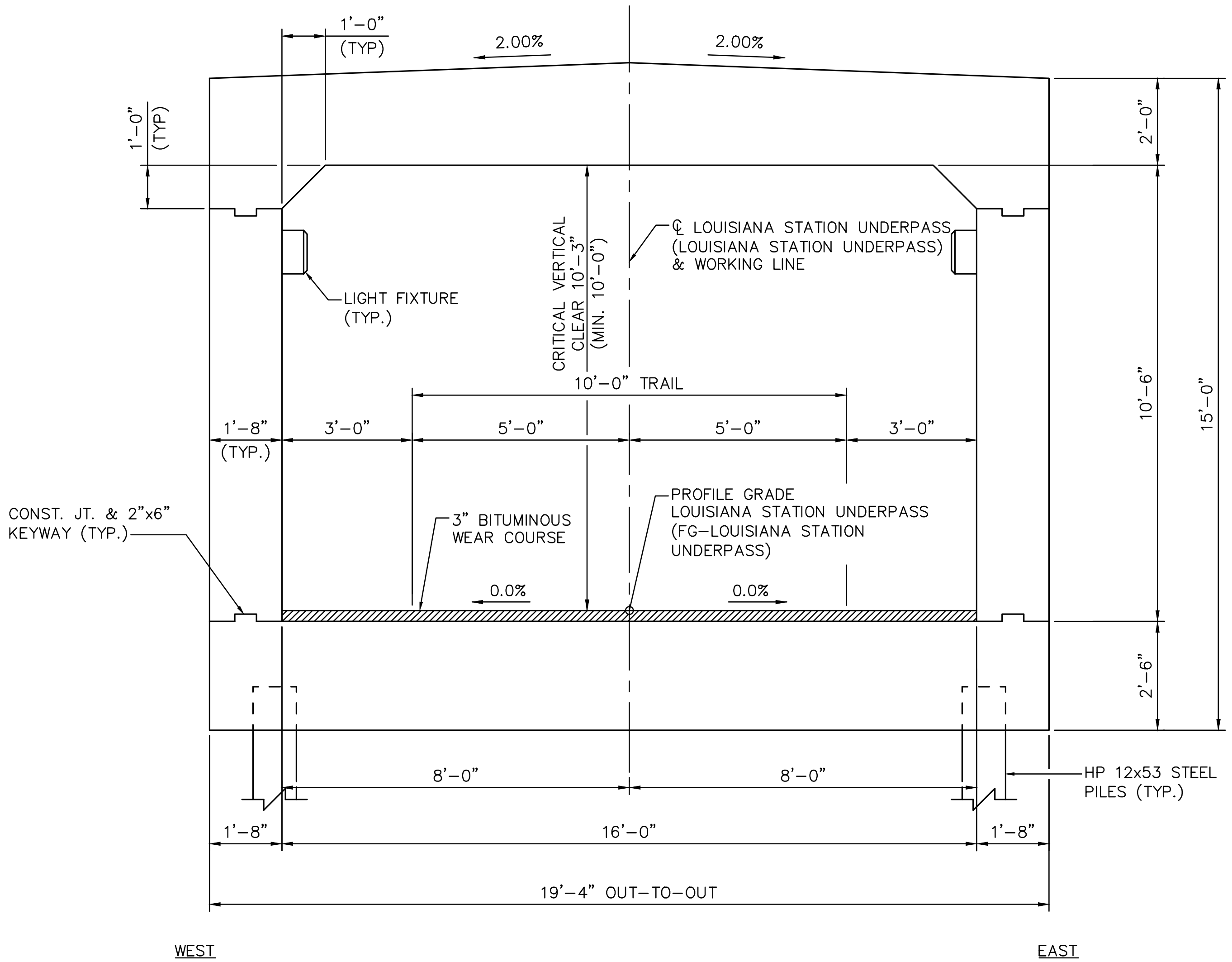
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
GENERAL PLAN AND ELEVATION

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0690-BRG-GPE-001

SHEET 1 OF 23



TRANSVERSE SECTION

0 1' 2' 4'
SCALE IN FEET

STRAY CURRENT CONTROL NOTES:

THE FOLLOWING STRAY CURRENT CONTROL NOTES ARE A SUPPLEMENT TO THE SYSTEM WIDE ELECTRICAL DRAWINGS. SEE SYSTEMS DRAWINGS, VOLUME 12 FOR ASSOCIATED DETAILS AND DOCUMENT CERTIFICATION RELATED TO STRAY CURRENT REQUIREMENTS.

1. ALL REBAR IN UNDERPASS BRIDGE R0690 AND IN RETAINING WALLS E215 AND E216 SHALL BE EPOXY COATED AND SECURED WITH NON-METALLIC OR NON-METALLIC COATED TIES.
2. NO SPECIAL MEASURES ARE REQUIRED IN REGARD TO THE PILES IN UNDERPASS BRIDGE R0690 AND IN RETAINING WALLS E215 AND E216.
3. ELECTRICAL ISOLATION SHALL BE MAINTAINED BETWEEN EMBEDDED STEEL ELEMENTS IN THE UNDERPASS BRIDGE AND EMBEDDED STEEL ELEMENTS IN RETAINING WALLS E214 AND E211.
4. ALL REBAR IN RETAINING WALLS E214 AND E211 SHALL BE BLACK BAR AND MADE ELECTRICALLY CONTINUOUS AND HAVE TEST STATIONS INSTALLED AS SHOWN IN DETAIL 4 ON SHEET E0-SYS-COOR-DTL-001.
5. ALL PILES IN RETAINING WALLS E214 AND E211 SHALL BE ELECTRICALLY INTERCONNECTED AND HAVE TEST STATIONS INSTALLED AS SHOWN IN DETAILS 2 AND 4 ON SHEET E0-SYS-CORR-DTL-008.
6. INSTALL STRAY CURRENT BOND TEST STATIONS IN RETAINING WALLS E214 AND E211 ADJACENT TO UNDERPASS PER SHEETS E0-SYS-CORR-DTL-023 AND 024.

SCHEDULE OF QUANTITIES

SPEC. SECTION	COMPONENT ITEM	UNIT	QUANTITY
--	CONSTRUCT BRIDGE R0690	LUMP SUM	LS

COMPONENT ITEM SUMMARY (BRIDGE R0690)

	SPEC. SECTION (3)	COMPONENT ITEM	UNIT (2)	QUANTITY (2)
	2401	STRUCTURAL CONCRETE (1G52)	CU. YD.	
(1)	2401	STRUCTURAL CONCRETE (3B52)	CU. YD.	
	2401	REINFORCEMENT BARS (EPOXY COATED)	POUND	
	SB-XX	ARCHITECTURAL CONCRETE TEXTURE (STACKED STONE)	SQ. FT.	
	SB-XX	STRUCTURAL EXCAVATION CLASS U	CU. YD.	
	SB-XX	STEEL H-PILING 12"	LIN. FT.	
	2452	STEEL H-TEST PILE 70 FT LONG 12"	EACH	
	2452	PILE TIP PROTECTION 12"	EACH	
	SB-XX	STEEL SHEET PILING (TEMPORARY)	LUMP SUM	
	2481	MEMBRANE WATERPROOFING SYSTEM	LIN. FT.	
	2502	DRAINAGE SYSTEM	LUMP SUM	
	2557	WIRE FENCE (DESIGN W-1)	LIN. FT.	

(1) A BENCHMARK IS REQUIRED, LOCATED AT THE SOUTHEAST CORNER OF THE BRIDGE. STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK TO CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE.

(2) QUANTITIES LISTED FOR THE COMPONENT ITEMS OF THE LUMP SUM BR R0690 ITEM ARE FOR INFORMATION 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 R0690. REFER TO MNDOT STANDARD SPECIFICATION OR SPECIAL PROVISION FOR TECHNICAL SPECIFICATION REQUIREMENTS FOR ALL PROVISION OTHER THAN MEASUREMENT & PAYMENT REQUIREMENTS.

CONSTRUCTION NOTES:

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

THE FIRST TWO DIGITS OF EACH 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 WERE COMPUTED USING SERVICE LOAD 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".

CONCRETE MATERIALS, MIX DESIGN, TESTING AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH CHAPTER 8, PART 1 OF THE 2014 A.R.E.M.A. MANUAL; MnDOT 2461 AND THE SPECIAL PROVISIONS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

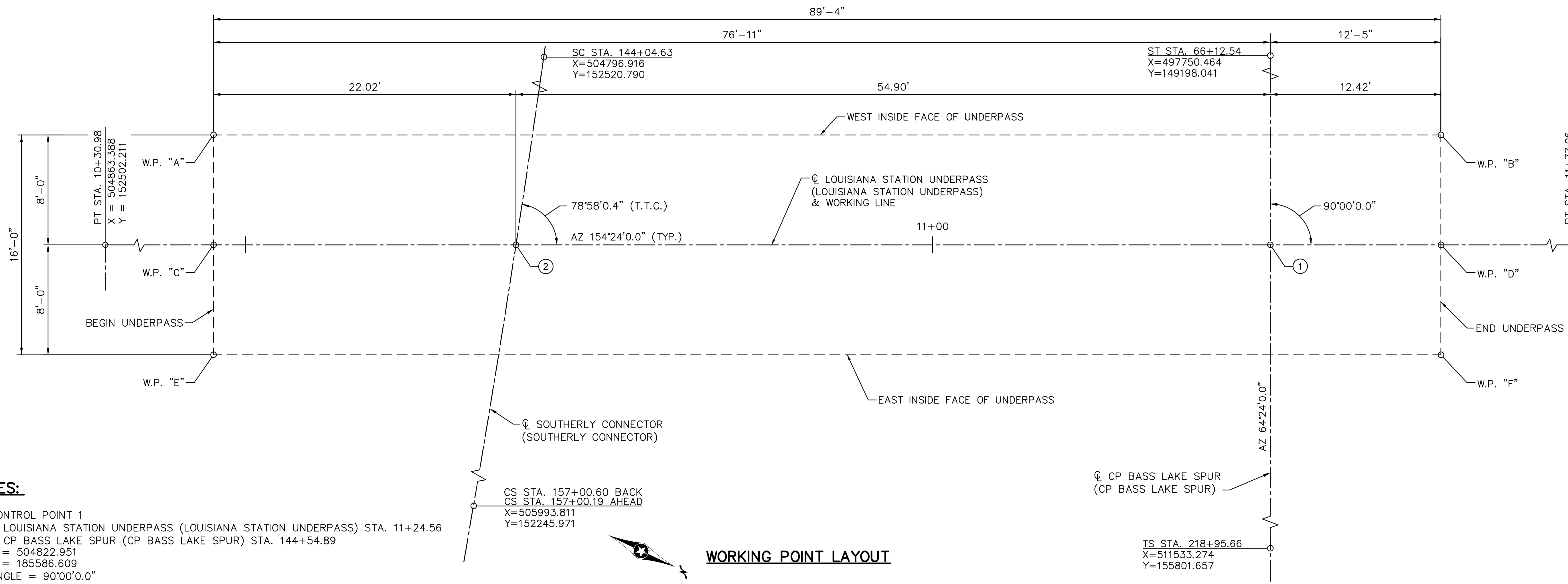
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
TRANSVERSE SECTION AND QUANTITIES

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0690-BRG-SUP-001



WORKING POINT LAYOUT

NOTES:

1. CONTROL POINT 1
   ℄ LOUISIANA STATION UNDERPASS (LOUISIANA STATION UNDERPASS) STA. 11+24.56
   ℄ CP BASS LAKE SPUR (CP BASS LAKE SPUR) STA. 144+54.89
   X = 504822.951
   Y = 185586.609
   ANGLE = 90°00'0.0"

2. CONTROL POINT 2
   ℄ LOUISIANA STATION UNDERPASS (LOUISIANA STATION UNDERPASS) STA. 10+69.67
   ℄ SOUTHERLY CONNECTOR (SOUTHERLY CONNECTOR) STA. 144+57.00
   X = 504846.672
   Y = 152537.099
   ANGLE = 78°58'0.4" (T.T.C.)

DIMENSIONS BETWEEN WORKING POINTS								COORDINATES		ELEVATION	
POINT	STATION	A	B	C	D	E	F	X	Y	TOP OF BOTTOM SLAB	POINT
A	10+47.65		89.33	8.00	89.69		90.75	504848.971	152513.785	893.83	A
B	11+36.98				8.00	90.75		504810.372	152594.349	892.85	B
C	10+47.65				89.33	8.00	89.69	504856.186	152517.242	893.83	C
D	11+36.98						8.00	504817.586	152597.806	892.85	D
E	10+47.65						89.33	504863.401	152520.699	893.83	E
F	11+36.98							504824.801	152601.262	892.85	F

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
UNDERPASS LAYOUT

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0690-BRG-SUP-002

SHEET 3 OF 23

COMPUTED PILE LOAD - TONS/PILE	
DEAD LOAD + EARTH PRESSURE	52
LIVE LOAD	25
DESIGN LOAD	77
* BASED ON GROUP I LOADING (SERVICE LOAD) PER AREMA CHAPTER 8 SECTION 2.2.4	

REQUIRED PILE TEST LOAD	
FIELD CONTROL METHOD	TEST LOAD
PDA	154

GENERAL PILE NOTES:

2 HP12x53 STEEL TEST PILE 70 FT. LONG
32 HP12x53 STEEL PILES EST. 70 FT. LENGTH
34 HP12x53 STEEL PILES REQ'D FOR UNDERPASS.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

FOR PILE SPLICE DETAILS SEE DETAIL B202.

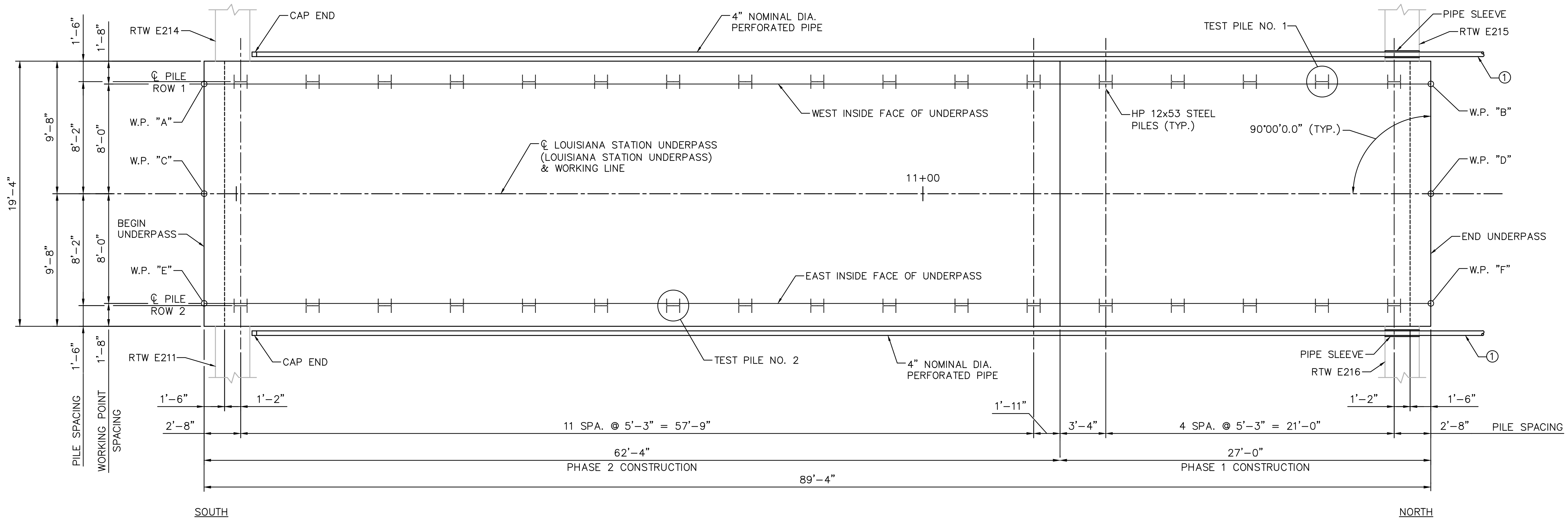
DRAINAGE SYSTEM NOTES:

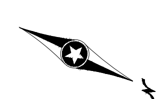
ALL PIPE TO COMPLY WITH SPEC. 3245.

WRAP PERFORATED PIPE WITH GEOTEXTILE PER SPEC. 3733, TYPE 1. ATTACH TO PIPE PER SPEC. 2502.

SLOPE PIPE ⅛" PER FT FROM SOUTH TO NORTH.

(1) CONNECT TO CATCH BASINS LOCATED ALONG EDGES OF TRAIL APPROXIMATELY 15 FT. NORTH OF THE END OF UNDERPASS. SEE GRADING AND DRAINAGE PLANS.





FOOTING LAYOUT

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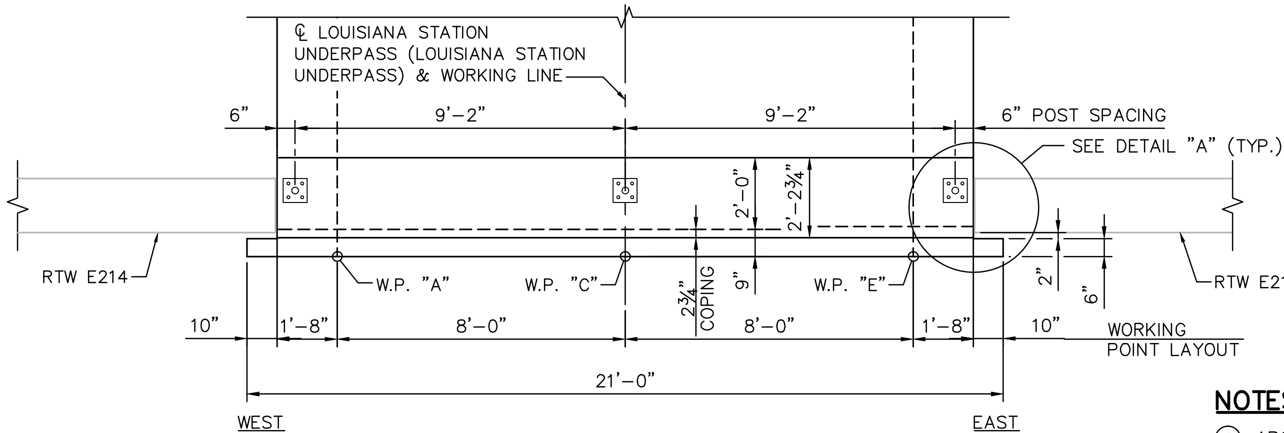
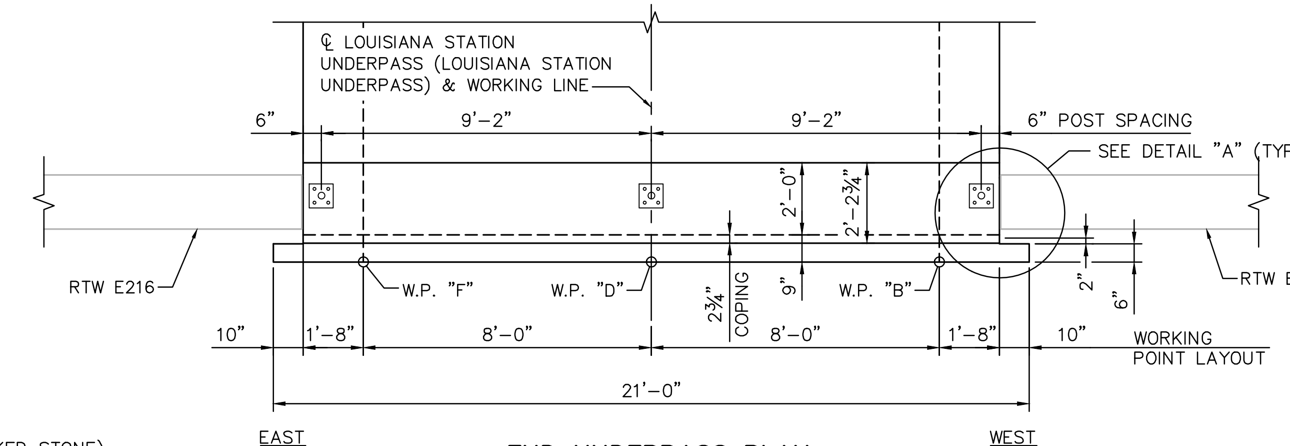
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
FOOTING LAYOUT

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0690-BRG-SUP-003



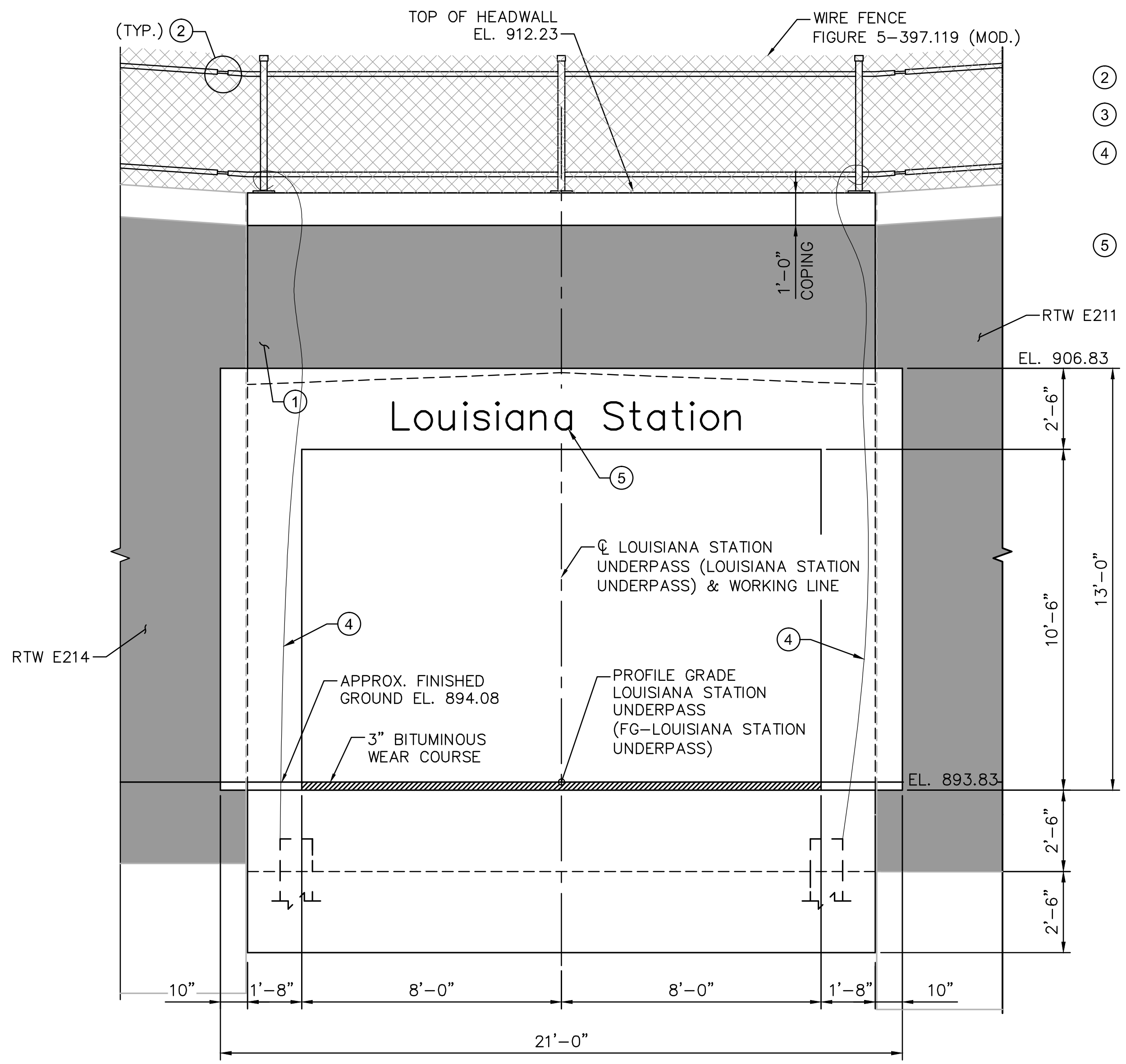
BEGIN UNDERPASS PLAN



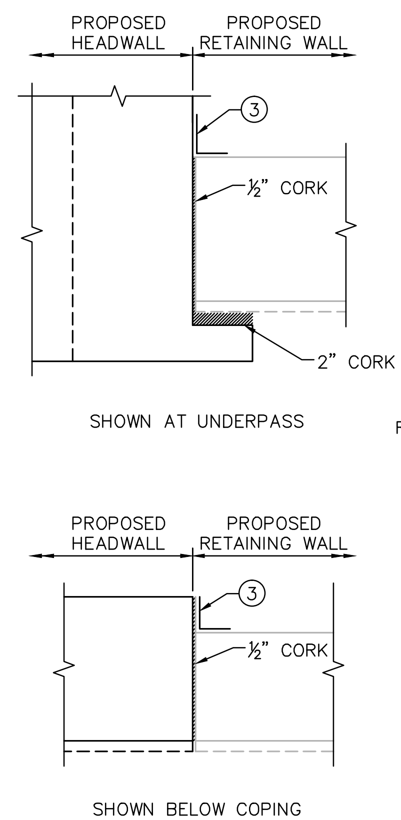
END UNDERPASS PLAN

NOTES:

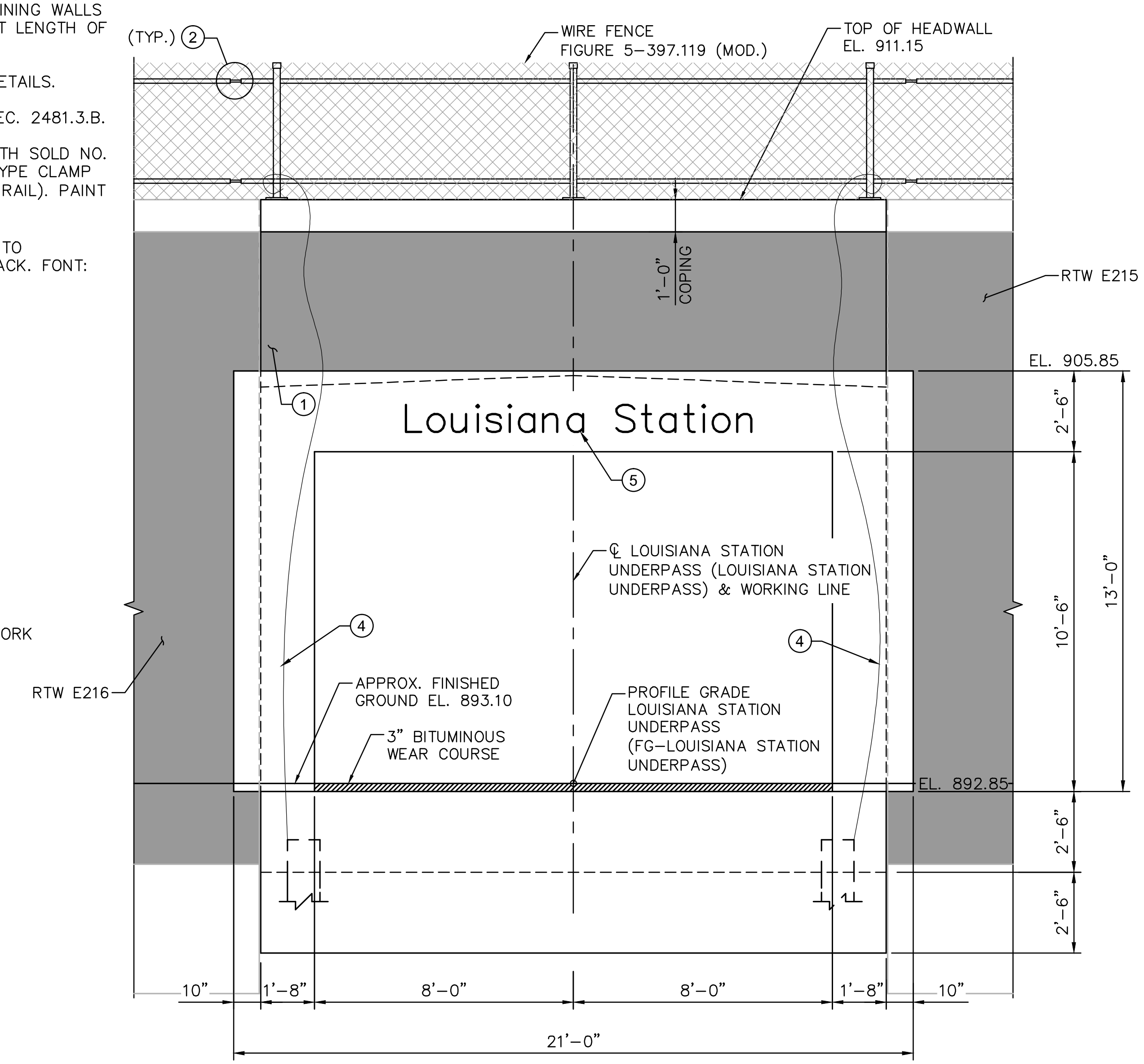
1. ARCHITECTURAL CONCRETE TEXTURE (STACKED STONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). PATTERN SHALL BE CONTINUOUS FROM RETAINING WALLS THROUGH HEADWALLS UNINTERUPTED. ADJUST LENGTH OF STONE UNITS AS NEEDED.
2. PIPE SLEEVE. SEE WIRE FENCE SHEET FOR DETAILS.
3. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
4. ATTACH WIRE FENCE ANCHORAGE TO PILE WITH SOLD NO. 6 GAGE COPPER WIRE WITH AN APPROVED TYPE CLAMP OR BRAZING (ONE ANCHORAGE PER END OF RAIL). PAINT EXPOSED WIRE GREY.
5. CENTER 10" LETTERS, ¾" RECESSED CAST INTO CONCRETE. PAINT ALL LETTER SURFACES BLACK. FONT: CENTURY GOTHIC.



BEGIN UNDERPASS ELEVATION



DETAIL "A"



END UNDERPASS ELEVATION

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

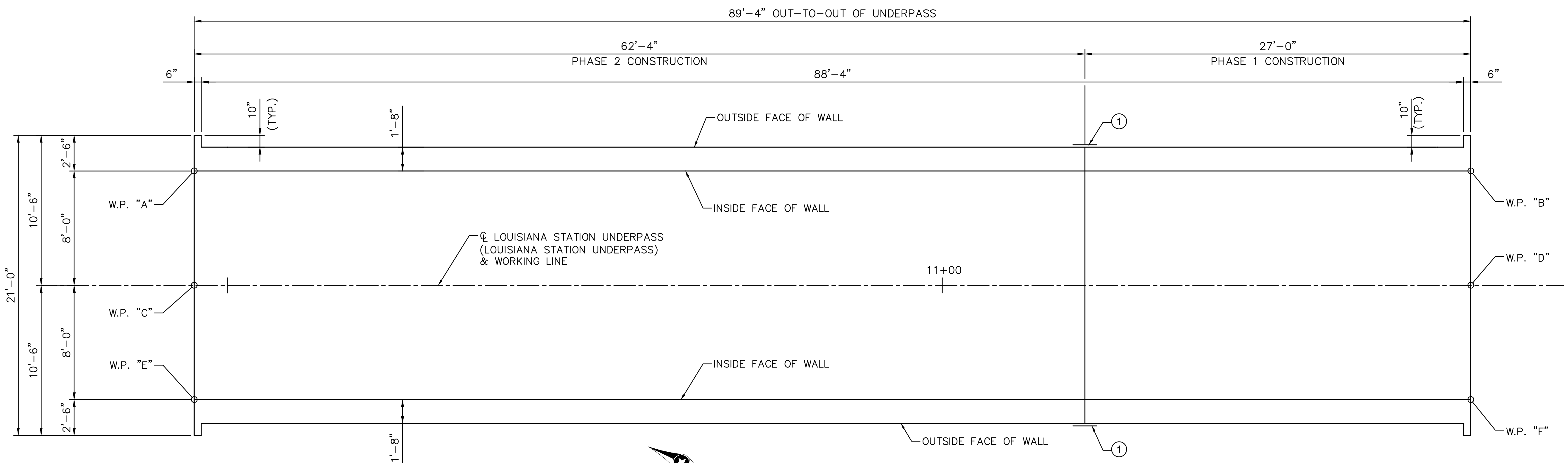
CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
UNDERPASS DETAILS 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0690-BRG-SUP-004

SHEET 5 OF 23

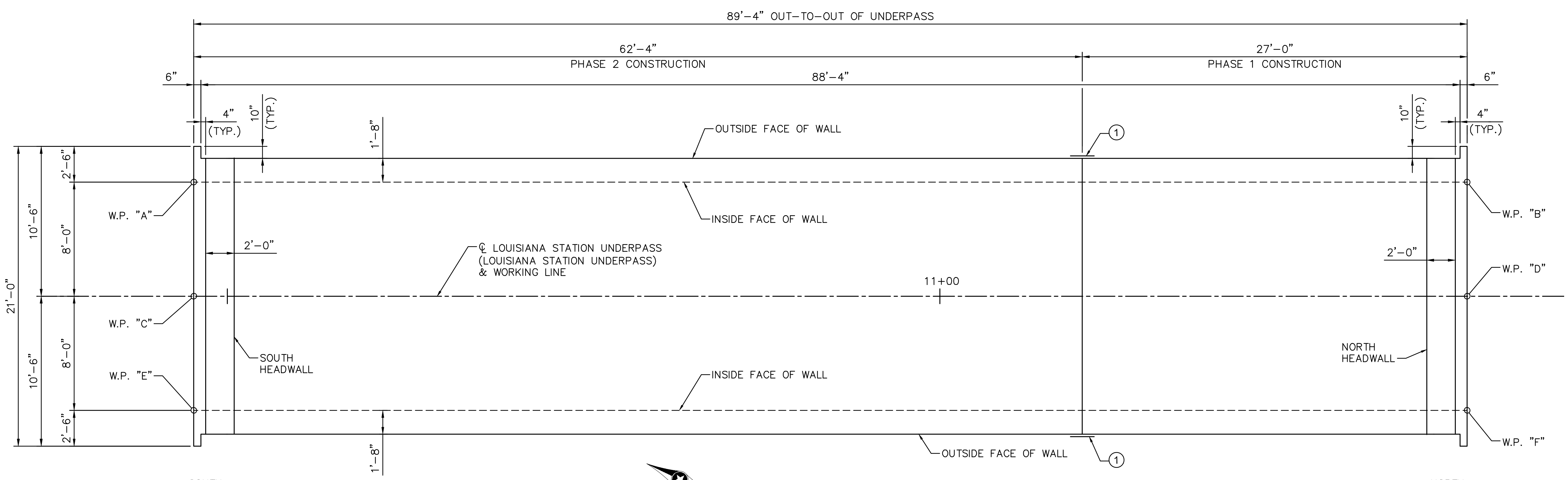
Dec. 10 2015 05:15 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\R0690\CBRR0690-BRG-SUP-004.dwg By: kevin.kimm



WALL LAYOUT PLAN

NOTES:

1. MEMBRANE WATERPROOFING SYSTEM PER SPEC 2481.3.B.



TOP SLAB PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: MSK | CHECKED BY: KJK

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

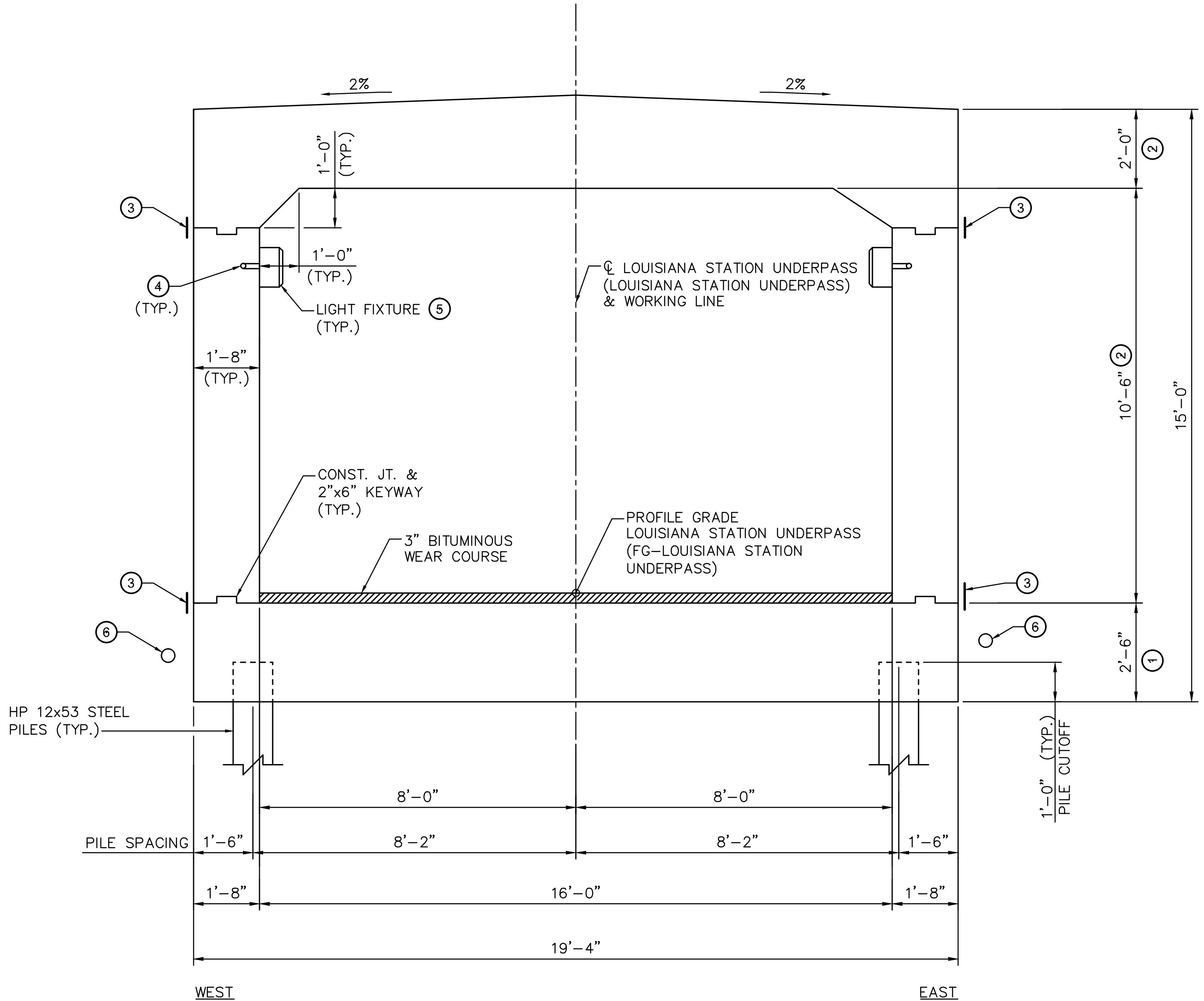
CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
UNDERPASS DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0690-BRG-SUP-005

SHEET 6 OF 23

Dec. 10 2015 03:14 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\R0690\CBRR0690-BRG-SUP-005.dwg By: kevin.kimm



TRANSVERSE SECTION

NOTES:

1. STRUCTURAL CONCRETE (1G52)
2. STRUCTURAL CONCRETE (3B52)
3. MEMBRANE WATERPROOFING SYSTEM PER SPEC 2481.3.B.
4. ELECTRICAL CONDUIT FOR LIGHTING. SEE ELECTRICAL PLANS FOR DETAILS.
5. UNDERPASS LIGHT FIXTURE. SEE ELECTRICAL PLANS FOR LAYOUT AND DETAILS.
6. 4" NOMINAL DIA. PERFORATED PIPE. SEE SHEET 4 FOR ADDITIONAL DRAINAGE SYSTEM DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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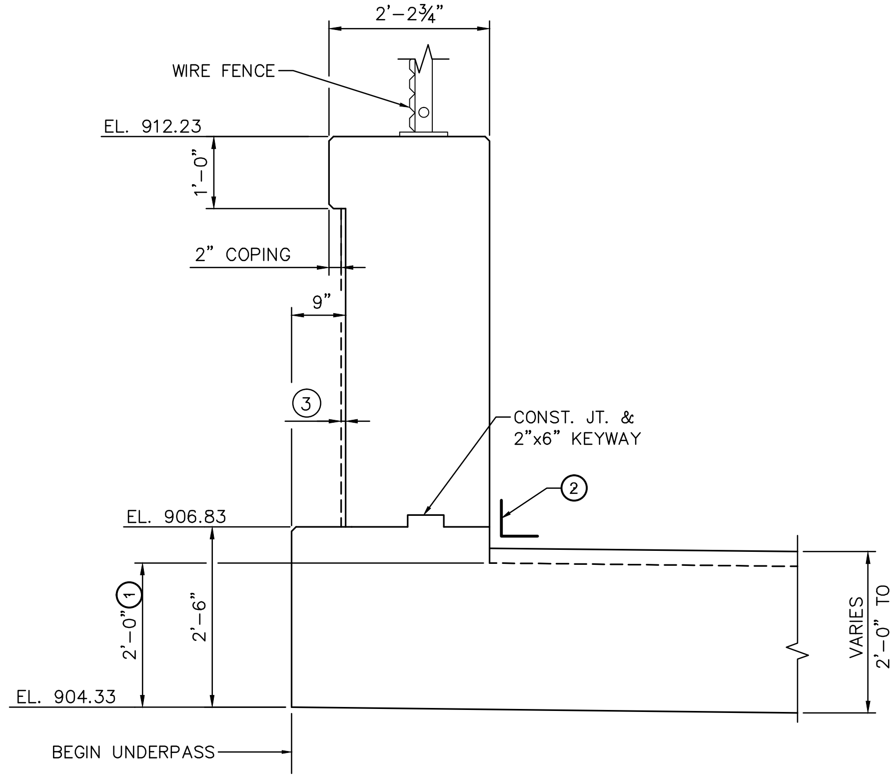
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

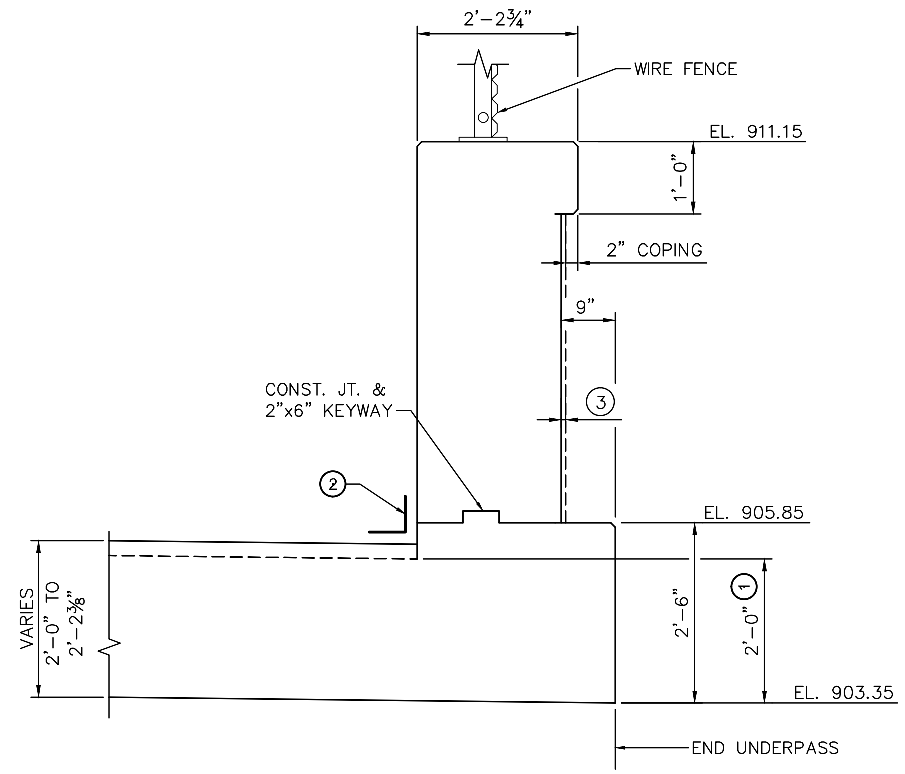
CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
UNDERPASS DETAILS 3

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0690-BRG-SUP-006



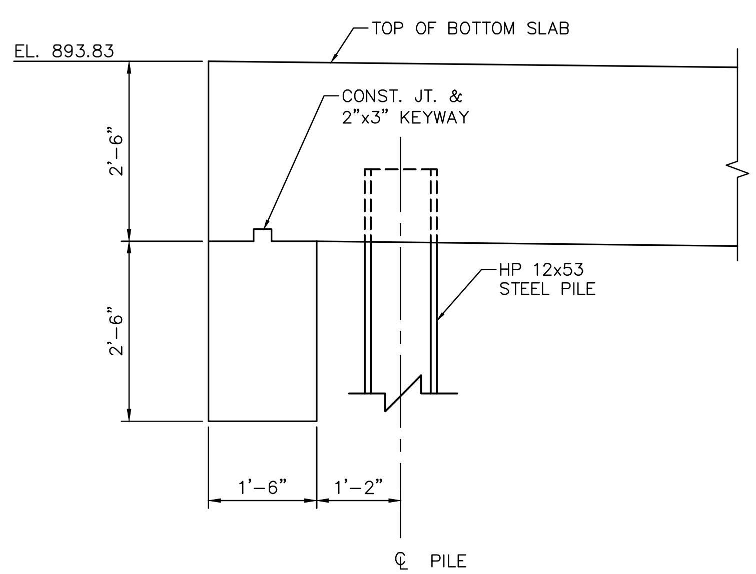
SECTION @ SOUTH HEADWALL



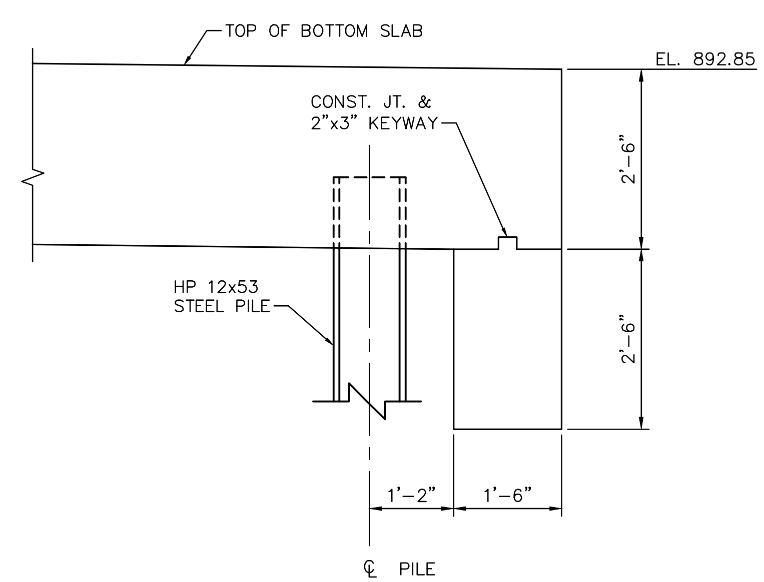
SECTION @ NORTH HEADWALL

NOTES:

1. TOP SLAB THICKNESS AT EXTERIOR FACE OF WALL.
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC 2481.3.B.
3. ARCHITECTURAL CONCRETE TEXTURE (STACKED STONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR).



SECTION @ SOUTH CUTOFF WALL



SECTION @ NORTH CUTOFF WALL

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METROPOLITAN COUNCIL

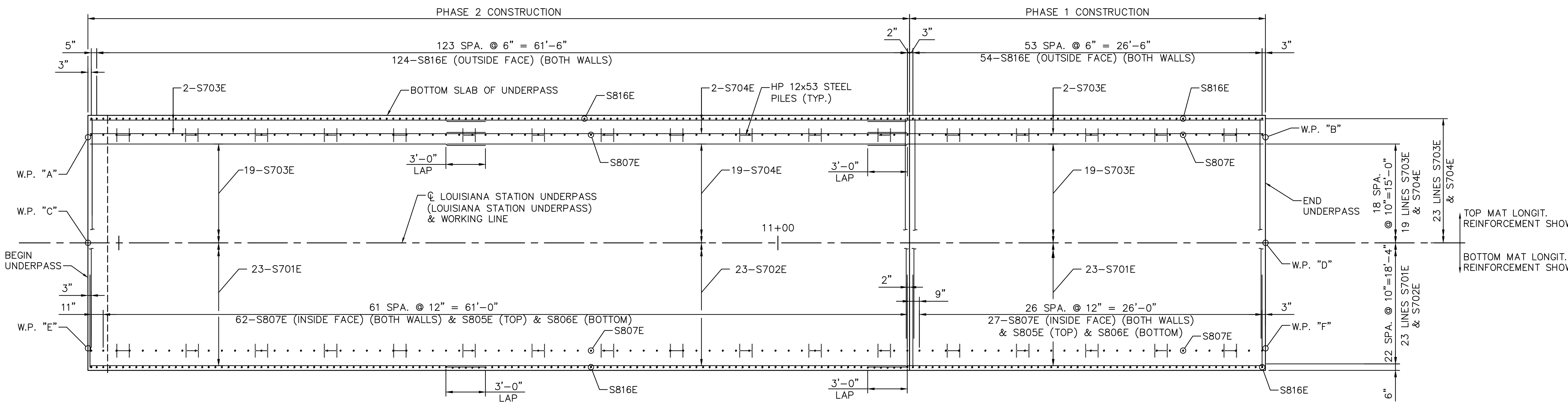
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
UNDERPASS DETAILS 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0690-BRG-SUP-007

SHEET 8 OF 23



FOOTING REINFORCEMENT

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

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METROPOLITAN COUNCIL

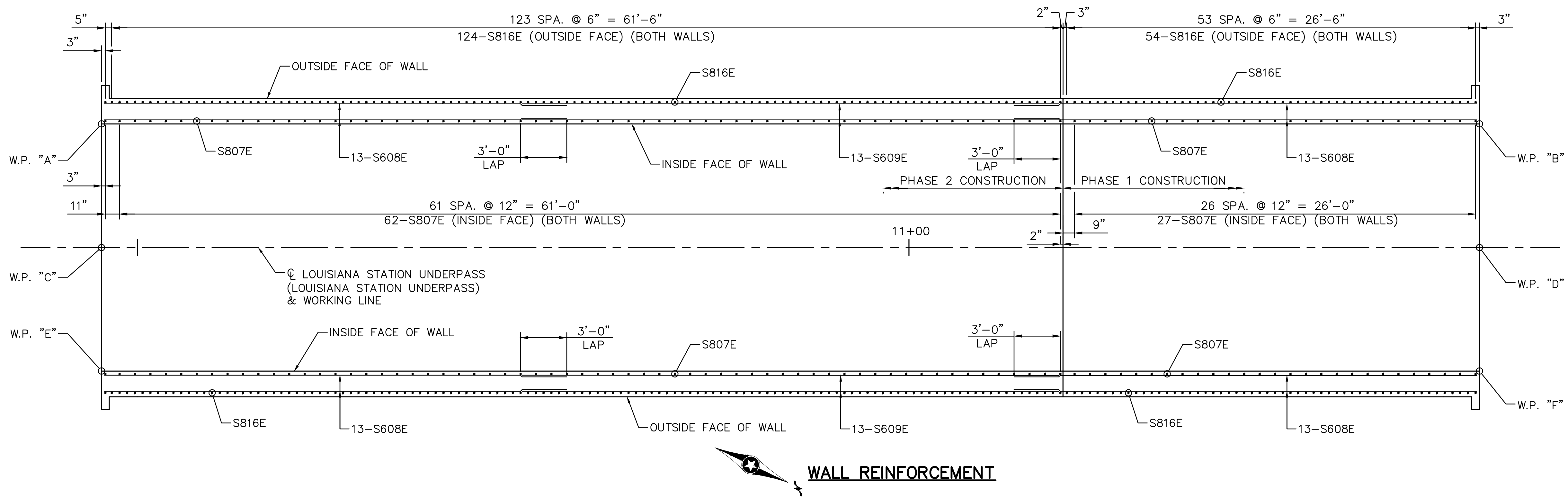
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
UNDERPASS REINFORCEMENT 1

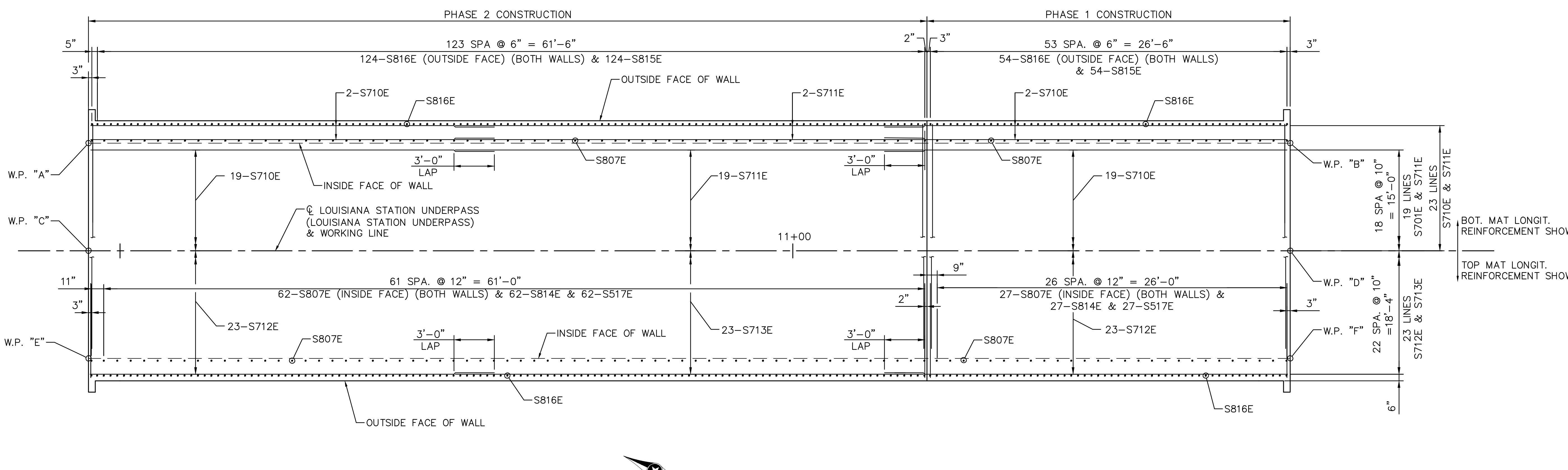
DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0690-BRG-SUP-008-1

SHEET 9 OF 23



WALL REINFORCEMENT



TOP SLAB REINFORCEMENT

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
UNDERPASS REINFORCEMENT 2

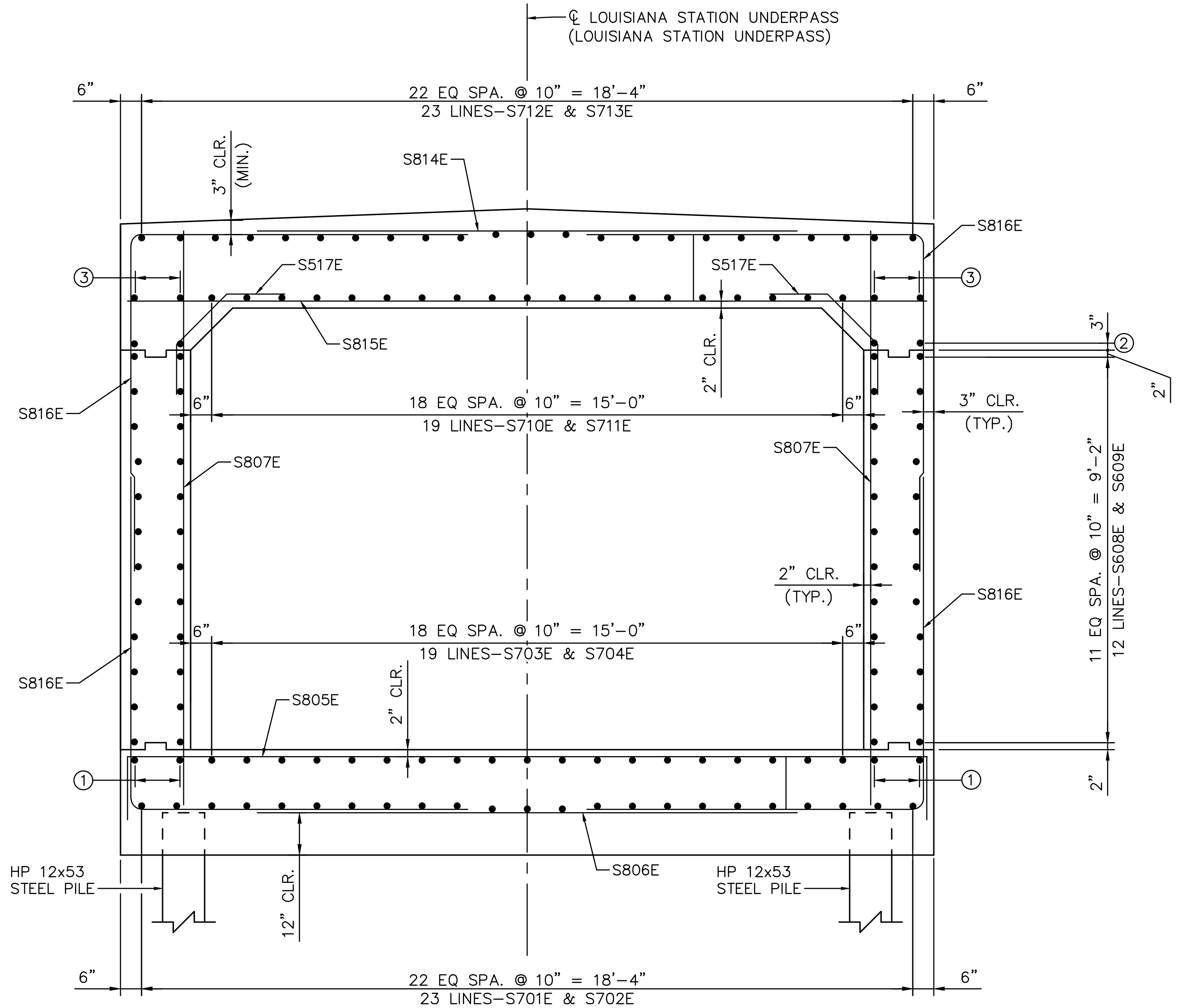
DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0690-BRG-SUP-008-2

SHEET 10 OF 23

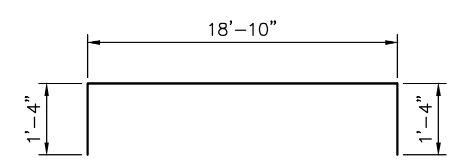
Dec. 10 2015 03:18 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\R0690\CBRR0690-BRG-SUP-008-2.dwg By: kevin.kimm

BILL OF REINFORCEMENT

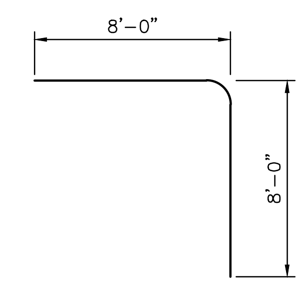
BAR	NO.	LENGTH	SHAPE	LOCATION
S701E	46	29'-11"	STR.	FOOTING BOT. LONG.
S702E	23	35'-0"	STR.	FOOTING BOT. LONG.
S703E	46	29'-11"	STR.	FOOTING TOP LONG.
S704E	23	35'-0"	STR.	FOOTING TOP LONG.
S805E	90	21'-6"	BENT	FOOTING TOP TRANS.
S806E	90	12'-10"	STR.	FOOTING BOT. TRANS.
S807E	180	13'-9"	STR.	WALL INSIDE VERT.
S608E	104	29'-2"	STR.	WALL LONG. E.F.
S609E	52	35'-0"	STR.	WALL LONG. E.F.
S710E	46	29'-11"	STR.	TOP SLAB LONG. BOT.
S711E	23	35'-0"	STR.	TOP SLAB LONG. BOT.
S712E	46	29'-11"	STR.	TOP SLAB TOP LONG.
S713E	23	35'-0"	STR.	TOP SLAB TOP LONG.
S814E	90	12'-10"	STR.	TOP SLAB TOP TRANS.
S815E	179	18'-10"	STR.	TOP SLAB BOT. TRANS.
S816E	716	16'-0"	BENT	WALL OUTSIDE DOWEL
S517E	180	3'-8"	BENT	TOP SLAB FILLET
S518E	64	2'-2"	STR.	WINGWALL TRANS.
S519E	4	12'-1"	STR.	WINGWALL VERTICAL



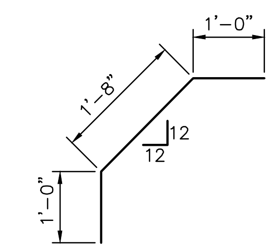
TRANSVERSE SECTION REINFORCEMENT



S805E



S816E



S517E

NOTES:

1. 2 LINES – S703E & S704E.
2. 2 LINES – S608E & S609E.
3. 2 LINES – S710E & S711E.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

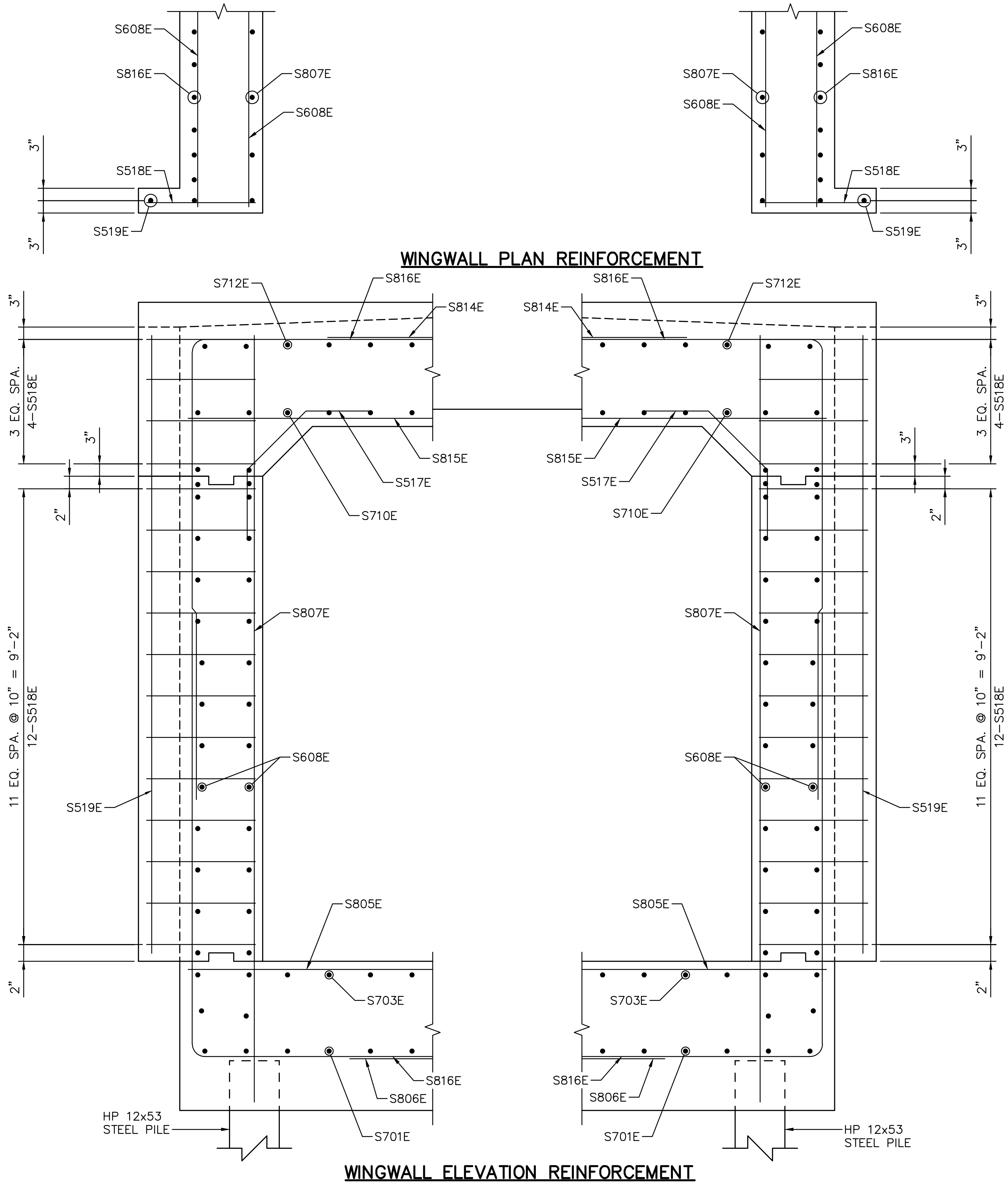
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
UNDERPASS REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0690-BRG-SUP-008-3

SHEET 11 OF 23



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
UNDERPASS REINFORCEMENT 4

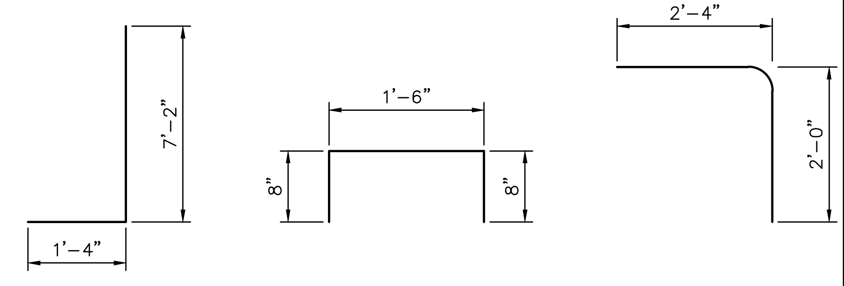
DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0690-BRG-SUP-008-4

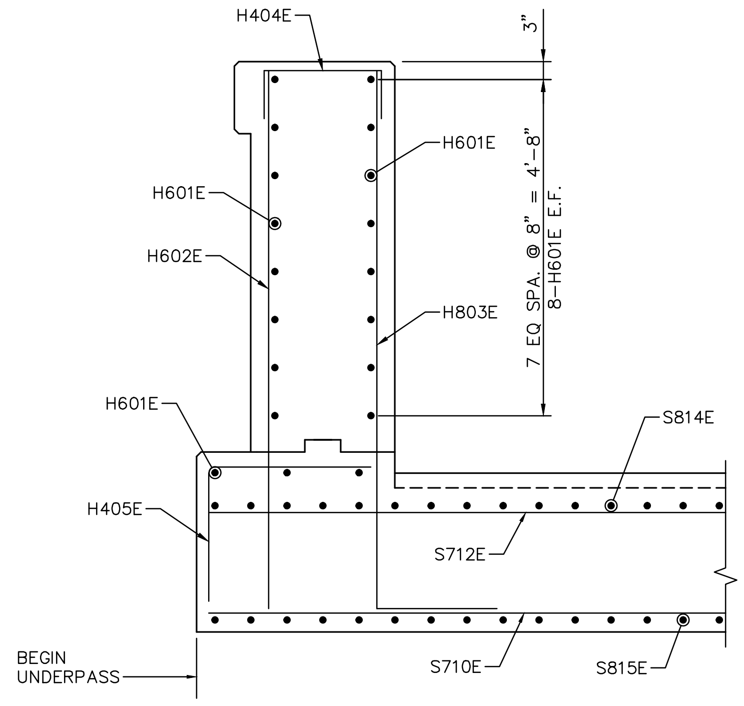
SHEET 12 OF 23

Dec. 10 2015 05:16 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\R0690\CBRR0690-BRG-SUP-008-4.dwg By: kevin.kimm

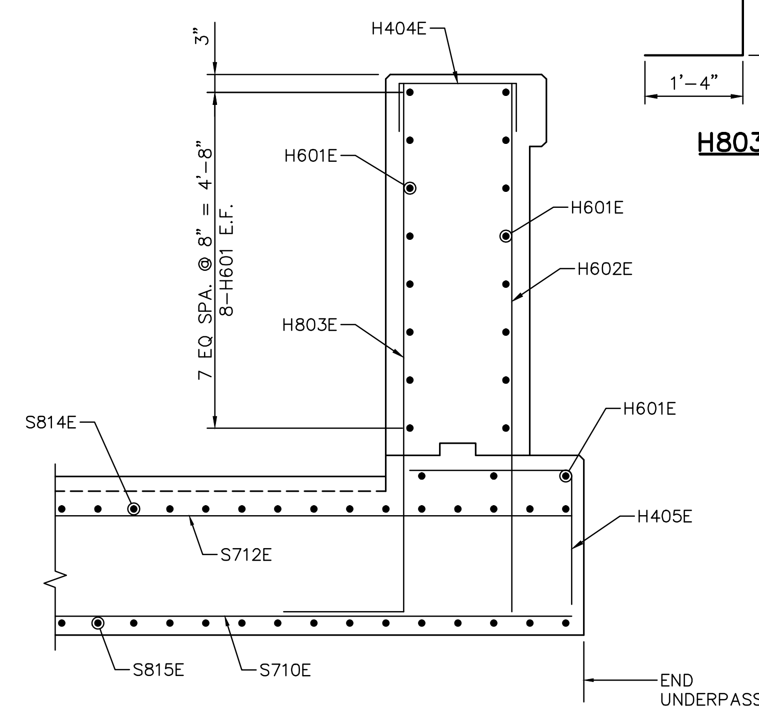
BILL OF REINFORCEMENT				
BAR	NO.	LENGTH	SHAPE	LOCATION
H601E	38	18'-10"	STR.	HEADWALL HORIZONTAL
H602E	50	7'-2"	STR.	HEADWALL VERTICAL F.F.
H803E	50	8'-6"	BENT	HEADWALL VERTICAL B.F.
H404E	50	2'-10"	BENT	HEADWALL CAP BAR
H405E	50	4'-4"	BENT	HEADWALL FACE
H406E	12	18'-10"	STR.	CUTOFF WALL HORIZONTAL
H607E	50	4'-11"	STR.	CUTOFF WALL VERTICAL



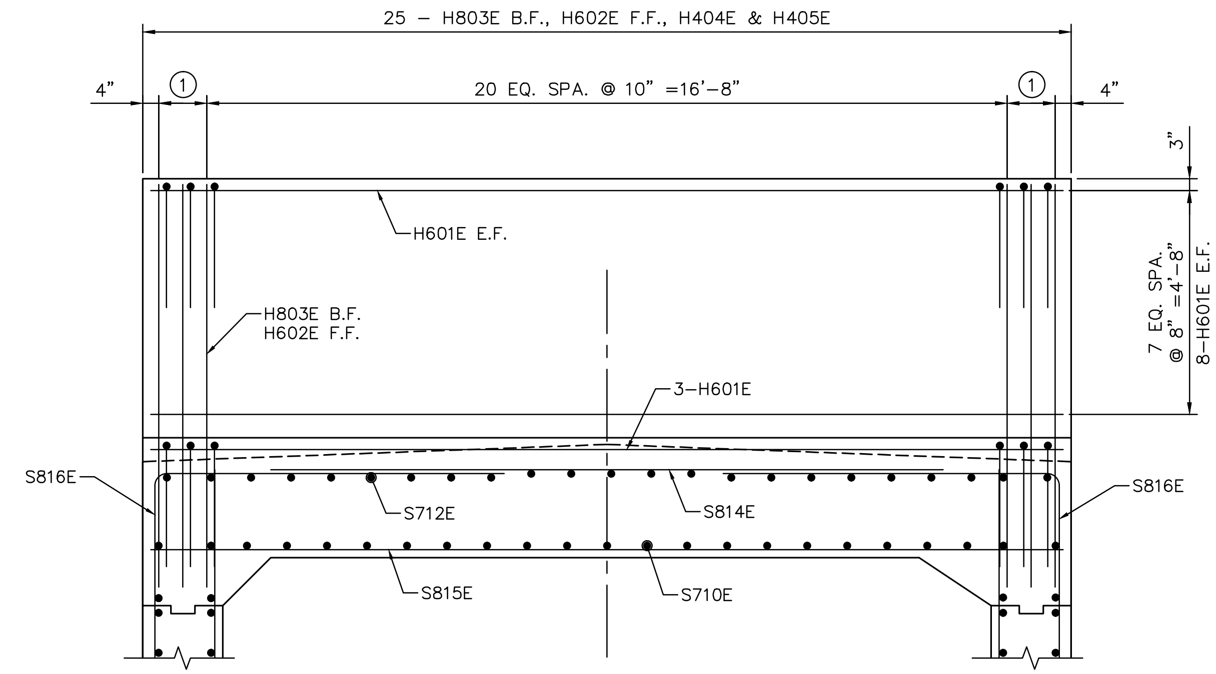
H803E H404E H405E



SECTION @ SOUTH HEADWALL REINFORCEMENT



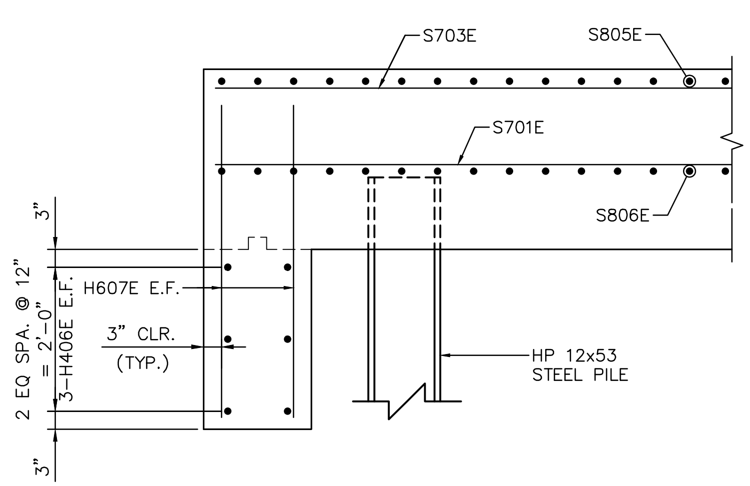
SECTION @ NORTH HEADWALL REINFORCEMENT



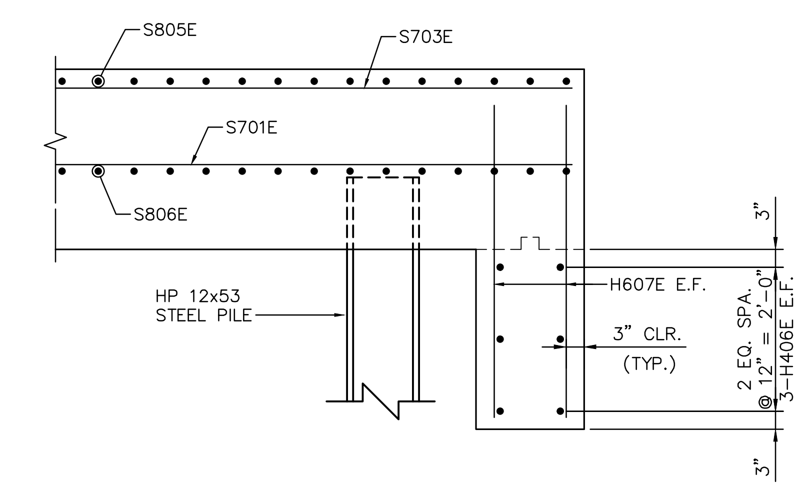
HEADWALL ELEVATION

NOTES:

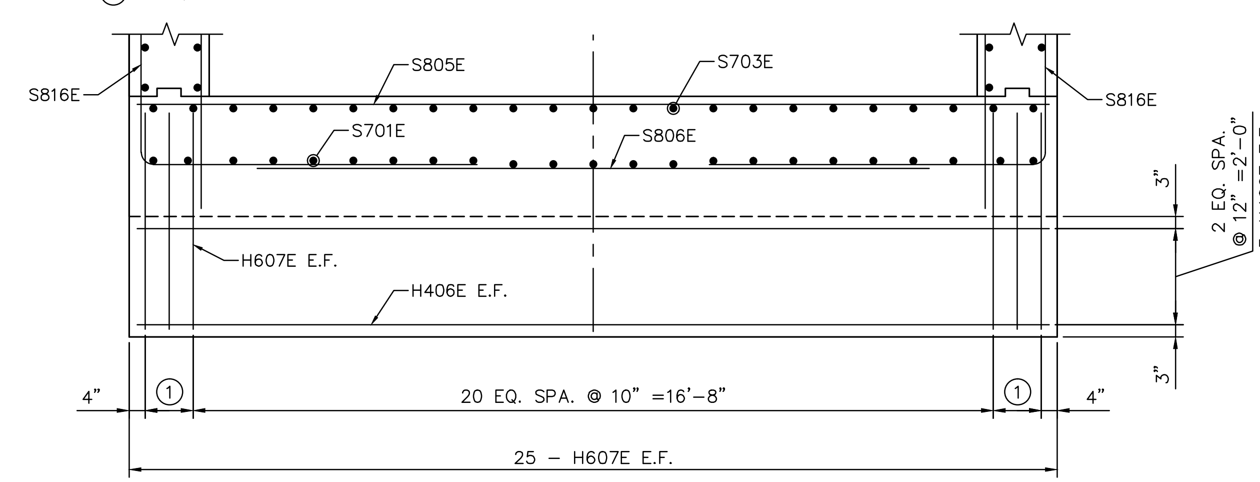
(1) 2 EQ. SPA. @ 6" = 1'-0"



SECTION @ SOUTH CUTOFF WALL REINFORCEMENT



SECTION @ NORTH CUTOFF WALL REINFORCEMENT



CUTOFF WALL ELEVATION

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

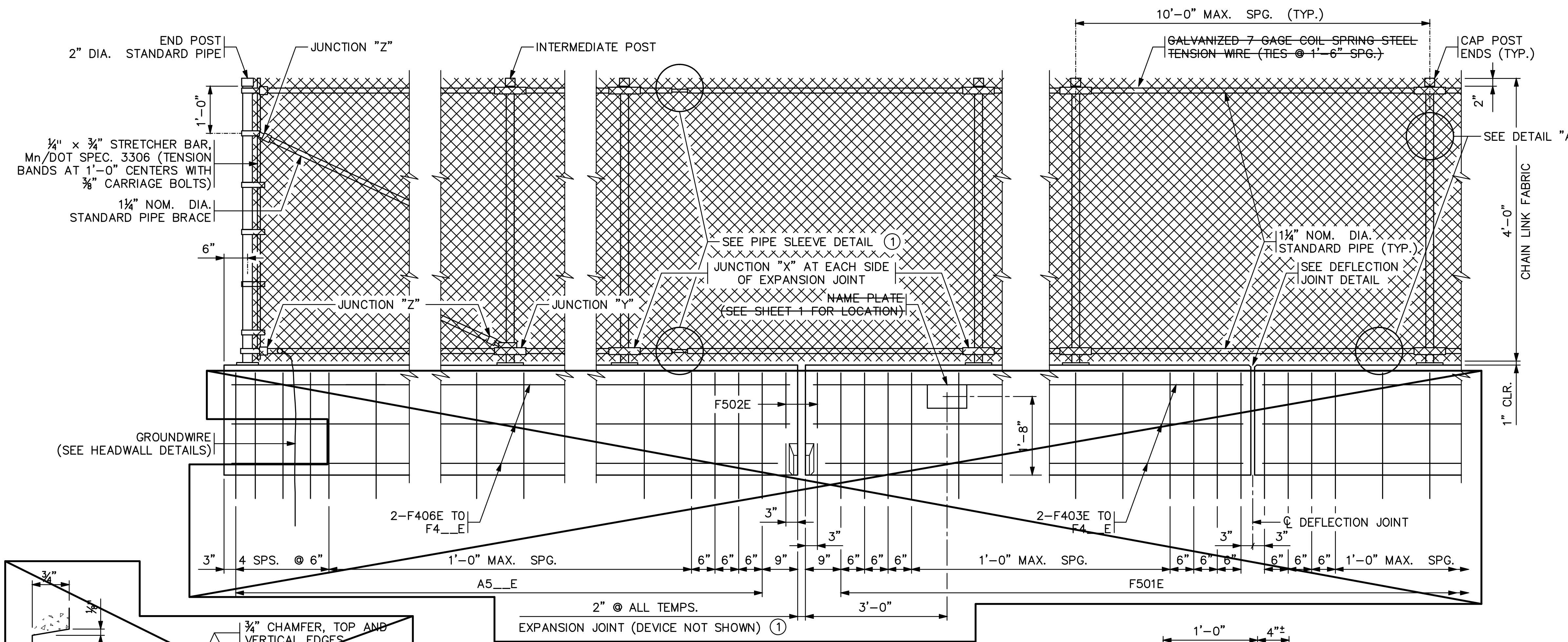
CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
UNDERPASS REINFORCEMENT 5

DISCIPLINE: STRUCTURES

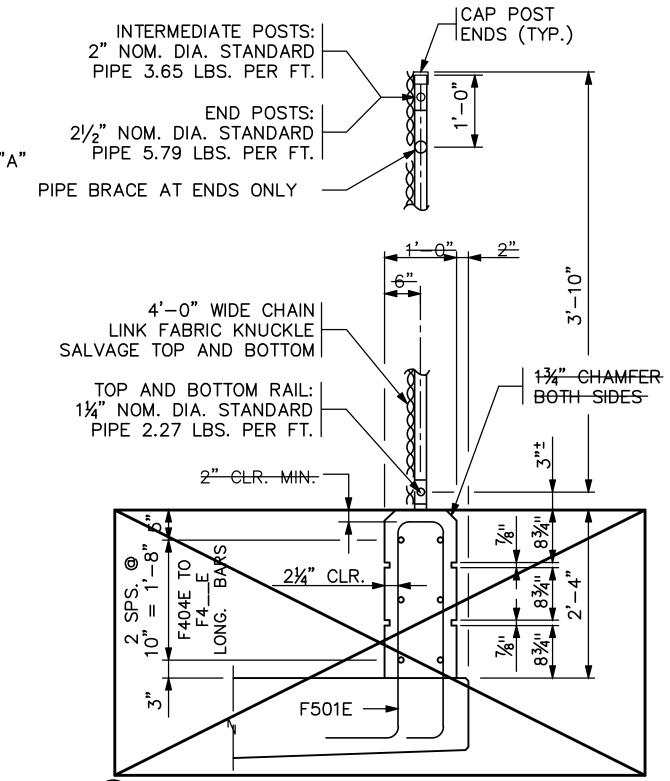
SHEET NAME: CBRR0690-BRG-SUP-008-5

SHEET 13 OF 23

Dec. 10 2015 03:20 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\R0690\CBRR0690-BRG-SUP-008-5.dwg By: kevin.kimm



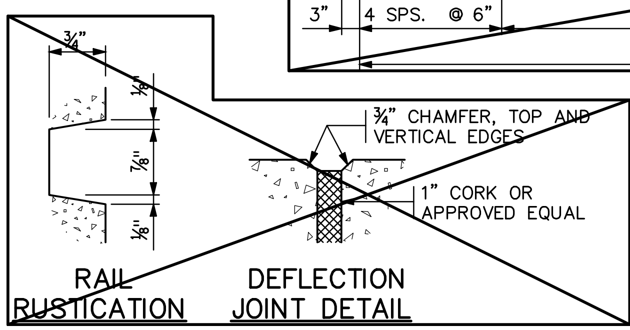
Ⓐ INSIDE ELEVATION OF RAILING

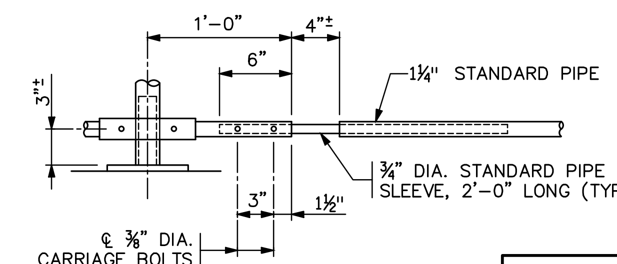


Ⓐ TYPICAL SECTION THROUGH FENCE

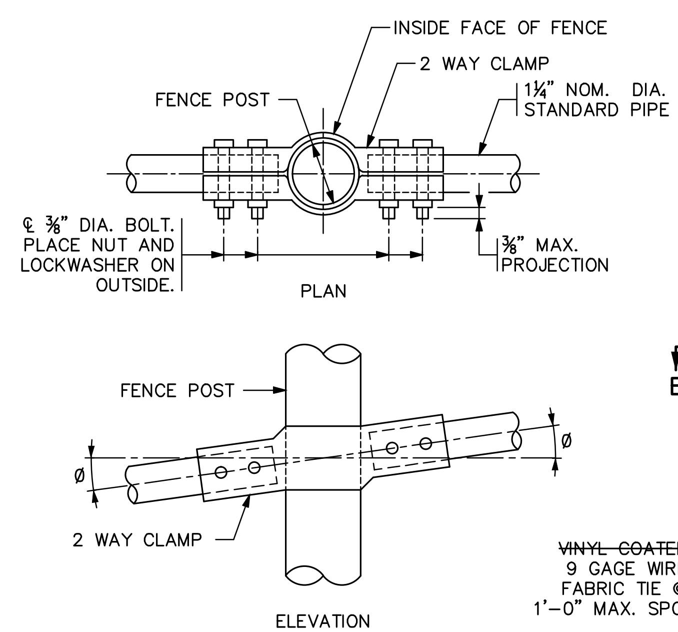
INTERMEDIATE POST SHOWN

SHEET MODIFICATION:
Ⓐ DENOTES MODIFICATION TO STANDARD SHEET





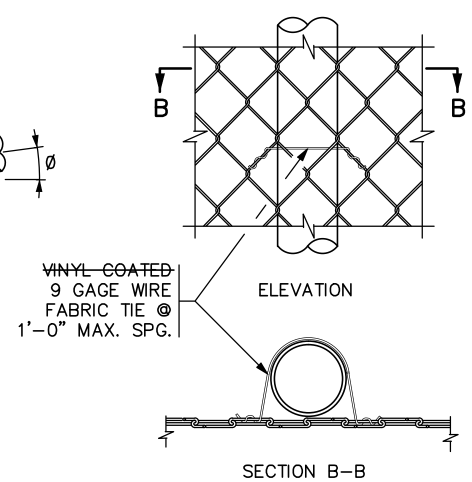
PIPE SLEEVE DETAIL 1



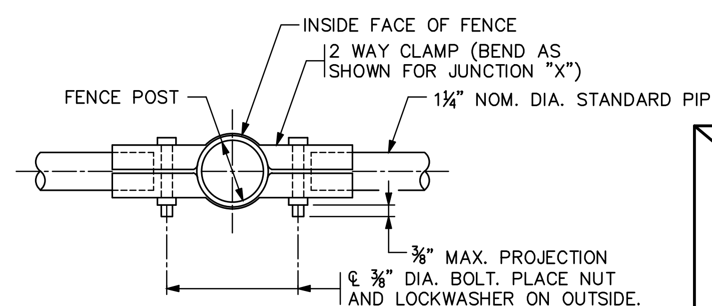
JUNCTION "X"

2 WAY CLAMP BENDING TABLE

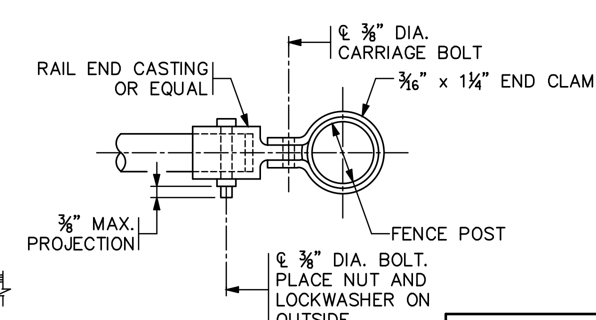
GRADE OF FENCE	Ø
0° TO 2°	0°
2° TO 6°	4°
6° TO 10°	8°



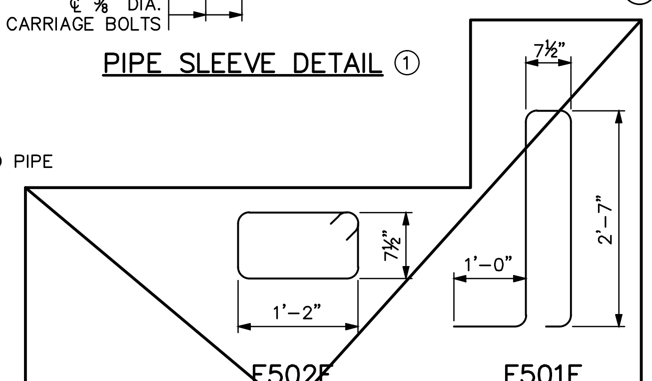
DETAIL "A"



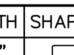
JUNCTION "Y"



JUNCTION "Z"



BILL OF REINFORCEMENT FOR PARAPET

BAR	NO.	LENGTH	SHAPE	LOCATION
F501E		7'-3"		RAIL BASE VERTICAL
F502E		4'-6"		RAIL BASE VERTICAL
F403E			—	RAIL BASE LONGITUDINAL
F404E			—	RAIL BASE LONGITUDINAL

GENERAL NOTES

Ⓐ SEE UNDERPASS STRUCTURE DETAILS & REINF. SHEETS FOR HEADWALL DIMENSIONS, 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.~~

Ⓐ LENGTH OF "WIRE FENCE" ~~FOR PAYMENT~~ SHALL BE MEASURED BETWEEN THE CENTERS OF END RAIL POSTS.

~~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.

℄ 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.~~

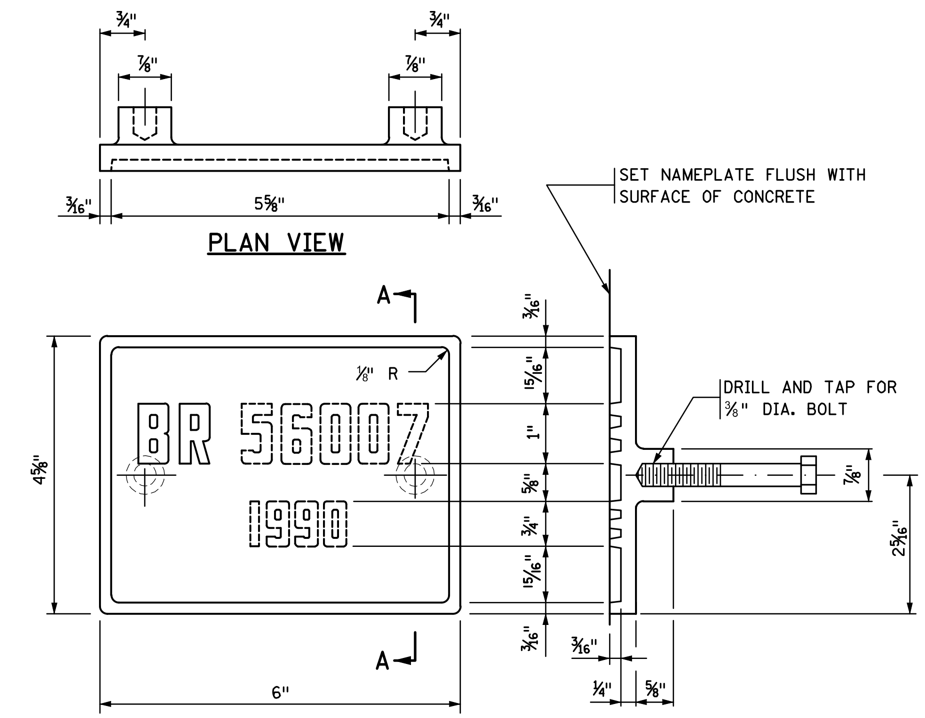
SEE SPECIAL PROVISIONS FOR REQUIREMENTS NOT INCLUDED ON THIS SHEET. ~~AND FOR BASIS OF PAYMENT.~~

1 PROVIDE PIPE SLEEVE IN SPAN BETWEEN THE VERTICAL POSTS AT EXPANSION JOINT.

REVISED: 04-17-2013		FIG. 5-397.119 (MOD.)
APPROVED: DECEMBER 18, 2003 — STATE BRIDGE ENGINEER	CERTIFIED BY ____ LICENSED PROFESSIONAL ENGINEER ____ DATE; NAME: ____ LIC. NO.	TITLE: WIRE FENCE (DESIGN W-1) Ⓐ
DES: DJL DR: MSK CHK: KJK CHK: KJK	SHEET NO. 14 OF 23 SHEETS	APPROVED: BRIDGE NO. R0690

Dec. 10 2015 03:21 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\R0690\CBRR0690-BRG-DTL-002.dwg By: kevin.kimm

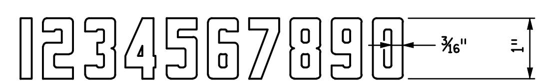
Dec. 10 2015 03:22 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\R0690\CBRR0690-BRG-DTL-001.dwg By: kevin.kimm



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

BRIDGE R0690

YEAR (1)



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.

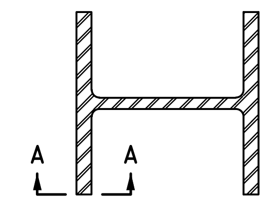
TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.

FURNISH 2 STEEL BOLTS ⅜" DIA. × 3" LONG WITH EACH PLATE.

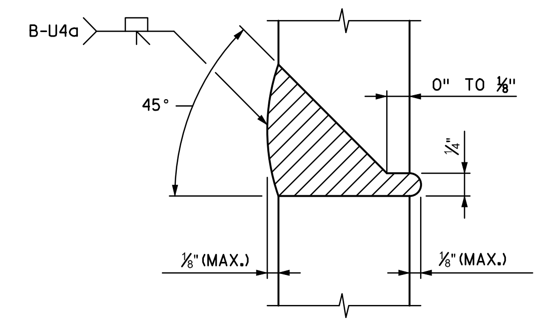
ALL DIMENSIONS FOR ¾" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

(1) YEAR OF CONSTRUCTION

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



SECTION AT SPLICE



SECTION A-A

100% BUTT WELDED PILE SPLICE

NOTES:

CELLULOSIC TYPE ELECTRODES E-6010 OR E-6011 SHALL BE USED FOR 100% BUTT WELDED SPLICES.

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.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION: 11-06-2013	DETAIL NO.
STATE BRIDGE ENGINEER	PILE SPLICE (STEEL H BEARING PILES 10" TO 14")		B202

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL CHECKED BY: KJK

DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

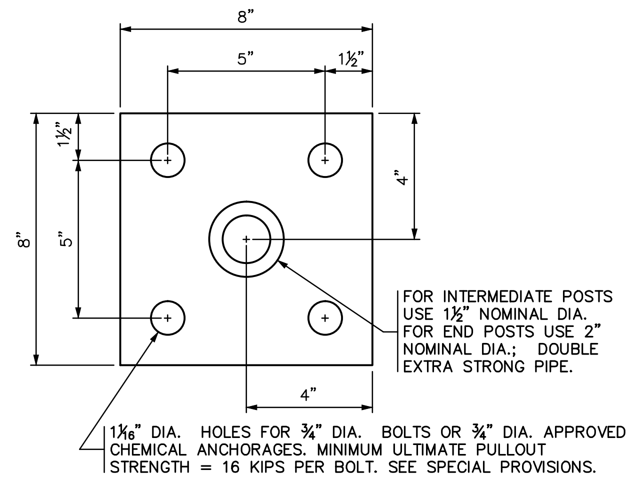
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
BRIDGE DETAILS 1

DISCIPLINE: STRUCTURES

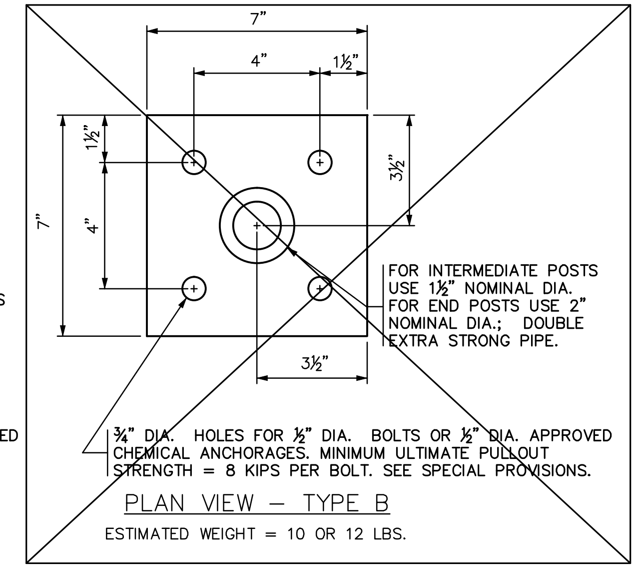
SHEET NAME: CBRR0690-BRG-DTL-001

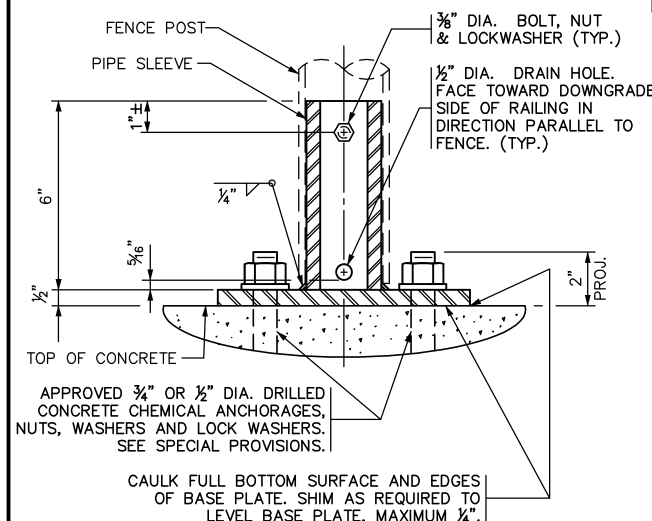
SHEET 15 OF 23



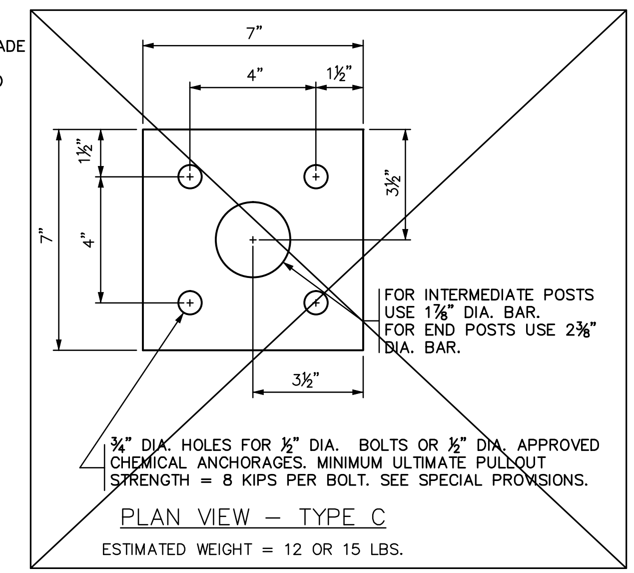
PLAN VIEW – TYPE A

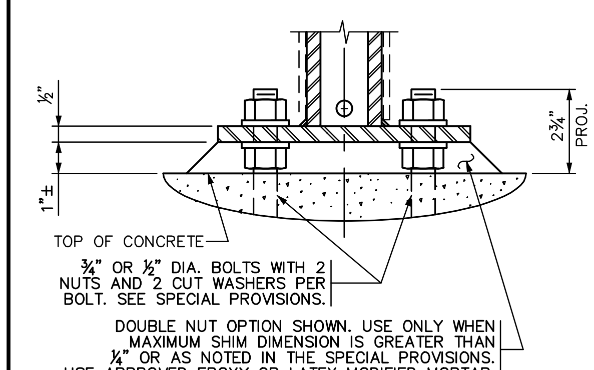
ESTIMATED WEIGHT = 12 OR 14 LBS.





TYPICAL SECTION





GROUT ALTERNATE

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:
1½" NOMINAL DIA. = 6.41 LBS./FT.
2" NOMINAL DIA. = 9.03 LBS./FT.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
STATE BRIDGE ENGINEER	FENCE POST ANCHORAGE		B905

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
BRIDGE DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0690-BRG-DTL-003

SHEET 16 OF 23

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).

AS-BUILT DETAILS

(AS NEEDED)

REVISION: 10-28-2008
APPROVED: SEPTEMBER 26, 2003
Daniel L. Dorgan
STATE BRIDGE ENGINEER

FIG. 5-397.900

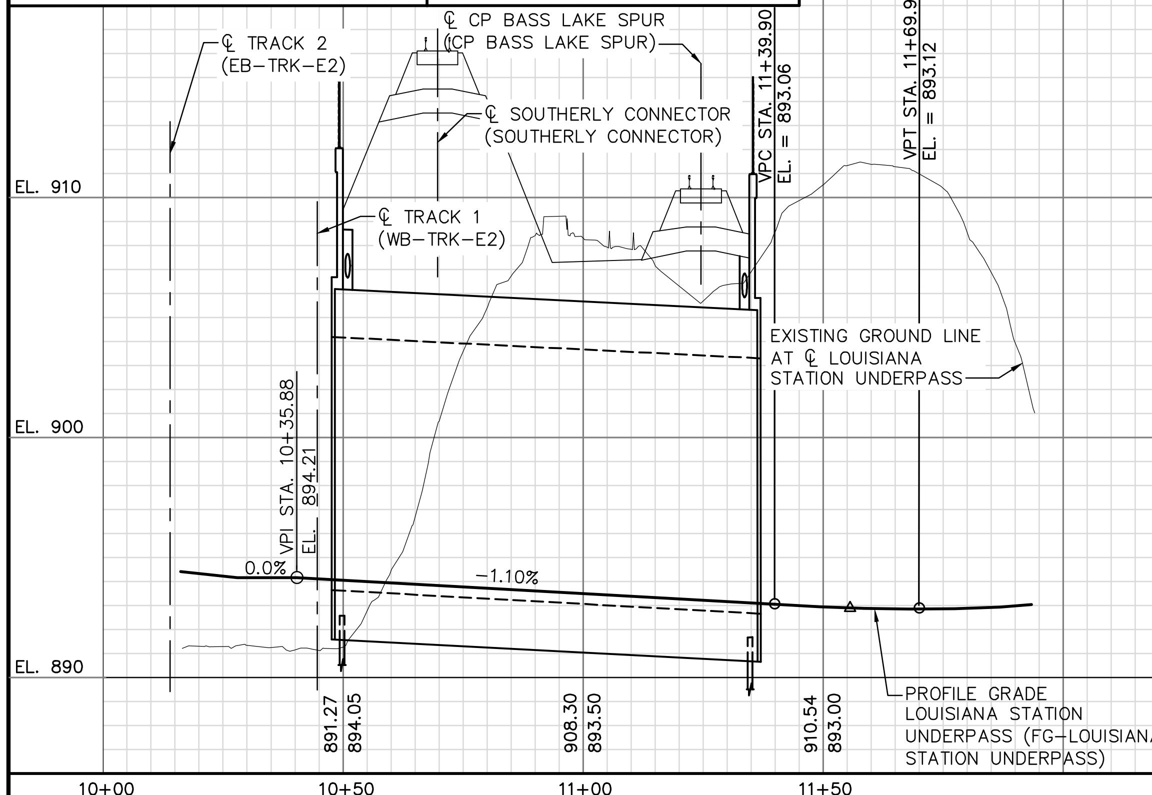
TITLE: AS-BUILT BRIDGE DATA	DES:	DR:	APPROVED:	BRIDGE NO. R0690
	CHK:	CHK:		
	SHEET NO. 17 OF 23 SHEETS			

CONTRACTED PROFILE

SCALE HOR: 0 20'

SCALE VER: 0 4'

PROFILE GRADE LOUISIANA STATION UNDERPASS (FG–LOUISIANA STATION UNDERPASS)

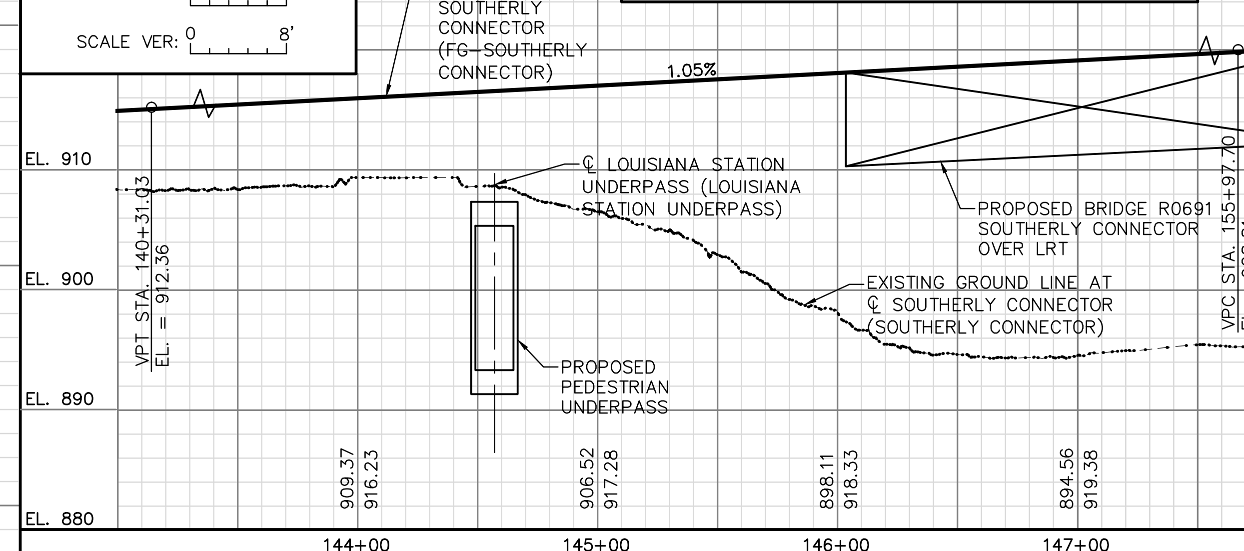


CONTRACTED PROFILE

SCALE HOR: 0 40'

SCALE VER: 0 8'

PROFILE GRADE SOUTHERLY CONNECTOR (FG–SOUTHERLY CONNECTOR)

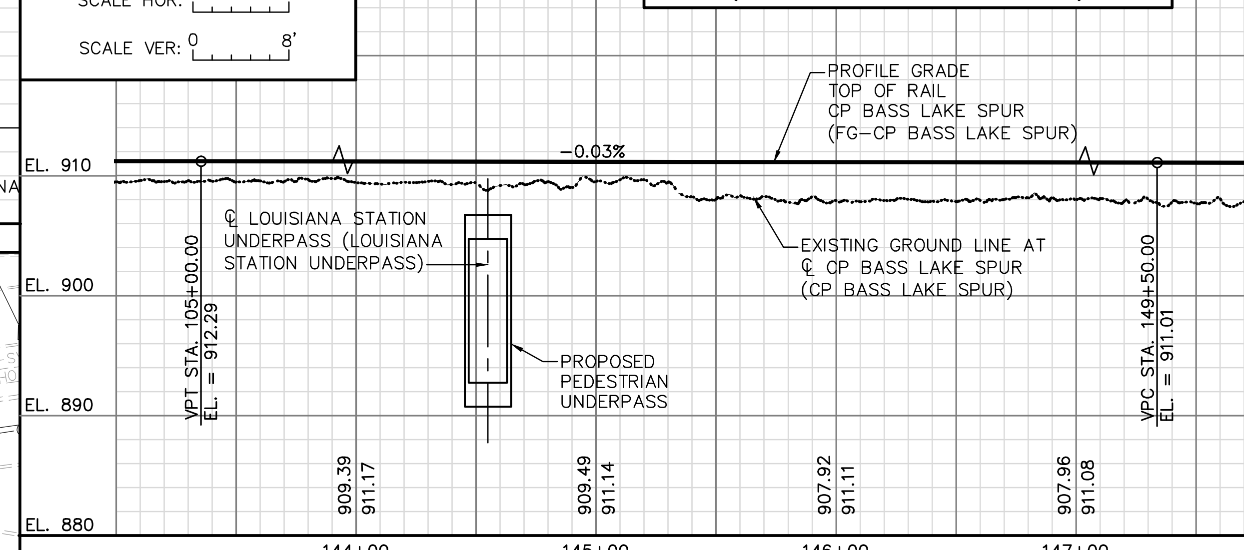


CONTRACTED PROFILE

SCALE HOR: 0 40'

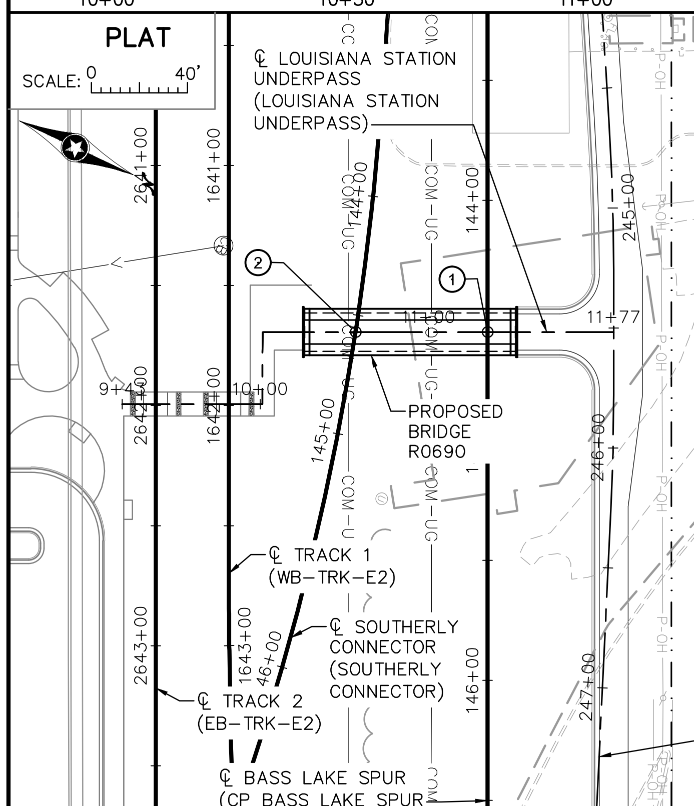
SCALE VER: 0 8'

PROFILE GRADE CP BASS LAKE SPUR (FG–CP BASS LAKE SPUR)



PLAT

SCALE: 0 40'

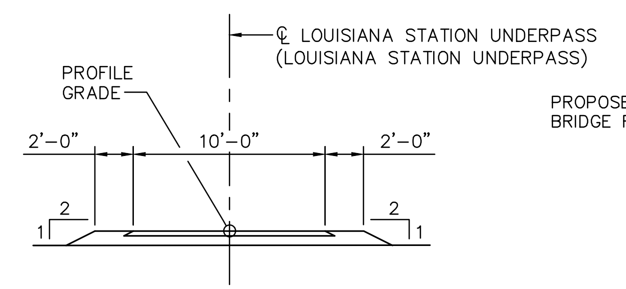


NOTES:

1. CONTROL POINT 1
   ℄ LOUISIANA STATION UNDERPASS (LOUISIANA STATION UNDERPASS)
   STA. 11+24.56 =
   ℄ CP BASS LAKE SPUR (CP BASS LAKE SPUR)
   STA. 144+54.89
   X = 504822.951
   Y = 152586.609
   ANGLE = 90°00'0"

2. CONTROL POINT 2
   ℄ LOUISIANA STATION UNDERPASS (LOUISIANA STATION UNDERPASS)
   STA. 10+69.67 =
   ℄ SOUTHERLY CONNECTOR (SOUTHERLY CONNECTOR)
   STA. 144+57.00
   X = 504846.672
   Y = 152537.099
   ANGLE = 78°58'0.4" (T.T.C.)

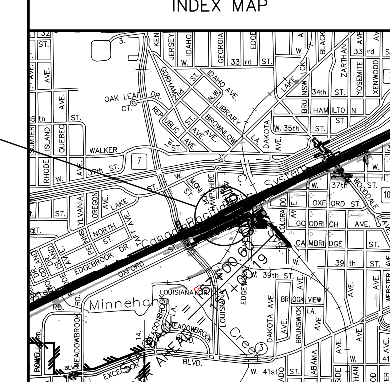
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."



TYPICAL SECTION LOUISIANA STATION UNDERPASS

PROPOSED BRIDGE R0690

INDEX MAP



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 (PARTICULARY 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 ENGINEER'S RECOMMENDATION

DATE:

STREAM OR DITCH DESIGNATION

DRAINAGE AREA

MAX FLOOD ON RECORD

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

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

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

FLOWLINE ELEVATION: FT. SKEW ANGLE:

ESTIMATED PRLIMINARY TOTAL SCOUR AT PIER EL. (500 OR OT YR. FREQ.)

SCOUR CONFIRMATION RECOMMENDATION

DATE:

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

BRIDGE SURVEY SHEETS MADE FROM 2014 MFRA SURVEYS

1ST BENCH MARK
ELEVATION: 892.05
NORTHING: 151747.105
EASTING: 504275.163
DESCRIPTION: PK NAIL IN BITUMINOUS ISLAND ON LOUSIANA AVE. JUST SOUTH OF OXFORD ST.

2ND BENCH MARK
ELEVATION: 893.52
NORTHING: 152551.746
EASTING: 503890.552
DESCRIPTION: PK NAIL IN CONCRETE ISLAND ON LOUSIANA AVE. JUST NORTH OF THE RAIL CORRIDOR.

BRIDGE SURVEY

PROPOSED BRIDGE LOCATED 0.3 MILES SOUTHEAST OF JCT. T.H. 7 AND LOUISIANA AVE S IN ST LOUIS PARK

CP BASS LAKE SPUR AND SOUTHERLY CONNECTOR OVER LOUISIANA STATION UNDERPASS

SEC 20 T 117N R 21W

CITY OF ST LOUIS PARK HENNEPIN COUNTY

BRIDGE R0690

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

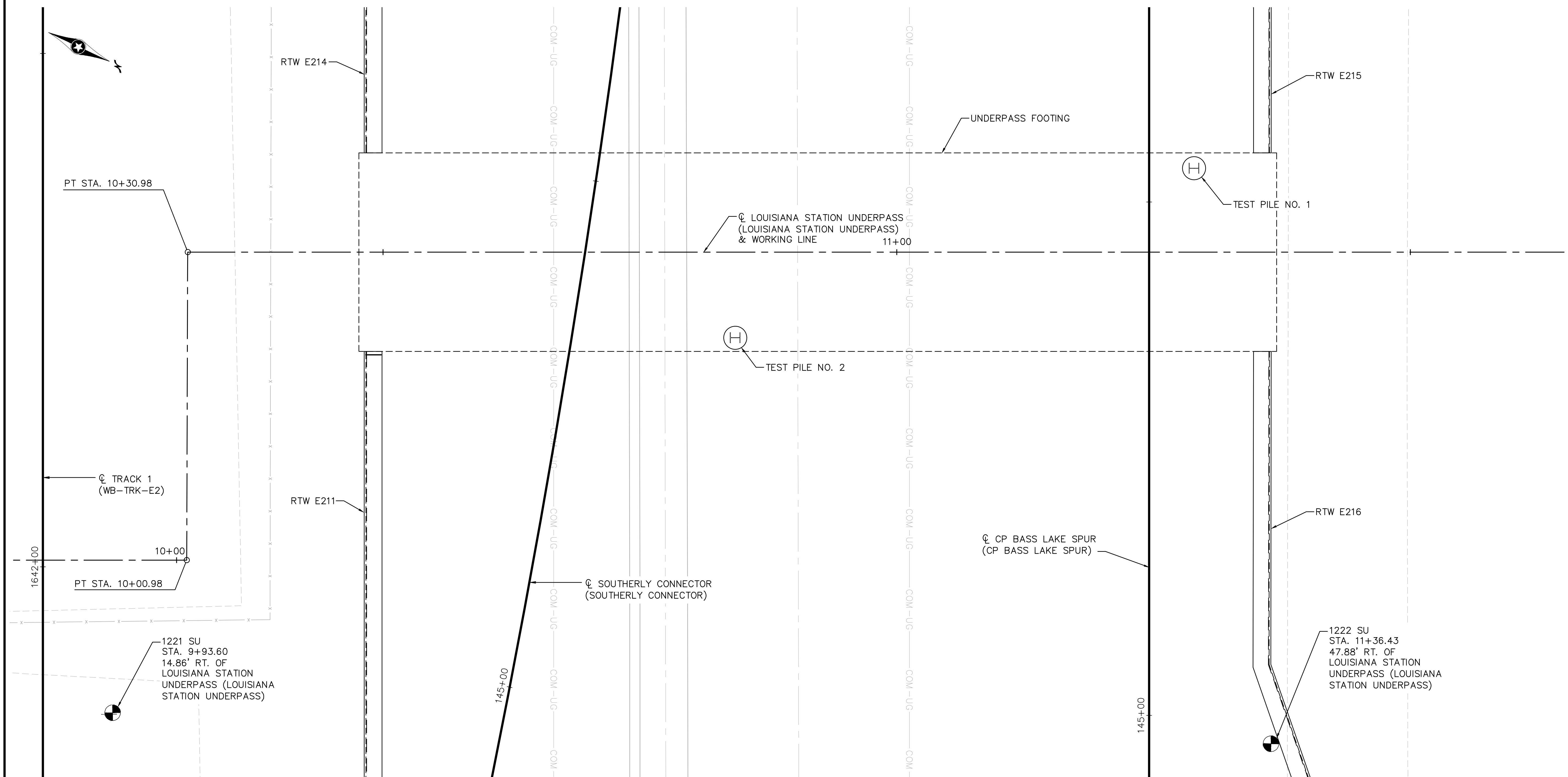
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
BRIDGE SURVEY

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0690-BRG-SUR-001



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

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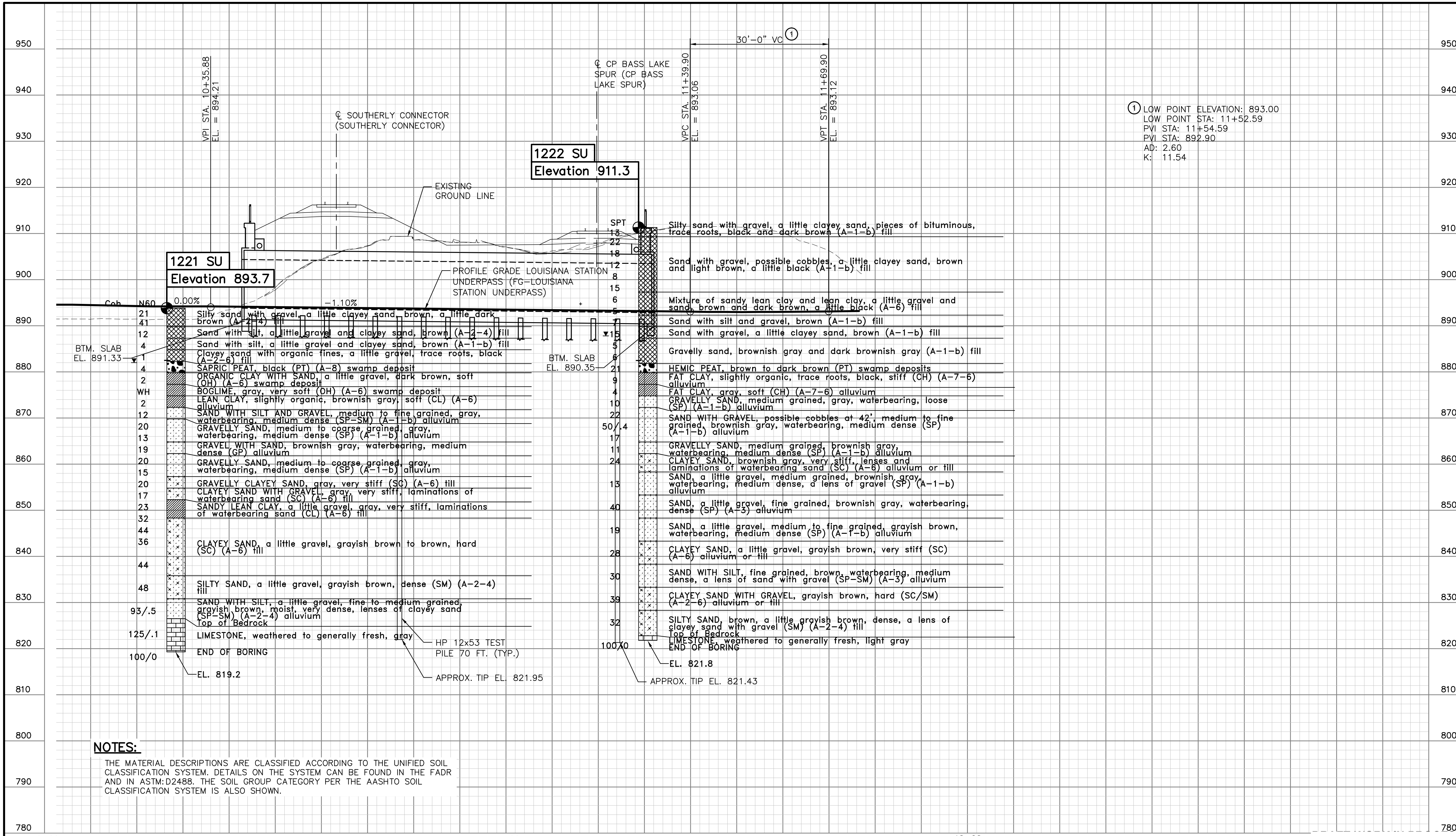
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
BRIDGE SURVEY PLAN

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0690-BRG-BOR-001



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. THE SOIL GROUP CATEGORY PER THE AASHTO SOIL CLASSIFICATION SYSTEM IS ALSO SHOWN.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
BRIDGE SURVEY PROFILE

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0690-BRG-BOR-002

SHEET 20 OF 23

Dec. 10 2015 03:36 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\R0690\CBRR0690-BRG-BOR-002.dwg By: kevin.kimm

STAGING NOTES:

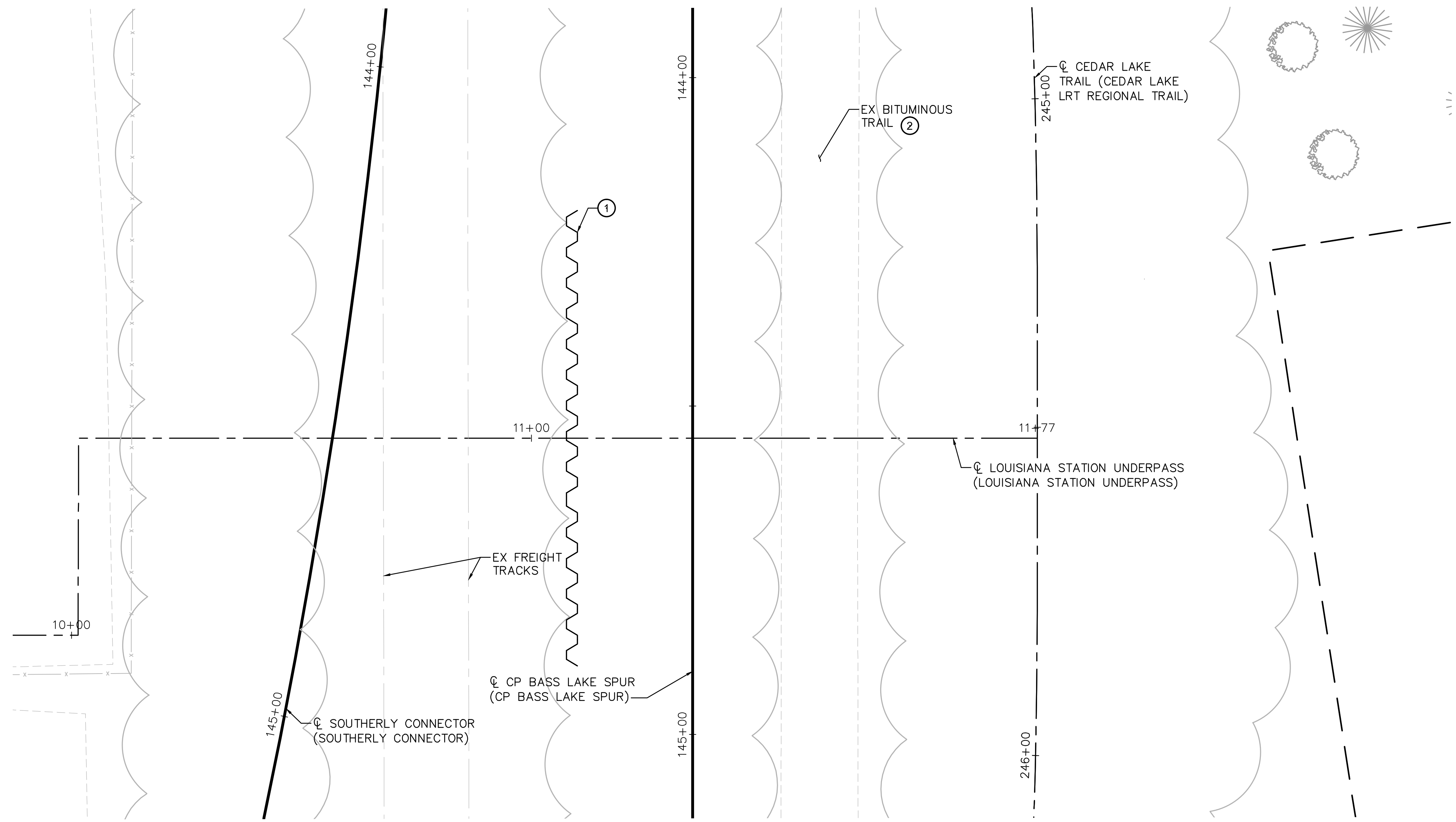
INSTALL SOE FOR CONSTRUCTION OF NORTH END OF PROPOSED LOUISIANA STATION PEDESTRIAN UNDERPASS. EXCAVATE FOR UNDERPASS CONSTRUCTION.

1. SOE
2. EXISTING TRAIL SHALL BE SHIFTED TO PROPOSED CEDAR LAKE TRAIL ALIGNMENT PRIOR TO UNDERPASS CONSTRUCTION.

STAGING REQUIREMENTS:

ALL TRACKS SHALL BE KEPT OPEN FOR TRAIN USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL. CP SHALL HAVE FINAL AUTHORITY ON PERMITTED TRACK CLOSURES.

CEDAR LAKE TRAIL SHALL BE KEPT OPEN FOR PUBLIC USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL.



PROPOSED CONSTRUCTION SEQUENCING – STAGE 1

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
STAGING PLAN 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0690-BRG-STG-001

SHEET 21 OF 23

STAGING NOTES:

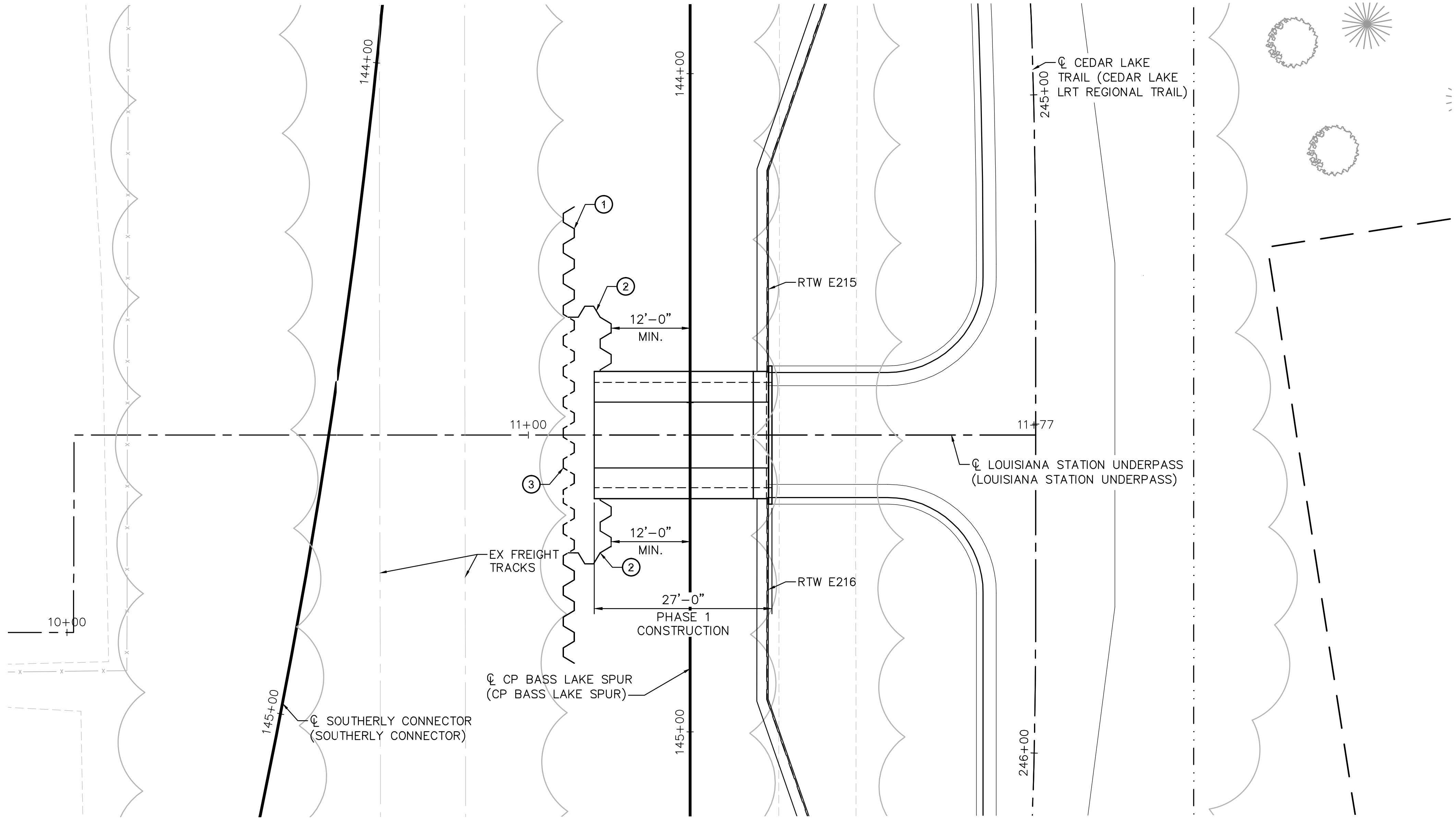
CONSTRUCT NORTH END OF PROPOSED LOUISIANA STATION PEDESTRIAN UNDERPASS AND RETAINING WALLS E215 AND E216.

1. SOE.
2. MODIFY SOE SYSTEM AFTER UNDERPASS CONSTRUCTION. BACKFILL STRUCTURE.
3. REMOVE SOE.

STAGING REQUIREMENTS:

ALL TRACKS SHALL BE KEPT OPEN FOR TRAIN USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL. CP SHALL HAVE FINAL AUTHORITY ON PERMITTED TRACK CLOSURES.

CEDAR LAKE TRAIL SHALL BE KEPT OPEN FOR PUBLIC USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL.



PROPOSED CONSTRUCTION SEQUENCING – STAGE 2

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL CHECKED BY: KJK
DRAWN BY: MSK CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
STAGING PLAN 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0690-BRG-STG-002

SHEET 22 OF 23

Dec. 10 2015 03:45 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\R0690\CBRR0690-BRG-STG-002.dwg By: kevin.kimm

STAGING NOTES:

RELOCATE EXISTING CP BASS LAKE SPUR TO FINAL ALIGNMENT.

EXCAVATE FOR SOUTH END OF UNDERPASS CONSTRUCTION.

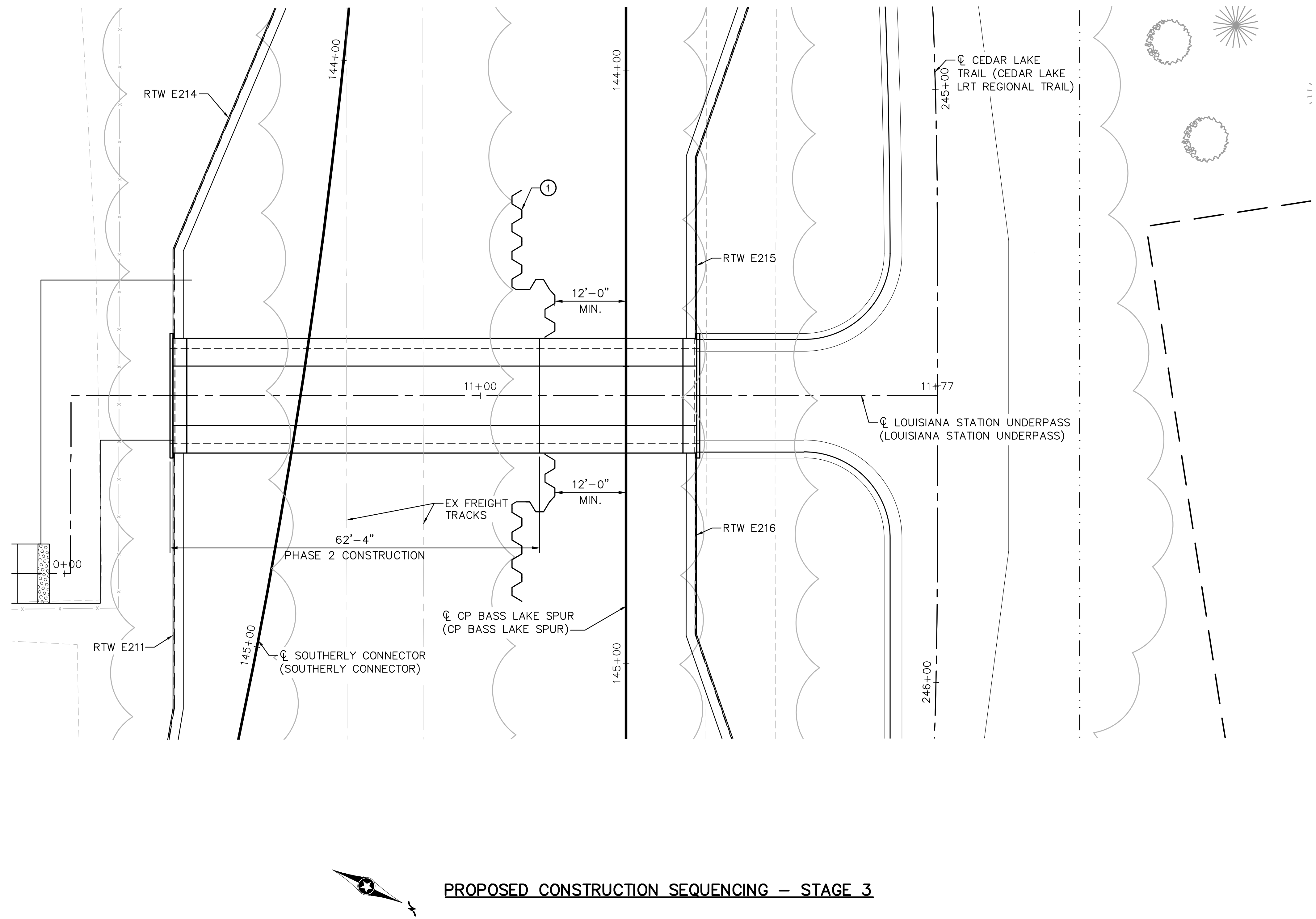
CONSTRUCT REMAINING PROPOSED LOUISIANA STATION PEDESTRIAN UNDERPASS AND RETAINING WALLS E211 AND E214. BACKFILL STRUCTURE.

(1) SOE.

STAGING REQUIREMENTS:

ALL TRACKS SHALL BE KEPT OPEN FOR TRAIN USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL. CP SHALL HAVE FINAL AUTHORITY ON PERMITTED TRACK CLOSURES.

CEDAR LAKE TRAIL SHALL BE KEPT OPEN FOR PUBLIC USE DURING CONSTRUCTION EXCEPT WITH PRIOR APPROVAL.



PROPOSED CONSTRUCTION SEQUENCING – STAGE 3

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DJL | CHECKED BY: KJK
DRAWN BY: MSK | CHECKED BY: KJK

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

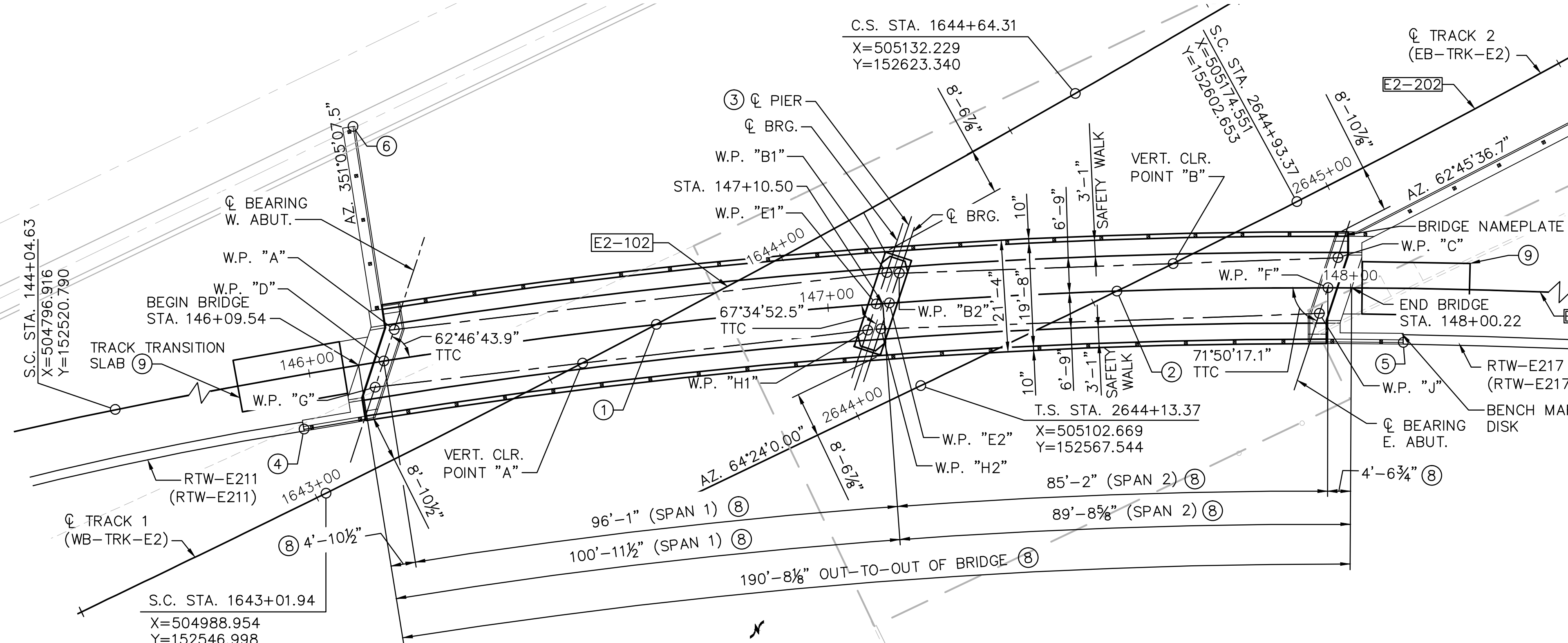
CIVIL - VOLUME 4E
LOUISIANA STATION UNDERPASS
BRIDGE R0690
STAGING PLAN 3

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0690-BRG-STG-003

SHEET 23 OF 23

Dec. 10 2015 03:49 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\R0690\CBRR0690-BRG-STG-003.dwg By: kevin.kimm



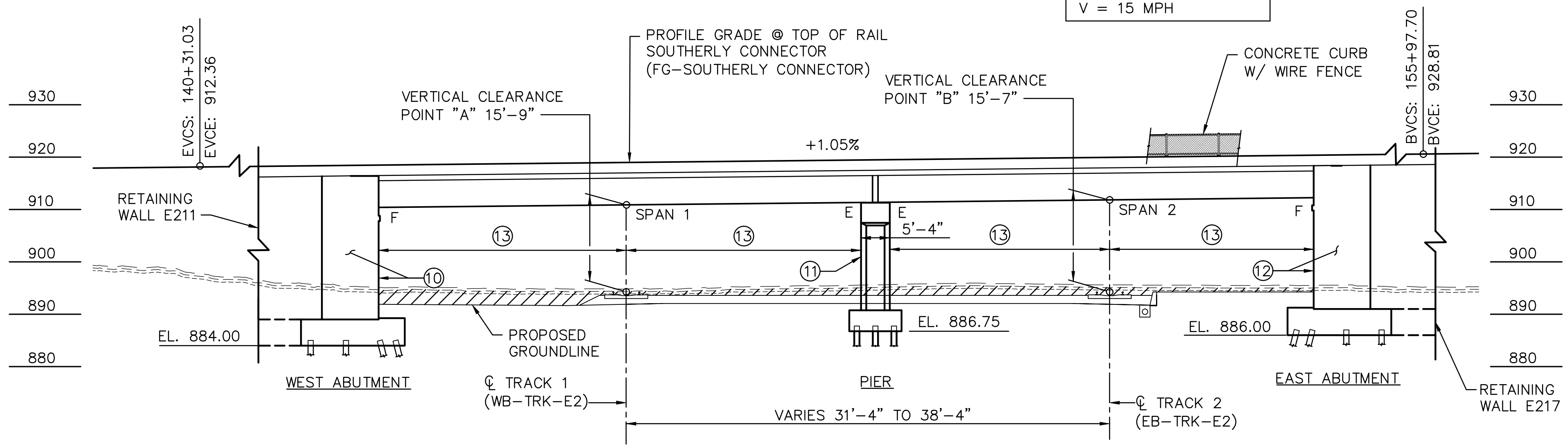
CURVE NO. E2-102
R = 2,600.00'
Lc = 162.37'
Ls = 60.00'
Ea = 1.25"
Eu = 1.19"
V = 40 MPH

CURVE NO. E2-202
R = 1,770.00'
Lc = 189.08'
Ls = 80.00'
Ea = 1.75"
Eu = 1.83"
V = 40 MPH

CURVE NO. E2-404
Dc = 5° 00' 0.00" RH
R = 1,146.28'
Lc = 1,295.97'
Ls = 93.00'
Ea = 0.50"
Eu = 0.29"
V = 15 MPH

GENERAL PLAN

0' 7.5' 15' 30'
SCALE IN FEET



GENERAL ELEVATION

0' 7.5' 15' 30'
SCALE IN FEET

EXISTING GROUND PROFILE	
11' LEFT	— — — —
℄ SC	– – – – – –
11' RIGHT	--------------

HATCH AREA TO BE REMOVED

NOTES:

AZIMUTH OF SUBSTRUCTURE: 18°15'00.0"

SEE BRIDGE SURVEY SHEET FOR IN-PLACE UTILITIES.

SEE SHEET 60 FOR STAGING PLAN AND SOE.

1. CONTROL POINT 1
   ℄ TRACK 1 STA. 1643+72.85
   ℄ SOUTHERLY CONNECTOR STA. 146+67.01
   X = 505052.111
   Y = 152579.238
   Δ = 21°28'51.7" TTC
2. CONTROL POINT 2
   ℄ TRACK 2 STA. 2644+55.02
   ℄ SOUTHERLY CONNECTOR STA. 147+55.31
   X = 505140.168
   Y = 152585.605
   Δ = 24°01'18.3" TTC
3. PIER DESIGNED FOR COLLISION FORCE IN ACCORDANCE WITH AREMA AND MNDOT BRIDGE OFFICE SUBSTRUCTURE PROTECTION POLICY
4. END RETAINING WALL E211
   ℄ SOUTHERLY CONNECTOR STA. 145+97.16
   X = 504984.734
   Y = 152559.229
   MEASURED AT F.F. WINGWALL
5. BEGIN RETAINING WALL E217
   ℄ SOUTHERLY CONNECTOR STA. 148+10.21
   X = 505194.904
   Y = 152575.847
   MEASURED AT F.F. WINGWALL
6. END NW WINGWALL
   ℄ SOUTHERLY CONNECTOR STA. 146+15.56
   X = 504994.119
   Y = 152617.024
   MEASURED AT F.F. WINGWALL
7. END NE WINGWALL
   ℄ SOUTHERLY CONNECTOR STA. 148+76.57
   X = 505265.246
   Y = 152637.359
   MEASURED AT F.F. WINGWALL
8. MEASURED ALONG ℄ SOUTHERLY CONNECTOR.
9. SEE TRACK PLANS FOR TRANSITION SLAB DETAILS.
10. ARCHITECTURAL CONCRETE TEXTURE (STACKED STONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). SEE ABUTMENT SHEETS FOR NOTES.
11. ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). SEE PIER SHEETS FOR LIMITS.
12. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). SEE ABUTMENT SHEETS FOR NOTES.
13. MIN. ALLOWABLE HORIZONTAL CLEARANCE = 8'-6". ACTUALS EXCEED MINIMUM AT ALL SUBSTRUCTURES.

DESIGN DATA

2014 AREMA MANUAL FOR RAILWAY ENGINEERING

SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0)

COOPER E 90 LIVE LOAD OR 100 KIP (4 AXLES) ALTERNATE LOAD WITH DIESEL IMPACT

MAXIMUM BALLAST DEPTH = 2'-0" (FOR DESIGN)

ALLOWABLE STRESS DESIGN METHOD (STEEL)
LOAD FACTOR DESIGN METHOD (CONCRETE)

MATERIAL DESIGN PROPERTIES
REINFORCED CONCRETE:
f'c = 4500 PSI n = 8
fy = 60000 PSI REINFORCEMENT

STRUCTURAL STEEL:
fs = 27,500 PSI, fy = 50,000 PSI
ASTM A709 GRADE 50WT3
(MnDOT 3309)

DESIGN SPEED: OVER = 15 MPH
UNDER = 40 MPH

DECK AREA 3960 SQ. FT.

LIST OF SHEETS

BRIDGE NO. R0691

CP RAILWAY OVER SOUTHWEST LRT TRACKS
0.3 MILES SOUTHEAST OF JCT. T.H. 7 AND LOUISIANA AVENUE SOUTH.
CP RAILWAY MILEPOST 429.00
ON THE MERRIAM PARK SUBDIVISION
96'-0" & 85'-0" WELDED STEEL PLATE GIRDER SPANS;
13'-6" RAILWAY; SKEW VARIES
CONCRETE CURB WITH WIRE FENCE
BRIDGE ID NO. 301

GENERAL PLAN AND ELEVATION

SEC 17 T 117N R 21W
CITY OF ST. LOUIS PARK HENNEPIN COUNTY

JOB NO. T9N635 | STATE PROJ. NO.: 9909-01 | MNDOT REVIEW: JOE NIETFELD

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

90% SUBMISSION - 01/22/16

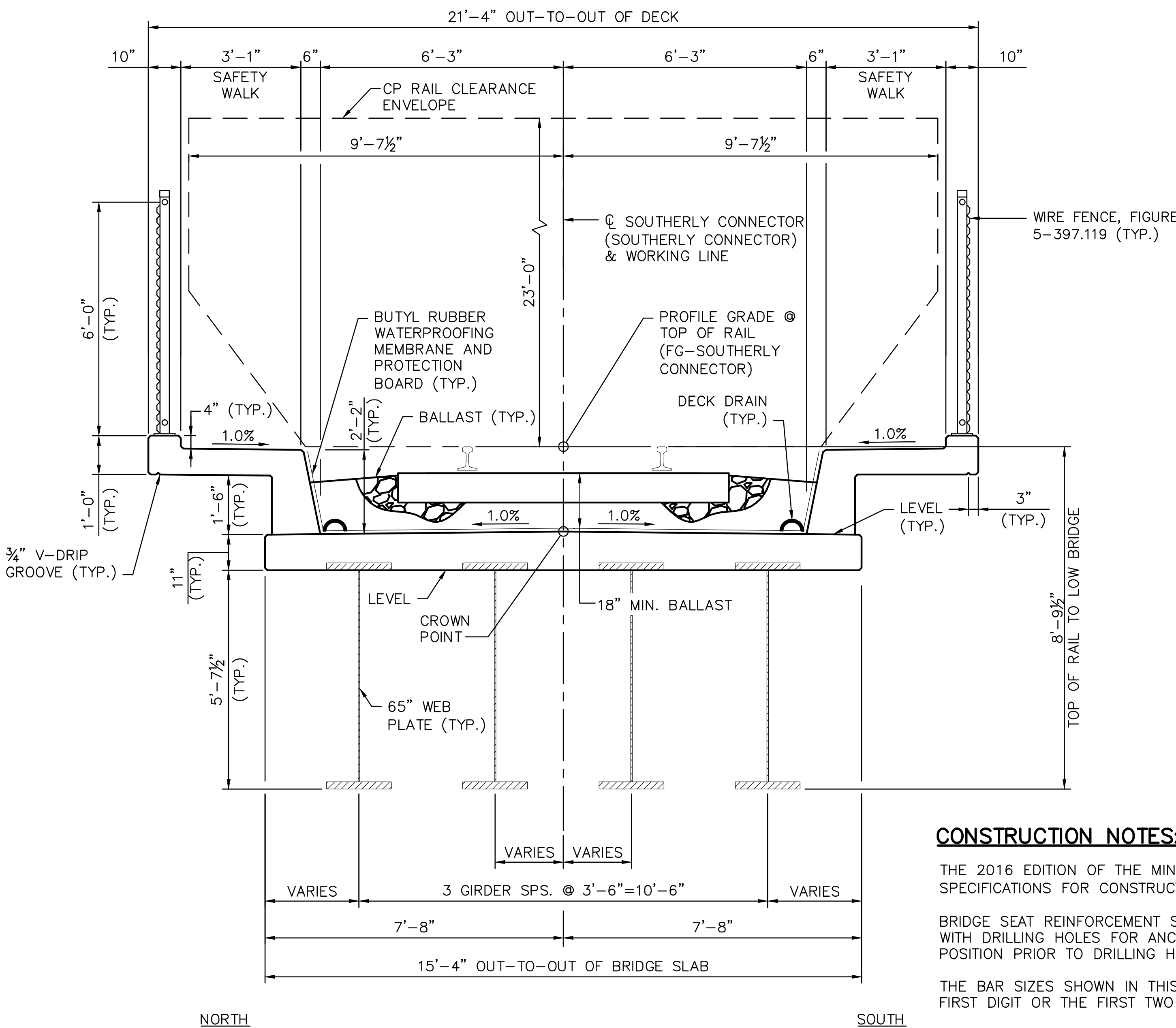
AECOM Kimley»Horn

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
GENERAL PLAN AND ELEVATION

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-GPE-001



TRANSVERSE SECTION

0' 1' 2' 4'
SCALE IN FEET

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 BAR SIZES SHOWN IN THIS PLAN ARE IN U.S. CUSTOMARY DESIGNATIONS. THE FIRST DIGIT OR THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE.

