METROPOLITAN COUNCIL

SOUTHWEST
Green Line LRT Extension

CIVIL CONSTRUCTION

VOLUME 4A
BRIDGES

90% SUBMISSION
DATE : 01/22/16

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.

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

AECOM

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
		VOLUME 4A - 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	00-GEN-IDX-003	VOLUME INDEX OF PLAN SHEETS SHEET 3			
5	W0-GEN-KEY-001	GENERAL KEY MAP SHEET 1			
6	E0-GEN-KEY-002	GENERAL KEY MAP SHEET 2			
7	00-GEN-NTS-001	GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS SHEET 1			
8	00-GEN-NTS-002	GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS SHEET 2			
		TH 212 / SHADY OAK ROAD - BRIDGE 27R34			
1	W2-STU-BRID-T212-BL01-60	KEY PLAN			
2	W2-STU-BRID-T212-BL02	SCHEDULE OF QUANTITIES			
3	W2-STU-BRID-T212-BL03	STRAY CURRENT/CORROSION CONTROL NOTES			
4	W2-STU-BRID-T212-GE01-1	GENERAL PLAN AND ELEVATION 1 (SHEET 1)			
5	W2-STU-BRID-T212-GE01-2	GENERAL PLAN AND ELEVATION 2 (SHEET 2)			
6	W2-STU-BRID-T212-GE01-3	GENERAL PLAN AND ELEVATION 3 (SHEET 3)			
7	W2-STU-BRID-T212-GE01-4	GENERAL PLAN AND ELEVATION 4 (SHEET 4)			
8	W2-STU-BRID-T212-GE01-5	GENERAL PLAN AND ELEVATION 5 (SHEET 5)			
9	W2-STU-BRID-T212-TYP2-2	TRANSV SECTION SPANS 1-6			
10	W2-STU-BRID-T212-TYP2-1	TRANSV SECTION SPANS 7-18			
11	W2-STU-BRID-T212-TYP1	TRANSV SECTION & LOADING DIAGRAM			
12	W2-STU-BRID-T212-TYP2-3	UNIT 1 DETAILS			
13	W2-STU-BRID-T212-WPTS-1	BRIDGE LAYOUT 1			
14	W2-STU-BRID-T212-WPTS-2	BRIDGE LAYOUT 2			
15	W2-STU-BRID-T212-WPTS-3	BRIDGE LAYOUT 3			
16	W2-STU-BRID-T212-WPTS-4	BRIDGE LAYOUT 4			
17	W2-STU-BRID-T212-WPTS-5	BRIDGE LAYOUT 5			
18	W2-STU-BRID-T212-WPTS-6	BRIDGE LAYOUT 6			
19	W2-STU-BRID-T212-WPTS-7	BRIDGE LAYOUT 7			
20	W2-STU-BRID-T212-WPTS-8	BRIDGE LAYOUT 8			
21	W2-STU-BRID-T212-AES1-2	AESTHETIC DETAILS 1			
22	W2-STU-BRID-T212-AES1-1	AESTHETIC DETAILS 2			
23	W2-STU-BRID-T212-AES1-3	AESTHETIC DETAILS 3			
24	W2-STU-BRID-T212-ABT-1	NORTH ABUTMENT DETAILS 1			
25	W2-STU-BRID-T212-ABT-2	NORTH ABUTMENT DETAILS 2			
26	W2-STU-BRID-T212-ABT-3	NORTH ABUTMENT DETAILS 3			
27	W2-STU-BRID-T212-ABT-4	NORTH ABUTMENT DETAILS 4			
28	W2-STU-BRID-T212-ABT-5	NORTH ABUTMENT DETAILS 5			
29	W2-STU-BRID-T212-ABT2_1	NORTH ABUTMENT REINFORCEMENT 1			
30	W2-STU-BRID-T212-ABT2_2	NORTH ABUTMENT REINFORCEMENT 2			
31	W2-STU-BRID-T212-ABT2_3	NORTH ABUTMENT REINFORCEMENT 3			
32	W2-STU-BRID-T212-ABT2_4	NORTH ABUTMENT REINFORCEMENT 4			
33	W2-STU-BRID-T212-ABT2_5	NORTH ABUTMENT REINFORCEMENT 5			
34	W2-STU-BRID-T212-ABT3	NORTH ABUTMENT REINFORCEMENT 6			
35	W2-STU-BRID-T212-PIER_SAB	SOUTH ABUTMENT DETAILS			
36	W2-STU-BRID-T212-PIER_RSA	S. ABUT. REINFORCEMENT			
37	W2-STU-BRID-T212-PIER-1	PIER 1 DETAILS			
38	W2-STU-BRID-T212-PIER_R-1	PIER 1 REINFORCEMENT			
39	W2-STU-BRID-T212-PIER-2	PIER 2 DETAILS			
40	W2-STU-BRID-T212-PIER_R-2	PIER 2 REINFORCEMENT			
41	W2-STU-BRID-T212-PIER-3	PIER 3 DETAILS			
42	W2-STU-BRID-T212-PIER_R-3	PIER 3 REINFORCEMENT			
43	W2-STU-BRID-T212-PIER-4	PIER 4 DETAILS			
44	W2-STU-BRID-T212-PIER_R-4	PIER 4 REINFORCEMENT			
45	W2-STU-BRID-T212-PIER-5	PIER 5 DETAILS			
46	W2-STU-BRID-T212-PIER_R-5	PIER 5 REINFORCEMENT			
47	W2-STU-BRID-T212-PIER-6	PIER 6 DETAILS			
48	W2-STU-BRID-T212-PIER_R-6	PIER 6 REINFORCEMENT			
49	W2-STU-BRID-T212-PIER-7	PIER 7 DETAILS			
50	W2-STU-BRID-T212-PIER_R-7	PIER 7 REINFORCEMENT			
51	W2-STU-BRID-T212-PIER-8	PIER 8 DETAILS			
52	W2-STU-BRID-T212-PIER_R-8	PIER 8 REINFORCEMENT			
53	W2-STU-BRID-T212-PIER-9	PIER 9 DETAILS			
54	W2-STU-BRID-T212-PIER_R-9	PIER 9 REINFORCEMENT			
55	W2-STU-BRID-T212-PIER-10	PIER 10 DETAILS			
56	W2-STU-BRID-T212-PIER_R-10	PIER 10 REINFORCEMENT			
57	W2-STU-BRID-T212-PIER-11	PIER 11 DETAILS			
58	W2-STU-BRID-T212-PIER_R-11	PIER 11 REINFORCEMENT			
59	W2-STU-BRID-T212-PIER-12	PIER 12 DETAILS			
60	W2-STU-BRID-T212-PIER_R-12	PIER 12 REINFORCEMENT			

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
61	W2-STU-BRID-T212-PIER-13	PIER 13 DETAILS			
62	W2-STU-BRID-T212-PIER_R-13	PIER 13 REINFORCEMENT			
63	W2-STU-BRID-T212-PIER-14	PIER 14 DETAILS			
64	W2-STU-BRID-T212-PIER_R2-14	PIER 14 REINFORCEMENT			
65	W2-STU-BRID-T212-PIER-15	PIER 15 DETAILS			
66	W2-STU-BRID-T212-PIER_R2-15	PIER 15 REINFORCEMENT			
67	W2-STU-BRID-T212-PIER-16	PIER 16 DETAILS			
68	W2-STU-BRID-T212-PIER_R2-16	PIER 16 REINFORCEMENT			
69	W2-STU-BRID-T212-PIER-17	PIER 17 DETAILS			
70	W2-STU-BRID-T212-PIER_R2-17	PIER 17 REINFORCEMENT			
71	W2-STU-BRID-T212-PIER2_18a	PIER 18 FOOTING PLAN			
72	W2-STU-BRID-T212-PIER_18	PIER 18 PLAN & ELEVATION			
73	W2-STU-BRID-T212-PIER2R_18f	PIER 18 DETAILS & REINFORCEMENT 1			
74	W2-STU-BRID-T212-PIER3R_18P	PIER 18 DETAILS & REINFORCEMENT 2			
75	W2-STU-BRID-T212-PIER3R_18S	PIER 18 DETAILS & REINFORCEMENT 3			
76	W2-STU-BRID-T212-PIER2_19A	PIER 19 FOOTING PLAN			
77	W2-STU-BRID-T212-PIER_19	PIER 19 PLAN & ELEVATION			
78	W2-STU-BRID-T212-PIER2R_19f	PIER 19 DETAILS & REINFORCEMENT 1			
79	W2-STU-BRID-T212-PIER3R_19P	PIER 19 DETAILS & REINFORCEMENT 2			
80	W2-STU-BRID-T212-PIER3R_19S	PIER 19 DETAILS & REINFORCEMENT 3			
81	W2-STU-BRID-T212-PIER2_20a	PIER 20 FOOTING PLAN			
82	W2-STU-BRID-T212-PIER_20	PIER 20 PLAN & ELEVATION			
83	W2-STU-BRID-T212-PIER2R_20f	PIER 20 DETAILS & REINFORCEMENT 1			
84	W2-STU-BRID-T212-PIER3R_20P	PIER 20 DETAILS & REINFORCEMENT 2			
85	W2-STU-BRID-T212-PIER3R_20S	PIER 20 DETAILS & REINFORCEMENT 3			
86	W2-STU-BRID-T212-PIER2_21A	PIER 21 FOOTING PLAN			
87	W2-STU-BRID-T212-PIER_21	PIER 21 PLAN & ELEVATION			
88	W2-STU-BRID-T212-PIER2R_21f	PIER 21 DETAILS & REINFORCEMENT 1			
89	W2-STU-BRID-T212-PIER3R_21P	PIER 21 DETAILS & REINFORCEMENT 2			
90	W2-STU-BRID-T212-PIER3R_21S	PIER 21 DETAILS & REINFORCEMENT 3			
91	W2-STU-BRID-T212-PIER2_22a	PIER 22 FOOTING PLAN			
92	W2-STU-BRID-T212-PIER_22	PIER 22 PLAN & ELEVATION			
93	W2-STU-BRID-T212-PIER2R_22f	PIER 22 DETAILS & REINFORCEMENT 1			
94	W2-STU-BRID-T212-PIER3R_22P	PIER 22 DETAILS & REINFORCEMENT 2			
95	W2-STU-BRID-T212-PIER3R_22S	PIER 22 DETAILS & REINFORCEMENT 3			
96	W2-STU-BRID-T212-PIER2_23a	PIER 23 FOOTING PLAN			
97	W2-STU-BRID-T212-PIER_23	PIER 23 PLAN & ELEVATION			
98	W2-STU-BRID-T212-PIER2R_23f	PIER 23 DETAILS & REINFORCEMENT 1			
99	W2-STU-BRID-T212-PIER3R_23P	PIER 23 DETAILS & REINFORCEMENT 2			
100	W2-STU-BRID-T212-PIER3R_23S	PIER 23 DETAILS & REINFORCEMENT 3			
101	W2-STU-BRID-T212-PIER2_24A	PIER 24 FOOTING PLAN			
102	W2-STU-BRID-T212-PIER_24	PIER 24 PLAN & ELEVATION			
103	W2-STU-BRID-T212-PIER2R_24f	PIER 24 DETAILS & REINFORCEMENT 1			
104	W2-STU-BRID-T212-PIER3R_24P	PIER 24 DETAILS & REINFORCEMENT 2			
105	W2-STU-BRID-T212-PIER3R_24S	PIER 24 DETAILS & REINFORCEMENT 3			
106	W2-STU-BRID-T212-PIER2_25a	PIER 25 FOOTING PLAN			
107	W2-STU-BRID-T212-PIER_25	PIER 25 PLAN & ELEVATION			
108	W2-STU-BRID-T212-PIER2R_25f	PIER 25 DETAILS & REINFORCEMENT 1			
109	W2-STU-BRID-T212-PIER3R_25P	PIER 25 DETAILS & REINFORCEMENT 2			
110	W2-STU-BRID-T212-PIER3R_25S	PIER 25 DETAILS & REINFORCEMENT 3			
111	W2-STU-BRID-T212-PIER2_26a	PIER 26 FOOTING PLAN			
112	W2-STU-BRID-T212-PIER_26	PIER 26 PLAN & ELEVATION			
113	W2-STU-BRID-T212-PIER2R_26f	PIER 26 DETAILS & REINFORCEMENT 1			
114	W2-STU-BRID-T212-PIER3R_26P	PIER 26 DETAILS & REINFORCEMENT 2			
115	W2-STU-BRID-T212-PIER3R_26S	PIER 26 DETAILS & REINFORCEMENT 3			
116	W2-STU-BRID-T212-PIER2_27a	PIER 27 FOOTING PLAN			
117	W2-STU-BRID-T212-PIER2_27	PIER 27 PLAN & ELEVATION			
118	W2-STU-BRID-T212-PIER2R_27f	PIER 27 DETAILS & REINFORCEMENT 1			
119	W2-STU-BRID-T212-PIER3R_27P	PIER 27 DETAILS & REINFORCEMENT 2			
120	W2-STU-BRID-T212-PIER3R_27S	PIER 27 DETAILS & REINFORCEMENT 3			
121	W2-STU-BRID-T212-PIER2_28a	PIER 28 FOOTING PLAN			
122	W2-STU-BRID-T212-PIER2_28	PIER 28 PLAN & ELEVATION			
123	W2-STU-BRID-T212-PIER2R_28f	PIER 28 DETAILS & REINFORCEMENT 1			
124	W2-STU-BRID-T212-PIER3R_28P	PIER 28 DETAILS & REINFORCEMENT 2			
125	W2-STU-BRID-T212-PIER3R_28S	PIER 28 DETAILS & REINFORCEMENT 3			
126	W2-STU-BRID-T212-PIER2_29a	PIER 29 FOOTING PLAN			
127	W2-STU-BRID-T212-PIER2_29	PIER 29 PLAN & ELEVATION			
128	W2-STU-BRID-T212-PIER2R_29f	PIER 29 DETAILS & REINFORCEMENT 1			
129	W2-STU-BRID-T212-PIER3R_29P	PIER 29 DETAILS & REINFORCEMENT 2			
130	W2-STU-BRID-T212-PIER3R_29S	PIER 29 DETAILS & REINFORCEMENT 3			
131	W2-STU-BRID-T212-PIER2_30a	PIER 30 FOOTING PLAN			
132	W2-STU-BRID-T212-PIER2_30	PIER 30 PLAN & ELEVATION			
133	W2-STU-BRID-T212-PIER2R_30f	PIER 30 DETAILS & REINFORCEMENT 1			

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
134	W2-STU-BRID-T212-PIER3R_30P	PIER 30 DETAILS & REINFORCEMENT 2			
135	W2-STU-BRID-T212-PIER3R_30S	PIER 30 DETAILS & REINFORCEMENT 3			
136	W2-STU-BRID-T212-SUP1-1	FRAMING PLAN (SPAN 19 & 20)			
137	W2-STU-BRID-T212-SUP1-2	FRAMING PLAN (SPAN 21 & 22)			
138	W2-STU-BRID-T212-SUP1-3	FRAMING PLAN (SPAN 23 & 24)			
139	W2-STU-BRID-T212-SUP1-4	FRAMING PLAN (SPAN 25 & 29)			
140	W2-STU-BRID-T212-SUP1-5	FRAMING PLAN (SPAN 30 & 31)			
141	W2-STU-BRID-T212-SUP2	FRAMING PLAN (SPAN 26-28) 1			
142	W2-STU-BRID-T212-SUP2_2	FRAMING PLAN (SPAN 26-28) 2			
143	W2-STU-BRID-T212-PCB02	96MW PRESTRESSED CONCRETE BEAM 1			
144	W2-STU-BRID-T212-PCB03	96MW PRESTRESSED CONCRETE BEAM 2			
145	W2-STU-BRID-T212-PCB04	82MW PRESTRESSED CONCRETE BEAM 1			
146	W2-STU-BRID-T212-PCB05	82MW PRESTRESSED CONCRETE BEAM 2			
147	W2-STU-BRID-T212-PCB06	PRESTRESSED CONCRETE BEAM DETAILS			
148	W2-STU-BRID-T212-SUP3-1	DIAPHRAGM LAYOUT SPAN 26 & 27			
149	W2-STU-BRID-T212-SUP3-2	DIAPHRAGM LAYOUT SPAN 28 & TABLE			
150	W2-STU-BRID-T212-SUP3-3	BEAM ELEVATION PG1-PG4			
151	W2-STU-BRID-T212-SUP3-4	BEAM SCHEDULE			
152	W2-STU-BRID-T212-SUP4_1	DIAPHRAGM DETAILS 1			
153	W2-STU-BRID-T212-SUP4_2	DIAPHRAGM DETAILS 2			
154	W2-STU-BRID-T212-SUP4_3	DIAPHRAGM DETAILS 3			
155	W2-STU-BRID-T212-SUP13_1	STEEL DETAILS (FIELD SPLICE) 1			
156	W2-STU-BRID-T212-SUP13_2	STEEL DETAILS (FIELD SPLICE) 2			
157	W2-STU-BRID-T212-SUP13_3	STEEL DETAILS (FIELD SPLICE) 3			
158	W2-STU-BRID-T212-SUP13_4	STEEL DETAILS (FIELD SPLICE) 4			
159	W2-STU-BRID-T212-SUP13_5	STEEL DETAILS (FIELD SPLICE) 5			
160	W2-STU-BRID-T212-SUP13_6	STEEL DETAILS (FIELD SPLICE) 6			
161	W2-STU-BRID-T212-SUP13_7	STEEL DETAILS (FIELD SPLICE) 7			
162	W2-STU-BRID-T212-SUP13_8	STEEL DETAILS (FIELD SPLICE) 8			
163	W2-STU-BRID-T212-SUP13_9	STEEL DETAILS			
164	W2-STU-BRID-T212-SUP15_1	STEEL DETAILS (DEFLECTIONS)			
165	W2-STU-BRID-T212-SUP15_2	STEEL DETAILS (CAMBER)			
166	W2-STU-BRID-T212-SUP11_1	SUPERSTRUCTURE (DETAIL & REINF) TOP 1A			
167	W2-STU-BRID-T212-SUP11_1A	SUPERSTRUCTURE (DETAIL & REINF) BOT 1B			
168	W2-STU-BRID-T212-SUP16_1	SUPERSTRUCTURE (SECTION & REINF) 1C			
169	W2-STU-BRID-T212-SUP11_2	SUPERSTRUCTURE (DETAIL & REINF) TOP 2A			
170	W2-STU-BRID-T212-SUP11_2A	SUPERSTRUCTURE (DETAIL & REINF) TOP 2B			
171	W2-STU-BRID-T212-SUP16_2	SUPERSTRUCTURE (SECTION & REINF) 2C			
172	W2-STU-BRID-T212-SUP11_3	SUPERSTRUCTURE (DETAIL & REINF) TOP 3A			
173	W2-STU-BRID-T212-SUP11_3A	SUPERSTRUCTURE (DETAIL & REINF) TOP 3B			
174	W2-STU-BRID-T212-SUP16_3	SUPERSTRUCTURE (SECTION & REINF) 3C			
175	W2-STU-BRID-T212-SUP11_4	SUPERSTRUCTURE (DETAIL & REINF) TOP 4A			
176	W2-STU-BRID-T212-SUP11_4A	SUPERSTRUCTURE (DETAIL & REINF) TOP 4B			
177	W2-STU-BRID-T212-SUP16_4	SUPERSTRUCTURE (SECTION & REINF) 4C			
178	W2-STU-BRID-T212-SUP11_5	SUPERSTRUCTURE (DETAIL & REINF) TOP 5A			
179	W2-STU-BRID-T212-SUP11_5A	SUPERSTRUCTURE (DETAIL & REINF) TOP 5B			
180	W2-STU-BRID-T212-SUP16_5	SUPERSTRUCTURE (SECTION & REINF) 5C			
181	W2-STU-BRID-T212-SUP11_6	SUPERSTRUCTURE (DETAIL & REINF) TOP 6A			
182	W2-STU-BRID-T212-SUP11_6A	SUPERSTRUCTURE (DETAIL & REINF) BOT 6B			
183	W2-STU-BRID-T212-SUP16_6	SUPERSTRUCTURE (SECTION & REINF) 6C			
184	W2-STU-BRID-T212-SUP16_DT	SUPERSTRUCTURE (DETAIL & REINF) 1 - 6			
185	W2-STU-BRID-T212-SUP9-19	SUPERSTRUCTURE (DETAIL & REINF) 7A			
186	W2-STU-BRID-T212-SUP9-20	SUPERSTRUCTURE (DETAIL & REINF) 7B			
187	W2-STU-BRID-T212-SUP10-1	SUPERSTRUCTURE (SECTION AND REINF) 7C			
188	W2-STU-BRID-T212-SUP9-21	SUPERSTRUCTURE (DETAIL & REINF) 8A			
189	W2-STU-BRID-T212-SUP9-22	SUPERSTRUCTURE (DETAIL & REINF) 8B			
190	W2-STU-BRID-T212-SUP10-2	SUPERSTRUCTURE (SECTION AND REINF) 8C			
191	W2-STU-BRID-T212-SUP9-23	SUPERSTRUCTURE (DETAIL & REINF) 9A			
192	W2-STU-BRID-T212-SUP9-24	SUPERSTRUCTURE (DETAIL & REINF) 9B			
193	W2-STU-BRID-T212-SUP9-25	SUPERSTRUCTURE (DETAIL & REINF) 9C			
194	W2-STU-BRID-T212-SUP10-3	SUPERSTRUCTURE (SECTION AND REINF) 9D			
195	W2-STU-BRID-T212-SUP9-26	SUPERSTRUCTURE (DETAIL & REINF) 10A			
196	W2-STU-BRID-T212-SUP9-27A	SUPERSTRUCTURE (DETAIL & REINF) 10B			
197	W2-STU-BRID-T212-SUP9-27B	SUPERSTRUCTURE (DETAIL & REINF) 10C			
198	W2-STU-BRID-T212-SUP9-28	SUPERSTRUCTURE (DETAIL & REINF) 10D			
199	W2-STU-BRID-T212-SUP10-4	SUPERSTRUCTURE (SECTION AND REINF) 10E			
200	W2-STU-BRID-T212-SUP9-29	SUPERSTRUCTURE (DETAIL & REINF) 11A			
201	W2-STU-BRID-T212-SUP9-30	SUPERSTRUCTURE (DETAIL & REINF) 11B			
202	W2-STU-BRID-T212-SUP9-31	SUPERSTRUCTURE (DETAIL & REINF) 11C			
203	W2-STU-BRID-T212-SUP10-5	SUPERSTRUCTURE (SECTION AND REINF) 11D			
204	W2-STU-BRID-T212-SUP10-6	SUPERSTRUCTURE (SECTION AND REINF) 11E			
205	W2-STU-BRID-T212-SUP9-EB	SUPERSTRUCTURE (REINF AT N. END BLOCK)			
206	W2-STU-BRID-T212-SUP10-7	SUPERSTRUCTURE (SECTION AND REINF) 1			

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: GENERAL

SHEET NAME: 00-GEN-IDX-001

SHEET 2 OF 442

Jan, 21 2016 05:34 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 4A - BRIDGES (cont'd)			
207	W2-STU-BRID-T212-SUP10-8	SUPERSTRUCTURE (SECTION AND REINF) 2			
208	W2-STU-BRID-T212-SUP10-HD	SUPERSTRUCTURE HAUNCH REINF			
209	W2-STU-BRID-T212-DRN01_1	SUPERSTRUCTURE DRAINAGE DETAILS 1			
210	W2-STU-BRID-T212-DRN01_2	SUPERSTRUCTURE DRAINAGE DETAILS 2			
211	W2-STU-BRID-T212-DRN01_3	SUPERSTRUCTURE DRAINAGE DETAILS 3			
212	W2-STU-BRID-T212-DTL04_1	O.C.S. POLE SUPPORT DETAILS 1			
213	W2-STU-BRID-T212-DTL04_2	O.C.S. POLE SUPPORT DETAILS 2			
214	W2-STU-BRID-T212-SUP18	SUPERSTRUCTURE (BILL OF REINF) 1			
215	W2-STU-BRID-T212-SUP17	SUPERSTRUCTURE (BILL OF REINF) 2			
216	W2-STU-BRID-T212-SUP5_101-201	BRIDGE DETAILS 1			
217	W2-STU-BRID-T212-SUP6_303	BRIDGE DETAILS 2			
218	W2-STU-BRID-T212-SUP5_310-311	BRIDGE DETAILS 3			
219	W2-STU-BRID-T212-SUP5_314-316	BRIDGE DETAILS 4			
220	W2-STU-BRID-T212-SUP5_410-411	BRIDGE DETAILS 5			
221	W2-STU-BRID-T212-SUP12_412-814A	BRIDGE DETAILS 6			
222	W2-STU-BRID-T212-SUP6_814B-814C	BRIDGE DETAILS 7			
223	W2-STU-BRID-T212-SUP6_814D-814D	BRIDGE DETAILS 8			
224	W2-STU-BRID-T212-SUP6_905-910	BRIDGE DETAILS 9			
225	W2-STU-BRID-T212-DTL02	WIRE FENCE (DESIGN W-1)			
226	W2-STU-BRID-T212-RAL01_1	ORNAMENTAL METAL RAILING 1			
227	W2-STU-BRID-T212-RAL01_2	ORNAMENTAL METAL RAILING 2			
228	W2-STU-BRID-T212-EXP01	WATERPROOF EXPANSION DEVICE 1			
229	W2-STU-BRID-T212-EXP02	WATERPROOF EXPANSION DEVICE 2			
230	W2-STU-BRID-T212-EXP03	WATERPROOF EXPANSION DEVICE 3			
231	W2-STU-BRID-T212-EXP04	WATERPROOF EXPANSION DEVICE 4			
232	W2-STU-BRID-T212-DTL03	AS-BUILT BRIDGE DATA			
233	W2-STU-BRID-T212-SUR1-1	BRIDGE SURVEY 1			
234	W2-STU-BRID-T212-SUR1-2	BRIDGE SURVEY 2			
235	W2-STU-BRID-T212-SUR2	BRIDGE SURVEY 3			
236	W2-STU-BRID-T212-SUR4A	BRIDGE SURVEY 4			
237	W2-STU-BRID-T212-SUR4B	BRIDGE SURVEY 5			
238	W2-STU-BRID-T212-SUR8	BRIDGE SURVEY 6			
239	W2-STU-BRID-T212-SUR3-1	BRIDGE SURVEY PLAN 1			
240	W2-STU-BRID-T212-SUR3-2	BRIDGE SURVEY PLAN 2			
241	W2-STU-BRID-T212-SUR3-3	BRIDGE SURVEY PLAN 3			
242	W2-STU-BRID-T212-SUR3-4	BRIDGE SURVEY PLAN 4			
243	W2-STU-BRID-T212-SUR3-5	BRIDGE SURVEY PLAN 5			
244	W2-STU-BRID-T212-SUR3-6	BRIDGE SURVEY PLAN 6			
245	W2-STU-BRID-T212-SUR3-7	BRIDGE SURVEY PLAN 7			
246	W2-STU-BRID-T212-SUR3-8	BRIDGE SURVEY PLAN 8			
247	W2-STU-BRID-T212-SUR3-9	BRIDGE SURVEY PLAN 9			
248	W2-STU-BRID-T212-SUR3-10	BRIDGE SURVEY PLAN 10			
249	W2-STU-BRID-T212-SUR5-1	BRIDGE SURVEY PROFILE 1			
250	W2-STU-BRID-T212-SUR5-2	BRIDGE SURVEY PROFILE 2			
251	W2-STU-BRID-T212-SUR5-3	BRIDGE SURVEY PROFILE 3			
252	W2-STU-BRID-T212-SUR5-4	BRIDGE SURVEY PROFILE 4			
253	W2-STU-BRID-T212-SUR5-5	BRIDGE SURVEY PROFILE 5			
254	W2-STU-BRID-T212-SUR5-6	BRIDGE SURVEY PROFILE 6			
255	W2-STU-BRID-T212-SUR5-7	BRIDGE SURVEY PROFILE 7			
256	W2-STU-BRID-T212-SUR5-8	BRIDGE SURVEY PROFILE 8			
257	W2-STU-BRID-T212-SUR5-9	BRIDGE SURVEY PROFILE 9			
258	W2-STU-BRID-T212-SUR5-10	BRIDGE SURVEY PROFILE 10			
259	W2-STU-BRID-T212-SUR5-11	BRIDGE SURVEY PROFILE 11			
260	W2-STU-BRID-T212-ALG-1	ALIGNMENT PLAN 1			
261	W2-STU-BRID-T212-ALG-2	ALIGNMENT PLAN 2			
262	W2-STU-BRID-T212-TAB-1	ALIGNMENT TABULATION 1			
263	W2-STU-BRID-T212-TAB-2	ALIGNMENT TABULATION 2			
264	W2-STU-BRID-T212-TAB-3	ALIGNMENT TABULATION 3			
		VALLEY VIEW ROAD - BRIDGE 27R33			
1	W1-STU-BRG-FCVV-BL01	KEY PLAN			
2	W1-STU-BRG-FCVV-BL02	SCHEDULE OF QUANTITIES			
3	W1-STU-BRG-FCVV-BL03	STRAY CURRENT/CORRISION CONTROL NOTES			
4	W1-STU-BRG-FCVV-GE01_1	GENERAL PLAN AND ELEVATION 1			
5	W1-STU-BRG-FCVV-GE01_2	GENERAL PLAN AND ELEVATION 2			
6	W1-STU-BRG-FCVV-TYP1	TRANSVERSE SECTION & LOADING DIAGRAM			
7	W1-STU-BRG-FCVV-WPTS01_1	BRIDGE LAYOUT			
8	W1-STU-BRG-FCVV-WPTS01_2	BRIDGE LAYOUT			
9	W1-STU-BRG-FCVV-WPTS	BRIDGE LAYOUT 3			

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
10	W1-STU-BRG-FCVV-AES1	AESTHETIC DETAILS 1			
11	W1-STU-BRG-FCVV-AES2	AESTHETIC DETAILS 2			
12	W1-STU-BRG-FCVV-ABT-S-1	SOUTH ABUTMENT DETAILS 1			
13	W1-STU-BRG-FCVV-ABT-S-2	SOUTH ABUTMENT DETAILS 2			
14	W1-STU-BRG-FCVV-ABT-S-3	SOUTH ABUTMENT DETAILS 3			
15	W1-STU-BRG-FCVV-ABT-S-4	SOUTH ABUTMENT DETAILS 4			
16	W1-STU-BRG-FCVV-ABT-S-5	SOUTH ABUTMENT DETAILS 5			
17	W1-STU-BRG-FCVV-ABT-S2-1	SOUTH ABUTMENT REINFORCEMENT 1			
18	W1-STU-BRG-FCVV-ABT-S2-2	SOUTH ABUTMENT REINFORCEMENT 2			
19	W1-STU-BRG-FCVV-ABT-S2-3	SOUTH ABUTMENT REINFORCEMENT 3			
20	W1-STU-BRG-FCVV-ABT-S2-4	SOUTH ABUTMENT REINFORCEMENT 4			
21	W1-STU-BRG-FCVV-ABT-S2-5	SOUTH ABUTMENT REINFORCEMENT 5			
22	W1-STU-BRG-FCVV-ABT-S3	SOUTH ABUTMENT REINFORCEMENT 6			
23	W1-STU-BRG-FCVV-ABT-N-1	NORTH ABUTMENT DETAILS 1			
24	W1-STU-BRG-FCVV-ABT-N-2	NORTH ABUTMENT DETAILS 2			
25	W1-STU-BRG-FCVV-ABT-N-3	NORTH ABUTMENT DETAILS 3			
26	W1-STU-BRG-FCVV-ABT-N-4	NORTH ABUTMENT DETAILS 4			
27	W1-STU-BRG-FCVV-ABT-N-5	NORTH ABUTMENT DETAILS 5			
28	W1-STU-BRG-FCVV-ABT-N2-1	NORTH ABUTMENT REINFORCEMENT 1			
29	W1-STU-BRG-FCVV-ABT-N2-2	NORTH ABUTMENT REINFORCEMENT 2			
30	W1-STU-BRG-FCVV-ABT-N2-3	NORTH ABUTMENT REINFORCEMENT 3			
31	W1-STU-BRG-FCVV-ABT-N2-4	NORTH ABUTMENT REINFORCEMENT 4			
32	W1-STU-BRG-FCVV-ABT-N2-5	NORTH ABUTMENT REINFORCEMENT 5			
33	W1-STU-BRG-FCVV-ABT-N3	NORTH ABUTMENT REINFORCEMENT 6			
34	W1-STU-BRG-FCVV-PIER1-1a	PIER 1 FOOTING PLAN			
35	W1-STU-BRG-FCVV-PIER1-1	PIER 1 PLAN & ELEVATION			
36	W1-STU-BRG-FCVV-PIER1F-1f	PIER 1 REINFORCEMENT 1			
37	W1-STU-BRG-FCVV-PIER1R-1	PIER 1 REINFORCEMENT 2			
38	W1-STU-BRG-FCVV-PIER1R-1a	PIER 1 REINFORCEMENT 3			
39	W1-STU-BRG-FCVV-PIER 2a	PIER 2 FOOTING PLAN			
40	W1-STU-BRG-FCVV-PIER2-2	PIER 2 PLAN & ELEVATION			
41	W1-STU-BRG-FCVV-PIER2-2f	PIER 2 REINFORCEMENT 1			
42	W1-STU-BRG-FCVV-PIER2R-2	PIER 2 REINFORCEMENT 2			
43	W1-STU-BRG-FCVV-PIER2R-2a	PIER 2 REINFORCEMENT 3			
44	W1-STU-BRG-FCVV-PIER3-3a	PIER 3 FOOTING PLAN			
45	W1-STU-BRG-FCVV-PIER3-3	PIER 3 PLAN & ELEVATION			
46	W1-STU-BRG-FCVV-PIER3R-3f	PIER 3 REINFORCEMENT 1			
47	W1-STU-BRG-FCVV-PIER3R-3	PIER 3 REINFORCEMENT 2			
48	W1-STU-BRG-FCVV-PIER3R-3a	PIER 3 REINFORCEMENT 3			
49	W1-STU-BRG-FCVV-PIER4-4a	PIER 4 FOOTING PLAN			
50	W1-STU-BRG-FCVV-PIER4-4	PIER 4 PLAN & ELEVATION			
51	W1-STU-BRG-FCVV-PIER4-4f	PIER 4 REINFORCEMENT 1			
52	W1-STU-BRG-FCVV-PIER4R-4	PIER 4 REINFORCEMENT 2			
53	W1-STU-BRG-FCVV-PIER4R-4a	PIER 4 REINFORCEMENT 3			
54	W1-STU-BRG-FCVV-PIER5-5a	PIER 5 FOOTING PLAN			
55	W1-STU-BRG-FCVV-PIER5-5	PIER 5 PLAN & ELEVATION			
56	W1-STU-BRG-FCVV-PIER5R-5f	PIER 5 REINFORCEMENT 1			
57	W1-STU-BRG-FCVV-PIER5R-5f	PIER 5 REINFORCEMENT 2			
58	W1-STU-BRG-FCVV-PIER5R-5a	PIER 5 REINFORCEMENT 3			
59	W1-STU-BRG-FCVV-PIER6-6a	PIER 6 FOOTING PLAN			
60	W1-STU-BRG-FCVV-PIER6-6	PIER 6 PLAN & ELEVATION			
61	W1-STU-BRG-FCVV-PIER6R-6f	PIER 6 REINFORCEMENT 1			
62	W1-STU-BRG-FCVV-PIER6R-6f	PIER 6 REINFORCEMENT 2			
63	W1-STU-BRG-FCVV-PIER6R-6a	PIER 6 REINFORCEMENT 3			
64	W1-STU-BRG-FCVV-FRAM1-1	FRAMING PLAN 1			
65	W1-STU-BRG-FCVV-FRAM1-2	FRAMING PLAN 2			
66	W1-STU-BRG-FCVV-FRAM1-3	FRAMING PLAN 3			
67	W1-STU-BRG-FCVV-FRAM1-4	FRAMING PLAN 4			
68	W1-STU-BRG-FCVV-FRAM1-5	FRAMING PLAN 5			
69	W1-STU-BRG-FCVV-BDTL-Figure 5-397_531	82MW PRESTRESSED CONCRETE BEAM 1			
70	W1-STU-BRG-FCVV-BDTL-Figure 5-397_532	82MW PRESTRESSED CONCRETE BEAM 2			
71	W1-STU-BRG-FCVV-PCB	PRESTRESSED CONCRETE BEAM DETAILS			
72	W1-STU-BRG-FCVV-SUP1-1	SUPERSTRUCTURE (DETAIL & REINF) 1			
73	W1-STU-BRG-FCVV-SUP1-2	SUPERSTRUCTURE (DETAIL & REINF) 2			
74	W1-STU-BRG-FCVV-TYP2	SUPERSTRUCTURE (SECTION AND REINF) 1			
75	W1-STU-BRG-FCVV-SUP1-3	SUPERSTRUCTURE (DETAIL & REINF) 3			
76	W1-STU-BRG-FCVV-SUP1-4	SUPERSTRUCTURE (DETAIL & REINF) 4			
77	W1-STU-BRG-FCVV-SUP1-5	SUPERSTRUCTURE (DETAIL & REINF) 5			
78	W1-STU-BRG-FCVV-TYP3	SUPERSTRUCTURE (SECTION AND REINF) 2			
79	W1-STU-BRG-FCVV-SUP1-6	SUPERSTRUCTURE (DETAIL & REINF) 6			
80	W1-STU-BRG-FCVV-SUP1-7	SUPERSTRUCTURE (DETAIL & REINF) 7			

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
81	W1-STU-BRG-FCVV-TYP4	SUPERSTRUCTURE (SECTION AND REINF) 3			
82	W1-STU-BRG-FCVV-SUP6-EB	SUPERSTRUCTURE (REINF AT END BLOCKS)			
83	W1-STU-BRG-FCVV-SUP2	SUPERSTRUCTURE (SECTION AND REINF) 4			
84	W1-STU-BRG-FCVV-SUP3-1	SUPERSTRUCTURE (HAUNCH REINF) 1			
85	W1-STU-BRG-FCVV-SUP3-2	SUPERSTRUCTURE (HAUNCH REINF) 2			
86	W1-STU-BRG-FCVV-DRN01	SUPERSTRUCTURE DRAINAGE DETAILS 1			
87	W1-STU-BRG-FCVV-DTL01	O.C.S. POLE SUPPORT DETAILS			
88	W1-STU-BRG-FCVV-SUP4-1	SUPERSTRUCTURE (WIRE FENCE) 1			
89	W1-STU-BRG-FCVV-SUP4-2	SUPERSTRUCTURE (WIRE FENCE) 2			
90	W1-STU-BRG-FCVV-SUP4-3	SUPERSTRUCTURE (WIRE FENCE) 3			
91	W1-STU-BRG-FCVV-SUP4-4	SUPERSTRUCTURE (WIRE FENCE) 4			
92	W1-STU-BRG-FCVV-SUP4-5	SUPERSTRUCTURE (WIRE FENCE) 5			
93	W1-STU-BRG-FCVV-SUP4-6	SUPERSTRUCTURE (WIRE FENCE) 6			
94	W1-STU-BRG-FCVV-SUP4-7	SUPERSTRUCTURE (WIRE FENCE) 7			
95	W1-STU-BRG-FCVV-SUP5	SUPERSTRUCTURE (BILL OF REINF)			
96	W1-STU-BRG-FCVV-BDTL-001_101-201	BRIDGE DETAILS 1			
97	W1-STU-BRG-FCVV-BDTL-002_303-305	BRIDGE DETAILS 2			
98	W1-STU-BRG-FCVV-BDTL-003_310-311	BRIDGE DETAILS 3			
99	W1-STU-BRG-FCVV-BDTL-004_412	BRIDGE DETAILS 4			
100	W1-STU-BRG-FCVV-BDTL-007_814a-910	BRIDGE DETAILS 5			
101	W1-STU-BRG-FCVV-BDTL-006_814b-814c	BRIDGE DETAILS 6			
102	W1-STU-BRG-FCVV-BDTL-006_814d-814e	BRIDGE DETAILS 7			
103	W1-STU-BRG-FCVV-BDTL-Figure 5-397_119_mod	WIRE FENCE (DESIGN W-1)			
104	W1-STU-BRG-FCVV-BDTL-Figure 5-397_627	WATERPROOF EXPANSION DEVICE 1			
105	W1-STU-BRG-FCVV-BDTL-Figure 5-397_630	WATERPROOF EXPANSION DEVICE 2			
106	W1-STU-BRG-FCVV-BDTL-EXP01	WATERPROOF EXPANSION DEVICE 3			
107	W1-STU-BRG-FCVV-BDTL-Figure 5-397_900	AS-BUILT BRIDGE DATA			
108	W1-STU-BRG-FCVV-SUR1	BRIDGE SURVEY 1			
109	W1-STU-BRG-FCVV-SUR2	BRIDGE SURVEY 2			
110	W1-STU-BRG-FCVV-SUR6	BRIDGE SURVEY 3			
111	W1-STU-BRG-FCVV-SUR4-1	BRIDGE SURVEY PLAN 1			
112	W1-STU-BRG-FCVV-SUR4-2	BRIDGE SURVEY PLAN 2			
113	W1-STU-BRG-FCVV-SUR5-1	BRIDGE SURVEY PROFILE 1			
114	W1-STU-BRG-FCVV-SUR5-2	BRIDGE SURVEY PROFILE 2			
115	W1-STU-BRG-FCVV-ALG-1	ALIGNMENT PLAN			
116	W1-STU-BRG-FCVV-TAB-1	ALIGNMENT TABULATION			
		BRIDGE OVER I-494 - BRIDGE 27W32			
1	CBR27W32-BRG-GPE-001	GENERAL PLAN & ELEVATION	2138+89	2140+86	
2	CBR27W32-BRG-GPE-002	TRANSVERSE SECTION			
3	CBR27W32-BRG-GPE-003	LOADING DIAGRAM			
4	CBR27W32-BRG-SUP-001	BRIDGE LAYOUT			
5	CBR27W32-BRG-ARCH	AESTHETICS			
6	CBR27W32-BRG-ABUT-001	SOUTH ABUTMENT DETAILS 1			
7	CBR27W32-BRG-ABUT-002	SOUTH ABUTMENT DETAILS 2			
8	CBR27W32-BRG-ABUT-003	SOUTH ABUTMENT DETAILS 3			
9	CBR27W32-BRG-ABUT-004	SOUTH ABUTMENT DETAILS 4			
10	CBR27W32-BRG-ABUT-005	SOUTH ABUTMENT DETAILS 5			
11	CBR27W32-BRG-ABUT-006	SOUTH ABUTMENT DETAILS 6			
12	CBR27W32-BRG-ABUT-007	SOUTH ABUTMENT DETAILS 7			
13	CBR27W32-BRG-ABUT-008	SOUTH ABUTMENT DETAILS 8			
14	CBR27W32-BRG-ABUT-009	SOUTH ABUTMENT DETAILS 9			
15	CBR27W32-BRG-ABUT-010	NORTH ABUTMENT DETAILS 1			
16	CBR27W32-BRG-ABUT-011	NORTH ABUTMENT DETAILS 2			
17	CBR27W32-BRG-ABUT-012	NORTH ABUTMENT DETAILS 3			
18	CBR27W32-BRG-ABUT-013	NORTH ABUTMENT DETAILS 4			
19	CBR27W32-BRG-ABUT-014	NORTH ABUTMENT DETAILS 5			
20	CBR27W32-BRG-ABUT-015	NORTH ABUTMENT DETAILS 6			
21	CBR27W32-BRG-ABUT-016	NORTH ABUTMENT DETAILS 7			
22	CBR27W32-BRG-ABUT-017	NORTH ABUTMENT DETAILS 8			
23	CBR27W32-BRG-ABUT-018	NORTH ABUTMENT DETAILS 9			
24	CBR27W32-BRG-ABUT-019	NORTH ABUTMENT DETAILS 10			

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: GENERAL

SHEET NAME: 00-GEN-IDX-002

SHEET 3 OF 442

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CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
		VOLUME 4A - BRIDGES (cont'd)			
25	CBR27W32-BRG-ABUT-020	NORTH ABUTMENT DETAILS 11			
26	CBR27W32-BRG-PIR-001	PIER DETAILS 1			
27	CBR27W32-BRG-PIR-002	PIER DETAILS 2			
28	CBR27W32-BRG-PIR-003	PIER DETAILS 3			
29	CBR27W32-BRG-PIR-004	PIER DETAILS 4			
30	CBR27W32-BRG-SUP-002	FRAMING PLAN			
31	CBR27W32-BRG-PCB-001	MN63 PRESTRESSED CONCRETE BEAM			
32	CBR27W32-BRG-SUP-003	SUPERSTRUCTURE DETAILS 1			
33	CBR27W32-BRG-SUP-004	SUPERSTRUCTURE DETAILS 2			
34	CBR27W32-BRG-SUP-005	SUPERSTRUCTURE DETAILS 3			
35	CBR27W32-BRG-SUP-006	SUPERSTRUCTURE DETAILS 4			
36	CBR27W32-BRG-RAL-001	CONCRETE BARRIER DETAILS 1			
37	CBR27W32-BRG-RAL-002	CONCRETE BARRIER DETAILS 2			
38	CBR27W32-BRG-RAL-003	CONCRETE BARRIER DETAILS 3			
39	CBR27W32-BRG-DTL-001	BRIDGE DETAILS 1			
40	CBR27W32-BRG-DTL-002	BRIDGE DETAILS 2			
41	CBR27W32-BRG-DTL-003	BRIDGE DETAILS 3			
42	CBR27W32-BRG-DTL-004	BRIDGE DETAILS 4			
43	CBR27W32-BRG-DTL-005	CONCRETE SLOPE PAVING UNDER BRIDGES			
44	CBR27W32-BRG-DTL-006	ORNAMENTAL METAL RAILING			
45	CBR27W32-BRG-DRN-001	BRIDGE DETAILS 7			
46	CBR27W32-BRG-DRN-002	BRIDGE DETAILS 8			
47	CBR27W32-BRG-EXP-001	WATERPROOF EXPANSION JOINT DEVICE			
48	CBR27W32-BRG-DTL-007	AS-BUILT BRIDGE DATA			
49	CBR27W32-BRG-SUR-001	BRIDGE SURVEY 1			
50	CBR27W32-BRG-SUR-002	BRIDGE SURVEY 2			
51	CBR27W32-BRG-SUR-003	BRIDGE SURVEY 3			
52	CBR27W32-BRG-BOR-001	BORINGS - PLAN			
53	CBR27W32-BRG-BOR-002	BORINGS - ELEVATION			
54	CBR27W32-BRG-ACSD	CONSTRUCTION DETAILS			

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
GENERAL
VOLUME INDEX OF PLAN SHEETS
SHEET 3

DISCIPLINE: GENERAL

SHEET NAME: 00-GEN-IDX-003

SHEET 4 OF 442

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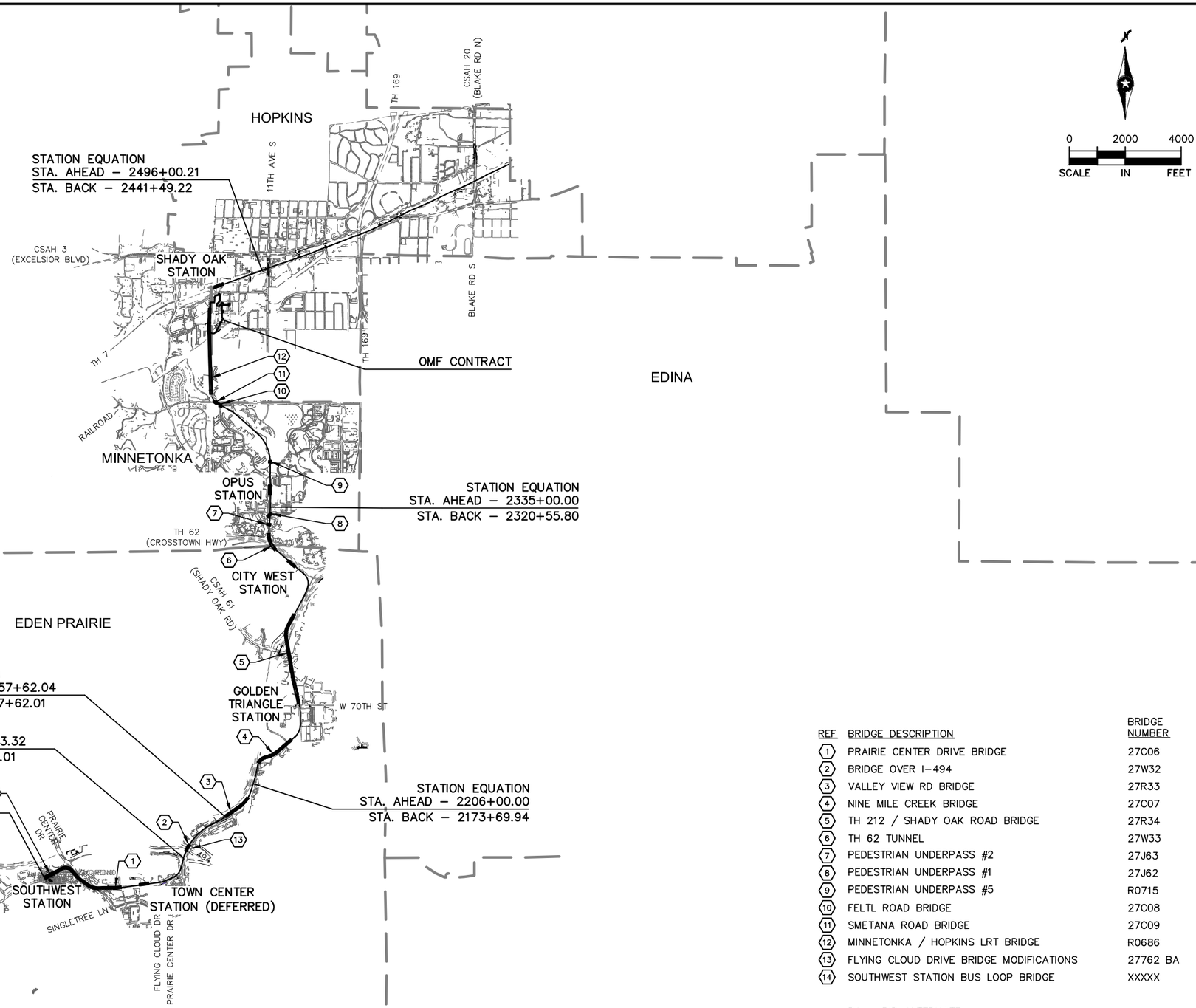

REF	BRIDGE DESCRIPTION	BRIDGE NUMBER
1	PRAIRIE CENTER DRIVE BRIDGE	27C06
2	BRIDGE OVER I–494	27W32
3	VALLEY VIEW RD BRIDGE	27R33
4	NINE MILE CREEK BRIDGE	27C07
5	TH 212 / SHADY OAK ROAD BRIDGE	27R34
6	TH 62 TUNNEL	27W33
7	PEDESTRIAN UNDERPASS #2	27J63
8	PEDESTRIAN UNDERPASS #1	27J62
9	PEDESTRIAN UNDERPASS #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

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
GENERAL
KEY MAP
SHEET 1

DISCIPLINE: GENERAL

SHEET NAME: W0-GEN-KEY-001

SHEET 5 OF 442

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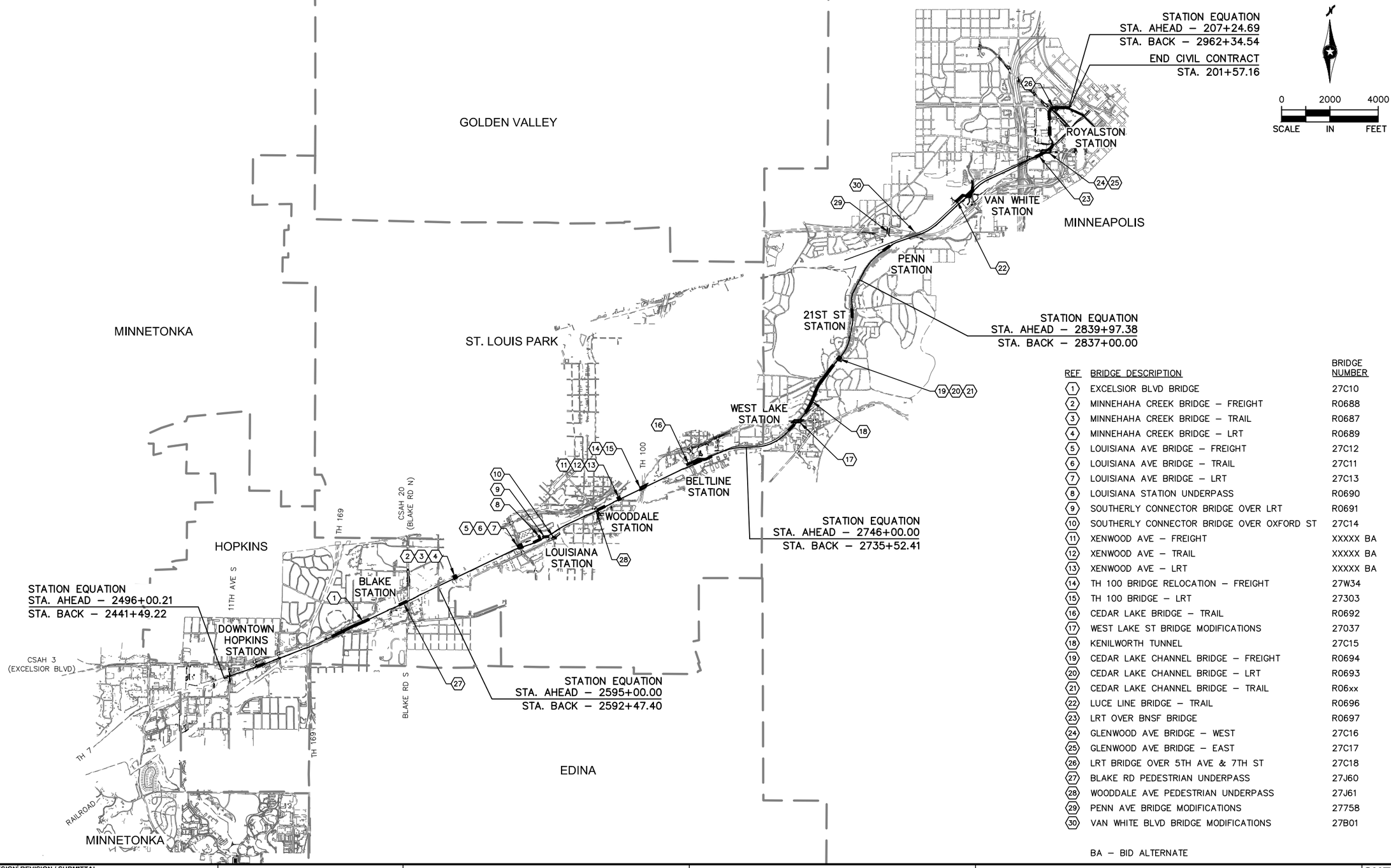

REF	BRIDGE DESCRIPTION	BRIDGE NUMBER
1	EXCELSIOR BLVD BRIDGE	27C10
2	MINNEHAHA CREEK BRIDGE – FREIGHT	R0688
3	MINNEHAHA CREEK BRIDGE – TRAIL	R0687
4	MINNEHAHA CREEK BRIDGE – LRT	R0689
5	LOUISIANA AVE BRIDGE – FREIGHT	27C12
6	LOUISIANA AVE BRIDGE – TRAIL	27C11
7	LOUISIANA AVE BRIDGE – LRT	27C13
8	LOUISIANA 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

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
GENERAL
KEY MAP
SHEET 2

DISCIPLINE: GENERAL

SHEET NAME: E0-GEN-KEY-002

SHEET 6 OF 442

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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.

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: GENERAL

SHEET NAME: 00-GEN-NTS-001

SHEET 7 OF 442

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
Ea	ACTUAL SUPERELEVATION (INCHES)
EB	EAST BOUND
EL or ELEV	ELEVATION
EP	ENDING POINT
ESMT	EASEMENT
Eu	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

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: GENERAL

SHEET NAME: 00-GEN-NTS-002

SHEET 8 OF 442

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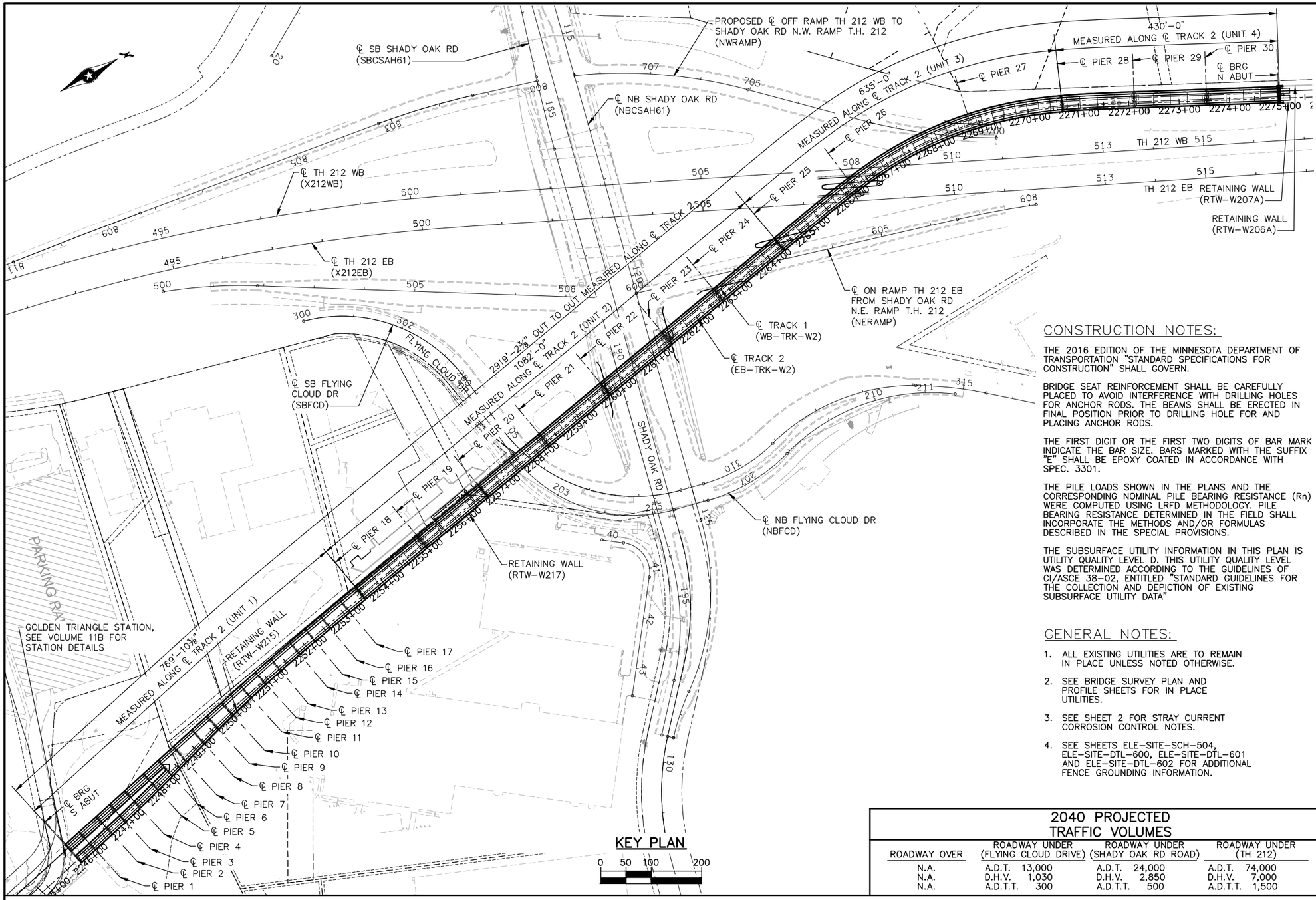

CONSTRUCTION NOTES:

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

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

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

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

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

GENERAL NOTES:

1. ALL EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS NOTED OTHERWISE.
2. SEE BRIDGE SURVEY PLAN AND PROFILE SHEETS FOR IN PLACE UTILITIES.
3. SEE SHEET 2 FOR STRAY CURRENT CORROSION CONTROL NOTES.
4. SEE SHEETS ELE–SITE–SCH–504, ELE–SITE–DTL–600, ELE–SITE–DTL–601 AND ELE–SITE–DTL–602 FOR ADDITIONAL FENCE GROUNDING INFORMATION.

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 SHEET 11

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4000 PSI n = 8
fy = 60000 PSI

PRESTRESSED CONCRETE:
f'c = 9000 PSI n = 1
fpu = 270 ksi FOR 0.6"ø LOW RELAXATION STRANDS
0.75 fpu FOR INITIAL PRESTRESS

STRUCTURAL STEEL:
fy = 50 ksi SPEC 3309 PAINTED

DESIGN SPEED: OVER = 40 MPH (LRT)
UNDER = 45 MPH (FLYING CLOUD DRIVE)
UNDER = 30 MPH (SHADY OAK ROAD)
UNDER = 60 MPH (TH 212)

DECK AREA 97,904 SQ. FT.

LIST OF SHEETS

BRIDGE NO. 27R34

SOUTHWEST LRT OVER SHADY OAK ROAD & TH 212
0.1 MI. NORTH OF JCT. T.H. 212 AND SHADY OAK ROAD
IN EDEN PRAIRIE
UNIT 1: 36'–46'–36', 5 @ 40'–50'–40'
UNIT 2: 159'–158'–158'–158'–158.5'–132.5'–158'
UNIT 3: 186.25'–263.75'–185'
UNIT 4: 143.33'–143.33'–143.33'
CIP CONCRETE SLAB SPANS – UNIT 1
PRESTRESSED CONCRETE BEAM SPANS – UNIT 2 & 4
CONTINUOUS STEEL BEAM SPANS – UNIT 3
VARIABLE ROADWAY (18'–6" MIN)
0°–0'–0" SKEW

BRIDGE I.D. NO. 209 – UNIT 1
BRIDGE I.D. NO. 501 – UNIT 2 & 4
BRIDGE I.D. NO. 401 – UNIT 3

KEY PLAN

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

APPROVED: _____
STATE BRIDGE ENGINEER DATE

2040 PROJECTED TRAFFIC VOLUMES

ROADWAY OVER	ROADWAY UNDER (FLYING CLOUD DRIVE)	ROADWAY UNDER (SHADY OAK RD ROAD)	ROADWAY UNDER (TH 212)
N.A.	A.D.T. 13,000	A.D.T. 24,000	A.D.T. 74,000
N.A.	D.H.V. 1,030	D.H.V. 2,850	D.H.V. 7,000
N.A.	A.D.T.T. 300	A.D.T.T. 500	A.D.T.T. 1,500

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

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

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

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

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

SHEET 1 OF 264

Jan. 17 2016 08:49 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-BL01-60.dwg By: hills

SCHEDULE OF QUANTITIES

SPEC. SECTION (3)	COMPONENT ITEM	UNIT	QUANTITY
–	BR 27R34	LUMP SUM	LS

COMPONENT ITEM SUMMARY (BRIDGE 27R34)

SPEC. SECTION (3)	COMPONENT ITEM	UNIT (2)	QUANTITY (2)
2401	SUPERSTRUCTURE EXCAVATION CLASS E (4)	CU YD	XXXX
2401	STRUCTURAL CONCRETE (1G52)	CU YD	XXXX
2401	STRUCTURAL CONCRETE (3B52)	CU YD	XXXX
2401	STRUCTURAL CONCRETE (3S52)	CU YD	XXXX
2401	STRUCTURAL CONCRETE (3YHPC–M) UNIT 1	SQ FT	XXXX
2401	BRIDGE SLAB CONCRETE (3YHPC–M) UNIT 2–4	CU YD	XXXX
2401	REINFORCEMENT BARS	POUND	XXXX
2401	REINFORCEMENT BARS (EPOXY COATED)	POUND	XXXX
3741	ELASTOMERIC BEARING PAD	EA	XXXX
2402	POT–TYPE BEARING ASSEMBLY TYPE E2	EA	XXXX
2402	POT–TYPE BEARING ASSEMBLY TYPE E3	EA	XXXX
2402	POT–TYPE BEARING ASSEMBLY TYPE F2	EA	XXXX
2402	POT–TYPE BEARING ASSEMBLY TYPE F3	EA	XXXX
2402	STRUCTURAL STEEL (3309)	POUND	XXXX
2402	EXPANSION JOINT DEVICE TYPE 5	LIN FT	XXXX
2402	EXPANSION JOINT DEVICE TYPE TROUGH	LIN FT	XXXX
2402	FIXED BEARING ASSEMBLY TYPE F1	EA	XXXX
2402	FIXED BEARING ASSEMBLY TYPE F4	EA	XXXX
2402	EXPANSION BEARING ASSEMBLY TYPE E1	EA	XXXX
2402	ORNAMENTAL METAL RAILING	LF	XXXX
2402	FLOOR DRAIN, TYPE R–3949–A	EA	XXXX
2402	FLOOR DRAIN, TYPE R–3956	EA	XXXX
2405	PRESTRESSED CONCRETE BEAMS 82MW	LF	XXXX
2405	PRESTRESSED CONCRETE BEAMS 96MW	LF	XXXX
2405	DIAPHRAGM FOR TYPE 82MW PRESTRESSED BEAMS	LF	XXXX
2405	DIAPHRAGM FOR TYPE 96MW PRESTRESSED BEAMS	LF	XXXX
2411	ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM)	SF	XXXX
2411	ARCHITECTURAL CONCRETE TEXTURE (TYPE 1)	SF	XXXX
2411	ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	SF	XXXX
2452	C.I.P. CONCRETE PILING 16"	LF	XXXX
2452	C.I.P. CONCRETE TEST PILE 60 FT LONG 16"	EA	XXXX
2452	C.I.P. CONCRETE TEST PILE 65 FT LONG 16"	EA	XXXX
2452	C.I.P. CONCRETE TEST PILE 70 FT LONG 16"	EA	XXXX
2452	C.I.P. CONCRETE TEST PILE 75 FT LONG 16"	EA	XXXX
2452	C.I.P. CONCRETE TEST PILE 80 FT LONG 16"	EA	XXXX
2452	C.I.P. CONCRETE TEST PILE 85 FT LONG 16"	EA	XXXX
2452	C.I.P. CONCRETE TEST PILE 90 FT LONG 16"	EA	XXXX
2452	PILE ANALYSIS	EA	XXXX
2479	INORGANIC ZINC– RICH PAINT SYSTEM (SHOP)	SF	XXXX
2557	WIRE FENCE DESIGN W–1	LF	XXXX

SCHEDULE OF QUANTITIES AND COMPONENT ITEM SUMMARY NOTES

(1) A BENCH MARK IS REQUIRED. LOCATED AT THE SOUTHEAST CORNER OF THE BRIDGE. STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE. PAYMENT FOR PLACING SHALL BE CONSIDERED INCIDENTAL TO CONCRETE PAY ITEMS.