BARS MARKED WITH THE 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 WERE COMPUTED USING SERVICE LOAD METHODOLOGY. PILE BEARING RESISTANCE DETERMINED IN THE FIELD SHALL INCORPORATE THE METHODS AND/OR FORMULAS DESCRIBED IN THE SPECIAL PROVISIONS.

CONCRETE MATERIALS, MIX DESIGN, TESTING AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH CHAPTER 8, PART 1 OF THE 2014 A.R.E.M.A. MANUAL; MnDOT 2461 AND THE SPECIAL PROVISIONS.

SCHEDULE OF QUANTITIES

SPEC. SECTION	COMPONENT ITEM	UNIT	QUANTITY
--	CONSTRUCT BRIDGE R0691	LUMP SUM	LS

COMPONENT ITEM SUMMARY (BRIDGE R0691)

	ITEM NO.	COMPONENT ITEM	UNIT (2)	QUANTITY (2)
	2401	STRUCTURAL CONCRETE (1G52)	CU. YD.	
(1)	2401	STRUCTURAL CONCRETE (3B52)	CU. YD.	
	2401	REINFORCEMENT BARS	POUND	
	2401	REINFORCEMENT BARS (EPOXY COATED)	POUND	
	2401	BRIDGE SLAB CONCRETE (3B52)	CU. YD.	
	2402	STRUCTURAL STEEL (3306)	POUND	
	2402	STRUCTURAL STEEL (3309)	POUND	
	2402	BEARING ASSEMBLY	EACH	
	SB-XX	ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE)	SQ. FT.	
	SB-XX	ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM)	SQ. FT.	
	SB-XX	ARCHITECTURAL CONCRETE TEXTURE (STACKED STONE)	SQ. FT.	
(4)	SB-XX	STRUCTURAL EXCAVATION CLASS U	CU. YD.	
	SB-XX	STEEL H-PILING 12"	LIN. FT.	
	2452	STEEL H-TEST PILE 60 FT LONG 12"	EACH	
	2452	STEEL H-TEST PILE 65 FT LONG 12"	EACH	
	2452	PILE TIP PROTECTION 12"	EACH	
	SB-XX	STEEL SHEET PILING (TEMPORARY)	LUMP SUM	
	2481	MEMBRANE WATERPROOFING SYSTEM	LIN. FT.	
	2502	DRAINAGE SYSTEM TYPE (B910)	LUMP SUM	
	2502	DRAINAGE SYSTEM (BRIDGE DECK)	LUMP SUM	
	2557	WIRE FENCE DESIGN W-1	LIN. FT.	

NOTES:

(1) A BENCH MARK IS REQUIRED. LOCATED AT THE SE 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.

(2) QUANTITIES LISTED FOR THE COMPONENT ITEMS OF THE LUMP SUM BR R0691 ITEM 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 THE BR R0691. REFER TO MnDOT STANDARD SPECIFICATION OR SPECIAL PROVISION FOR TECHNICAL SPECIFICATION REQUIREMENTS FOR ALL PROVISION OTHER THAN MEASUREMENT AND PAYMENT REQUIREMENTS.

(4) BACKFILL BEHIND ABUTMENTS SHALL BE SELECT GRANULAR BORROW PER SPEC. 3149.2.D.2. BACKFILL DENSITY SHALL BE ATTAINED BY THE SPECIFIED DENSITY METHOD IN ACCORDANCE WITH SPEC. 2105.3.F.1.

GROUNDING NOTES:

SEE SHEETS ELE-SITE-SCH-504, ELE-SITE-DTL-600, ELE-SITE-DTL-601, AND ELE-SITE-DTL-602 FOR ADDITIONAL FENCE GROUNDING INFORMATION. FOR BRIDGES, ABUTMENTS, AND RETAINING WALLS THAT DON'T HAVE STRAY CURRENT SYSTEMS, GROUND THE FENCE AS SHOWN IN THE WIRE FENCE DETAIL.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

90% SUBMISSION - 01/22/16

AECOM Kimley»Horn

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
TRANSVERSE SECTION AND QUANTITIES

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-TRN-001

STRAY CURRENT CONTROL NOTES

THE FOLLOWING STRAY CURRENT CONTROL NOTES ARE A SUPPLEMENT TO THE SYSTEMWIDE ELECTRICAL DRAWINGS – SEE SYSTEMS DRAWINGS, VOLUME 12 FOR ASSOCIATED DETAILS AND DOCUMENT CERTIFICATION RELATED TO STRAY CURRENT.

1. BLACK REBAR IN ABUTMENT WALLS, WINGWALLS, AND FOOTINGS AND IN PIER COLUMNS AND FOOTINGS SHALL BE MADE ELECTRICALLY CONTINUOUS WITHIN WALLS, FOOTINGS, AND COLUMNS. SEE DETAILS ON SHEET E0-SYS-CORR-DTL-001.
2. H-PILES IN ABUTMENT, WINGWALL, AND PIER FOOTINGS SHALL BE MADE ELECTRICALLY CONTINUOUS WITH WELDED REBAR IN THE FOOTINGS. SEE DETAILS ON DWG E0-SYS-CORR-DTL-008.
3. INSTALL STRAY CURRENT TEST STATION HOUSING TWO 1/0 AWG CABLES FROM ELECTRICALLY CONTINUOUS REBAR AND H-PILES IN FOOTING AND ONE #14 AWG HMWPE CABLE FROM COPPER/COPPER SULFATE REFERENCE CELL. SEE NOTE 5. REFERENCE CELL SHALL BE INSTALLED IN SOIL WITHIN 1' OF PILE AND 1' BELOW BOTTOM OF FOOTING. SEE DETAIL 4 ON SHEET E0-SYS-CORR-DTL-003 AND DETAIL 2 ON SHEET E0-SYS-CORR-DTL-013.
4. INSTALL STRAY CURRENT BOND TEST STATION HOUSING TWO 1/0 AWG CABLES FROM ELECTRICALLY CONTINUOUS REBAR AND H-PILES IN ABUTMENT, TWO 1/0 AWG CABLES FROM ELECTRICALLY CONTINUOUS REBAR AND H-PILES IN RETAINING WALL (E211 OR E217 FOOTING) AND TWO #14 AWG HMWPE CABLES FROM COPPER/COPPER SULFATE REFERENCE CELLS. SEE NOTE 5. REFERENCE CELLS SHALL BE INSTALLED IN SOIL WITHIN 1' OF PILE AND 1' BELOW BOTTOM OF FOOTING. SEE DETAIL 3 ON SHEET E0-SYS-CORR-DTL-003 AND DETAIL 3 ON SHEET E0-SYS-CORR-DTL-017.
5. ALL STRAY CURRENT TEST STATIONS SHALL BE INSTALLED AT LOCATIONS WHERE THEY WILL BE ACCESSIBLE AFTER COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND DURING REVENUE LRT OPERATIONS.
6. MAINTAIN ELECTRICAL ISOLATION OF BLACK REBAR IN ABUTMENT WINGWALLS FROM EPOXY COATED REBAR IN STEM WALL OF RETAINING WALL E217 AND FROM BLACK REBAR IN FOOTING OF RTW E217.
7. MAINTAIN ELECTRICAL ISOLATION OF BLACK REBAR IN ABUTMENT WINGWALLS FROM BLACK REBAR IN STEM WALL AND FOOTING OF RETAINING WALL E211.
8. THE CONCRETE/SOIL INTERFACE ALONG EACH H-PILE UNDER THE FOOTING FOR THE ABUTMENTS AND CENTER PIER SHALL BE COATED WITH A DIELECTRIC COATING. THE COATING SHALL EXTEND INTO THE CONCRETE FOOTING AT LEAST 6-INCHES AND EXTEND A MINIMUM OF 18-INCHES INTO THE SOIL ALONG THE EXTERNAL PILE SURFACE BELOW THE BOTTOM OF THE FOOTING.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: JPJ CHECKED BY: IKS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

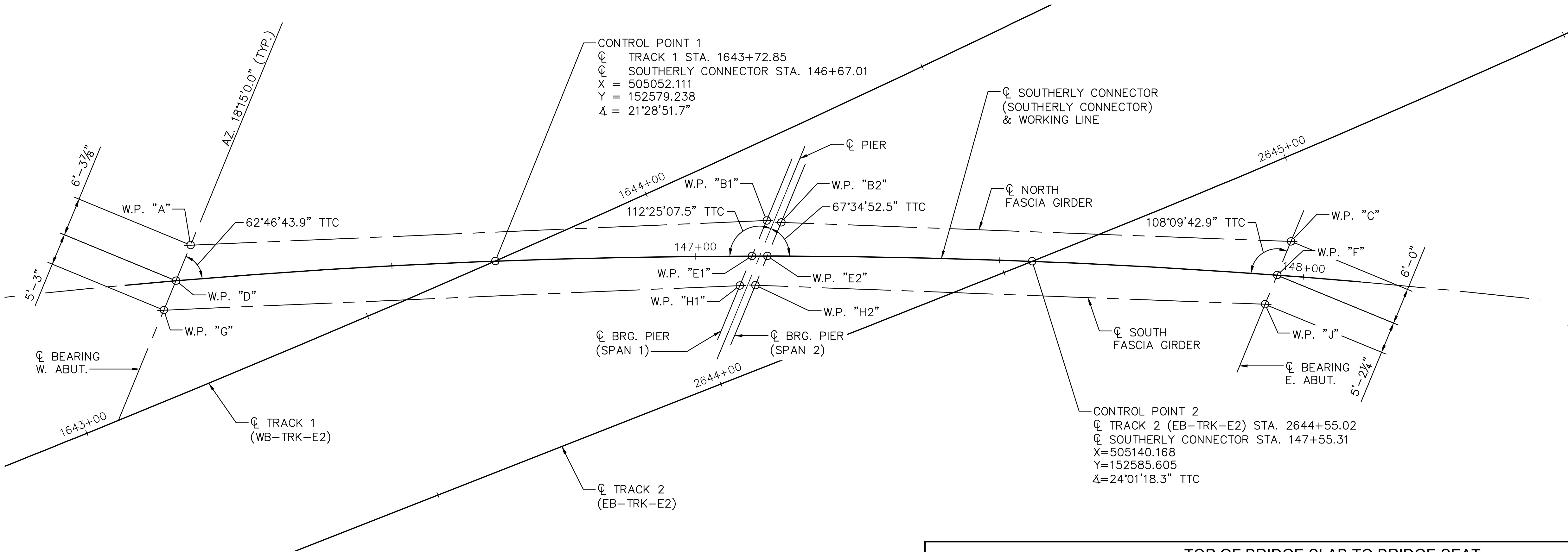
METROPOLITAN COUNCIL

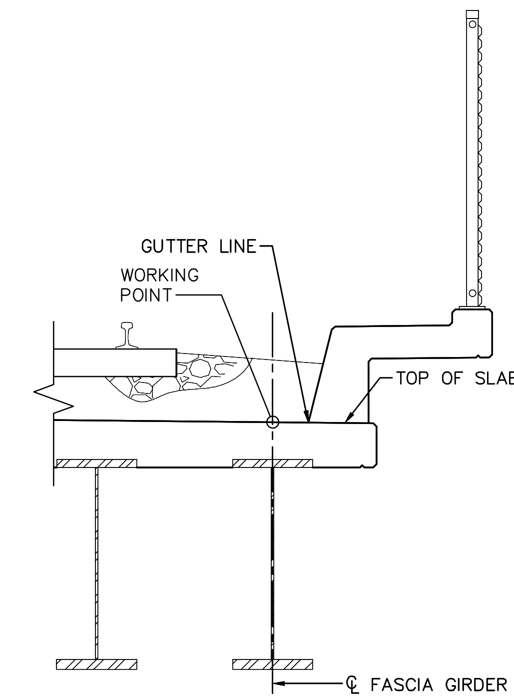
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
STRAY CURRENT/CORROSION CONTROL NOTES

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-TRN-002

SHEET 3 OF 60





WORKING POINT LAYOUT

0 5' 10' 20'
SCALE IN FEET

TOP OF BRIDGE SLAB TO BRIDGE SEAT								
	W.P. "A"	W.P. "B1"	W.P. "B2"	W.P. "C"	W.P. "G"	W.P. "H1"	W.P. "H2"	W.P. "J"
SLAB THICKNESS	11 1/8"	11"	11 1/8"	11 1/8"	11 1/8"	11 1/8"	11 1/8"	11 1/4"
WEB HEIGHT	65"	65"	65"	65"	65"	65"	65"	65"
BOTTOM FLANGE HEIGHT	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
BEARING HEIGHT	8 1/8"	11 1/4"	11 1/2"	8 1/8"	8 1/8"	10 3/4"	11"	8 1/8"
TOTAL	7'-2 3/4"	7'-5 3/4"	7'-6 1/8"	7'-2 3/4"	7'-2 3/4"	7'-5 3/8"	7'-5 5/8"	7'-2 7/8"
	7.23	7.48'	7.51'	7.23'	7.23'	7.45'	7.47'	7.24'

DIMENSIONS BETWEEN WORKING POINTS														COORDINATES		ELEVATIONS				
POINT	STATION	A	B1	B2	C	D	E1	E2	F	G	H1	H2	J	X	Y	TOP OF RAIL	TOP OF SLAB	TOP OF SLAB TO BRIDGE SEAT	BRIDGE SEAT	POINT
A	146+17.30		94.79	97.18	180.93	6.33	92.31	94.83	178.71		90.54	93.07	176.93	505001.982	152578.240	918.51	916.26	7.23'	909.03	A
B1	147+11.64			2.42	86.29	97.62	6.33	5.85	84.42	100.20		10.81	83.11	505096.142	152589.137	919.50	917.25	7.48'	909.77	B1
B2	147+14.03				83.88	99.98	7.35	6.01	82.00	102.54	12.43		80.69	505098.559	152589.016	919.53	917.28	7.51'	909.77	B2
C	147+97.53					183.45	88.67	86.15	6.01	185.68	90.93	88.38		505182.391	152591.956	920.41	918.16	7.23'	910.93	C
D	146+14.42						94.79	97.31	181.05	5.25	92.71	95.25	179.12	505000.001	152572.232					D
E1	147+09.24							2.52	86.41	97.11	5.25	4.83	84.74	505094.161	152583.129					E1
E2	147+11.76								83.88	99.62	6.63	5.19	82.23	505096.679	152583.313					E2
F	147+95.66									183.14	88.36	85.82	5.19	505180.510	152586.253					F
G	146+12.01										94.79	97.34	181.08	504998.358	152567.250	918.46	916.22	7.23'	908.99	G
H1	147+07.22											2.55	86.43	505092.518	152578.147	919.46	917.22	7.45'	909.77	H1
H2	147+09.78												83.88	505095.054	152578.386	919.48	917.24	7.47'	909.77	H2
J	147+94.04													505178.886	152581.327	920.37	918.13	7.24'	910.90	J

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DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
BRIDGE LAYOUT

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-SUP-001

SHEET 4 OF 60

WEST ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
DEAD LOAD + EARTH PRESSURE	59.5
LIVE LOAD	35.5
* DESIGN LOAD	95.0
* BASED ON GROUP VI LOADING (SERVICE LOAD) PER AREMA CHAPTER 8 SECTION 2.2.4	

REQUIRED PILE TEST LOAD - TONS/PILE	
FIELD CONTROL METHOD	TEST LOAD
PDA	190.0

GENERAL PILE NOTES:

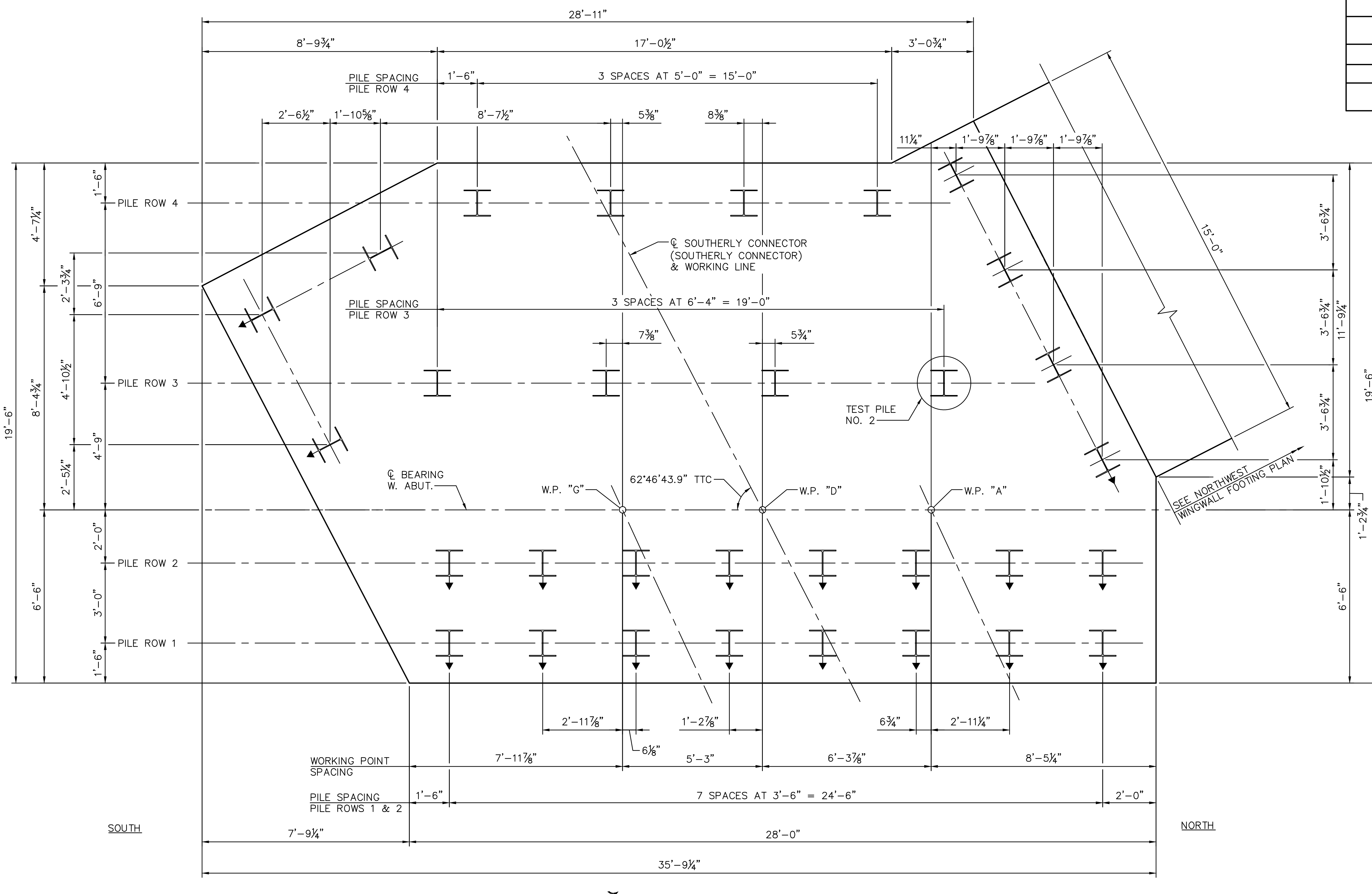
1 HP12x53 STEEL TEST PILE 60 FT. LONG
30 HP12x53 STEEL PILES EST. 60 FT. LENGTH
31 HP12x53 STEEL PILES REQ'D FOR WEST ABUT.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

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METROPOLITAN COUNCIL

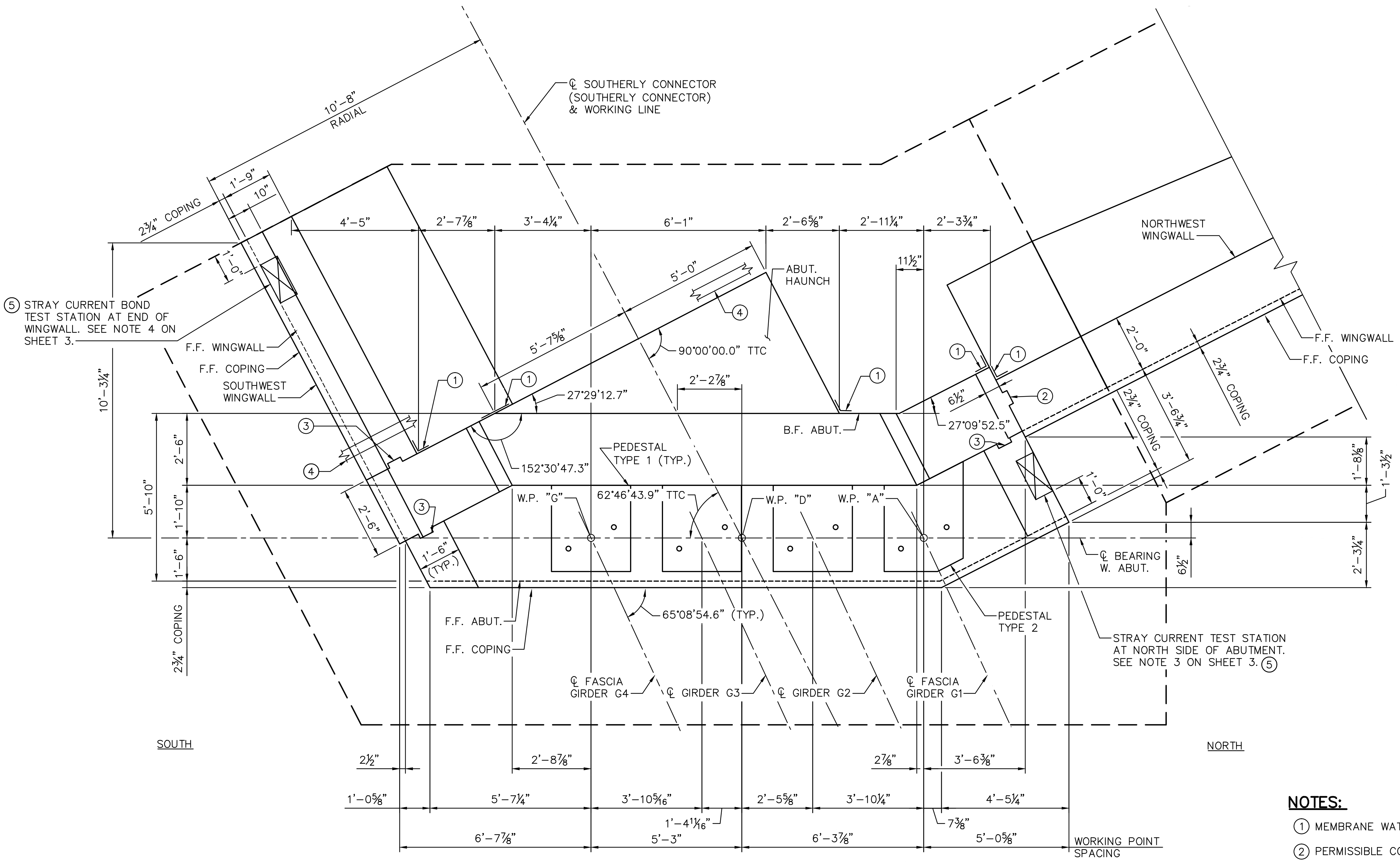
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
WEST ABUTMENT DETAILS 1

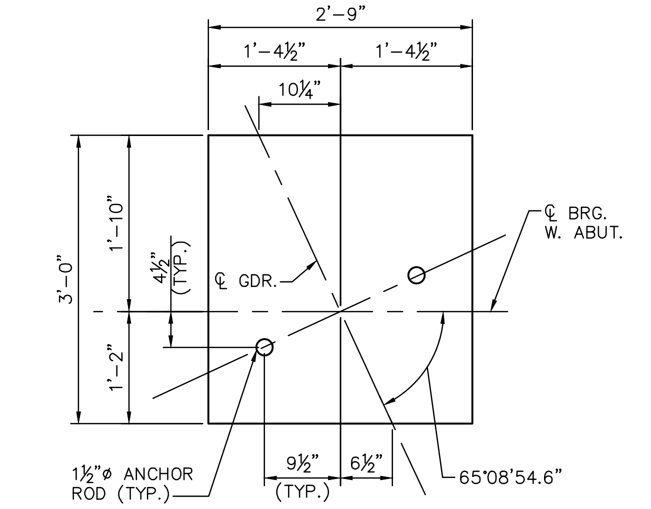
DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-ABT-001

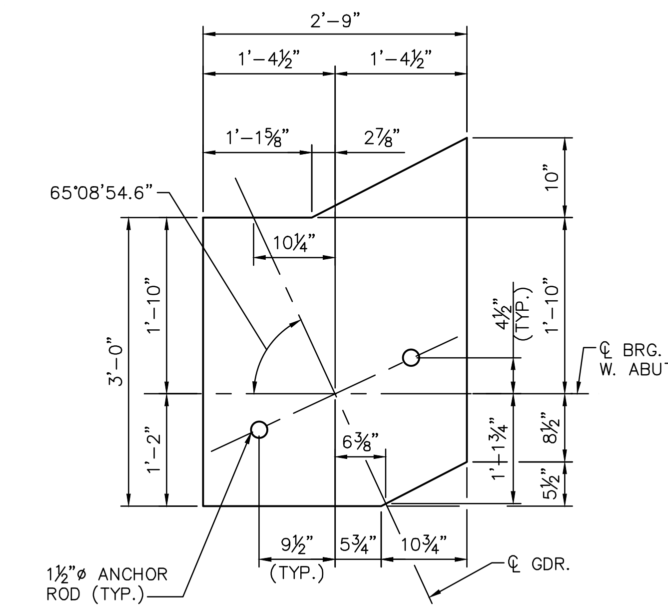
SHEET 5 OF 60



PLAN



PEDESTAL DETAIL – TYPE 1



PEDESTAL DETAIL – TYPE 2

NOTES:

1. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
2. PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY CENTERED IN WALL INTERFACE.
3. CONSTRUCTION JOINT WITH 2" X 6" KEY CENTERED IN WALL INTERFACE.
4. 4" DIA. PERFORATED DRAIN PIPE. SEE DETAIL B910.
5. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWINGS E0-SYS-CORR-DTL-001 TO 018 FOR DETAILS. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT. (TYP. FOR ALL BLOCKOUTS).

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: MRD CHECKED BY: DLS

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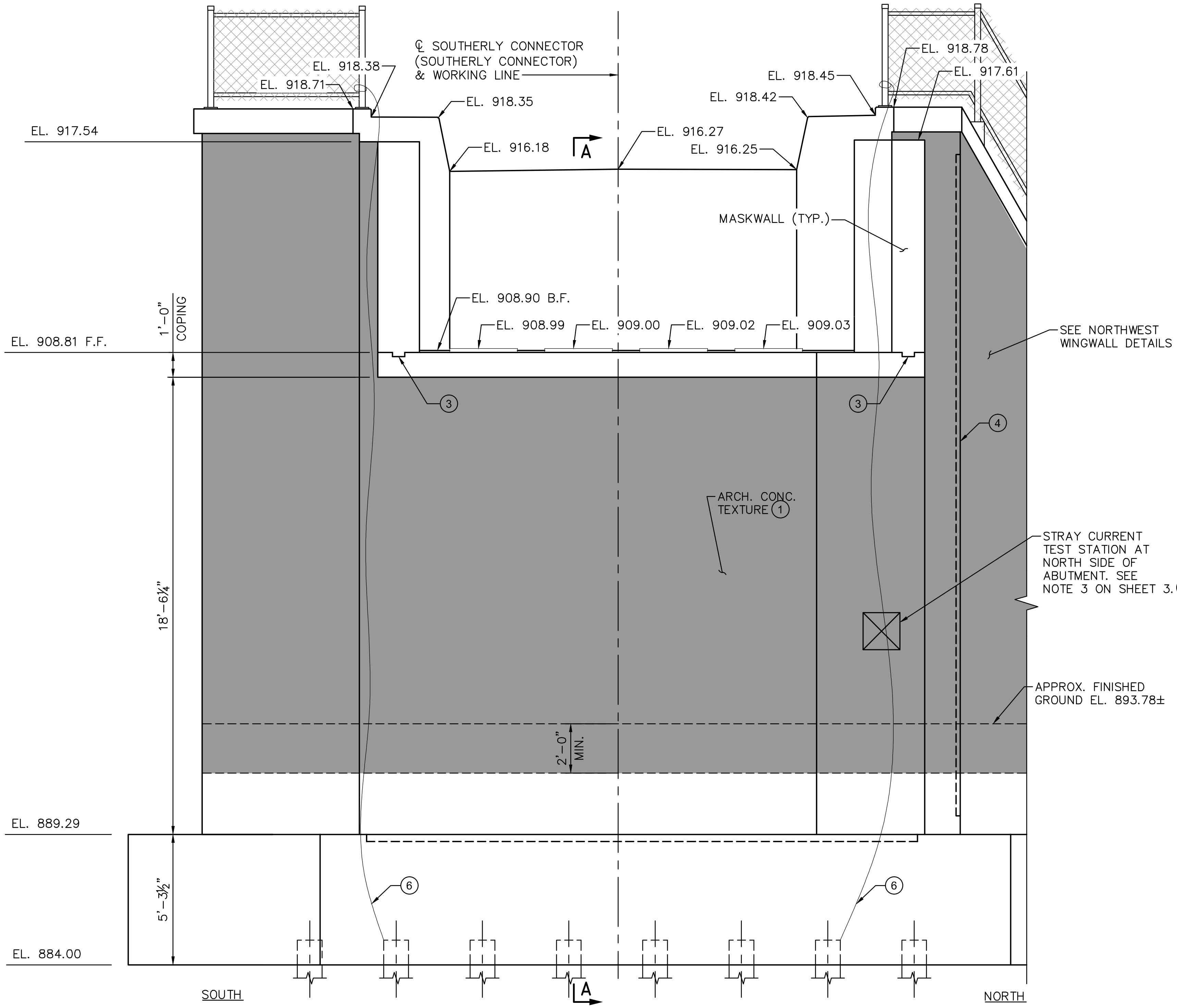
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

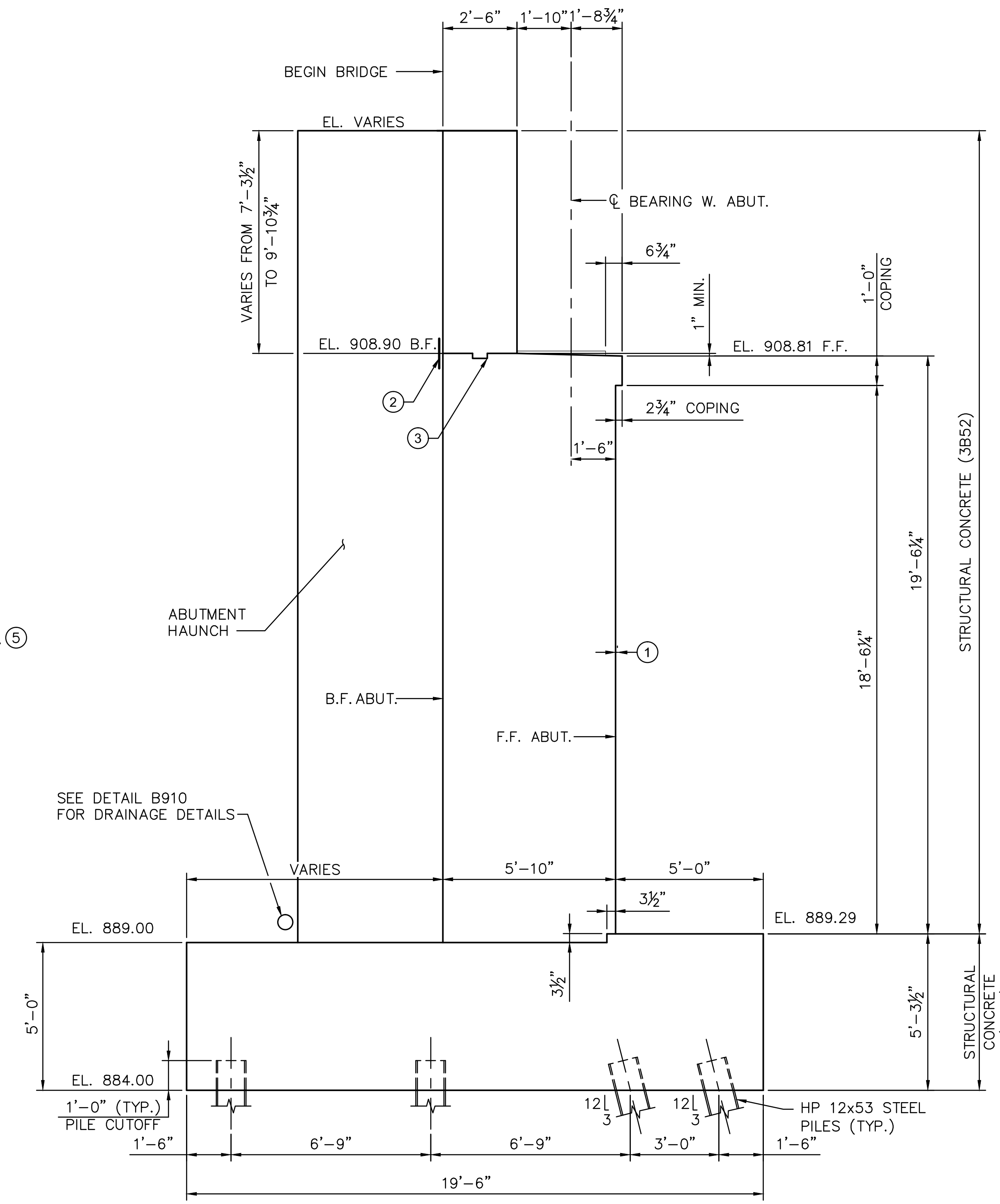
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
WEST ABUTMENT DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-002

SHEET 6 OF 60



ELEVATION



SECTION A-A

NOTES:

SEE SHEET 8 FOR SOUTHWEST WINGWALL DETAILS.

SEE SHEET 9 & 10 FOR NORTHWEST WINGWALL DETAILS.

1. ARCHITECTURAL CONCRETE TEXTURE (STACKED STONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 0.75".
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
3. PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY.
4. CONSTRUCTION JOINT WITH 2" X 6" KEY CENTERED IN WALL INTERFACE.
5. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWINGS E0-SYS-CORR-DTL-001 TO 018 FOR DETAILS. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT. (TYP. FOR ALL BLOCKOUTS).
6. ATTACH WIRE FENCE ANCHORAGE TO PILE WITH SOLID NO. 6 GAGE COPPER WIRE WITH AN APPROVED TYPE CLAMP OR BRAZING (ONE ANCHORAGE PER END OF RAIL). GROUND BOTH SIDES OF EXPANSION JOINT PIPE SLEEVE IF PRESENT. PAINT EXPOSED PORTION OF WIRE GRAY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG | CHECKED BY: DLS
DRAWN BY: KAG | CHECKED BY: DLS

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METROPOLITAN COUNCIL

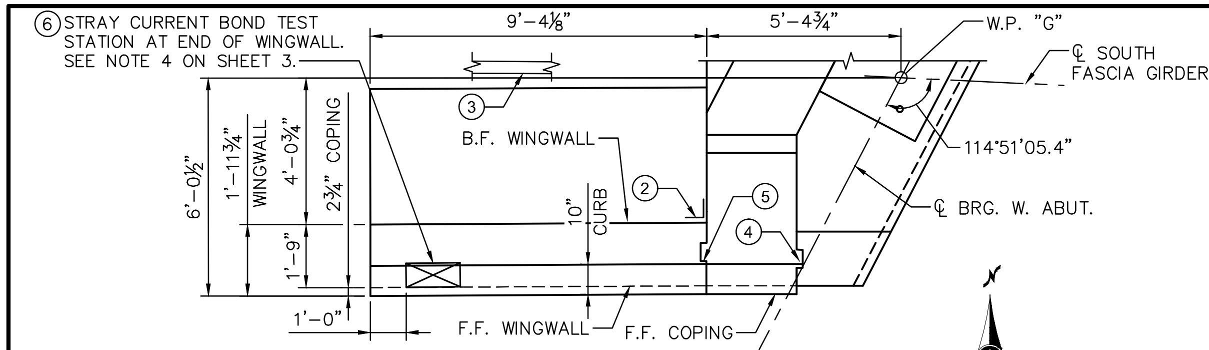
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
WEST ABUTMENT DETAILS 3

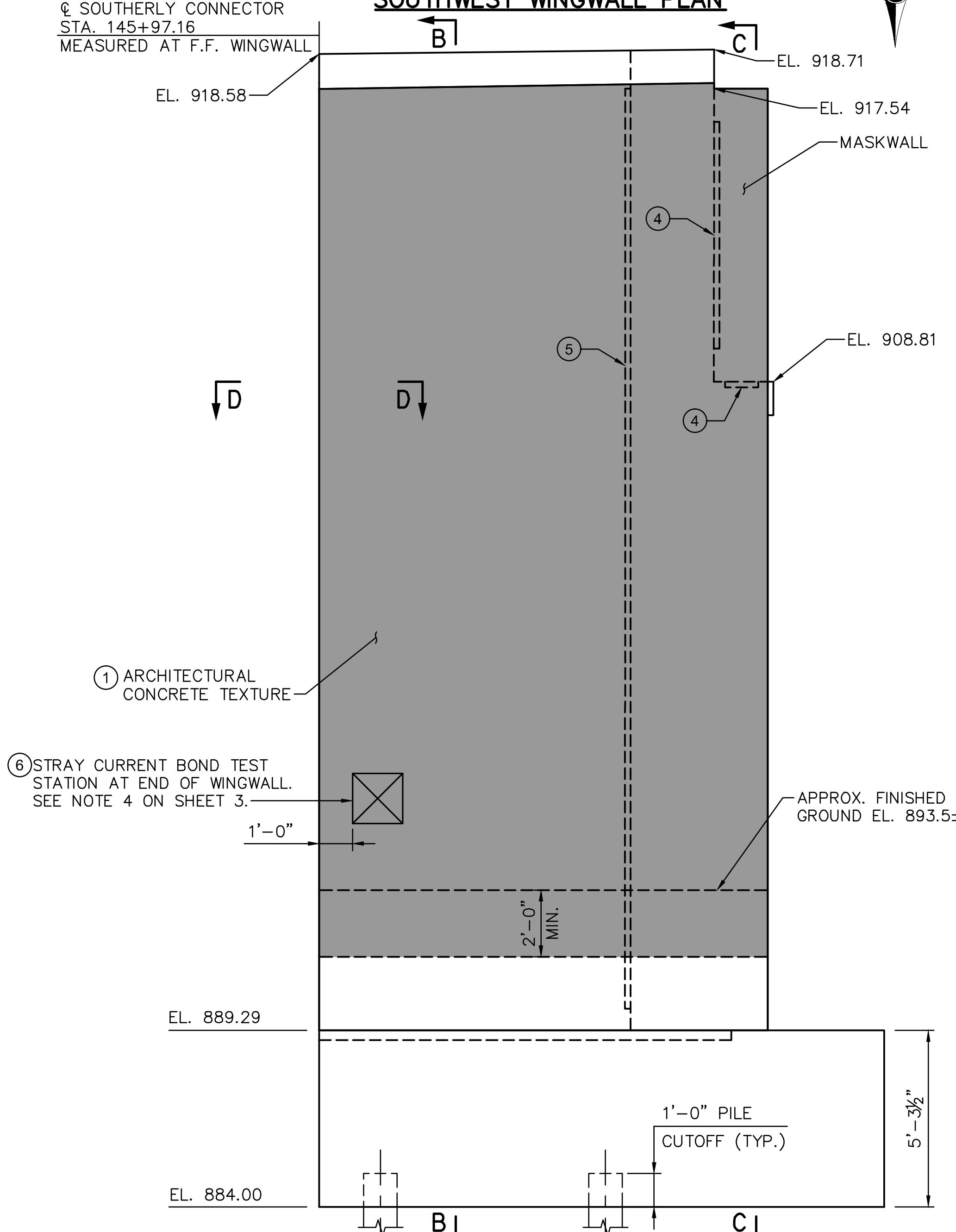
DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-ABT-003

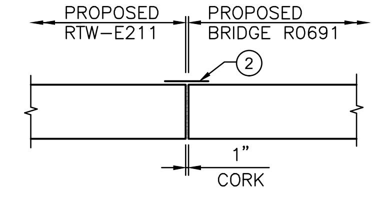
SHEET 7 OF 60



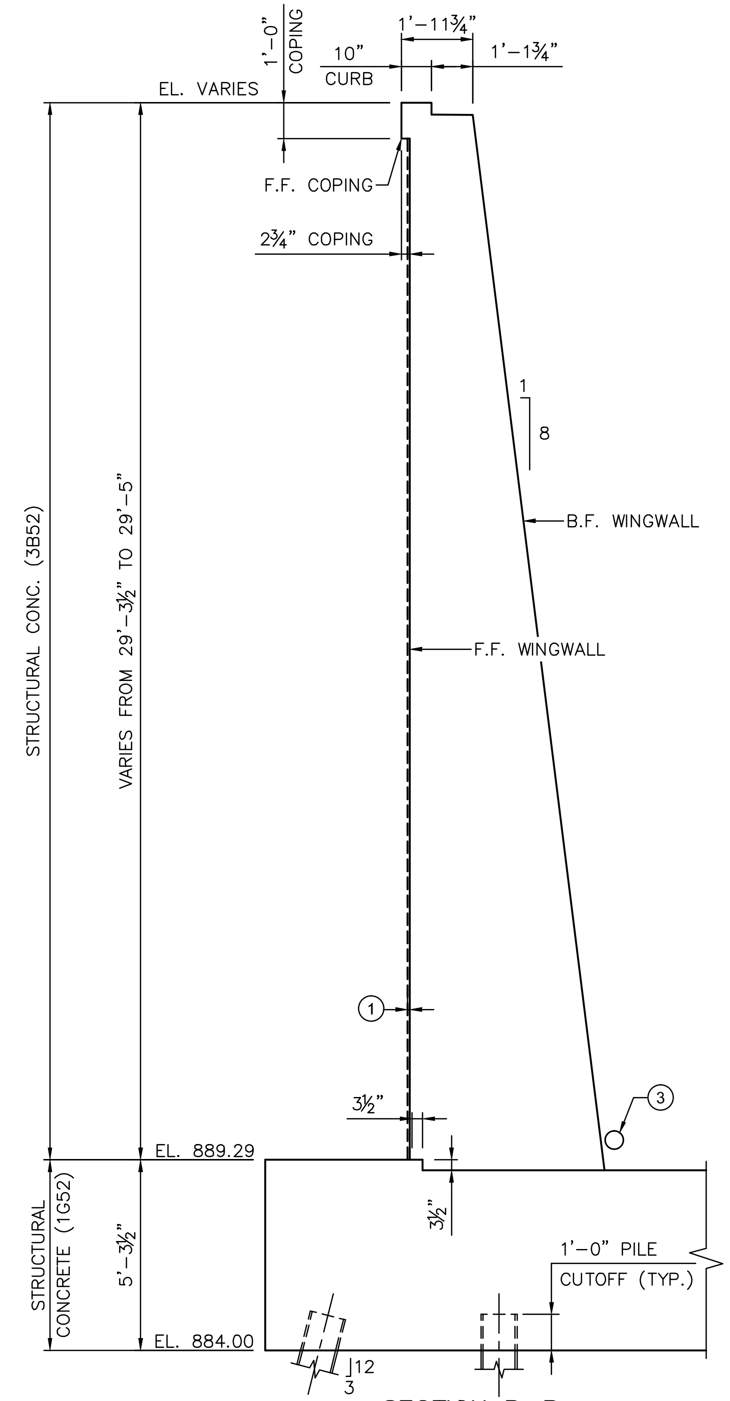
SOUTHWEST WINGWALL PLAN



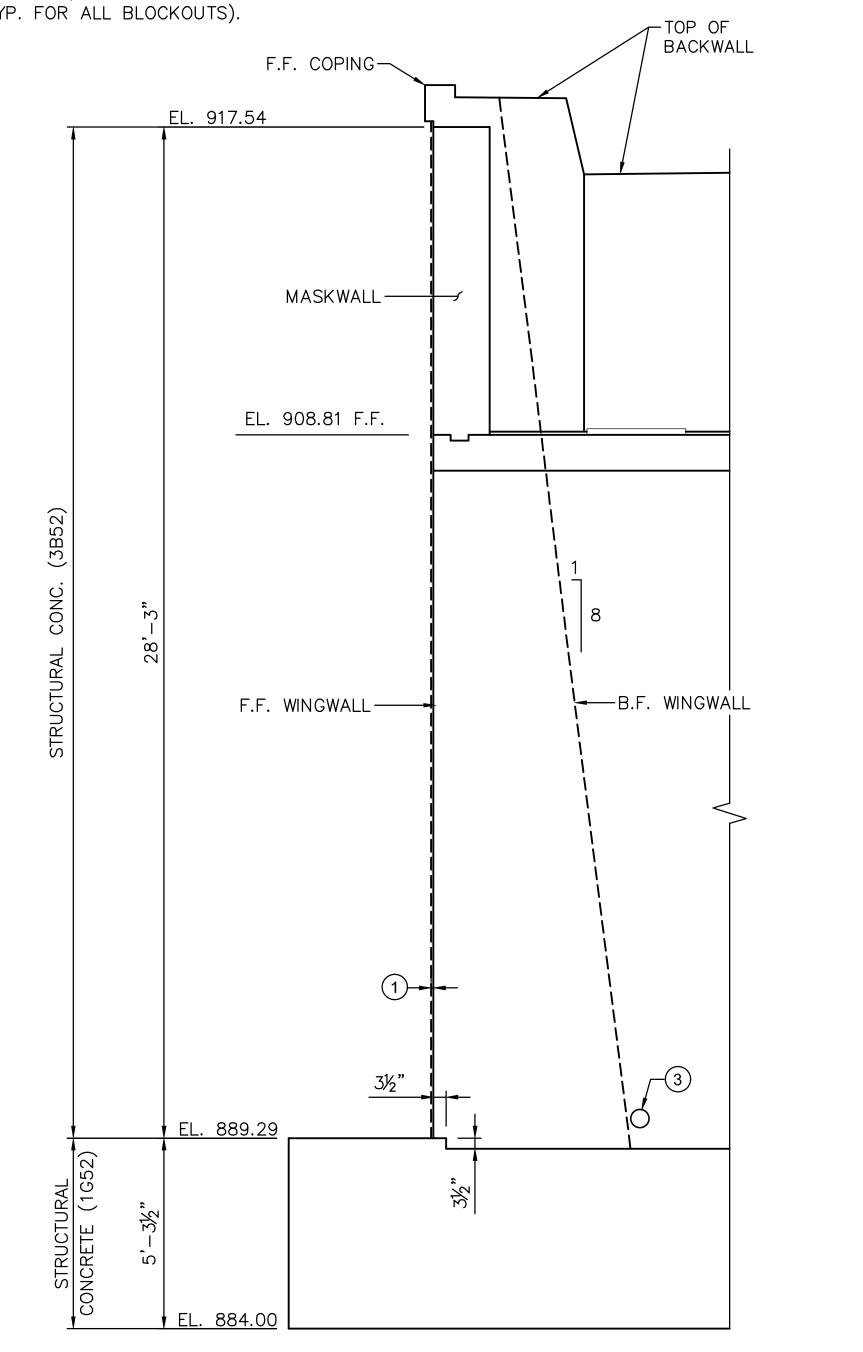
SOUTHWEST WINGWALL ELEVATION



SECTION D-D



SECTION B-B



SECTION C-C

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (STACKED STONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 0.75".
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
3. SEE DETAIL B910 FOR DRAINAGE DETAILS.
4. PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEYWAY.
5. CONSTRUCTION JOINT WITH 2" X 6" KEYWAY CENTERED IN WALL INTERFACE.
6. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWINGS E0-SYS-CORR-DTL-001 TO 018 FOR DETAILS. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT. (TYP. FOR ALL BLOCKOUTS).

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: ZTW CHECKED BY: DLS

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AECOM Kimley»Horn

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
WEST ABUTMENT DETAILS 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-ABT-004

SHEET 8 OF 60

Jan, 18 2016 03:05 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SOCO-FRT\CBRR0691-BRG-ABT-004.dwg By: Connor.Smith

NORTHWEST WINGWALL COMPUTED PILE LOAD - TONS/PILE	
DEAD LOAD + EARTH PRESSURE	35.0
LIVE LOAD	10.0
* DESIGN LOAD	45.0
* BASED ON GROUP I LOADING (SERVICE LOAD) PER AREMA CHAPTER 8 SECTION 2.2.4	

REQUIRED PILE TEST LOAD - TONS/PILE	
FIELD CONTROL METHOD	TEST LOAD
PDA	90.0

GENERAL PILE NOTES:

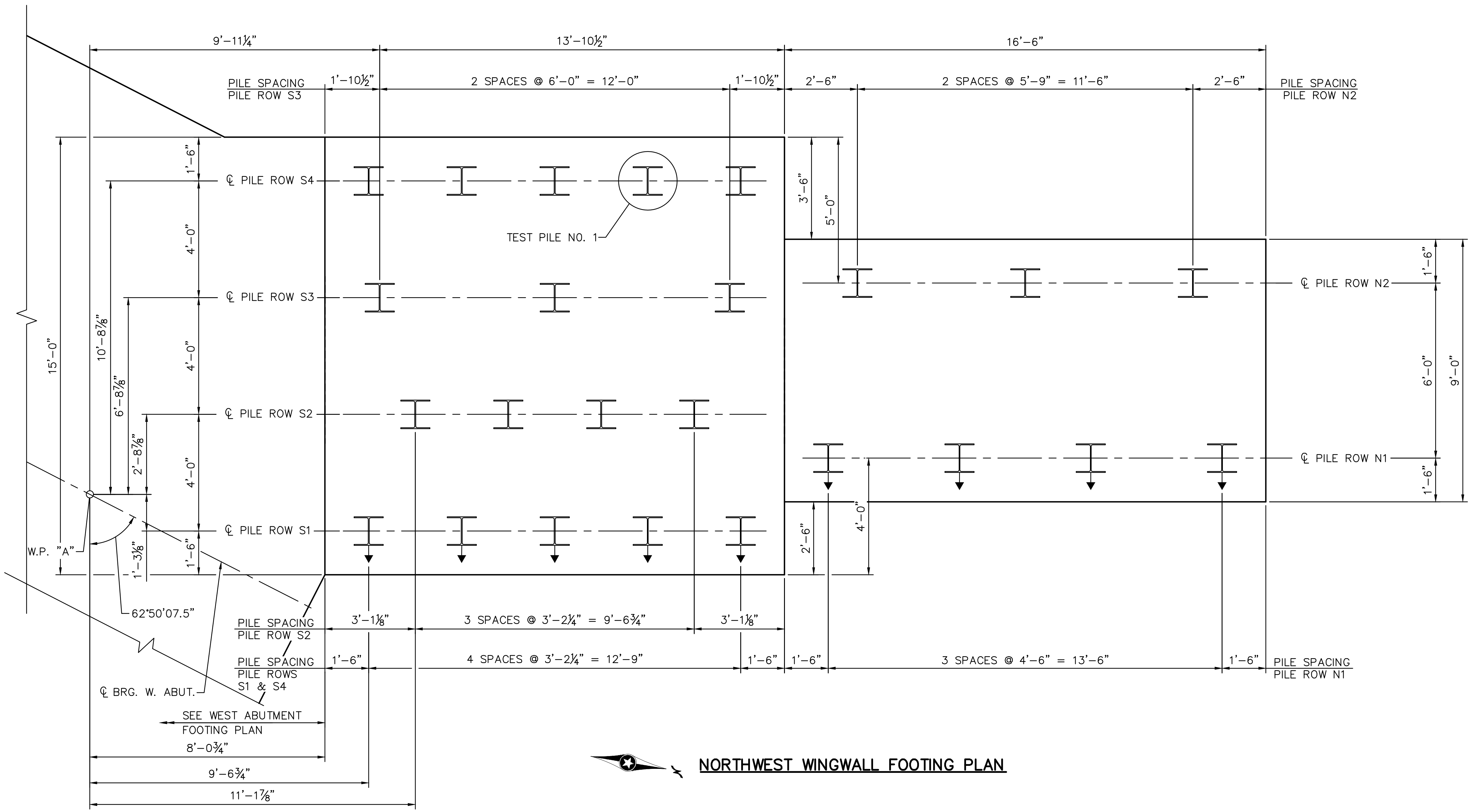
1 HP12x53 STEEL TEST PILE 60 FT. LONG
23 HP12x53 STEEL PILES EST. 60 FT. LENGTH
24 HP12x53 STEEL PILES REQ'D FOR NORTHWEST WINGWALL.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



NORTHWEST WINGWALL FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

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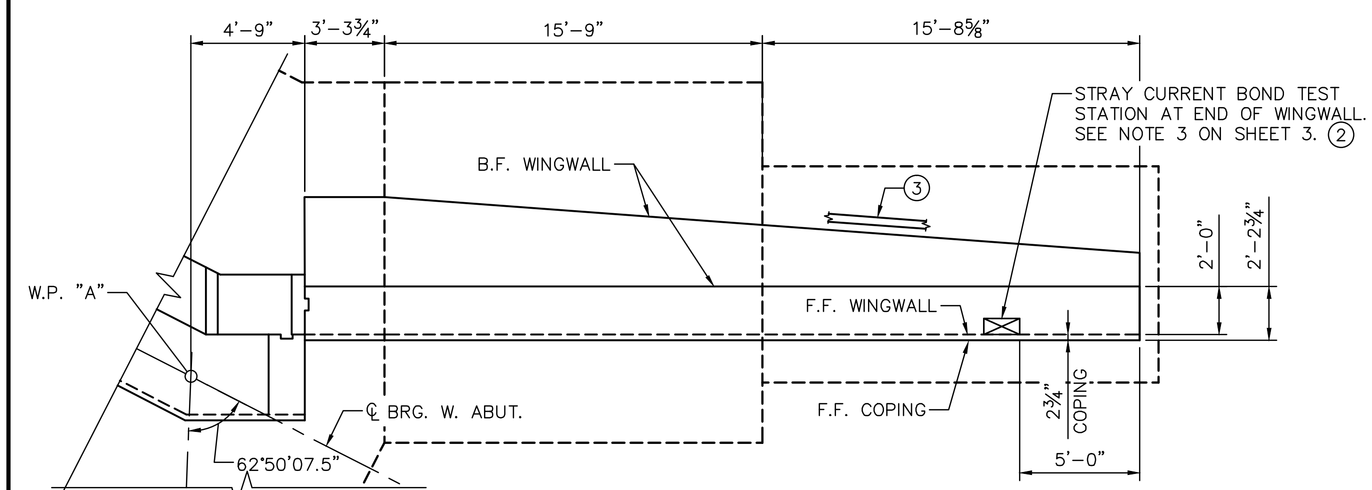
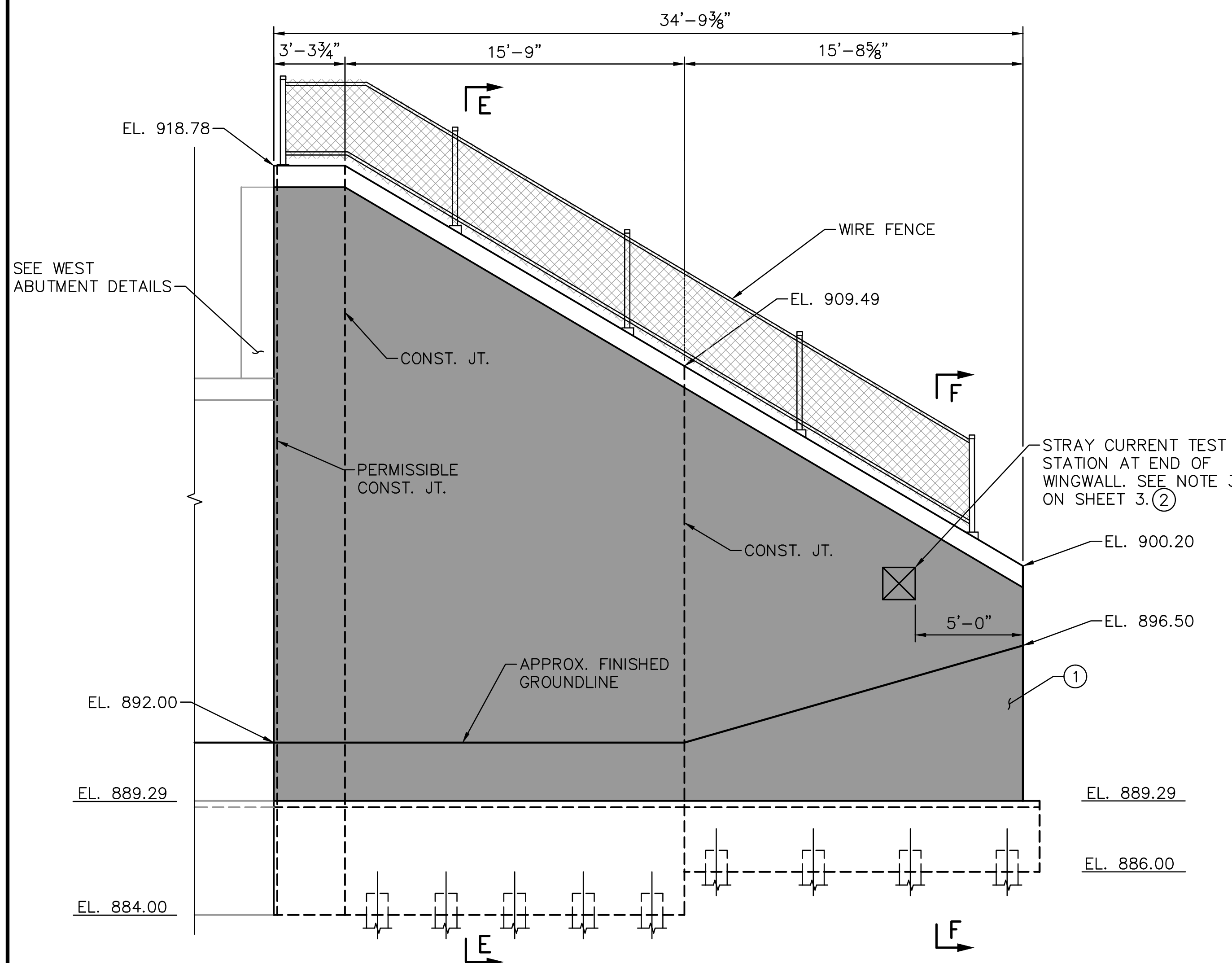
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
WEST ABUTMENT DETAILS 5

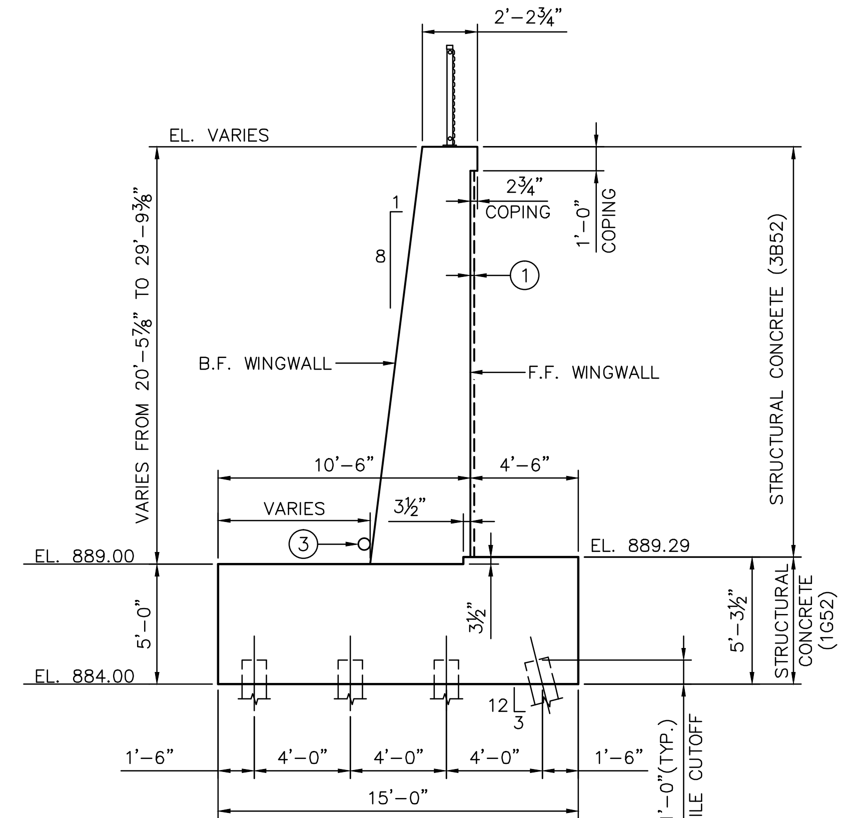
DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-005



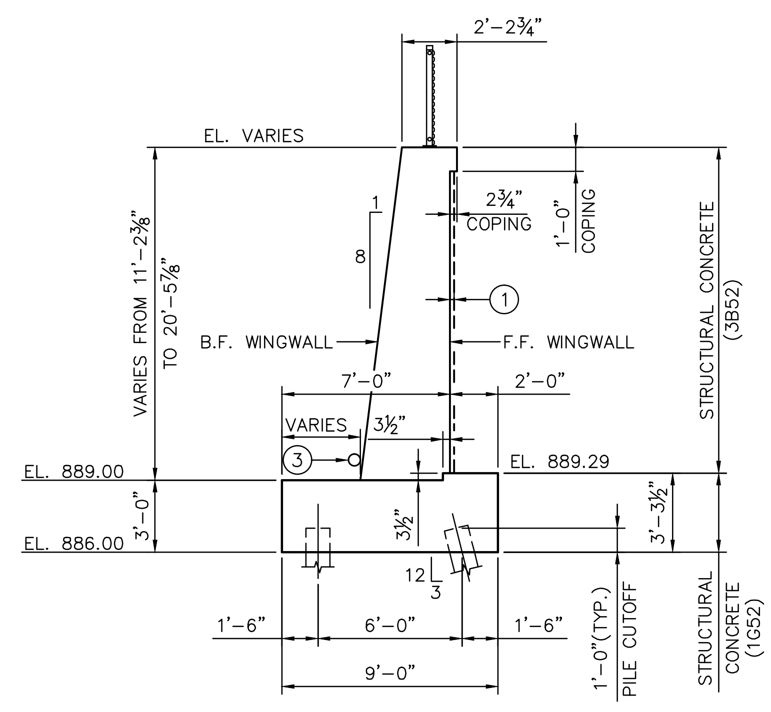
NORTHWEST WINGWALL PLAN



NORTHWEST WINGWALL ELEVATION



SECTION E–E



SECTION F–F

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (STACKED STONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 0.75".
2. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWINGS E0-SYS-CORR-DTL-001 TO 018 FOR DETAILS. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT. (TYP. FOR ALL BLOCKOUTS).
3. 4" DIA. PERFORATED DRAIN PIPE. SEE DETAIL B910.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

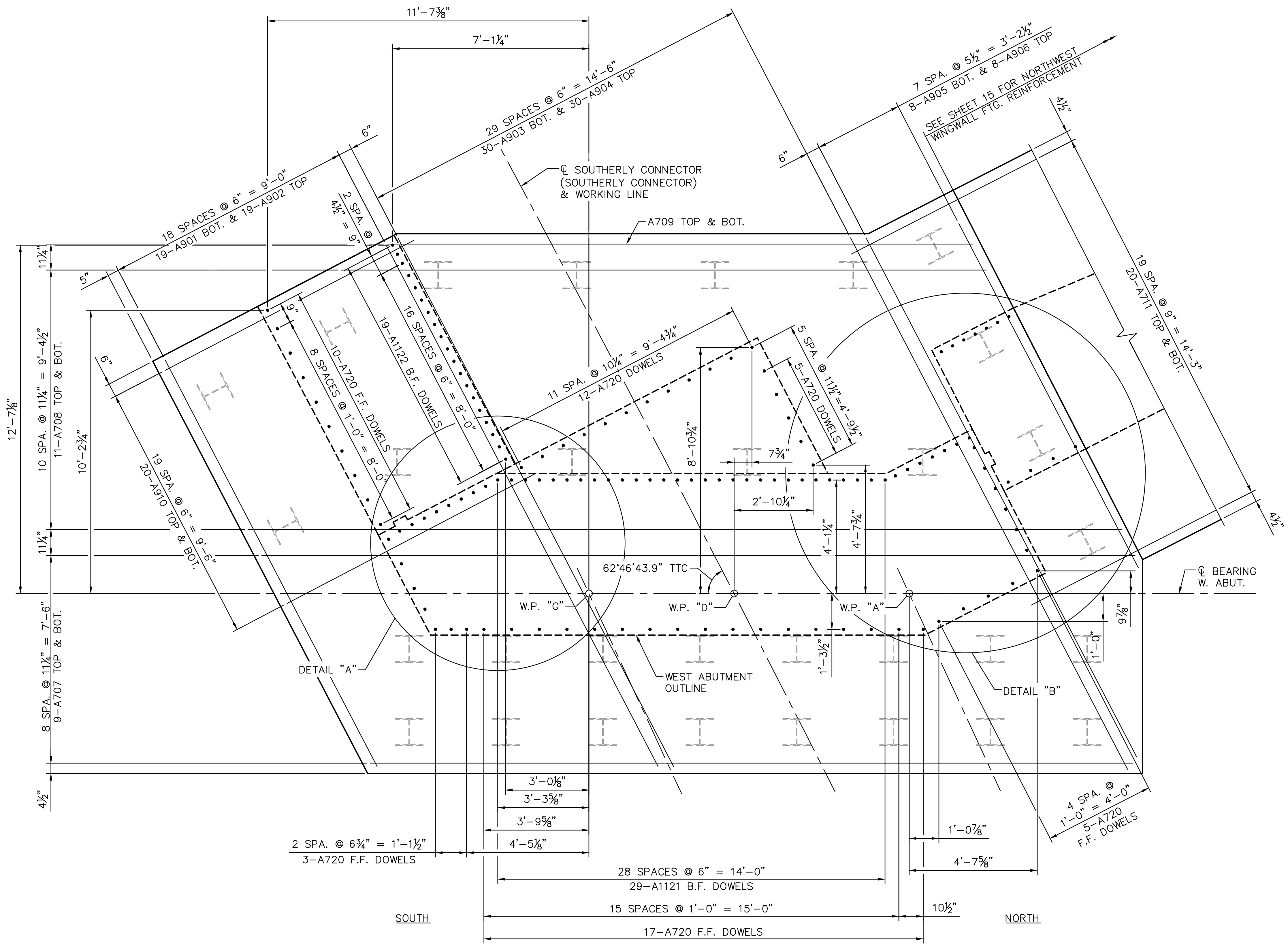
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

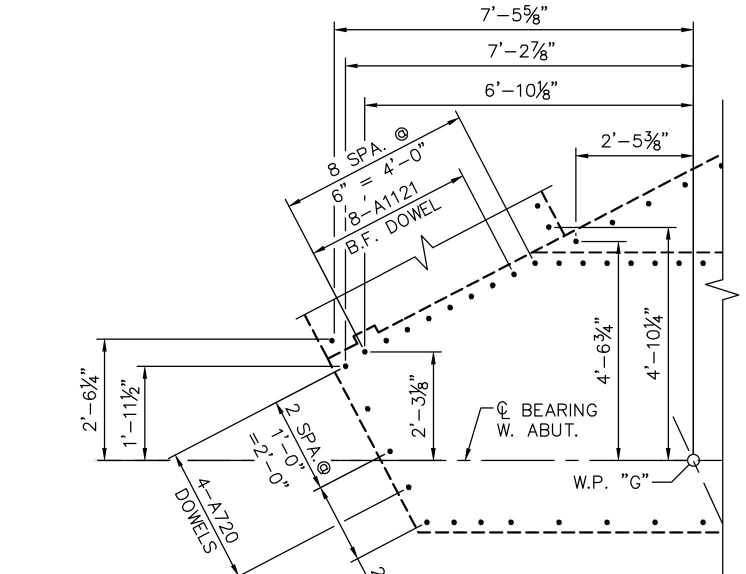
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
WEST ABUTMENT DETAILS 6

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-006

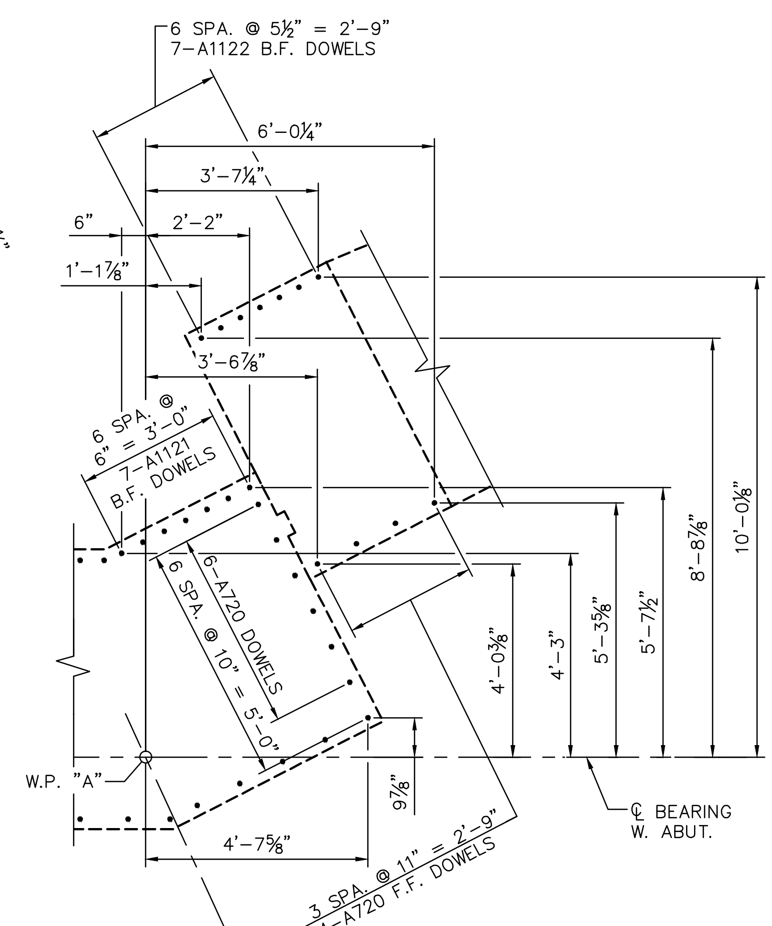
SHEET 10 OF 60



FOOTING PLAN



DETAIL "A"



DETAIL "B"

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

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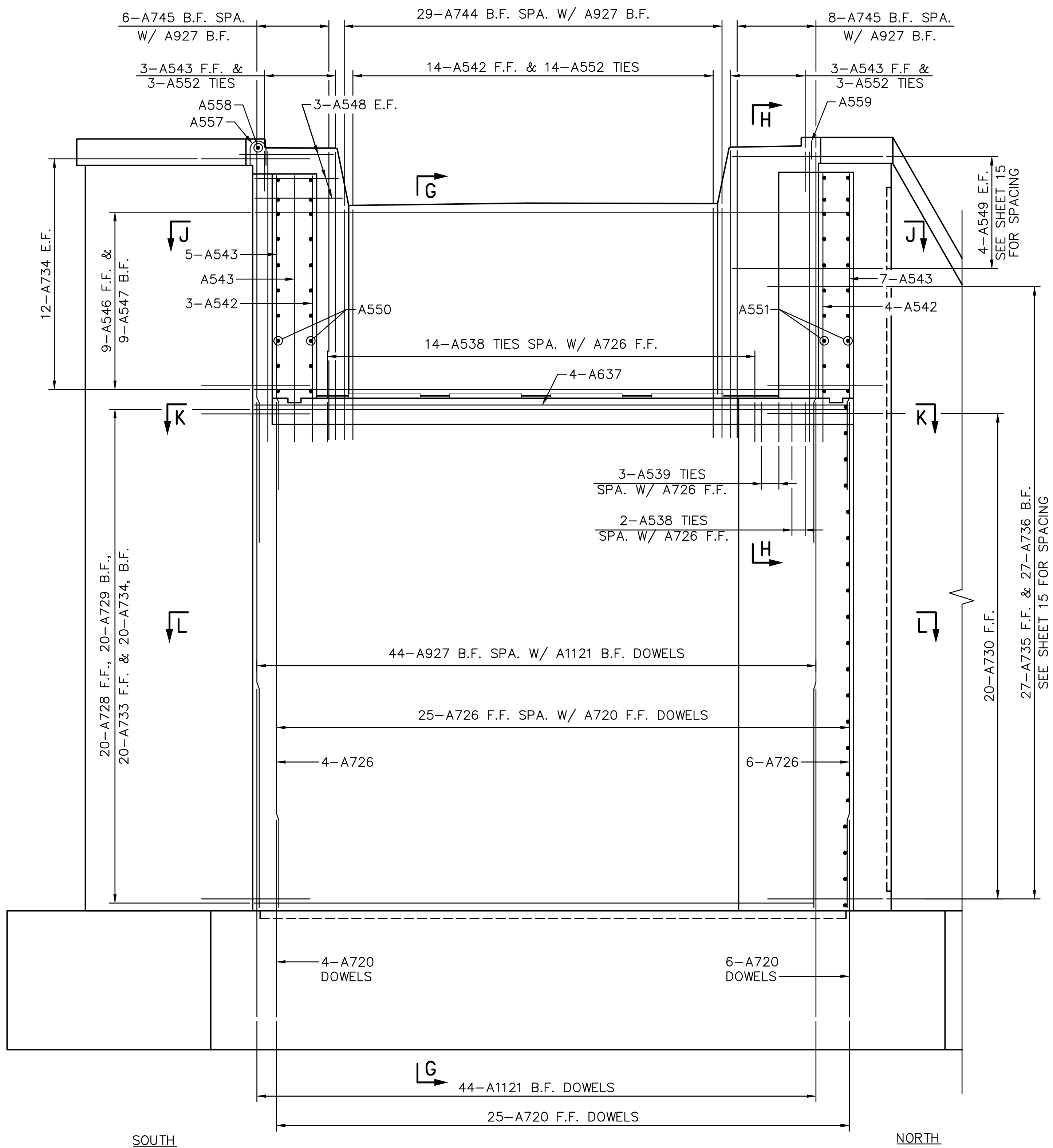
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

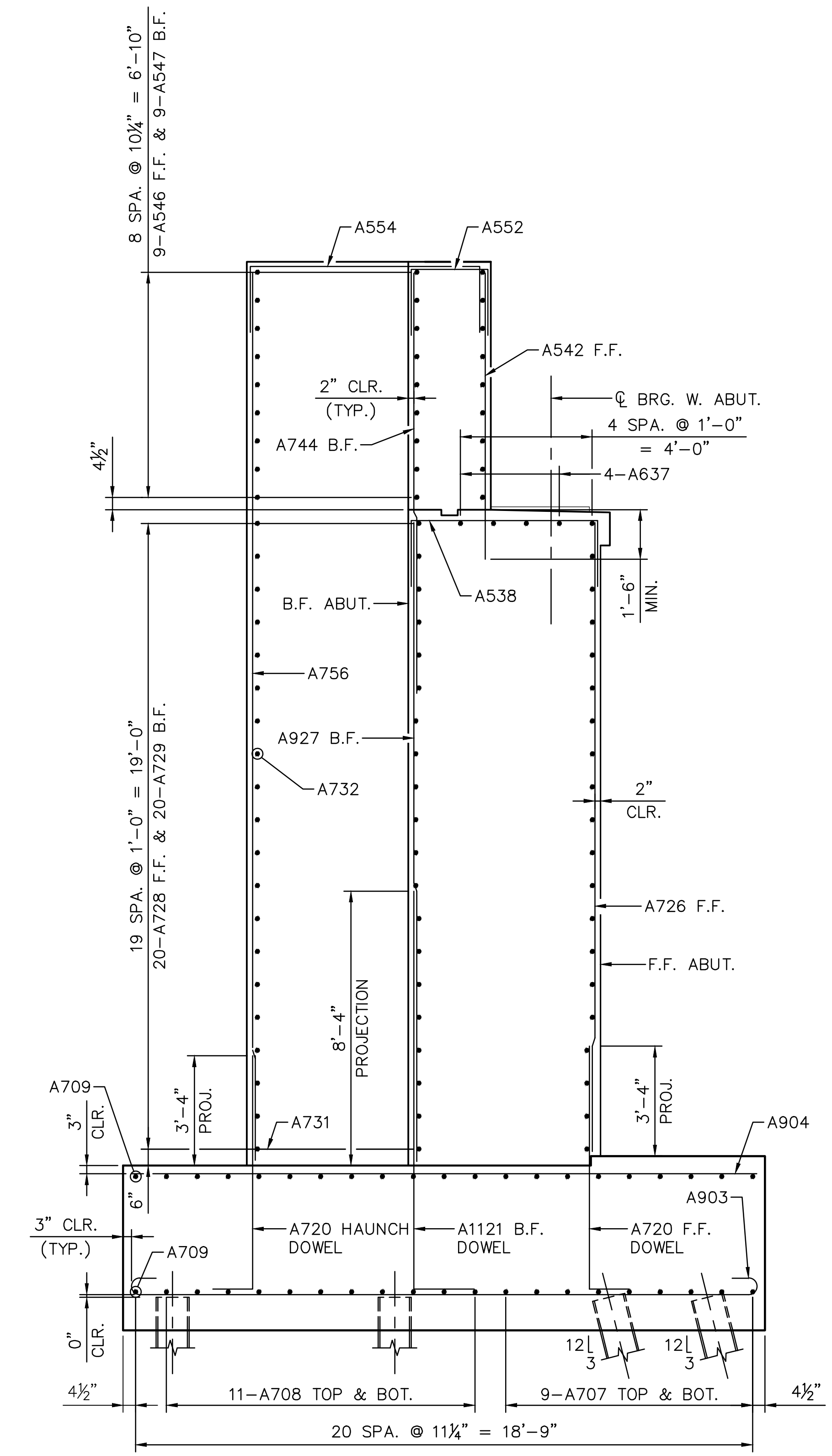
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
WEST ABUTMENT REINFORCEMENT 1

DISCIPLINE: STRUCTURES

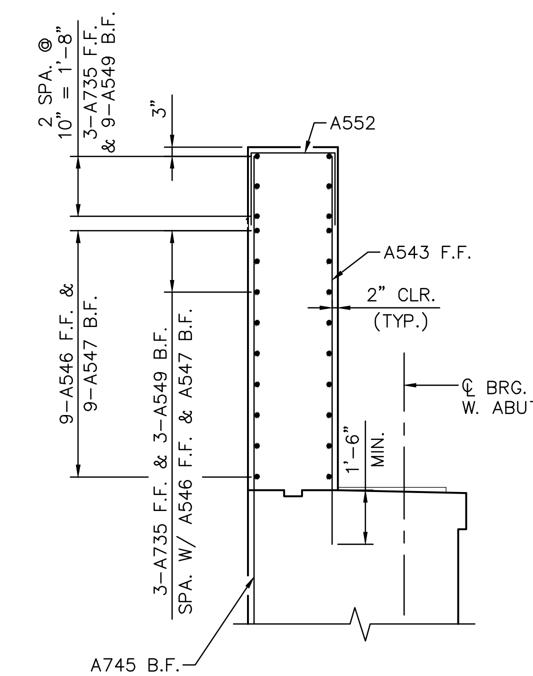
SHEET NAME: CBRR0691-BRG-ABT-007



ELEVATION

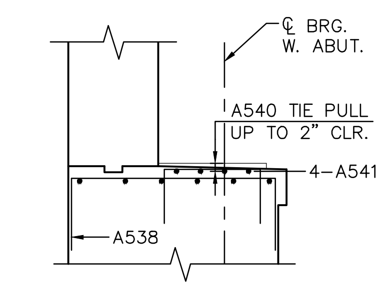


SECTION G-G



SECTION H-H

NOTE: ABUTMENT HAUNCH NOT SHOWN FOR CLARITY



TYPICAL PEDESTAL SECTION

NOTE: ONLY PEDESTAL AND SEAT REINFORCEMENT SHOWN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

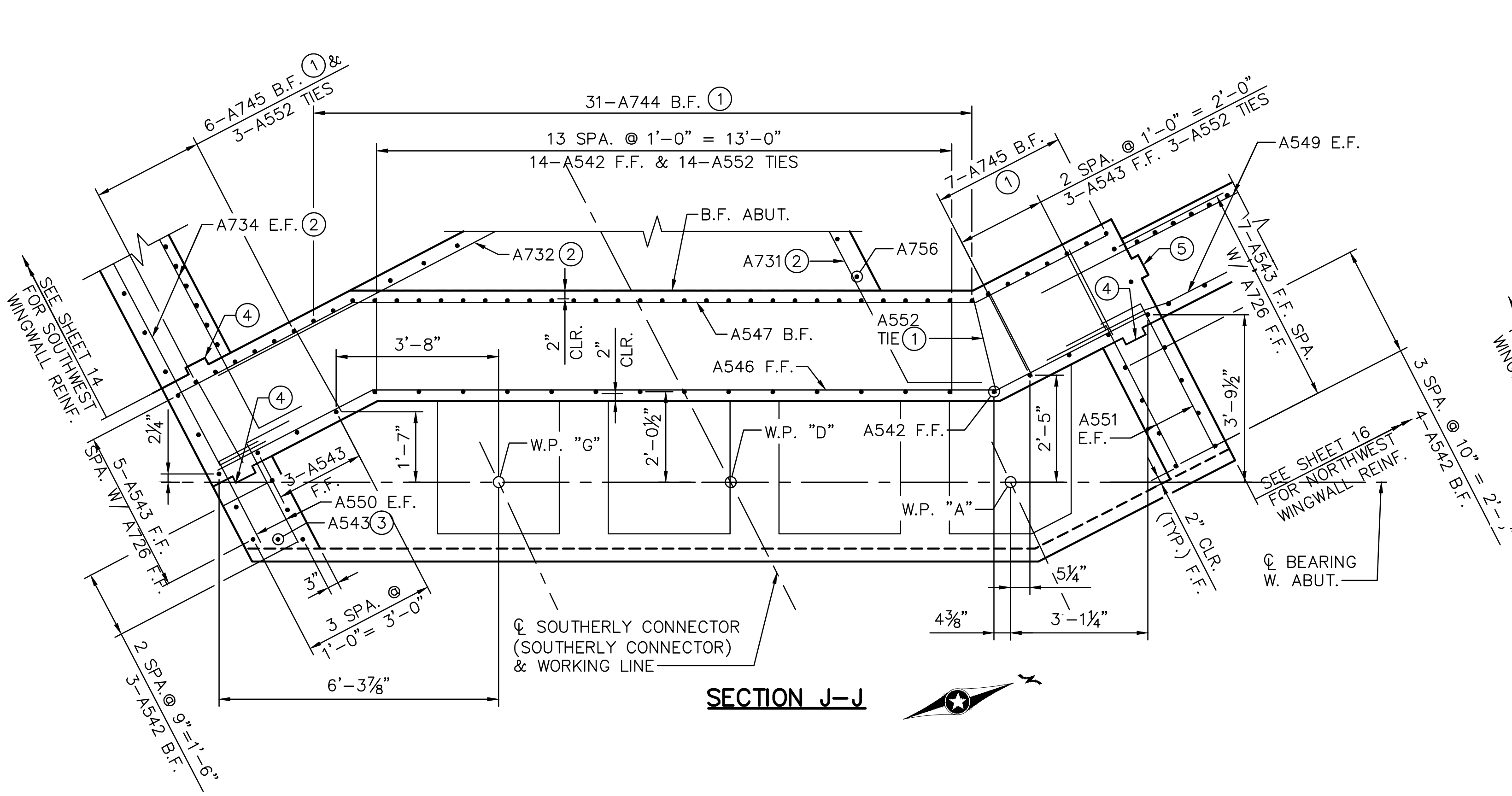
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
WEST ABUTMENT REINFORCEMENT 2

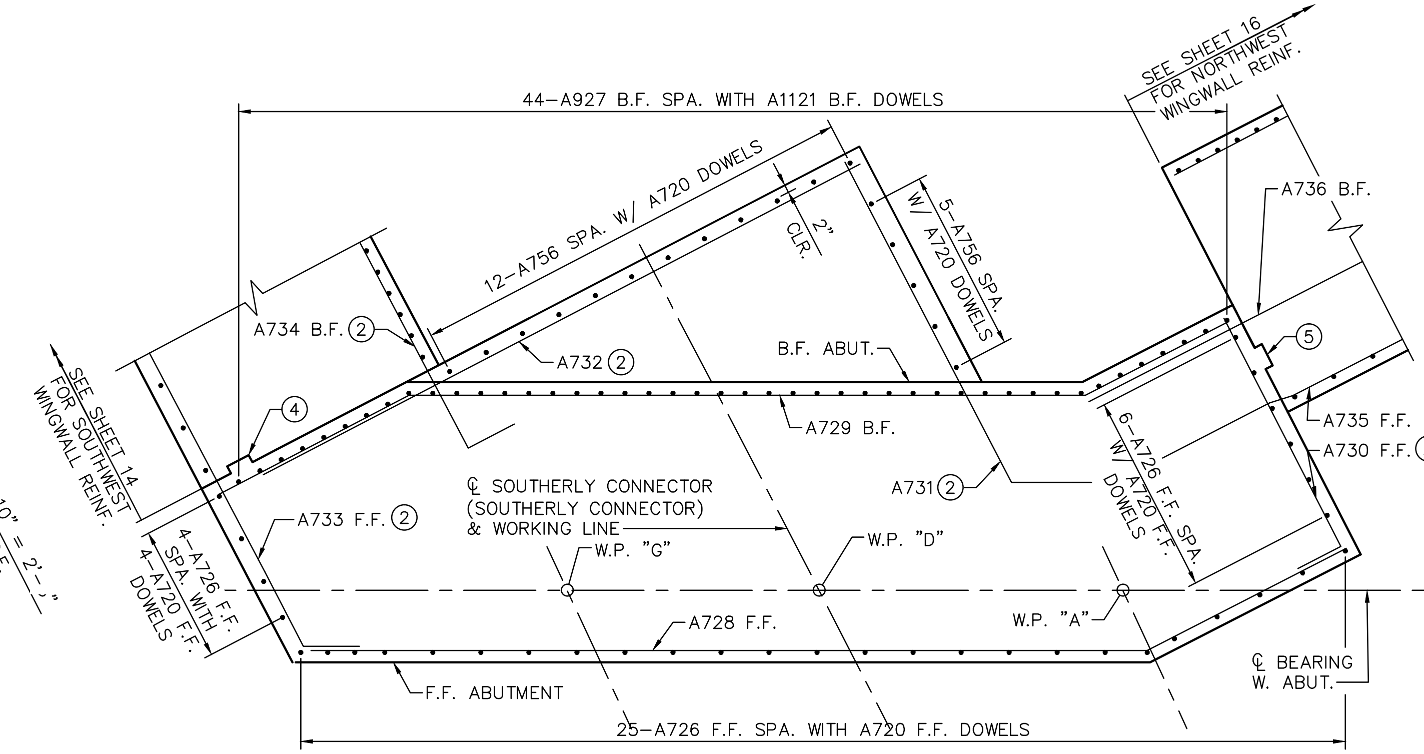
DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-ABT-008

SHEET 12 OF 60



SECTION J-J



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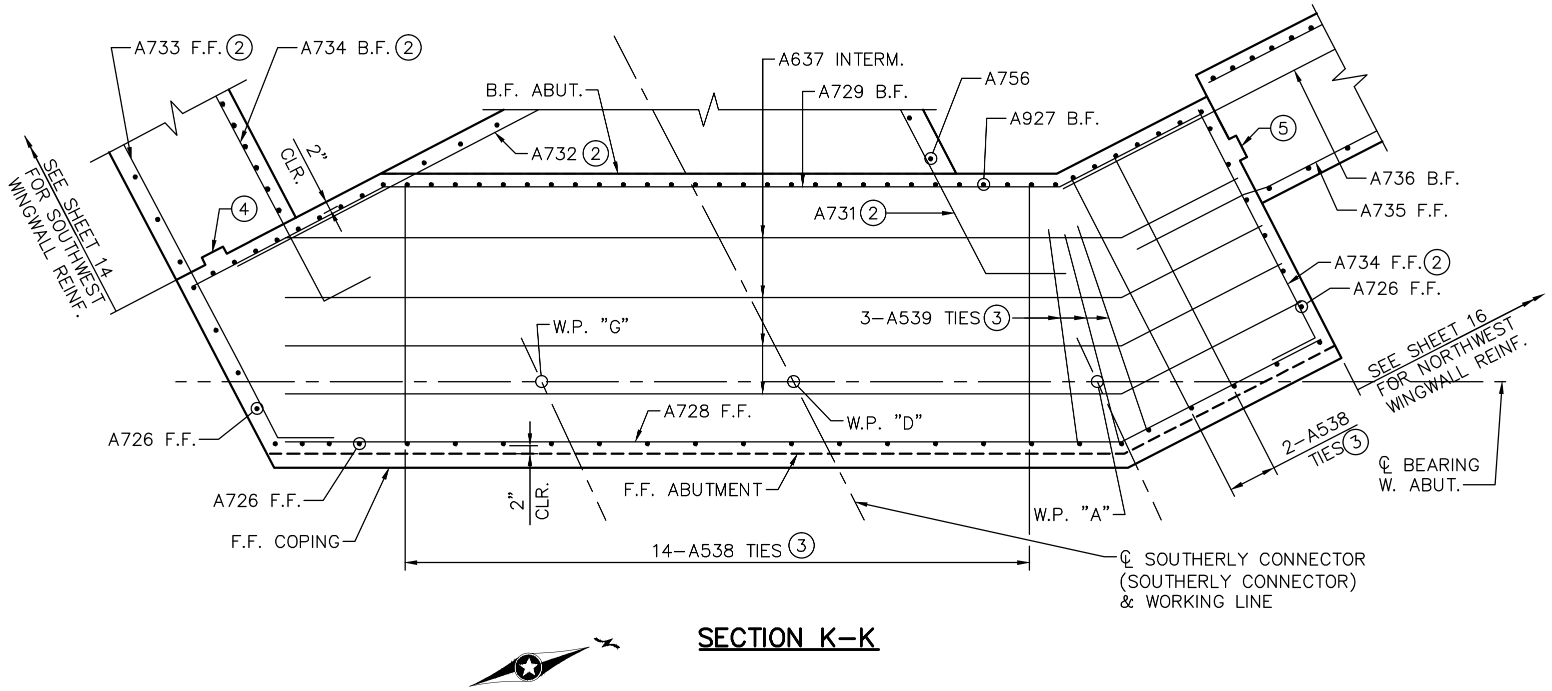

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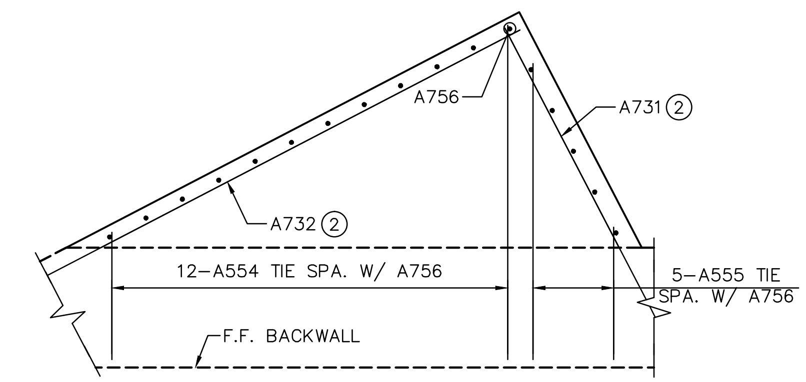
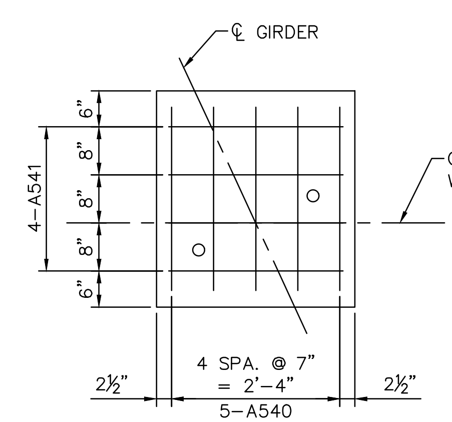
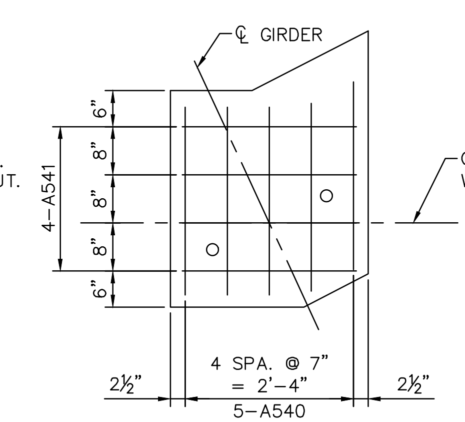


HAUNCH TOP REINFORCEMENT DETAIL



PEDESTAL PLAN – TYPE 1



PEDESTAL PLAN – TYPE 2

NOTES:

1. SPACE WITH A927 B.F.
2. SPACE WITH A728 F.F., A729 B.F., A546 F.F. & A547 B.F.
3. SPACE AS SHOWN WITH A726 F.F.
4. CONSTRUCTION JOINT WITH 2" X 6" KEY.
5. PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

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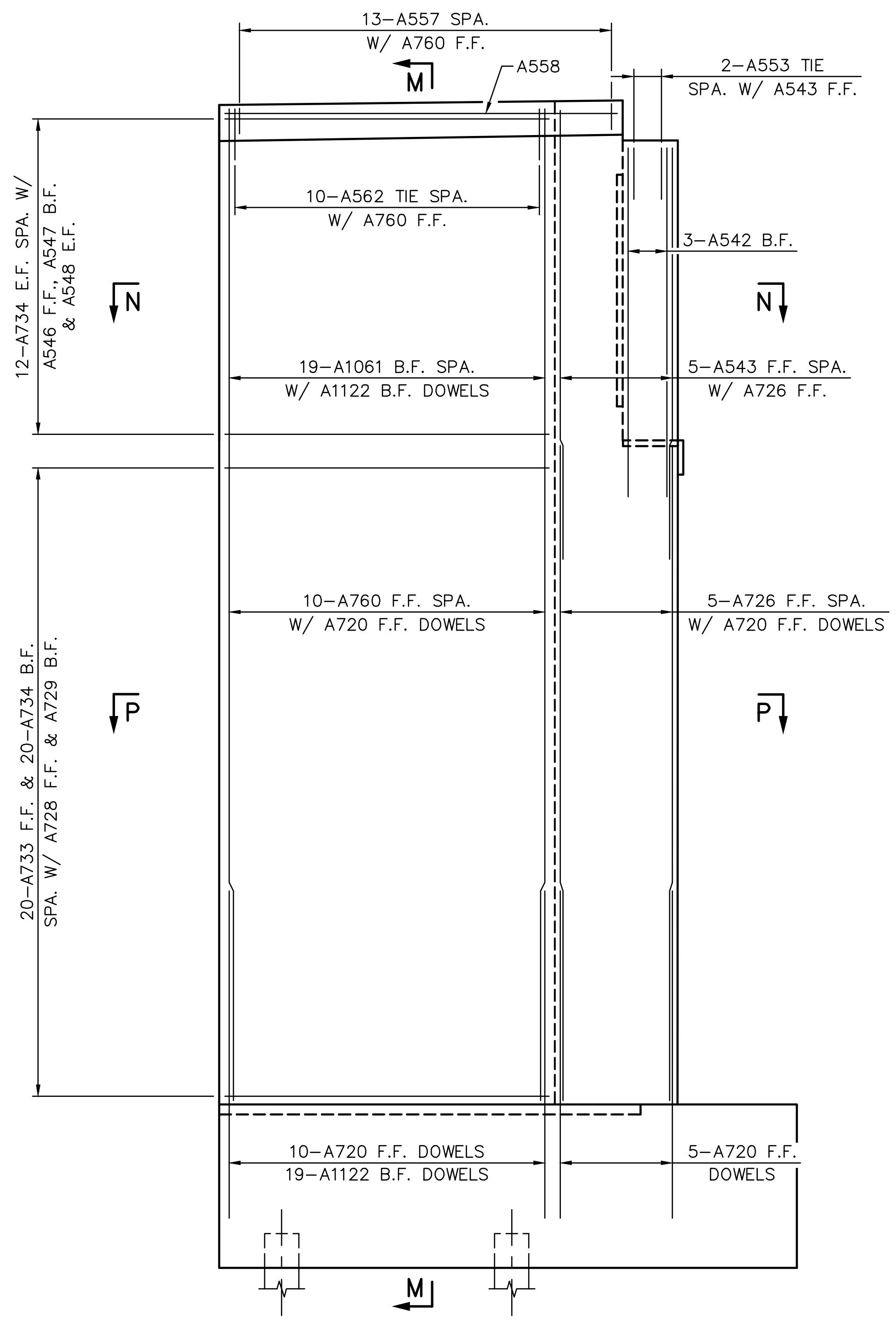
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

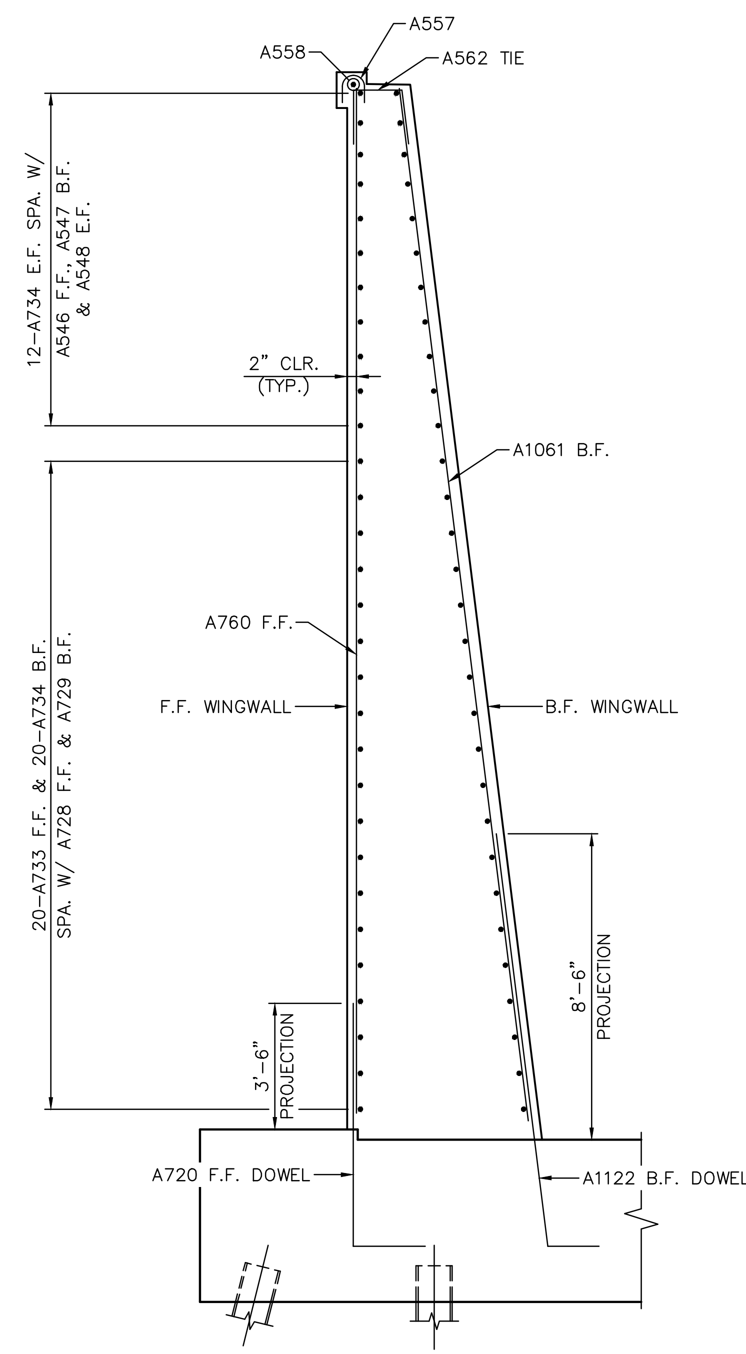
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
WEST ABUTMENT REINFORCEMENT 3

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-ABT-009



SOUTHWEST WINGWALL ELEVATION



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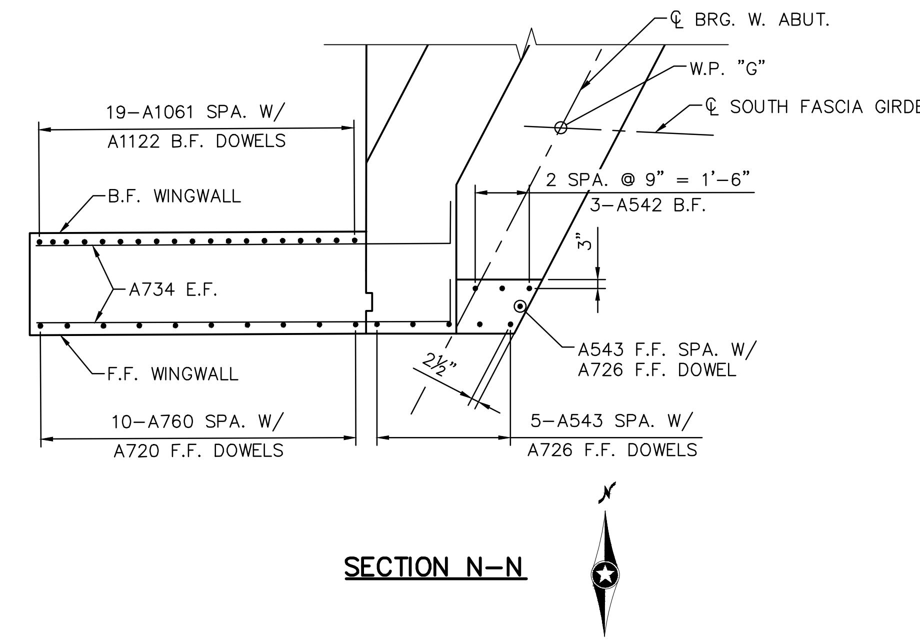
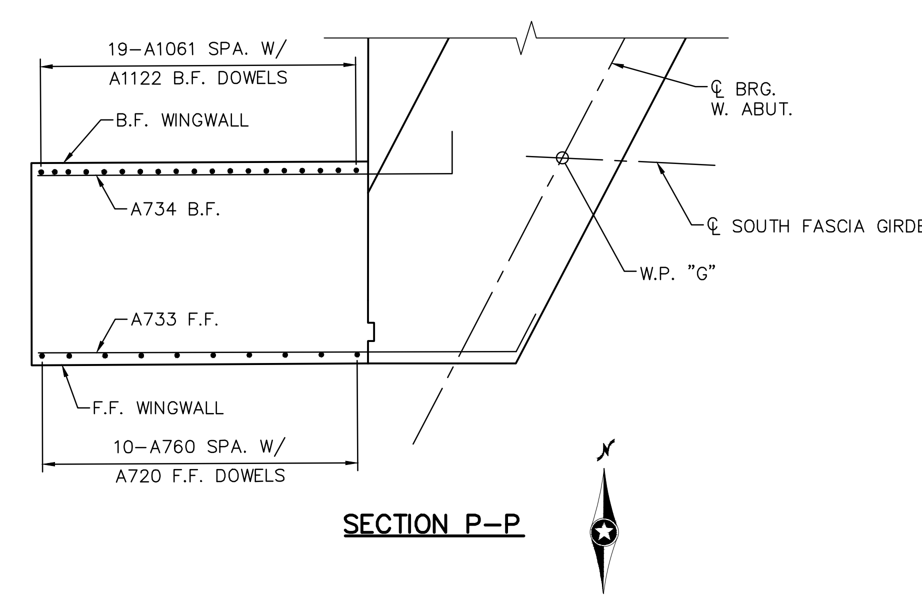


SECTION N-N



SECTION P-P

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
WEST ABUTMENT REINFORCEMENT 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-010

SHEET 14 OF 60

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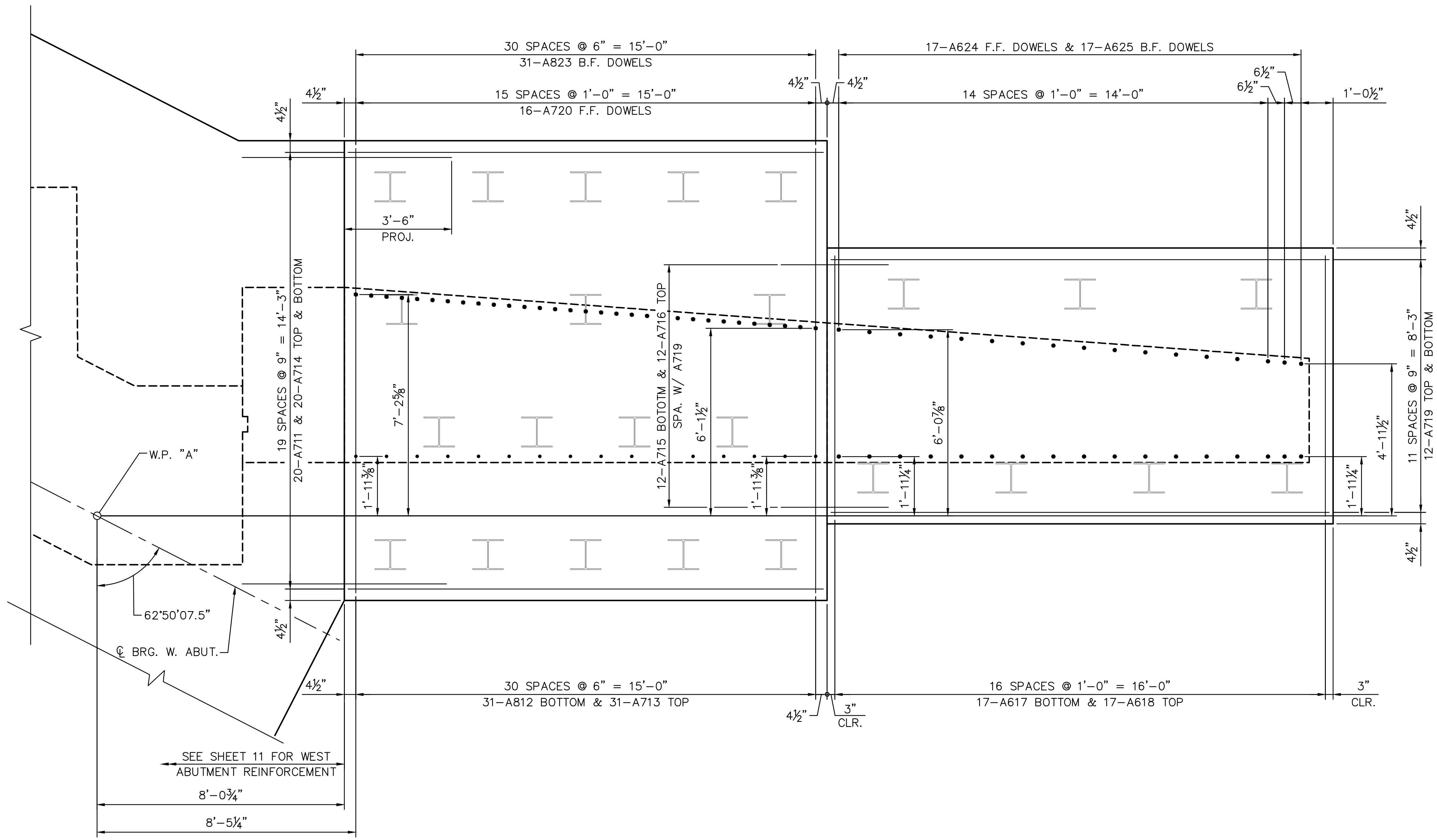

NORTHWEST WINGWALL FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

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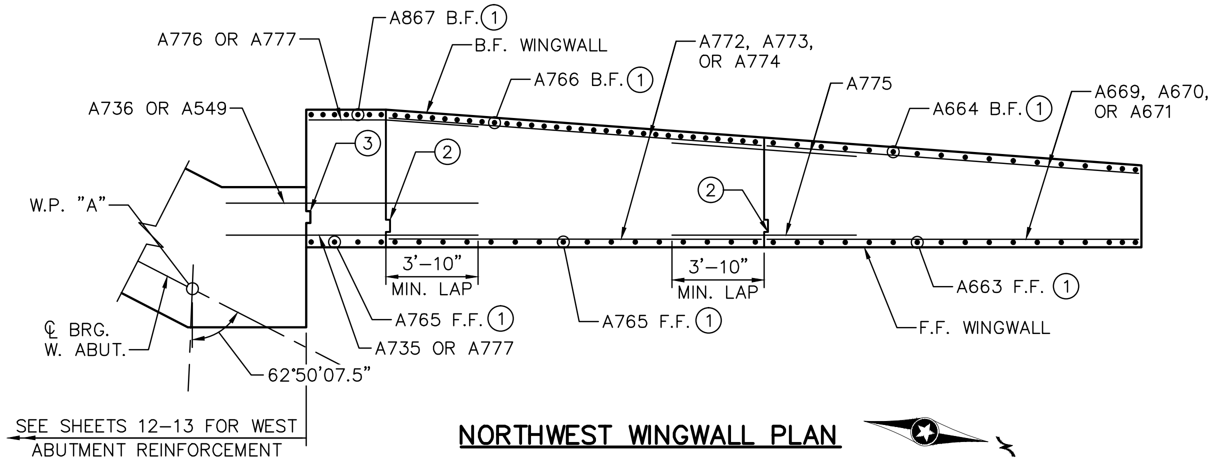
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

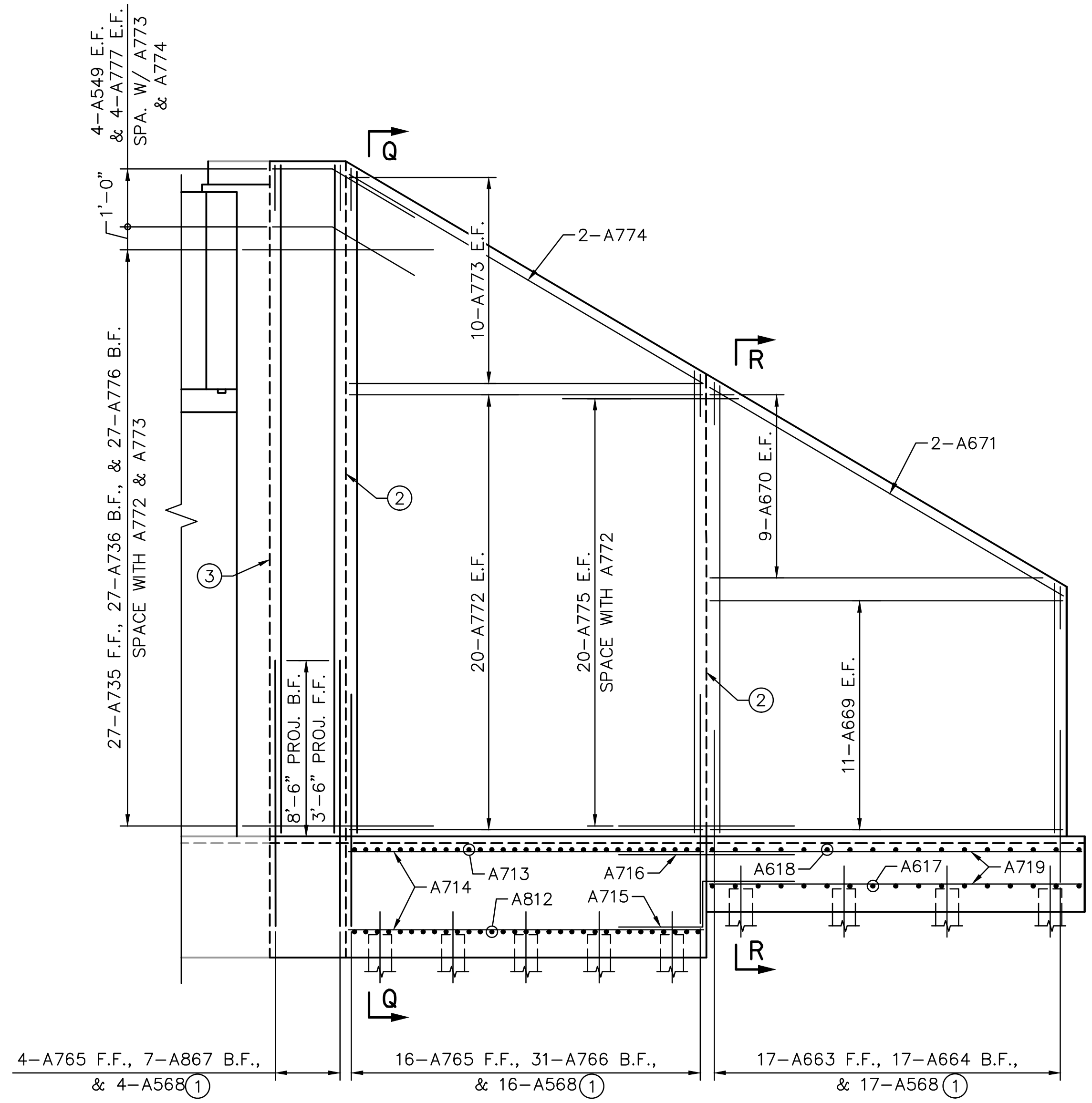
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
WEST ABUTMENT REINFORCEMENT 5

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-011

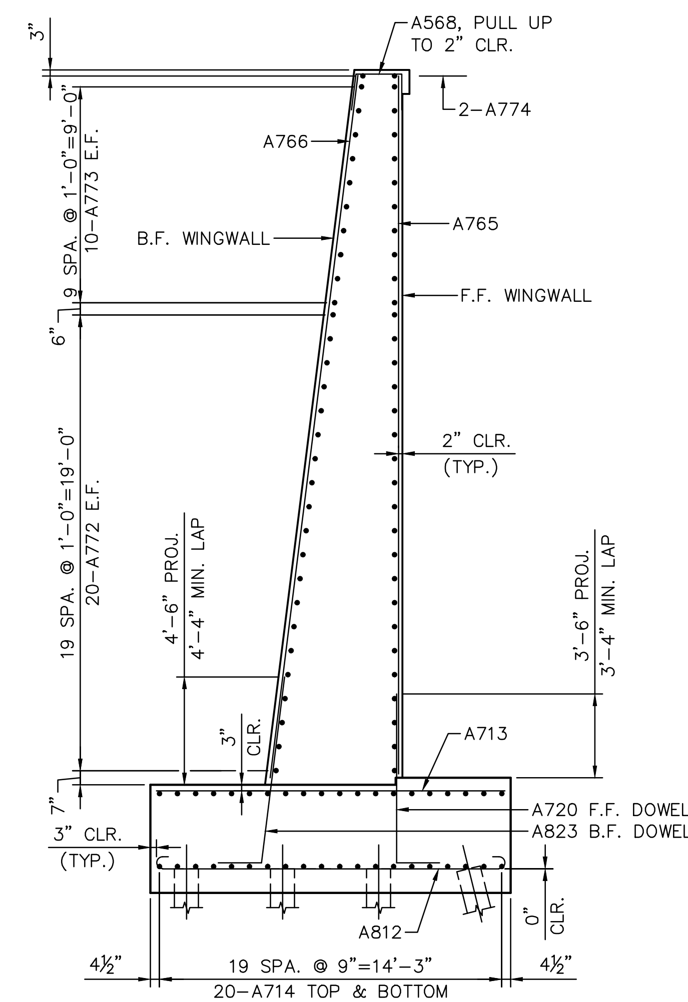
SHEET 15 OF 60



NORTHWEST WINGWALL PLAN



NORTHWEST WINGWALL ELEVATION



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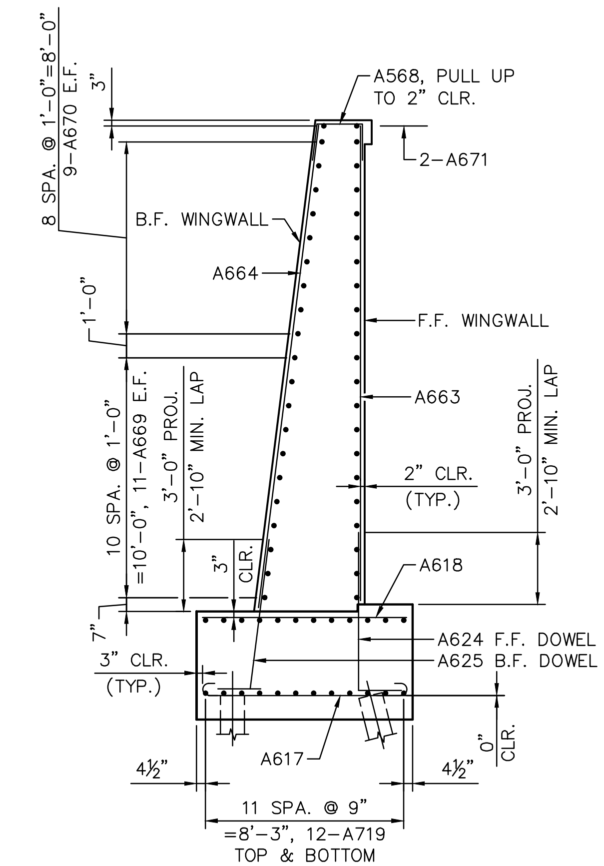


SECTION R–R

NOTES:

1. SPACE WITH DOWEL BARS.
2. CONSTRUCTION JOINT WITH 2" X 6" KEY.
3. PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

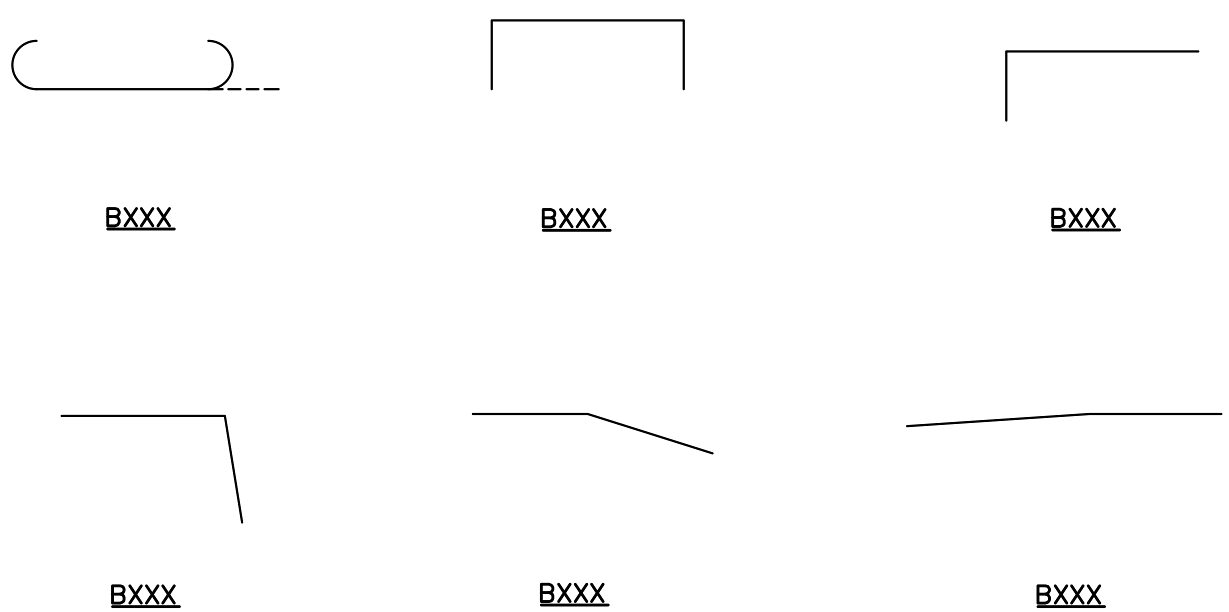
AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
WEST ABUTMENT REINFORCEMENT 6

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-012



BILL OF REINFORCEMENT FOR WEST ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
A901			0	FOOTING, BOT., TRANS.
A902			0	FOOTING, TOP, TRANS.
A903			0	FOOTING, BOT., TRANS.
A904			0	FOOTING, TOP, TRANS.
A905			0	FOOTING, BOT., TRANS.
A906			0	FOOTING, TOP, TRANS.
A707			0	FOOTING, LONG.
A708			0	FOOTING, LONG.
A709			0	FOOTING, LONG.
A910			0	FOOTING, TRANS.
A711			0	FOOTING, LONG. DOWEL
A812			0	NW WINGWALL, FTG., BOT., TRANS.
A713			0	NW WINGWALL, FTG., TOP, TRANS.
A714			0	NW WINGWALL, FTG., LONG.
A715			0	NW WINGWALL, FTG., LONG., DOWEL
A716			0	NW WINGWALL, FTG., LONG., DOWEL
A617			0	NW WINGWALL, FTG., BOT., TRANS.
A618			0	NW WINGWALL, FTG., TOP, TRANS.
A719			0	NW WINGWALL, FTG., LONG.
A720			0	F.F. DOWEL
A1121			0	STEM, B.F. DOWEL
A1122			0	WINGWALL, B.F. DOWEL
A823			0	NW WINGWALL, B.F. DOWEL
A624			0	NW WINGWALL, F.F. DOWEL
A625			0	NW WINGWALL, B.F. DOWEL
A726			0	STEM, VERT., F.F.
A927			0	STEM, VERT., B.F.
A728			0	STEM, HORIZ., F.F.
A729			0	STEM, HORIZ., B.F.
A730			0	STEM, HORIZ., F.F.
A731			0	STEM, LONG., HAUNCH DOWEL
A732			0	STEM, LONG., HAUNCH DOWEL
A733			0	STEM, LONG., DOWEL
A734			0	STEM, LONG., DOWEL
A735			0	STEM, LONG., DOWEL
A736			0	STEM, LONG., DOWEL
A637			0	STEM, LONG.
A538			0	STEM, TOP TIE
A539			0	STEM, TOP TIE
A540			0	PEDESTAL, TIE
A541			0	PEDESTAL, TIE
A542			0	BACKWALL, VERT., F.F.
A543			0	BACKWALL, VERT., F.F.
A744			0	BACKWALL, VERT., B.F.
A745			0	BACKWALL, VERT., B.F.
A546			0	BACKWALL, HORIZ., F.F.
A547			0	BACKWALL, HORIZ., B.F.
A548			0	BACKWALL, HORIZ.
A549			0	BACKWALL, HORIZ., B.F.

BILL OF REINFORCEMENT FOR WEST ABUTMENT CONT.

BAR	NO.	LENGTH	SHAPE	LOCATION
A550			0	MASKWALL, HORIZ.
A551			0	MASKWALL, HORIZ.
A552			0	BACKWALL, TOP TIE
A553			0	MASKWALL, TOP TIE
A554			0	HAUNCH, TOP TIE
A555			0	HAUNCH, TOP TIE
A756			0	HAUNCH, VERTICAL
A557			0	CURB, TOP TIE
A558			0	CURB, LONG.
A559			0	CURB, TOP TIE
A760			0	SW WINGWALL, VERT., F.F.
A1061			0	SW WINGWALL, VERT., B.F.
A562			0	SW WINGWALL, TOP TIE
A663			0	NW WINGWALL, VERT., F.F.
A664			0	NW WINGWALL, VERT., B.F.
A765			0	NW WINGWALL, VERT., F.F.
A766			0	NW WINGWALL, VERT., B.F.
A867			0	NW WINGWALL, VERT., B.F.
A568			0	NW WINGWALL, TOP TIE
A669			0	NW WINGWALL, LONG.
A670			0	NW WINGWALL, LONG.
A671			0	NW WINGWALL, LONG.
A772			0	NW WINGWALL, LONG.
A773			0	NW WINGWALL, LONG.
A774			0	NW WINGWALL, LONG.
A775			0	NW WINGWALL, LONG. DOWEL
A776			0	NW WINGWALL, LONG. DOWEL
A777			0	NW WINGWALL, LONG. DOWEL

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DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

AECOM Kimley»Horn

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METROPOLITAN COUNCIL

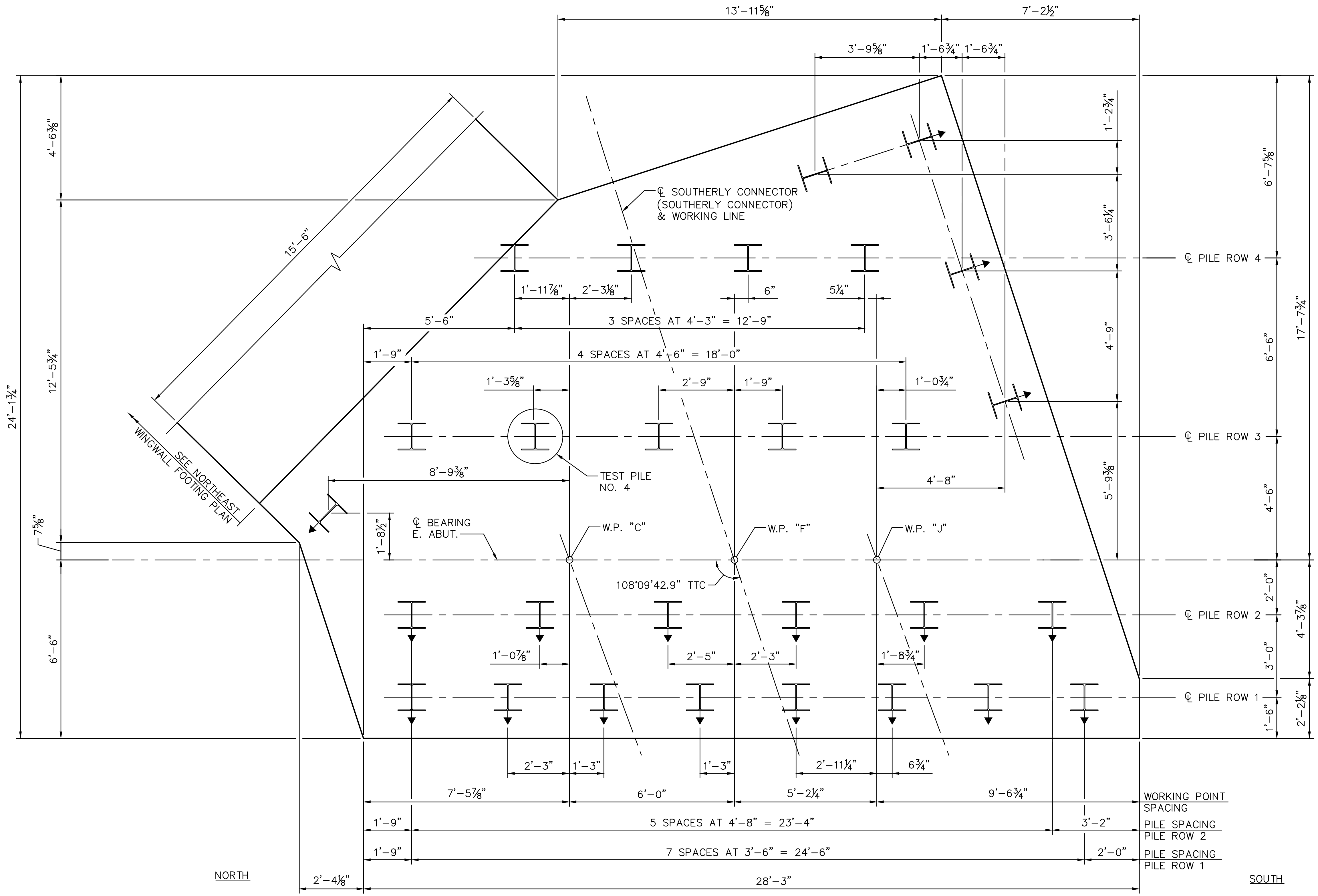
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
WEST ABUTMENT REINFORCEMENT 7

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-ABT-013

SHEET 17 OF 60



FOOTING PLAN

EAST ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
DEAD LOAD + EARTH PRESSURE	62.0
LIVE LOAD	32.0
* DESIGN LOAD	94.0

* BASED ON GROUP VI LOADING (SERVICE LOAD) PER AREMA CHAPTER 8 SECTION 2.2.4

REQUIRED PILE TEST LOAD	
FIELD CONTROL METHOD	TEST LOAD
PDA	188.0

GENERAL PILE NOTES:

1 HP12x53 STEEL TEST PILE 65 FT. LONG
27 HP12x53 STEEL PILES EST. 65 FT. LENGTH
28 HP12x53 STEEL PILES REQ'D FOR EAST ABUT.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

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AECOM Kimley»Horn

METROPOLITAN COUNCIL

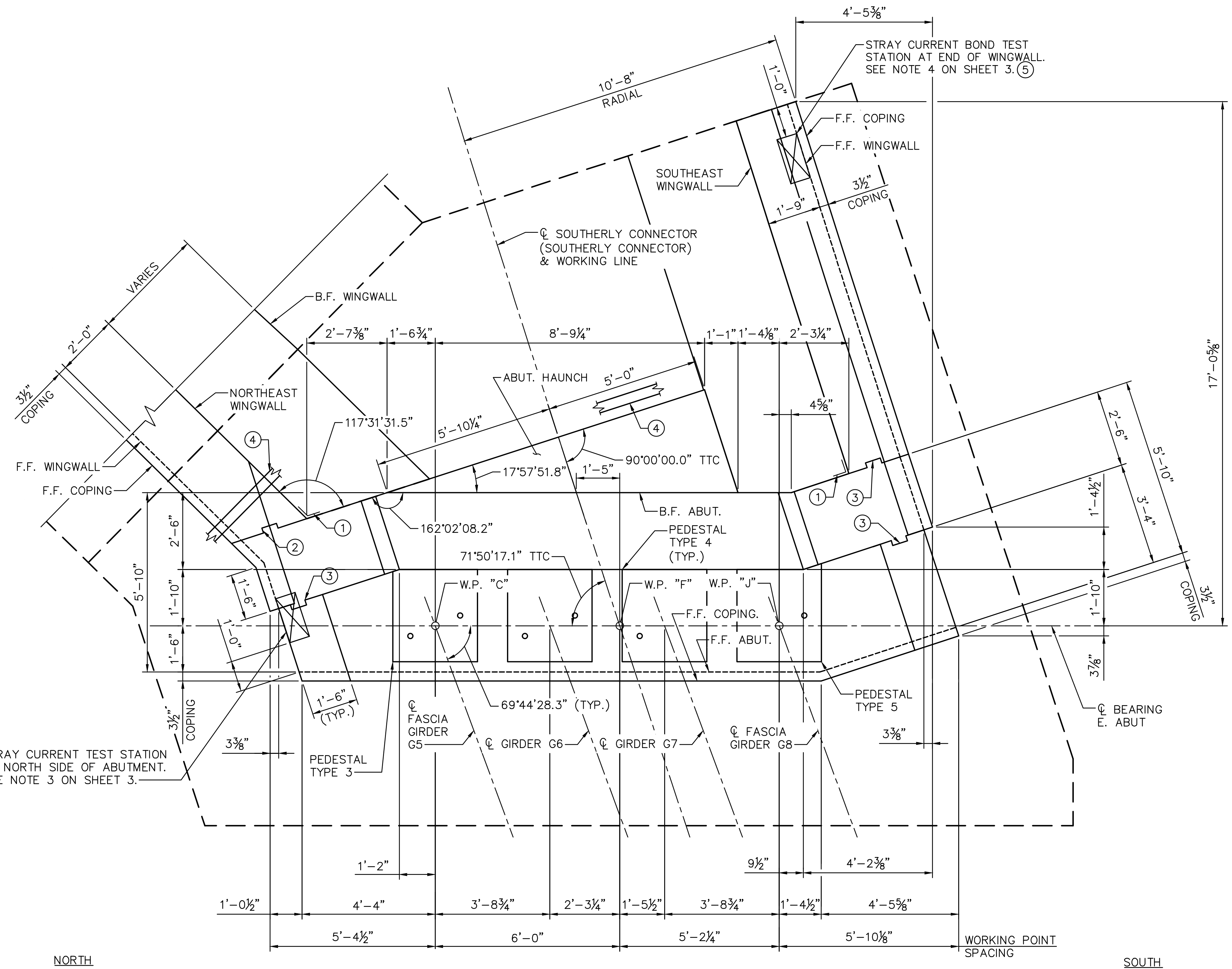
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
EAST ABUTMENT DETAILS 1

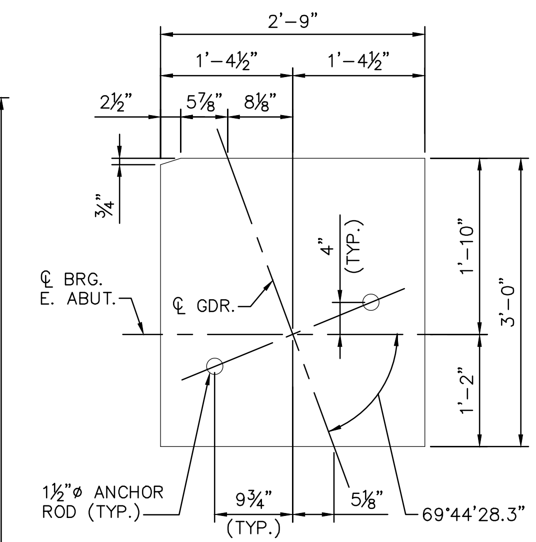
DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-ABT-014

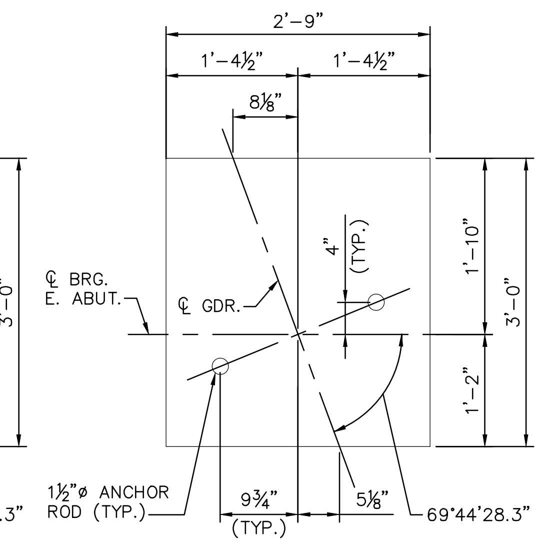
SHEET 18 OF 60



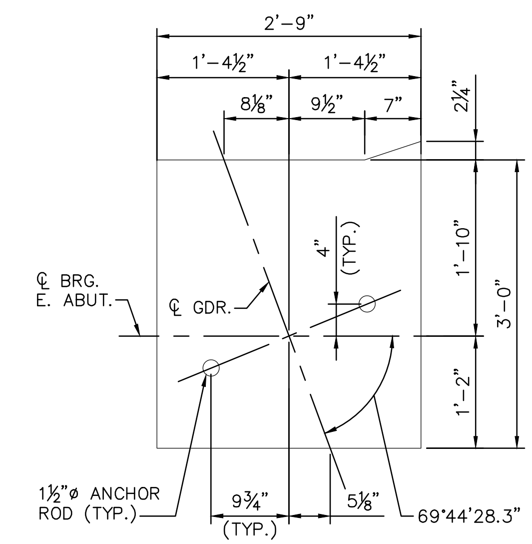
PLAN



PEDESTAL DETAIL – TYPE 3



PEDESTAL DETAIL – TYPE 4



PEDESTAL DETAIL – TYPE 5

NOTES:

1. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
2. PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY CENTERED IN WALL INTERFACE.
3. CONSTRUCTION JOINT WITH 2" X 6" KEY CENTERED IN WALL INTERFACE.
4. 4" DIA. PERFORATED DRAIN PIPE. SEE DETAIL B910.
5. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWINGS E0-SYS-CORR-DTL-001 TO 018 FOR DETAILS. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT. (TYP. FOR ALL BLOCKOUTS).

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

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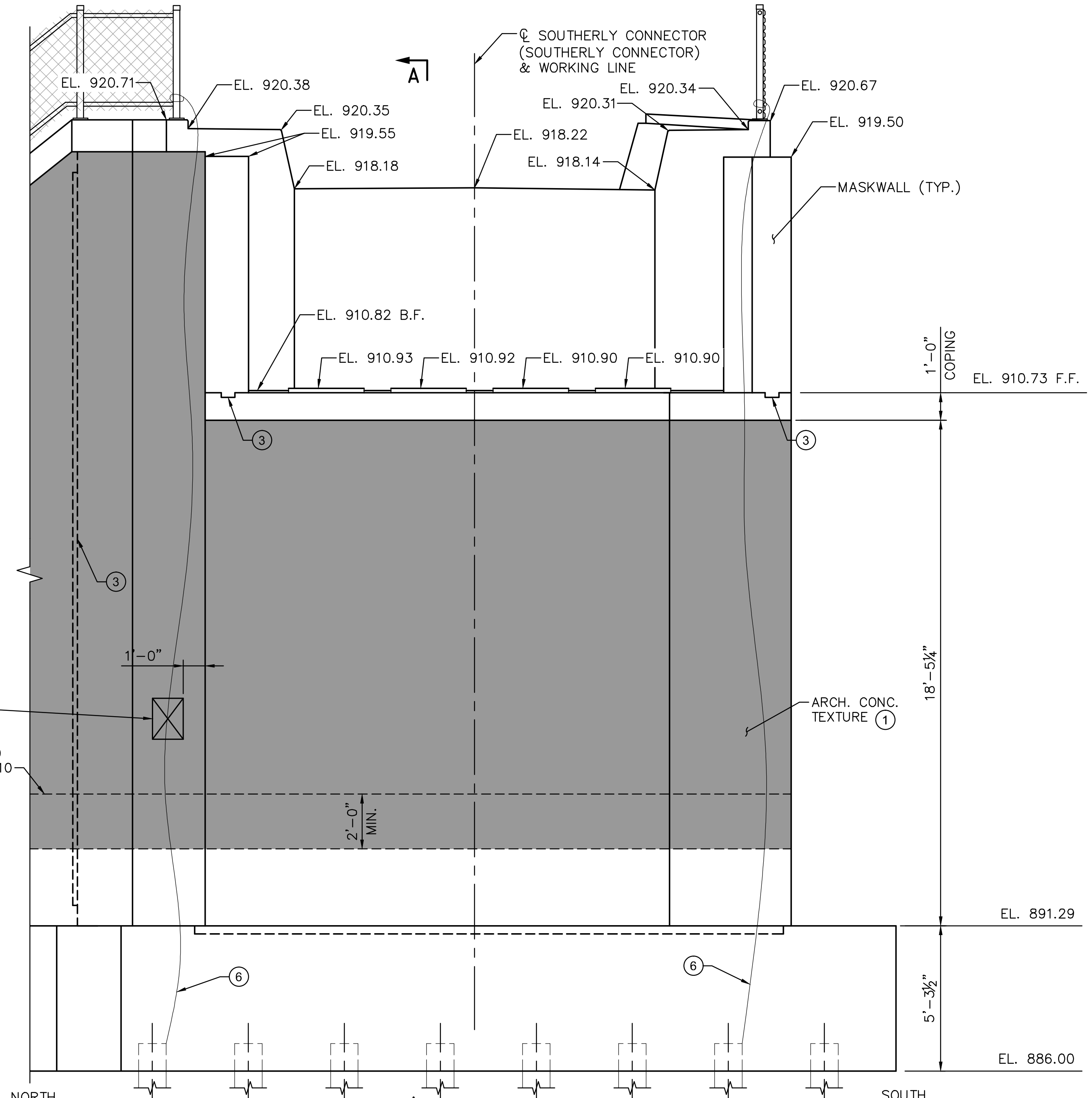
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

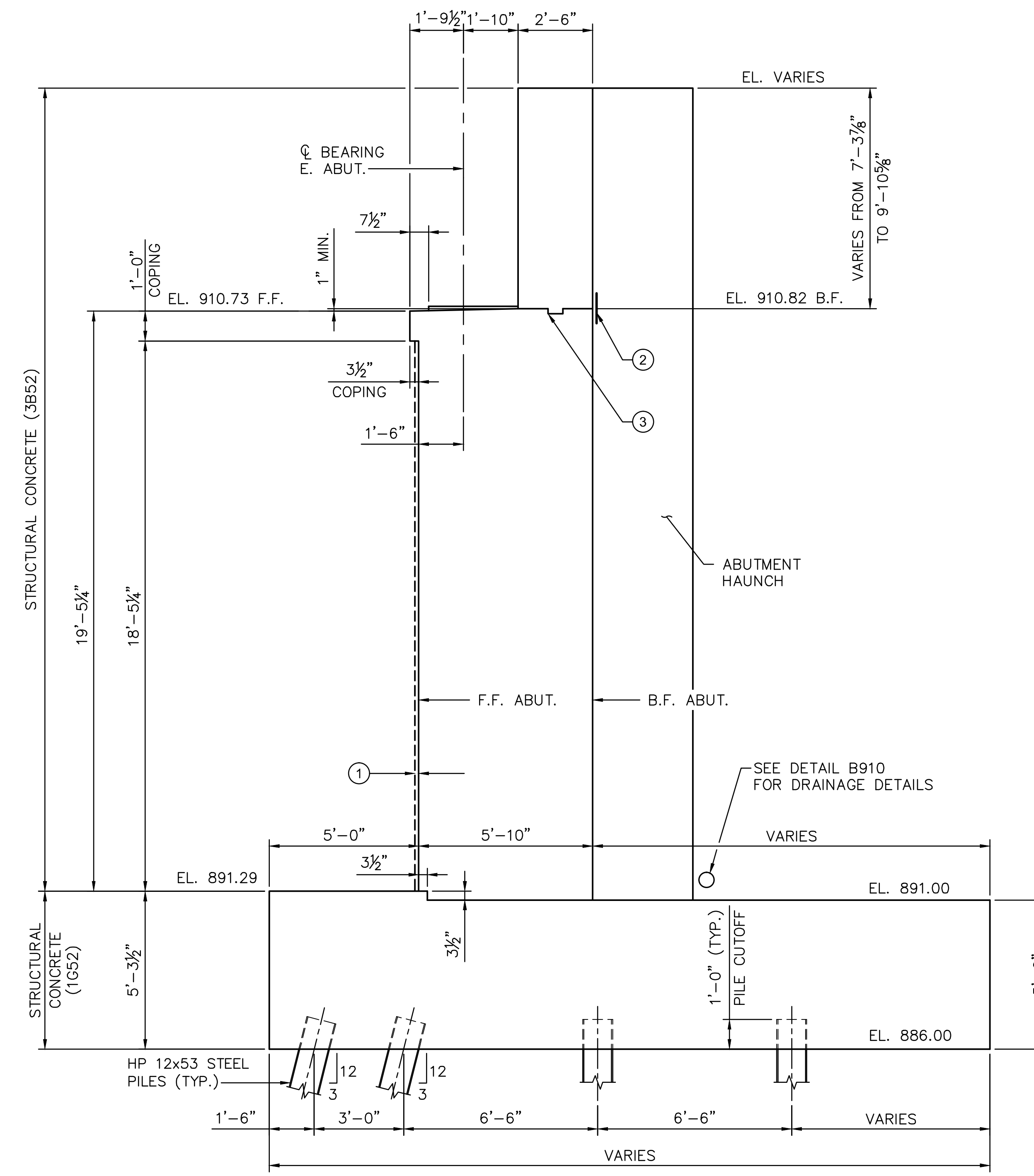
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
EAST ABUTMENT DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-015

SHEET 19 OF 60



ELEVATION



SECTION A-A

NOTES:

SEE SHEET 21 FOR SOUTHEAST WINGWALL DETAILS.

SEE SHEETS 22 & 23 FOR NORTHEAST WINGWALL DETAILS.

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
3. PERMISSIBLE CONSTRUCTION JOINT WITH 2" x 6" KEY.
4. CONSTRUCTION JOINT WITH 2" X 6" KEY CENTERED IN WALL INTERFACE.
5. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWINGS E0-SYS-CORR-DTL-001 TO 018 FOR DETAILS. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT. (TYP. FOR ALL BLOCKOUTS).
6. ATTACH WIRE FENCE ANCHORAGE TO PILE WITH SOLID NO. 6 GAGE COPPER WIRE WITH AN APPROVED TYPE CLAMP OR BRAZING (ONE ANCHORAGE PER END OF RAIL). GROUND BOTH SIDES OF EXPANSION JOINT PIPE SLEEVE IF PRESENT. PAINT EXPOSED PORTION OF WIRE GRAY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

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METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
EAST ABUTMENT DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-016

SHEET 20 OF 60

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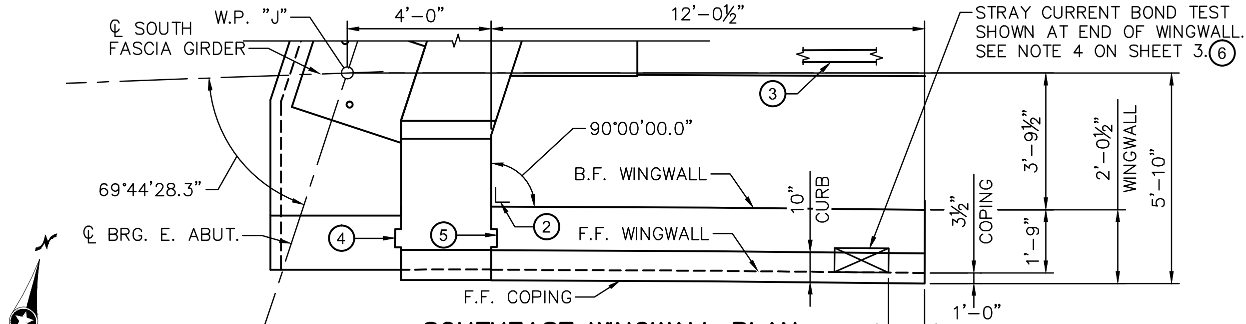
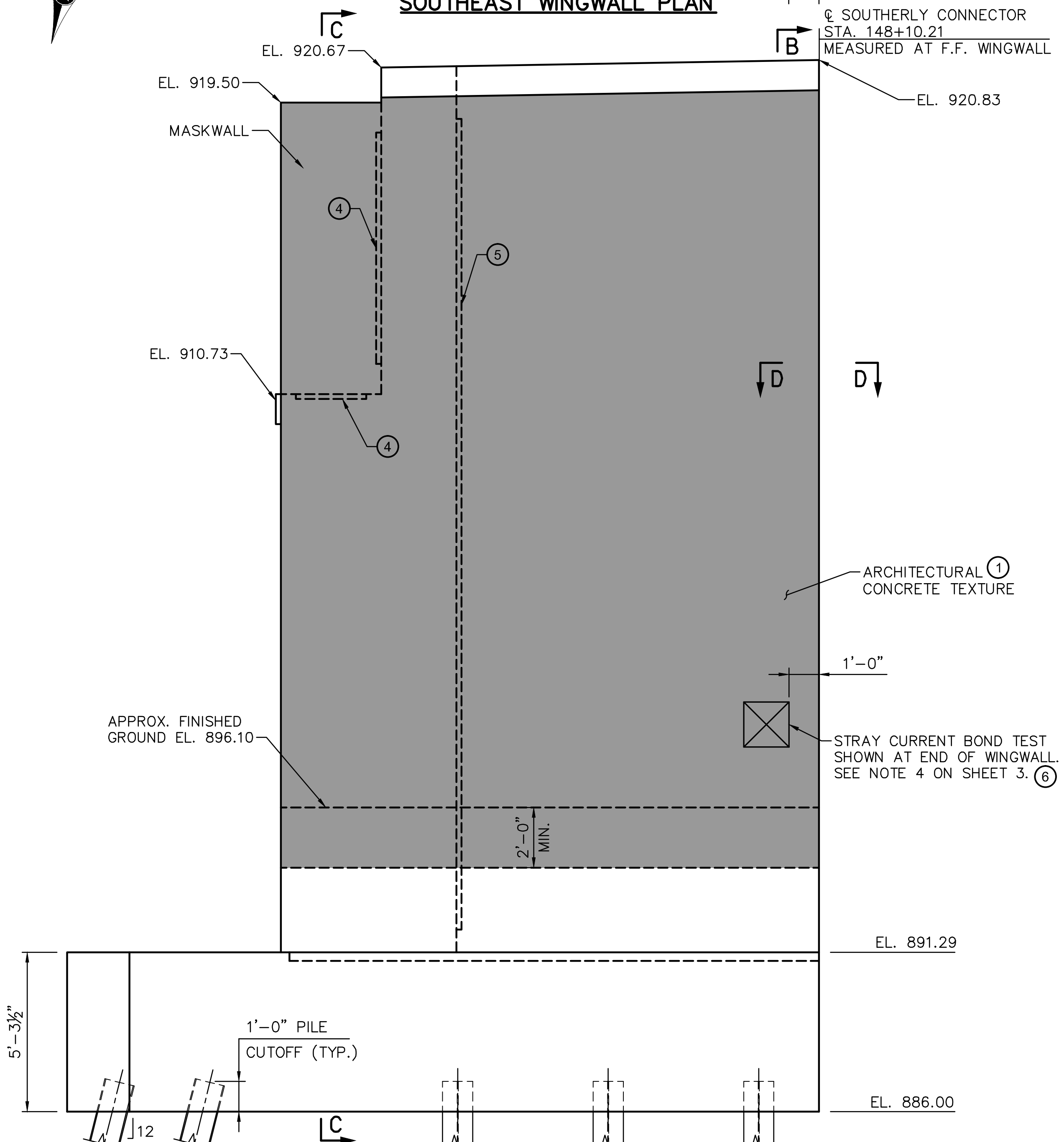
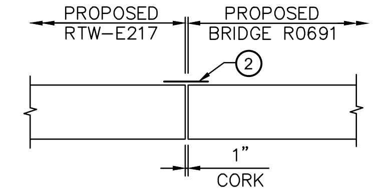


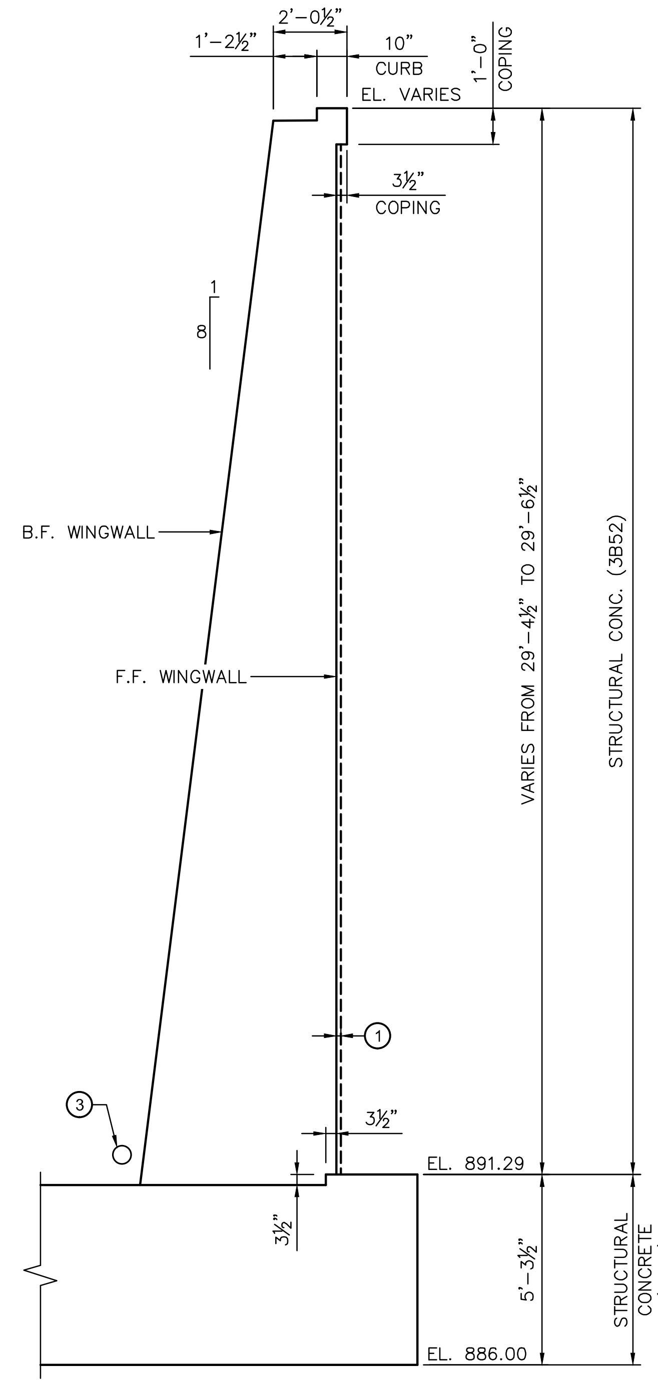
SOUTHEAST WINGWALL PLAN



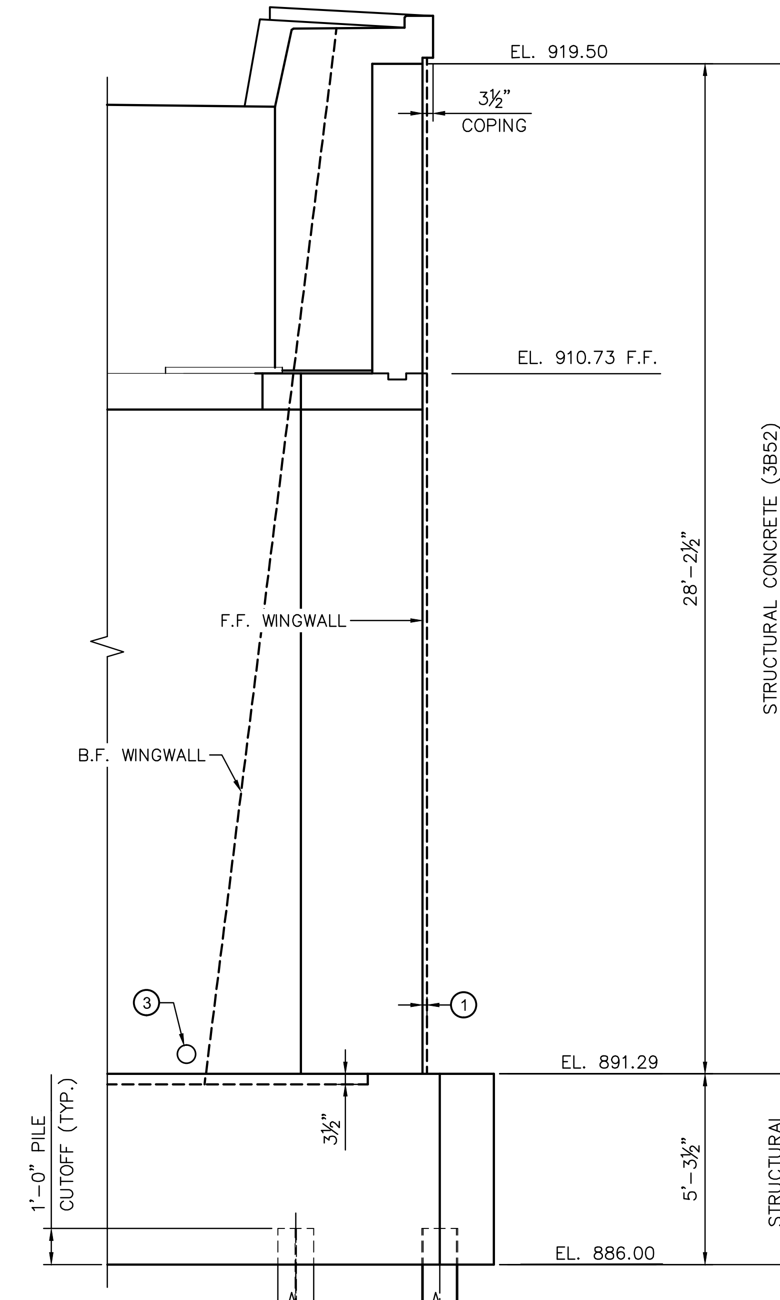
SOUTHEAST WINGWALL ELEVATION



SECTION D-D



SECTION B-B



SECTION C-C

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
3. SEE DETAIL B910 FOR DRAINAGE DETAILS.
4. PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY.
5. CONSTRUCTION JOINT WITH 2" X 6" KEY CENTERED IN WALL INTERFACE.
6. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWINGS E0-SYS-CORR-DTL-001 TO 018 FOR DETAILS. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT. (TYP. FOR ALL BLOCKOUTS).

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
EAST ABUTMENT DETAILS 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-017

SHEET 21 OF 60

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NORTHEAST WINGWALL COMPUTED PILE LOAD - TONS/PILE	
DEAD LOAD + EARTH PRESSURE	31.6
LIVE LOAD	22.5
* DESIGN LOAD	54.1
* BASED ON GROUP I LOADING (SERVICE LOAD) PER AREMA CHAPTER 8 SECTION 2.2.4	

REQUIRED PILE TEST LOAD - TONS/PILE	
FIELD CONTROL METHOD	TEST LOAD
PDA	108.2

GENERAL PILE NOTES:

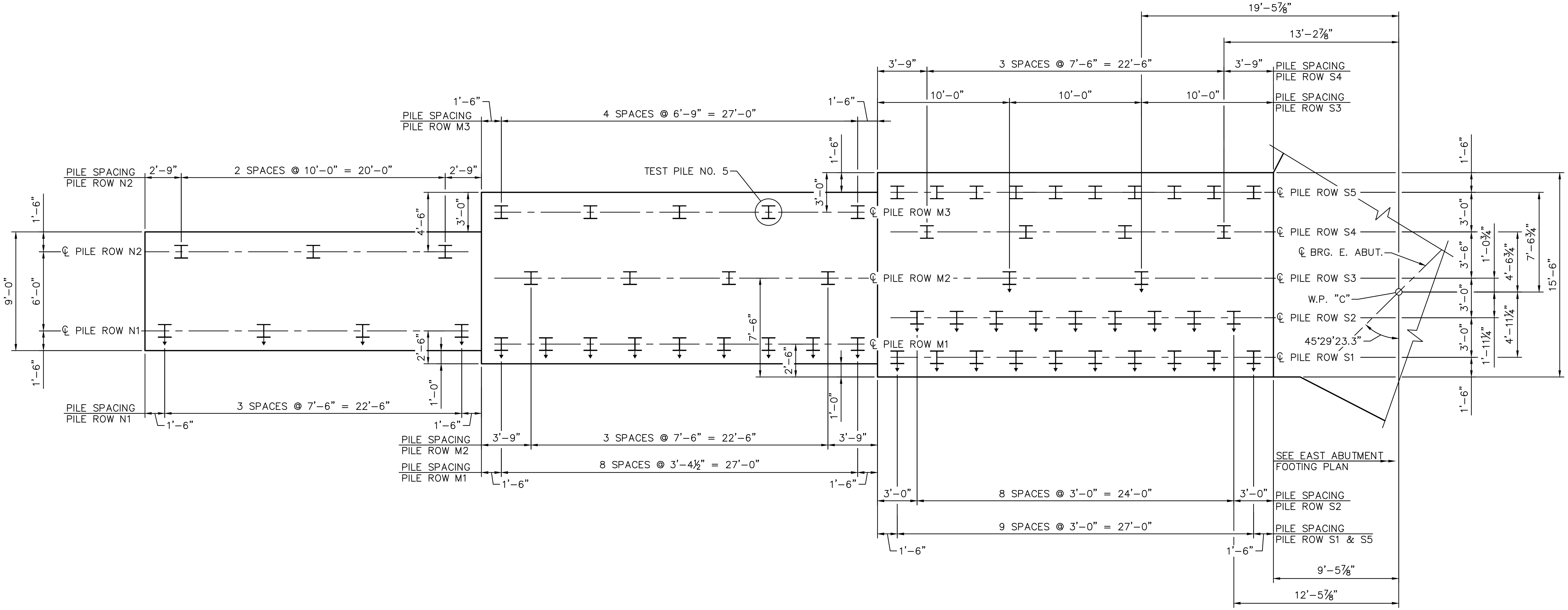
1 HP12x53 STEEL TEST PILE 65 FT. LONG
59 HP12x53 STEEL PILES EST. 65 FT. LENGTH
60 HP12x53 STEEL PILES REQ'D FOR NORTHEAST WINGWALL

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



NORTHEAST WINGWALL FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

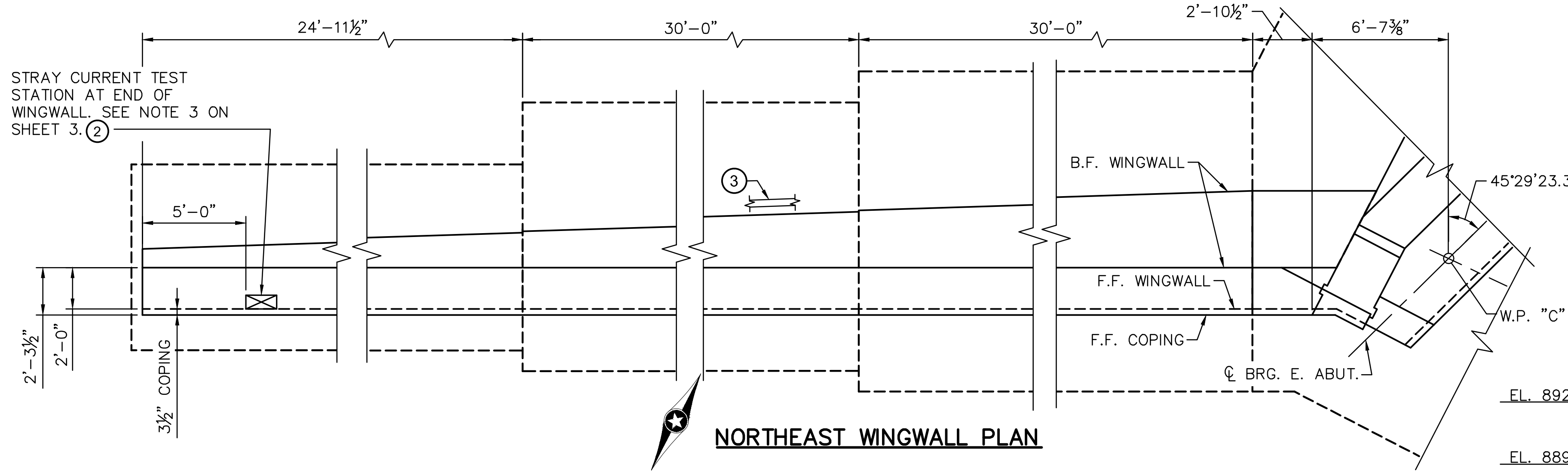
AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

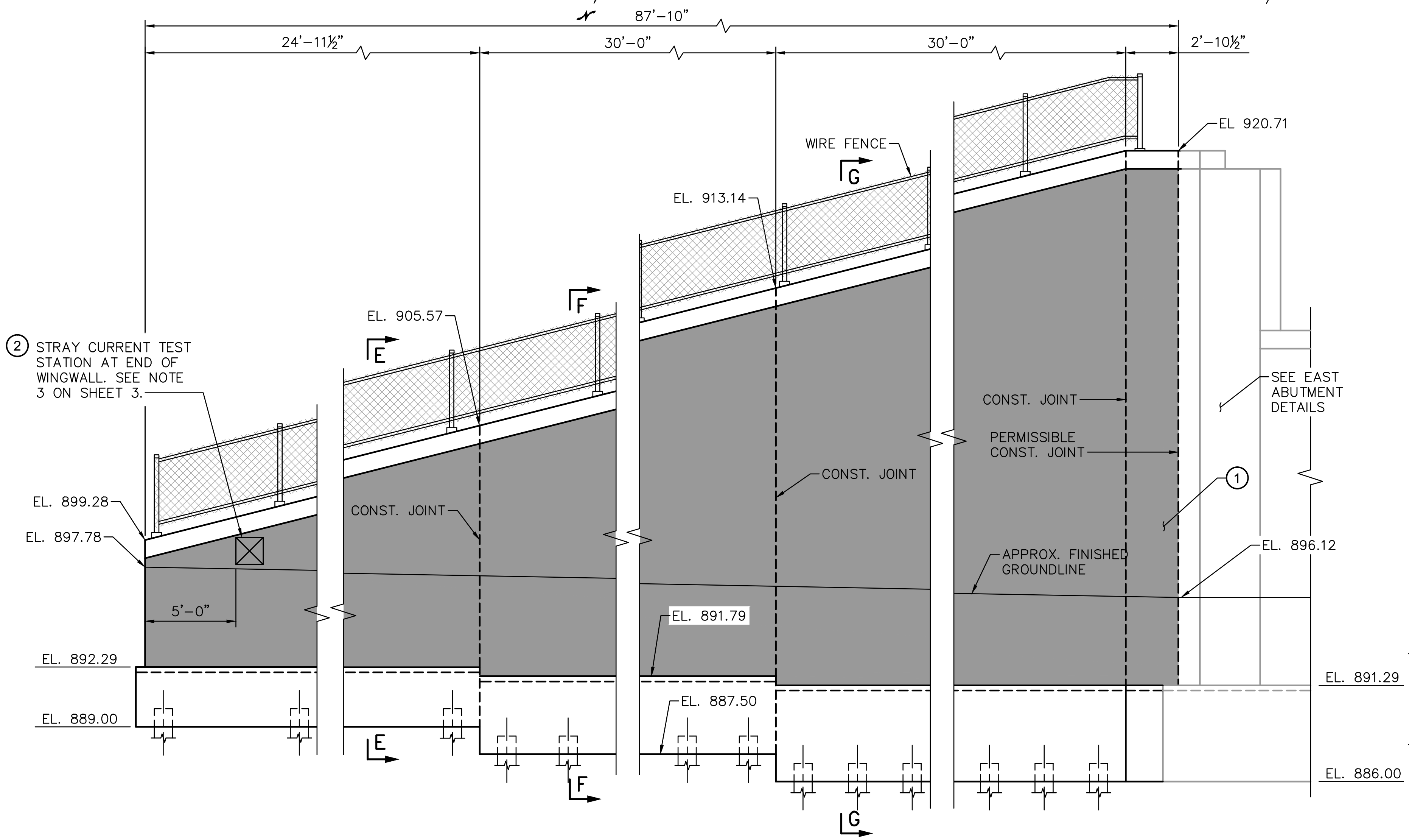
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
EAST ABUTMENT DETAILS 5

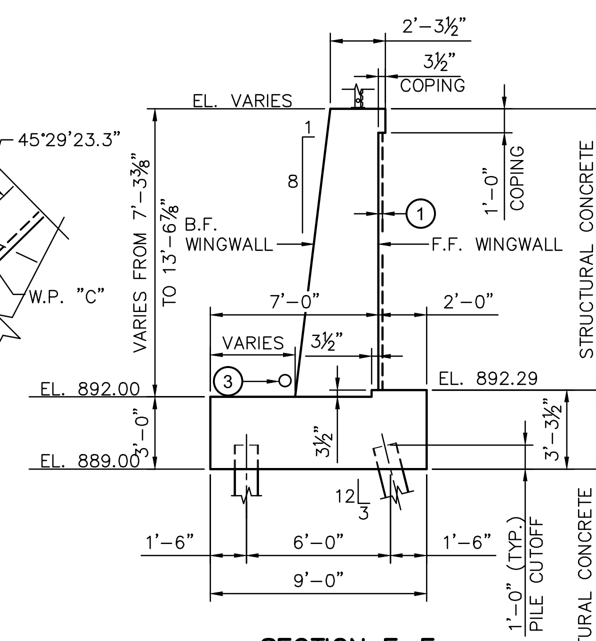
DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-018



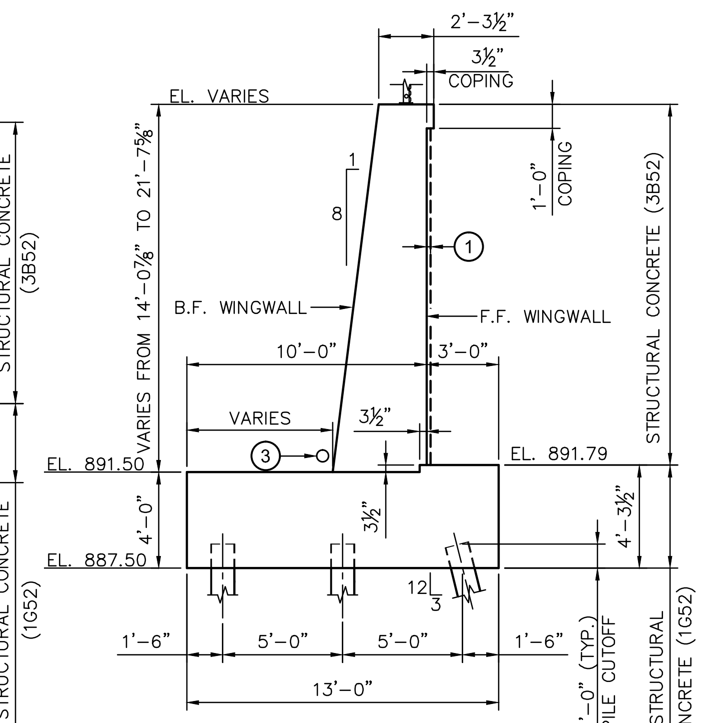
NORTHEAST WINGWALL PLAN



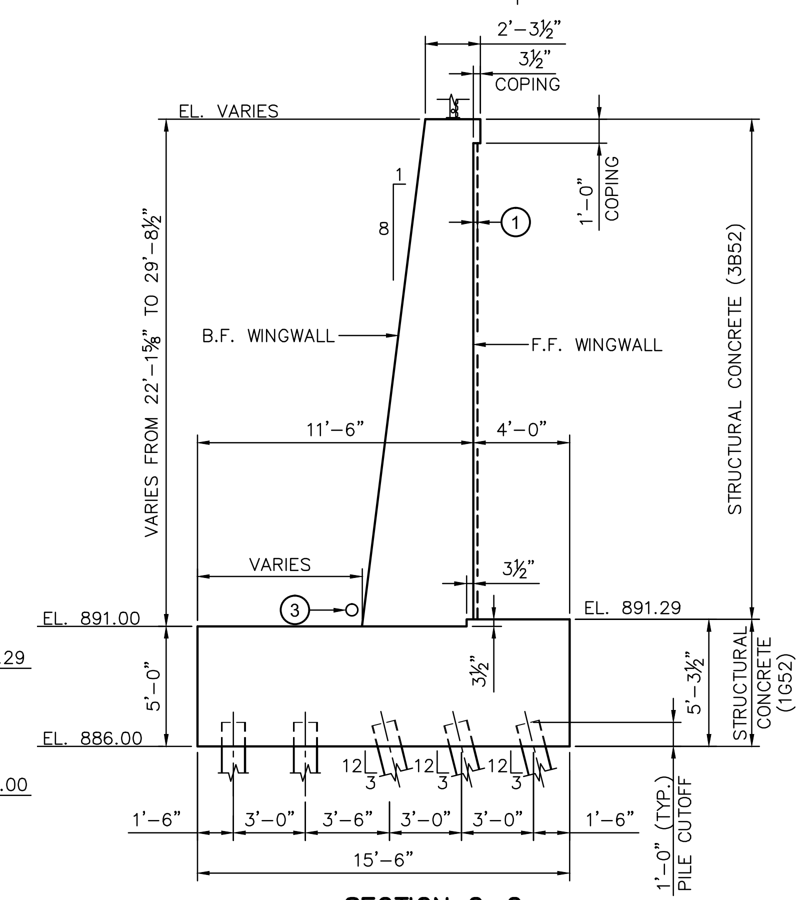
NORTHEAST WINGWALL ELEVATION



SECTION E-E



SECTION F-F



SECTION G-G

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWINGS E0-SYS-CORR-DTL-001 TO 018 FOR DETAILS. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT. (TYP. FOR ALL BLOCKOUTS).
3. 4" DIA. PERFORATED DRAIN PIPE. SEE DETAIL B910.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

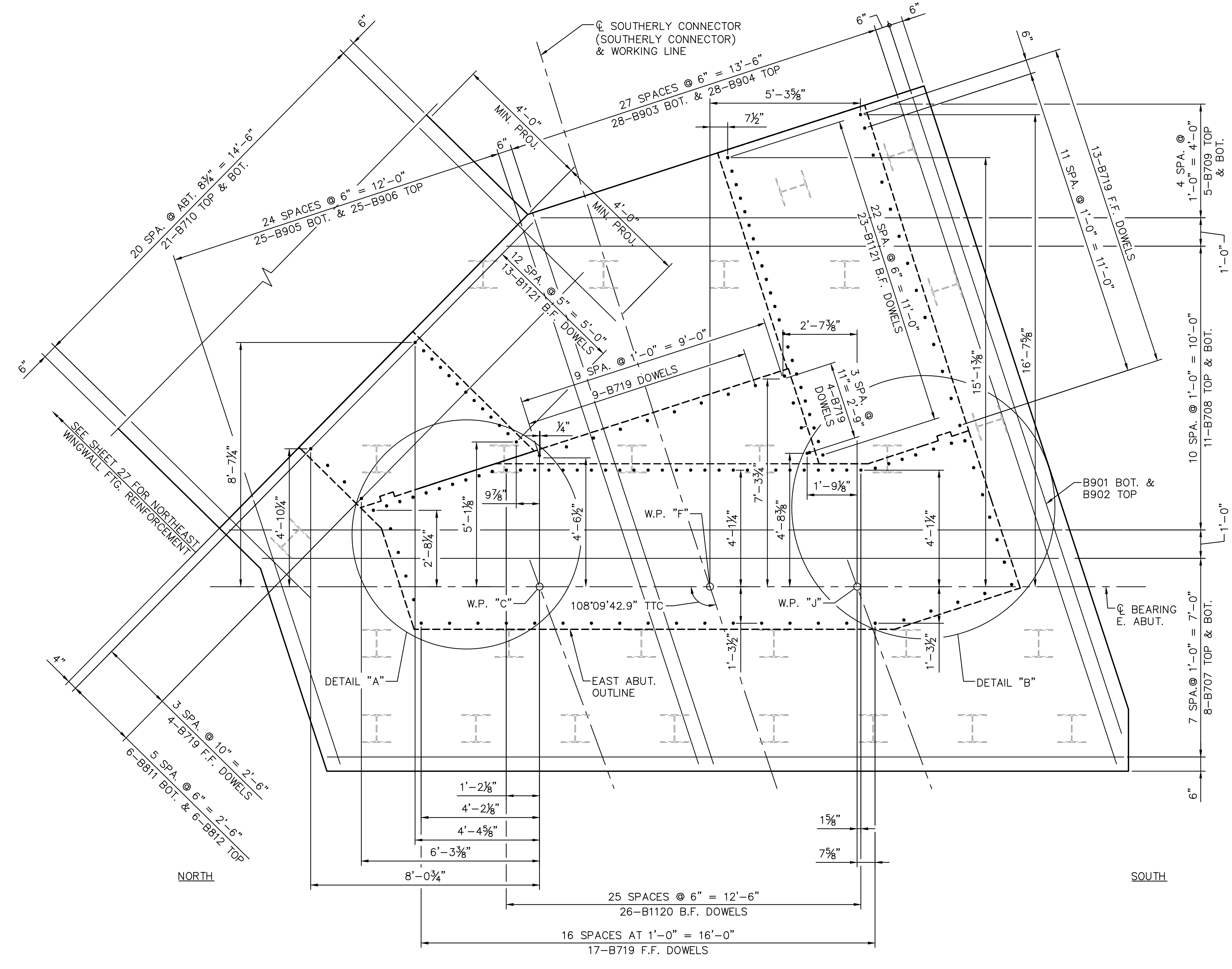
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

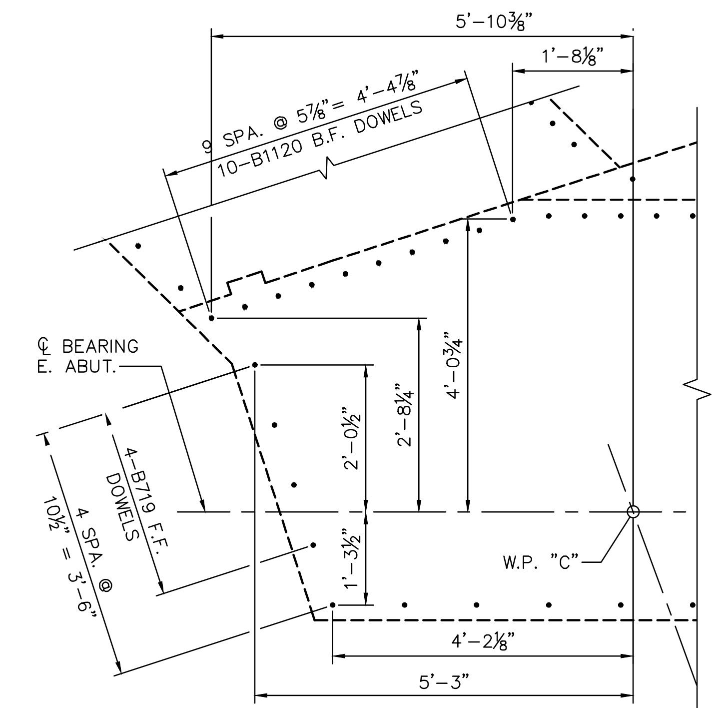
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
EAST ABUTMENT DETAILS 6

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-019

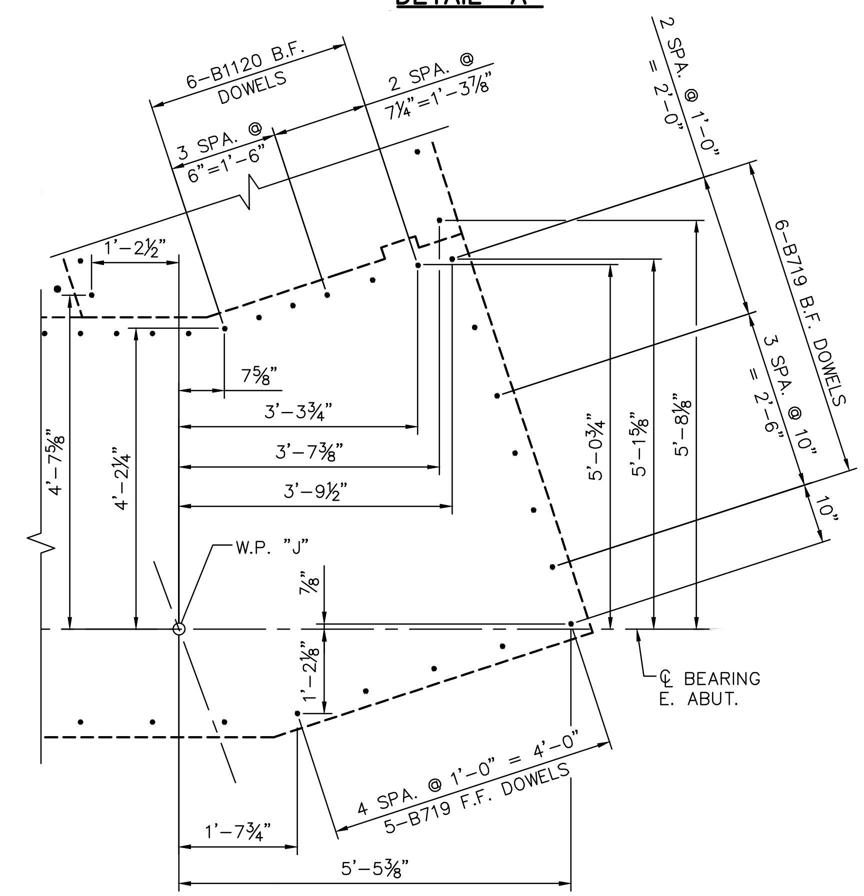
SHEET 23 OF 60



FOOTING PLAN



DETAIL "A"



DETAIL "B"

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

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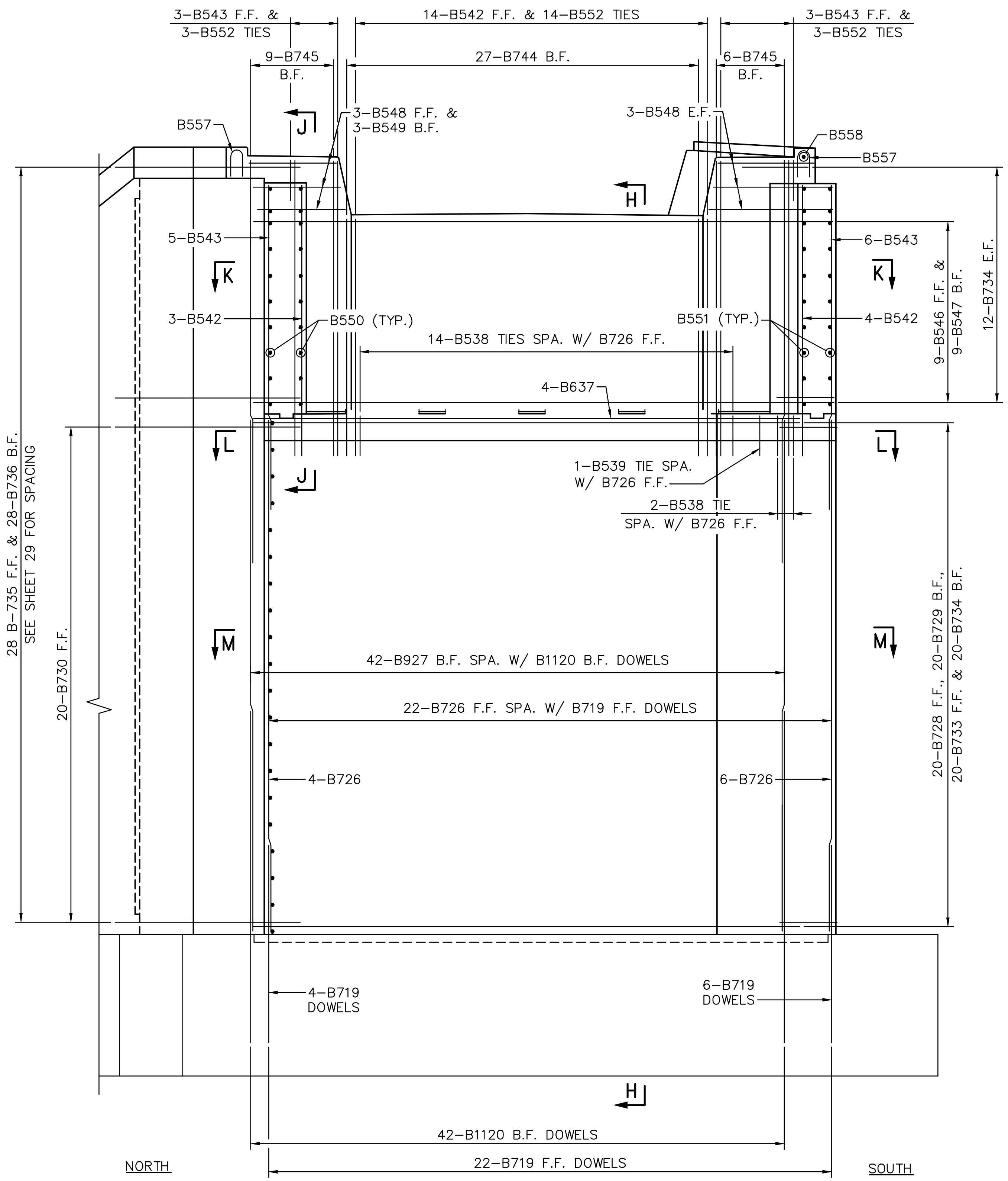
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

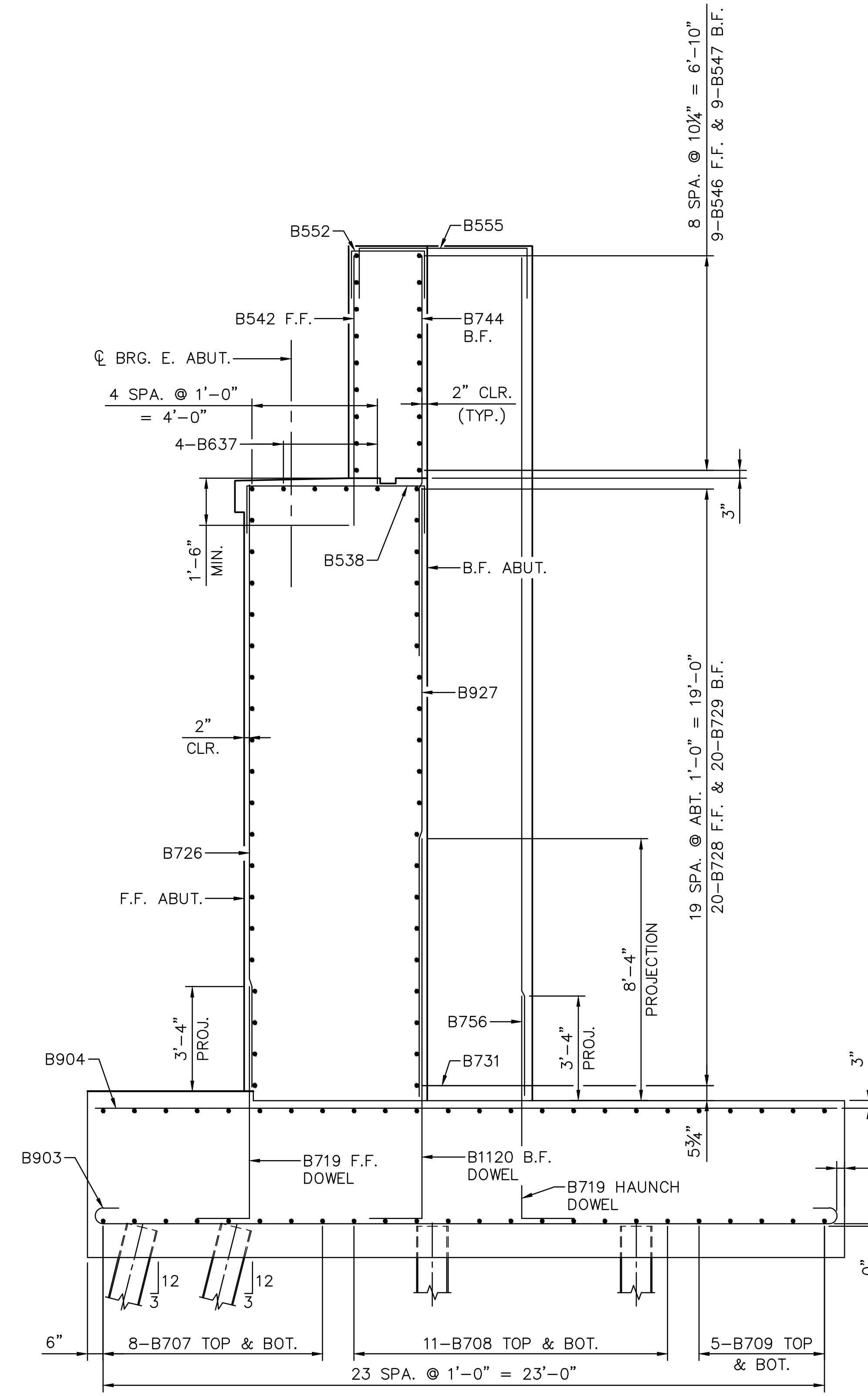
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
EAST ABUTMENT REINFORCEMENT 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-020

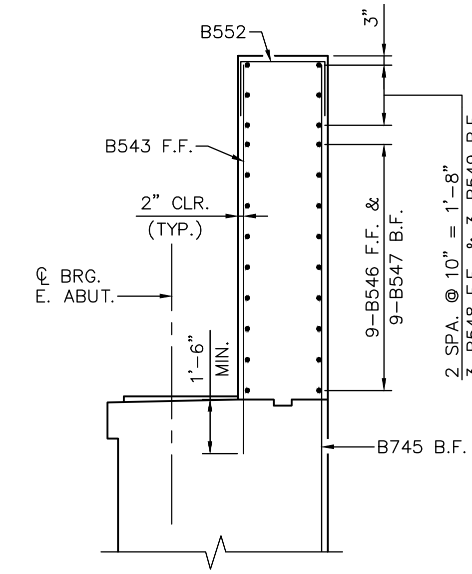
SHEET 24 OF 60



ELEVATION

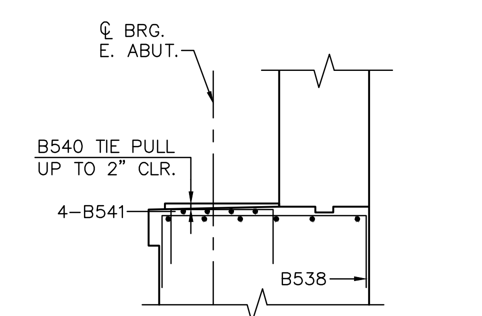


SECTION H-H



SECTION J-J

NOTE: ABUTMENT HAUNCH NOT SHOWN FOR CLARITY



TYPICAL PEDESTAL SECTION

NOTE: ONLY PEDESTAL AND SEAT REINFORCEMENT SHOWN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

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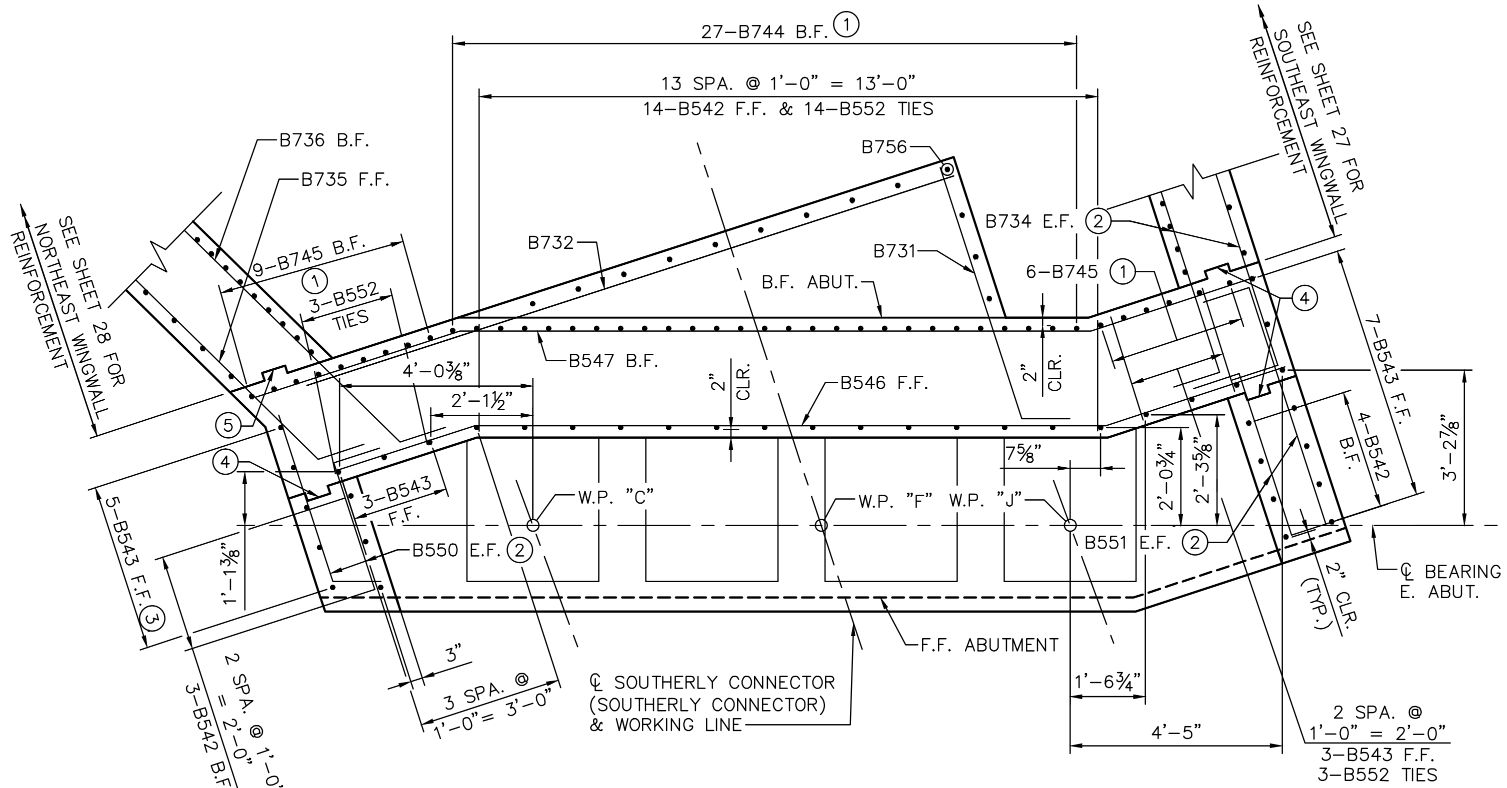
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

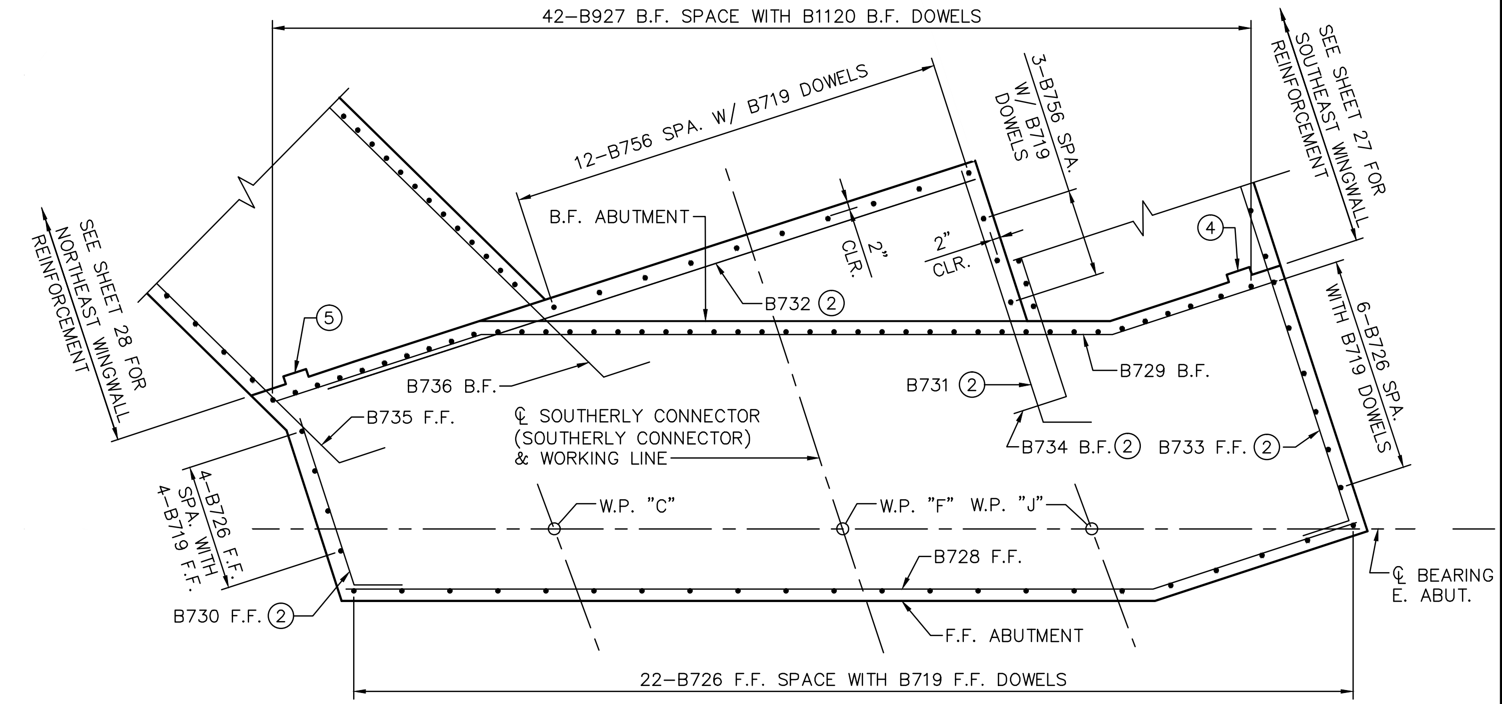
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
EAST ABUTMENT REINFORCEMENT 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-021

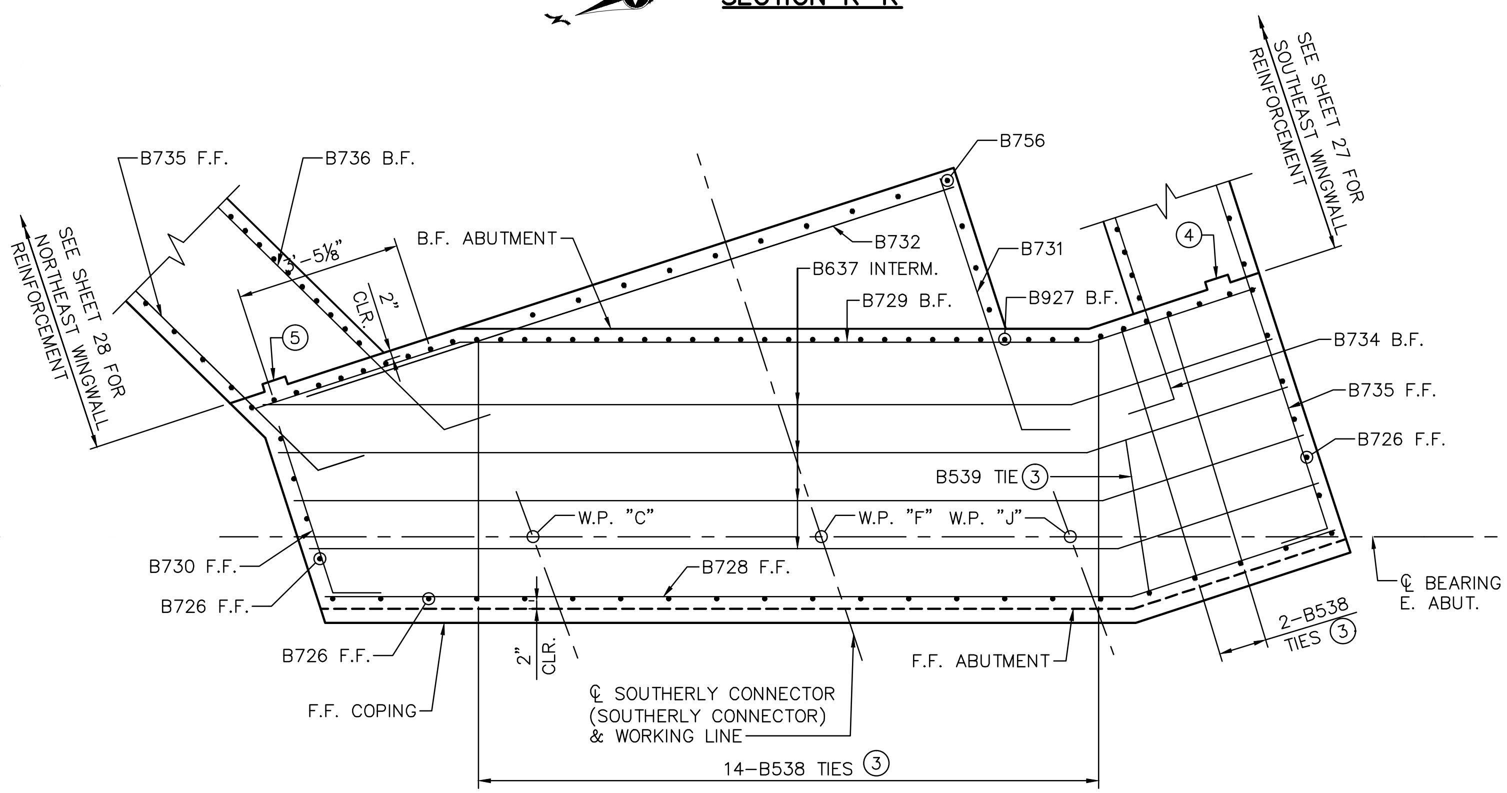
SHEET 25 OF 60



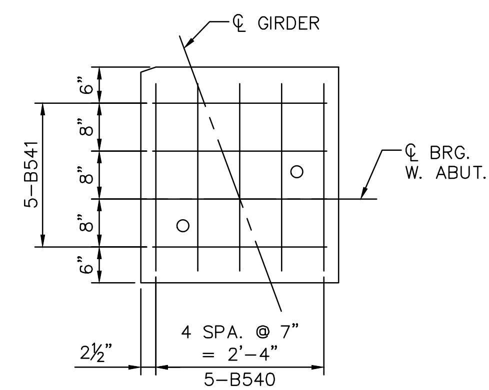
SECTION K-K



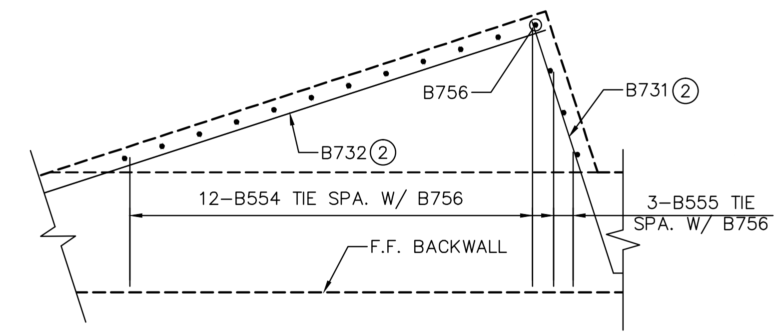
SECTION M-M



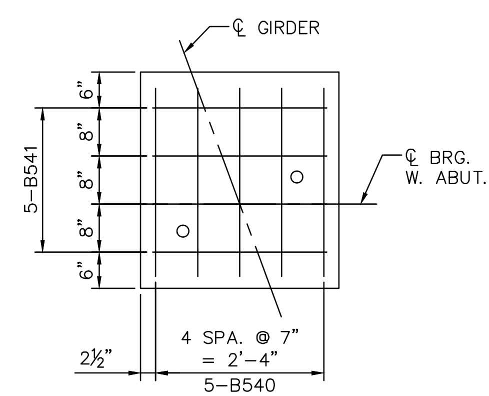
SECTION L-L



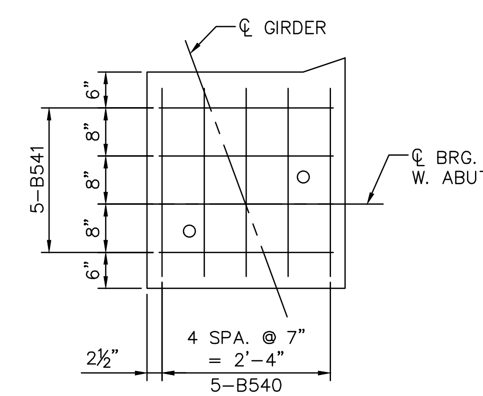
PEDESTAL PLAN - TYPE 1



HAUCH TOP REINFORCEMENT DETAIL



PEDESTAL PLAN - TYPE 2



PEDESTAL PLAN - TYPE 3

NOTES:

1. SPACE WITH B927 B.F.
2. SPACE WITH B728 F.F., B729 B.F., B546 F.F. & B547 B.F.
3. SPACE AS SHOWN WITH B726 F.F.
4. CONSTRUCTION JOINT WITH 2" X 6" KEY.
5. PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

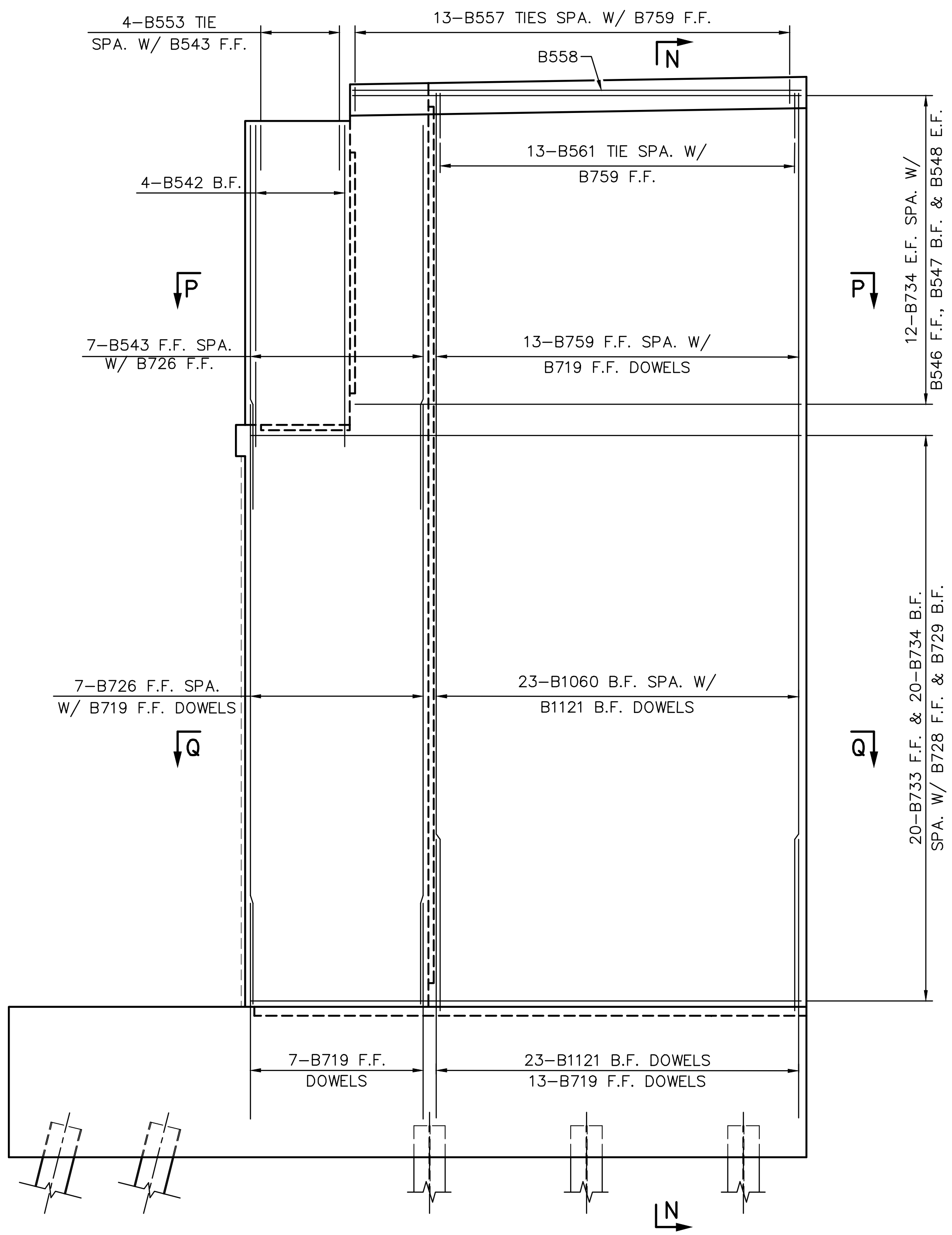
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

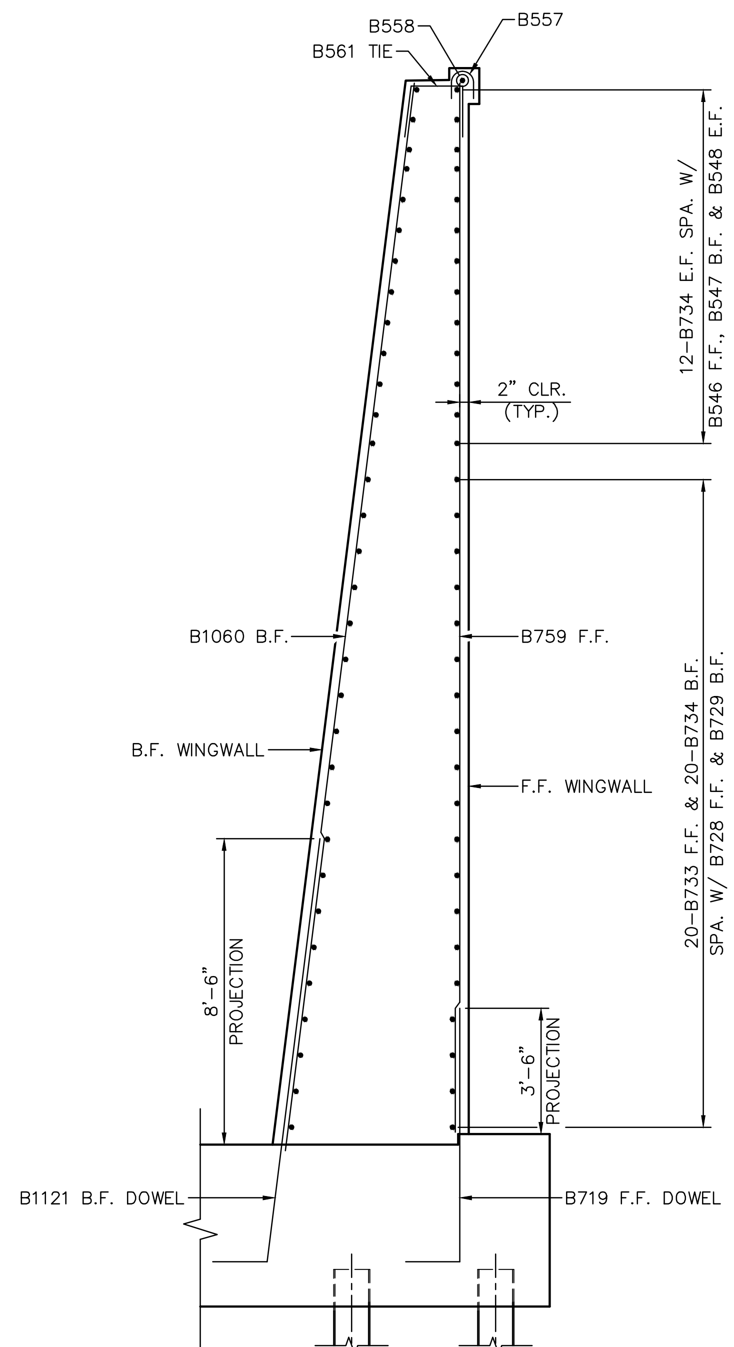
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
EAST ABUTMENT REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-ABT-022

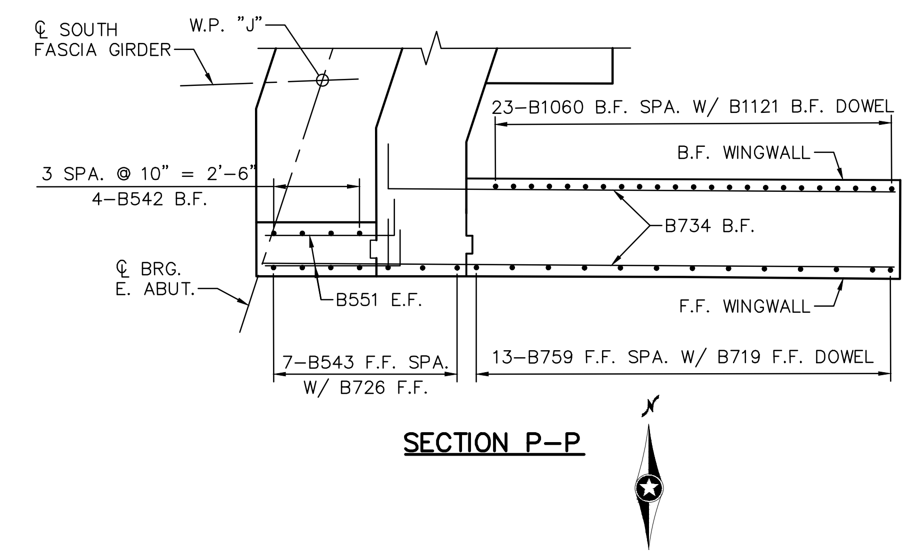
SHEET 26 OF 60



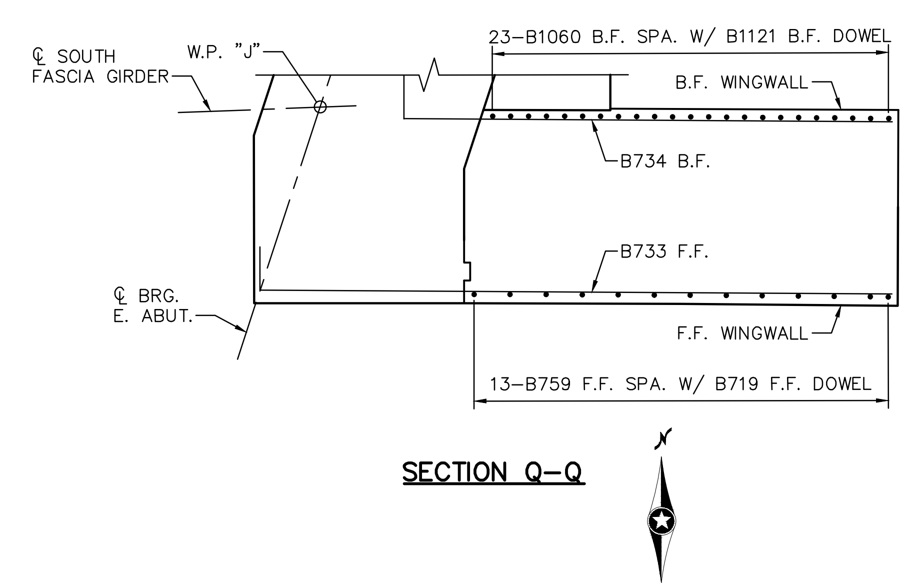
SOUTHEAST WINGWALL ELEVATION



SECTION N-N



SECTION P-P



SECTION Q-Q

Jan. 18 2016 03:21 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SOCO-FRT\CBRR0691-BRG-ABT-023.dwg By: Connor.Smith

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

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METROPOLITAN COUNCIL

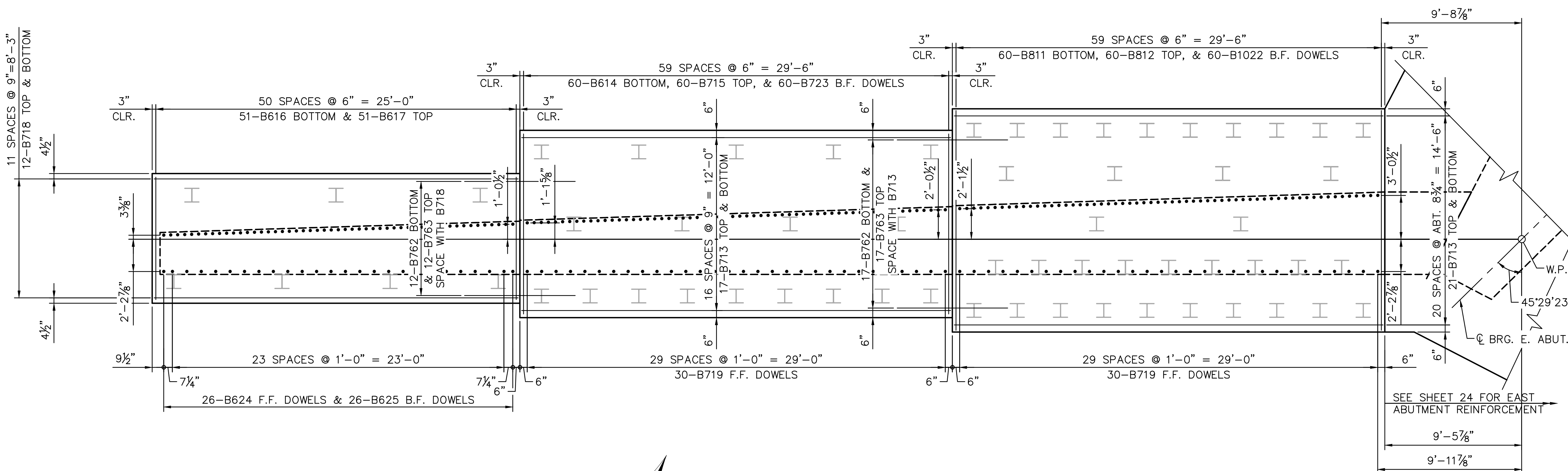
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
EAST ABUTMENT REINFORCEMENT 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-ABT-023

SHEET 27 OF 60



NORTHEAST WINGWALL FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

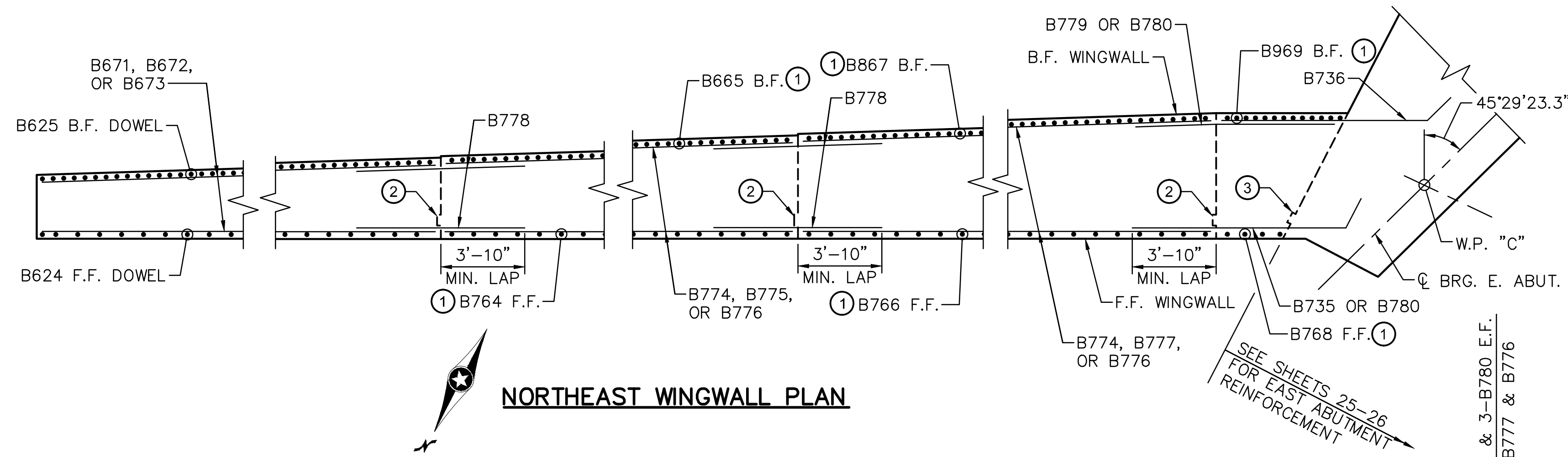
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
EAST ABUTMENT REINFORCEMENT 5

DISCIPLINE: STRUCTURES

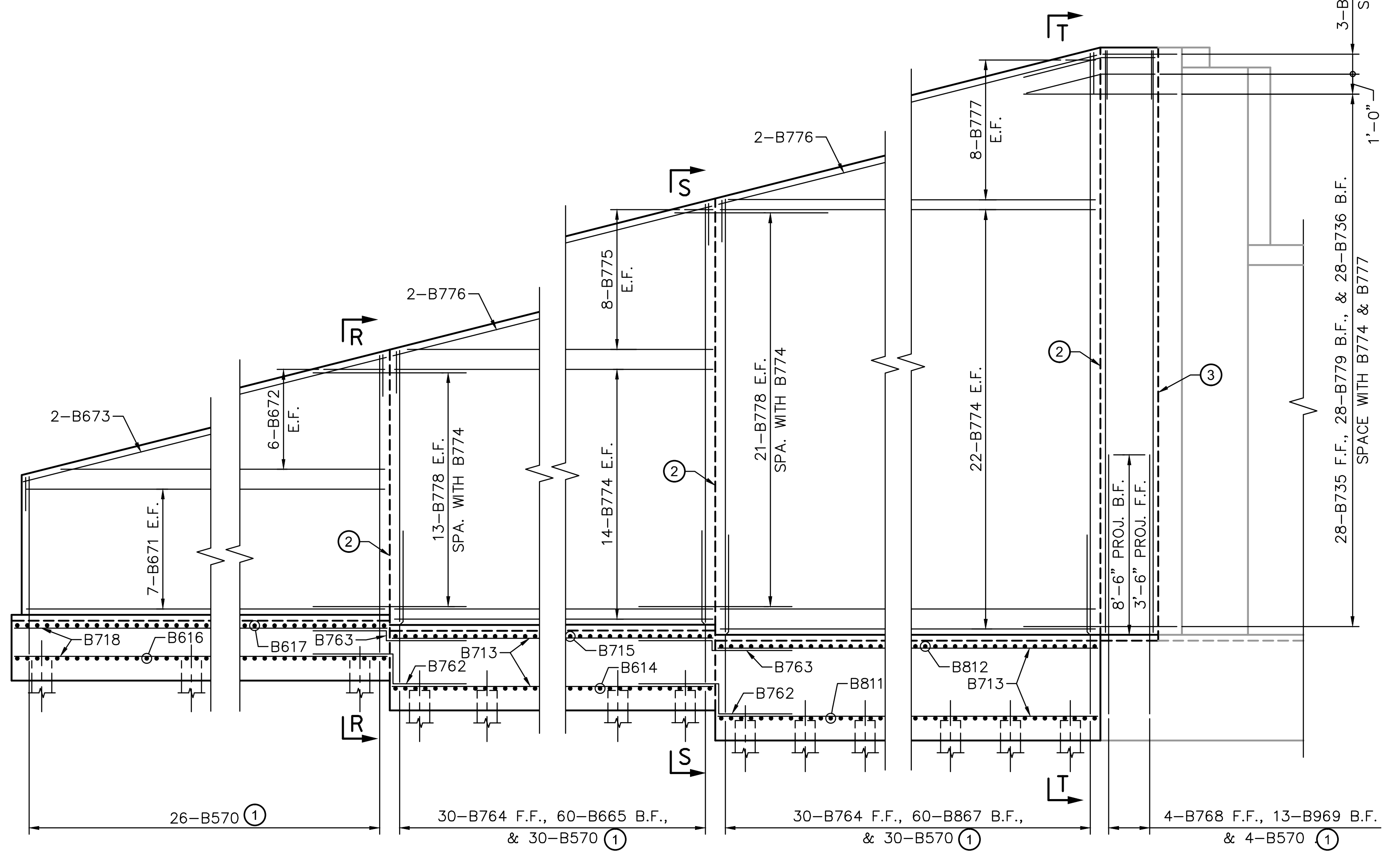
SHEET NAME: CBRR0691-BRG-ABT-024

SHEET 28 OF 60

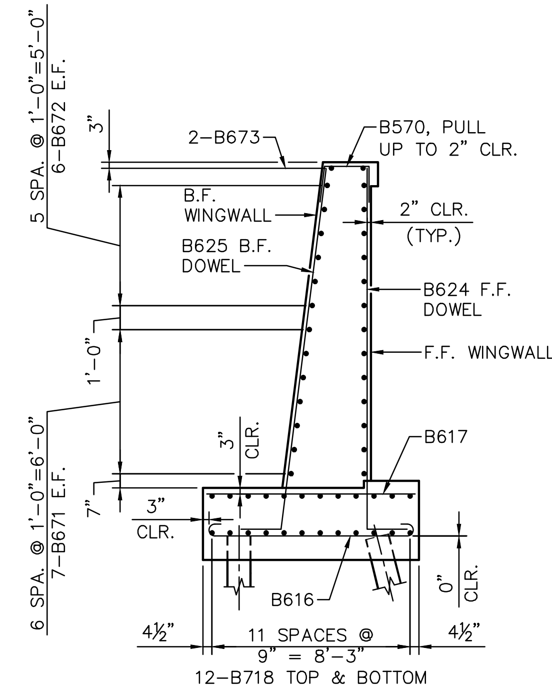
Jan. 18 2016 03:21 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SOCO-FRT\CBRR0691-BRG-ABT-024.dwg By: Connor.Smith



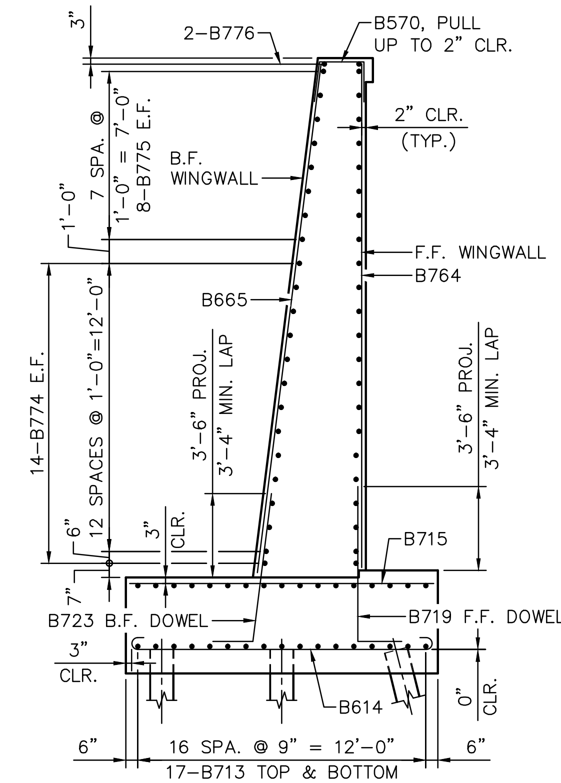
NORTHEAST WINGWALL PLAN



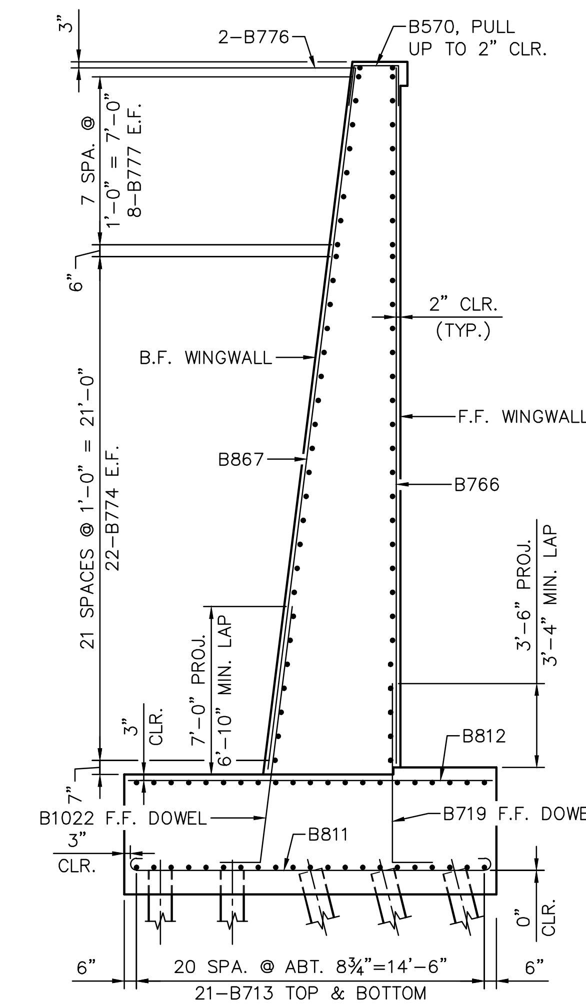
NORTHEAST WINGWALL ELEVATION



SECTION R-R



SECTION S-S



SECTION T-T

NOTES:

1. SPACE WITH DOWEL BARS.
2. CONSTRUCTION JOINT WITH 2" X 6" KEY.
3. PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS | CHECKED BY: DLS
DRAWN BY: JFM | CHECKED BY: DLS

AECOM Kimley»Horn

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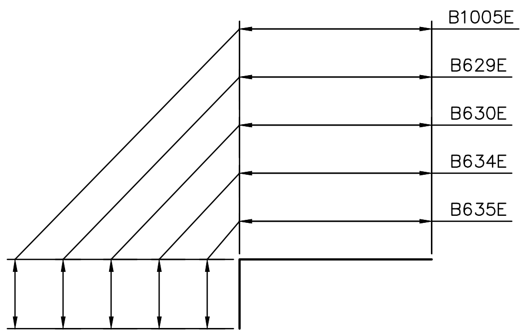
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

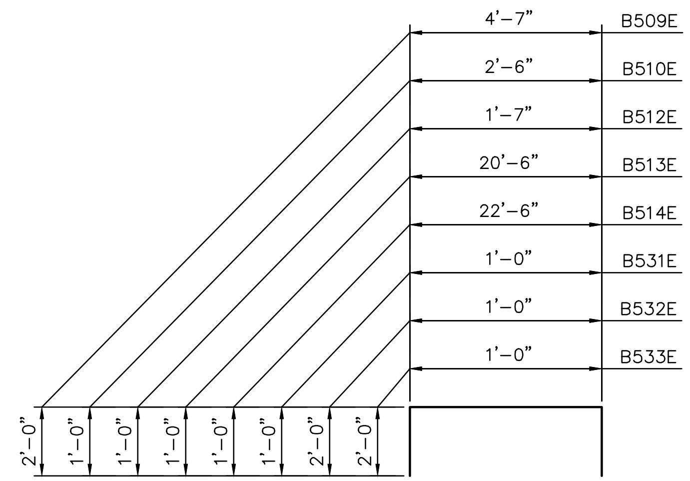
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
EAST ABUTMENT REINFORCEMENT 6

DISCIPLINE: STRUCTURES

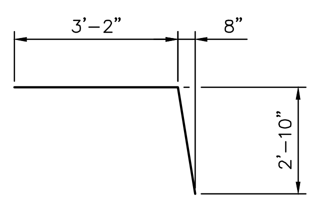
SHEET NAME: CBRR0691-BRG-ABT-025



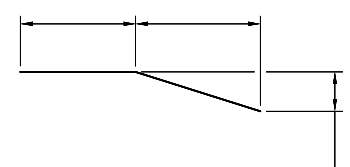
B1005E, B629E, B630E, B634E & B635E



B509E, B510E, B512E, B513E, B514E, B531E, B532E & B533E



B517E



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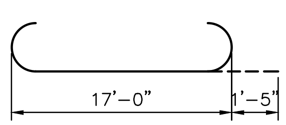

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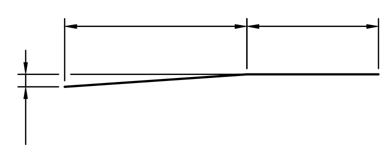


B520E

BILL OF REINFORCEMENT FOR EAST ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
B901			0	FOOTING, BOT., TRANS.
B902			0	FOOTING, TOP, TRANS.
B903			0	FOOTING, BOT., TRANS.
B904			0	FOOTING, TOP, TRANS.
B905			0	FOOTING, BOT., TRANS.
B906			0	FOOTING, TOP, TRANS.
B707			0	FOOTING, LONG.
B708			0	FOOTING, LONG.
B709			0	FOOTING, LONG.
B710			0	FOOTING, LONG., DOWEL
B811			0	NE WINGWALL, FTG., BOT., TRANS.
B812			0	NE WINGWALL, FTG., TOP, TRANS.
B713			0	NE WINGWALL, FTG., LONG.
B614			0	NE WINGWALL, FTG., BOT., TRANS.
B715			0	NE WINGWALL, FTG., TOP, TRANS.
B616			0	NE WINGWALL, FTG., BOT., TRANS.
B617			0	NE WINGWALL, FTG., TOP, TRANS.
B718			0	NE WINGWALL, FTG., LONG.
B719			0	F.F. DOWEL
B1120			0	STEM, B.F. DOWEL
B1121			0	WINGWALL, B.F. DOWEL
B1022			0	WINGWALL, B.F. DOWEL
B723			0	NE WINGWALL, B.F. DOWEL
B624			0	NE WINGWALL, F.F. DOWEL
B625			0	NE WINGWALL, B.F. DOWEL
B726			0	STEM, VERT., F.F.
B927			0	STEM, VERT., B.F.
B728			0	STEM, HORIZ., F.F.
B729			0	STEM, HORIZ., B.F.
B730			0	STEM, HORIZ., F.F.
B731			0	STEM, HAUNCH DOWEL
B732			0	STEM, HAUNCH DOWEL
B733			0	STEM, LONG. DOWEL
B734			0	STEM, LONG. DOWEL
B735			0	STEM, LONG. DOWEL
B736			0	STEM, LONG. DOWEL
B637			0	STEM, LONG.
B538			0	STEM, TOP TIE
B539			0	STEM, TOP TIE
B540			0	PEDESTAL, TIE
B541			0	PEDESTAL, TIE
B542			0	BACKWALL, VERT., F.F.
B543			0	BACKWALL, VERT., F.F.
B744			0	BACKWALL, VERT., B.F.
B745			0	BACKWALL, VERT., B.F.
B546			0	BACKWALL, HORIZ., F.F.
B547			0	BACKWALL, HORIZ., F.F.
B548			0	BACKWALL, HORIZ.
B549			0	BACKWALL, HORIZ., B.F.
B550			0	MASKWALL, HORIZ.

BILL OF REINFORCEMENT FOR EAST ABUTMENT (CONT.)

BAR	NO.	LENGTH	SHAPE	LOCATION
B551			0	MASKWALL, HORIZ.
B552			0	BACKWALL, TOP TIE
B553			0	MASKWALL, TOP TIE
B554			0	HAUNCH, TOP TIE
B555			0	HAUNCH, TOP TIE
B756			0	HAUNCH, VERTICAL
B557			0	CURB, TOP TIE
B558			0	CURB, LONG.
B759			0	SE WINGWALL, VERT., F.F.
B1060			0	SE WINGWALL, VERT., B.F.
B561			0	SE WINGWALL, VERT., TOP TIE
B762			0	NE WINGWALL, FTG., LONG. DOWEL
B763			0	NE WINGWALL, FTG., LONG. DOWEL
B764			0	NE WINGWALL, VERT., F.F.
B665			0	NE WINGWALL, VERT., B.F.
B766			0	NE WINGWALL, VERT., F.F.
B867			0	NE WINGWALL, VERT., B.F.
B768			0	NE WINGWALL, VERT., F.F.
B969			0	NE WINGWALL, VERT., B.F.
B570			0	NE WINGWALL TOP TIE
B671			0	NE WINGWALL, LONG.
B672			0	NE WINGWALL, LONG.
B673			0	NE WINGWALL, LONG.
B774			0	NE WINGWALL, LONG.
B775			0	NE WINGWALL, LONG.
B776			0	NE WINGWALL, LONG.
B777			0	NE WINGWALL, LONG.
B778			0	NE WINGWALL, LONG. DOWEL
B779			0	NE WINGWALL, LONG. DOWEL
B780			0	NE WINGWALL, LONG. DOWEL

Jan, 18 2016 03:03 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SOCO-FRT\CBRR0691-BRG-ABT-026.dwg By: gavin.good

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
EAST ABUTMENT REINFORCEMENT 7

DISCIPLINE: STRUCTURES

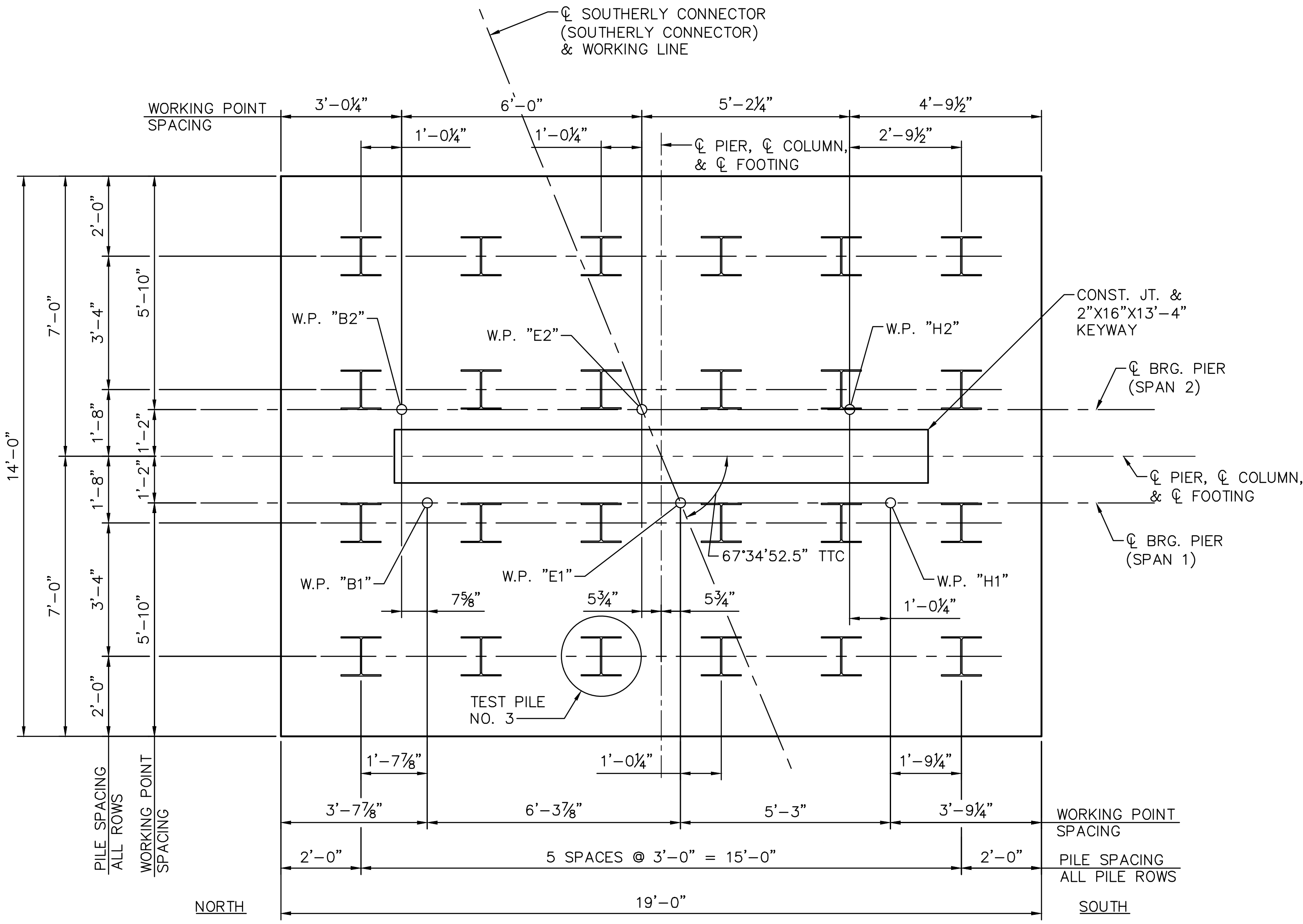
SHEET NAME: CBRR0691-BRG-ABT-026

SHEET 30 OF 60

PIER COMPUTED PILE LOAD - TONS/PILE	
DEAD LOAD	22.0
LIVE LOAD	18.0
OVERTURNING	46.0
*DESIGN LOAD	86.0

* BASED ON GROUP VI LOADING (SERVICE LOAD) PER AREMA CHAPTER 8 SECTION 2.2.4

REQUIRED PILE TEST LOAD - TONS/PILE	
FIELD CONTROL METHOD	TEST LOAD
PDA	172.0



FOOTING PLAN

GENERAL PILE NOTES

1 HP12x53 STEEL TEST PILE 65 FT. LONG
23 HP12x53 STEEL PILES EST. 65 FT. LENGTH
24 HP12x53 STEEL PILES REQ'D FOR PIER

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

FOR PILE SPLICE DETAILS SEE DETAIL B202.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

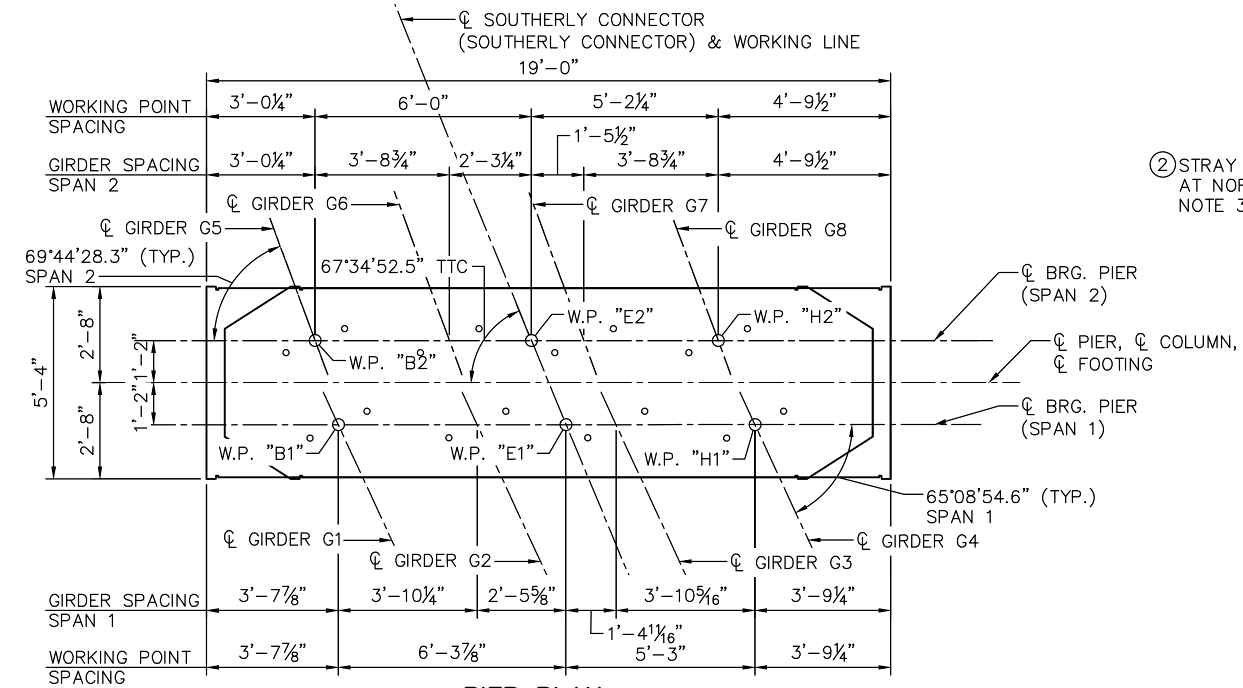
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

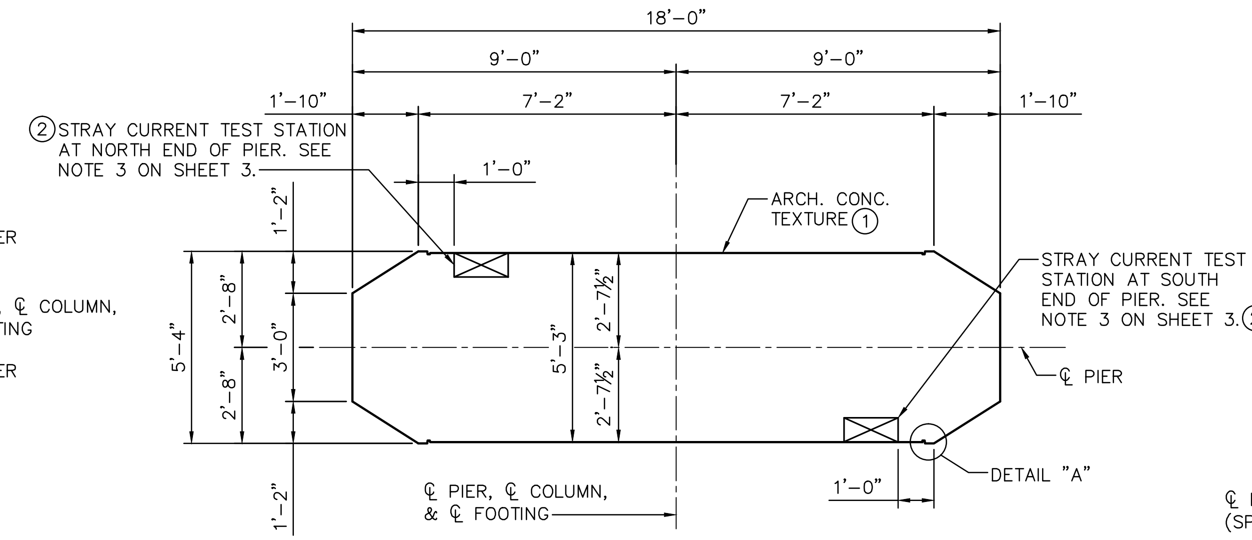
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
PIER DETAILS 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-PIR-001



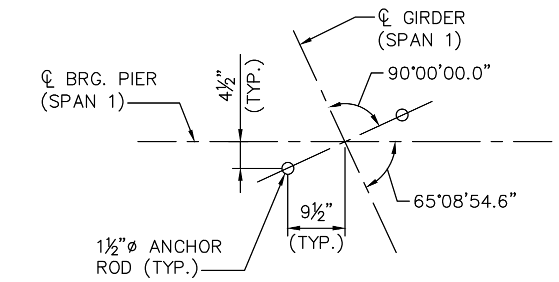
PIER PLAN



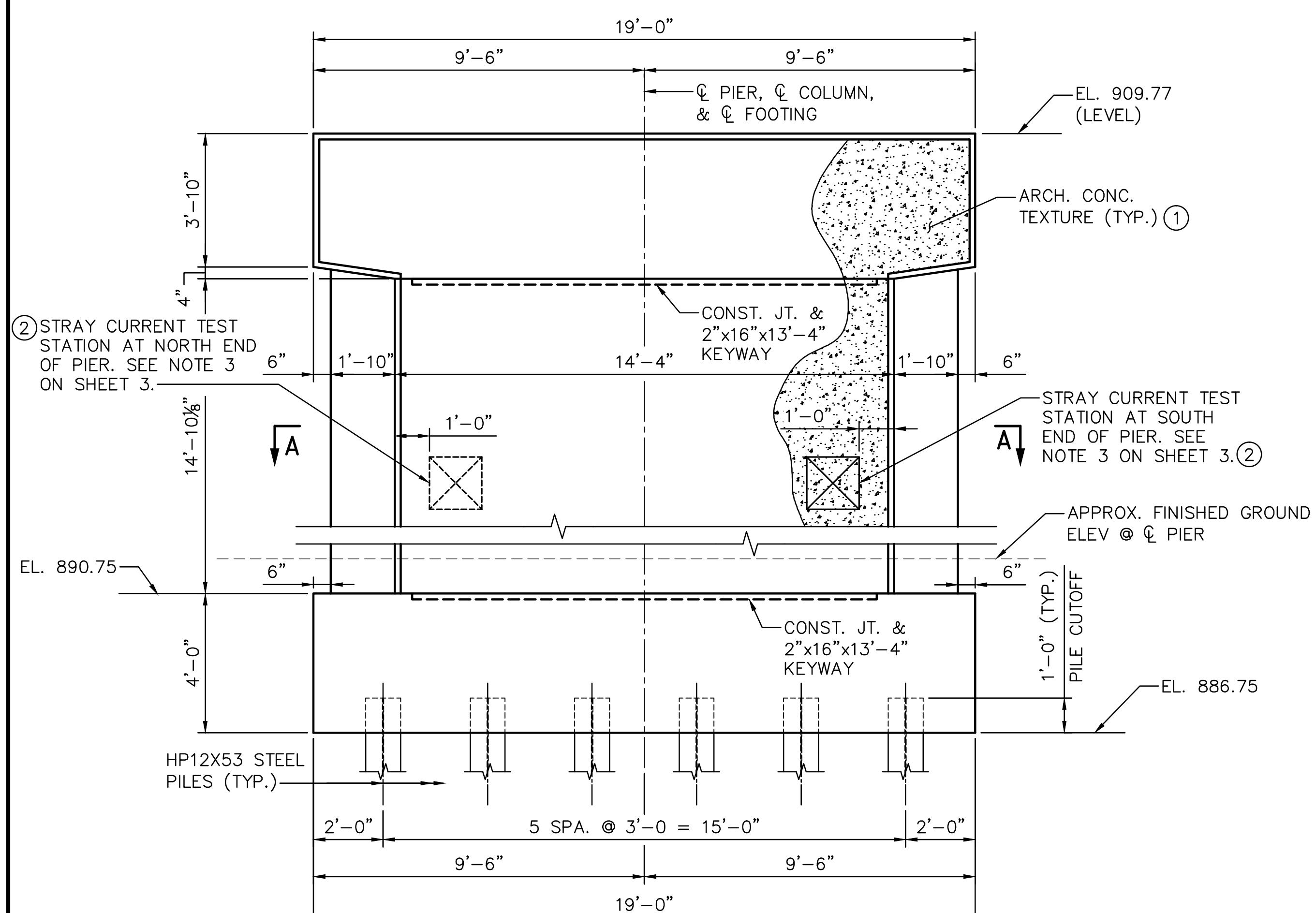
SECTION A-A

NOTES:

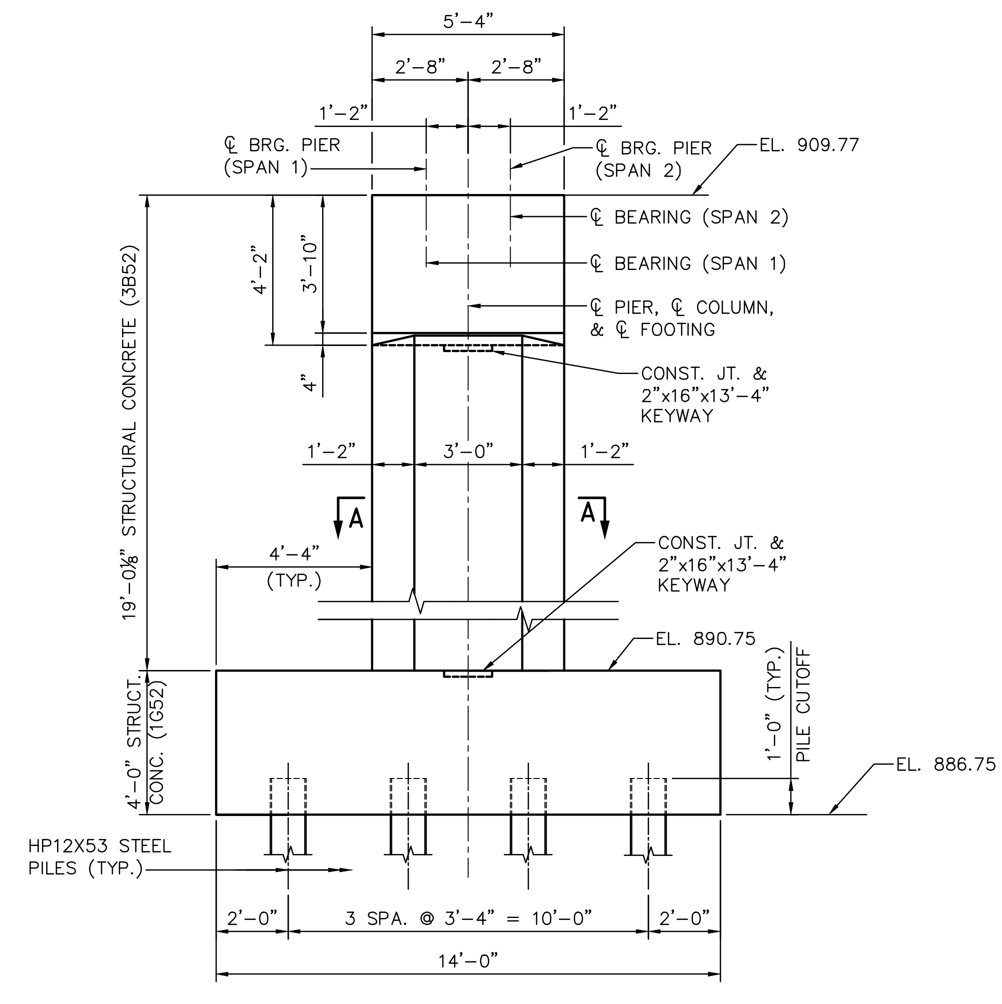
1. ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 0.50."
2. INSTALL STRAY CURRENT JUNCTION BOX. SEE DRAWINGS E0-SYS-CORR-DTL-001 TO 018 FOR DETAILS. CABLES WILL BE ROUTED TO JUNCTION BOXES BY CONTRACTOR. AFTER CONDUITS ARE INSTALLED, REMAINING BLOCKOUT SPACE TO BE FILLED AND SEALED WITH NON-SHRINK GROUT. (TYP. FOR ALL BLOCKOUTS).



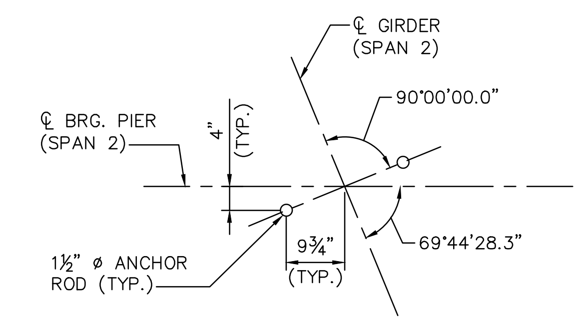
ANCHOR ROD LAYOUT – SPAN 1



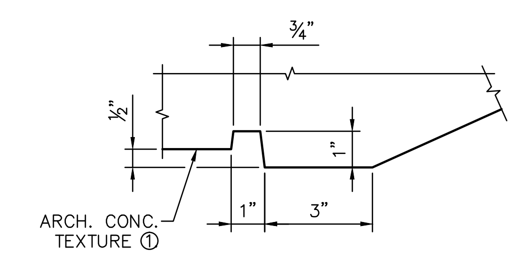
ELEVATION



END ELEVATION



ANCHOR ROD LAYOUT – SPAN 2



DETAIL A

Jan. 18 2016 03:57 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SOCO-FRT\CBRR0691-BRG-PIR-002.dwg By: gavin.good

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DESIGNED BY:	GAG	CHECKED BY:	DLS
DRAWN BY:	KAG	CHECKED BY:	DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

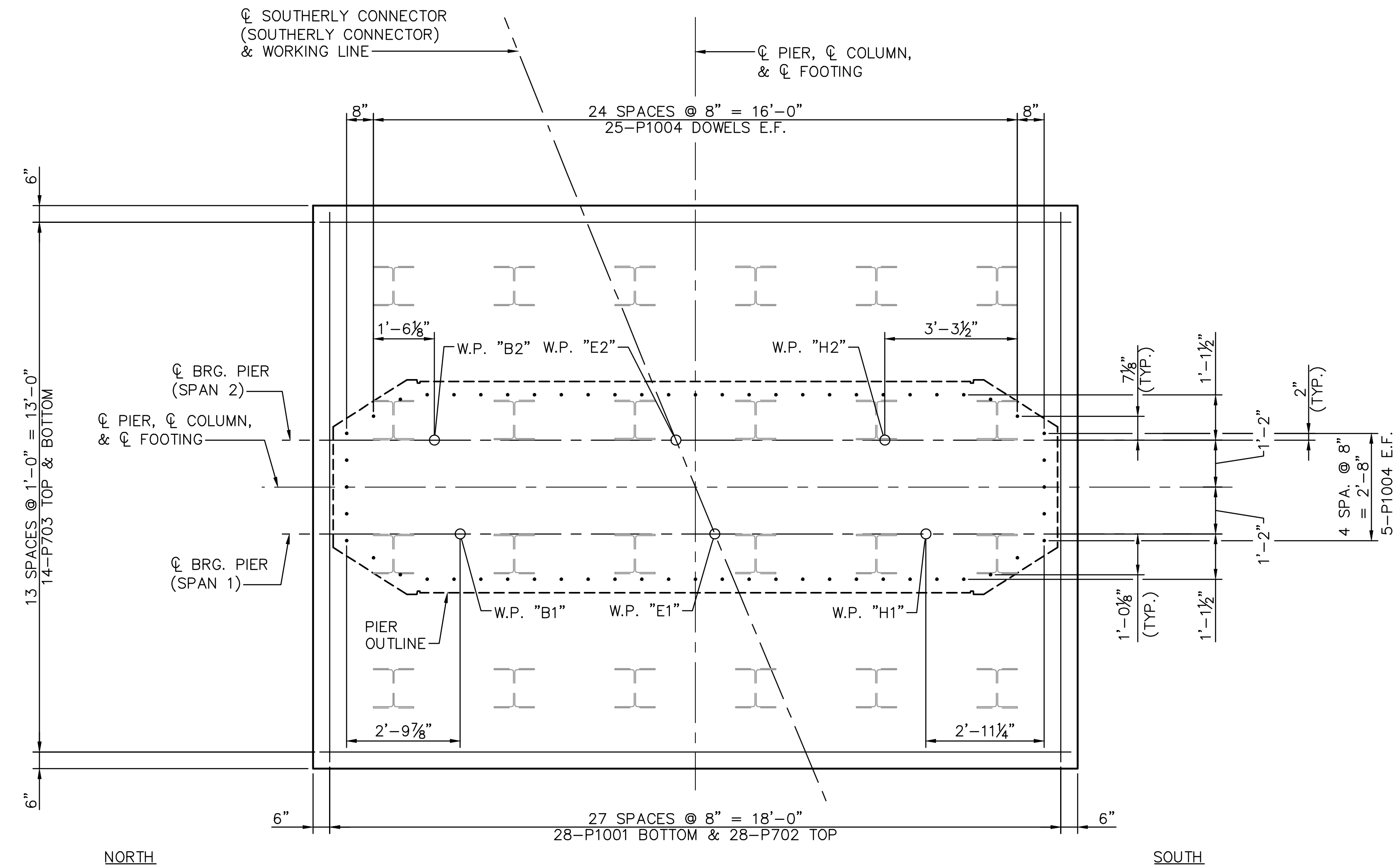
SOUTHWEST Green Line LRT Extension

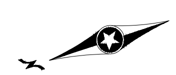
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
PIER DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-PIR-002

SHEET 32 OF 60





FOOTING PLAN

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DRAWN BY: JFM | CHECKED BY: DLS

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
PIER REINFORCEMENT 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-PIR-003

SHEET 33 OF 60

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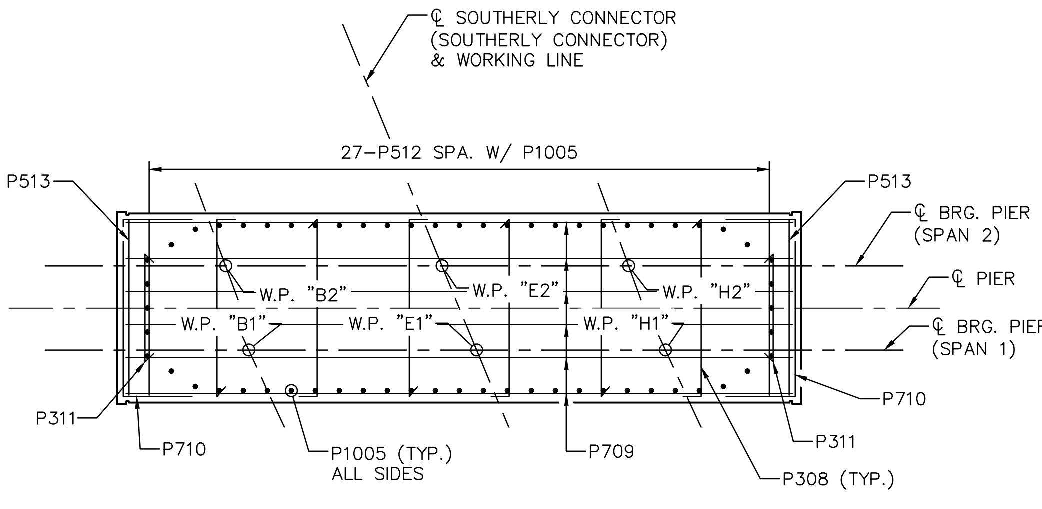
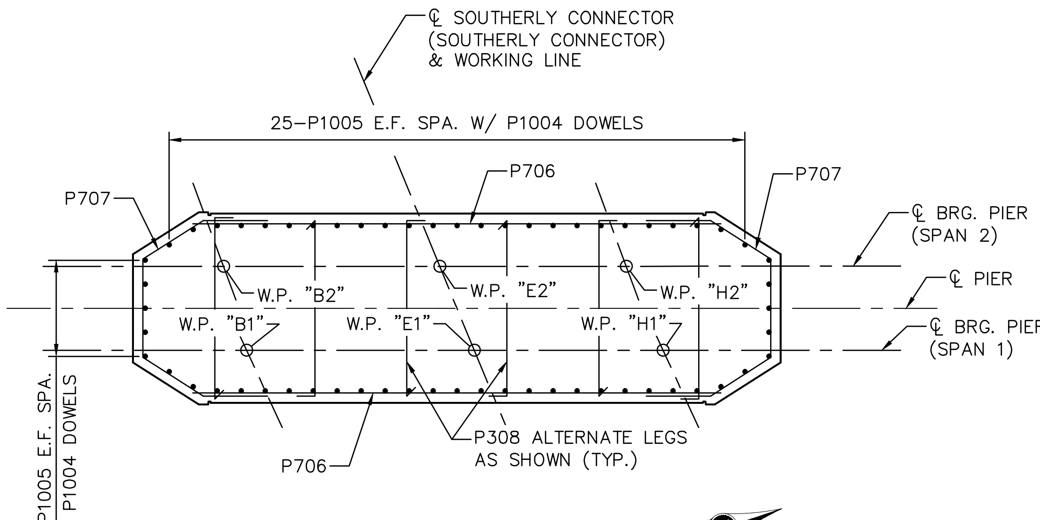
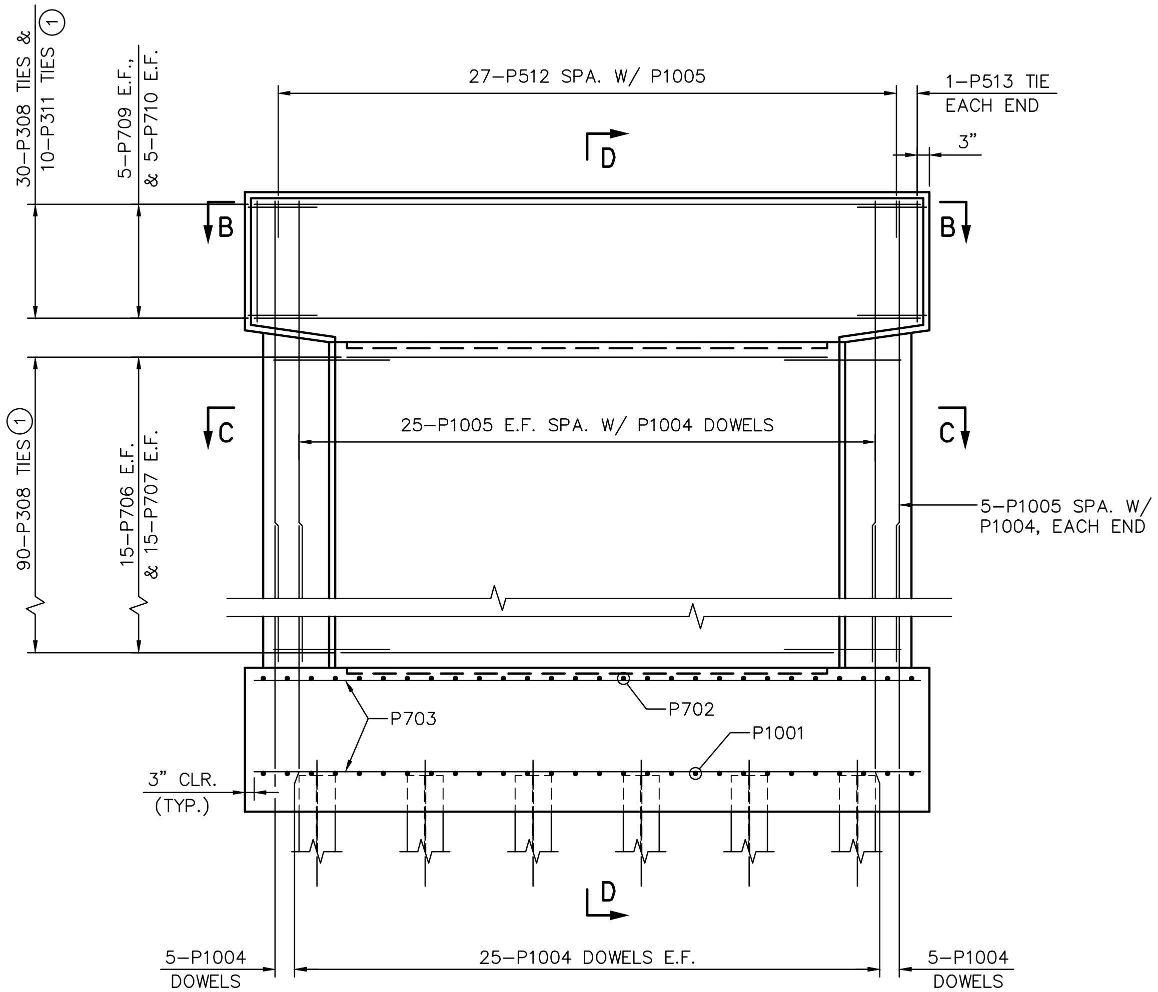


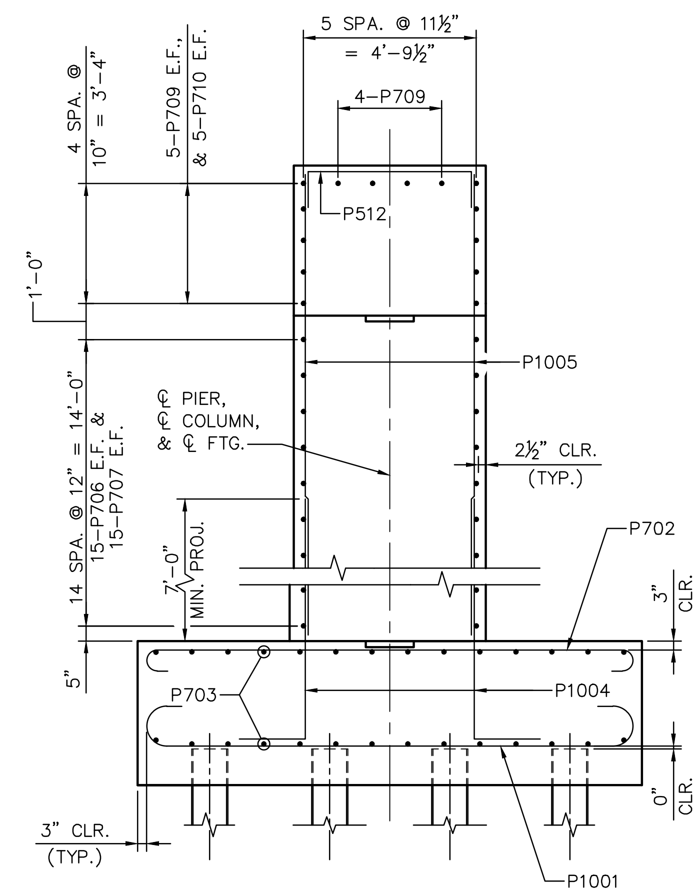
SECTION B-B



SECTION C-C



ELEVATION



SECTION D-D

NOTES:

(1) SPACE WITH P709 E.F.

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
PIER REINFORCEMENT 2

DISCIPLINE: STRUCTURES

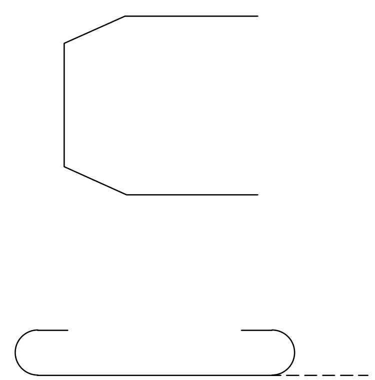
SHEET NAME: CBRR0691-BRG-PIR-004

SHEET 34 OF 60

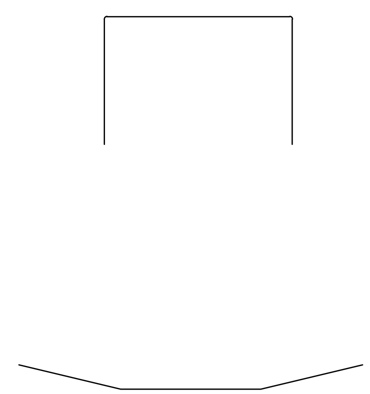
BILL OF REINFORCEMENT FOR PIER

BAR	NO.	LENGTH	SHAPE	LOCATION
P1001	0	'-"	0	FOOTING, BOT., TRANS.
P702	0	'-"	0	FOOTING, TOP, TRANS.
P703	0	'-"	0	FOOTING, LONG.
P1004	0	'-"	0	COLUMN, DOWELS
P1005	0	'-"	0	COLUMN, VERTICAL
P706	0	'-"	0	COLUMN, HORIZONTAL
P707	0	'-"	0	COLUMN, END TIE
P308	0	'-"	0	COLUMN, TIE
P709	0	'-"	0	CAP, HORIZONTAL
P710	0	'-"	0	CAP, END TIE
P311	0	'-"	0	CAP, TIE
P512	0	'-"	0	CAP, TOP TIE
P513	0	'-"	0	CAP, TOP TIE

PXXXX



PXXXX



PXXXX

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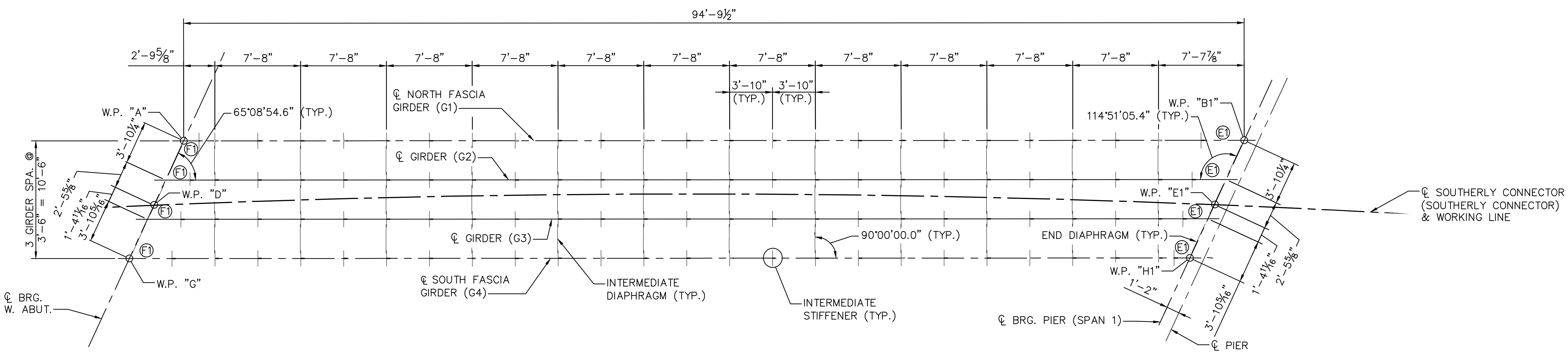
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
PIER REINFORCEMENT 3

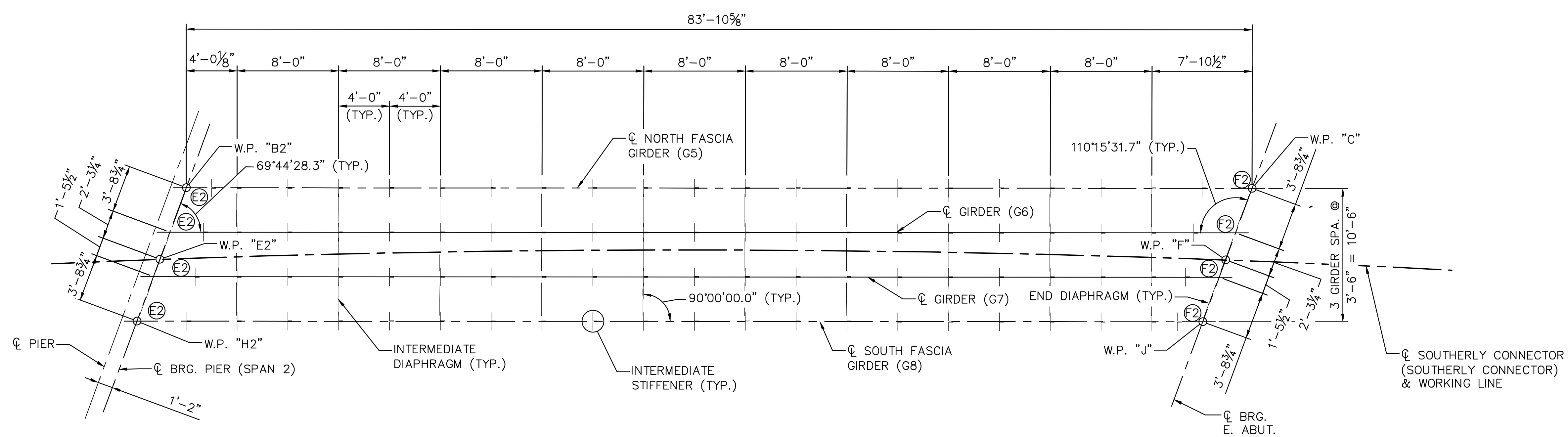
DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-PIR-005

SHEET 35 OF 60



FRAMING PLAN – SPAN 1



FRAMING PLAN – SPAN 2

NOTES:

SPACING OF INTERMEDIATE STIFFENERS IS GIVEN WITH RESPECT TO BACK FACE OF ANGLES.

(E1) DENOTES EXPANSION MULTI-ROTATIONAL BEARING ASSEMBLY

(F1) DENOTES FIXED MULTI-ROTATIONAL BEARING ASSEMBLY

FOR FURTHER INFORMATION ON BEARING ASSEMBLIES, REFER TO GIRDER ELEVATIONS AND BEARING ASSEMBLY DETAIL SHEETS.

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DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

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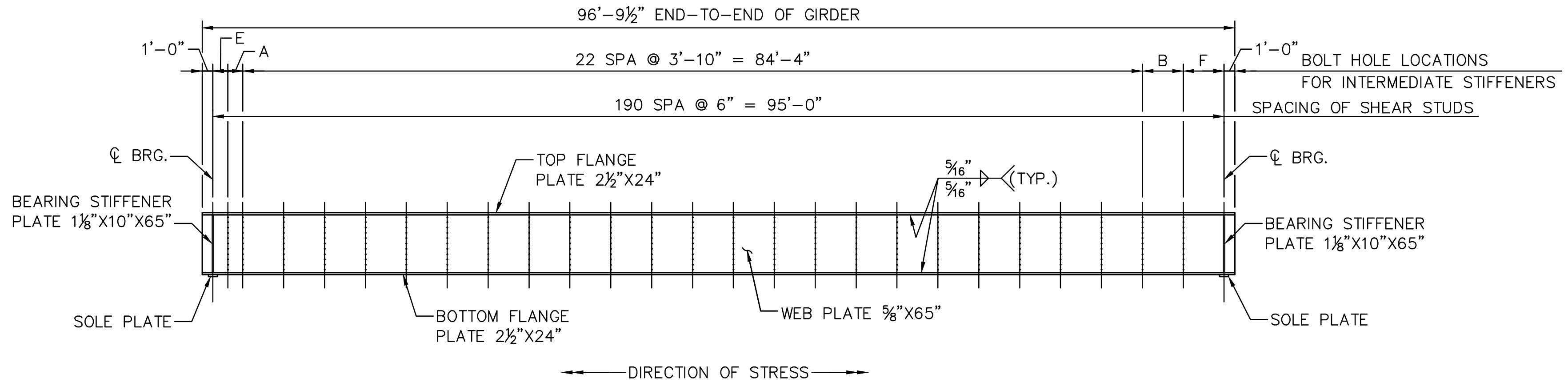
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

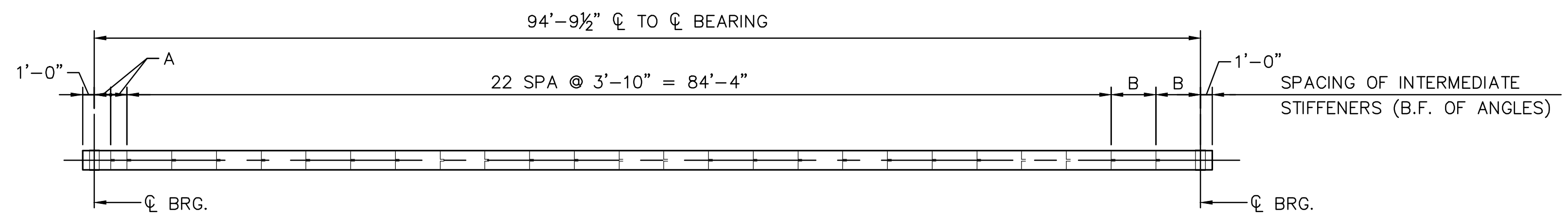
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
FRAMING PLAN

DISCIPLINE: STRUCTURES

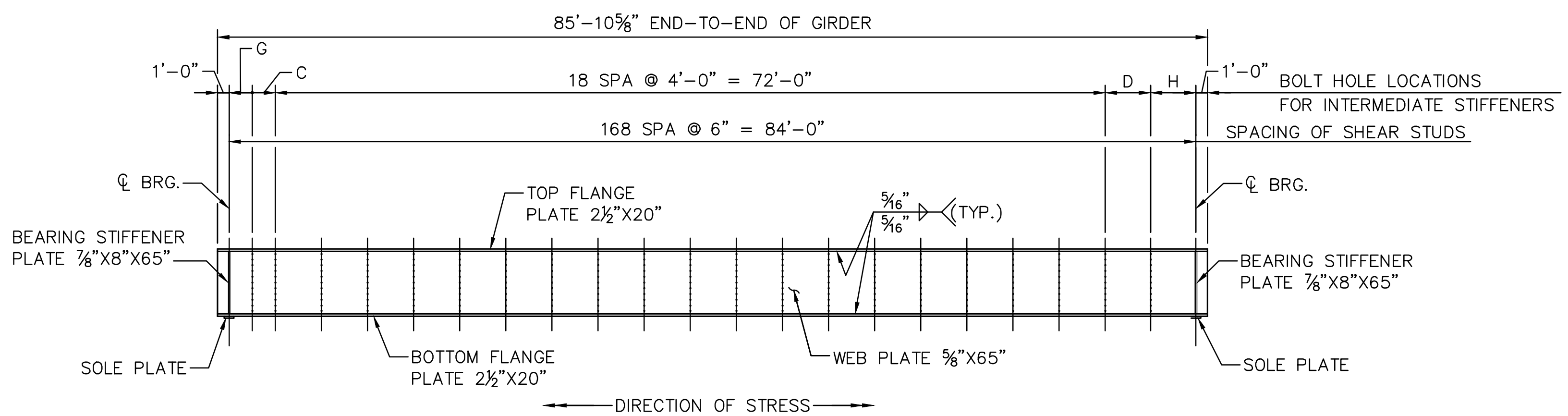
SHEET NAME: CBRR0691-BRG-SUP-002



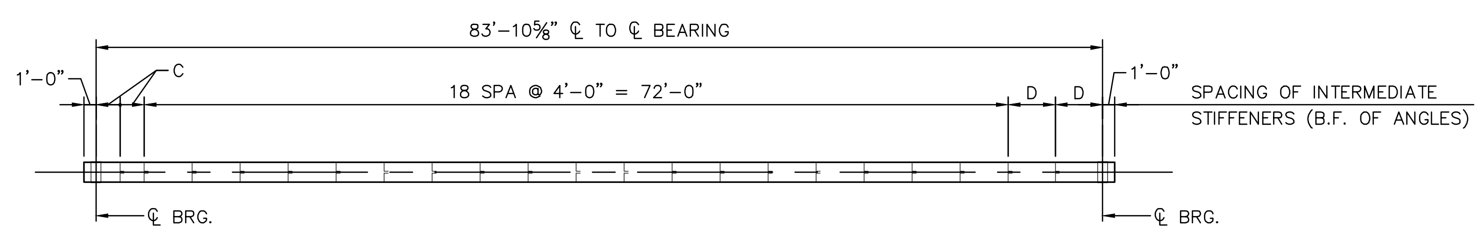
ELEVATION VIEW OF GIRDERS G1 – G4



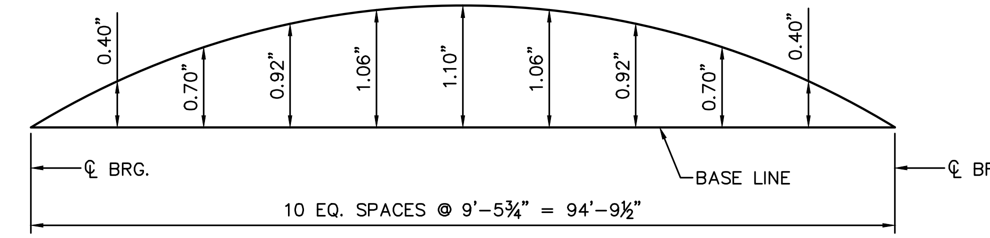
PLAN VIEW OF GIRDERS G1 – G4



ELEVATION VIEW OF GIRDERS G5 – G8



PLAN VIEW OF GIRDERS G5 – G8



CAMBER DIAGRAM FOR GIRDERS G1–G4

DIMENSION TABLE

GIRDER	A	B	C	D	E	F	G	H
G1	1'-4 13/16"	3'-9 15/16"			1'-7 5/16"	3'-7 9/16"		
G2	2'-2 9/16"	3'-0 5/16"			2'-5 1/16"	2'-9 13/16"		
G3	3'-0 5/16"	2'-2 9/16"			3'-2 13/16"	2'-0 1/16"		
G4	3'-10 1/16"	1'-4 13/16"			4'-0 9/16"	1'-2 5/16"		
G5			2'-0 1/16"	3'-11 1/4"			2'-2 9/16"	3'-8 3/4"
G6			2'-7 13/16"	3'-3 1/2"			2'-10 5/16"	3'-1"
G7			3'-3 9/16"	2'-7 3/4"			3'-6 1/16"	2'-5 1/4"
G8			3'-11 5/16"	2'-0"			4'-1 13/16"	1'-9 1/2"

GENERAL NOTES:

STRUCTURAL STEEL SHALL CONFORM TO Mn/DOT 3309 ASTM A709 GRADE 50WT3 UNLESS OTHERWISE NOTED.

BOLTED CONNECTIONS SHALL BE MADE WITH ⅞" DIAMETER A325 TYPE 3 HIGH STRENGTH BOLTS, EXCEPT AS NOTED. HOLES FOR ⅞" DIAMETER BOLTS SHALL BE 15⁄16", EXCEPT AS NOTED. OVERSIZE HOLES WILL NOT BE PERMITTED.

PLACE NUT AND WASHER INSIDE OF GIRDER WEB FOR ALL BOLTS THROUGH GIRDER WEB.

WEB AND FLANGE PLATES SHALL BE FURNISHED IN AVAILABLE MILL LENGTHS WITH A MINIMUM NUMBER OF SPLICES. LOCATION OF SPLICES SHALL BE APPROVED BY ENGINEER. A SPLICE SHALL BE MINIMUM OF 12" FROM ANY STIFFENER. NO SPLICES WILL BE ALLOWED 12 FEET FROM MIDPOINT OF GIRDER.

CAMBER DIAGRAMS SHOWN ARE FOR BEAM IN UNLOADED POSITION AND PROVIDES FOR ALL DEAD LOAD DEFLECTIONS. BASE LINE IN CAMBER DIAGRAM IS A STRAIGHT LINE FROM ℄ BRG. TO ℄ BRG. AT BOTTOM OF WEB.

FOR WELDED FLANGE SPLICES, SEE SPEC. 2471.3F1A.

SOLE PLATES SHALL BE PER BEARING ASSEMBLY DETAILS SHEET.

NO WELDING OR DRILLING OF HOLES FOR TEMPORARY ATTACHMENTS WILL BE PERMITTED.

THE STRUCTURAL STEEL FABRICATOR SHALL BE CERTIFIED UNDER THE A.I.S.C. QUALITY CERTIFICATION PROGRAM, CATEGORY, MAJOR STEEL BRIDGES (Cbr.).

GIRDERS G5–G8 SHALL NOT BE CAMBERED.

BEARING STIFFENERS SHALL BE VERTICAL.

SHEAR STUDS ON THE TOP FLANGE OF THE GIRDER SHALL BE INSTALLED IN THE FIELD. ROWS OF SHEAR STUDS SHALL BE ALIGNED PARALLEL TO THE TRANSVERSE REINFORCEMENT BARS.

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DRAWN BY: ZEG | CHECKED BY: DLS

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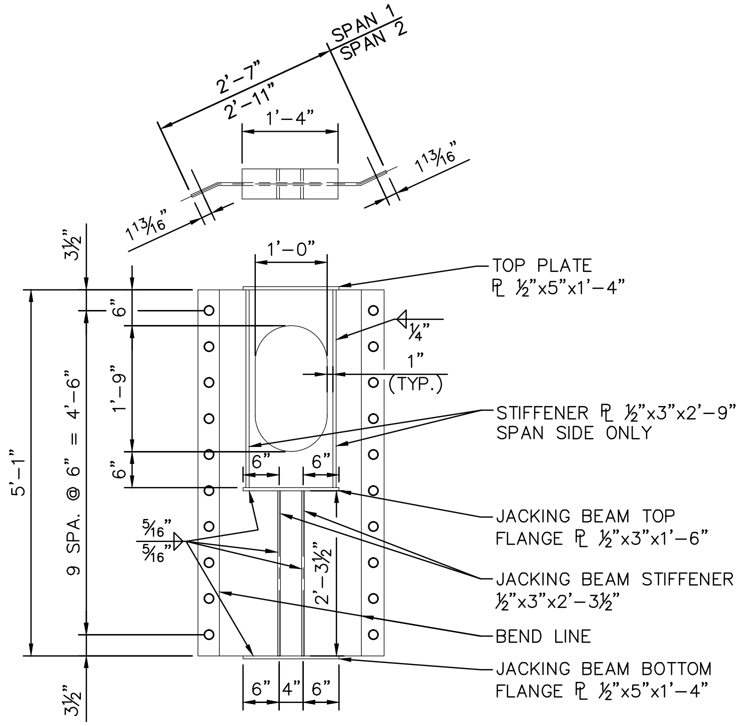
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

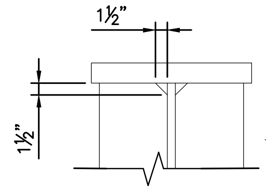
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
GIRDER ELEVATION

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-STL-001

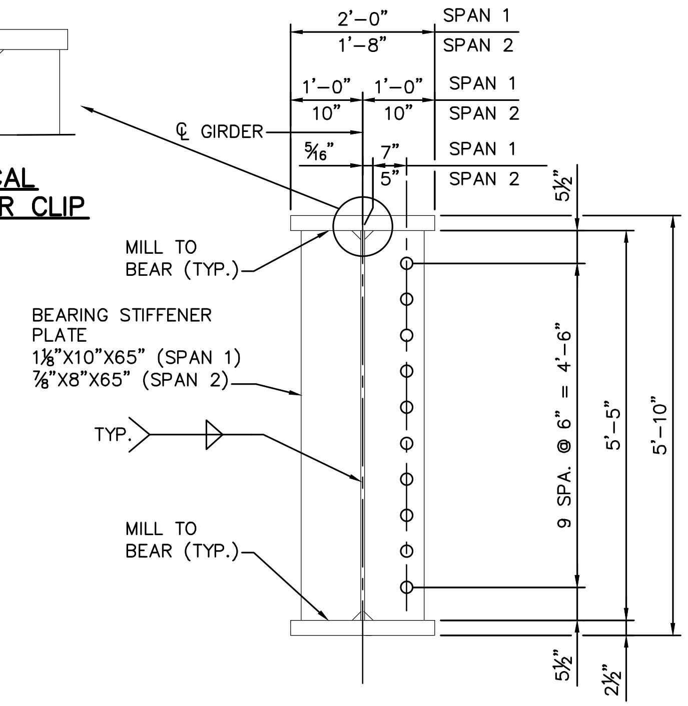


JACKING BEAM STIFFENER DETAIL

(SEE SHEET 39 FOR OTHER DETAILS)

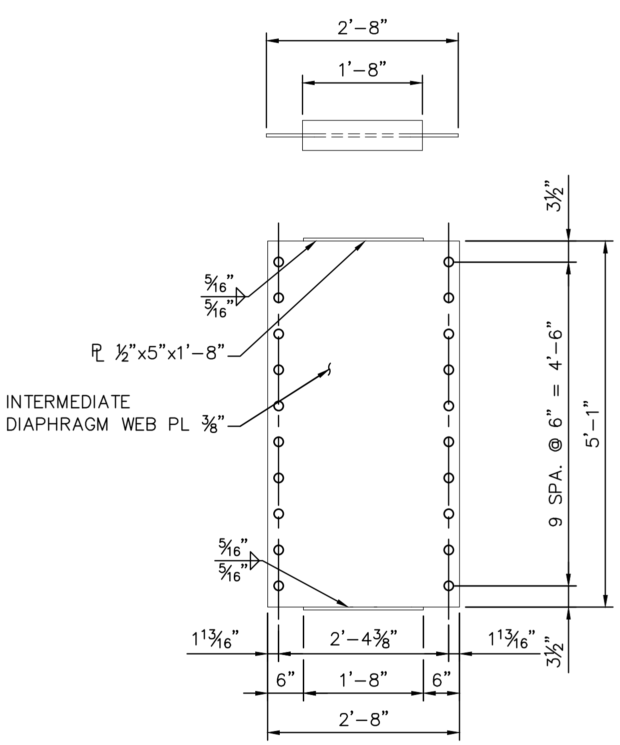


TYPICAL STIFFENER CLIP



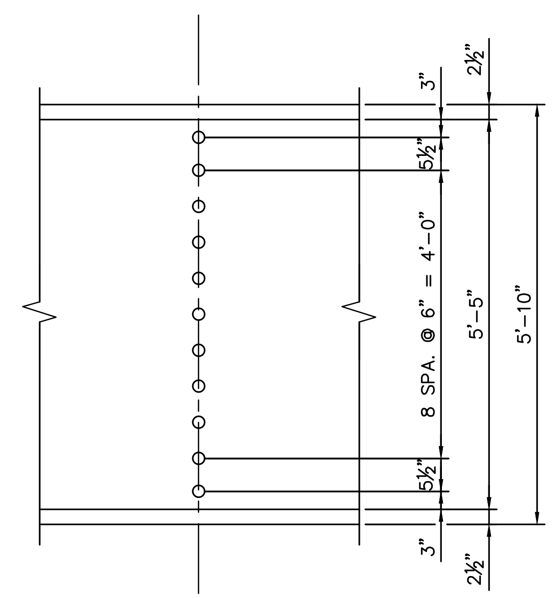
BEARING STIFFENER

(FASCIA GIRDER SHOWN)

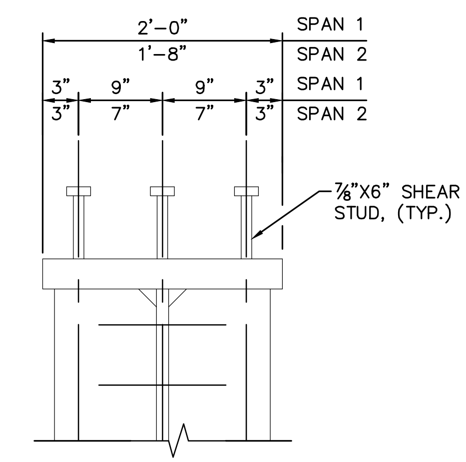


INTERMEDIATE DIAPHRAGM DETAIL

(SEE SHEET 39 FOR OTHER DETAILS)



INTERMEDIATE STIFFENER BOLT HOLE LAYOUT



SHEAR STUD DESIGN

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DESIGNED BY: JFM CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
GIRDER DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-STL-002

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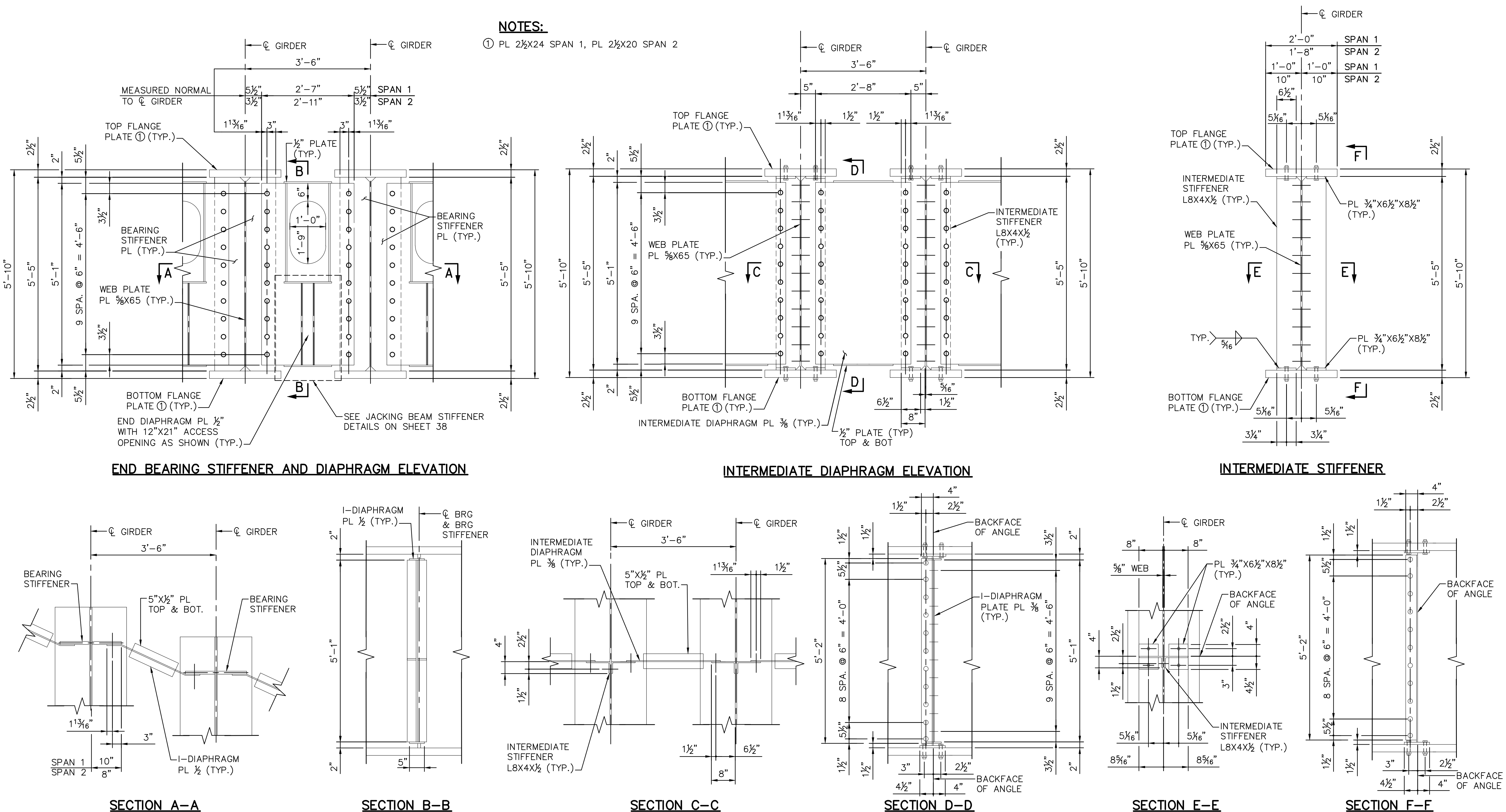
NOTES:

① PL 2½X24 SPAN 1, PL 2½X20 SPAN 2



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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
GIRDER DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-STL-003

SHEET 39 OF 60

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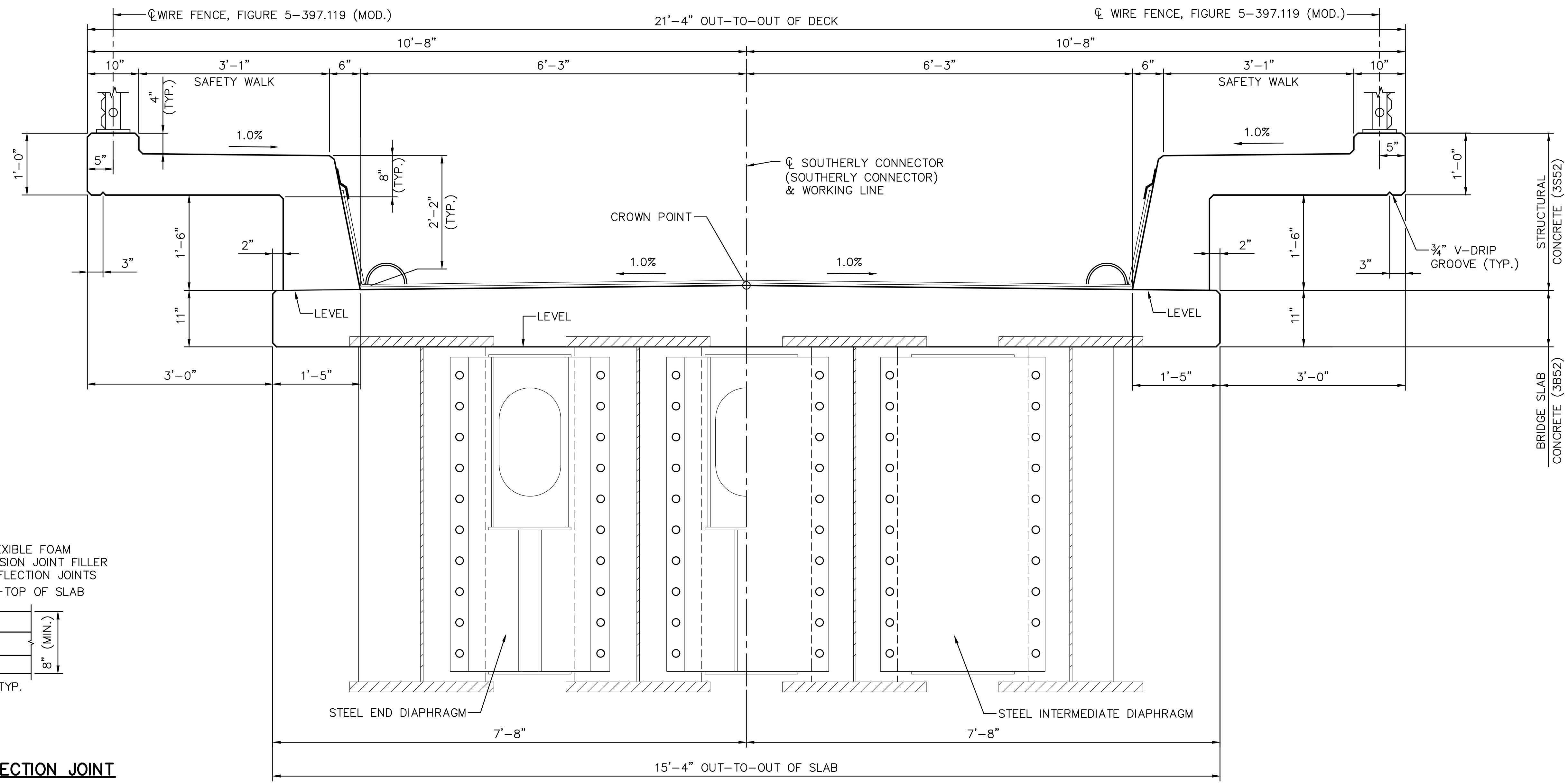
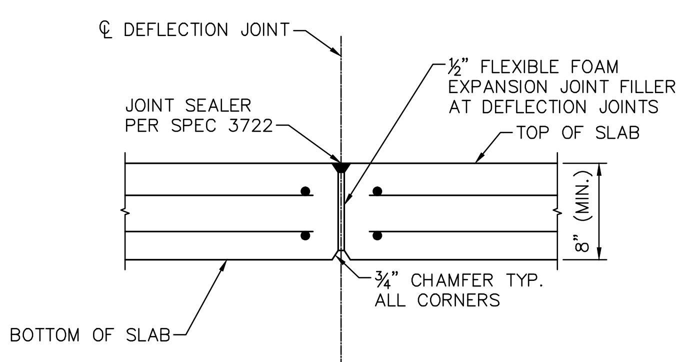
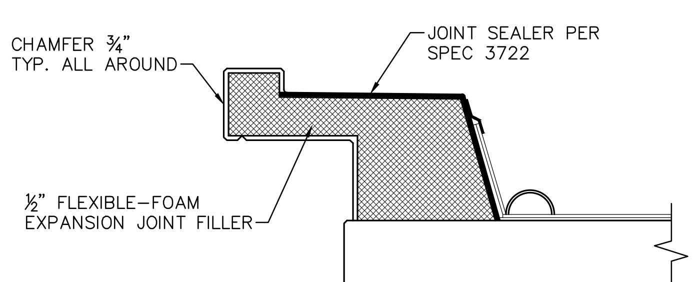


TRANSVERSE SECTION



SAFETY WALK SLAB SECTION AT DEFLECTION JOINT



CURB SECTION AT DEFLECTION JOINT

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: JFM CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
SUPERSTRUCTURE DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-SUP-003

SHEET 40 OF 60

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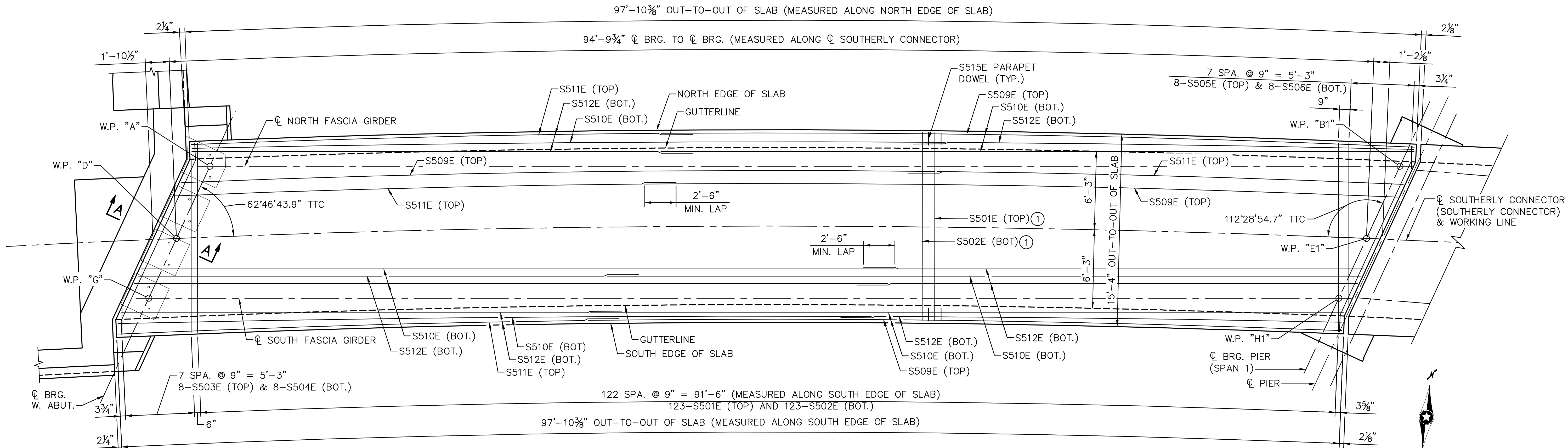
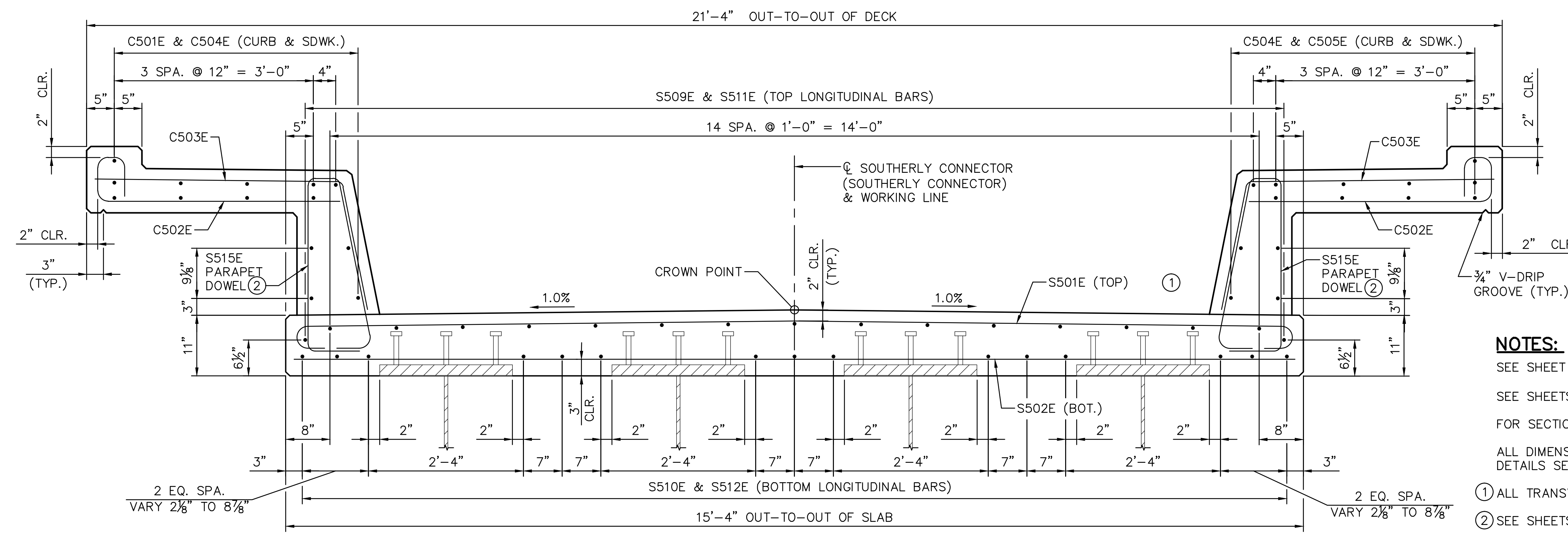


SLAB PLAN – SPAN 1



TRANSVERSE SECTION – SPAN 1

NOTES:

SEE SHEET 42 FOR SPAN 2 SUPERSTRUCTURE REINFORCEMENT.