(2) QUANTITIES LISTED FOR THE COMPONENT ITEMS OF BR 27R34 ARE FOR INFORMATIONAL PURPOSES. ANY ADDITIONAL ITEMS OR CHANGES IN QUANTITIES REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

(3) MEASUREMENT AND PAYMENT FOR COMPONENT ITEMS SHALL BE PART OF THE LUMP SUM PAYMENT FOR BR 27R34. REFER TO MNDOT STANDARD SPECIFICATION OR SPECIAL PROVISION FOR TECHNICAL SPECIFICATION REQUIREMENTS FOR ALL PROVISIONS OTHER THAN MEASUREMENT & PAYMENT REQUIREMENTS.

(4) STRUCTURE EXCAVATIONS INCLUDES TEMPORARY SUPPORT EXCAVATION.

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SCHEDULE OF QUANTITIES

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-BL02

SHEET 2 OF 264

NOTES FOR SECTION OF DECK WITH BLACK REBAR (PIERS 1 THROUGH 17 AND SPANS 1 THROUGH 18)

1. ALL LAP SPLICES IN LONGITUDINAL REBARS IN BOTH LAYERS OF DECK SLAB SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 002. BLACK REBAR IN PLINTH BLOCKS SHALL BE WELDED AND MADE CONTINUOUS WITH WELDED REBAR IN DECK.

2. ON BOTH SIDES OF EXPANSION JOINTS AND AT END OF STRUCTURE WELD ALL LONGITUDINAL BARS IN BOTH REBAR LAYERS TO ADDITIONAL END TRANSVERSE COLLECTOR BARS. WELD END TRANSVERSE COLLECTOR BARS TOGETHER IN EACH REBAR LAYER PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 012 TO FORM AN ELECTRICALLY CONTINUOUS CAGE.

3. BLACK REBAR IN PIER CAPS SHALL BE MADE ELECTRICALLY CONTINUOUS WITHIN PIER CAP AND WITH WELDED BLACK REBAR IN THE DECK SLAB.

4. STEEL SHELLS OF CIP PILES AND REBAR IN FOOTINGS/PIER CAPS SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

5. BOND CABLES, BONDING NOTCHES AND STEEL STRAPS SHALL BE INSTALLED ACROSS ALL EXPANSION TYPE JOINTS IN DECK SLAB THAT DO NOT HAVE A BOND TEST STATION INSTALLED ACROSS THEM PER DETAILS ON SHEET E0-SYS-CORR-DTL-001. SUFFICIENT SLACK SHALL BE AVAILABLE IN THE CABLES THAT SPAN THE EXPANSION JOINT TO ACCOUNT FOR MOVEMENT OF THE JOINT.

6. INSTALL STRAY CURRENT BOND TEST STATION ALONG BRIDGE HOUSING TWO #1/0 AWG CABLES FROM WELDED REBAR ON EACH SIDE OF EXPANSION JOINT IN TRACK SLAB AND TWO PAIRS OF #22 TEST WIRES FROM SILVER/SILVER CHLORIDE REFERENCE ELECTRODES EMBEDDED IN THE TRACK SLABS ON EACH SIDE OF JOINT. SEE DETAIL 1 ON SHEET E0-SYS-CORR-DTL-002, DETAIL 3 ON SHEET E0-SYS-CORR-DTL-003, DETAIL 1 ON SHEET E0-SYS-CORR-DTL-012 AND DETAIL 2 ON SHEET E0-SYS-CORR-DTL-014. 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 BOND TEST STATION CONTAINING TWO #1/0 AWG CABLES FROM WELDED REBAR IN TRACK INVERT ALONG THE BRIDGE TO THE NORTH, TWO #1/0 AWG CABLES FROM WELDED REBAR IN TRACK INVERT THROUGH THE STATION TO THE SOUTH AND TWO PAIRS OF #22 TEST WIRES FROM SILVER/SILVER CHLORIDE REFERENCE ELECTRODES EMBEDDED IN THE TRACK SLABS ON EACH SIDE OF JOINT. SEE DETAIL 1 ON SHEET E0-SYS-CORR-DTL-002, DETAIL 3 ON SHEET E0-SYS-CORR-DTL-003 AND DETAIL 2 ON SHEET E0-SYS-CORR-DTL-014. SUFFICIENT SLACK SHALL BE AVAILABLE IN THE CABLES THAT SPAN THE EXPANSION JOINT TO ACCOUNT FOR MOVEMENT OF THE JOINT. SEE NOTE 9.

8. INSTALL STRAY CURRENT TEST STATION HOUSING TWO #1/0 AWG CABLES FROM ELECTRICALLY INTERCONNECTED STEEL PILE SHELLS AND #14 HMWPE CABLE FROM COPPER/COPPER SULFATE REFERENCE CELL. SEE NOTE 9. REFERENCE CELL SHALL BE INSTALLED IN SOIL WITHIN 1-FOOT OF PILE AND 1-FOOT BELOW PIER CAP OR 3-FEET BELOW GRADE IF PIER CAP FOOTING BOTTOM IS LOCATED ABOVE FINAL GRADE ELEVATION. SEE DETAIL 4 ON SHEET E0-SYS-CORR-DTL-003

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 OPERATIONS OF THE LRT SYSTEM.

10. AT PILES FOR THE SUBJECT PIERS AND SOUTH ABUTMENT, WHERE THE CONCRETE PILE CAP/STEEL PILE SHELL INTERFACE WILL BE BURIED, THE STEEL SHELL OF THE CIP PILES SHALL BE COATED WITH A DIELECTRIC COATING OR HEAT SHRINK SLEEVE. THE COATING SHALL EXTEND INTO THE CONCRETE CAP/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.

NOTES FOR SECTION OF DECK WITH EPOXY COATED REBAR (PIERS 18 THROUGH 30 AND SPANS 19 THROUGH 31)

11. ALL EPOXY COATED REBAR IN THE LRT DECK, WALKWAYS, PLINTH BLOCKS, BEAMS AND EAST ABUTMENT SHALL BE SECURED WITH NON-METALLIC OR NON-METALLIC COATED TIES.

12. ALL BEARINGS SHALL PROVIDE ELECTRICAL ISOLATION OF EMBEDDED STEEL ELEMENTS LOCATED ABOVE THE BEARING ASSEMBLIES FROM EMBEDDED STEEL ELEMENTS LOCATED BELOW THE BEARING ASSEMBLIES.

13. BLACK REBAR IN NORTH ABUTMENT FOOTING SHALL BE MADE ELECTRICALLY CONTINUOUS WITHIN THE FOOTING. BLACK REBAR IN FOOTINGS SHALL BE ISOLATED FROM EPOXY COATED REBAR IN ABUTMENT WALLS AND WINGWALLS. SEE DETAIL 2 ON SHEET E0-SYS-CORR-DTL-013.

14. STEEL SHELLS OF CIP PILES IN ABUTMENT FOOTING SHALL BE MADE ELECTRICALLY CONTINUOUS WITH WELDED REBAR IN FOOTING. SEE DETAILS 2 AND 4 ON SHEET E0-SYS-CORR-DTL-008.

15. A 3/8-INCH UNCOATED, GALVANIZED STEEL CABLE SHALL BE INSTALLED IN A 1" X 2" DEEP LONGITUDINAL GROOVE IN THE DECK POSITIONED DIRECTLY BELOW EACH RUNNING RAIL. THE CABLE SHALL BE POSITIONED IN THE DECK SUCH THAT IT DOES NOT INTERFERE WITH INSTALLATION OF THE PLINTH ANCHOR INSERTS. SEE SHEET E0-SYS-CORR-DTL-010.

16. LONGITUDINAL REBAR IN TRANSITION SLAB SHALL BE MADE ELECTRICALLY CONTINUOUS WITHIN SLAB. 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 STEEL WIRES IN DECK SLAB AND FROM THE GROUND ROD ARRAY. SEE SHEET E0-SYS-CORR-DTL-010. SUFFICIENT SLACK SHALL BE AVAILABLE IN THE CABLES THAT SPAN THE EXPANSION JOINT TO ACCOUNT FOR MOVEMENT OF THE JOINT.

17. AT DECK EXPANSION JOINTS, THAT DO NOT HAVE A STRAY CURRENT BOND TEST STATION, ELECTRICAL CONTINUITY OF THE GALVANIZED STEEL CABLE SHALL BE MAINTAINED ACROSS THE EXPANSION JOINT. SUFFICIENT SLACK SHALL BE AVAILABLE IN THE CABLES THAT SPAN THE EXPANSION JOINT TO ACCOUNT FOR MOVEMENT OF THE JOINT. SEE DETAIL 1 ON SHEET E0-SYS-CORR-DTL-011.

18. AT PIER 18 INSTALL STRAY CURRENT BOND TEST STATION ALONG BRIDGE HOUSING TWO #1/0 AWG INSULATED CABLES FROM THE UNCOATED GALVANIZED CABLES UNDER THE TRACK TO THE NORTH OF PIER 18, TWO #1/0 AWG CABLES FROM WELDED REBAR IN THE TRACK SLAB TO THE SOUTH OF PIER 18 AND ONE PAIR OF #22 TEST WIRES FROM SILVER/SILVER CHLORIDE REFERENCE ELECTRODE EMBEDDED IN THE TRACK SLABS. SEE NOTE 22. SEE DETAIL 2 ON SHEET E0-SYS-CORR-DTL-003 AND DETAIL 1 ON SHEET E0-SYS-CORR-DTL-010. NO REFERENCE ELECTRODE IS TO BE INSTALLED IN THE DECK TO THE NORTH OF PIER 18, SINCE THERE IS NO BLACK REBAR IN THE DECK TO THE NORTH OF PIER 18.

19. AT PIERS 20, 22, 25 AND 28 INSTALL STRAY CURRENT BOND TEST STATION ALONG BRIDGE HOUSING TWO INSULATED #1/0 AWG CABLES FROM GALVANIZED STEEL CABLES ON EACH SIDE OF EXPANSION JOINT IN TRACK SLAB. SEE DETAIL 3 ON SHEET E0-SYS-CORR-DTL-003 AND DETAIL 1 ON SHEET E0-SYS-CORR-DTL-010. SEE NOTE 22. NO REFERENCE ELECTRODE IS TO BE INSTALLED IN THE DECK SINCE THERE IS NO BLACK REBAR IN THE DECK. SUFFICIENT SLACK SHALL BE AVAILABLE IN THE CABLES THAT SPAN THE EXPANSION JOINT TO ACCOUNT FOR MOVEMENT OF THE JOINT.

20. AT THE NORTH ABUTMENT, INSTALL A STRAY CURRENT BOND TEST STATION ALONG BRIDGE HOUSING TWO #1/0 AWG THWN CABLES FROM UNCOATED GALVANIZED STEEL CABLES IN TRACK SLAB, TWO #1/0 AWG CABLES FROM WELDED REBAR IN TRANSITION SLAB AND 250 MCM CABLE TO GROUND ROD ARRAY AT BASE OF ABUTMENT. SEE DETAIL 2 ON SHEET E0-SYS-CORR-DTL-003, DETAIL 2 ON SHEET E0-SYS-CORR-DTL-013 AND SHEET E0-SYS-CORR-DTL-010. SUFFICIENT SLACK SHALL BE AVAILABLE IN THE CABLES THAT SPAN THE EXPANSION JOINT TO ACCOUNT FOR MOVEMENT OF THE JOINT. SEE NOTE 22. NO REFERENCE ELECTRODE IS TO BE INSTALLED IN THE AERIAL DECK, SINCE THERE IS NO BLACK REBAR IN THE DECK.

21. INSTALL STRAY CURRENT BOND TEST STATION CONTAINING TWO #1/0 AWG CABLES FROM WELDED REBAR/PILES IN ABUTMENT FOOTING, TWO #1/0 AWG CABLES FROM WELDED REBAR IN FOOTING OF RTW W206A OR W207, ONE #14 HMWPE CABLE FROM COPPER/COPPER SULFATE REFERENCE CELL INSTALLED UNDER ABUTMENT FOOTING AND TWO #22 TEST WIRES FROM SILVER/SILVER CHLORIDE REFERENCE ELECTRODES EMBEDDED IN RTW FOOTING. SEE DETAIL 1 ON SHEET E0-SYS-CORR-DTL-002, DETAIL 3 ON SHEET E0-SYS-CORR-DTL-003 AND DETAIL 2 ON SHEET E0-SYS-CORR-DTL-017. SEE NOTE 22.

22. ALL STRAY CURRENT TEST STATIONS SHALL BE INSTALLED AT LOCATIONS WHERE THEY WILL BE ACCESSIBLE AFTER COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND DURING REVENUE OPERATIONS OF THE LRT SYSTEM.

23. 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 BETWEEN STRAY CURRENT TEST STATIONS AT ENDS OF BRIDGE STRUCTURE. 250 MCM CABLE SHALL RUN INSIDE 2" SCH 80 PVC CONDUIT THAT IS EMBEDDED WITHIN ABUTMENT. SEE DETAIL 3 ON SHEET E0-SYS-CORR-DTL-013.

24. MAINTAIN ELECTRICAL ISOLATION OF REBAR IN ABUTMENT FROM REBAR IN ADJACENT RETAINING WALL.

25. THE CONCRETE/SOIL INTERFACE ALONG EACH STEEL SLEEVE FOR THE CIP PILES UNDER THE FOOTINGS FOR THE PIERS AND NORTH ABUTMENT SHALL BE COATED WITH A DIELECTRIC COATING OR HEAT SHRINK SLEEVE. 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.

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
STRAY CURRENT/CORROSION CONTROL NOTES

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-BL03

SHEET 3 OF 264

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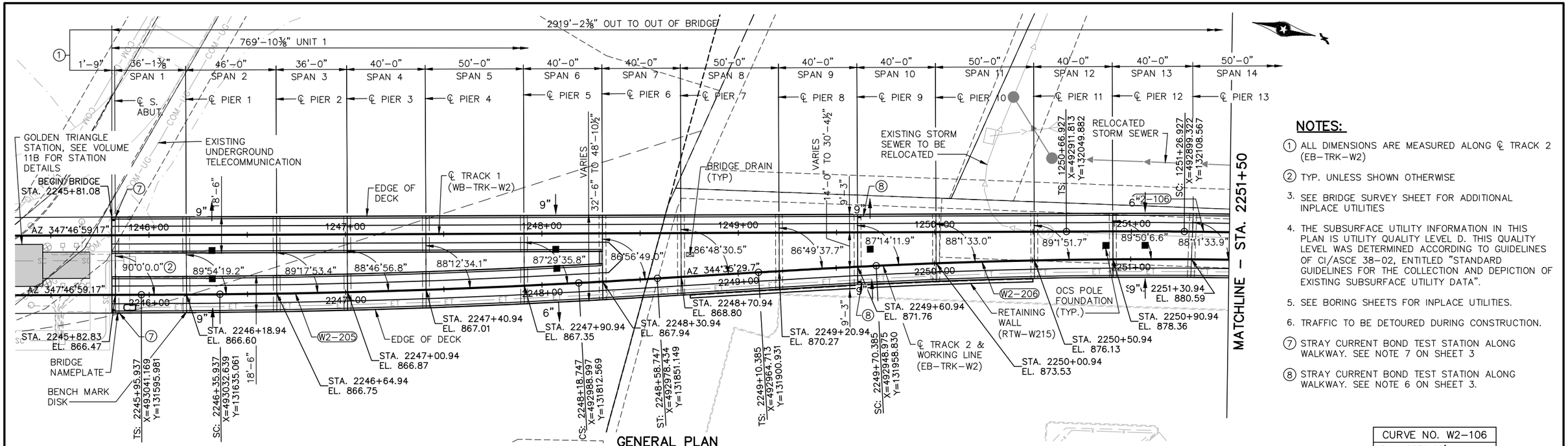

GENERAL PLAN

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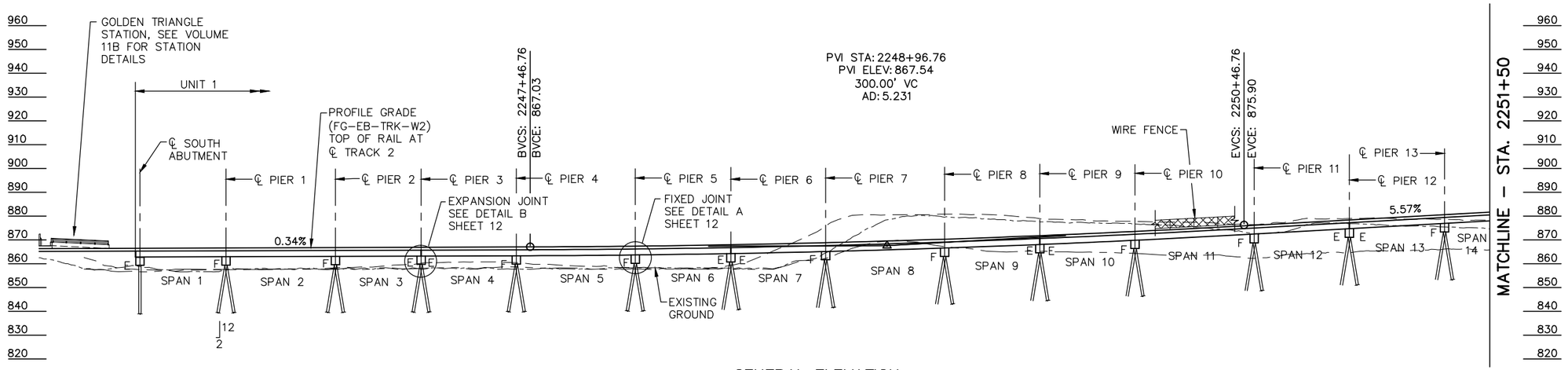

GENERAL ELEVATION

SCALE 0 12.5 25 50 IN FEET

NOTES:

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

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

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

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

20' LT. — — — — — —
C/L TRACK 2 ——— - ———
10' RT. ——— — — ———

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
GENERAL PLAN AND ELEVATION (SHEET 1)

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-GE01-1

SHEET 4 OF 264

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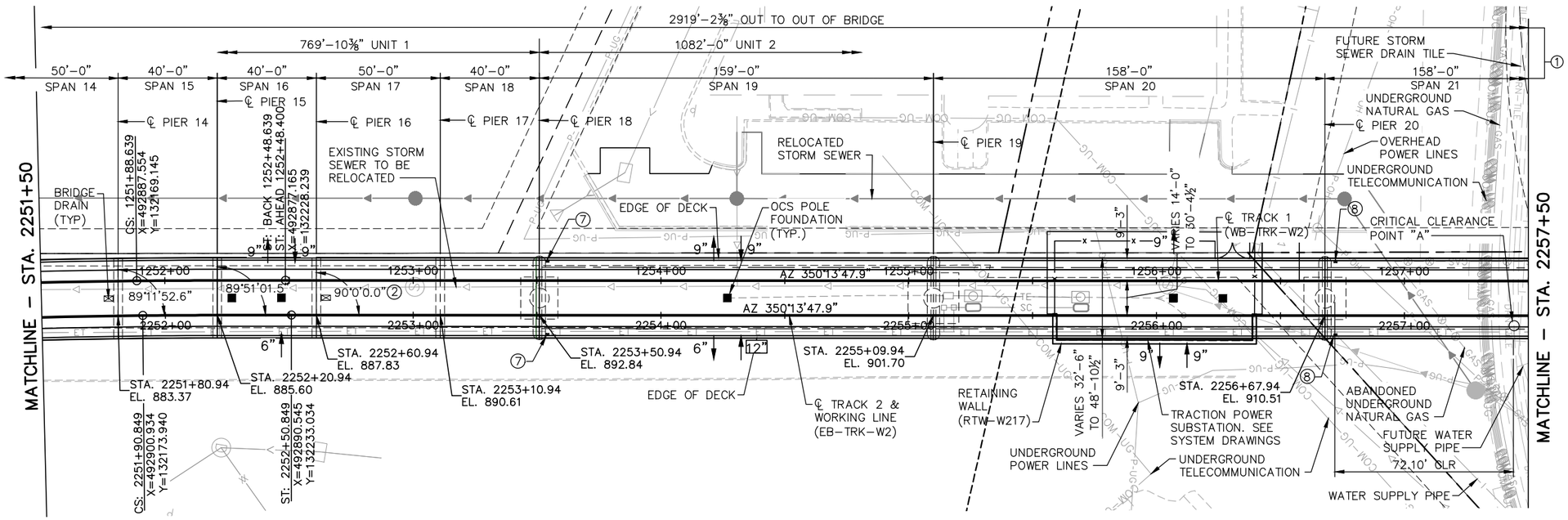

GENERAL PLAN

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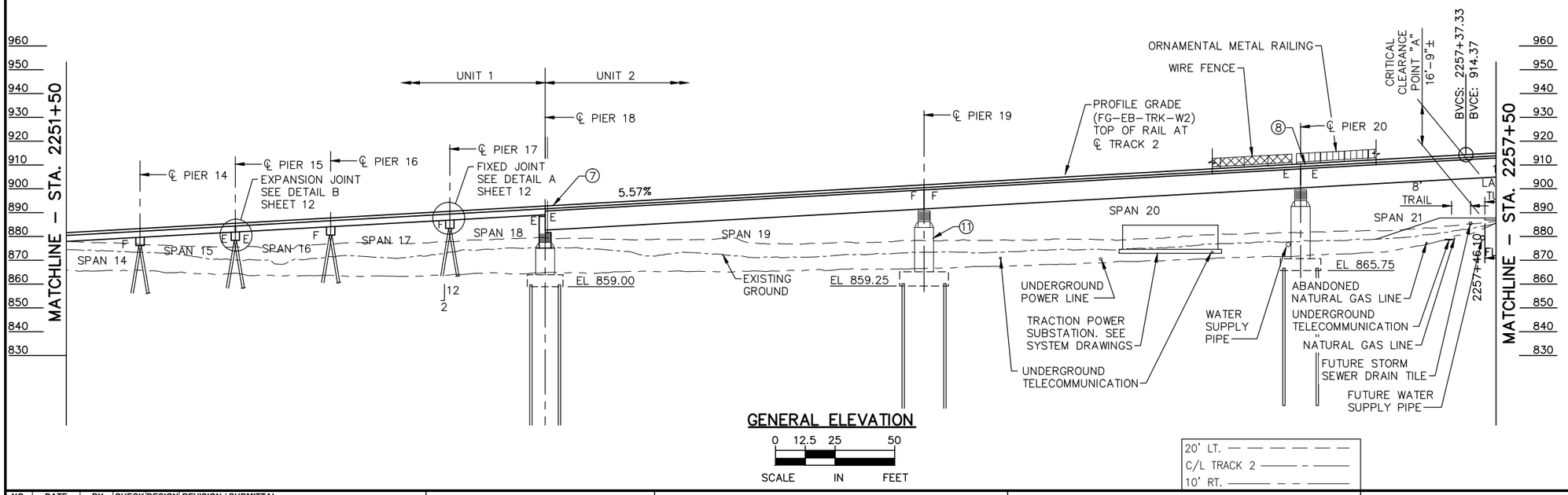
SCALE IN FEET



GENERAL ELEVATION

0 12.5 25 50

SCALE IN FEET

20' LT. — — — — —
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10' RT. — — — — —

NOTES:

1. ALL DIMENSIONS ARE MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)
2. TYP. UNLESS SHOWN OTHERWISE
3. SEE BRIDGE SURVEY SHEET FOR ADDITIONAL INPLACE UTILITIES
4. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38–02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
5. SEE BORING SHEETS FOR INPLACE UTILITIES.
6. TRAFFIC TO BE DETOURED DURING CONSTRUCTION.
7. STRAY CURRENT BOND TEST STATION ALONG WALKWAY. SEE NOTE 18 ON SHEET 3
8. STRAY CURRENT BOND TEST STATION ALONG WALKWAY. SEE NOTE 19 ON SHEET 3
9. MAINTAIN ELECTRICAL SEPARATION BETWEEN WELDED REBAR IN UNIT 1 AND EPOXY COATED REBAR IN UNIT 2.
10. STRAY CURRENT COLLECTION CABLES SHALL BE INSTALLED IN THE DECK DIRECTLY BELOW EACH RUNNING RAIL IN UNITS 2, 3, & 4. SEE NOTE 15 ON SHEET 3.
11. GROUNDING TEST STATION, SEE GROUNDING PLANS IN VOLUME 12, SHEET ELE–SITE–DTL–600.

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
GENERAL PLAN AND ELEVATION (SHEET 2)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-GE01-2

SHEET 5 OF 264

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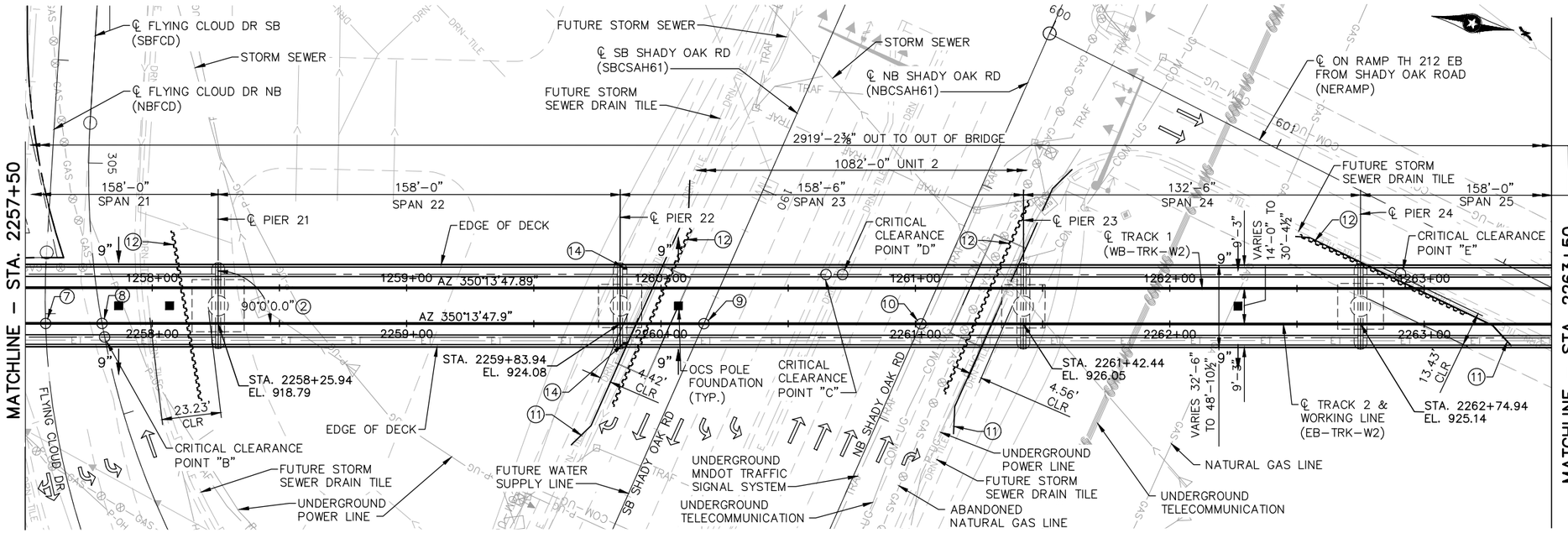
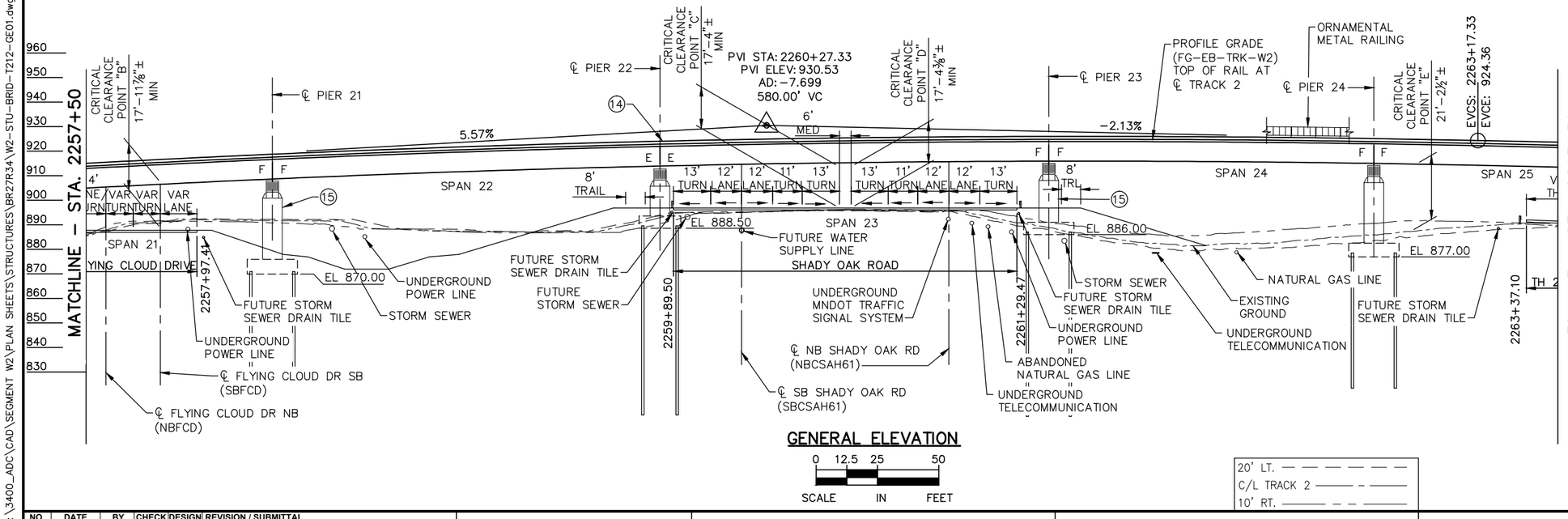


GENERAL PLAN

SCALE 0 12.5 25 50 IN FEET



GENERAL ELEVATION

SCALE 0 12.5 25 50 IN FEET

20' LT. — — — — — —
C/L TRACK 2 ——— - ———
10' RT. ——— — — ———

NOTES:

1. ALL DIMENSIONS ARE MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)
2. TYP. UNLESS SHOWN OTHERWISE
3. SEE BRIDGE SURVEY SHEET FOR ADDITIONAL INPLACE UTILITIES
4. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38–02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
5. SEE BORING SHEETS FOR INPLACE UTILITIES.
6. TRAFFIC TO BE DETOURED DURING CONSTRUCTION.
7. CONTROL POINT
   ℄ TRACK 2 (EB–TRK–W2) P.O.T. STA 2257+58.11
   ℄ NB FLYING CLOUD DRIVE (NBFCD) P.O.C.
   STA 202+03.76
   X = 492804.467
   Y = 132732.933
   ANGLE: 88°6'37.2" TTC
8. CONTROL POINT
   ℄ TRACK 2 (EB–TRK–W2) P.O.T. STA 2257+80.28
   ℄ SB FLYING CLOUD DRIVE (SBFCD) P.O.C.
   STA 305+63.36
   X = 492800.703
   Y = 132754.790
   ANGLE: 79°42'17.3" TTC
9. CONTROL POINT
   ℄ TRACK 2 (EB–TRK–W2) P.O.T. STA 2260+16.84
   ℄ SB SHADY OAK RD (SBCSAH61) P.O.C.
   STA 190+57.65
   X = 492760.561
   Y = 132987.916
   ANGLE: 66°7'53.7 TTC
10. CONTROL POINT
    ℄ TRACK 2 (EB–TRK–W2) P.O.T. STA 2261+02.14
    ℄ NB SHADY OAK RD (NBCSAH61) P.O.C.
    STA 121+59.85
    X = 492746.087
    Y = 133071.974
    ANGLE: 66°7'53.7" TTC
11. THRIE BEAM GUARDRAIL, SEE CIVIL PLANS
12. SUPPORT OF EXCAVATION (SOE) TO BE DESIGNED BY THE CONTRACTOR. STEEL SHEET PILING SHOWN, OTHER SYSTEMS MAY BE BE UTILIZED AT THE CONTRACTOR'S OPTION. SEE SPECIAL PROVISIONS.
13. STRAY CURRENT COLLECTION CABLES SHALL BE INSTALLED IN THE DECK DIRECTLY BELOW EACH RUNNING RAIL IN UNITS 2, 3, & 4. SEE NOTE 15 ON SHEET 3.
14. STRAY CURRENT BOND TEST STATION ALONG WALKWAY. SEE NOTE 19 ON SHEET 3
15. GROUNDING TEST STATION, SEE GROUNDING PLANS IN VOLUME 12, SHEET ELE–SITE–DTL–600.

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DESIGNED BY: DDL CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

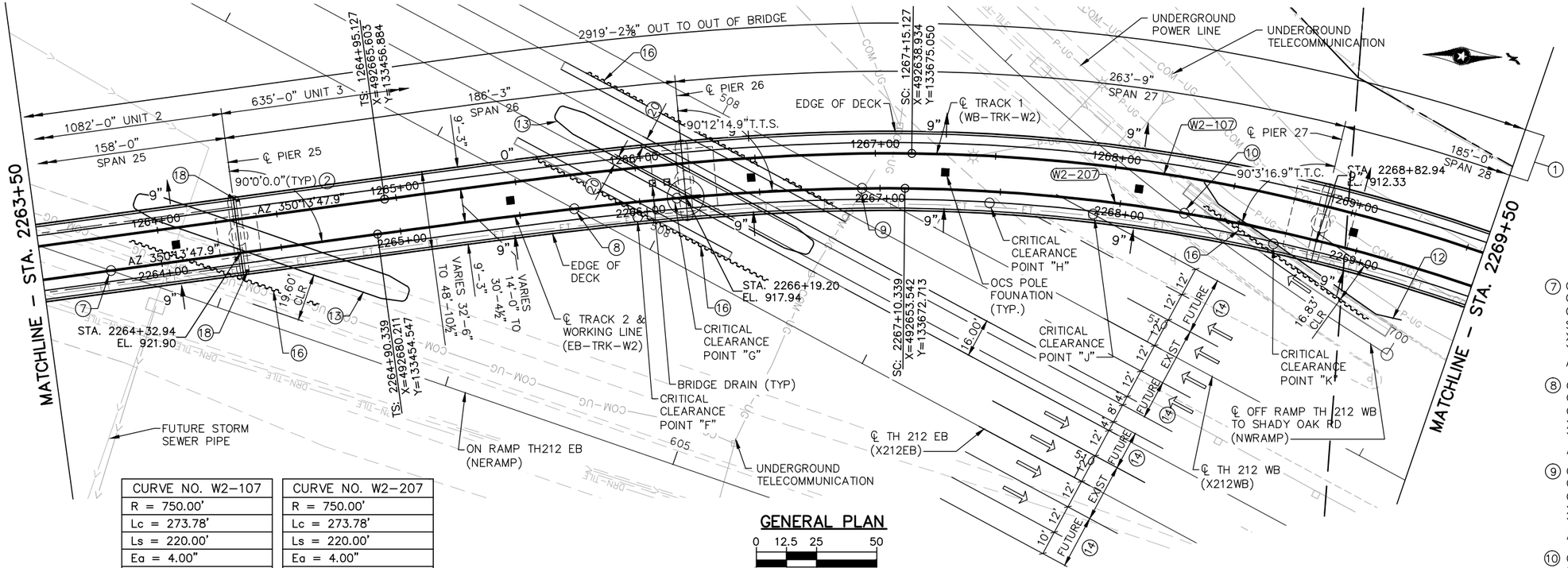
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD BRIDGE 27R34
GENERAL PLAN AND ELEVATION (SHEET 3)

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-GE01-3

SHEET 6 OF 264

Jan, 17 2016 08:54 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-GE01.dwg By: hills

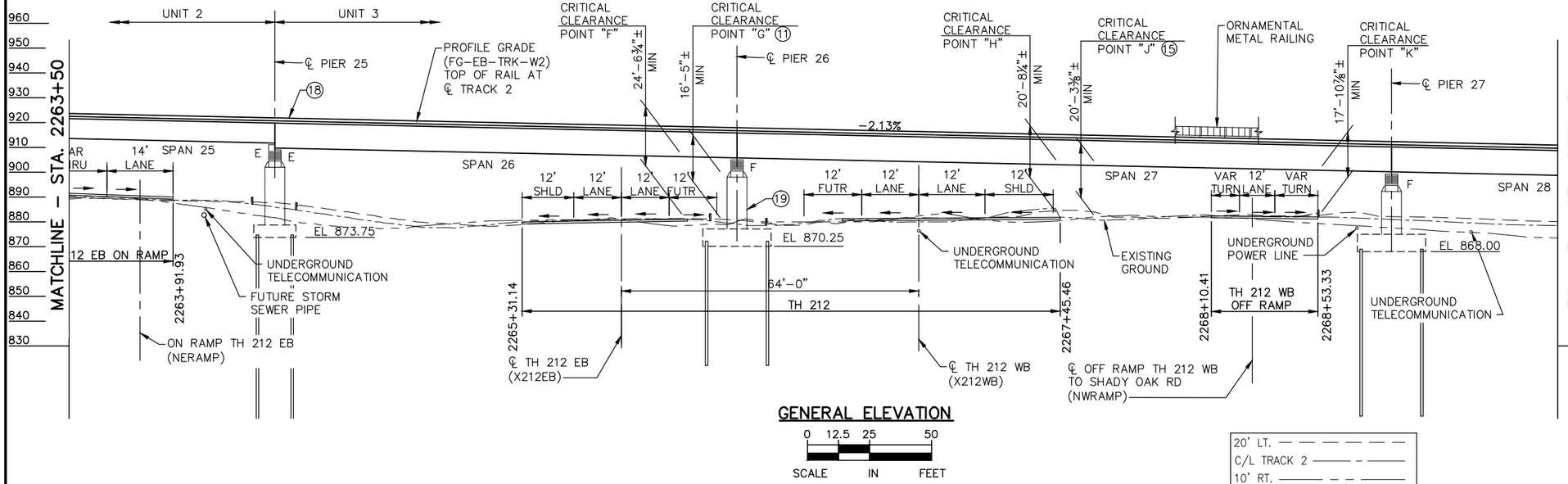


CURVE NO. W2-107
R = 750.00'
Lc = 273.78'
Ls = 220.00'
Ea = 4.00"
Eu = 4.45"
V = 40 MPH

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

GENERAL PLAN

SCALE 0 12.5 25 50 IN FEET



GENERAL ELEVATION

SCALE 0 12.5 25 50 IN FEET

20' LT. — — — — — —
C/L TRACK 2 ——— - ———
10' RT. ——— — — ———

NOTES:

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

(7) CONTROL POINT
℄ TRACK 2 (EB-TRK-W2) P.O.T. STA 2263+78.63
℄ ON RAMP TH212 EB (NERAMP) P.O.C.
STA 602+53.18
X = 492699.168
Y = 133344.454
ANGLE: 26°48'3.8" TTC

(8) CONTROL POINT
℄ TRACK 2 (EB-TRK-W2) P.O.T. STA 2265+72.64
℄ TH 212 EB (X212EB) P.O.C. STA 507+64.26
X = 492666.801
Y = 133535.744
ANGLE: 34°50'13.5" TTC

(9) CONTROL POINT
℄ TRACK 2 (EB-TRK-W2) P.O.T. STA 2266+92.48
℄ TH 212 WB (X212WB) P.O.C. STA 508+65.52
X = 492654.174
Y = 133654.868
ANGLE: 28°55'10.8" TTC

(10) CONTROL POINT
℄ TRACK 2 (EB-TRK-W2) P.O.T. STA 2268+26.85
℄ TH 212 WB OFF RAMP (NWRAMP)
P.O.C. STA 701+02.55
X = 492659.804
Y = 133788.941
ANGLE: 28°07'10.7" TTC

(11) CLEARANCE SHOWN AT TH212 FUTURE WIDENING TO UNDERSIDE OF CAP

(12) THRIE BEAM GUARDRAIL, SEE CIVIL PLANS

(13) THRIE BEAM BULLNOSE GUARDRAIL, SEE CIVIL PLANS

(14) POTENTIAL FUTURE WIDENING

(15) CLEARANCE SHOWN AT TH 212 FUTURE WIDENING.

(16) SUPPORT OF EXCAVATION (SOE) TO BE DESIGNED BY THE CONTRACTOR. STEEL SHEET PILING SHOWN, OTHER SYSTEMS MAY BE BE UTILIZED AT THE CONTRACTOR'S OPTION. SEE SPECIAL PROVISIONS.

17. STRAY CURRENT COLLECTION CABLES SHALL BE INSTALLED IN THE DECK DIRECTLY BELOW EACH RUNNING RAIL IN UNITS 2, 3, & 4. SEE NOTE 15 ON SHEET 3.

(18) STRAY CURRENT BOND TEST STATION ALONG WALKWAY. SEE NOTE 19 ON SHEET 3

(19) GROUNDING TEST STATION, SEE GROUNDING PLANS IN VOLUME 12, SHEET ELE-SITE-DTL-600.

(20) 4'-0" CLEAR TO EDGE OF FUTURE LANE.

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DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

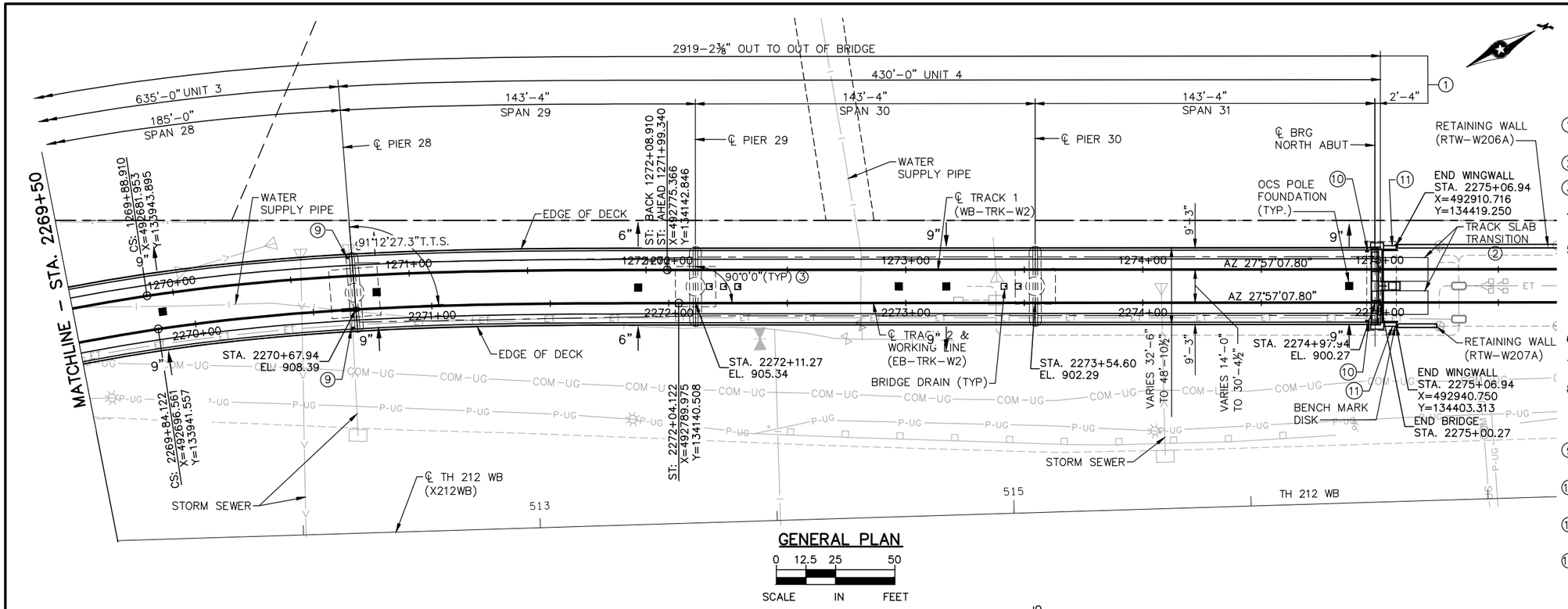
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
GENERAL PLAN AND ELEVATION (SHEET 4)

DISCIPLINE: STRUCTURES

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

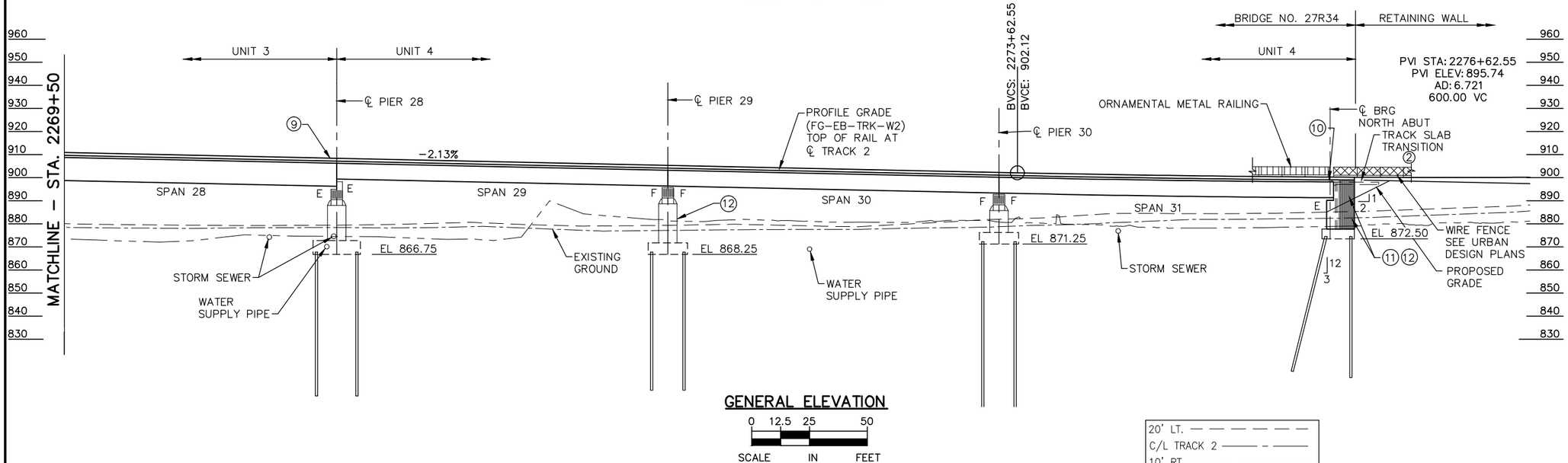
SHEET 7 OF 264

Jan, 17 2016 08:55 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-GE01.dwg By: hills



GENERAL PLAN

SCALE 0 12.5 25 50 IN FEET



GENERAL ELEVATION

SCALE 0 12.5 25 50 IN FEET

20' LT. — — — — — —
C/L TRACK 2 ——— – ———
10' RT. ——— — — ———

NOTES:

1. ALL DIMENSIONS ARE MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)
2. SEE TRACK PLANS FOR TRANSITION SLAB DETAILS
3. TYP. UNLESS SHOWN OTHERWISE
4. SEE BRIDGE SURVEY SHEET FOR ADDITIONAL INPLACE UTILITIES
5. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38–02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
6. SEE BORING SHEETS FOR INPLACE UTILITIES.
7. TRAFFIC TO BE DETOURED DURING CONSTRUCTION.
8. STRAY CURRENT COLLECTION CABLES SHALL BE INSTALLED IN THE DECK DIRECTLY BELOW EACH RUNNING RAIL IN UNITS 2, 3, & 4. . SEE NOTE 15 ON SHEET 3.
9. STRAY CURRENT BOND TEST STATION ALONG WALKWAY. SEE NOTE 19 ON SHEET 3
10. STRAY CURRENT BOND TEST STATION ALONG WALKWAY. SEE NOTE 20 ON SHEET 3
11. STRAY CURRENT BOND TEST STATION NORTH ABUTMENT. SEE NOTE 21 ON SHEET 3
12. GROUNDING TEST STATION, SEE GROUNDING IN PLANS VOLUME 12, SHEET ELE–SITE–DTL–600.

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DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

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METROPOLITAN COUNCIL

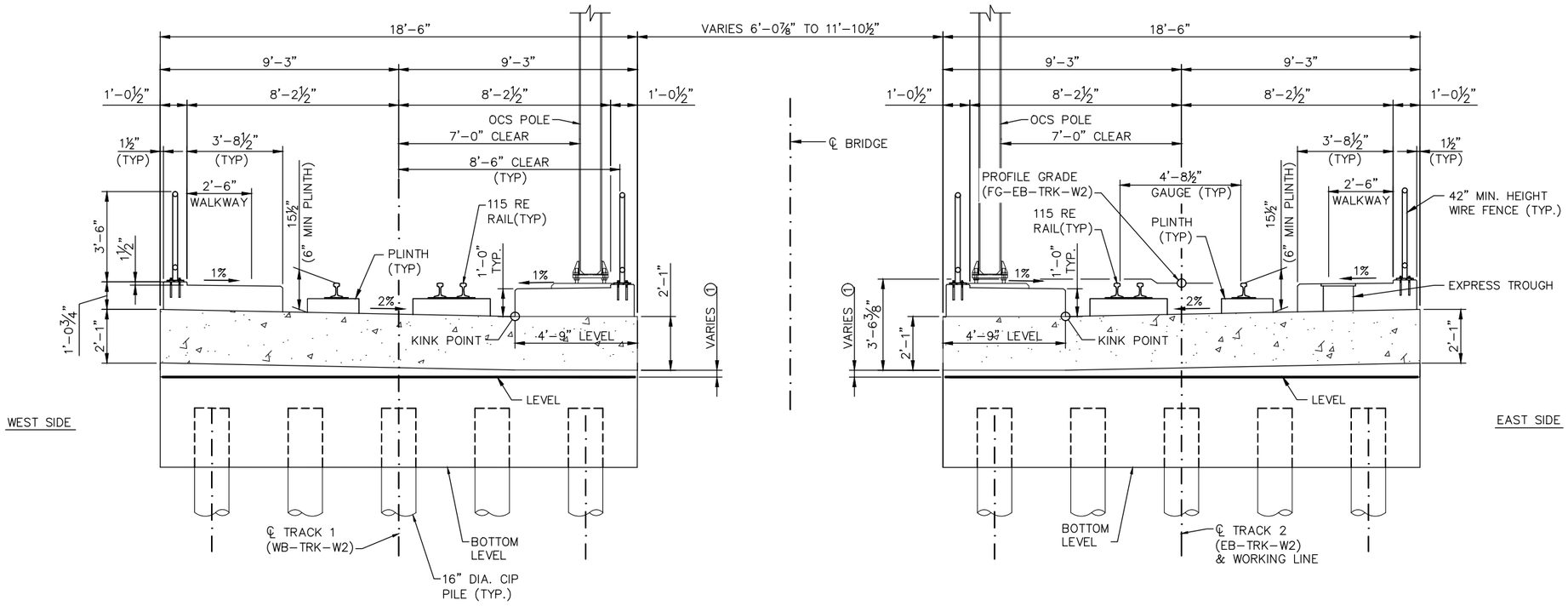
SOUTHWEST Green Line LRT Extension

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

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

SHEET 8 OF 264

Jan. 17 2016 08:56 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-GE01.dwg By: hills



TRANSVERSE SECTION SPANS 1-6

0 2.5 5
SCALE IN FEET

NOTES:

① 3" MIN. HAUNCH HEIGHT AT FIXED PIER
4" MIN. HAUNCH HEIGHT EXPANSION PIER

2. WELD ALL REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

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90% SUBMISSION - 01/22/16

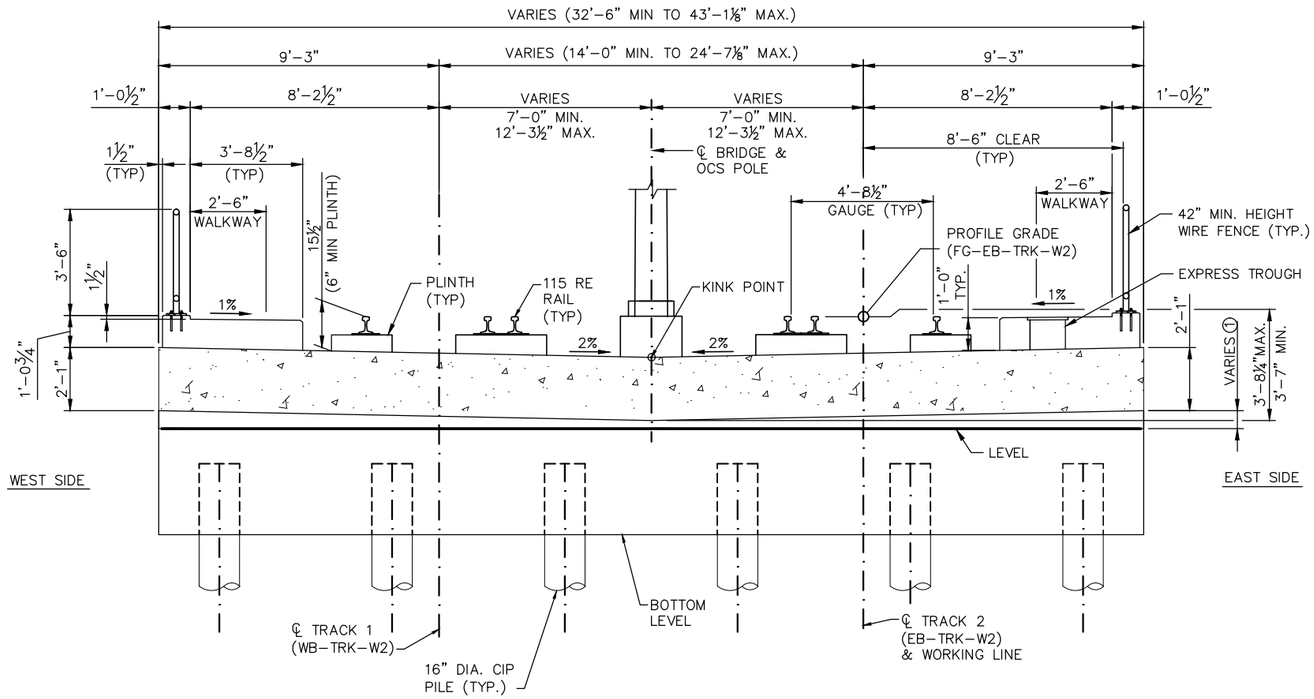
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
TRANSV SECTION SPANS 1-6

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-TYP2-2

SHEET 9 OF 264

Jan, 17 2016 08:56 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-TYP2.dwg By: hills



TRANSVERSE SECTION SPANS 7-18

0 2.5 5

SCALE IN FEET

NOTES:

① 3" MIN. HAUNCH HEIGHT AT FIXED PIER
4" MIN. HAUNCH HEIGHT EXPANSION PIER

2. WELD ALL REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

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METROPOLITAN COUNCIL

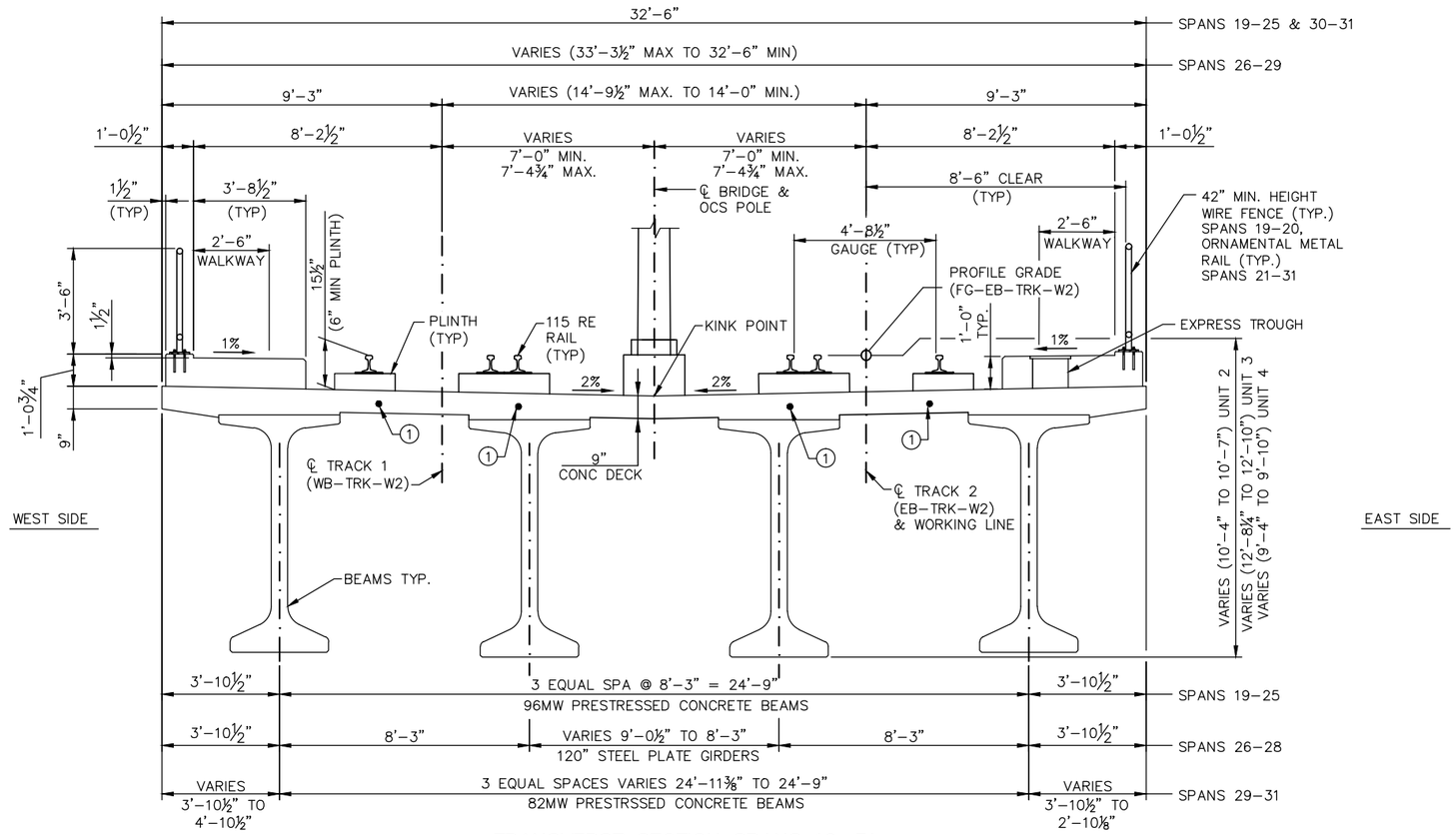
SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
TRANSV SECTION SPANS 7-18

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-TYP2-1

SHEET 10 OF 264

Jan, 17 2016 08:56 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-TYP2.dwg By: hills



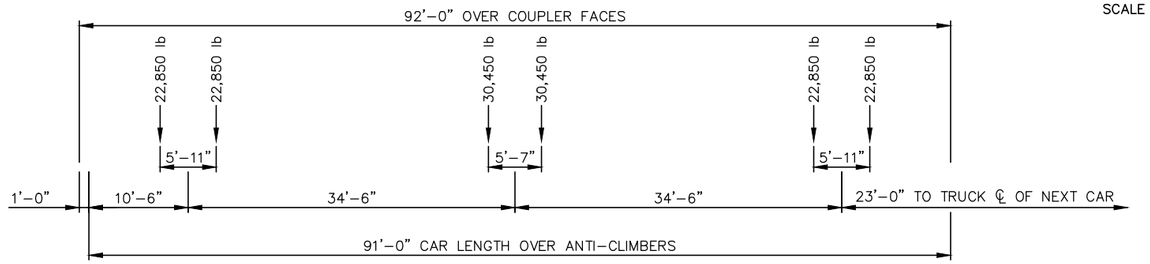
TRANSVERSE SECTION SPANS 19-31

(96MW BEAMS SHOWN)

SCALE 0 2.5 5 IN FEET

NOTES:

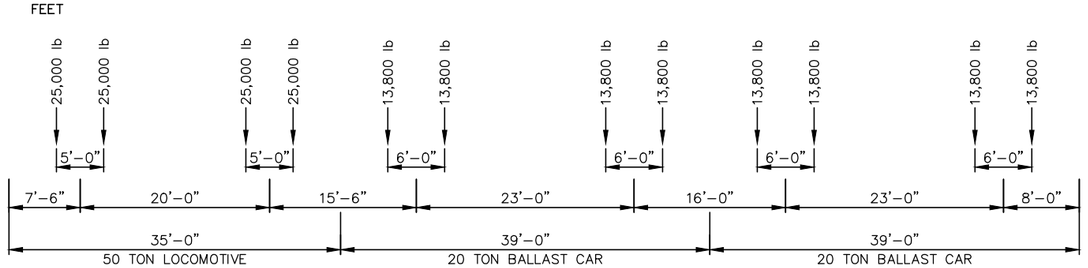
1. STRAY CURRENT COLLECTOR CABLE. SEE SYSTEM PLANS. SEE NOTE 15 ON SHEET 3.