SEE SHEETS 43–44 FOR DECK/CURB PLAN AND REINFORCEMENT.

FOR SECTION A–A, SEE SHEET 45.

ALL DIMENSIONS BASED ON TEMPERATURE OF 90°F. FOR JOINT DETAILS SEE SHEETS 49–50.

1 ALL TRANSVERSE BARS SET NORMAL TO GIRDERS.

2 SEE SHEETS 43–44 FOR SPACING OF S515E

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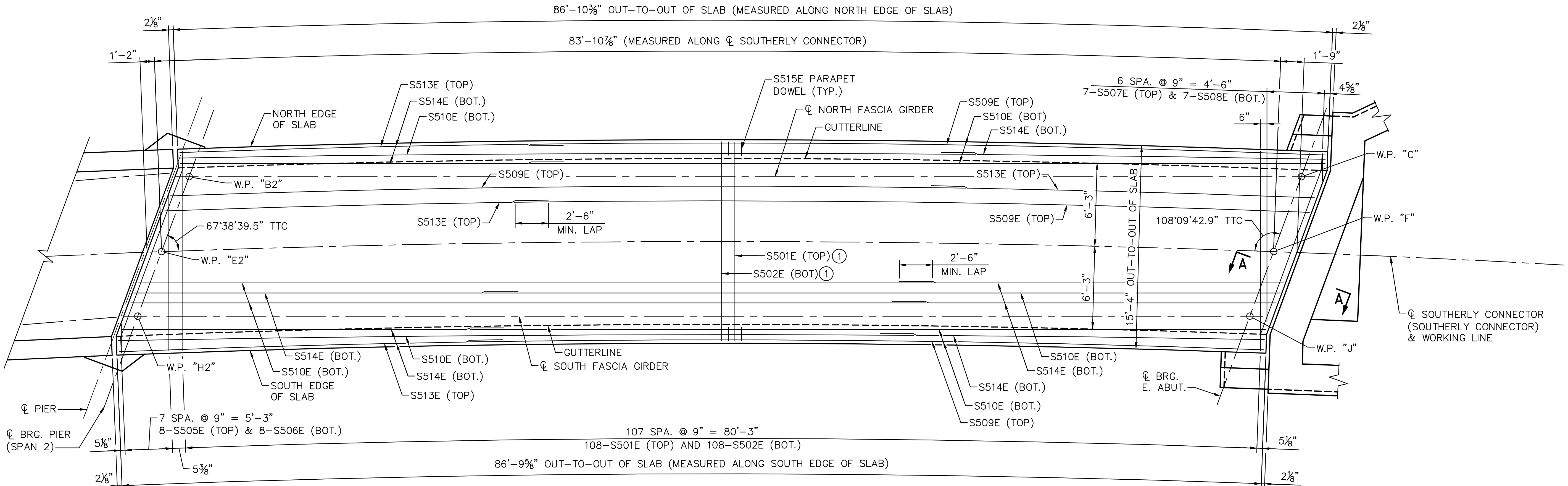
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

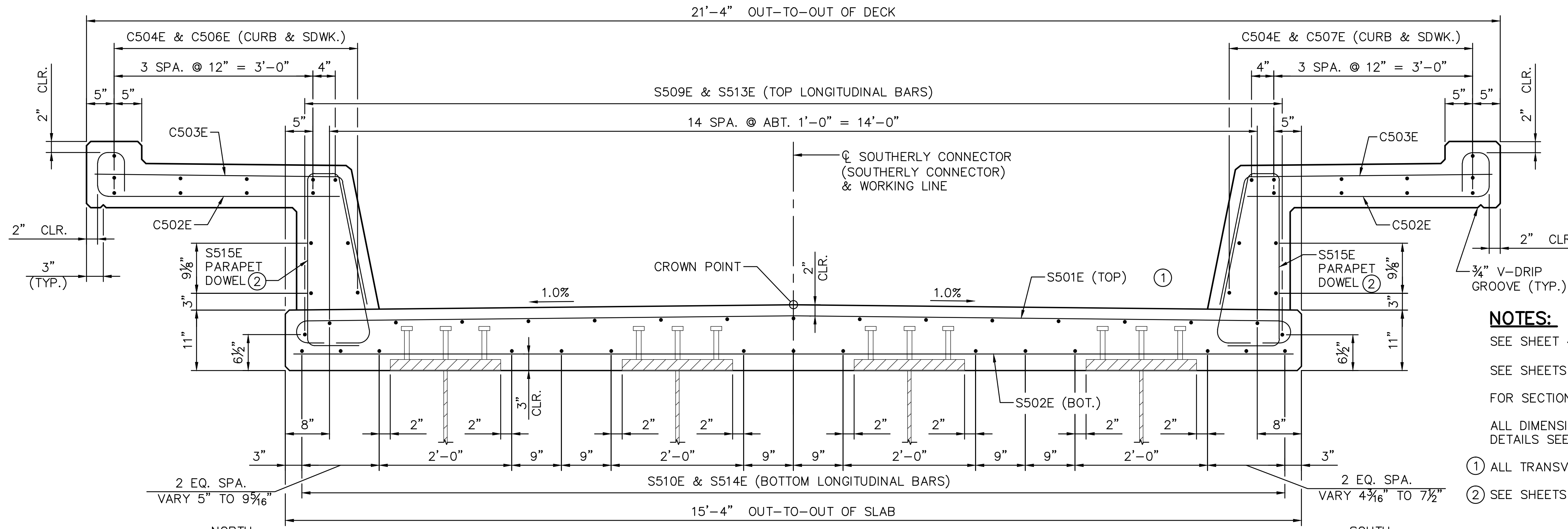
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
SUPERSTRUCTURE DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-SUP-004



SLAB PLAN – SPAN 2



TRANSVERSE SECTION – SPAN 2

NOTES:

SEE SHEET 41 FOR SPAN 1 SUPERSTRUCTURE REINFORCEMENT.

SEE SHEETS 43-44 FOR DECK/CURB PLAN AND REINFORCEMENT.

FOR SECTION A-A, SEE SHEET 45.

ALL DIMENSIONS BASED ON TEMPERATURE OF 90°F. FOR JOINT DETAILS SEE SHEETS 49-50.

1 ALL TRANSVERSE BARS SET NORMAL TO GIRDERS.

2 SEE SHEETS 43-44 FOR SPACING OF S515E

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: JFM CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

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METROPOLITAN COUNCIL

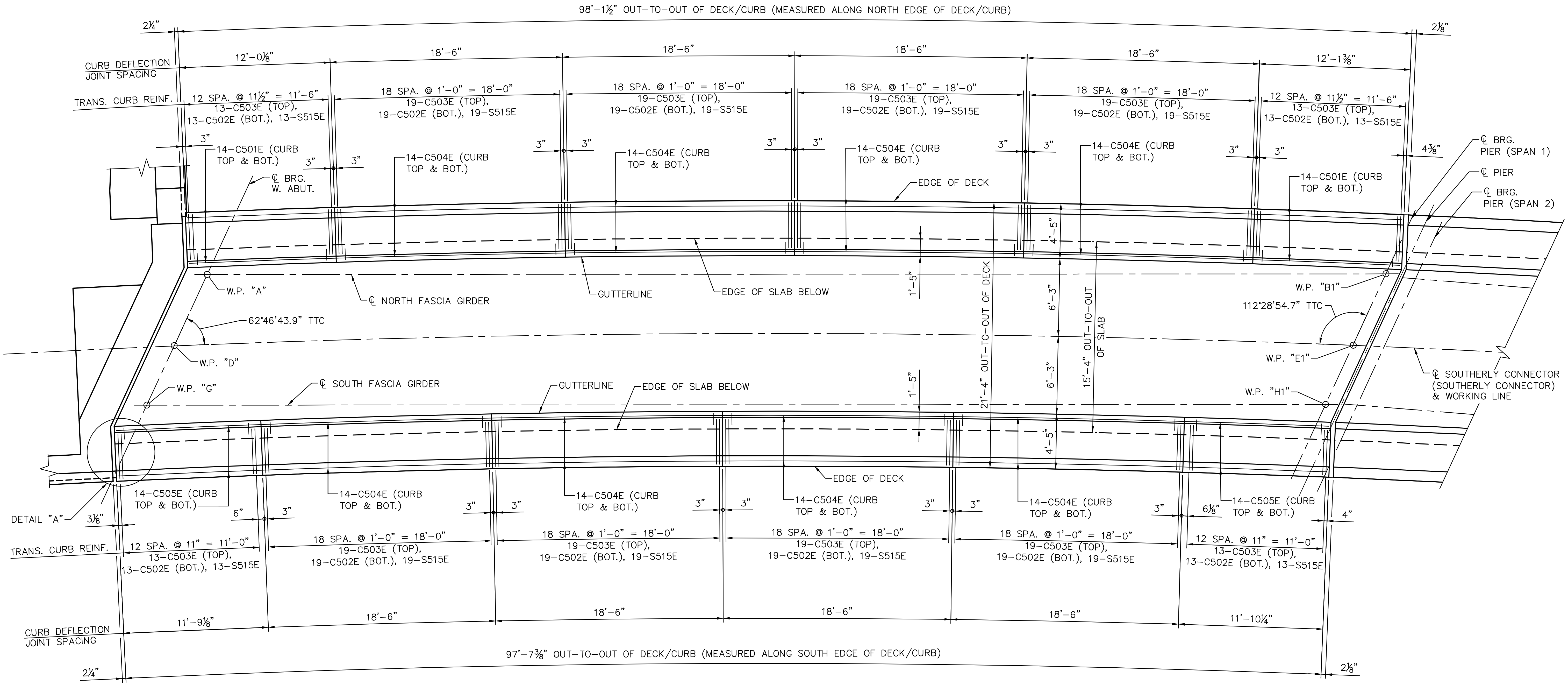
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
SUPERSTRUCTURE DETAILS 3

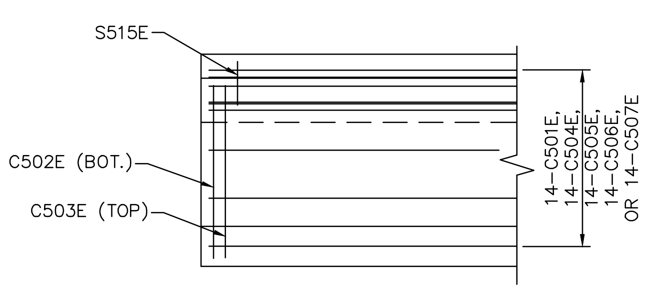
DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-SUP-005

SHEET 42 OF 60



DECK/CURB PLAN – SPAN 1



DETAIL "A"

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: JFM CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

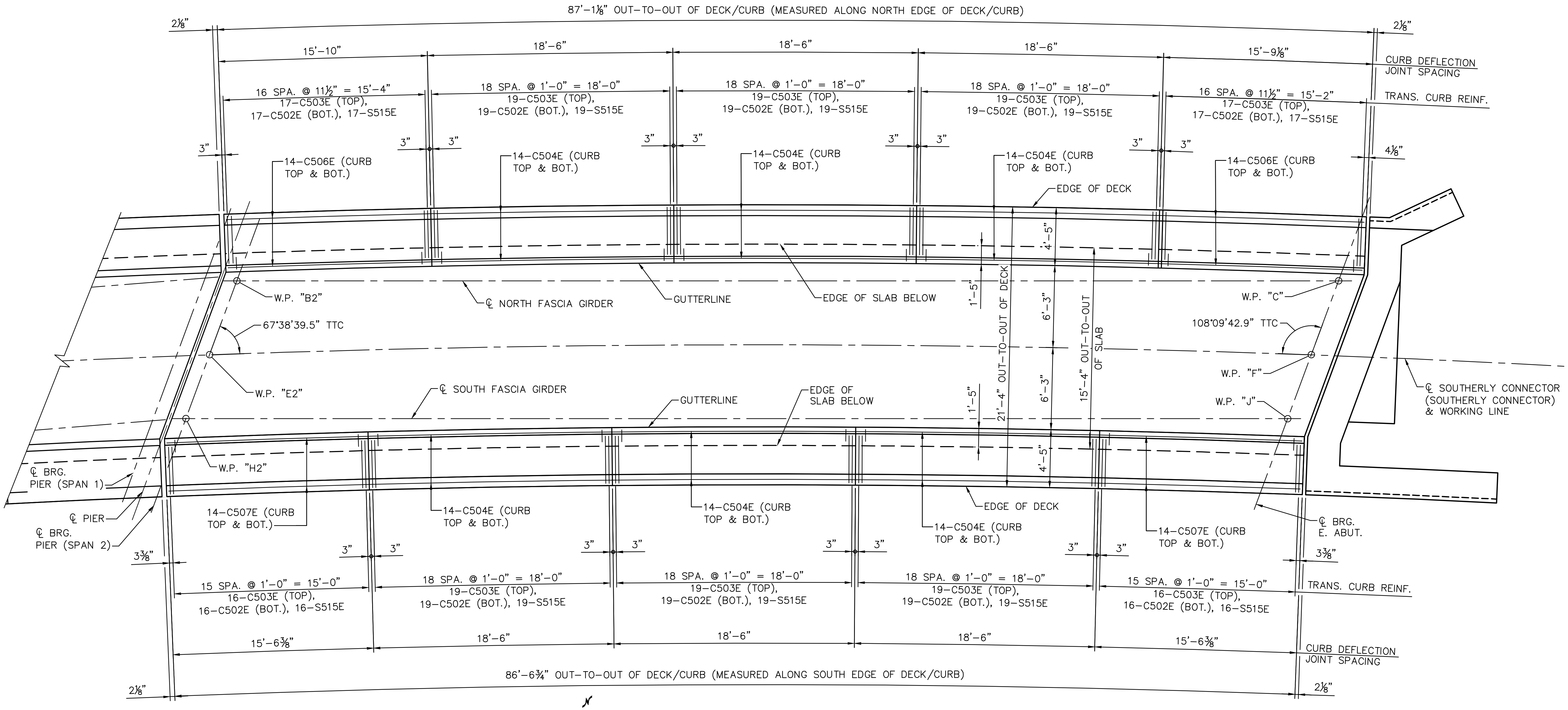
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
SUPERSTRUCTURE DETAILS 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-SUP-006

SHEET 43 OF 60

Jan. 18 2016 03:11 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SOCO-FRT\CBRR0691-BRG-SUP-006.dwg By: gavin.good



DECK/CURB PLAN – SPAN 2

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: JFM CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

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METROPOLITAN COUNCIL

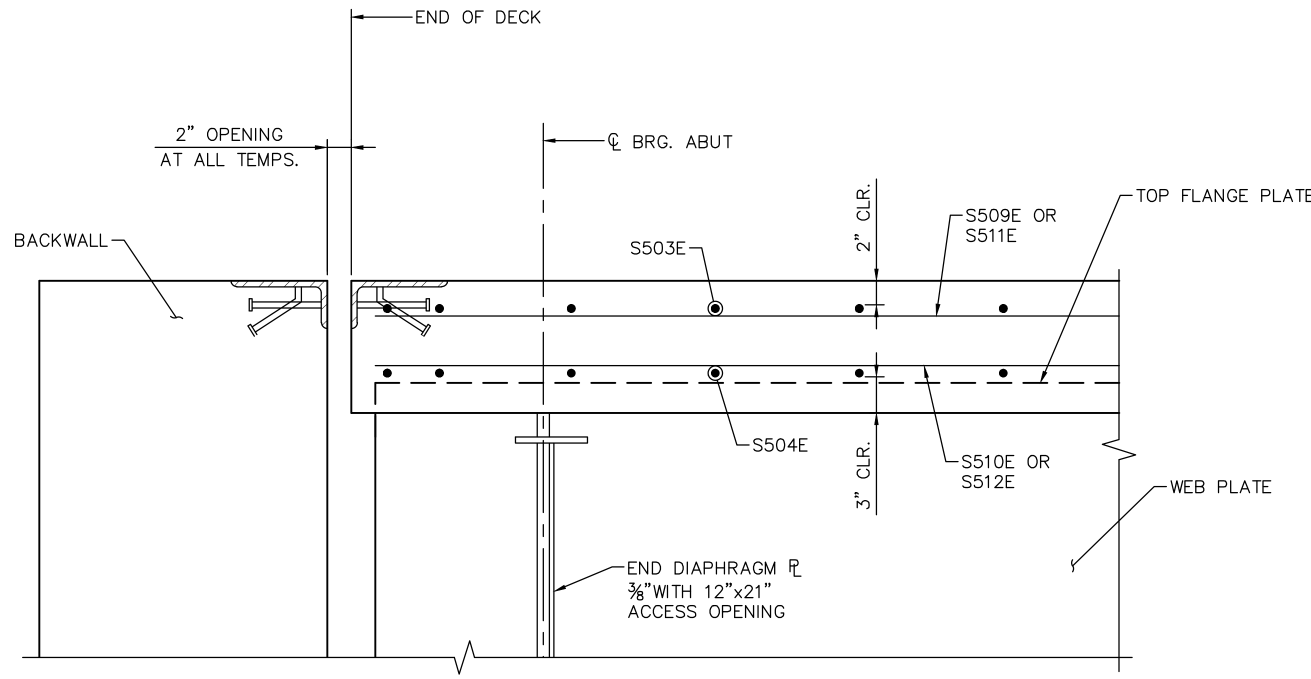
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
SUPERSTRUCTURE DETAILS 5

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-SUP-007

SHEET 44 OF 60

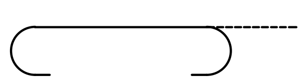


NOTE:
SPAN 1 BACK SHOWN. SPAN 1 AHEAD, SPAN 2 BACK, AND SPAN 2 AHEAD SIMILAR.

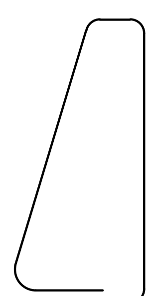
SECTION A–A

BILL OF REINFORCEMENT
FOR SUPERSTRUCTURE

BAR	NO.	LENGTH	SHAPE	LOCATION
S501E	0	0'-0"	BENT	TRANS., TOP
S502E	0	0'-0"	STR.	TRANS., BOT.
S503E	0	0'-0"	BENT	SPAN 1, TRANS., TOP
S504E	0	0'-0"	STR.	SPAN 1, TRANS., BOT.
S505E	0	0'-0"	BENT	TRANS., TOP
S506E	0	0'-0"	STR.	TRANS., BOT.
S507E	0	0'-0"	BENT	SPAN 2, TRANS., TOP
S508E	0	0'-0"	STR.	SPAN 2, TRANS.,BOT.
S509E	0	0'-0"	STR.	LONG., TOP
S510E	0	0'-0"	STR.	LONG., BOT.
S511E	0	0'-0"	STR.	SPAN 1, LONG., TOP
S512E	0	0'-0"	STR.	SPAN 1, LONG., BOT.
S513E	0	0'-0"	STR.	SPAN 2, LONG., TOP
S514E	0	0'-0"	STR.	SPAN2, LONG., BOT.
S515E	0	0'-0"	BENT	PARAPET DOWEL
C501E	0	0'-0"	STR.	SPAN 1, CURB, LONG.
C502E	0	0'-0"	BENT	CURB, TRANS., BOT.
C503E	0	0'-0"	BENT	CURB, TRANS., TOP
C504E	0	0'-0"	STR.	CURB, LONG.
C505E	0	0'-0"	STR.	SPAN 1, CURB, LONG.
C506E	0	0'-0"	STR.	SPAN 2, CURB, LONG.
C507E	0	0'-0"	STR.	SPAN 2, CURB, LONG.

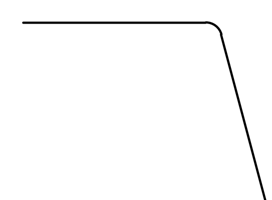


S501E

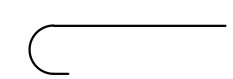


S515E

C502E



C503E



S503E, S505E, & S507E

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

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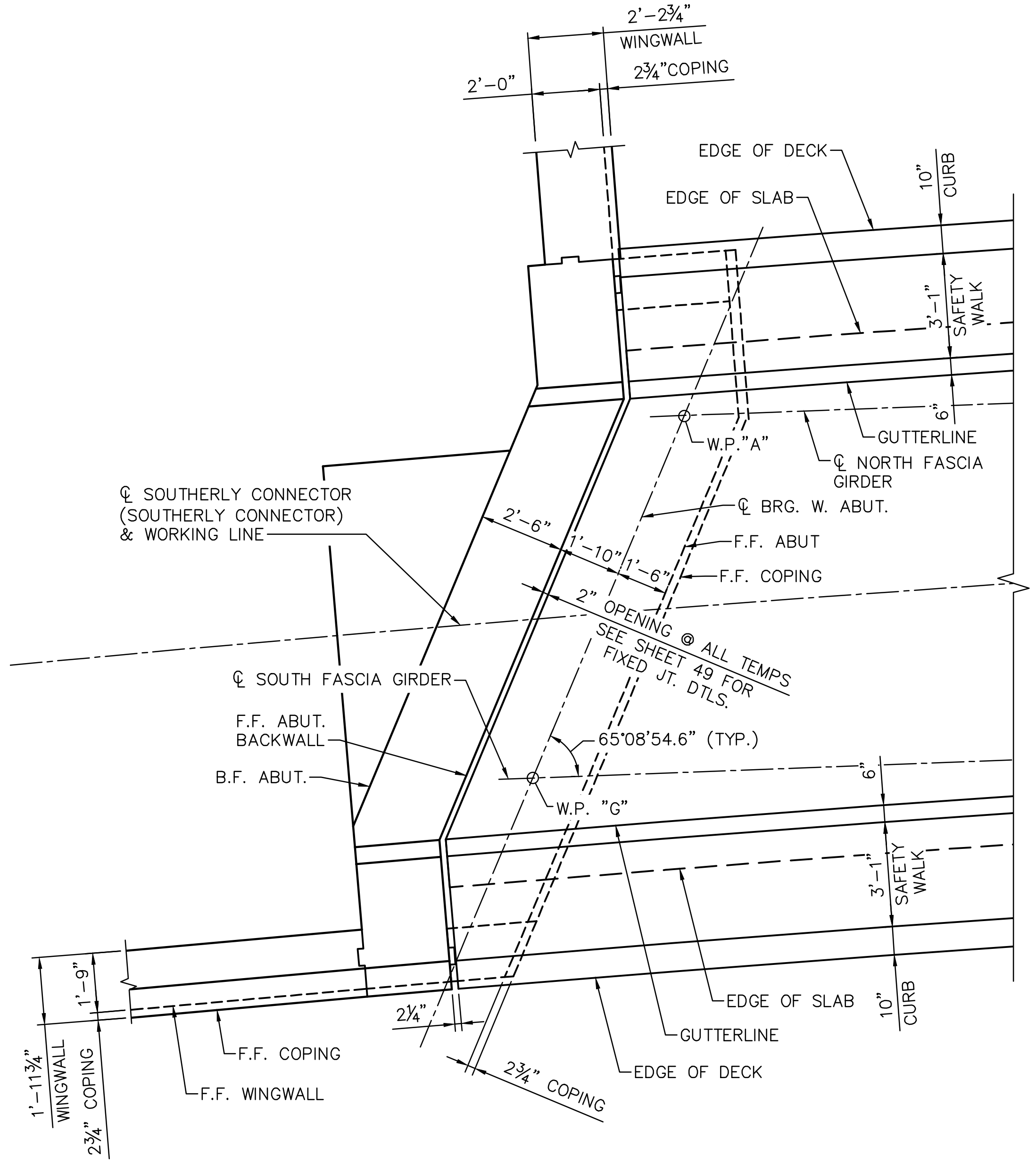
METROPOLITAN COUNCIL

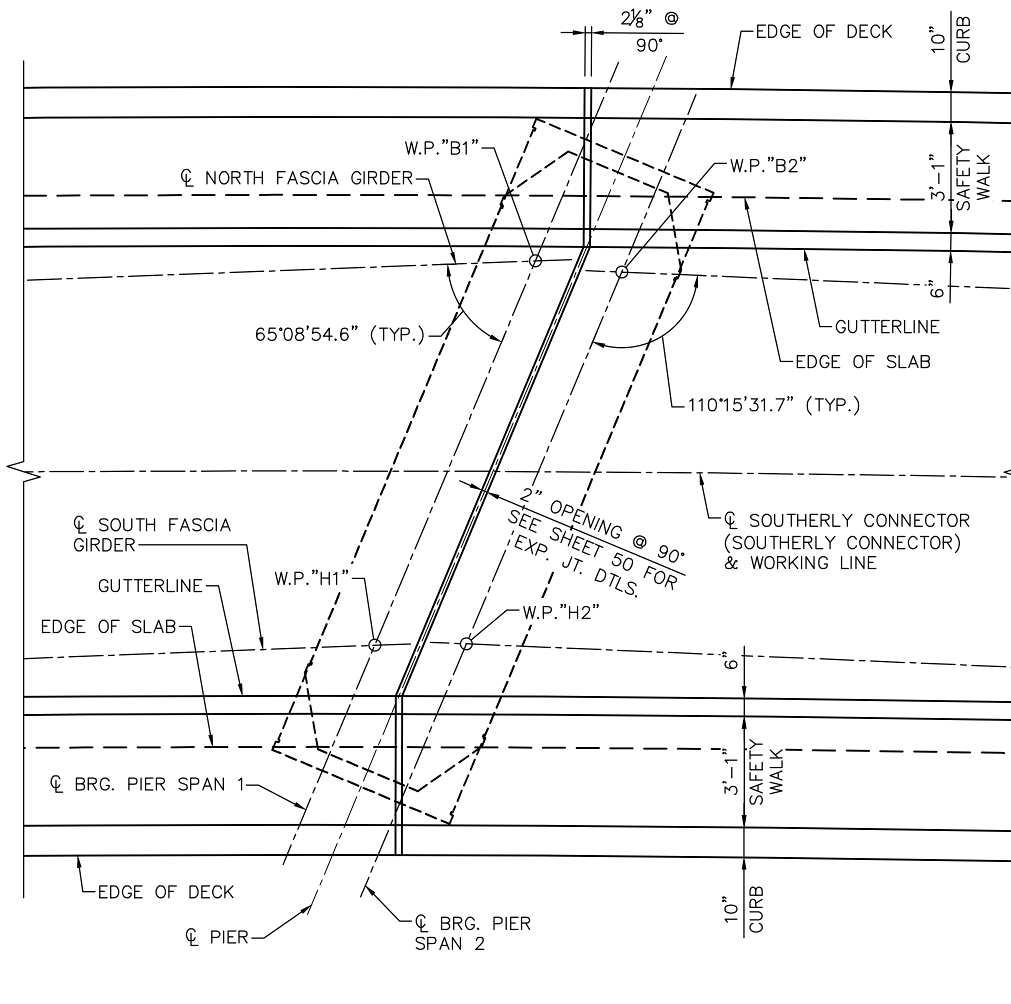
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
SUPERSTRUCTURE DETAILS 6

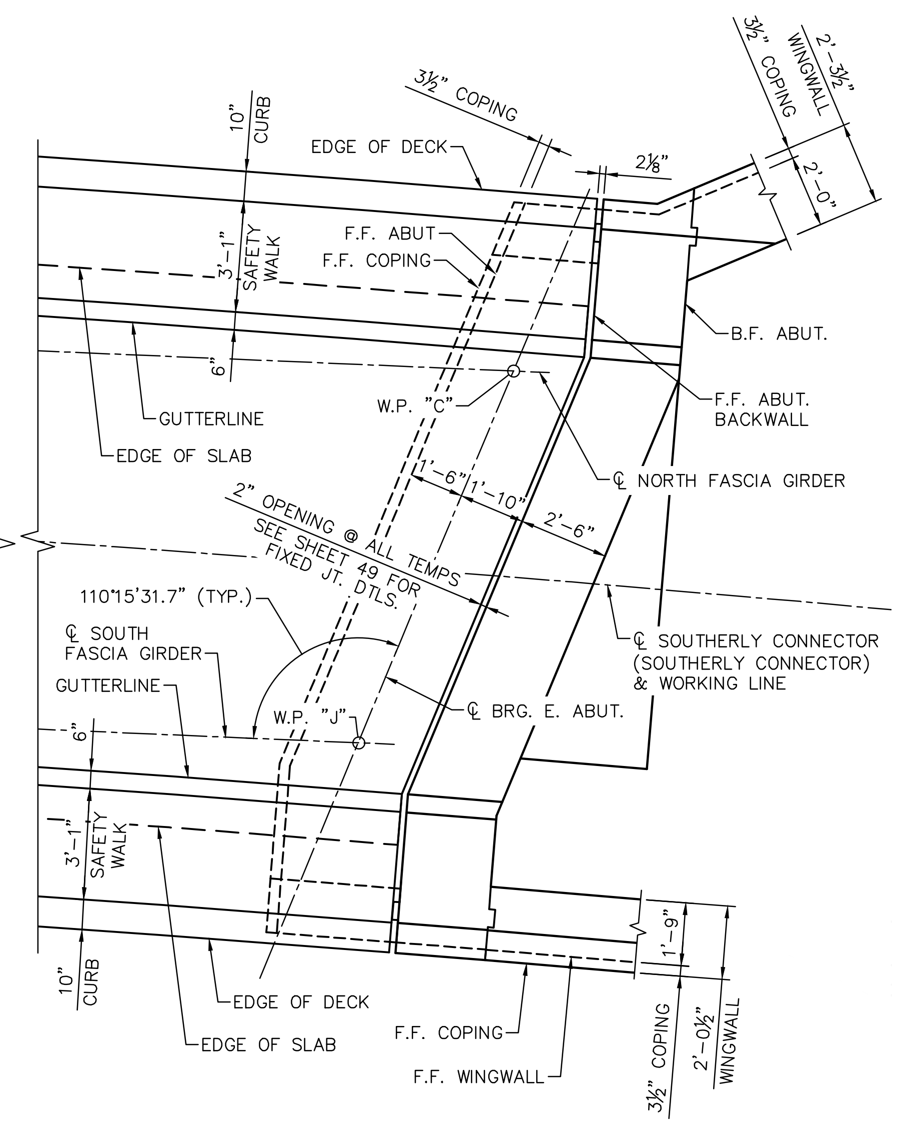
DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-SUP-008



WEST ABUTMENT CORNER DETAILS



PIER CORNER DETAILS



EAST ABUTMENT CORNER DETAILS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

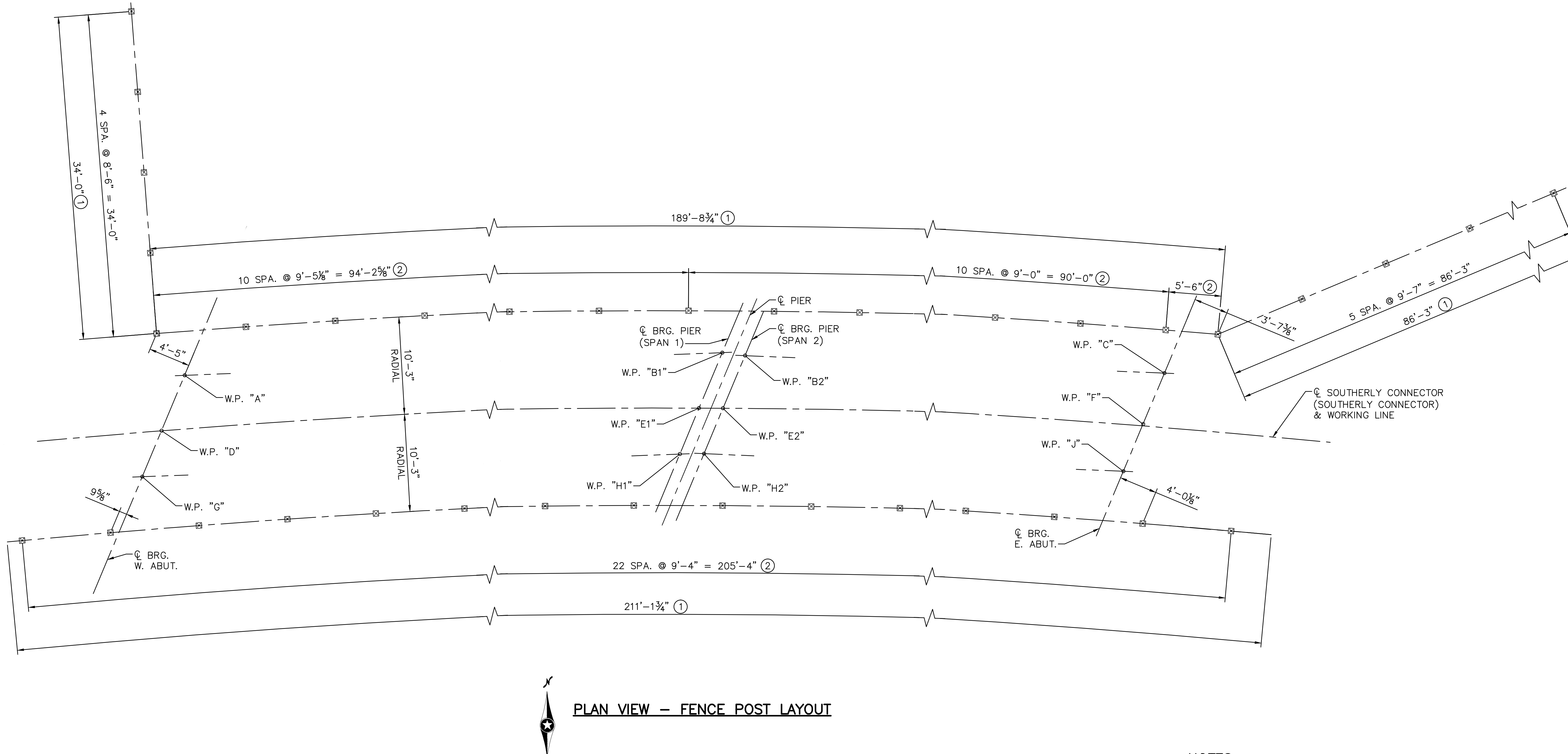
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
SUPERSTRUCTURE DETAILS 7

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-SUP-009

SHEET 46 OF 60



PLAN VIEW – FENCE POST LAYOUT

NOTES:

POSTS SHALL BE SET VERTICAL.

ALL FENCE POST ANCHORAGES SHALL BE TYPE A. SEE DETAIL B905.

(1) WIRE FENCE, FIGURE 5-397.119 (MOD.)

(2) MEASURED ALONG EDGE OF DECK.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

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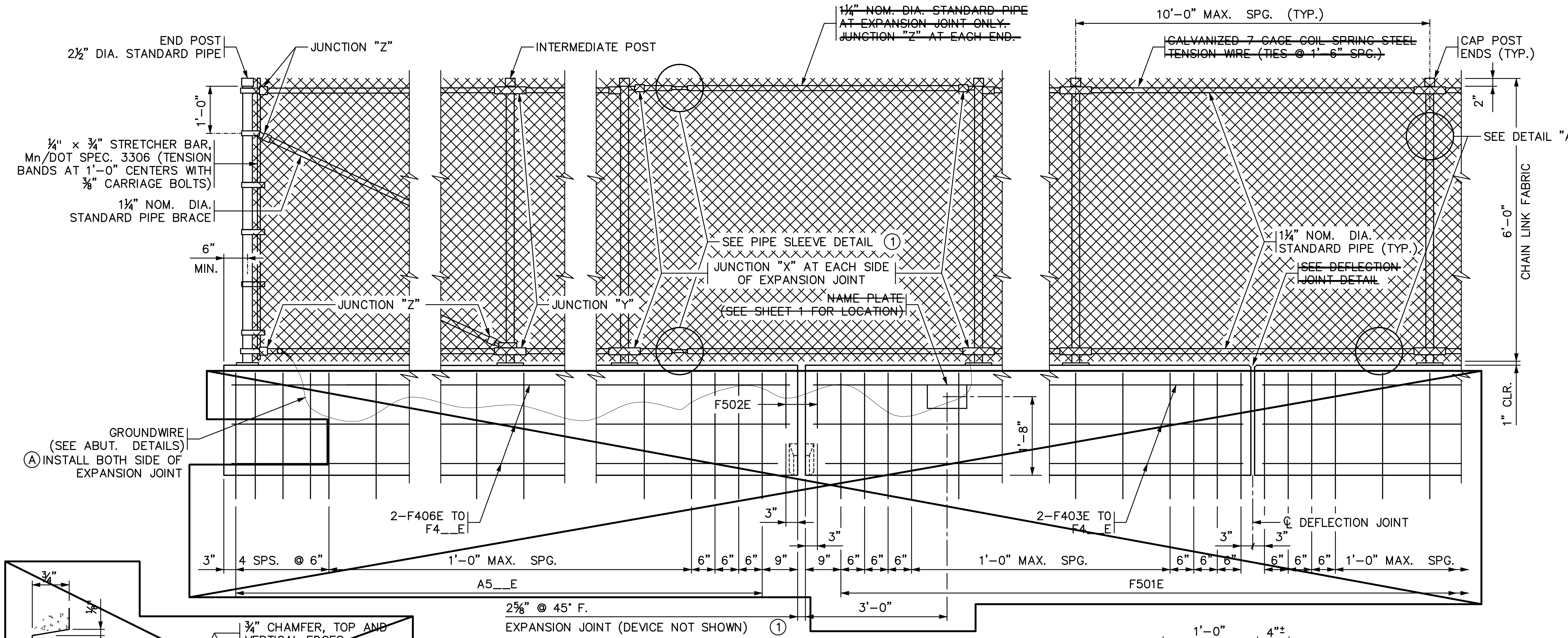
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

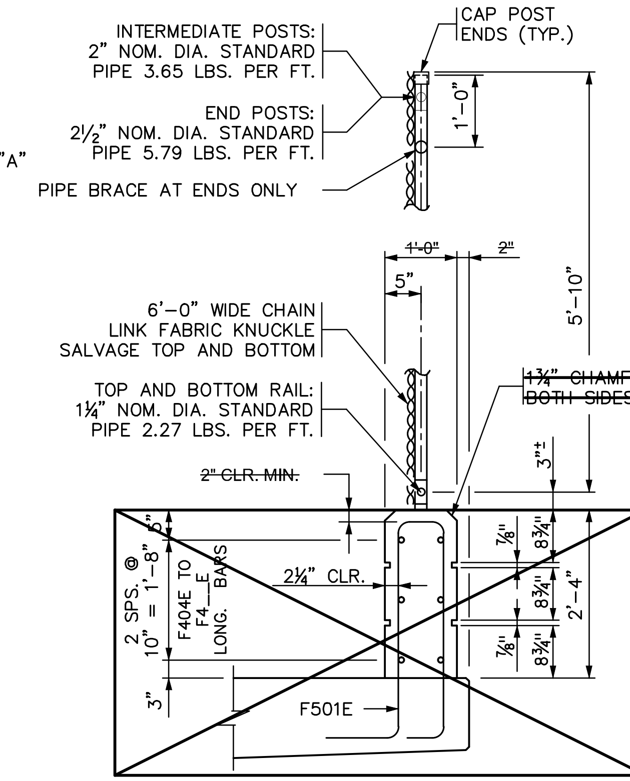
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
SUPERSTRUCTURE DETAILS 8

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-SUP-010

SHEET 47 OF 60



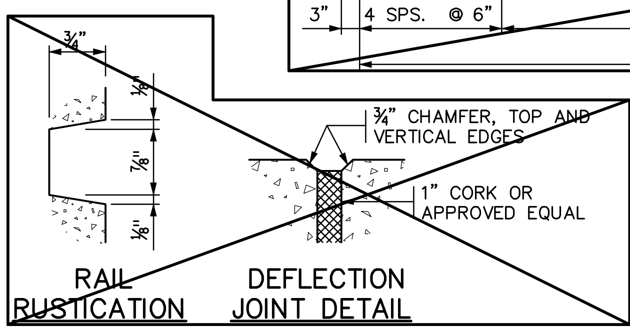
(A) INSIDE ELEVATION OF RAILING



(A) TYPICAL SECTION THROUGH FENCE

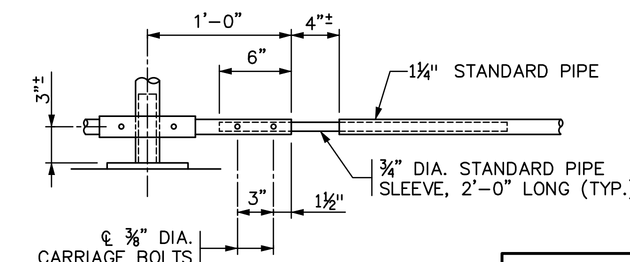
INTERMEDIATE POST SHOWN

SHEET MODIFICATION:
(A) DENOTES MODIFICATION TO STANDARD SHEET



RAIL RUSTICATION

DEFLECTION JOINT DETAIL



PIPE SLEEVE DETAIL (1)

GENERAL NOTES

(A) SEE SUPERSTRUCTURE DETAILS SHEETS FOR CURB DIMENSION, REINFORCEMENT, AND NOTES.

(A) LENGTH OF "WIRE FENCE" ~~FOR PAYMENT~~ SHALL BE MEASURED BETWEEN THE CENTERS OF END RAIL POSTS, SEE SHEET 47.

~~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.

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

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

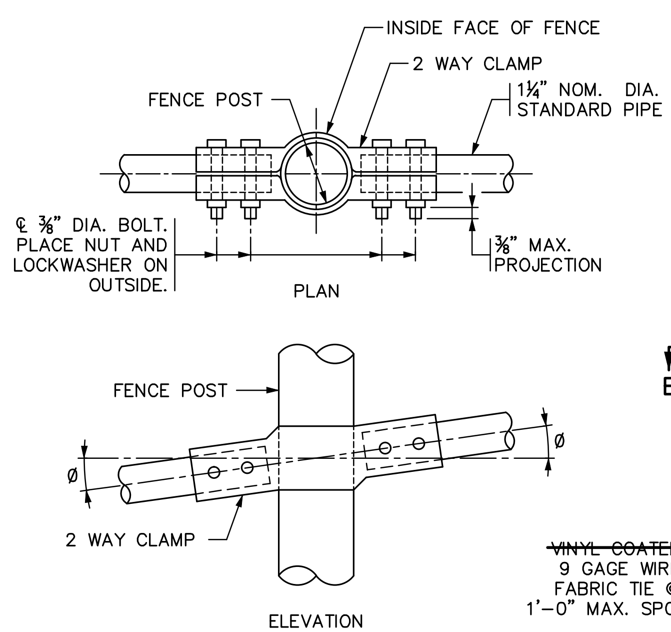
~~ALL POSTS SHALL HAVE A MEANS TO SECURELY HOLD THE TOP TENSION WIRE IN POSITION AND ALLOW FOR THE REMOVAL AND REPLACEMENT OF A POST WITHOUT DAMAGING THE TOP WIRE.~~

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 12½ GAGE GALVANIZED HOG RINGS FOR TENSION WIRE TIES.~~

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

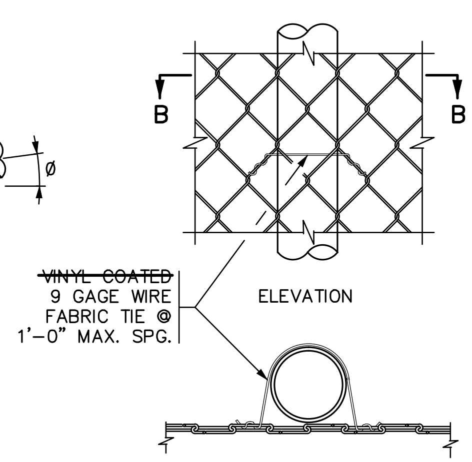
SEE SPECIAL PROVISIONS FOR REQUIREMENTS NOT INCLUDED ON THIS SHEET. ~~AND FOR BASIS OF PAYMENT.~~

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

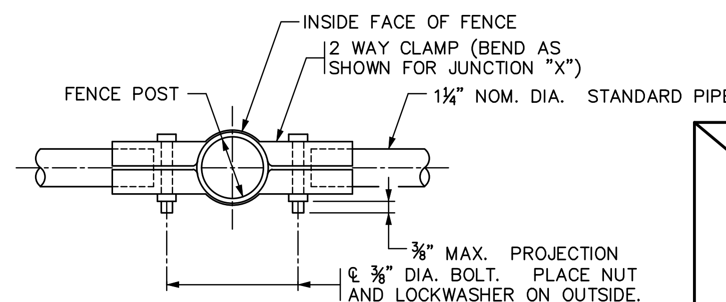


JUNCTION "X"

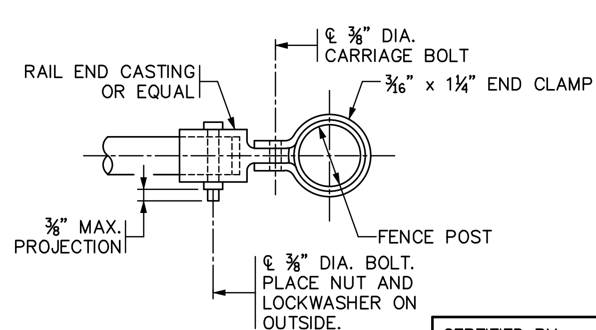
2 WAY CLAMP BENDING TABLE	
GRADE OF FENCE	Ø
0° TO 2°	0°
2° TO 6°	4°
6° TO 10°	8°



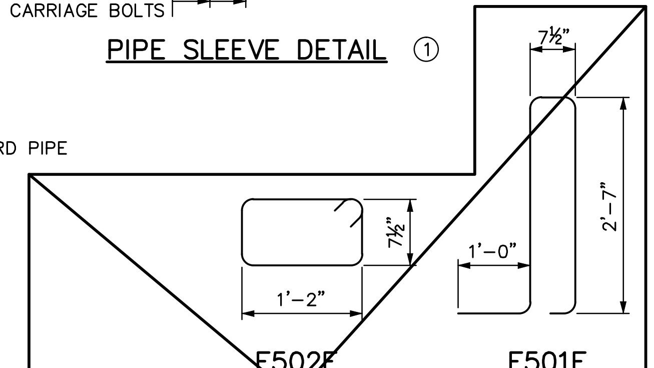
DETAIL "A"



JUNCTION "Y"



JUNCTION "Z"



F502E

F501E

BILL OF REINFORCEMENT FOR PARAPET

BAR	NO.	LENGTH	SHAPE	LOCATION
F501E		7'-3"		RAIL BASE VERTICAL
F502E		4'-6"		RAIL BASE VERTICAL
F403E			——	RAIL BASE LONGITUDINAL
F404E			——	RAIL BASE LONGITUDINAL

FIG. 5-397.119 (MOD.)

REVISED: 04-17-2013

APPROVED: DECEMBER 18, 2003

STATE BRIDGE ENGINEER

CERTIFIED BY

LICENSED PROFESSIONAL ENGINEER

01/22/16 DATE

NAME: # LIC. NO. #####

TITLE: WIRE FENCE (DESIGN W-1)(A)

DES:	BLF	DR:	ZTW
CHK:	DLS	CHK:	DLS

APPROVED:

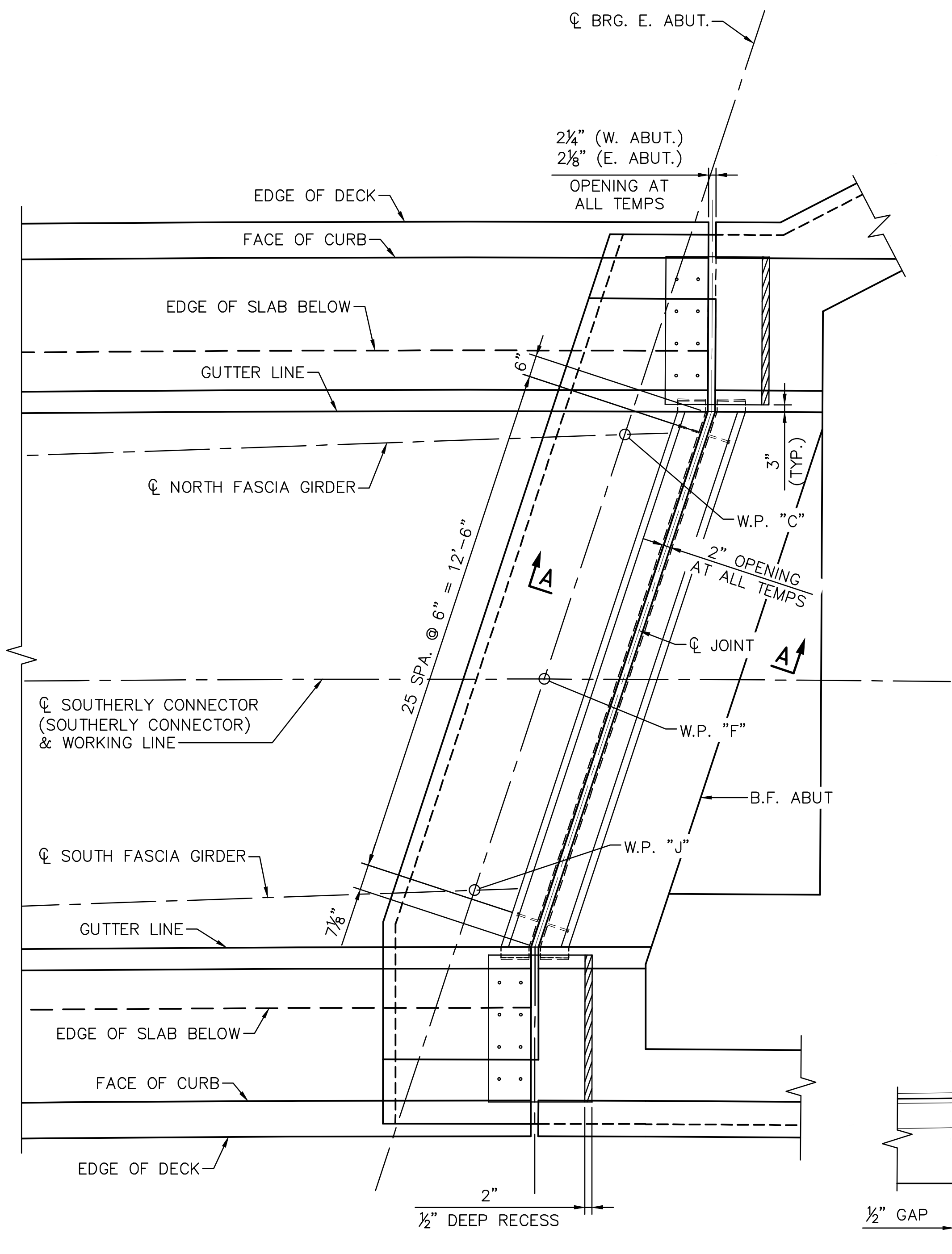
SHEET NO. 48 OF 60 SHEETS

BRIDGE NO. R0691

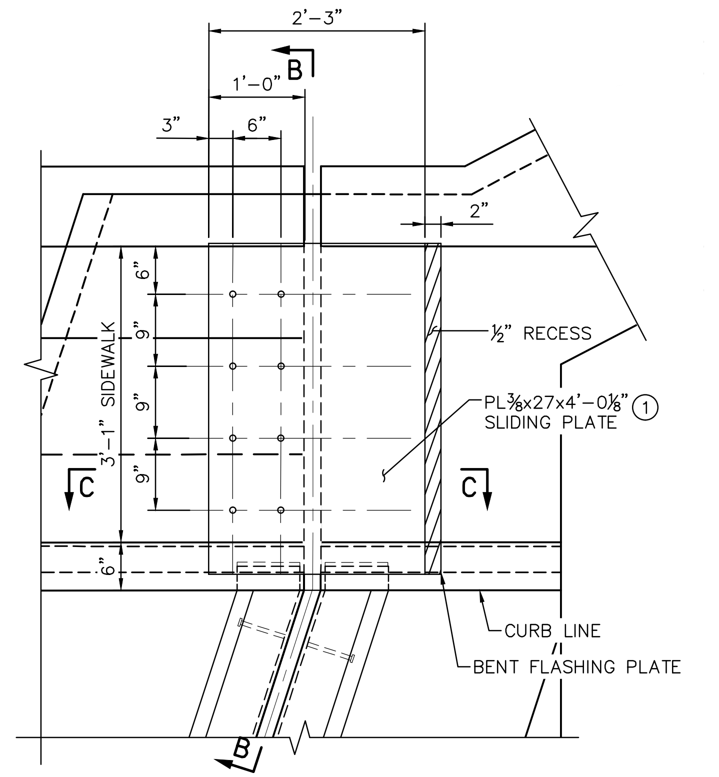
NOTES:

(1) RAISED PATTERN PLATE

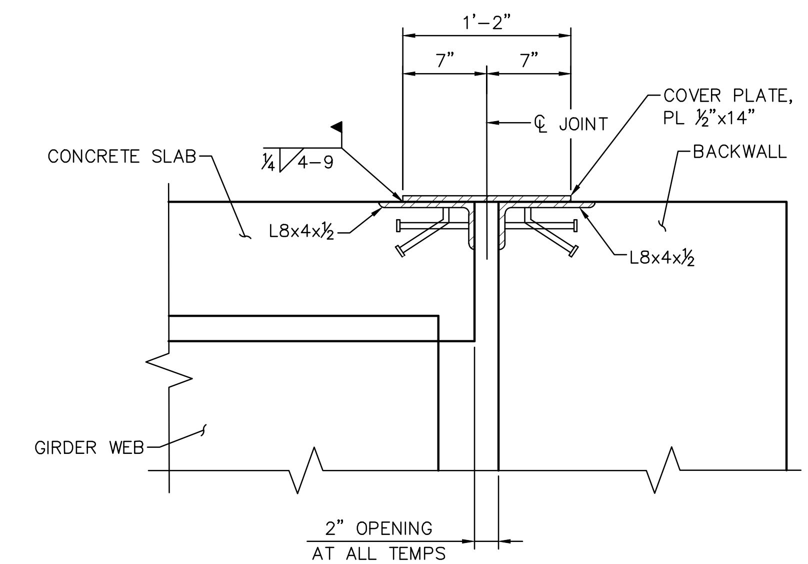
STEEL NOTE:
ALL STRUCTURAL SHAPES AND PLATES SHOWN ON JOINT DETAIL SHEETS FOR EXP. AND FIXED JOINTS SHALL BE GALVANIZED PER SPEC. 3394. FASTENERS SHALL BE GALVANIZED PER SPEC. 3392.



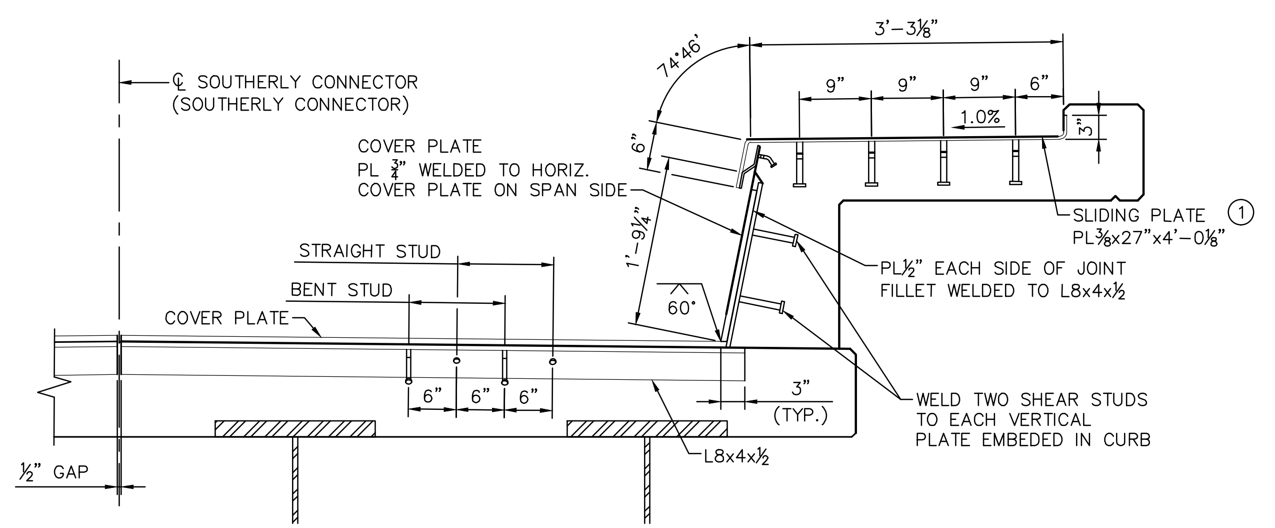
PLAN – FIXED JOINT DEVICE AT ABUTMENT
(EAST ABUT. SHOWN, WEST ABUT. SIM.)



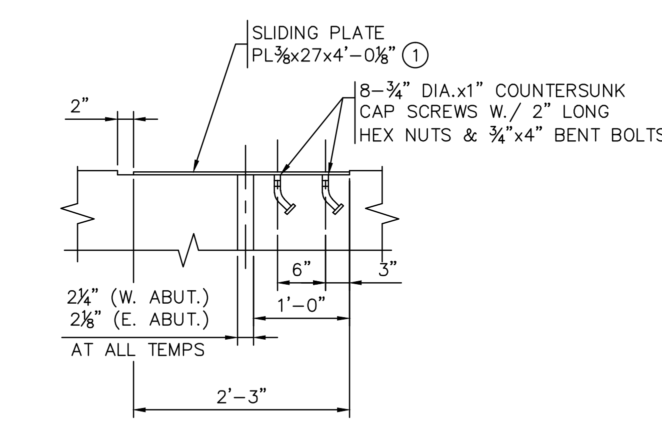
PLAN – SLIDING PLATE AT NORTH SIDE OF ABUTMENT



SECTION A–A



SECTION B–B



SECTION C–C

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
JOINT DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-EXP-001

SHEET 49 OF 60

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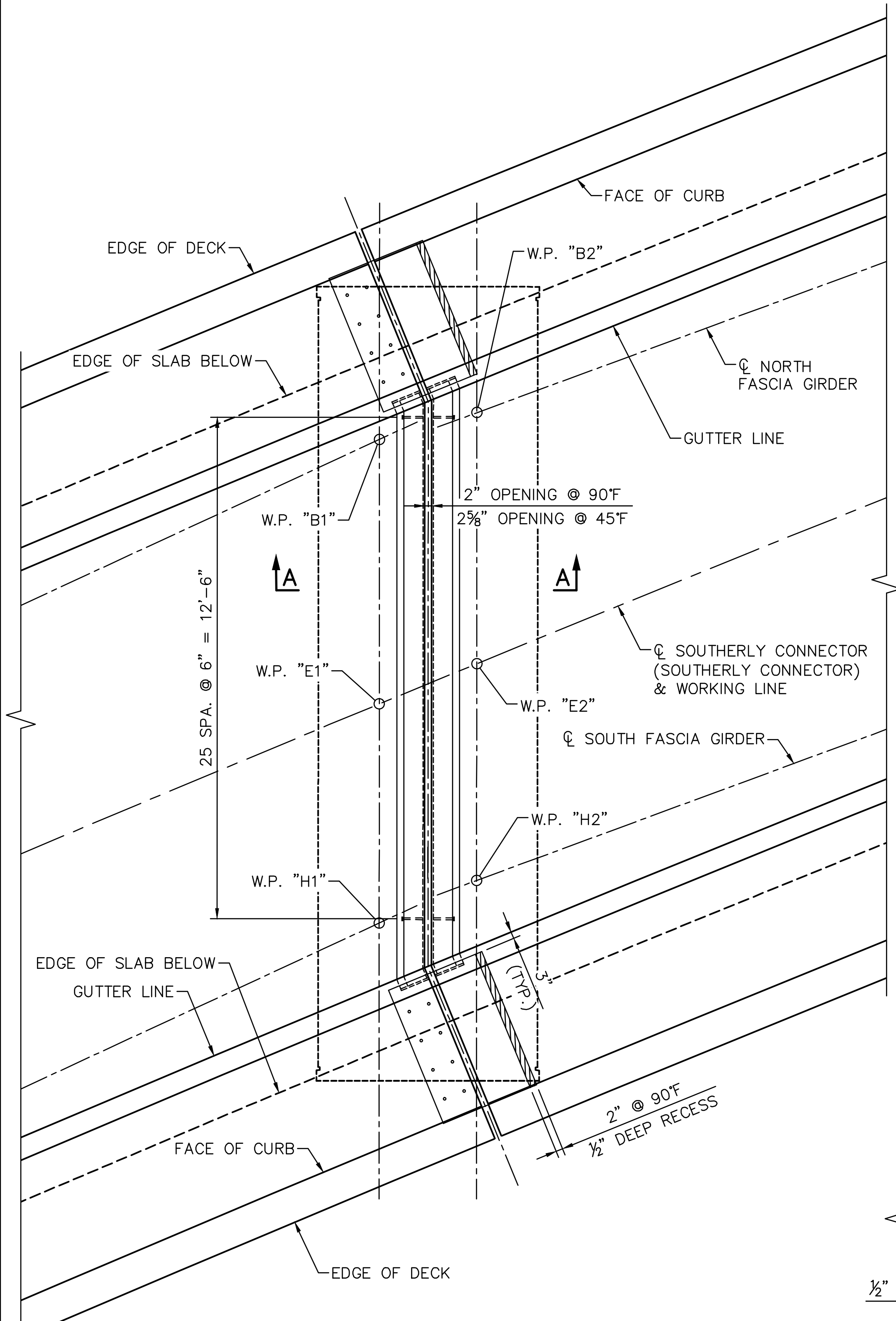
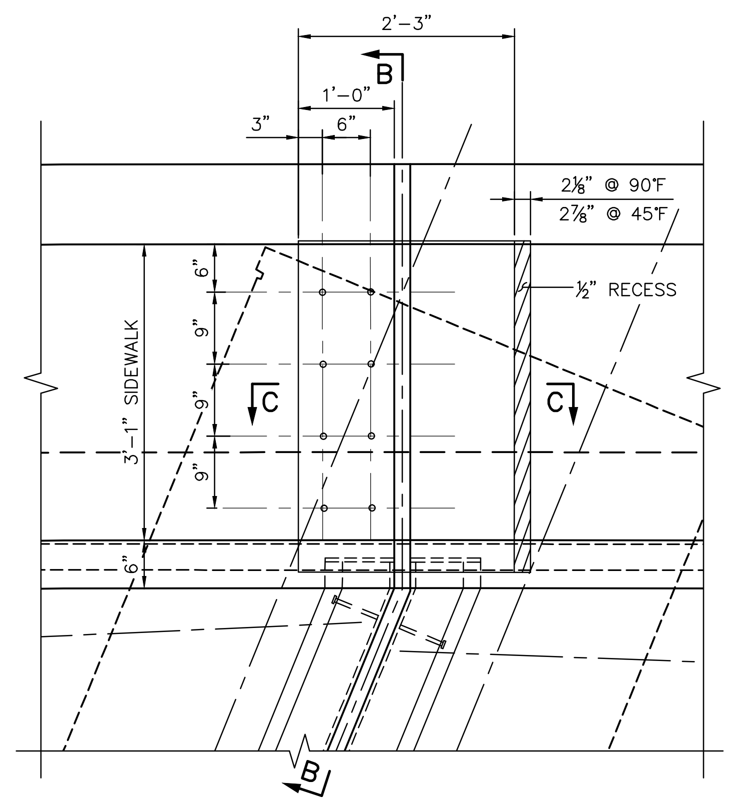
NOTES:

1. RAISED PATTERN PLATE

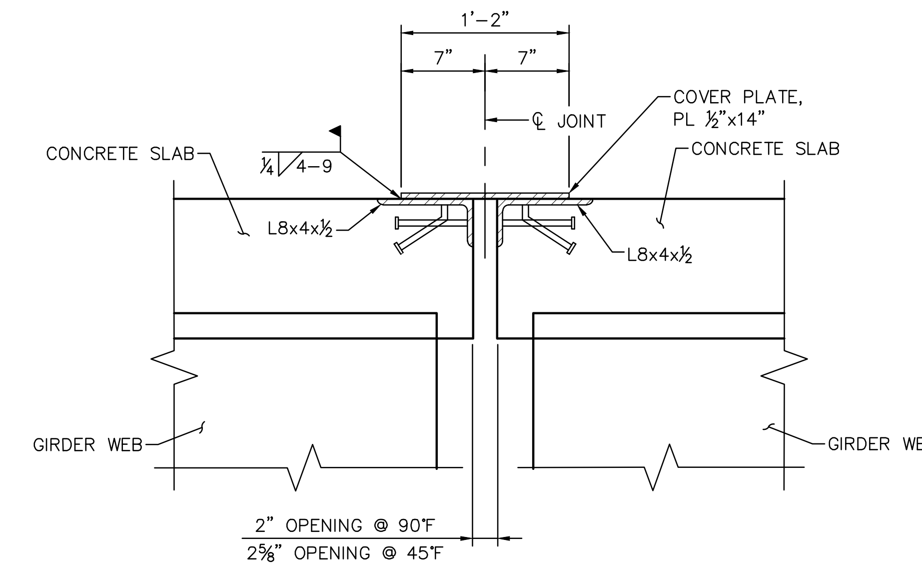
STEEL NOTE:
ALL STRUCTURAL SHAPES AND PLATES SHOWN ON JOINT DETAIL SHEETS FOR EXP. AND FIXED JOINTS SHALL BE GALVANIZED PER SPEC. 3394. FASTENERS SHALL BE GALVANIZED PER SPEC. 3392.



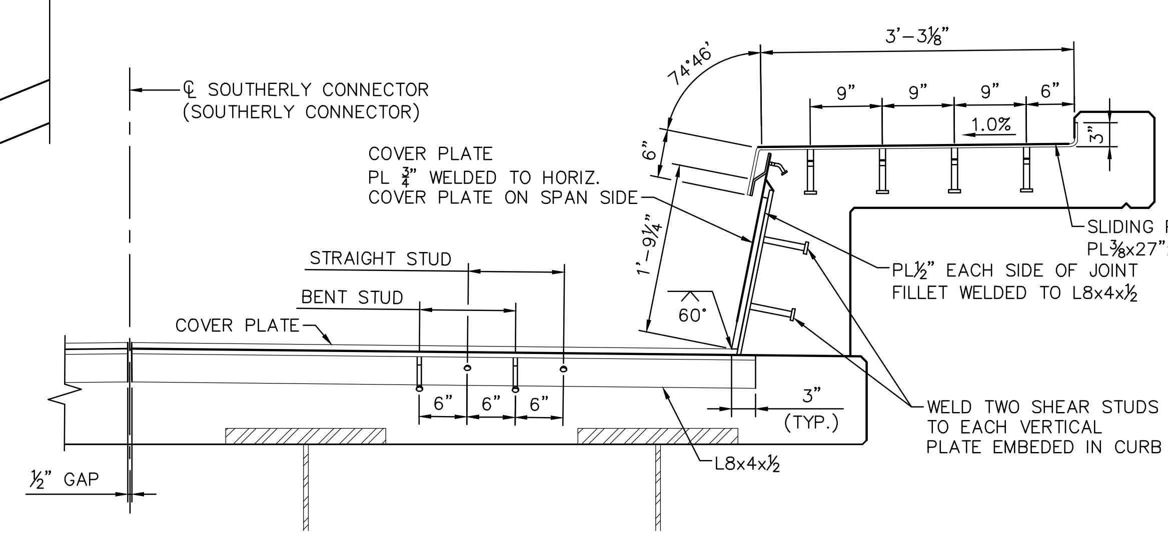
PLAN – EXPANSION JOINT DEVICE AT PIER



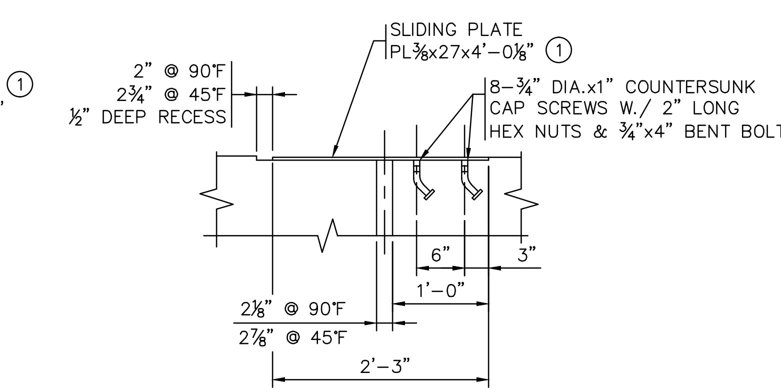
PLAN – SLIDING PLATE AT NORTH SIDE OF PIER



SECTION A–A



SECTION B–B



SECTION C–C

Jan. 18 2016 03:15 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SOCO-FRT\CBRR0691-BRG-EXP-002.dwg By: gavin.good

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG | CHECKED BY: DLS
DRAWN BY: MRD | CHECKED BY: DLS

AECOM Kimley»Horn

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
JOINT DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-EXP-002

SHEET 50 OF 60

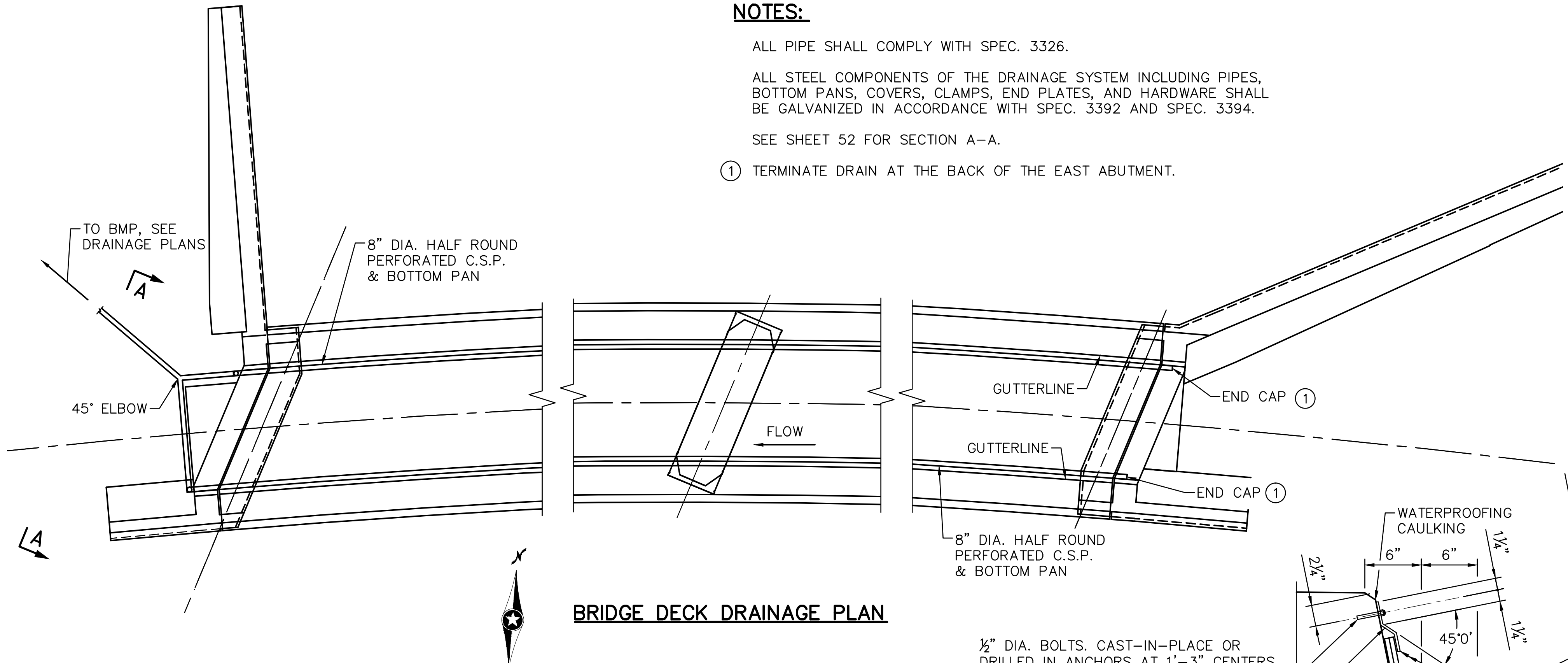
NOTES:

ALL PIPE SHALL COMPLY WITH SPEC. 3326.

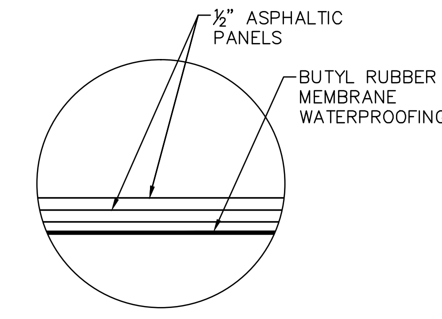
ALL STEEL COMPONENTS OF THE DRAINAGE SYSTEM INCLUDING PIPES, BOTTOM PANS, COVERS, CLAMPS, END PLATES, AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH SPEC. 3392 AND SPEC. 3394.

SEE SHEET 52 FOR SECTION A–A.

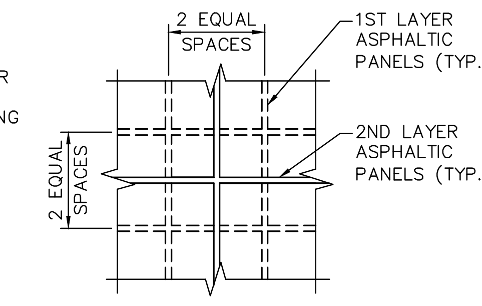
(1) TERMINATE DRAIN AT THE BACK OF THE EAST ABUTMENT.



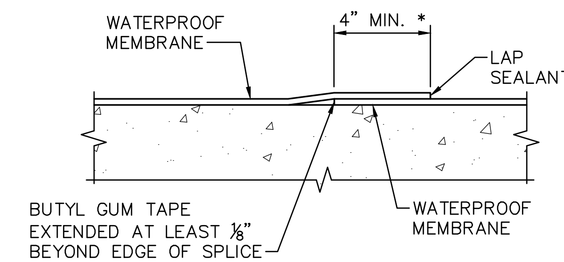
BRIDGE DECK DRAINAGE PLAN



TYPICAL DECK WATERPROOFING

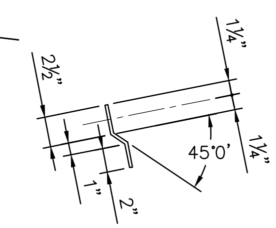


TYPICAL ASPHALT PANEL PLACEMENT

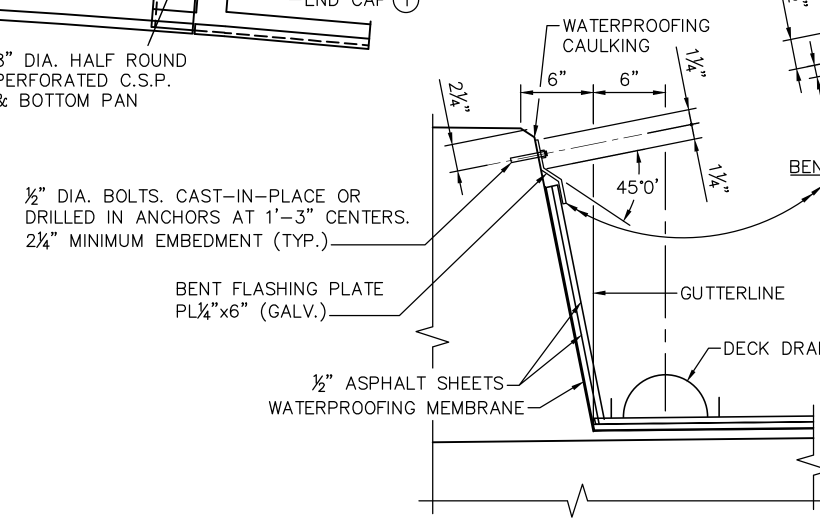


BUTYL RUBBER MEMBRANE WATERPROOFING SPLICE DETAIL

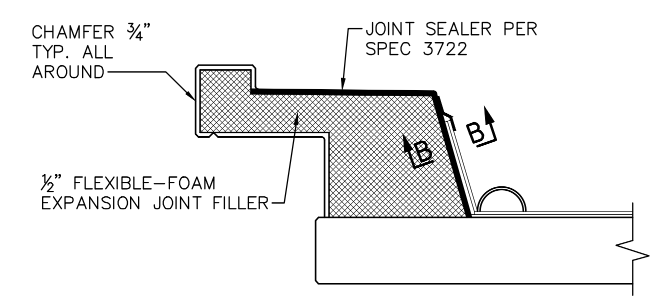
* ALL CONTACT SURFACES TO BE THOROUGHLY CLEANED & CEMENTED



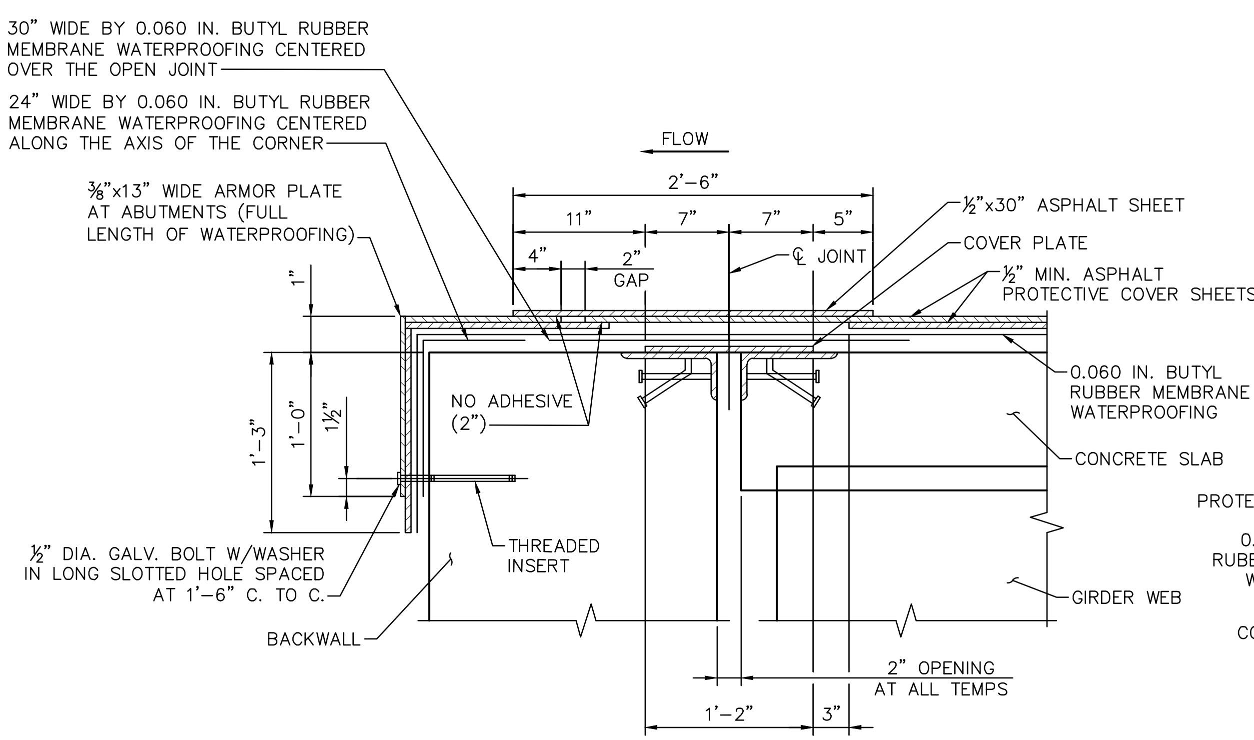
BENT FLASHING PLATE



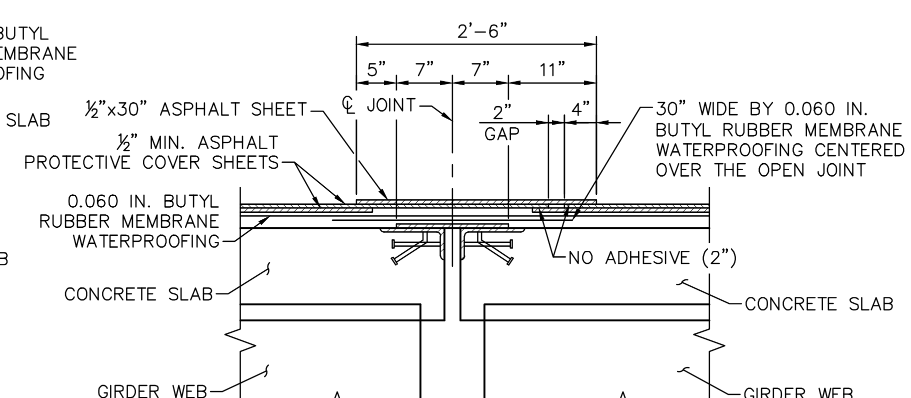
CURB SECTION



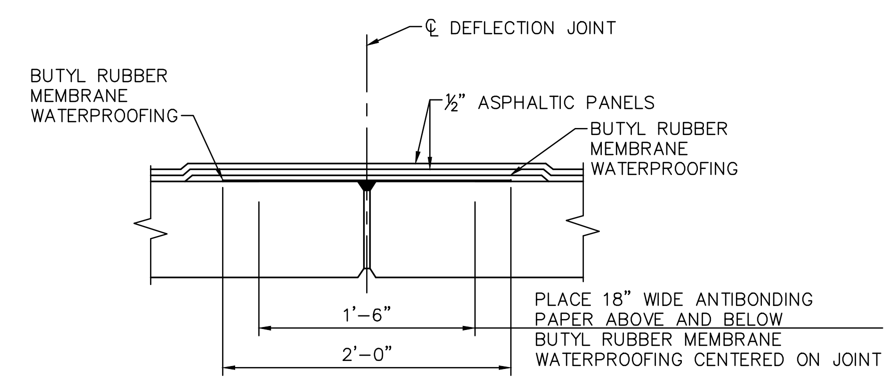
CURB SECTION AT DEFLECTION JOINT



WATERPROOFING AT ABUTMENT



WATERPROOFING AT PIER



SECTION B–B

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

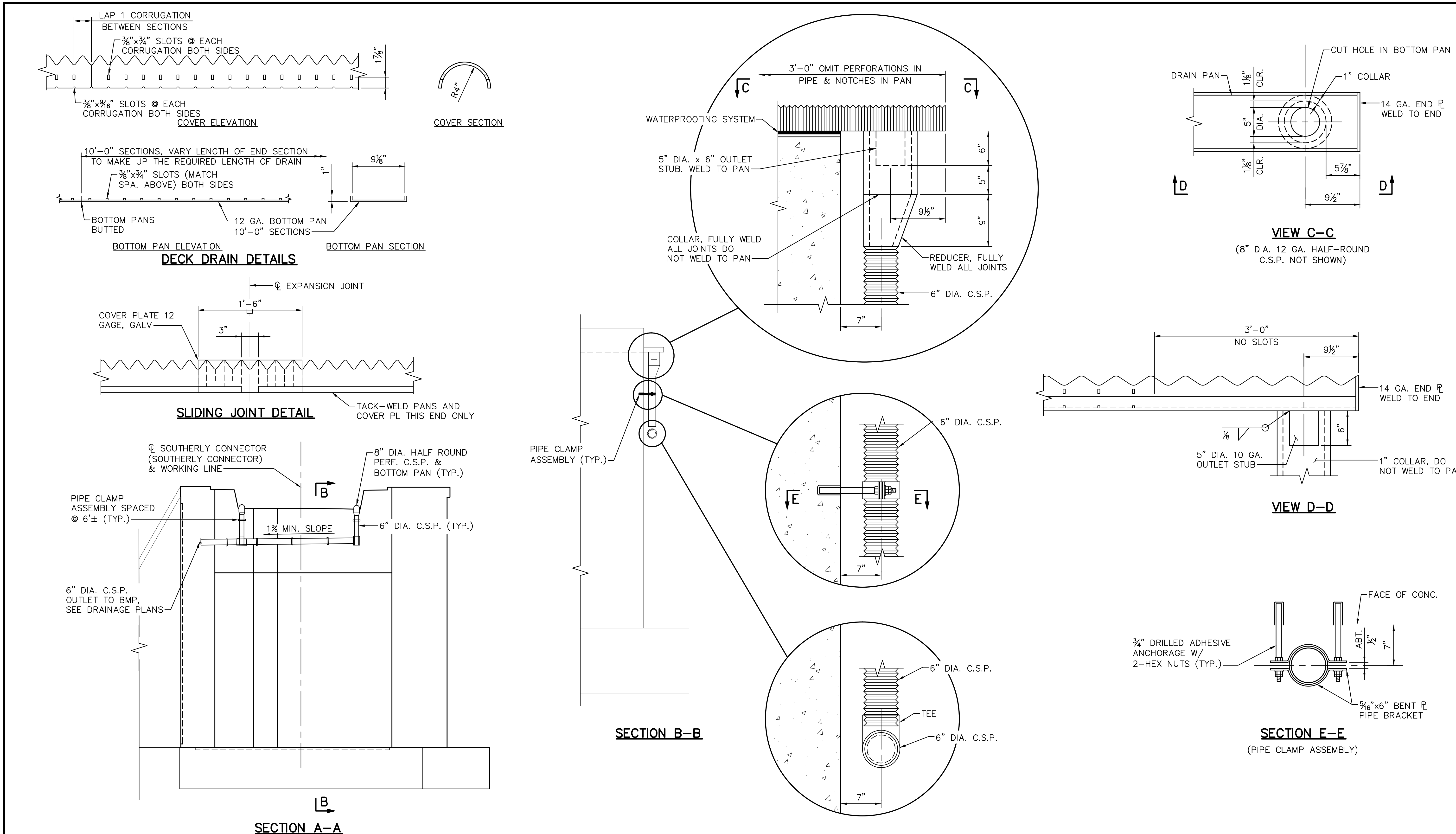
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
DECK DRAINAGE AND WATERPROOFING 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-DTL-001

SHEET 51 OF 60



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG | CHECKED BY: DLS
DRAWN BY: JFM | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

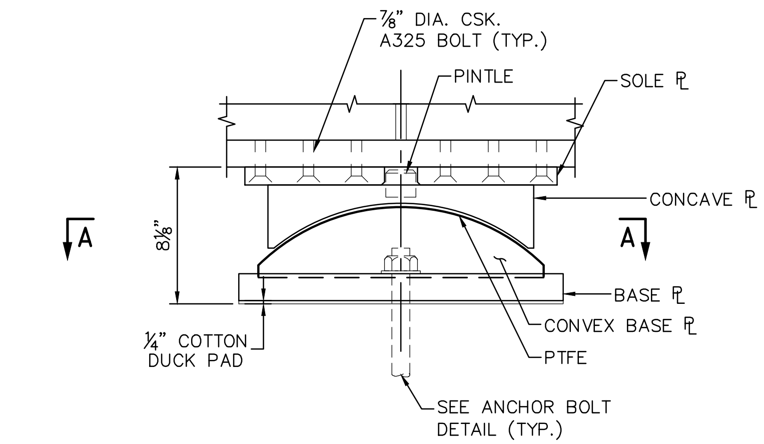
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

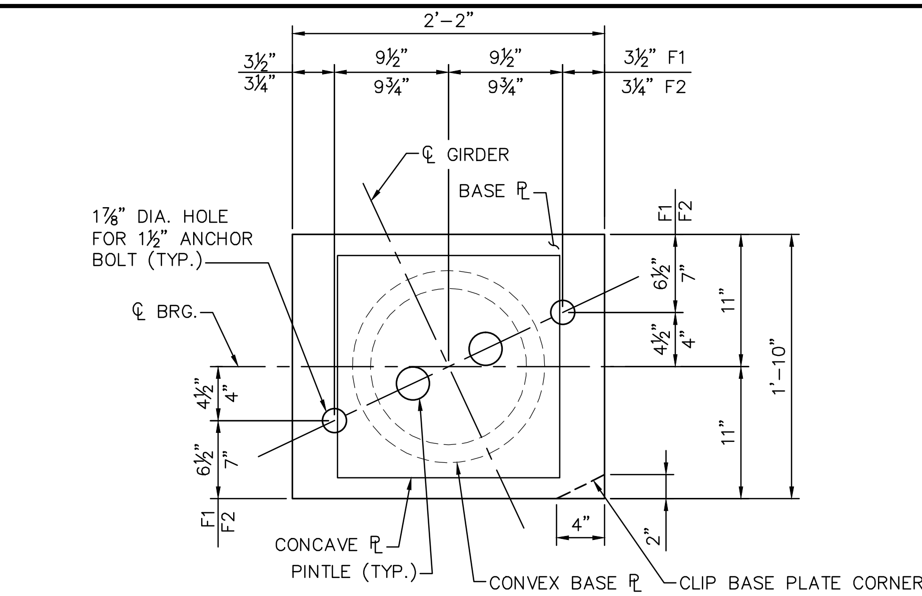
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
DECK DRAINAGE AND WATERPROOFING 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-DTL-002



TYPE F1 & F2



SECTION A–A

LOADS & MOVEMENT FOR TYPE F1 & F2 BEARING:

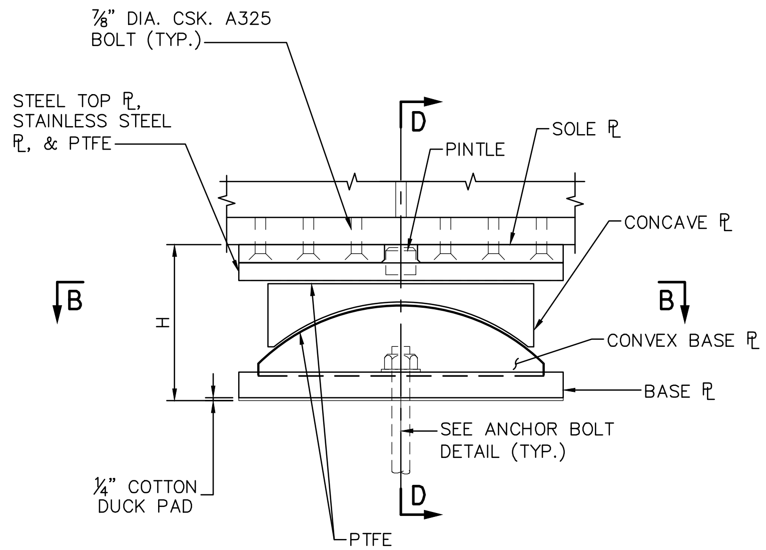
VERTICAL	DL	122K
	LL+I	225K
	TOTAL	347K
LONGITUDINAL		66K
TRANSVERSE		50K
MIN. ROTATION CAPACITY		0.02 RAD

LOADS & MOVEMENT FOR TYPE E1 & E2 BEARING:

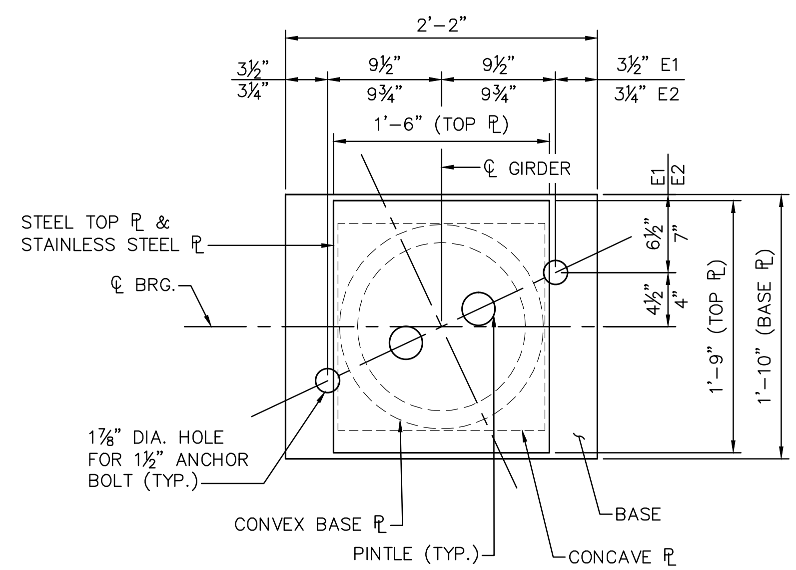
VERTICAL	DL	122K
	LL+I	225K
	TOTAL	347K
HORIZONTAL		83K
LONG. MOVEMENT		2¼ IN
MIN. ROTATION CAPACITY		0.02 RAD

ALLOWABLE STRESSES:

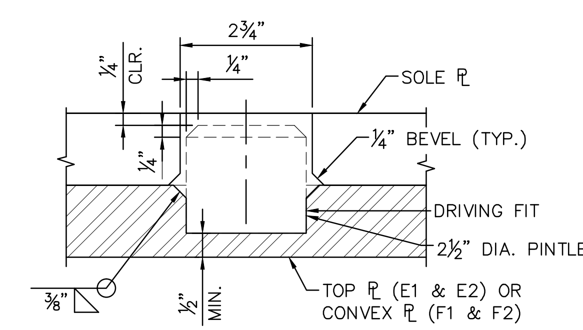
PTFE BEARING	2000 PSI
MASONRY BEARING	1350 PSI



TYPE E1 & E2

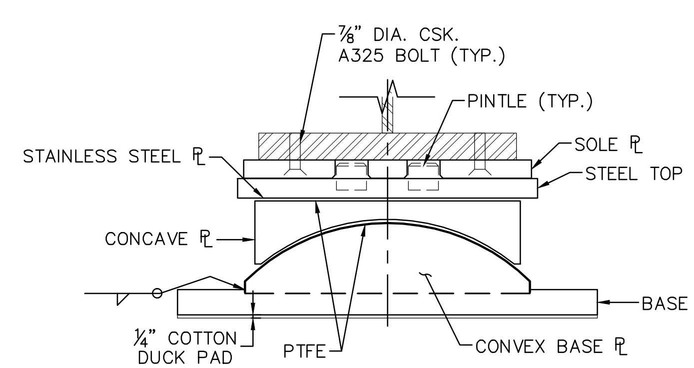


SECTION B–B

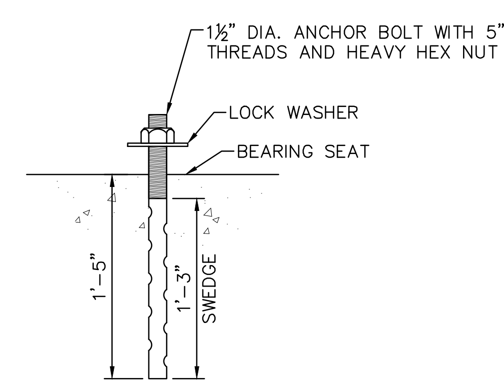


PINTLE DETAIL

F2)



SECTION D–D



ANCHOR BOLT DETAIL

NOTES:

DETAILS AND DIMENSIONS SHOWN FOR BEARINGS ARE FOR ILLUSTRATION ONLY. THE CONTRACTOR SHALL SUBMIT DETAILS AND SPECIFICATIONS FROM THE BEARING MANUFACTURER FOR APPROVAL BY THE ENGINEER. BEARINGS SHALL BE DESIGNED IN ACCORDANCE WITH AREMA 2014.

BEARING MANUFACTURER SHALL SUPPLY SOLE PLATES TO THE BEAM FABRICATOR. PAYMENT FOR SOLE PLATES SHALL BE INCLUDED IN PAYMENT FOR "BEARING ASSEMBLY". SOLE PLATES ARE SHOWN FOR INFORMATION ONLY.

GALVANIZE SOLE PLATE, MASONRY PLATE, NUTS, WASHERS AND ANCHOR BOLTS PER ASTM A 123 (MnDOT SPEC. 3394). MINIMUM ZINC COATING OF 2 OZ. PER SQUARE FOOT.

METALIZE NON-SLIDING SURFACES OF THE CONCAVE PLATE AND THE TOP PLATE PER MnDOT SPEC. 2471.3L2.

SOLE PLATE SHALL BE BOLTED TO THE UNDERSIDE OF GIRDERS AND FLOORBEAMS USING COUNTERSUNK OR COUNTERBORED ⅞" DIA. ASTM A325 BOLTS. WELDING OF SOLE PLATES SHALL NOT BE PERMITTED.

ANY ADJUSTMENT IN ELEVATION NECESSARY TO ACCOMMODATE THE BEARING THAT IS SUPPLIED SHALL BE MADE BY ADJUSTING THE TOP OF PIER AND ABUTMENT ELEVATIONS. THE PROFILE GRADE OF THE SUPERSTRUCTURE SHALL REMAIN UNCHANGED. ANY CHANGE IN ELEVATION OF THE TOP OF PIERS OR ABUTMENTS WILL NOT BE ALLOWED WITHOUT APPROVAL OF THE ENGINEER.

PINTLES AND ALL MATERIAL FOR BEARING WELDMENTS INCLUDING TOP PLATES AND BASE PLATES SHALL CONFORM TO MnDOT SPEC. 3309 (GRADE 50W) STEEL UNLESS OTHERWISE NOTED.

ANCHOR BOLTS SHALL CONFORM TO MnDOT SPEC. 3385 TYPE B.

ALL STRUCTURAL STEEL BEARING PLATES SHALL BE FLAT ROLLED STEEL PLATES WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL.

ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.

BEARING WELDMENTS SHALL BE FULLY STRESS RELIEVED AFTER WELDING IS COMPLETED AND BEFORE FINISHING.

RADIAL SURFACES OF WELDMENTS SHALL BE MACHINE FINISHED AFTER WELDING.

AFTER WELDING BEARING ASSEMBLIES, FINISH BOTTOM OF BASE PLATE TO A FLAT SURFACE.

ANCHOR BOLTS ARE LOCATED TO CLEAR BRIDGE SEAT REINFORCEMENT.

BEARING ASSEMBLY TABLE - "E1" & "E2"

E1		E2	
LOCATION	ASSUMED HEIGHT "H"	LOCATION	ASSUMED HEIGHT "H"
GDR. 1	11¼"	GDR. 5	11½"
GDR. 2	11"	GDR. 6	11⅜"
GDR. 3	10⅞"	GDR. 7	11⅛"
GDR. 4	10¾"	GDR. 8	11"

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

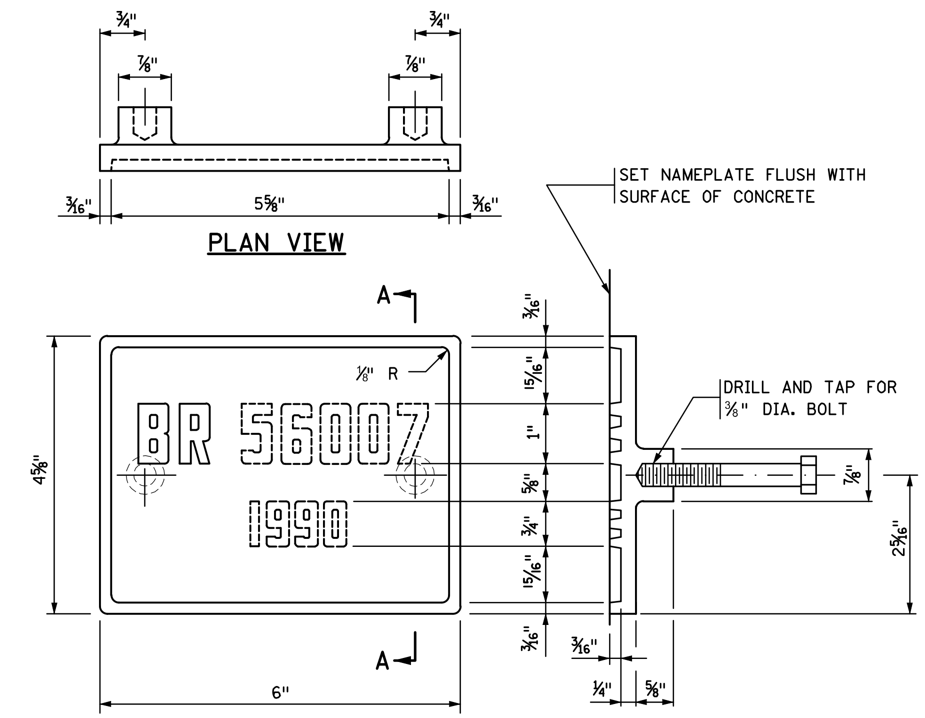
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
BEARING ASSEMBLY DETAILS

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-EXP-003

SHEET 53 OF 60



PLAN VIEW

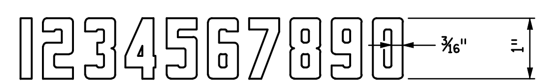
ELEVATION

SECTION A-A

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

BRIDGE R0691

YEAR ①



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.

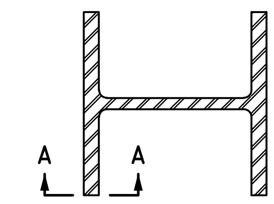
TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.

FURNISH 2 STEEL BOLTS ⅜" DIA. × 3" LONG WITH EACH PLATE.

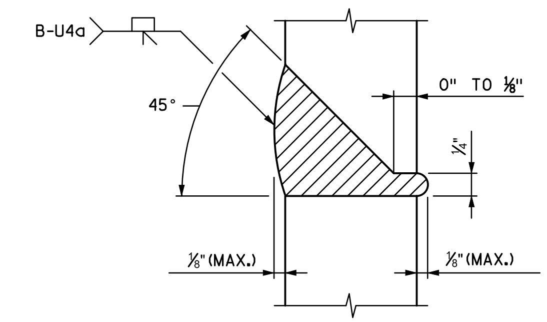
ALL DIMENSIONS FOR ¾" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

① YEAR OF CONSTRUCTION

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



SECTION AT SPLICE



SECTION A-A

100% BUTT WELDED PILE SPLICE

NOTES:

CELLULOSIC TYPE ELECTRODES E-6010 OR E-6011 SHALL BE USED FOR 100% BUTT WELDED SPLICES.

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.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION: 11-06-2013	DETAIL NO.
STATE BRIDGE ENGINEER	PILE SPLICE (STEEL H BEARING PILES 10" TO 14")		B202

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

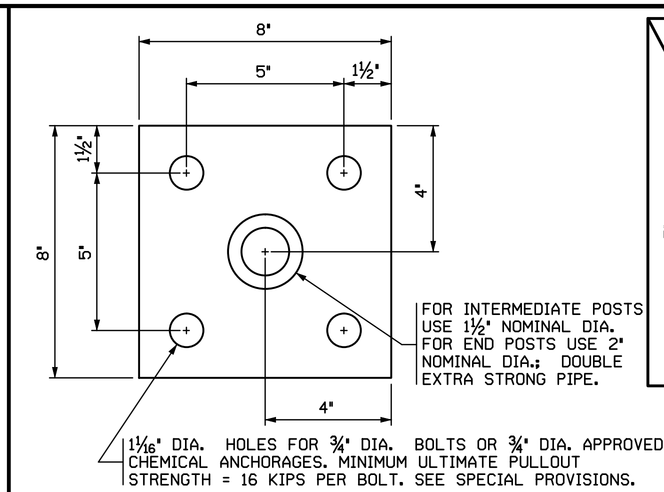
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
BRIDGE DETAILS 1

DISCIPLINE: STRUCTURES

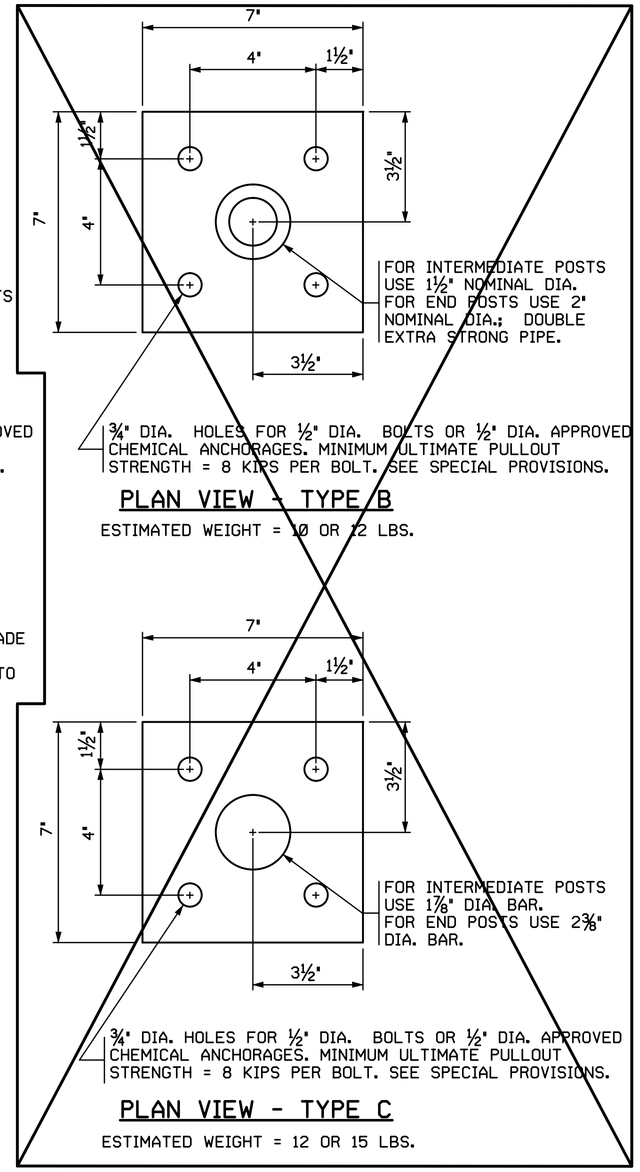
SHEET NAME: CBRR0691-BRG-DTL-003

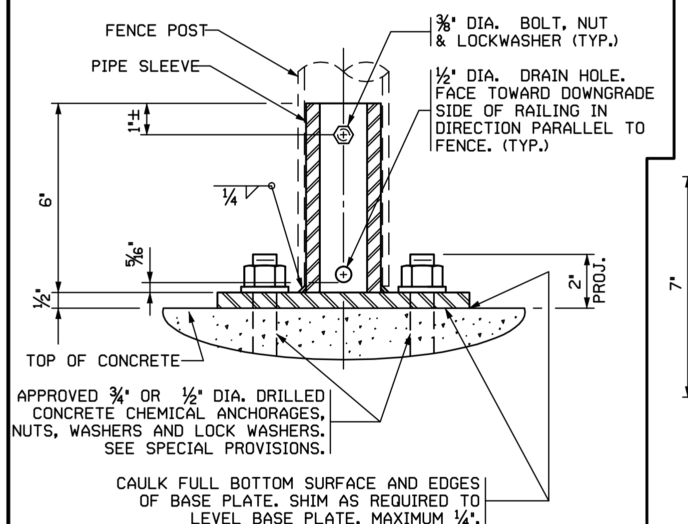
SHEET 54 OF 60



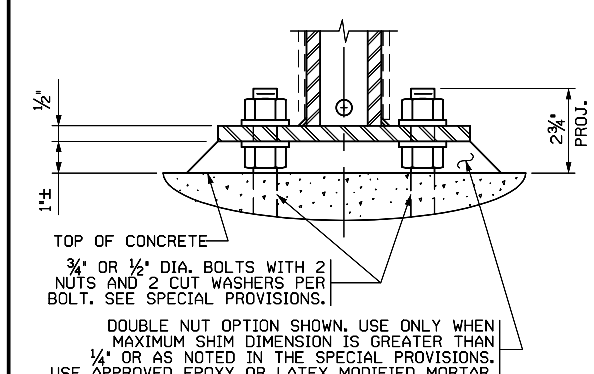
PLAN VIEW - TYPE A

ESTIMATED WEIGHT = 12 OR 14 LBS.





TYPICAL SECTION



GROUT ALTERNATE

NOTES:

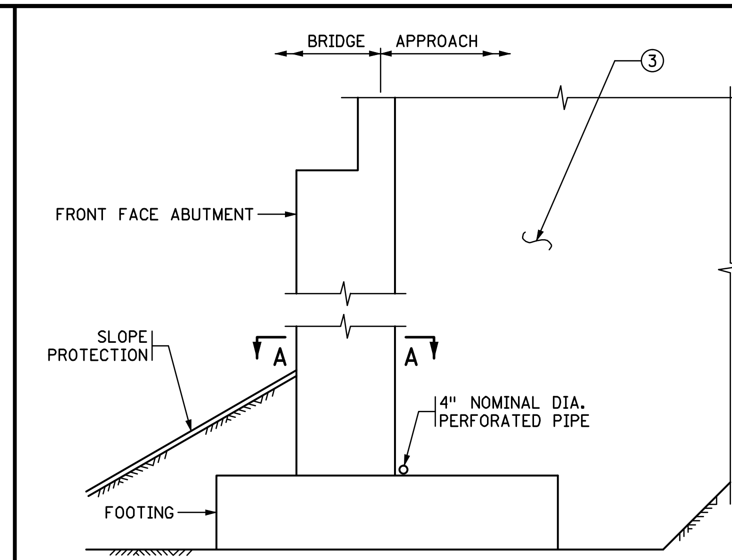
STRUCTURAL STEEL PER Mn/DOT SPEC. 3306

STRUCTURAL PIPE PER Mn/DOT SPEC. 3362

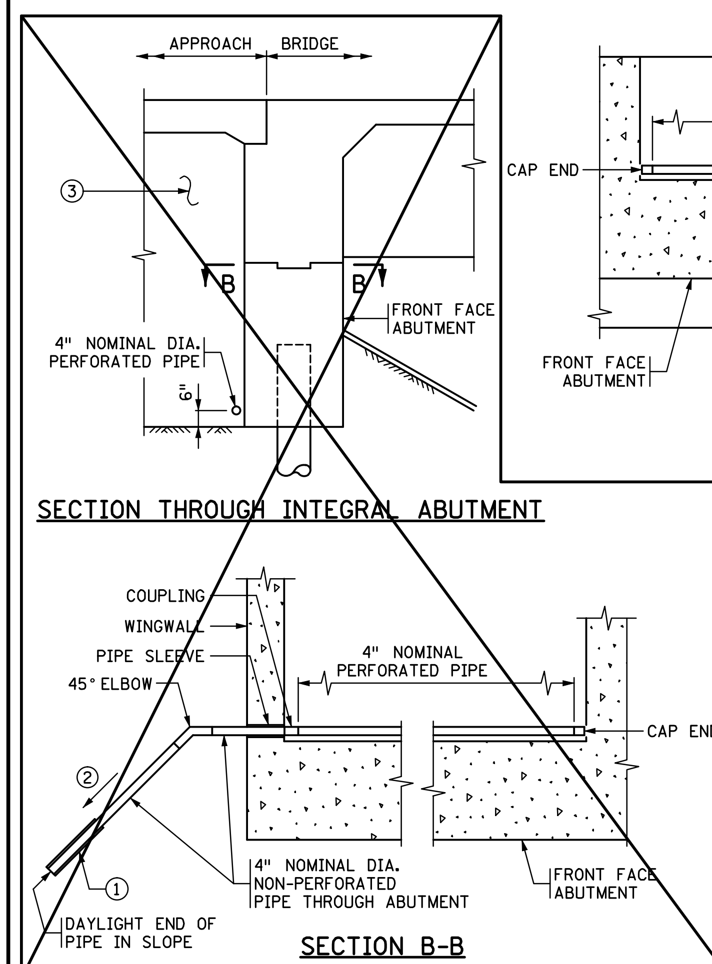
GALVANIZE THE FENCE POST ANCHORAGE AFTER FABRICATION PER Mn/DOT SPEC. 3394. GALVANIZE THE FASTENERS PER Mn/DOT SPEC. 3392.

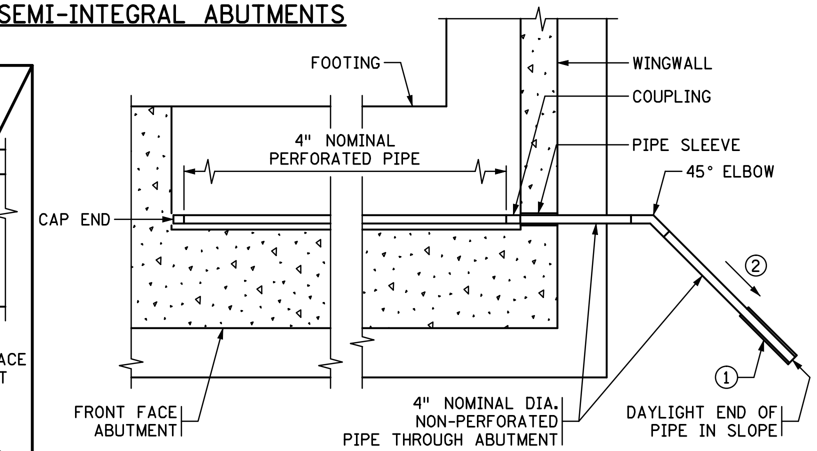
DOUBLE EXTRA STRONG PIPE WEIGHTS:
1½" NOMINAL DIA. = 6.41 LBS./FT.
2" NOMINAL DIA. = 9.03 LBS./FT.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
STATE BRIDGE ENGINEER	FENCE POST ANCHORAGE		B905



SECTION THROUGH PARAPET AND SEMI-INTEGRAL ABUTMENTS





SECTION A-A

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 MANTAINED.

USE PRECAST CONCRETE HEADWALL WITH RODENT SCREEN. SEE STANDARD PLATE 3131 FOR DETAILS.

2 ⅛" 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.
STATE BRIDGE ENGINEER	DRAINAGE SYSTEM		B910 (MOD.)

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS | CHECKED BY: DLS
DRAWN BY: JFM | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
BRIDGE DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-DTL-004

SHEET 55 OF 60

Jan. 18 2016 03:19 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SOCO-FRT\CBRR0691-BRG-DTL-004.dwg By: gavin.good

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 L. Dorgan
STATE BRIDGE ENGINEER

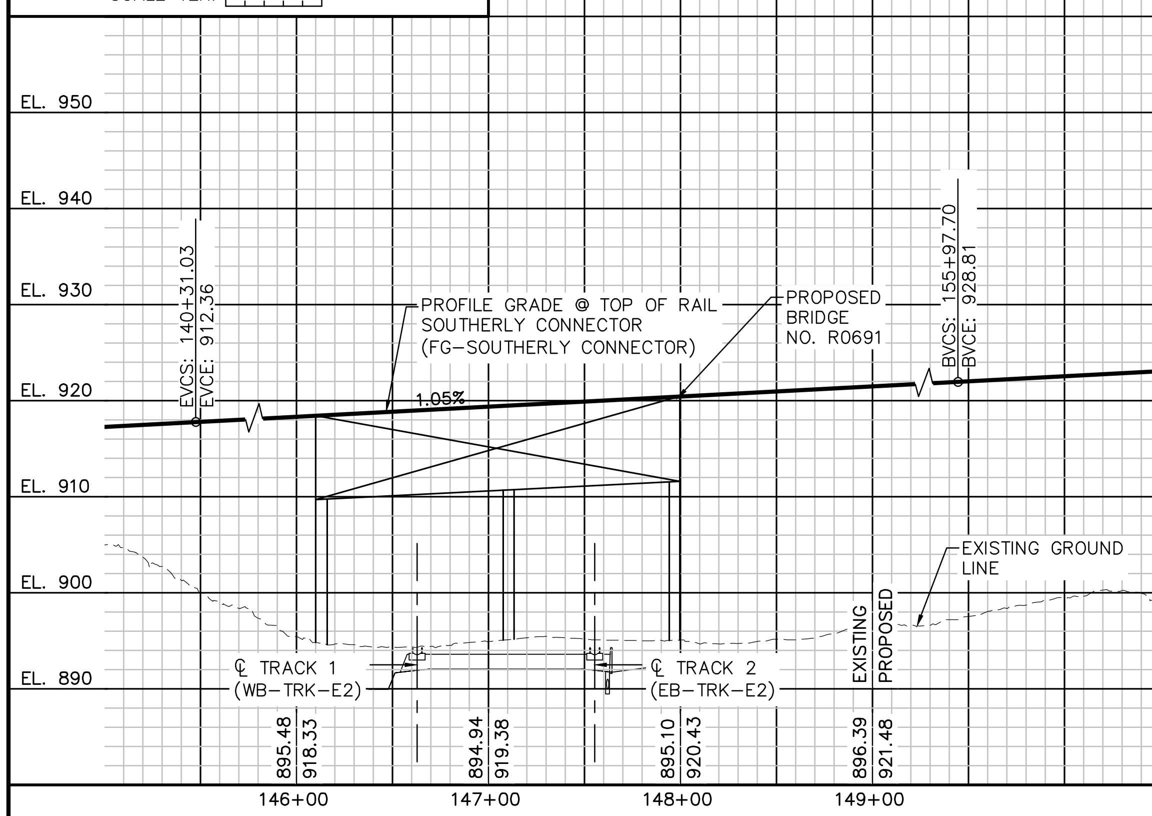
AS-BUILT DETAILS
(AS NEEDED)

				FIG. 5-397.900
TITLE: AS-BUILT BRIDGE DATA	DES:	DR:	APPROVED:	BRIDGE NO. R0691
	CHK:	CHK:		
	SHEET NO. 56 OF 60 SHEETS			

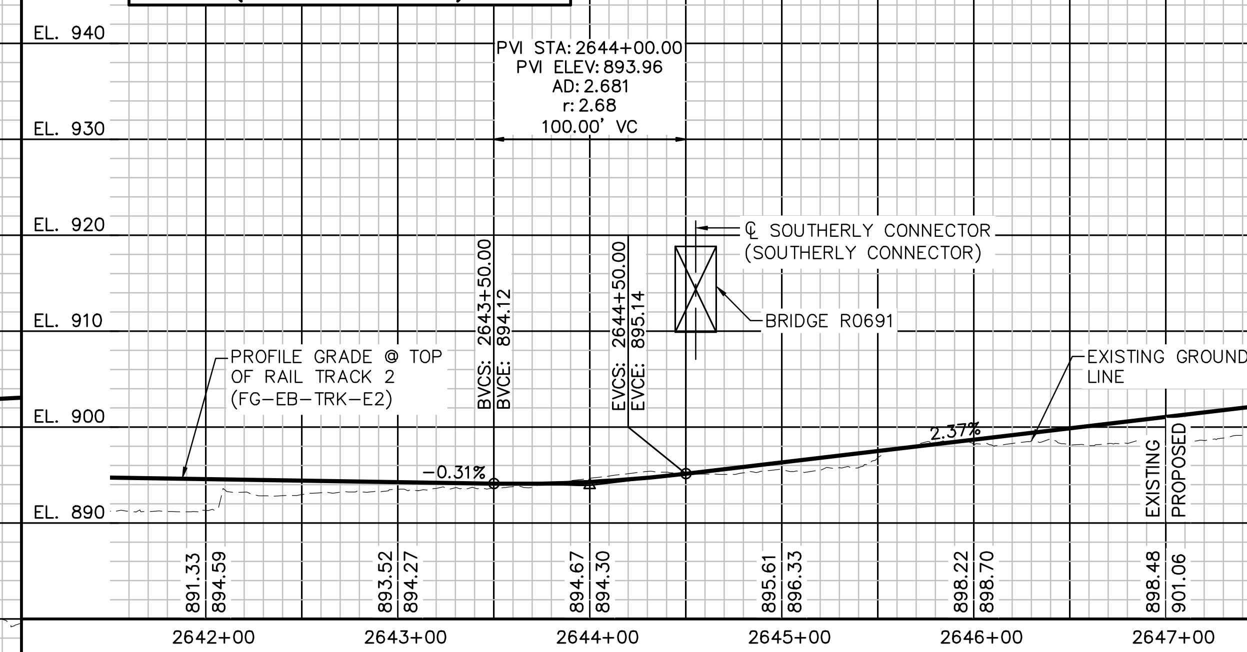
CONTRACTED PROFILE

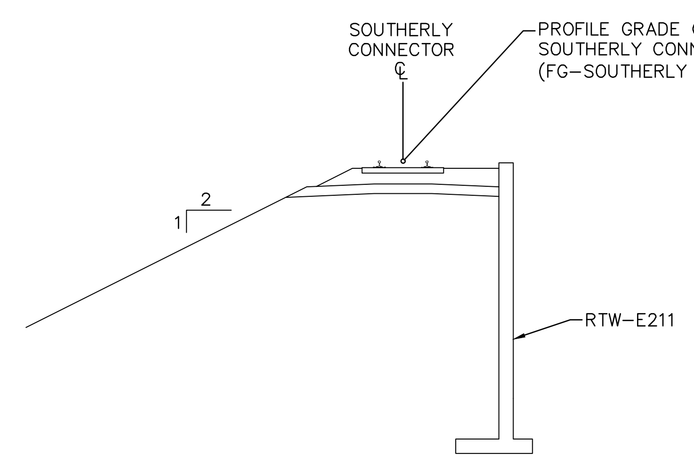
SCALE HOR: 0 50'
SCALE VER: 0 10'

PROFILE GRADE @ TOP OF RAIL SOUTHERLY CONNECTOR (FG–SOUTHERLY CONNECTOR)



PROFILE GRADE @ TOP OF RAIL TRACK 2 (FG–EB–TRK–E2)





TYPICAL APPROACH SECTION SOUTHERLY CONNECTOR

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 (PARTICULARY 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 ENGINEER'S RECOMMENDATION

DATE:

STREAM OR DITCH DESIGNATION

DRAINAGE AREA

MAX FLOOD ON RECORD

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

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

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

FLOWLINE ELEVATION: FT. SKEW ANGLE:

ESTIMATED PRLIMINARY TOTAL SCOUR AT PIER EL. (500 OR OT YR. FREQ.)

SCOUR CONFIRMATION RECOMMENDATION

DATE:

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

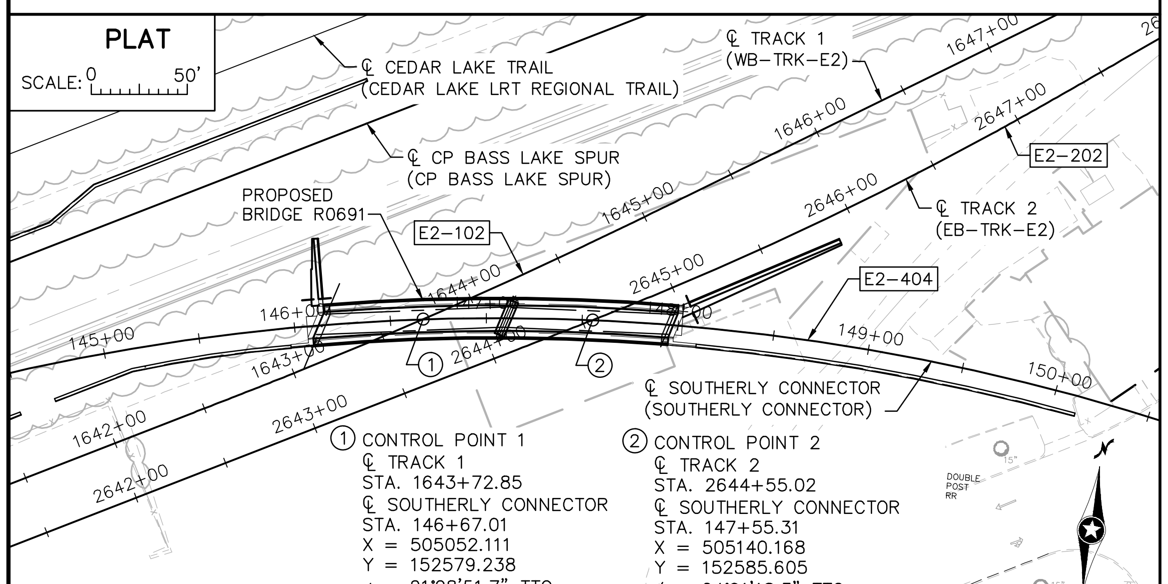
BRIDGE SURVEY SHEETS MADE FROM 2014 MFRA SURVEYS

1ST BENCH MARK (NAVD 88)
BENCHMARK ID PT. 175
ELEVATION = 896.03
N = 152982.35, E = 505138.46
DESCRIPTION = MAG NAIL IN BIT.

2ND BENCH MARK (NAVD 88)
BENCHMARK ID PT. 167
ELEVATION = 899.33
N = 151921.95, E = 505886.04
DESCRIPTION = ½" PIPE W/ CAP

PLAT

SCALE: 0 50'



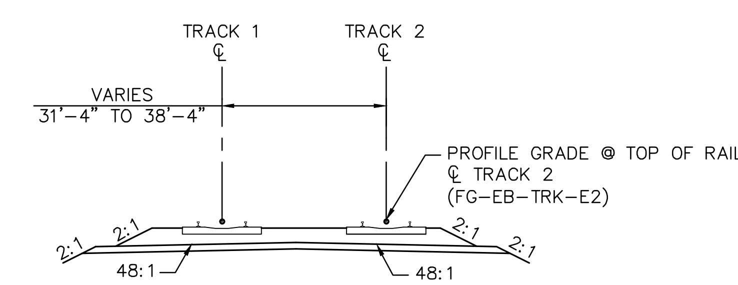
① CONTROL POINT 1
℄ TRACK 1
STA. 1643+72.85
℄ SOUTHERLY CONNECTOR
STA. 146+67.01
X = 505052.111
Y = 152579.238
Δ = 21°28'51.7" TTC

② CONTROL POINT 2
℄ TRACK 2
STA. 2644+55.02
℄ SOUTHERLY CONNECTOR
STA. 147+55.31
X = 505140.168
Y = 152585.605
Δ = 24°01'18.3" TTC

NOTES:

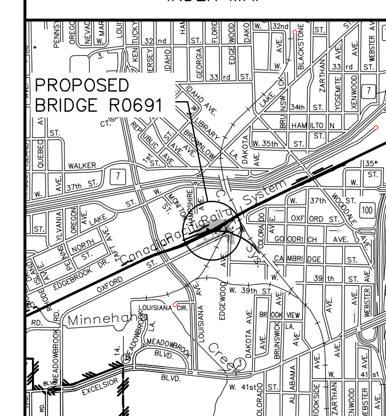
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

CURVE NO. E2–102	CURVE NO. E2–202	CURVE NO. E2–404
		Dc = 5° 00' 0.00" RH
R = 2,600.00'	R = 1,770.00'	R = 1,146.28'
Lc = 162.37'	Lc = 189.08'	Lc = 1,295.97'
Ls = 60.00'	Ls = 80.00'	Ls = 93.00'
Ea = 1.25"	Ea = 1.75"	Ea = 0.50"
Eu = 1.19"	Eu = 1.83"	Eu = 0.29"
V = 40 MPH	V = 40 MPH	V = 15 MPH



TYPICAL SECTION SOUTHWEST LRT

INDEX MAP



BRIDGE SURVEY

CANADIAN PACIFIC RAILWAY OVER SOUTHWEST LRT TRACKS
0.3 MILES SOUTHEAST OF JCT. T.H. 7 AND LOUISIANA AVENUE SOUTH

SEC 17 T 117N R 21W
CITY OF ST LOUIS PARK HENNEPIN COUNTY

BRIDGE R0691

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
BRIDGE SURVEY

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-SUR-001

SHEET 57 OF 60

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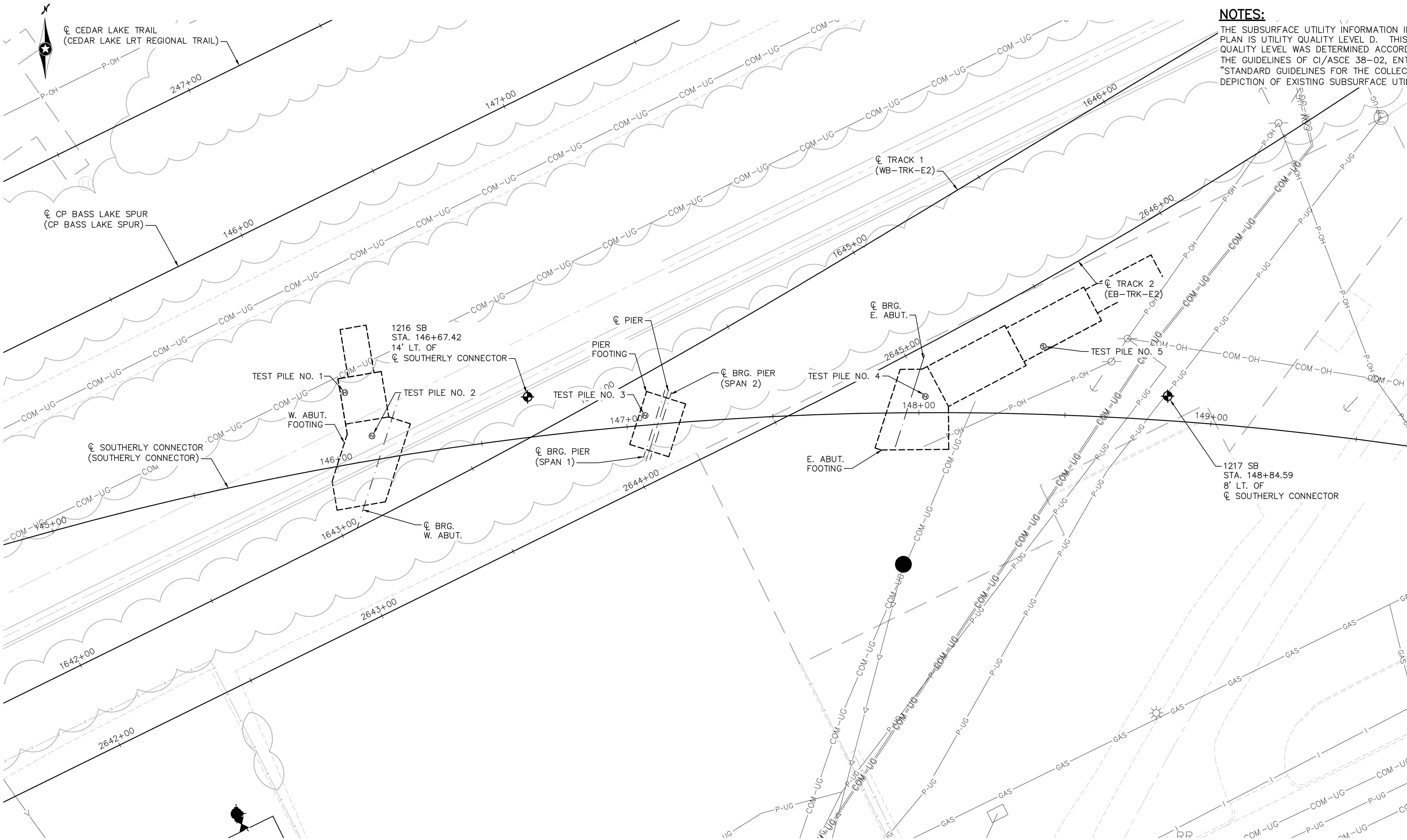

NOTES:

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."

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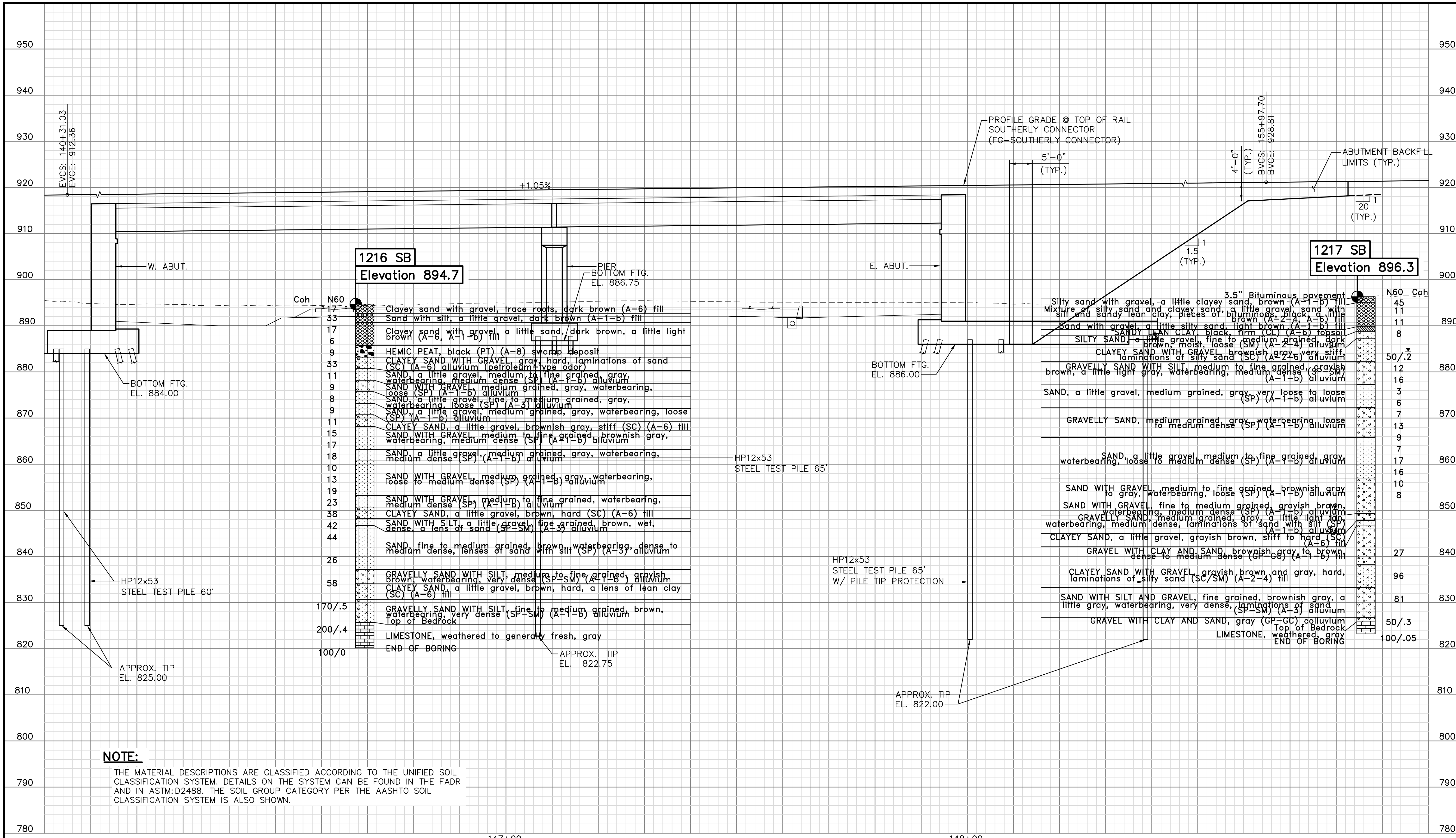
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
BRIDGE SURVEY PLAN

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-BOR-001

SHEET 58 OF 60



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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
BRIDGE SURVEY PROFILE

DISCIPLINE: STRUCTURES
SHEET NAME: CBRR0691-BRG-BOR-002

SHEET 59 OF 60

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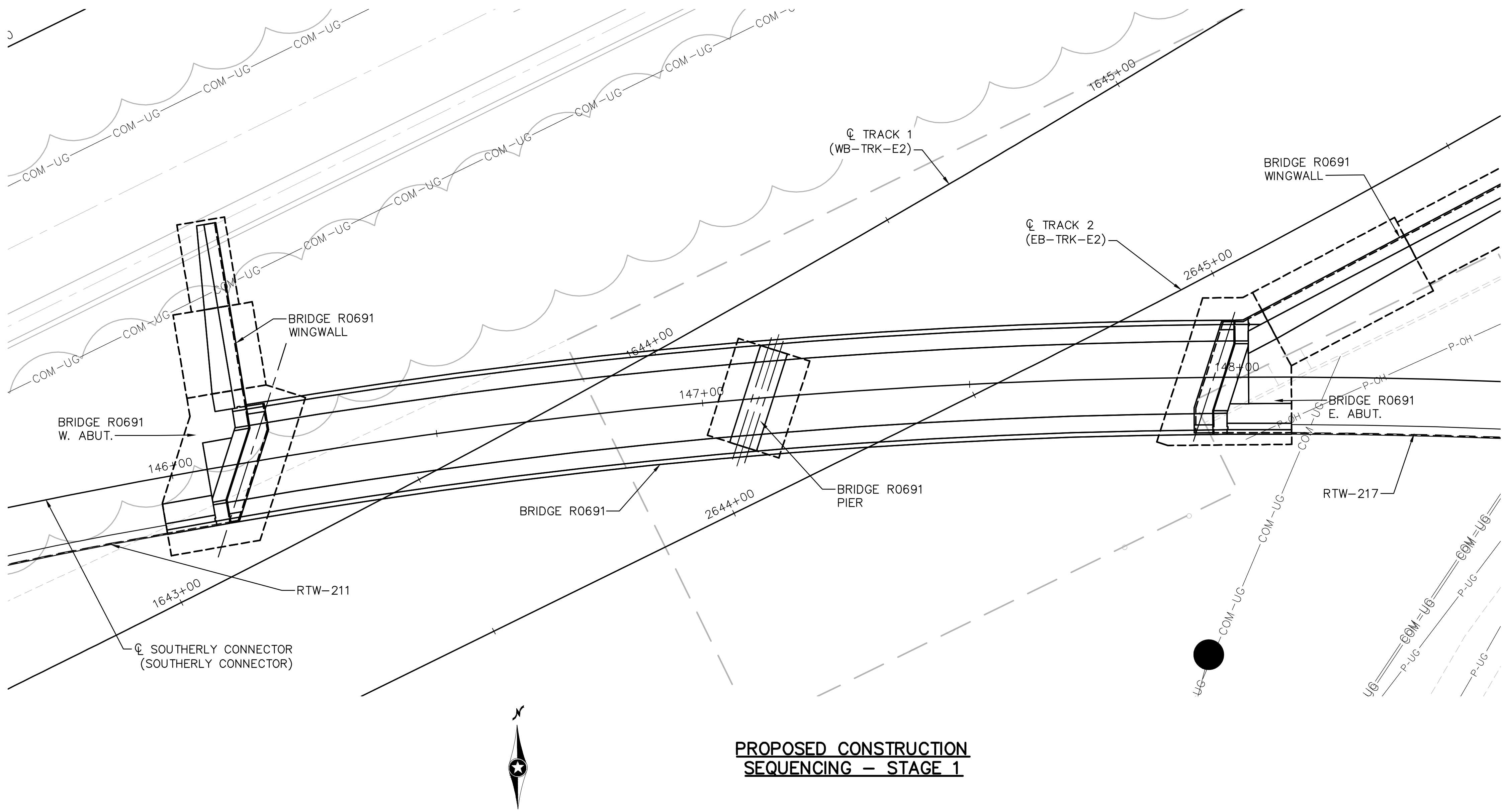
STAGING NOTES:

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 PRIOR TO BRIDGE CONSTRUCTION. SEE UTILITY PLANS.



PROPOSED CONSTRUCTION SEQUENCING – STAGE 1

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR OVER LRT
BRIDGE R0691
STAGING PLAN

DISCIPLINE: STRUCTURES

SHEET NAME: CBRR0691-BRG-STG-001

SHEET 60 OF 60

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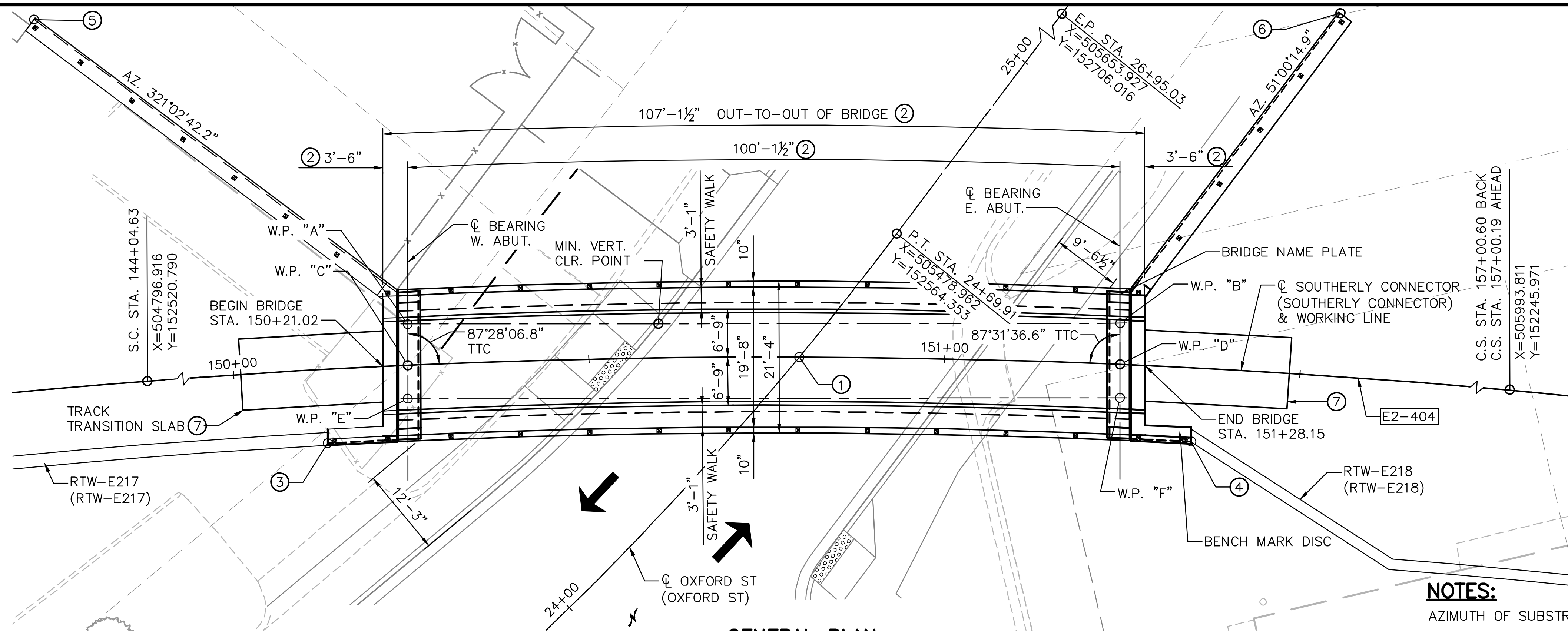
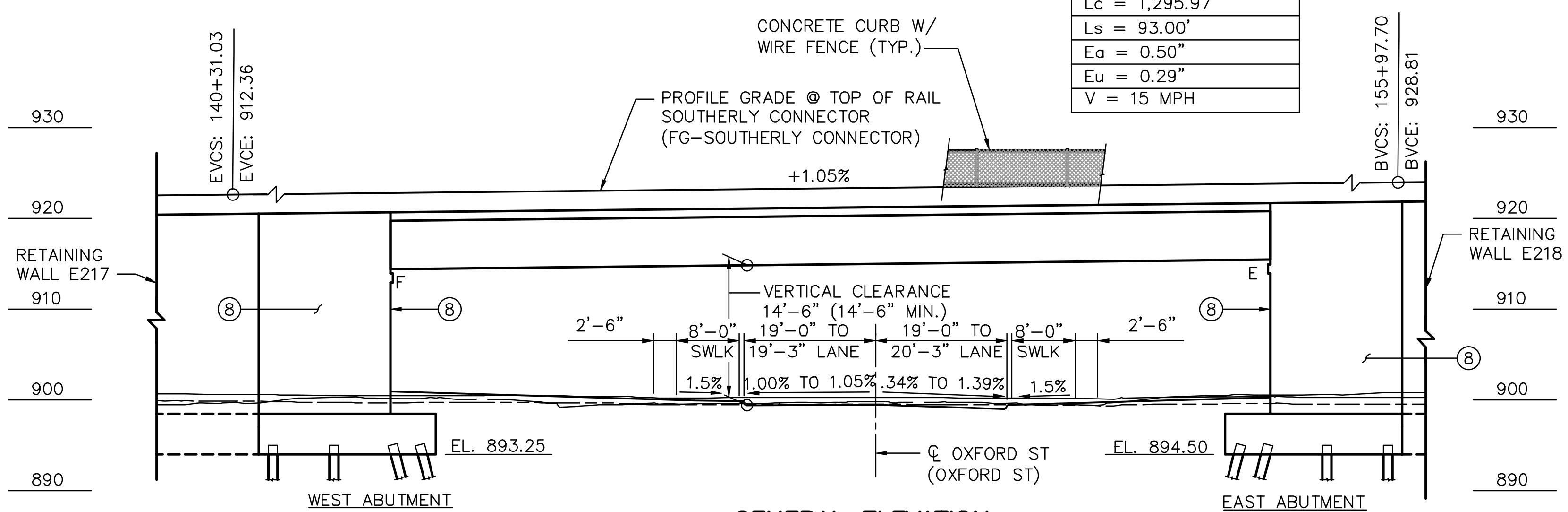


GENERAL PLAN

0' 5' 10' 20'

SCALE IN FEET

CURVE NO. E2-404
Dc = 5° 00' 0.00" RH
R = 1,146.28'
Lc = 1,295.97'
Ls = 93.00'
Ea = 0.50"
Eu = 0.29"
V = 15 MPH



GENERAL ELEVATION

0' 5' 10' 20'

SCALE IN FEET

EXISTING GROUND PROFILE	
11' LEFT	— — — —
℄ SC	— — — — — —
11' RIGHT	- - - - - - - - - - - -

DESIGN DATA

2014 AREMA MANUAL FOR RAILWAY ENGINEERING

SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0)

COOPER E 90 LIVE LOAD OR 100 KIP (4 AXLES) ALTERNATE LOAD WITH DIESEL IMPACT

MAXIMUM BALLAST DEPTH = 2'-0" (FOR DESIGN)

ALLOWABLE STRESS DESIGN METHOD (STEEL)
LOAD FACTOR DESIGN METHOD (CONCRETE)

MATERIAL DESIGN PROPERTIES
REINFORCED CONCRETE:
f'c = 4500 PSI n = 8
fy = 60000 PSI REINFORCEMENT

STRUCTURAL STEEL:
fs = 27,500 PSI fy = 50,000PSI
ASTM A709 GRADE 50WT3
(MnDOT 3309)

DESIGN SPEED: OVER = 15 MPH
UNDER = 20 MPH

DECK AREA 2200 SQ. FT.

LIST OF SHEETS

NO.	DESCRIPTION
1	GENERAL PLAN AND ELEVATION
2	TRANSVERSE SECTION AND QUANTITES
3	BRIDGE LAYOUT
4–9	WEST ABUTMENT DETAILS
10–16	WEST ABUTMENT REINFORCEMENT
17–22	EAST ABUTMENT DETAILS
23–29	EAST ABUTMENT REINFORCEMENT
30	FRAMING PLAN
31	GIRDER ELEVATION
32–33	GIRDER DETAILS
34–39	SUPERSTRUCTURE DETAILS
40	WIRE FENCE (DESIGN W-1)
41–42	JOINT DETAILS
43–44	DECK DRAINAGE AND WATERPROOFING
45	BEARING ASSEMBLY DETAILS
46–47	BRIDGE DETAILS
48	AS-BUILT BRIDGE DATA
49	BRIDGE SURVEY
50	BRIDGE SURVEY PLAN
51	BRIDGE SURVEY PROFILE
52	STAGING PLAN

NOTES:

AZIMUTH OF SUBSTRUCTURE: 14°03'31.9"

SEE BRIDGE SURVEY SHEET FOR IN-PLACE UTILITIES.

SEE SHEET 52 FOR STAGING PLAN AND SOE.

① CONTROL POINT
℄ SOUTHERLY CONNECTOR (SOUTHERLY CONNECTOR) STA. 150+79.56
℄ OXFORD ST (OXFORD ST) STA. 24+47.79
X = 505461.453
Y = 152550.846
Δ = 50°34'40.6" TTC

② MEASURED ALONG ℄ SOUTHERLY CONNECTOR

③ END RETAINING WALL E217
℄ SOUTHERLY CONNECTOR STA. 150+12.69
X = 505394.242
Y = 152555.251
MEASURED AT F.F. WINGWALL

④ BEGIN RETAINING WALL E218
℄ SOUTHERLY CONNECTOR STA. 151+35.20
X = 505511.981
Y = 152525.901
MEASURED AT F.F. WINGWALL

⑤ END NW WINGWALL
℄ SOUTHERLY CONNECTOR STA. 149+76.40
X = 505368.709
Y = 152623.065
MEASURED AT F.F. WINGWALL

⑥ END NE WINGWALL
℄ SOUTHERLY CONNECTOR STA. 151+52.24
X = 505546.949
Y = 152579.188
MEASURED AT F.F. WINGWALL

⑦ SEE TRACK PLANS FOR TRANSITION SLAB DETAILS.

⑧ ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). SEE ABUTMENT SHEET FOR LIMITS.

BRIDGE NO. 27C14

CP RAILWAY OVER OXFORD STREET
0.3 MILES SOUTHEAST OF JCT. T.H. 7 AND LOUISIANA AVENUE SOUTH.
CP RAILWAY MILEPOST 429.00
ON THE MERRIAM PARK SUBDIVISION
100'-0" WELDED STEEL PLATE GIRDER SPAN
13'-6" RAILWAY;
SKEW VARIES
CONCRETE CURB WITH WIRE FENCE
BRIDGE ID NO. 301

GENERAL PLAN AND ELEVATION

SEC 17 T 117 N R 21 W
CITY OF ST. LOUIS PARK HENNEPIN COUNTY

JOB NO. T9N635 | STATE PROJECT NO. 9909-01 | MNDOT REVIEW: JOE NIETFELD

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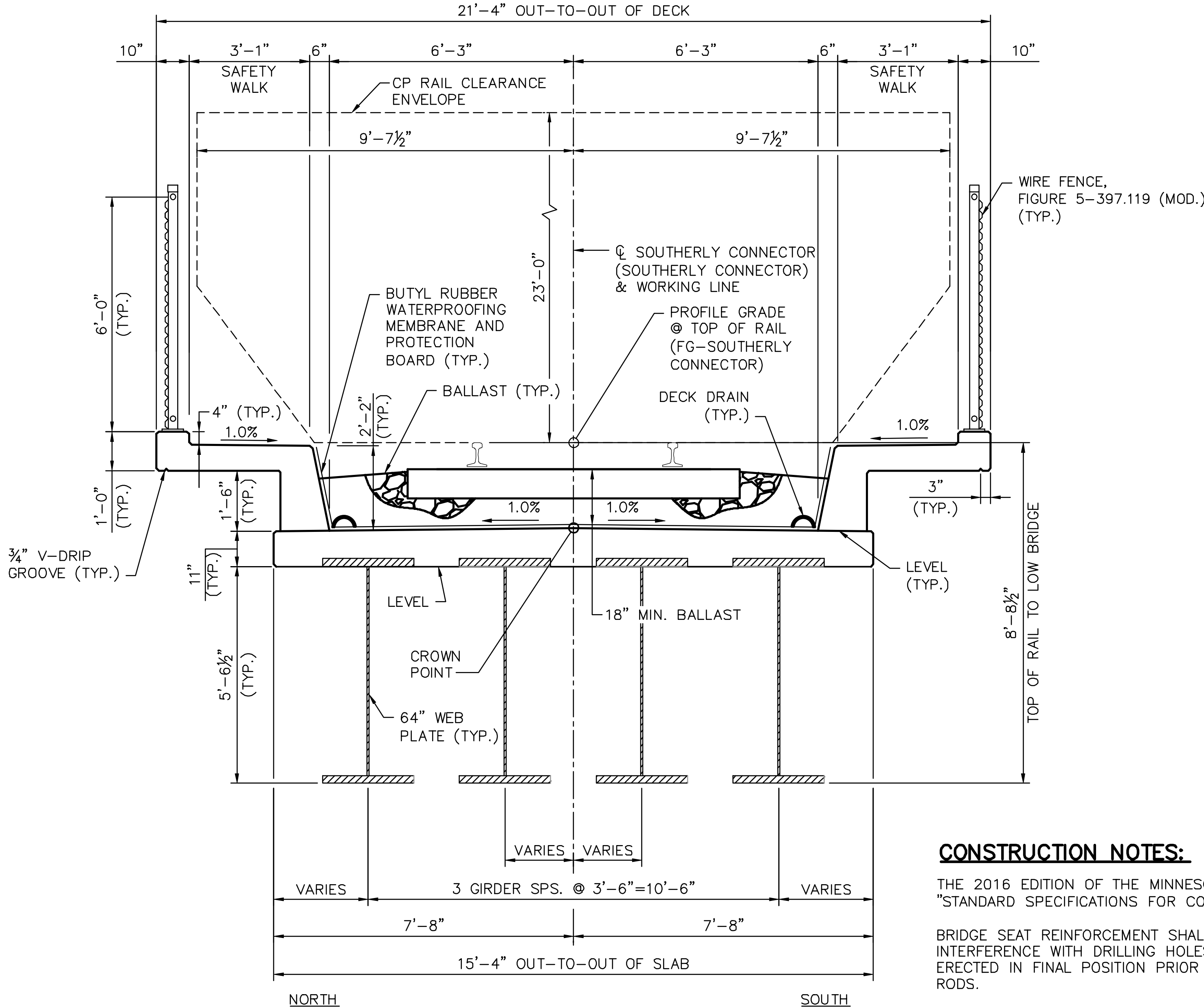
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
GENERAL PLAN AND ELEVATION

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-GPE-001

SHEET 1 OF 52



TRANSVERSE SECTION

0' 1' 2' 4'
SCALE IN FEET

SCHEDULE OF QUANTITIES			
SPEC. SECTION	COMPONENT ITEM	UNIT	QUANTITY
–	CONSTRUCT BRIDGE 27C14	LUMP SUM	LS

	COMPONENT ITEM SUMMARY (BRIDGE 27C14)			
	ITEM NO.	COMPONENT ITEM	UNIT (2)	QUANTITY (2)
	2401	STRUCTURAL CONCRETE (1G52)	CU. YD.	
(1)	2461	STRUCTURAL CONCRETE (CP5000)	CU. YD.	
	2401	REINFORCEMENT BARS	POUND	
	2401	REINFORCEMENT BARS (EPOXY COATED)	POUND	
	2401	BRIDGE SLAB CONCRETE (3B52)	CU. YD.	
	2402	STRUCTURAL STEEL (3306)	POUND	
	2402	STRUCTURAL STEEL (3309)	POUND	
	2402	BEARING ASSEMBLY	EACH	
	SB-XX	ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM)	SQ. FT.	
	SB-XX	STRUCTURAL EXCAVATION CLASS U	CU. YD.	
(4)	SB-XX	STEEL H-PILING 12"	LIN. FT.	
	2452	STEEL H-TEST PILE 70 FT LONG 12"	EACH	
	2452	STEEL H-TEST PILE 70 FT LONG 12"	EACH	
	2452	PILE TIP PROTECTION 12"	EACH	
	SB-XX	STEEL SHEET PILING (TEMPORARY)	LUMP SUM	
	2481	MEMBRANE WATERPROOFING SYSTEM	LIN. FT.	
	2502	DRAINAGE SYSTEM TYPE (B910)	LUMP SUM	
	2502	DRAINAGE SYSTEM (BRIDGE DECK)	LUMP SUM	
	2557	WIRE FENCE DESIGN W-1	LIN. FT.	

NOTES:

(1) A BENCH MARK IS REQUIRED. LOCATED AT THE SE 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.

(2) QUANTITIES LISTED FOR THE COMPONENT ITEMS OF THE LUMP SUM BR 27C14 ITEM 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 THE BR 27C14. REFER TO MnDOT STANDARD SPECIFICATION OR SPECIAL PROVISION FOR TECHNICAL SPECIFICATION REQUIREMENTS FOR ALL PROVISION OTHER THAN MEASUREMENT AND PAYMENT REQUIREMENTS.

(4) BACKFILL BEHIND ABUTMENTS SHALL BE SELECT GRANULAR BORROW PER SPEC. 3149.2.D.2. BACKFILL DENSITY SHALL BE ATTAINED BY THE SPECIFIED DENSITY METHOD IN ACCORDANCE WITH SPEC. 2105.3.F.1.

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 BAR SIZES SHOWN IN THIS PLAN ARE IN U.S. CUSTOMARY DESIGNATIONS. THE FIRST DIGIT OR THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE.

BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301.

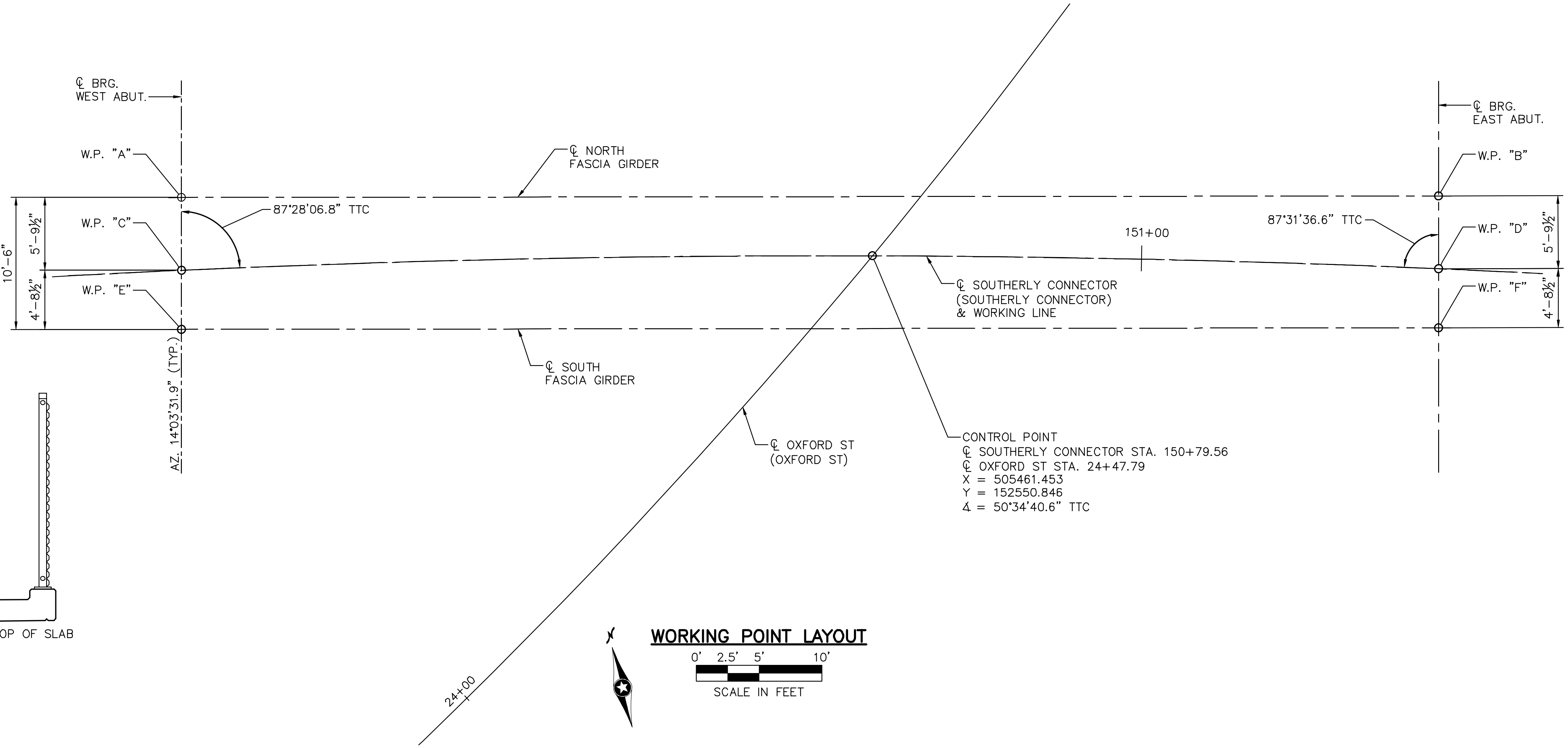
THE SUBSURFACE UTILITY INFORMATION IN THESE PLANS IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

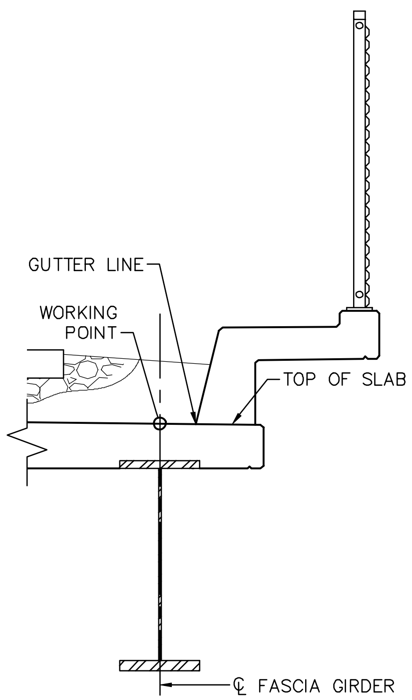
THE PILE LOADS SHOWN IN THE PLANS WERE COMPUTED USING SERVICE LOAD METHODOLOGY. PILE BEARING RESISTANCE DETERMINED IN THE FIELD SHALL INCORPORATE THE METHODS AND/OR FORMULAS DESCRIBED IN THE SPECIAL PROVISIONS.

CONCRETE MATERIALS, MIX DESIGN, TESTING AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH CHAPTER 8, PART 1 OF THE 2014 A.R.E.M.A. MANUAL; MnDOT 2461 AND THE SPECIAL PROVISIONS.

GROUNDING NOTES:

SEE SHEETS ELE-SITE-SCH-504, ELE-SITE-DTL-600, ELE-SITE-DTL-601, AND ELE-SITE-DTL-602 FOR ADDITIONAL FENCE GROUNDING INFORMATION. FOR BRIDGES, ABUTMENTS, AND RETAINING WALLS THAT DON'T HAVE STRAY CURRENT SYSTEMS, GROUND THE FENCE AS SHOWN IN THE WIRE FENCE DETAIL.





DIMENSIONS BETWEEN WORKING POINTS								COORDINATES		ELEVATIONS				
POINT	STATION	A	B	C	D	E	F	X	Y	TOP OF RAIL	TOP OF SLAB	TOP OF SLAB TO BRIDGE SEAT	BRIDGE SEAT	POINT
A	150+24.78		100.09	5.80	100.26		100.64	505409.225	152568.756	922.79	920.54	7.15'	913.39	A
B	151+24.40			100.26	5.80	100.65		505506.331	152544.491	923.84	921.59	7.33'	914.26	B
C	150+24.52				100.09	4.70	100.20	505407.817	152563.133					C
D	151+24.65					100.21	4.70	505504.923	152538.868					D
E	150+24.31						100.09	505406.674	152558.570	922.79	920.55	7.16'	913.39	E
F	151+24.85							505503.781	152534.306	923.84	921.60	7.34'	914.26	F

TOP OF BRIDGE SLAB TO BRIDGE SEAT				
	W.P. "A"	W.P. "B"	W.P. "E"	W.P. "F"
SLAB THICKNESS	11"	11"	11⅛"	11⅛"
WEB HEIGHT	64"	64"	64"	64"
BOTTOM FLANGE HEIGHT	2½"	2½"	2½"	2½"
BEARING HEIGHT	8¼"	10½"	8¼"	10½"
TOTAL	7'-1¾"	7'-4"	7'-1⅞"	7'-4⅛"
	7.15'	7.33'	7.16'	7.34'

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

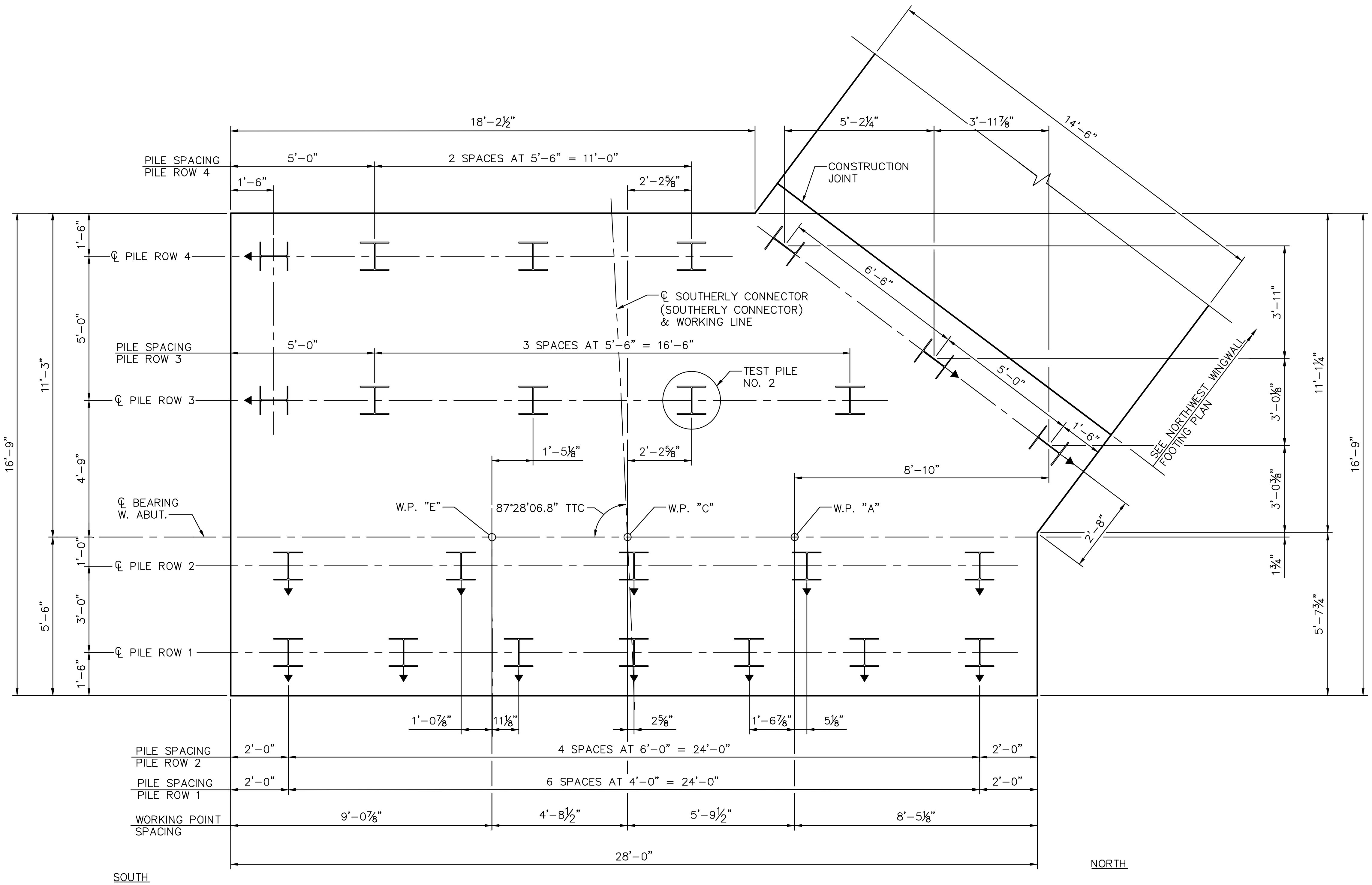
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
BRIDGE LAYOUT

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-SUP-001

WEST ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
DEAD LOAD + EARTH PRESSURE	55.0
LIVE LOAD	40.0
* DESIGN LOAD	95.0

* BASED ON GROUP VI LOADING (SERVICE LOAD) PER AREMA CHAPTER 8 SECTION 2.2.4

REQUIRED PILE TEST LOAD - TONS/PILE	
FIELD CONTROL METHOD	TEST LOAD
PDA	190.0



FOOTING PLAN

GENERAL PILE NOTES:

1	HP12x53 STEEL TEST PILE 70 FT. LONG
23	HP12x53 STEEL PILES EST. 70 FT. LENGTH
24	HP12x53 STEEL PILES REQ'D FOR WEST ABUT.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.

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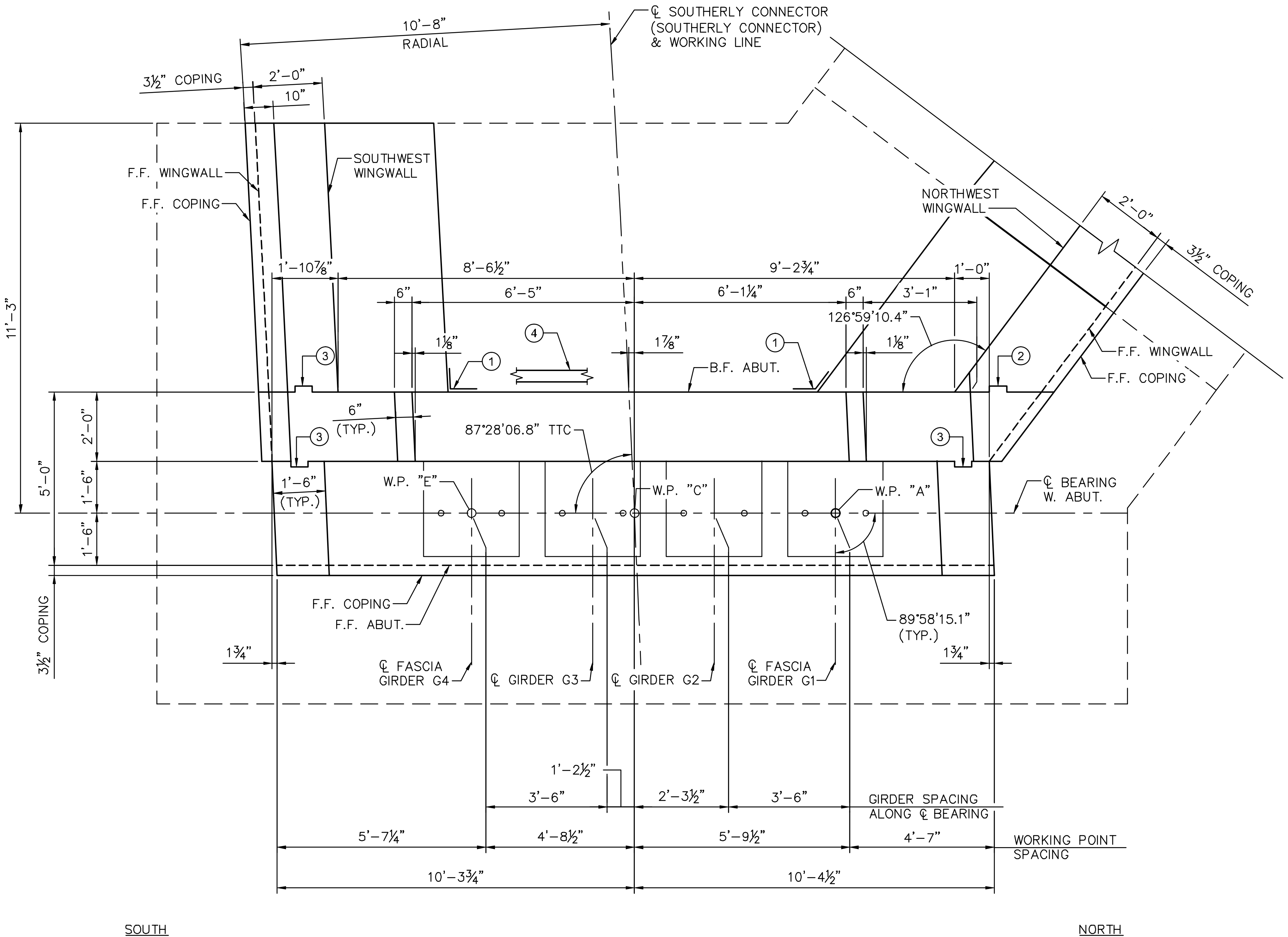
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

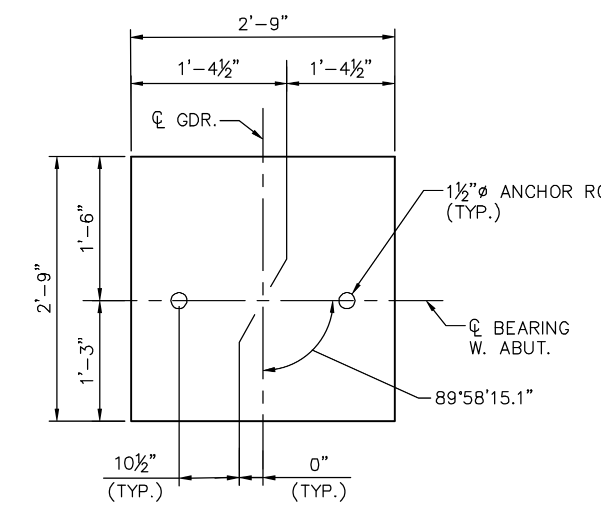
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
WEST ABUTMENT DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-001

SHEET 4 OF 52



PLAN



PEDESTAL DETAIL

NOTES:

1. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
2. PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY CENTERED IN WALL INTERFACE.
3. CONSTRUCTION JOINT WITH 2" X 6" KEY CENTERED IN WALL INTERFACE.
4. 4" DIA. PERFORATED DRAIN PIPE. SEE DETAIL B910.

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SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
WEST ABUTMENT DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-ABT-002

SHEET 5 OF 52

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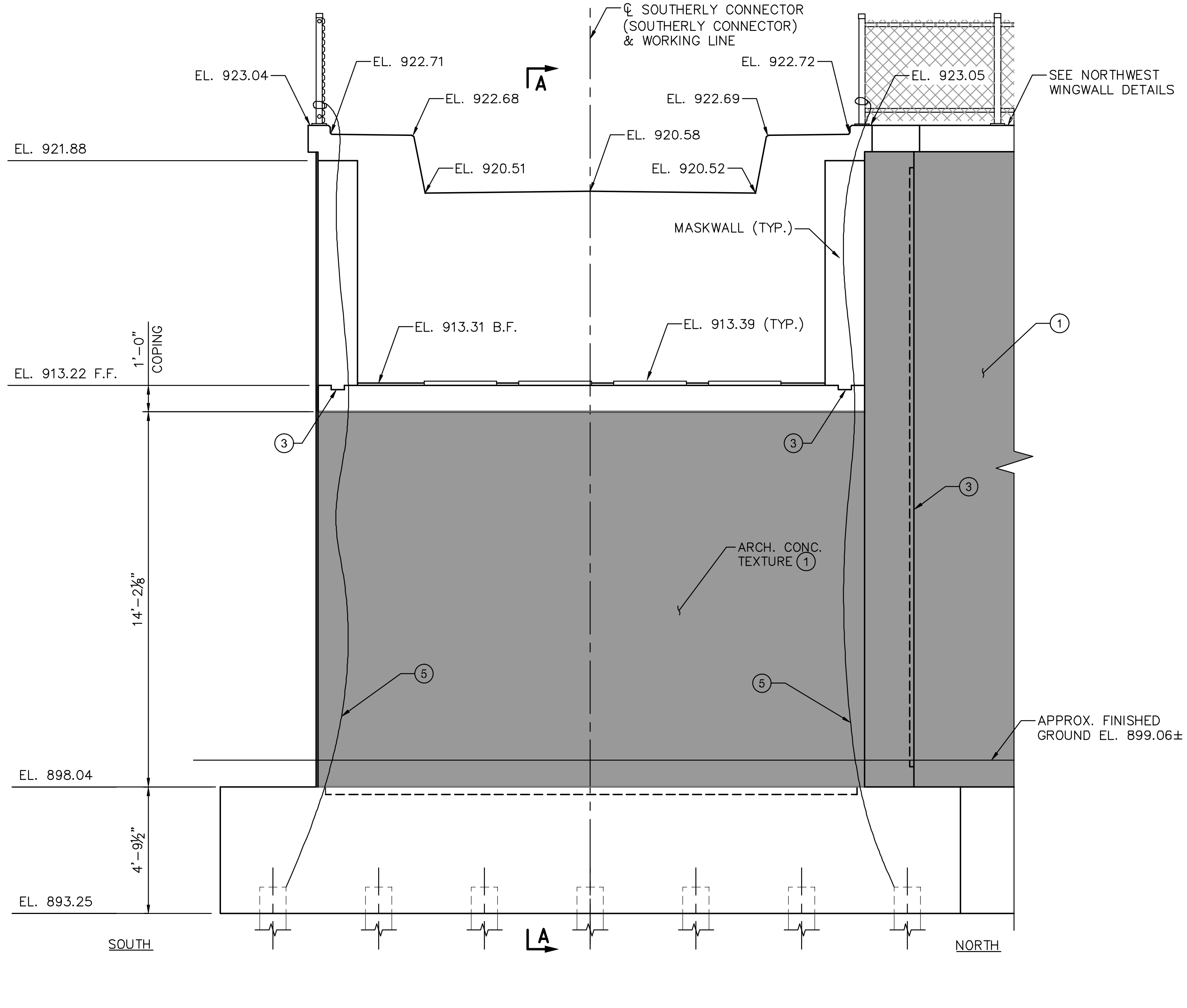
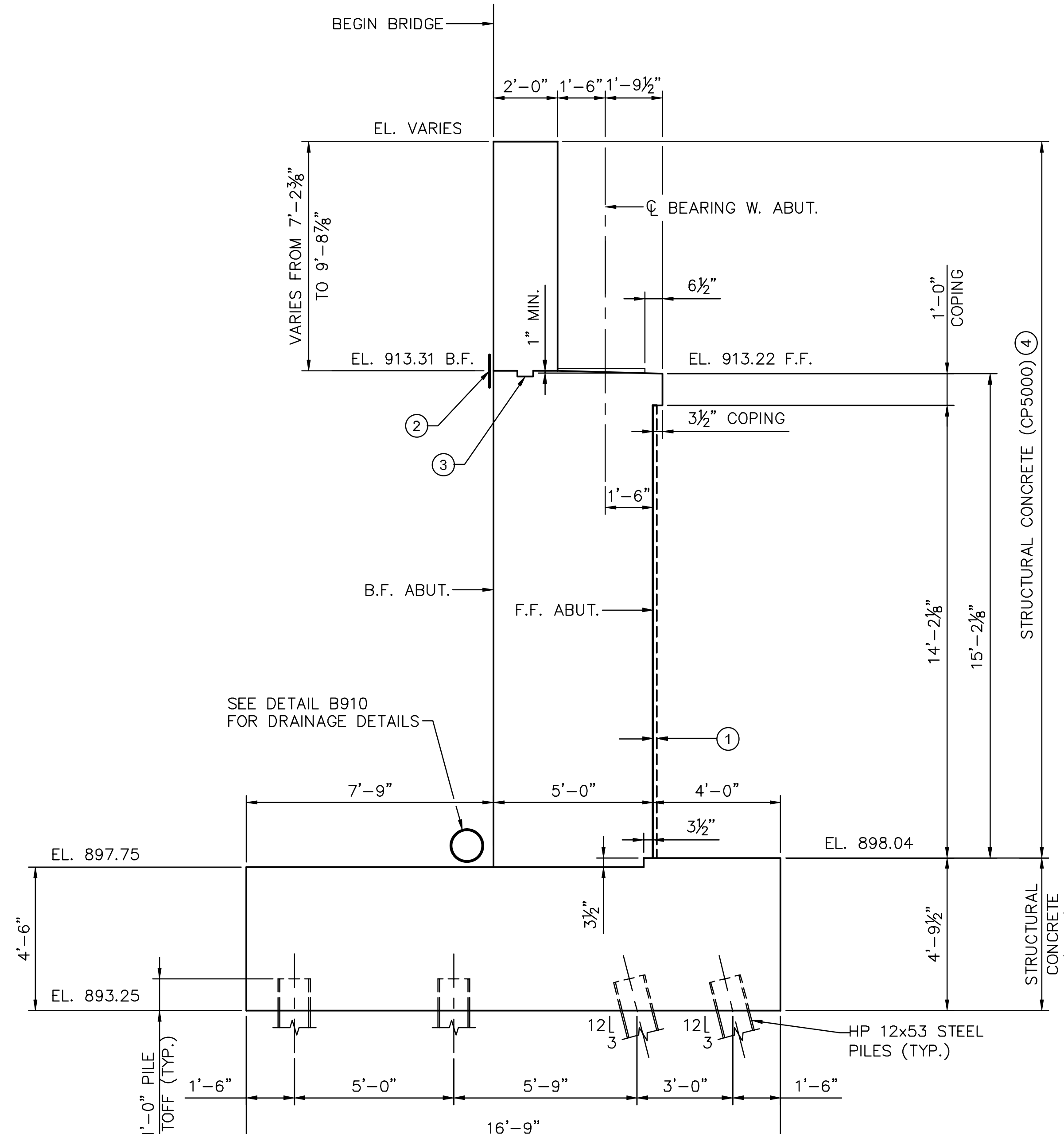


ELEVATION



SECTION A-A

NOTES:

SEE SHEET 7 FOR SOUTHWEST WINGWALL DETAILS.

SEE SHEETS 8 & 9 FOR NORTHWEST WINGWALL DETAILS.

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
3. PERMISSIBLE CONSTRUCTION JOINT WITH 2" x 6" KEY CENTERED IN WALL.
4. STRUCTURAL CONCRETE (CP5000) IS A LEVEL 2 CONTRACTOR MIX DESIGN IN ACCORDANCE WITH MnDOT 2461 WITH A MINIMUM COMPRESSIVE STRENGTH OF 5 KSI AND A MAXIMUM WATER/CEMENT RATIO OF 0.40.
5. ATTACH WIRE FENCE ANCHORAGE TO PILE WITH SOLID NO. 6 GAGE COPPER WIRE WITH AN APPROVED TYPE CLAMP OR BRAZING (ONE ANCHORAGE PER END OF RAIL). GROUND BOTH SIDES OF EXPANSION JOINT PIPE SLEEVE IF PRESENT. PAINT EXPOSED PORTION OF WIRE GRAY.

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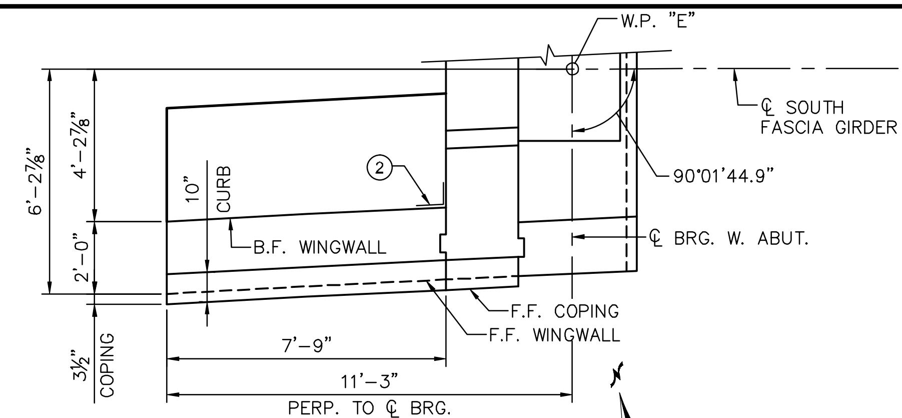
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

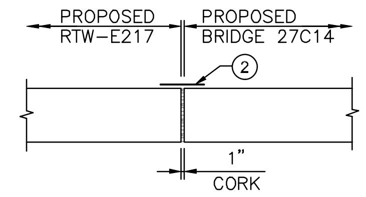
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
WEST ABUTMENT DETAILS 3

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-ABT-003



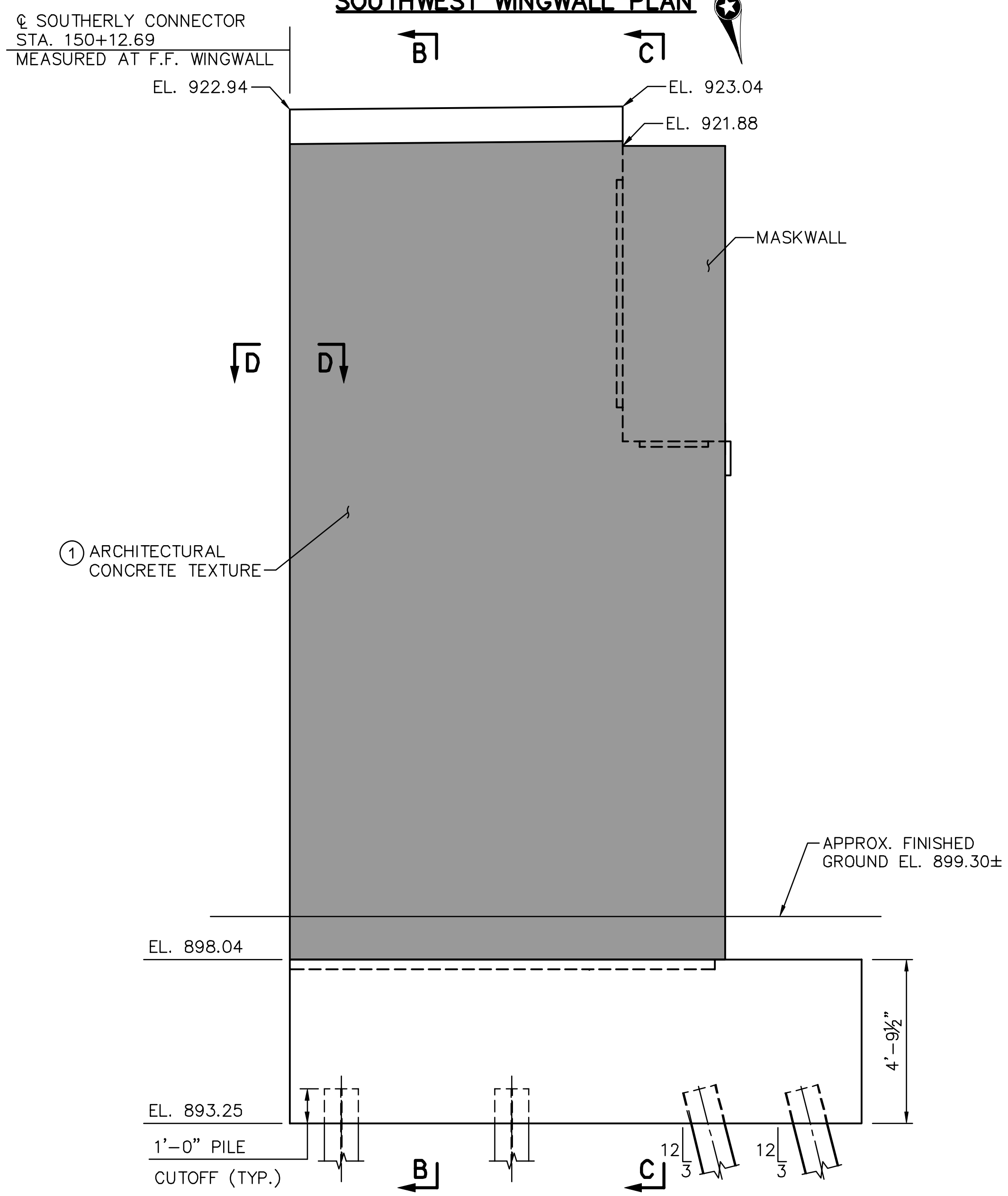
SOUTHWEST WINGWALL PLAN



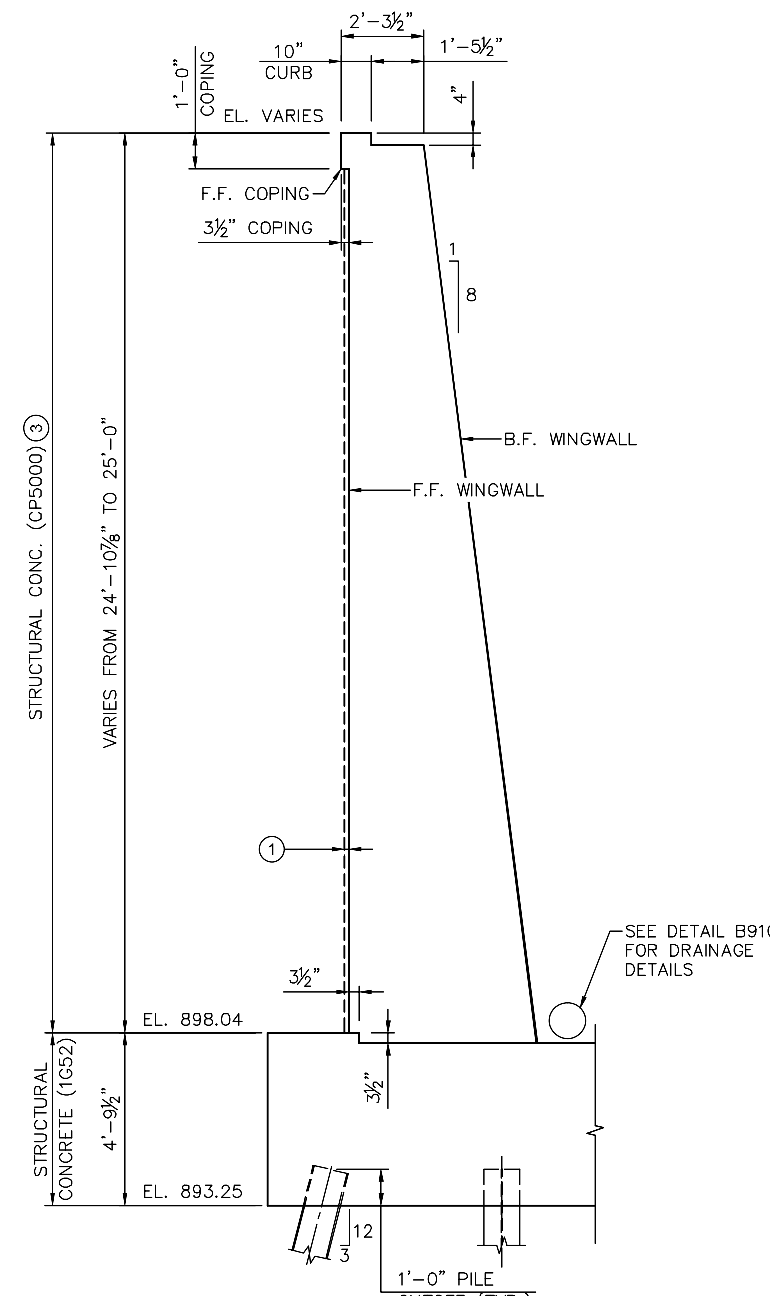
SECTION D–D

NOTES:

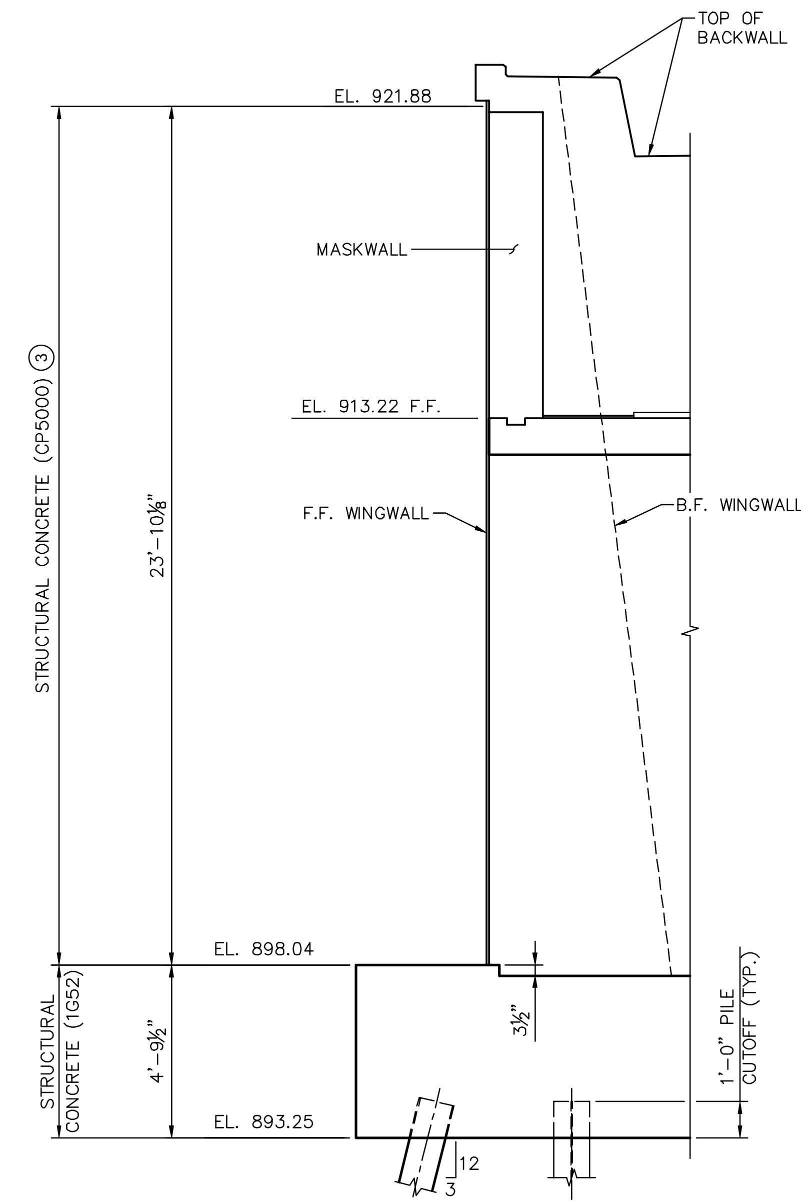
1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
3. STRUCTURAL CONCRETE (CP5000) IS A LEVEL 2 CONTRACTOR MIX DESIGN IN ACCORDANCE WITH MnDOT 2461 WITH A MINIMUM COMPRESSIVE STRENGTH OF 5 KSI AND A MAXIMUM WATER/CEMENT RATIO OF 0.40.



SOUTHWEST WINGWALL ELEVATION



SECTION B–B



SECTION C–C

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
WEST ABUTMENT DETAILS 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-004

SHEET 7 OF 52

Jan. 18 2016 01:20 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-ABT-004.dwg By: Joe.Menapace

REQUIRED PILE TEST LOAD - TONS/PILE	
FIELD CONTROL METHOD	TEST LOAD
PDA	98.0

NORTHWEST WINGWALL COMPUTED PILE LOAD - TONS/PILE	
DEAD LOAD + EARTH PRESSURE	38.0
LIVE LOAD	11.0
* DESIGN LOAD	49.0
* BASED ON GROUP I LOADING (SERVICE LOAD) PER AREMA CHAPTER 8 SECTION 2.2.4	

GENERAL PILE NOTES:

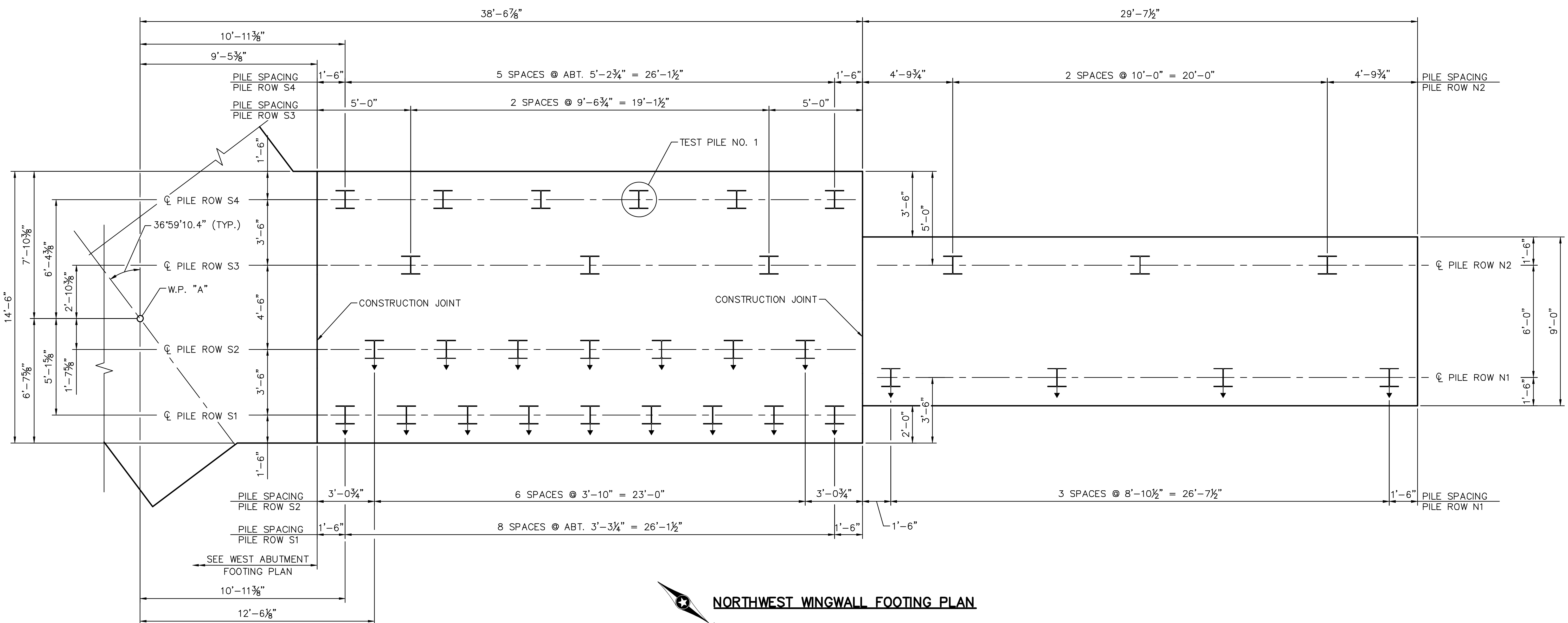
1	HP12x53 STEEL TEST PILE 70 FT. LONG
31	HP12x53 STEEL PILES EST. 70 FT. LENGTH
32	HP12x53 STEEL PILES REQ'D FOR NORTHWEST WINGWALL.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



NORTHWEST WINGWALL FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

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METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
WEST ABUTMENT DETAILS 5

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-005

SHEET 8 OF 52

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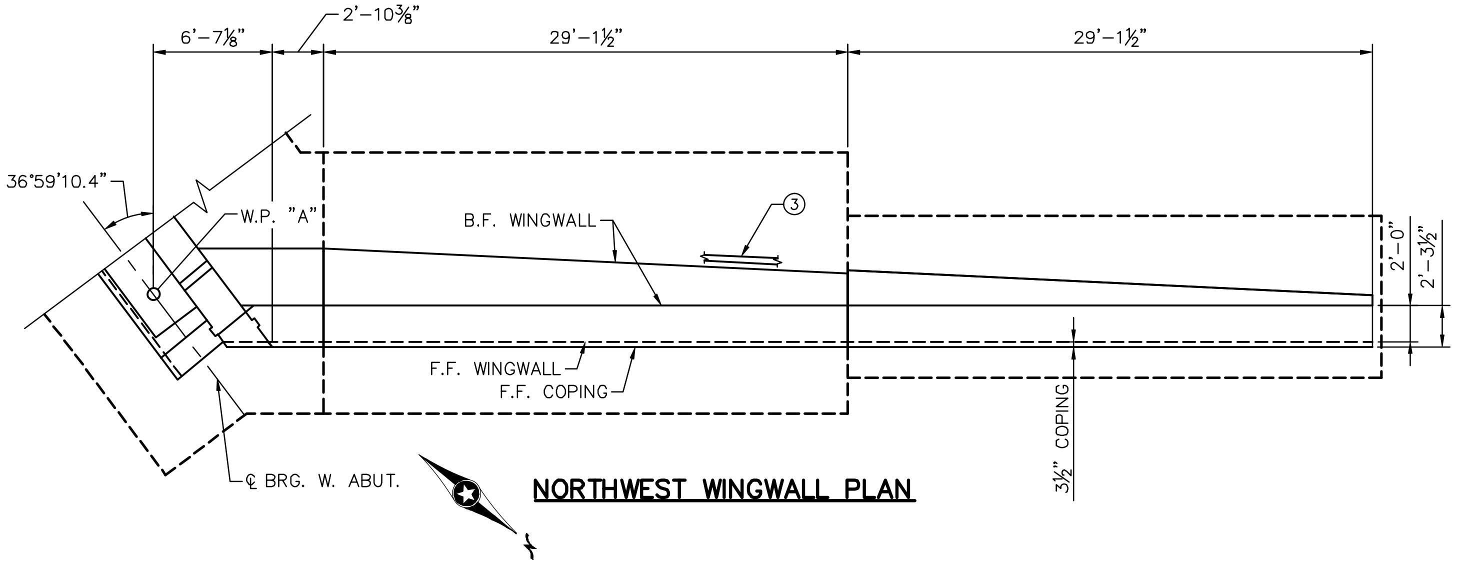
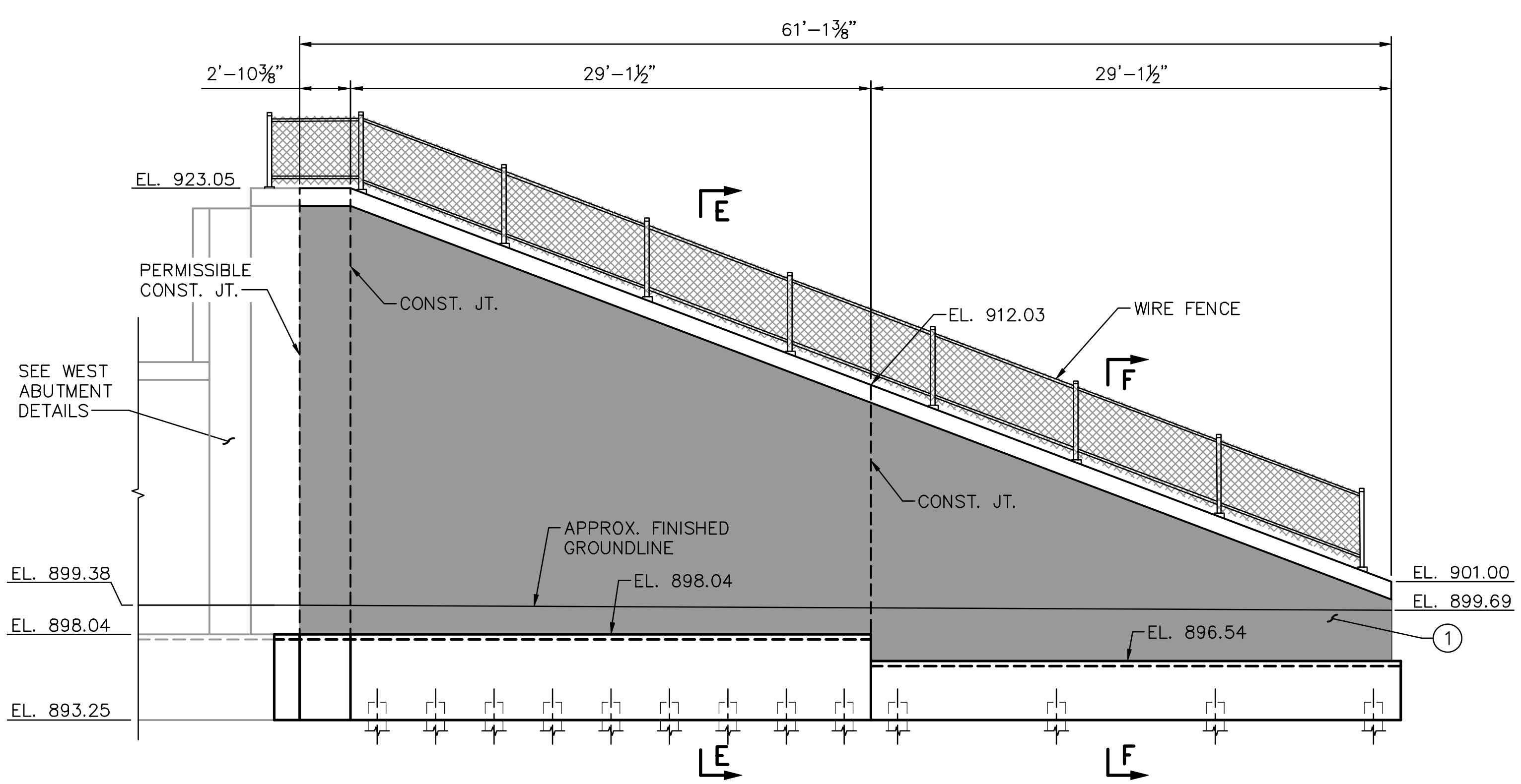
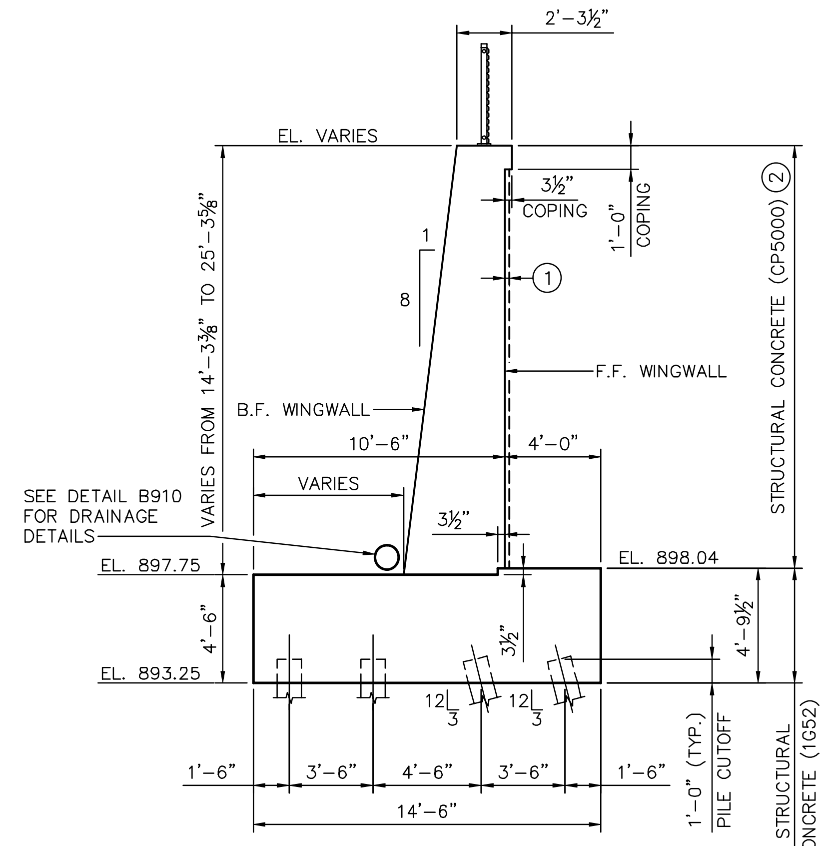


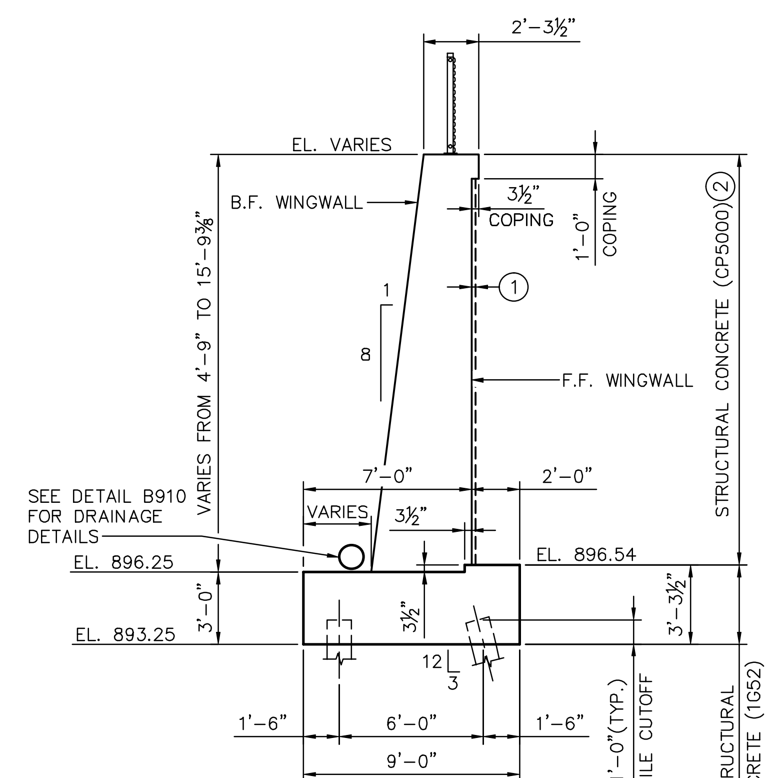
NORTHWEST WINGWALL PLAN



NORTHWEST WINGWALL ELEVATION



SECTION E–E



SECTION F–F

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. STRUCTURAL CONCRETE (CP5000) IS A LEVEL 2 CONTRACTOR MIX DESIGN IN ACCORDANCE WITH MNDOT 2461 WITH A MINIMUM COMPRESSIVE STRENGTH OF 5 KSI AND A MAXIMUM WATER/CEMENT RATIO OF 0.40.
3. 4" DIA. PERFORATED DRAIN PIPE. SEE DETAIL B910.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: MRD CHECKED BY: DLS

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
WEST ABUTMENT DETAILS 6

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-006

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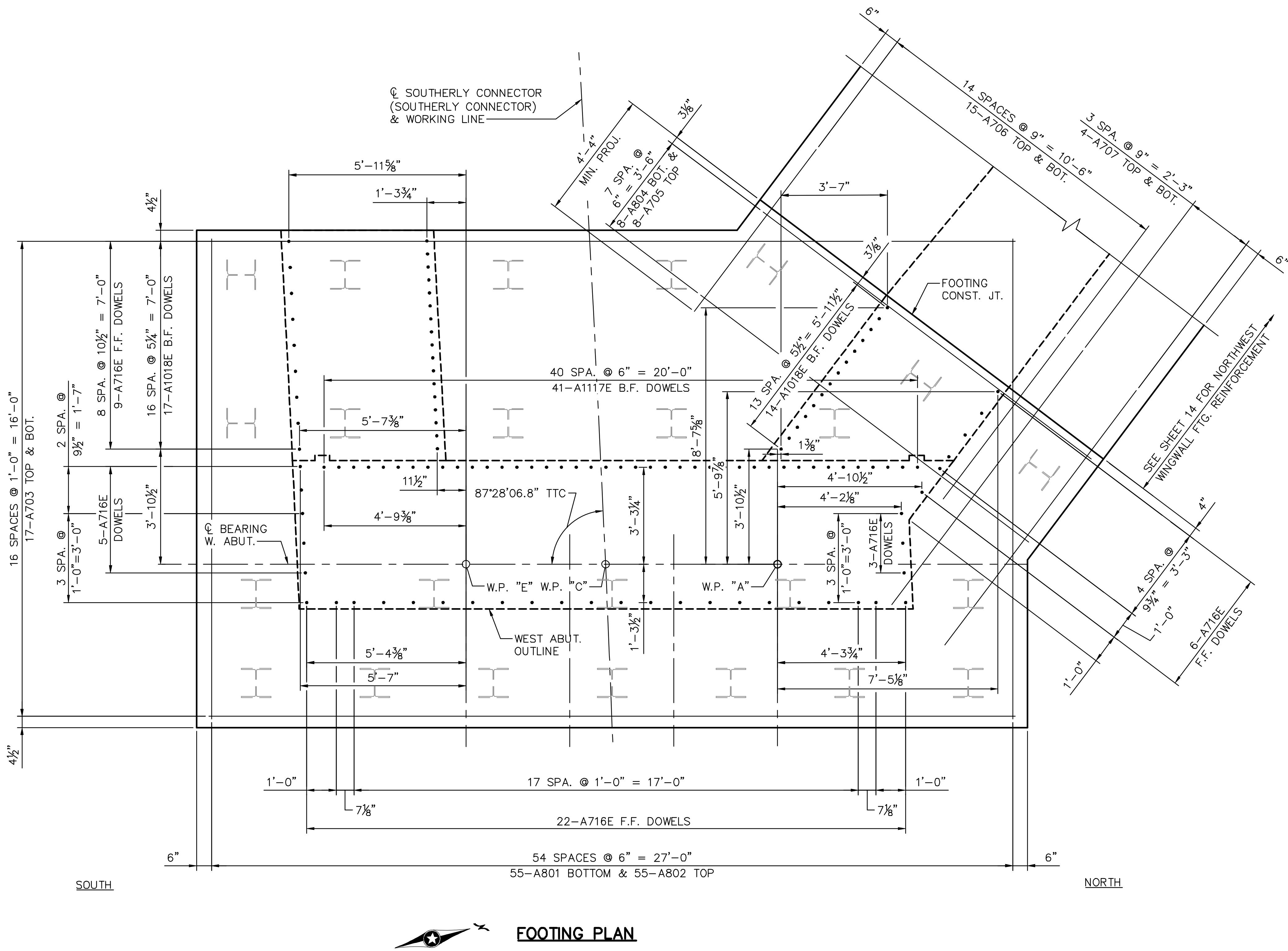

FOOTING PLAN

Jan. 18 2016 01:21 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-ABT-007.dwg By: Joe.Menapace

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DRAWN BY: MRD CHECKED BY: DLS

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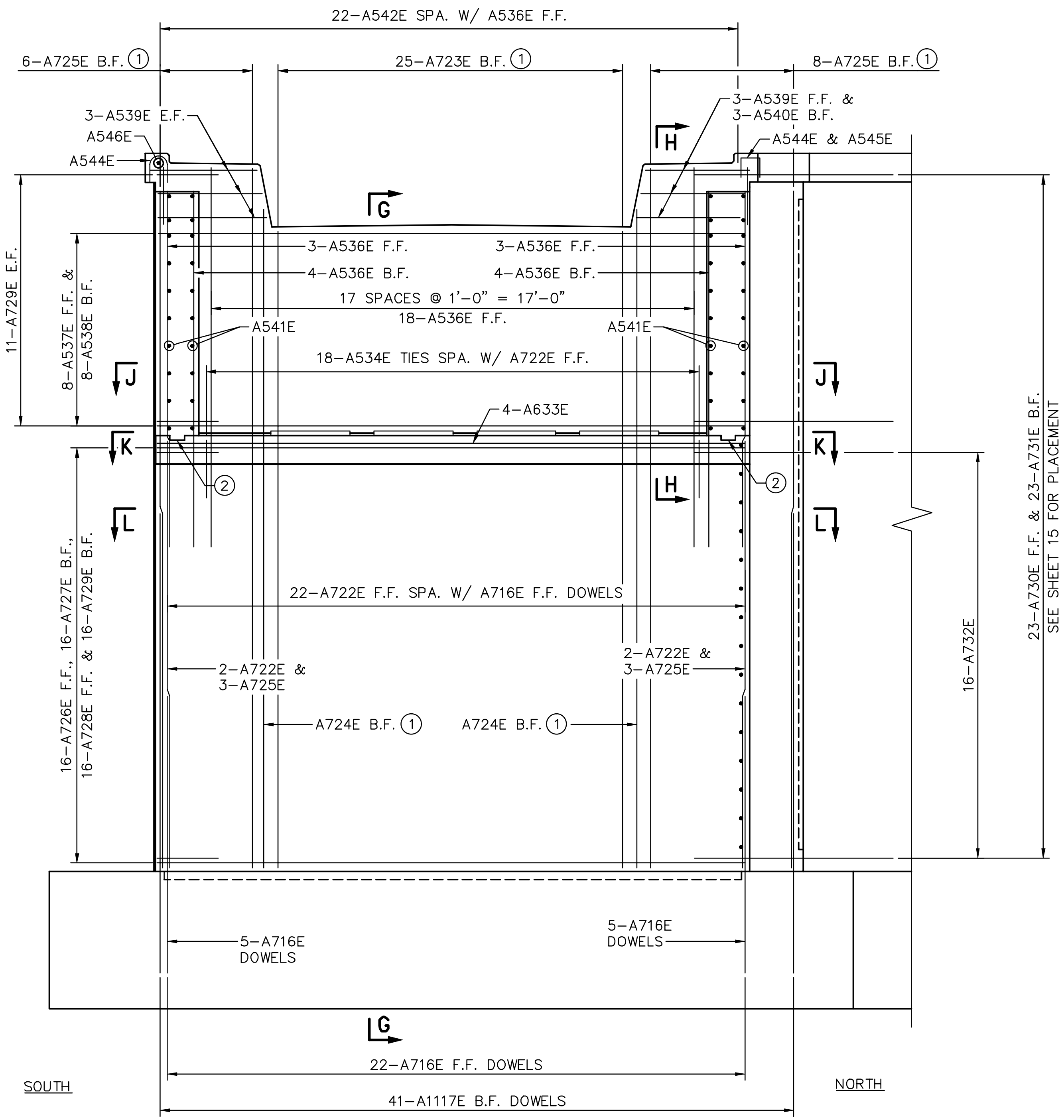
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

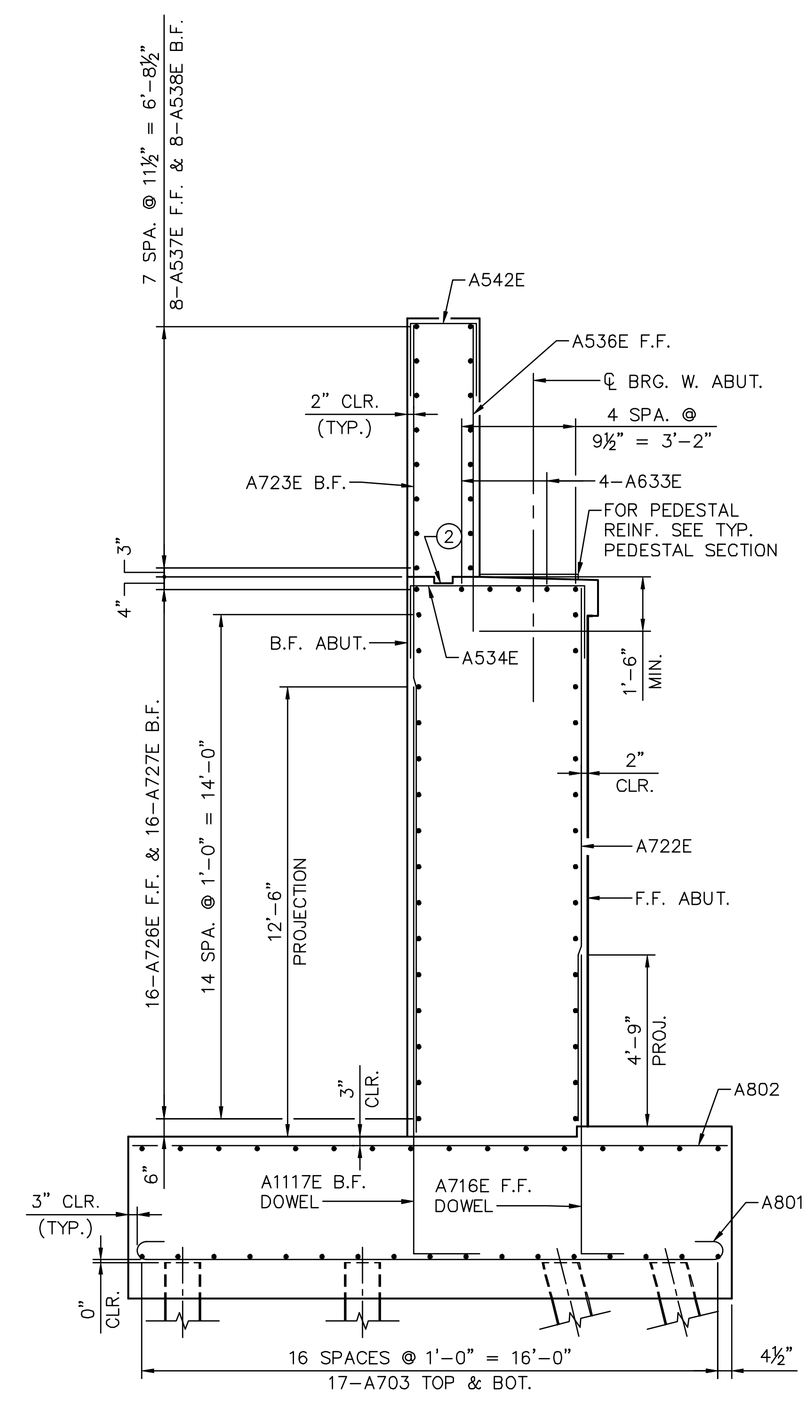
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
WEST ABUTMENT REINFORCEMENT 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-007

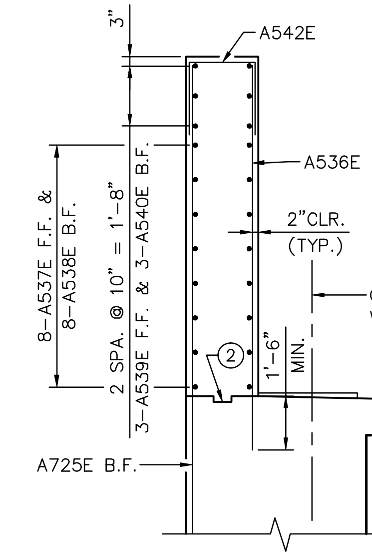
SHEET 10 OF 52



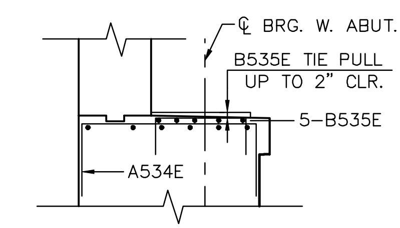
ELEVATION



SECTION G-G



SECTION H-H



TYPICAL PEDESTAL SECTION

(ONLY PEDESTAL AND SEAT REINFORCEMENT SHOWN)

NOTES:

1 SPACE WITH A1117E B.F. DOWELS.

2 PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY.

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
WEST ABUTMENT REINFORCEMENT 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-ABT-008

SHEET 11 OF 52

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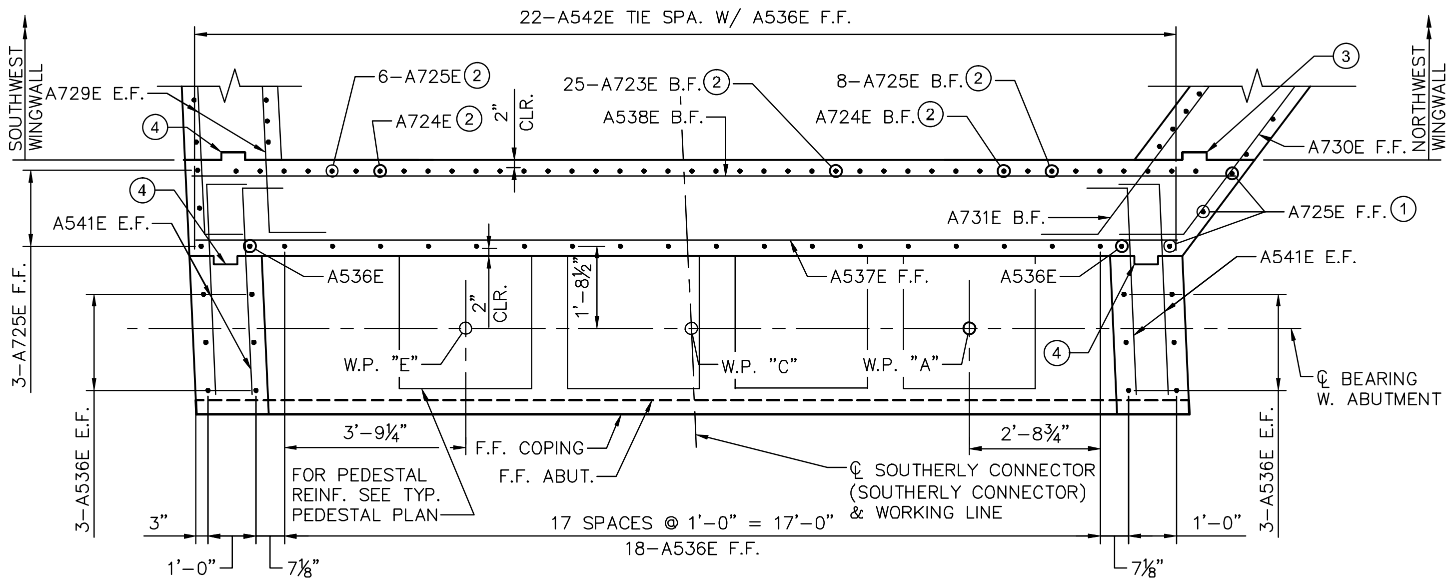
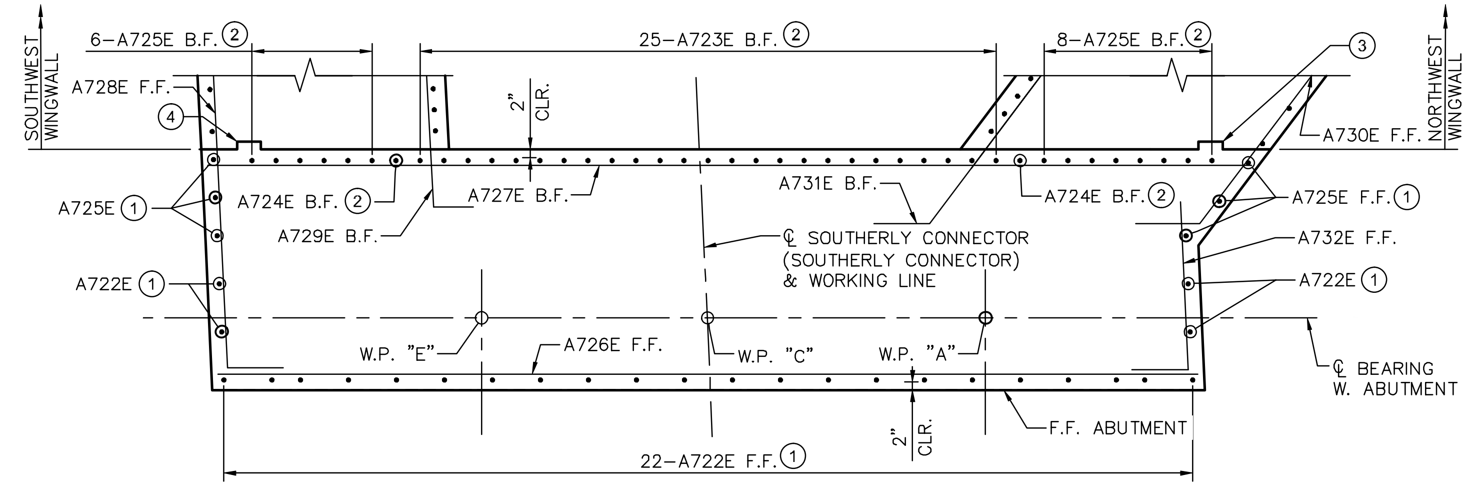
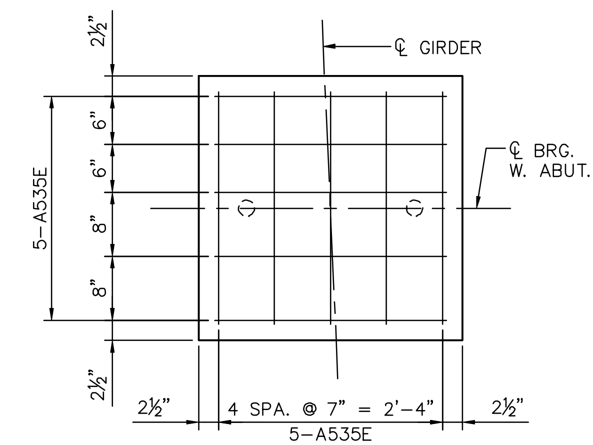


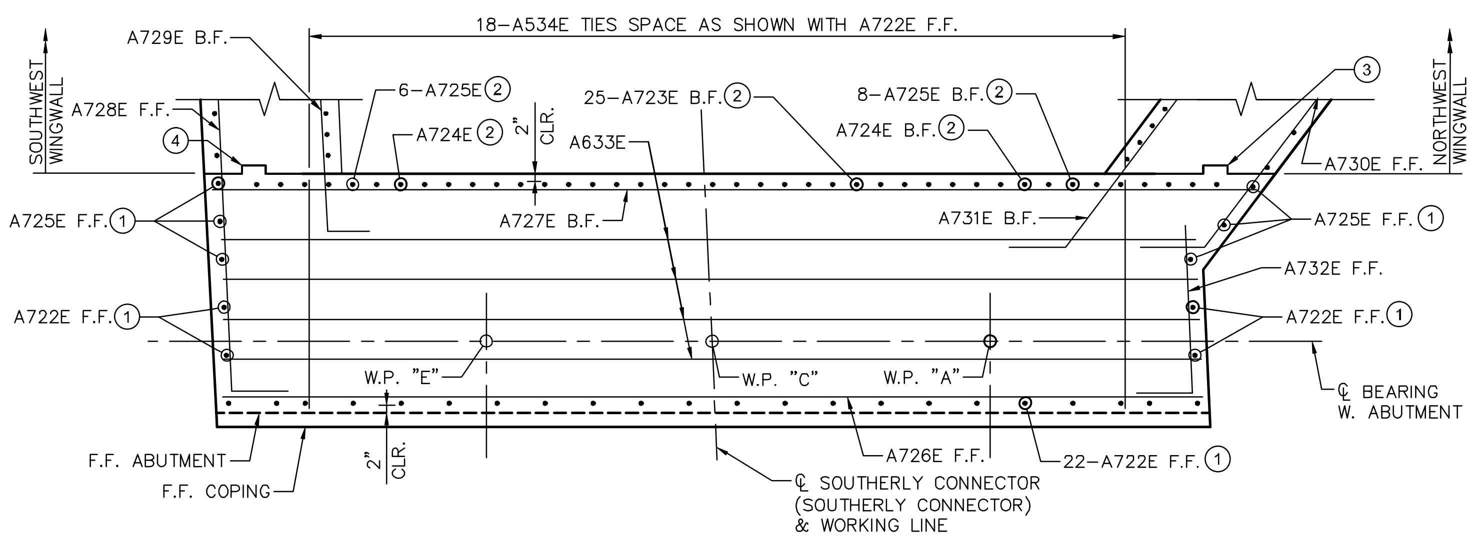
SECTION J-J



SECTION L-L



TYPICAL PEDESTAL PLAN



SECTION K-K

NOTES:

SEE SHEET 13 FOR SOUTHWEST WINGWALL REINFORCEMENT.

SEE SHEET 15 FOR NORTHWEST WINGWALL REINFORCEMENT.

(1) SPACE WITH A716E F.F. DOWELS.

(2) SPACE WITH A1117E B.F. DOWELS.

(3) PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEYWAY.

(4) CONSTRUCTION JOINT WITH 2" X 6" KEYWAY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: MRD CHECKED BY: DLS

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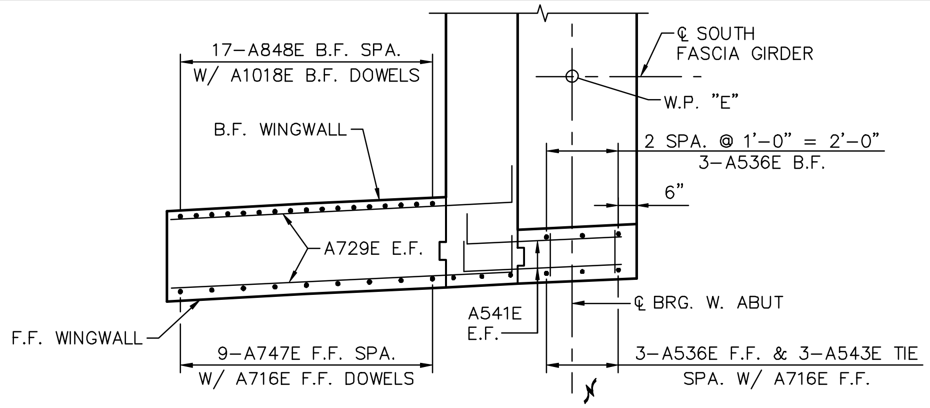
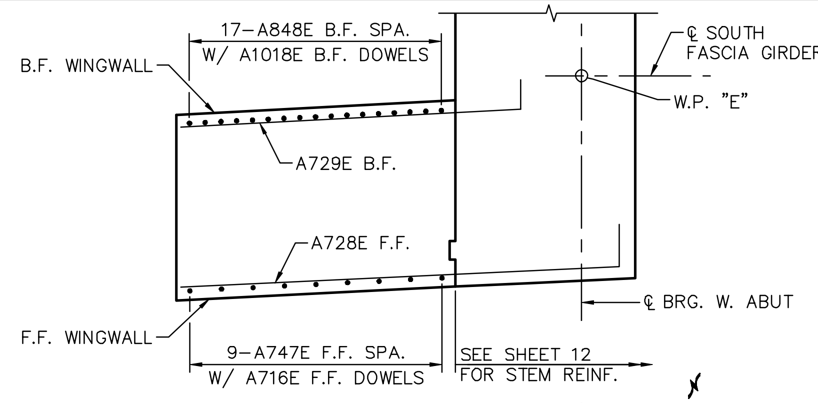
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
WEST ABUTMENT REINFORCEMENT 3

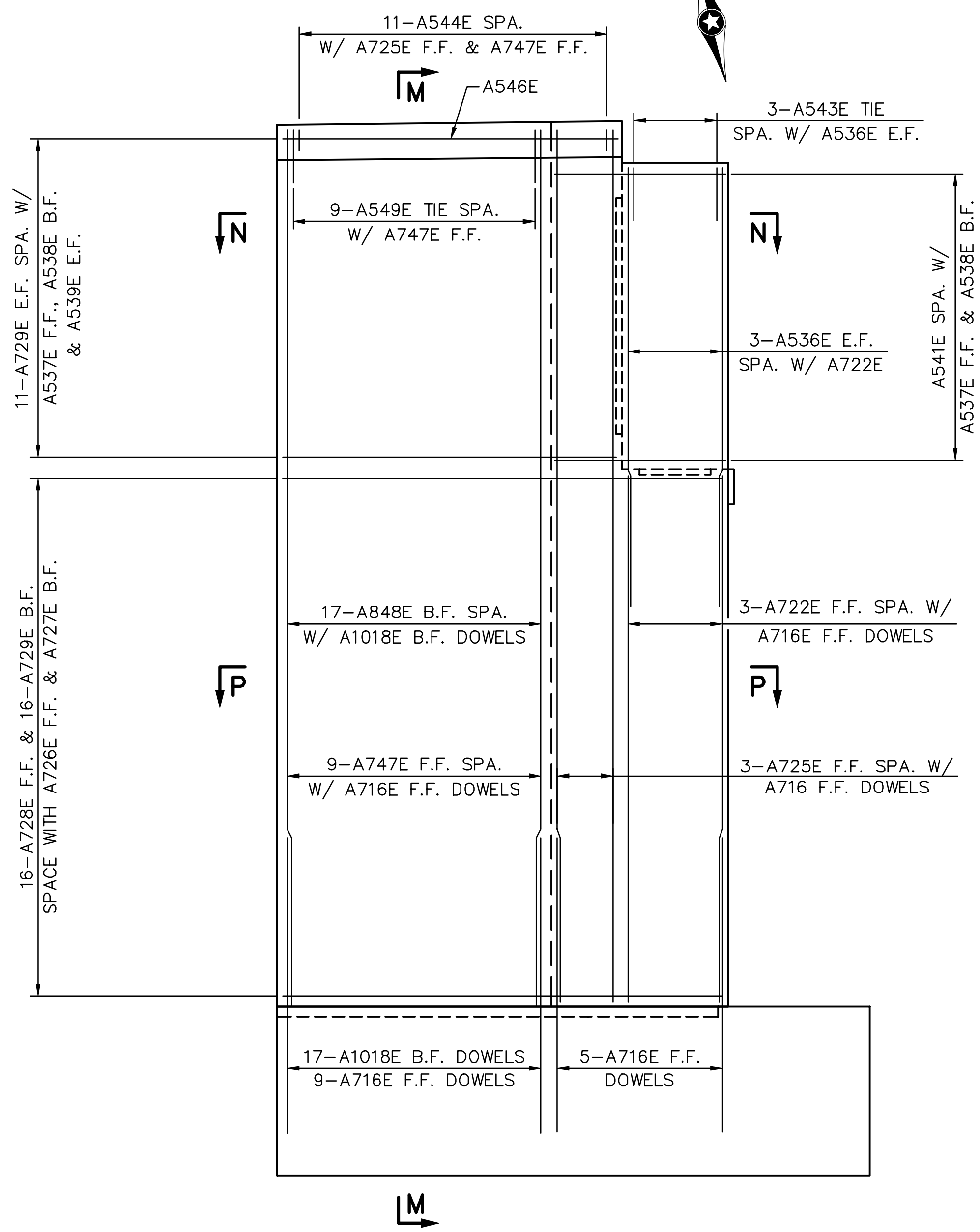
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-009



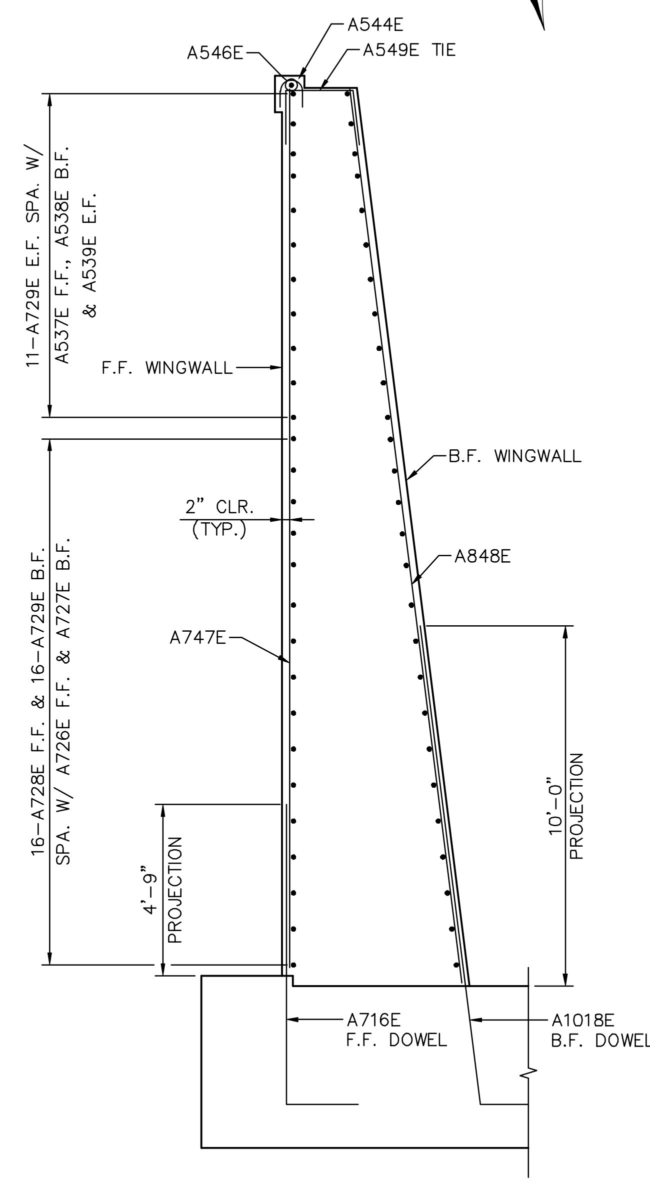
SECTION N-N



SECTION P-P



SOUTHWEST WINGWALL ELEVATION



SECTION M-M

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: MRD | CHECKED BY: DLS

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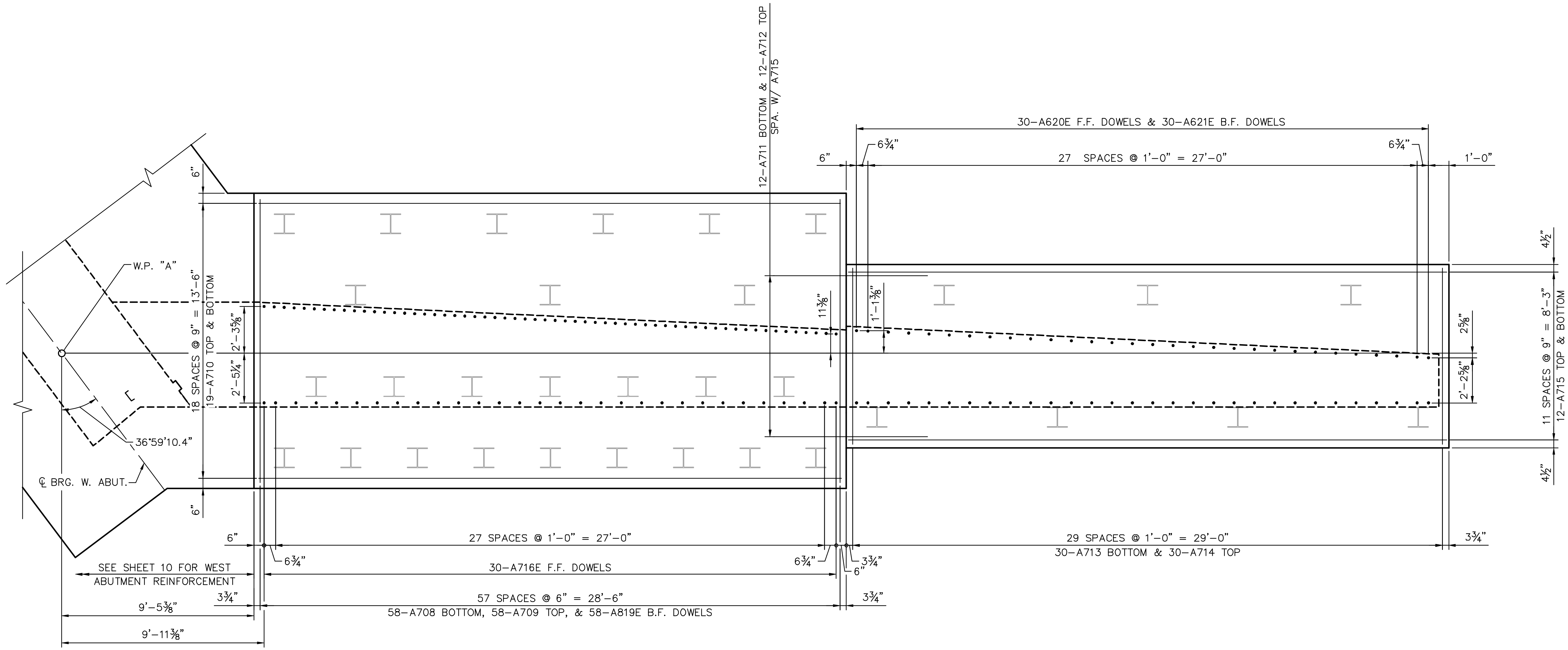
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL | SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
WEST ABUTMENT REINFORCEMENT 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-010

SHEET 13 OF 52



NORTHWEST WINGWALL FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS | CHECKED BY: DLS
DRAWN BY: MRD | CHECKED BY: DLS

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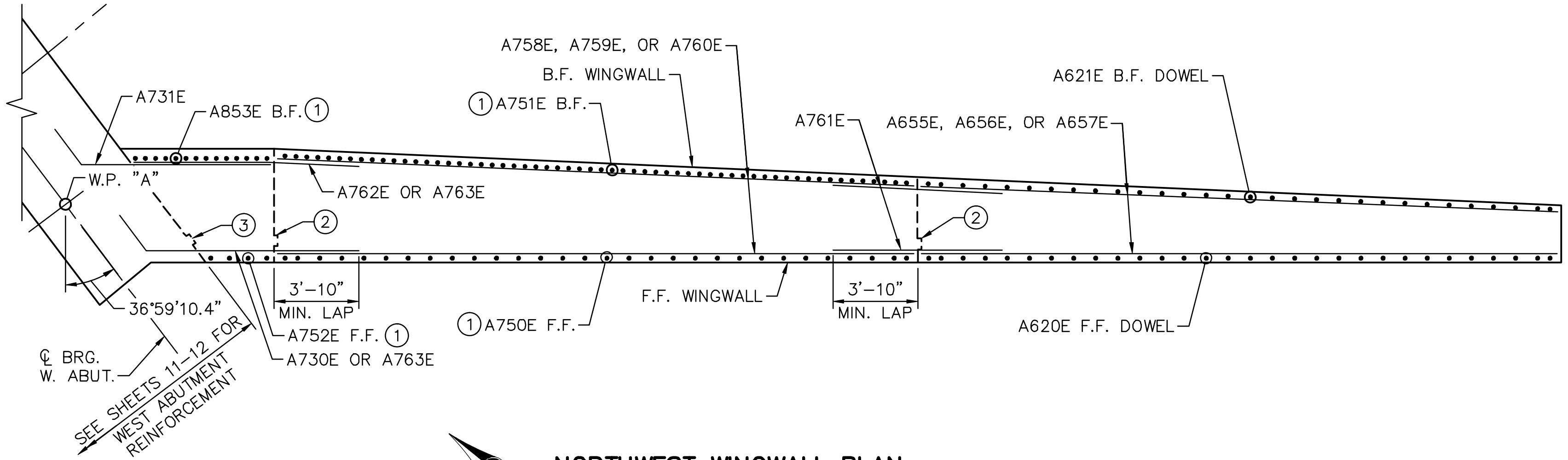
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL | SOUTHWEST Green Line LRT Extension

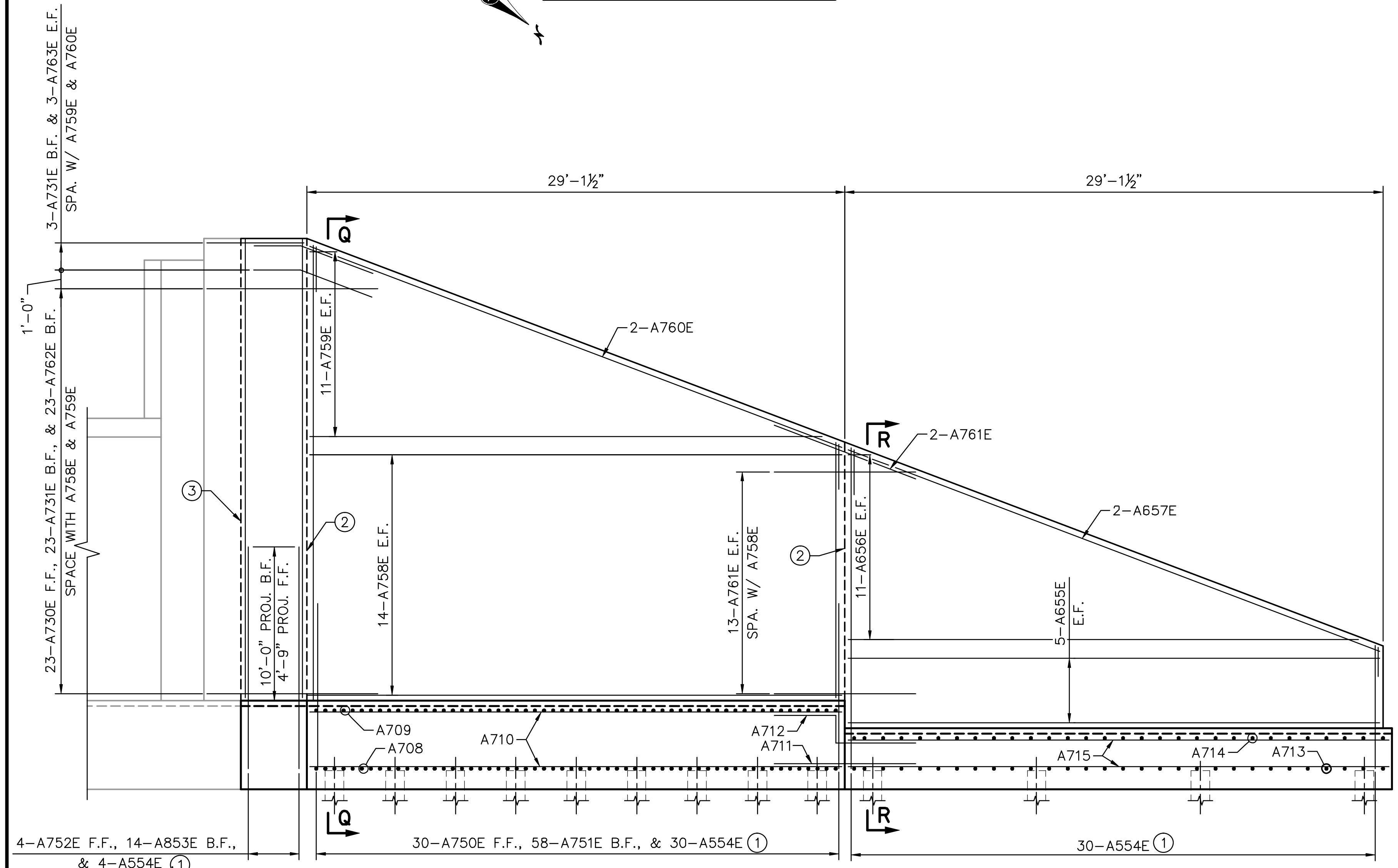
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
WEST ABUTMENT REINFORCEMENT 5

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-011

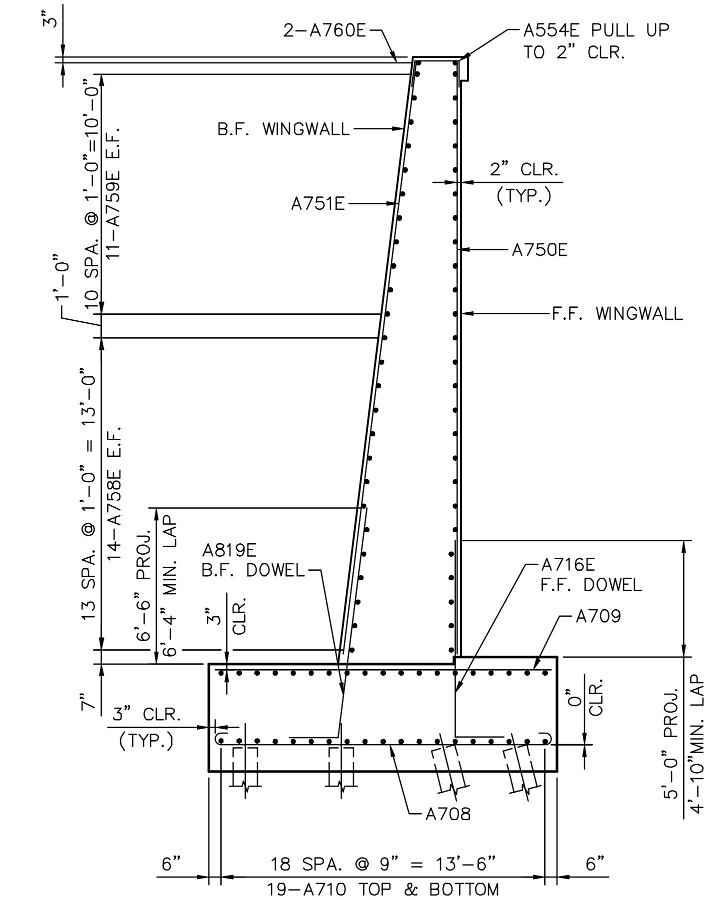
SHEET 14 OF 52



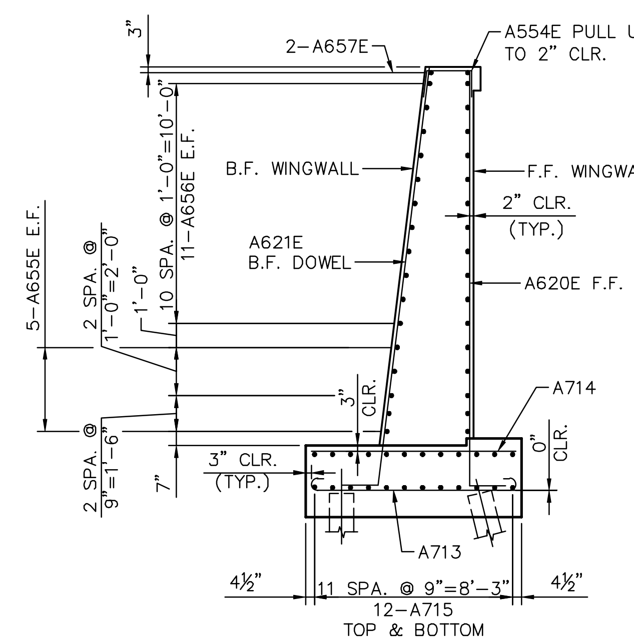
NORTHWEST WINGWALL PLAN



NORTHWEST WINGWALL ELEVATION



SECTION Q–Q



SECTION R–R

NOTES:

1. SPACE WITH DOWEL BARS.
2. CONSTRUCTION JOINT WITH 2" X 6" KEY.
3. PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

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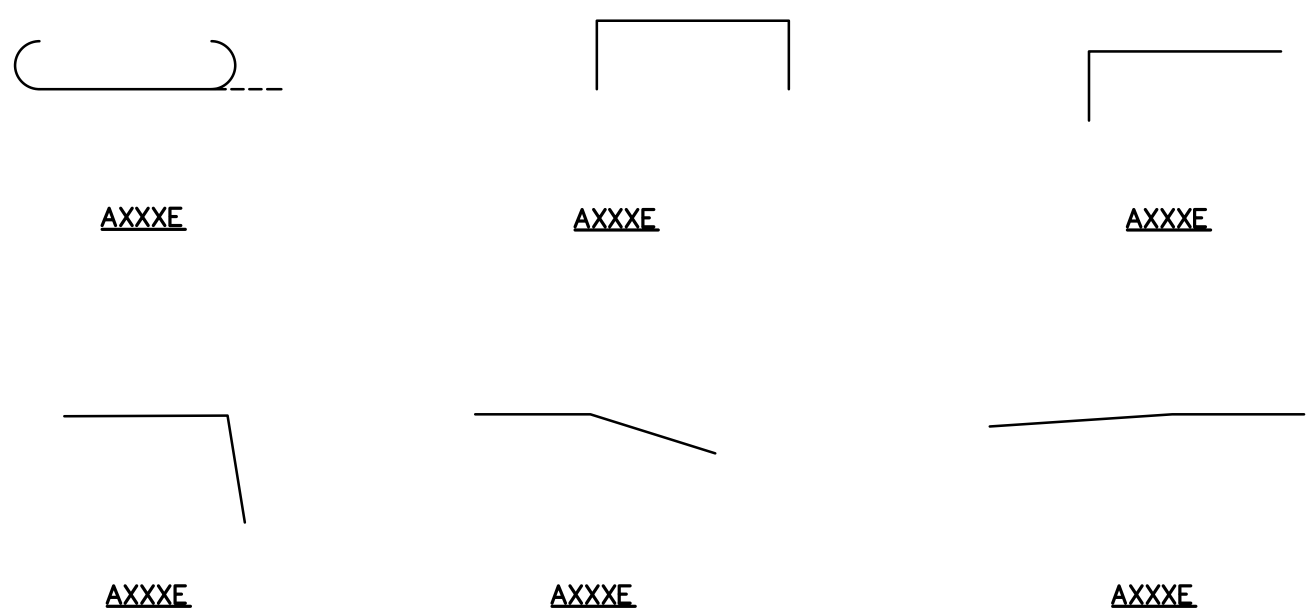
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
WEST ABUTMENT REINFORCEMENT 6

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-012

SHEET 15 OF 52



BILL OF REINFORCEMENT FOR WEST ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
A801			0	FOOTING, BOT., TRANS.
A802			0	FOOTING, TOP, TRANS.
A703			0	FOOTING, LONG.
A804			0	FOOTING, BOT., TRANS.
A705			0	FOOTING, TOP, TRANS.
A706			0	FOOTING, LONG., DOWEL
A707			0	FOOTING, LONG., DOWEL
A708			0	NW WINGWALL FTG., BOT., TRANS.
A709			0	NW WINGWALL FTG., TOP, TRANS.
A710			0	NW WINGWALL FTG., LONG.
A711			0	NW WINGWALL FTG., LONG. DOWEL
A712			0	NW WINGWALL FTG., LONG. DOWEL
A713			0	NW WINGWALL FTG., BOT., TRANS.
A714			0	NW WINGWALL FTG., TOP, TRANS.
A715			0	NW WINGWALL FTG., LONG.
A716E			0	F.F. DOWELS
A1117E			0	STEM, B.F. DOWELS
A1018E			0	WINGWALL, B.F. DOWELS
A819E			0	NW WINGWALL, B.F. DOWELS
A620E			0	NW WINGWALL, F.F. DOWELS
A621E			0	NW WINGWALL, B.F. DOWELS
A722E			0	STEM, VERT. F.F.
A723E			0	STEM, VERT. B.F.
A724E			0	STEM, VERT. B.F.
A725E			0	STEM, VERT.
A726E			0	STEM, HORIZ. F.F.
A727E			0	STEM, HORIZ. B.F.
A728E			0	STEM, LONG. DOWEL
A729E			0	STEM, LONG. DOWEL
A730E			0	STEM, LONG. DOWEL
A731E			0	STEM, LONG. DOWEL
A732E			0	STEM, HORIZ. F.F.
A633E			0	STEM, LONG.
A534E			0	STEM, TOP TIE
A535E			0	PEDESTAL, TIE
A536E			0	BACKWALL, VERT. F.F.
A537E			0	BACKWALL, HORIZ. F.F.
A538E			0	BACKWALL, HORIZ. B.F.
A539E			0	BACKWALL, HORIZ. E.F.
A540E			0	BACKWALL, HORIZ. B.F.
A541E			0	MASKWALL, HORIZ. E.F.
A542E			0	BACKWALL, TOP TIE
A543E			0	MASKWALL, TOP TIE
A544E			0	CURB, TOP TIE
A545E			0	CURB, TOP TIE
A546E			0	CURB, LONG.
A747E			0	SW WINGWALL, VERT. F.F.
A848E			0	SW WINGWALL, VERT. B.F.
A549E			0	SW WINGWALL, TOP TIE

BILL OF REINFORCEMENT FOR WEST ABUTMENT (CONT.)

BAR	NO.	LENGTH	SHAPE	LOCATION
A750E			0	NW WINGWALL, VERT. F.F.
A751E			0	NW WINGWALL, VERT. B.F.
A752E			0	NW WINGWALL, VERT. F.F.
A853E			0	NW WINGWALL, VERT. B.F.
A554E			0	NW WINGWALL TOP TIE
A655E			0	NW WINGWALL, LONG.
A656E			0	NW WINGWALL, LONG.
A657E			0	NW WINGWALL, LONG.
A758E			0	NW WINGWALL, LONG.
A759E			0	NW WINGWALL, LONG.
A760E			0	NW WINGWALL, LONG.
A761E			0	NW WINGWALL, LONG. DOWEL
A762E			0	NW WINGWALL, LONG. DOWEL
A763E			0	NW WINGWALL, LONG. DOWEL

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
WEST ABUTMENT REINFORCEMENT 7

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-ABT-013

EAST ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
DEAD LOAD + EARTH PRESSURE	49.2
LIVE LOAD	39.3
*DESIGN LOAD	88.5

* BASED ON GROUP VI LOADING (SERVICE LOAD) PER AREMA CHAPTER 8 SECTION 2.2.4

REQUIRED PILE TEST LOAD - TONS/PILE	
FIELD CONTROL METHOD	TEST LOAD
PDA	177.0

GENERAL PILE NOTES:

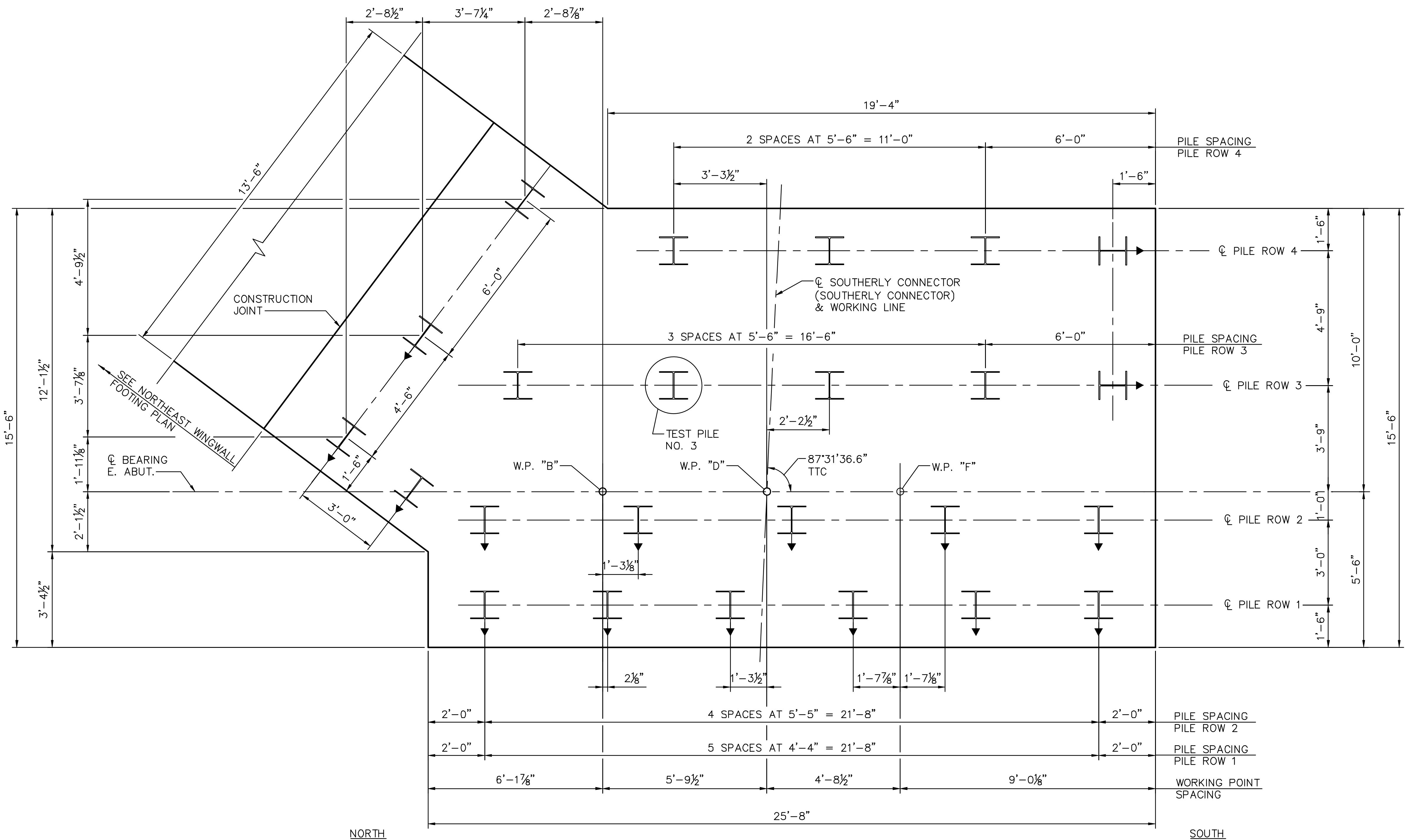
1	HP12x53 STEEL TEST PILE 70 FT. LONG
23	HP12x53 STEEL PILES EST. 70 FT. LENGTH
24	HP12x53 STEEL PILES REQ'D FOR EAST ABUT.

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



FOOTING PLAN

Jan. 18 2016 01:25 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-ABT-014.dwg By: Joe.Menopace

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

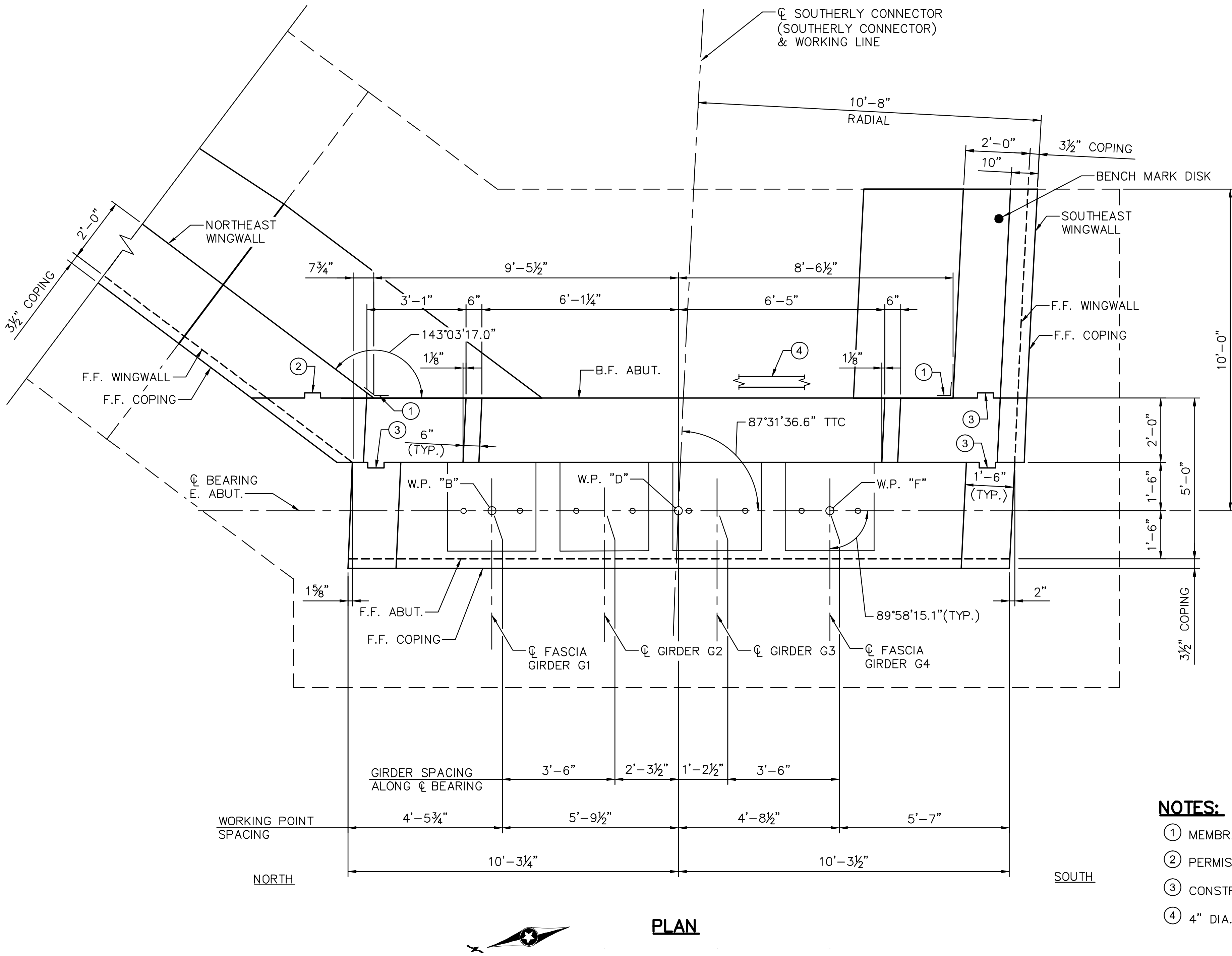
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

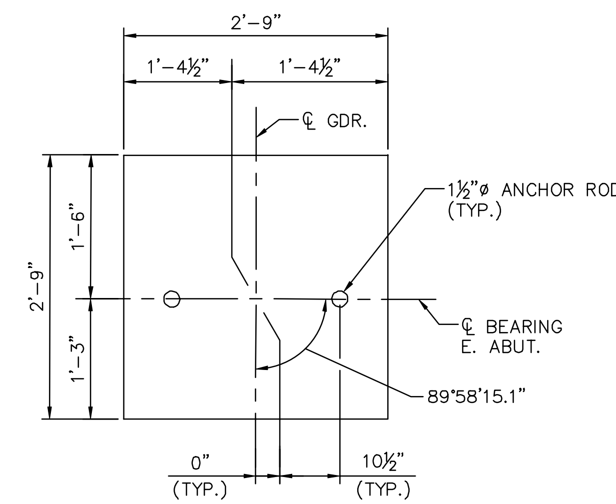
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
EAST ABUTMENT DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-014

SHEET 17 OF 52



PLAN



PEDESTAL DETAIL

NOTES:

① MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.

② PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY CENTERED IN WALL INTERFACE.

③ CONSTRUCTION JOINT WITH 2" X 6" KEY CENTERED IN WALL INTERFACE.

④ 4" DIA. PERFORATED DRAIN PIPE. SEE DETAIL B910.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

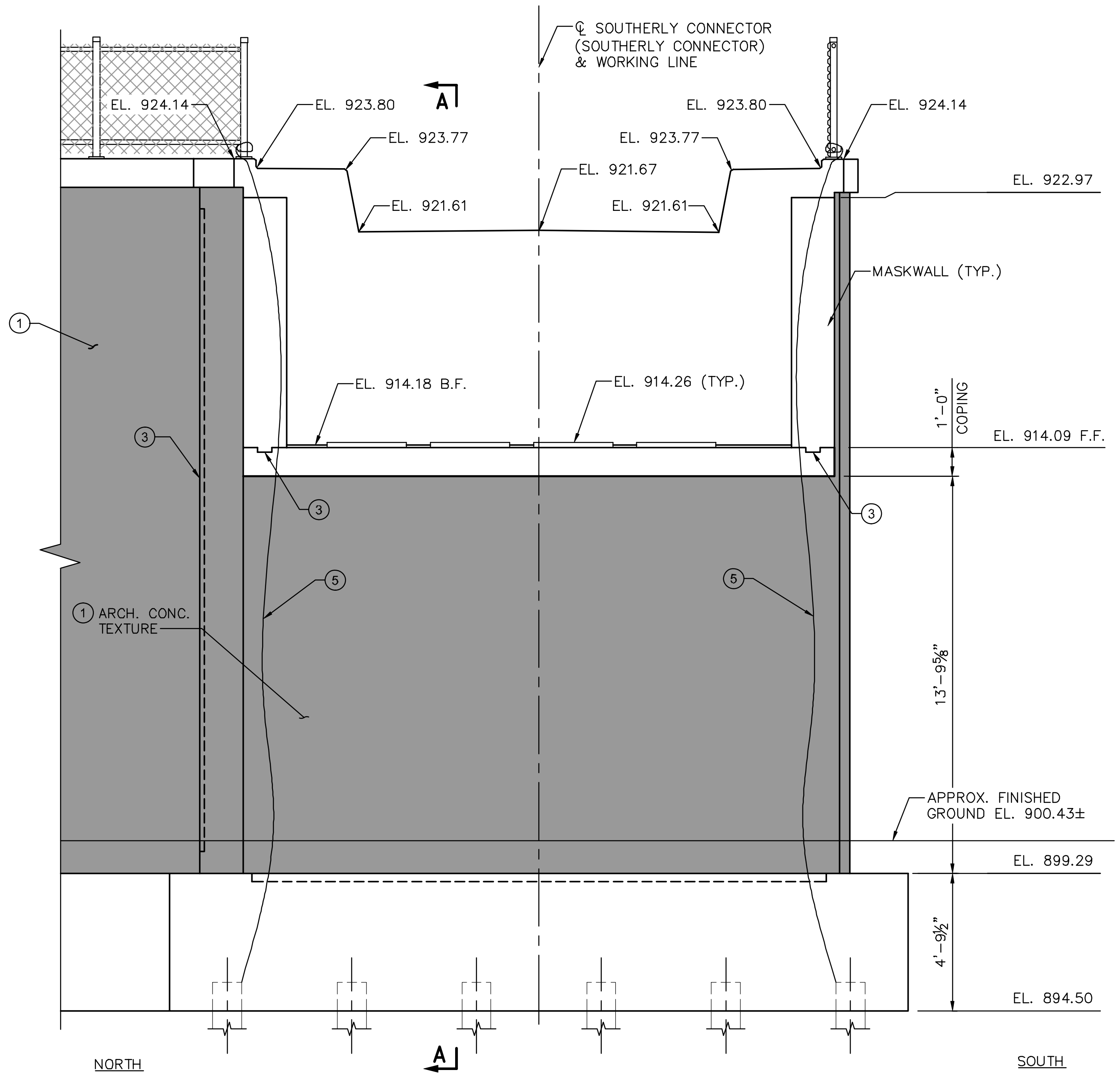
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
EAST ABUTMENT DETAILS 2

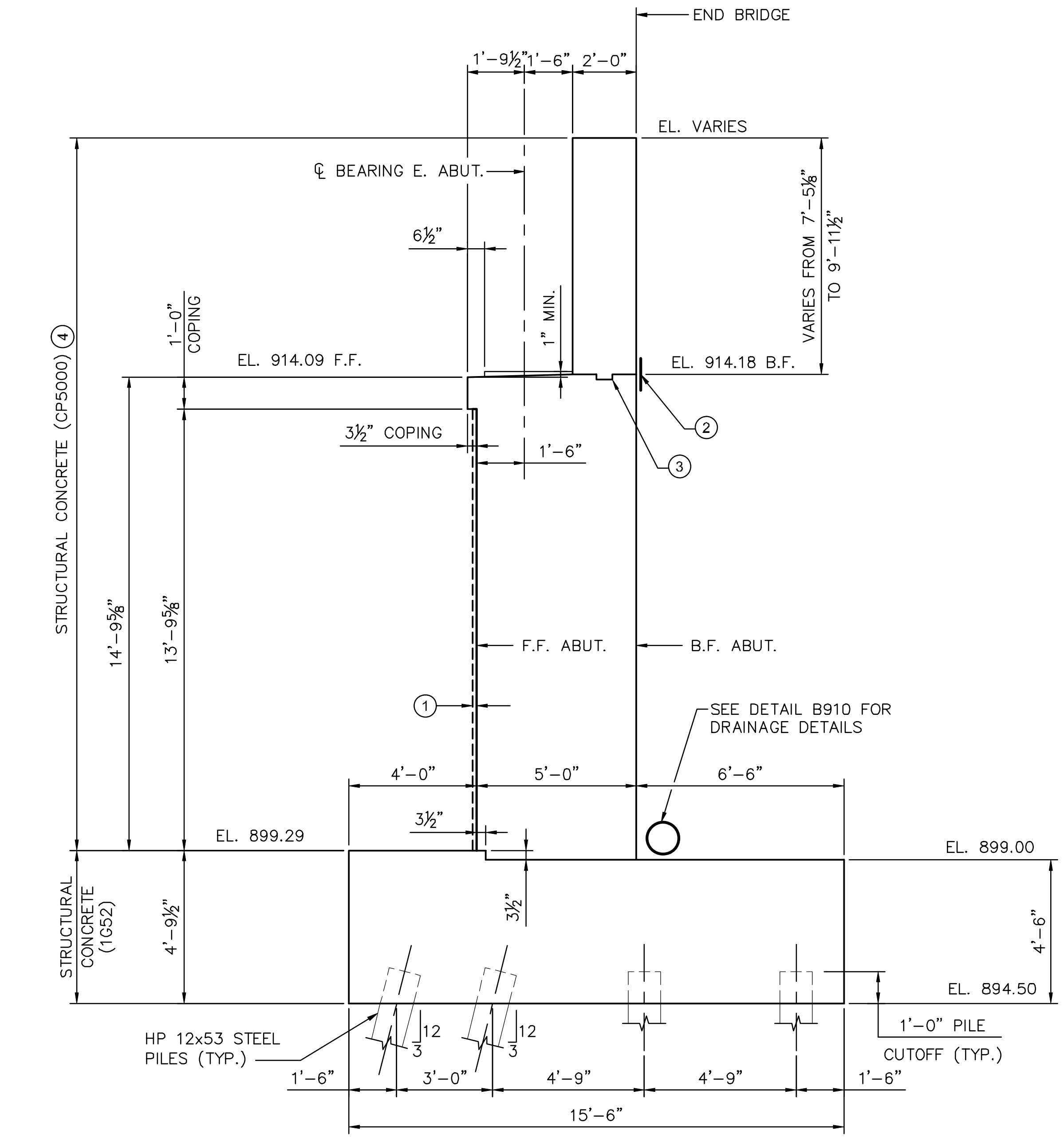
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-015

SHEET 18 OF 52

Jan. 18 2016 01:25 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-ABT-015.dwg By: Joe.Menapace



ELEVATION



SECTION A–A

NOTES:

SEE SHEET 20 FOR SOUTHEAST WINGWALL DETAILS.

SEE SHEETS 21 & 22 FOR NORTHEAST WINGWALL DETAILS.

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINTE GLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
3. PERMISSIBLE CONSTRUCTION JOINT WITH 2" x 6" KEY CENTERED IN WALL.
4. STRUCTURAL CONCRETE (CP5000) IS A LEVEL 2 CONTRACTOR MIX DESIGN IN ACCORDANCE WITH MnDOT 2461 WITH A MINIMUM COMPRESSIVE STRENGTH OF 5 KSI AND A MAXIMUM WATER/CEMENT RATIO OF 0.40.
5. ATTACH WIRE FENCE ANCHORAGE TO PILE WITH SOLID NO. 6 GAGE COPPER WIRE WITH AN APPROVED TYPE CLAMP OR BRAZING (ONE ANCHORAGE PER END OF RAIL). GROUND BOTH SIDES OF EXPANSION JOINT PIPE SLEEVE IF PRESENT. PAINT EXPOSED PORTION OF WIRE GRAY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG | CHECKED BY: DLS
DRAWN BY: ZEG | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

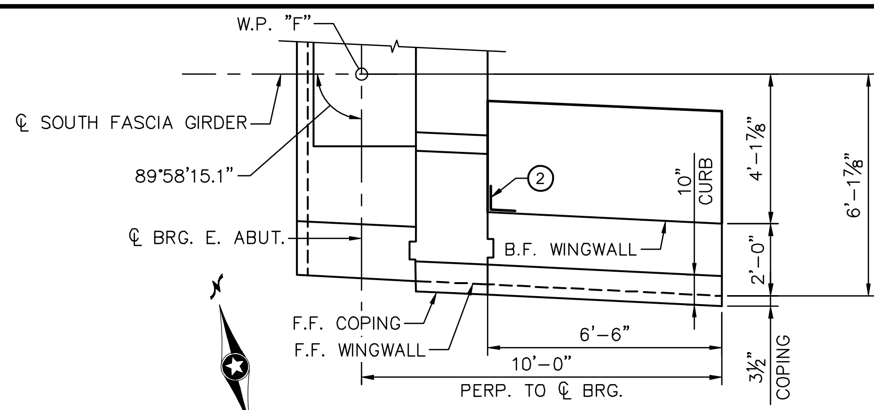
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

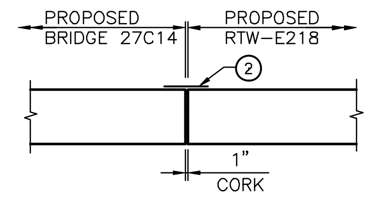
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
EAST ABUTMENT DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-016

SHEET 19 OF 52



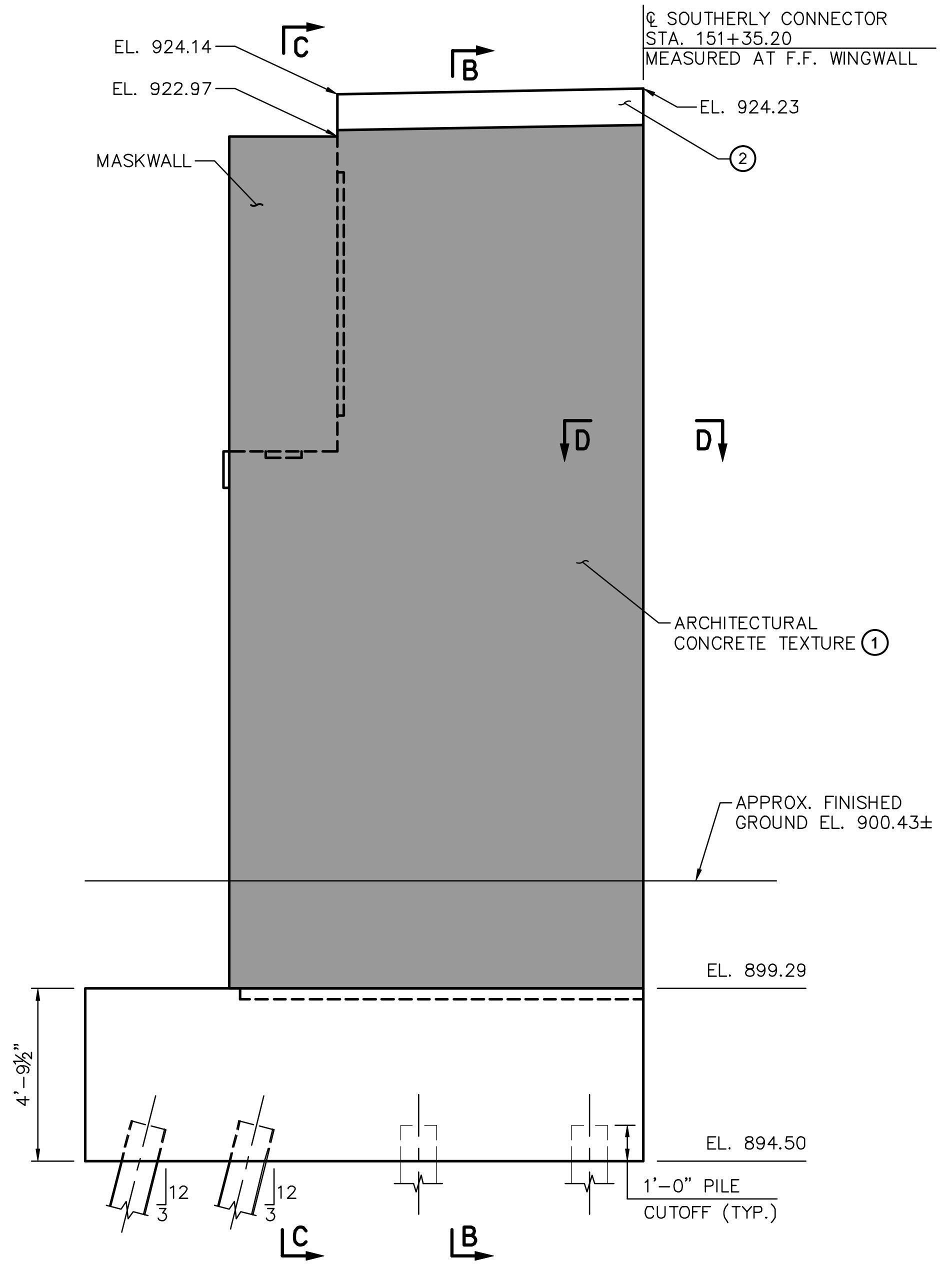
SOUTHEAST WINGWALL PLAN



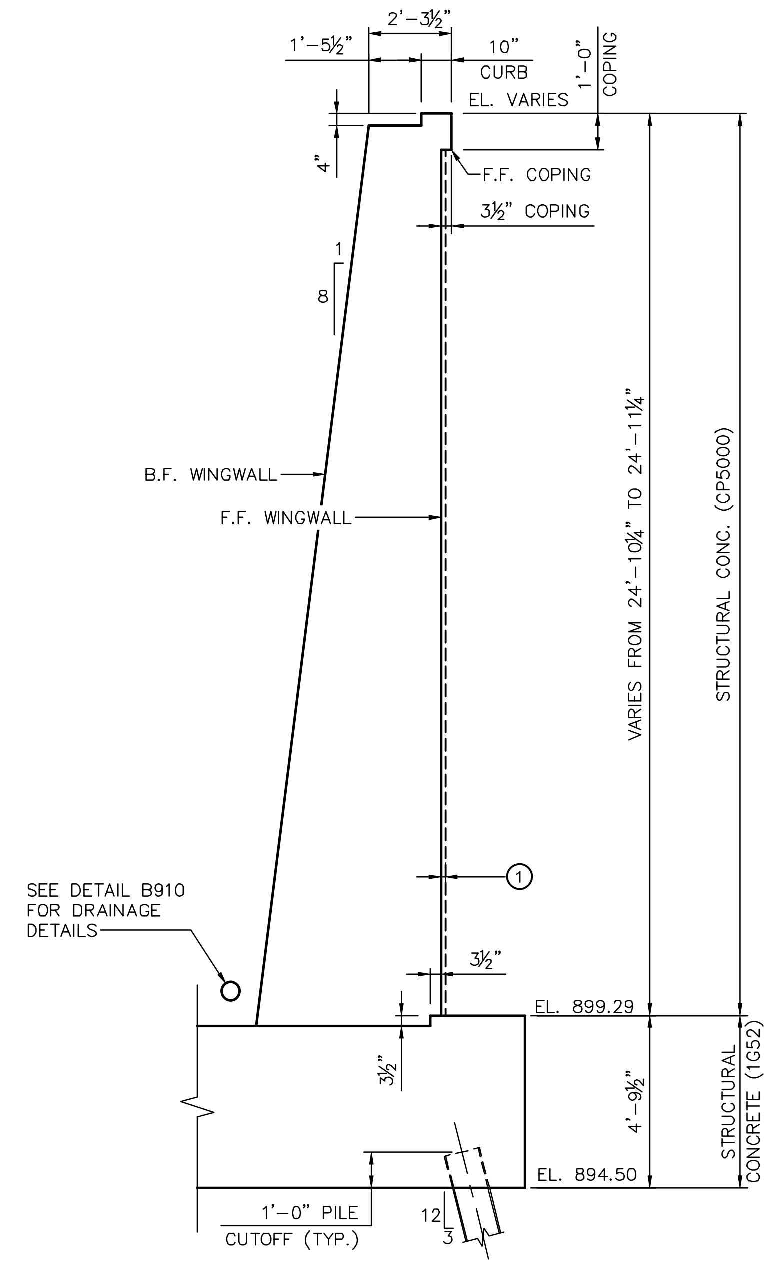
SECTION D–D

NOTES:

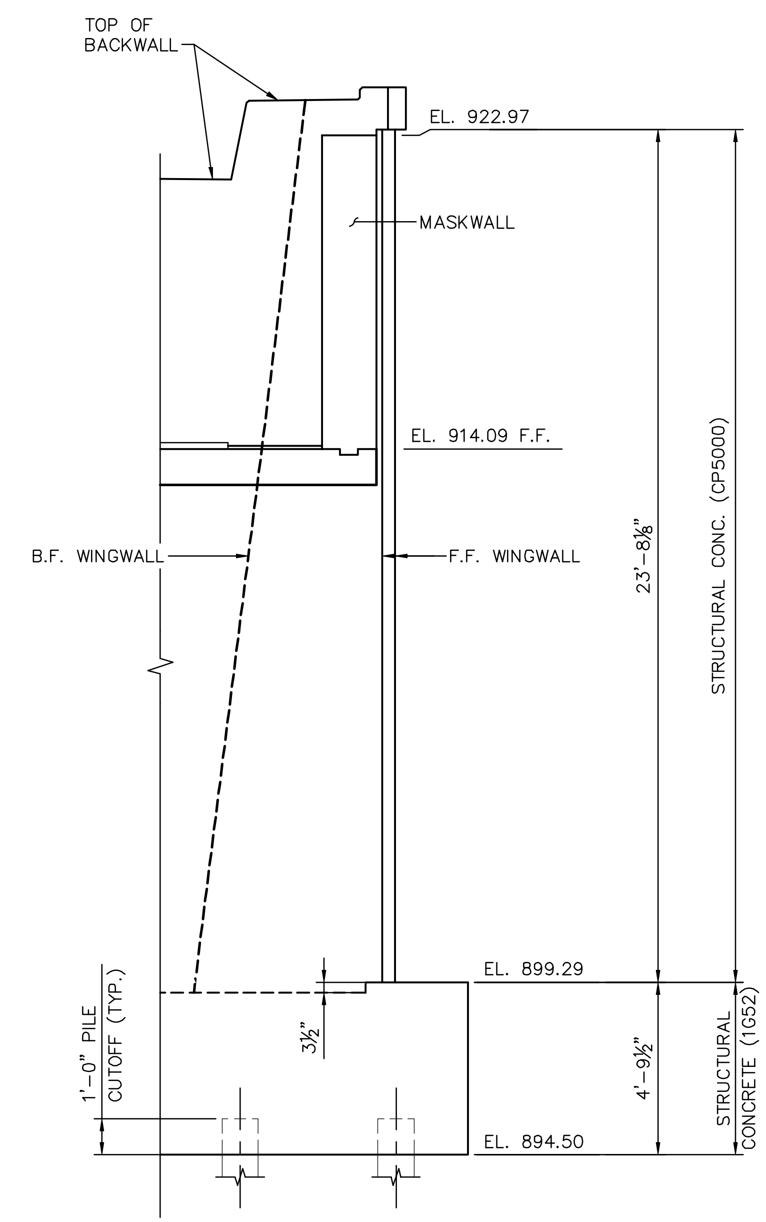
1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
3. STRUCTURAL CONCRETE (CP5000) IS A LEVEL 2 CONTRACTOR MIX DESIGN IN ACCORDANCE WITH MnDOT 2461 WITH A MINIMUM COMPRESSIVE STRENGTH OF 5 KSI AND A MAXIMUM WATER/CEMENT RATIO OF 0.40.



SOUTHEAST WINGWALL ELEVATION



SECTION B–B



SECTION C–C

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: ZEG CHECKED BY: DLS

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
EAST ABUTMENT DETAILS 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-017

SHEET 20 OF 52

Jan. 18 2016 01:26 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-ABT-017.dwg By: Joe.Menapace

NORTHEAST WINGWALL COMPUTED PILE LOAD - TONS/PILE	
DEAD LOAD + EARTH PRESSURE	28.0
LIVE LOAD	15.0
* DESIGN LOAD	43.0
* BASED ON GROUP I LOADING (SERVICE LOAD) PER AREMA CHAPTER 8 SECTION 2.2.4	

REQUIRED PILE TEST LOAD - TONS/PILE	
FIELD CONTROL METHOD	TEST LOAD
PDA	86.0

GENERAL PILE NOTES:

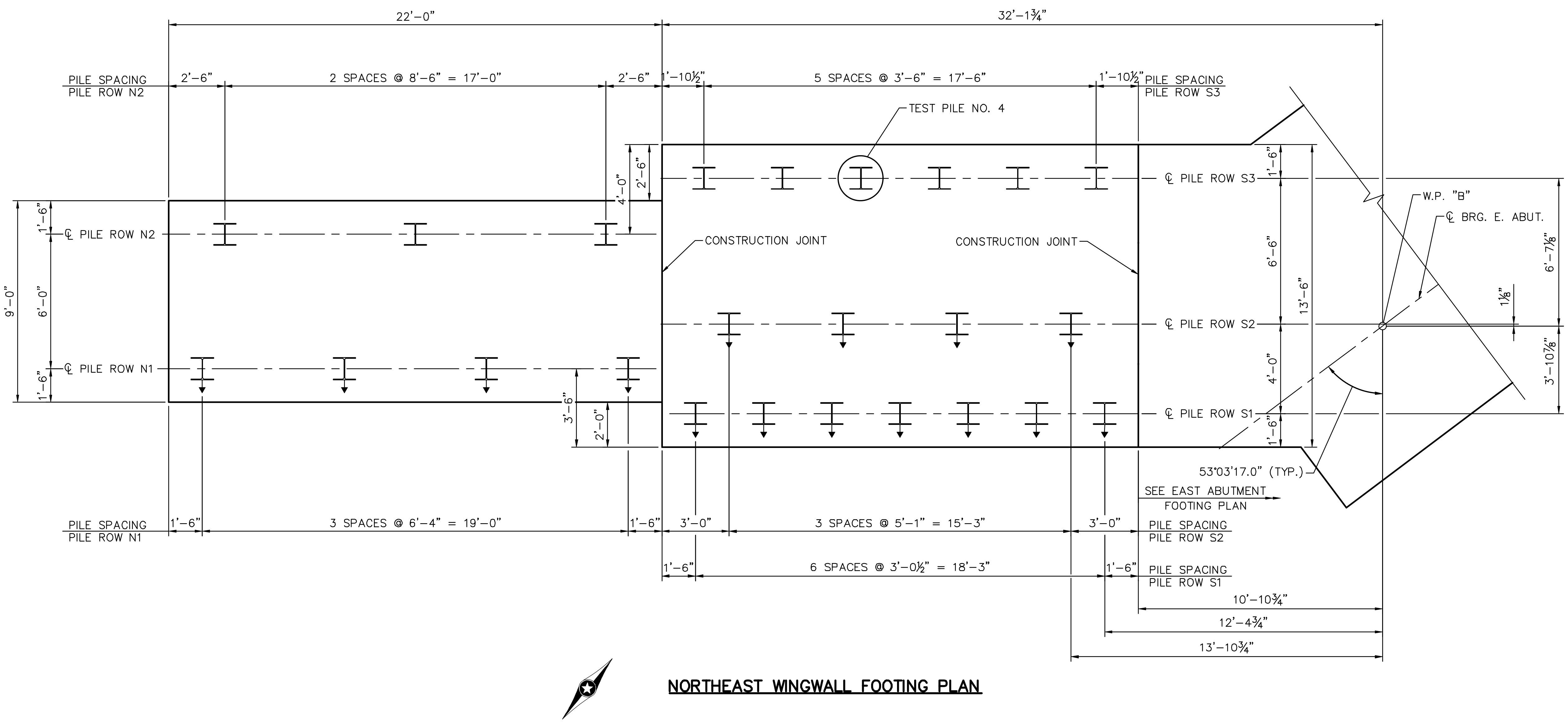
1 HP12x53 STEEL TEST PILE 70 FT. LONG
23 HP12x53 STEEL PILES EST. 70 FT. LENGTH
24 HP12x53 STEEL PILES REQ'D FOR NORTHEAST WINGWALL

ALL PILES TO BE HP12x53 WITH PILE TIP PROTECTION.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

FOR PILE SPLICE DETAILS SEE DETAIL B202.