LIGHT RAIL VEHICLE LOADING DIAGRAM

NOTES:

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



MAINTENANCE TRAIN LOADING DIAGRAM

NOTES:

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

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DESIGNED BY: DDL CHECKED BY: EEM
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

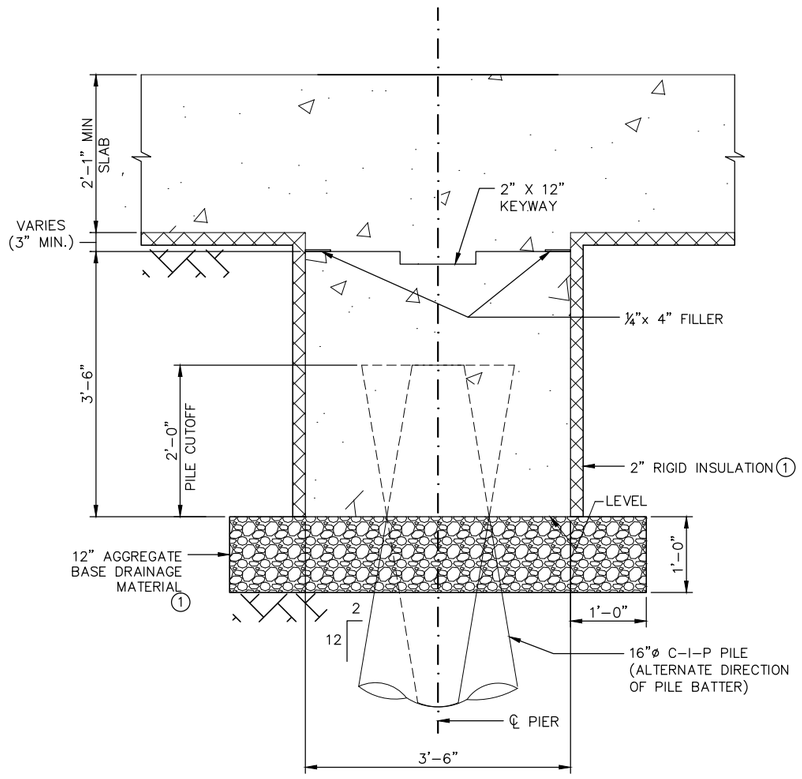
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
TRANSV SECTION & LOADING DIAGRAM

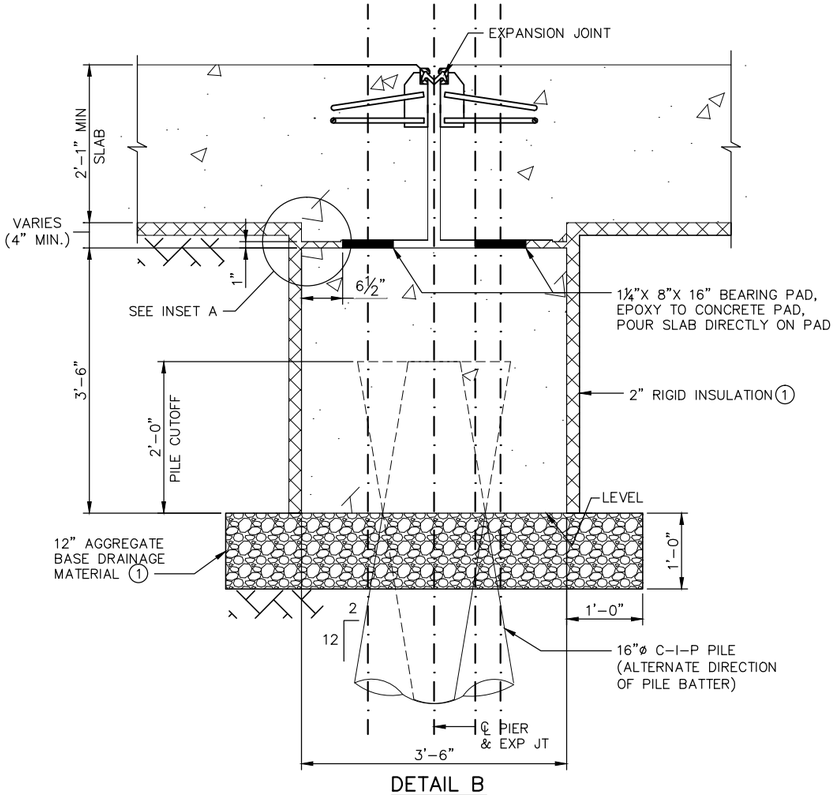
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-TYP1

SHEET 11 OF 264

Jan, 17 2016 08:56 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-TYP1.dwg By: hills



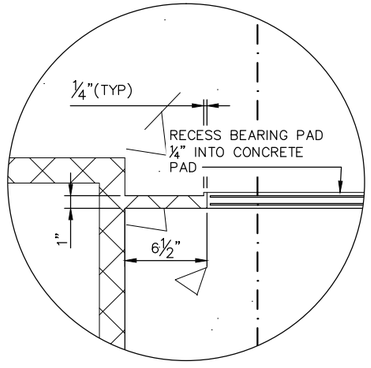
DETAIL A
(PIER 1-13 SHOWN 14-17 SIMILAR)



DETAIL B
(PIER 1-13 SHOWN 14-17 SIMILAR)

NOTES:

(1) PROVIDE ONLY AT LOCATIONS WHERE PILE CAP AND OR SLAB IS IN CONTACT WITH GOUND LINE.



INSET A

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

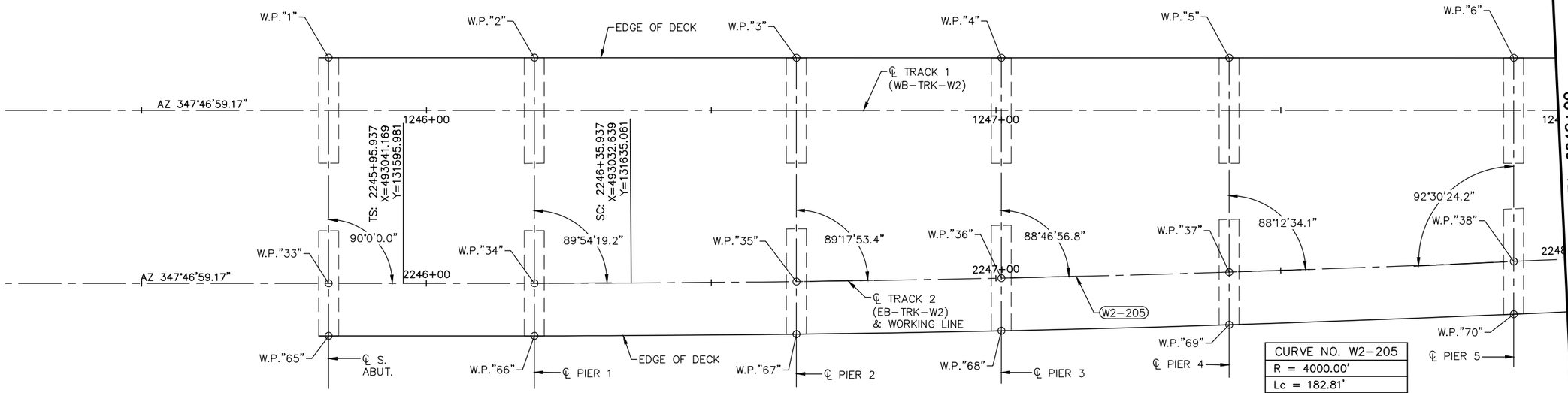
SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
UNIT 1 DETAILS

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-TYP2-3

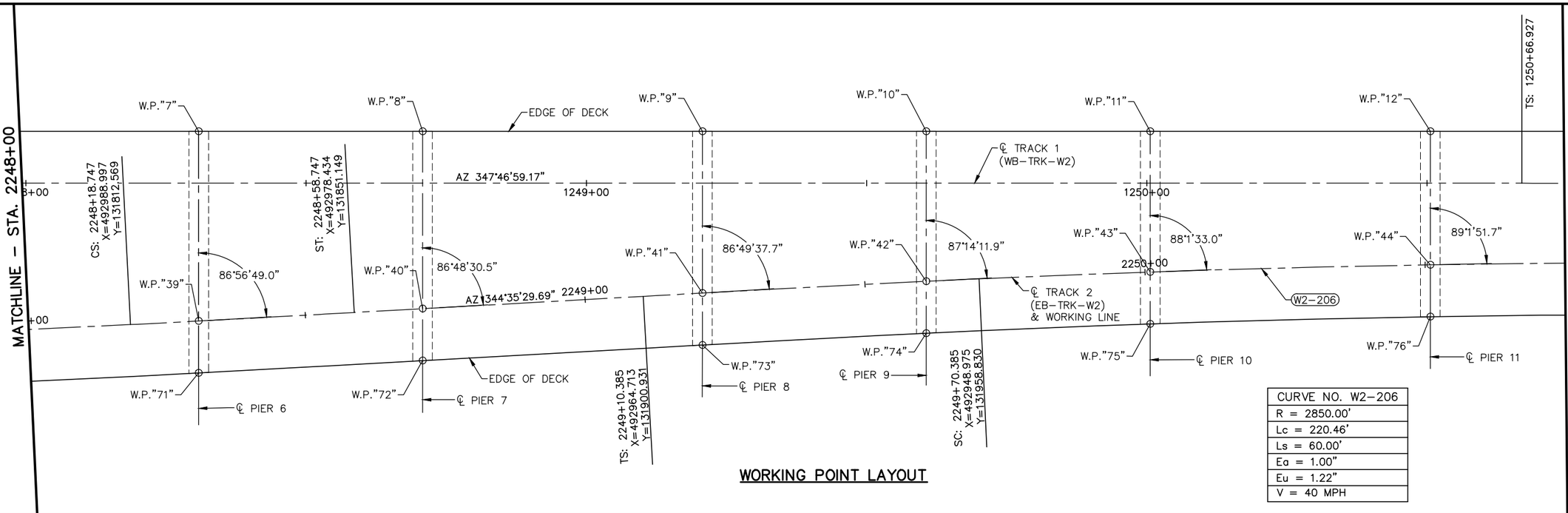
SHEET 12 OF 264

Jan, 17 2016 08:56 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-TYP2.dwg By: hills



WORKING POINT LAYOUT

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



WORKING POINT LAYOUT

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

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DESIGNED BY: EEM CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

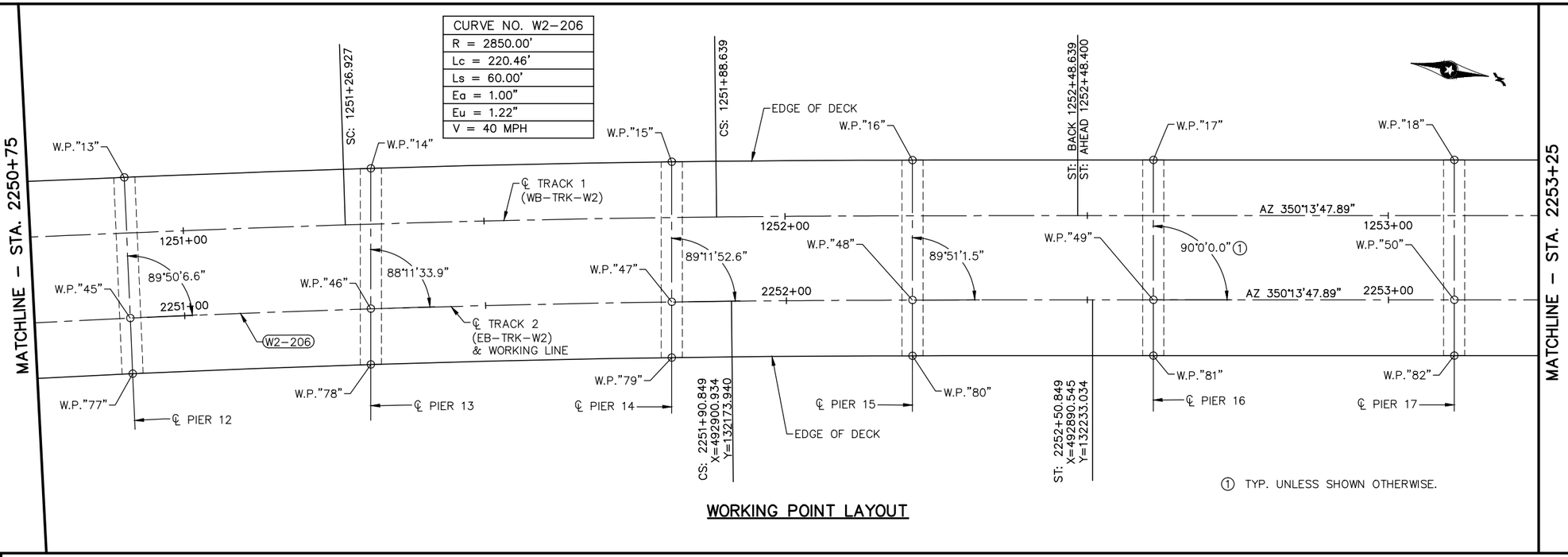
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE LAYOUT 1

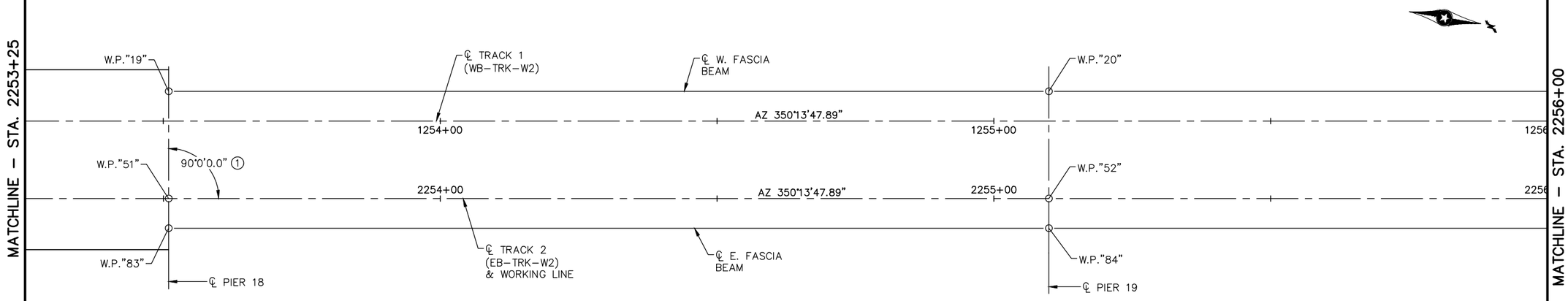
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-WPTS-1

SHEET 13 OF 264

Jan, 17 2016 08:57 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-WPTS.dwg By: hills



WORKING POINT LAYOUT



WORKING POINT LAYOUT

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

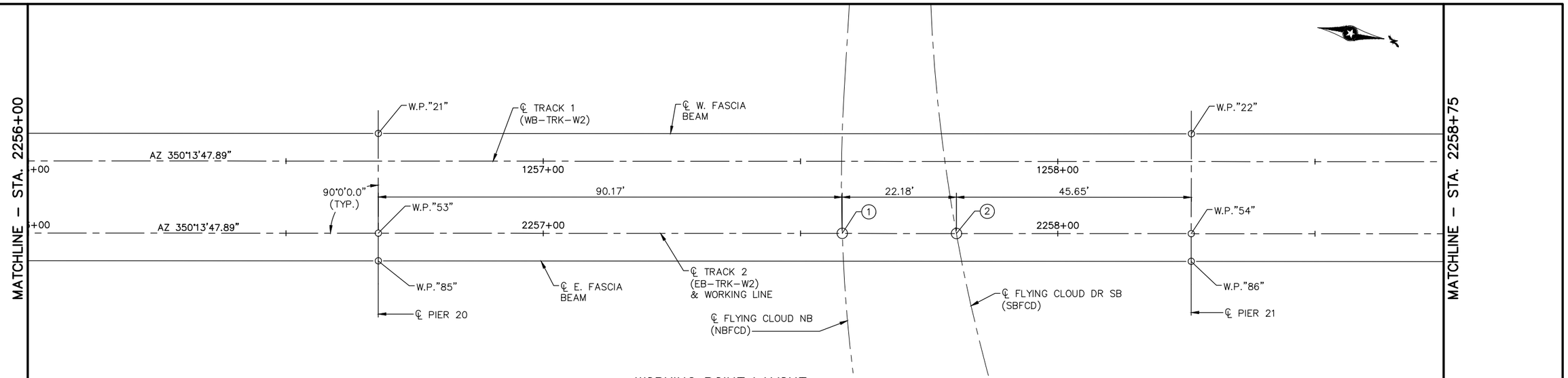
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE LAYOUT 2

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

SHEET 14 OF 264

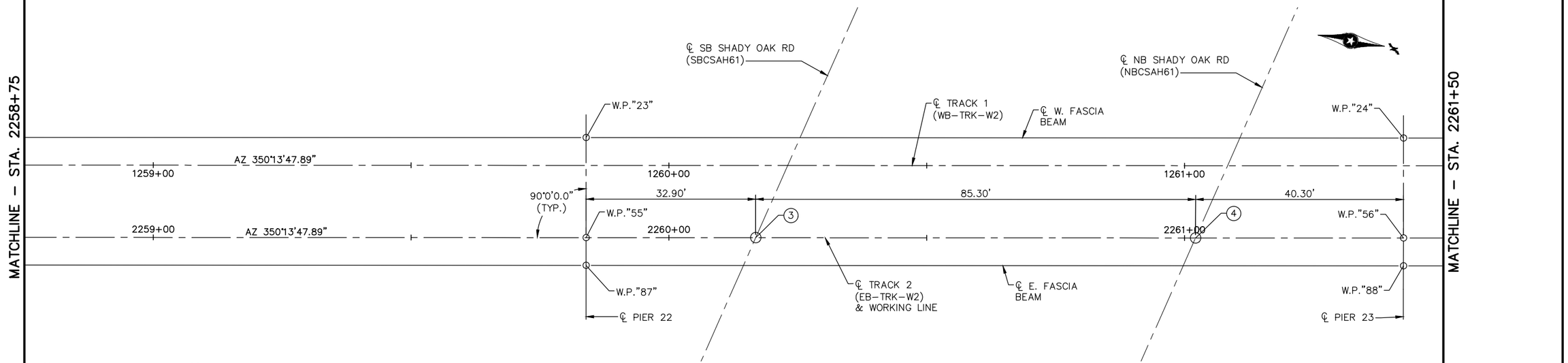
Jan, 17 2016 08:57 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-WPTS.dwg By: hills



WORKING POINT LAYOUT

① CONTROL POINT 1
X = 492804.467
Y = 132732.933
ANGLE: 88°6'37.2" TTC

② CONTROL POINT 2
X = 492800.703
Y = 132754.790
ANGLE: 79°42'17.3" TTC



WORKING POINT LAYOUT

③ CONTROL POINT 3
X = 492760.561
Y = 132987.916
ANGLE: 66°7'53.7 TTC

④ CONTROL POINT 4
X = 492746.087
Y = 133071.974
ANGLE: 66°7'53.7" TTC

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DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

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

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

SHEET 15 OF 264

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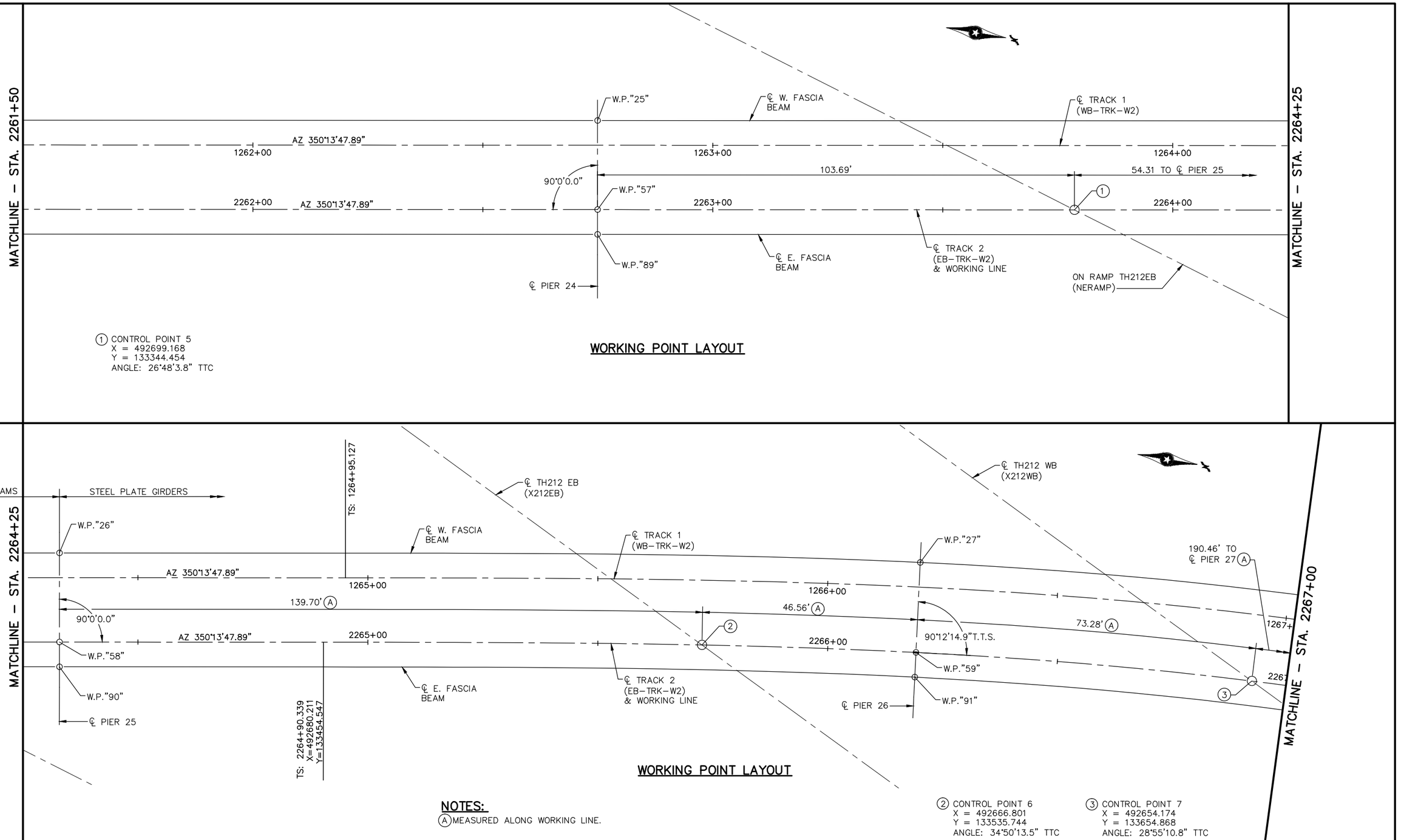

NOTES:

(A) MEASURED ALONG WORKING LINE.

(1) CONTROL POINT 5
X = 492699.168
Y = 133344.454
ANGLE: 26°48'3.8" TTC

(2) CONTROL POINT 6
X = 492666.801
Y = 133535.744
ANGLE: 34°50'13.5" TTC

(3) CONTROL POINT 7
X = 492654.174
Y = 133654.868
ANGLE: 28°55'10.8" TTC

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DRAWN BY: SWH | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: STRUCTURES

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

SHEET 16 OF 264

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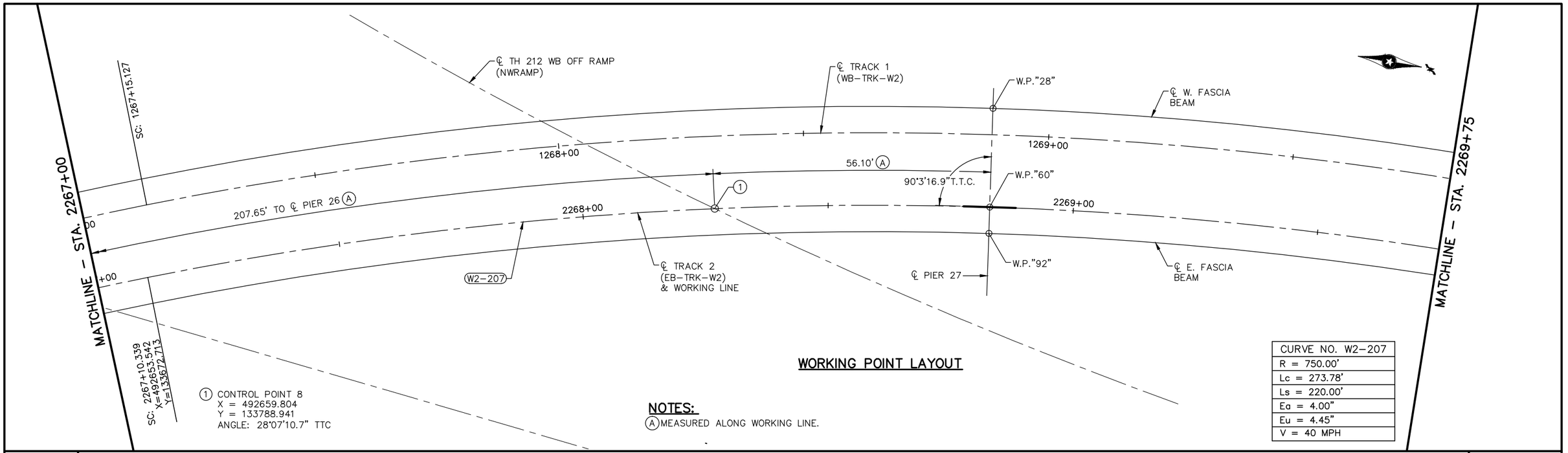

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: STRUCTURES

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

SHEET 17 OF 264

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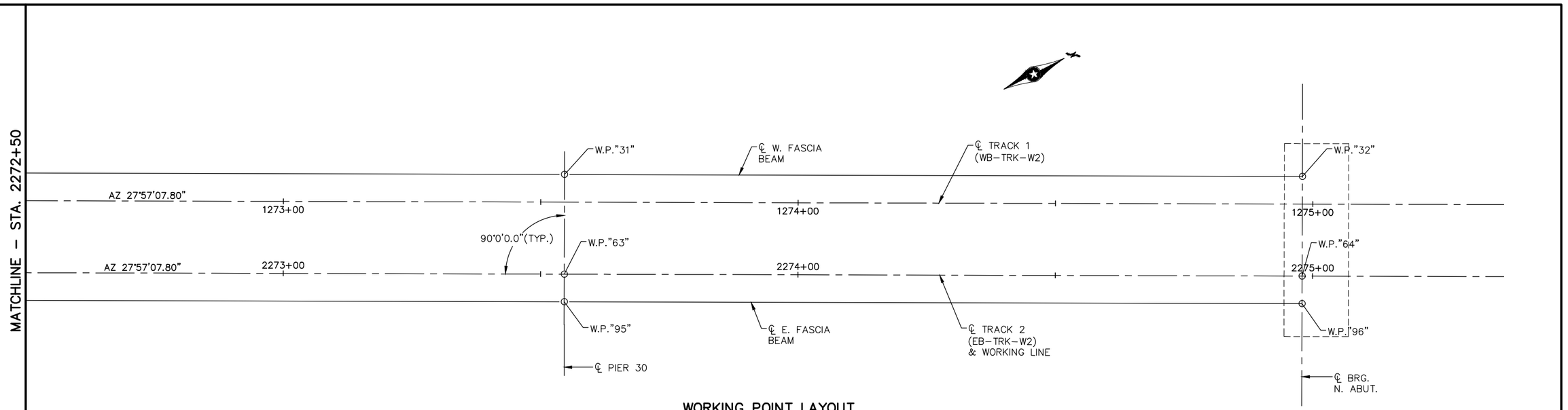
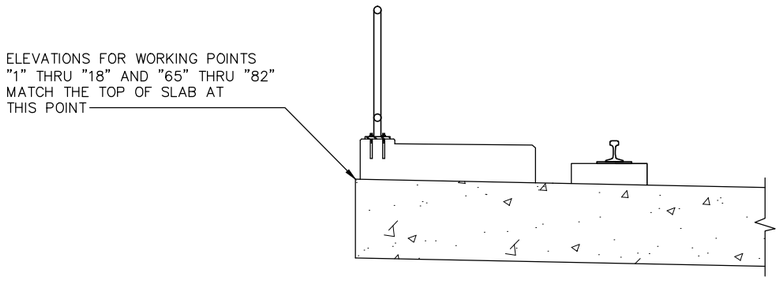
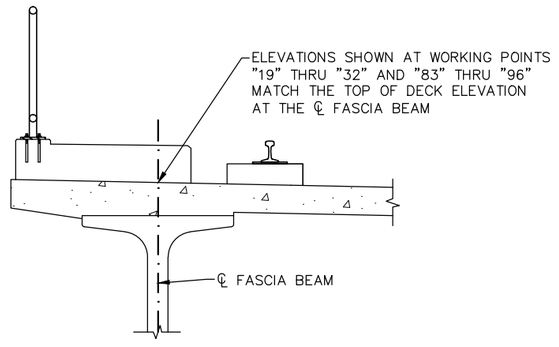


WORKING POINT LAYOUT



WORKING POINT LOCATION DETAIL
SPANS 1–17



WORKING POINT LOCATION DETAIL
SPANS 18–31

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

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

DISCIPLINE: STRUCTURES

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

SHEET 18 OF 264

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	DIMENSIONS BETWEEN WORKING POINTS (FT.) (UNIT 1)																							ELEVATIONS			TOP OF RDWY. TO BDG. SEAT				
POINT	STATION	X-COORDINATE	Y-COORDINATE	1	2	3	4	5	6	7	33	34	35	36	37	38	39	65	66	67	68	69	70	71	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	SLAB THICKNESS	HAUNCH	BEARING	TOTAL	POINT
1	2245+82.821	493005.216	131574.777		36.11						39.63	53.60	91.04						60.76	95.40					865.30	2.692	862.61	25"	0'-6¼"	1	2'-2"	1
2	2246+18.995	492997.575	131610.071			46.00					53.61	39.61	60.51	90.68				60.77		66.89	94.99				865.42	2.609	862.81	25"	0'-6¼"	0	2'-1"	2
3	2246+65.420	492987.841	131655.029				36.00				91.17	60.71	39.31	52.86	84.80			95.56	67.11		59.97	89.30			865.58	2.610	862.97	25"	0'-6⅜"	0	2'-1"	3
4	2247+01.769	492980.223	131690.214					39.99				91.07	53.30	38.70	54.92	96.81			95.45	60.45		61.64	100.60		865.70	2.694	863.01	25"	0'-6⅜"	1	2'-2"	4
5	2247+42.126	492971.761	131729.294						49.96				85.55	55.65	37.66	61.46	96.07			90.18	62.44		67.27	99.71	865.84	2.612	863.23	25"	0'-6⅜"	0	2'-1"	5
6	2247+92.518	492961.188	131778.127							39.95				97.92	62.57	35.78	52.35				101.94	68.53		58.77	866.19	2.626	863.57	25"	0'-6½"	0	2'-1"	6
7	2248+32.751	492952.733	131817.175												97.48	53.63	33.83					101.42	60.21		866.79	2.881	863.91	25"	0'-8⅝"	1	2'-2"	7
33	2245+82.821	493043.944	131583.163									36.11						9.25	37.27	82.60					865.11	2.507	862.61	25"	0'-4⅛"	1	2'-2"	33
34	2246+18.932	493036.290	131618.453										46.00					37.28	9.25	46.86	82.42				865.24	2.423	862.81	25"	0'-4⅛"	0	2'-1"	34
35	2246+64.933	493026.259	131663.347											36.01				82.67	46.98	9.25	37.02	76.37			865.39	2.423	862.97	25"	0'-4⅛"	0	2'-1"	35
36	2247+00.939	493018.051	131698.404												40.00				82.63	37.32	9.25	40.82	90.17		865.52	2.507	863.01	25"	0'-4⅛"	1	2'-2"	36
37	2247+40.939	493008.564	131737.262													50.00				76.76	41.29	9.25	50.51	90.08	865.65	2.423	863.23	25"	0'-4⅛"	0	2'-1"	37
38	2247+90.939	492996.158	131785.699														40.00				90.77	51.19	9.26	40.62	865.99	2.423	863.57	25"	0'-4⅛"	0	2'-1"	38
39	2248+30.939	492985.801	131824.334																		90.86	41.49	9.26		866.58	2.663	863.91	25"	0'-6"	1	2'-2"	39
65	2245+82.821	493052.985	131585.120																36.11						865.30	2.692	862.61	25"	0'-6¼"	1	2'-2"	65
66	2246+18.917	493045.331	131620.410																	46.00					865.42	2.608	862.81	25"	0'-6¼"	0	2'-1"	66
67	2246+64.820	493035.300	131665.305																		36.00				865.58	2.608	862.97	25"	0'-6¼"	0	2'-1"	67
68	2247+00.742	493027.094	131700.362																			40.00			865.70	2.691	863.01	25"	0'-6¼"	1	2'-2"	68
69	2247+40.650	493017.609	131739.221																				50.00		865.84	2.607	863.23	25"	0'-6¼"	0	2'-1"	69
70	2247+90.535	493005.207	131787.658																					40.00	866.17	2.604	863.57	25"	0'-6¼"	0	2'-1"	70
71	2248+30.446	492994.854	131826.294																						866.75	2.839	863.91	25"	0'-8⅛"	1	2'-2"	71

	DIMENSIONS BETWEEN WORKING POINTS (FT.) (UNIT 1)																							ELEVATIONS			TOP OF RDWY. TO BDG. SEAT				
POINT	STATION	X-COORDINATE	Y-COORDINATE	7	8	9	10	11	12	13	39	40	41	42	43	44	45	71	72	73	74	75	76	77	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	SLAB THICKNESS	HAUNCH	BEARING	TOTAL	POINT
7	2248+32.751	492952.733	131817.175		39.94						33.83	50.95	94.38						57.16	97.61					866.79	2.881	863.91	25"	0'-8⅝"	1	2'-2"	7
8	2248+72.699	492944.282	131856.209			49.92					52.34	31.63	57.66	93.76				58.76		62.81	96.81				867.67	2.786	864.88	25"	0'-8⅜"	0	2'-1"	8
9	2249+22.531	492933.718	131905.001				39.94				96.02	59.10	28.85	48.07	83.76			99.66	64.53		53.78	86.98			869.15	2.769	866.38	25"	0'-8¼"	0	2'-1"	9
10	2249+62.218	492925.265	131944.041					39.97				95.27	49.27	26.74	47.19	93.04			98.73	55.21		52.69	95.83		870.64	2.829	867.81	25"	0'-8"	1	2'-2"	10
11	2250+01.795	492916.808	131983.102						49.98				84.96	48.09	25.09	55.36	92.98			88.53	53.79		59.92	95.72	872.39	2.718	869.68	25"	0'-7⅝"	0	2'-1"	11
12	2250+51.338	492906.231	132031.953							40.00				93.84	55.93	23.80	46.34				96.89	60.64		51.64	874.98	2.686	872.29	25"	0'-7¼"	0	2'-1"	12
13	2250+91.005	492897.779	132071.047												93.41	46.54	23.39					96.31	51.88		877.19	2.747	874.44	25"	0'-7"	1	2'-2"	13
39	2248+30.939	492985.801	131824.334									40.00						9.26	40.56	89.96					866.58	2.663	863.91	25"	0'-6"	1	2'-2"	39
40	2248+70.939	492975.194	131862.902										50.00					41.55	9.26	50.34	89.97				867.44	2.556	864.88	25"	0'-5⅝"	0	2'-1"	40
41	2249+20.939	492961.911	131911.106											40.00				90.99	51.36	9.26	40.58	80.10			868.91	2.530	866.38	25"	0'-5⅜"	0	2'-1"	41
42	2249+60.939	492951.403	131949.701												40.00				90.97	41.53	9.26	40.68	90.17		870.40	2.591	867.81	25"	0'-5⅛"	1	2'-2"	42
43	2250+00.939	492941.326	131988.410													50.00				80.96	41.43	9.26	50.61	90.30	872.17	2.492	869.68	25"	0'-4⅞"	0	2'-1"	43
44	2250+50.939	492929.494	132036.989														40.00				90.77	51.08	9.25	40.97	874.77	2.479	872.29	25"	0'-4¾"	0	2'-1"	44
45	2250+90.939	492920.643	132075.998																			90.64	41.15	9.25	877.00	2.558	874.44	25"	0'-4¾"	1	2'-2"	45
71	2248+30.446	492994.854	131826.294																40.00						866.75	2.839	863.91	25"	0'-8⅛"	1	2'-2"	71
72	2248+70.423	492984.249	131864.863																	50.00					867.61	2.728	864.88	25"	0'-7¾"	0	2'-1"	72
73	2249+20.425	492970.965	131913.066																		40.00				869.08	2.698	866.38	25"	0'-7⅜"	0	2'-1"	73
74	2249+60.491	492960.454	131951.660																			40.00			870.57	2.758	867.81	25"	0'-7⅛"	1	2'-2"	74
75	2250+00.619	492950.372	131990.369																				50.00		872.34	2.661	869.68	25"	0'-7"	0	2'-1"	75
76	2250+50.782	492938.536	132038.947																					40.00	874.95	2.655	872.29	25"	0'-6⅞"	0	2'-1"	76
77	2250+90.912	492929.683	132077.955																						877.18	2.742	874.44	25"	0'-6⅞"	1	2'-2"	77

	DIMENSIONS BETWEEN WORKING POINTS (FT.) (UNIT 1)																							ELEVATIONS			TOP OF RDWY. TO BDG. SEAT				
POINT	STATION	X-COORDINATE	Y-COORDINATE	13	14	15	16	17	18	19	45	46	47	48	49	50	51	77	78	79	80	81	82	83	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	SLAB THICKNESS	HAUNCH	BEARING	TOTAL	POINT
13	2250+91.005	492897.779	132071.047		41.00						23.39	46.42	93.28						51.43	95.76					877.19	2.747	874.44	25"	0'-7"	1	2'-2"	13
14	2251+31.668	492889.348	132111.167			50.00					47.08	23.33	54.69	92.61				52.25		59.05	95.22				879.45	2.700	876.75	25"	0'-7⅜"	0	2'-1"	14
15	2251+81.262	492879.789	132160.243				40.00				93.63	55.63	23.26	46.13	83.23			93.23	60.27		51.37	86.24			882.22	2.677	879.54	25"	0'-7⅛"	0	2'-1"	15
16	2252+21.000	492872.728	132199.614					40.00				93.31	46.42	23.25	46.26	92.95			96.18	51.74		51.53	95.68		884.43	2.745	881.69	25"	0'-7"	1	2'-2"	16
17	2252+60.939	492865.920	132239.031						50.00				83.40	46.28	23.25	55.14	92.95			86.47	51.56		59.63	94.44	886.66	2.658	884.00	25"	0'-6⅞"	0	2'-1"	17
18	2253+10.939	492857.436	132288.306							40.19				92.96	55.14	23.25	46.27				95.70	59.63		49.19	889.44	2.658	886.78	25"	0'-6⅞"	0	2'-1"	18
19	2253+50.939	492854.467	132328.383												92.06	44.45	19.38					94.44	49.19		891.67	2.742	888.93	25"	0'-6⅞"	1	2'-2"	19
45	2250+90.939	492920.643	132075.998									40.00						9.25	40.71	90.20					877.00	2.558	874.44	25"	0'-4¾"	1	2'-2"	45
46	2251+30.939	492912.340	132115.126										50.00					41.02	9.26	50.64	90.32				879.23	2.474	876.75	25"	0'-4¾"	0	2'-1"	46
47	2251+80.939	492902.736	132164.194											40.00				90.35	51.05	9.25	40.99	80.49			882.01	2.474	879.54	25"	0'-4⅝"	0	2'-1"	47
48	2252+20.939	492895.647	132203.561												40.00				90.62	41.12	9.25	41.05	90.47		884.24	2.557	881.69	25"	0'-4⅝"	1	2'-2"	48
49	2252+60.939	492888.833	132242.976													50.00				80.57	41.06	9.25	50.85	90.16	886.47	2.473	884.00	25"	0'-4⅝"	0	2'-1"	49
50	2253+10.939	492880.349	132292.251														40.00				90.48	50.85	9.25	40.36	889.26	2.473	886.78	25"	0'-4⅝"	0	2'-1"	50
51	2253+50.939	492873.561	132331.671																			90.47	41.06	5.37	891.49	2.557	888.93	25"	0'-4⅝"	1	2'-2"	51
77	2250+90.912	492929.683	132077.955																39.60						877.18	2.742	874.44	25"	0'-6⅞"	1	2'-2"	77
78	2251+30.646	492921.461	132116.697																	50.00					879.40	2.643	876.75	25"	0'-6¾"	0	2'-1"	78
79	2251+80.809	492911.853	132165.764																		40.00				882.20	2.654	879.54	25"	0'-6⅞"	0	2'-1"	79
80	2252+20.914	492904.763	132205.131																			40.00			884.43	2.741	881.69	25"	0'-6⅞"	1	2'-2"	80
81	2252+60.939	492897.949	132244.546																				50.00		886.66	2.658	884.00	25"	0'-6⅞"	0	2'-1"	81
82	2253+10.939	492889.464	132293.821																					40.19	889.44	2.658	886.78	25"	0'-6⅞"	0	2'-1"	82
83	2253+50.939	492878.858	132332.583																						891.67	2.742	888.93	25"	0'-6⅞"	1	2'-2"	83

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DESIGNED BY: EEM CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-WPTS-7

SHEET 19 OF 264

Jan, 17 2016 08:57 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-WPTS.dwg By: hills

DIMENSIONS BETWEEN WORKING POINTS (FT.) (UNIT 2)

POINT	STATION	X-COORDINATE	Y-COORDINATE	19	20	21	22	23	24	25	26	51	52	53	54	55	56	57	58	83	84	85	86	87	88	89	90	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	SLAB THICKNESS	HAUNCH	BEAM HEIGHT	BEARING	TOTAL	POINT
																												ELEVATIONS			TOP OF RDWY. TO BDG. SEAT					
19	2253+50.939	492854.467	132328.383		159.00							19.38	160.18	317.59							160.91	317.97						891.59								19
20	2255+09.938	492827.485	132485.077			158.00						160.18	19.38	159.18	316.59					160.91		159.93	316.97					900.45	9.438	891.01	9"	5"	96"	3¼"	9'-5¼"	20
21	2256+67.938	492800.674	132640.785				158.00					317.59	159.18	19.38	159.18	316.59				317.96	159.93		159.93	316.97				909.26	9.760	899.49	9"	5"	96"	7⅛"	9'-9⅛"	21
22	2258+25.938	492773.862	132796.494					158.00					316.59	159.18	19.38	159.18	317.09				316.97	159.93		159.93	317.47			917.54	9.188	908.35	9"	2"	96"	3¼"	9'-2¼"	22
23	2259+83.938	492747.051	132952.202						158.50					316.59	159.18	19.38	159.68	291.64				316.97	159.93		160.42	292.05		922.82	9.510	913.31	9"	2"	96"	7⅛"	9'-6⅛"	23
24	2261+42.438	492720.154	133108.404							132.50					317.09	159.68	19.38	133.91	291.14					317.47	160.42		134.79	291.55	924.80	9.188	915.61	9"	2"	96"	3¼"	9'-2¼"	24
25	2262+74.938	492697.670	133238.982								158.00					291.64	133.91	19.38	159.18						292.05	134.79		159.93	923.89	9.188	914.70	9"	2"	96"	3¼"	9'-2¼"	25
26	2264+32.938	492670.858	133394.690														291.14	159.18	19.38							291.55	159.93	920.65								26
51	2253+50.939	492873.561	132331.671										159.00							5.38	159.09	317.05						891.49								51
52	2255+09.938	492846.579	132488.365											158.00						159.09	5.38	158.09	316.05					900.34								52
53	2256+67.938	492819.768	132644.073												158.00					317.05	158.09	5.38	158.09	316.05				909.15								53
54	2258+25.938	492792.956	132799.782													158.00					316.05	158.09	5.38	158.09	316.55			917.43								54
55	2259+83.938	492766.145	132955.490														158.50					316.04	158.09	5.38	158.59	291.05		922.72								55
56	2261+42.438	492739.248	133111.692															132.50					316.55	158.59	5.38	132.61	290.55	924.69								56
57	2262+74.938	492716.764	133242.270																158.00					291.05	132.61	5.38	158.09	923.78								57
58	2264+32.938	492689.952	133397.978																						290.55	158.09	5.38	920.54								58
83	2253+50.939	492878.858	132332.583																		159.00							891.59								83
84	2255+09.938	492851.877	132489.277																			158.00						900.45	9.438	891.01	9"	5"	96"	3¼"	9'-5¼"	84
85	2256+67.938	492825.065	132644.986																				158.00					909.26	9.760	899.49	9"	5"	96"	7⅛"	9'-9⅛"	85
86	2258+25.938	492798.253	132800.694																					158.00				917.54	9.188	908.35	9"	2"	96"	3¼"	9'-2¼"	86
87	2259+83.938	492771.442	132956.402																						158.50			922.82	9.510	913.31	9"	2"	96"	7⅛"	9'-6⅛"	87
88	2261+42.438	492744.545	133112.604																							132.50		924.80	9.188	915.61	9"	2"	96"	3¼"	9'-2¼"	88
89	2262+74.938	492722.061	133243.182																								158.00	923.89	9.188	914.70	9"	2"	96"	3¼"	9'-2¼"	89
90	2264+32.938	492695.249	133398.891																									920.65								90

DIMENSIONS BETWEEN WORKING POINTS (FT.) (UNITS 3 & 4)

POINT	STATION	X-COORDINATE	Y-COORDINATE	26	27	28	29	30	31	32	58	59	60	61	62	63	64	90	91	92	93	94	95	96	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	SLAB THICKNESS	HAUNCH	BEAM HEIGHT	BEARING	TOTAL	POINT
																									ELEVATIONS			TOP OF RDWY. TO BDG. SEAT					
26	2264+32.938	492670.858	133394.690		187.15						19.38	187.47	449.53						187.91	448.43					920.65								26
27	2266+19.127	492641.039	133579.451			269.04					187.95	19.59	266.26	448.20				188.52		265.77	447.09				916.69	12.229	904.46	9"	①5"	②123.25"	9½"	12'-2¾"	27
28	2268+82.957	492649.508	133848.362				188.63				452.20	266.72	20.15	188.05	331.30			451.79	266.33		188.25	331.14			911.07	12.229	898.85	9"	①5"	②123.25"	9½"	12'-2¾"	28
29	2270+67.532	492710.424	134026.886					144.82				447.81	187.26	19.62	145.80	288.64			446.59	187.26		146.52	289.01		907.15								29
30	2272+11.271	492776.211	134155.905						143.33				329.54	144.96	19.38	144.64	287.32			328.92	145.46		145.45	287.74	904.09	8.188	895.90	9"	4"	82"	3¼"	8'-2¼"	30
31	2273+54.604	492843.396	134282.517							143.34				287.46	144.64	19.38	144.64				287.50	145.45		145.46	901.04	8.479	892.56	9"	7½"	82"	3¼"	8'-5¾"	31
32	2274+97.941	492910.583	134409.132												287.32	144.64	19.38					287.74	145.46		899.02	9.010	890.01	9"	10"	82"	7⅛"	9'-0⅛"	32
58	2264+32.938	492689.952	133397.978									186.24						5.38	186.13	445.40					920.54								58
59	2266+19.196	492660.480	133581.869										262.49					186.25	5.38	261.62	441.10				916.58								59
60	2268+82.939	492669.229	133844.215											184.59				446.08	261.70	5.38	184.21	326.58			910.97								60
61	2270+67.939	492728.414	134019.055												143.31				440.99	184.02	5.38	143.32	286.64		907.03								61
62	2272+11.271	492793.326	134146.823													143.33				326.14	143.09	5.38	143.43	286.72	903.98								62
63	2273+54.604	492860.511	134273.435														143.34				286.32	143.43	5.38	143.44	900.93								63
64	2274+97.941	492927.698	134400.050																			286.72	143.44	5.38	898.91								64
90	2264+32.938	492695.249	133398.891																185.99						920.65								90
91	2266+19.215	492665.814	133582.533																	260.72					916.69	12.125	904.56	9"	①5"	②122"	9½"	12'-1½"	91
92	2268+82.933	492674.489	133843.109																		183.49				911.08	12.125	898.95	9"	①5"	②122"	9½"	12'-1½"	92
93	2270+68.052	492733.344	134016.909																			142.90			907.14								93
94	2272+11.271	492798.074	134144.304																				143.33		904.09	8.188	895.90	9"	4"	82"	3¼"	8'-2¼"	94
95	2273+54.604	492865.259	134270.916																					143.34	901.04	8.479	892.56	9"	7½"	82"	3¼"	8'-5¾"	95
96	2274+97.941	492932.446	134397.531																						899.02	9.010	890.01	9"	10"	82"	7⅛"	9'-0⅛"	96

NOTES:

① INCLUDES THICKNESS OF TOP FLANGE.

② INCLUDES WEB HEIGHT AND THICKNESS OF BOTTOM FLANGE.

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

DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

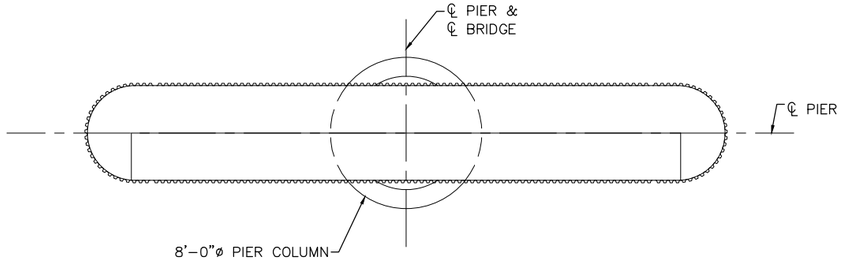
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE LAYOUT 8

DISCIPLINE: STRUCTURES

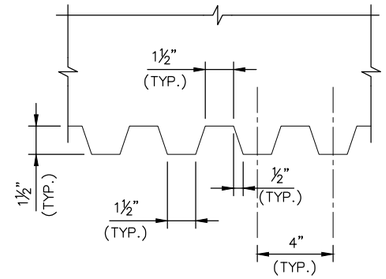
SHEET NAME: W2-STU-BRID-T212-WPTS-8

SHEET 20 OF 264

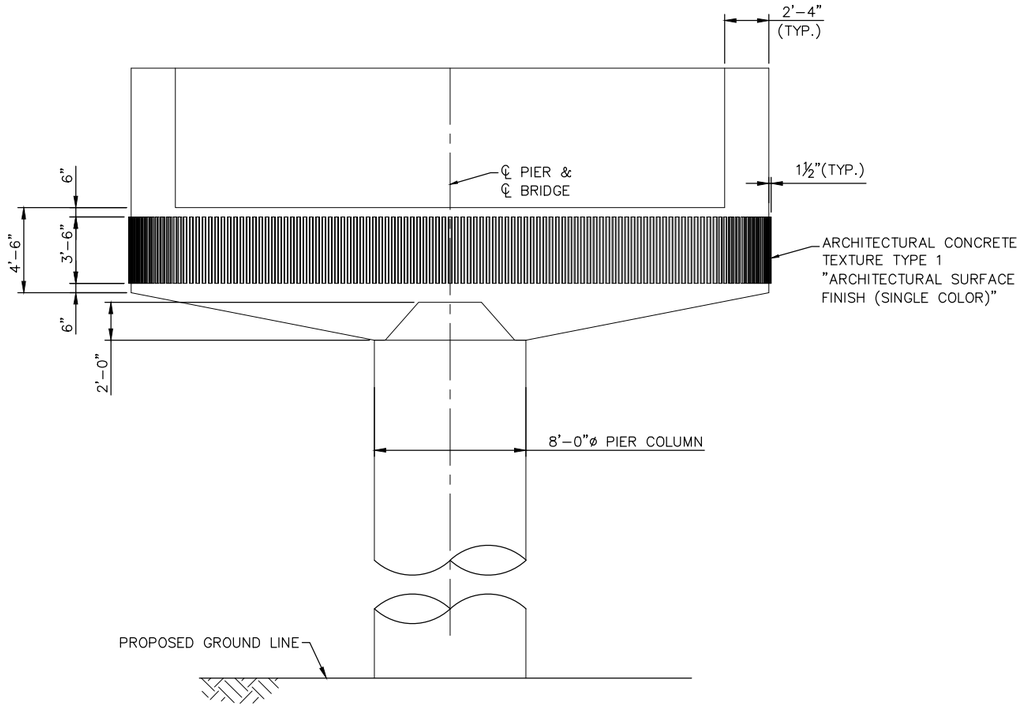
Jan, 17 2016 08:57 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-WPTS.dwg By: hills



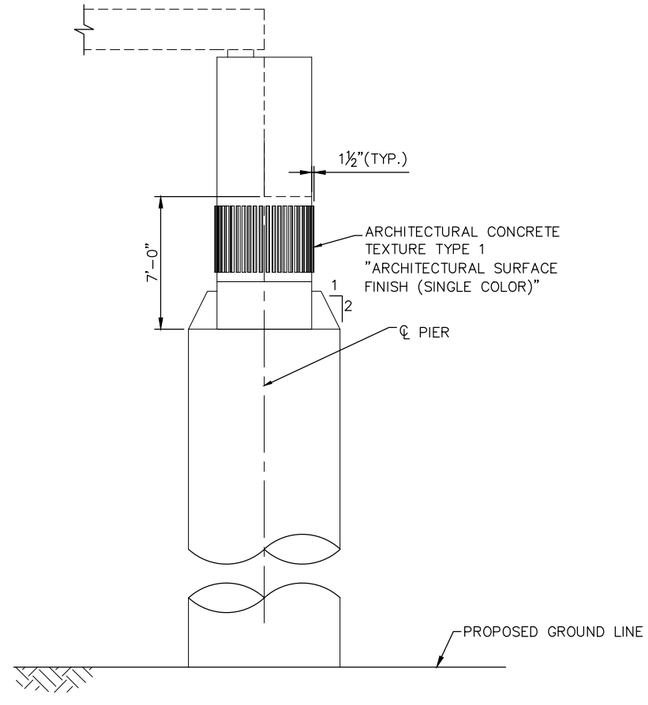
PLAN (PIER 18 SHOWN, 25 & 28 SIMILAR)



ARCHITECTURAL CONCRETE TEXTURE TYPE 1



ELEVATION (PIER 18 SHOWN, 25 & 28 SIMILAR)



SECTION (PIER 18 SHOWN, 25 & 28 SIMILAR)

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DESIGNED BY: DDL | CHECKED BY: EEM
DRAWN BY: SWH | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extention

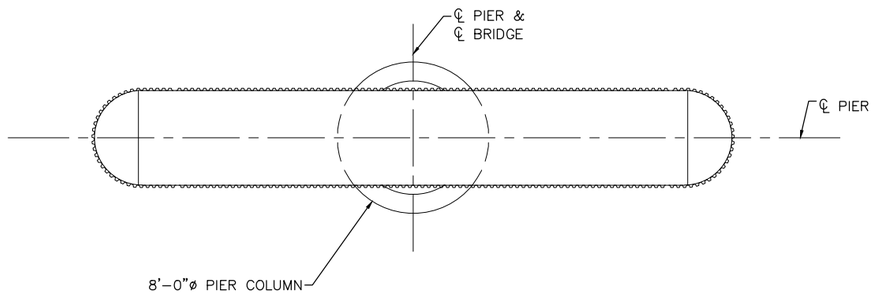
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
AESTHETIC DETAILS 1

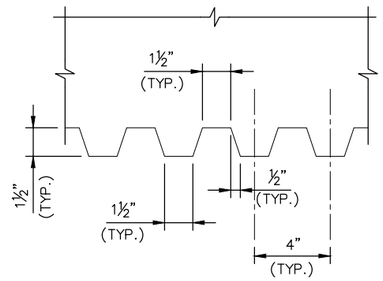
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-AES1-2

SHEET 21 OF 264

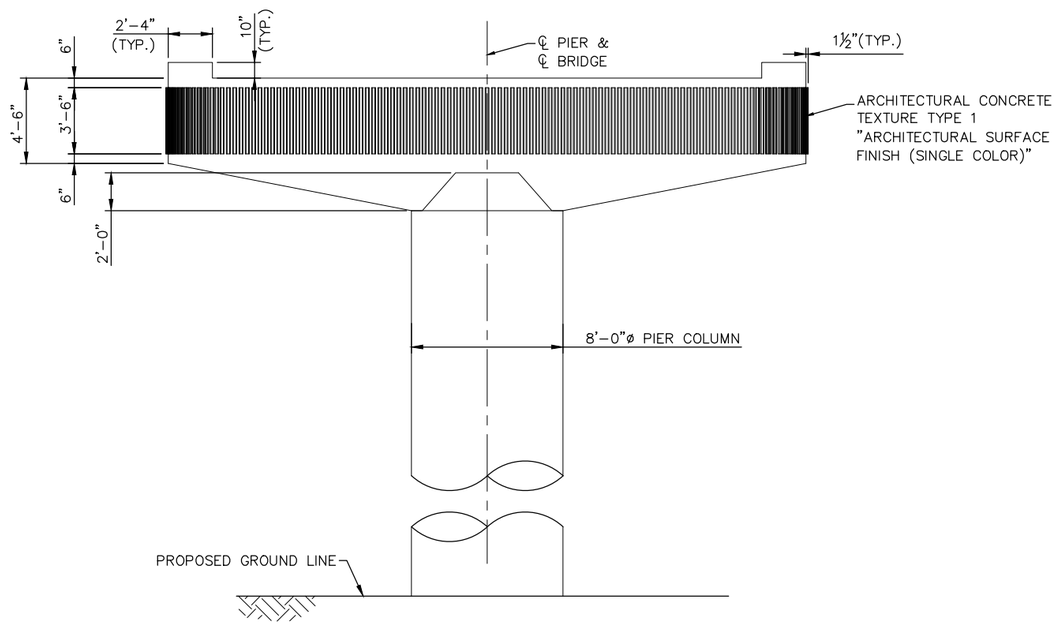
Jan, 17 2016 08:57 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-AES1.dwg By: hills



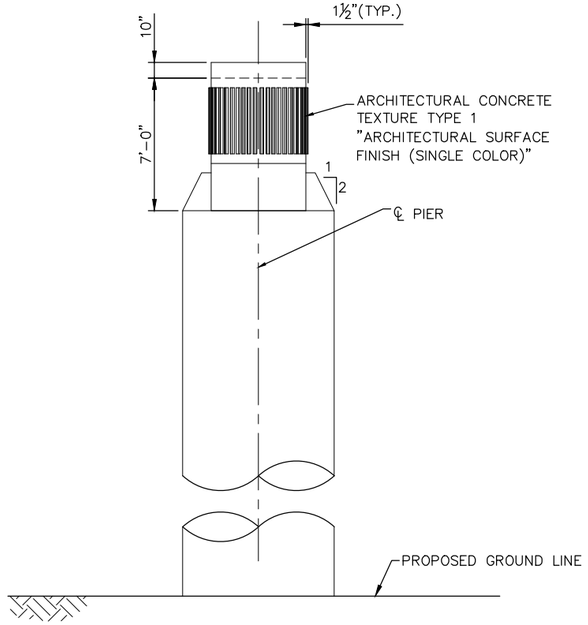
PLAN (PIER 19–24, 26–27, 29–30)



ARCHITECTURAL CONCRETE TEXTURE TYPE 1



ELEVATION (PIER 19–24, 26–27, 29–30)



SECTION (PIER 19–24, 26–27, 29–30)

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DESIGNED BY: DDL | CHECKED BY: EEM
DRAWN BY: SWH | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extention

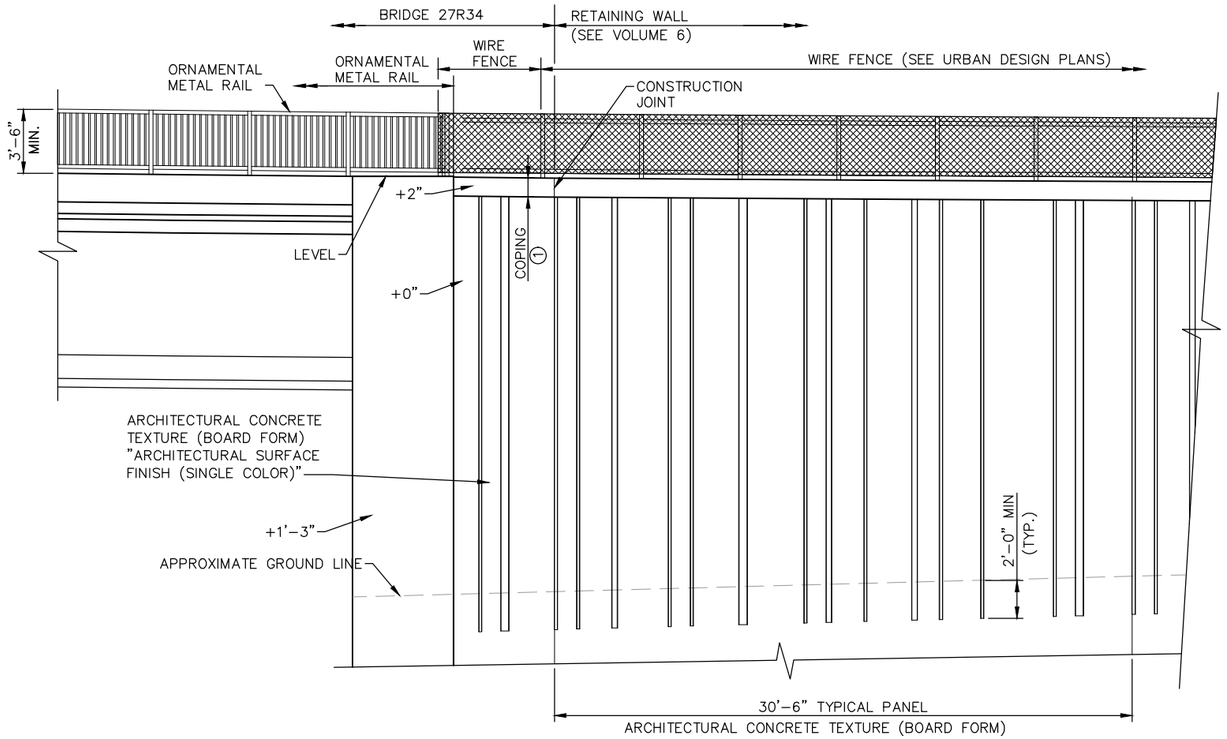
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
AESTHETIC DETAILS 2

DISCIPLINE: STRUCTURES

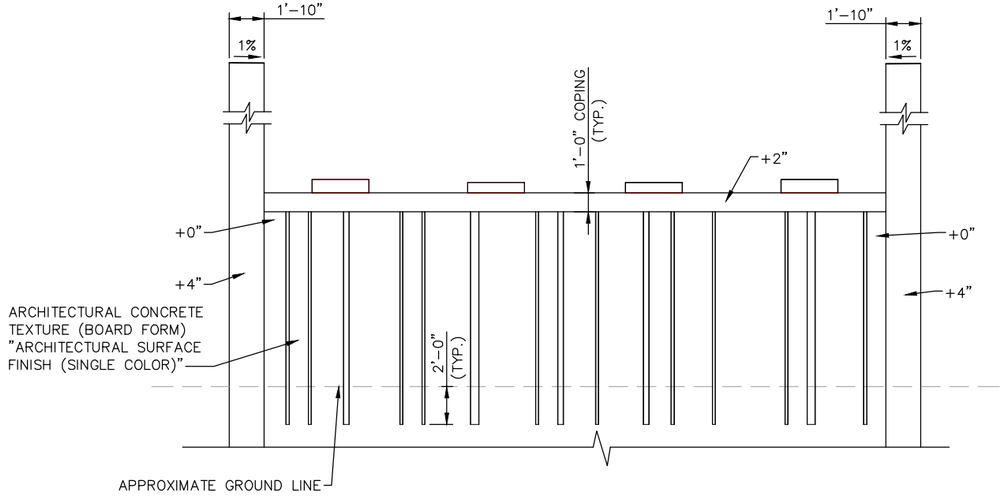
SHEET NAME: W2-STU-BRID-T212-AES1-1

SHEET 22 OF 264

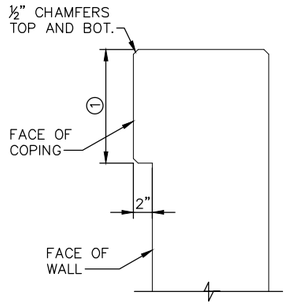
Jan, 17 2016 08:58 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-AES1.dwg By: hills



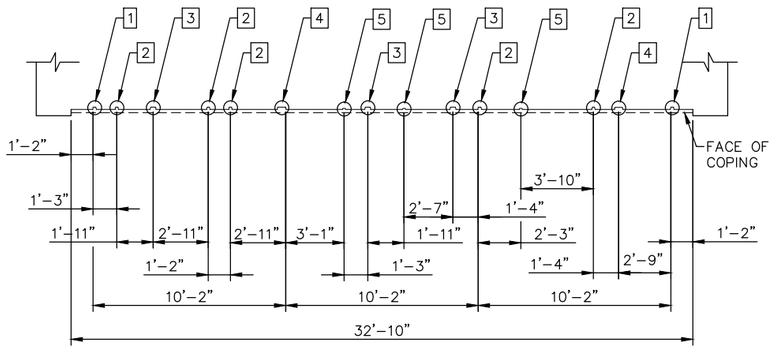
ABUTMENT WINGWALL ELEVATION



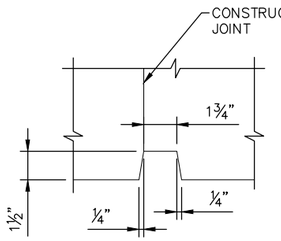
ABUTMENT FRONT FACE



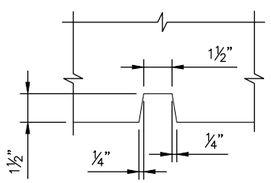
SECTION THRU COPING



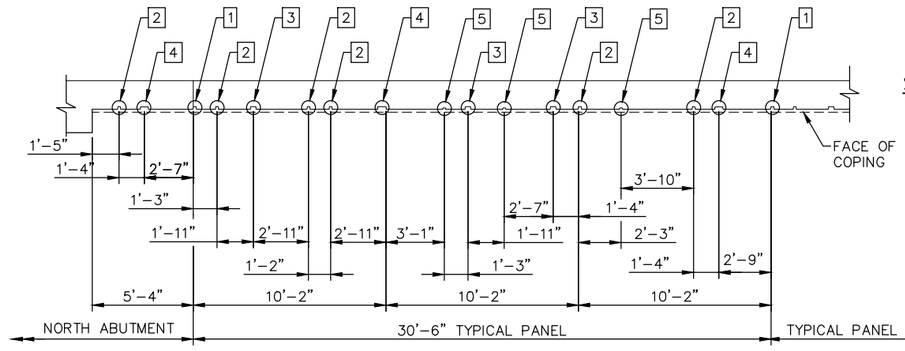
ABUTMENT FRONT FACE PLAN



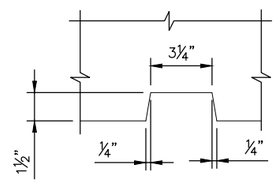
DETAIL 1



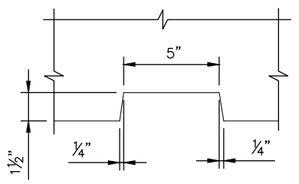
DETAIL 2



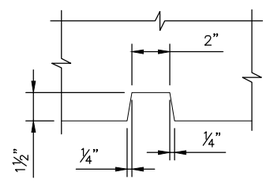
ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM)



DETAIL 3



DETAIL 4



DETAIL 5

NOTES:

① COPING DEPTH TO MATCH MSE WALL PRECAST DEPTH

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DESIGNED BY: DDL | CHECKED BY: EEM
DRAWN BY: SWH | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
AESTHETIC DETAILS 3

DISCIPLINE: STRUCTURES

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

SHEET 23 OF 264

Jan, 17 2016 08:58 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-AES1.dwg By: hills

NORTH ABUTMENT COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	108.1
FACTORED LIVE LOAD	16.0
*FACTORED DESIGN LOAD	124.1

*BASED ON STRENGTH I LOAD COMBINATION.

NORTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	248.2
PDA	0.65	190.9

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

PILE NOTES

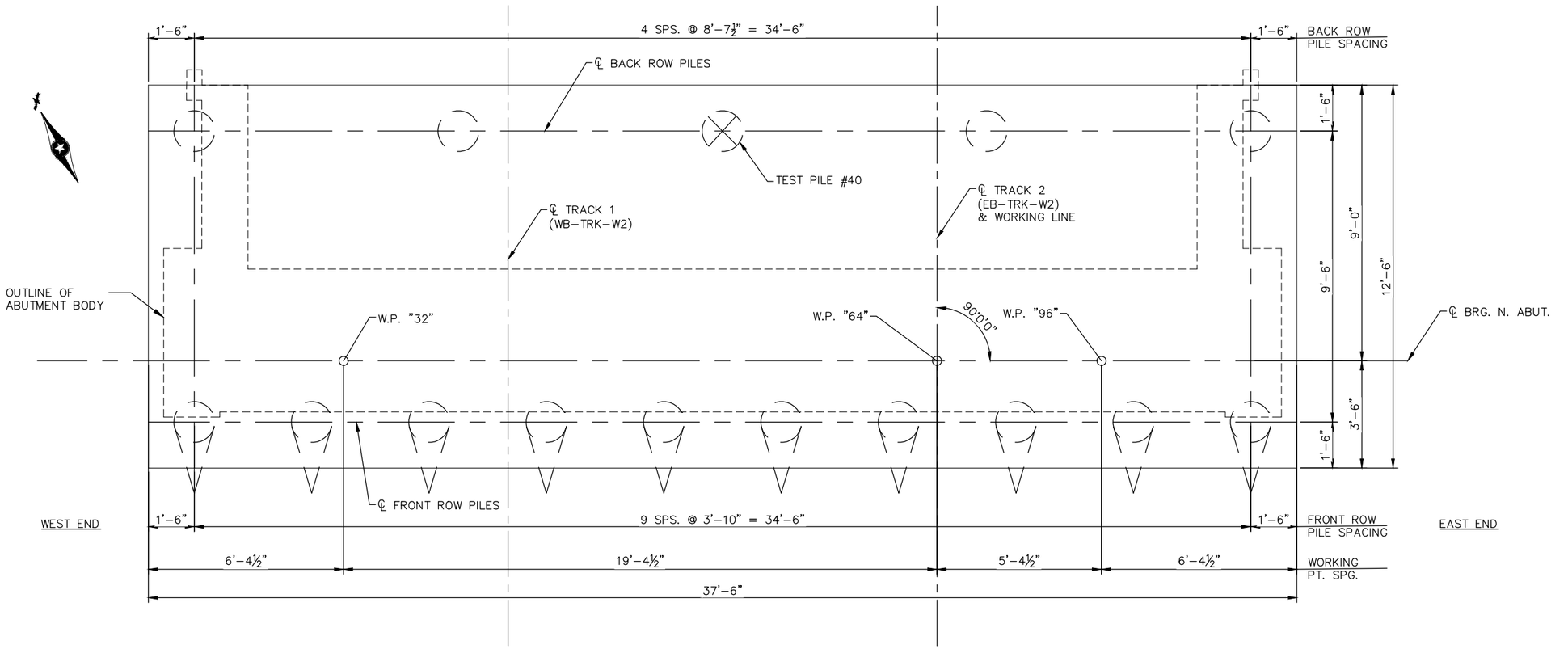
1 CAST–IN–PLACE CONC. TEST PILES 75 FT. LONG
14 CAST–IN–PLACE CONC. PILES EST. LENGTH 65 FT.
15 CAST–IN–PLACE CONC. PILES REQ'D FOR NORTH ABUTMENT

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.3125".

FOR PILE SPLICE DETAILS SEE DETAIL B201.



FOOTING PLAN & PILE LAYOUT

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: MJY | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
NORTH ABUTMENT DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-ABT_1

SHEET 24 OF 264

Jan, 17 2016 08:58 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-ABT.dwg By: hills

NOTES:

SEE SHEET 23 FOR AESTHETIC DETAILS.

FOR SECTIONS A–A, B–B AND C–C, SEE SHEET 28.

FOR DRAINAGE SYSTEM DETAILS SEE SHEET 224.

(1) MEMBRANE WATERPROOFING SYSTEM PER MnDOT SPEC. 2481.38

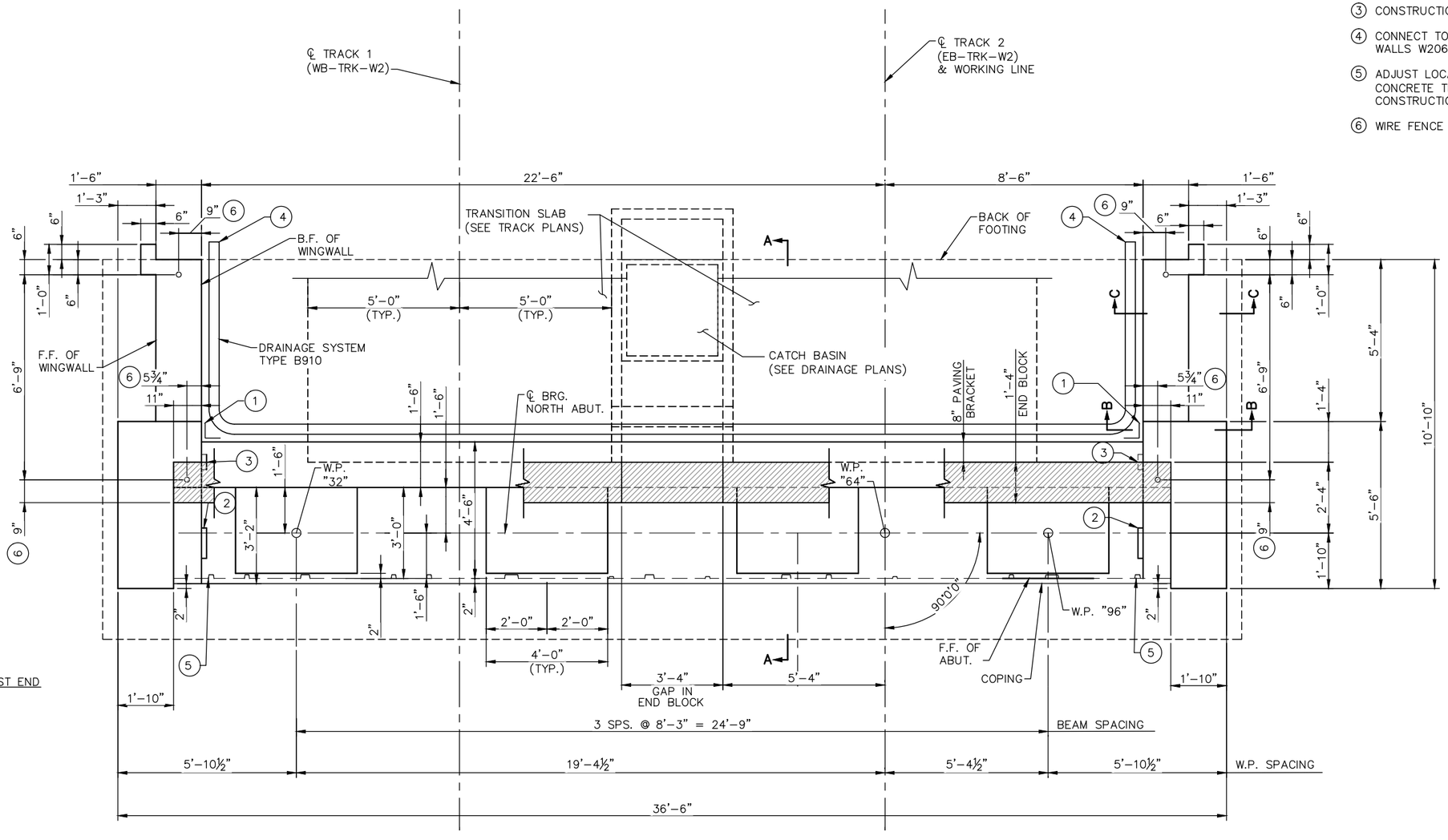
(2) CONSTRUCTION JOINT AND 2" X 12" KEYWAY IN STEM (TYP.).

(3) CONSTRUCTION JOINT AND 2" X 6" KEYWAY IN BACKWALL (TYP.).

(4) CONNECT TO RETAINING WALL DRAINAGE SYSTEM. SEE RETAINING WALLS W206A AND W207A.

(5) ADJUST LOCATION OF VERTICAL REVEAL IN ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) TO ALIGN WITH CONSTRUCTION JOINT.

(6) WIRE FENCE POST SPACING.



PLAN

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DESIGNED BY: DDL CHECKED BY: MJC
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

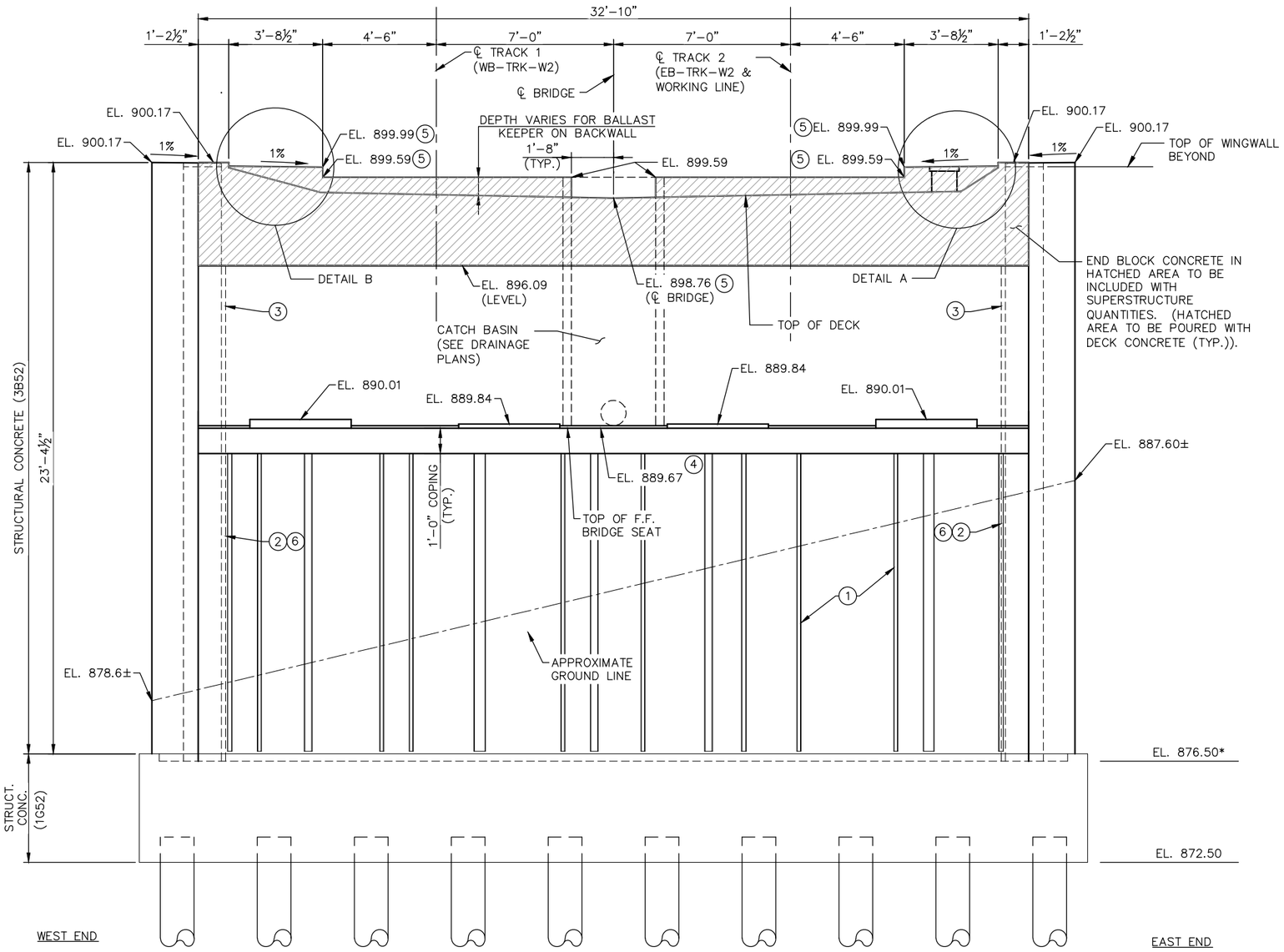
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
NORTH ABUTMENT DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-ABT_2

SHEET 25 OF 264

Jan, 17 2016 08:58 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-ABT.dwg By: hills



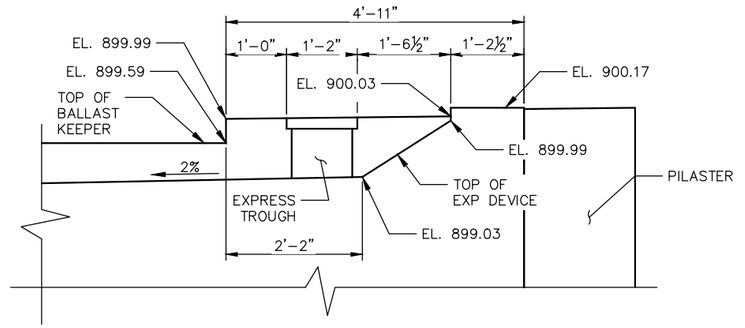
ELEVATION

* BACK SIDE OF FOOTING

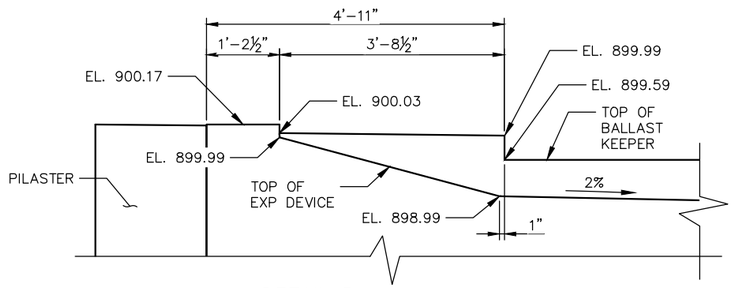
NOTES:

SEE SHEET 23 FOR AESTHETIC DETAILS.

1. APPLY ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)" (TYP.) TO TOP OF FOOTING FOR FUTURE GROUNDLINE CONFIGURATION. SEE SHEET 23 FOR AESTHETIC DETAILS INCLUDING REVEAL LOCATIONS AND DIMENSIONS.
2. CONSTRUCTION JOINT AND 2" X 12" KEYWAY IN STEM (TYP.).
3. CONSTRUCTION JOINT AND 2" X 6" KEYWAY IN BACKWALL (TYP.).
4. ELEVATIONS GIVEN ARE ALONG FRONT FACE OF ABUTMENT SEAT.
5. ELEVATIONS AT FRONT FACE OF PAVING BRACKET.
6. ADJUST LOCATION OF VERTICAL REVEAL IN ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) TO ALIGN WITH CONSTRUCTION JOINT



DETAIL A



DETAIL B

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: MJY | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
NORTH ABUTMENT DETAILS 3

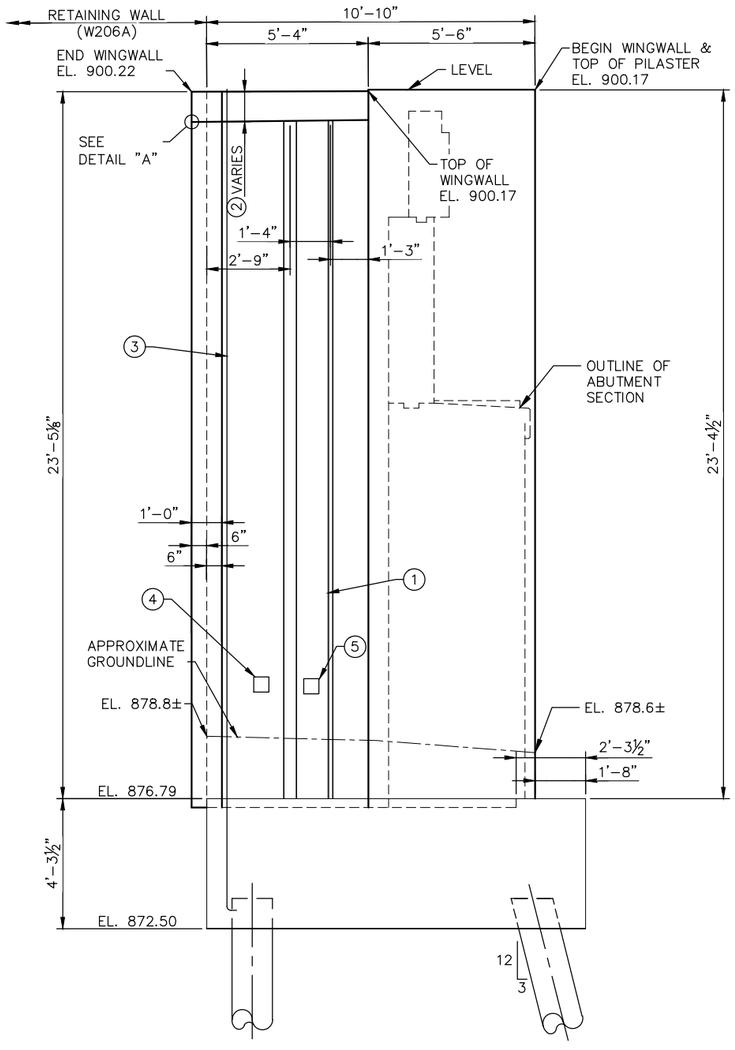
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-ABT_3

SHEET 26 OF 264

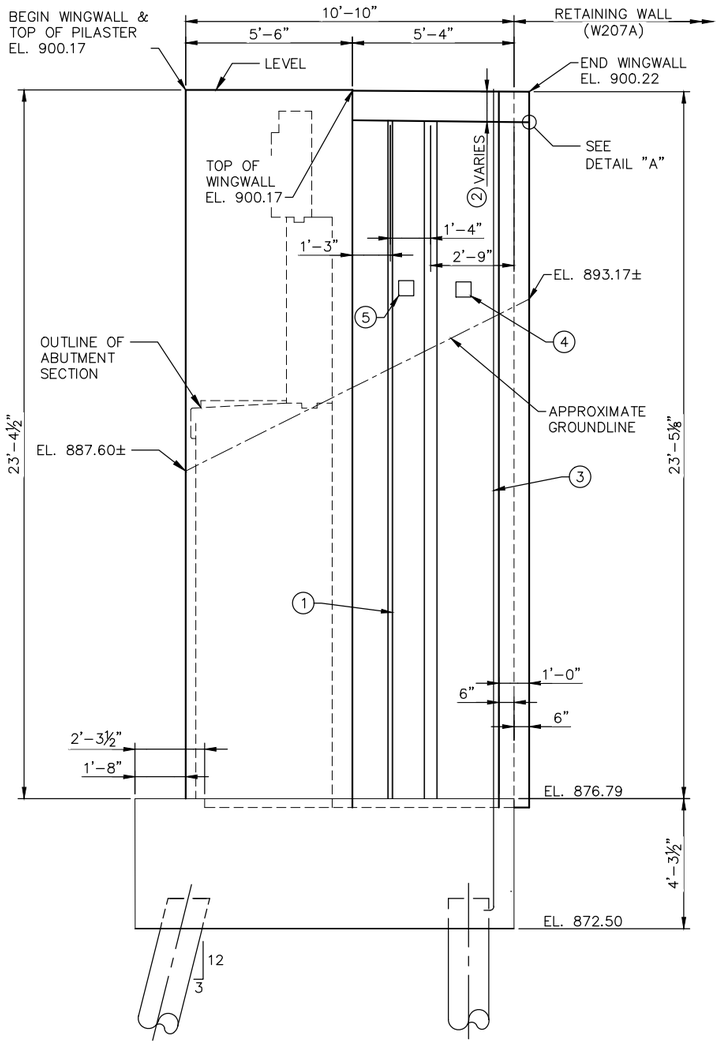
Jan, 17 2016 08:58 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-ABT.dwg By: hills

NOTES:

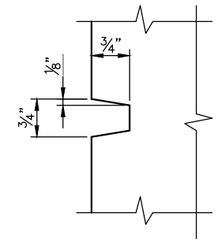
1. APPLY ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)" (TYP.) TO TOP OF FOOTING FOR FUTURE GROUNDLINE CONFIGURATION. SEE SHEET 23 FOR AESTHETIC DETAILS INCLUDING REVEAL LOCATIONS AND DIMENSIONS.
2. COPING DEPTH TO MATCH MSE WALL PRECAST CAP DEPTH.
3. GROUND WIRE PLACED INSIDE 1" PVC CONDUIT. SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-601
4. STRAY CURRENT TEST STATION, SEE NOTE 21 ON SHEET 3.
5. GROUNDING TEST STATION. SEE GROUNDING PLANS IN VOLUME 12, SEE ELE-SITE-DTL-600



NORTHWEST WINGWALL ELEVATION
(CATCH BASIN NOT SHOWN FOR CLARITY)



NORTHEAST WINGWALL ELEVATION
(CATCH BASIN NOT SHOWN FOR CLARITY)



DETAIL A

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: MJY CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

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

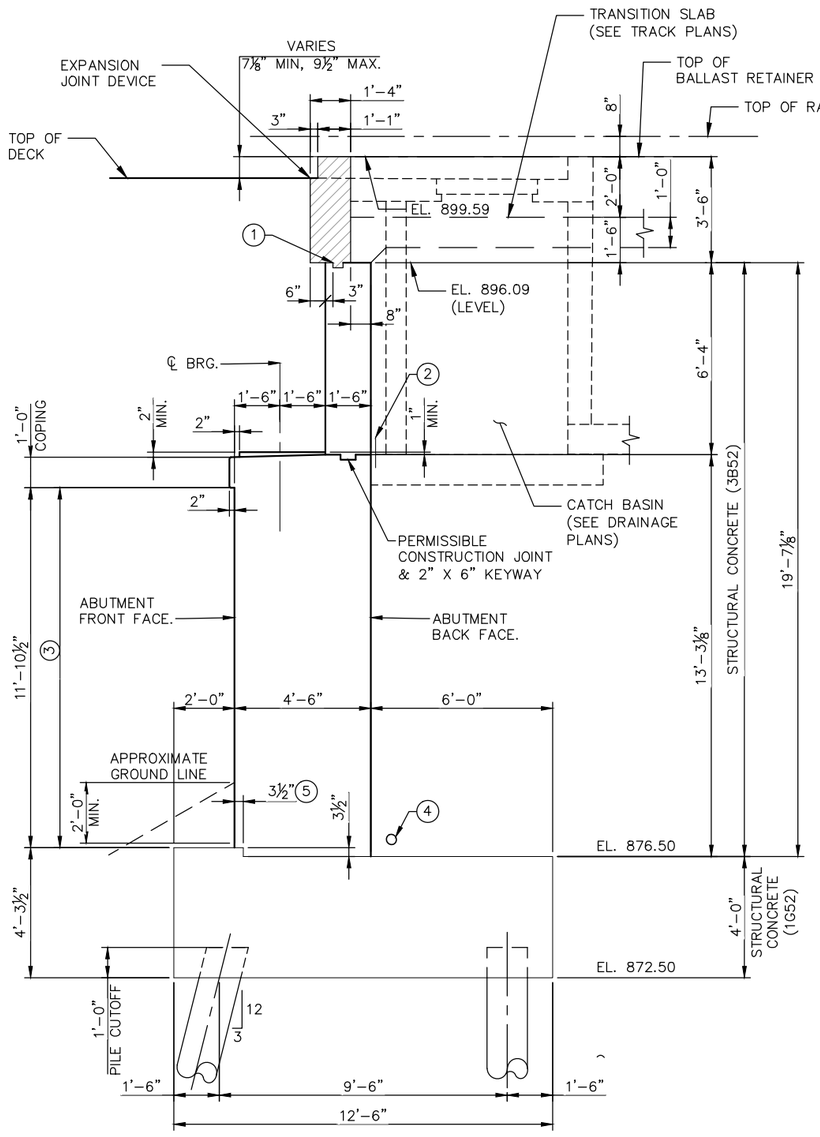
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-ABT_4

SHEET 27 OF 264

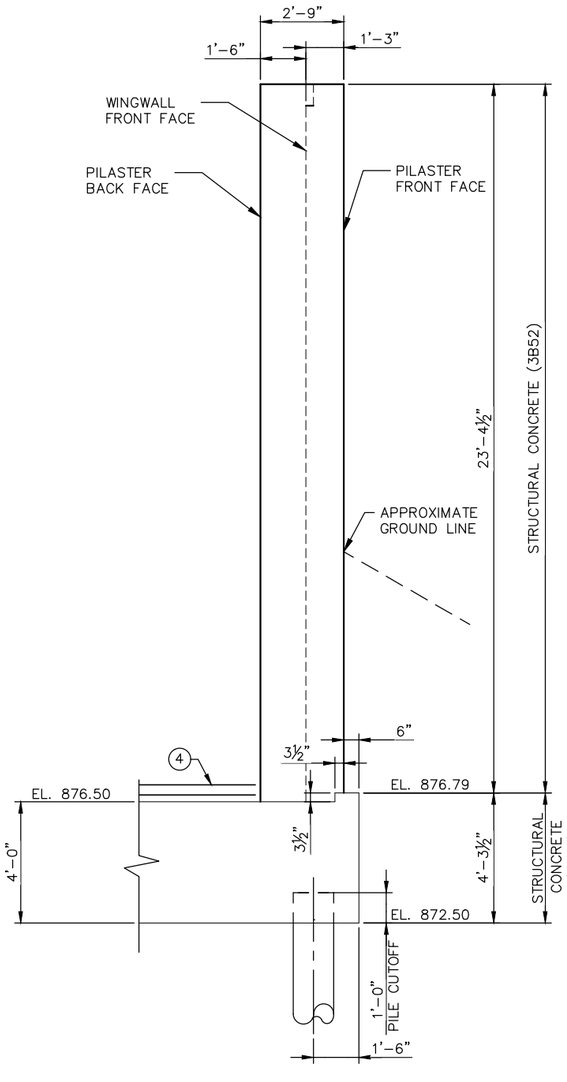
Jan, 17 2016 08:58 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-ABT.dwg By: hills

NOTES:

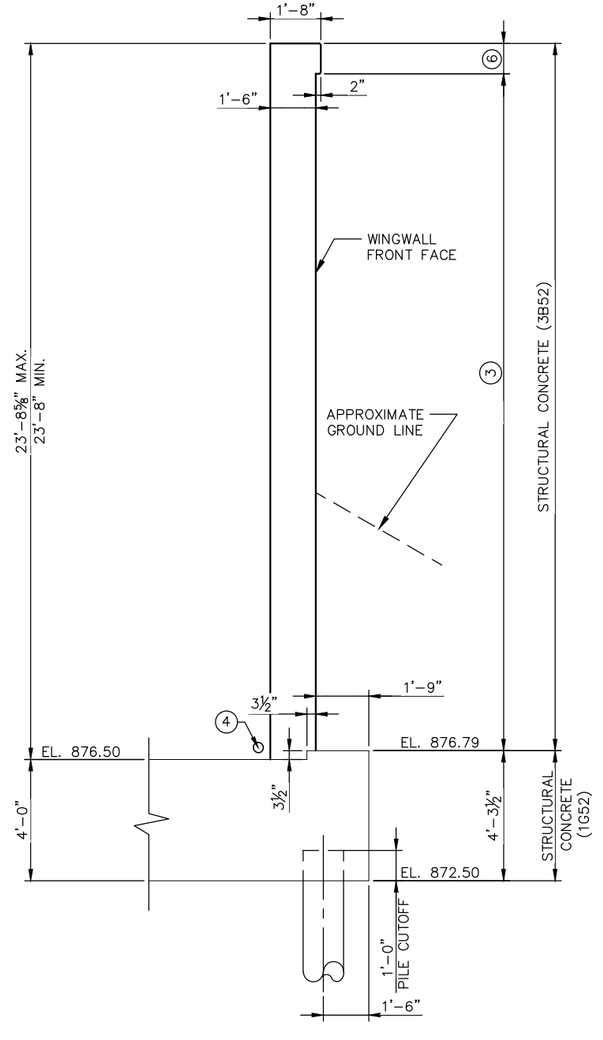
1. CONSTRUCTION JOINT & 2" X 4" KEYWAY.
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC.2481.3B IF JOINT IS USED.
3. ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)" (TYP.)
4. 4" DIA. PERFORATED PIPE INCLUDED IN "DRAINAGE SYSTEM TYPE (B910)".
5. KEYWAY DIMENSION MAY BE ADJUSTED SLIGHTLY TO FACILITATE FORM WORK.
6. COPING DEPTH TO MATCH MSE WALL PRECAST DEPTH.



SECTION A–A



SECTION B–B



SECTION C–C

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DRAWN BY: MJY CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

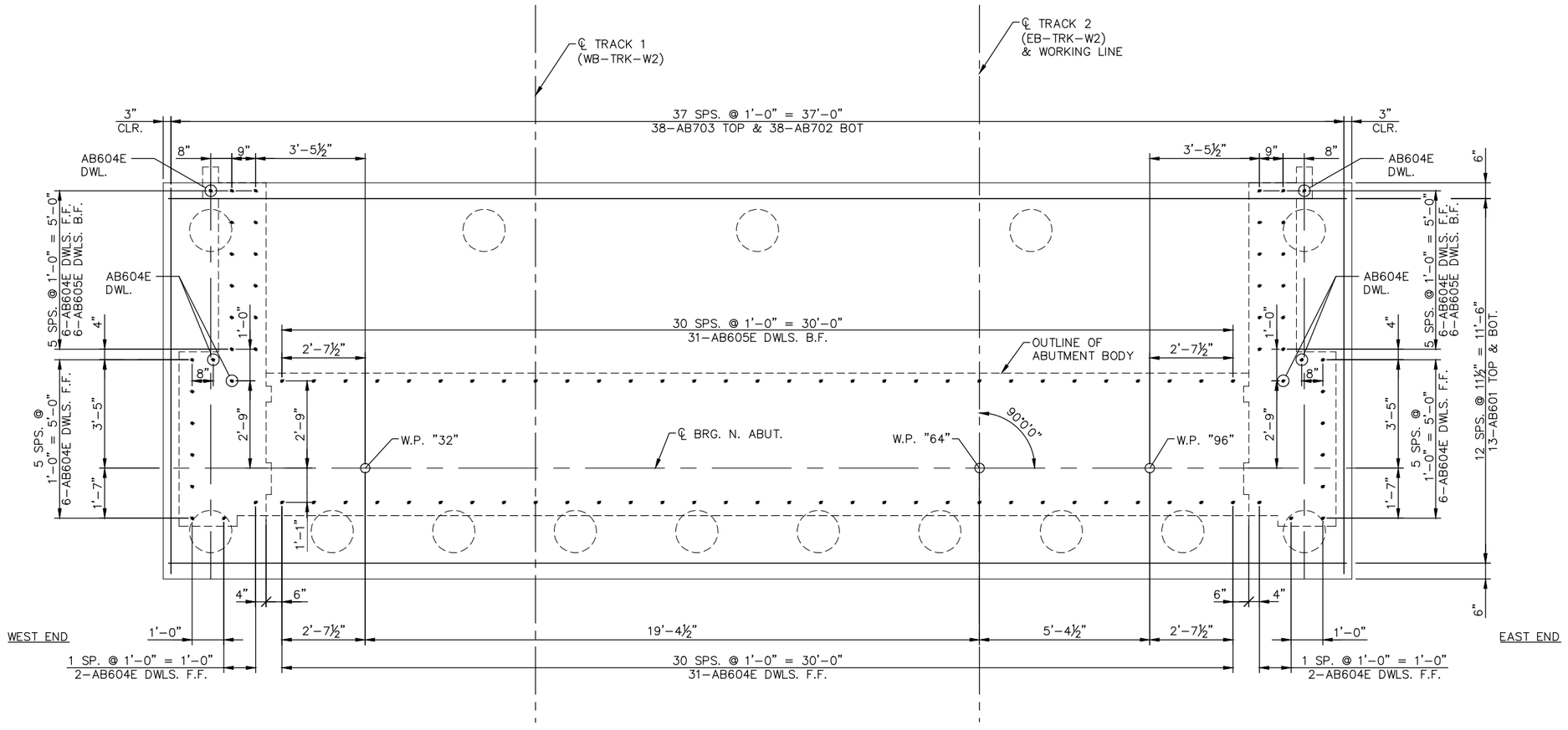
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
NORTH ABUTMENT DETAILS 5

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-ABT_5

SHEET 28 OF 264

Jan, 17 2016 08:59 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-ABT.dwg By: hills



FOOTING REINFORCEMENT & DOWEL LAYOUT PLAN

NOTES

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

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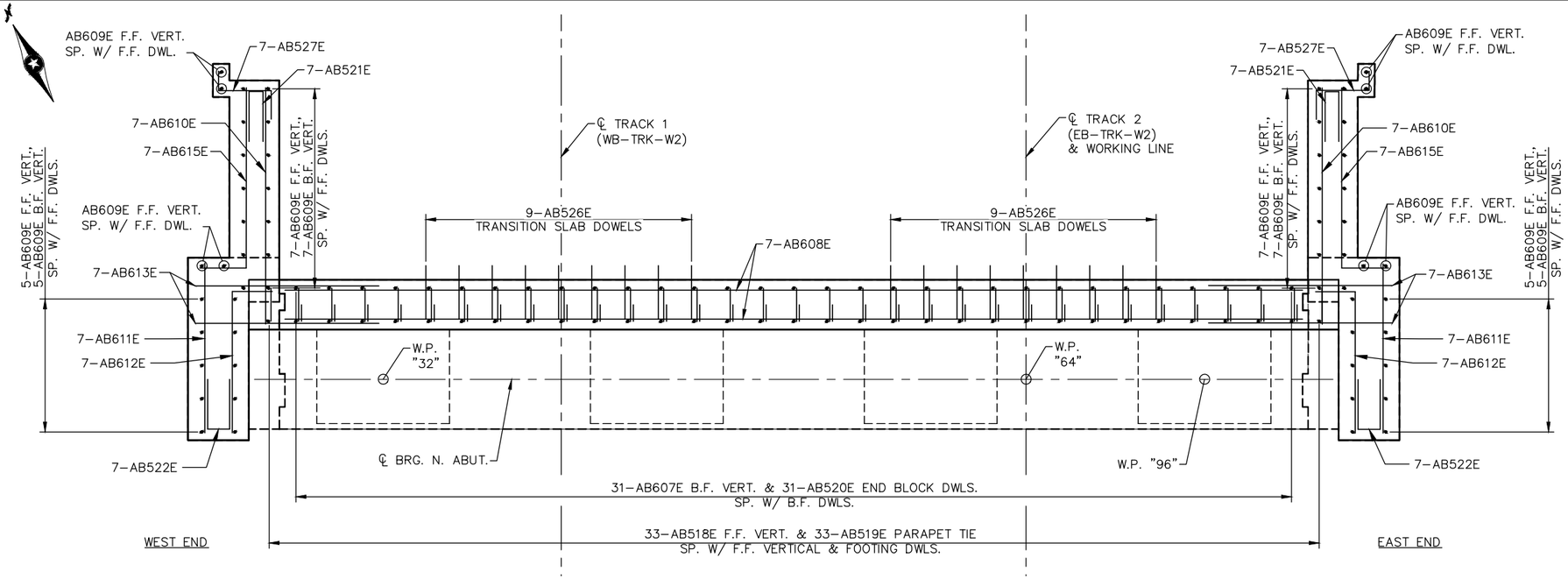
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
NORTH ABUTMENT REINFORCEMENT 1

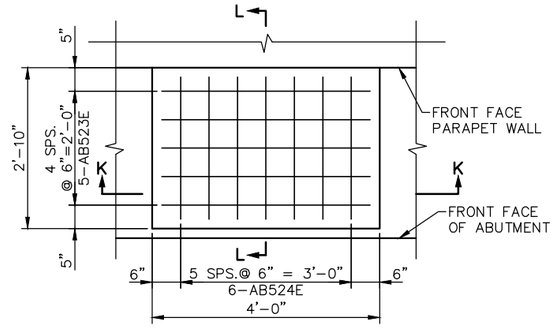
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-ABT2_1

SHEET 29 OF 264

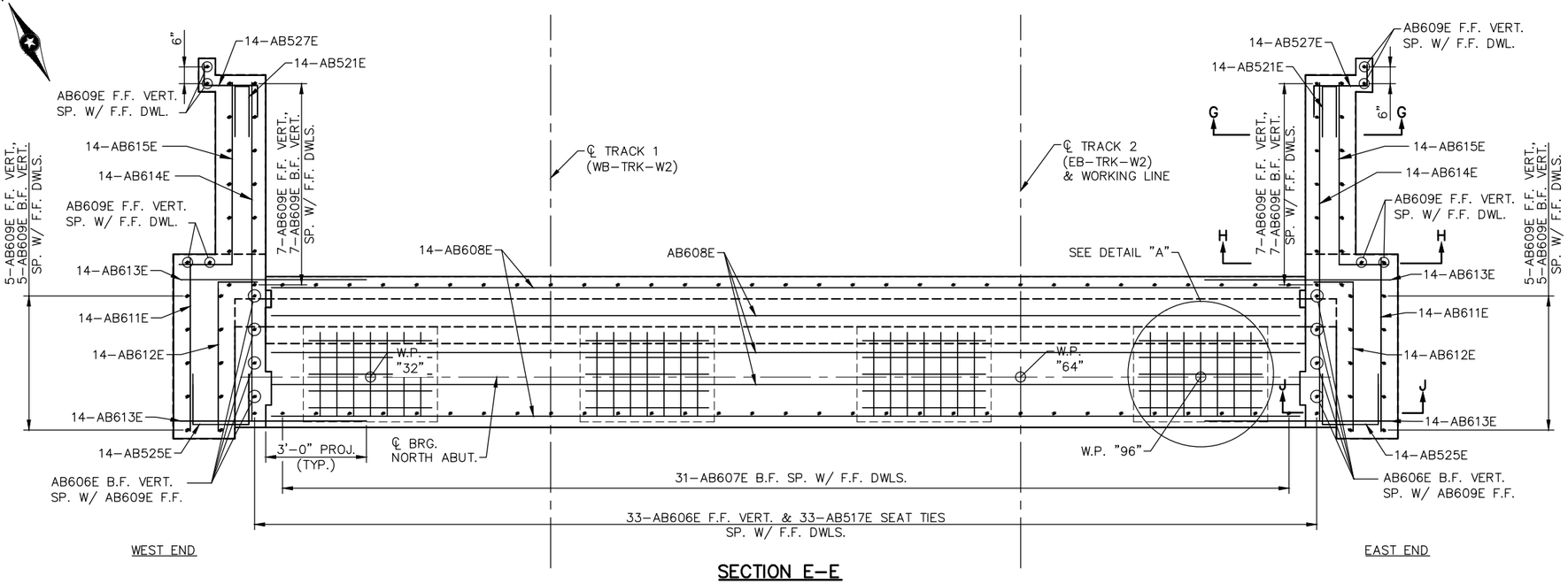
Jan, 17 2016 08:59 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-ABT2.dwg By: hills



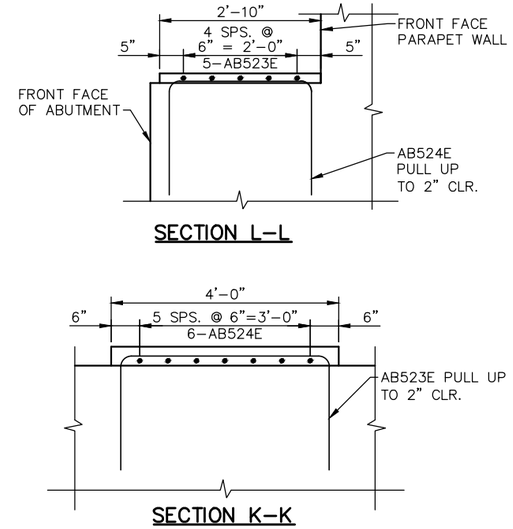
SECTION F-F



DETAIL A



SECTION E-E



SECTION L-L

SECTION K-K

NOTES:

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

SEE SHEET 32 FOR SECTIONS G-G, H-H AND J-J.

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: MJY | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
NORTH ABUTMENT REINFORCEMENT 2

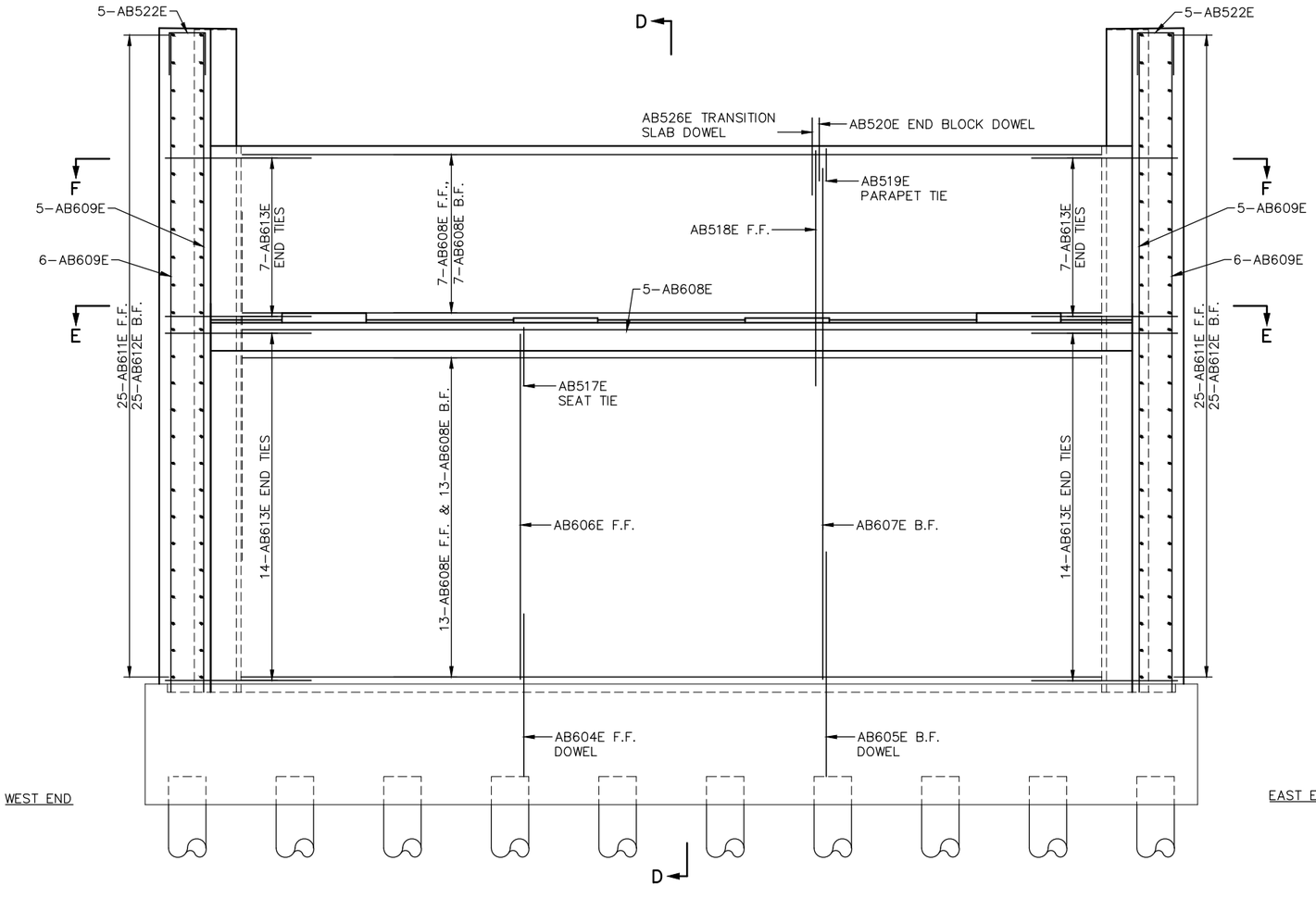
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-ABT2_2

SHEET 30 OF 264

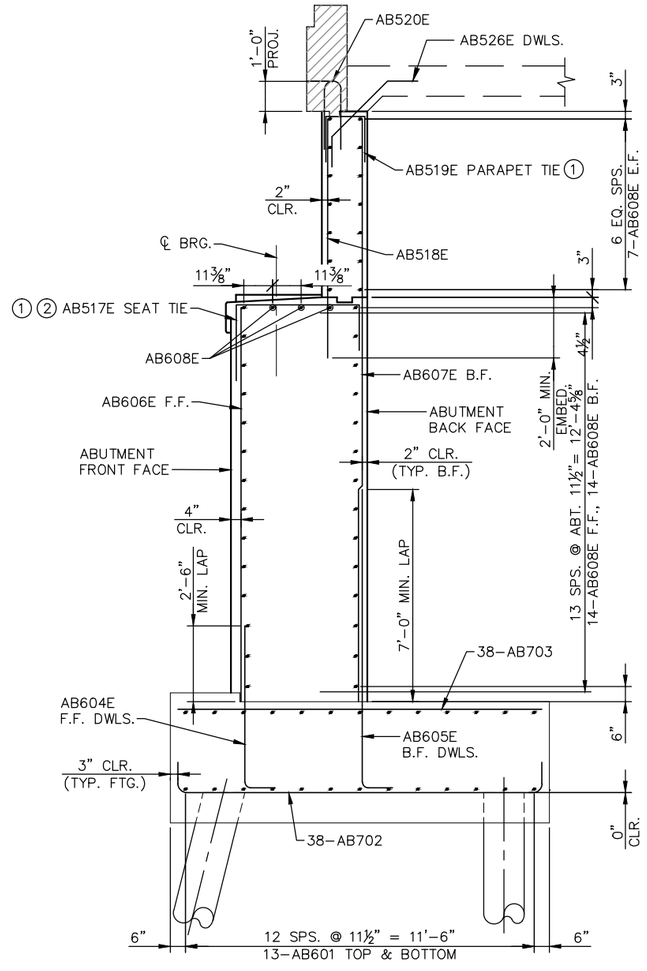
Jan, 17 2016 08:59 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-ABT2.dwg By: hills

NOTES:

1. PULL UP TO 2" CLEAR.
2. PLACE LONGER LEG IN FRONT.



ELEVATION



SECTION D–D

NOTES:

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

SEE SHEET 30 FOR SECTIONS E–E AND F–F.

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

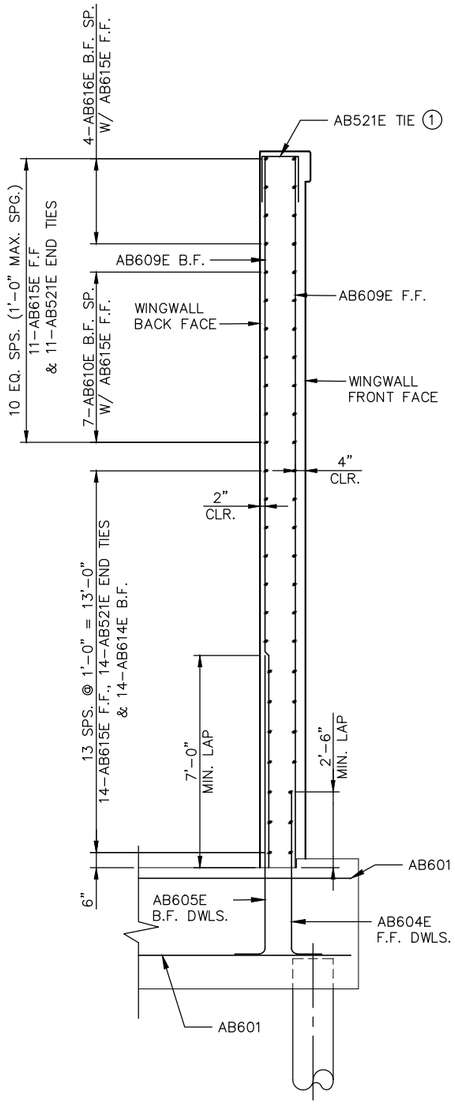
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
NORTH ABUTMENT REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-ABT2_3

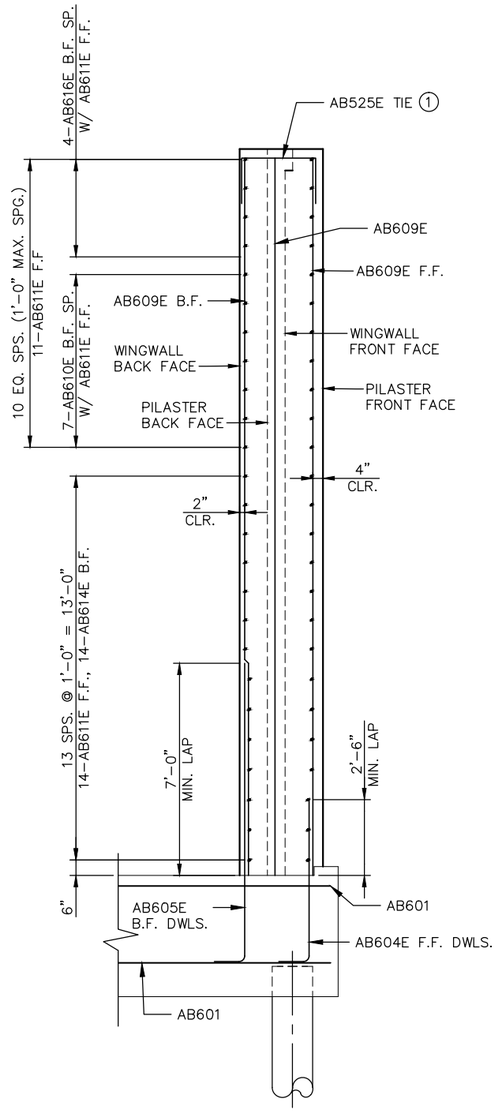
Jan, 17 2016 08:59 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-ABT2.dwg By: hills

NOTES:

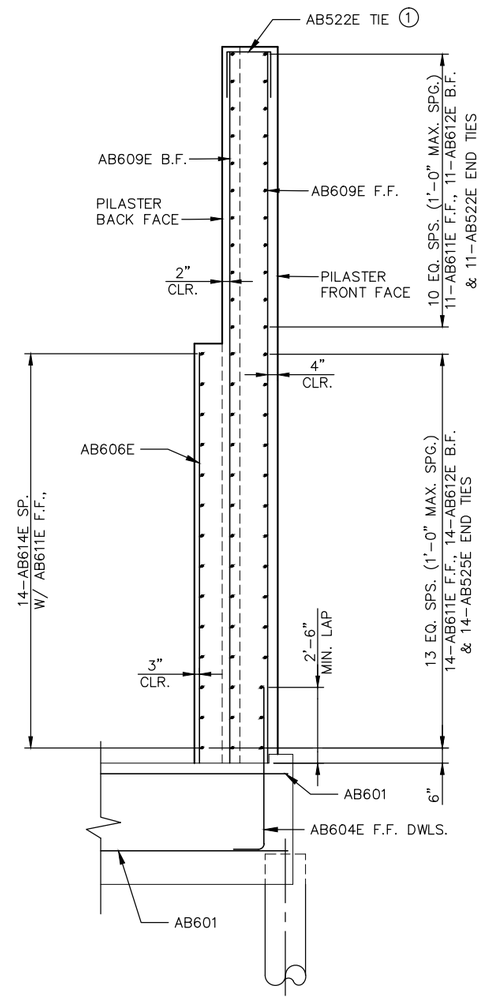
1. PULL UP TO 2" CLEAR.



SECTION G–G



SECTION H–H



SECTION J–J

NOTES

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

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DRAWN BY: MJY CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

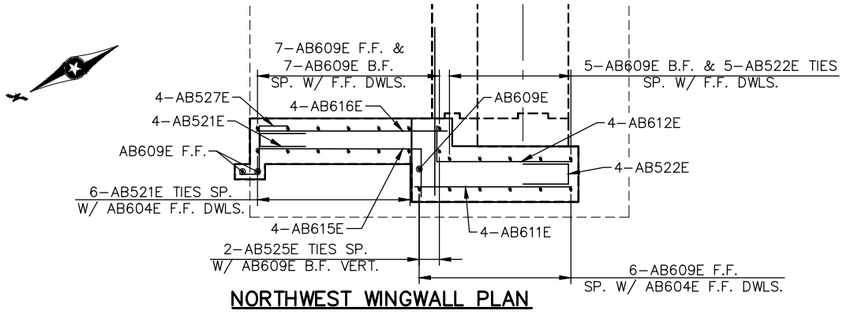
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
NORTH ABUTMENT REINFORCEMENT 4

DISCIPLINE: STRUCTURES

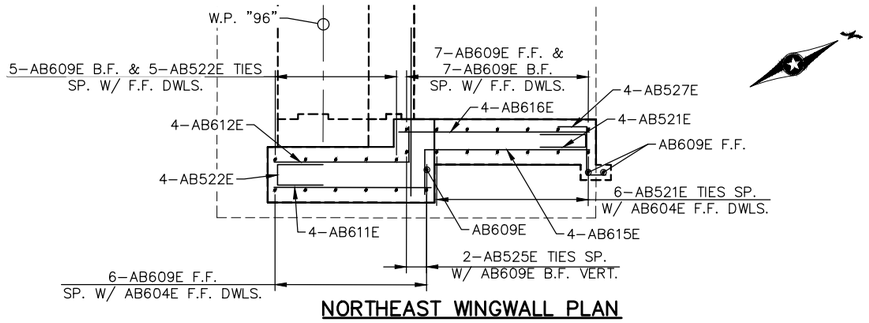
SHEET NAME: W2-STU-BRID-T212-ABT2_4

SHEET 32 OF 264

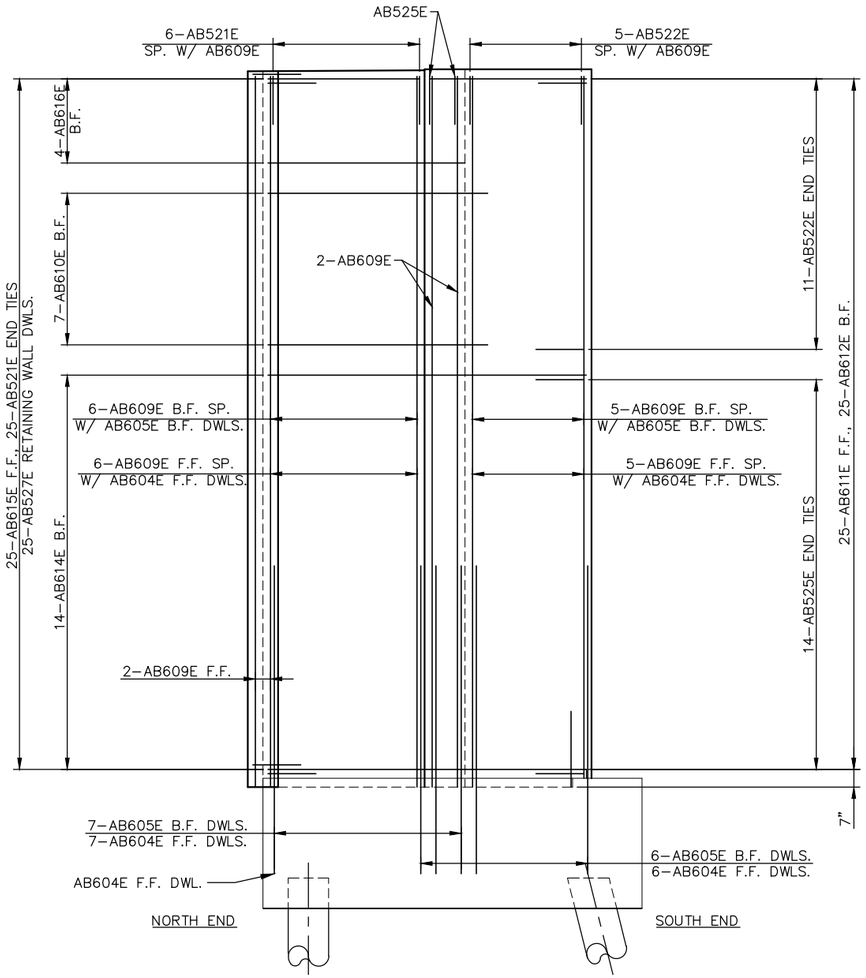
Jan, 17 2016 08:59 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-ABT2.dwg By: hills



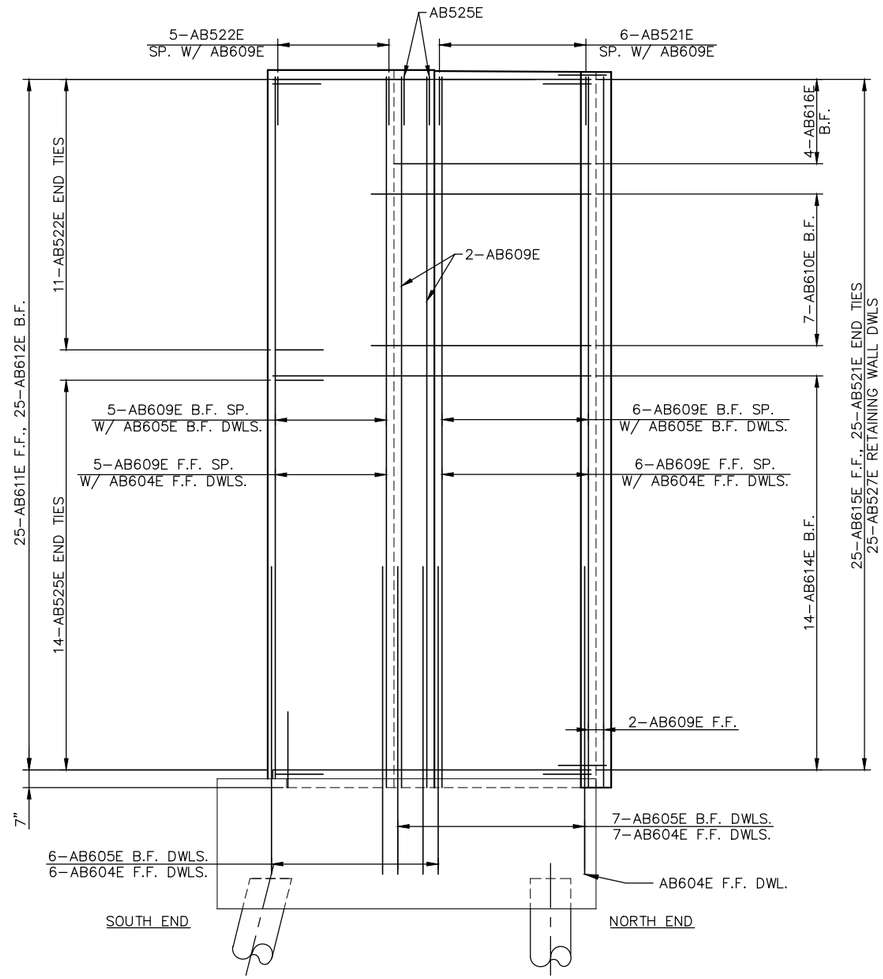
NORTHWEST WINGWALL PLAN



NORTHEAST WINGWALL PLAN



NORTHWEST WINGWALL ELEVATION



NORTHEAST WINGWALL ELEVATION

NOTES

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

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

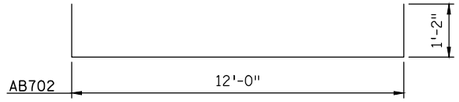
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
NORTH ABUTMENT REINFORCEMENT 5

DISCIPLINE: STRUCTURES

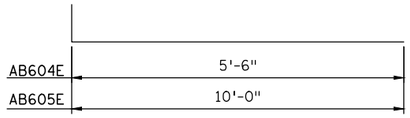
SHEET NAME: W2-STU-BRID-T212-ABT2_5

SHEET 33 OF 264

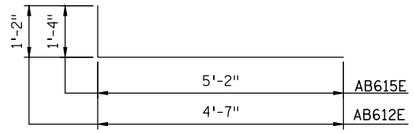
Jan, 17 2016 09:00 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-ABT2.dwg By: hills



AB702



AB604E, AB605E



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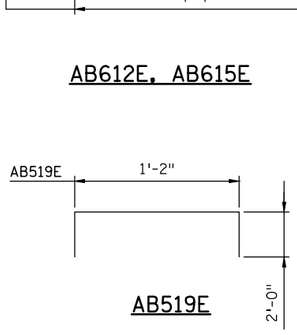

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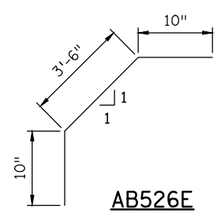

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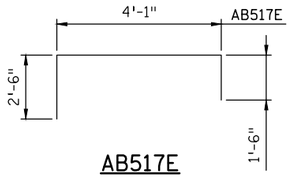

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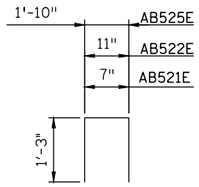

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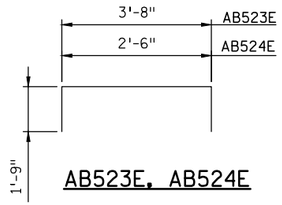

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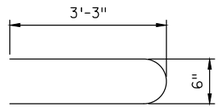

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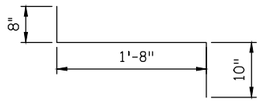


AB527E

BILL OF REINFORCEMENT FOR NORTH ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
AB601	26	37'-0"		FOOTING LONGIT. TOP & BOTTOM
AB702	38	14'-4"		FOOTING TRANSVERSE BOTTOM
AB703	38	12'-0"		FOOTING TRANSVERSE TOP
AB604E	65	6'-6"		FOOTING DOWEL
AB605E	43	11'-0"		FOOTING DOWEL
AB606E	41	12'-10"		BRIDGE SEAT VERTICAL FRONT FACE
AB607E	31	19'-4"		BRIDGE SEAT VERTICAL BACK FACE
AB608E	45	30'-8"		BRIDGE SEAT & PARAPET HORIZONTAL
AB609E	56	23'-5"		WINGWALL VERTICAL
AB610E	14	7'-2"		WINGWALL HORIZONTAL BACK FACE
AB611E	50	5'-2"		WINGWALL HORIZONTAL FRONT FACE
AB612E	50	5'-9"		WINGWALL HORIZONTAL BACK FACE
AB613E	84	5'-7"		BRIDGE SEAT & PARAPET END TIE
AB614E	28	10'-2"		WINGWALL HORIZONTAL BACK FACE
AB615E	50	6'-6"		WINGWALL HORIZONTAL FRONT FACE
AB616E	8	6'-4"		WINGWALL HORIZONTAL BACK FACE
AB517E	33	8'-1"		BRIDGE SEAT TIE
AB518E	33	8'-2"		BRIDGE PARAPET VERTICAL FRONT FACE
AB519E	33	5'-2"		PARAPET TIE
AB520E	31	6'-10"		END BLOCK DOWEL
AB521E	62	3'-1"		WINGWALL VERTICAL & HORIZONTAL TIE
AB522E	32	3'-5"		WINGWALL VERTICAL & HORIZONTAL TIE
AB523E	20	7'-2"		PEDESTAL TIE
AB524E	24	6'-0"		PEDESTAL TIE
AB525E	32	4'-4"		WINGWALL HORIZONTAL & VERTICAL TIE
AB526E	18	5'-2"		TRANSITION SLAB DOWEL
AB527E	50	3'-2"		RETAINING WALL DOWEL

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: MJY | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

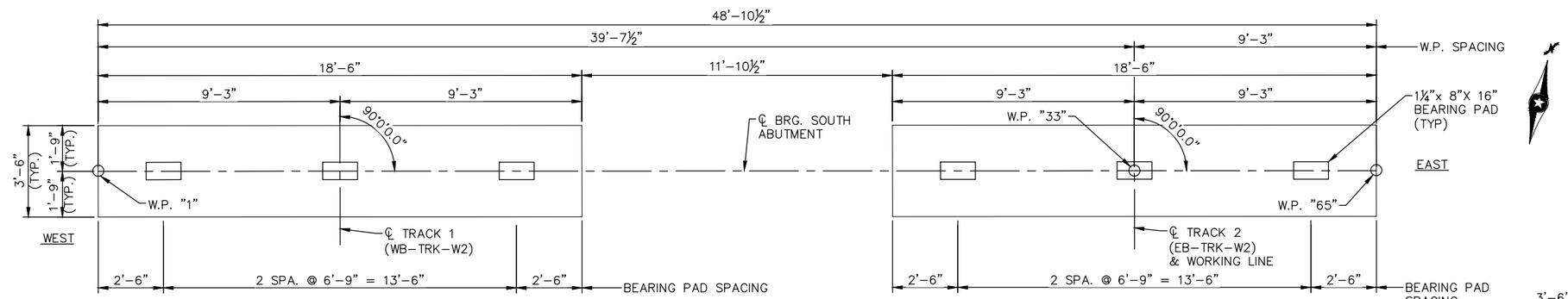
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
NORTH ABUTMENT REINFORCEMENT 6

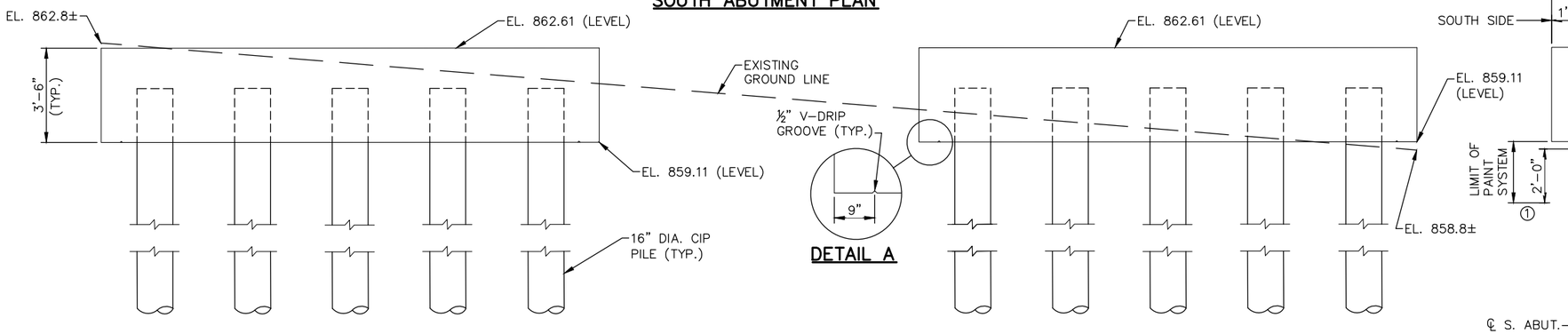
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-ABT3

SHEET 34 OF 264

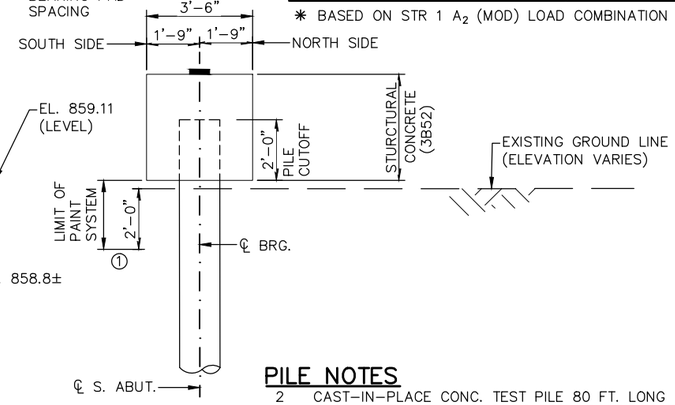
Jan, 17 2016 09:00 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-ABT3.dwg By: hills



SOUTH ABUTMENT PLAN

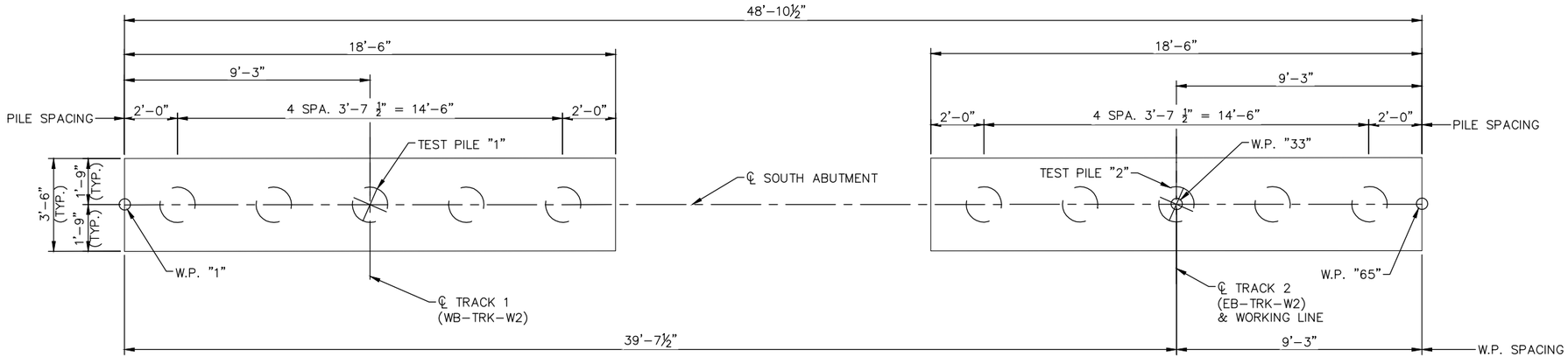


DETAIL A



END VIEW

SOUTH ABUTMENT ELEVATION



SOUTH ABUTMENT PILE LAYOUT

SOUTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	55.0
PDA	0.65	42.3

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

SOUTH ABUTMENT COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	19.6
FACTORED LIVE LOAD	7.9
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	27.5

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

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

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

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DESIGNED BY: DDL CHECKED BY: EEM
DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

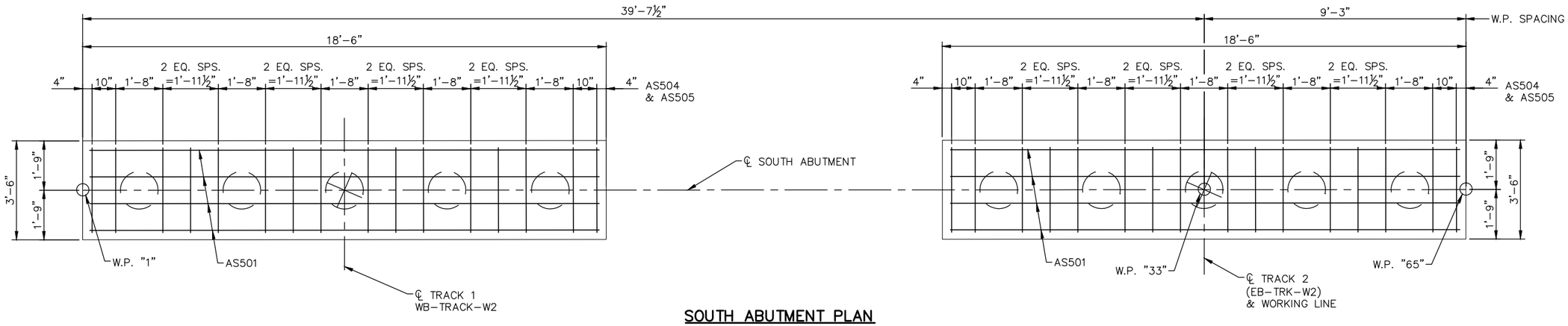
SOUTHWEST Green Line LRT Extension

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

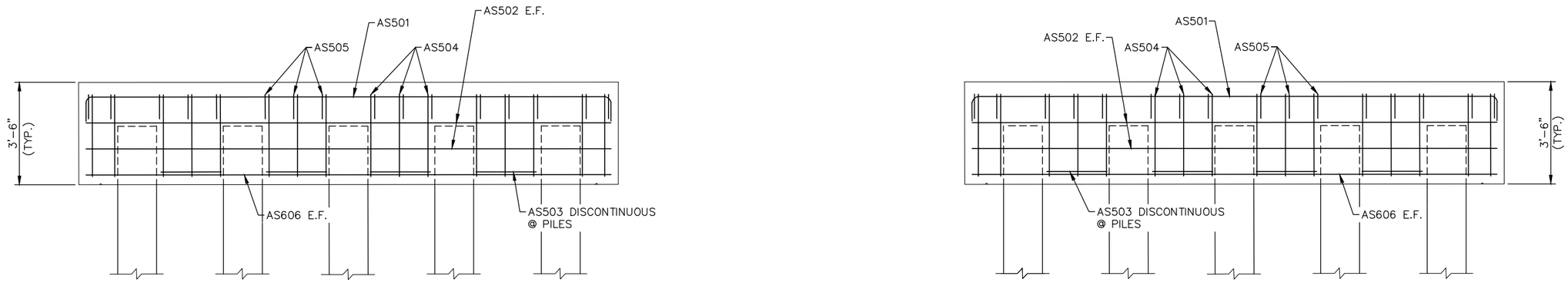
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_SAB

SHEET 35 OF 264

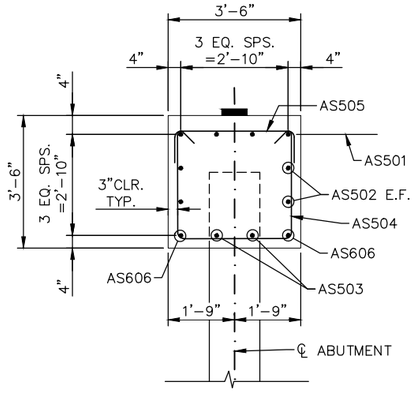
Jan, 17 2016 09:00 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills

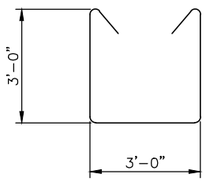


SOUTH ABUTMENT PLAN

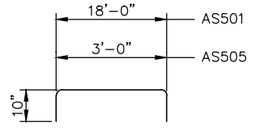


SOUTH ABUTMENT ELEVATION





AS504



AS501 & AS505

BILL OF REINFORCEMENT
FOR SOUTH ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
AS501	8	19'-8"	⌐¬	PIER HORIZONTAL
AS502	8	18'-0"	——	PIER HORIZONTAL
AS503	16	2'-0"	——	PIER HORIZONTAL
AS504	32	9'-3"	⊔	PIER STIRRUP
AS505	32	4'-7"	⌐¬	PIER TIE
AS606	4	18'-0"	——	PIER HORIZONTAL

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DESIGNED BY: EEM CHECKED BY: DDL
DRAWN BY: SBM CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
S. ABUT. REINFORCEMENT

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

SHEET 36 OF 264

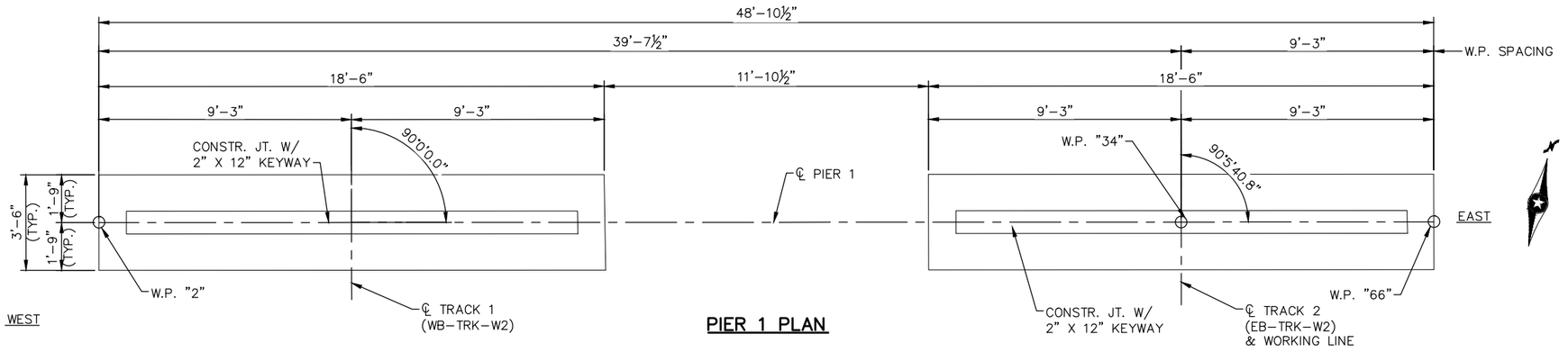
Jan. 17 2016 09:01 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills

PIER 1 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	141.8
PDA	0.65	109.1

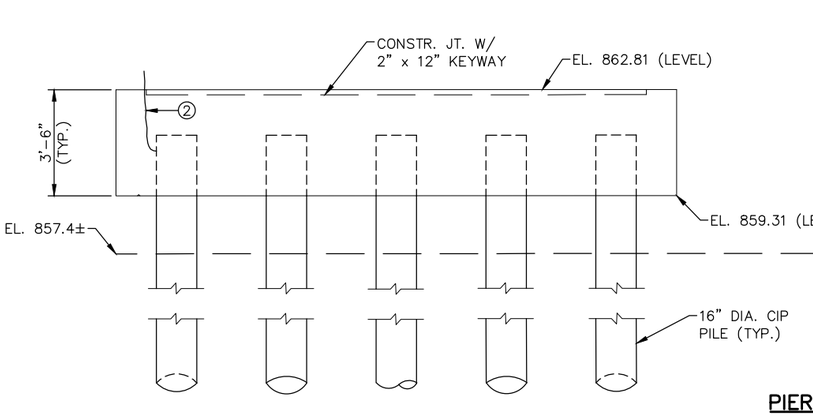
$* R_n$ = (FACTORED DESIGN LOAD) / φ_{dyn}

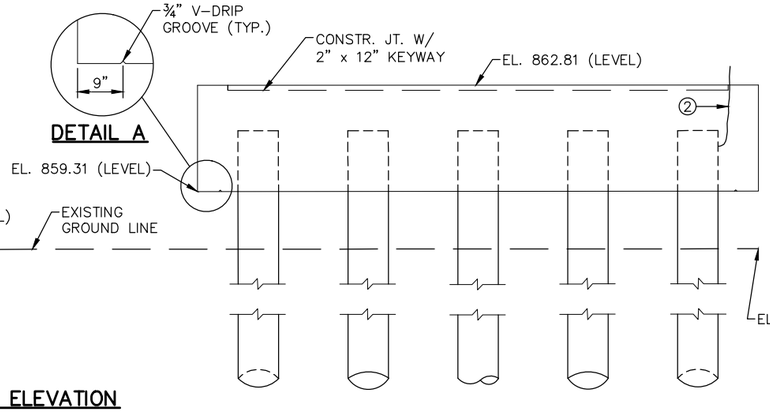
PIER 1 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	56.2
FACTORED LIVE LOAD	14.7
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	70.9

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

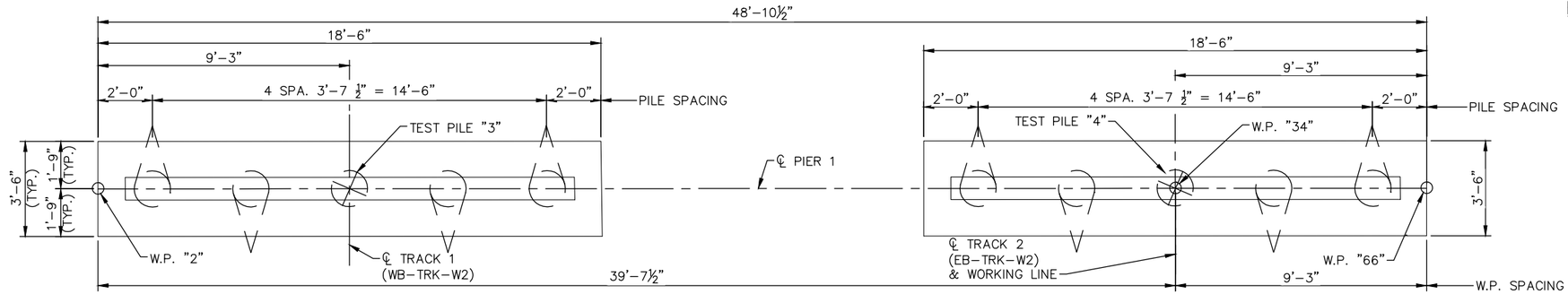


PIER 1 PLAN

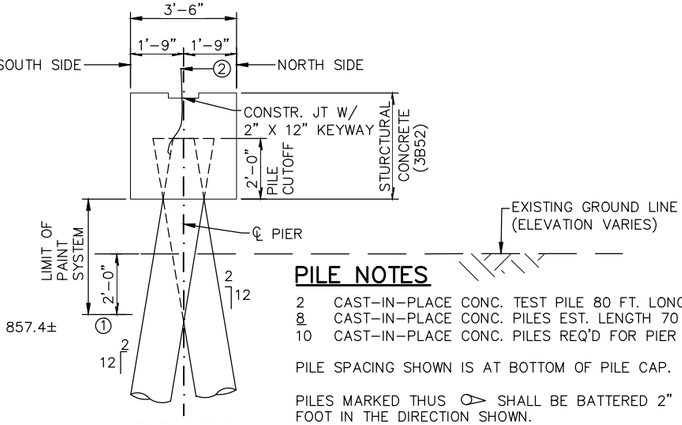




PIER 1 ELEVATION



PIER 1 PLAN



END VIEW

PILE NOTES

2 CAST–IN–PLACE CONC. TEST PILE 80 FT. LONG
8 CAST–IN–PLACE CONC. PILES EST. LENGTH 70 FT.
10 CAST–IN–PLACE CONC. PILES REQ'D FOR PIER 1.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC–RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

② GROUND WIRE PLACED INSIDE 1" PVC CONDUIT. SEE GROUNDING PLANS VOLUME 12, SHEET ELE–SITE–DTL–600

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DESIGNED BY: DDL | CHECKED BY: EEM
DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

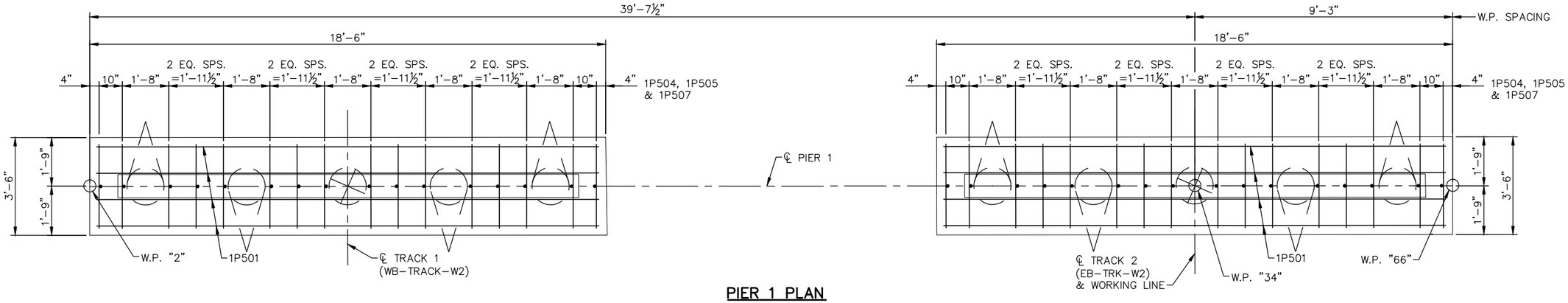
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 1 DETAILS

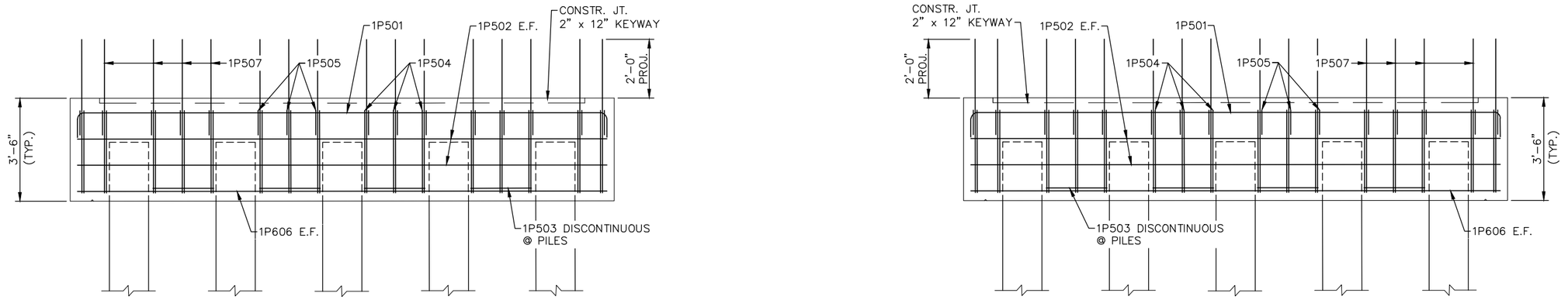
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-1

SHEET 37 OF 264

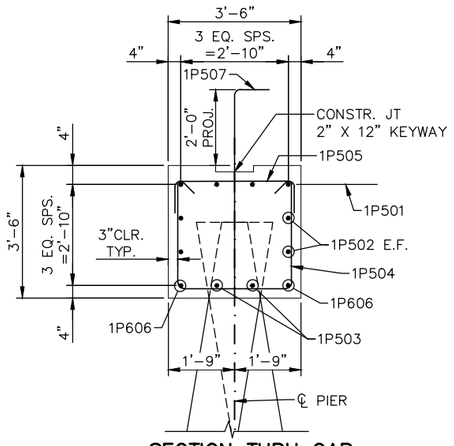
Jan, 17 2016 09:01 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



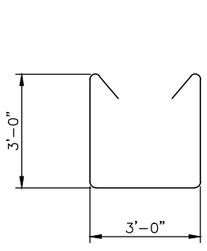
PIER 1 PLAN



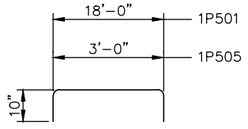
PIER 1 ELEVATION



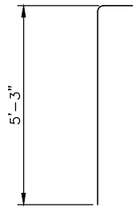
SECTION THRU CAP



1P504



1P501 & 1P505



1P507

BILL OF REINFORCEMENT FOR PIER 1

BAR	NO.	LENGTH	SHAPE	LOCATION
1P501	8	19'-8"		PIER HORIZONTAL
1P502	8	18'-0"		PIER HORIZONTAL
1P503	16	2'-0"		PIER HORIZONTAL
1P504	32	9'-10"		PIER STIRRUP
1P505	32	4'-7"		PIER TIE
1P606	4	18'-0"		PIER HORIZONTAL
1P507	32	6'-1"		PIER TIE

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DESIGNED BY: EEM | CHECKED BY: DDL
DRAWN BY: SBM | CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

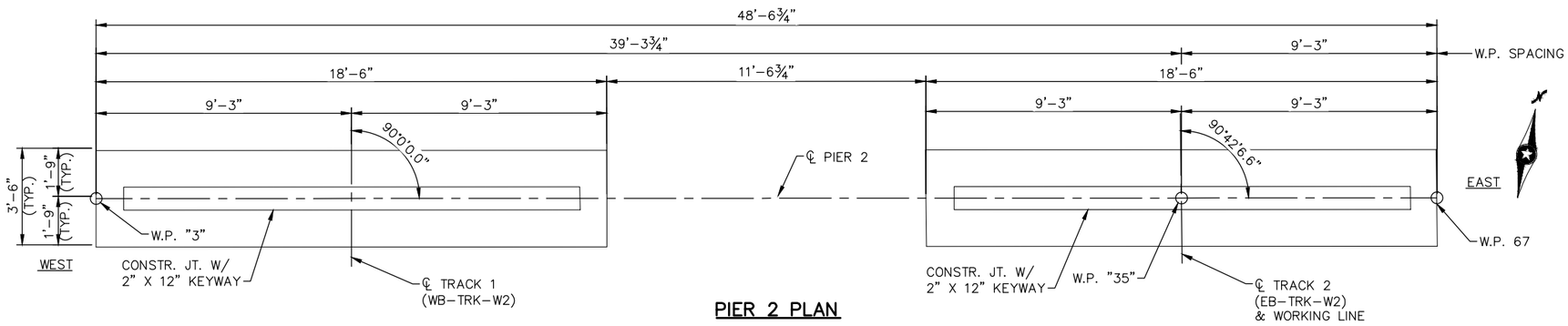
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 1 REINFORCEMENT

DISCIPLINE: STRUCTURES

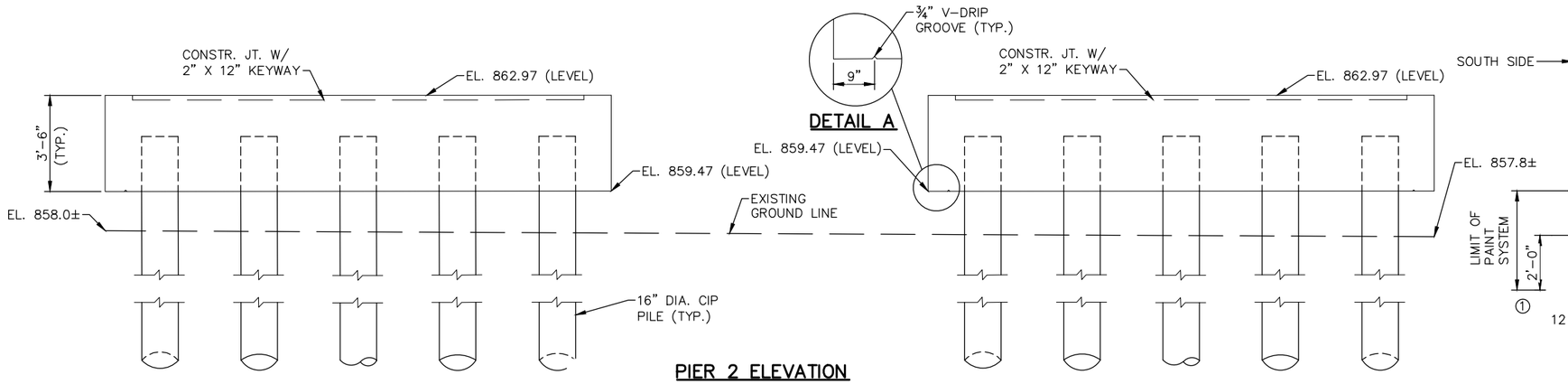
SHEET NAME: W2-STU-BRID-T212-PIER_R-1

SHEET 38 OF 264

Jan, 17 2016 09:01 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills

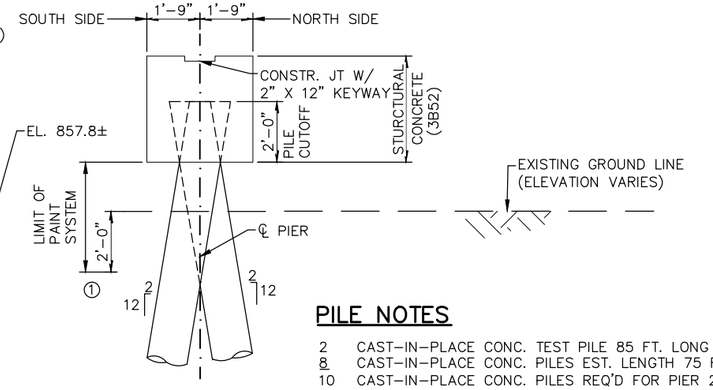


PIER 2 PLAN



PIER 2 ELEVATION

PIER 2 PILE LAYOUT



END VIEW

PIER 2 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	142.2
PDA	0.65	109.4

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

PIER 2 COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	56.2
FACTORED LIVE LOAD	14.9
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	71.1

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

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

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

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DESIGNED BY: DDL | CHECKED BY: EEM
DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

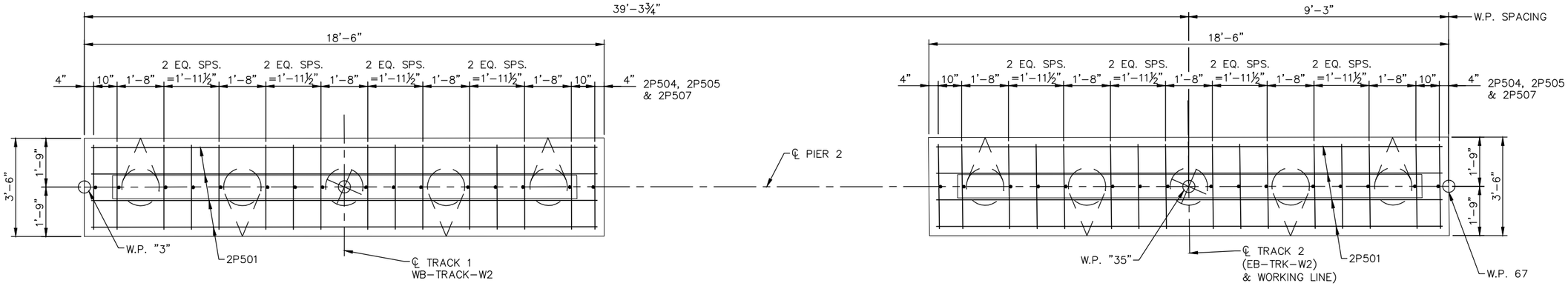
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 2 DETAILS

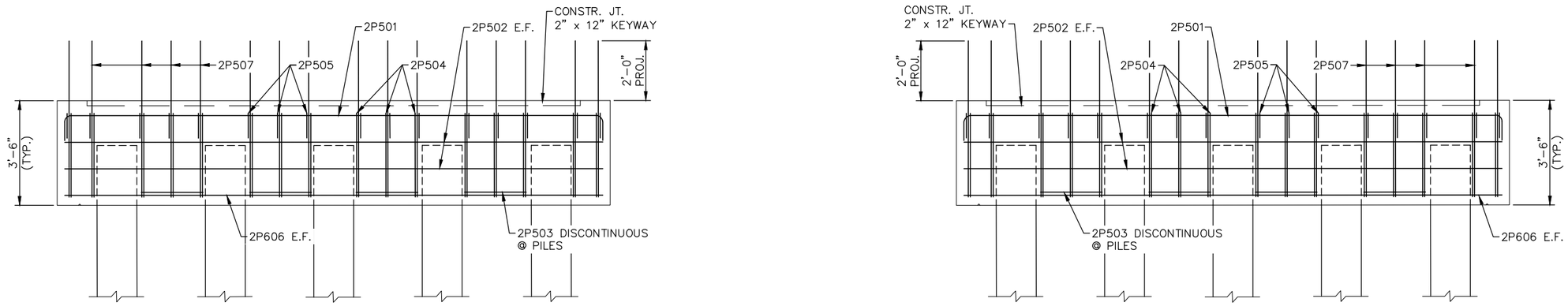
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-2

SHEET 39 OF 264

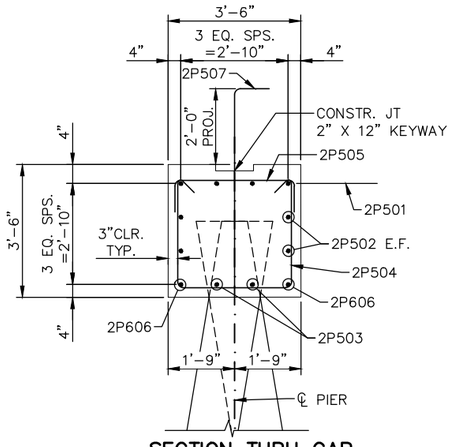
Jan, 17 2016 09:02 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



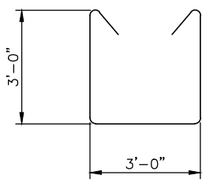
PIER 2 PLAN



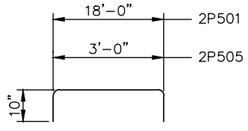
PIER 2 ELEVATION



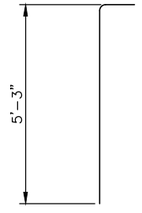
SECTION THRU CAP



2P504



2P501 & 2P505



2P507

BILL OF REINFORCEMENT FOR PIER 2

BAR	NO.	LENGTH	SHAPE	LOCATION
2P501	8	19'-8"	⌐	PIER HORIZONTAL
2P502	8	18'-0"	—	PIER HORIZONTAL
2P503	16	2'-0"	—	PIER HORIZONTAL
2P504	32	9'-10"	⊓	PIER STIRRUP
2P505	32	4'-7"	⌐	PIER TIE
2P606	4	18'-0"	—	PIER HORIZONTAL
2P507	32	6'-1"	⌐	PIER TIE

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DESIGNED BY: EEM CHECKED BY: DDL
DRAWN BY: SBM CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

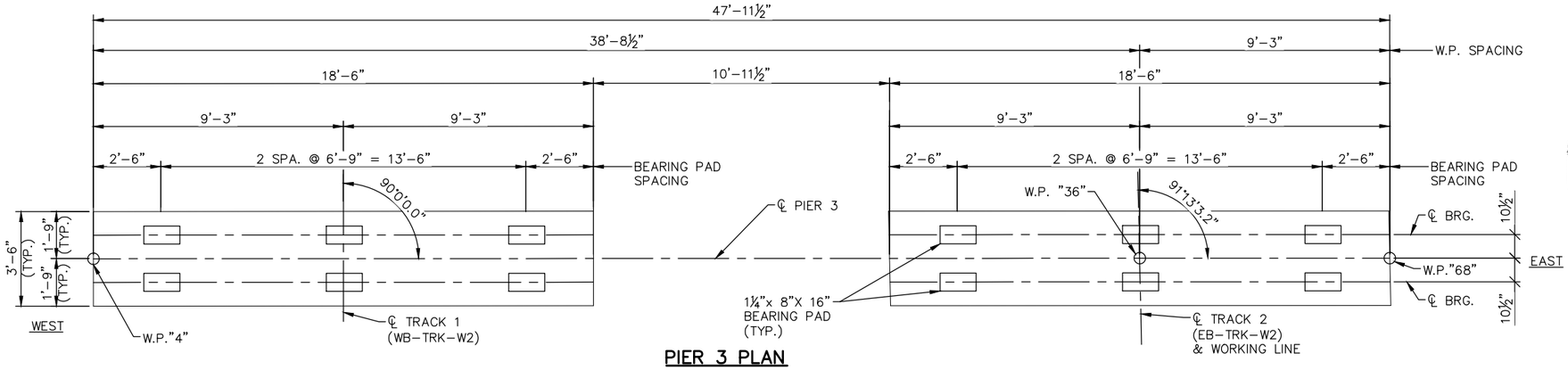
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 2 REINFORCEMENT

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

SHEET 40 OF 264

Jan, 17 2016 09:02 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills



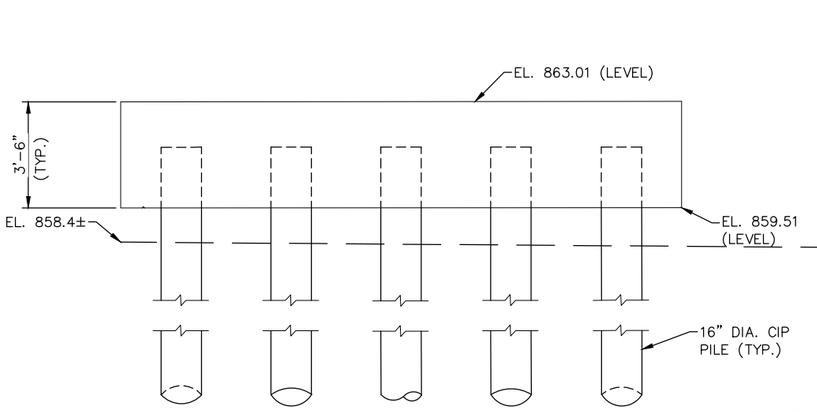
PIER 3 PLAN

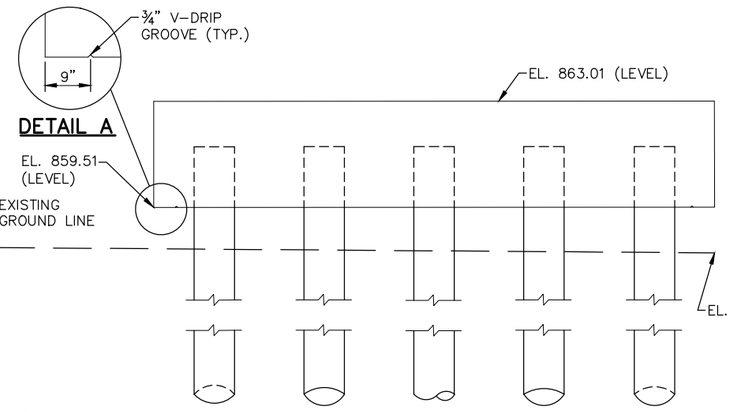
PIER 3 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	91.4
PDA	0.65	70.3

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

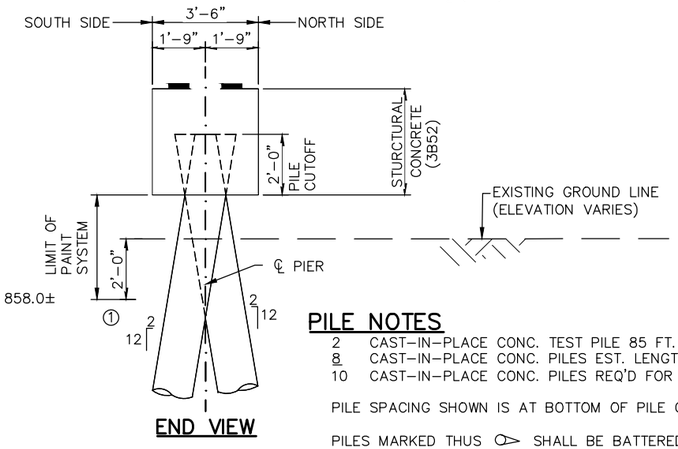
PIER 3 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	35.0
FACTORED LIVE LOAD	10.7
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	45.7

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

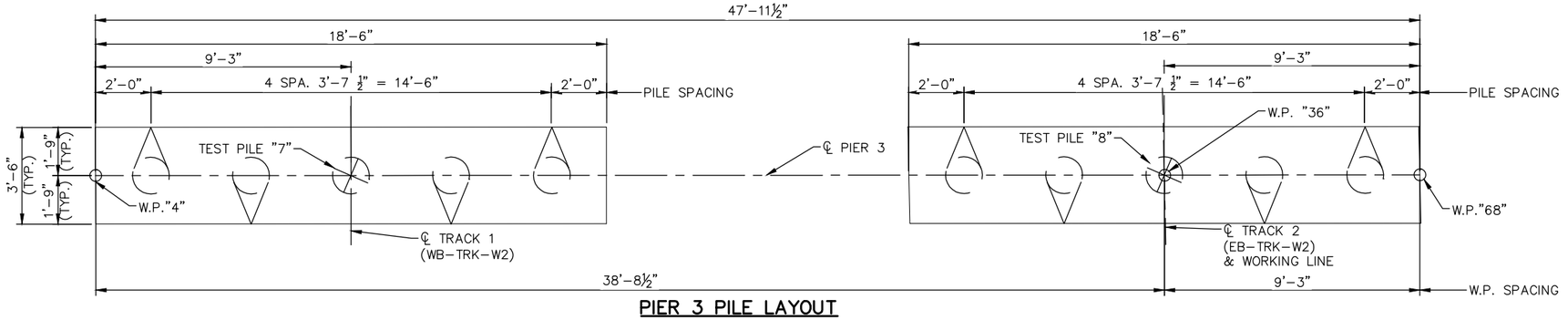




PIER 3 ELEVATION



END VIEW



PIER 3 PILE LAYOUT

PILE NOTES

2 CAST-IN-PLACE CONC. TEST PILE 85 FT. LONG
8 CAST-IN-PLACE CONC. PILES EST. LENGTH 75 FT.
10 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 3.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

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DESIGNED BY: DDL CHECKED BY: EEM
DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

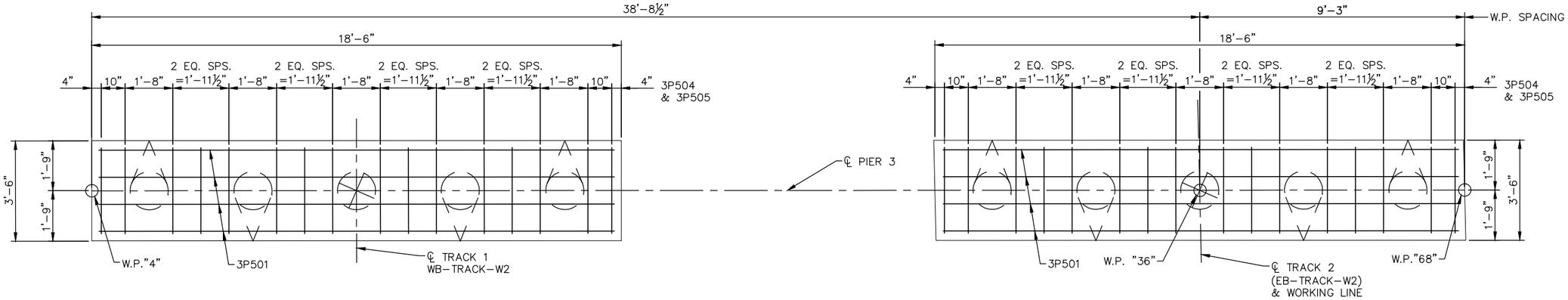
90% SUBMISSION - 01/22/16

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

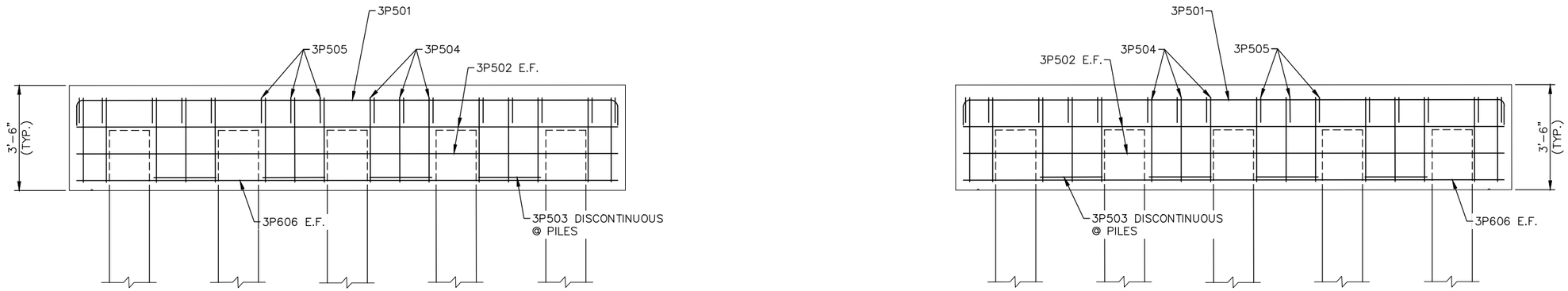
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-3

SHEET 41 OF 264

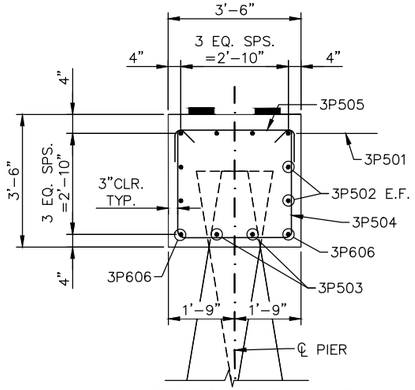
Jan, 17 2016 09:02 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



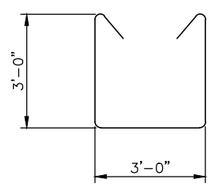
PIER 3 PLAN



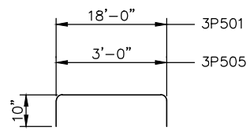
PIER 3 ELEVATION



SECTION THRU CAP



3P504



3P501 & 3P505

BILL OF REINFORCEMENT FOR PIER 3

BAR	NO.	LENGTH	SHAPE	LOCATION
3P501	8	19'-8"	⌐ ¬	PIER HORIZONTAL
3P502	8	18'-0"	———	PIER HORIZONTAL
3P503	16	2'-0"	———	PIER HORIZONTAL
3P504	32	9'-10"	⊓	PIER STIRRUP
3P505	32	4'-7"	⌐ ¬	PIER TIE
3P606	4	18'-0"	———	PIER HORIZONTAL

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DESIGNED BY: EEM CHECKED BY: DDL
DRAWN BY: SBM CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

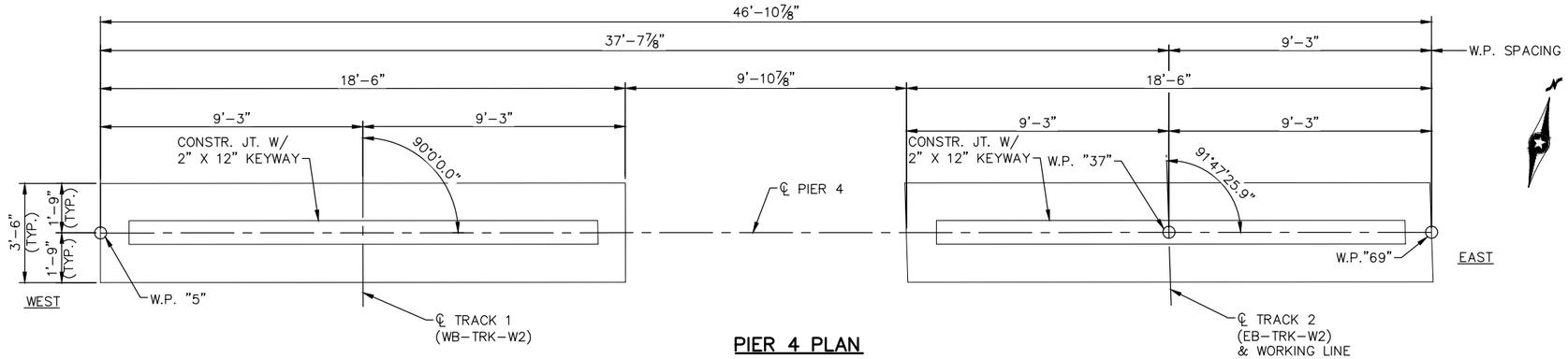
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 3 REINFORCEMENT

DISCIPLINE: STRUCTURES

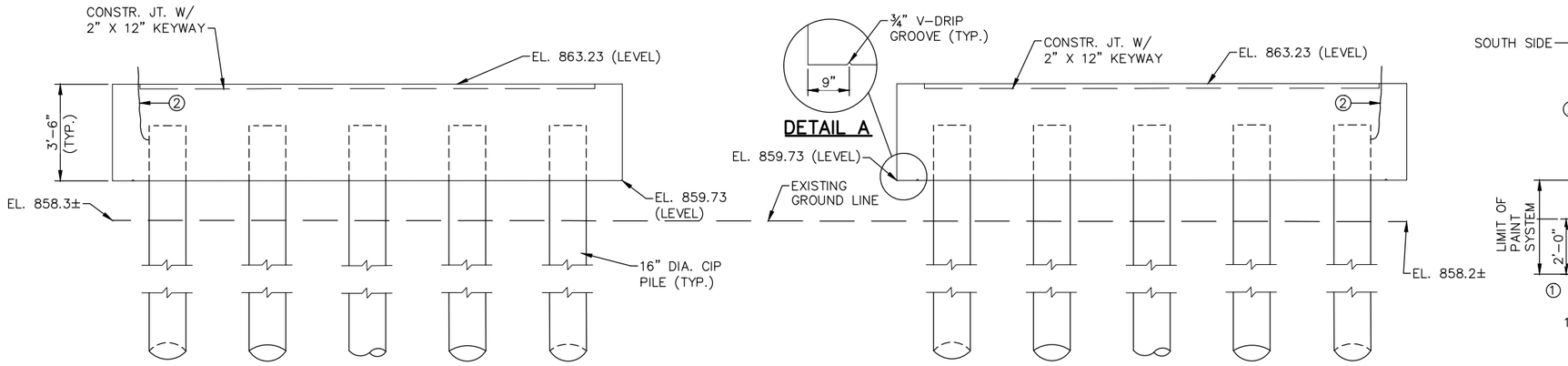
SHEET NAME: W2-STU-BRID-T212-PIER_R-3

SHEET 42 OF 264

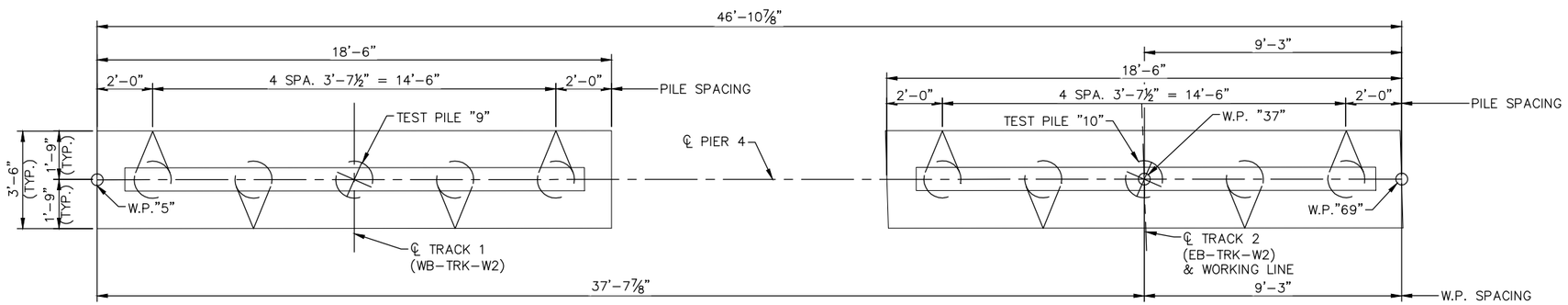
Jan, 17 2016 09:03 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills



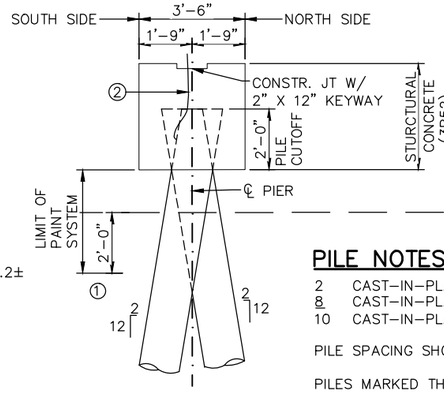
PIER 4 PLAN



PIER 4 ELEVATION



PIER 4 PILE LAYOUT



END VIEW

PIER 4
REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	141.8
PDA	0.65	109.1

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

PIER 4
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	56.2
FACTORED LIVE LOAD	14.7
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	70.9

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

2 CAST-IN-PLACE CONC. TEST PILE 85 FT. LONG
8 CAST-IN-PLACE CONC. PILES EST. LENGTH 75 FT.
10 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 4.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

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

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

(2) GROUND WIRE PLACED INSIDE 1" PVC CONDUIT. SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600

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DESIGNED BY: DDL | CHECKED BY: EEM
DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

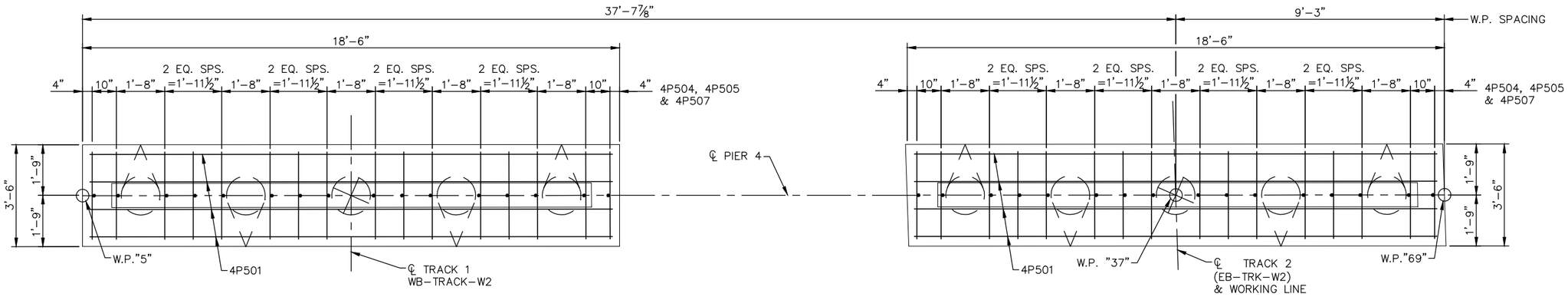
SOUTHWEST Green Line LRT Extension

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

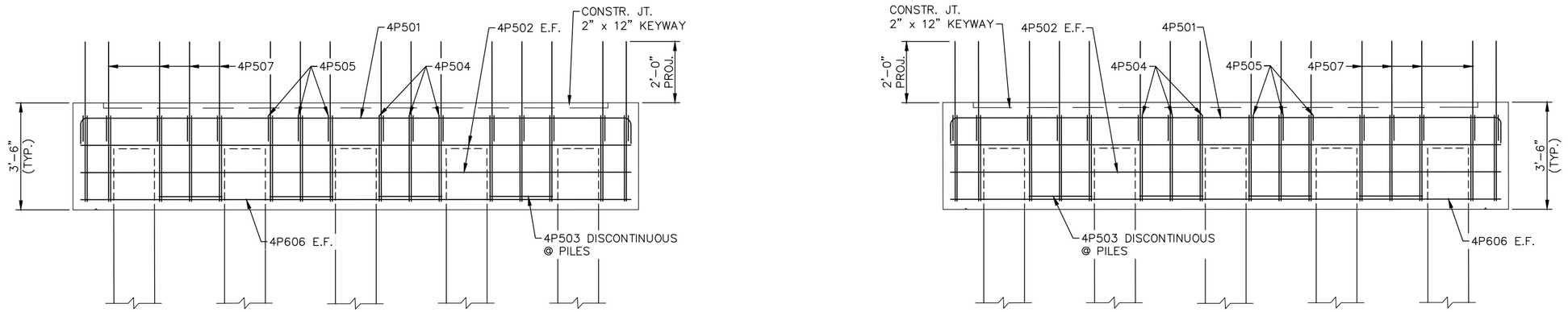
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-4

SHEET 43 OF 264

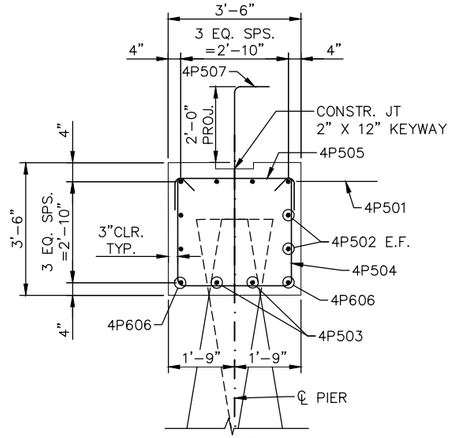
Jan. 17 2016 09:03 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



PIER 4 PLAN



PIER 4 ELEVATION



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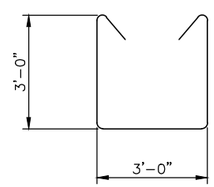
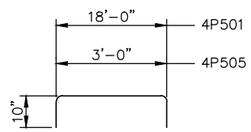
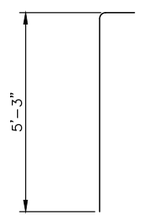


4P504



4P501 & 4P505



4P507

BILL OF REINFORCEMENT FOR PIER 4

BAR	NO.	LENGTH	SHAPE	LOCATION
4P501	8	19'-8"		PIER HORIZONTAL
4P502	8	18'-0"		PIER HORIZONTAL
4P503	16	2'-0"		PIER HORIZONTAL
4P504	32	9'-10"		PIER STIRRUP
4P505	32	4'-7"		PIER TIE
4P606	4	18'-0"		PIER HORIZONTAL
4P507	32	6'-1"		PIER TIE

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DESIGNED BY: EEM CHECKED BY: DDL
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

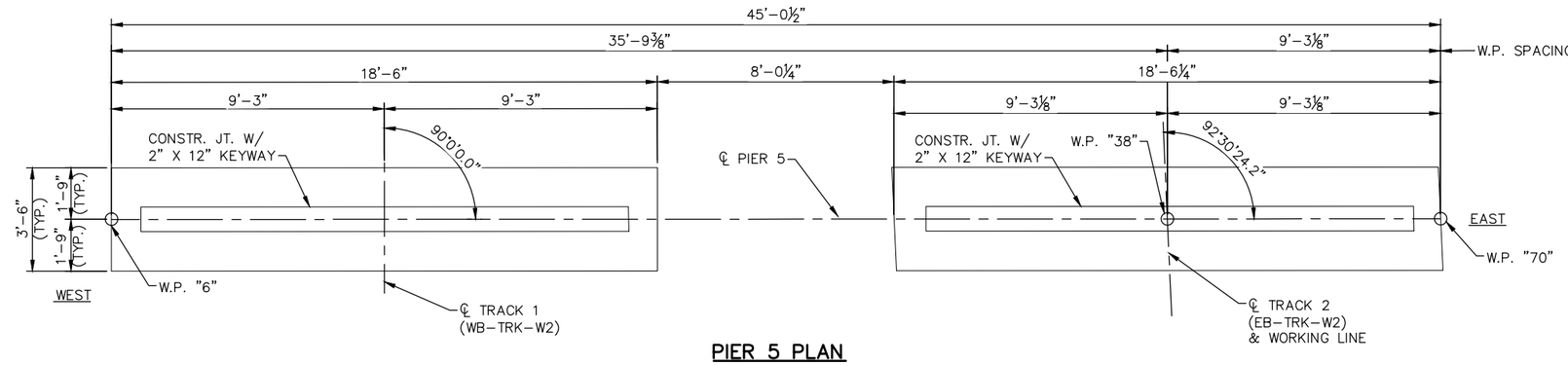
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 4 REINFORCEMENT

DISCIPLINE: STRUCTURES

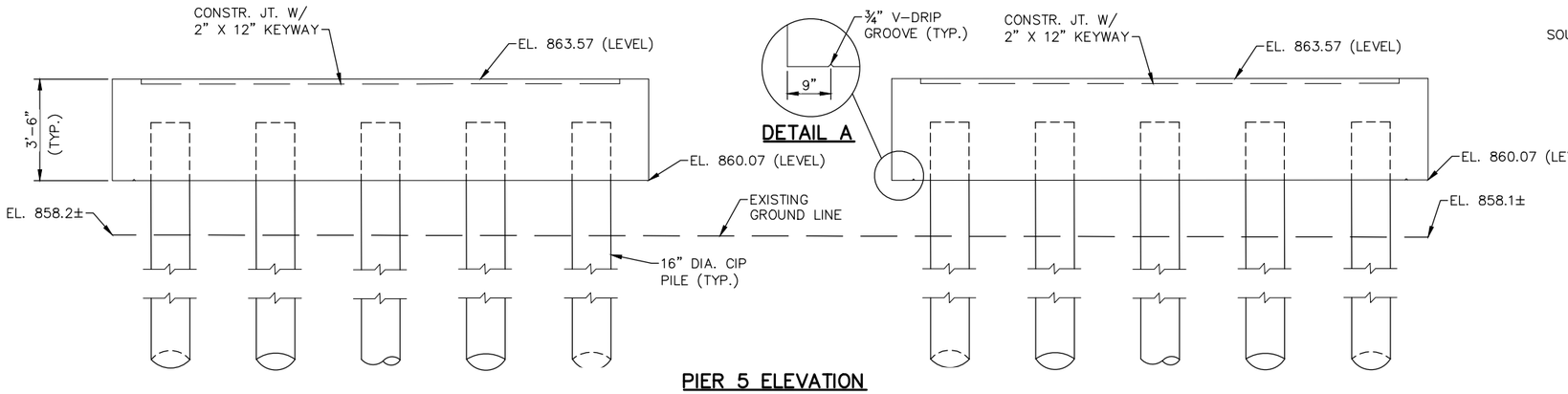
SHEET NAME: W2-STU-BRID-T212-PIER_R-4

SHEET 44 OF 264

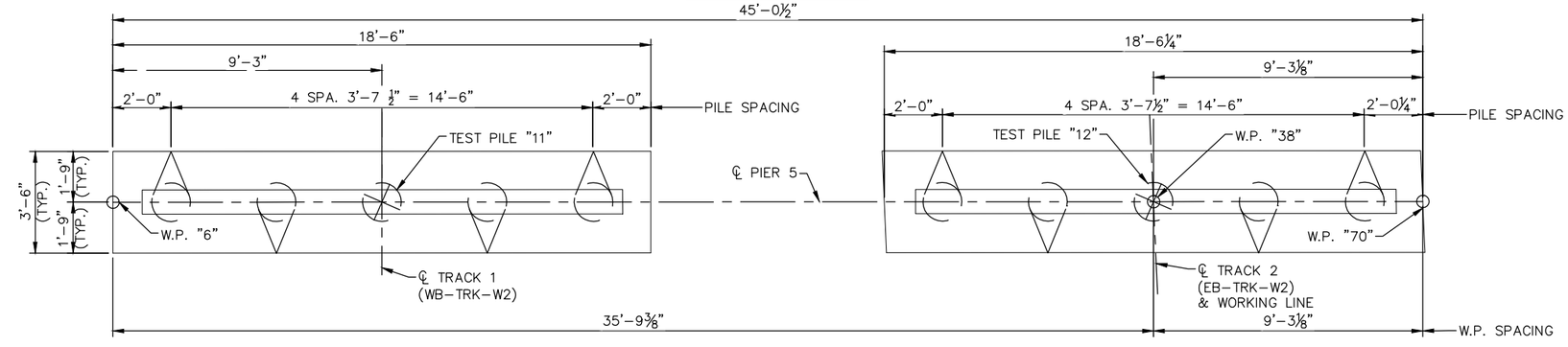
Jan, 17 2016 09:04 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills



PIER 5 PLAN



PIER 5 ELEVATION



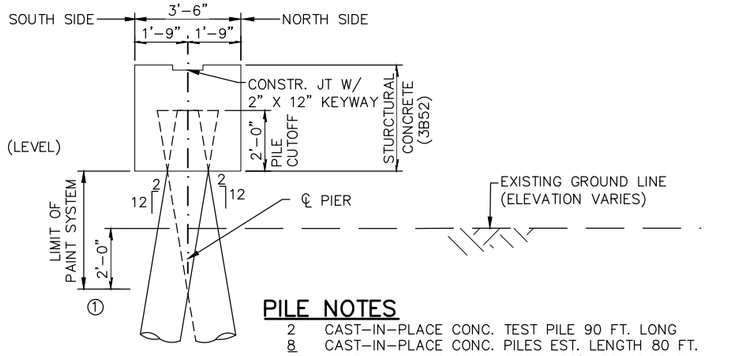
PIER 5 PILE LAYOUT

PIER 5 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	142.2
PDA	0.65	109.4

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

PIER 5 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	56.2
FACTORED LIVE LOAD	14.9
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	71.1

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION



END VIEW

PILE NOTES

2 CAST-IN-PLACE CONC. TEST PILE 90 FT. LONG
8 CAST-IN-PLACE CONC. PILES EST. LENGTH 80 FT.
10 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 5.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