NORTHEAST WINGWALL FOOTING PLAN

Jan. 18 2016 01:26 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-ABT-018.dwg By: Joe.Menopace

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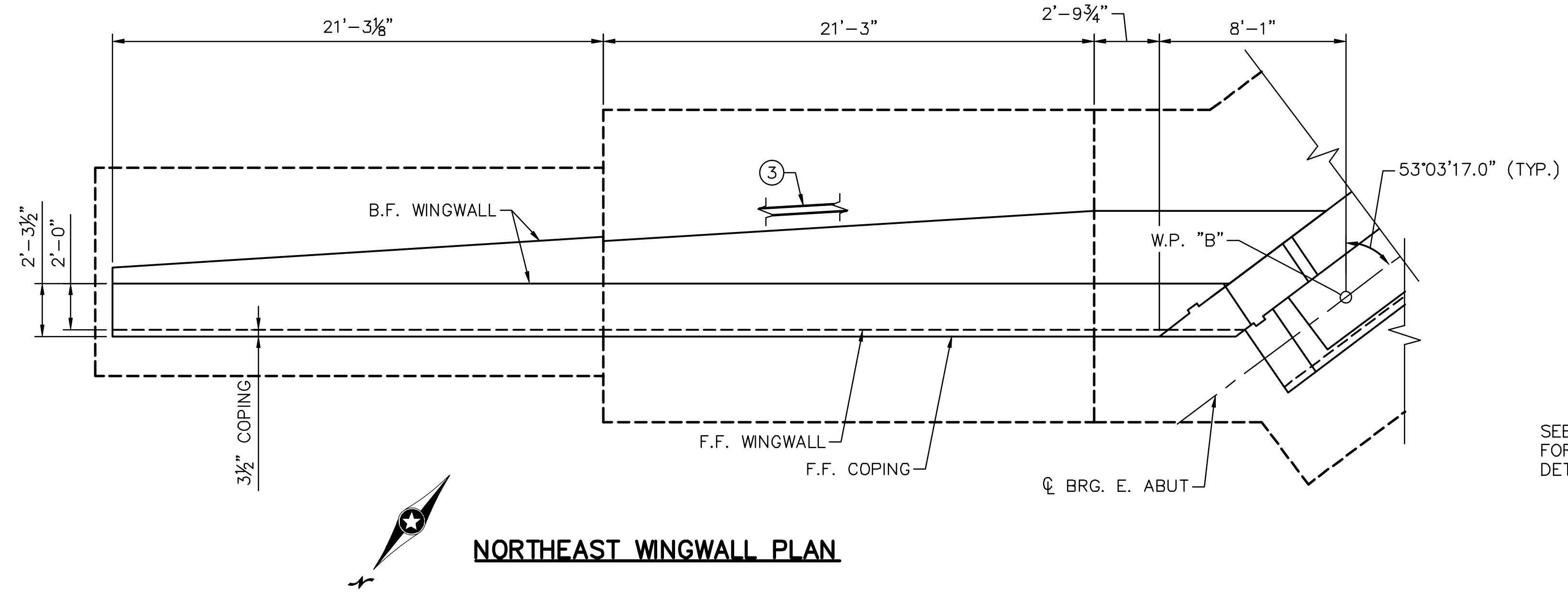
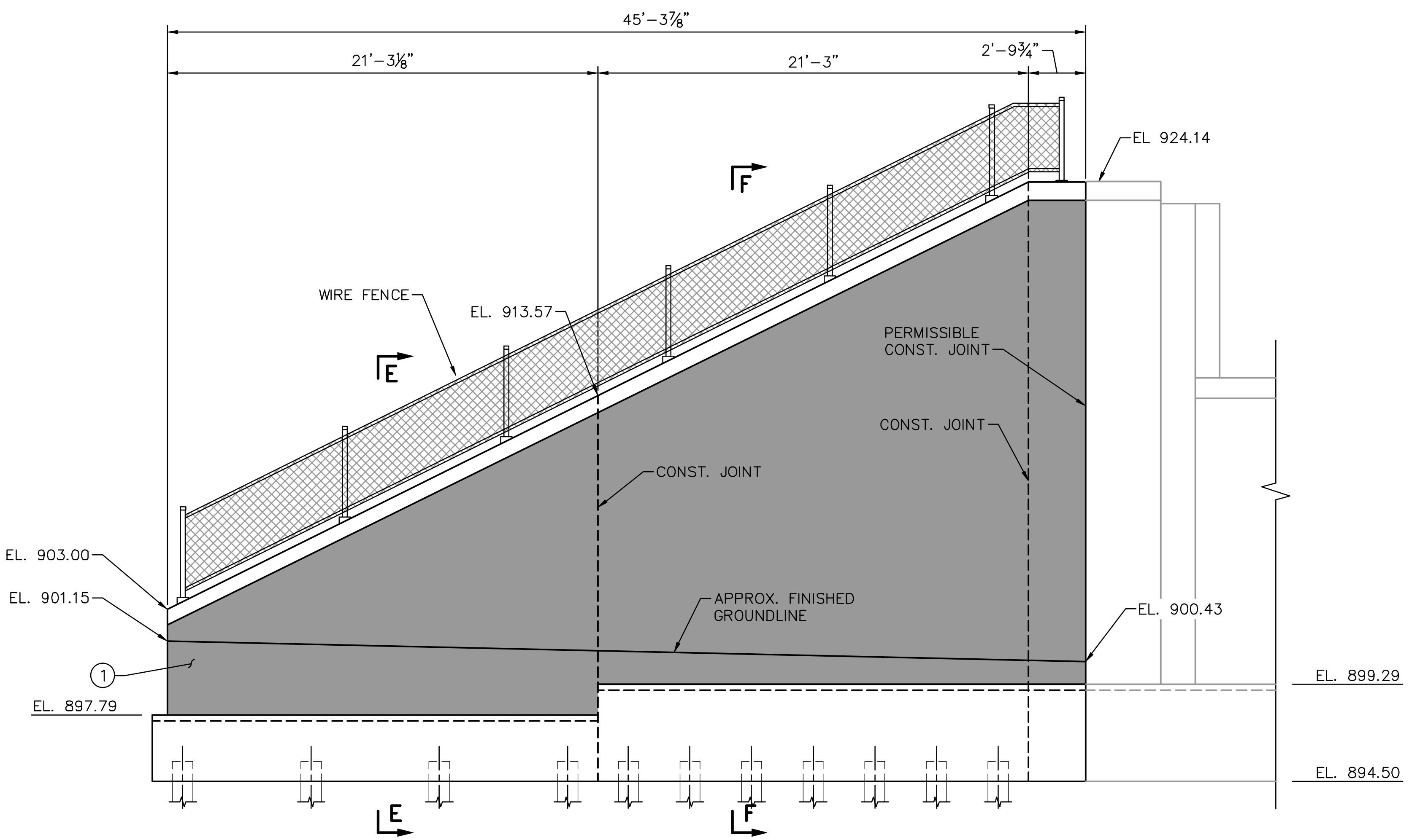
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
EAST ABUTMENT DETAILS 5

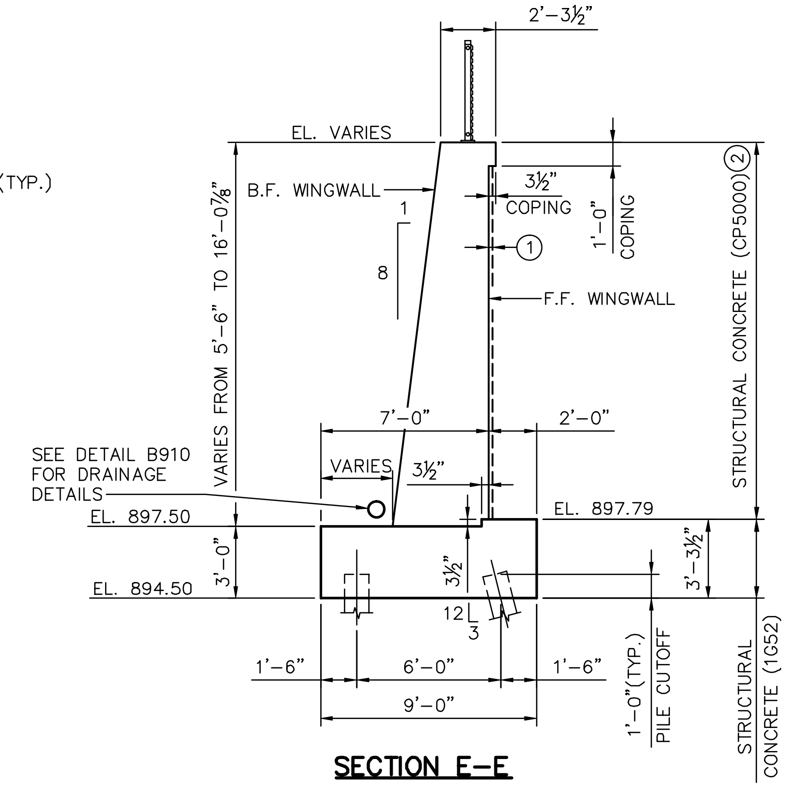
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-018



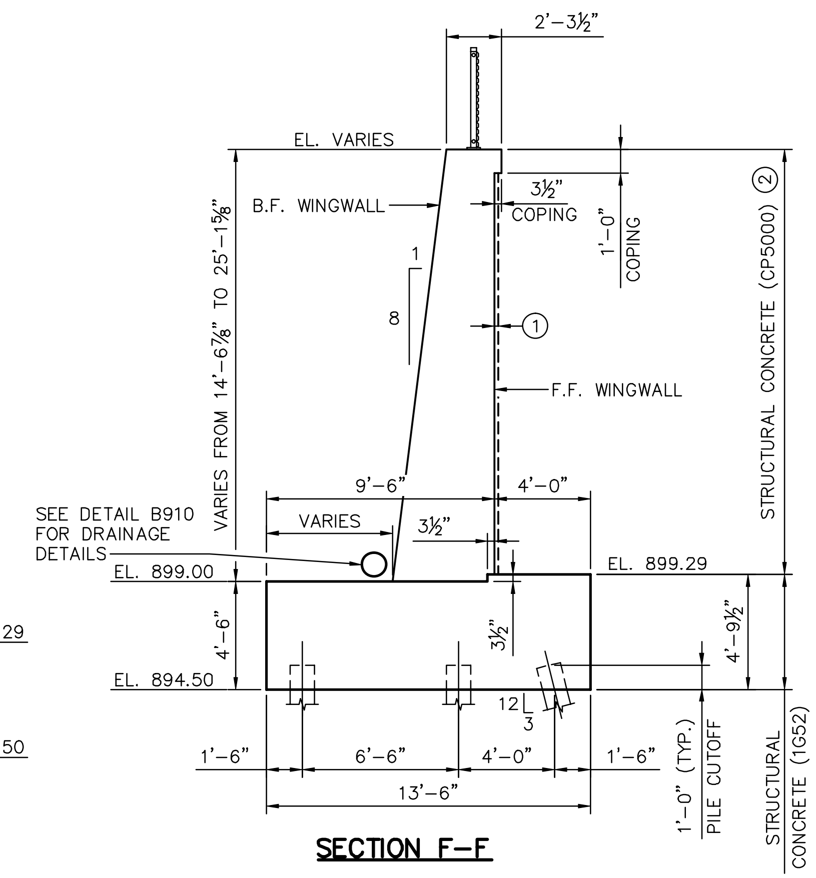
NORTHEAST WINGWALL PLAN



NORTHEAST WINGWALL ELEVATION



SECTION E-E



SECTION F-F

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). THE APPROXIMATE THICKNESS OF ARCHITECTURAL CONCRETE IS 1.5".
2. STRUCTURAL CONCRETE (CP5000) IS A LEVEL 2 CONTRACTOR MIX DESIGN IN ACCORDANCE WITH MNDOT 2461 WITH A MINIMUM COMPRESSIVE STRENGTH OF 5 KSI AND A MAXIMUM WATER/CEMENT RATIO OF 0.40.
3. 4" DIA. PERFORATED DRAIN PIPE. SEE DETAIL B910.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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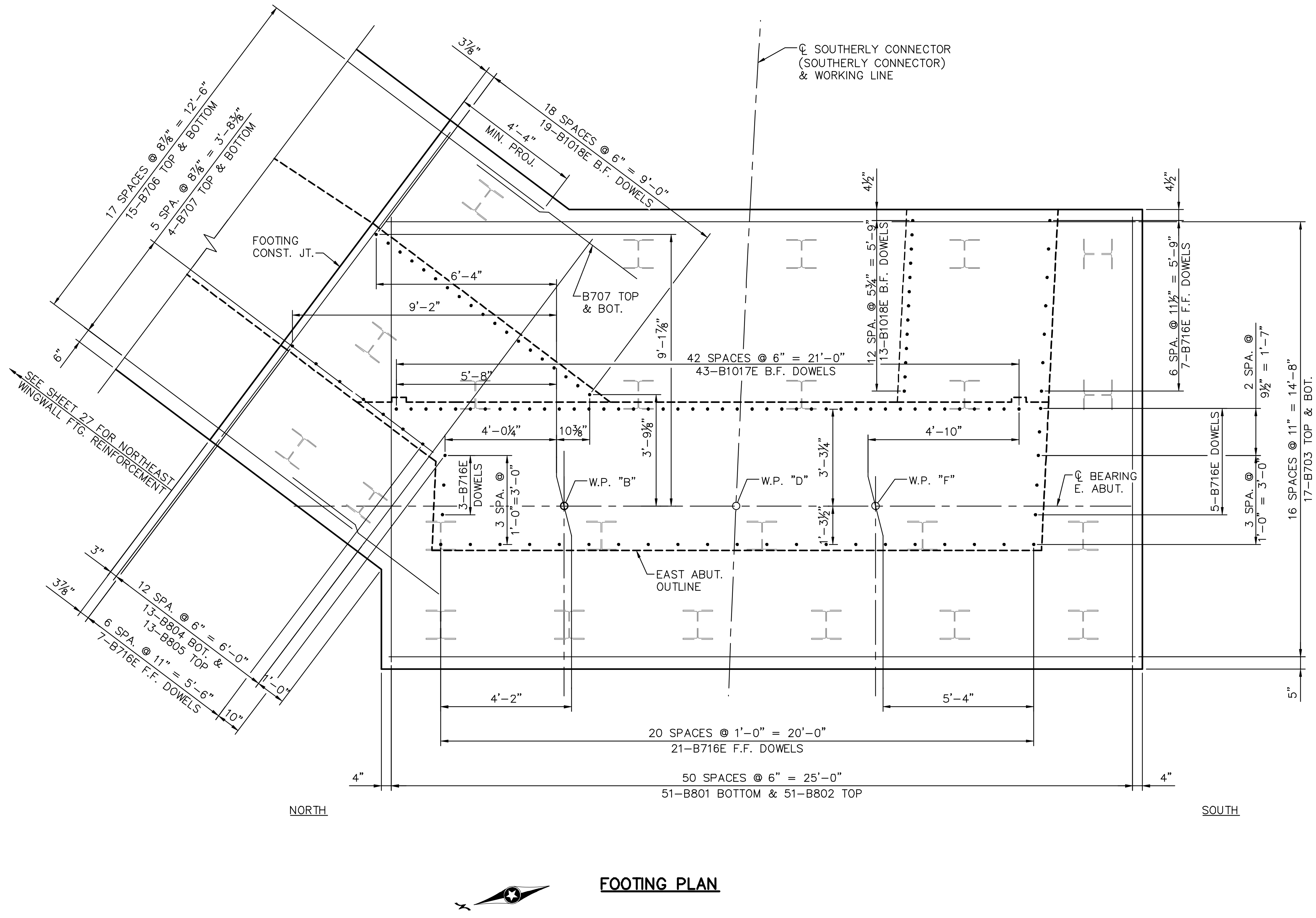
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
EAST ABUTMENT DETAILS 6

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-019



FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

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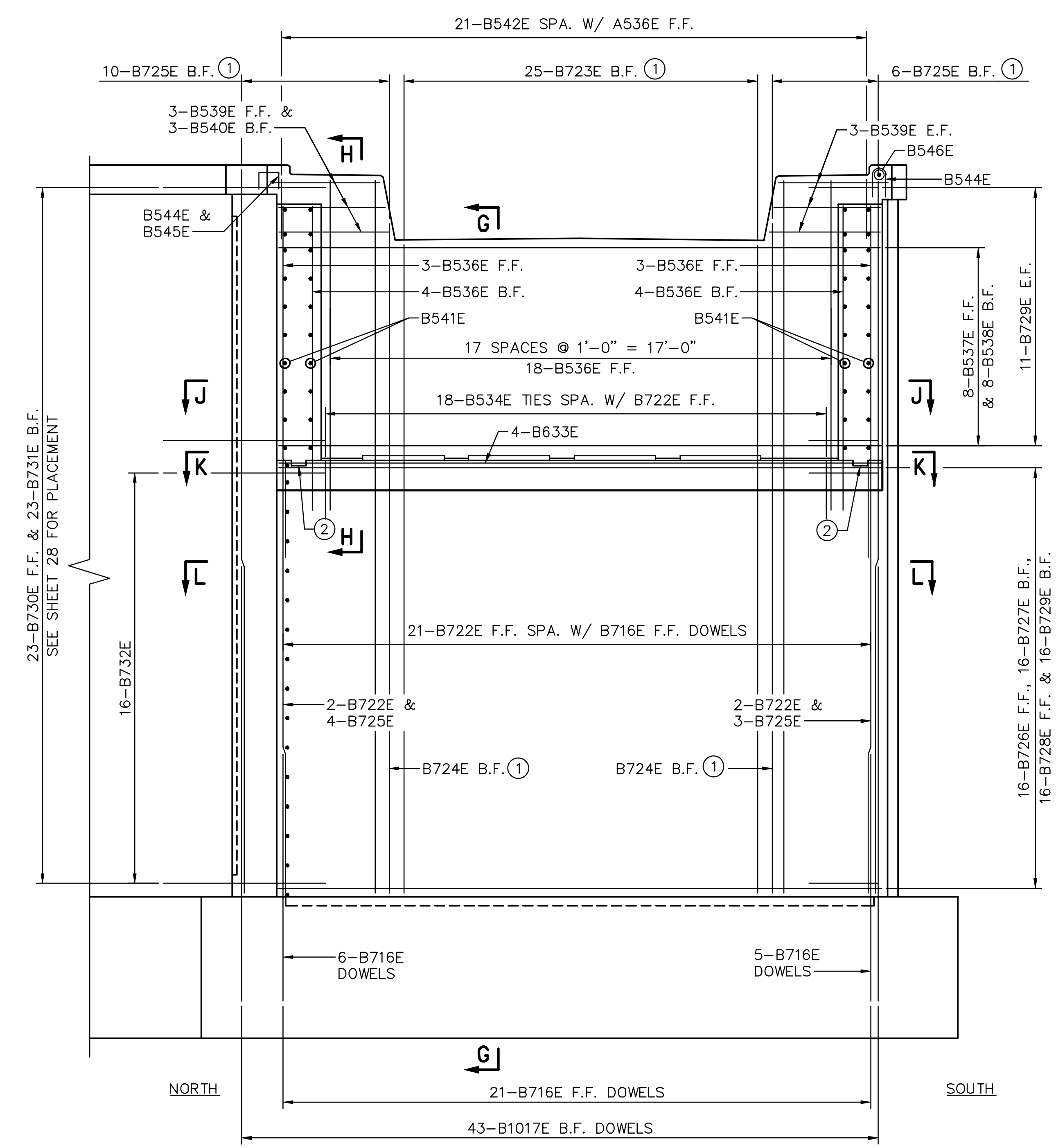
METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
EAST ABUTMENT REINFORCEMENT 1

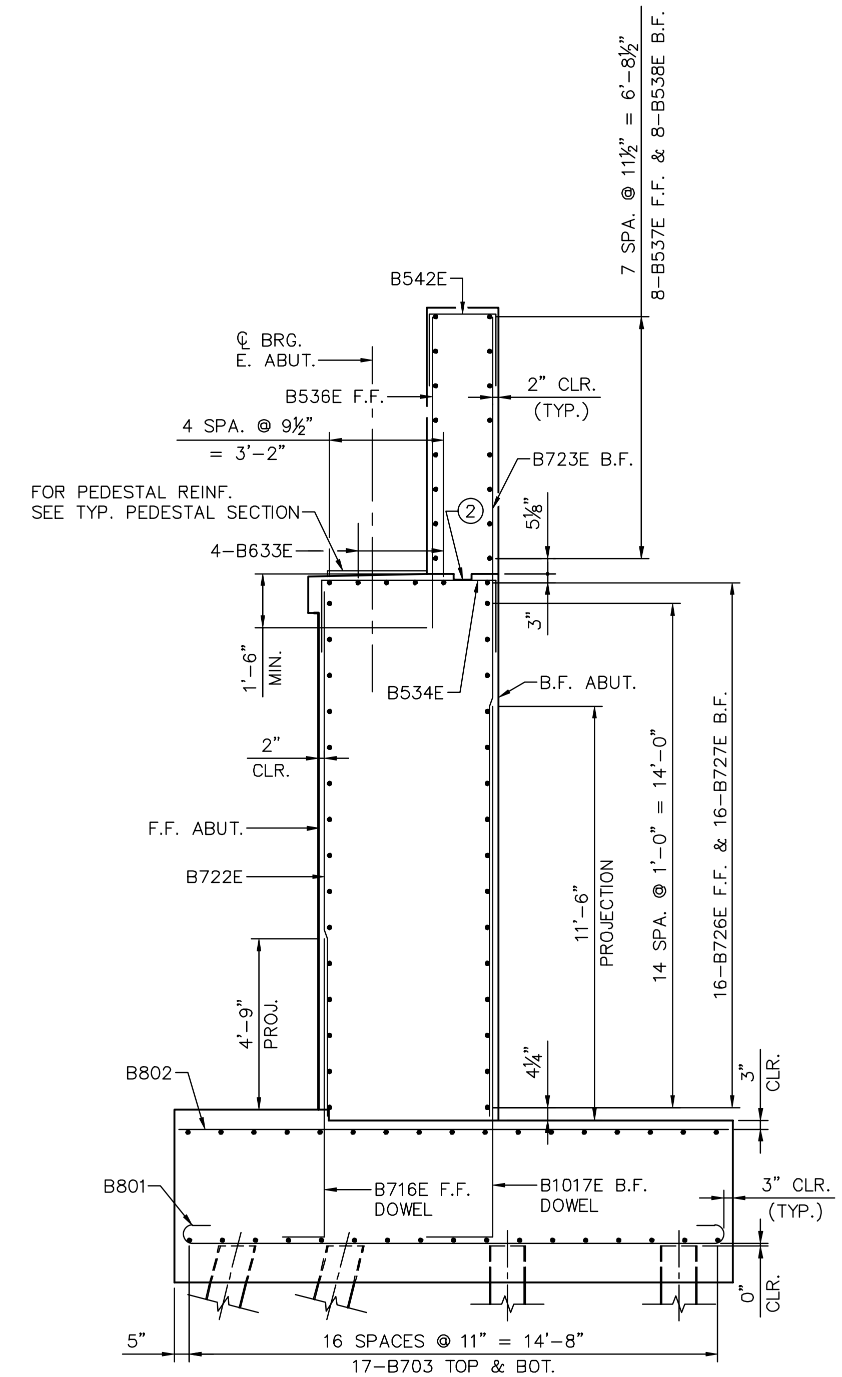
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-020

SHEET 23 OF 52

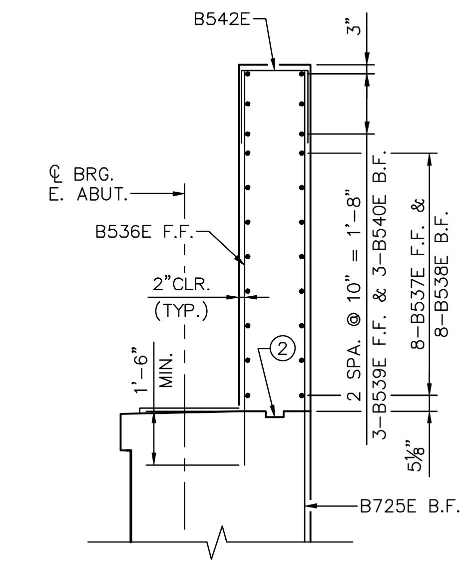
Jan. 18 2016 01:27 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-ABT-020.dwg By: Joe.Menopace



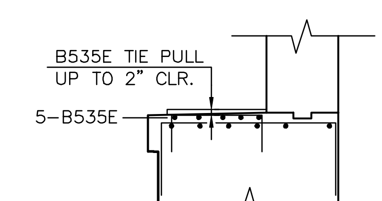
ELEVATION



SECTION G-G



SECTION H-H



TYPICAL PEDESTAL SECTION

(ONLY PEDESTAL AND SEAT REINFORCEMENT SHOWN)

NOTES:

(1) SPACE WITH B1017E B.F. DOWELS.

(2) PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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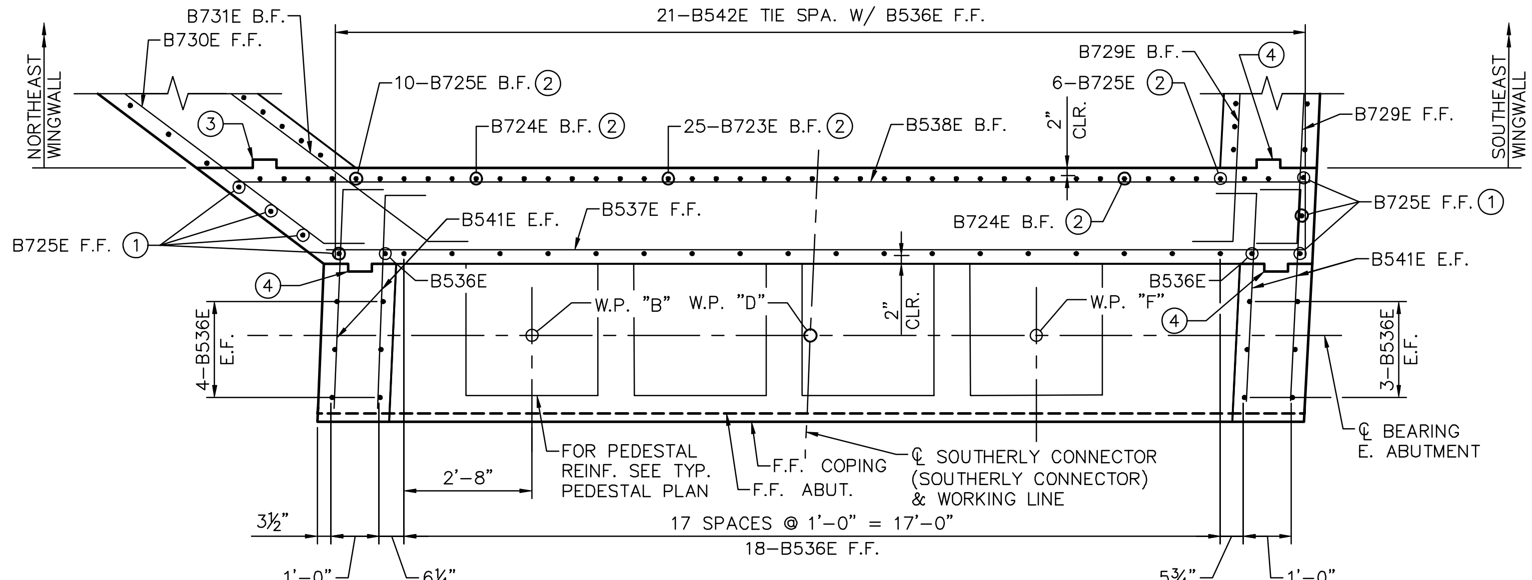
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

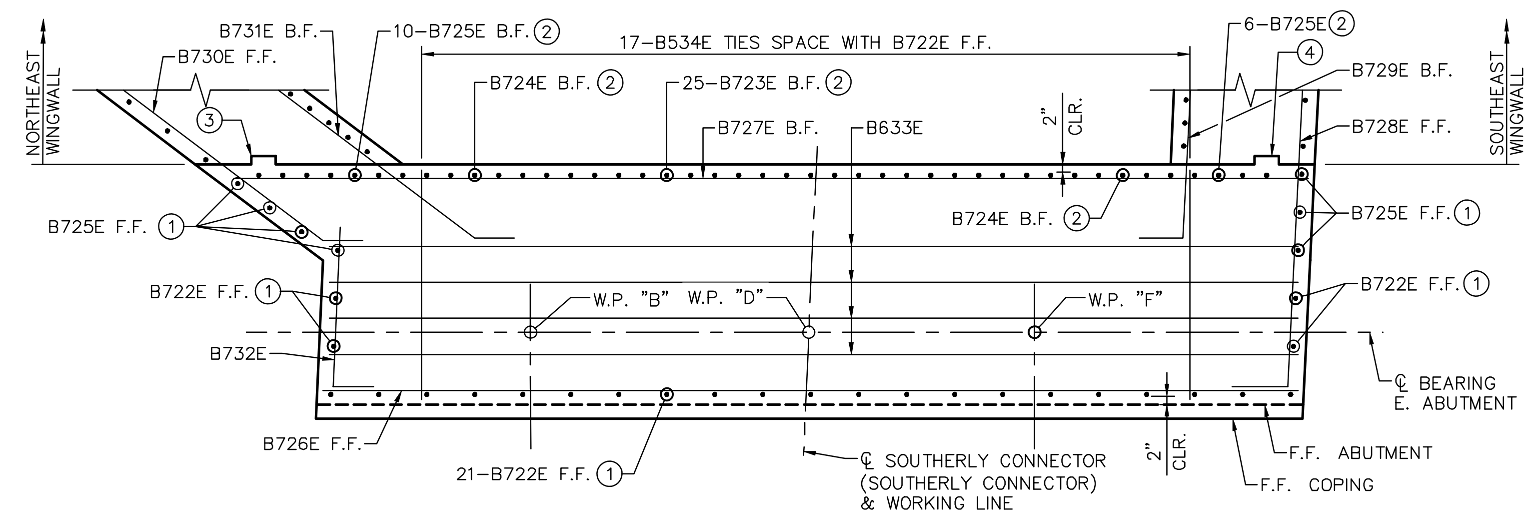
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
EAST ABUTMENT REINFORCEMENT 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-021

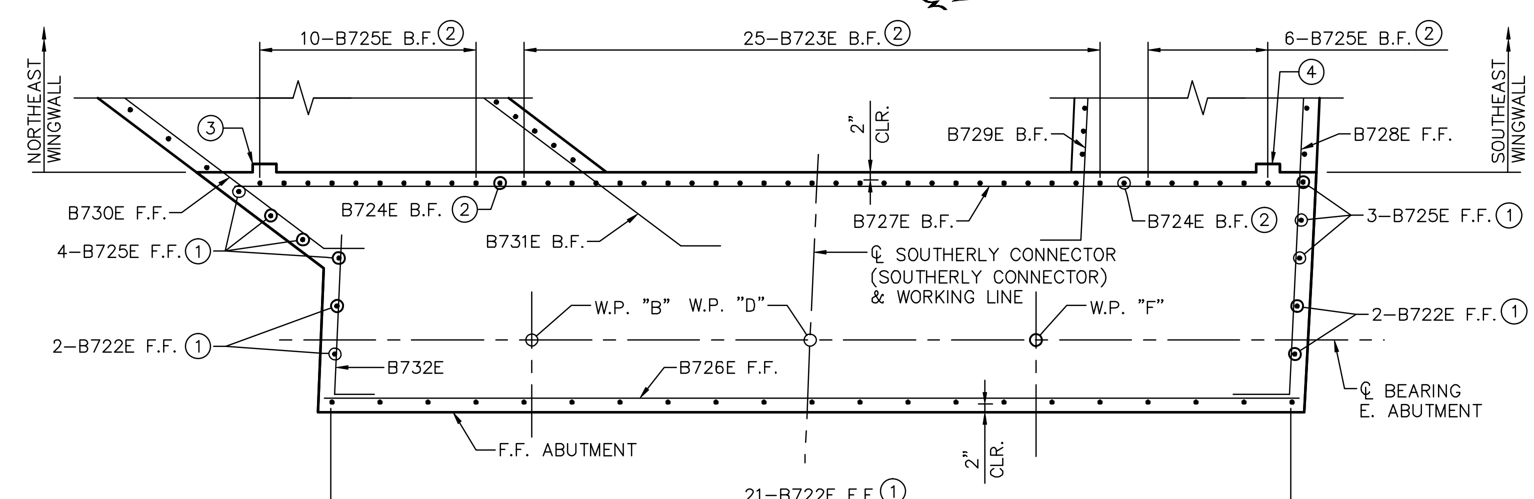
SHEET 24 OF 52



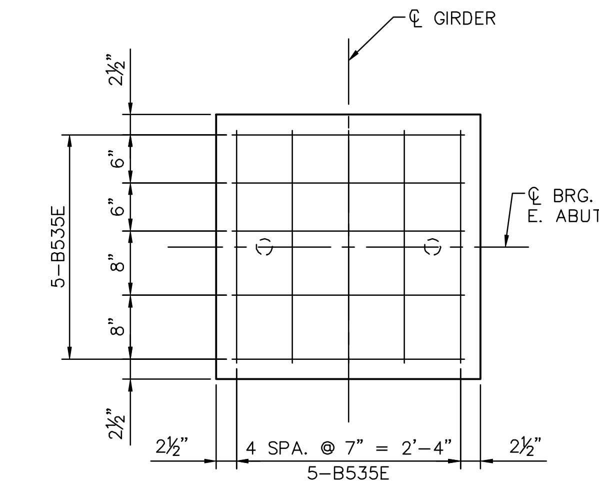
SECTION J–J



SECTION K–K



SECTION L–L



TYPICAL PEDESTAL PLAN

NOTES:

SEE SHEET 26 FOR SOUTHWEST WINGWALL REINFORCEMENT.

SEE SHEET 28 FOR NORTHWEST WINGWALL REINFORCEMENT.

① SPACE WITH B716E F.F. DOWELS.

② SPACE WITH B1017E DOWELS.

③ PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEYWAY.

④ CONSTRUCTION JOINT WITH 2" X 6" KEYWAY.

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

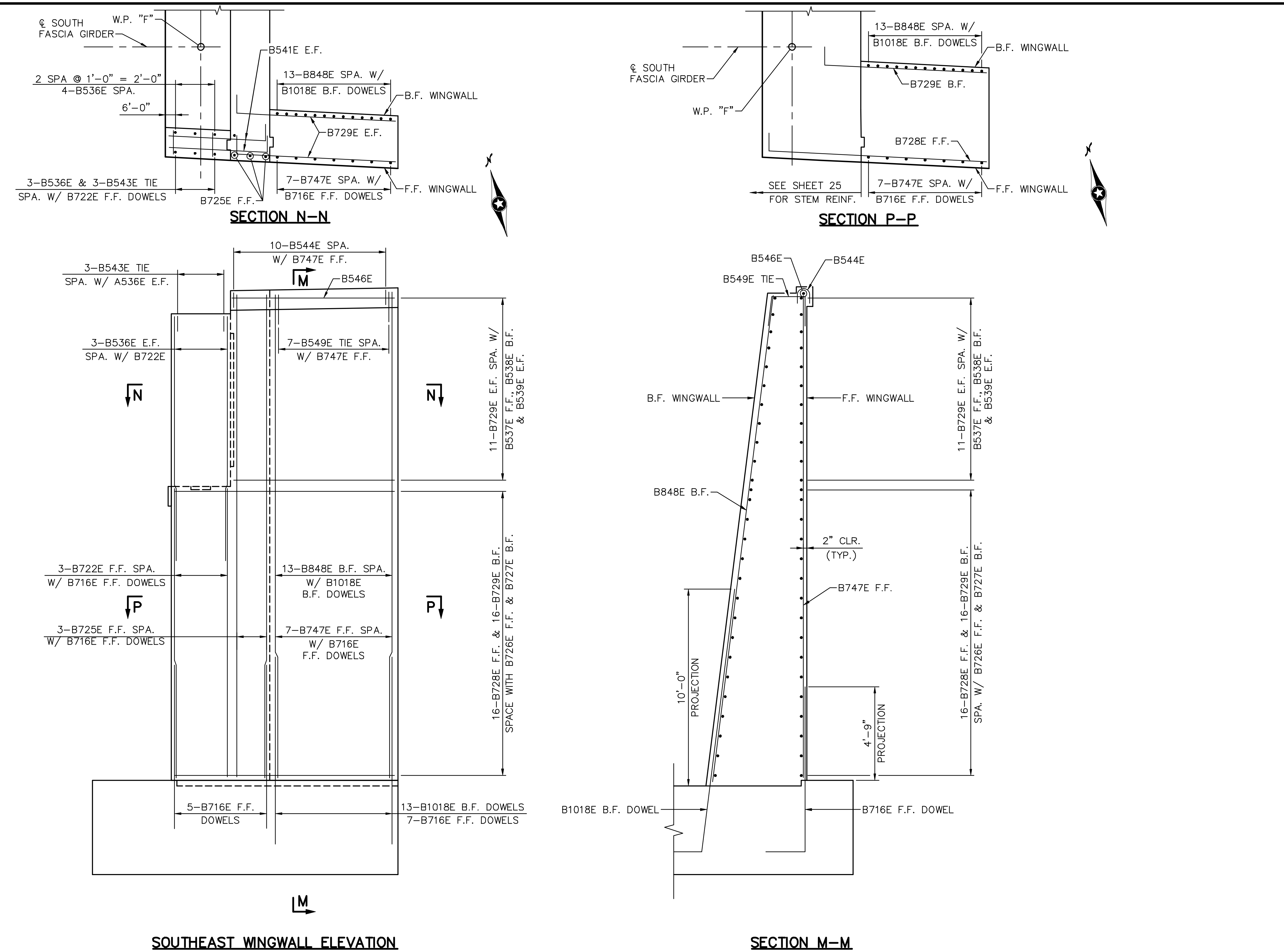
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
EAST ABUTMENT REINFORCEMENT 3

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-ABT-022

SHEET 25 OF 52

Jan. 18 2016 01:28 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-ABT-022.dwg By: Joe.Menopace



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

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METROPOLITAN COUNCIL

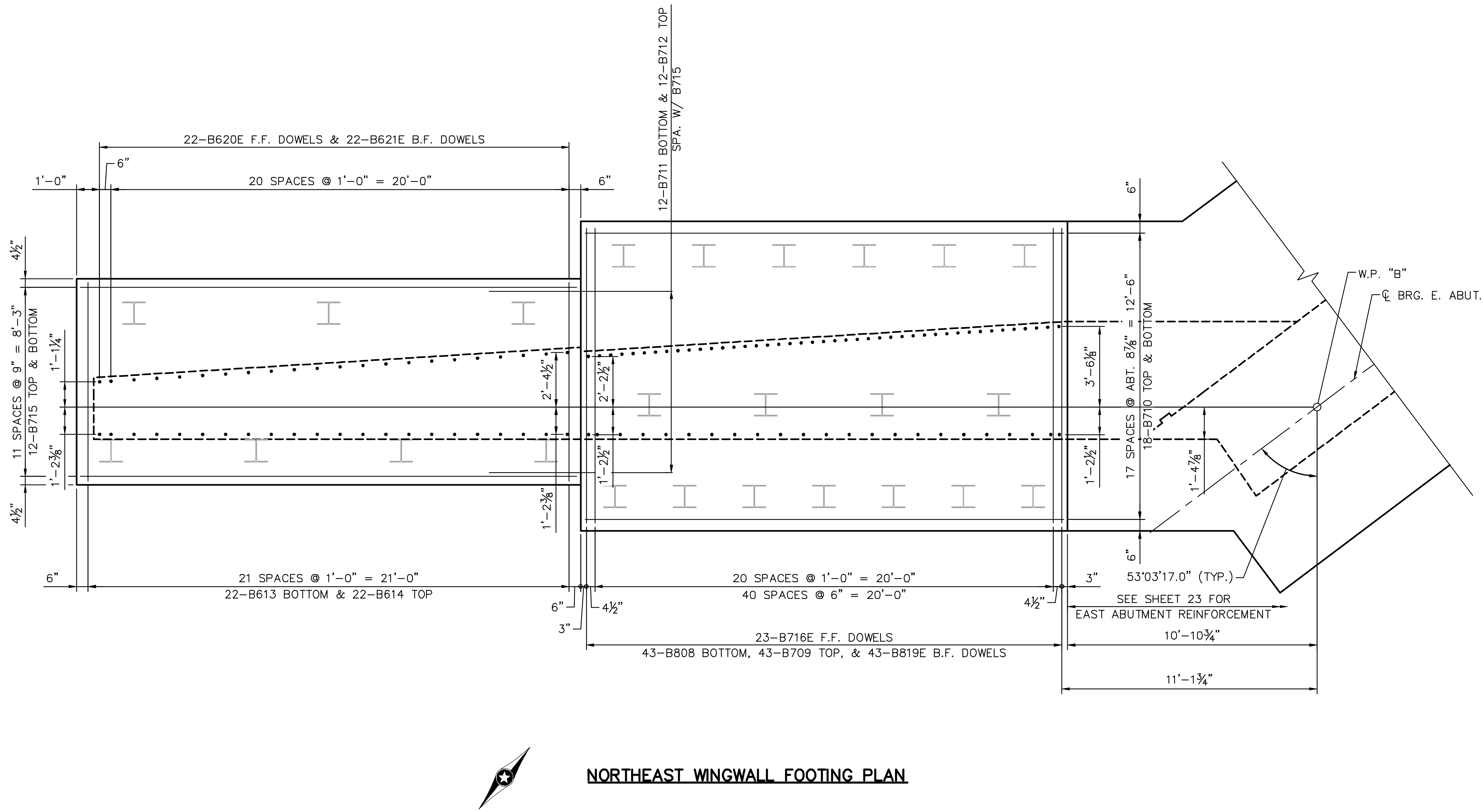
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
EAST ABUTMENT REINFORCEMENT 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-ABT-023

SHEET 26 OF 52



NORTHEAST WINGWALL FOOTING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

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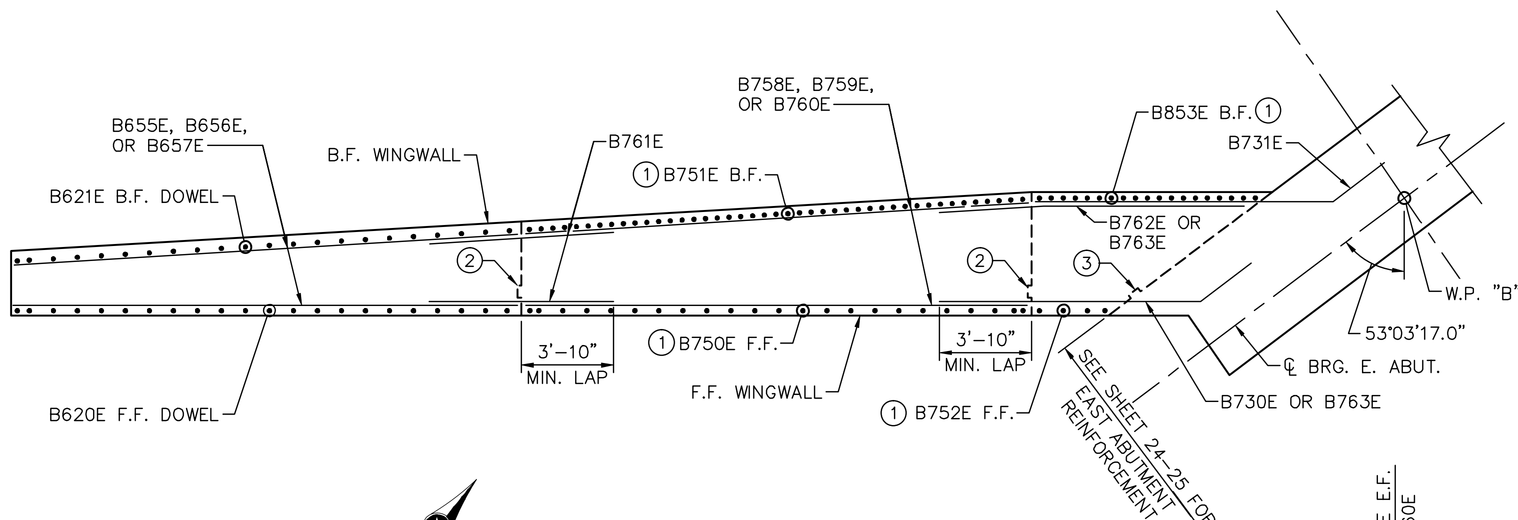
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

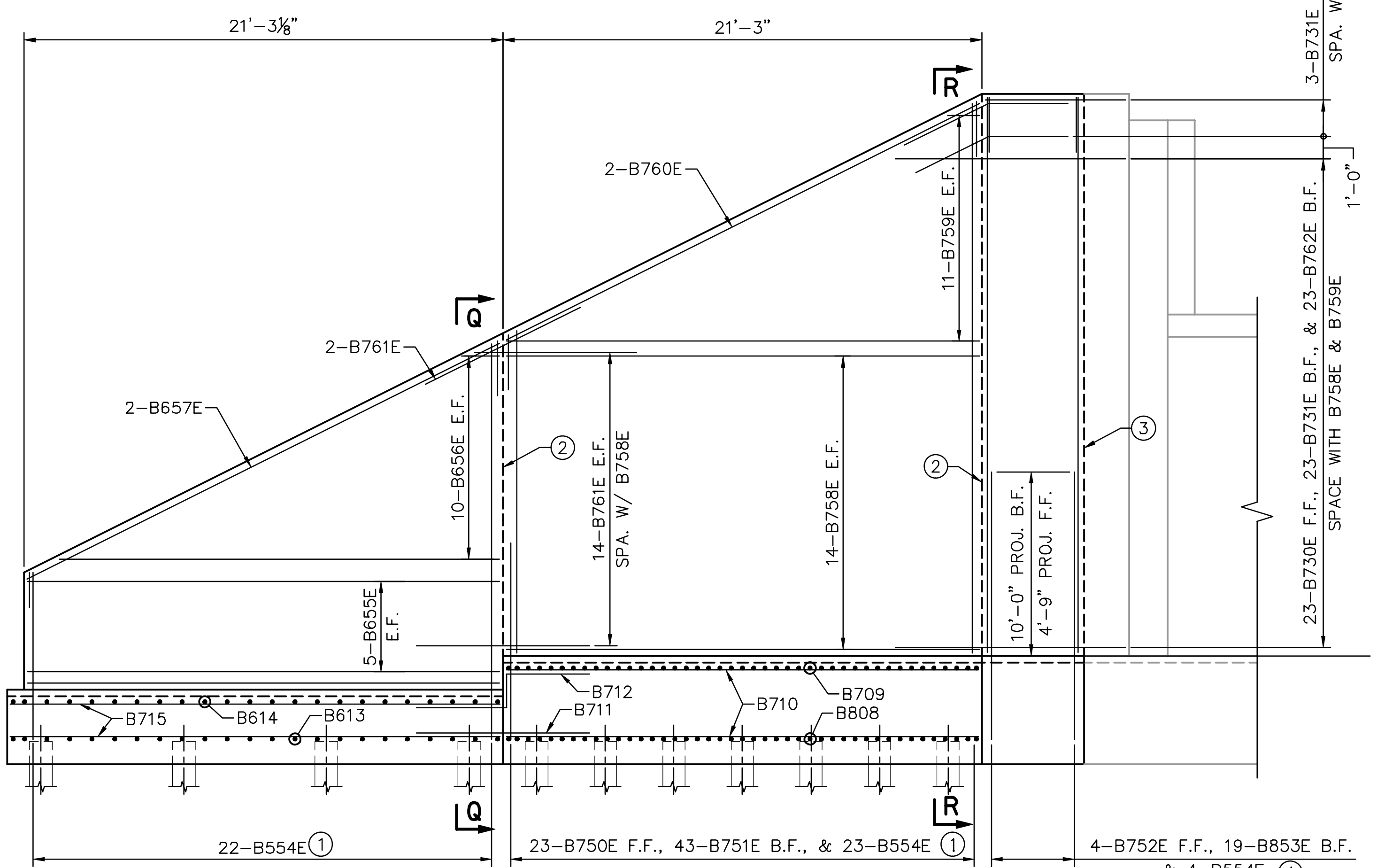
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
EAST ABUTMENT REINFORCEMENT 5

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-024

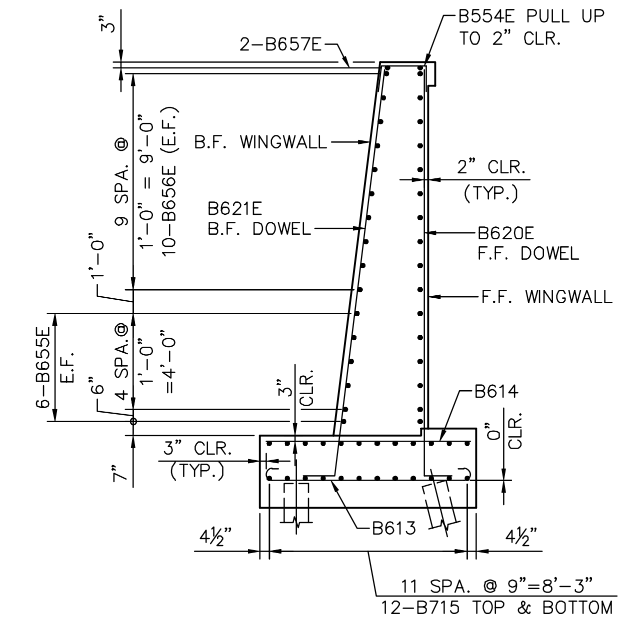
SHEET 27 OF 52



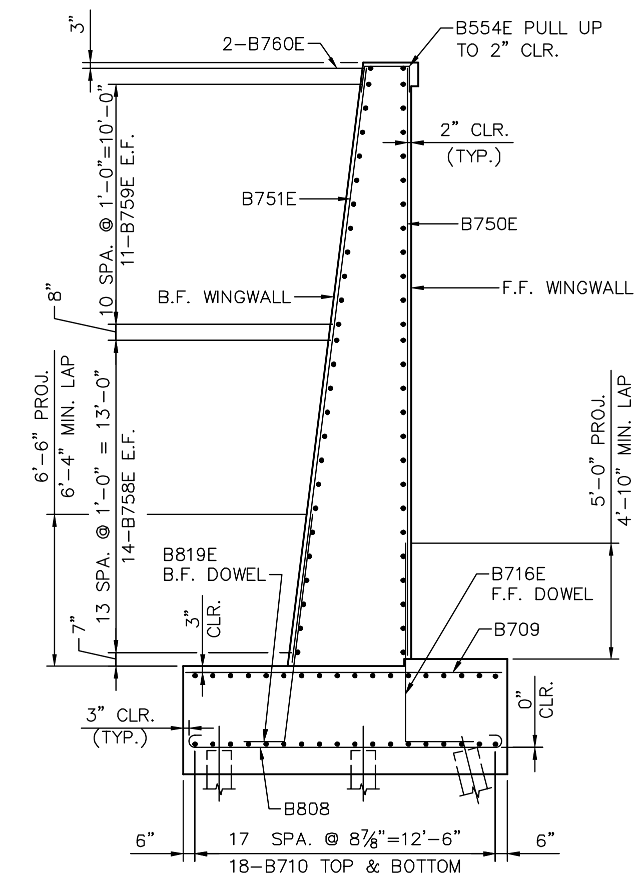
NORTHEAST WINGWALL PLAN



NORTHEAST WINGWALL ELEVATION



SECTION Q–Q



SECTION R–R

NOTES:

1. SPACE WITH DOWEL BARS.
2. CONSTRUCTION JOINT WITH 2" X 6" KEY.
3. PERMISSIBLE CONSTRUCTION JOINT WITH 2" X 6" KEY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

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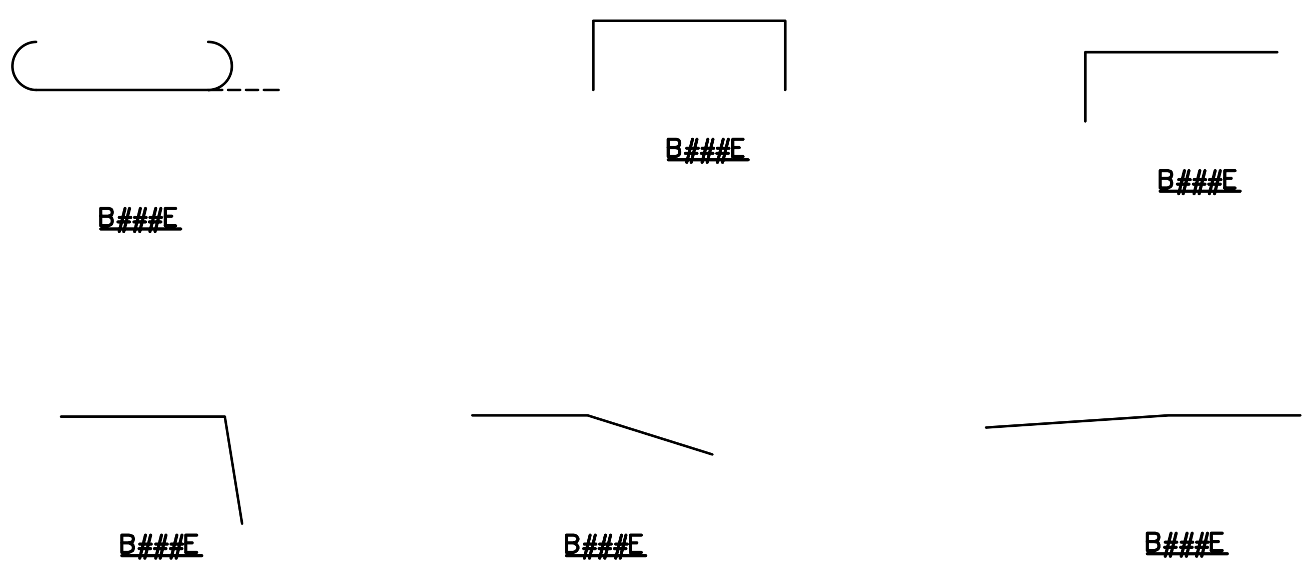
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
EAST ABUTMENT REINFORCEMENT 6

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-ABT-025

SHEET 28 OF 52

Jan. 18 2016 01:30 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-ABT-025.dwg By: Joe.Menapace



BILL OF REINFORCEMENT FOR EAST ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
B801			0	FOOTING, BOT., TRANS.
B802			0	FOOTING, TOP, TRANS.
B703			0	FOOTING, LONG.
B804			0	FOOTING, BOT., TRANS.
B805			0	FOOTING, TOP, TRANS.
B706			0	FOOTING, LONG. DOWEL
B707			0	FOOTING, LONG. DOWEL
B808			0	NE WINGWALL FTG., BOT., TRANS.
B709			0	NE WINGWALL FTG., TOP, TRANS.
B710			0	NE WINGWALL FTG., LONG.
B711			0	NE WINGWALL FTG., LONG. DOWEL
B712			0	NE WINGWALL FTG., LONG. DOWEL
B613			0	NE WINGWALLFTG., BOT. TRANS.
B614			0	NE WINGWALL FTG., TOP TRANS.
B715			0	NE WINGWALL FTG., LONG.
B716E			0	F.F. DOWELS
B1017E			0	STEM, B.F. DOWELS
B1018E			0	WINGWALL, B.F. DOWELS
B819E			0	NE WINGWALL, B.F. DOWELS
B620E			0	NE WINGWALL, F.F. DOWELS
B621E			0	NE WINGWALL, B.F. DOWELS
B722E			0	STEM, VERT. F.F.
B723E			0	STEM, VERT. B.F.
B724E			0	STEM, VERT. B.F.
B725E			0	STEM, VERT.
B726E			0	STEM, HORIZ. F.F.
B727E			0	STEM, HORIZ. B.F.
B728E			0	STEM, LONG. DOWEL
B729E			0	STEM, LONG. DOWEL
B730E			0	STEM, LONG. DOWEL
B731E			0	STEM, LONG. DOWEL
B732E			0	STEM, HORIZ. F. F.
B633E			0	STEM, LONG.
B534E			0	STEM, TOP TIE
B535E			0	PEDESTAL, TIE
B536E			0	BACKWALL, VERT. F.F.
B537E			0	BACKWALL, HORIZ. F.F.
B538E			0	BACKWALL, HORIZ. B.F.
B539E			0	BACKWALL, HORIZ. E.F.
B540E			0	BACKWALL, HORIZ. B.F.
B541E			0	MASKWALL, HORIZ. E.F.
B542E			0	BACKWALL, TOP TIE
B543E			0	MASKWALL, TOP TIE
B544E			0	CURB, TOP TIE
B545E			0	CURB, TOP TIE
B546E			0	CURB, LONG.
B747E			0	SE WINGWALL, VERT. F.F.
B848E			0	SE WINGWALL, VERT. B.F.
B549E			0	SE WINGWALL, TOP TIE

BILL OF REINFORCEMENT FOR EAST ABUTMENT (CONT.)

BAR	NO.	LENGTH	SHAPE	LOCATION
B750E			0	NE WINGWALL, VERT. F.F.
B751E			0	NE WINGWALL, VERT. B.F.
B752E			0	NE WINGWALL, VERT. F.F.
B853E			0	NE WINGWALL, VERT. B.F.
B554E			0	NE WINGWALL TOP TIE
B655E			0	NE WINGWALL, LONG.
B656E			0	NE WINGWALL, LONG.
B657E			0	NE WINGWALL, LONG.
B758E			0	NE WINGWALL, LONG.
B759E			0	NE WINGWALL, LONG.
B760E			0	NE WINGWALL, LONG.
B761E			0	NE WINGWALL, LONG. DOWEL
B762E			0	NE WINGWALL, LONG. DOWEL
B763E			0	NE WINGWALL, LONG. DOWEL

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG | CHECKED BY: DLS
DRAWN BY: ZEG | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

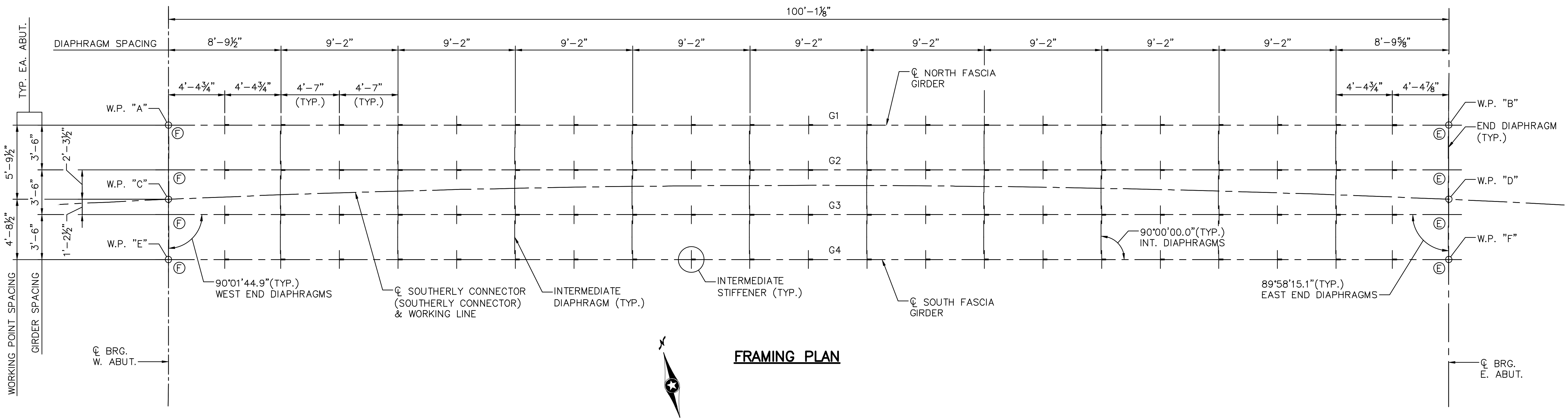
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
EAST ABUTMENT REINFORCEMENT 7

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-ABT-026



FRAMING PLAN

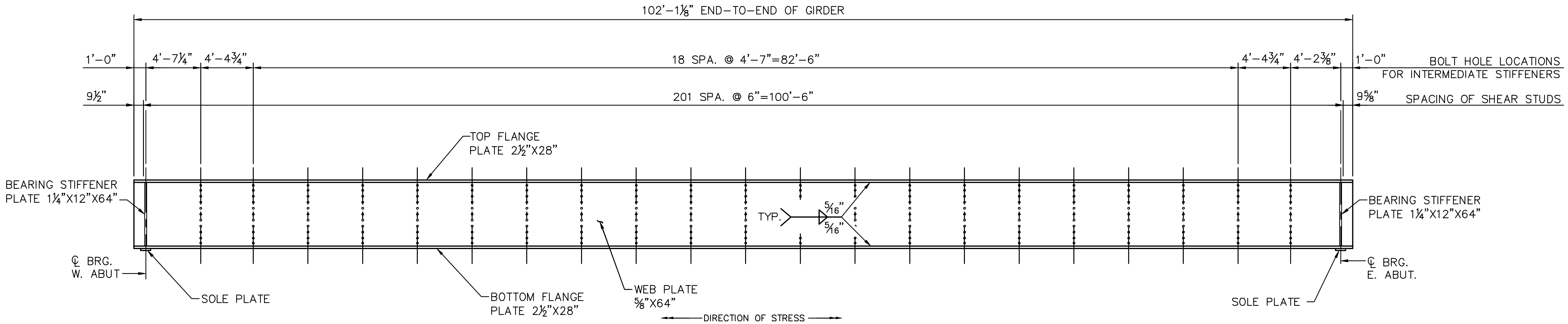
NOTES:

SPACING OF INTERMEDIATE STIFFENERS IS GIVEN WITH RESPECT TO BACK OF FACE OF ANGLES.

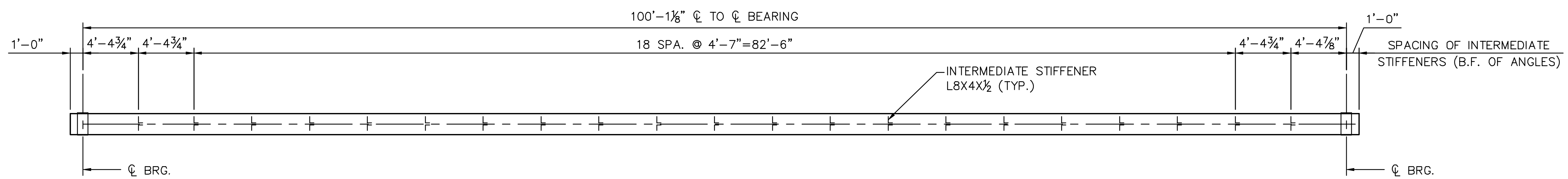
Ⓔ DENOTES EXPANSION MULTI-ROTATIONAL BEARING ASSEMBLY.

Ⓕ DENOTES FIXED MULTI-ROTATIONAL BEARING ASSEMBLY

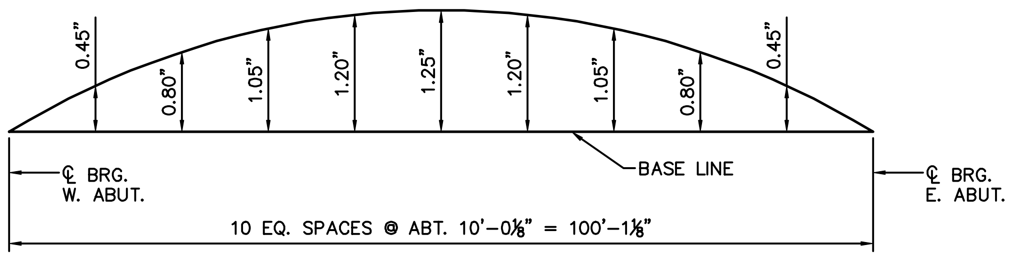
FOR FURTHER INFORMATION ON BEARING ASSEMBLIES, REFER TO GIRDER ELEVATIONS AND BEARING ASSEMBLY DETAIL SHEETS.



ELEVATION VIEW OF GIRDERS G1-G4



PLAN VIEW OF GIRDERS G1-G4



CAMBER DIAGRAM

GENERAL NOTES:

STRUCTURAL STEEL SHALL CONFORM TO MN/DOT 3309 ASTM A709 GRADE 50WT3 UNLESS OTHERWISE NOTED.

BOLTED CONNECTIONS SHALL BE MADE WITH ⅞" DIAMETER A325 TYPE 3 HIGH STRENGTH BOLTS, EXCEPT AS NOTED. HOLES FOR ⅞" DIAMETER BOLTS SHALL BE 15⁄16", EXCEPT AS NOTED. OVERSIZE HOLES WILL NOT BE PERMITTED.

PLACE NUT AND WASHER INSIDE OF GIRDER WEB FOR ALL BOLTS THROUGH GIRDER WEB.

WEB AND FLANGE PLATES SHALL BE FURNISHED IN AVAILABLE MILL LENGTHS WITH A MINIMUM NUMBER OF SPLICES. LOCATION OF SPLICES SHALL BE APPROVED BY ENGINEER. A SPLICE SHALL BE MINIMUM OF 12" FROM ANY STIFFENER. NO SPLICES WILL BE ALLOWED 12 FEET FROM MIDPOINT OF GIRDER.

CAMBER DIAGRAM SHOWN IS FOR BEAM IN UNLOADED POSITION AND PROVIDES FOR ALL DEAD LOAD DEFLECTIONS. BASE LINE IN CAMBER DIAGRAM IS A STRAIGHT LINE FROM ℄ BRG TO ℄ BRG AT BOTTOM OF WEB.

FOR WELDED FLANGE SPLICES, SEE SPEC. 2471.3F1A

SOLE PLATES SHALL BE PER BEARING ASSEMBLY DETAILS.

NO WELDING OR DRILLING OF HOLES FOR TEMPORARY ATTACHMENTS WILL BE PERMITTED.

THE STRUCTURAL STEEL FABRICATOR SHALL BE CERTIFIED UNDER THE A.I.S.C. QUALITY CERTIFICATION PROGRAM, CATEGORY, MAJOR STEEL BRIDGES (Cbr.).

BEARING STIFFENERS SHALL BE VERTICAL.

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

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

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY:	JFM	CHECKED BY:	DLS
DRAWN BY:	ZEG	CHECKED BY:	DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

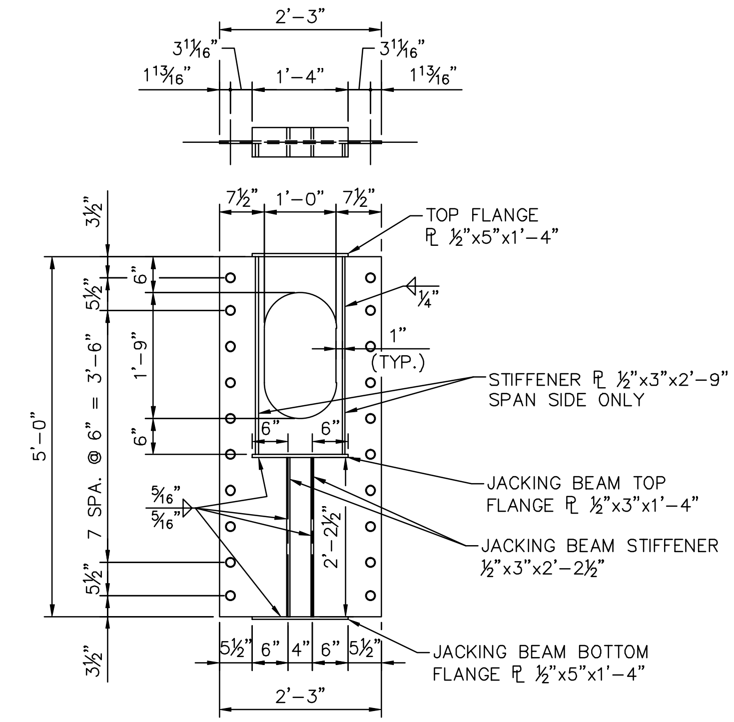
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
GIRDER ELEVATION

DISCIPLINE: STRUCTURES

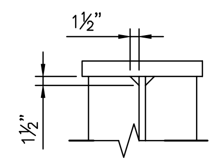
SHEET NAME: CBR27C14-BRG-STL-001

SHEET 31 OF 52

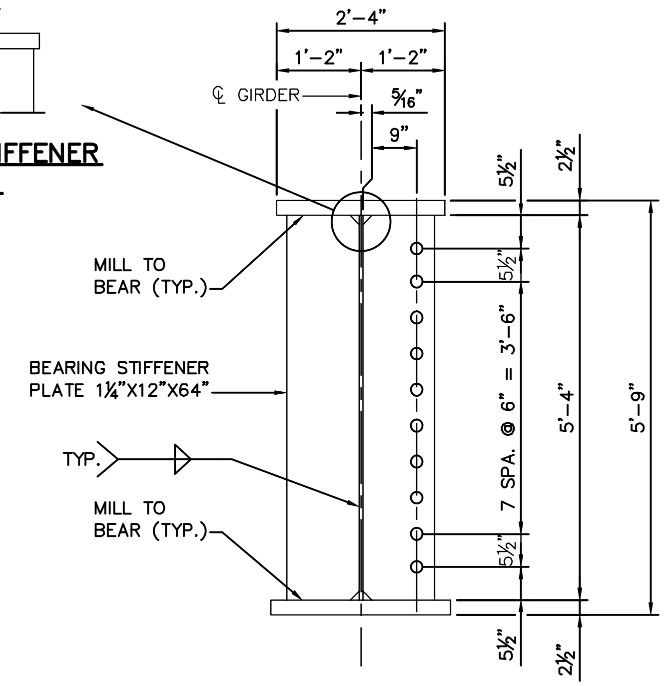


END BEARING DIAPHRAGM DETAIL

(SEE SHEET 33 FOR OTHER DETAILS)

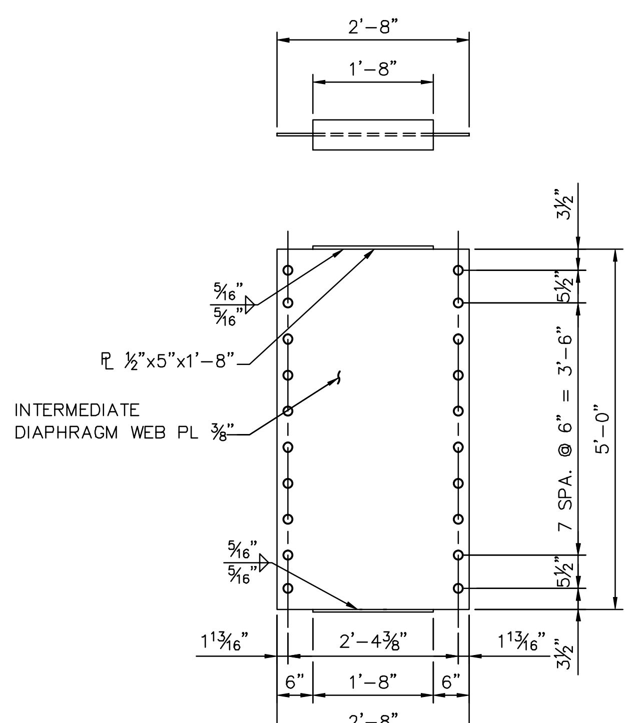


TYPICAL STIFFENER CLIP



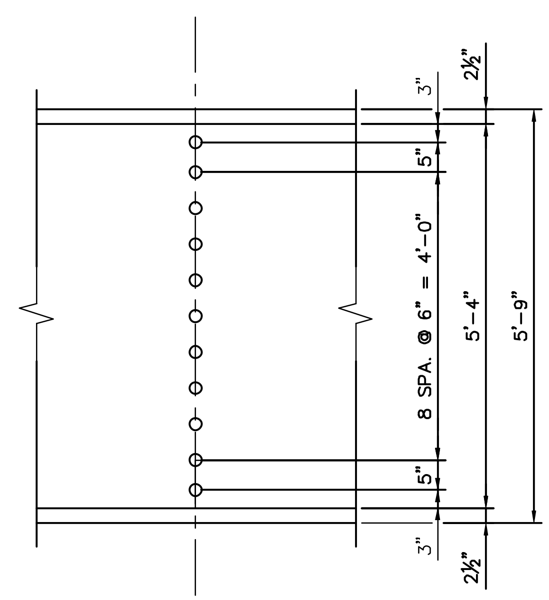
BEARING STIFFENER

(FASCIA GIRDER SHOWN)

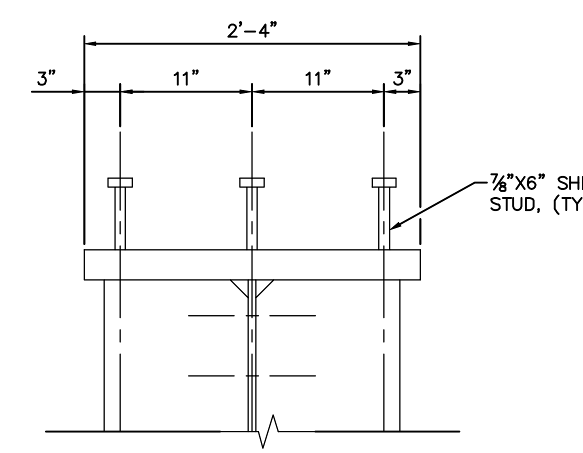


INTERMEDIATE DIAPHRAGM DETAIL

(SEE SHEET 33 FOR OTHER DETAILS)



INTERMEDIATE STIFFENER BOLT HOLE LAYOUT



SHEAR STUD DETAIL

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DRAWN BY: ZEG CHECKED BY: DLS

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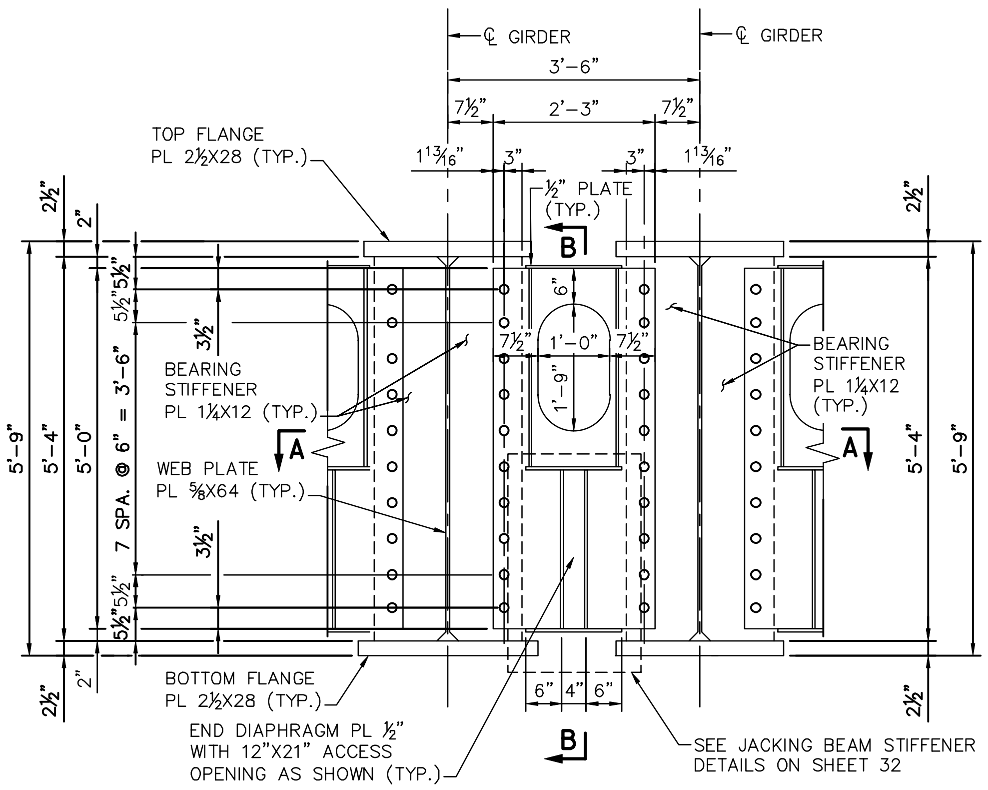
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
GIRDER DETAILS 1

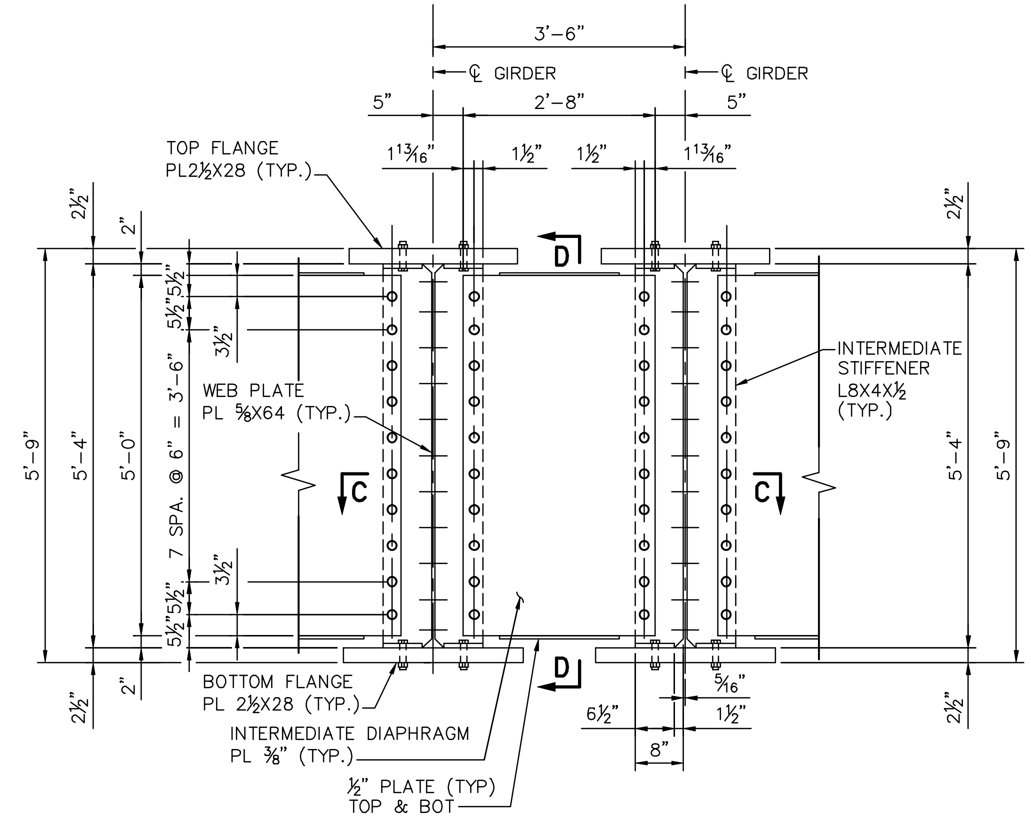
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-STL-002

SHEET 32 OF 52

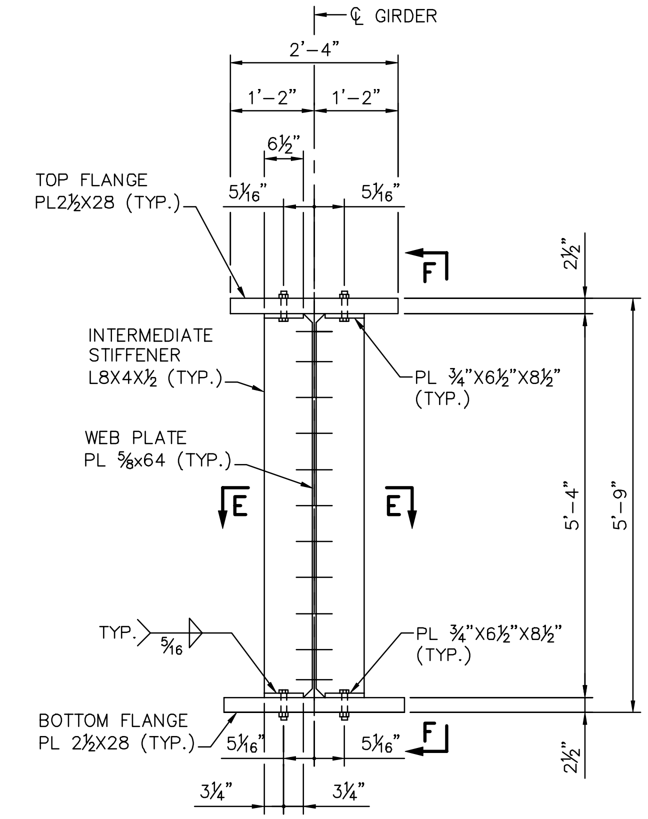
Jan. 18 2016 01:34 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-STL-002.dwg By: Joe.Menapace



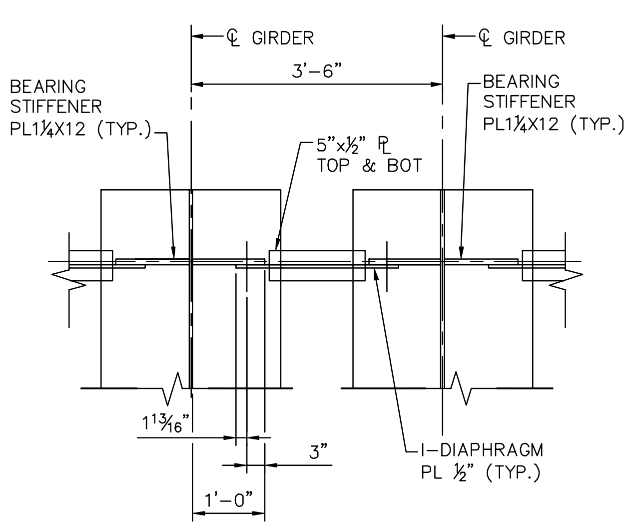
END BEARING STIFFENER AND DIAPHRAGM ELEVATION



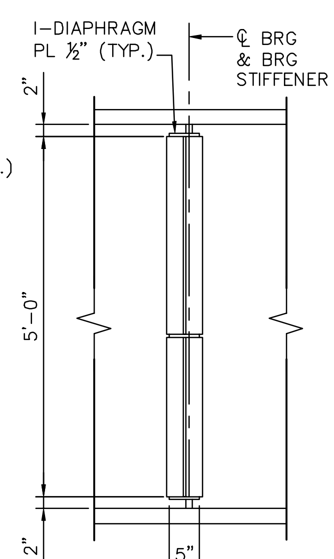
INTERMEDIATE DIAPHRAGM ELEVATION



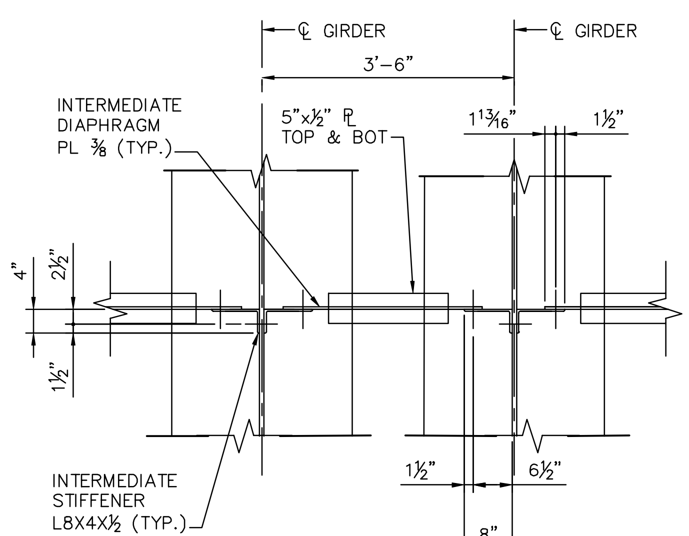
INTERMEDIATE STIFFENER



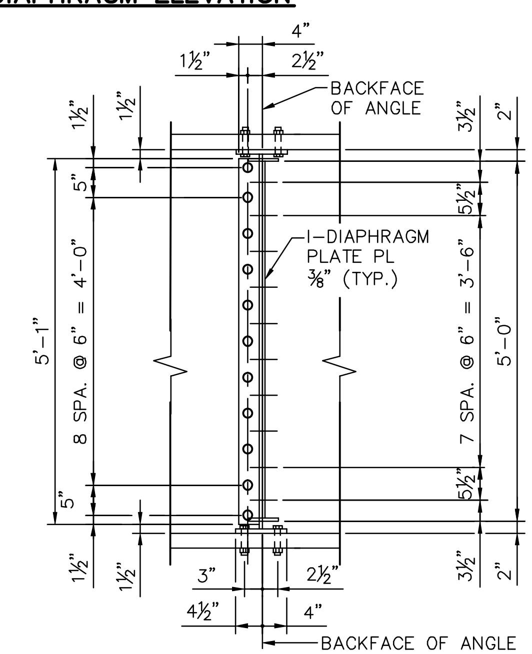
SECTION A–A



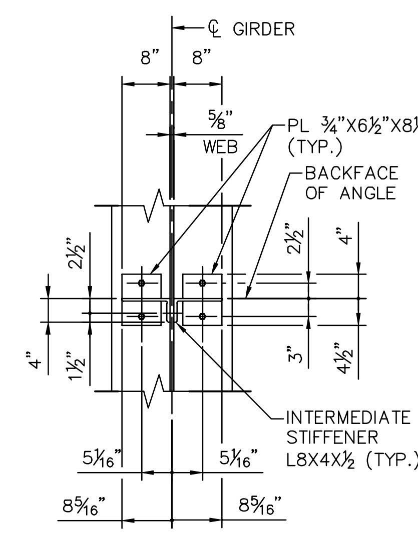
SECTION B–B



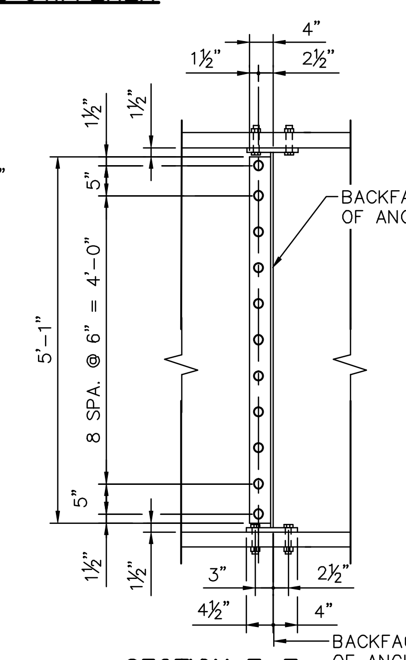
SECTION C–C



SECTION D–D



SECTION E–E



SECTION F–F

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: JFM CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

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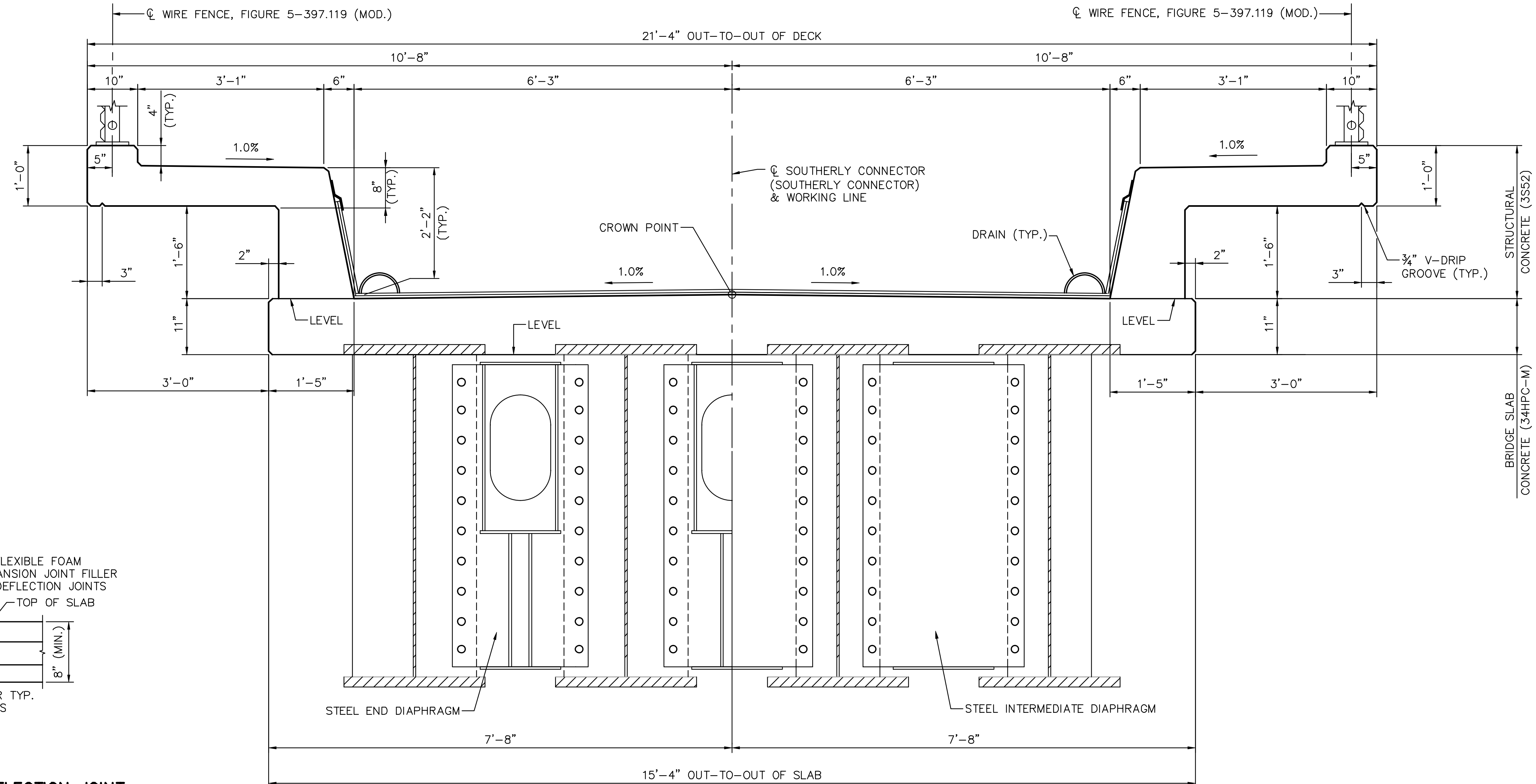
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

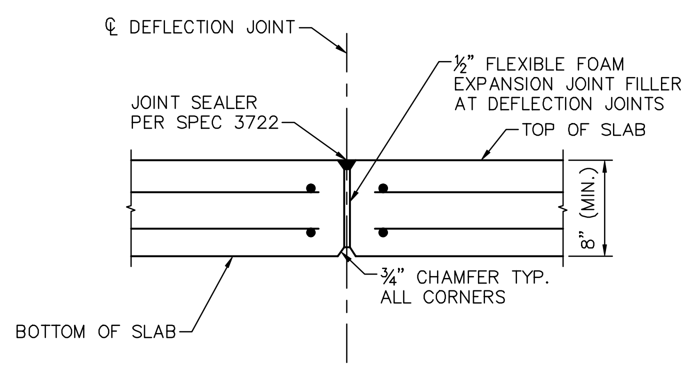
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
GIRDER DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-STL-003

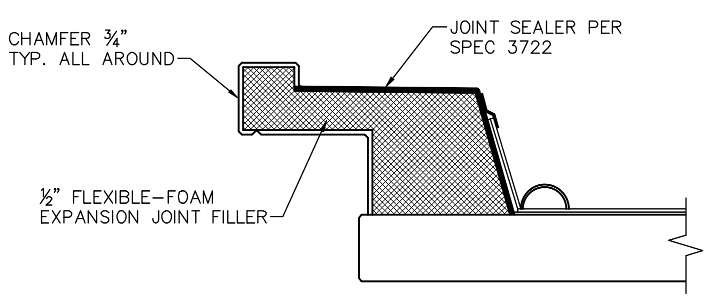
SHEET 33 OF 52



TRANSVERSE SECTION



SAFETY WALK SLAB SECTION AT DEFLECTION JOINT



CURB SECTION AT DEFLECTION JOINT

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

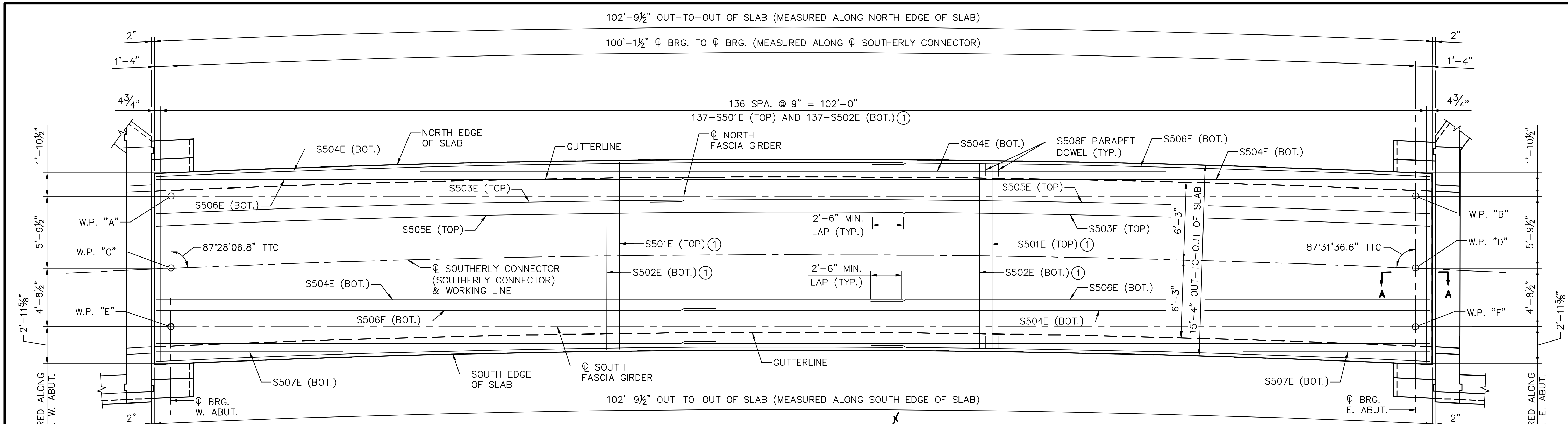
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
SUPERSTRUCTURE DETAILS 1

DISCIPLINE: STRUCTURES

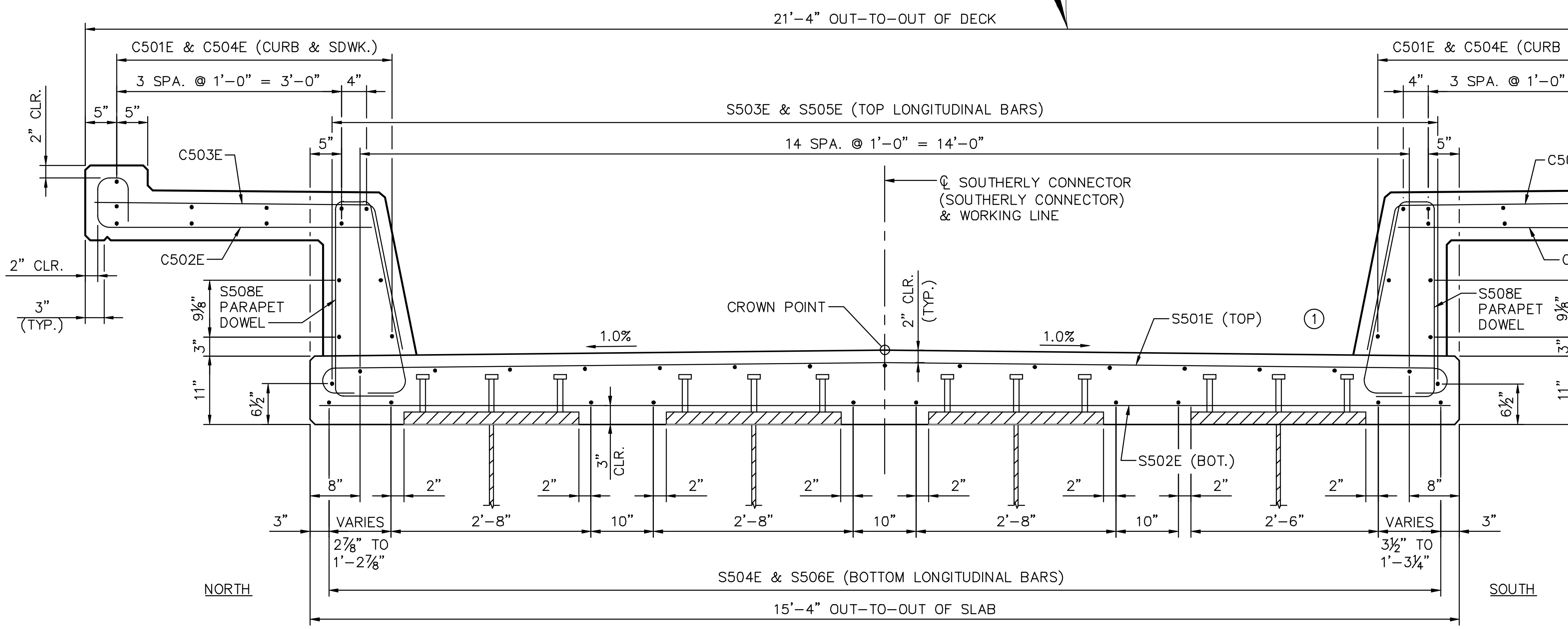
SHEET NAME: CBR27C14-BRG-SUP-003

SHEET 34 OF 52

Jan. 18 2016 01:37 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-SUP-003.dwg By: Joe.Menapace



SLAB PLAN



TRANSVERSE SECTION

NOTES:

SEE SHEET 36 FOR DECK/CURB PLAN AND REINFORCEMENT.

SEE SHEET 37 FOR SECTION A-A.

1 ALL TRANSVERSE BARS SET PARALLEL TO ℄ BEARING.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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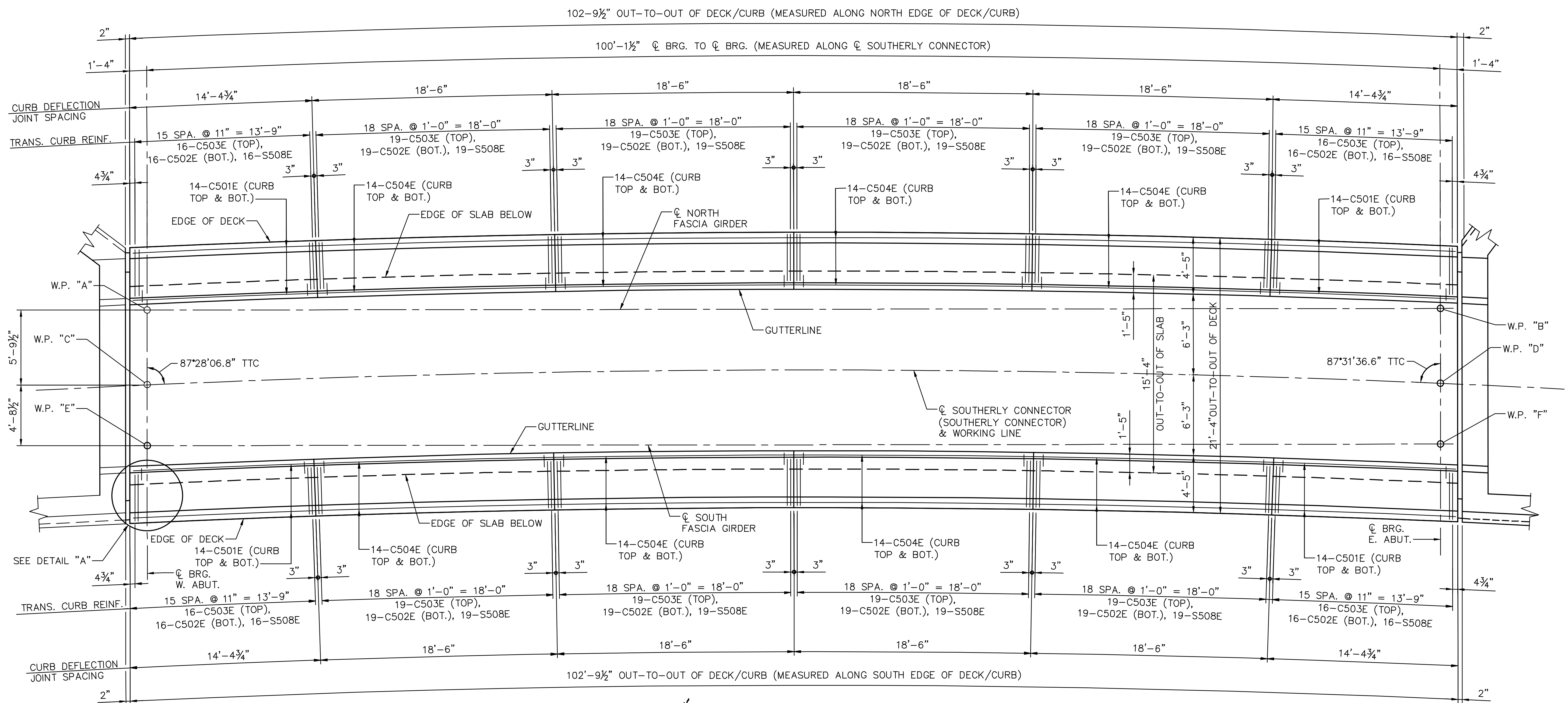
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

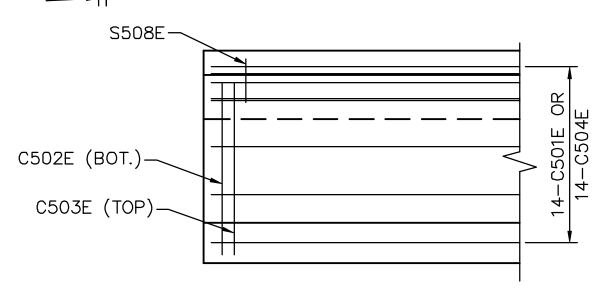
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
SUPERSTRUCTURE DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-SUP-004



DECK/CURB PLAN



DETAIL "A"

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: JFM CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

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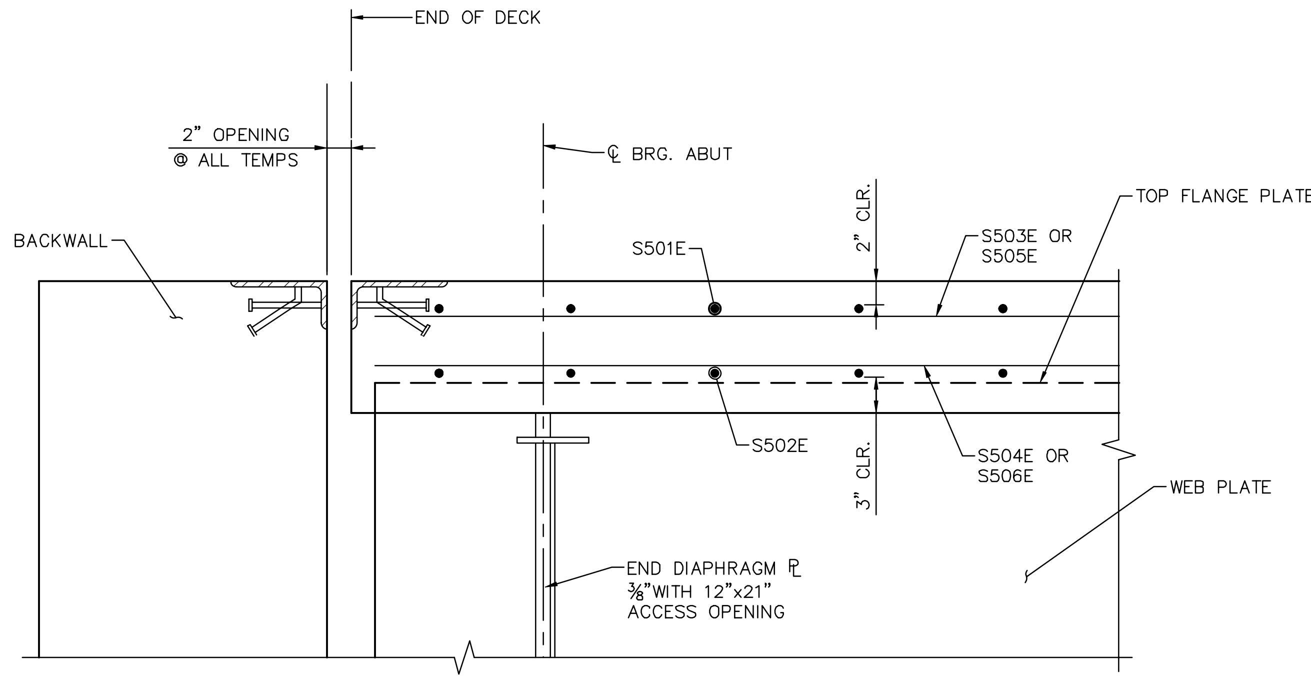
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
SUPERSTRUCTURE DETAILS 3

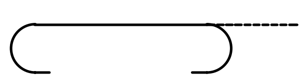
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-SUP-005

SHEET 36 OF 52

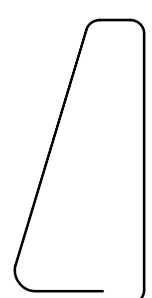
BILL OF REINFORCEMENT FOR SUPERSTRUCTURE				
BAR	NO.	LENGTH	SHAPE	LOCATION
S501E	0	0'-0"	BENT.	TOP TANS.
S502E	0	0'-0"	STR.	BOT TRANS.
S503E	0	0'-0"	STR.	TOP LONG.
S504E	0	0'-0"	STR.	BOT LONG.
S505E	0	0'-0"	STR.	TOP LONG. LAP
S506E	0	0'-0"	STR.	BOT LONG LAP
S507E	0	0'-0"	STR.	BOT. LONG
S508E	0	0'-0"	BENT.	PARAPET DOWEL
C501E	0	0'-0"	STR.	LONG. CURB ENDS
C502E	0	0'-0"	BENT.	CURB BOT.
C503E	0	0'-0"	BENT	CURB TOP
C504E	0	0'-0"	STR.	LONG. CURB MID.



SECTION A–A

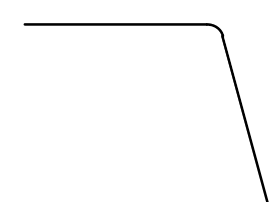


S501E



S508E

C502E



C503E

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

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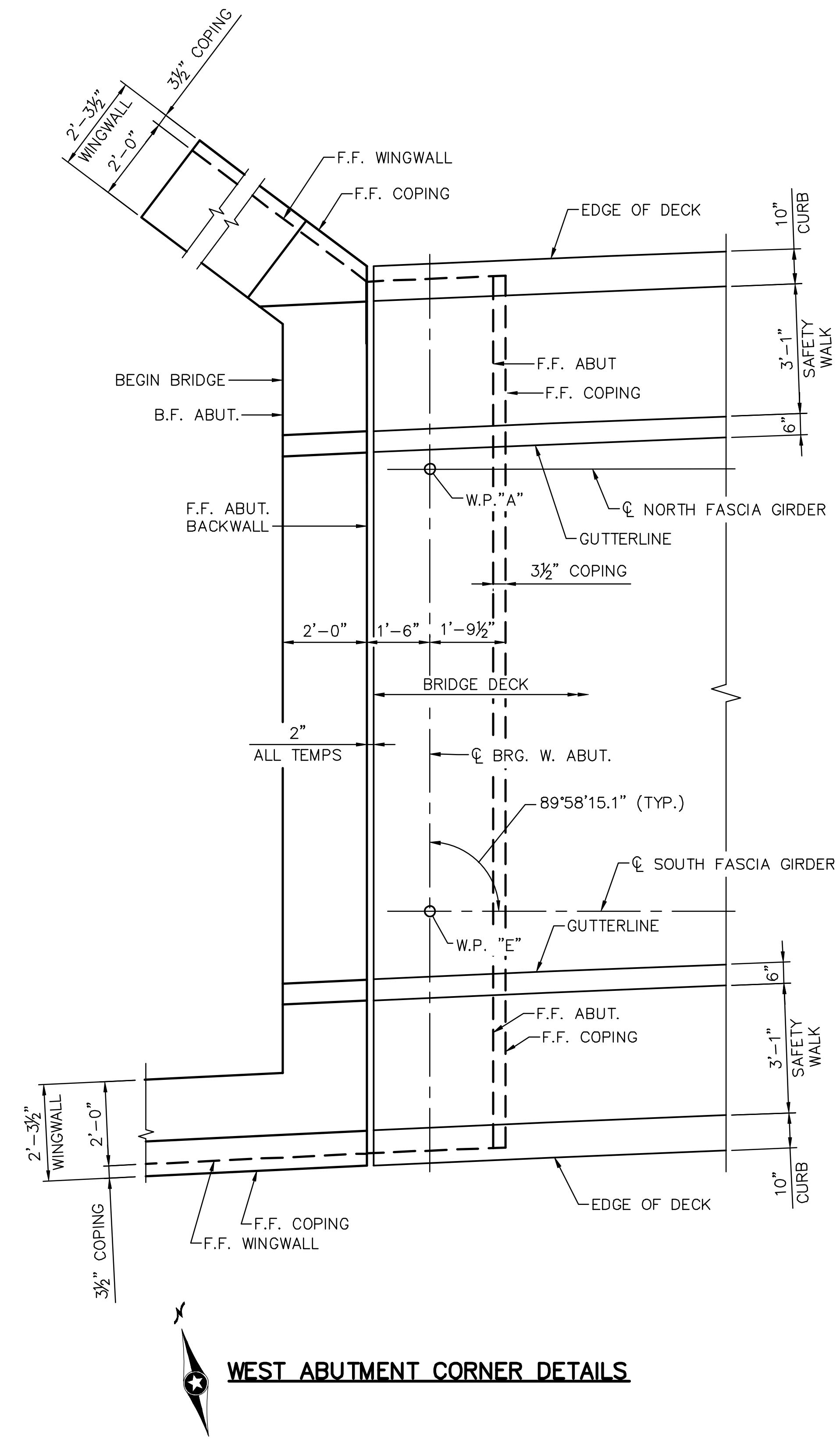
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

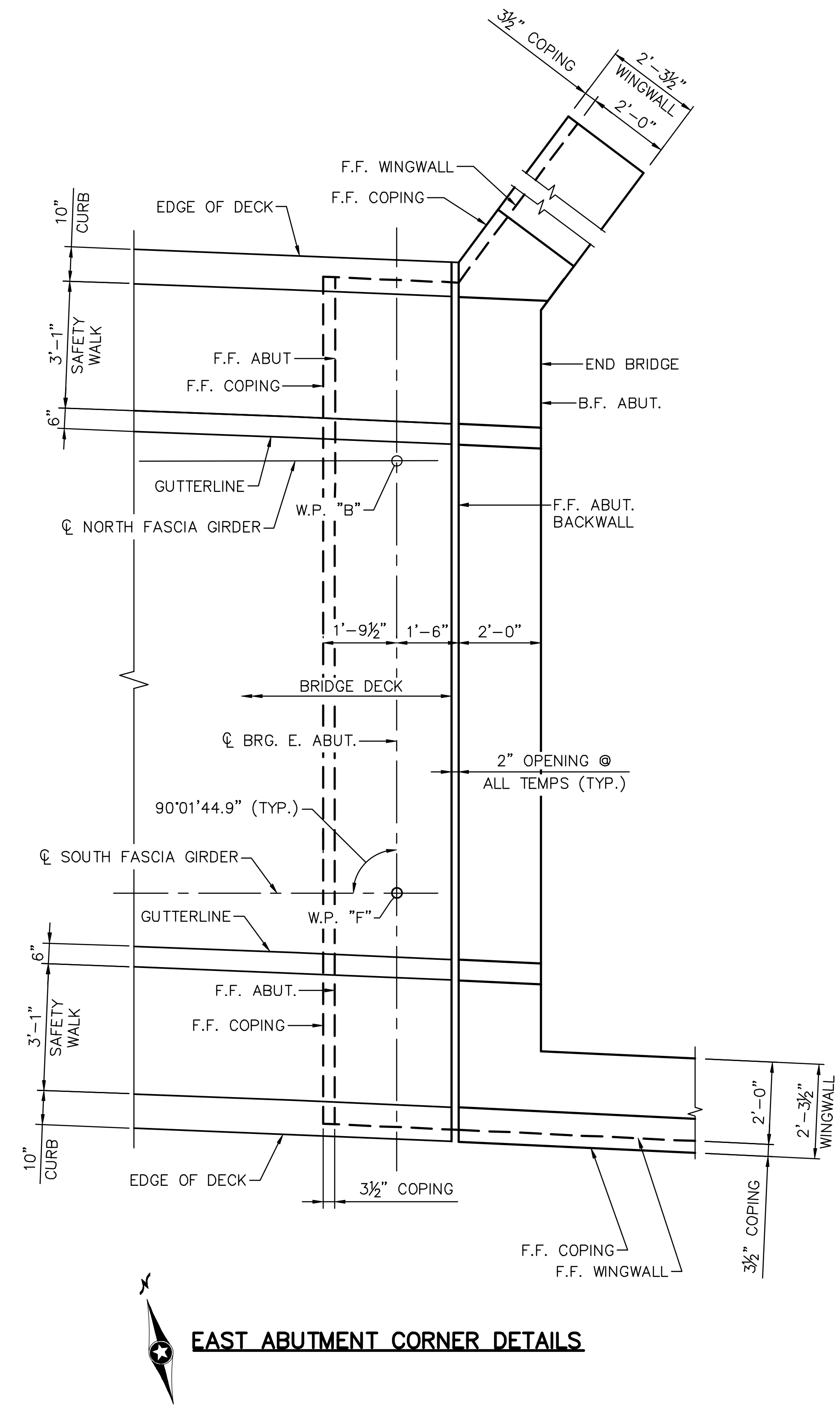
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
SUPERSTRUCTURE DETAILS 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-SUP-006



WEST ABUTMENT CORNER DETAILS



EAST ABUTMENT CORNER DETAILS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG | CHECKED BY: DLS
DRAWN BY: ZTW | CHECKED BY: DLS

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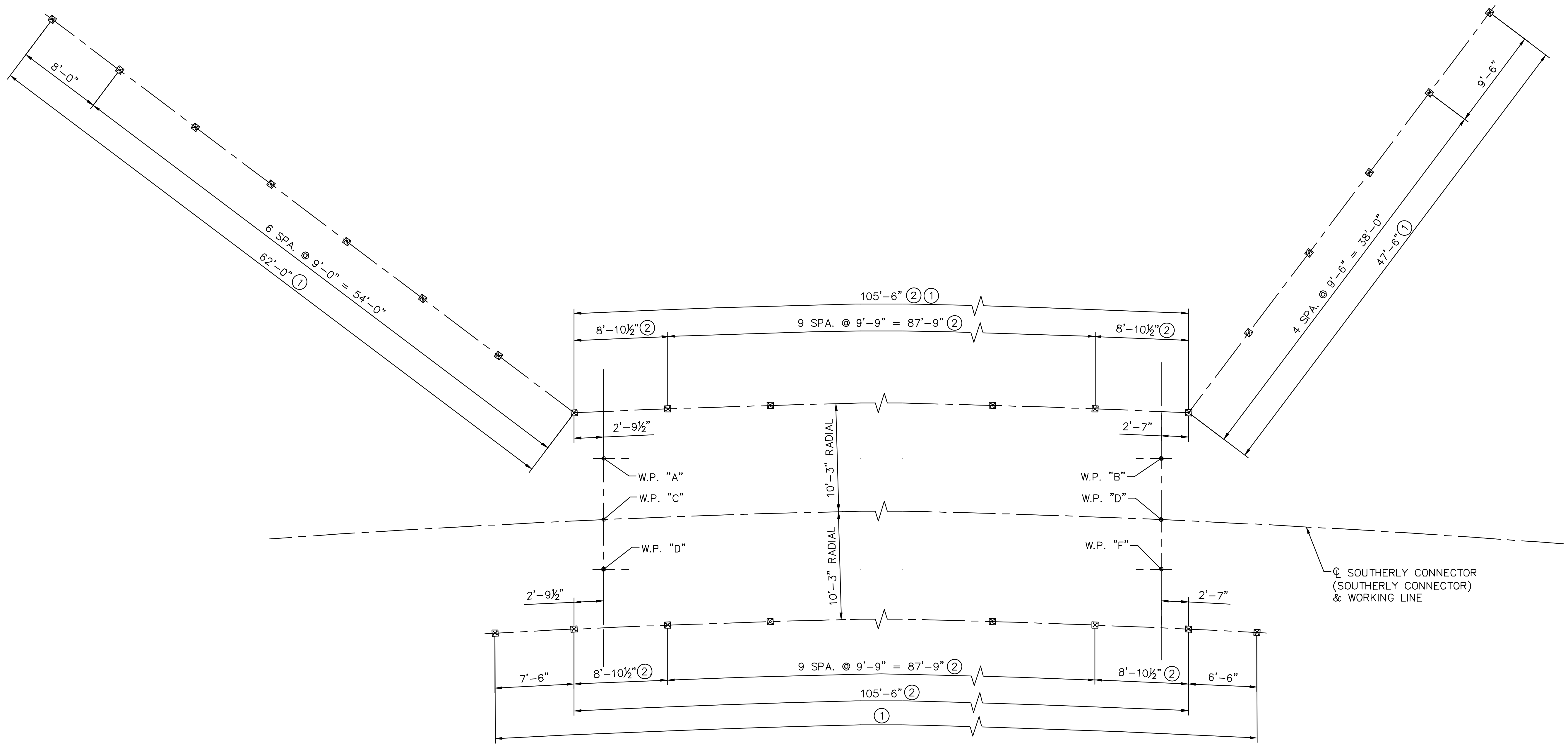
METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
SUPERSTRUCTURE DETAILS 5

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-SUP-007

SHEET 38 OF 52



PLAN VIEW – FENCE POST LAYOUT

NOTES:

POST SHALL BE SET VERTICAL.

ALL FENCE POST ANCHORAGES SHALL BE TYPE A. SEE DETAIL B905.

(1) WIRE FENCE, FIGURE 5-397.119 (MOD.)

(2) MEASURED ALONG EDGE OF DECK.

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DRAWN BY: ZEG | CHECKED BY: DLS

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METROPOLITAN COUNCIL

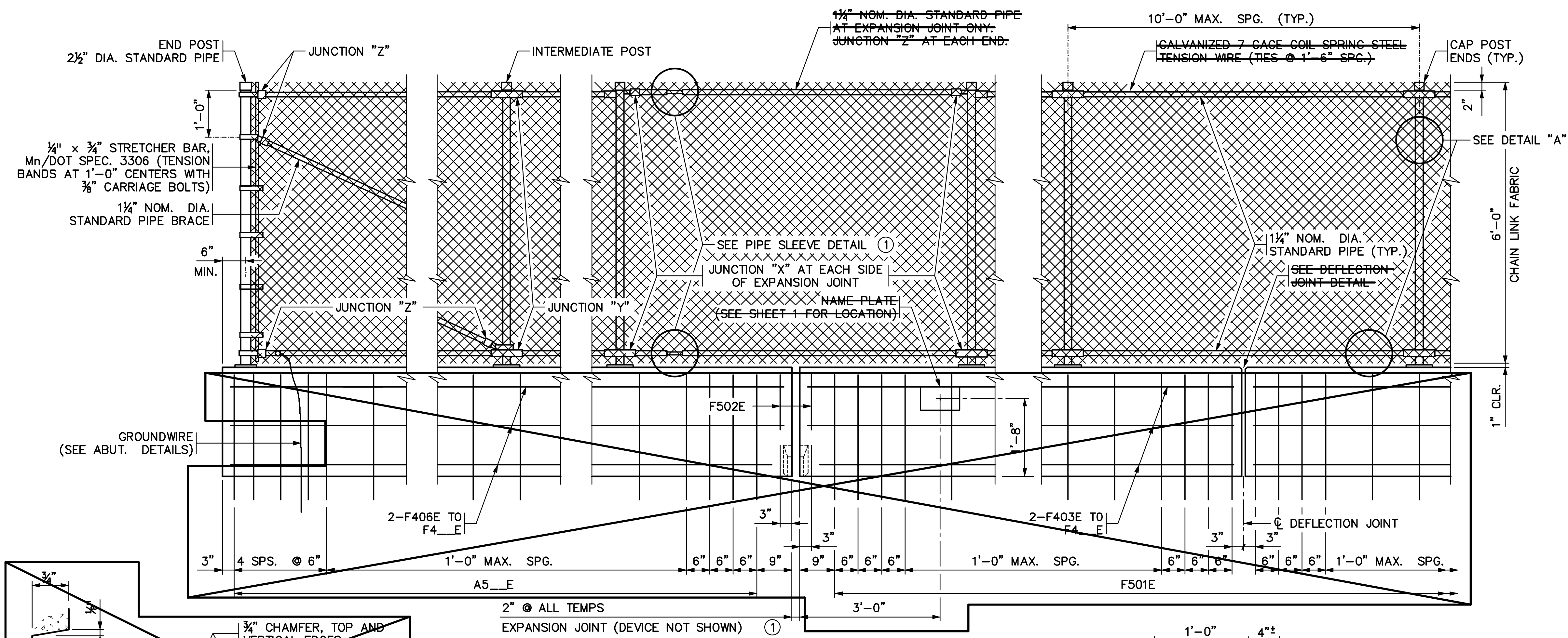
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
SUPERSTRUCTURE DETAILS 6

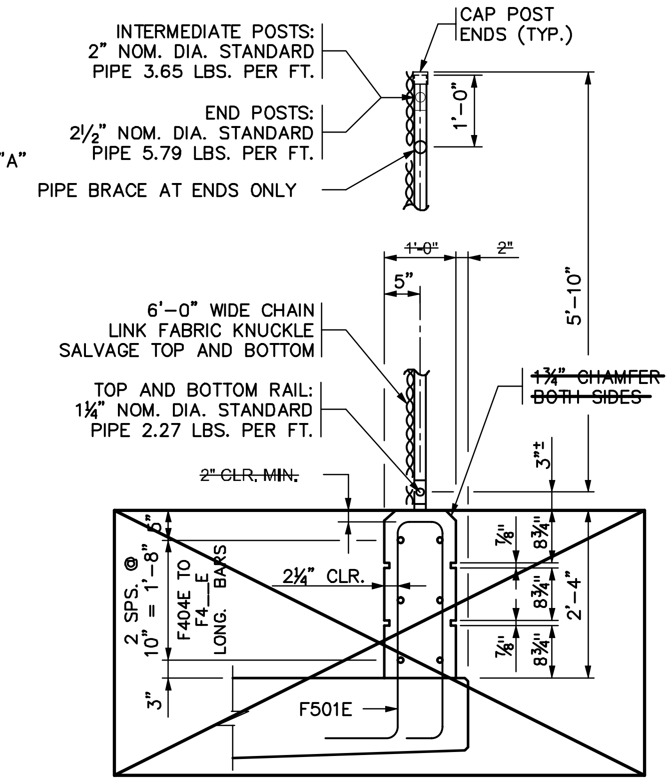
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-SUP-008

SHEET 39 OF 52



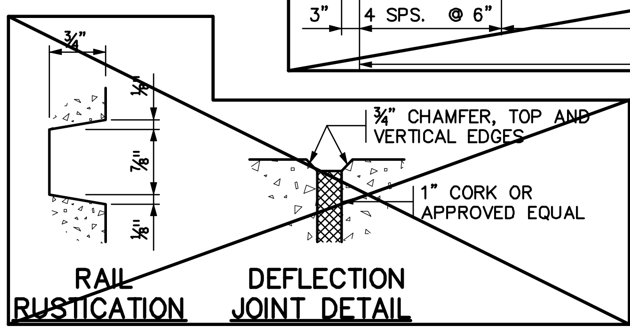
Ⓐ INSIDE ELEVATION OF RAILING



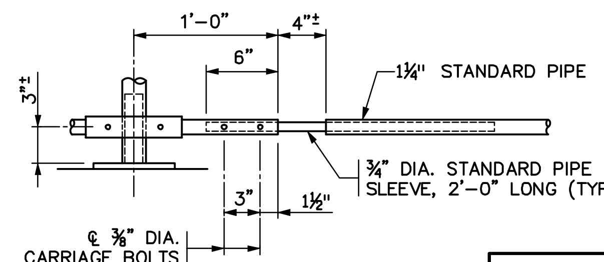
Ⓐ TYPICAL SECTION THROUGH FENCE

INTERMEDIATE POST SHOWN

SHEET MODIFICATION:
Ⓐ DENOTES MODIFICATION TO STANDARD SHEET



RAIL RUSTICATION DEFLECTION JOINT DETAIL



PIPE SLEEVE DETAIL ①

GENERAL NOTES

Ⓐ SEE SUPERSTRUCTURE DETAILS SHEETS FOR CURB DIMENSION, REINFORCEMENT, AND NOTES.

Ⓐ LENGTH OF "WIRE FENCE" ~~FOR PAYMENT~~ SHALL BE MEASURED BETWEEN THE CENTER OF END RAIL POSTS. SEE SHEET 39.

~~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.

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

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

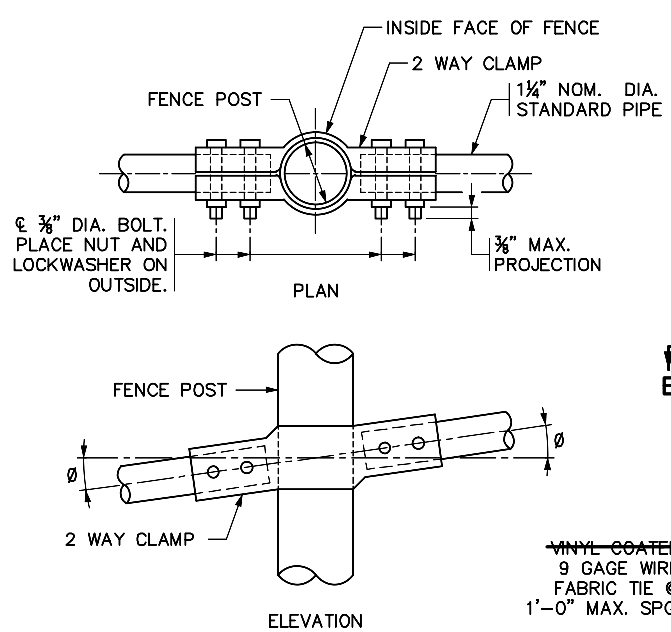
~~ALL POSTS SHALL HAVE A MEANS TO SECURELY HOLD THE TOP TENSION WIRE IN POSITION AND ALLOW FOR THE REMOVAL AND REPLACEMENT OF A POST WITHOUT DAMAGING THE TOP WIRE.~~

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 12½ 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.~~

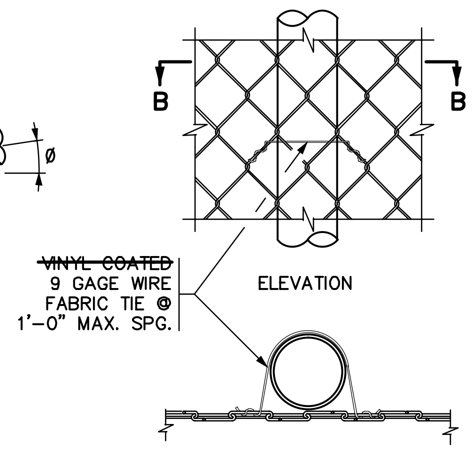
① PROVIDE PIPE SLEEVE IN SPAN BETWEEN THE VERTICAL POSTS AT EXPANSION JOINT. SEE SUPERSTRUCTURE SHEETS FOR LOCATION.



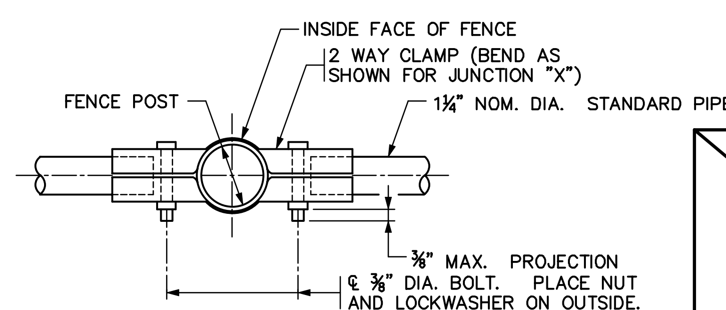
JUNCTION "X"

2 WAY CLAMP BENDING TABLE

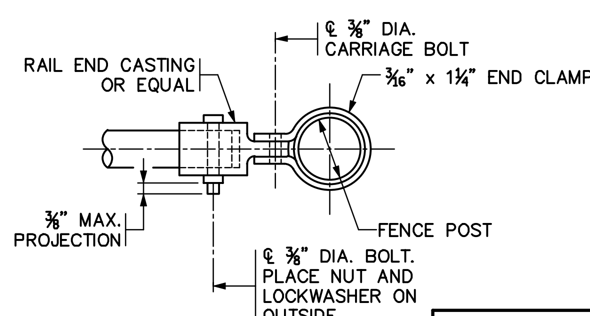
GRADE OF FENCE	Ø
0° TO 2°	0°
2° TO 6°	4°
6° TO 10°	8°



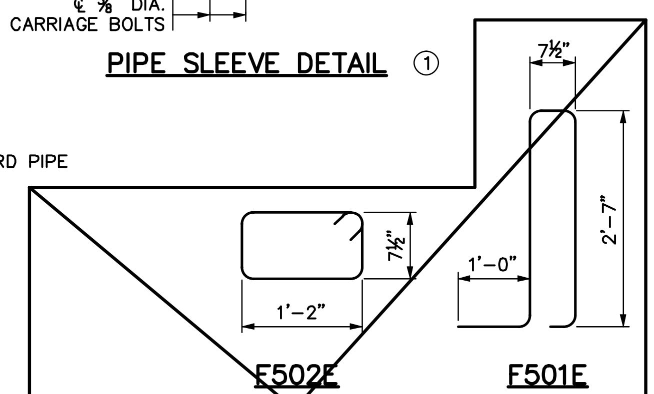
DETAIL "A"



JUNCTION "Y"



JUNCTION "Z"



BILL OF REINFORCEMENT FOR PARAPET

BAR	NO.	LENGTH	SHAPE	LOCATION
F501E		7'–3"		RAIL BASE VERTICAL
F502E		4'–6"		RAIL BASE VERTICAL
F403E				RAIL BASE LONGITUDINAL
F404E				RAIL BASE LONGITUDINAL

REVISED: 04–17–2013

APPROVED: DECEMBER 18, 2003

STATE BRIDGE ENGINEER

CERTIFIED BY LICENSED PROFESSIONAL ENGINEER 01/22/16 DATE

NAME: # LIC. NO. #####

TITLE: WIRE FENCE (DESIGN W–1) Ⓐ

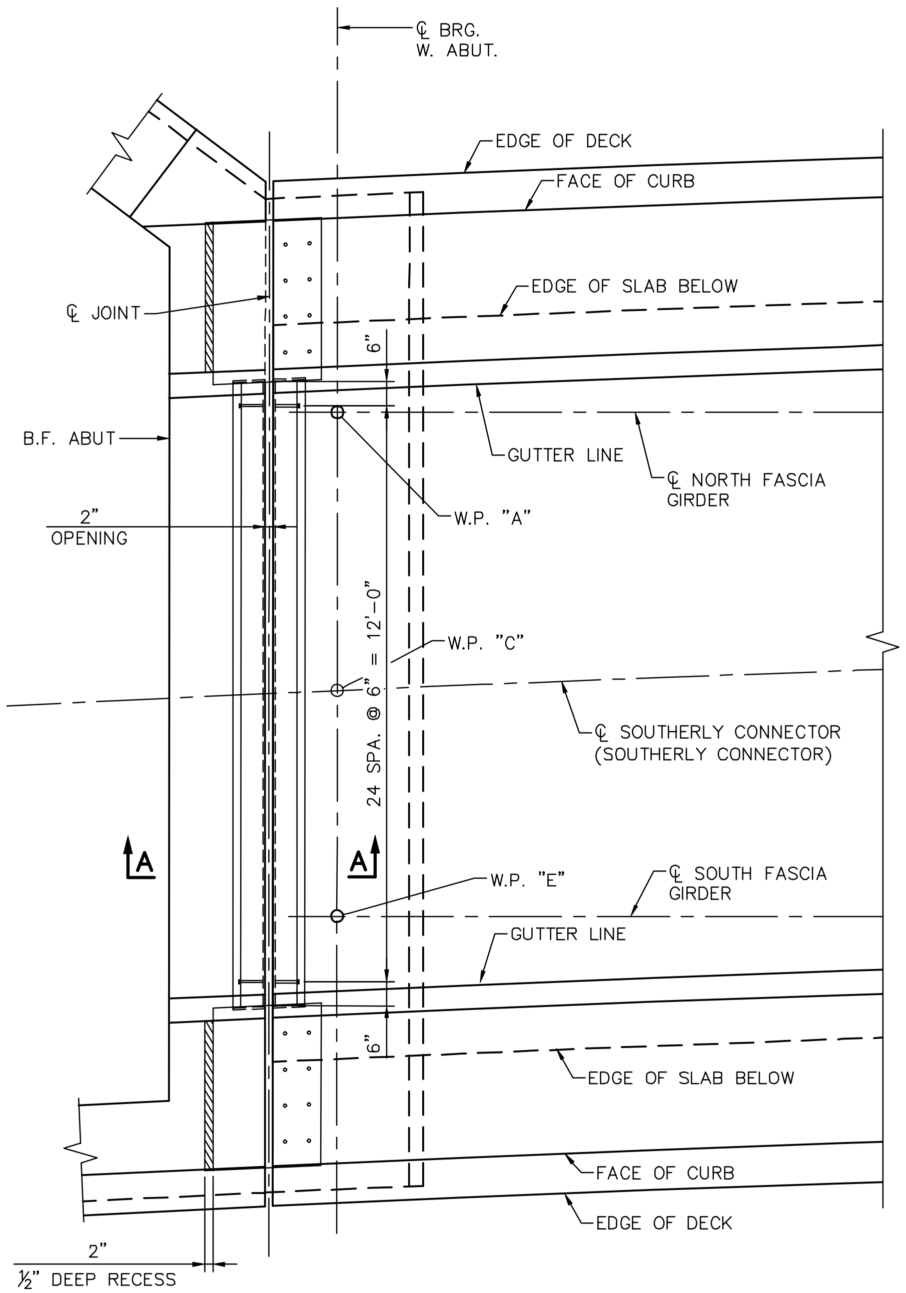
DES: CJS DR: ZTW CHK: DLS CHK: DLS

FIG. 5–397.119 (MOD.)

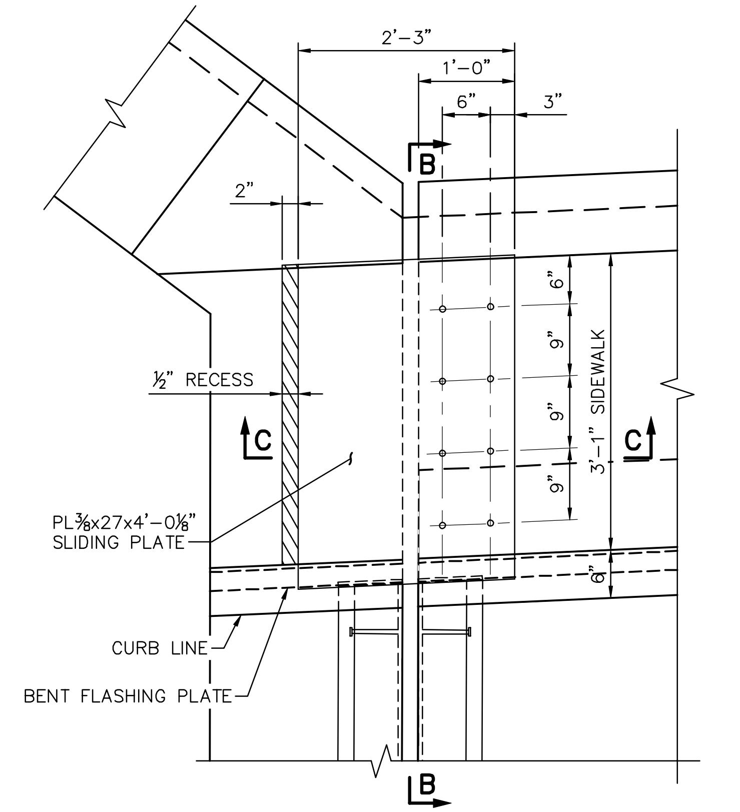
APPROVED:

SHEET NO. 40 OF 52 SHEETS

BRIDGE NO. 27C14



PLAN – FIXED JOINT DEVICE AT WEST ABUTMENT

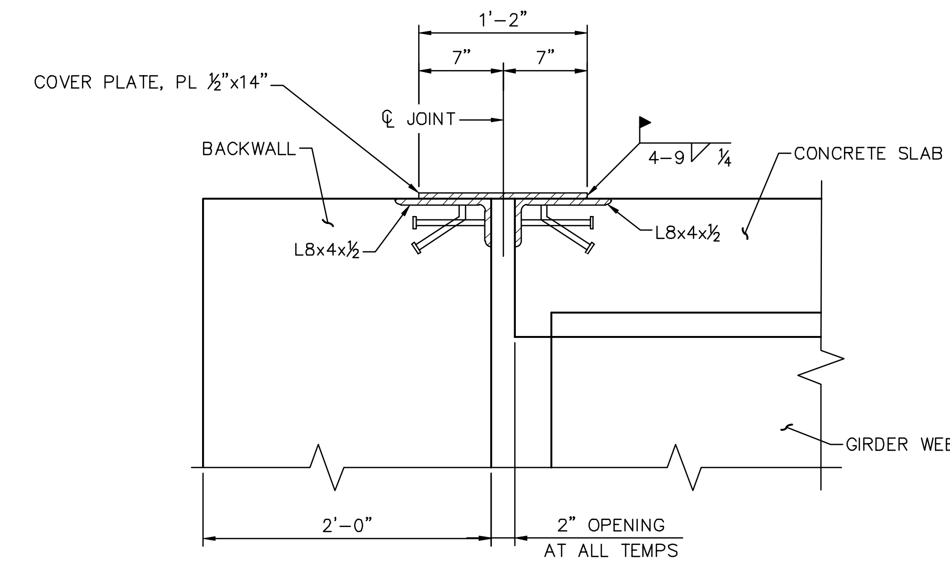


PLAN – SLIDING PLATE AT NORTH SIDE OF ABUTMENT

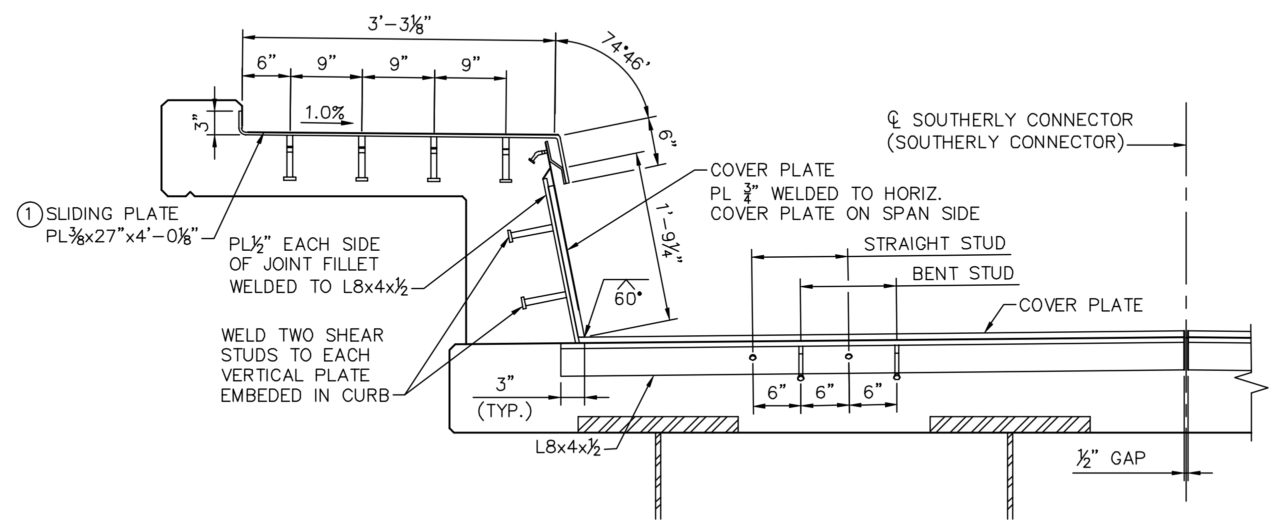
NOTES:

(1) RAISED PATTERN PLATE

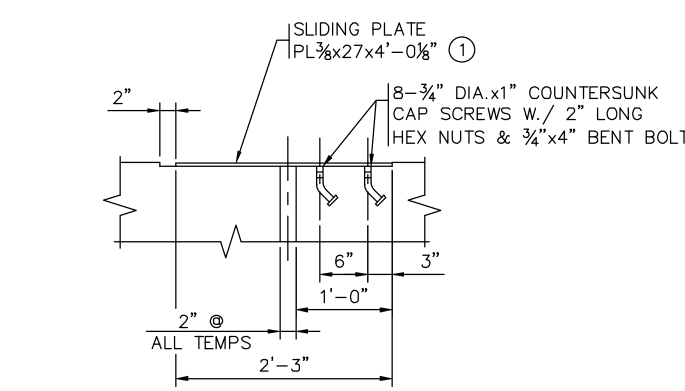
STEEL NOTE:
ALL STRUCTURAL SHAPES AND PLATES SHOWN ON JOINT DETAIL SHEETS FOR EXP. AND FIXED JOINTS SHALL BE GALVANIZED PER SPEC. 3394. FASTENERS SHALL BE GALVANIZED PER SPEC. 3392.



SECTION A–A



SECTION B–B



SECTION C–C

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG | CHECKED BY: DLS
DRAWN BY: MRD | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

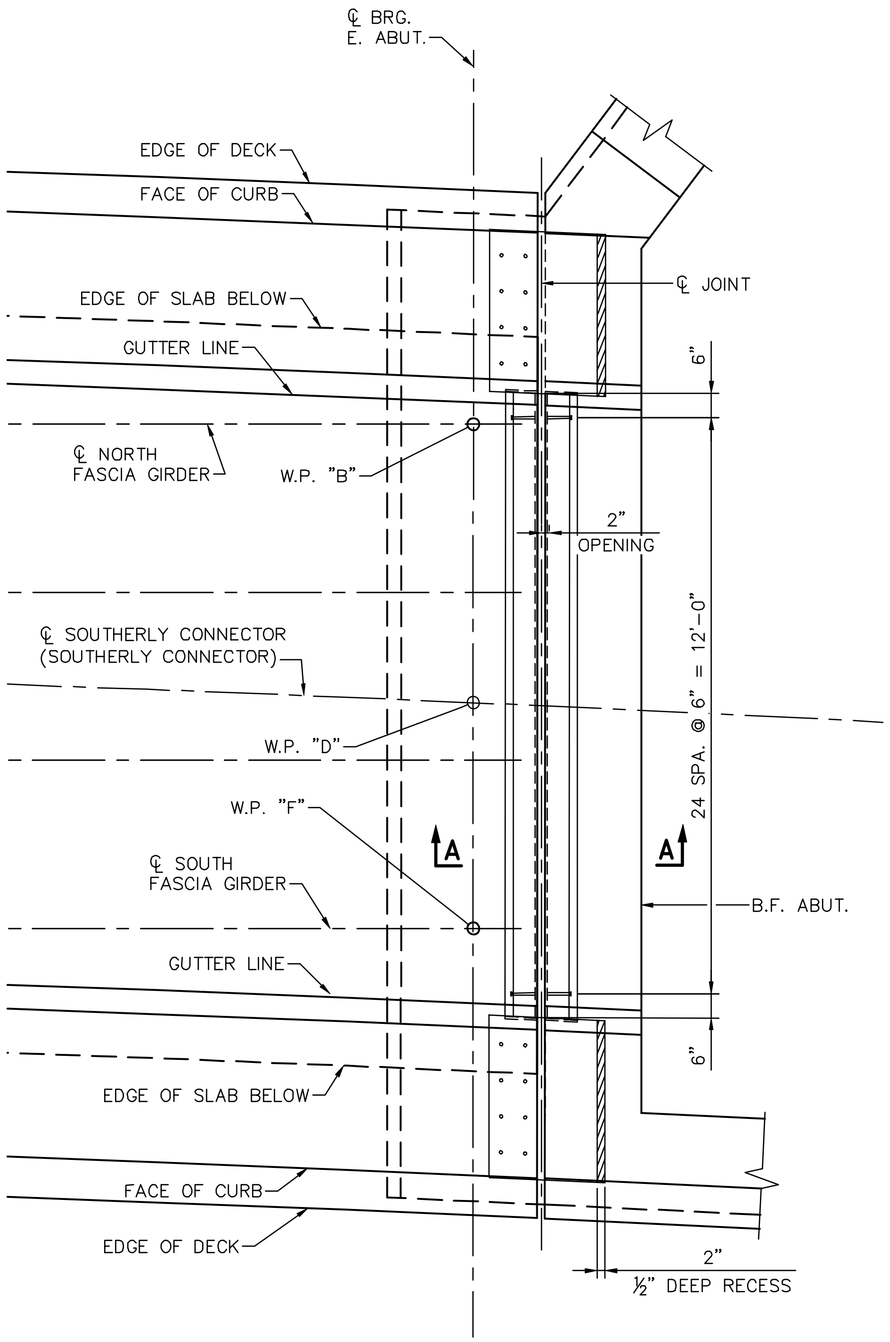
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
JOINT DETAILS 1

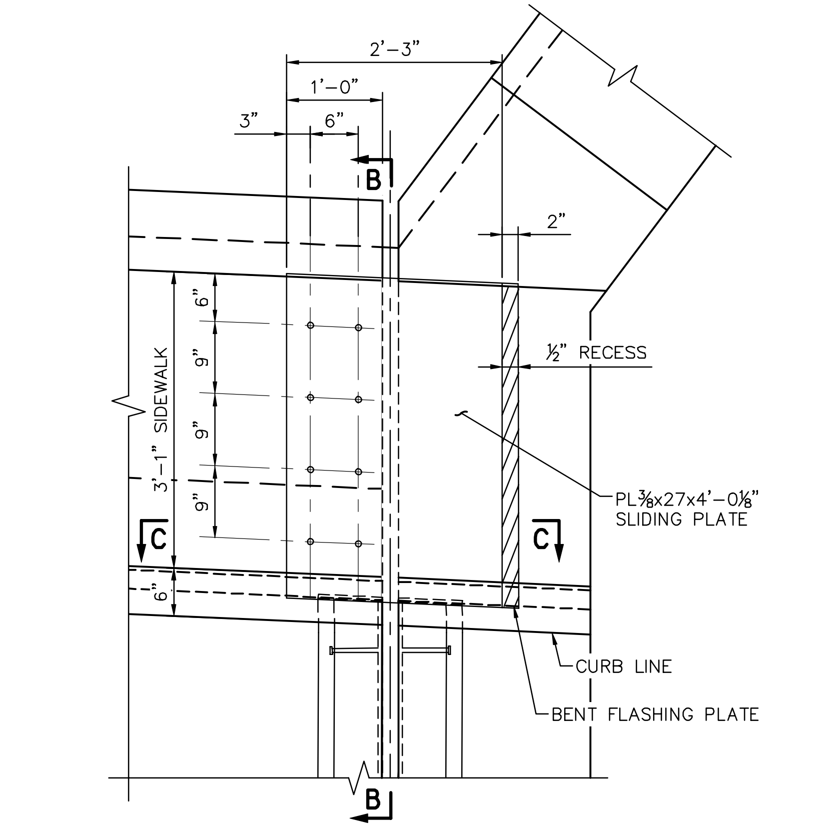
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-EXP-001

SHEET 41 OF 52

Jan. 18 2016 01:40 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-EXP-001.dwg By: Joe.Menapace



PLAN – EXP. JOINT DEVICE AT EAST ABUTMENT

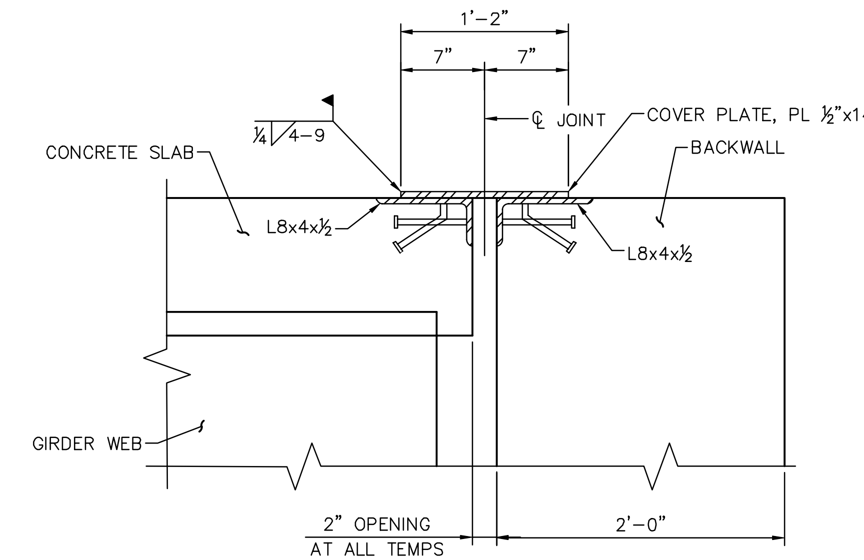


PLAN – SLIDING PLATE AT NORTH SIDE OF ABUTMENT

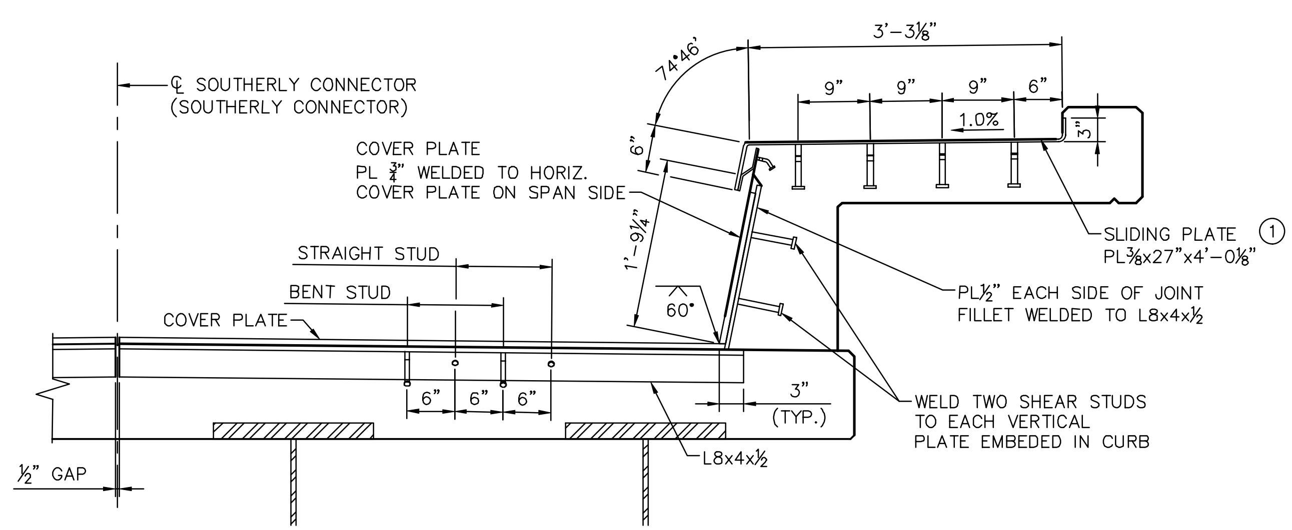
NOTES:

1. RAISED PATTERN PLATE

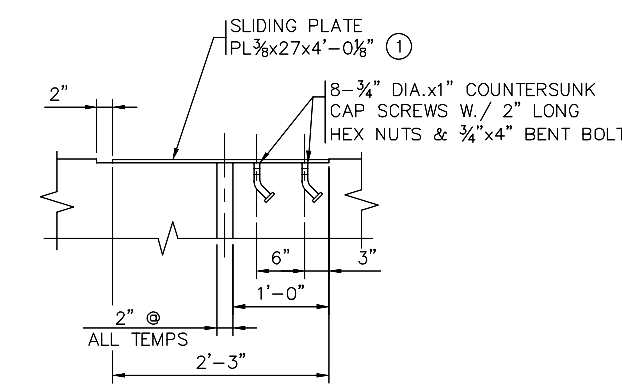
STEEL NOTE:
ALL STRUCTURAL SHAPES AND PLATES SHOWN ON JOINT DETAIL SHEETS FOR EXP. AND FIXED JOINTS SHALL BE GALVANIZED PER SPEC. 3394. FASTENERS SHALL BE GALVANIZED PER SPEC. 3392.