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DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

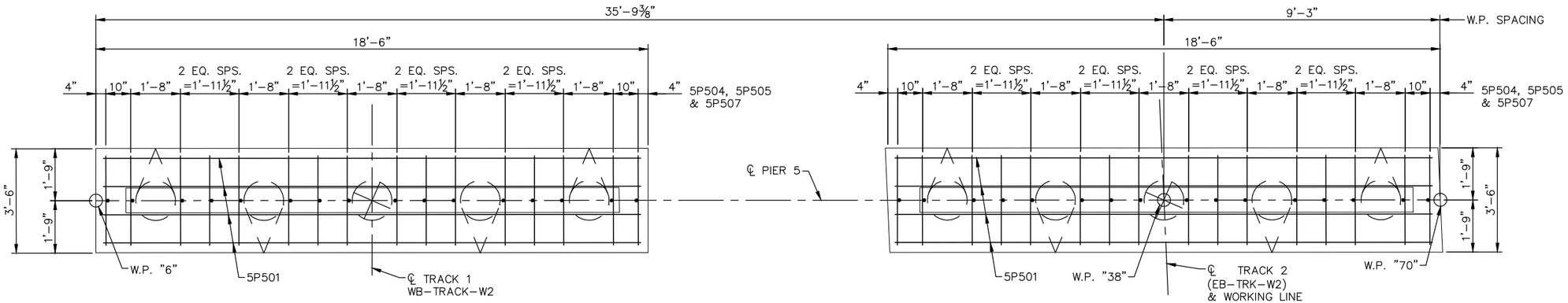
SOUTHWEST Green Line LRT Extension

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

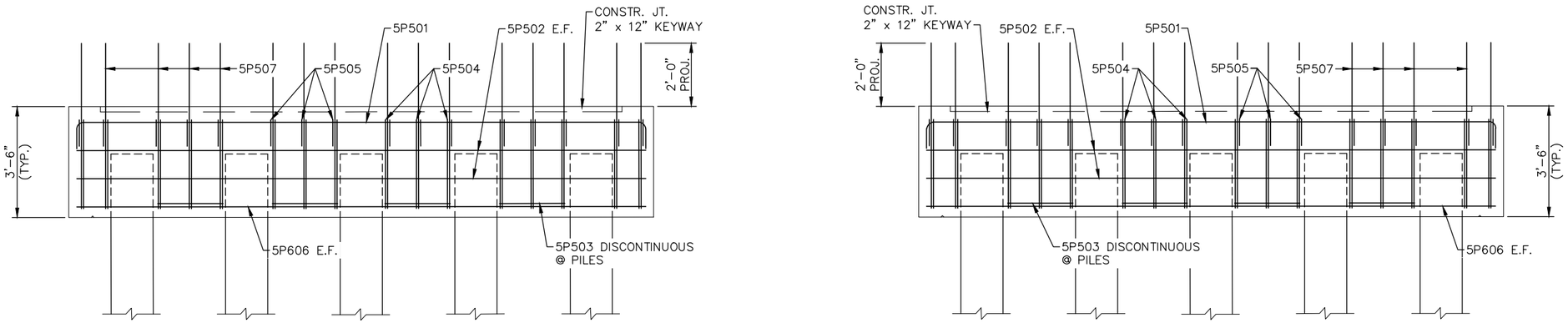
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-5

SHEET 45 OF 264

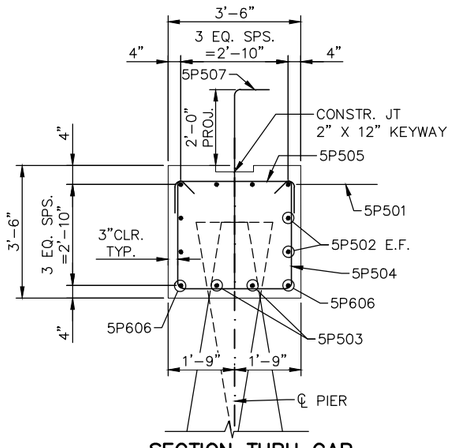
Jan, 17 2016 09:04 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



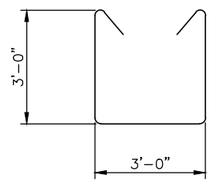
PIER 5 PLAN



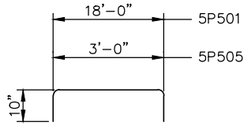
PIER 5 ELEVATION



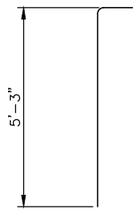
SECTION THRU CAP



5P504



5P501 & 5P505



5P507

BILL OF REINFORCEMENT
FOR PIER 5

BAR	NO.	LENGTH	SHAPE	LOCATION
5P501	8	19'-8"	⌐¬	PIER HORIZONTAL
5P502	8	18'-0"	——	PIER HORIZONTAL
5P503	16	2'-0"	——	PIER HORIZONTAL
5P504	32	9'-10"	⊔	PIER STIRRUP
5P505	32	4'-7"	⌐¬	PIER TIE
5P606	4	18'-0"	——	PIER HORIZONTAL
5P507	32	6'-1"	⌐¬	PIER TIE

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DESIGNED BY: EEM CHECKED BY: DDL
DRAWN BY: SBM CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

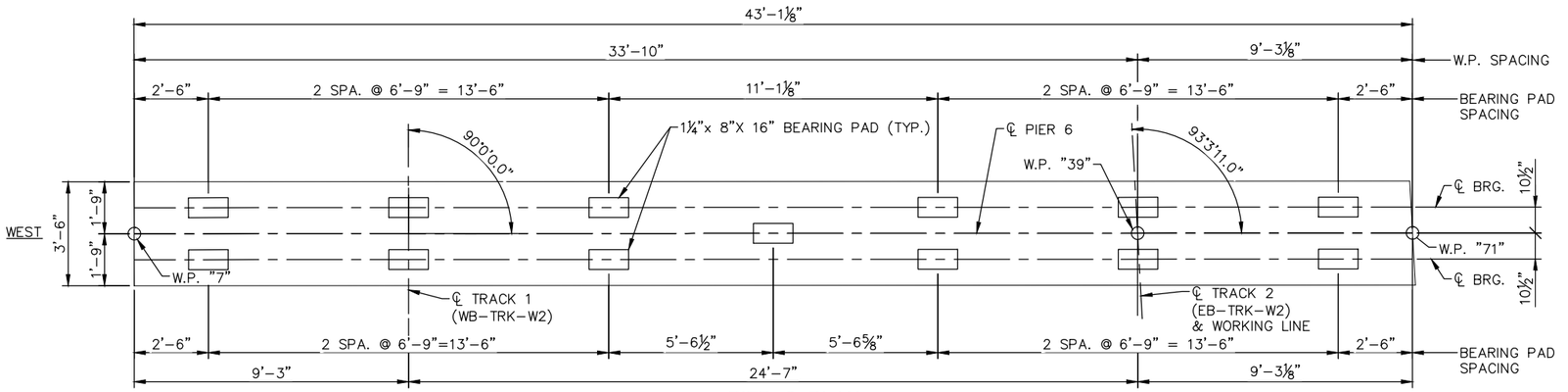
SOUTHWEST Green Line LRT Extension

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

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

SHEET 46 OF 264

Jan. 17 2016 09:04 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills



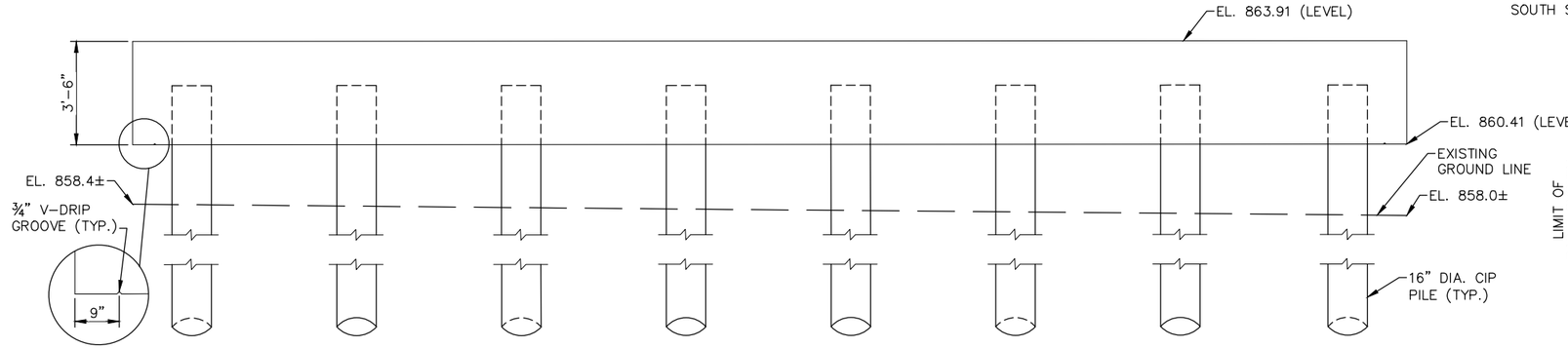
PIER 6 PLAN

PIER 6 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	114.2
PDA	0.65	87.8

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

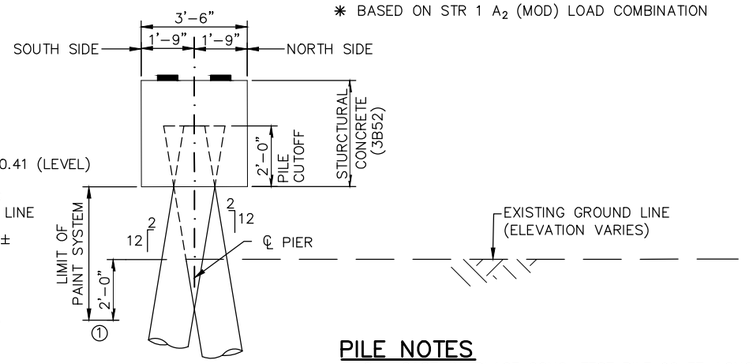
PIER 6 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	46.4
FACTORED LIVE LOAD	10.7
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	57.1

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

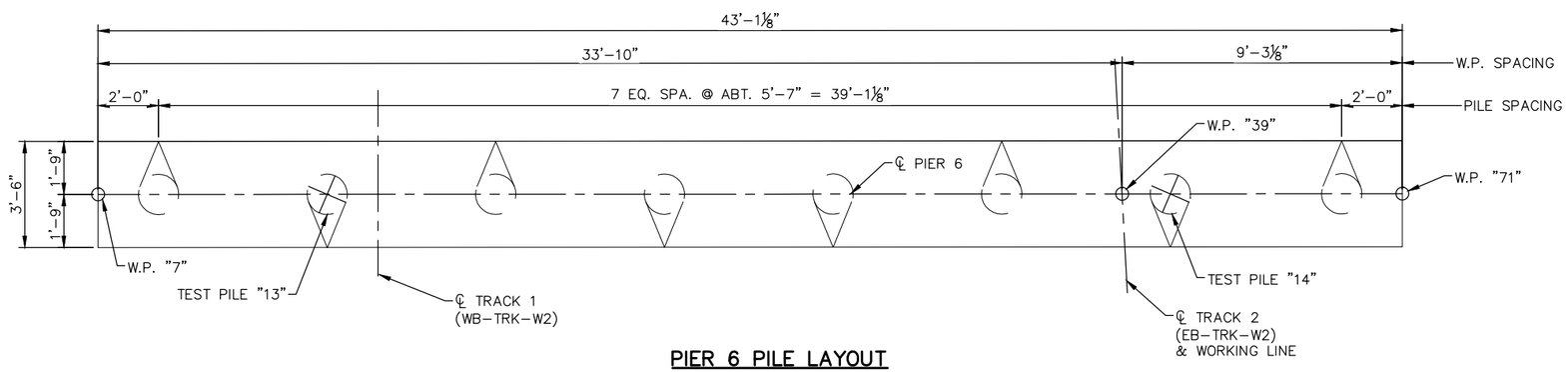


DETAIL A

PIER 6 ELEVATION



END VIEW



PIER 6 PILE LAYOUT

PILE NOTES

2 CAST-IN-PLACE CONC. TEST PILE 90 FT. LONG
6 CAST-IN-PLACE CONC. PILES EST. LENGTH 80 FT.
8 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 6.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

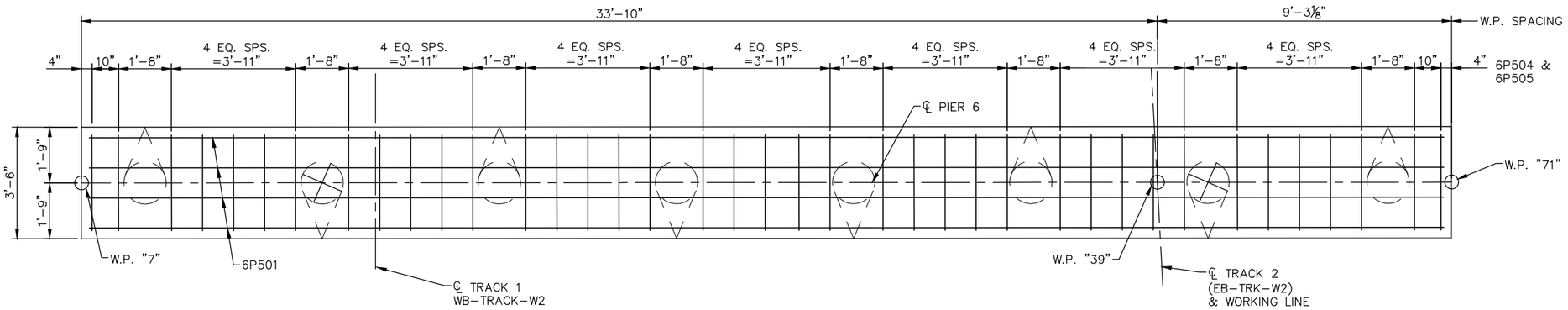
SOUTHWEST Green Line LRT Extension

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

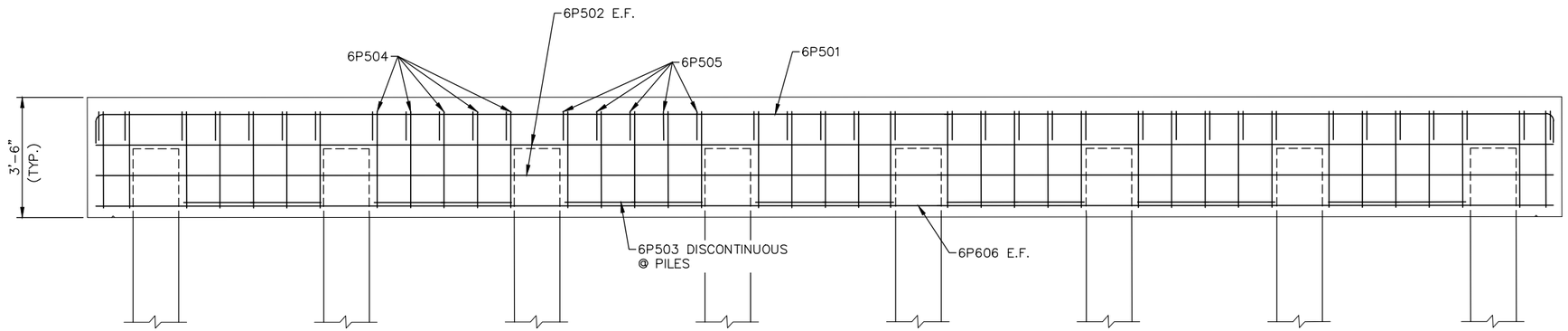
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-6

SHEET 47 OF 264

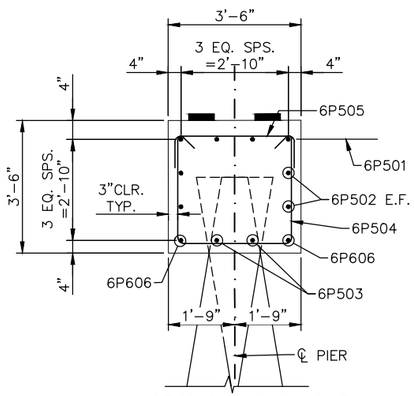
Jan, 17 2016 09:05 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



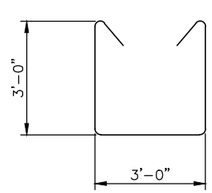
PIER 6 PLAN



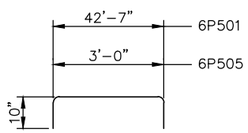
PIER 6 ELEVATION



SECTION THRU CAP



6P504



6P501 & 6P505

BILL OF REINFORCEMENT FOR PIER 9

BAR	NO.	LENGTH	SHAPE	LOCATION
9P501	4	37'-2"	⌐¬	PIER HORIZONTAL
9P502	4	35'-6"	——	PIER HORIZONTAL
9P503	12	3'-8"	——	PIER HORIZONTAL
9P504	34	9'-10"	⊓	PIER STIRRUP
9P505	34	4'-7"	⌐¬	PIER TIE
9P606	2	35'-6"	——	PIER HORIZONTAL

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

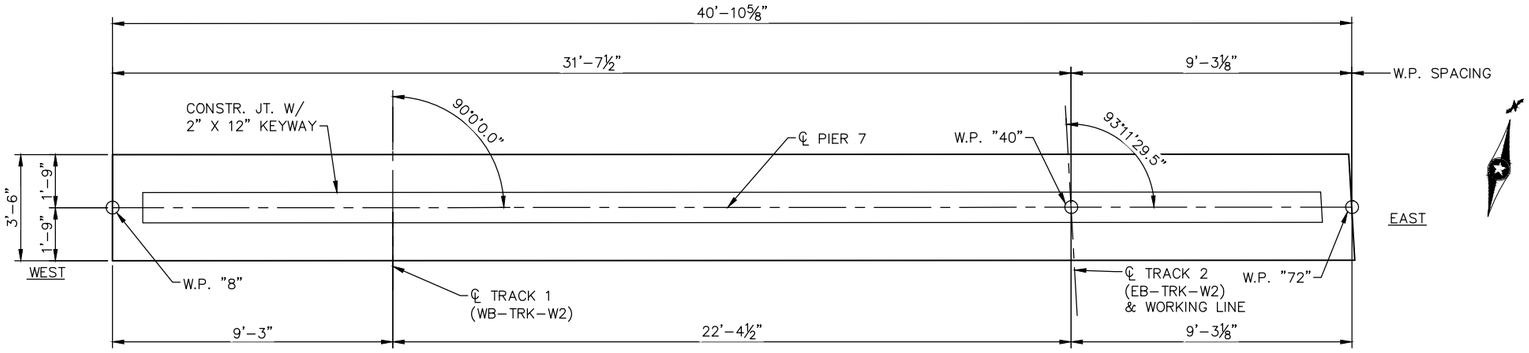
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

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

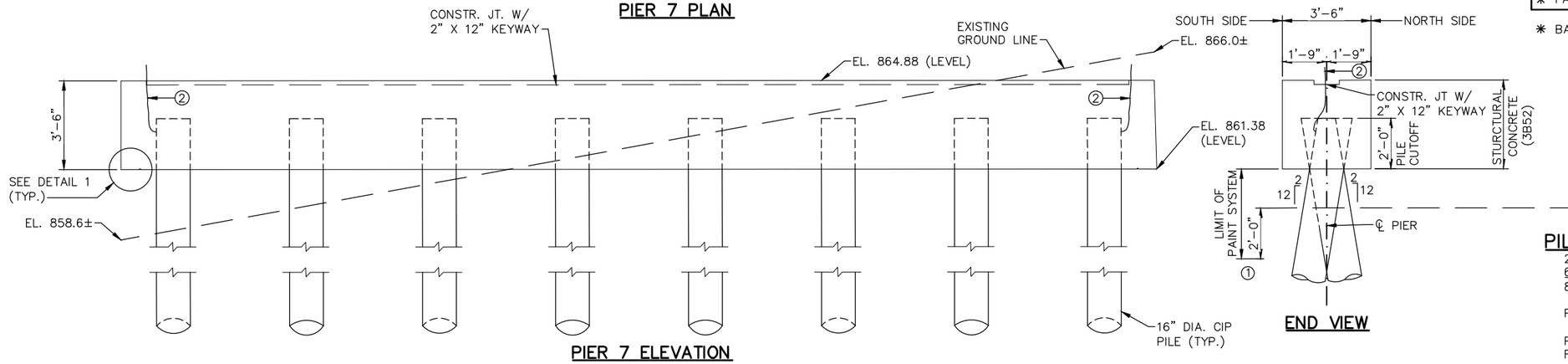
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_R-6

SHEET 48 OF 264

Jan, 17 2016 09:05 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills

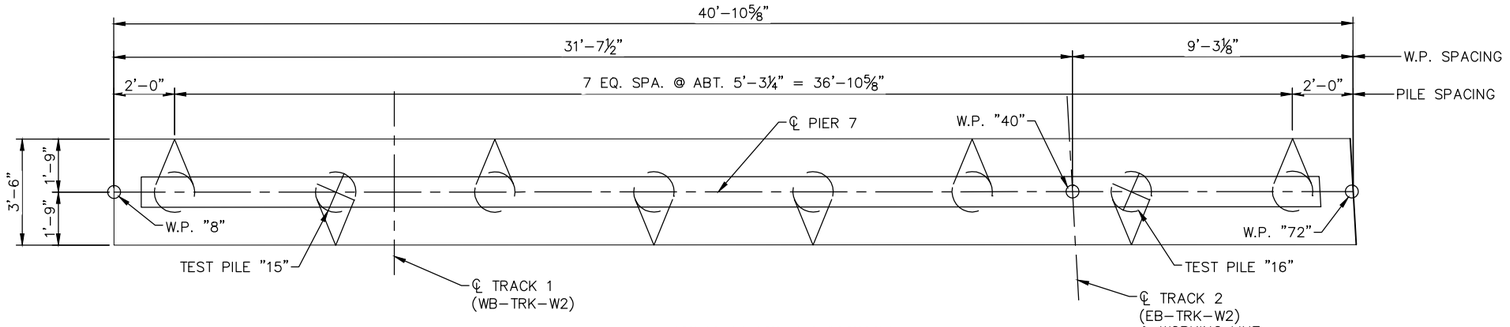


PIER 7 PLAN

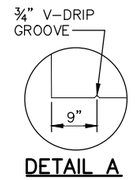


PIER 7 ELEVATION

END VIEW



PIER 7 PILE LAYOUT



DETAIL A

PIER 7
REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	182.4
PDA	0.65	140.3

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

PIER 7
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	72.8
FACTORED LIVE LOAD	18.4
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	91.2

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

2 CAST-IN-PLACE CONC. TEST PILE 90 FT. LONG
6 CAST-IN-PLACE CONC. PILES EST. LENGTH 80 FT.
8 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 7.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

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

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

(2) GROUND WIRE PLACED INSIDE 1" PVC CONDUIT. SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

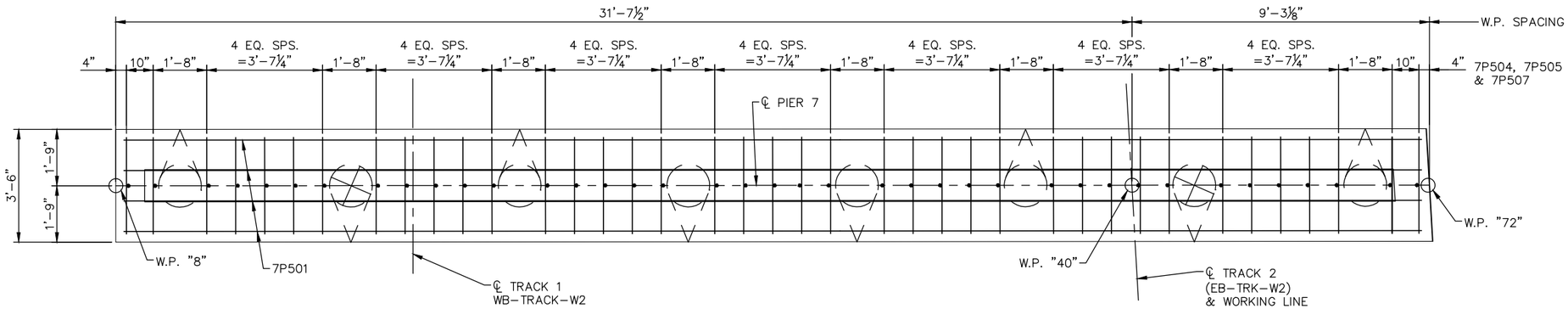
SOUTHWEST Green Line LRT Extension

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

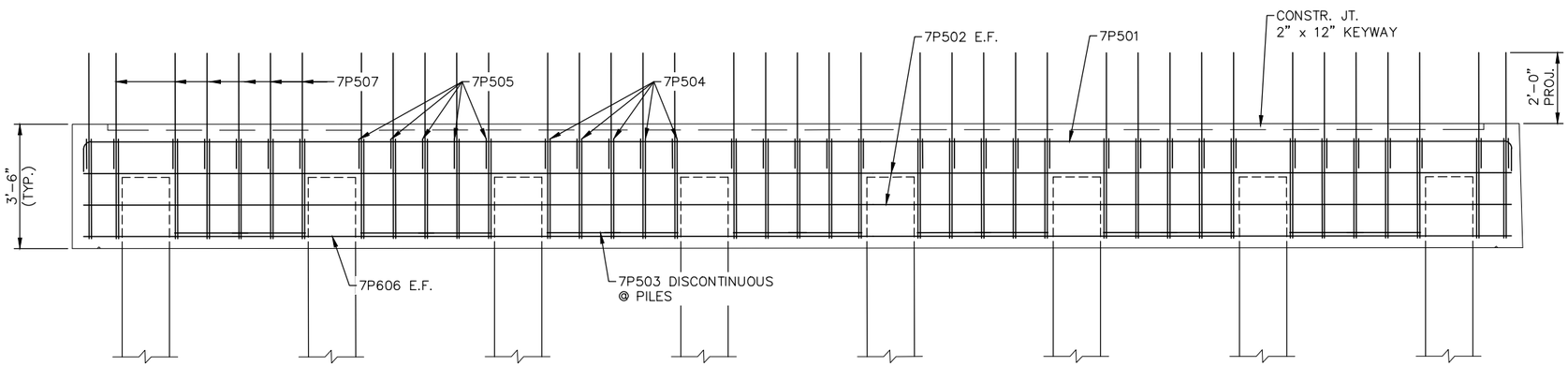
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-7

SHEET 49 OF 264

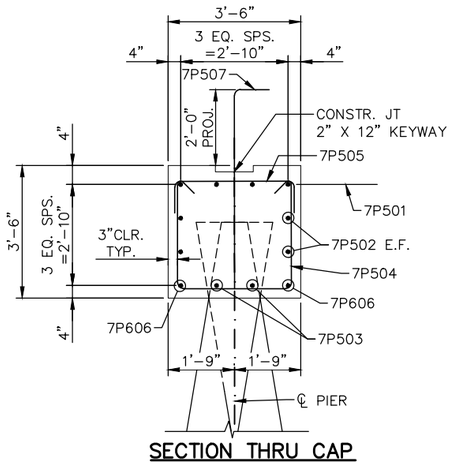
Jan, 17 2016 09:05 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



PIER 7 PLAN



PIER 7 ELEVATION



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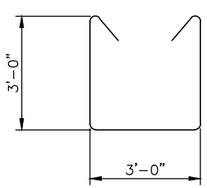
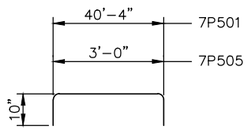
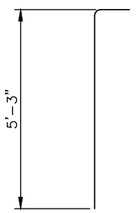


7P504



7P501 & 7P505



7P507

BILL OF REINFORCEMENT FOR PIER 7

BAR	NO.	LENGTH	SHAPE	LOCATION
7P501	4	42'-1"		PIER HORIZONTAL
7P502	4	40'-5"		PIER HORIZONTAL
7P503	14	3'-7"		PIER HORIZONTAL
7P504	39	9'-10"		PIER STIRRUP
7P505	39	4'-7"		PIER TIE
7P606	2	40'-4"		PIER HORIZONTAL
7P507	39	6'-1"		PIER TIE

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DRAWN BY: SBM CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

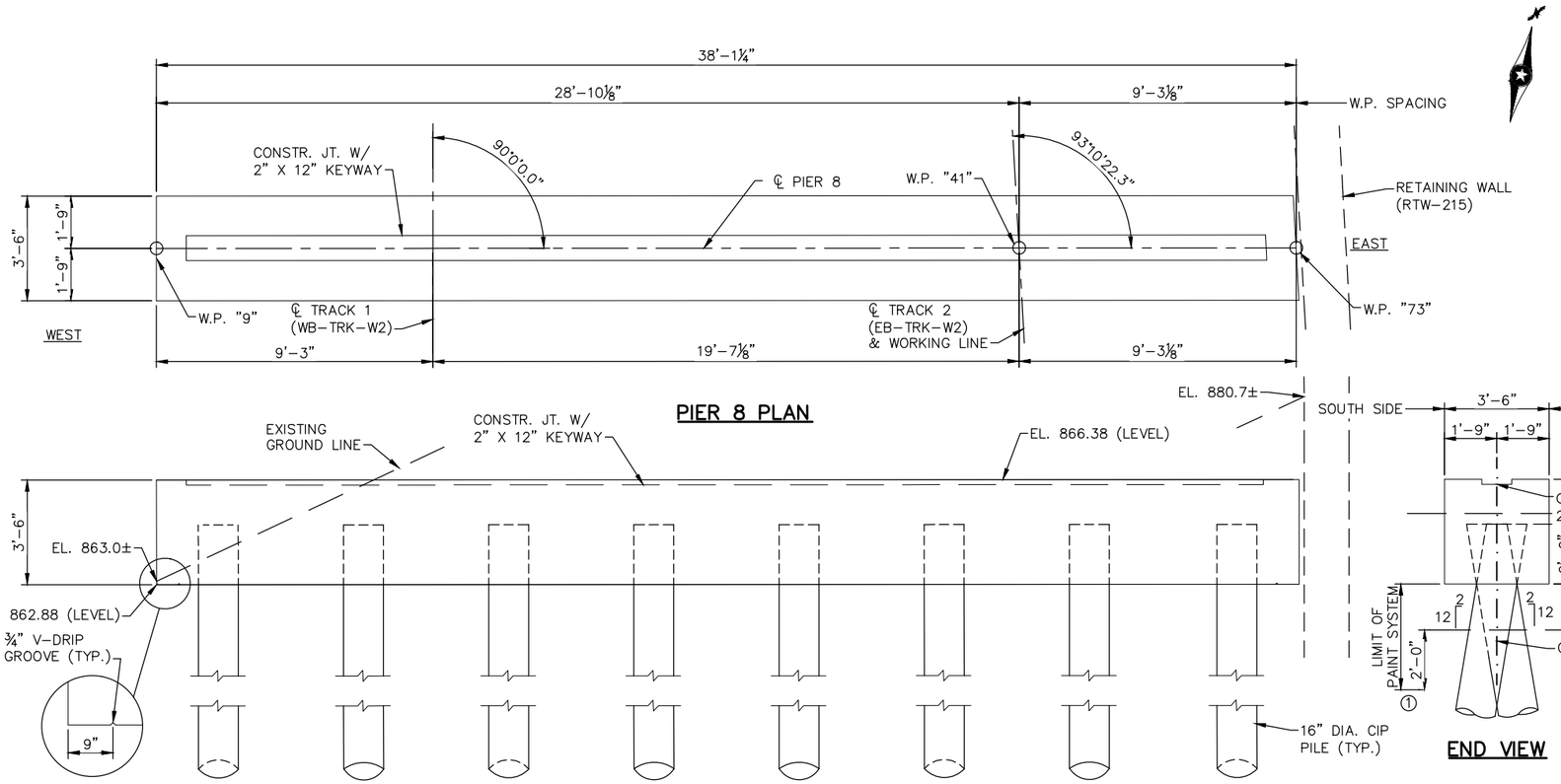
SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_R-7

SHEET 50 OF 264

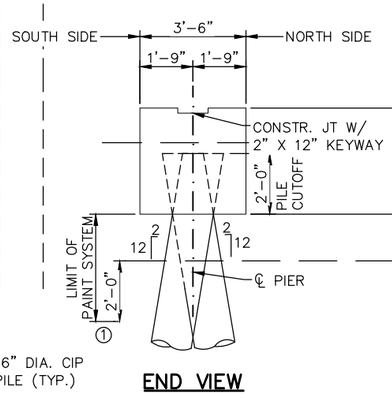
Jan, 17 2016 09:06 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills



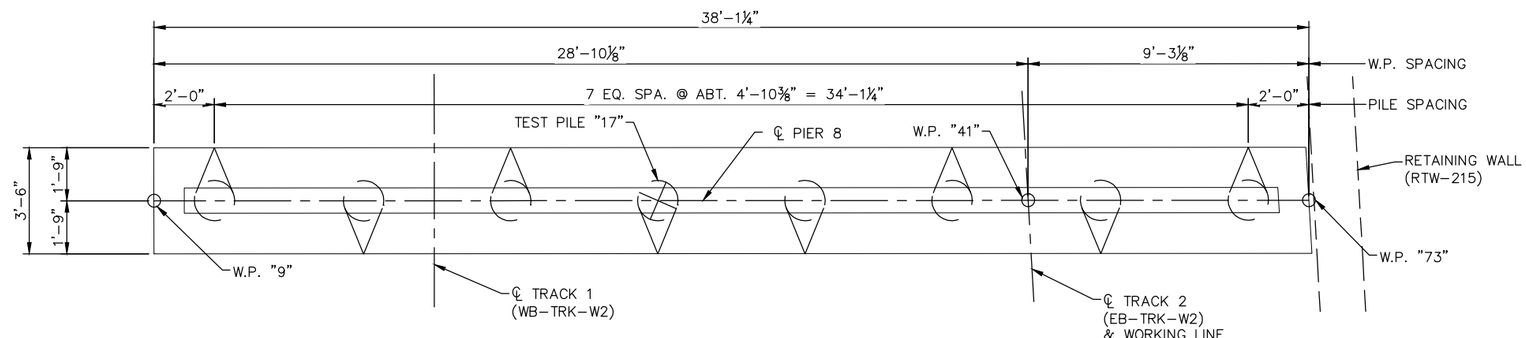
PIER 8 PLAN

DETAIL A

PIER 8 ELEVATION



END VIEW



PIER 8 PILE LAYOUT

PIER 8
REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	173.0
PDA	0.65	133.1

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

PIER 8
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	67.8
FACTORED LIVE LOAD	18.7
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	86.5

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

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

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

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DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

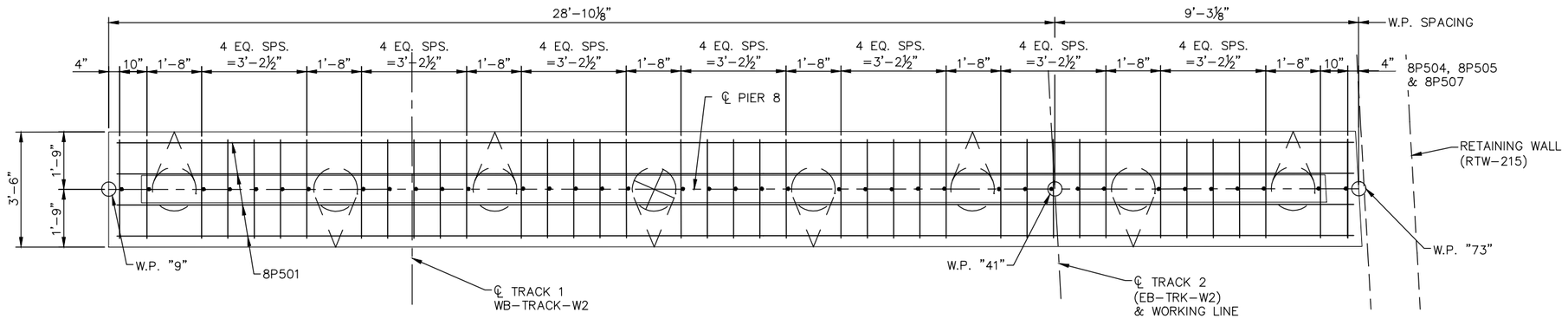
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

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

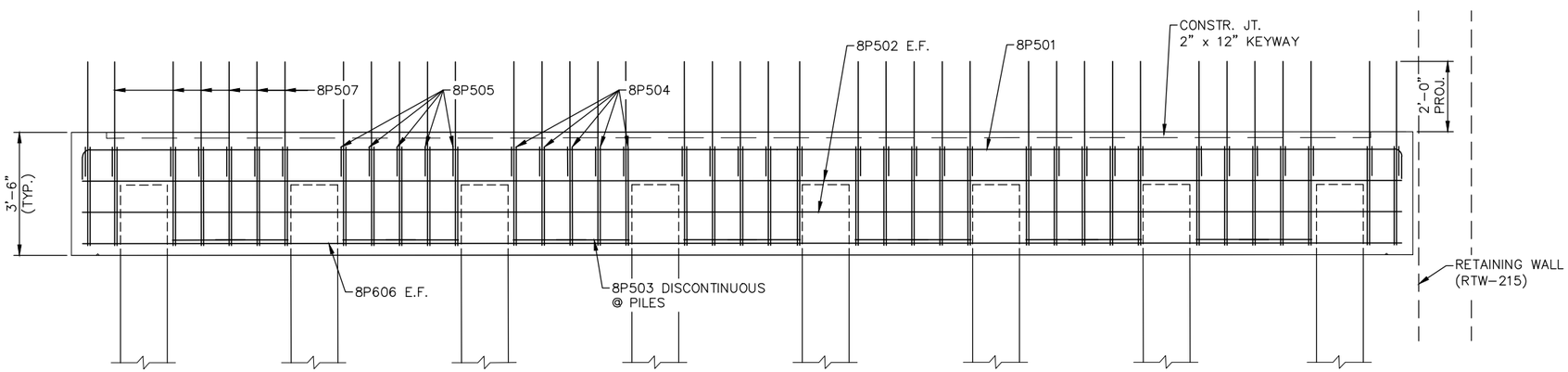
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-8

SHEET 51 OF 264

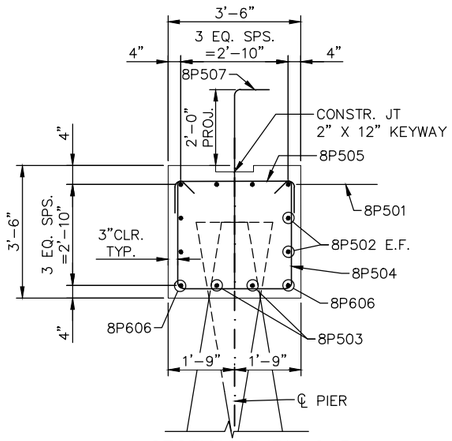
Jan, 17 2016 09:06 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



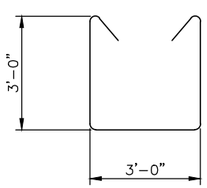
PIER 8 PLAN



PIER 8 ELEVATION



SECTION THRU CAP



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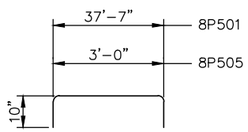
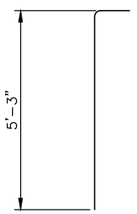


8P501 & 8P505



8P507

BILL OF REINFORCEMENT FOR PIER 8

BAR	NO.	LENGTH	SHAPE	LOCATION
8P501	4	39'-3"		PIER HORIZONTAL
8P502	4	37'-7"		PIER HORIZONTAL
8P503	14	3'-2"		PIER HORIZONTAL
8P504	39	9'-10"		PIER STIRRUP
8P505	39	4'-7"		PIER TIE
8P606	2	37'-7"		PIER HORIZONTAL
8P507	39	6'-1"		PIER TIE

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DESIGNED BY: EEM CHECKED BY: DDL
DRAWN BY: SBM CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

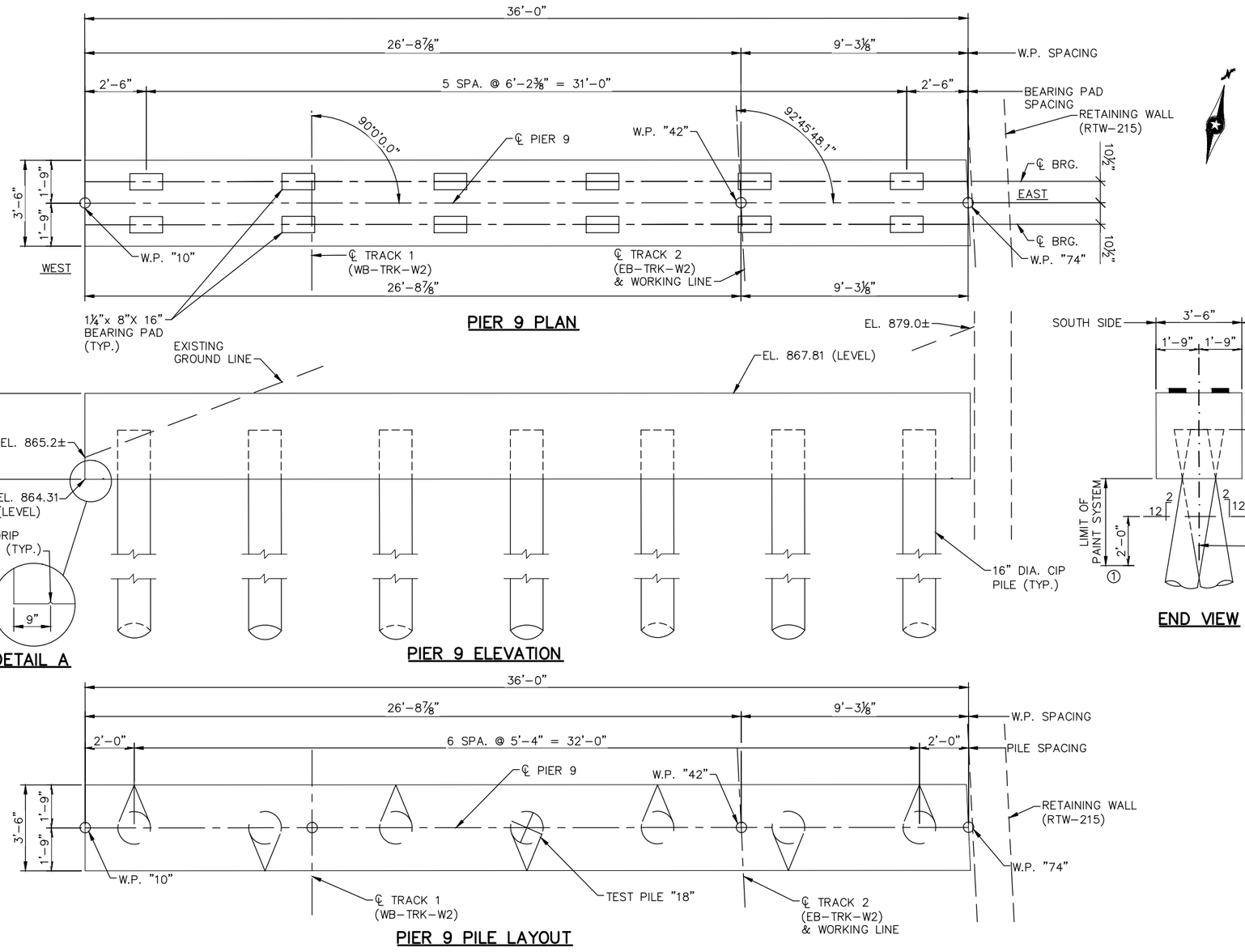
SOUTHWEST Green Line LRT Extension

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

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

SHEET 52 OF 264

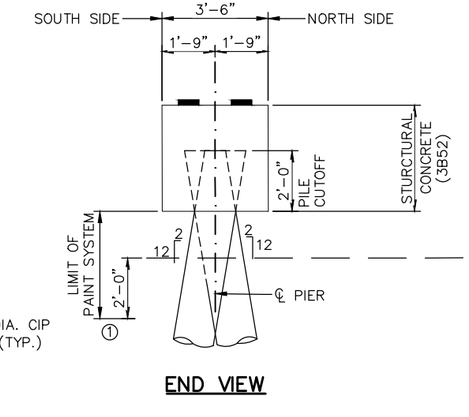
Jan, 17 2016 09:07 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills



PIER 9 PLAN

DETAIL A

PIER 9 ELEVATION



END VIEW

PIER 9 PILE LAYOUT

PIER 9
REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	122.2
PDA	0.65	94.0

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

PIER 9
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	45.8
FACTORED LIVE LOAD	15.3
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	61.1

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

1 CAST-IN-PLACE CONC. TEST PILE 70 FT. LONG
6 CAST-IN-PLACE CONC. PILES EST. LENGTH 60 FT.
7 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 9.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

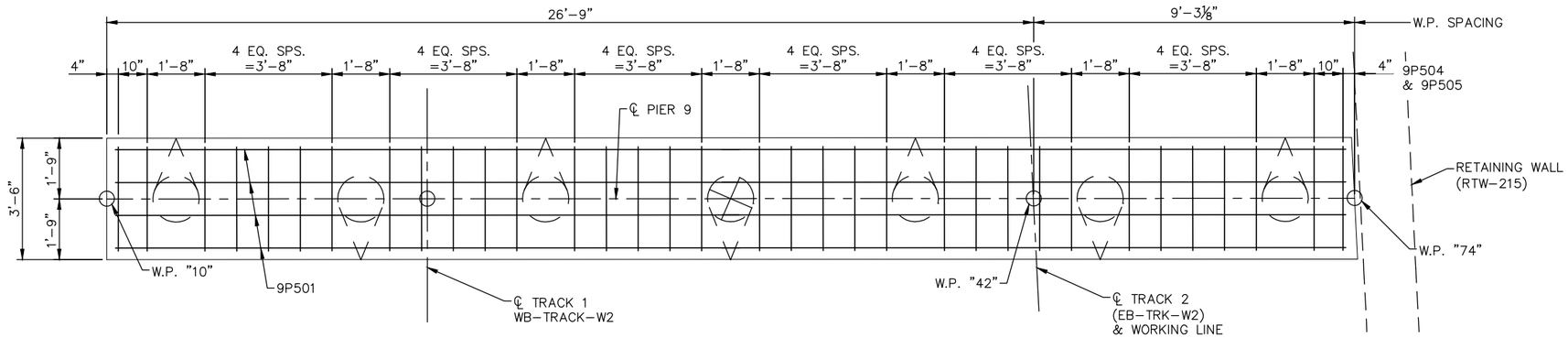
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 9 DETAILS

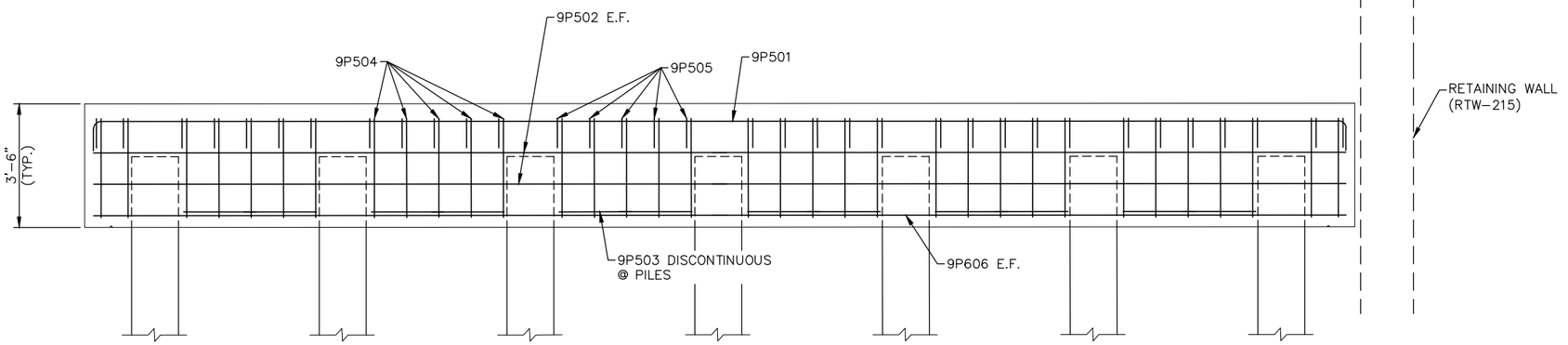
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-9

SHEET 53 OF 264

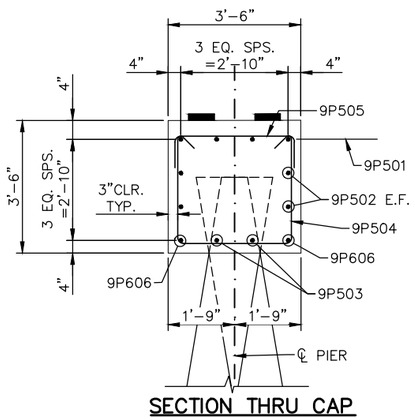
Jan, 17 2016 09:07 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



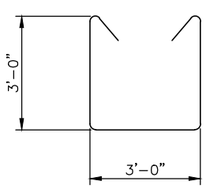
PIER 9 PLAN



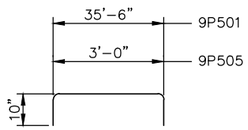
PIER 9 ELEVATION



SECTION THRU CAP



9P504



9P501 & 9P505

BILL OF REINFORCEMENT
FOR PIER 9

BAR	NO.	LENGTH	SHAPE	LOCATION
9P501	4	37'-2"	⌐¬	PIER HORIZONTAL
9P502	4	35'-6"	——	PIER HORIZONTAL
9P503	12	3'-8"	——	PIER HORIZONTAL
9P504	34	9'-10"	⌐¬	PIER STIRRUP
9P505	34	4'-7"	⌐¬	PIER TIE
9P606	2	35'-6"	——	PIER HORIZONTAL

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DESIGNED BY: EEM CHECKED BY: DDL
DRAWN BY: SBM CHECKED BY: DDL

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

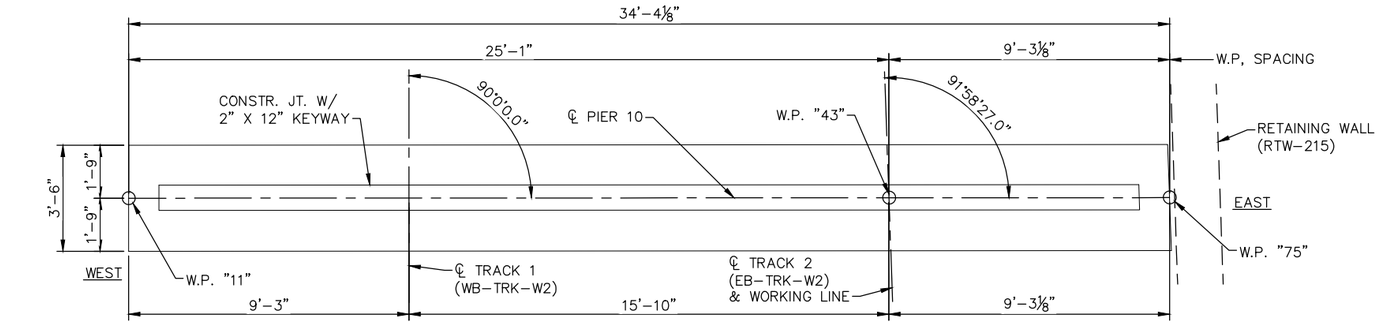
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 9 REINFORCEMENT

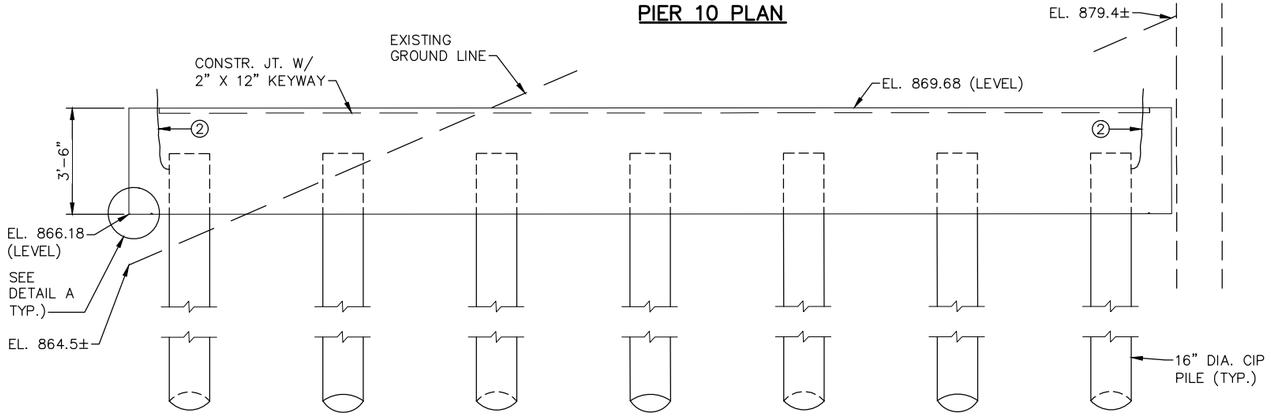
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_R-9

SHEET 54 OF 264

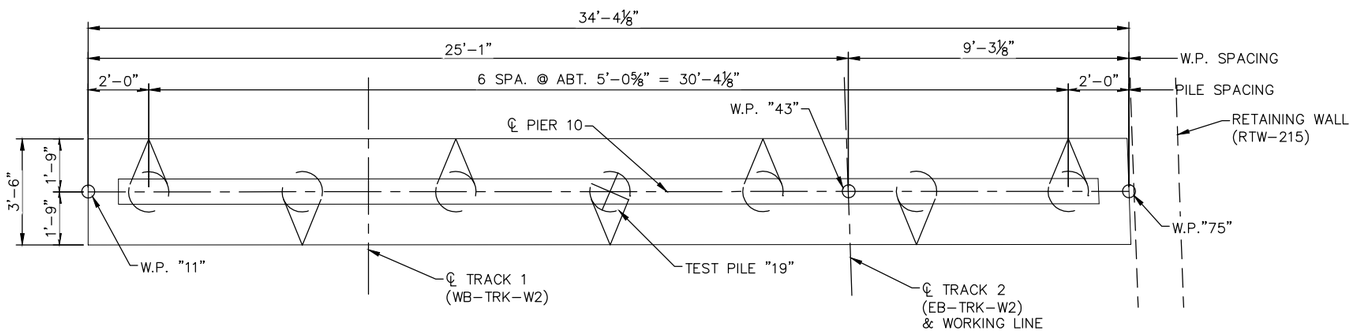
Jan, 17 2016 09:07 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills



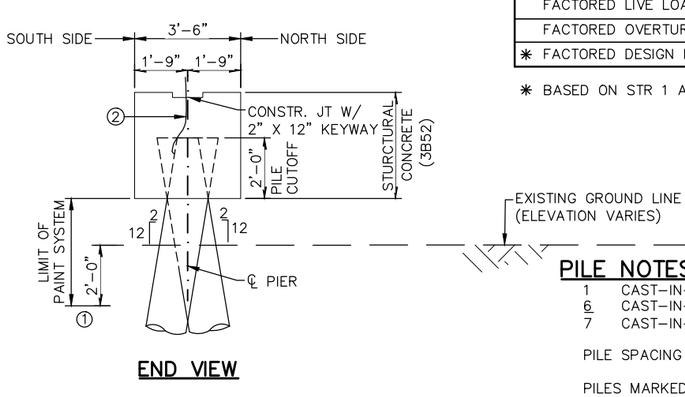
PIER 10 PLAN



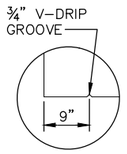
PIER 10 ELEVATION



PIER 10 PILE LAYOUT



END VIEW



DETAIL A

PIER 10
REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	181.8
PDA	0.65	139.8

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

PIER 10
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	69.9
FACTORED LIVE LOAD	21.0
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	90.9

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

1 CAST-IN-PLACE CONC. TEST PILE 75 FT. LONG
6 CAST-IN-PLACE CONC. PILES EST. LENGTH 65 FT.
7 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 10.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

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

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

(2) GROUND WIRE PLACED INSIDE 1" PVC CONDUIT. SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

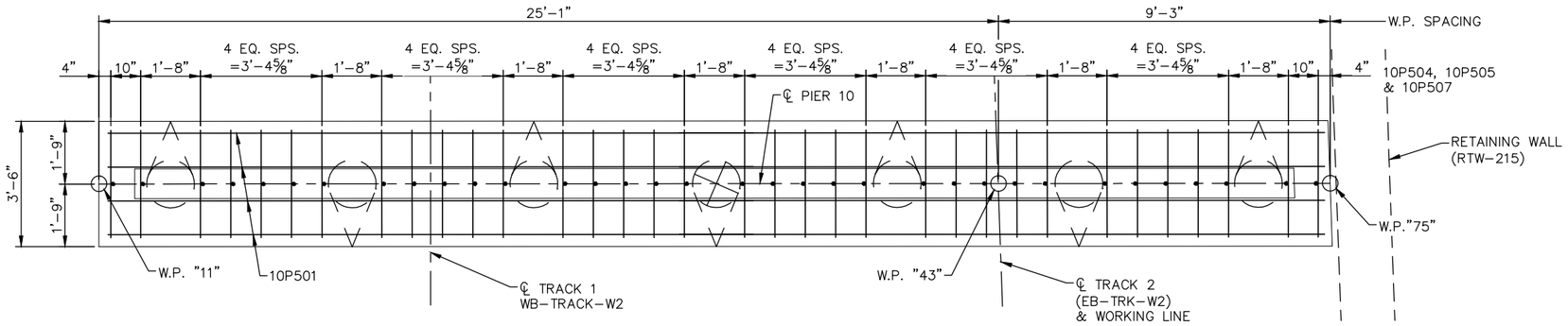
SOUTHWEST Green Line LRT Extension

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

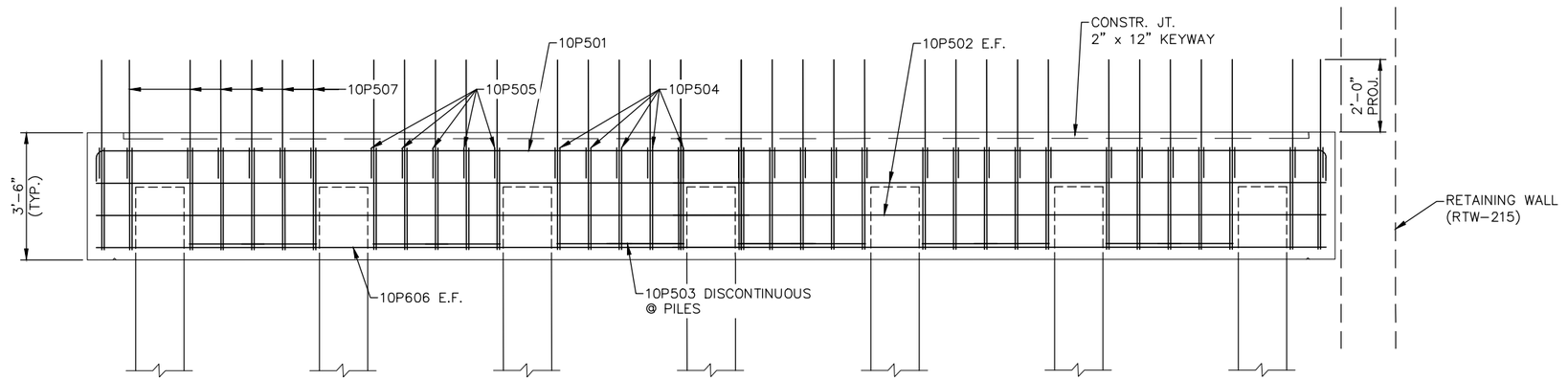
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-10

SHEET 55 OF 264

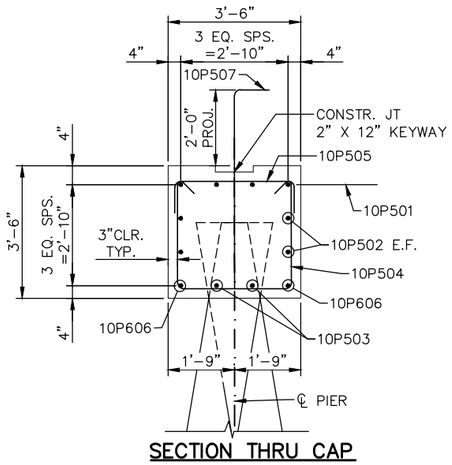
Jan, 17 2016 09:08 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



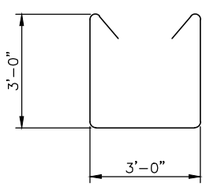
PIER 10 PLAN



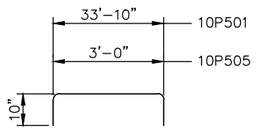
PIER 10 ELEVATION



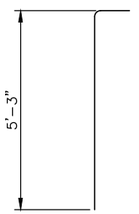
SECTION THRU CAP



10P504



10P501 & 10P505



10P507

BILL OF REINFORCEMENT FOR PIER 10

BAR	NO.	LENGTH	SHAPE	LOCATION
10P501	4	35'-6"	⌐¬	PIER HORIZONTAL
10P502	4	33'-10"	——	PIER HORIZONTAL
10P503	12	3'-4"	——	PIER HORIZONTAL
10P504	34	9'-10"	⊓	PIER STIRRUP
10P505	34	4'-7"	⌐¬	PIER TIE
10P606	2	33'-10"	——	PIER HORIZONTAL
10P507	34	6'-1"	⌐¬	PIER TIE

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DESIGNED BY: EEM CHECKED BY: DDL
DRAWN BY: SBM CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

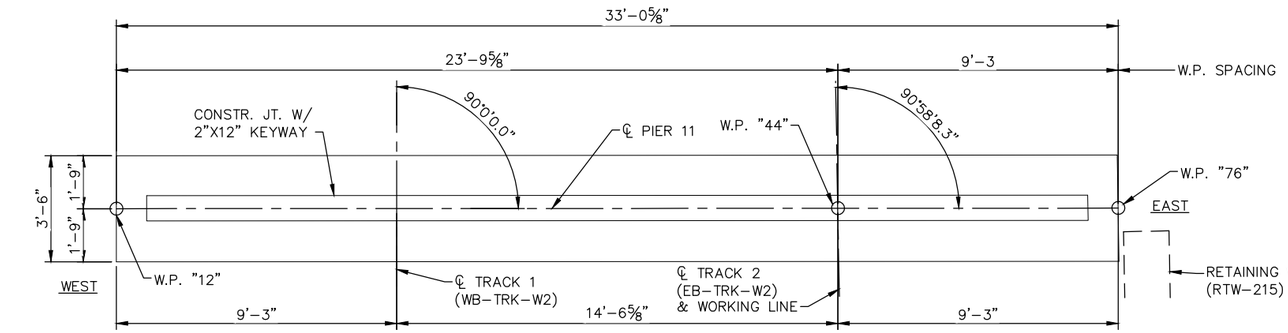
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 10 REINFORCEMENT

DISCIPLINE: STRUCTURES

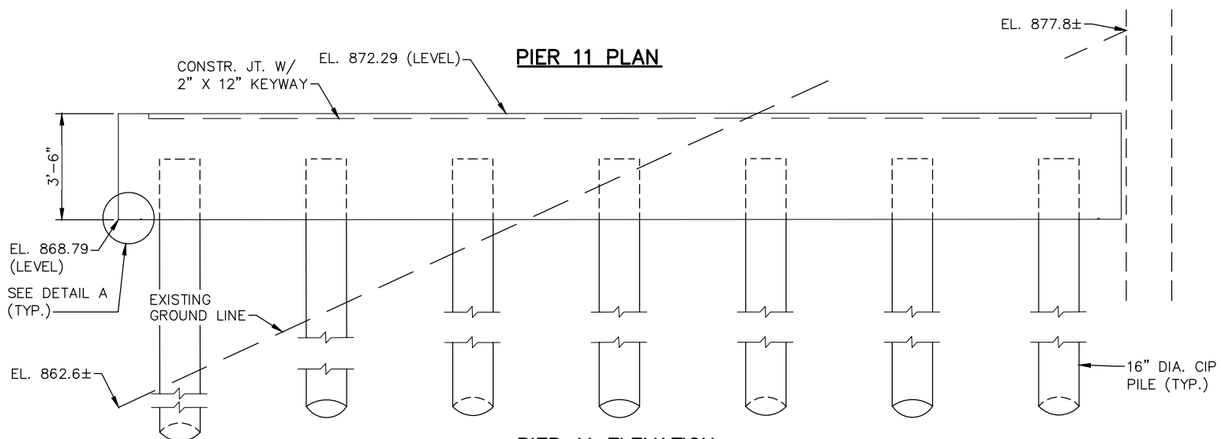
SHEET NAME: W2-STU-BRID-T212-PIER_R-10

SHEET 56 OF 264

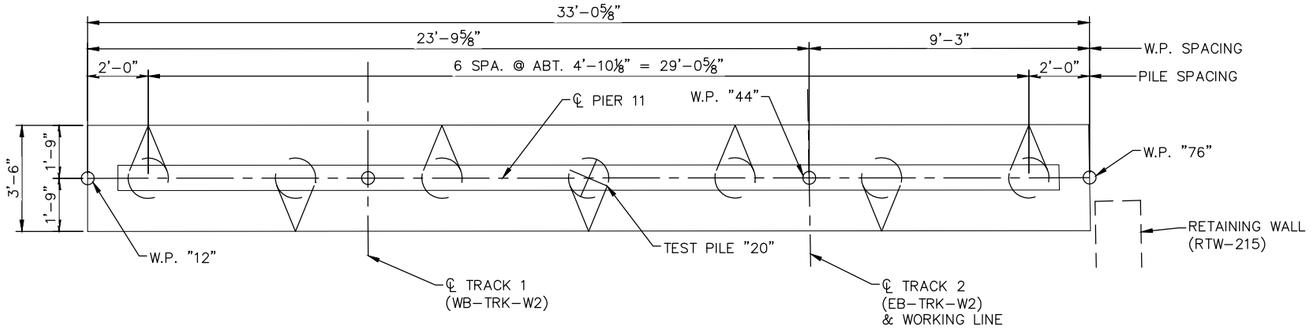
Jan, 17 2016 09:08 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills



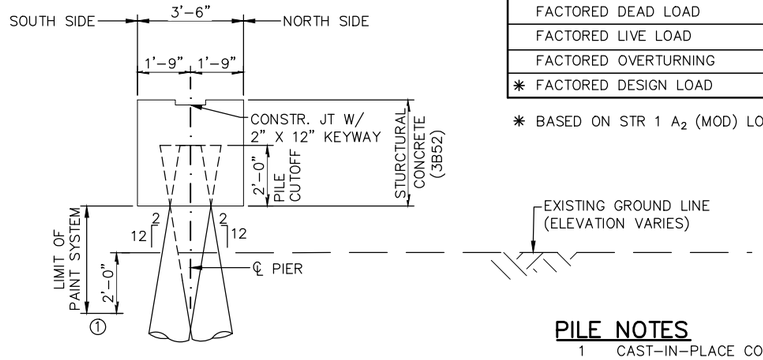
PIER 11 PLAN



PIER 11 ELEVATION



PIER 11 PILE LAYOUT



END VIEW

PIER 11 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	177.0
PDA	0.65	136.2

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

PIER 11 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	67.2
FACTORED LIVE LOAD	21.3
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	88.5

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

1 CAST-IN-PLACE CONC. TEST PILE 75 FT. LONG
6 CAST-IN-PLACE CONC. PILES EST. LENGTH 65 FT.
7 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 11.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

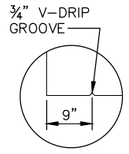
NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.