SECTION A–A



SECTION B–B



SECTION C–C

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: MRD CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

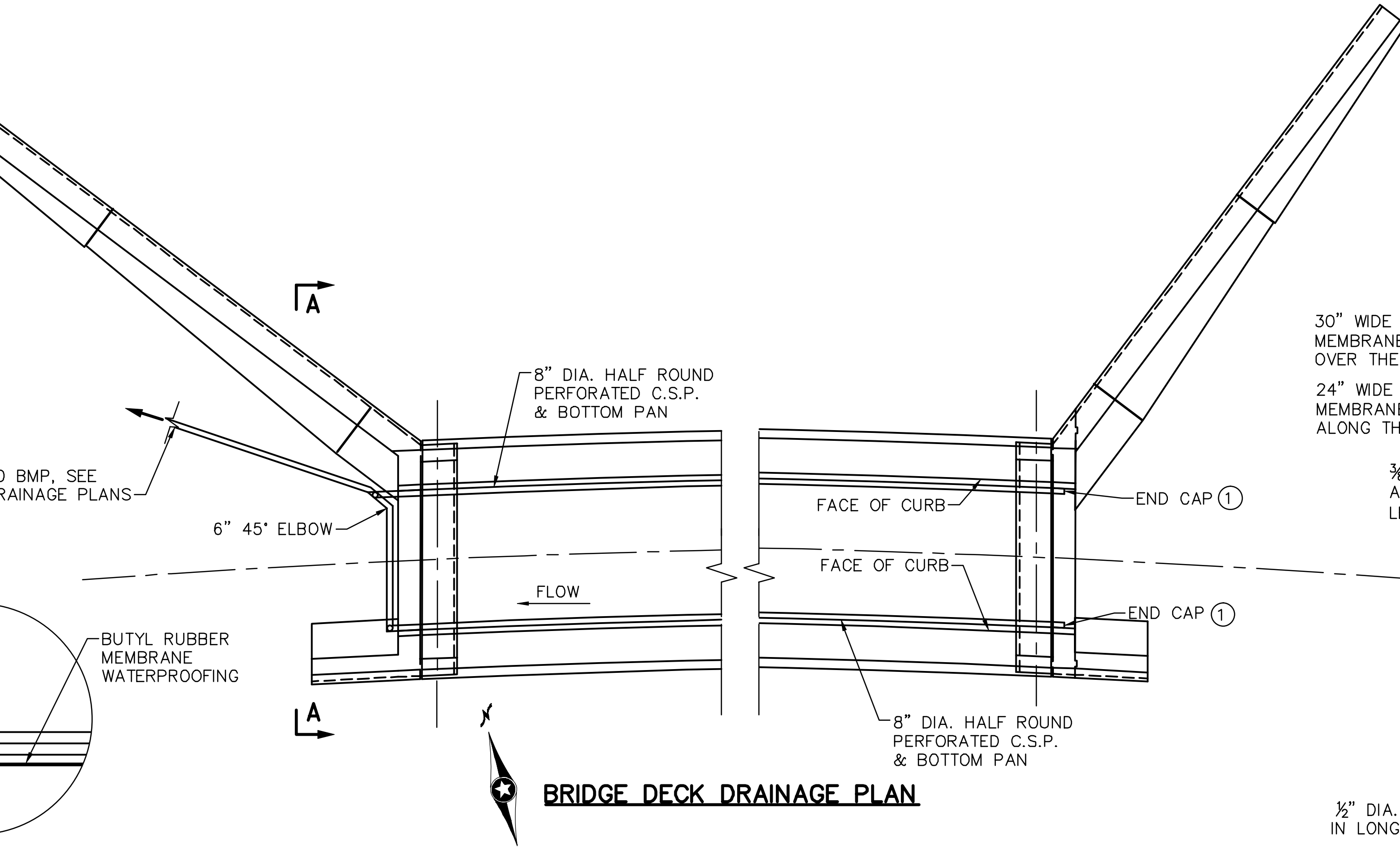
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

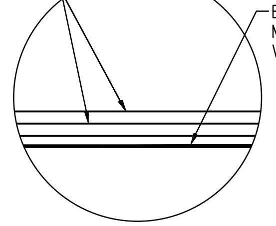
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
JOINT DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-EXP-002

SHEET 42 OF 52



BRIDGE DECK DRAINAGE PLAN



TYPICAL DECK WATERPROOFING

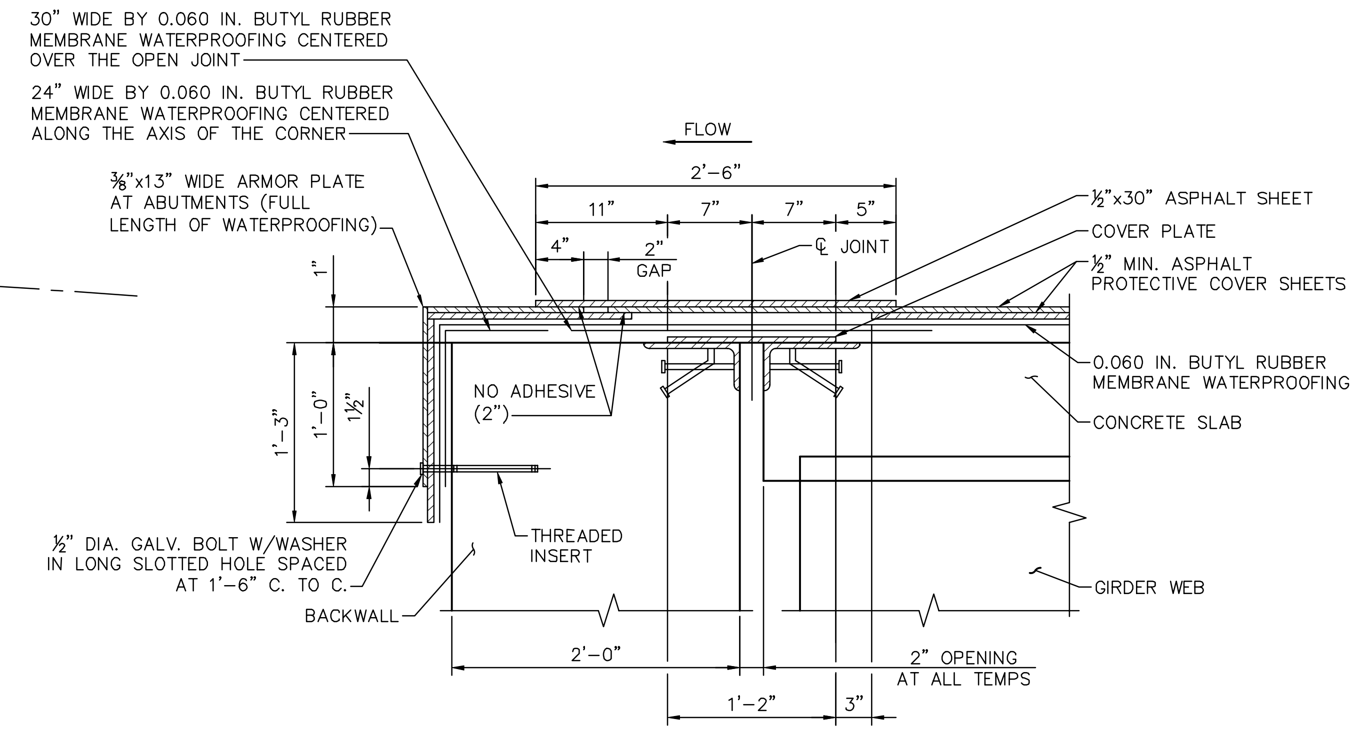
NOTES:

ALL PIPE SHALL COMPLY WITH SPEC. 3326.

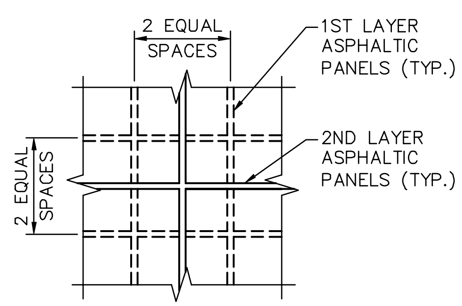
ALL STEEL COMPONENTS OF THE DRAINAGE SYSTEM INCLUDING PIPES, BOTTOM PANS, COVERS, CLAMPS, END PLATES, AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH SPEC. 3392 AND SPEC. 3394.

SEE SHEET 44 FOR SECTION A–A.

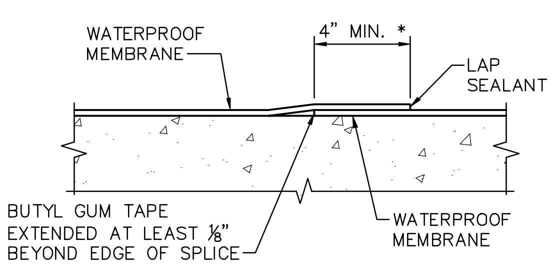
(1) TERMINATE DRAIN AT THE BACK OF THE EAST ABUTMENT.



WATERPROOFING AT ABUTMENT

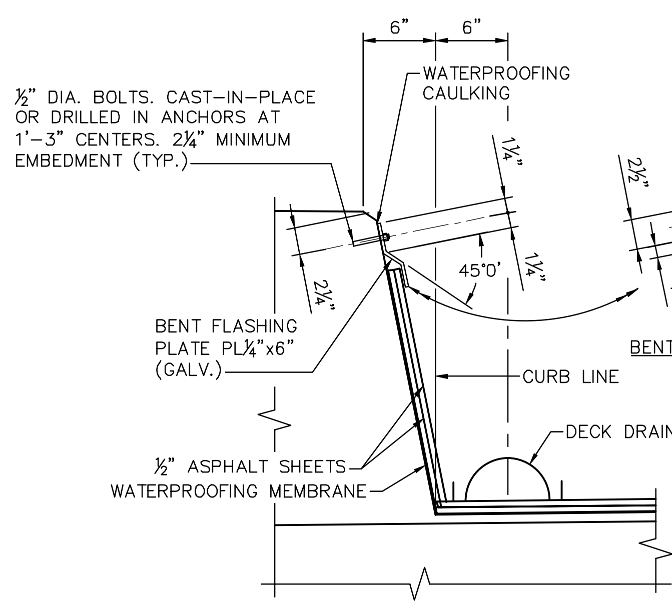


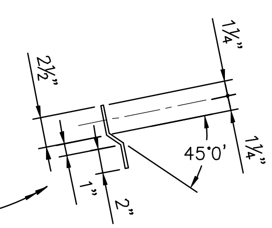
TYPICAL ASPHALT PANEL PLACEMENT



BUTYL RUBBER MEMBRANE WATERPROOFING SPLICE DETAIL

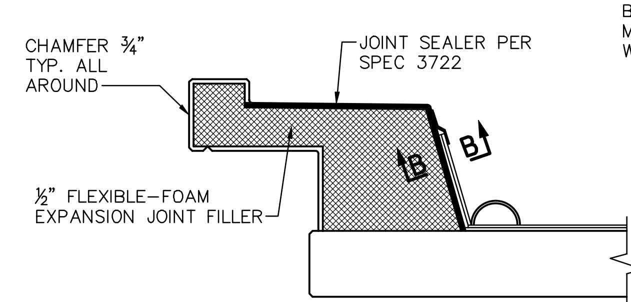
* ALL CONTACT SURFACES TO BE THOROUGHLY CLEANED & CEMENTED



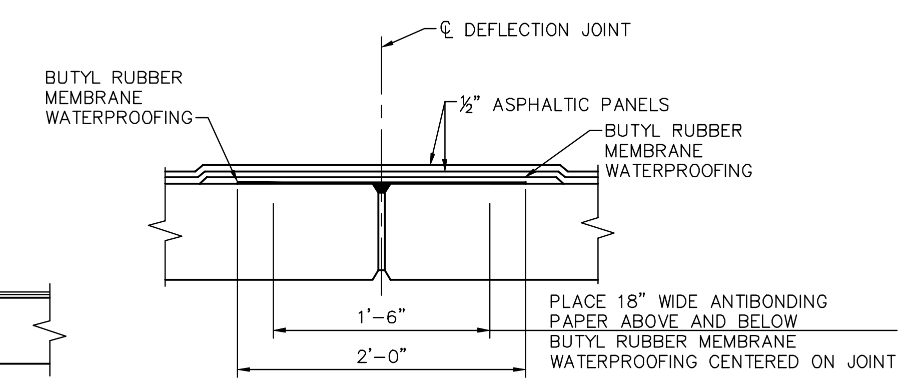


BENT FLASHING PLATE

CURB SECTION



CURB SECTION AT DEFLECTION JOINT



SECTION B–B

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG | CHECKED BY: DLS
DRAWN BY: JFM | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

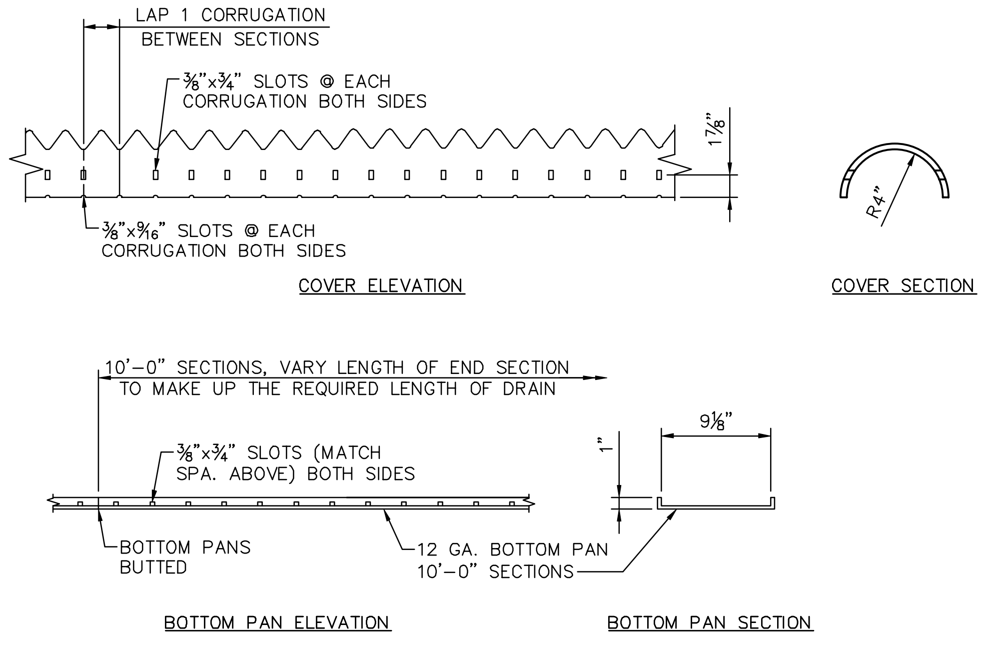
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
DECK DRAINAGE AND WATERPROOFING 1

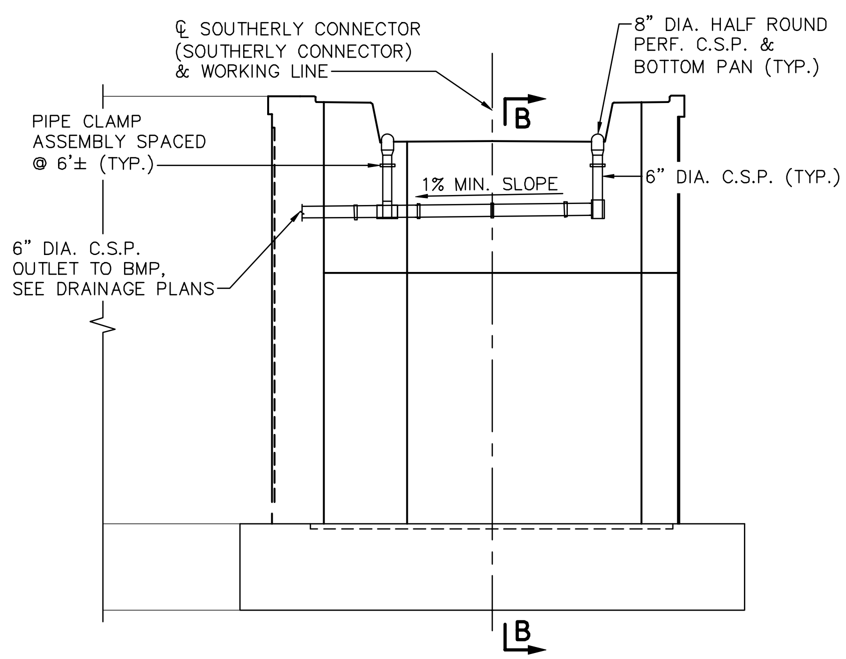
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-DTL-001

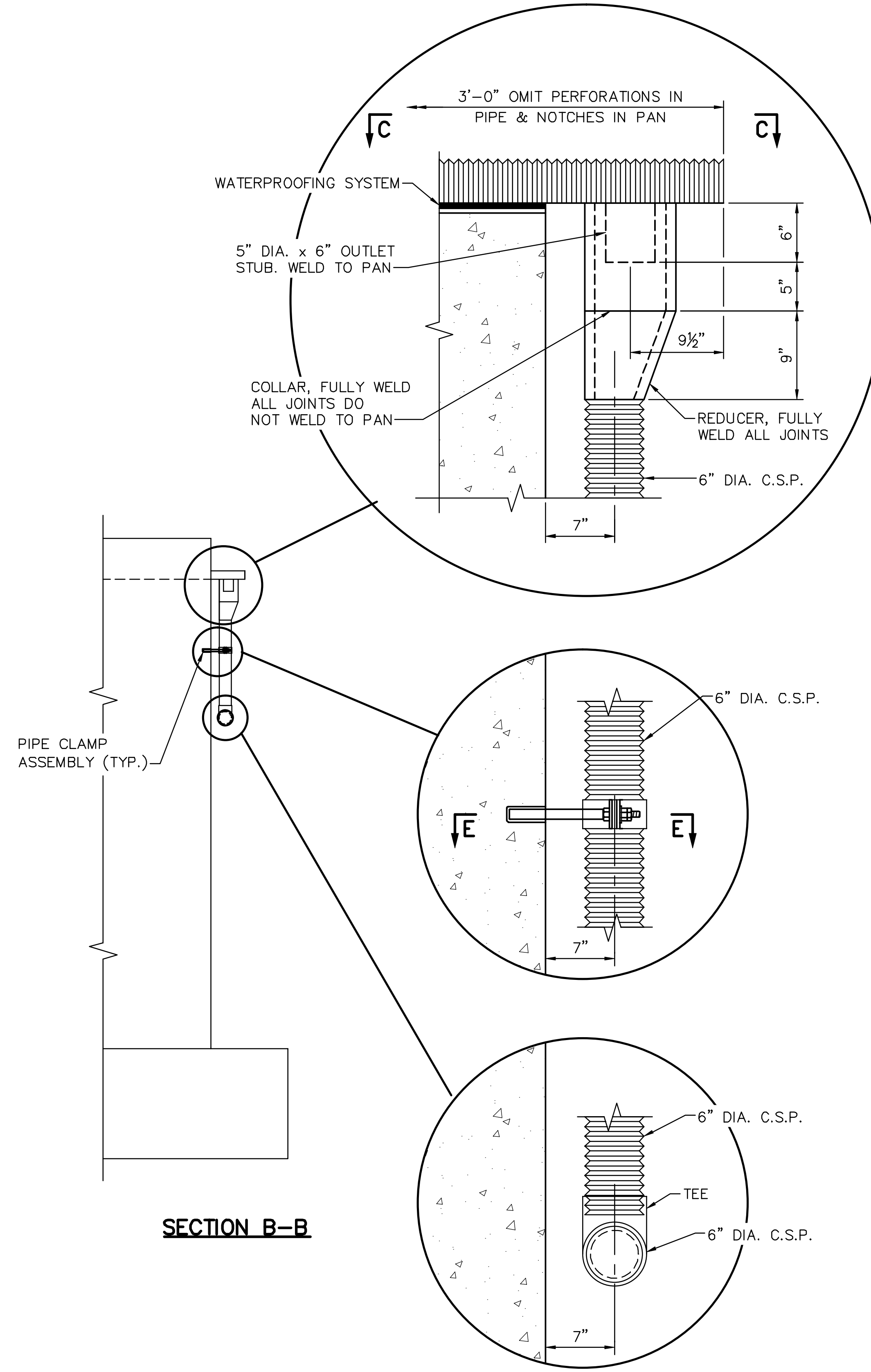
SHEET 43 OF 52



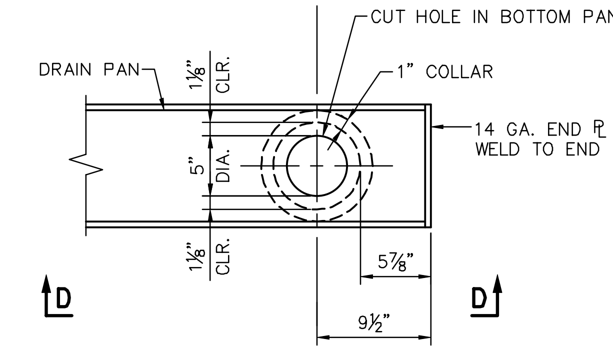
DECK DRAIN DETAILS



SECTION A–A

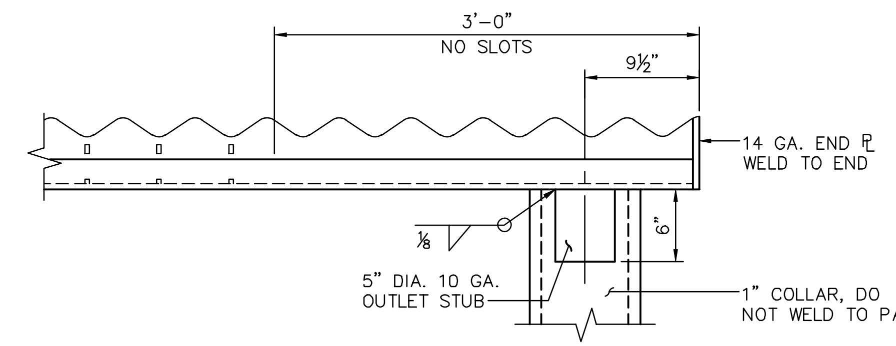


SECTION B–B

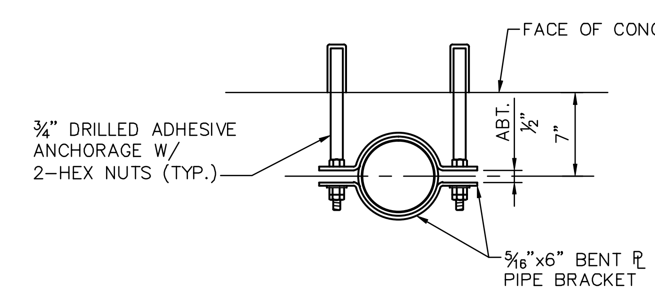


VIEW C–C

(8" DIA. 12 GA. HALF-ROUND C.S.P. NOT SHOWN)



VIEW D–D



SECTION E–E

(PIPE CLAMP ASSEMBLY)

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG | CHECKED BY: DLS
DRAWN BY: JFM | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

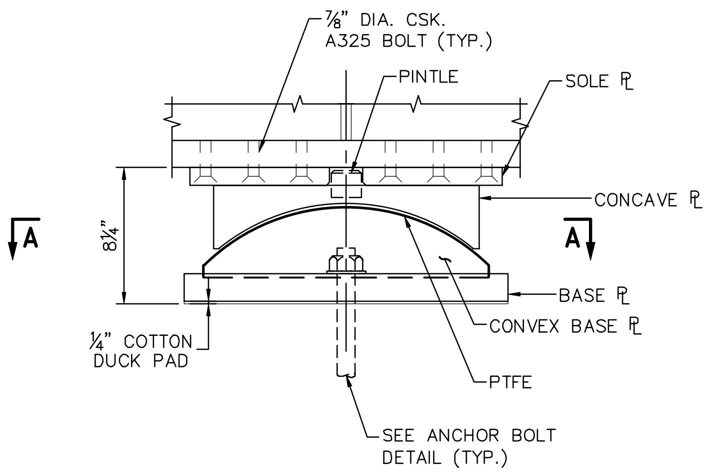
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

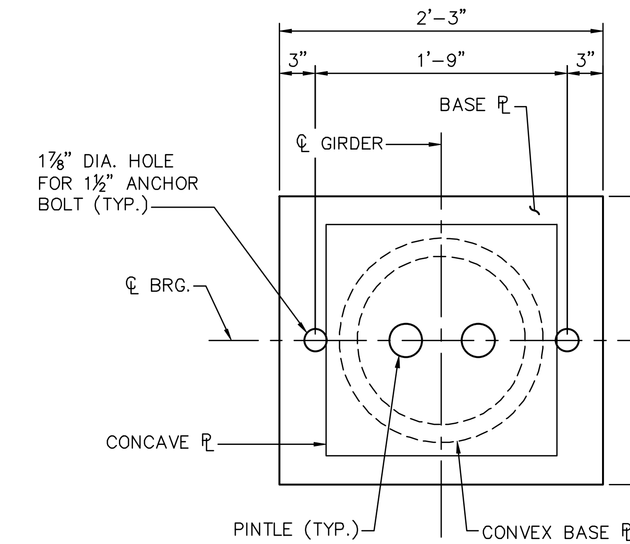
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
DECK DRAINAGE AND WATERPROOFING 2

DISCIPLINE: STRUCTURES

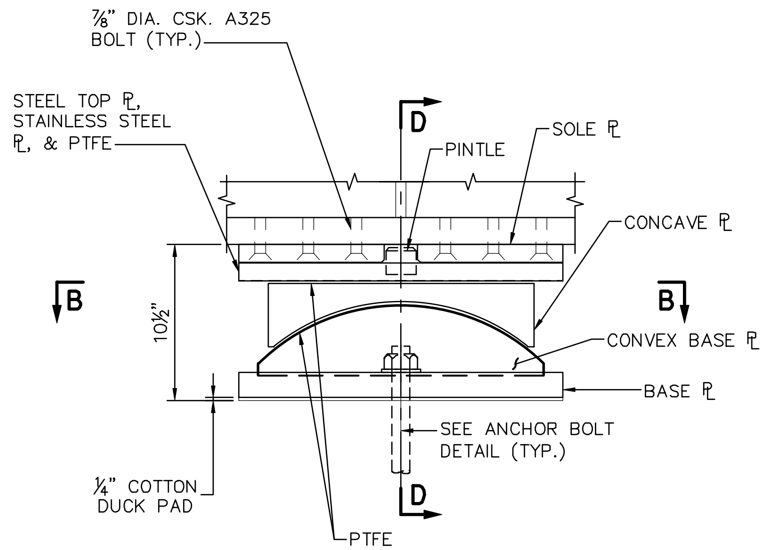
SHEET NAME: CBR27C14-BRG-DTL-002



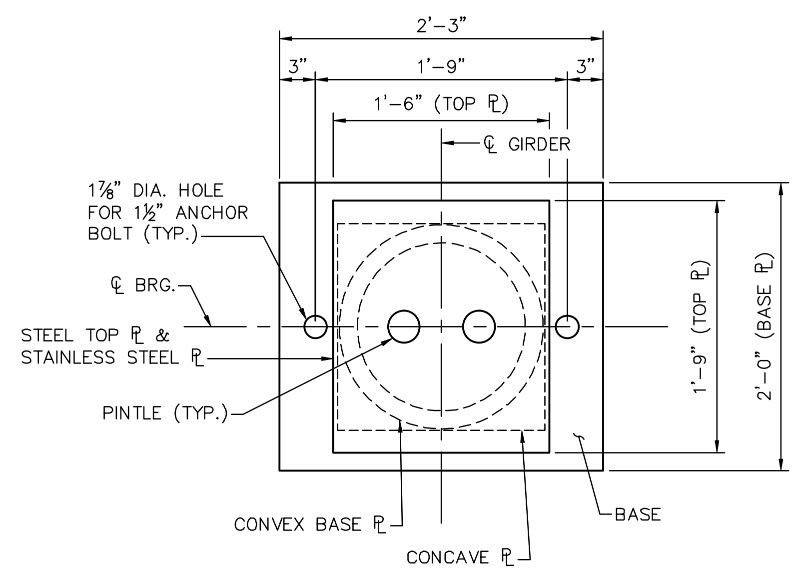
TYPE F1



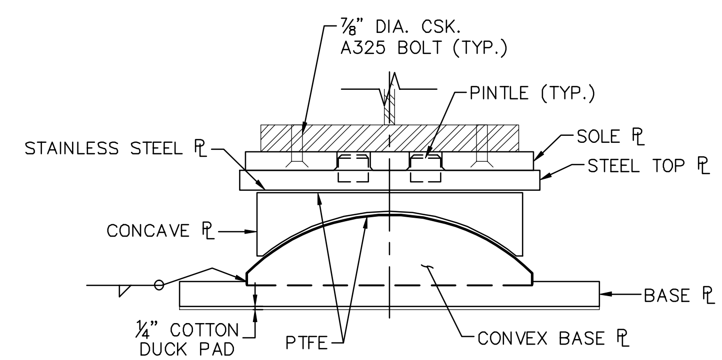
SECTION A–A



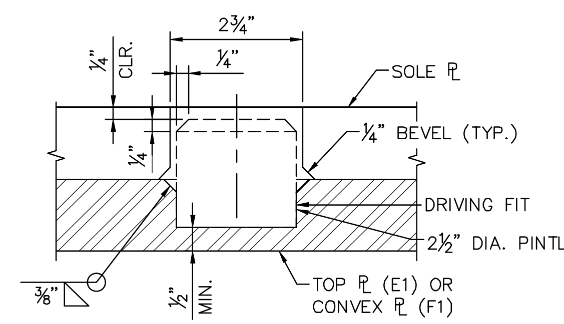
TYPE E1



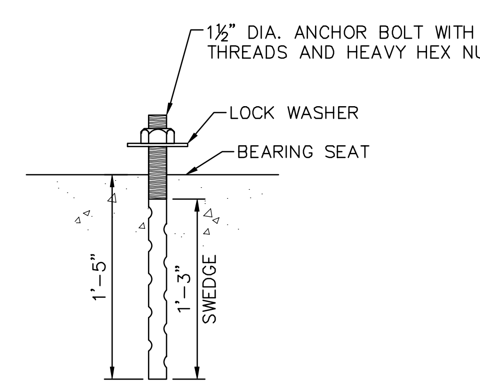
SECTION B–B



SECTION D–D



PINTLE DETAIL



ANCHOR BOLT DETAIL

LOADS & MOVEMENT FOR TYPE F1 BEARING:

VERTICAL	DL	134K
	LL+I	236K
	TOTAL	370K
LONGITUDINAL		74K
TRANSVERSE		22K
MIN. ROTATION CAPACITY		0.02 RAD

LOADS & MOVEMENT FOR TYPE E1 BEARING:

VERTICAL	DL	134K
	LL+I	236K
	TOTAL	370K
HORIZONTAL		77K
LONG. MOVEMENT		2 1/4 IN
MIN. ROTATION CAPACITY		0.02 RAD

ALLOWABLE STRESSES:

PTFE BEARING	2000 PSI
MASONRY BEARING	1350 PSI

NOTES:

DETAILS AND DIMENSIONS SHOWN FOR BEARINGS ARE FOR ILLUSTRATION ONLY. THE CONTRACTOR SHALL SUBMIT DETAILS AND SPECIFICATIONS FROM THE BEARING MANUFACTURER FOR APPROVAL BY THE ENGINEER. BEARINGS SHALL BE DESIGNED IN ACCORDANCE WITH AREMA 2014.

BEARING MANUFACTURER SHALL SUPPLY SOLE PLATES TO THE BEAM FABRICATOR. PAYMENT FOR SOLE PLATES SHALL BE INCLUDED IN PAYMENT FOR "BEARING ASSEMBLY". SOLE PLATES ARE SHOWN FOR INFORMATION ONLY.

GALVANIZE SOLE PLATE, MASONRY PLATE, NUTS, WASHERS AND ANCHOR BOLTS PER ASTM A 123 (MnDOT SPEC. 3394). MINIMUM ZINC COATING OF 2 OZ. PER SQUARE FOOT.

METALIZE NON–SLIDING SURFACES OF THE CONCAVE PLATE AND THE TOP PLATE PER MnDOT SPEC. 2471.3L2.

SOLE PLATE SHALL BE BOLTED TO THE UNDERSIDE OF GIRDERS AND FLOORBEAMS USING COUNTERSUNK OR COUNTERBORED 7/8" DIA. ASTM A325 BOLTS. WELDING OF SOLE PLATES SHALL NOT BE PERMITTED.

ANY ADJUSTMENT IN ELEVATION NECESSARY TO ACCOMMODATE THE BEARING THAT IS SUPPLIED SHALL BE MADE BY ADJUSTING THE TOP OF PIER AND ABUTMENT ELEVATIONS. THE PROFILE GRADE OF THE SUPERSTRUCTURE SHALL REMAIN UNCHANGED. ANY CHANGE IN ELEVATION OF THE TOP OF PIERS OR ABUTMENTS WILL NOT BE ALLOWED WITHOUT APPROVAL OF THE ENGINEER.

PINTLES AND ALL MATERIAL FOR BEARING WELDMENTS INCLUDING TOP PLATES AND BASE PLATES SHALL CONFORM TO MnDOT SPEC. 3309 (GRADE 50W) STEEL UNLESS OTHERWISE NOTED.

ANCHOR BOLTS SHALL CONFORM TO MnDOT SPEC. 3385 TYPE B.

ALL STRUCTURAL STEEL BEARING PLATES SHALL BE FLAT ROLLED STEEL PLATES WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL.

ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.

BEARING WELDMENTS SHALL BE FULLY STRESS RELIEVED AFTER WELDING IS COMPLETED AND BEFORE FINISHING.

RADIAL SURFACES OF WELDMENTS SHALL BE MACHINE FINISHED AFTER WELDING.

AFTER WELDING BEARING ASSEMBLIES, FINISH BOTTOM OF BASE PLATE TO A FLAT SURFACE.

ANCHOR BOLTS ARE LOCATED TO CLEAR BRIDGE SEAT REINFORCEMENT.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

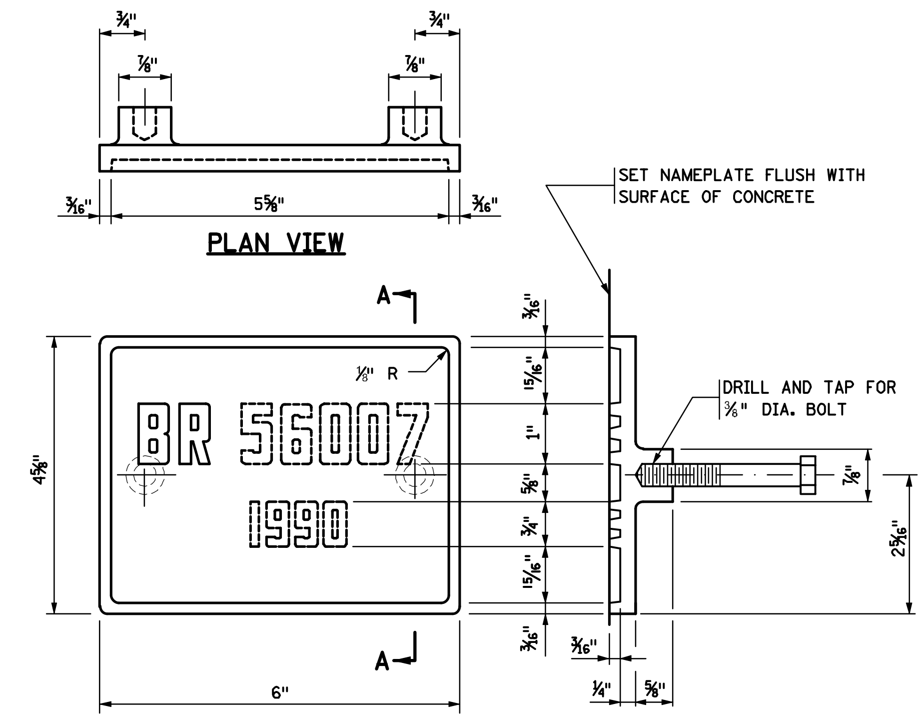
AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
BEARING ASSEMBLY DETAILS

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-EXP-003



PLAN VIEW

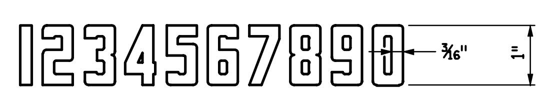
ELEVATION

SECTION A-A

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

BRIDGE 27C14

YEAR ①



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.

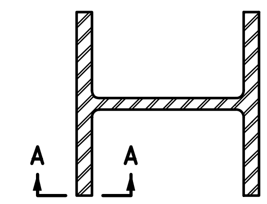
TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.

FURNISH 2 STEEL BOLTS ⅜" DIA. × 3" LONG WITH EACH PLATE.

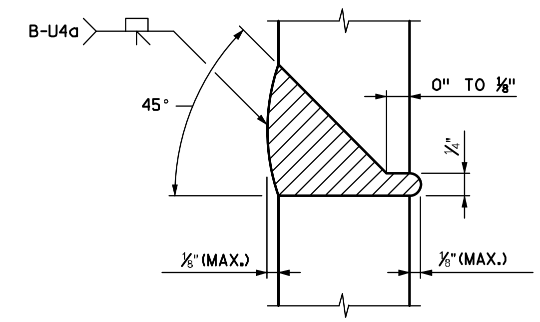
ALL DIMENSIONS FOR ¾" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

① YEAR OF CONSTRUCTION

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



SECTION AT SPLICE



SECTION A-A

100% BUTT WELDED PILE SPLICE

NOTES:

CELLULOSIC TYPE ELECTRODES E-6010 OR E-6011 SHALL BE USED FOR 100% BUTT WELDED SPLICES.

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.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION: 11-06-2013	DETAIL NO.
STATE BRIDGE ENGINEER	PILE SPLICE (STEEL H BEARING PILES 10" TO 14")		B202

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

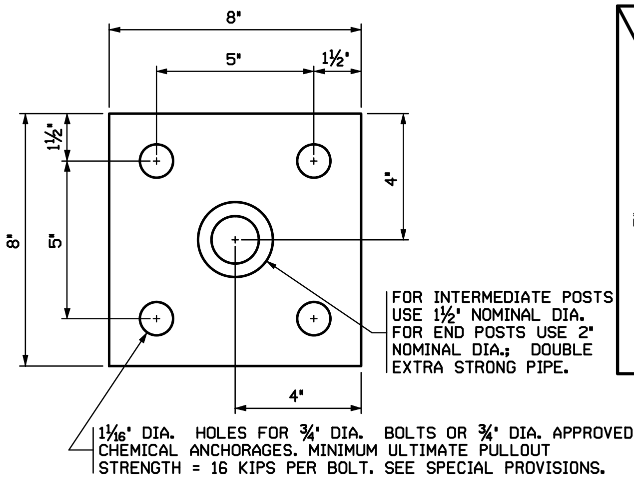
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
BRIDGE DETAILS 1

DISCIPLINE: STRUCTURES

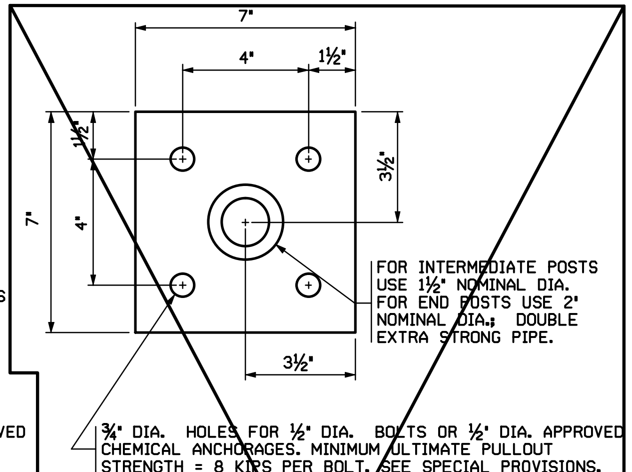
SHEET NAME: CBR27C14-BRG-DTL-003

Jan. 18 2016 01:42 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-DTL-003.dwg By: Joe.Menapace



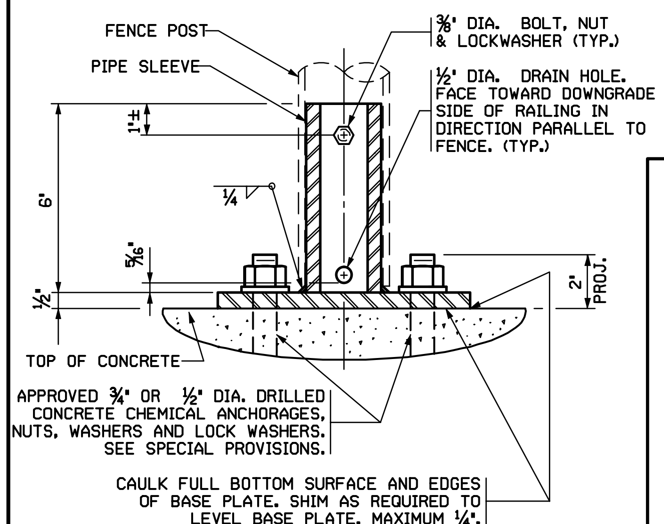
PLAN VIEW - TYPE A

ESTIMATED WEIGHT = 12 OR 14 LBS.

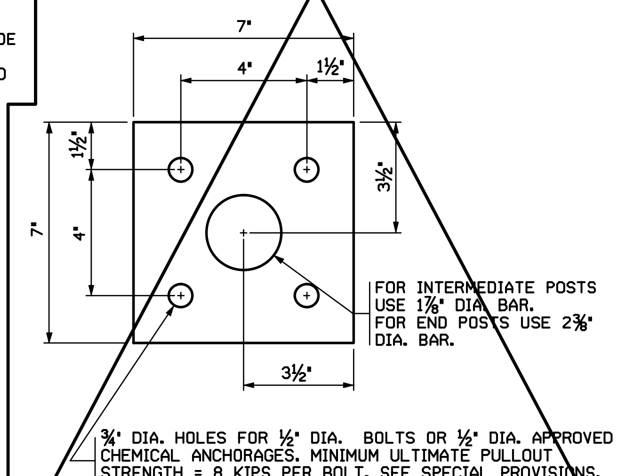


PLAN VIEW - TYPE B

ESTIMATED WEIGHT = 10 OR 12 LBS.

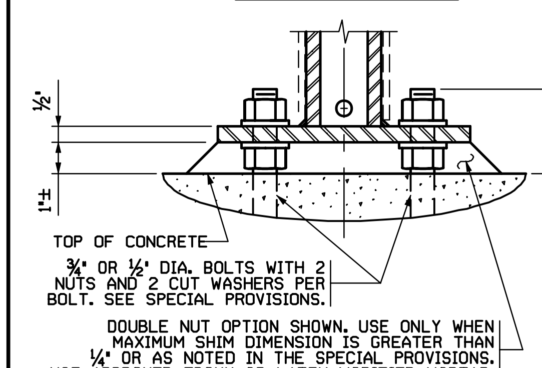


TYPICAL SECTION



PLAN VIEW - TYPE C

ESTIMATED WEIGHT = 12 OR 15 LBS.



GROUT ALTERNATE

NOTES:

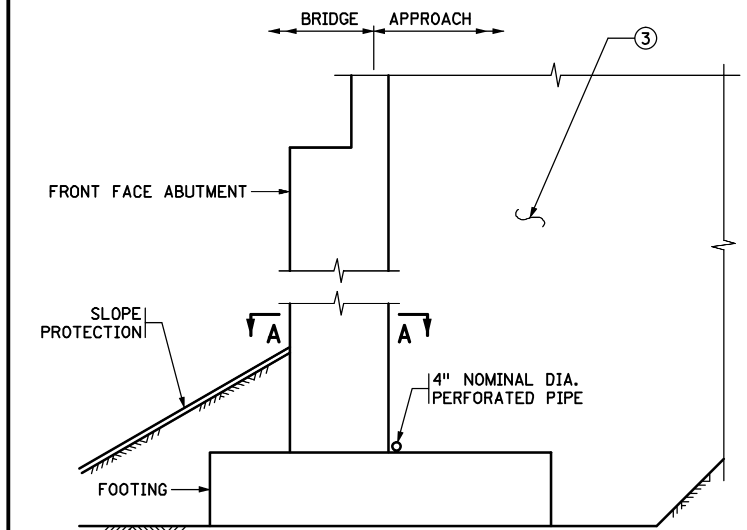
STRUCTURAL STEEL PER Mn/DOT SPEC. 3306

STRUCTURAL PIPE PER Mn/DOT SPEC. 3362

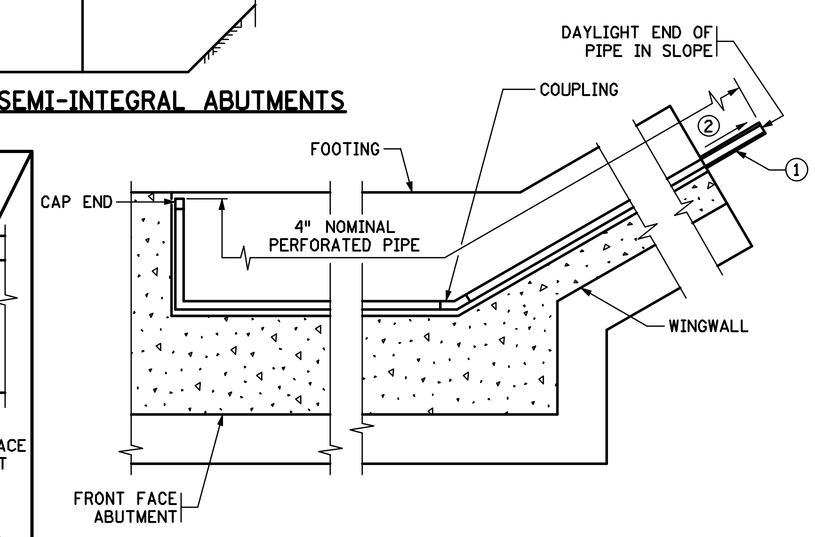
GALVANIZE THE FENCE POST ANCHORAGE AFTER FABRICATION PER Mn/DOT SPEC. 3394. GALVANIZE THE FASTENERS PER Mn/DOT SPEC. 3392.

DOUBLE EXTRA STRONG PIPE WEIGHTS:
1½" NOMINAL DIA. = 6.41 LBS./FT.
2" NOMINAL DIA. = 9.03 LBS./FT.

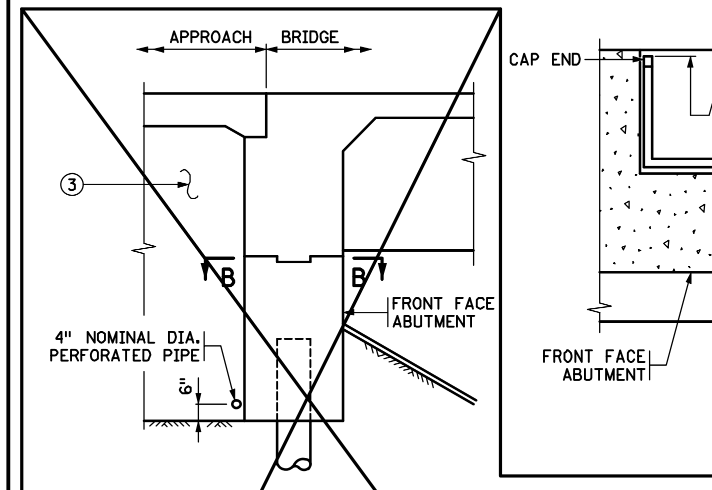
APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
STATE BRIDGE ENGINEER	FENCE POST ANCHORAGE		B905



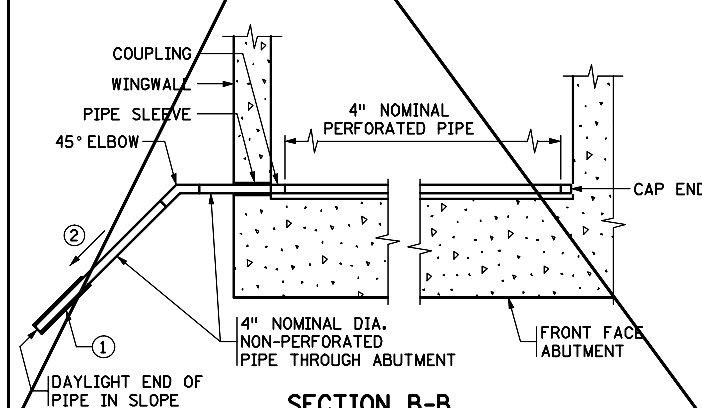
SECTION THROUGH PARAPET AND SEMI-INTEGRAL ABUTMENTS



SECTION A-A



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 MANTAINED.

USE PRECAST CONCRETE HEADWALL WITH RODENT SCREEN. SEE STANDARD PLATE 3131 FOR DETAILS.

2 ⅛" 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.
STATE BRIDGE ENGINEER	DRAINAGE SYSTEM		B910 (MOD.)

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: ZEG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
BRIDGE DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-DTL-004

SHEET 47 OF 52

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 L. Dorgan

STATE BRIDGE ENGINEER

AS-BUILT DETAILS
(AS NEEDED)

FIG. 5-397.900

TITLE: AS-BUILT BRIDGE DATA

DES: DR: CHK: CHK: APPROVED:

SHEET NO. 48 OF 52 SHEETS

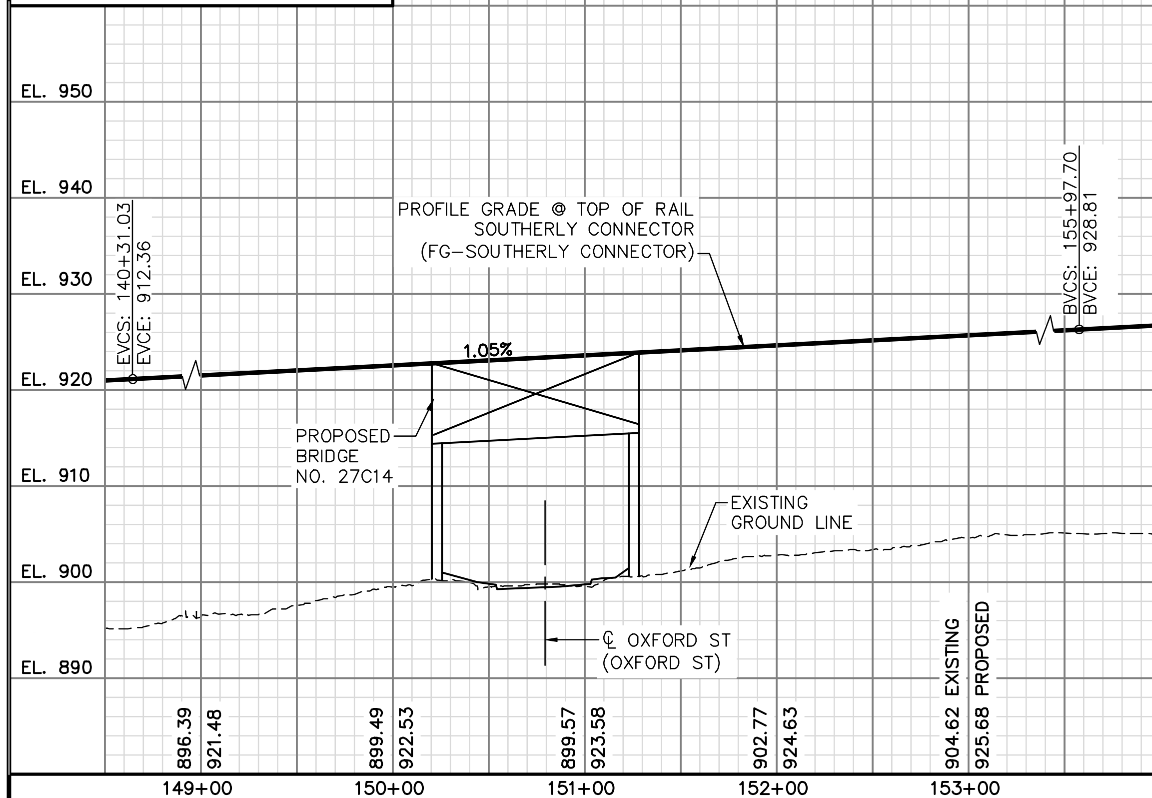
BRIDGE NO. 27C14

CONTRACTED PROFILE

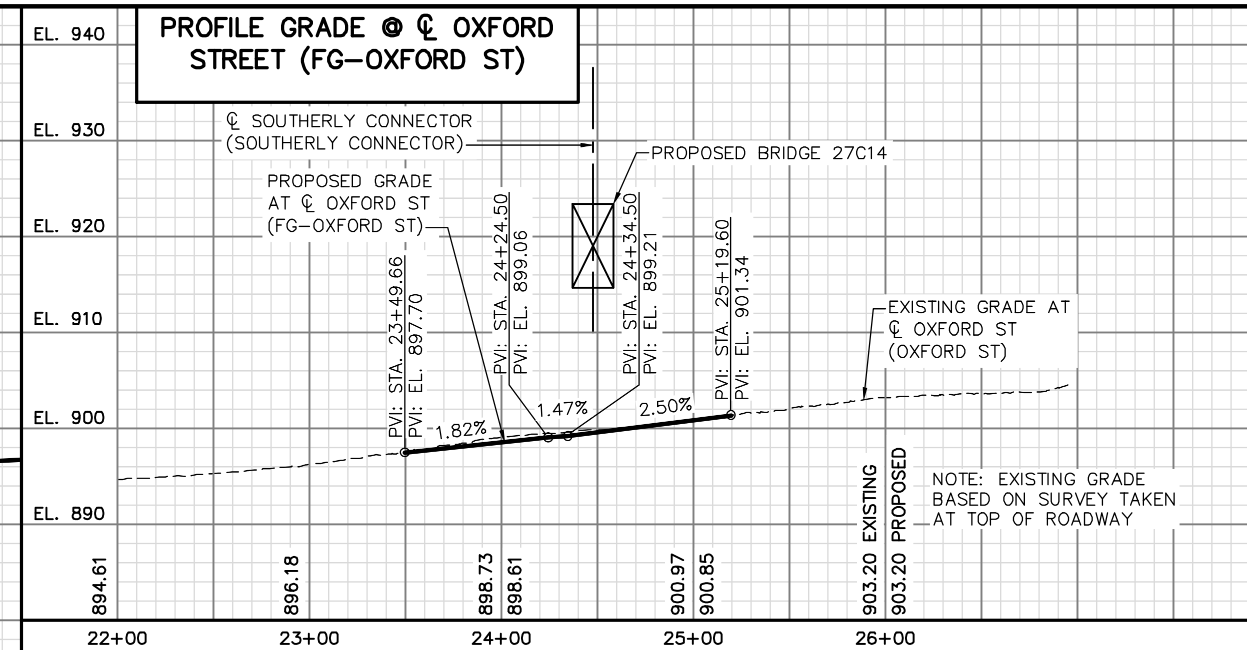
SCALE HOR: 0 50'

SCALE VER: 0 10'

PROFILE GRADE @ TOP OF RAIL SOUTHERLY CONNECTOR (FG–SOUTHERLY CONNECTOR)



PROFILE GRADE @ ℄ OXFORD STREET (FG–OXFORD ST)



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 (PARTICULARY 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 ENGINEER'S RECOMMENDATION

DATE:

STREAM OR DITCH DESIGNATION

DRAINAGE AREA

MAX FLOOD ON RECORD

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

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

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

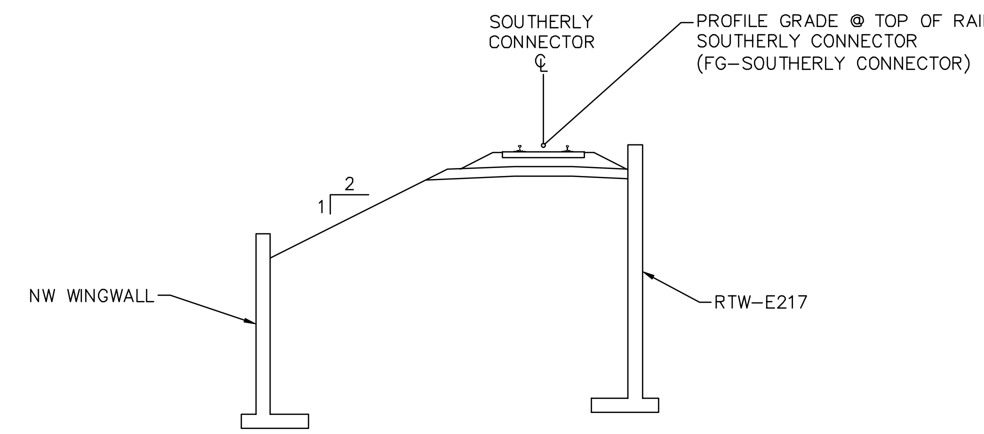
FLOWLINE ELEVATION: FT. SKEW ANGLE:

ESTIMATED PRLIMINARY TOTAL SCOUR AT PIER EL.
(500 OR OT YR. FREQ.)

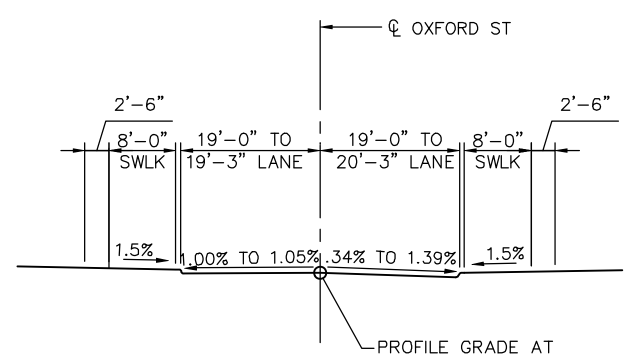
SCOUR CONFIRMATION RECOMMENDATION

DATE:

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



TYPICAL APPROACH SECTION
SOUTHERLY CONNECTOR



TYPICAL ROADWAY SECTION
OXFORD ST

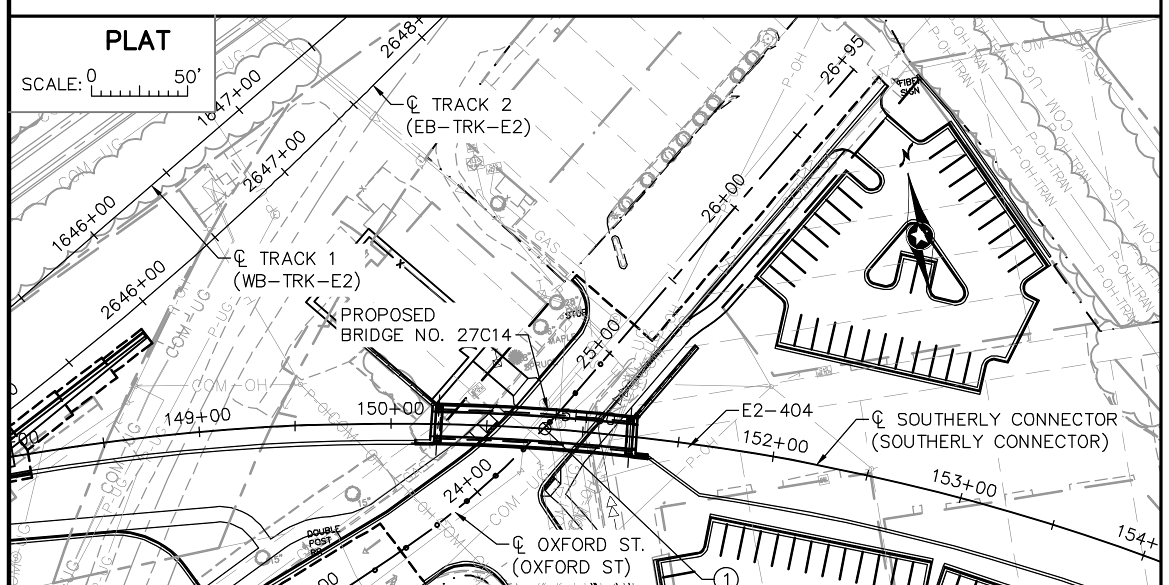
BRIDGE SURVEY SHEETS MADE FROM 2014 MFRA SURVEYS

1ST BENCH MARK (NAVD 88)
BENCHMARK ID PT. 175
ELEVATION = 896.03
N = 152982.35, E = 505138.46
DESCRIPTION = MAG NAIL IN BIT.

2ND BENCH MARK (NAVD 88)
BENCHMARK ID PT. 167
ELEVATION = 899.33
N = 151921.95, E = 505886.04
DESCRIPTION = ½" PIPE W/ CAP

PLAT

SCALE: 0 50'



NOTES:

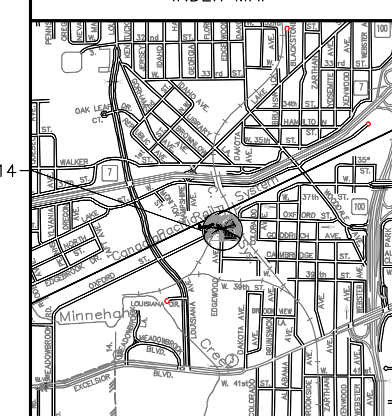
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38–02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

(1) CONTROL POINT
℄ SOUTHERLY CONNECTOR
STA. 150+79.56
℄ OXFORD ST
STA. 24+47.79
X = 505461.453
Y = 152550.846
Δ = 50°34'40.6" TTC

CURVE NO. E2–404
Dc = 5° 00' 0.00" RH
R = 1,146.28'
Lc = 1,295.97'
Ls = 93.00'
Ea = 0.50"
Eu = 0.29"
V = 15 MPH

INDEX MAP

PROPOSED BRIDGE NO. 27C14



BRIDGE SURVEY

CP RAILWAY OVER OXFORD STREET
0.3 MILES SOUTHEAST OF JCT. T.H. 7 AND LOUISIANA AVENUE SOUTH.

N

SEC 17 T 117 N R 21 W

ST. LOUIS PARK HENNEPIN COUNTY

BRIDGE NO. 27C14

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

90% SUBMISSION - 01/22/16

AECOM Kimley»Horn

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

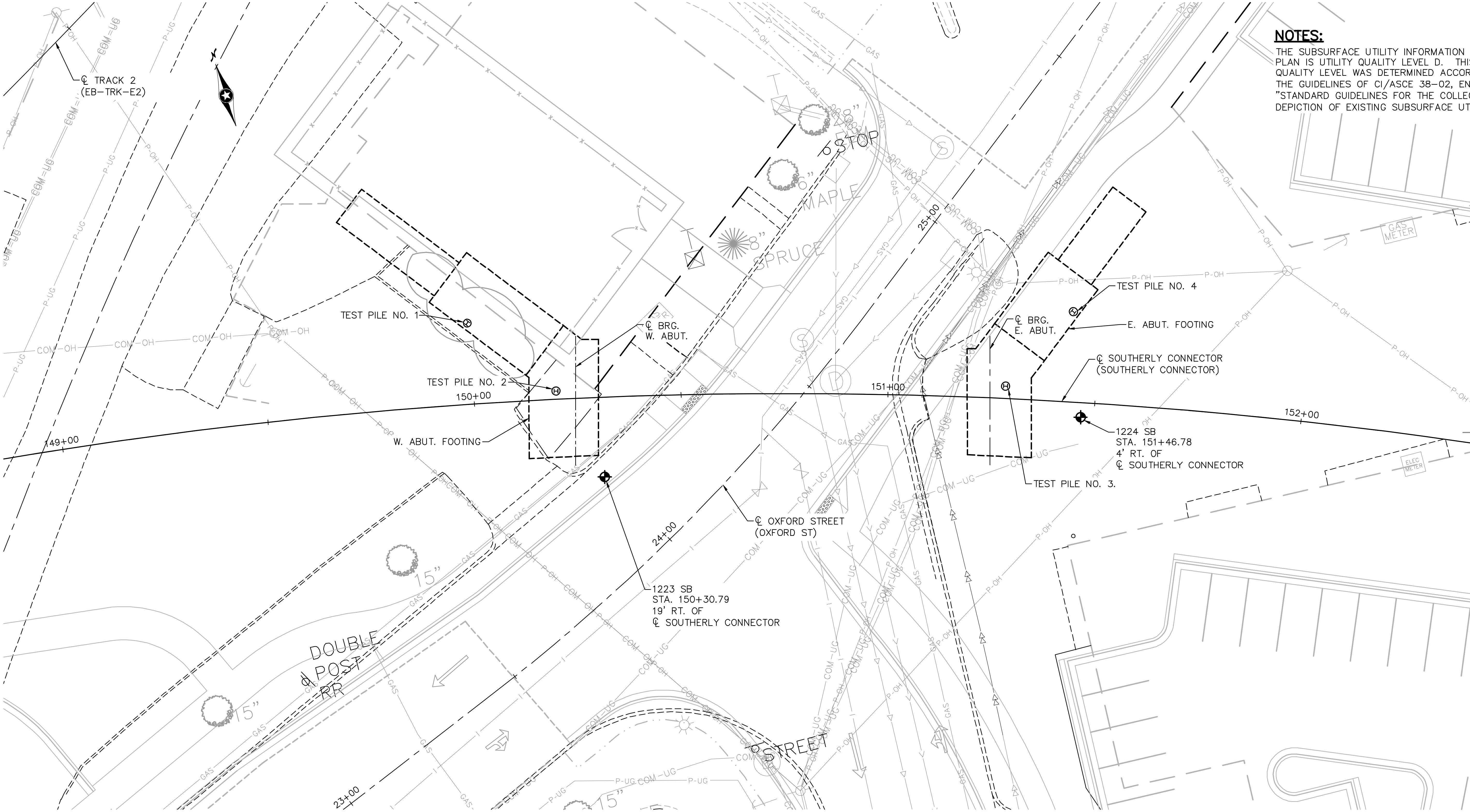
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
BRIDGE SURVEY

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-SUR-001

SHEET 49 OF 52

Jan. 18 2016 01:49 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-SUR-001.dwg By: Joe.Menapace



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."

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GAG CHECKED BY: DLS
DRAWN BY: KAG CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

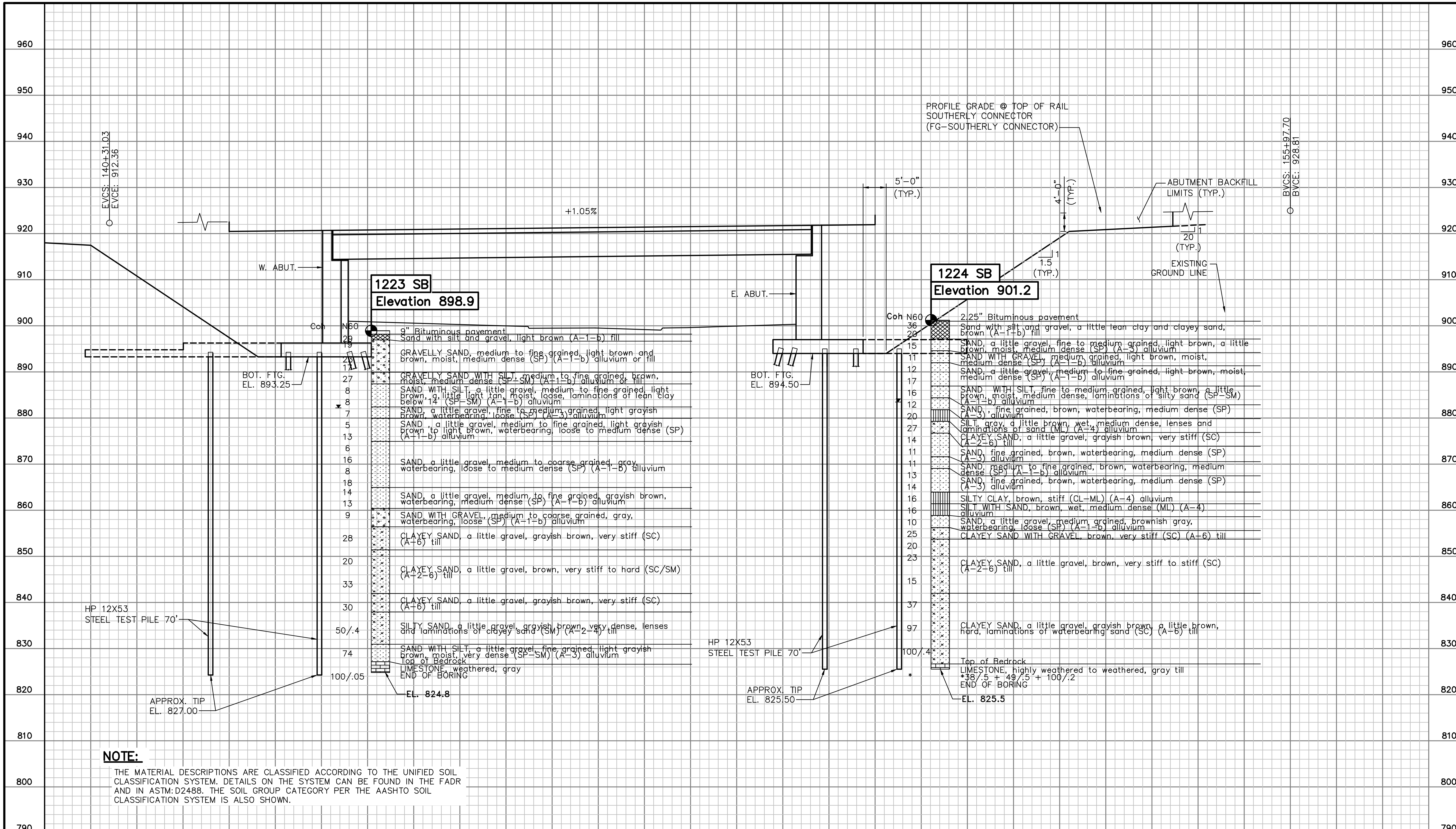
CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
BRIDGE SURVEY PLAN

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-BOR-001

SHEET 50 OF 52

Jan. 18 2016 01:51 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-BOR-001.dwg By: Joe.Menapace



NOTE:

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. THE SOIL GROUP CATEGORY PER THE AASHTO SOIL CLASSIFICATION SYSTEM IS ALSO SHOWN.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ZEG | CHECKED BY: DLS
DRAWN BY: ZEG | CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
BRIDGE SURVEY PROFILE

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C14-BRG-BOR-002

Jan, 18 2016 01:52 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\SCOX-FRT\CBR27C14-BRG-BOR-002.dwg By: Joe.Menapace

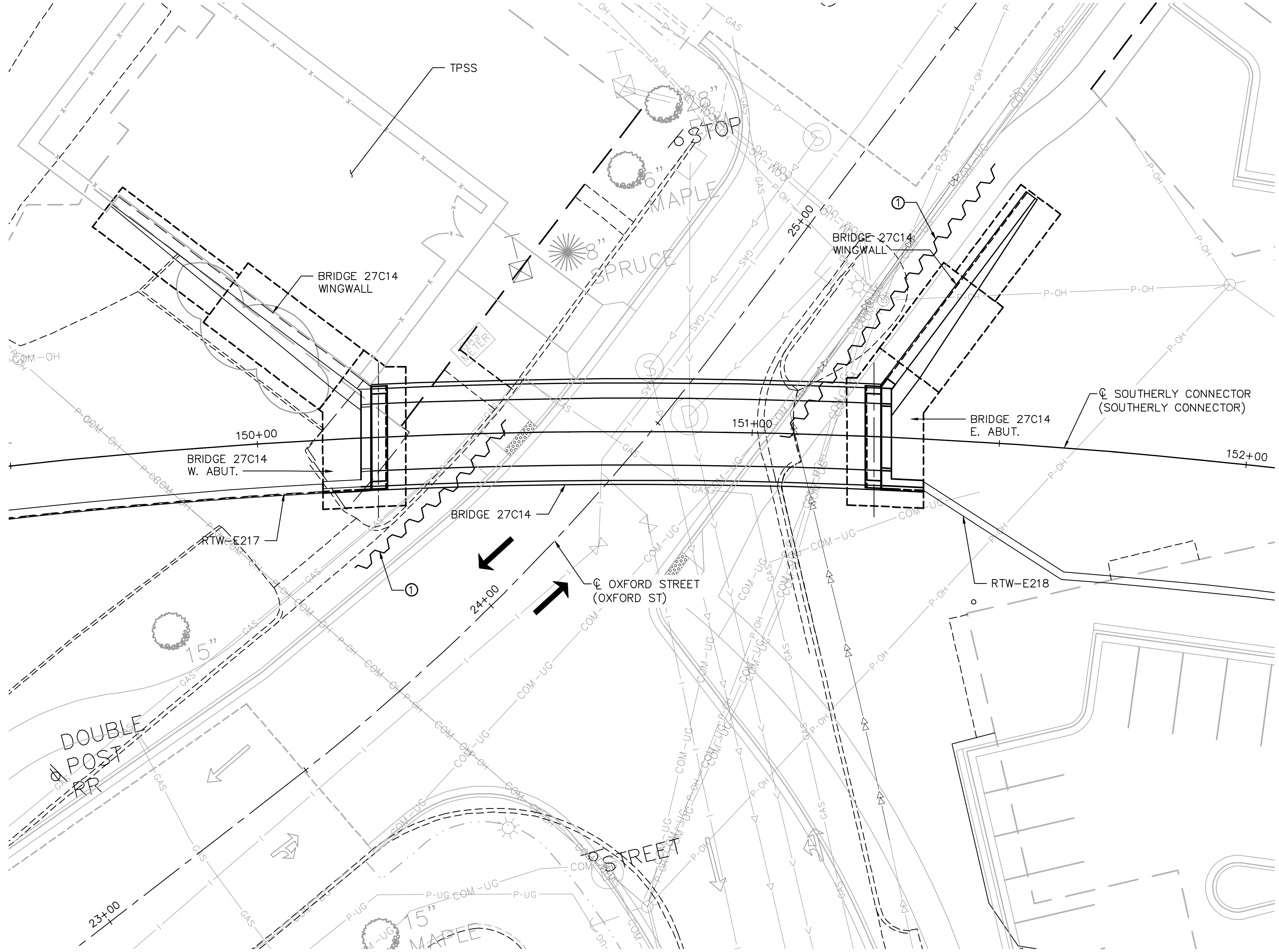
STAGING NOTES:

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 PRIOR TO BRIDGE CONSTRUCTION. SEE UTILITY PLANS.

MAINTAIN TRAFFIC ON OXFORD STREET DURING BRIDGE CONSTRUCTION.

① SOE AS NECESSARY.



PROPOSED CONSTRUCTION SEQUENCING – STAGE 1

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: CJS CHECKED BY: DLS
DRAWN BY: JFM CHECKED BY: DLS

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

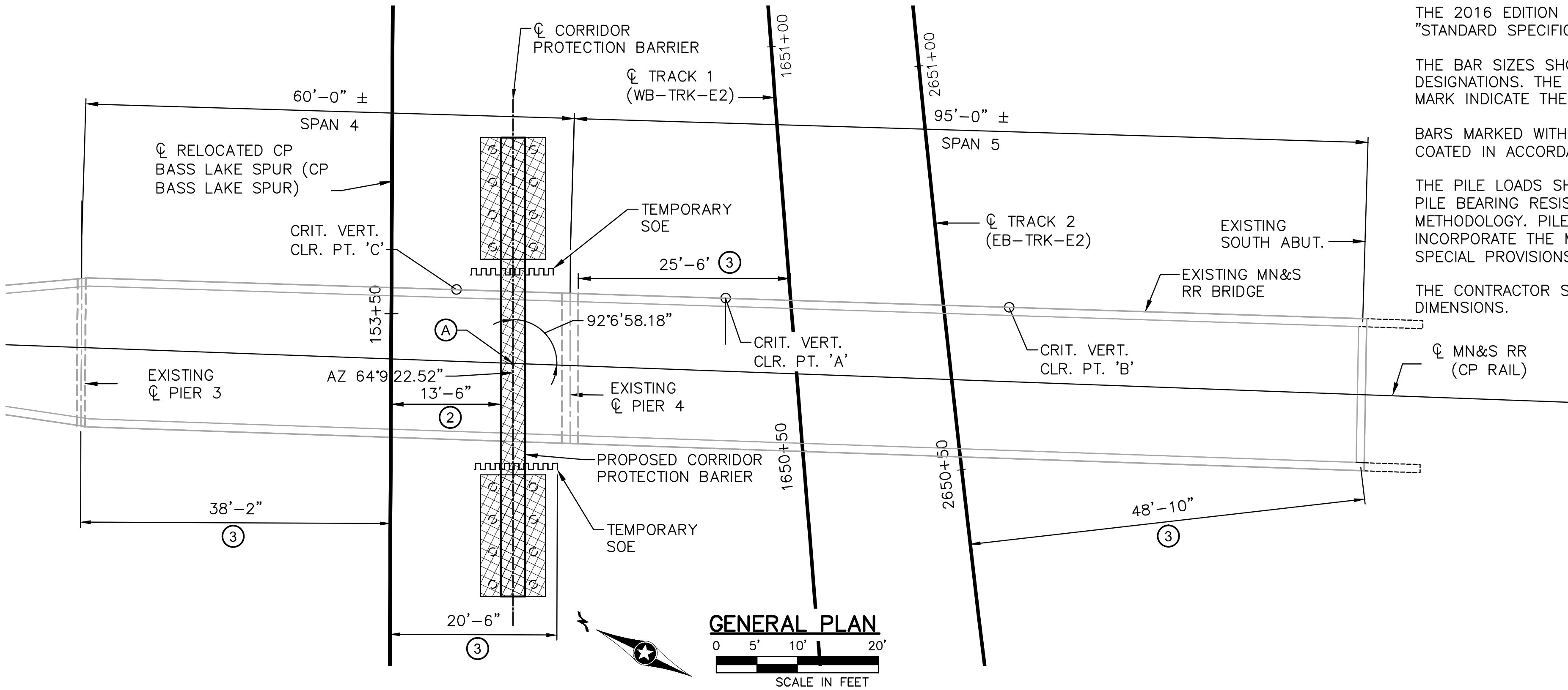
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
SOUTHERLY CONNECTOR AT OXFORD ST
BRIDGE 27C14
STAGING PLAN

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C14-BRG-STG-001

SHEET 52 OF 52



GENERAL PLAN

0 5' 10' 20'
SCALE IN FEET

CONSTRUCTION NOTES

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

THE BAR SIZES SHOWN IN THIS PLAN ARE IN U.S. CUSTOMARY DESIGNATIONS. THE FIRST DIGIT OR THE FIRST TWO DIGITS OF EACH 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 CONTRACTOR SHALL FIELD VERIFY IN-PLACE BRIDGE ELEVATIONS AND DIMENSIONS.

DESIGN DATA

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION WITH 2015 INTERIM REVISIONS

2014 AREMA MANUAL FOR RAILWAY ENGINEERING

LOAD AND RESISTANCE FACTOR DESIGN METHOD

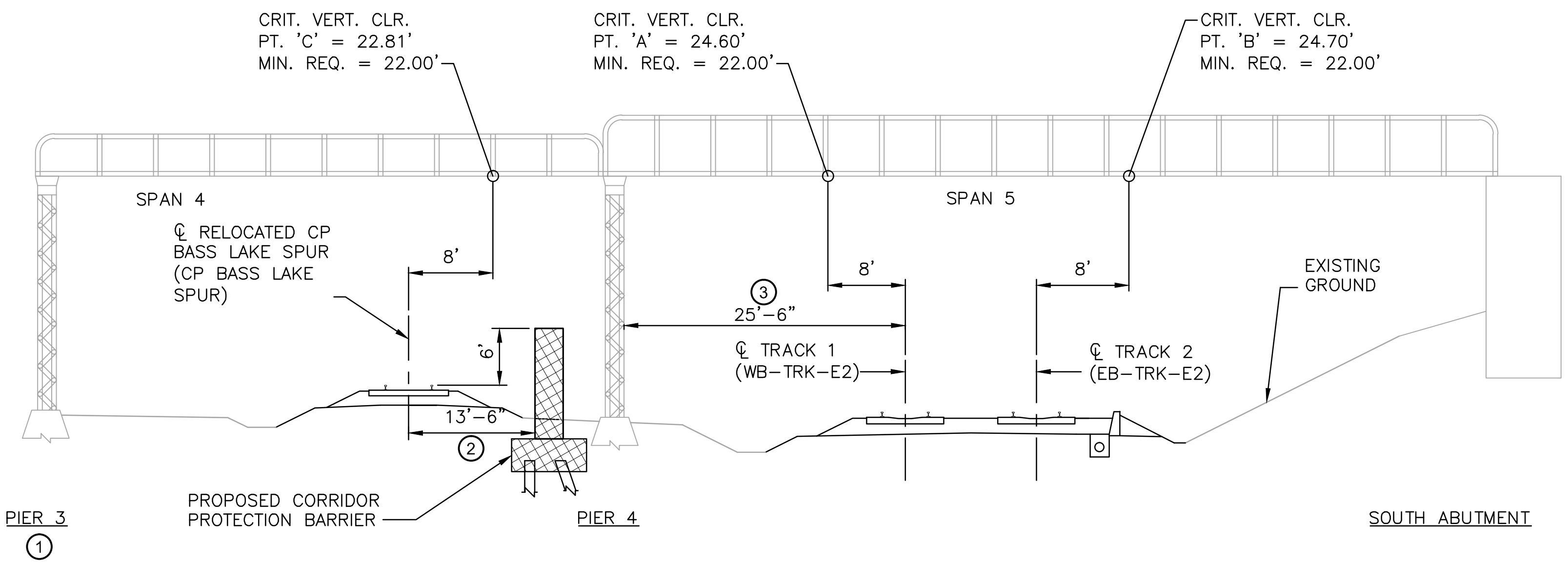
SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0)

RAILWAY COLLISION LOAD = 600 K

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4000 PSI n = 8
fy = 60000 PSI REINFORCEMENT

LIST OF SHEETS

NO.	DESCRIPTION
1	GENERAL PLAN AND ELEVATION
2	LAYOUT AND QUANTITIES
3	DETAILS 1
4	DETAILS 2
5	REINFORCEMENT 1
6	REINFORCEMENT 2
7	REINFORCEMENT 3
8	AESTHETIC DETAILS



GENERAL ELEVATION

0 5' 10' 20'
SCALE IN FEET

NOTES:

PLANS BASED ON LIMITED FIELD SURVEY.
CONTRACTOR SHALL FIELD VERIFY DIMENSIONS OF EXISTING BRIDGE AND PROVIDE TO ENGINEER A PLAN SHOWING EXISTING BRIDGE DIMENSIONS PRIOR TO PERFORMING ANY EXCAVATION.

CARE SHALL BE TAKEN TO PREVENT ANY DISTURBANCE TO THE EXISTING BRIDGE. FOUNDATIONS SHALL NOT BE UNDERMINED BY EXCAVATION ACTIVITIES.

(1) PIER PROTECTION NOT REQUIRED ON PIER 3

(2) HORIZONTAL OFFSET SHOWN IS MEASURED PERPENDICULAR FROM CENTERLINE OF TRACK TO FACE OF CORRIDOR PROTECTION BARRIER AT CLOSEST POINT

(3) HORIZONTAL OFFSET SHOWN IS MEASURED PERPENDICULAR FROM CENTERLINE OF TRACK TO FACE OF PIER AT CLOSEST POINT

(A) CONTROL POINT

PROPOSED CORRIDOR PROTECTION BARRIER

FOR AESTHETIC DETAILS REFER TO SHEET 8

CORRIDOR PROTECTION BARRIER AT MN&S RR (CP RAIL)

CP RAIL OVER CP RR, SOUTHWEST LRT, AND CEDAR LAKE TRAIL

57'–0" LONG CAST IN PLACE CONCRETE STAND ALONE PILE SUPPORTED CORRIDOR PROTECTION BARRIER

BRIDGE I.D. NO. 305

GENERAL PLAN AND ELEVATION

SEC 17 T 117N R 21W
CITY OF ST. LOUIS PARK HENNEPIN COUNTY

JOB NO. T9N635 STATE PROJECT NO. 9909–01 MNDOT REVIEW: JOE NIETFELD

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AMC CHECKED BY: LKZ
DRAWN BY: EBM CHECKED BY: LKZ

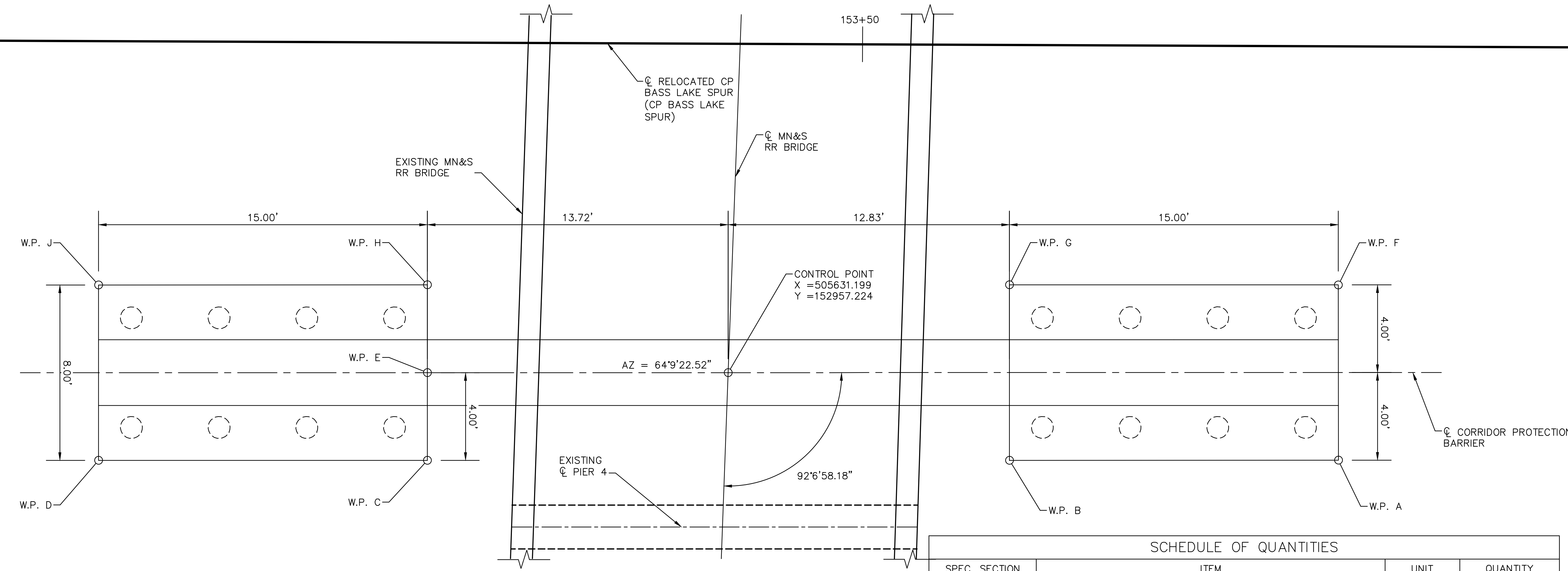
AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
MN&S RR (CP RAIL)
CORRIDOR PROTECTION BARRIER
GENERAL PLAN AND ELEVATION

DISCIPLINE: STRUCTURES
SHEET NAME: EX2-STU-PPR-MNSR-FRT-GPE-001



GENERAL PLAN

0 2' 4' 8' SCALE IN FEET

NOTES:

STATIONS ARE TAKEN FROM ℄ CP BASS LAKE SPUR (CP) BASS LAKE SPUR)

SCHEDULE OF QUANTITIES			
SPEC. SECTION	ITEM	UNIT	QUANTITY
–	CONSTRUCT CP RAIL CORRIDOR PROTECTION BARRIER	LUMP SUM	1
COMPONENT ITEM SUMMARY (CP RAIL CORRIDOR PROTECTION BARRIER)			
SPEC. SECTION (2)	COMPONENT ITEM	UNIT (1)	QUANTITY (1)
2401	STRUCTURAL CONCRETE (1G52)	CU YD	
2401	STRUCTURAL CONCRETE (3B52)	CU YD	
2401	REINFORCEMENT BARS (EPOXY COATED)	POUND	
2411	ARCHITECTURAL CONCRETE TEXTURE	SQ FT	
2451	STRUCTURE EXCAVATION CLASS U	CU YD	
2452	C-I-P CONCRETE PILING INSTALLED 12"	LIN FT	
2452	C-I-P CONCRETE TEST PILE 50 FT LONG 12"	EACH	
2452	STEEL SHEET PILING (TEMPORARY)	LUMP SUM	

(1) QUANTITIES LISTED FOR THE COMPONENT ITEMS OF THE LUMP SUM CONSRUCT CP RAIL ITEM ARE FOR INFORMATION PURPOSES. ANY ADDITIONAL ITEMS OR CHANGES IN QUANTITIES REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

(2) MEASUREMENT AND PAYMENT FOR COMPONENT ITEMS SHALL BE PART OF THE LUMP SUM PAYMENT FOR CORRIDOR PROTECTION BARRIER. REFER TO MNDOT STANDARD SPECIFICATION OR SPECIAL PROVISION FOR TECHNICAL SPECIFICATION REQUIREMENTS FOR ALL PROVISIONS OTHER THAN MEASUREMENT & PAYMENT REQUIREMENTS.

DIMENSIONS BETWEEN WORKING POINTS											COORDINATES		ELEVATION	
POINT	STATION	A	B	C	D	E	F	G	H	J	X	Y	TOP OF FOOTING	POINT
A	153+71.78		15.00				8.00	17.00			505657.991	152965.757	906.75	A
B	153+56.78			26.55		26.85	17.00	8.00	44.22		505644.492	152959.218	906.75	B
C	153+30.23				15.00	4.00		44.22	8.00	17.00	505620.597	152947.645	906.75	C
D	153+15.23					15.52			17.00	8.00	505607.097	152941.106	906.75	D
E	153+30.22							26.85	4.00	15.52	505612.347	152964.824	906.75	E
F	153+71.75							15.00			505654.504	152972.957	906.75	F
G	153+56.75								26.55		505641.004	152966.418	906.75	G
H	153+30.20									15.00	505617.110	152954.845	906.75	H
J	153+15.20										505603.610	152948.306	906.75	J

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AMC CHECKED BY: LKZ
DRAWN BY: EBM CHECKED BY: LKZ

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
MN&S RR (CP RAIL)
CORRIDOR PROTECTION BARRIER
LAYOUT AND QUANTITIES

DISCIPLINE: STRUCTURES

SHEET NAME: EX2-STU-PPR-MNSR-FRT-SUP-001

COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD	18
FACTORED COLLISION LOAD	42
*FACTORED DESIGN LOAD	60

* BASED ON EXTREME EVENT II LOAD COMBINATION.

REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES Rn - TONS/PILE		
FIELD CONTROL METHOD	φdyn	*Rn
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{W\ x\ H}{1000}}\ x log\left(\frac{10}{S}\right)$	0.5	65
PDA	0.65	85

* Rn = (FACTORED DESIGN LOAD) / φdyn

GENERAL PILE NOTES

2 12"ø CIP STEEL PIPE TEST PILES 50 FT. LONG

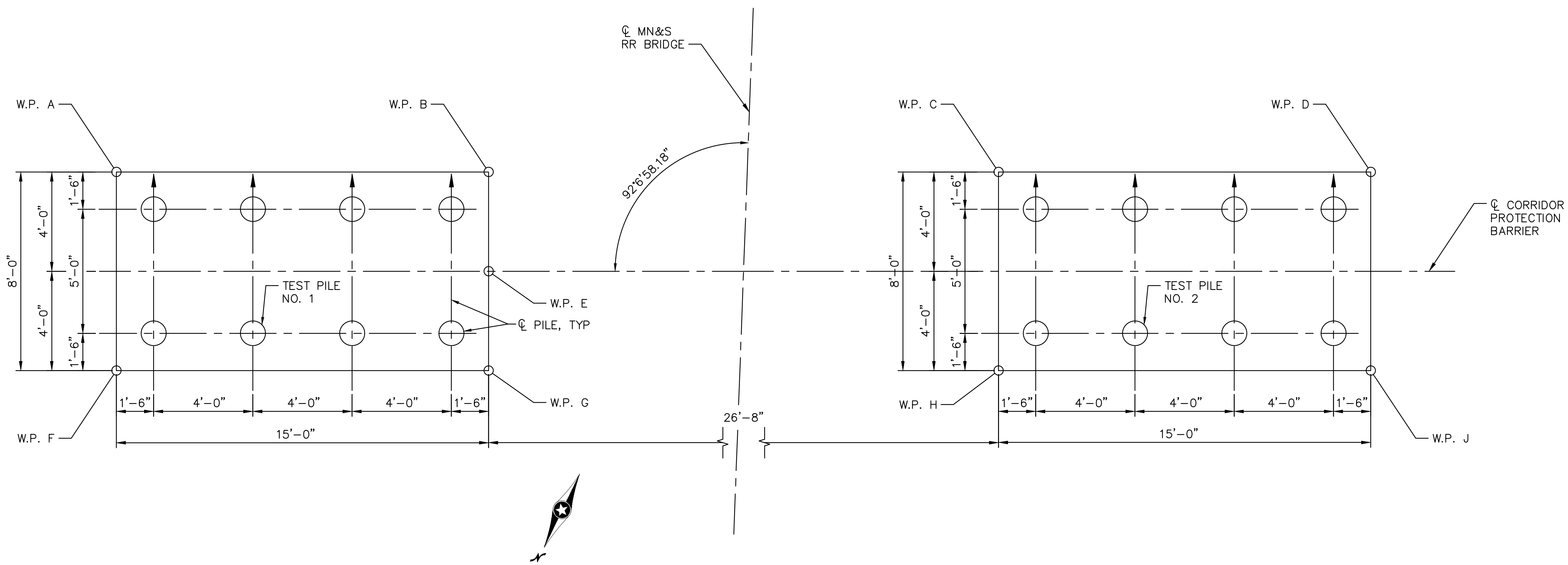
14 12"ø CIP STEEL PIPE PILES EST. 50 FT. LENGTH

16 12"ø CIP STEEL PIPE PILES REQ'D FOR CORRIDOR PROTECTION BARRIER FOUNDATION

ALL PILES TO BE 12"ø CIP STEEL PIPE PILE WITH ¼" THICK WALL.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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



FOOTING PLAN

NOTES:

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AMC CHECKED BY: LKZ
DRAWN BY: EBM CHECKED BY: LKZ

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

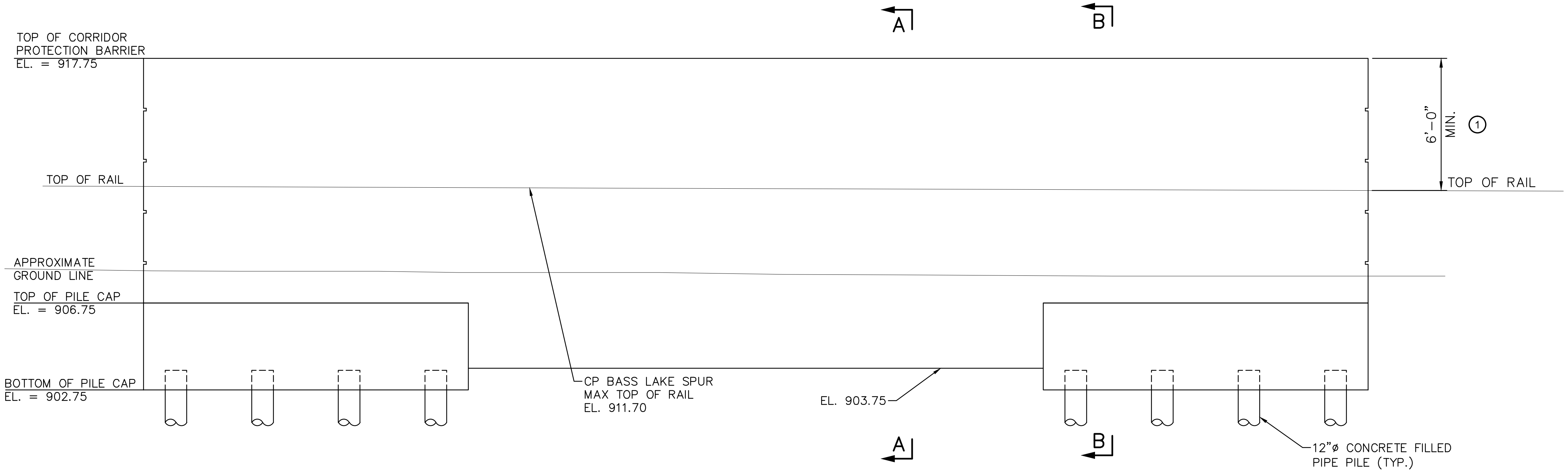
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
MN&S RR (CP RAIL)
CORRIDOR PROTECTION BARRIER
DETAILS 1

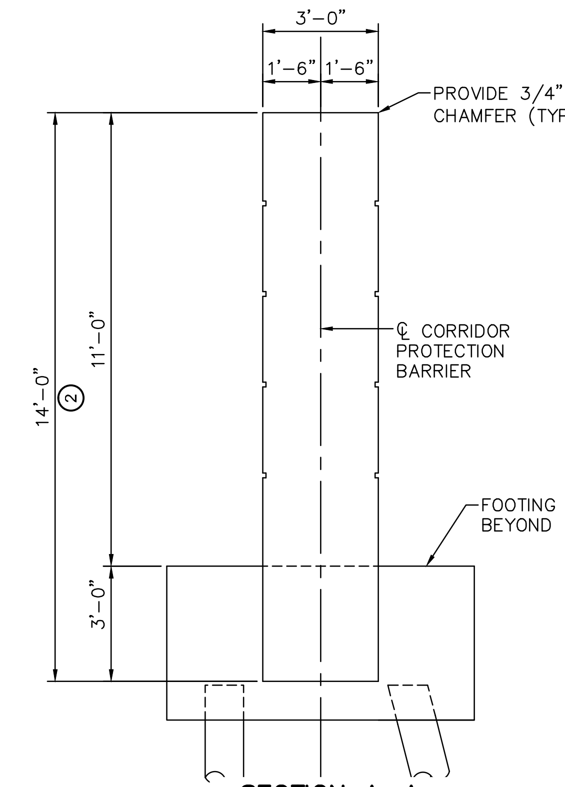
DISCIPLINE: STRUCTURES

SHEET NAME: EX2-STU-PPR-MNSR-FRT-PIR-001

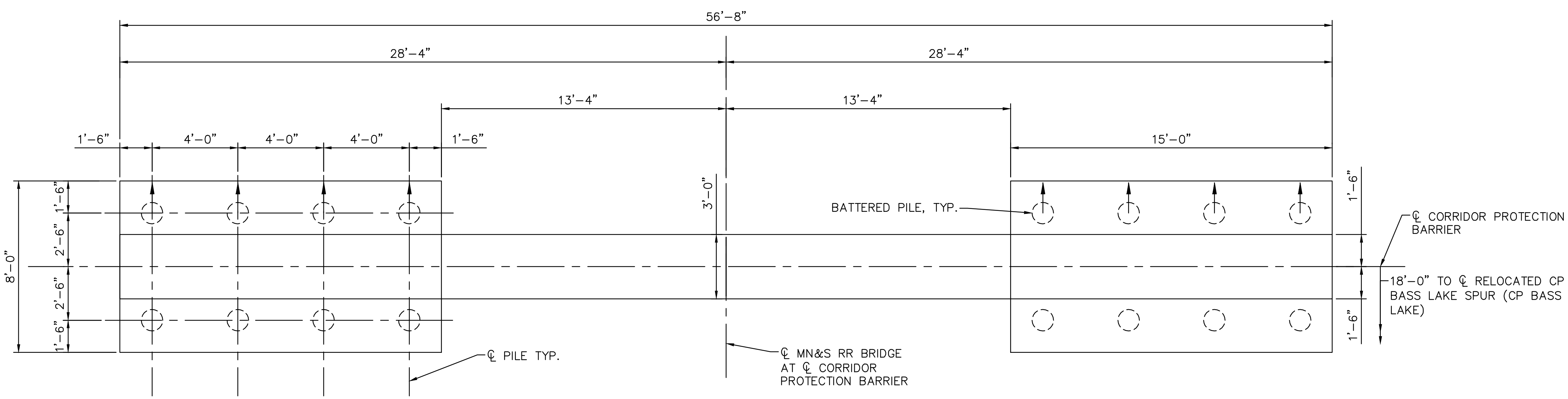
SHEET 3 OF 8



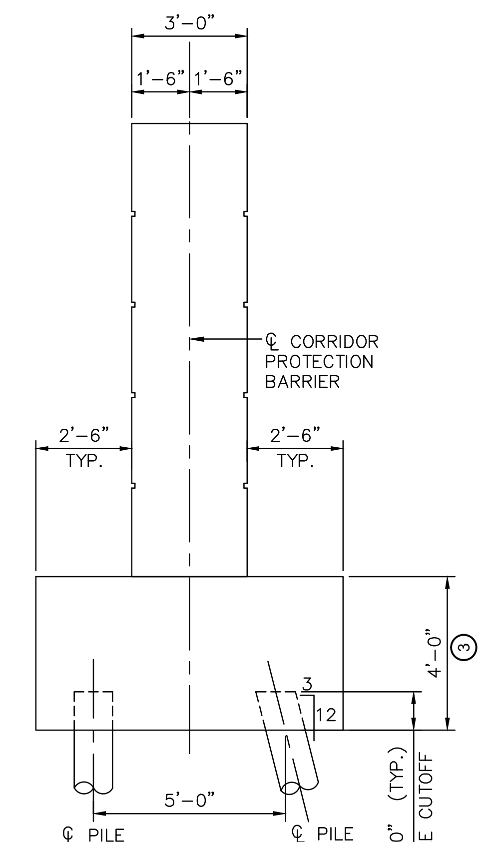
ELEVATION – CORRIDOR PROTECTION BARRIER



SECTION A–A



PLAN – CORRIDOR PROTECTION BARRIER



SECTION B–B

NOTES:

FOR AESTHETIC DETAILS REFER TO SHEET 8

① MINIMUM HEIGHT ABOVE MAX TOP OF RAIL

② STRUCTURAL CONCRETE (3G52), BARRIER WALL

③ STRUCTURAL CONCRETE (1G52) PILE CAP

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

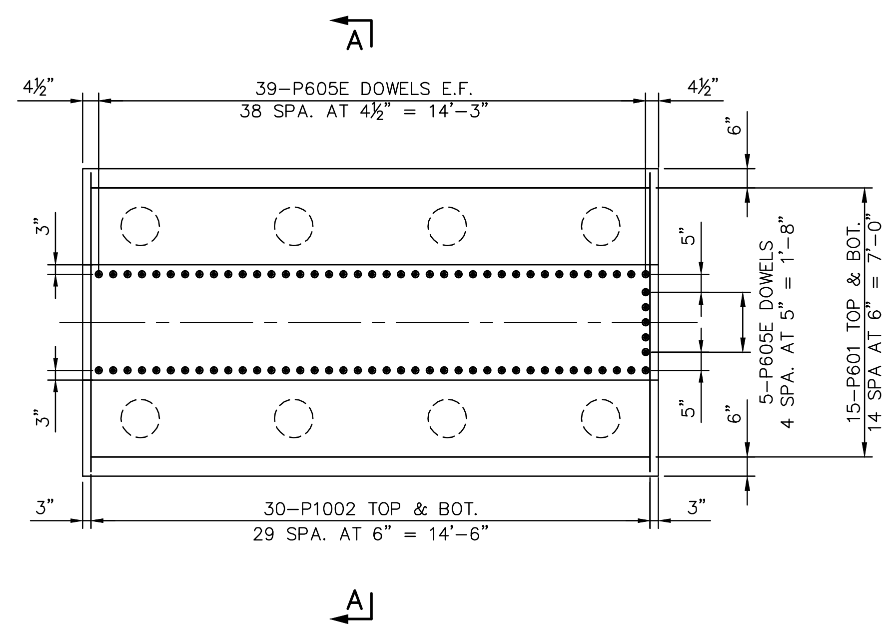
CIVIL - VOLUME 4E
MN&S RR (CP RAIL)
CORRIDOR PROTECTION BARRIER
DETAILS 2

DISCIPLINE: STRUCTURES

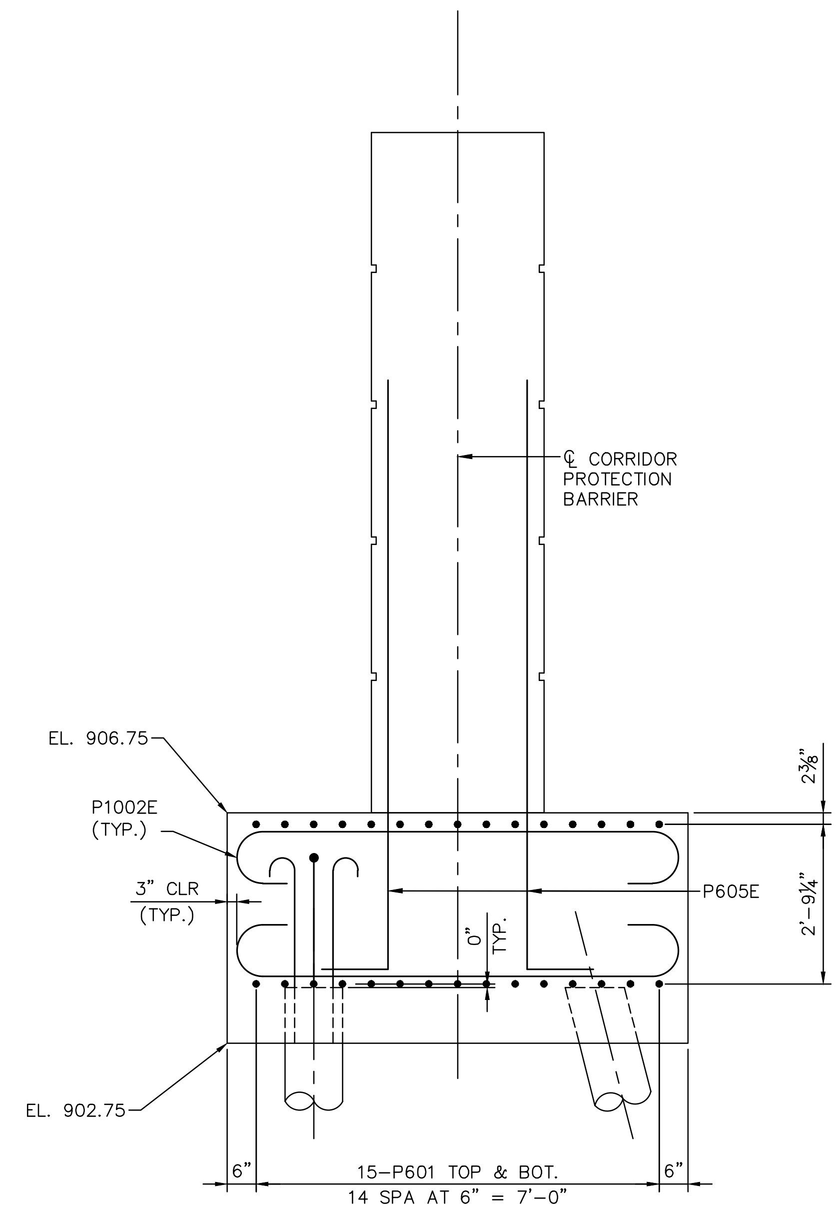
SHEET NAME: EX2-STU-PPR-MNSR-FRT-PIR-002

SHEET 4 OF 8

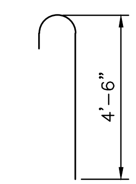
Jan. 12 2016 04:13 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\PIER PROTECTION\EX2-STU-PPR-MNSR-FRT-DTL.dwg By: Edgar.McKoy



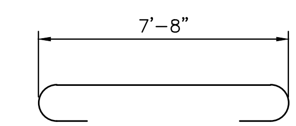
FOOTING PLAN



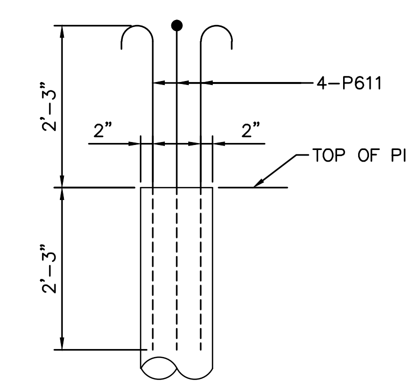
SECTION A–A



P611



P1002



PILE TIE DETAIL

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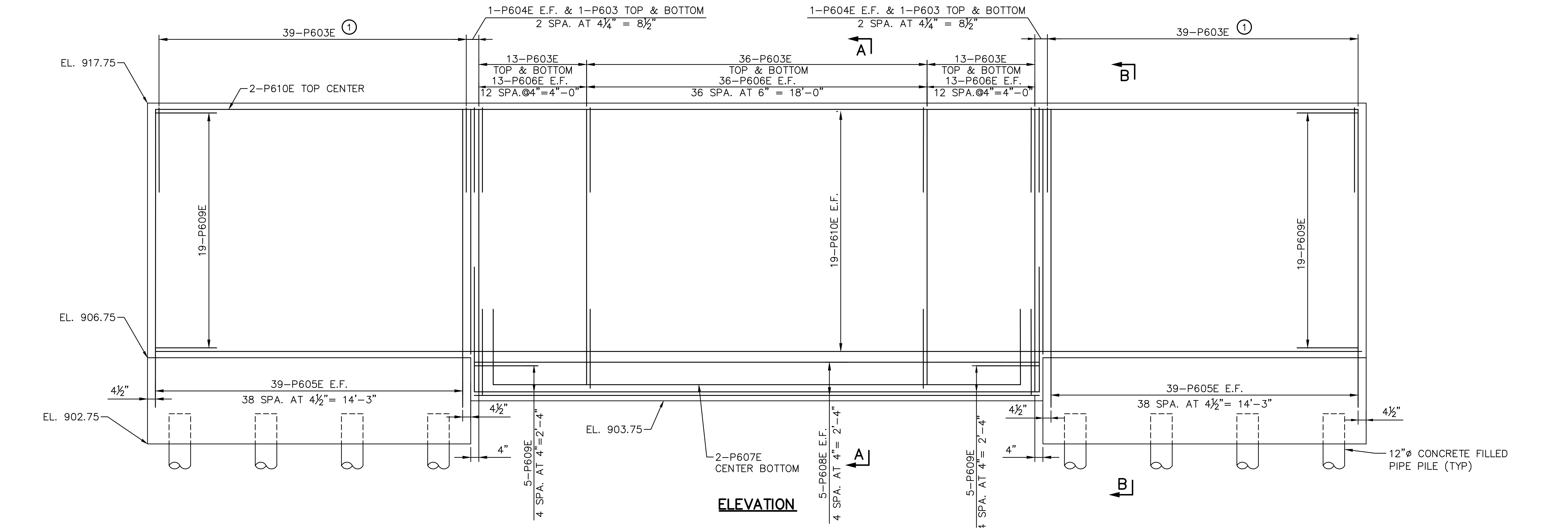
CIVIL - VOLUME 4E
MN&S RR (CP RAIL)
CORRIDOR PROTECTION BARRIER
REINFORCEMENT 1

DISCIPLINE: STRUCTURES

SHEET NAME: EX2-STU-PPR-MNSR-FRT-PIR-003

SHEET 5 OF 8

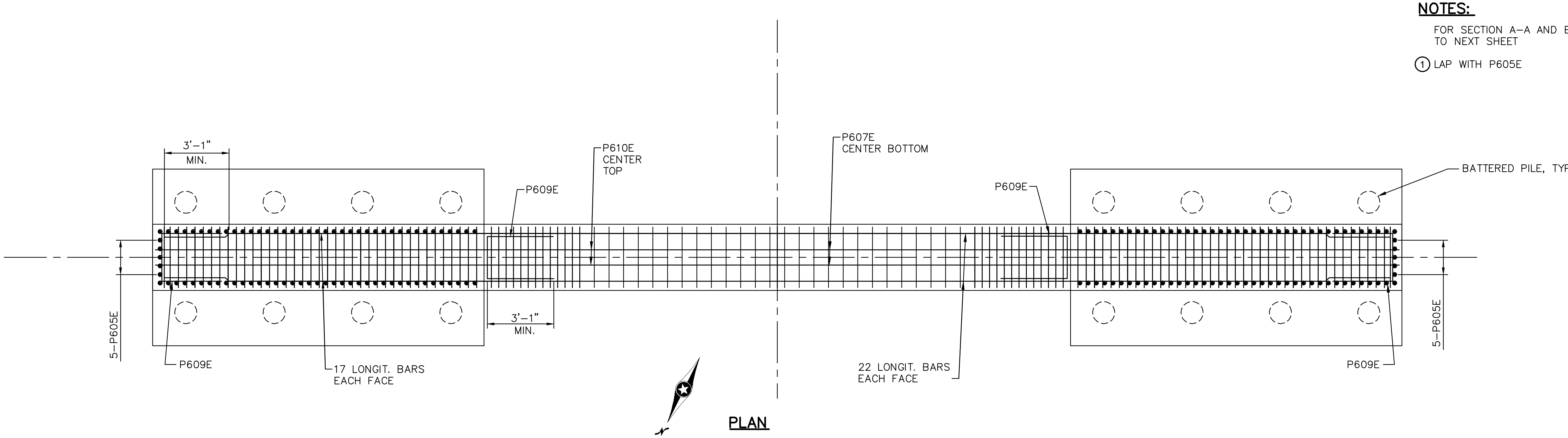


ELEVATION

NOTES:

FOR SECTION A-A AND B-B REFER TO NEXT SHEET

① LAP WITH P605E



PLAN

Jan. 12 2016 04:13 pm V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\PIER PROTECTION\EX2-STU-PPR-MNSR-FRT-DTL.dwg By: Edgar.McKoy

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DRAWN BY: EBM | CHECKED BY: LKZ

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

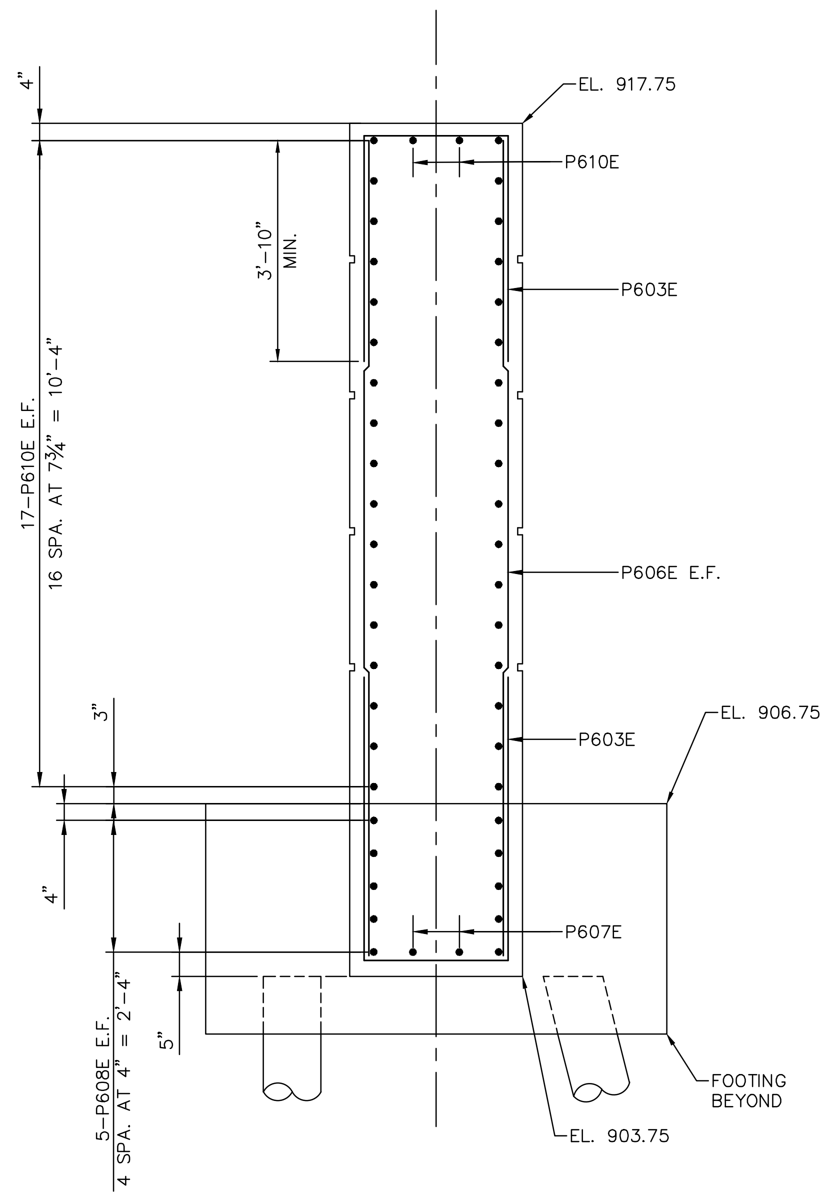
CIVIL - VOLUME 4E
MN&S RR (CP RAIL)
CORRIDOR PROTECTION BARRIER
REINFORCEMENT 2

DISCIPLINE: STRUCTURES

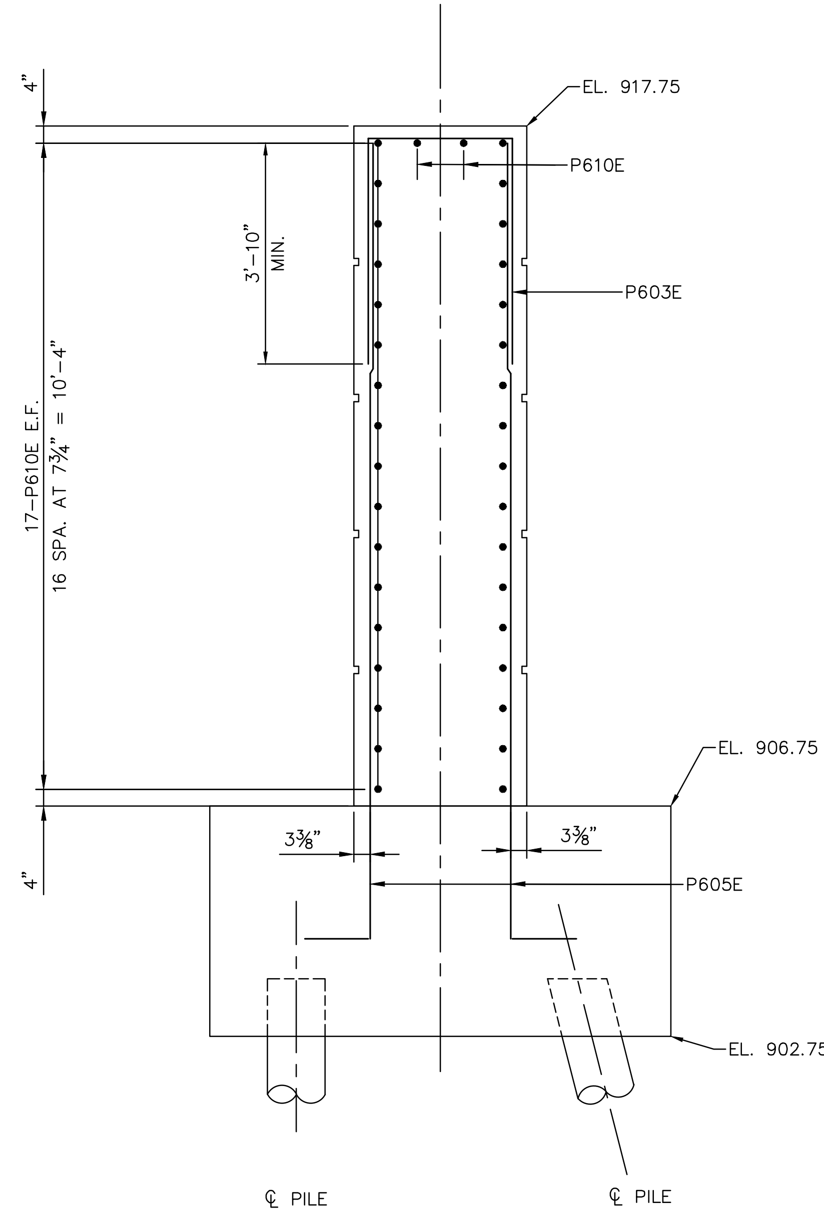
SHEET NAME: EX2-STU-PPR-MNSR-FRT-PIR-004

SHEET 6 OF 8

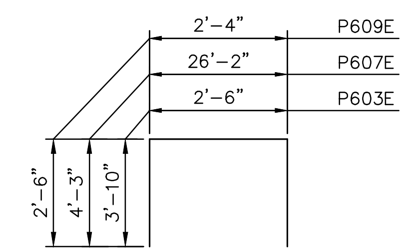
BILL OF REINFORCEMENT				
BAR	NO.	LENGTH	SHAPE	LOCATION
P601	60	14'-8"	STR.	FOOTING LONG. TOP & BOT.
P1002	120	10'-6"	BENT	FOOTING TRANS. TOP & BOT.
P603E	206	10'-2"	BENT	TIE VERTICAL
P604E	4	10'-8"	STR.	BARRIER VERT. E.F.
P605E	166	14'-10"	BENT	FOOTING DOWEL
P606E	128	13'-7"	STR.	BARRIER VERT. E.F.
P607E	2	34'-8"	BENT	BARRIER LONG. BOT.
P608E	10	26'-4"	STR.	BARRIER LONG. E.F.
P609E	48	7'-4"	BENT	TIE HORIZONTAL
P610E	34	56'-2"	STR.	BARRIER LONG. E.F.
P611	64	5'-2"	BENT	PILE TIE



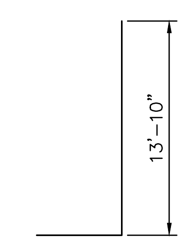
SECTION A–A



SECTION B–B



P603E, P607E, P609E



P605E

NOTES:

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AMC CHECKED BY: LKZ
DRAWN BY: EBM CHECKED BY: LKZ

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

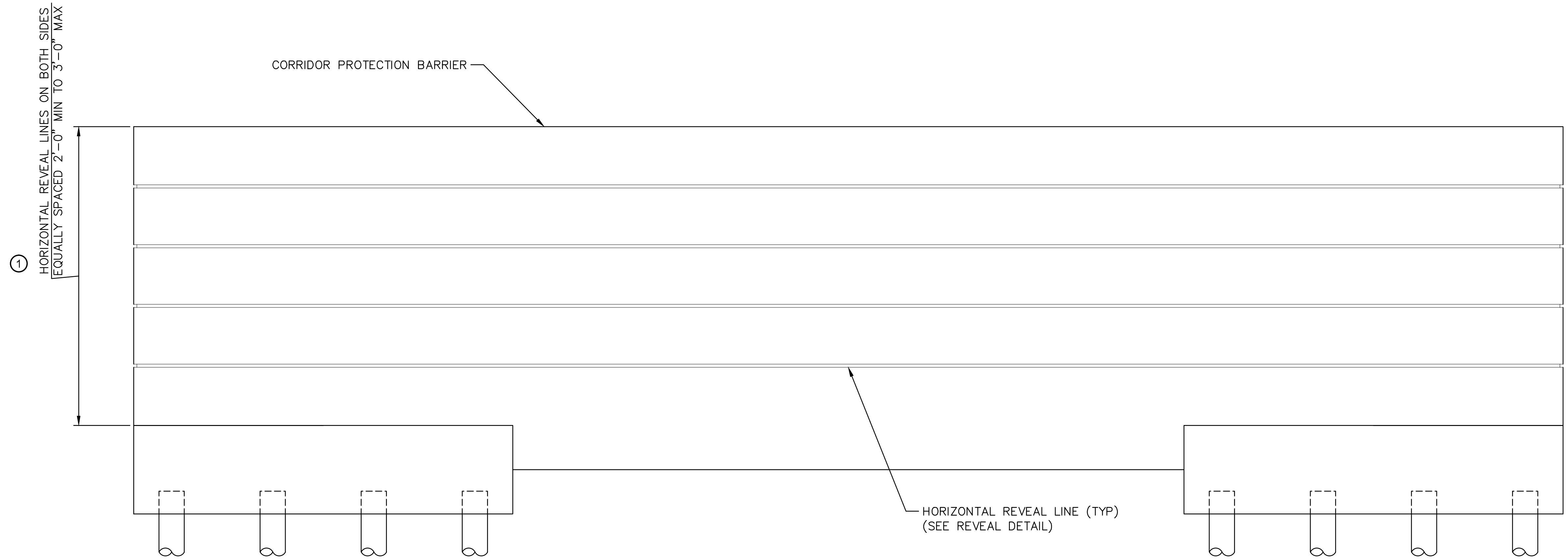
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
MN&S RR (CP RAIL)
CORRIDOR PROTECTION BARRIER
REINFORCEMENT 3

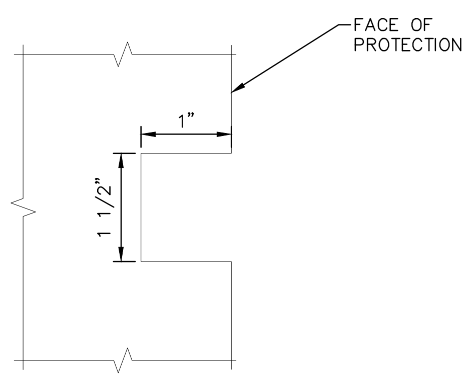
DISCIPLINE: STRUCTURES

SHEET NAME: EX2-STU-PPR-MNSR-FRT-PIR-005

SHEET 7 OF 8



ELEVATION



REVEAL DETAIL

NOTES:

1. PROVIDE HORIZONTAL REVEAL LINES EQUALLY SPACED AS SHOWN ON FRONT AND BACK FACE OF CORRIDOR PROTECTION BARRIER.

PROVIDE ¾" CHAMFER AT TOP OF PIER PROTECTION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: EBM CHECKED BY: LKZ

AECOM Kimley»Horn

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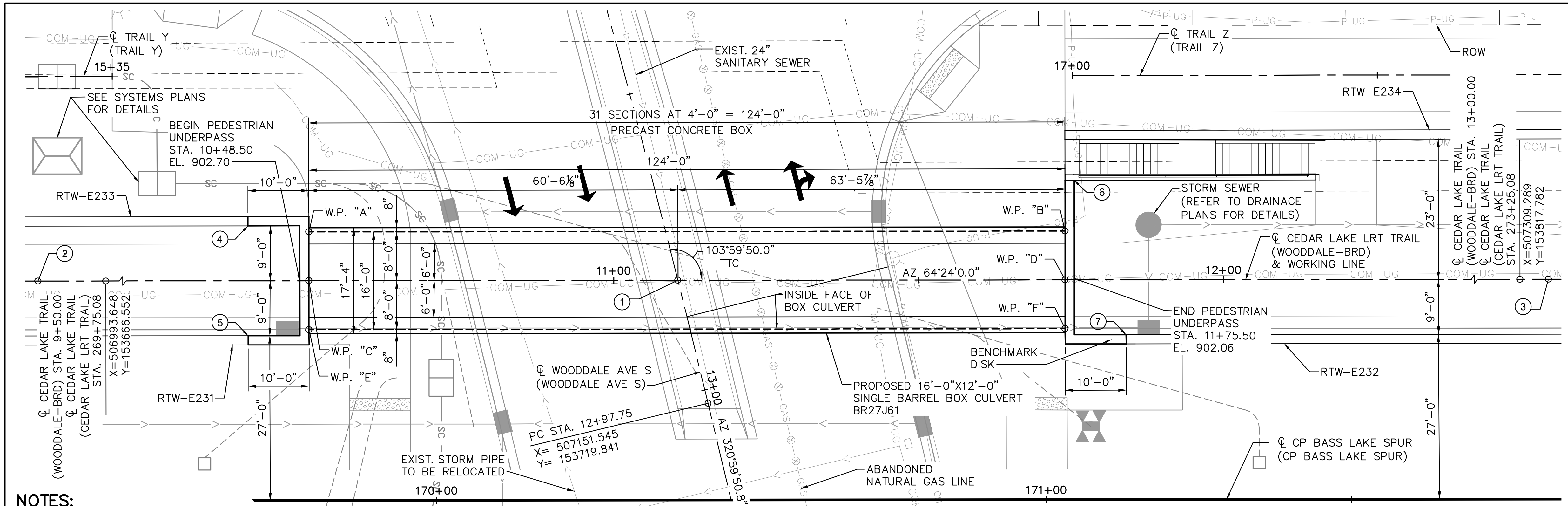
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
MN&S RR (CP RAIL)
COORIDOR PROTECTION BARRIER
AESTHETIC DETAILS

DISCIPLINE: STRUCTURES
SHEET NAME: EX2-STU-PPR-MNSR-FRT-PIR-006

SHEET 8 OF 8



GENERAL PLAN

0 5' 10' 20'
SCALE IN FEET

NOTES:

1. CONTROL POINT
℄ CEDAR LAKE LRT TRAIL
(WOODDALE–BRD) STA. 11+10.51=
℄ WOODDALE AVE S (WOODDALE AVE S)
STA. 13+18.51
EL. 902.38'
X = 507138.398
Y = 153735.904

2. P.T. ℄ CEDAR LAKE LRT TRAIL
(CEDAR LAKE LRT TRAIL)
STA. 269+19.82
X = 506943.801
Y = 153642.673

3. P.C. ℄ CEDAR LAKE LRT TRAIL
(CEDAR LAKE LRT TRAIL)
STA. 273+50.02
X = 507331.783
Y = 153828.559

4. END OF RTW–E233 AND BEGIN NW HEADWALL AT F.F. HEADWALL. ℄ CEDAR LAKE LRT TRAIL
(WOODDALE–BRD)
STA. 10+40.00
X = 507070.924
Y = 153713.556

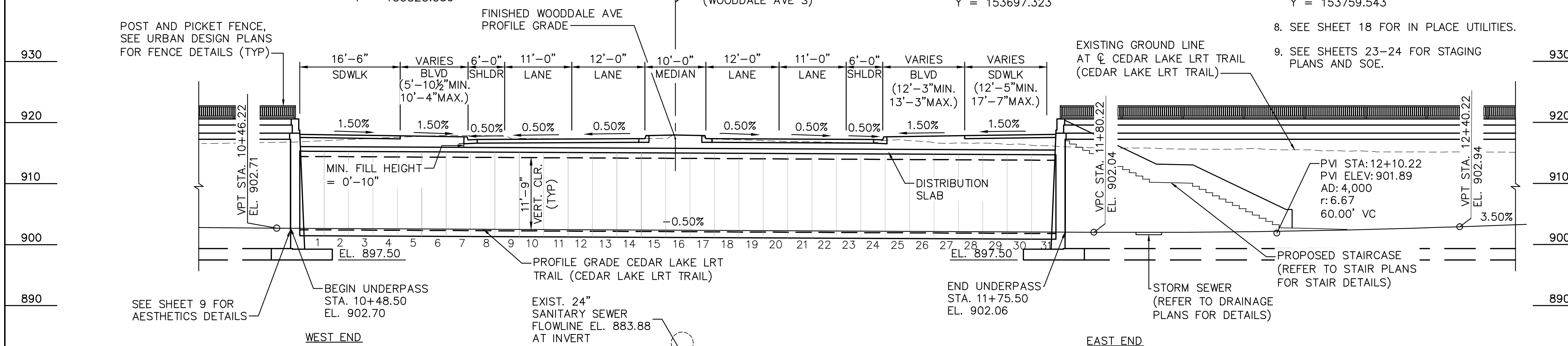
5. END OF RTW–E231 AND BEGIN SW HEADWALL AT F.F. HEADWALL. ℄ CEDAR LAKE LRT TRAIL
(WOODDALE–BRD)
STA. 10+40.00
X = 507078.702
Y = 153697.323

6. END OF STAIR RTW AND BEGIN NE HEADWALL AT F.F. HEADWALL. ℄ CEDAR LAKE LRT TRAIL
(WOODDALE–BRD)
STA. 11+75.50
X = 507189.967
Y = 153778.689

7. END OF RTW–E232 AND BEGIN NW HEADWALL AT F.F. HEADWALL. ℄ CEDAR LAKE LRT TRAIL
(WOODDALE–BRD)
STA. 11+84.00
X = 507208.566
Y = 153759.543

8. SEE SHEET 18 FOR IN PLACE UTILITIES.

9. SEE SHEETS 23–24 FOR STAGING PLANS AND SOE.



GENERAL ELEVATION

0 5' 10' 20'
SCALE IN FEET

DESIGN DATA

2014 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0)

LOAD AND RESISTANCE FACTOR DESIGN METHOD

HL–93 LIVE LOAD
COOPER E80 RAILROAD LIVE LOAD

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 5000 PSI n = 8
fy = 60000 PSI REINFORCEMENT BARS
fy = 65000 PSI STEEL FABRIC

INSIDE HEIGHT = 12'–0" (10'–0" MIN. VERT CLR.)
INSIDE WIDTH = 16'–0"
SKEW ANGLE = 13° 59' 50.0"
DESIGN FILL HEIGHT ABOVE BOX = 0'–10" (MIN.)
1'–10" (MAX.)

UNIT WEIGHT OF FILL = 120 PCF

ANGLE INTERNAL FRICTION = 30 DEG.
DESIGN SPEED: 35 MPH (WOODDALE AVE S)
30 MPH (CEDAR LAKE LRT TRAIL)

LIST OF SHEETS

2040 PROJECTED TRAFFIC VOLUMES

WOODDALE AVE S		CEDAR LAKE LRT TRAIL
18,600	AADT	N/A
XXXX	DHV	N/A
XXXX	ADTT	N/A

BRIDGE NO. 27J61

WOODDALE AVE. S. OVER CEDAR LAKE TRAIL
0.06 MI. SE OF JCT. OF T.H. 7
IN ST. LOUIS PARK

16' x 12' PRECAST BOX

12' WIDE PATH

13°–59'–50.0" SKEW

BRIDGE I.D. NO. 113

GENERAL PLAN AND ELEVATION

SEC 16 T 117N R 21W
CITY OF ST LOUIS PARK HENNEPIN COUNTY

JOB NO.: T9N635 | STATE PROJECT NO.: 9909–01 | MNDOT REVIEW: JOE NIETFELD

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG
DRAWN BY: RCL CHECKED BY: JG

90% SUBMISSION - 01/22/16

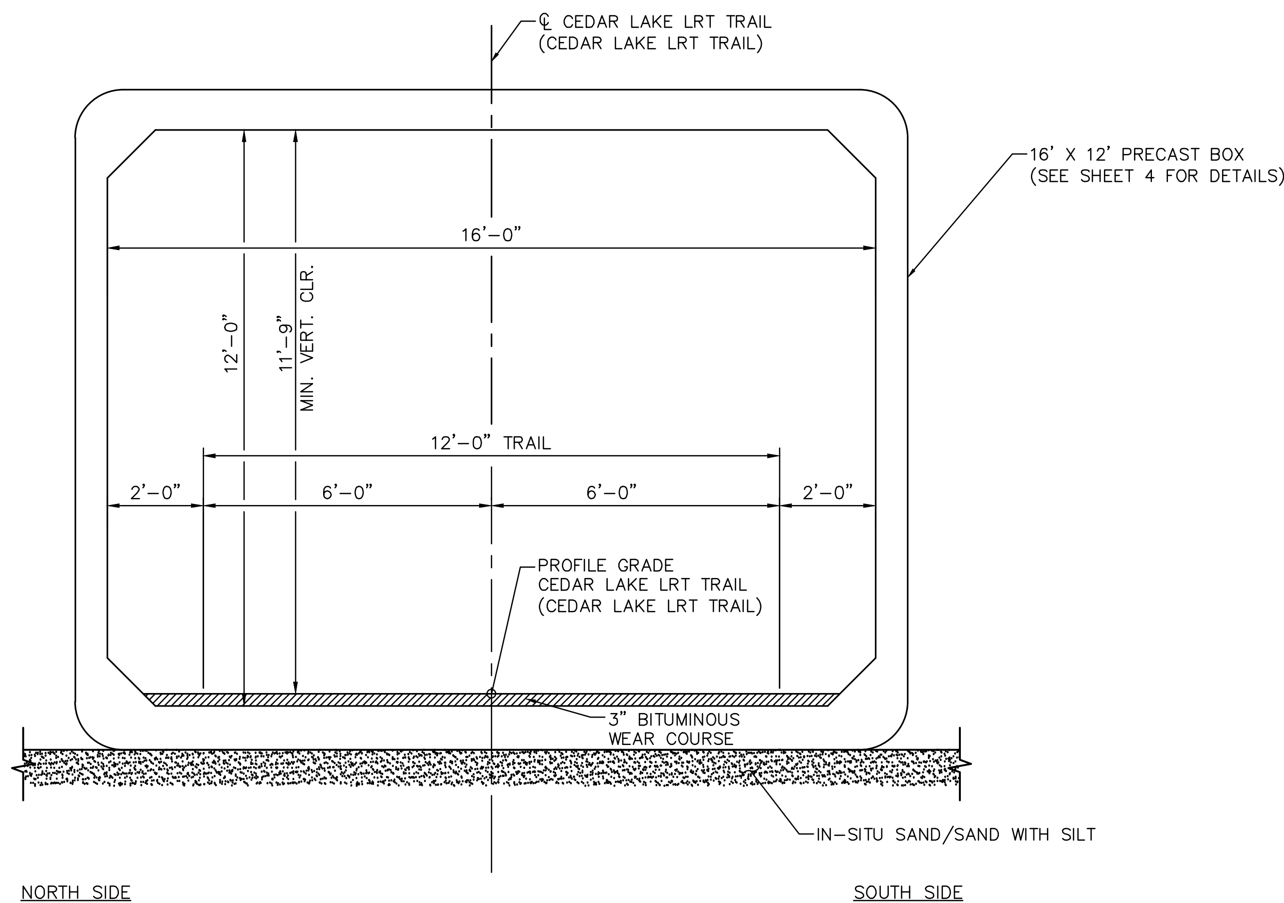
AECOM Kimley»Horn

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN
UNDERPASS BRIDGE 27J61
GENERAL PLAN AND ELEVATION

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27J61-BRG-GPE



TRANSVERSE SECTION

0 1' 2' 4'
SCALE IN FEET

SCHEDULE OF QUANTITIES

SPEC. SECTION	ITEM	UNIT	QUANTITY
-	CONSTRUCT UNDERPASS 27J61 - STAGE 1	LUMP SUM	1
-	CONSTRUCT UNDERPASS 27J62 - STAGE 2	LUMP SUM	1

COMPONENT ITEM SUMMARY (UNDERPASS 27J61)

SPEC. SECTION (3)	COMPONENT ITEM	UNIT (2)	QUANTITY (2)
2401	STRUCTURAL CONCRETE (1G52)	CU. YD.	54
2401 (1)	STRUCTURAL CONCRETE (3B52)	CU. YD.	65
2401	TYPE P-1 BARRIER CONCRETE (3B52)	LIN. FT.	74
2401	REINFORCEMENT BARS	POUND	4675
2401	REINFORCEMENT BARS (EPOXY COATED)	POUND	8551
2412	16' X 12' PRECAST CONCRETE BOX CULVERT	LIN. FT.	124
2481	MEMBRANE WATERPROOFING SYSTEM	SQ. FT.	180
2557	POST AND PICKET FENCE	LIN. FT.	74
SB-XX	ARCHITECTURAL CONCRETE TEXTURE (STACKED STONE)	SQ. FT.	1142
SB-XX	STEEL SHEET PILING (TEMPORARY)	LUMP SUM	1
SB-XX	STRUCTURE EXCAVATION	LUMP SUM	1
SB-XX	STRUCTURAL BACKFILL	CU. YD.	1232

NOTES:

(1) A BENCHMARK IS REQUIRED. LOCATED AT THE SOUTHEAST CORNER OF THE UNDERPASS. STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE.

(2) QUANTITIES LISTED FOR THE COMPONENT ITEMS OF THE LUMP SUM UNDERPASS 27J61 ITEM ARE FOR INFORMATIONAL PURPOSE. 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 UNDERPASS 27J61. REFER TO MNDOT STANDARD SPECIFICATION OR SPECIAL PROVISION FOR TECHNICAL SPECIFICATION REQUIREMENTS FOR ALL PROVISION OTHER THAN MEASUREMENT & PAYMENT REQUIREMENTS.

CONSTRUCTION NOTES:

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

THE BAR SIZES SHOWN IN THIS PLAN ARE IN U.S. CUSTOMARY DESIGNATIONS. THE FIRST DIGIT OR THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE.

BARS MARKED WITH THE 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 STRUCTURE MUST BE PLACED ON A SAND OR SAND WITH SILT FOUNDATION. THE EXCAVATION BOTTOM MUST BE OBSERVED BY A GEOTECHNICAL ENGINEER IN THE FIELD. IF SILTY OR CLAYEY SOILS ARE ENCOUNTERED, GRANULAR FILL MEETING THE REQUIREMENTS OF MnDOT SPECIFICATION 3149.2B2 MUST BE PLACED 2'–0" BELOW STRUCTURE AND 2'–0" BEYOND THE STRUCTURE EDGES.

PRECAST BOX CULVERT JOINTS SHALL BE SEALED AS FOLLOWS:
- MASTIC JOINT SEALER MATERIAL SHALL BE APPLIED IN ACCORDANCE WITH THE RECOMMENDATION OF THE MANUFACTURER.
- THE EXTERIOR OF THE JOINT SHALL BE SEALED WITH AN APPROVED MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
- ALL WORK AND MATERIAL NECESSARY TO WATERPROOF JOINTS SHALL BE INCLUDED IN BID ITEM "16X12 PRECAST CONCRETE BOX CULVERT."

ALL INTERIOR UNDERPASS SURFACES TO BE MNDOT GRAY MODIFIED COLOR.