DETAIL A

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: DDL | CHECKED BY: EEM
DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

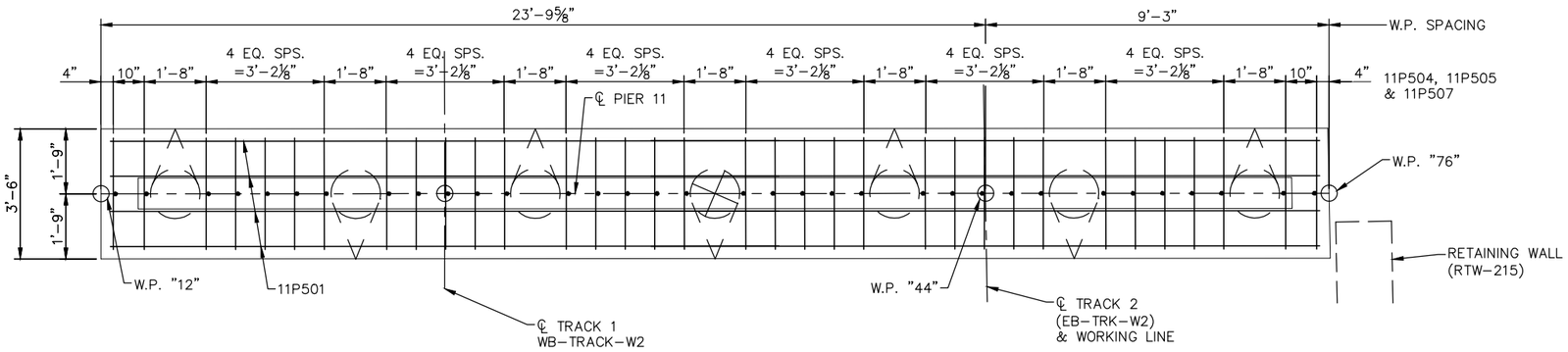
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 11 DETAILS

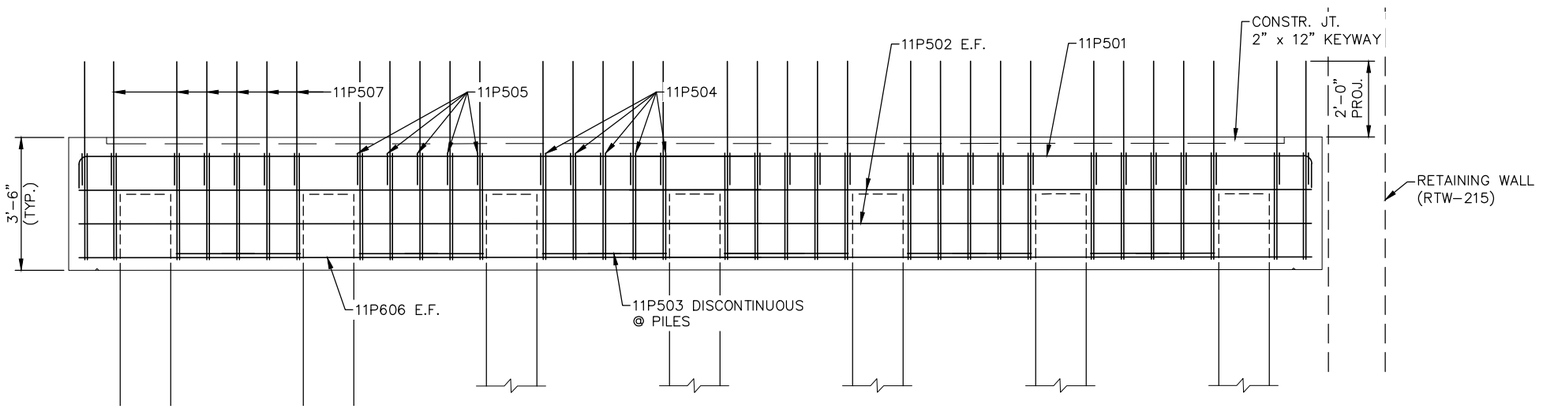
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-11

SHEET 57 OF 264

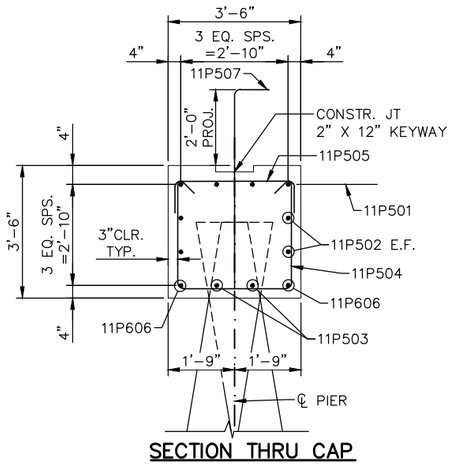
Jan, 17 2016 09:08 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



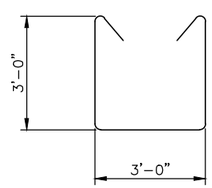
PIER 11 PLAN



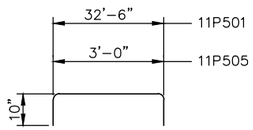
PIER 11 ELEVATION



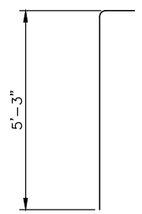
SECTION THRU CAP



11P504



11P501 & 11P505



11P507

BILL OF REINFORCEMENT FOR PIER 11

BAR	NO.	LENGTH	SHAPE	LOCATION
11P501	4	34'-3"		PIER HORIZONTAL
11P502	4	32'-7"		PIER HORIZONTAL
11P503	12	3'-2"		PIER HORIZONTAL
11P504	34	9'-10"		PIER STIRRUP
11P505	34	4'-7"		PIER TIE
11P606	2	32'-6"		PIER HORIZONTAL
11P507	34	6'-1"		PIER TIE

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DESIGNED BY: EEM CHECKED BY: DDL
DRAWN BY: SBM CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

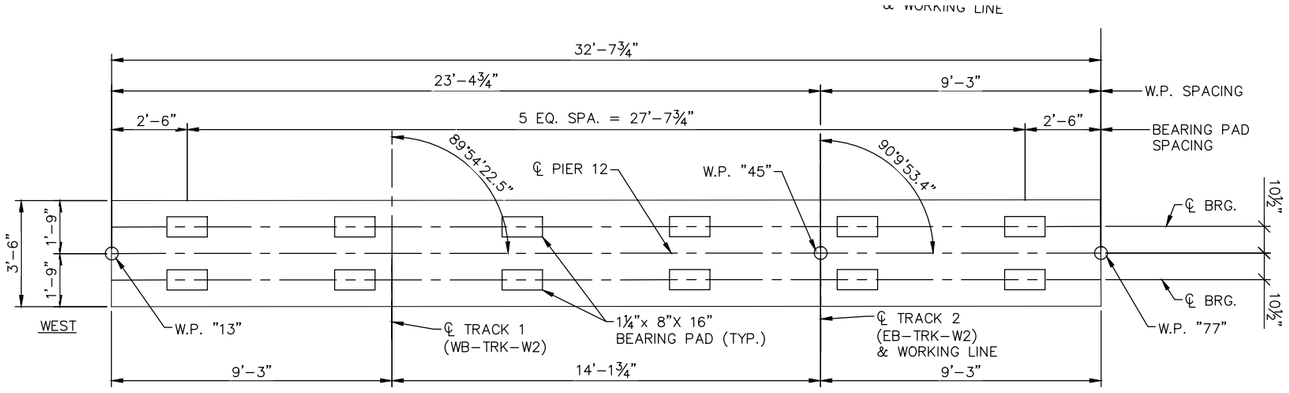
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 11 REINFORCEMENT

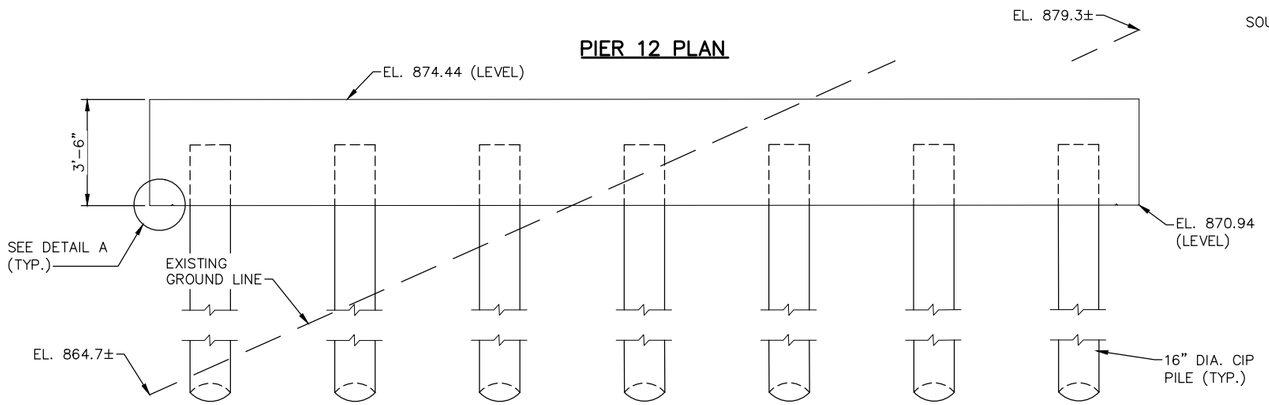
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_R-11

SHEET 58 OF 264

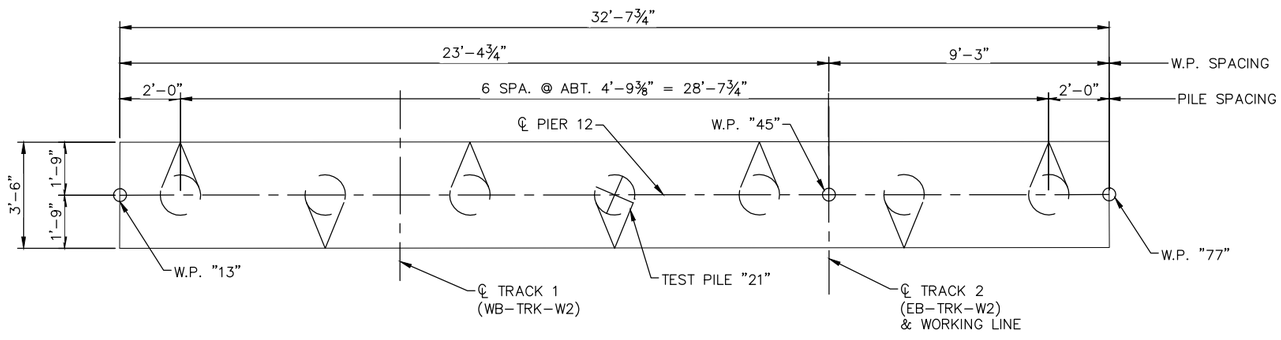
Jan, 17 2016 09:09 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills



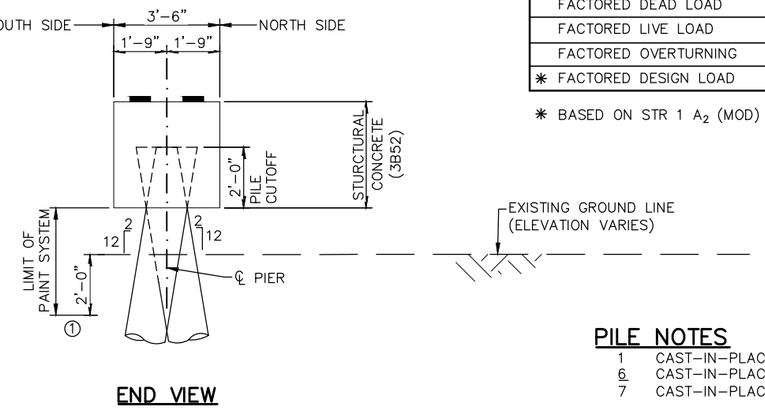
PIER 12 PLAN



PIER 12 ELEVATION



PIER 12 PILE LAYOUT



END VIEW

PIER 12 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	113.6
PDA	0.65	87.4

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

PIER 12 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	41.6
FACTORED LIVE LOAD	15.2
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	56.8

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

1 CAST-IN-PLACE CONC. TEST PILE 75 FT. LONG
6 CAST-IN-PLACE CONC. PILES EST. LENGTH 65 FT.
7 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 12.

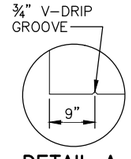
PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.



DETAIL A

NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

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DESIGNED BY: DDL CHECKED BY: EEM
DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

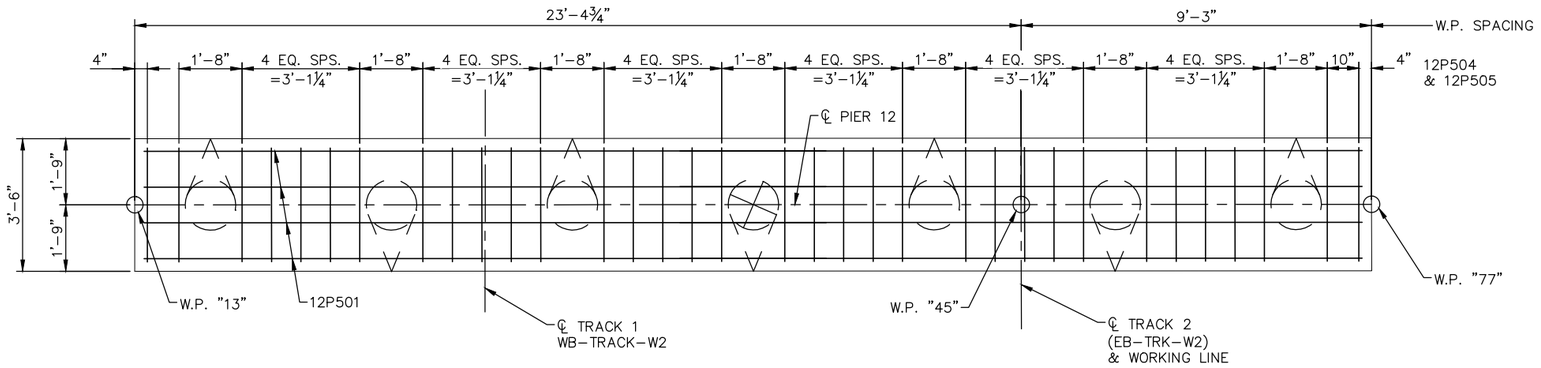
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 12 DETAILS

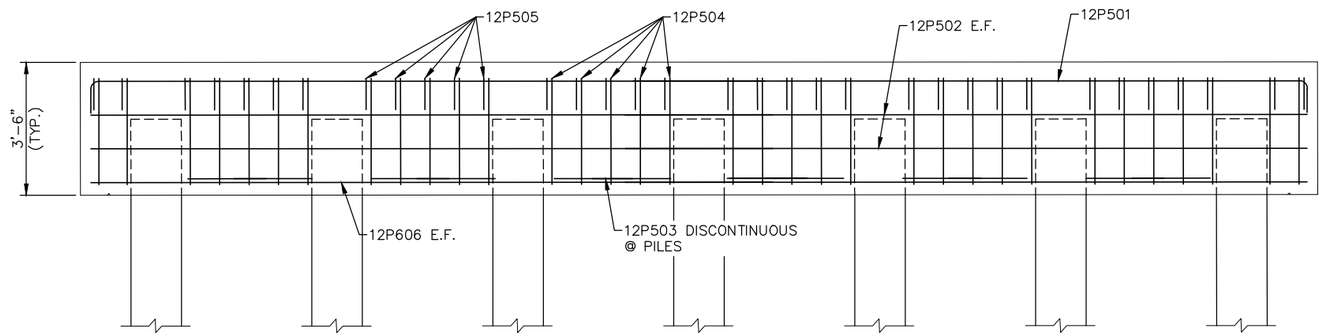
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-12

SHEET 59 OF 264

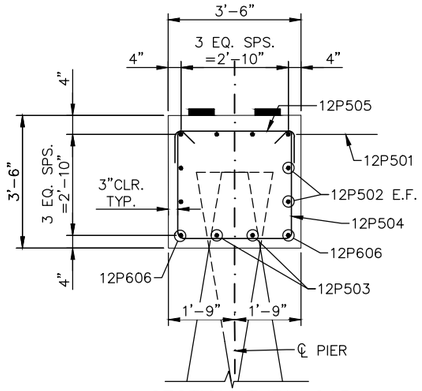
Jan, 17 2016 09:09 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



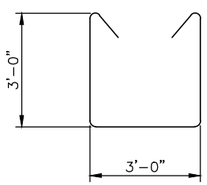
PIER 12 PLAN



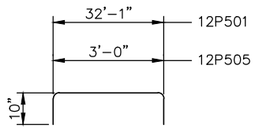
PIER 12 ELEVATION



SECTION THRU CAP



12P504



12P501 & 12P505

BILL OF REINFORCEMENT
FOR PIER 12

BAR	NO.	LENGTH	SHAPE	LOCATION
12P501	4	33'-9"	⊓	PIER HORIZONTAL
12P502	4	32'-2"	———	PIER HORIZONTAL
12P503	12	3'-1"	———	PIER HORIZONTAL
12P504	34	9'-10"	⊔	PIER STIRRUP
12P505	34	4'-7"	⊓	PIER TIE
12P606	2	32'-1"	———	PIER HORIZONTAL

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DESIGNED BY: EEM CHECKED BY: DDL
DRAWN BY: SBM CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

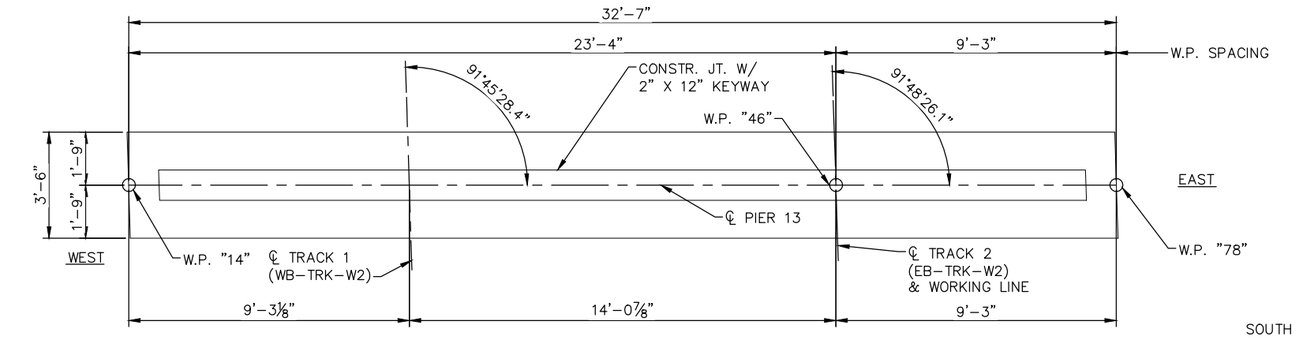
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 12 REINFORCEMENT

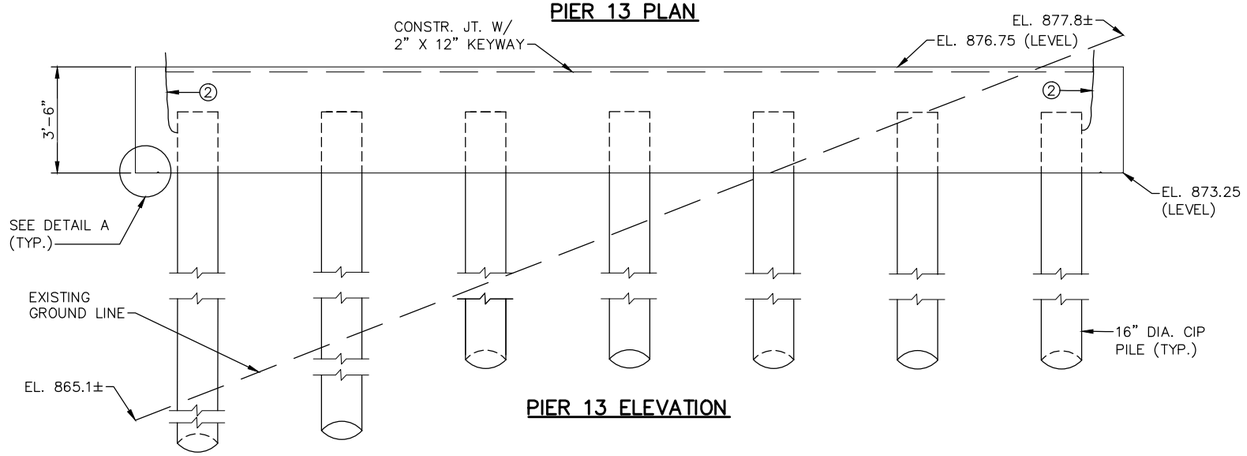
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_R-12

SHEET 60 OF 264

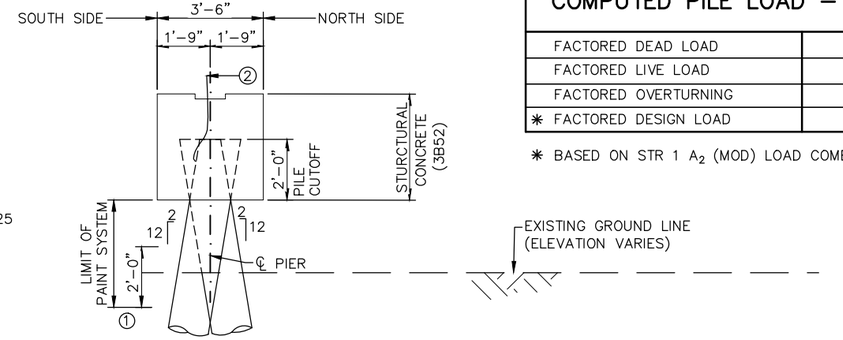
Jan, 17 2016 09:10 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills



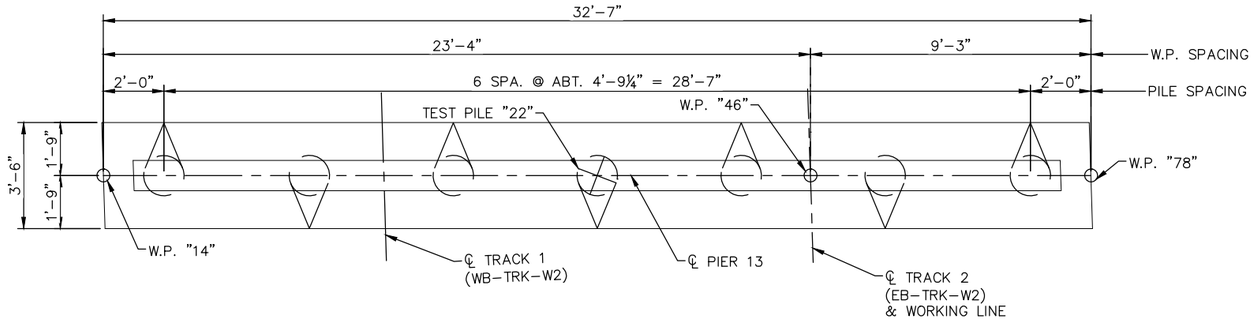
PIER 13 PLAN



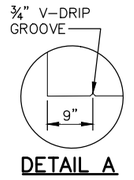
PIER 13 ELEVATION



END VIEW



PIER 13 PILE LAYOUT



DETAIL A

PIER 13
REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	174.8
PDA	0.65	134.5

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

PIER 13
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	66.3
FACTORED LIVE LOAD	21.1
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	87.4

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

1 CAST-IN-PLACE CONC. TEST PILE 70 FT. LONG
6 CAST-IN-PLACE CONC. PILES EST. LENGTH 60 FT.
7 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 13.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

② GROUND WIRE PLACED INSIDE 1" PVC CONDUIT. SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600

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DESIGNED BY: DDL | CHECKED BY: EEM
DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

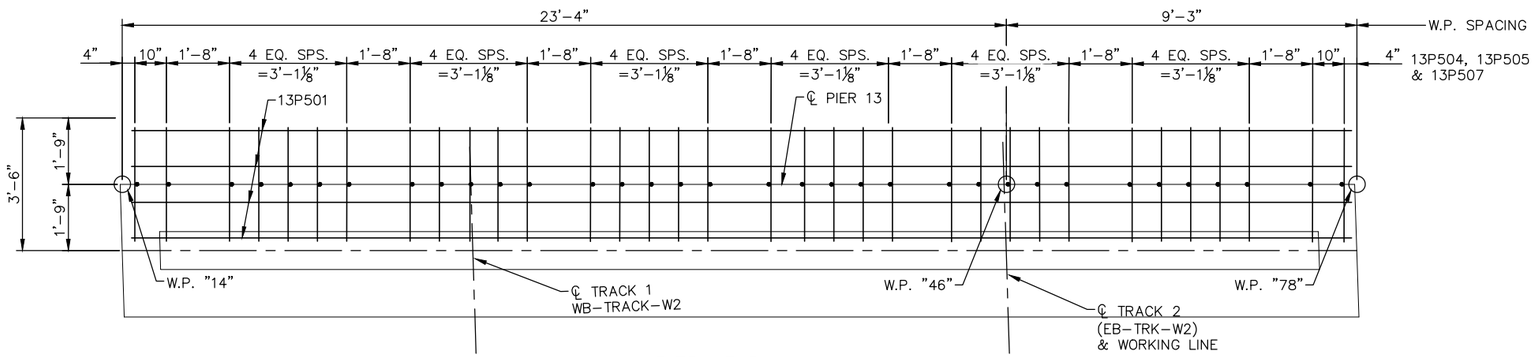
SOUTHWEST Green Line LRT Extension

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

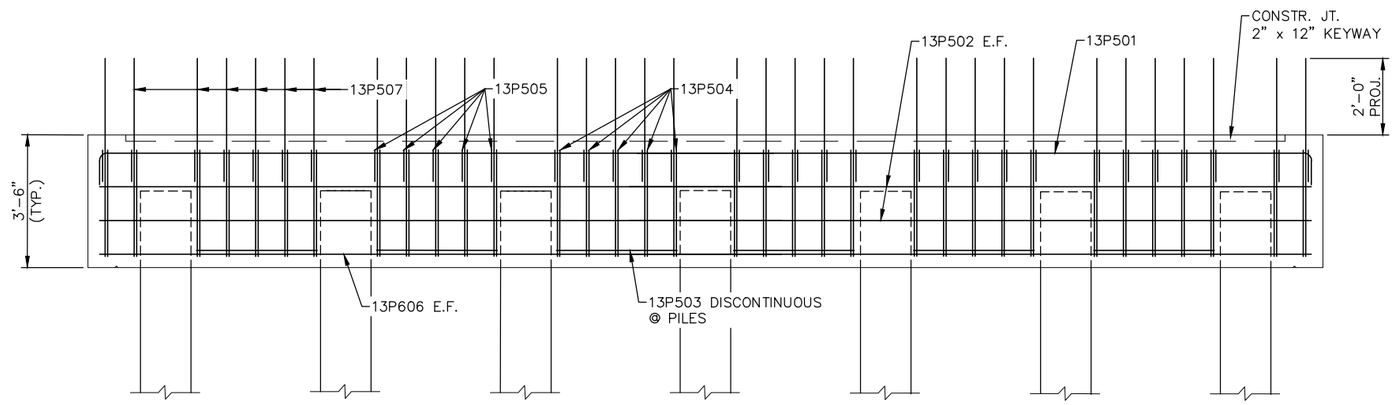
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-13

SHEET 61 OF 264

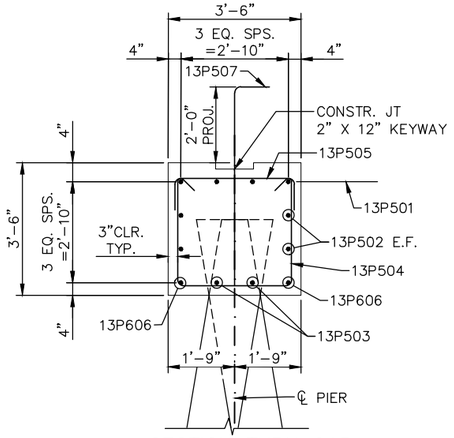
Jan. 17 2016 09:10 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



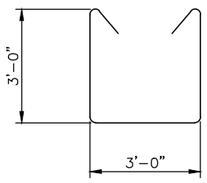
PIER 13 PLAN



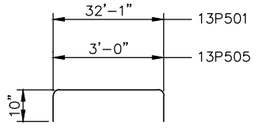
PIER 13 ELEVATION



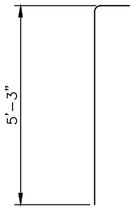
SECTION THRU CAP



13P504



13P501 & 13P505



13P507

BILL OF REINFORCEMENT FOR PIER 13

BAR	NO.	LENGTH	SHAPE	LOCATION
13P501	4	33'-9"		PIER HORIZONTAL
13P502	4	32'-1"		PIER HORIZONTAL
13P503	12	3'-1"		PIER HORIZONTAL
13P504	34	9'-10"		PIER STIRRUP
13P505	34	4'-7"		PIER TIE
13P606	2	32'-1"		PIER HORIZONTAL
13P507	34	6'-1"		PIER TIE

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DESIGNED BY: EEM | CHECKED BY: DDL
DRAWN BY: SBM | CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

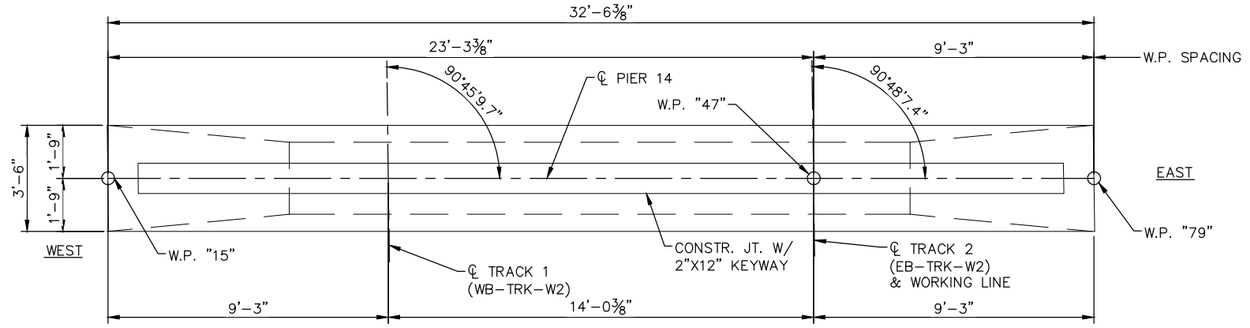
SOUTHWEST Green Line LRT Extension

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

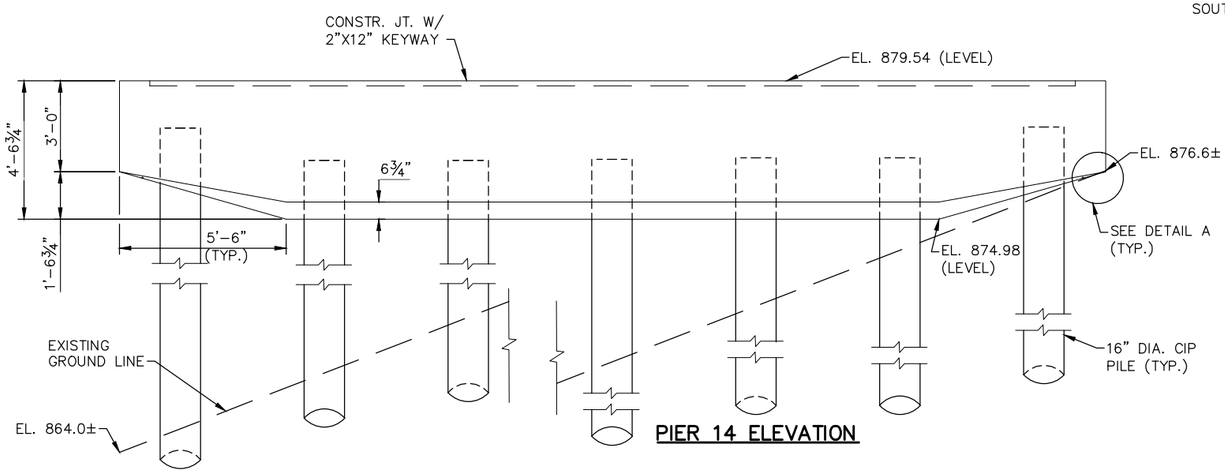
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_R-13

SHEET 62 OF 264

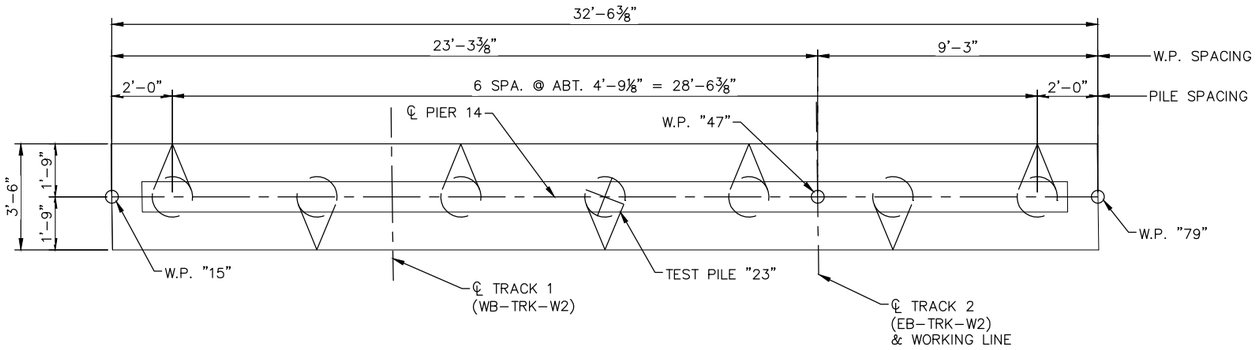
Jan, 17 2016 09:10 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R.dwg By: hills



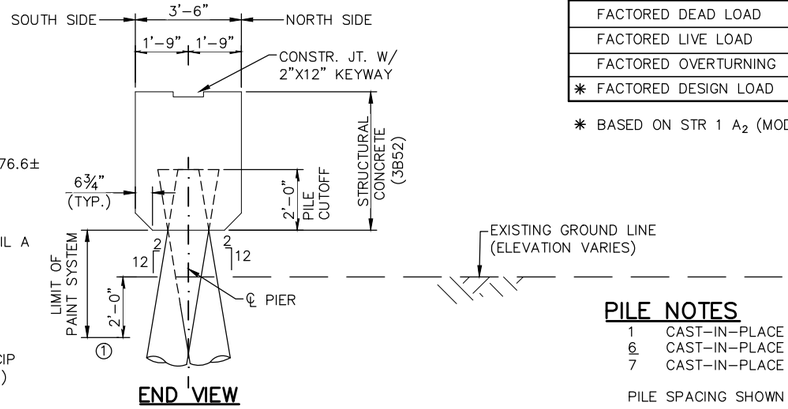
PIER 14 PLAN



PIER 14 ELEVATION



PIER 14 PILE LAYOUT



END VIEW

PIER 14 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	175.0
PDA	0.65	134.6

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

PIER 14 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	66.2
FACTORED LIVE LOAD	21.3
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	87.5

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

1 CAST-IN-PLACE CONC. TEST PILE 70 FT. LONG
6 CAST-IN-PLACE CONC. PILES EST. LENGTH 60 FT.
7 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 14.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

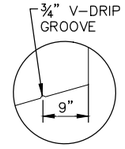
NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.



DETAIL A

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: DDL CHECKED BY: EEM
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

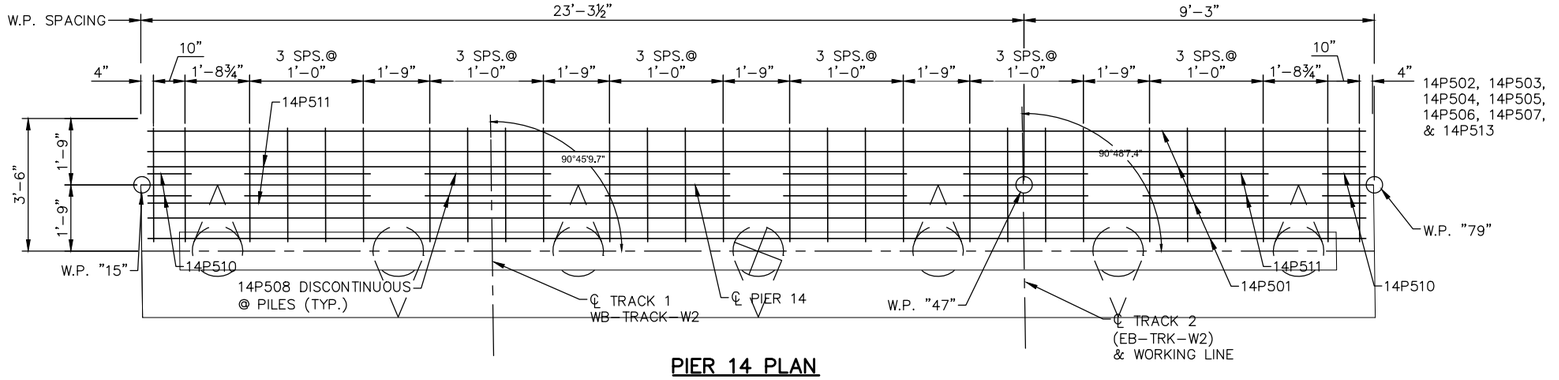
SOUTHWEST Green Line LRT Extension

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

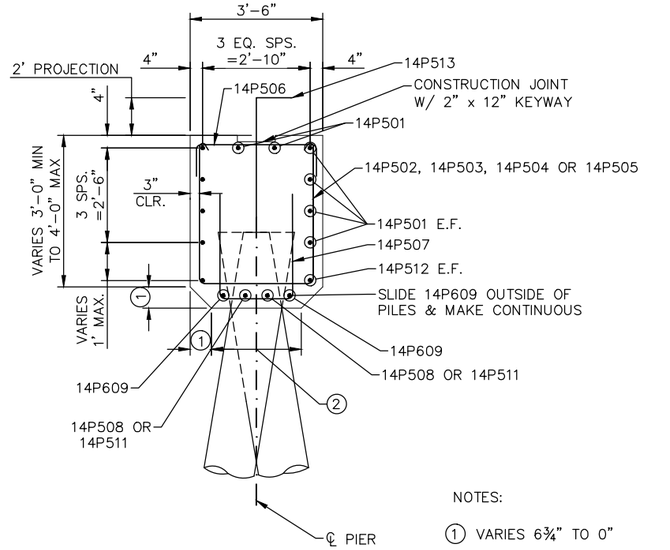
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-14

SHEET 63 OF 264

Jan, 17 2016 09:11 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



PIER 14 PLAN

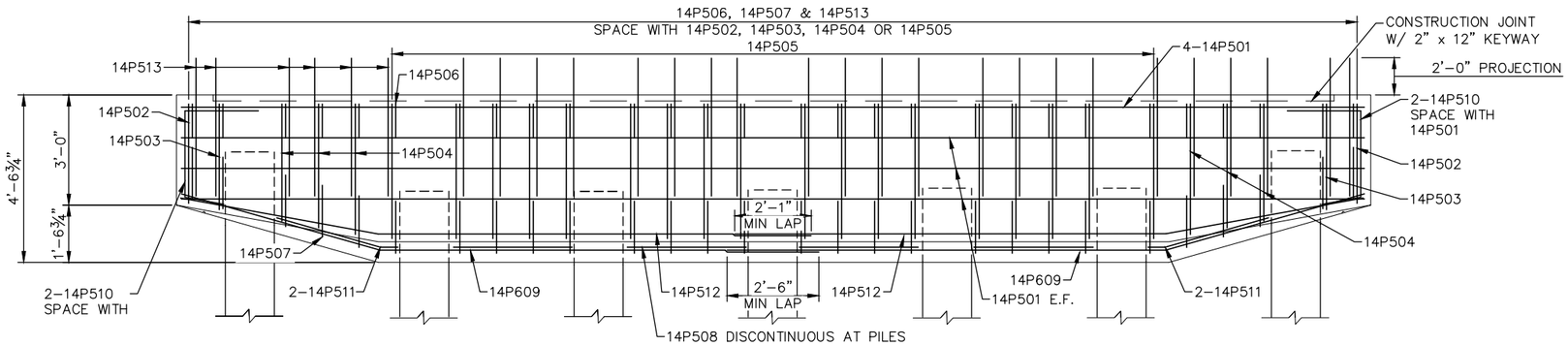


NOTES:

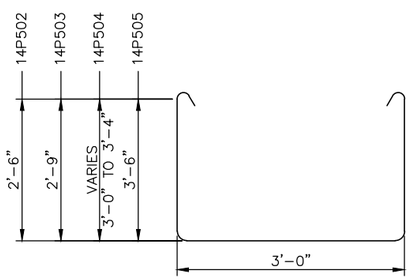
① VARIES 6¾" TO 0"

② VARIES 2'-4½" TO 3'-6"

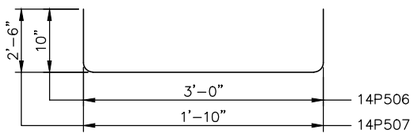
SECTION THROUGH CAP



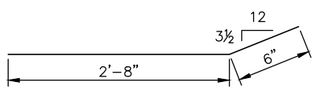
PIER 14 ELEVATION



14P502, 14P503, 14P504, 14P505



14P506 & 14P507



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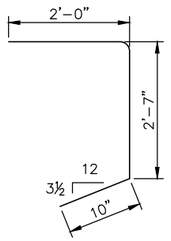

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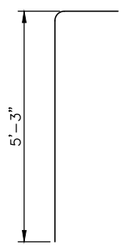

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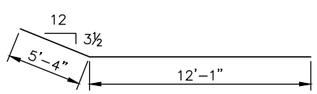
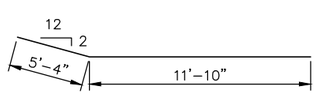


14P609



14P512

BILL OF REINFORCEMENT FOR PIER 14

BAR	NO.	LENGTH	SHAPE	LOCATION
14P501	10	31'-10"		PIER HORIZONTAL
14P502	2	8'-11"		CAP STIRRUP
14P503	2	9'-5"		CAP STIRRUP
14P504	6	①		CAP STIRRUP
14P505	18	10'-11''		CAP STIRRUP
14P506	28	4'-8"		PIER TIE
14P507	28	6'-10"		PIER TIE
14P508	8	3'-2"		PIER HORIZONTAL
14P609	4	17'-5"		PIER HORIZONTAL
14P510	4	5'-5"		PIER END TIE
14P511	4	3'-10"		PIER HORIZONTAL
14P512	4	17'-2"		PIER HORIZONTAL
14P513	28	6'-1"		PIER TIE

① 2-SERIES OF 3, 9'-11" TO 10'-7"

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DESIGNED BY: EEM CHECKED BY: DDL

DRAWN BY: SBM CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

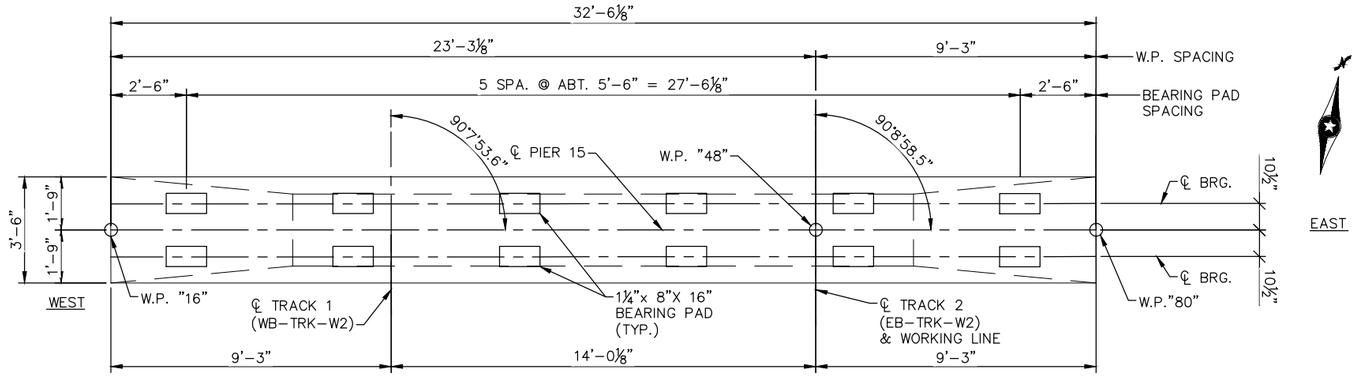
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 14 REINFORCEMENT

DISCIPLINE: STRUCTURES

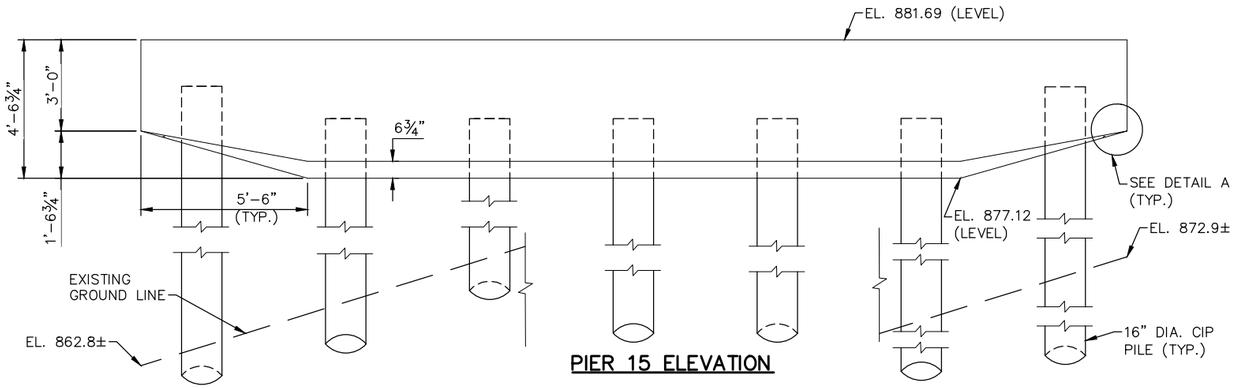
SHEET NAME: W2-STU-BRID-T212-PIER_R2-14

SHEET 64 OF 264

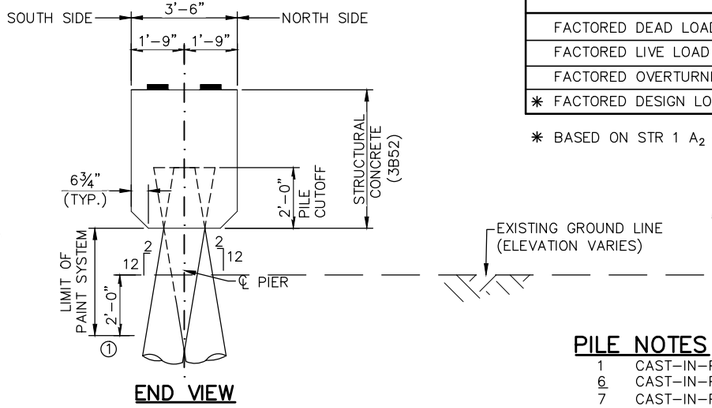
Jan, 17 2016 09:11 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R2.dwg By: hills



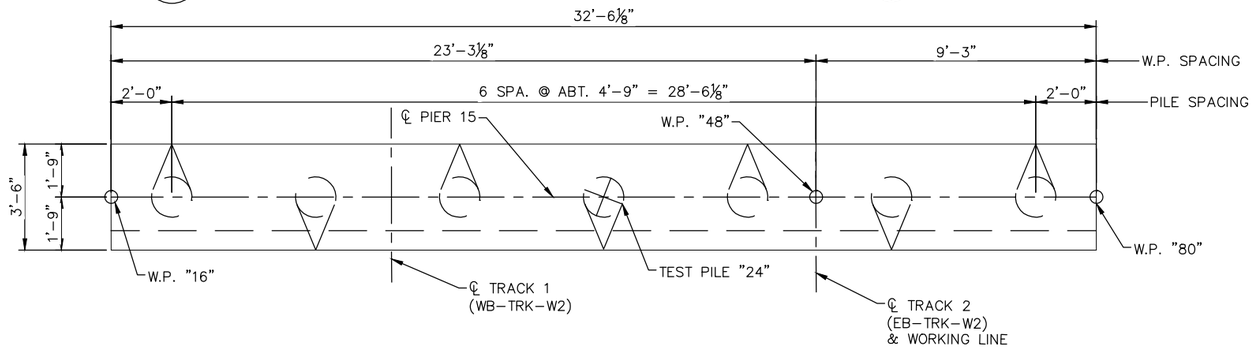
PIER 15 PLAN



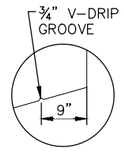
PIER 15 ELEVATION



END VIEW



PIER 15 PILE LAYOUT



DETAIL A

PIER 15
REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	113.2
PDA	0.65	87.1

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

PIER 15
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	41.4
FACTORED LIVE LOAD	15.2
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	56.6

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

1 CAST-IN-PLACE CONC. TEST PILE 80 FT. LONG
6 CAST-IN-PLACE CONC. PILES EST. LENGTH 70 FT.
7 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 15.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

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DESIGNED BY: DDL | CHECKED BY: EEM
DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

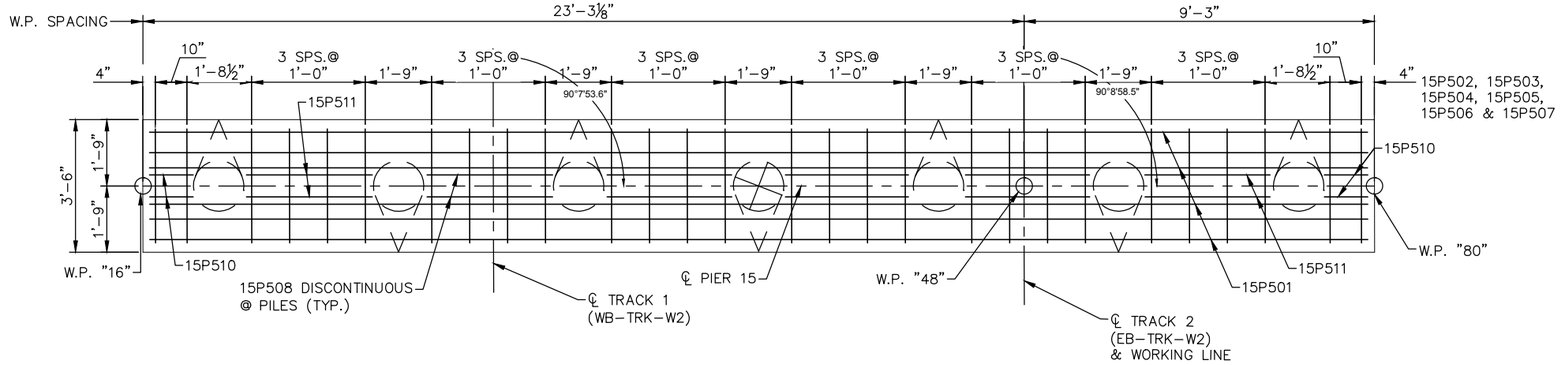
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 15 DETAILS

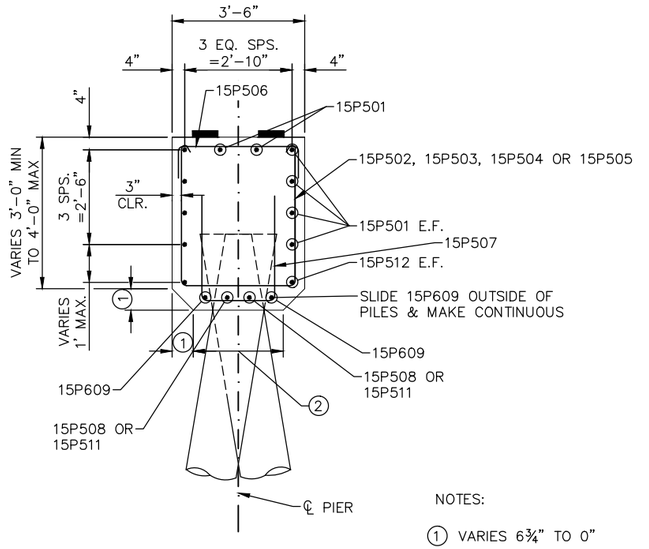
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-15

SHEET 65 OF 264

Jan. 17 2016 09:11 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



PIER 15 PLAN

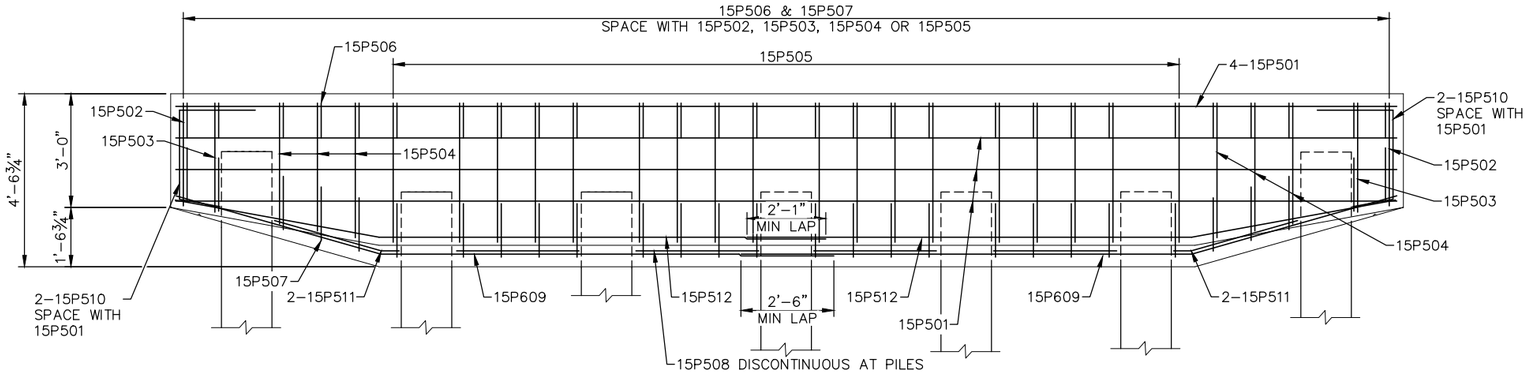


NOTES:

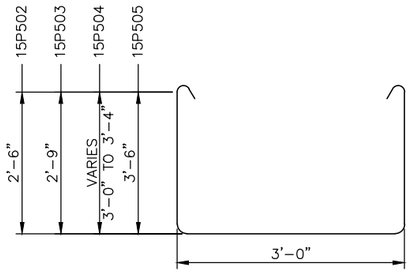
① VARIES 6¾" TO 0"

② VARIES 2'-4½" TO 3'-6"

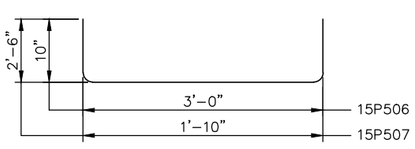
SECTION THROUGH CAP



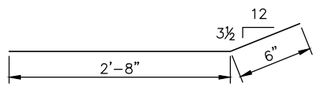
PIER 15 ELEVATION



15P502, 15P503, 15P504, 15P505



15P506 & 15P507



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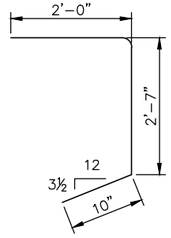
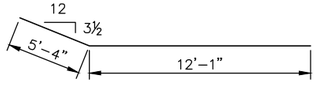


15P510



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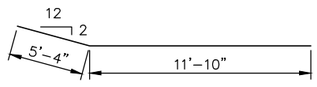

15P512

BILL OF REINFORCEMENT FOR PIER 15

BAR	NO.	LENGTH	SHAPE	LOCATION
15P501	10	31'-10"		PIER HORIZONTAL
15P502	2	8'-11"		CAP STIRRUP
15P503	2	9'-5"		CAP STIRRUP
15P504	6	①		CAP STIRRUP
15P505	18	10'-11'		CAP STIRRUP
15P506	28	4'-8"		PIER TIE
15P507	28	6'-10"		PIER TIE
15P508	8	3'-2"		PIER HORIZONTAL
15P609	4	17'-5"		PIER HORIZONTAL
15P510	4	5'-5"		PIER END TIE
15P511	4	3'-10"		PIER HORIZONTAL
15P512	4	17'-2"		PIER HORIZONTAL

① 2-SERIES OF 3, 9'-11" TO 10'-7"

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DESIGNED BY: EEM CHECKED BY: DDL

DRAWN BY: SBM CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

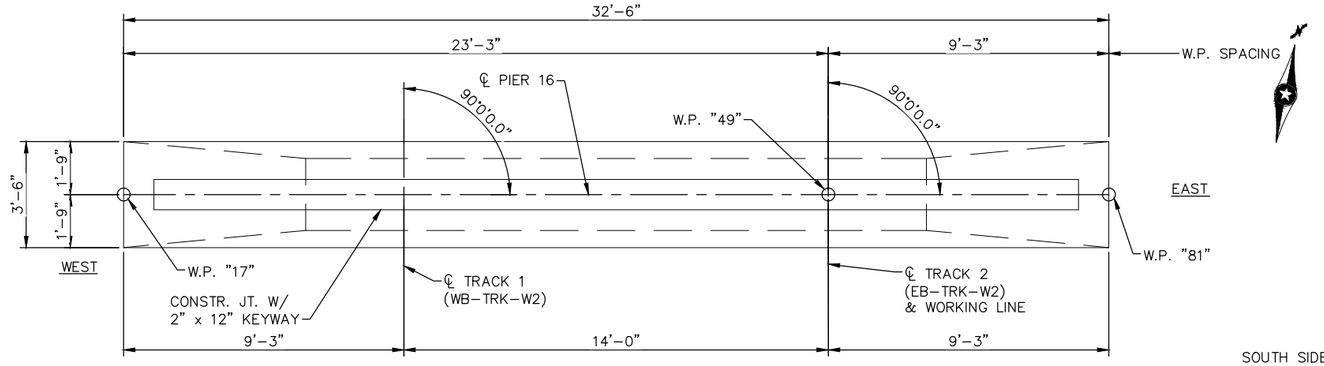
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 15 REINFORCEMENT

DISCIPLINE: STRUCTURES

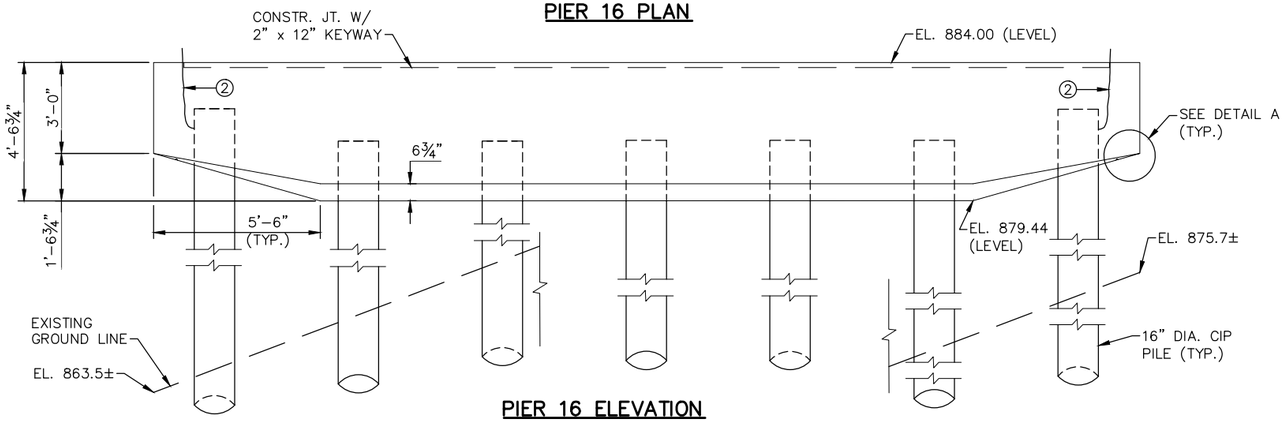
SHEET NAME: W2-STU-BRID-T212-PIER_R2-15

SHEET 66 OF 264

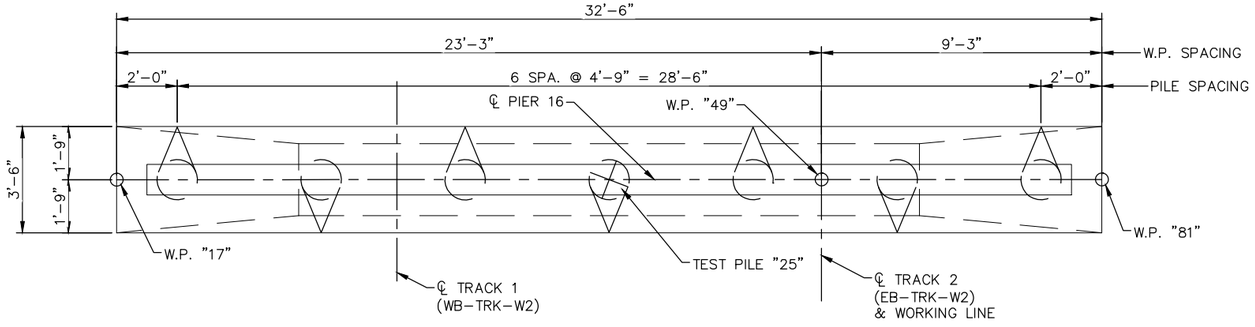
Jan, 17 2016 09:12 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-