SEE SHEETS 23–24 FOR STAGING PLANS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG
DRAWN BY: RCL CHECKED BY: JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

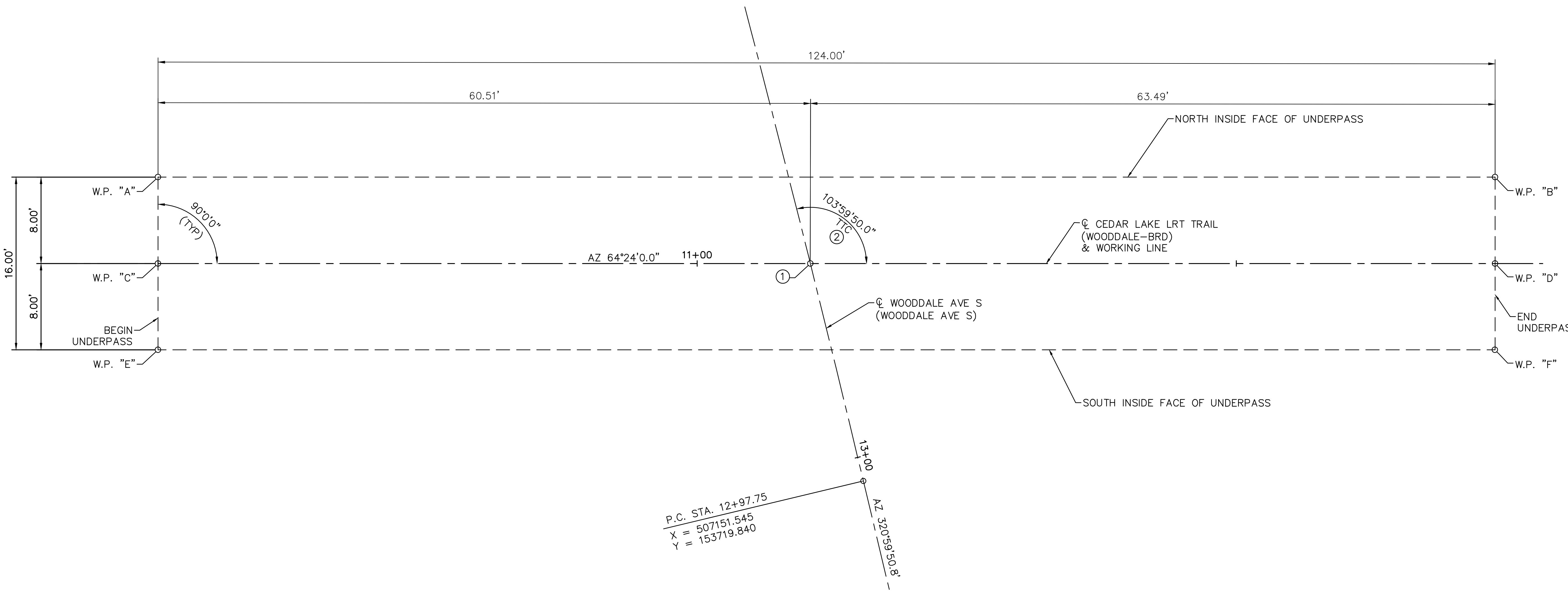
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
TRANSVERSE SECTION AND QUANTITIES

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27J61-BRG-SEC-001



WORKING POINT LAYOUT

NOTES:

1. CONTROL POINT 1
   ℄ CEDAR LAKE LRT TRAIL (WOODDALE–BRD) STA 11+10.51
   ℄ WOODDALE AVE S (WOODDALE AVE S) STA 13+18.51
   X=507138.398
   Y=153735.904
   ANGLE=103°59'50.0"

2. TTC=TANGENT TO CURVE

DIMENSIONS BETWEEN WORKING POINTS								COORDINATES		ELEVATIONS	
POINT	STATION	A	B	C	D	E	F	X	Y	TOP OF BOTTOM SLAB	POINT
A	10+50.00		124.00	8.00		16.00		507080.375	153716.975	902.69	A
B	11+74.00				8.00		16.00	507192.202	153770.554	902.07	B
C	10+50.00				124.00	8.00		507083.831	153709.760	902.69	C
D	11+74.00						8.00	507195.658	153763.339	902.07	D
E	10+50.00						124.00	507087.288	153702.546	902.69	E
F	11+74.00							507199.115	153756.124	902.07	F

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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DRAWN BY: ML CHECKED BY: JG

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METROPOLITAN COUNCIL

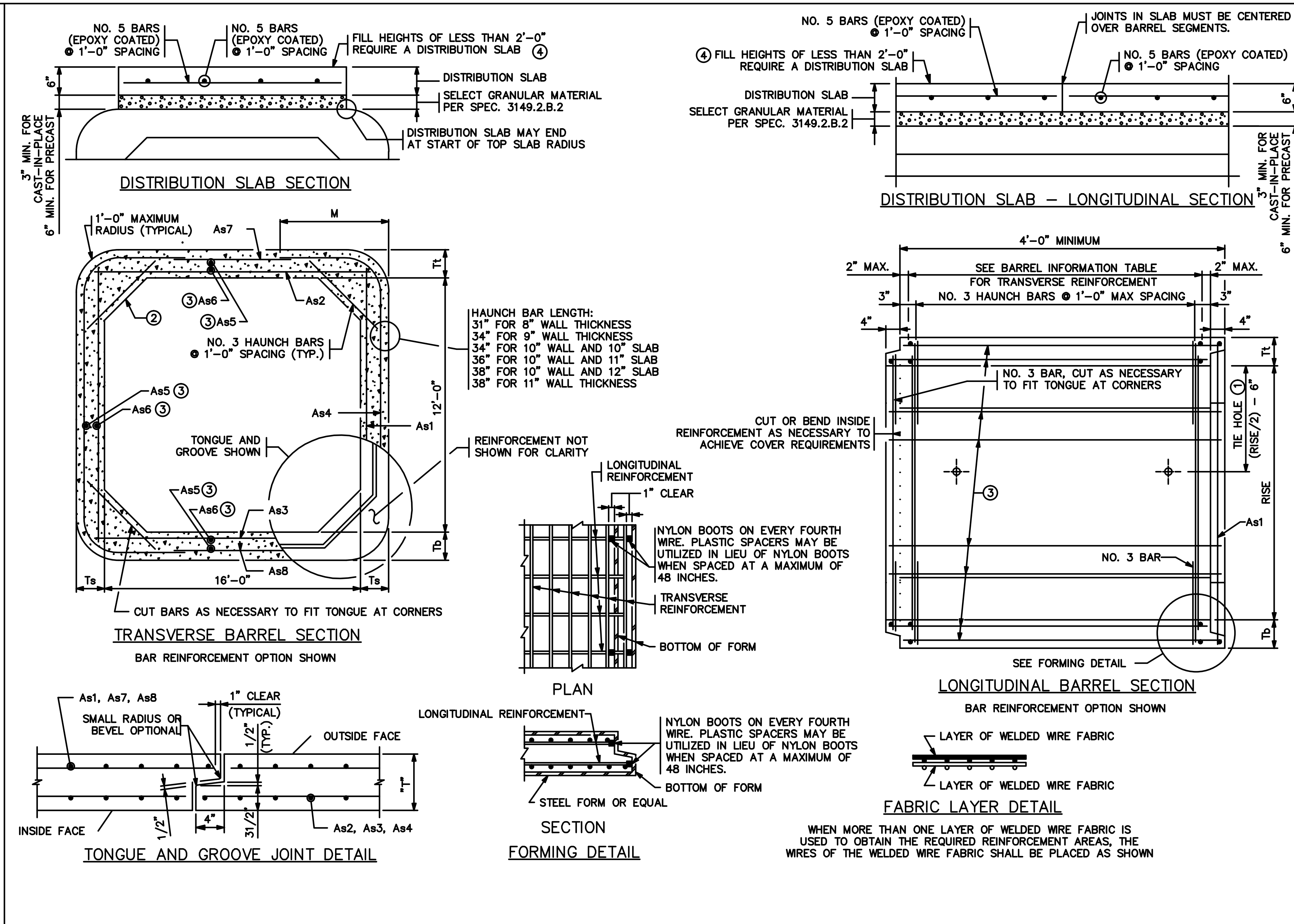
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN
UNDERPASS BRIDGE 27J61
UNDERPASS LAYOUT

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27J61-BRG-LAY

SHEET 3 OF 24

Jan, 18 2016 09:59 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27J61\CBR27J61-BRG-LAY.dwg By: Ryan.Laurent



CONSTRUCTION NOTES

CULVERTS TO BE CONSTRUCTED AS PER SPEC. 2412 EXCEPT AS NOTED.

REFER TO THE GENERAL PLAN AND ELEVATION SHEET FOR THE DISTANCE BETWEEN BARRELS OF ADJACENT BOXES AND TO STANDARD FIGURE 5-395.115 FOR MATERIAL REQUIREMENTS FOR FILL BETWEEN ADJACENT BOXES.

THE WELDED WIRE FABRIC, SHEAR REINFORCEMENT AND REINFORCEMENT BARS SHALL CONFORM TO APPLICABLE REQUIREMENTS OF AASHTO M259.

1 1/2" MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT, EXCEPT FOR TONGUE AND GROOVE DETAIL.

ANY OF THE FOLLOWING COMBINATIONS OF STEEL REINFORCEMENT MAY BE USED:
(a) 1 OR 2 LAYERS OF WELDED WIRE FABRIC OR
(b) 1 LAYER OF WELDED WIRE FABRIC AND 1 LAYER OF REINFORCEMENT BARS OR
(c) 1 LAYER OF REINFORCEMENT BARS.
THE REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS". IF BAR REINFORCEMENT IS SUBSTITUTED FOR WELDED WIRE FABRIC, THE AREA OF REINFORCEMENT SHALL BE INCREASED BY 8%, AND CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS VERIFYING COMPLIANCE WITH AASHTO 5.7.3.4. "CONTROL OF CRACKING BY DISTRIBUTION OF REINFORCEMENT".

THE MAXIMUM SIZE OF REINFORCEMENT BARS SHALL BE NO. 6. THE MAXIMUM WELDED WIRE FABRIC SIZE SHALL BE A W23 PER LAYER (MAXIMUM OF 2 LAYERS).

THE SPACING CENTER TO CENTER OF THE TRANSVERSE WIRES SHALL NOT BE LESS THAN 2" NOR MORE THAN 4". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8".

WELDING WILL NOT BE ALLOWED ON REINFORCEMENT BARS OR WELDED WIRE FABRIC, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE WIRE FABRIC IS ACCEPTABLE.

WHEN REINFORCEMENT IS CUT, ADDITIONAL REINFORCEMENT SHALL BE ADDED ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT STEEL.

CONCRETE SHALL BE MIX NO. 3W36 WITH NO CALCIUM CHLORIDE ALLOWED.

SHOP DRAWING APPROVAL PER SPEC. 3238.2.A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.

COMPACT THE FIRST 1.5' (LOOSE) OF FILL ABOVE THE BOX WITH LIGHT COMPACTION EQUIPMENT SUCH AS PLATE COMPACTORS OR WALK BEHIND ROLLERS.

TRANSVERSE REINFORCEMENT IS PARALLEL TO THE CULVERT SPAN.
LONGITUDINAL REINFORCEMENT IS PERPENDICULAR TO THE CULVERT SPAN.

① CULVERT TIES ARE TO BE 1" DIAMETER RODS. SEE STANDARD PLATE NO. 3145 FOR CONNECTION DETAILS.

② HAUNCH SIZES ARE TO BE 12" VERTICAL, 12" HORIZONTAL ON ALL BOX SIZES.

③ LONGITUDINAL REINFORCEMENT DENOTED AS As5 AND As6 MUST BE PLACED IN ALL SLABS AND WALLS AND MUST BE 0.06 SQ. IN./FT. MIN. As5 AND As6 IN END BOX SECTION SHALL BE #4 MIN AND SPACED 1'-0" MAX.

④ ROADWAY OR SHOULDER FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A DISTRIBUTION SLAB.

USE CONCRETE MIX 3Y43 FOR THE DISTRIBUTION SLAB.

CAST-IN-PLACE DISTRIBUTION SLABS SHALL BE 6" THICK. PROVIDE 3" MINIMUM SELECT GRANULAR MATERIAL PER SPEC. 3149.2.B.2 BETWEEN BARREL AND DISTRIBUTION SLAB.

PRECAST DISTRIBUTION SLABS SHALL BE 6" THICK AND MAY BE USED FOR FILL HEIGHTS OVER 1'-0". PROVIDE 6" MINIMUM SELECT GRANULAR MATERIAL PER SPEC. 3149.2.B.2 BETWEEN BARREL AND DISTRIBUTION SLAB.

THE WIDTH OF THE DISTRIBUTION SLAB SHALL EXTEND BETWEEN THE OUTSIDE EDGES OF THE SHOULDERS UNLESS DIRECTED BY THE ENGINEER.

PAYMENT FOR THE DISTRIBUTION SLAB AND SELECT GRANULAR MATERIAL BENEATH THE SLAB SHALL BE CONSIDERED INCIDENTAL.

IF DISTRIBUTION SLAB IS USED AS PAVEMENT SURFACE IT MUST BE REDESIGNED PER THE MnDOT PAVEMENT DESIGN MANUAL.

BARREL INFORMATION TABLE ***

LOCATION	SIZE	CLASS	f'c (P.S.I.)	FILL HEIGHT RANGE (FT.)	DISTRIBUTION SLAB REQUIRED *	RECESSED TIE RODS REQUIRED **	DIMENSIONS					WEIGHT (LBS./FT.)	WELDED WIRE FABRIC REINFORCEMENT													
													As1			As2		As3		As4		As7		As8		
							SPAN (FT.)	RISE (FT.)	Tt (IN.)	Tb (IN.)	Ts (IN.)		AREA (IN^2/FT.)	LENGTH (FT.)	M (FT.)	AREA (IN^2/FT.)	LENGTH (FT.)	AREA (IN^2/FT.)	LENGTH (FT.)	AREA (IN^2/FT.)	LENGTH (FT.)	AREA (IN^2/FT.)	LENGTH (FT.)	AREA (IN^2/FT.)	LENGTH (FT.)	
	16x12	1	5000	< 3	YES	YES	16'-0"	12'-0"	10	11	8	7250	0.90	21'-1"	3'-11"	1.43	16'-6"	1.44	16'-6"	0.24	12'-6"	0.27	12'-7"	0.27	12'-7"	

* ALL CLASS 1 CULVERTS WITH FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A DISTRIBUTION SLAB. IF A DISTRIBUTION SLAB IS NOT REQUIRED, INDICATE "NO" IN THIS BOX.

** FOR PEDESTRIAN CULVERT APPLICATIONS HIDE-AWAY OR RECESSED TIE CONNECTIONS ARE REQUIRED, SEE STANDARD PLATE 3145. IF REQUIRED, INDICATE "YES" IN THIS BOX.

*** BOX CULVERTS WITH SPANS FROM 6 TO 14 FT. ARE DESIGNED FOR HL-93 LIVE LOADS (AASHTO LRFD 3.6.2.1) NOT INCLUDING THE DESIGN LANE LOAD. BOXES WITH SPANS OF 16 FT. ARE DESIGNED FOR HL-93 LIVE LOADS INCLUDING THE DESIGN LANE LOAD.

⑤ WHERE END PRECAST CULVERT END SECTIONS MEET CAST-IN-PLACE HEADWALLS, PROVIDE SQUARE END (WITHOUT GROOVE). EXTEND ADDITIONAL DOWEL REINFORCEMENT OUT OF END SECTIONS AS SHOWN AND NOTED ON SHEET 10.

REVISION: 09-11-2014
APPROVED: MARCH 24, 2011
Nancy Daubenberger
STATE BRIDGE ENGINEER

STATE PROJ. NO. 9909-01 – (T.H.) STA. + .

FIG. 5-395.101(A) (MOD)

CERTIFIED BY ______ LICENSED PROFESSIONAL ENGINEER 7/02/15 DATE
NAME: # LIC. NO. #####

TITLE: PRECAST CONCRETE BARREL DETAILS

DES: ML | DR: CJM | APPROVED:
CHK: LNI | CHK: LNI

SHEET NO. 4 OF 24 SHEETS

BRIDGE NO. 27J61

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML | CHECKED BY: JG
DRAWN BY: RCL | CHECKED BY: JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

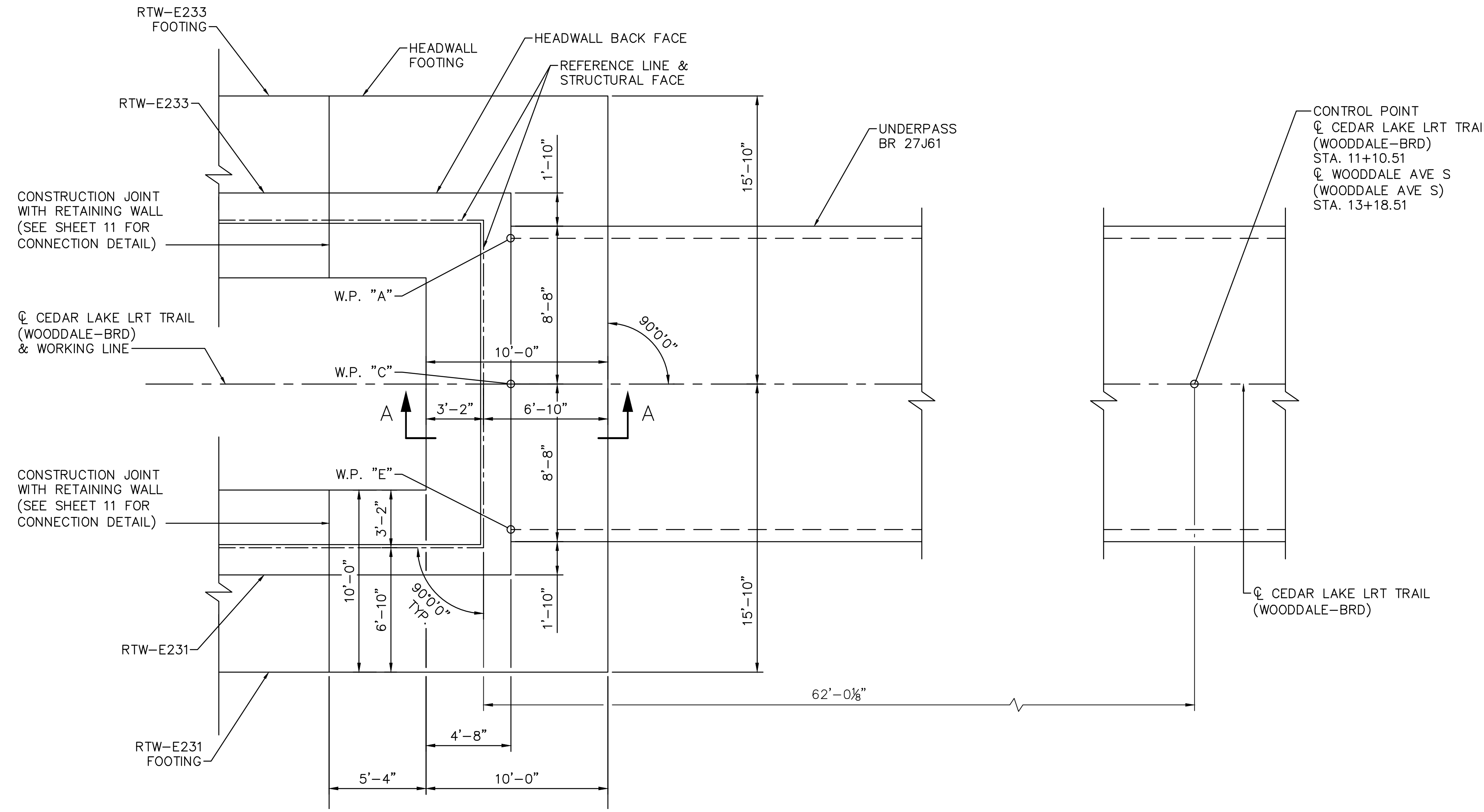
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
PRECAST CONCRETE BARREL DETAILS

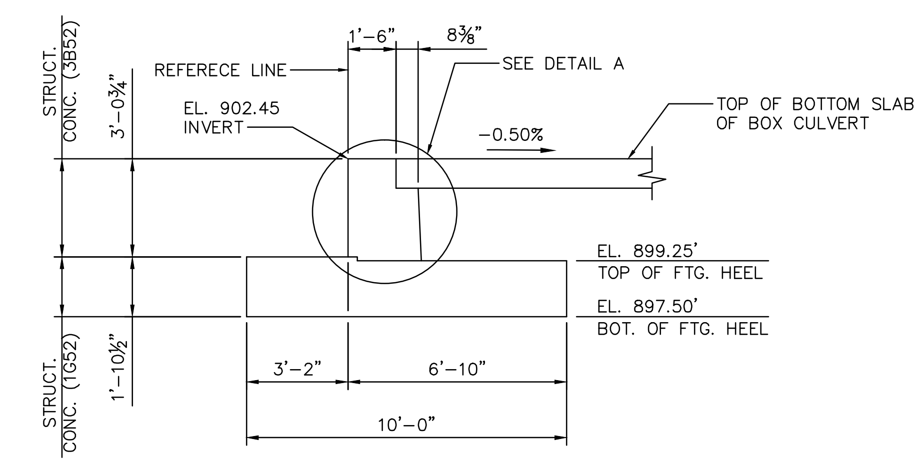
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27J61-BRG-DTL-001

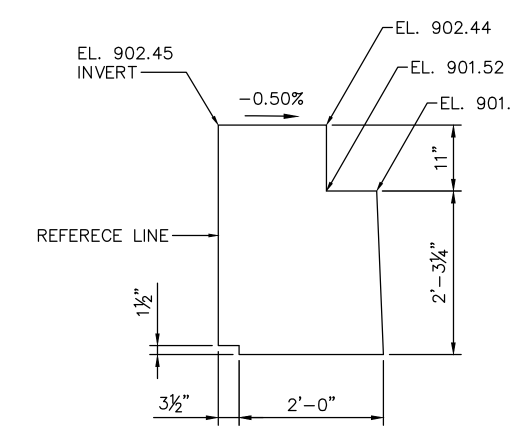
SHEET 4 OF 24



FOOTING PLAN
WEST END OF PEDESTRIAN UNDERPASS



SECTION A-A



DETAIL A

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG
DRAWN BY: RCL CHECKED BY: JG

AECOM Kimley»Horn

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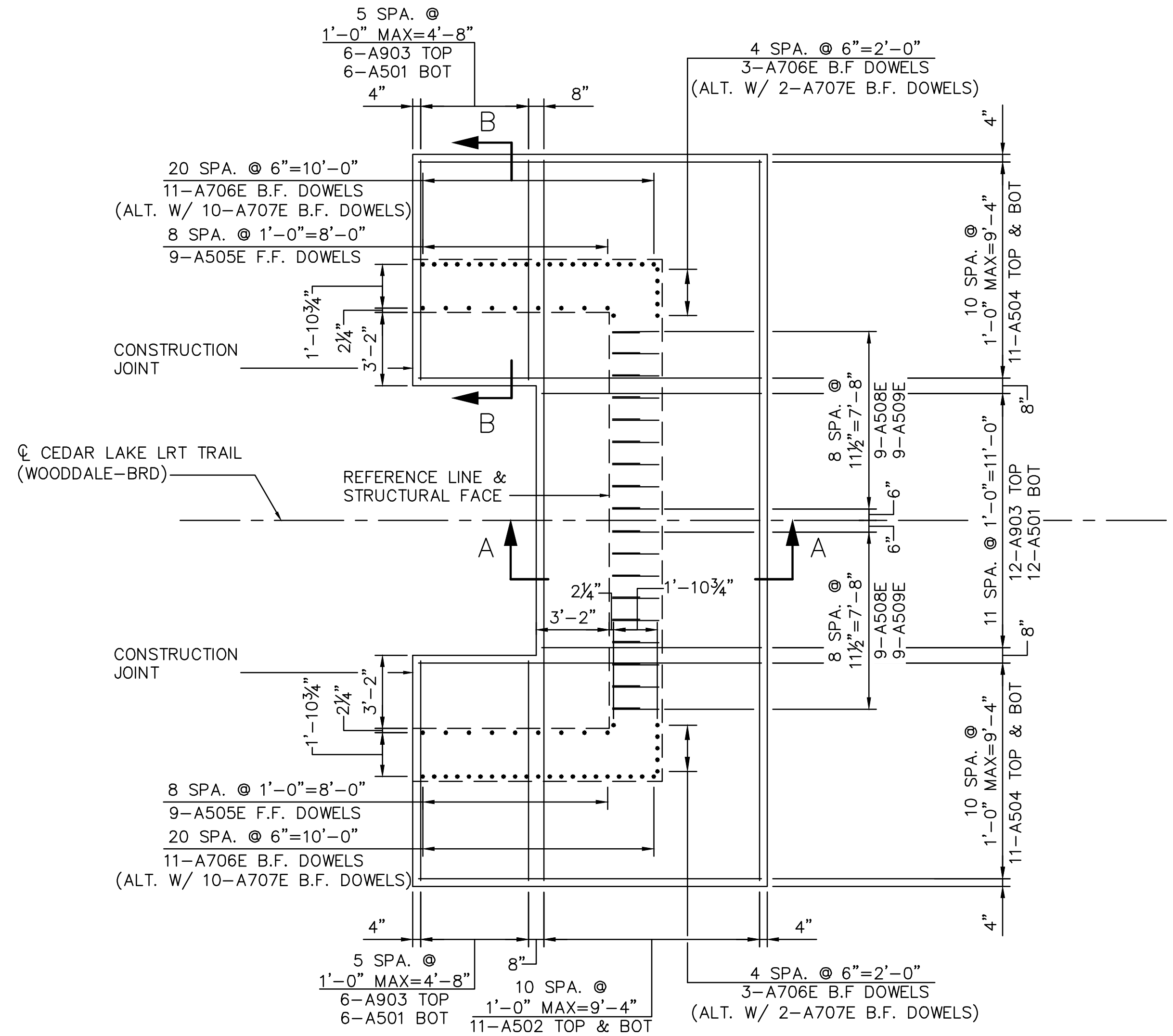
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
WEST FOOTING LAYOUT

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27J61-BRG-HDW-001-1

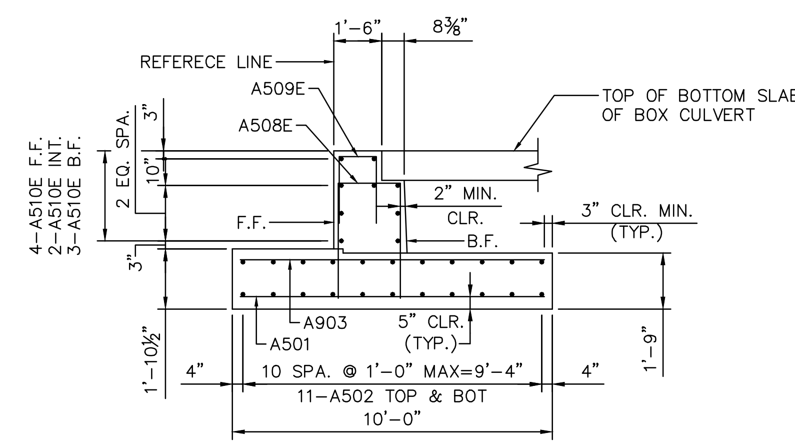
SHEET 5 OF 24

Jan. 18 2016 09:59 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27J61\CBR27J61-BRG-HDW-001.dwg By: Ryan.Laurent



FOOTING PLAN

WEST END OF PEDESTRIAN UNDERPASS



SECTION A-A

NOTES:

F.F. DENOTES FRONT FACE
B.F. DENOTES BACK FACE
E.F. DENOTES EACH FACE
INT. DENOTES INTERMEDIATE

SECTION B-B SHOWN ON SHEET 11 HEADWALL DETAILS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG
DRAWN BY: RCL CHECKED BY: JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

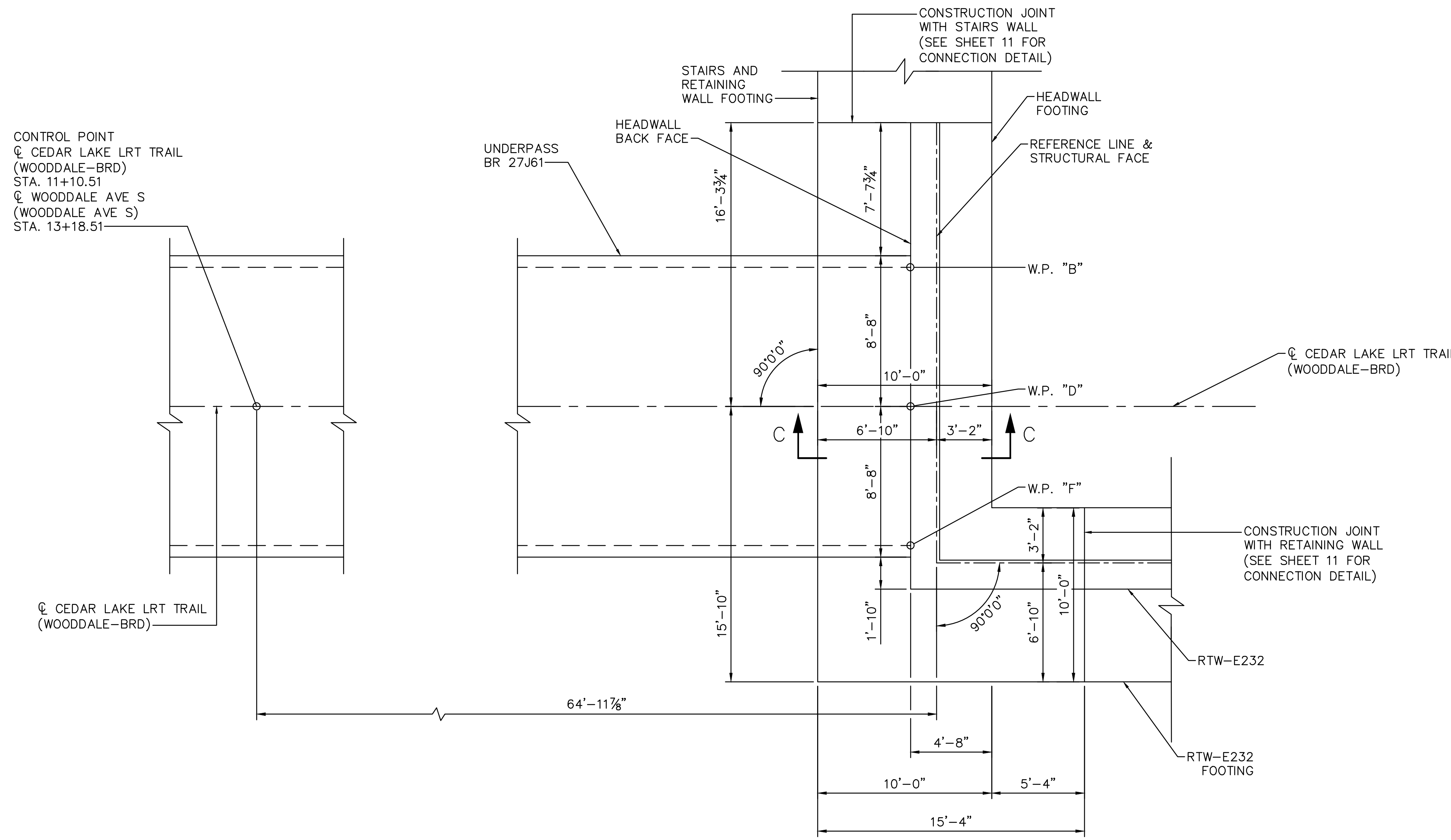
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
WEST FOOTING REINFORCEMENT

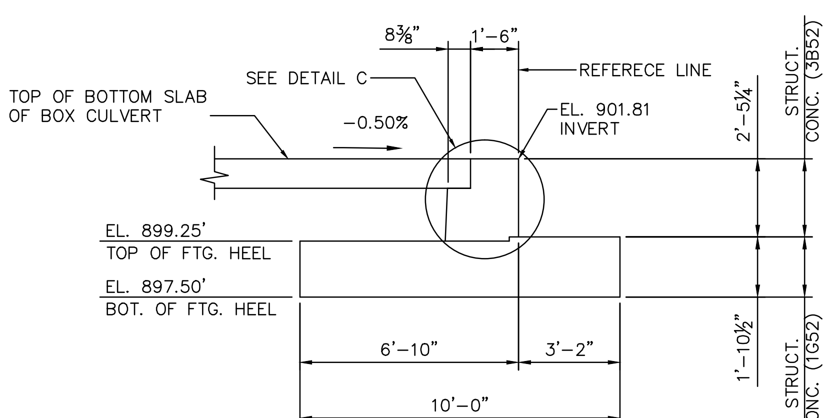
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27J61-BRG-HDW-001-2

SHEET 6 OF 24

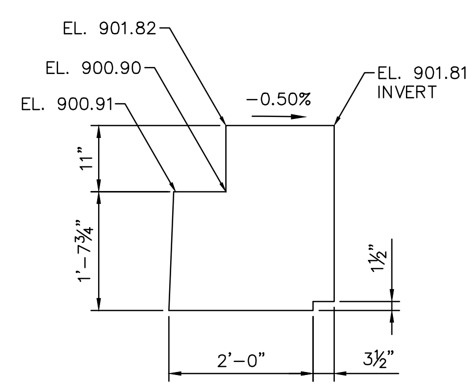


FOOTING PLAN VIEW

EAST END OF PEDESTRIAN UNDERPASS



SECTION C–C



DETAIL C

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG
DRAWN BY: RCL CHECKED BY: JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

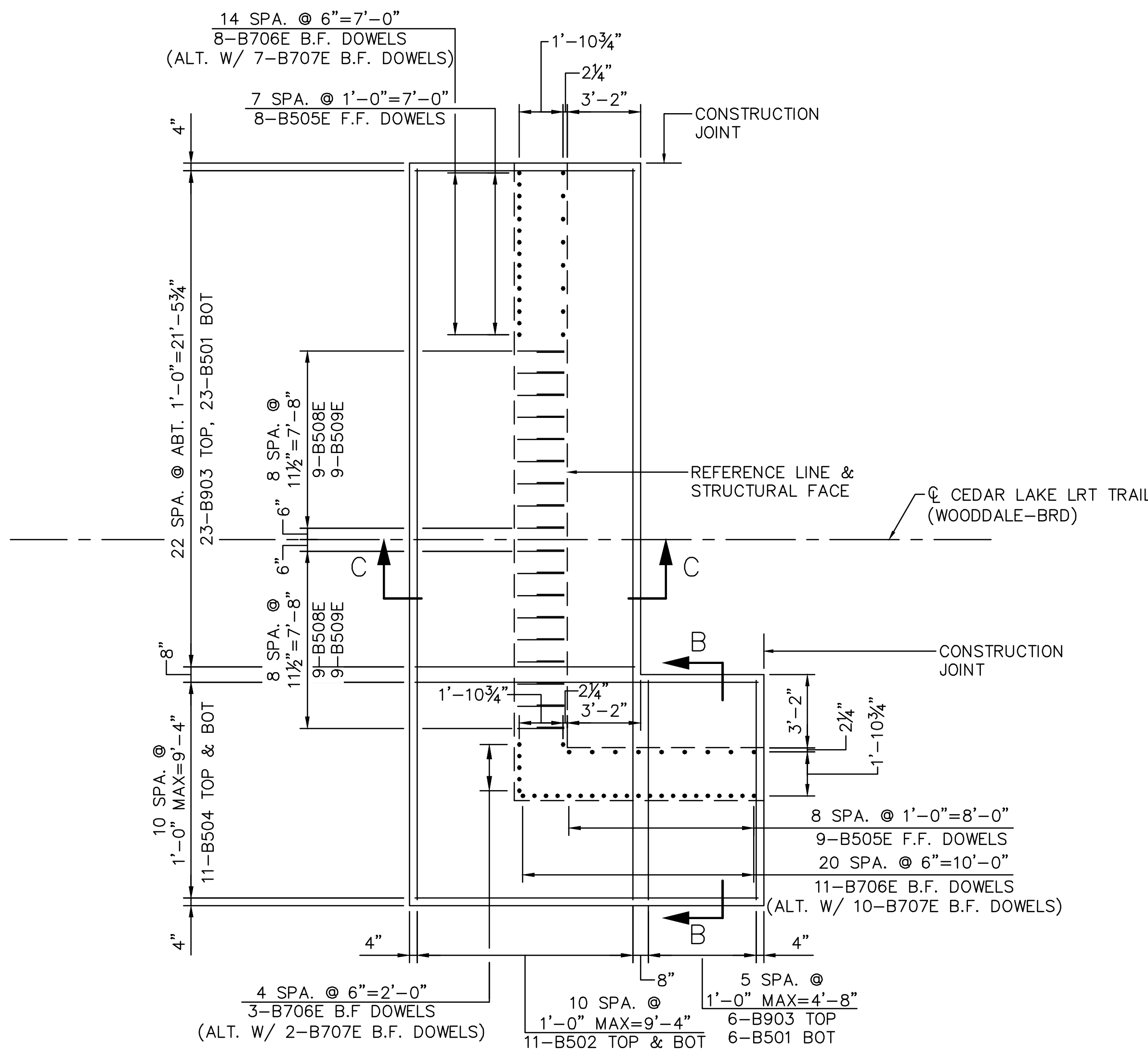
CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
EAST FOOTING LAYOUT

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27J61-BRG-HDW-001-3

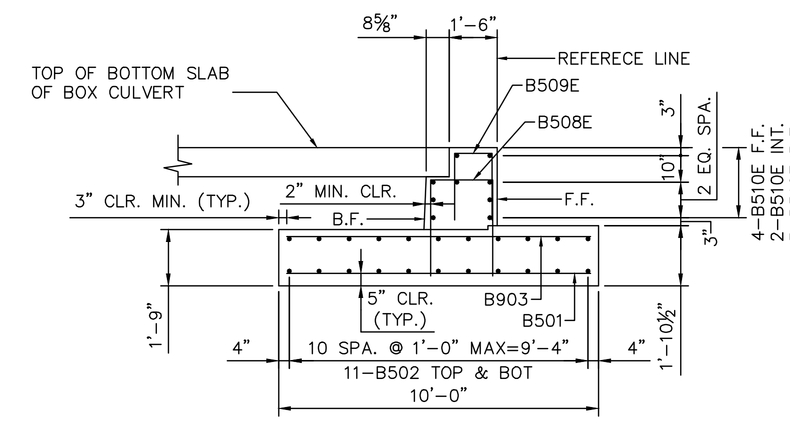
SHEET 7 OF 24

Jan. 18 2016 09:59 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27J61\CBR27J61-BRG-HDW-001.dwg By: Ryan.Laurent



FOOTING PLAN

EAST END OF PEDESTRIAN UNDERPASS



SECTION C-C

NOTES:

F.F. DENOTES FRONT FACE
B.F. DENOTES BACK FACE
E.F. DENOTES EACH FACE
INT. DENOTES INTERMEDIATE

SECTION B-B SHOWN ON SHEET 11 HEADWALL DETAILS

Jan. 18 2016 09:59 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27J61\CBR27J61-BRG-HDW-001.dwg By: Ryan.Laurent

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML | CHECKED BY: JG
DRAWN BY: RCL | CHECKED BY: JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

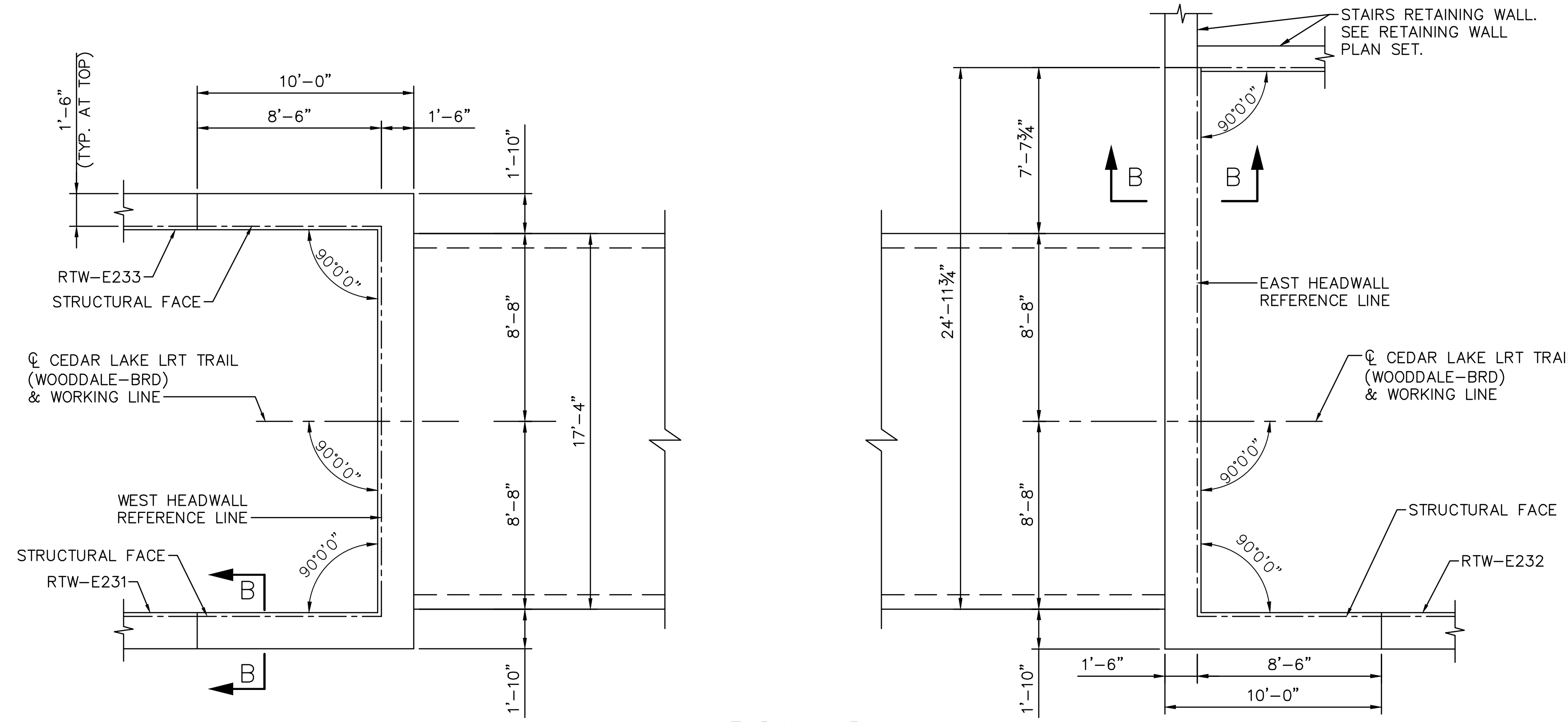
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
EAST FOOTING REINFORCEMENT

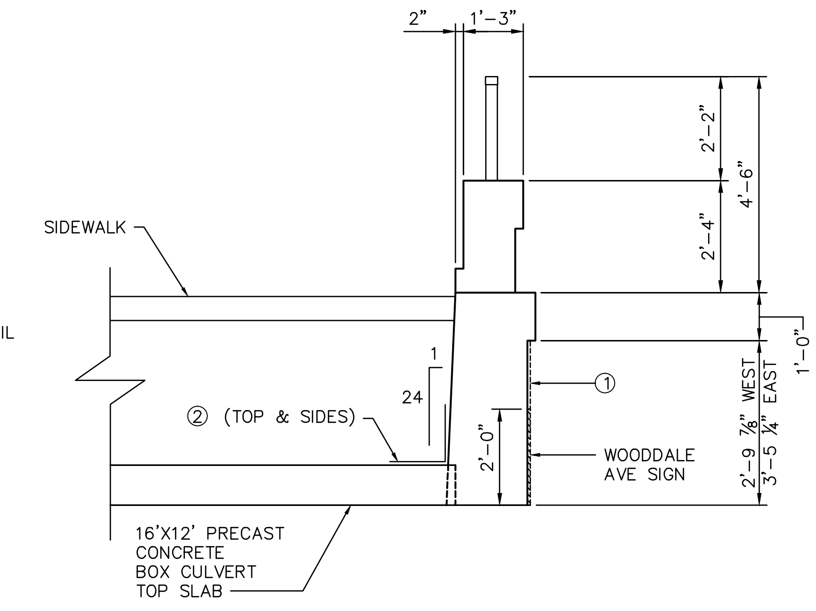
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27J61-BRG-HDW-001-4

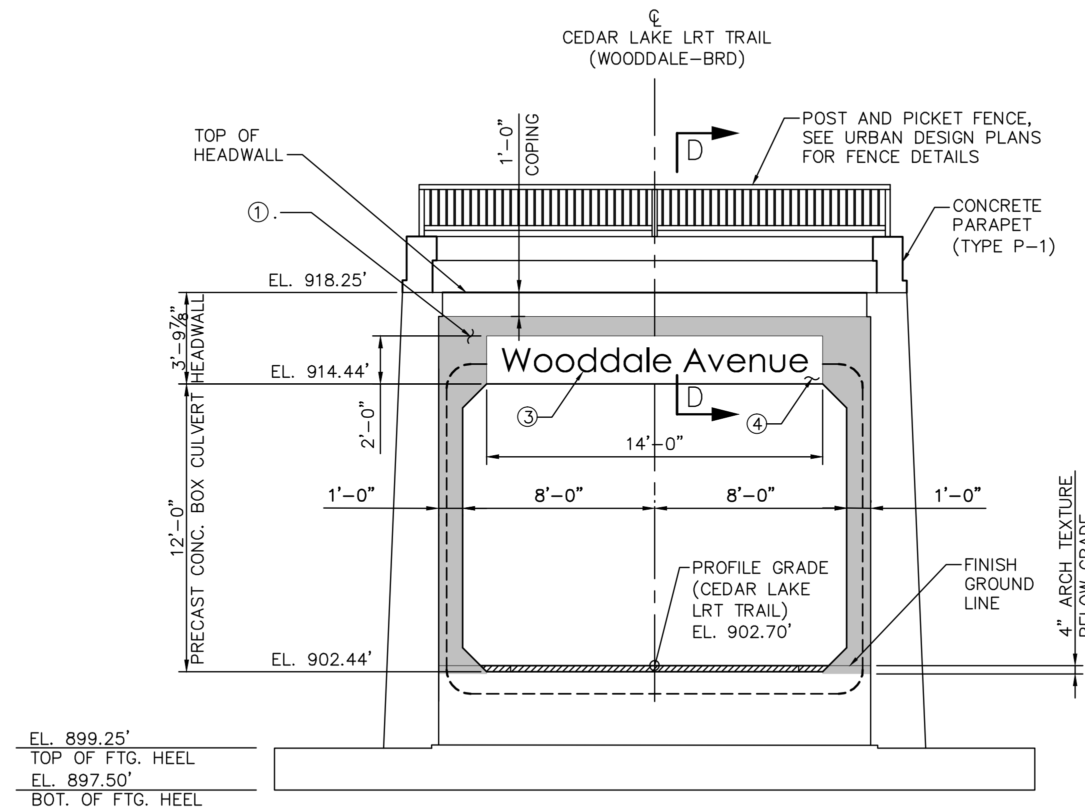
SHEET 8 OF 24



HEADWALL PLAN



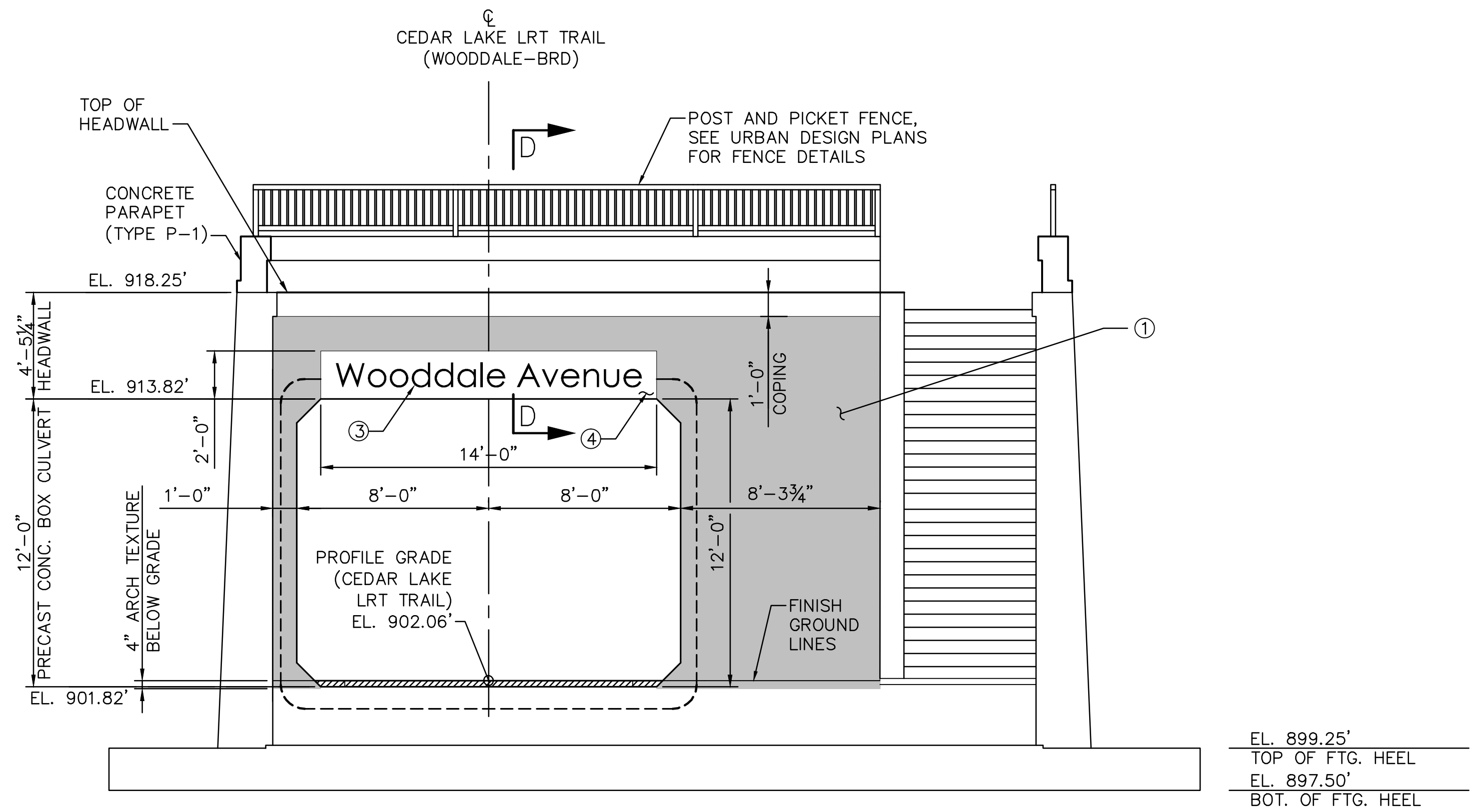
SECTION D-D



WEST HEADWALL ELEVATION

NOTES:

1. ARCHITECTURAL CONCRETE TEXTURE (STACKED STONE)WITH ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). PATTERN SHALL RUN CONTINUOUSLY FROM RETAINING WALL & THROUGH HEADWALLS UNINTERRUPTED. ADJUST LENGTH OF STONE UNITS AS NEEDED.
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC. 2481.3.B.
3. CENTER 10" LETTERS, ¾" RECESSED CAST INTO CONCRETE. PAINT ALL LETTER SURFACES BLACK. FONT: CENTURY GOTHIC.
4. ALL EXPOSED CONCRETE SURFACES TO BE MNDOT GRAY MODIFIED COLOR.



EAST HEADWALL ELEVATION

SECTION B-B SHOWN ON SHEET 11 HEADWALL DETAILS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG
DRAWN BY: RCL CHECKED BY: JG

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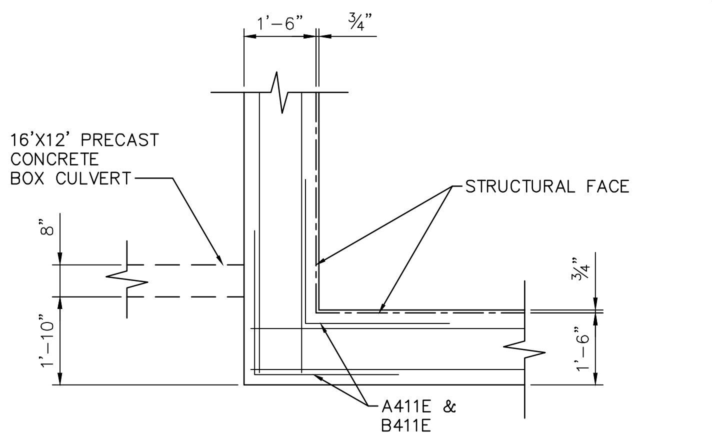
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

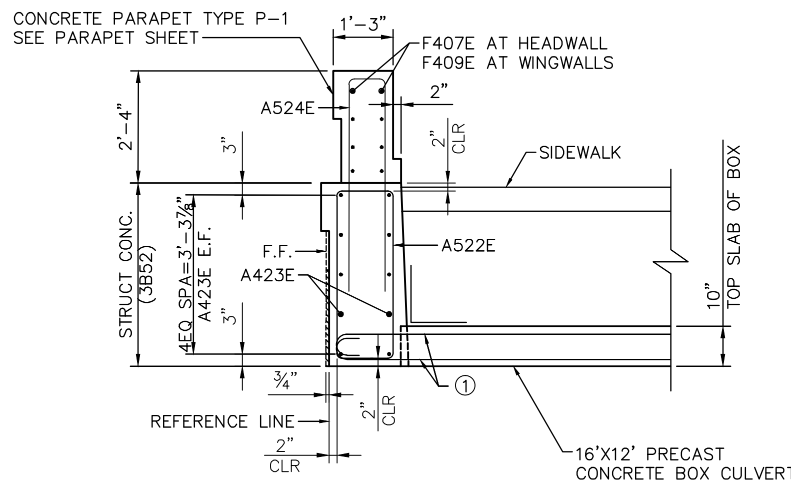
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
HEADWALL DETAILS

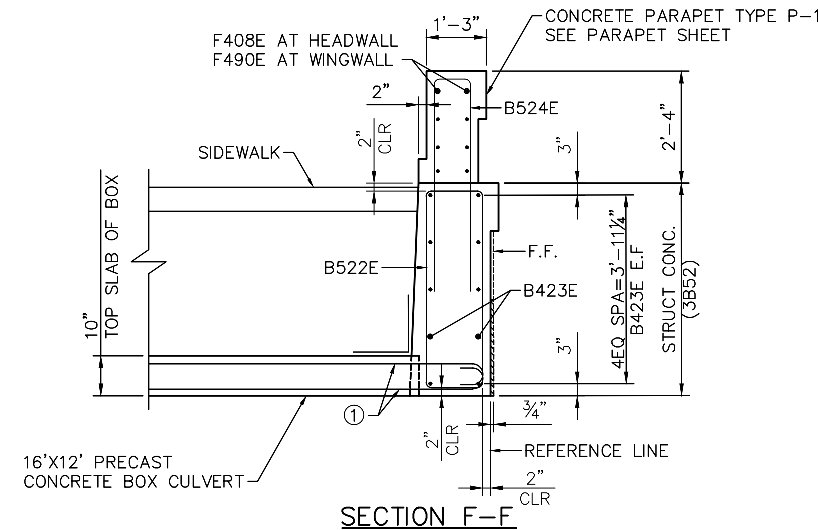
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27J61-BRG-HDW-002-1



CORNER DETAIL ABOVE & BELOW BOX – PLAN VIEW
(APPLIES TO NW, SW, & SE CORNERS)



SECTION E–E



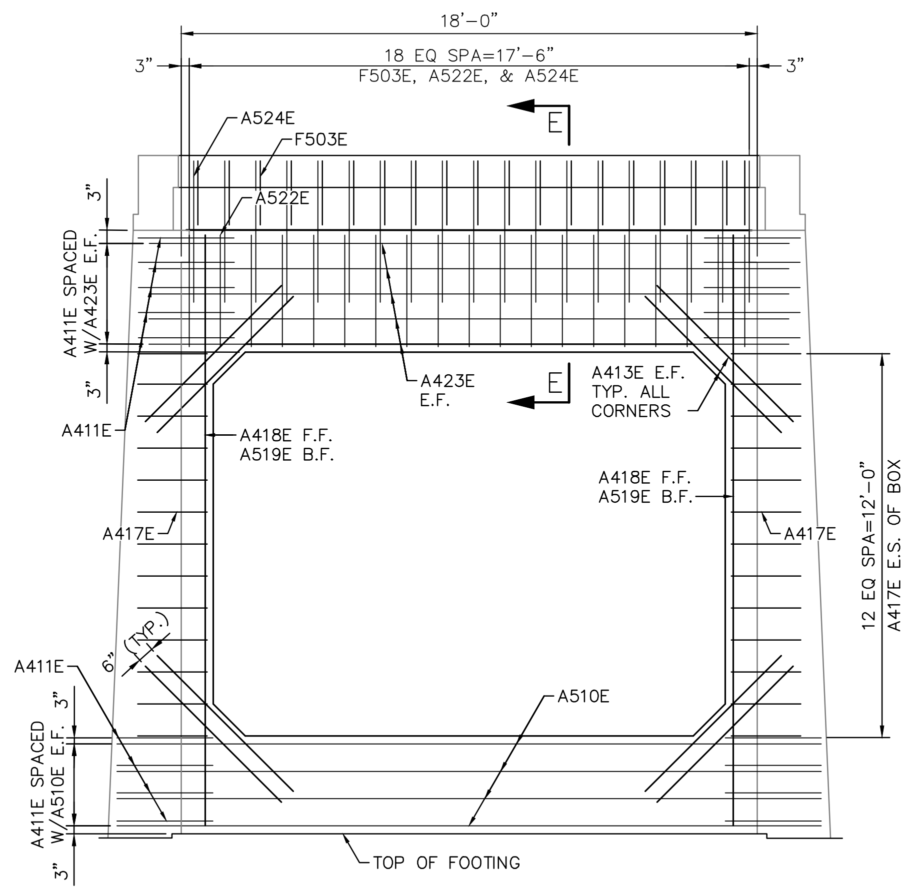
SECTION F–F

NOTES:

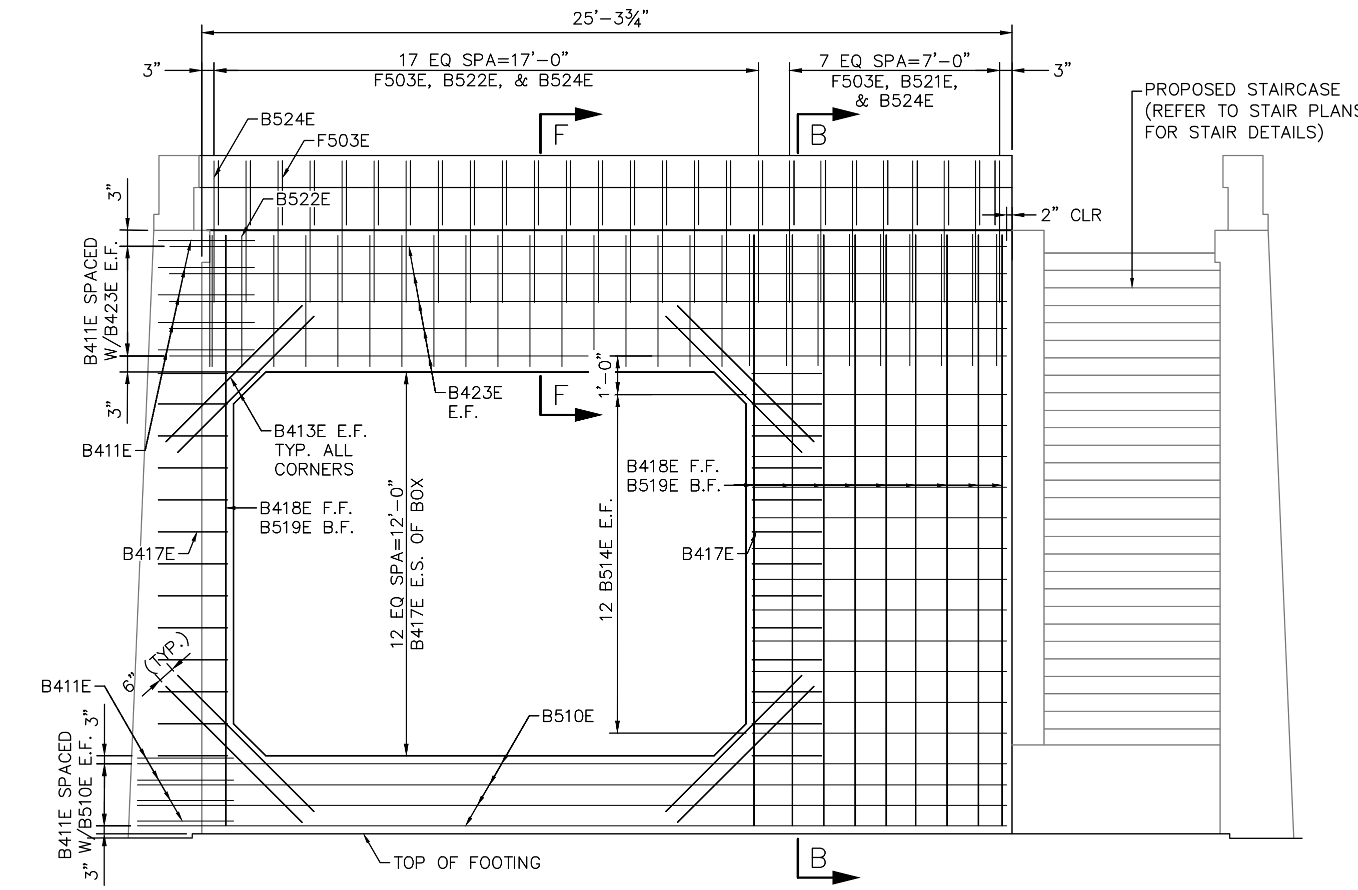
① BOX CULVERT MANUFACTURER SHALL EXTEND REINFORCEMENT As5 AND As6 OUT OF END SECTIONS. BARS SHALL EMBED 1'-8" INTO PRECAST CONCRETE BOX CULVERT AND PROJECT A 180° HOOK 1'-4" FROM END SECTION. BARS SHALL BE SPACED 1'-0" MAX. AROUND PRECAST CONCRETE BOX CULVERT AND HOOKS SHALL BE SET PERPENDICULAR TO CONCRETE FACES. COST FOR FURNISHING AND INSTALLING BARS INCLUDED IN PRICE BID FOR "16'X12' PRECAST CONCRETE BOX CULVERT."

F.F. DENOTES FRONT FACE
B.F. DENOTES BACK FACE
E.F. DENOTES EACH FACE
E.S. DENOTES EACH SIDE

SECTION B–B SHOWN ON SHEET 11 HEADWALL DETAILS



WEST HEADWALL ELEVATION



EAST HEADWALL ELEVATION

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML | CHECKED BY: JG
DRAWN BY: RCL | CHECKED BY: JG

AECOM Kimley»Horn

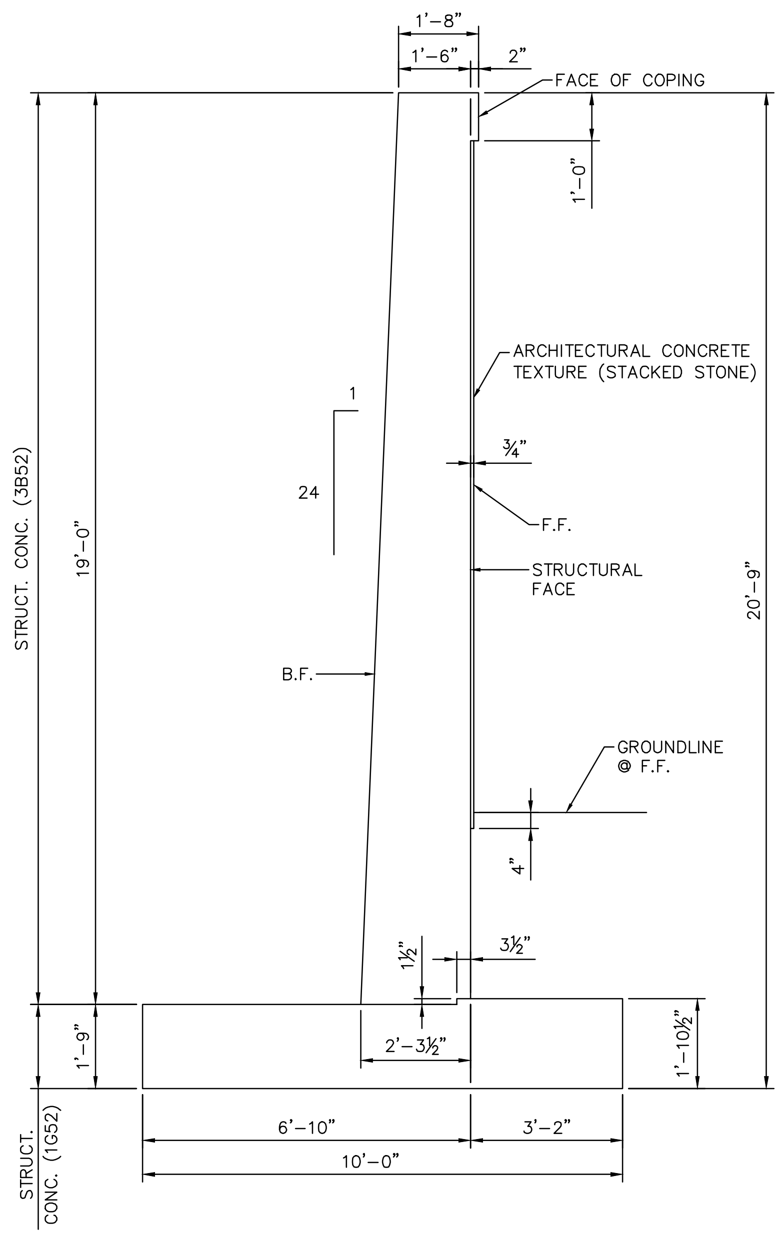
90% SUBMISSION - 01/22/16

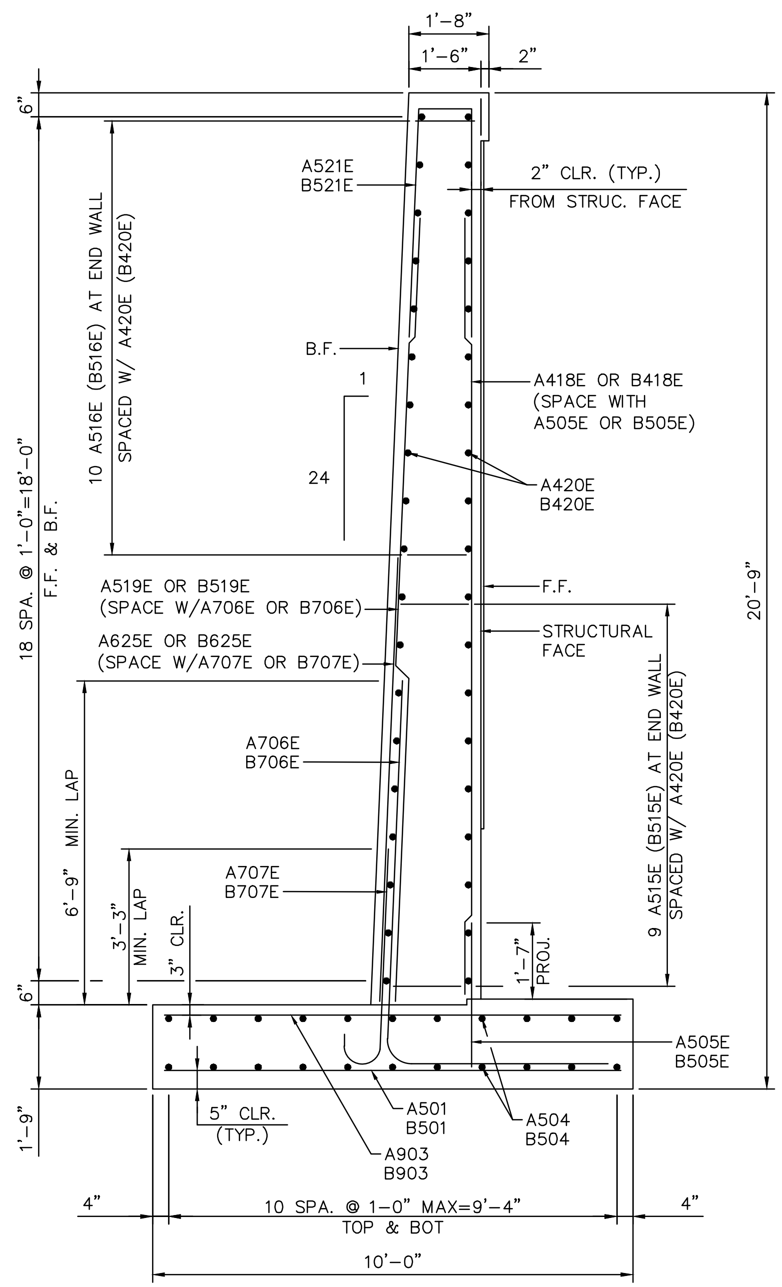
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN
UNDERPASS BRIDGE 27J61
HEADWALL REINFORCEMENT 1

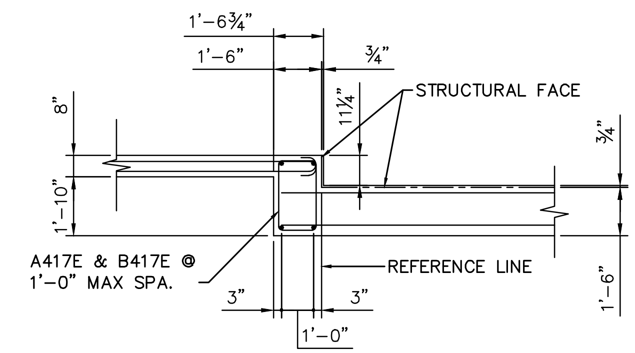
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27J61-BRG-HDW-002-2

SHEET 10 OF 24



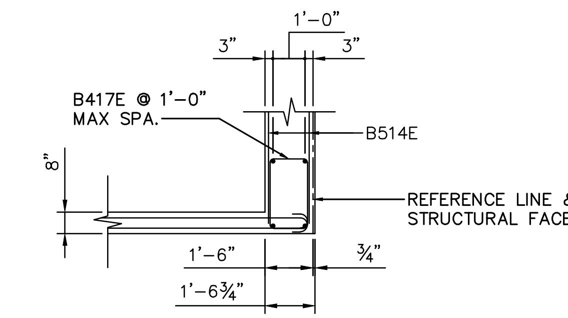


SECTION B–B



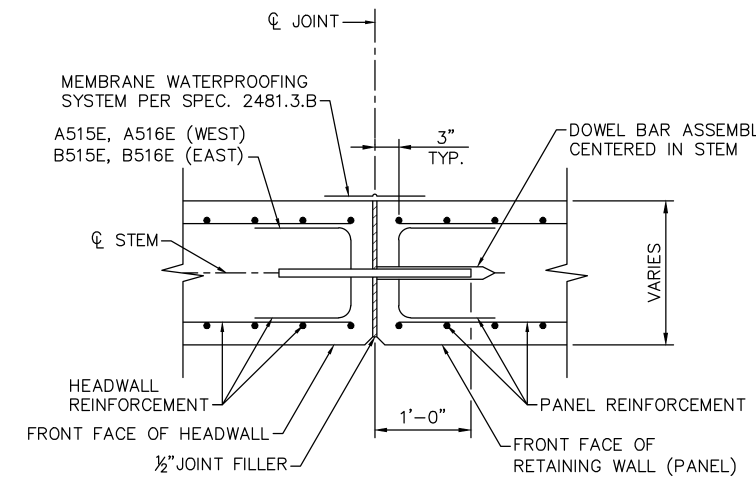
CORNER DETAIL–PLAN VIEW

(APPLIES TO NW, SW, & SE CORNERS)

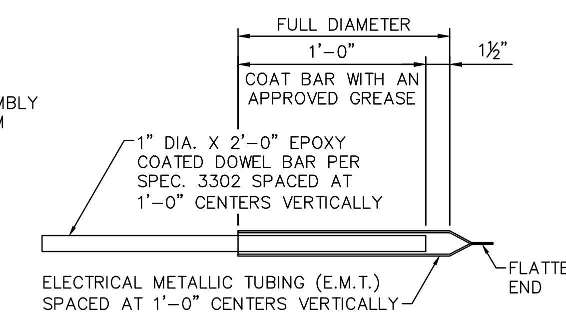


CORNER DETAIL–PLAN VIEW

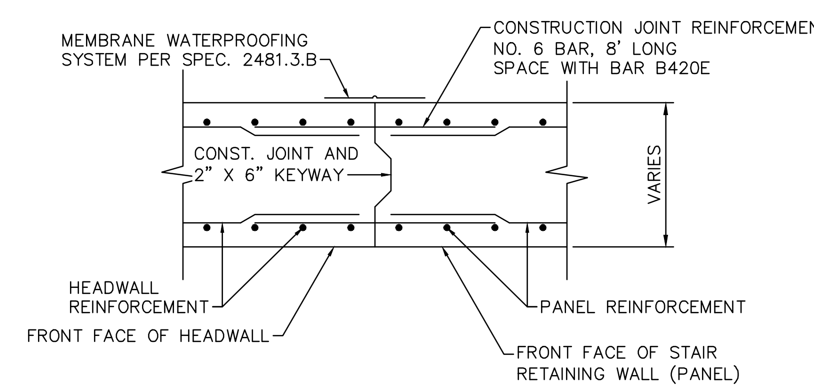
(APPLIES TO NE CORNER)



CONNECTION DETAIL TO RETAINING WALLS



DOWEL BAR ASSEMBLY



CONNECTION DETAIL TO STAIR RETAINING WALL

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY:	ML	CHECKED BY:	JG
DRAWN BY:	RCL	CHECKED BY:	JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
HEADWALL REINFORCEMENT 2

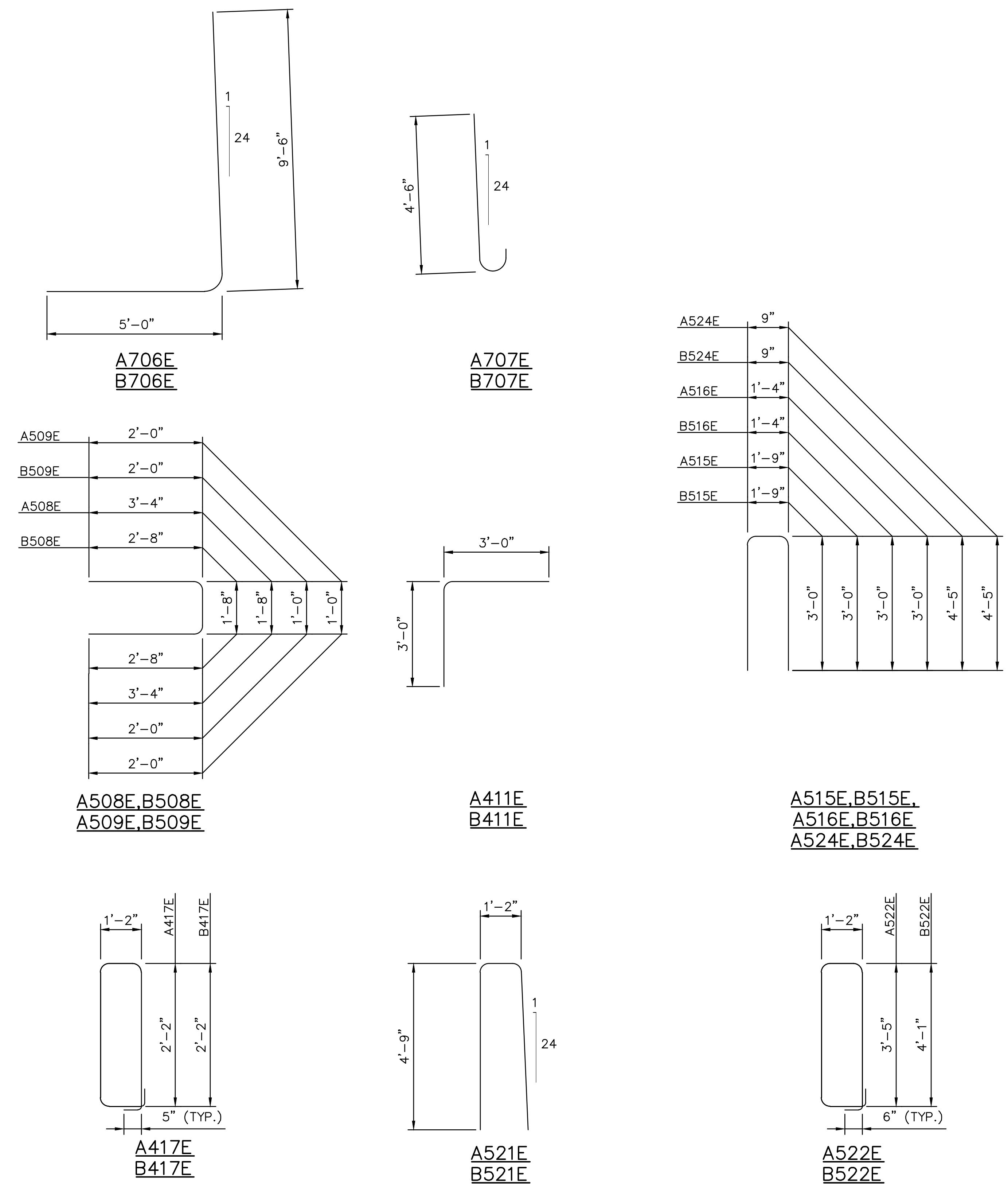
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27J61-BRG-HDW-003-1

SHEET 11 OF 24

BILL OF REINFORCEMENT WEST HEADWALL				
BAR	NO.	LENGTH	SHAPE	LOCATION
A501	24	9'-6"	STR.	FOOTING, TRANS. BOT.
A502	22	31'-2"	STR.	FOOOTING, LONG. TOP & BOT.
A903	24	9'-6"	STR.	FOOTING, TRANS. TOP
A504	44	14'-10"	STR.	FOOTING, LONG. TOP & BOT.
A505E	20	3'-0"	STR.	F.F. DOWELS
A706E	28	14'-6"	BENT	B.F. DOWELS
A707E	24	5'-10"	BENT	B.F. DOWELS
A508E	18	8'-4"	BENT	HEADWALL PEDESTAL TIE
A509E	18	5'-0"	BENT	HEADWALL PEDESTAL TIE
A510E	9	20'-6"	STR.	HEADWALL PEDESTAL, LONG. E.F.
A411E	36	6'-0"	BENT	HEADWALL CORNER TIE
A413E	16	6'-0"	STR.	HEADWALL FILLET TIE
A515E	18	7'-9"	BENT	END OF WALL TIE
A516E	20	7'-4"	BENT	END OF WALL TIE
A417E	26	7'-6"	BENT	HEADWALL STIRRUP
A418E	20	16'-2"	STR.	HEADWALL, VERT. F.F.
A519E	28	16'-2"	STR.	HEADWALL, VERT. B.F.
A420E	76	9'-6"	STR.	WINGWALL, HORZ. E.F.
A521E	22	10'-8"	BENT	HEADWALL TIE
A522E	19	10'-2"	BENT	HEADWALL STIRRUP
A423E	10	20'-6"	STR.	HEADWALL, LONG. E.F.
A524E	41	9'-7"	BENT	BARRIER TIE
A625E	24	9'-3"	STR.	HEADWALL, VERT. B.F.

BILL OF REINFORCEMENT EAST HEADWALL				
BAR	NO.	LENGTH	SHAPE	LOCATION
B501	29	9'-6"	STR.	FOOTING, TRANS. BOT.
B502	22	31'-7"	STR.	FOOOTING, LONG. TOP & BOT.
B903	29	9'-6"	STR.	FOOTING, TRANS. TOP
B504	22	14'-10"	STR.	FOOTING, LONG. TOP & BOT.
B505E	18	3'-0"	STR.	F.F. DOWELS
B706E	22	14'-6"	BENT	B.F. DOWELS
B707E	19	5'-10"	BENT	B.F. DOWELS
B508E	18	7'-0"	BENT	HEADWALL PEDESTAL TIE
B509E	18	5'-0"	BENT	HEADWALL PEDESTAL TIE
B510E	9	26'-3"	STR.	HEADWALL PEDESTAL, LONG. E.F.
B411E	18	6'-0"	BENT	HEADWALL CORNER TIE
B413E	16	6'-0"	STR.	HEADWALL FILLET TIE
B514E	24	7'-9"	STR.	HEADWALL LONG. E.F.
B515E	9	7'-9"	BENT	END OF WALL TIE
B516E	10	7'-4"	BENT	END OF WALL TIE
B417E	26	7'-6"	BENT	HEADWALL STIRRUP
B418E	18	16'-2"	STR.	HEADWALL, VERT. F.F.
B519E	22	16'-2"	STR.	HEADWALL, VERT. B.F.
B420E	38	9'-6"	STR.	WINGWALL, HORZ. E.F.
B521E	19	10'-8"	BENT	HEADWALL TIE
B522E	18	11'-6"	BENT	HEADWALL STIRRUP
B423E	10	26'-3"	STR.	HEADWALL, LONG. E.F.
B524E	37	9'-7"	BENT	BARRIER TIE
B625E	19	9'-3"	STR.	HEADWALL, VERT. B.F.



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG
DRAWN BY: RCL CHECKED BY: JG

AECOM Kimley»Horn

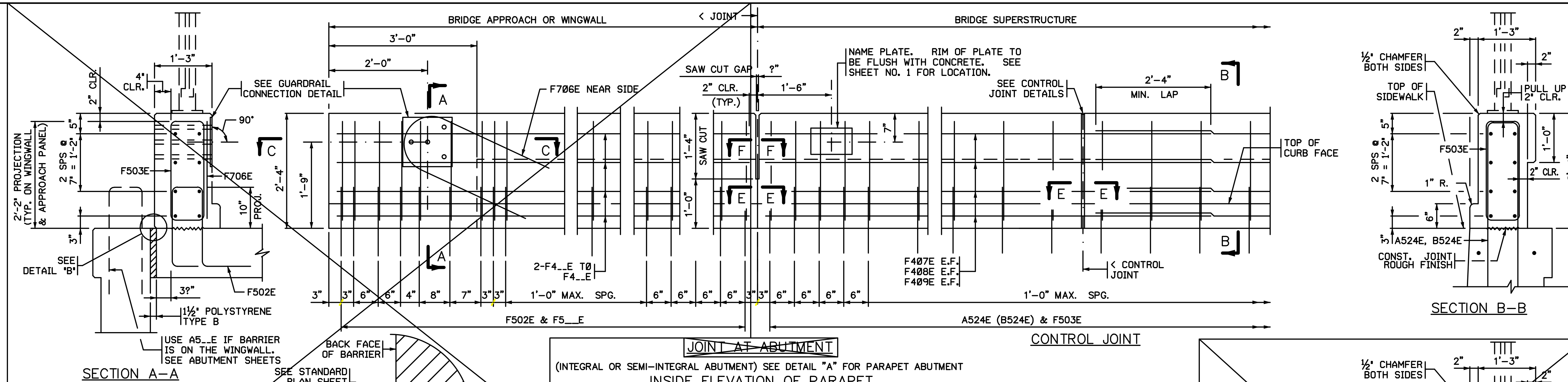
90% SUBMISSION - 01/22/16

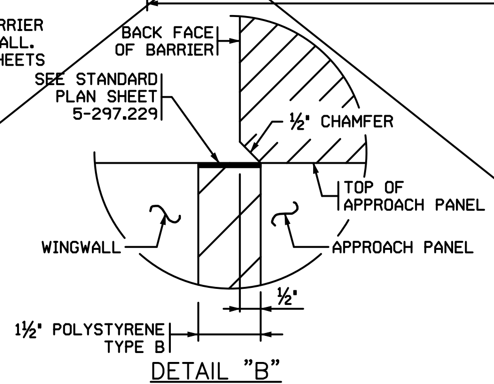
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
REINFORCEMENT BAR LIST

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27J61-BRG-RNF





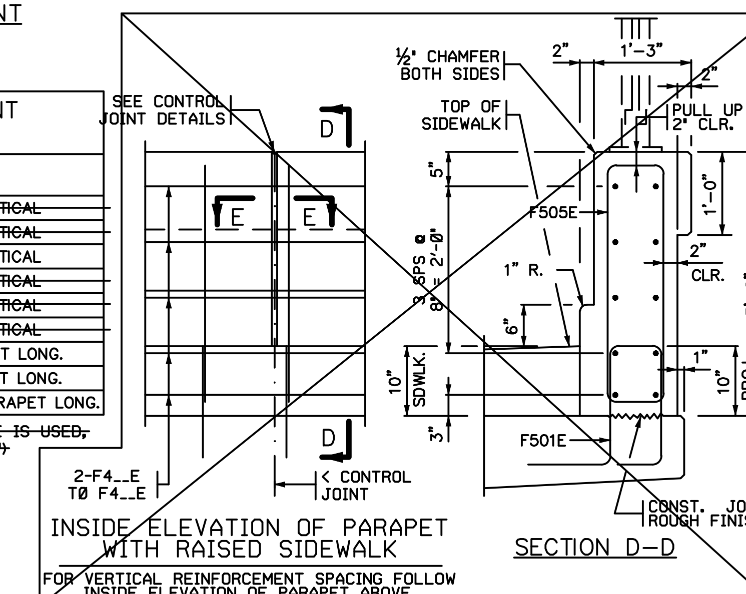
DETAIL "B"

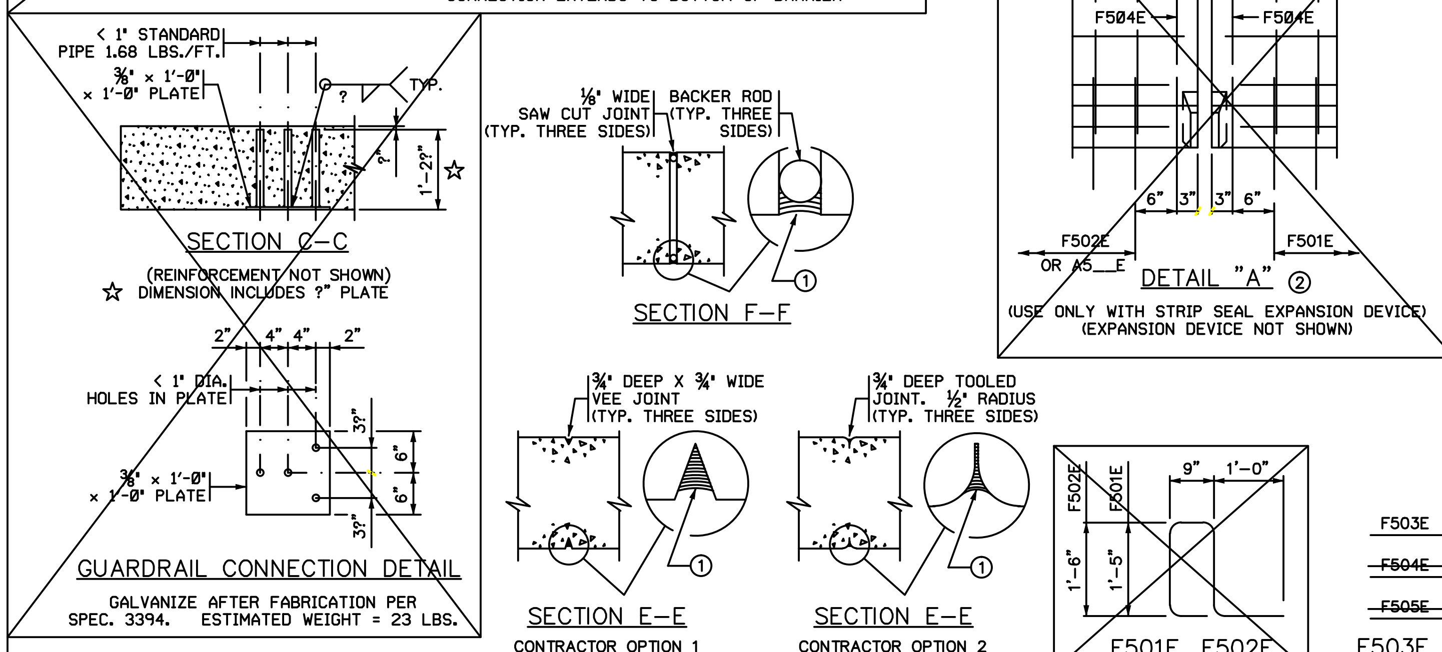
(ELEVATION VIEW) WHERE COPING ON BACK OF BARRIER AT GUARDRAIL CONNECTION EXTENDS TO BOTTOM OF BARRIER

BAR	NO.	LENGTH	SHAPE	LOCATION
~~F501E~~	~~—~~	~~5'-2"~~		~~PARAPET VERTICAL~~
~~F502E~~	~~—~~	~~5'-4"~~		~~PARAPET VERTICAL~~
F503E	78	6'-5"		PARAPET VERTICAL
* ~~F504E~~	~~—~~	~~4'-9"~~		~~PARAPET VERTICAL~~
~~F505E~~	~~—~~	~~8'-1"~~		~~PARAPET VERTICAL~~
~~F706E~~	~~—~~	~~6'-7"~~		~~PARAPET VERTICAL~~
F407E	8	20'-6"		WEST PARAPET LONG.
F408E	8	26'-3"		EAST PARAPET LONG.
F409E	24	9'-6"		WINGWALL PARAPET LONG.

BILL OF REINFORCEMENT FOR PARAPET

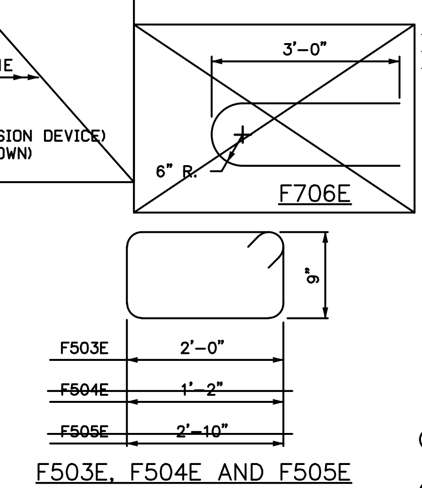
* ~~F504E WHEN STRIP SEAL EXPANSION DEVICE IS USED, WITHOUT RAISED SIDEWALK. (SEE DETAIL "A")~~





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)



GENERAL NOTES

~~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 BETWEEN THE OUTSIDE FACES OF THE CONCRETE PARAPET.

CONCRETE PARAPET = 416 LBS./FT. (0.103 CU. YDS./FT.)

~~CONCRETE PARAPET W/ADJACENT SIDEWALK (BASED ON A 10" SIDEWALK HEIGHT) = 573 LBS./FT. (0.141 CU. YDS./FT.)~~

FINISH ALL EDGES OF PARAPET WITH ½" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.

MAXIMUM SPACING OF CONTROL JOINTS ON SUPERSTRUCTURE, APPROACH AND WINGWALL SHALL BE 10 FT. SEE SUPERSTRUCTURE SHEET FOR JOINT SPACING.

~~GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, SPEC. 3306. GUARDRAIL CONNECTION AND NAME PLATE TO BE CONSIDERED INCIDENTAL TO "TYPE P-1 PARAPET CONCRETE (3Y46 OR 3Y4GA)".~~

~~SEE STANDARD FIGURE 5-397.___ FOR LIGHT BLISTER DETAILS.~~

PARAPET QUANTITIES ARE LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

1. JOINT SEALANT PER MnDOT APPROVED/QUALIFIED PRODUCTS LIST - CRACK AND JOINT MATERIALS - SILICONE JOINT SEALERS.

2. ~~REFER TO STANDARD FIGURE 5-397.632 FOR COVER PLATE DETAILS.~~

FIG. 5-397.166

REVISION:

APPROVED: NOVEMBER 6, 2013

Nancy Daubenberger

STATE BRIDGE ENGINEER

CERTIFIED BY ______ LICENSED PROFESSIONAL ENGINEER ______ DATE

NAME: ______ LIC. NO. ______

TITLE: CONCRETE PARAPET (TYPE P-1) ~~WITH INTEGRAL END POST (WITHOUT CONCRETE WEARING COURSE)~~

DES: ______ DR: ______ CHK: ______ CHK: ______

APPROVED:

SHEET NO. 13 OF 24 SHEETS

BRIDGE NO. 27J61

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG

DRAWN BY: RCL CHECKED BY: JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

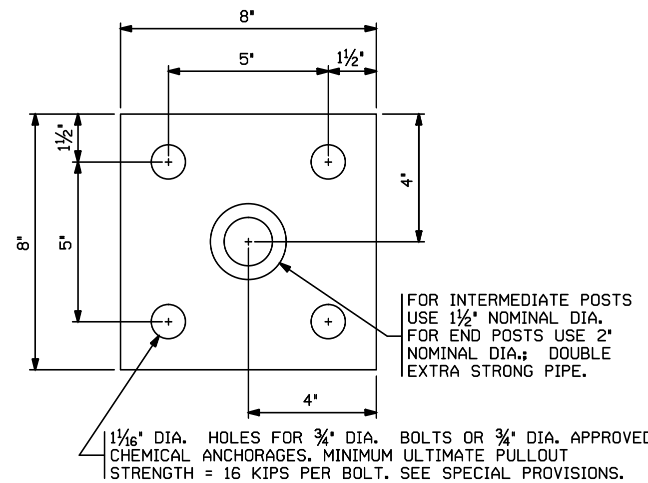
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN
UNDERPASS BRIDGE 27J61
CONCRETE PARAPET (TYPE P-1)

DISCIPLINE: STRUCTURES

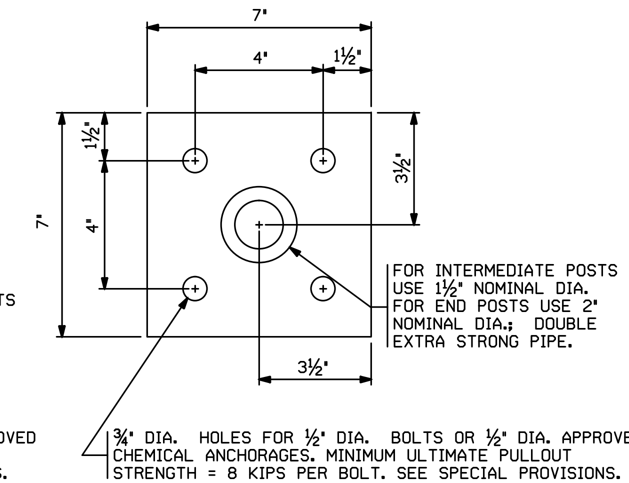
SHEET NAME: CBR27J61-BRG-DTL-002

SHEET 13 OF 24



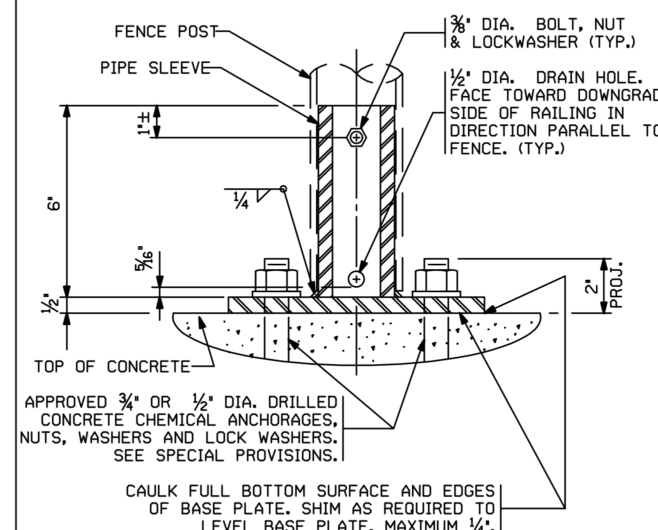
PLAN VIEW - TYPE A

ESTIMATED WEIGHT = 12 OR 14 LBS.

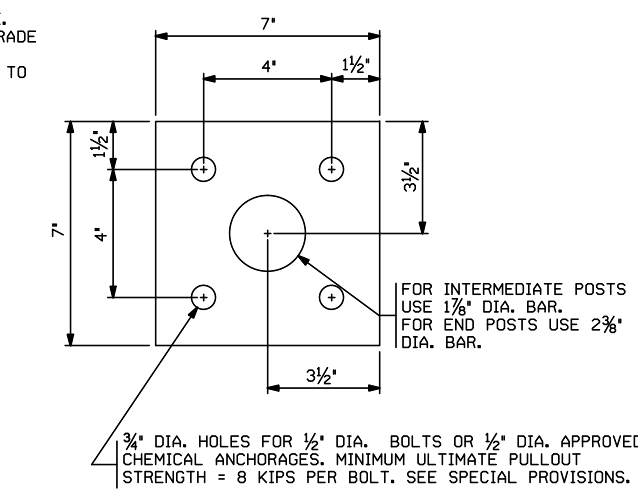


PLAN VIEW - TYPE B

ESTIMATED WEIGHT = 10 OR 12 LBS.

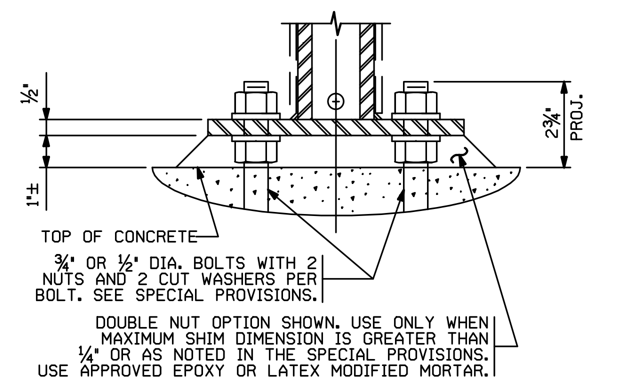


TYPICAL SECTION



PLAN VIEW - TYPE C

ESTIMATED WEIGHT = 12 OR 15 LBS.



GROUT ALTERNATE

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:
1½" NOMINAL DIA. = 6.41 LBS./FT.
2" NOMINAL DIA. = 9.03 LBS./FT.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
STATE BRIDGE ENGINEER	FENCE POST ANCHORAGE		B905

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML | CHECKED BY: JG
DRAWN BY: TRH | CHECKED BY: JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
BRIDGE DETAILS

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27J61-BRG-DTL-003

SHEET 14 OF 24

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).

AS-BUILT DETAILS

(AS NEEDED)

REVISION: 10-28-2008

APPROVED: SEPTEMBER 26, 2003

Daniel L. Dorgan

STATE BRIDGE ENGINEER

FIG. 5-397.900

TITLE: AS-BUILT BRIDGE DATA

DES: ______ DR: ______ CHK: ______ CHK: ______

APPROVED:

SHEET NO. 15 OF 24 SHEETS

BRIDGE NO. 27J61

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG

DRAWN BY: RCL CHECKED BY: JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

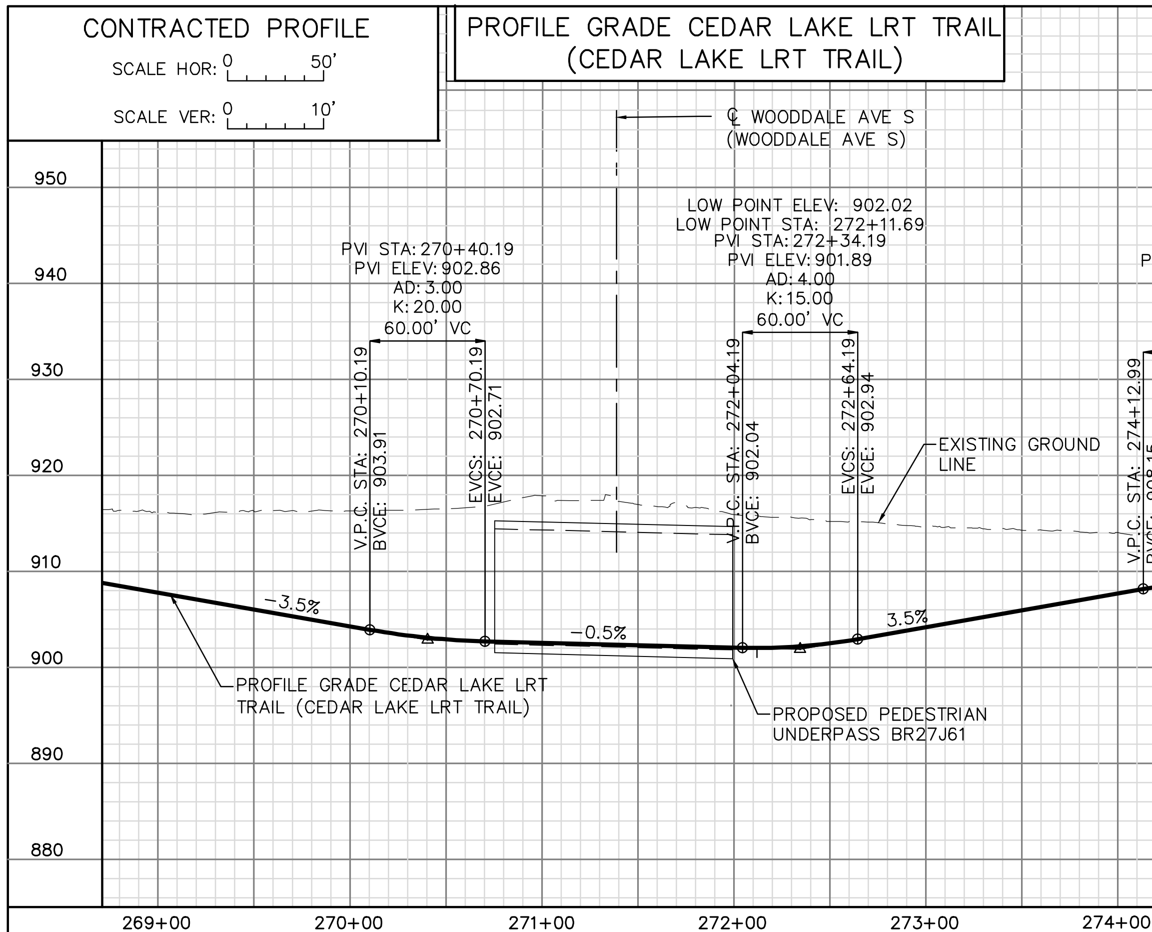
SOUTHWEST Green Line LRT Extension

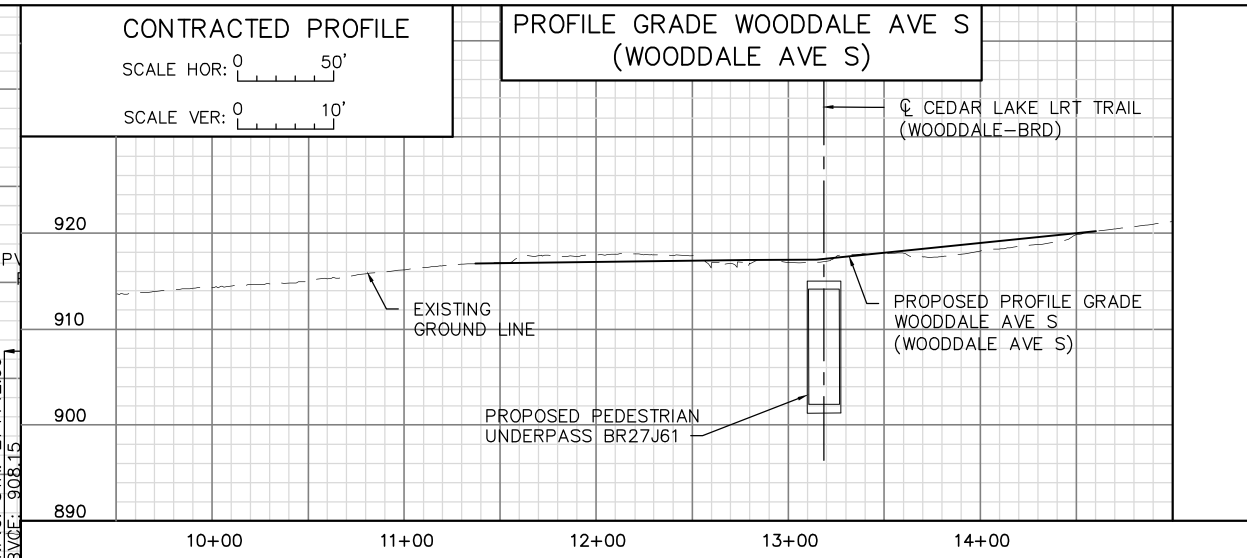
CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN
UNDERPASS BRIDGE 27J61
AS-BUILT BRIDGE DATA

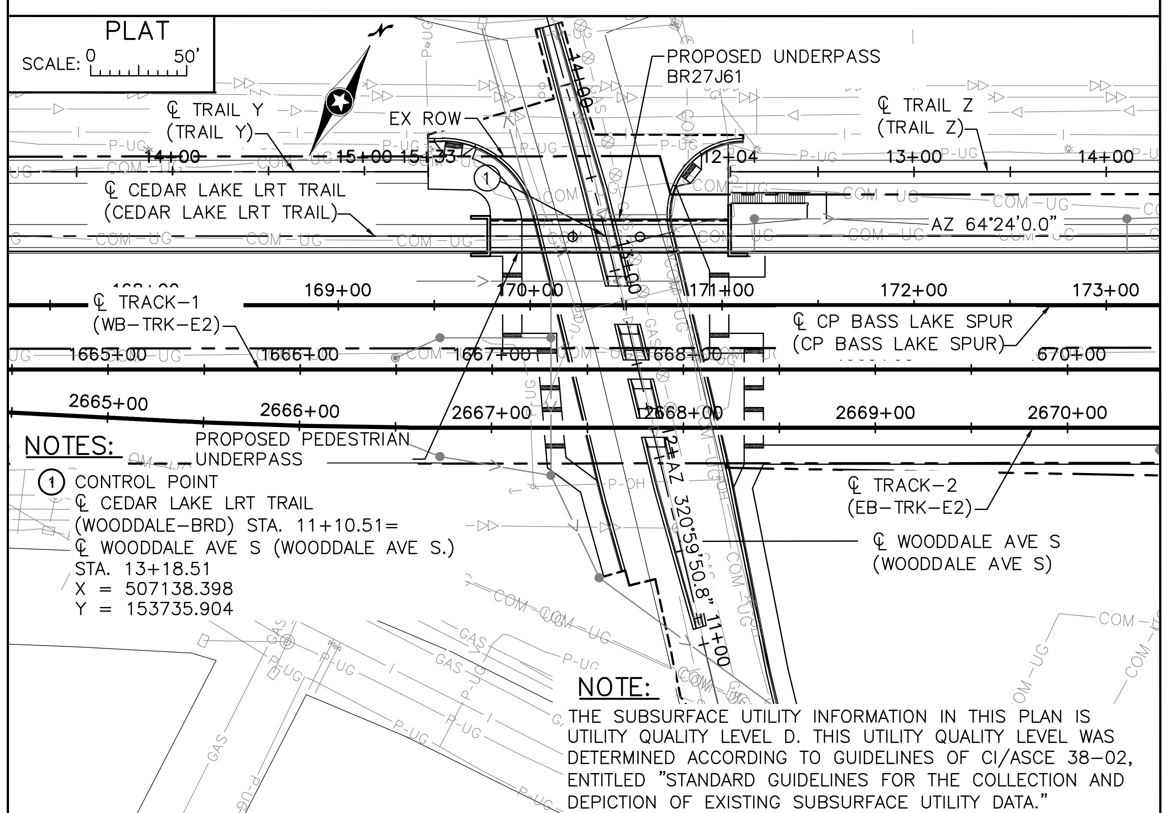
SHEET 15 OF 24

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27J61-BRG-DTL-004





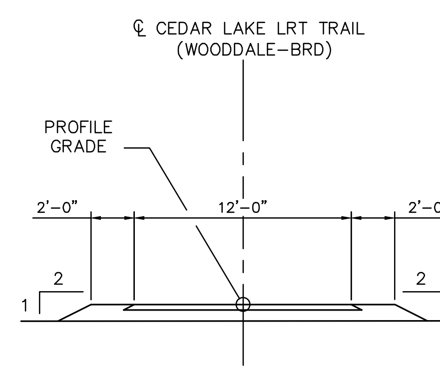


NOTES:

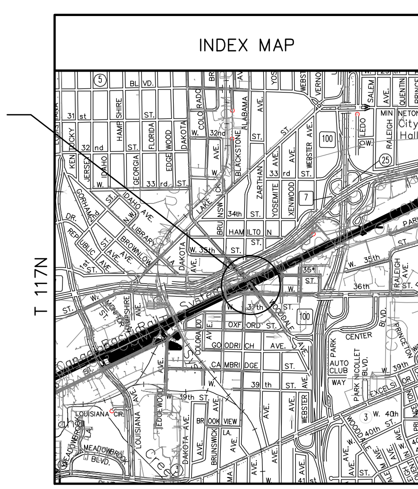
1. CONTROL POINT
℄ CEDAR LAKE LRT TRAIL
(WOODDALE-BRD) STA. 11+10.51=
℄ WOODDALE AVE S (WOODDALE AVE S.)
STA. 13+18.51
X = 507138.398
Y = 153735.904

NOTE:

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."



TYPICAL APPROACH SECTION
CEDAR LAKE LRT TRAIL



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 (PARTICULARY 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 ENGINEER'S RECOMMENDATION

DATE:

STREAM OR DITCH DESIGNATION:

DRAINAGE AREA: SQ. MI.

MAX FLOOD ON RECORD: UNKNOWN

DESIGN FLOOD (100 YR. FREQ.): C.F.S.
HEADWATER ELEVATION: FT.
DESIGN MEAN VELOCITY THROUGH STRUCTURE F.P.S.
TOTAL STAGE INCREASE FT.
LOW MEMBER AT OR ABOVE ELEVATION FT.

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

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

FLOWLINE ELEVATION: FT. SKEW ANGLE: DEG.

ESTIMATED PRELIMINARY TOTAL SCOUR (500 YR. FREQ.) AT ABUTMENT TO BE PROVIDED AT 60% SUBMITTAL

SCOUR CONFIRMATION RECOMMENDATION

DATE: PENDING

FINAL HYDRAULIC AND SCOUR ANALYSIS PENDING FROM DNR AND RESULTS OF IN-PLACE ABUTMENT TESTING. RECOMMENDATION TO BE PROVIDED AT 60% SUBMITTAL.

BRIDGE SURVEY SHEETS MADE FROM 2014 MFRA SURVEYS

1ST BENCH MARK (NAVD88)
ELEVATION: 922.10
NORTHING: 153902.36
EASTING: 506943.04
DESCRIPTION: SPIKE IN WALK.

2ND BENCH MARK (NADV88)
ELEVATION: 914.44
NORTHING: 153987.80
EASTING: 507459.25
DESCRIPTION: TOP NUT HYDRANT.

BRIDGE SURVEY

WOODDALE AVE. S. OVER CEDAR LAKE LRT TRAIL
0.06 MI. SE OF JCT. OF T.H. 7
IN ST. LOUIS PARK

SEC 16 T 117N R 21W

CITY OF ST. LOUIS PARK HENNEPIN COUNTY

BRIDGE 27J61

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG
DRAWN BY: RCL CHECKED BY: JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
BRIDGE SURVEY 1

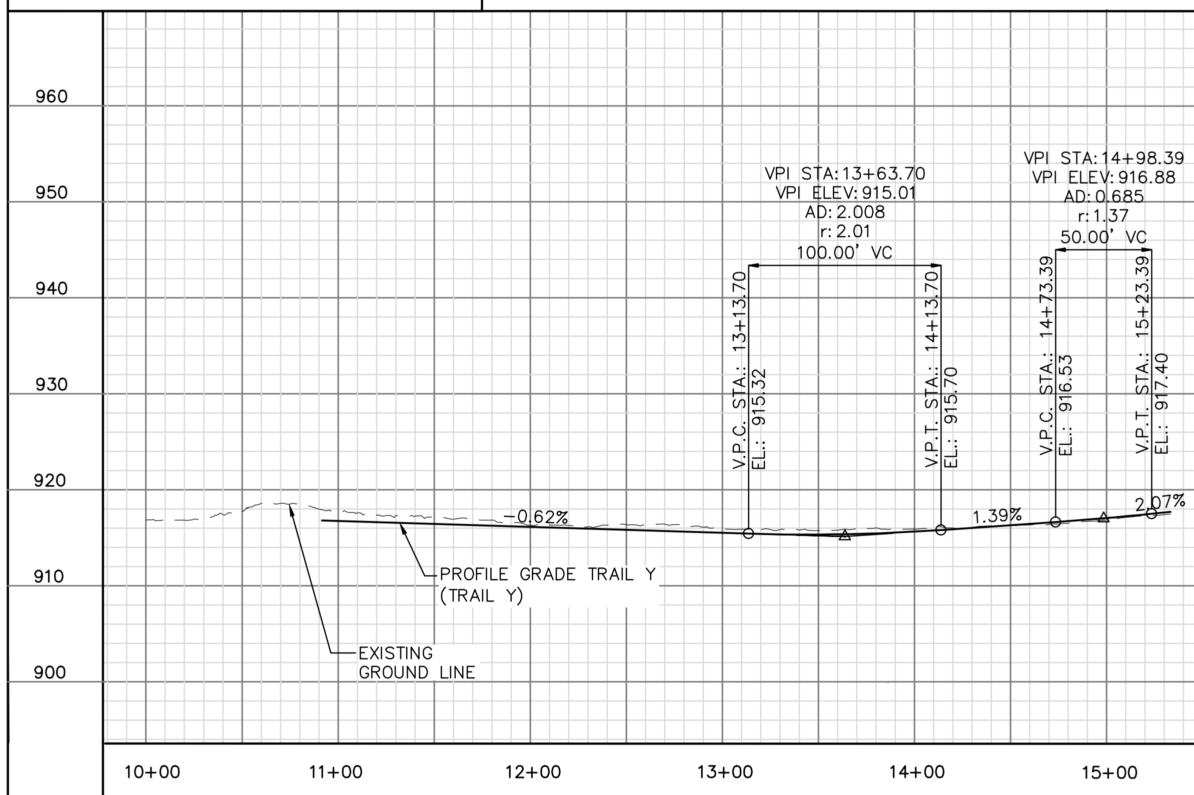
DISCIPLINE: STRUCTURES

SHEET NAME: CBR27J61-BRG-SUR-001-1

SHEET 16 OF 24

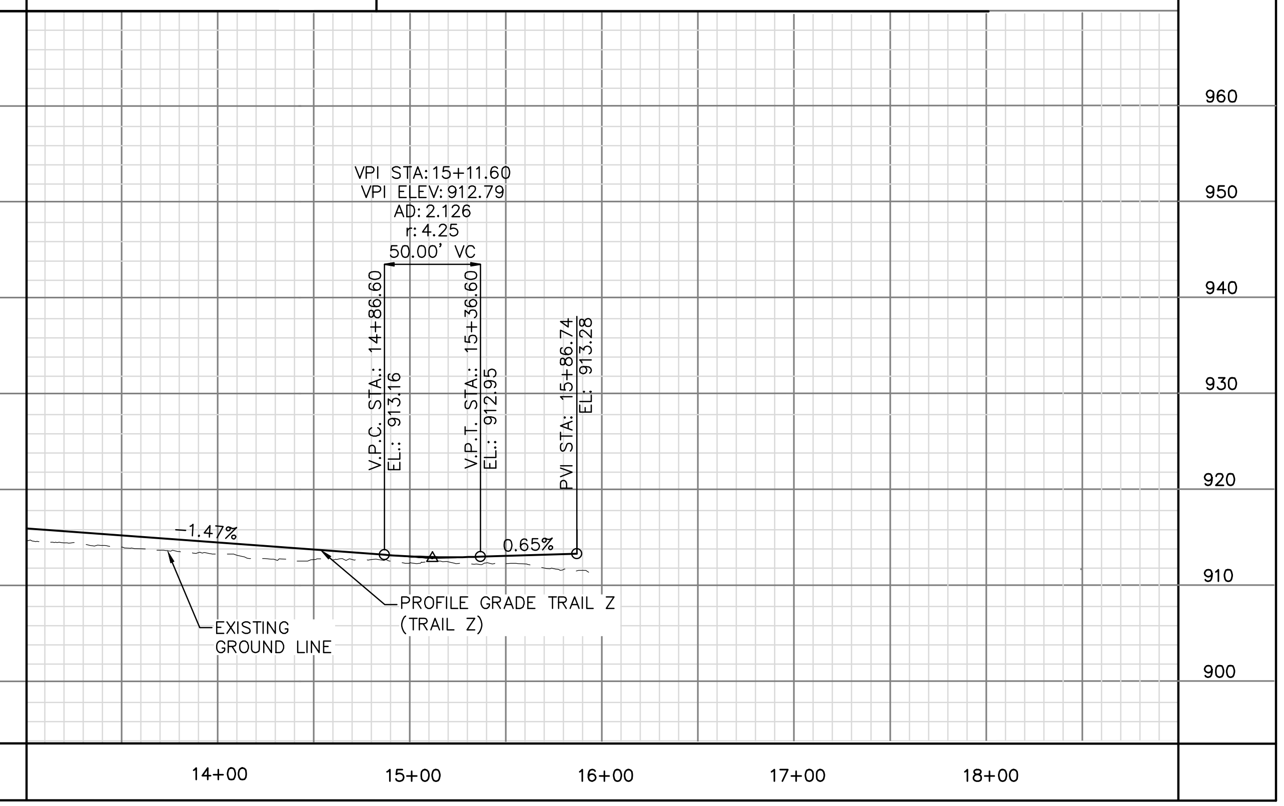
CONTRACTED PROFILE
SCALE HOR: 0 50'
SCALE VER: 0 10'

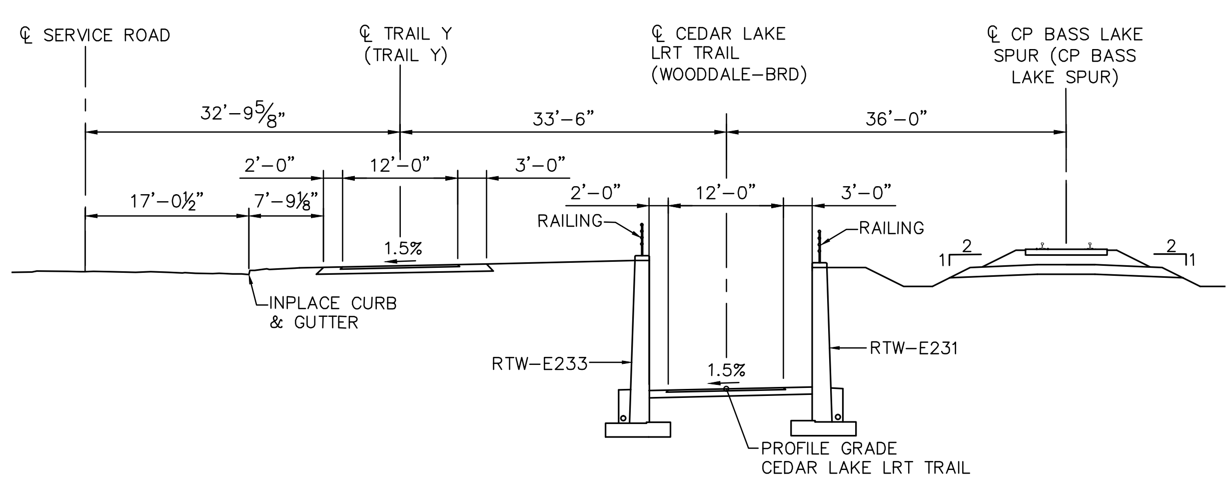
PROFILE GRADE TRAIL Y
(TRAIL Y)



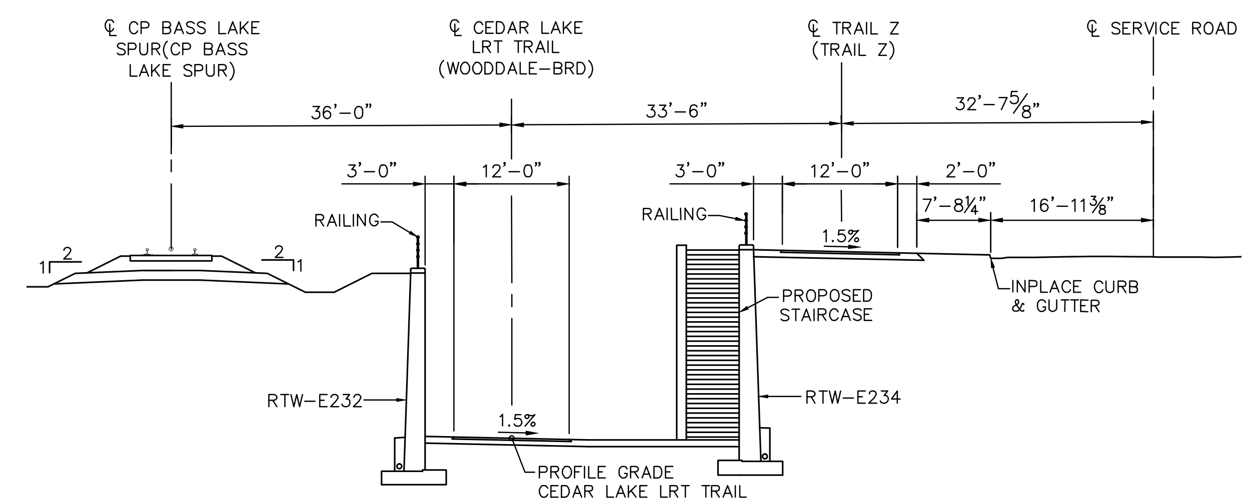
CONTRACTED PROFILE
SCALE HOR: 0 50'
SCALE VER: 0 10'

PROFILE GRADE TRAIL Z
(TRAIL Z)





PROPOSED TYPICAL CEDAR LAKE LRT
TRAIL SECTION (LOOKING EAST)
STA. 270+50.00



PROPOSED TYPICAL CEDAR LAKE LRT
TRAIL SECTION (LOOKING WEST)
STA. 273+00.00

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG
DRAWN BY: RCL CHECKED BY: JG

AECOM Kimley»Horn

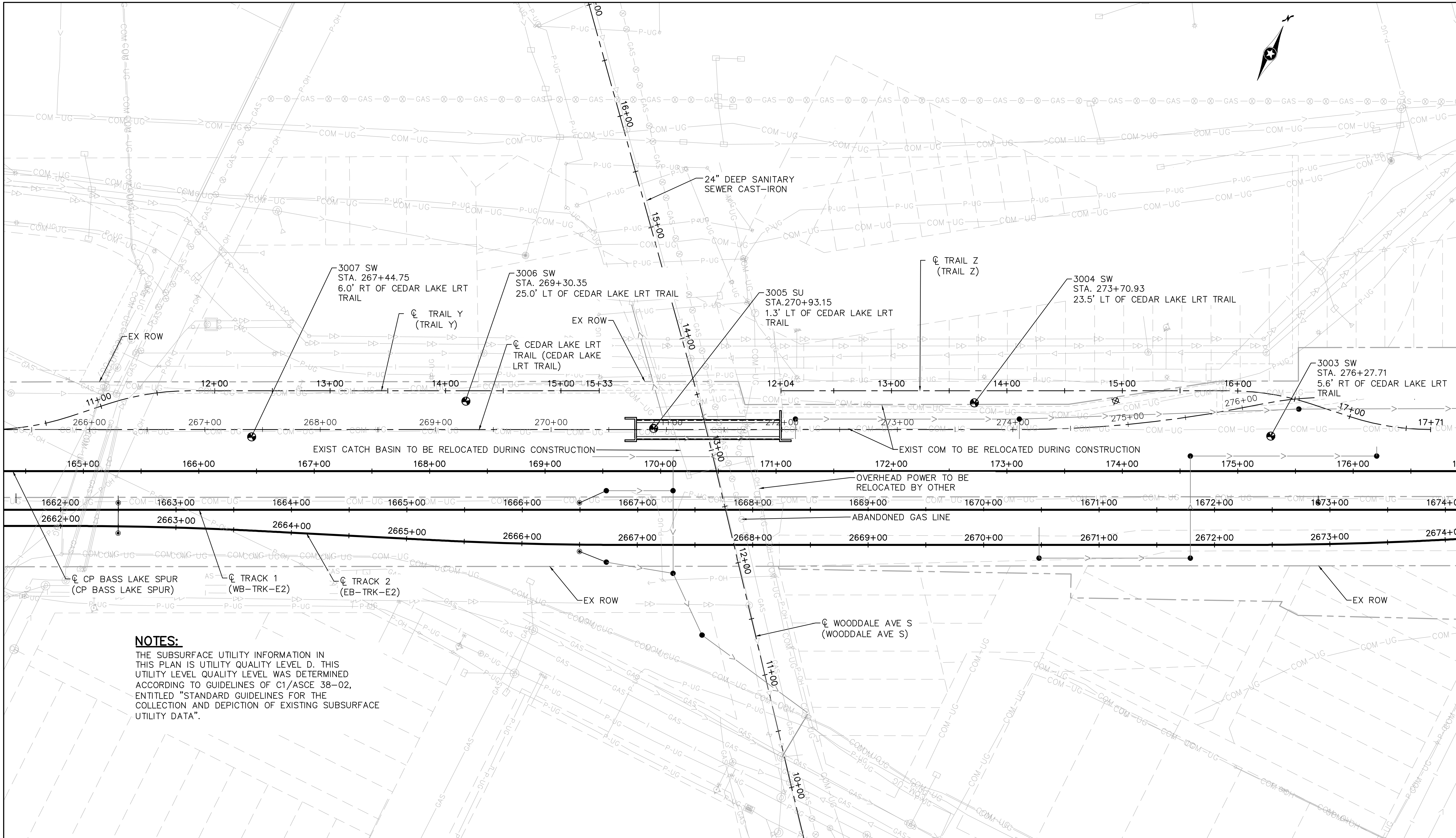
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
BRIDGE SURVEY 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27J61-BRG-SUR-001-2

Jan. 18 2016 10:05 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27J61\CBR27J61-BRG-SUR-001.dwg By: Ryan.Laurent



NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY LEVEL 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".

Jan, 18 2016 10:07 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27J61\CBR27J61-BRG-BOR-001.dwg By: Ryan.Laurent

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG
DRAWN BY: TRH CHECKED BY: JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

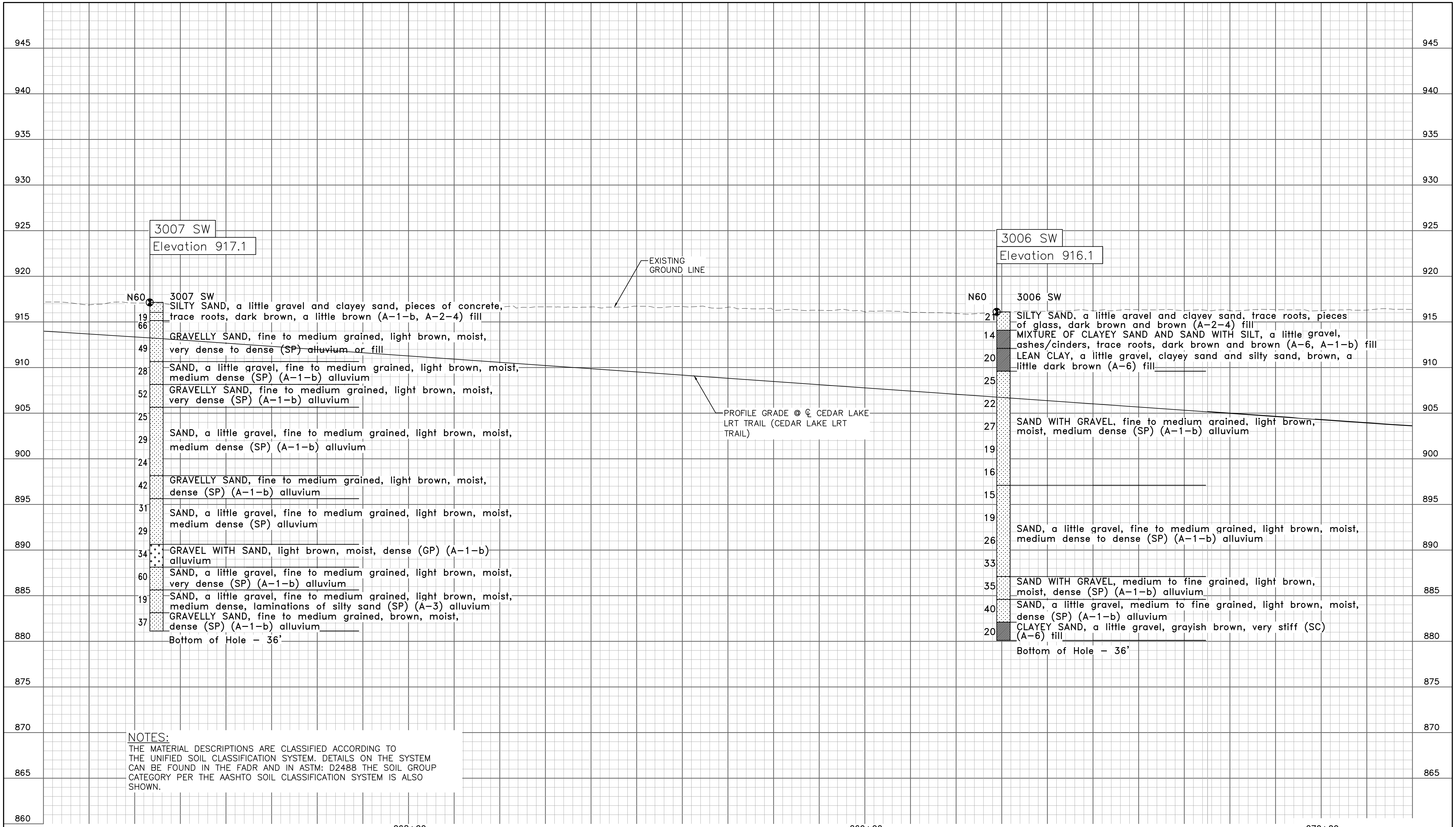
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
BRIDGE SURVEY PLAN

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27J61-BRG-BOR-001

SHEET 18 OF 24



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 THE SOIL GROUP CATEGORY PER THE AASHTO SOIL CLASSIFICATION SYSTEM IS ALSO SHOWN.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG
DRAWN BY: CJM CHECKED BY: JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

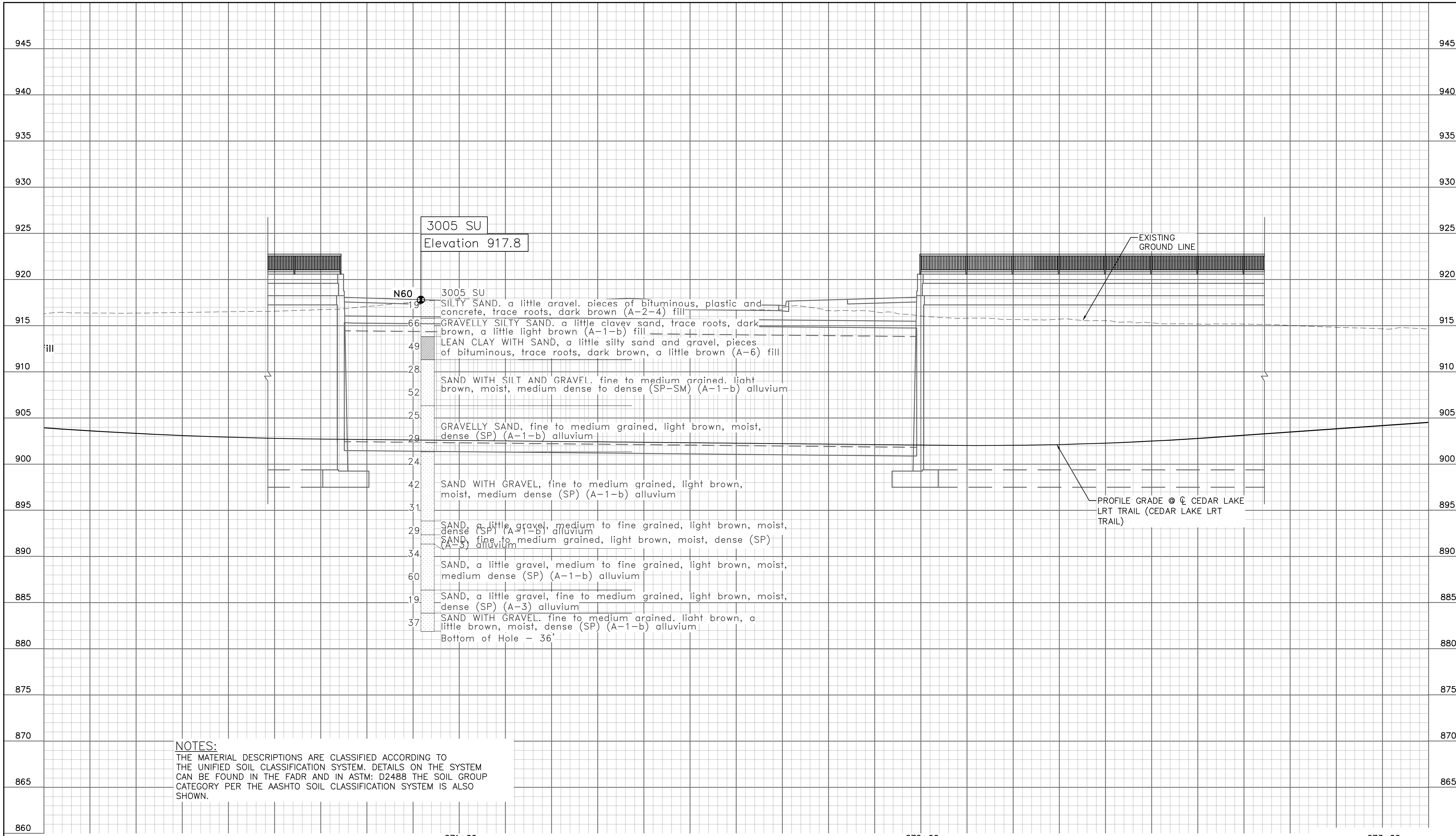
CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61 BRIDGE SURVEY PROFILE 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27J61-BRG-BOR-002-1

SHEET 19 OF 24

Jan, 18 2016 10:08 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27J61\CBR27J61-BRG-BOR-002.dwg By: Ryan.Laurent



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 THE SOIL GROUP CATEGORY PER THE AASHTO SOIL CLASSIFICATION SYSTEM IS ALSO SHOWN.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML CHECKED BY: JG
DRAWN BY: CJM CHECKED BY: JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

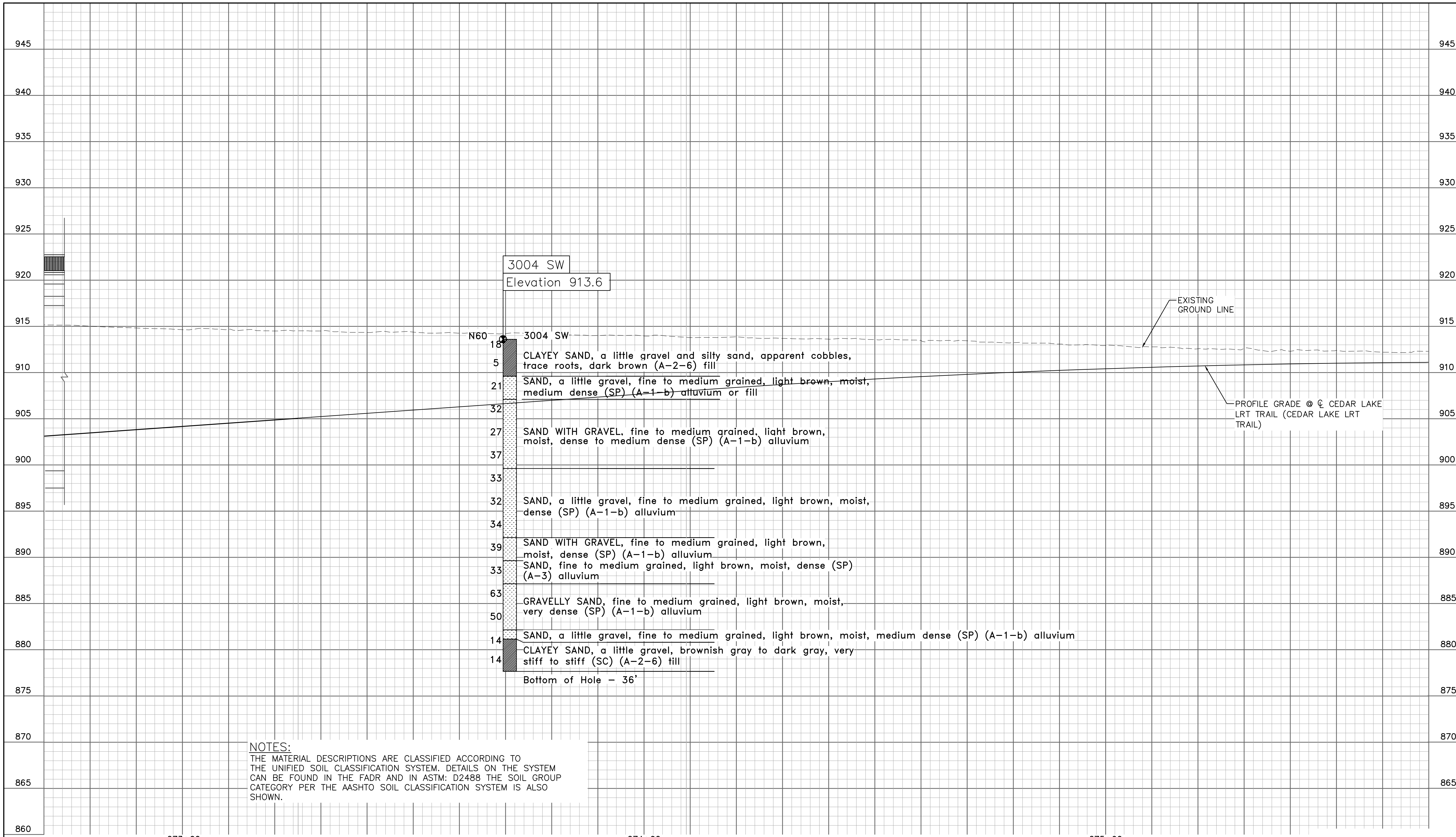
CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
BRIDGE SURVEY PROFILE 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27J61-BRG-BOR-002-2

SHEET 20 OF 24

Jan. 18 2016 10:08 am V:\3400_ADC\CAD\SEGMENT E2\PLAN SHEETS\STRUCTURES\27J61\CBR27J61-BRG-BOR-002.dwg By: Ryan.Laurent



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML | CHECKED BY: JG
DRAWN BY: CJM | CHECKED BY: JG

AECOM Kimley»Horn

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

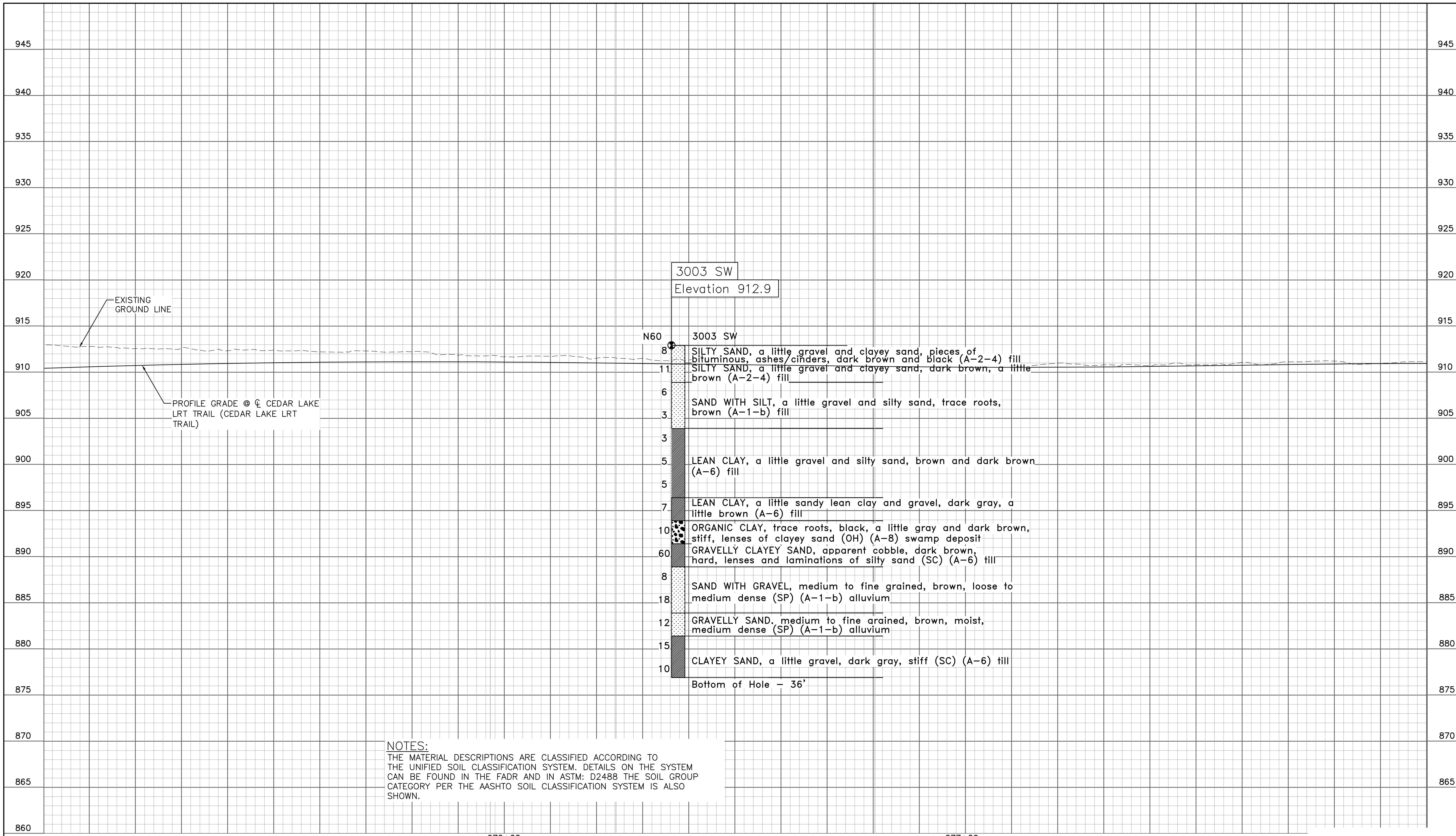
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
BRIDGE SURVEY PROFILE 3

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27J61-BRG-BOR-002-3

SHEET 21 OF 24



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 THE SOIL GROUP CATEGORY PER THE AASHTO SOIL CLASSIFICATION SYSTEM IS ALSO SHOWN.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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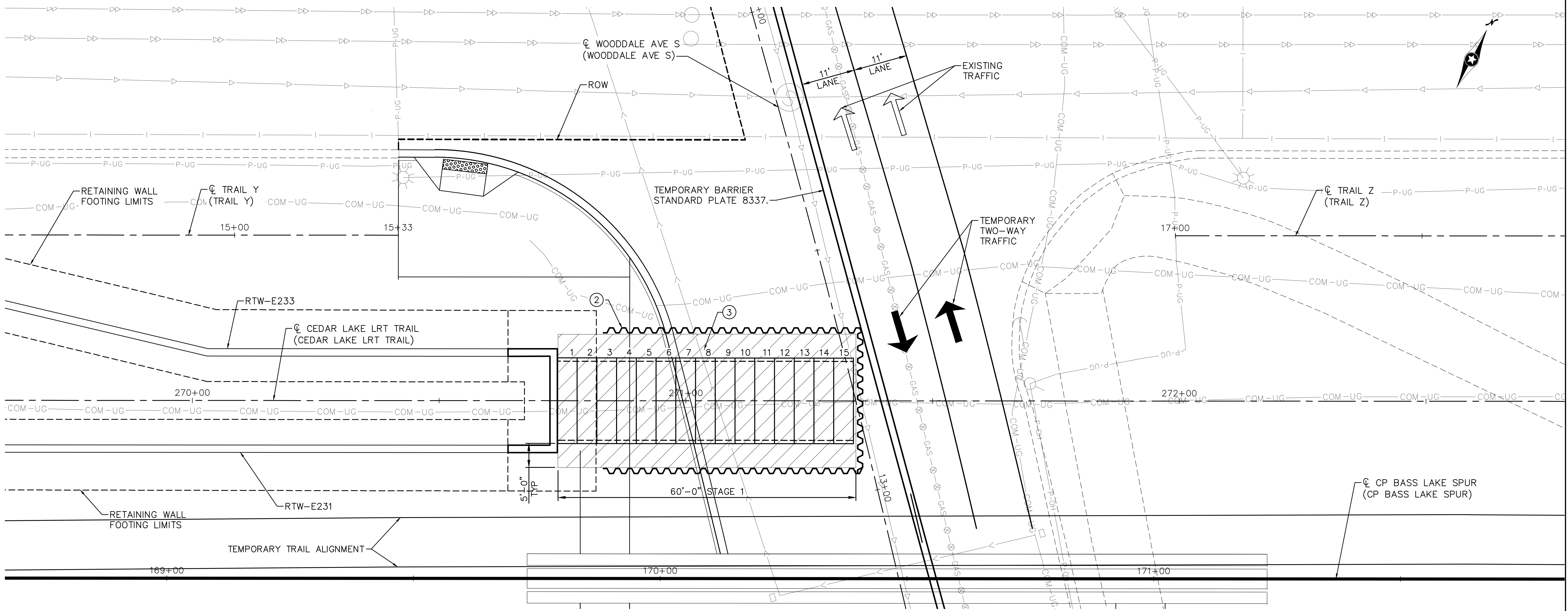
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
BRIDGE SURVEY PROFILE 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27J61-BRG-BOR-002-4

SHEET 22 OF 24



CONSTRUCTION STAGING:

1 SHIFT TRAFFIC TO THE EAST HALF OF WOODDALE AVE S.

2 PLACE TEMPORARY SHEET PILES ON THE WEST HALF OF WOODDALE AVE S.

3 CONSTRUCT CEDAR LANE TRAIL UNDER WEST HALF OF WOODDALE AVE S.

4 MODIFY AND SHIFT TEMPORARY SHEET PILE WALLS TO THE EAST HALF OF WOODDALE AVE S.

5 SHIFT TRAFFIC TO THE WEST HALF OF WOODDALE AVE S.

6 CONSTRUCT CEDAR LANE TRAIL UNDER EAST HALF OF WOODDALE AVE S.

7 REMOVE TEMPORARY SHEET PILES AND OPEN TRAFFIC TO BOTH LANES.

NOTE:

1 PRECAST CONCRETE CULVERT SECTION #15 IS PLACED PRIOR TO MOVING SHEET PILES TO EAST HALF OF ROADWAY

2 STEEL SHEET PILING SHOWN. OTHER SYSTEMS MAY BE UTILIZED AT THE CONTRACTOR'S OPTION AND TO BE DESIGNED BY THE CONTRACTOR.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ML | CHECKED BY: JG
DRAWN BY: TRH | CHECKED BY: JG

AECOM Kimley»Horn

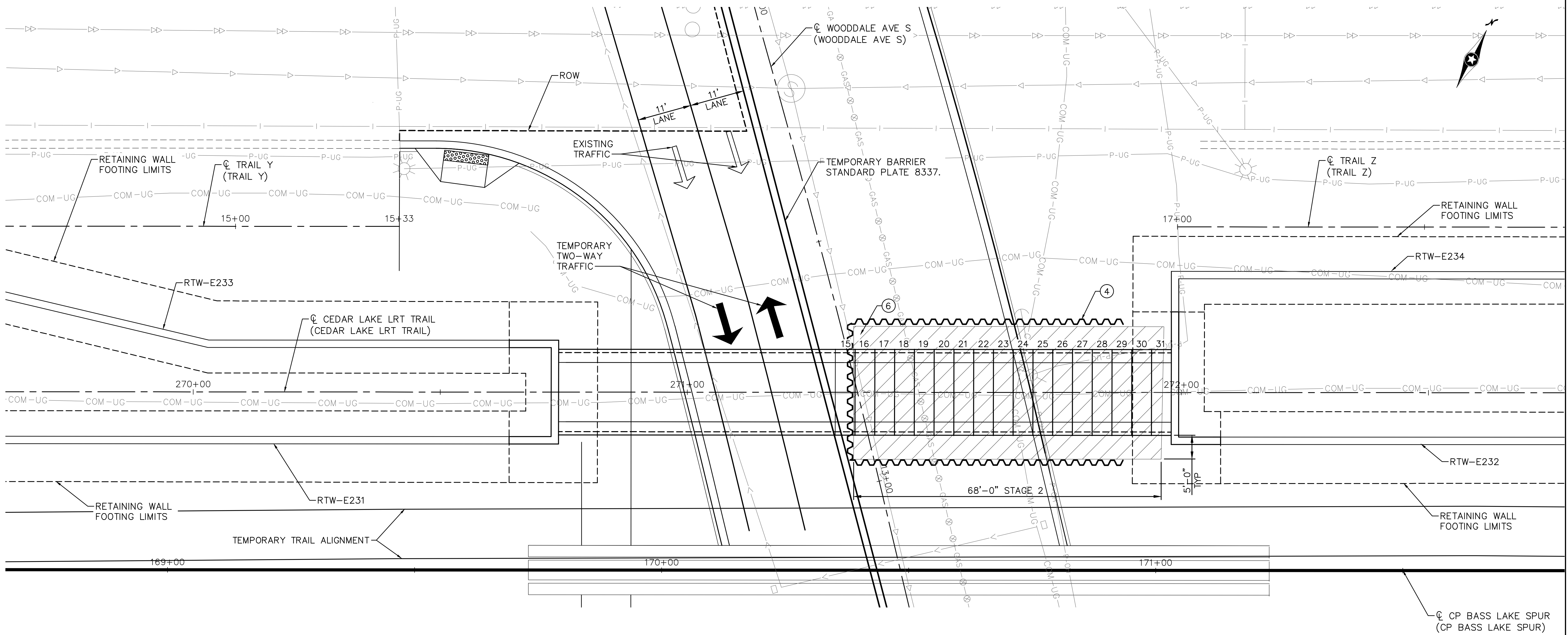
90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
STAGING PLAN 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27J61-BRG-STG-001

SHEET 23 OF 24



CONSTRUCTION STAGING:

1 SHIFT TRAFFIC TO THE EAST HALF OF WOODDALE AVE S.

2 PLACE TEMPORARY SHEET PILES ON THE WEST HALF OF WOODDALE AVE S.

3 CONSTRUCT CEDAR LANE TRAIL UNDER WEST HALF OF WOODDALE AVE S.

4 MODIFY AND SHIFT TEMPORARY SHEET PILE WALLS TO THE EAST HALF OF WOODDALE AVE S.

5 SHIFT TRAFFIC TO THE WEST HALF OF WOODDALE AVE S.

6 CONSTRUCT CEDAR LANE TRAIL UNDER EAST HALF OF WOODDALE AVE S.

7 REMOVE TEMPORARY SHEET PILES AND OPEN TRAFFIC TO BOTH LANES.

NOTE:

1 PRECAST CONCRETE CULVERT SECTION #15 IS PLACED PRIOR TO MOVING SHEET PILES TO EAST HALF OF ROADWAY

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4E
WOODDALE AVE PEDESTRIAN UNDERPASS BRIDGE 27J61
STAGING PLAN 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27J61-BRG-STG-002

SHEET 24 OF 24