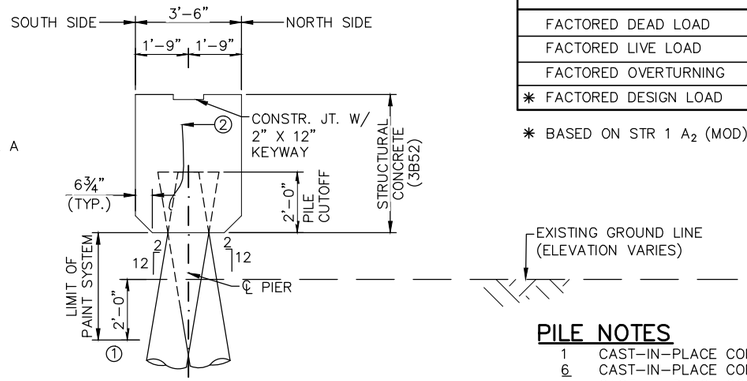
PIER 16 PLAN



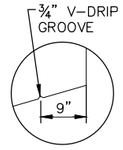
PIER 16 ELEVATION



PIER 16 PILE LAYOUT



END VIEW



DETAIL A

PIER 16 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	174.4
PDA	0.65	134.2

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

PIER 16 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	66.1
FACTORED LIVE LOAD	21.1
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	87.2

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

1 CAST-IN-PLACE CONC. TEST PILE 85 FT. LONG
6 CAST-IN-PLACE CONC. PILES EST. LENGTH 75 FT.
7 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 16.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

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

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

(2) GROUND WIRE PLACED INSIDE 1" PVC CONDUIT. SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600

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DESIGNED BY: DDL CHECKED BY: EEM
DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

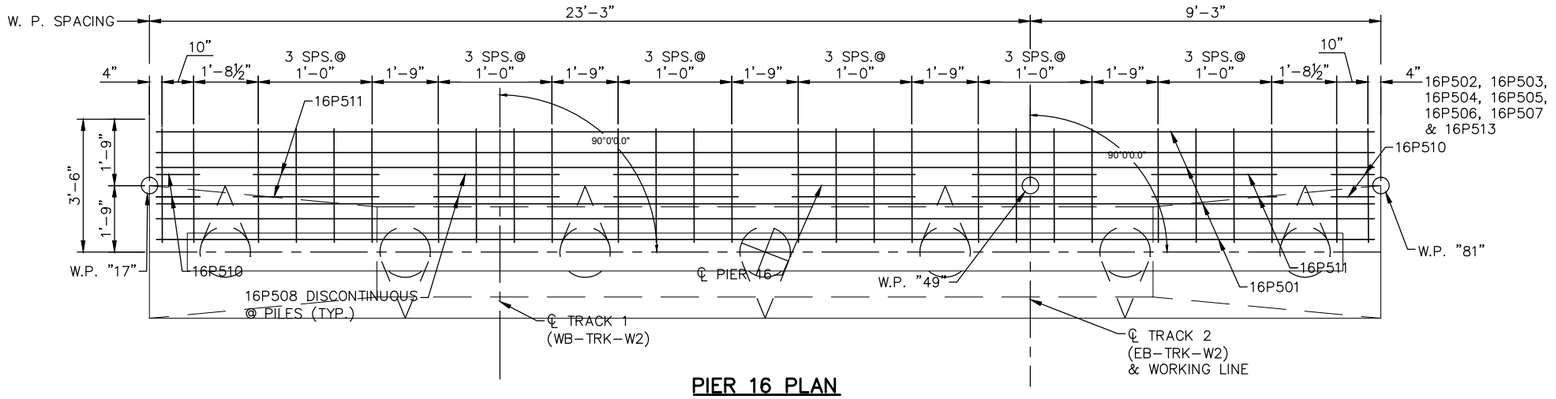
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 16 DETAILS

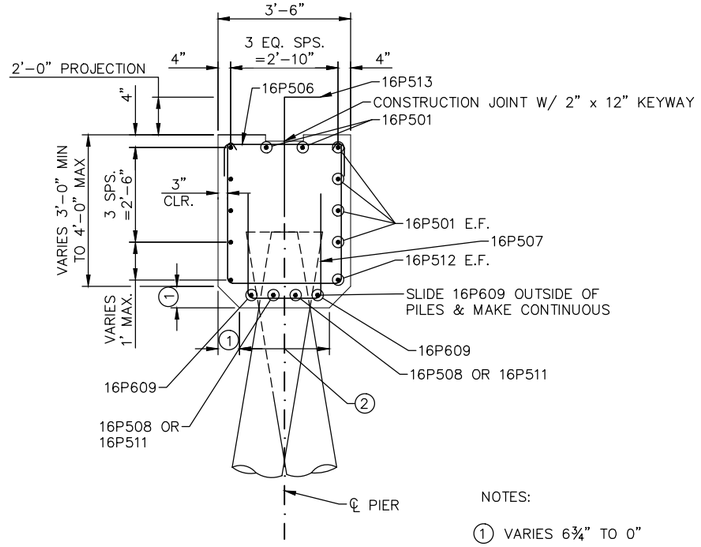
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-16

SHEET 67 OF 264

Jan, 17 2016 09:12 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



PIER 16 PLAN

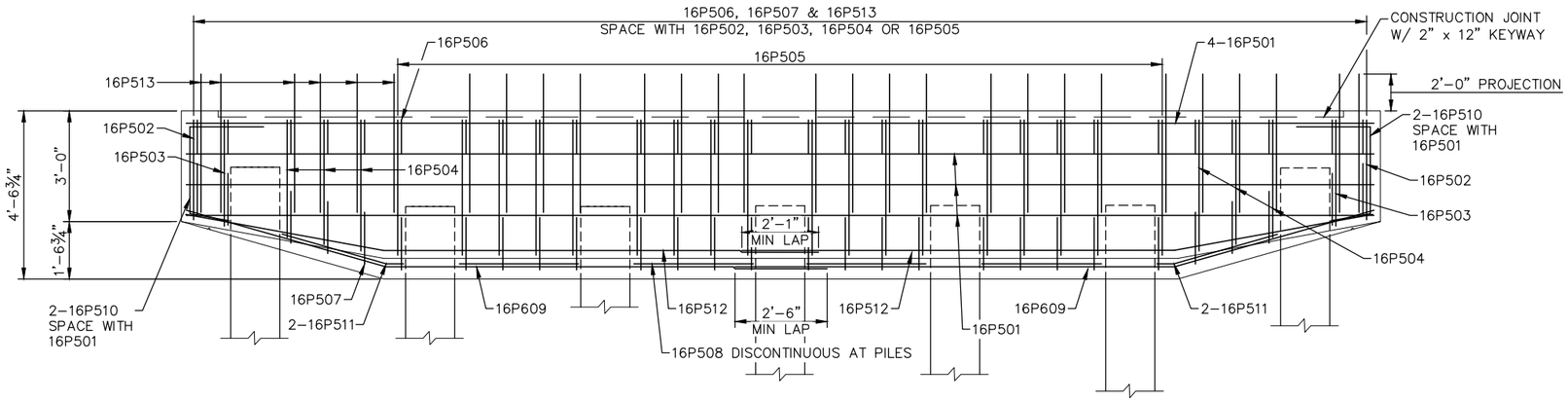


NOTES:

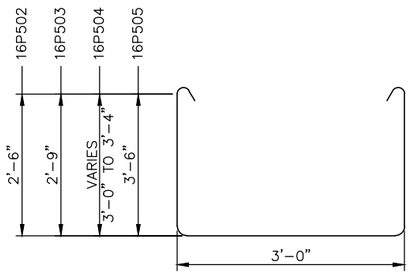
① VARIES 6¾" TO 0"

② VARIES 2'–4½" TO 3'–6"

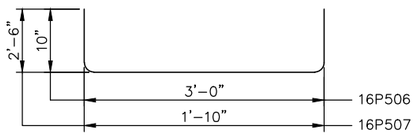
SECTION THROUGH CAP



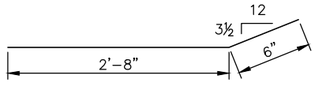
PIER 16 ELEVATION



16P502, 16P503, 16P504, 16P505



16P506 & 16P507



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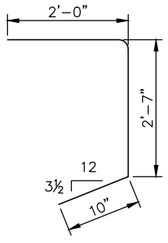

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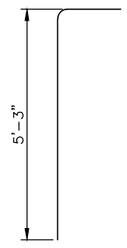

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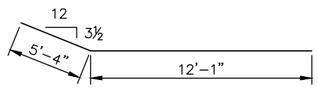

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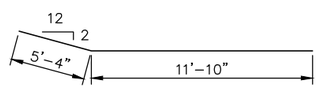

16P512

BILL OF REINFORCEMENT FOR PIER 16

BAR	NO.	LENGTH	SHAPE	LOCATION
16P501	10	31'–10"		PIER HORIZONTAL
16P502	2	8'–11"		CAP STIRRUP
16P503	2	9'–5"		CAP STIRRUP
16P504	6	①		CAP STIRRUP
16P505	18	10'–11"		CAP STIRRUP
16P506	28	4'–8"		PIER TIE
16P507	28	6'–10"		PIER TIE
16P508	8	3'–2"		PIER HORIZONTAL
16P609	4	17'–5"		PIER HORIZONTAL
16P510	4	5'–5"		PIER END TIE
16P511	4	3'–10"		PIER HORIZONTAL
16P512	4	17'–2"		PIER HORIZONTAL
16P513	28	6'–1"		PIER TIE

① 2–SERIES OF 3, 9'–11" TO 10'–7"

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

DRAWN BY: SBM CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 16 REINFORCEMENT

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-PIER_R2-16

SHEET 68 OF 264

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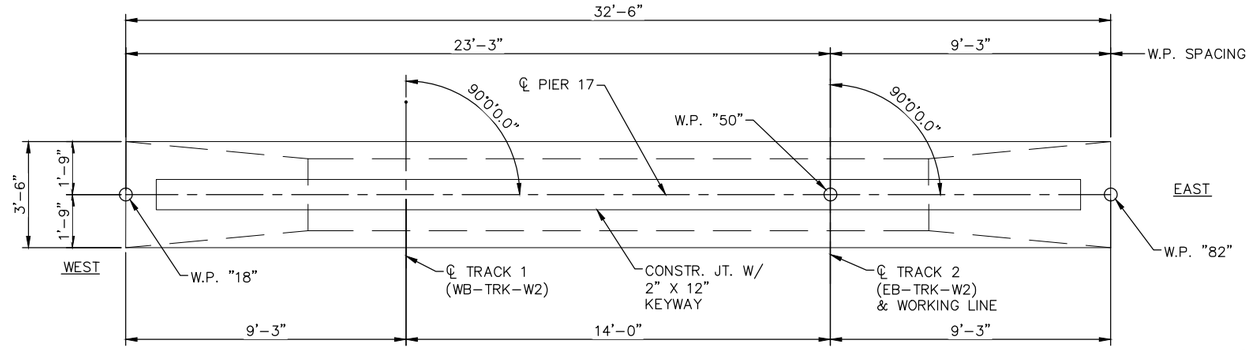
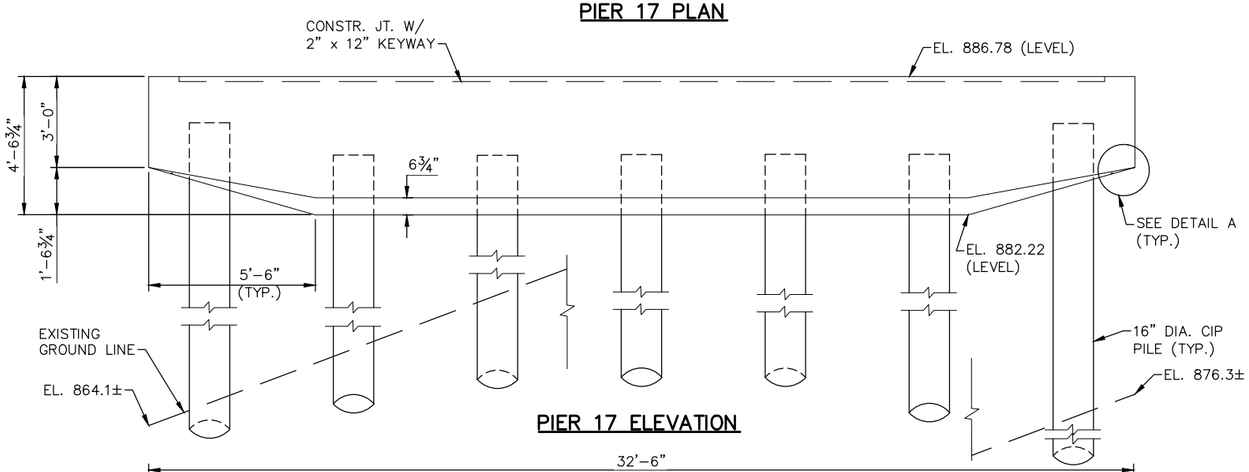
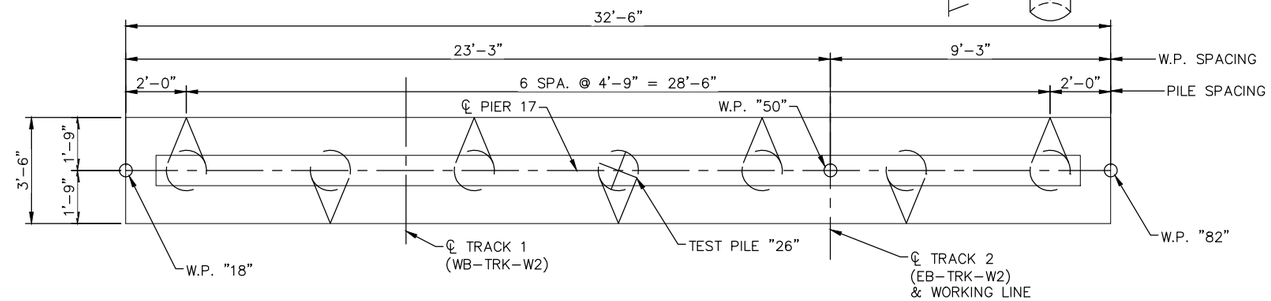


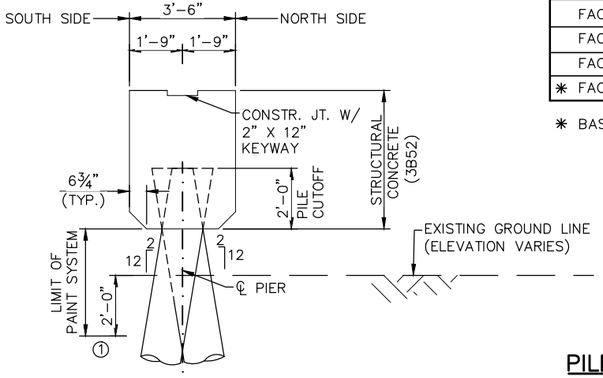
PIER 17 PLAN



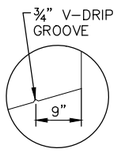
PIER 17 ELEVATION



PIER 17 PILE LAYOUT



END VIEW



DETAIL A

PIER 17 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	174.8
PDA	0.65	134.5

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

PIER 17 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	66.1
FACTORED LIVE LOAD	21.3
FACTORED OVERTURNING	0.0
* FACTORED DESIGN LOAD	87.4

* BASED ON STR 1 A_2 (MOD) LOAD COMBINATION

PILE NOTES

1 CAST-IN-PLACE CONC. TEST PILE 90 FT. LONG
6 CAST-IN-PLACE CONC. PILES EST. LENGTH 80 FT.
7 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 17.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

① EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

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DESIGNED BY: DDL | CHECKED BY: EEM
DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

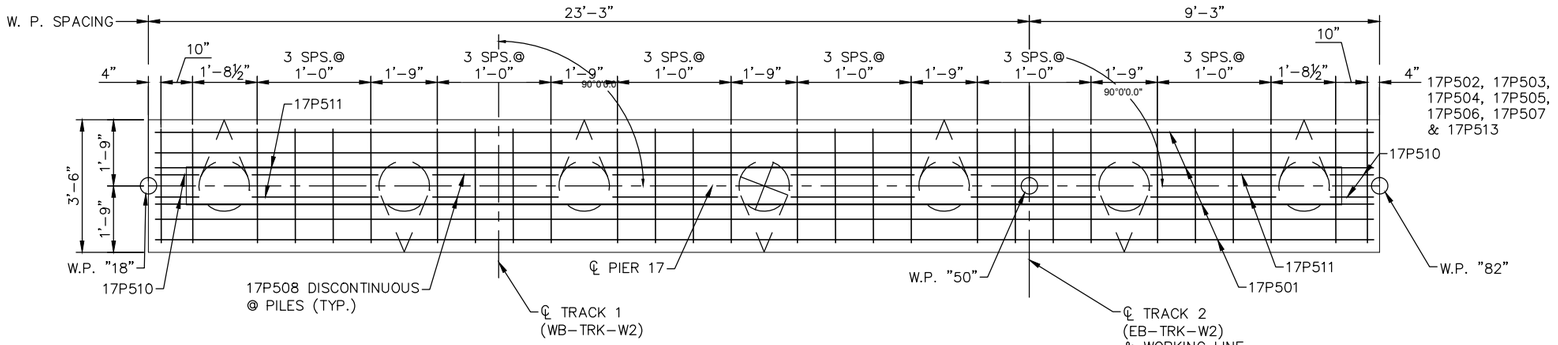
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 17 DETAILS

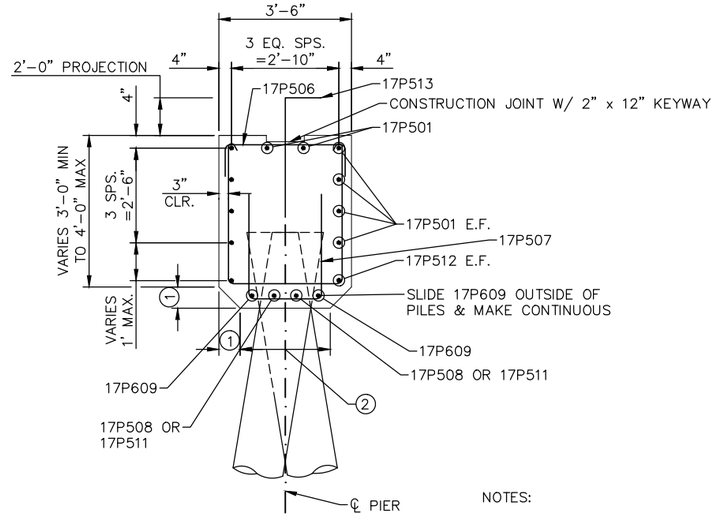
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER-17

SHEET 69 OF 264

Jan, 17 2016 09:13 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER.dwg By: hills



PIER 17 PLAN

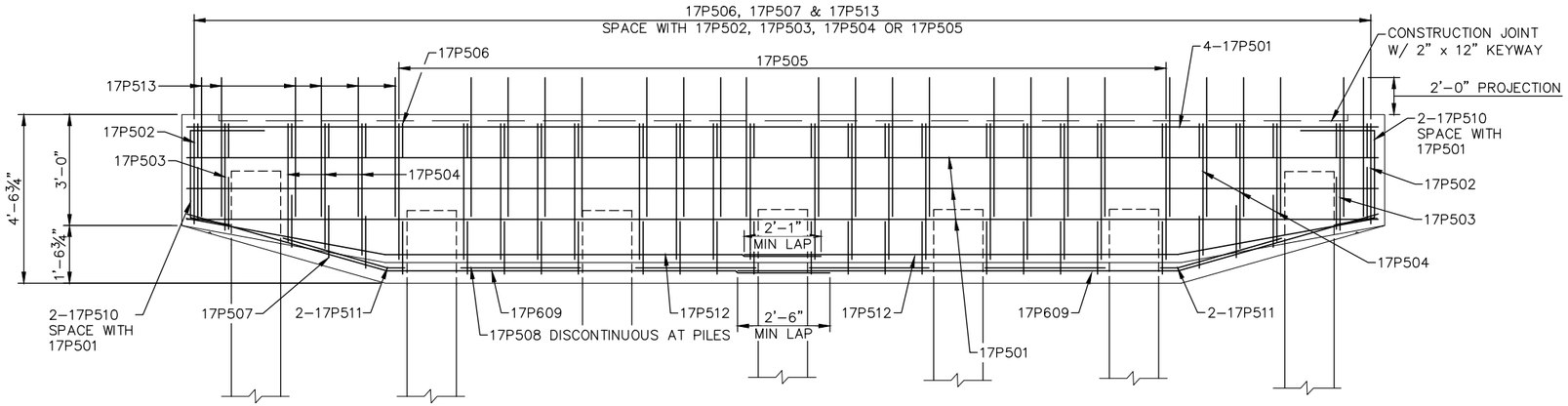


NOTES:

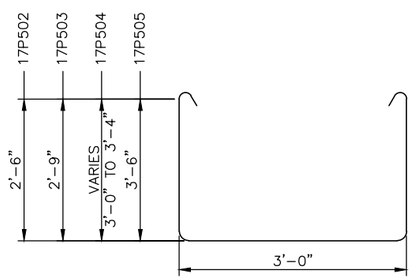
① VARIES 6¾" TO 0"

② VARIES 2'–4½" TO 3'–6"

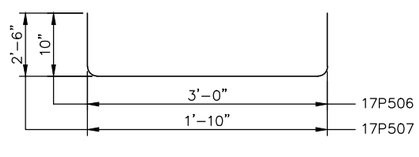
SECTION THROUGH CAP



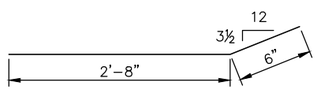
PIER 17 ELEVATION



17P502, 17P503, 17P504, 17P505



17P506 & 17P507



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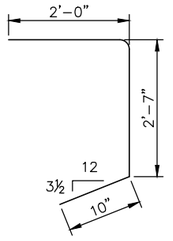

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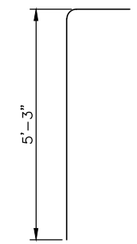

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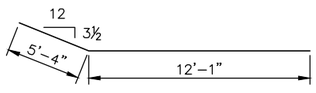

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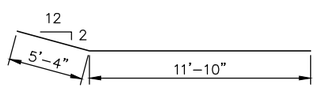

17P512

BILL OF REINFORCEMENT FOR PIER 17

BAR	NO.	LENGTH	SHAPE	LOCATION
17P501	10	31'–10"		PIER HORIZONTAL
17P502	2	8'–11"		CAP STIRRUP
17P503	2	9'–5"		CAP STIRRUP
17P504	6	①		CAP STIRRUP
17P505	18	10'–11"		CAP STIRRUP
17P506	28	4'–8"		PIER TIE
17P507	28	6'–10"		PIER TIE
17P508	8	3'–2"		PIER HORIZONTAL
17P609	4	17'–5"		PIER HORIZONTAL
17P510	4	5'–5"		PIER END TIE
17P511	4	3'–10"		PIER HORIZONTAL
17P512	4	17'–2"		PIER HORIZONTAL
17P513	28	6'–1"		PIER TIE

① 2–SERIES OF 3, 9'–11" TO 10'–7"

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DESIGNED BY: EEM CHECKED BY: DDL

DRAWN BY: SBM CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

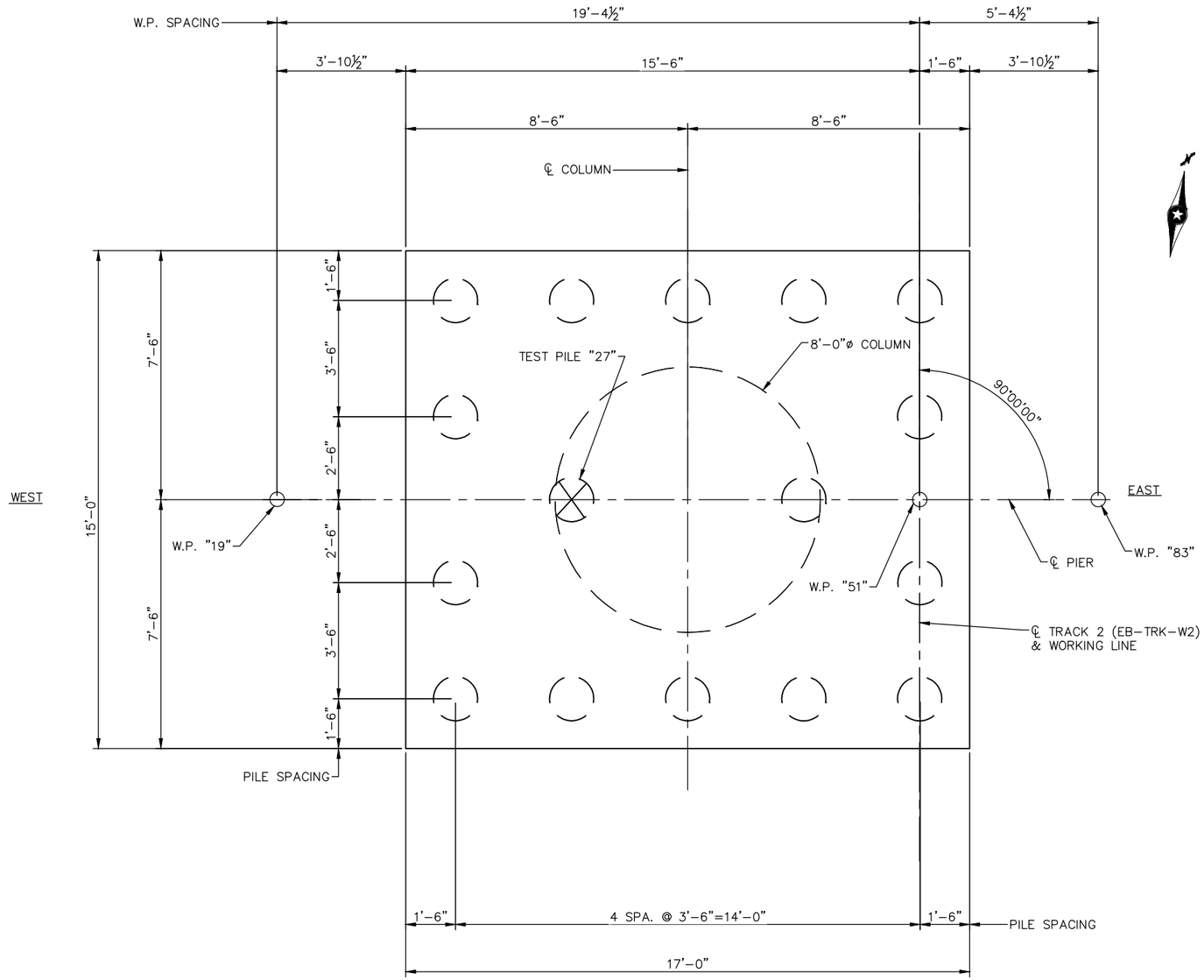
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 17 REINFORCEMENT

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-PIER_R2-17

SHEET 70 OF 264

Jan, 17 2016 09:13 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER_R2.dwg By: hills



PIER 18 PILE LAYOUT

PIER 18 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n=20\sqrt{\frac{WxH}{1000}}\times\log\left(\frac{10}{S}\right)$	0.50	265.4
PDA	0.65	204.2

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

PIER 18 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	77.1
FACTORED LIVE LOAD	40.2
FACTORED OVERTURNING	15.4
FACTORED DESIGN LOAD	132.7
FACTORED DESIGN UPLIFT	N/A
LOAD COMBINATION	STRENGTH 5 (MOD)

PILE NOTES

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

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.3125 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

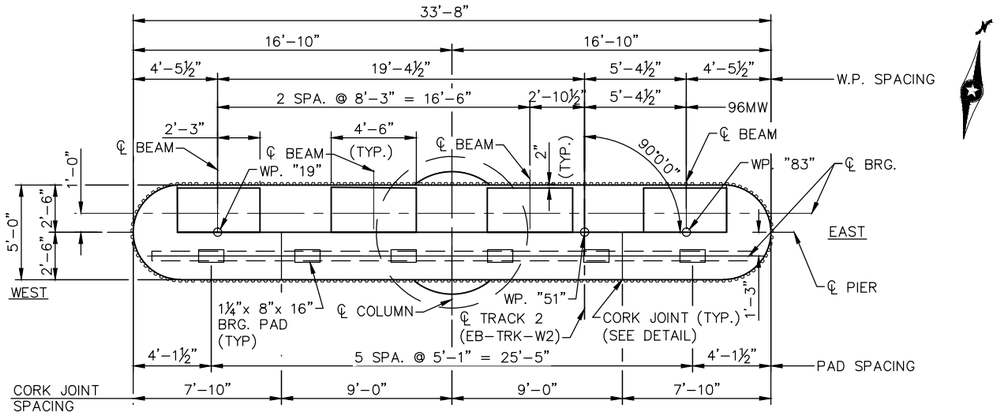
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 18 FOOTING PLAN

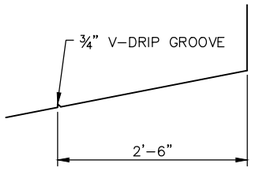
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_18a

SHEET 71 OF 264

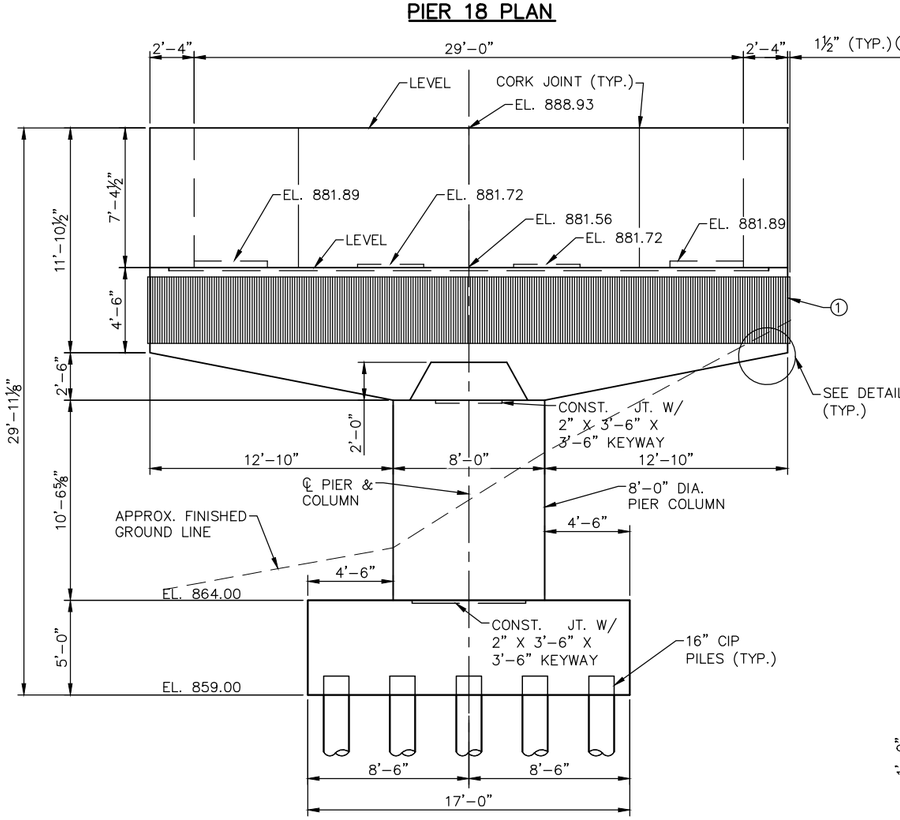
Jan. 17 2016 09:14 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



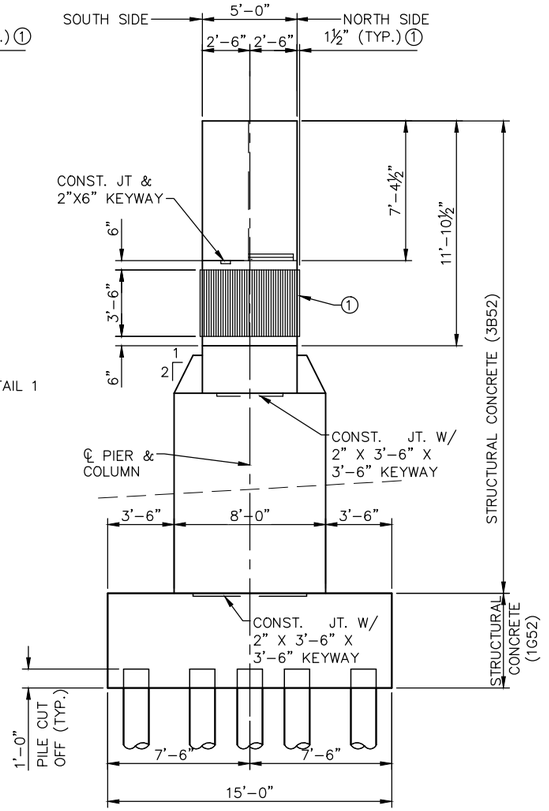
PIER 18 PLAN



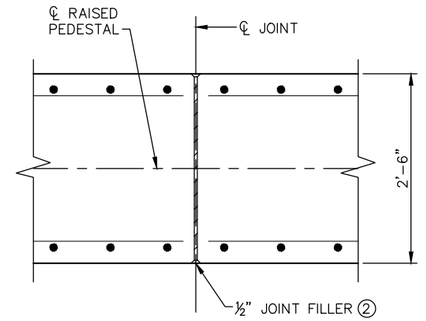
DETAIL 1



PIER 18 ELEVATION



PIER 18 END VIEW



CORK JOINT DETAIL

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE, TYPE 1 "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)"

② JOINT FILLER SHALL BE CORK PER MNDOT STANDARD SPECIFICATION 3702.

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DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

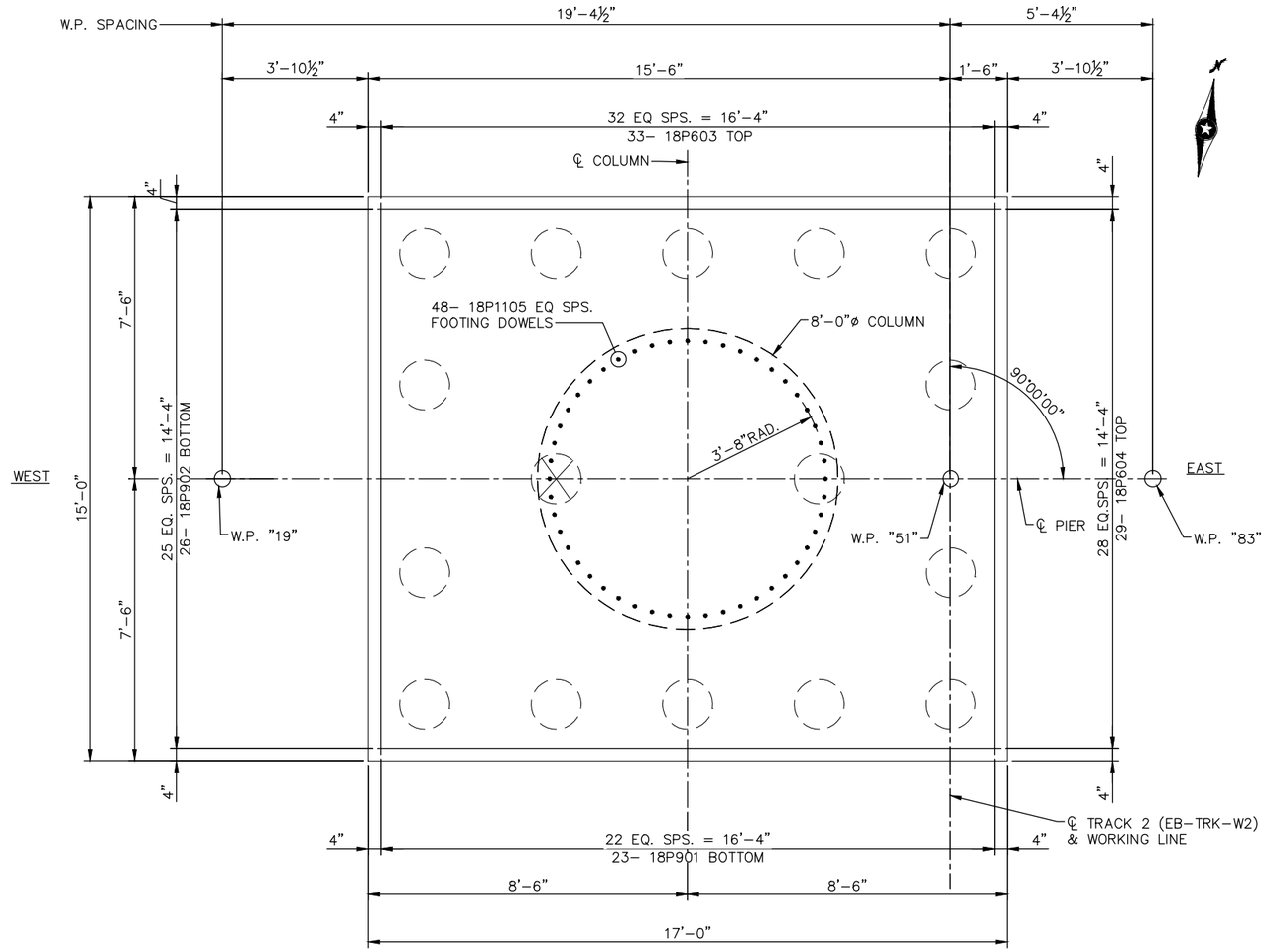
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 18 PLAN & ELEVATION

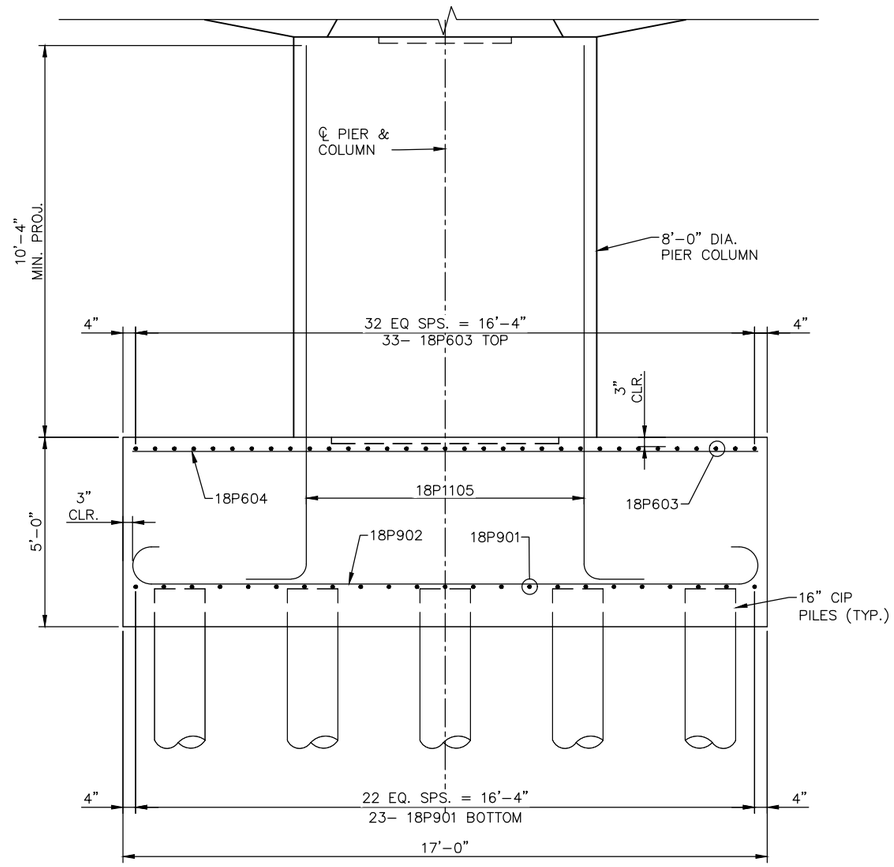
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_18

SHEET 72 OF 264

Jan, 17 2016 09:14 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



PIER 18 FOOTING PLAN



PIER 18 FOOTING ELEVATION

NOTES:

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

WELD REBAR AND PILES PER STRAY CURRENT/CORROSION CONTROL NOTES ON SHEET 3.

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

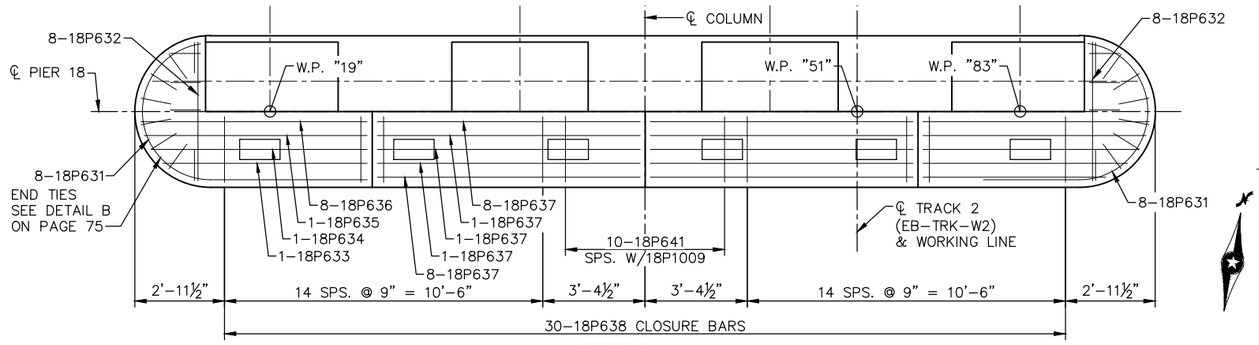
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 18 REINFORCEMENT 1

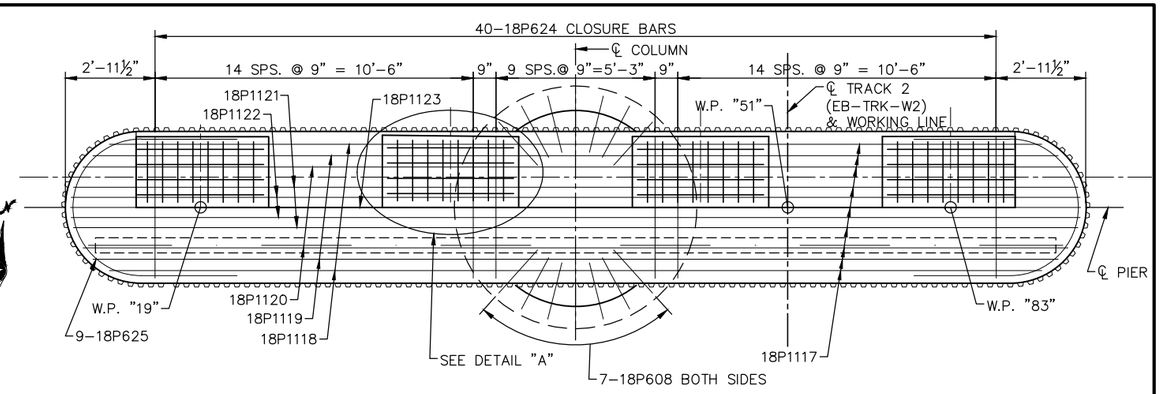
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2R_18f

SHEET 73 OF 264

Jan, 17 2016 09:14 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2R.dwg By: hills



SECTION A–A



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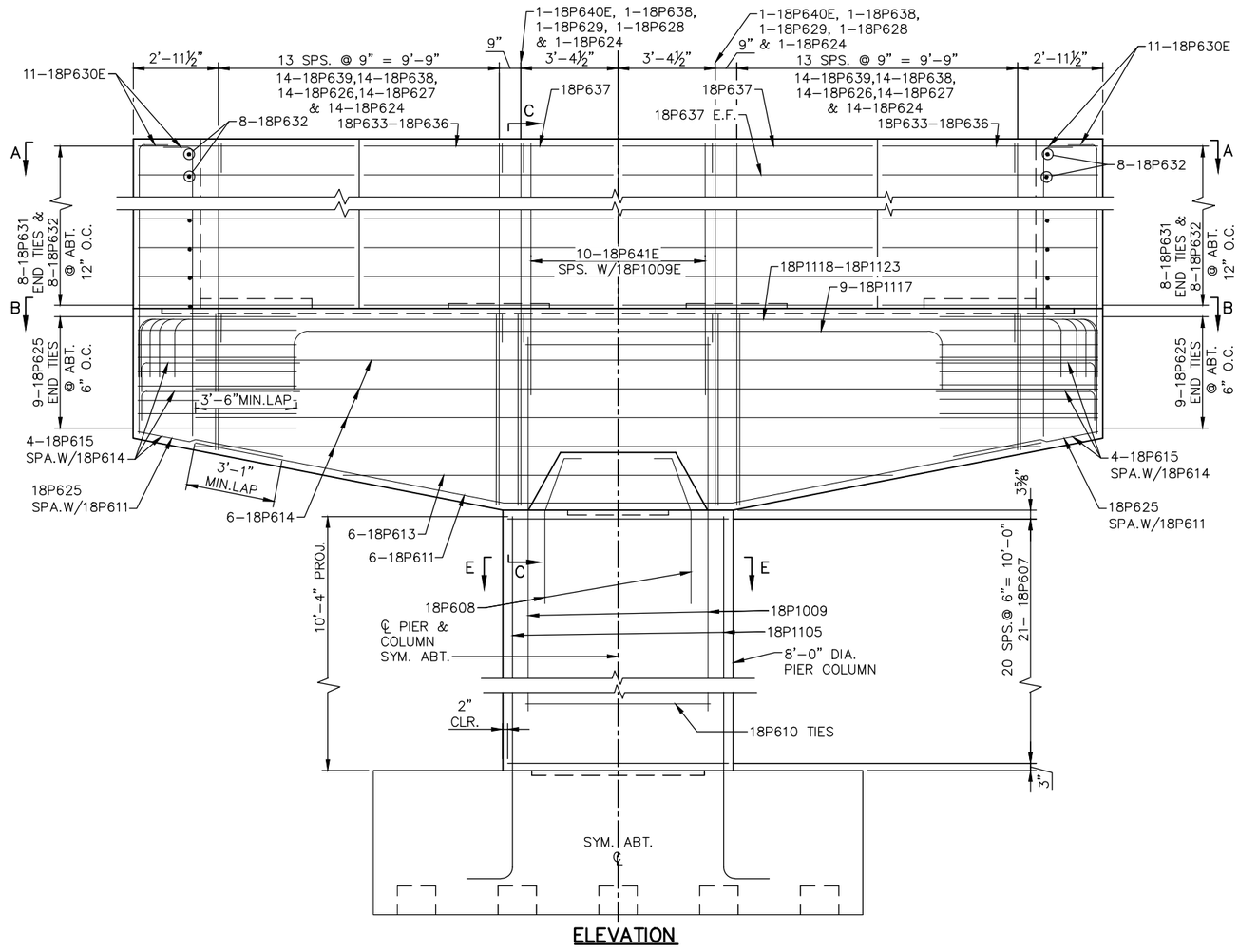
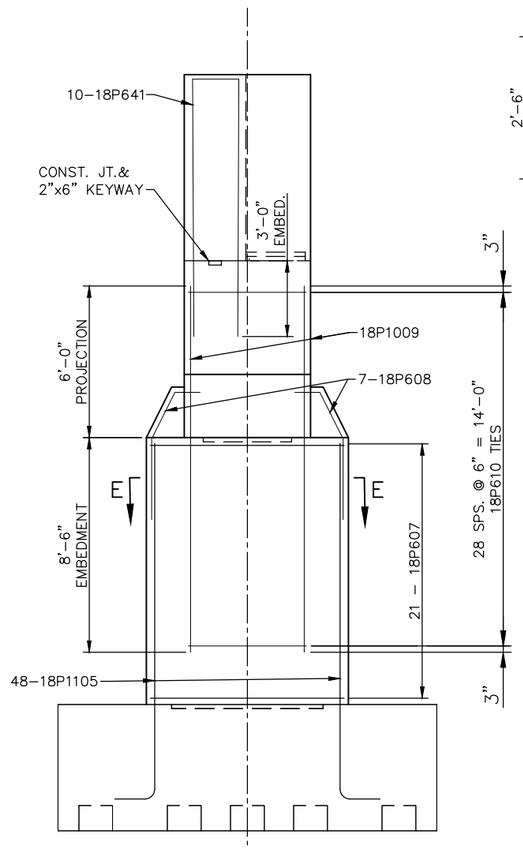
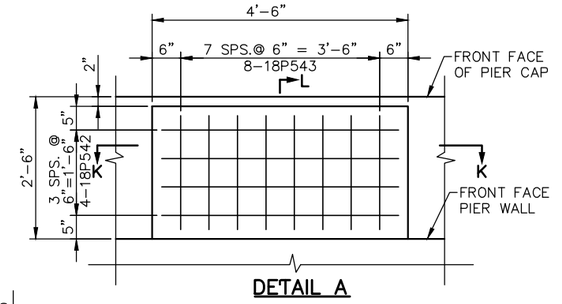


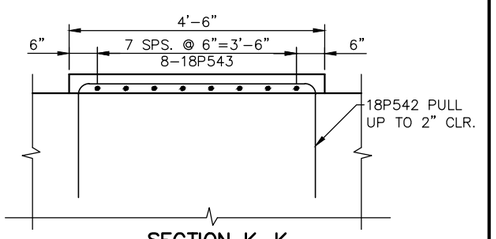
ELEVATION



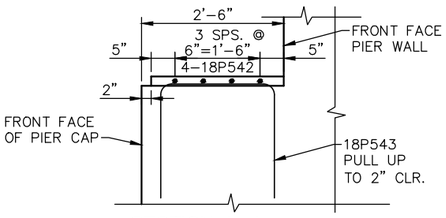
END VIEW



DETAIL A



SECTION K–K



SECTION L–L

NOTES:

FOR SECTION C–C & E–E SEE SHEET 75.

FOR DOWEL LAYOUT SEE SHEET 73.

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DESIGNED BY: MJC | CHECKED BY: EEM

DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

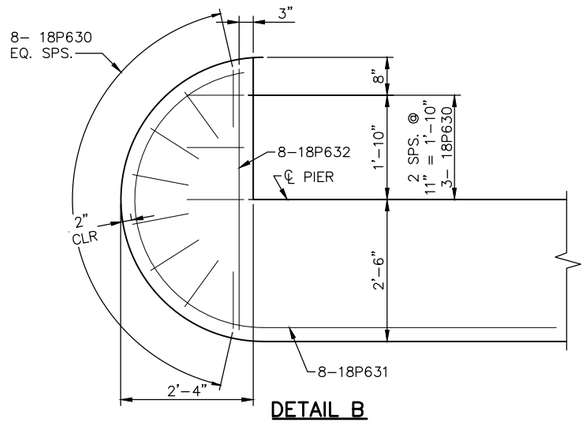
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 18 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

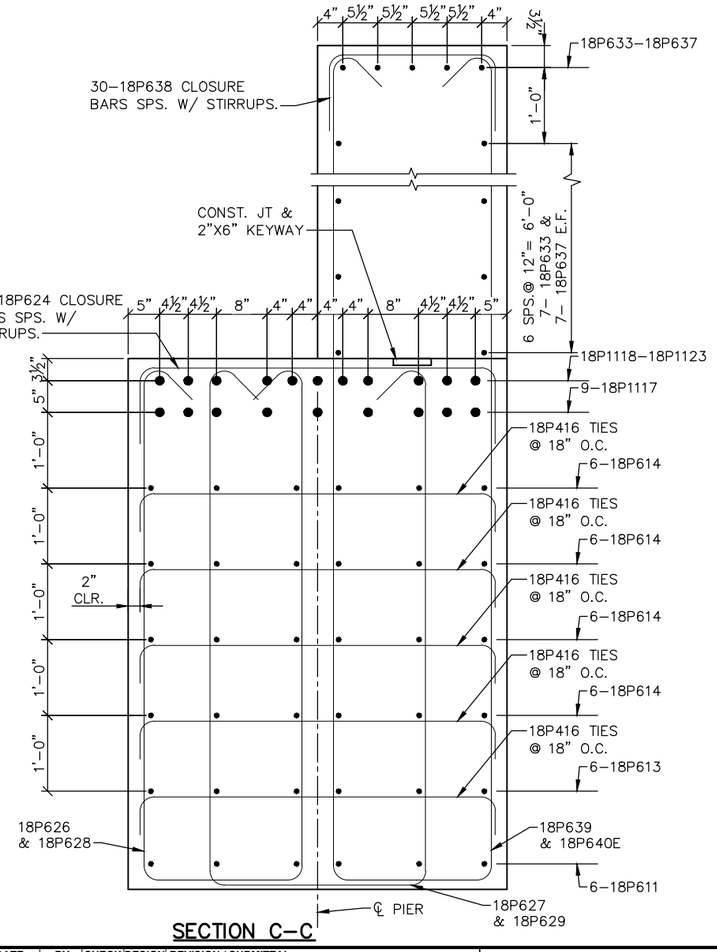
SHEET NAME: W2-STU-BRID-T212-PIER3R_18P

SHEET 74 OF 264

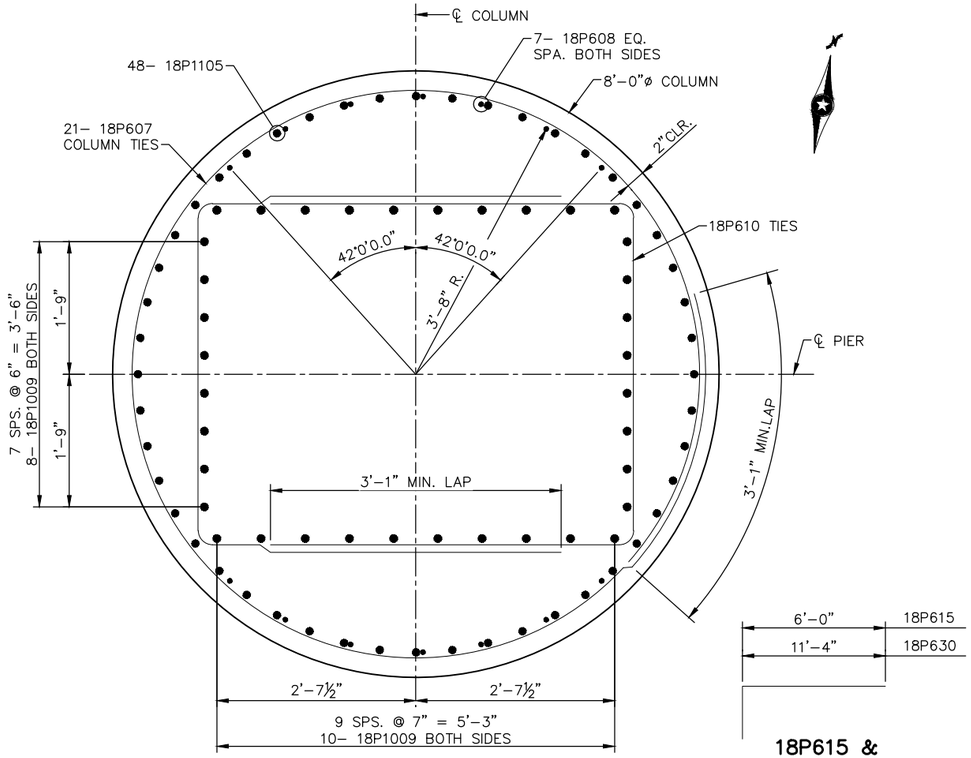
Jan, 17 2016 09:16 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



DETAIL B

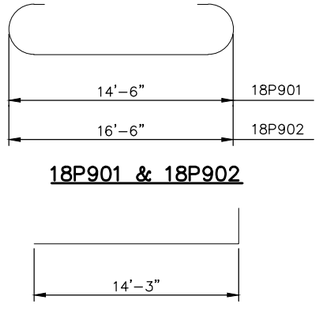


SECTION C–C



SECTION E–E

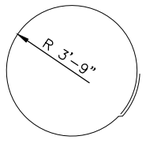
18P615 & 18P630



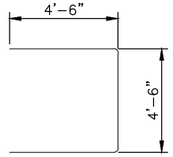
18P901 & 18P902

18P608

18P1105



18P607



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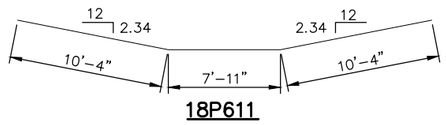

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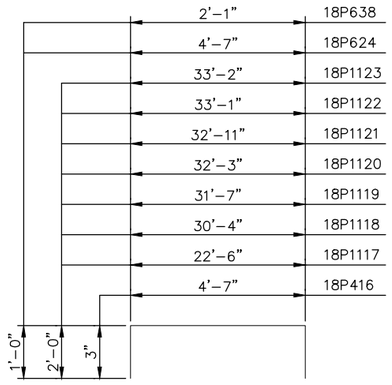
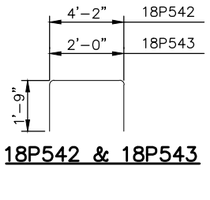
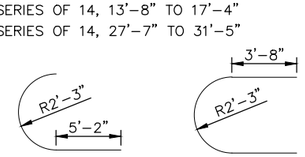


18P416, 18P1117, 18P1118, 18P1119, 18P1120, 18P1121, 18P1122, 18P1123, 18P624 & 18P638

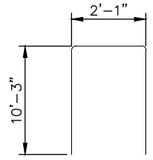


18P542 & 18P543



18P631

18P625



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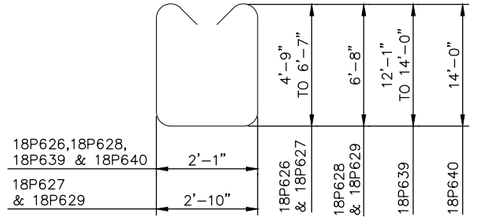

18P626, 18P627, 18P628, 18P629, 18P639 & 18P640

BILL OF REINFORCEMENT FOR PIER 18

BAR	NO.	LENGTH	SHAPE	LOCATION
18P901	23	17'–0"		FOOTING HORIZONTAL
18P902	26	19'–0"		FOOTING HORIZONTAL
18P603	33	14'–6"		FOOTING HORIZONTAL
18P604	29	16'–6"		FOOTING HORIZONTAL
18P1105	48	16'–3"		FOOTING COLUMN DOWEL
NOT USED				
18P607	21	26'–8"		COLUMN TIE
18P608	14	6'–3"		CAP DOWEL
18P1009	36	14'–6"		CAP DOWEL
18P610	58	13'–6"		CAP TIE HORIZONTAL
18P611	6	28'–7"		CAP LONGITUDINAL
18P612	12	5'–2"		CAP LONGITUDINAL
18P613	6	18'–7"		CAP LONGITUDINAL
18P614	24	28'–4"		CAP LONGITUDINAL
18P615	24	7'–0"		CAP LONGITUDINAL
18P416	70	5'–1"		CAP TIE
18P1117	9	26'–6"		CAP LONGITUDINAL
18P1118	2	34'–4"		CAP LONGITUDINAL
18P1119	2	35'–7"		CAP LONGITUDINAL
18P1120	2	36'–3"		CAP LONGITUDINAL
18P1121	2	36'–11"		CAP LONGITUDINAL
18P1122	2	37'–1"		CAP LONGITUDINAL
18P1123	1	37'–2"		CAP LONGITUDINAL
18P624	40	6'–7"		CAP TIE
18P625	16	14'–4"		END TIE
18P626	28	①		CAP STIRRUP
18P627	28	②		CAP STIRRUP
18P628	2	16'–9"		CAP STIRRUP
18P629	2	17'–6"		CAP STIRRUP
18P630	22	12'–4"		CAP VERTICAL
18P631	16	11'–8"		END TIE
18P632	16	4'–6"		CAP HORIZONTAL
18P633	2	6'–9"		CAP LONGITUDINAL
18P634	2	7'–1"		CAP LONGITUDINAL
18P635	2	7'–4"		CAP LONGITUDINAL
18P636	2	7'–5"		CAP LONGITUDINAL
18P637	38	8'–8"		CAP LONGITUDINAL
18P638	30	4'–1"		CAP TIE
18P639	28	③		CAP STIRRUP
18P640	2	31'–5"		CAP STIRRUP
18P641	10	22'–7"		CAP VERTICAL
18P542	16	7'–8"		PEDESTAL TIE
18P543	32	5'–6"		PEDESTAL TIE

① 2–SERIES OF 14, 12'–11" TO 16'–7"
② 2–SERIES OF 14, 13'–8" TO 17'–4"
③ 2–SERIES OF 14, 27'–7" TO 31'–5"

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

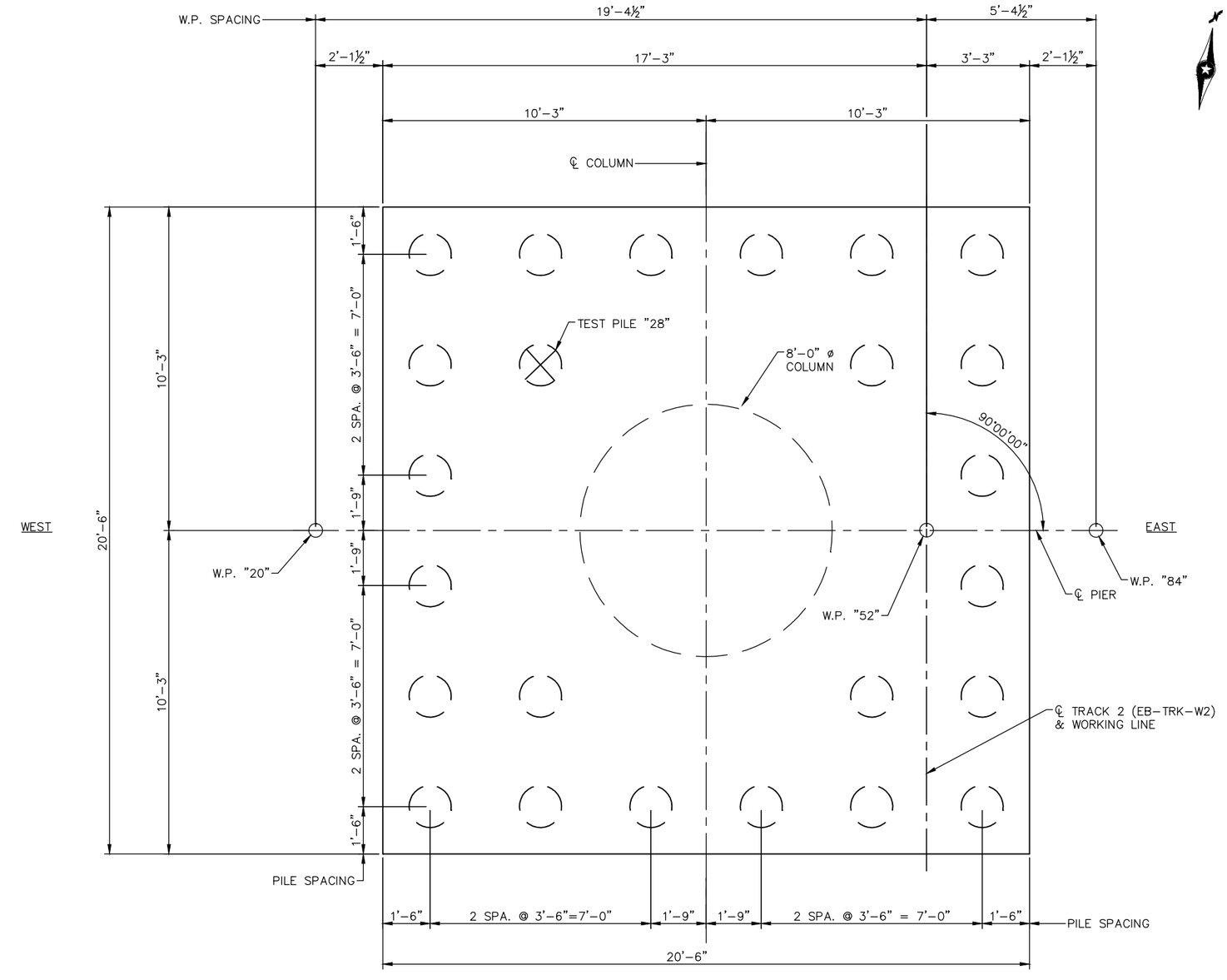
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 18 REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER3R_18S

SHEET 75 OF 264

Jan, 18 2016 09:22 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



PIER 19 PILE LAYOUT

PIER 19 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	273.0
PDA	0.65	210.0

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

PIER 19 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	77.5
FACTORED LIVE LOAD	44.8
FACTORED OVERTURNING	14.2
FACTORED DESIGN LOAD	136.5
FACTORED DESIGN UPLIFT	N/A
LOAD COMBINATION	STRENGTH 5 (MOD)

PILE NOTES

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

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.3125 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

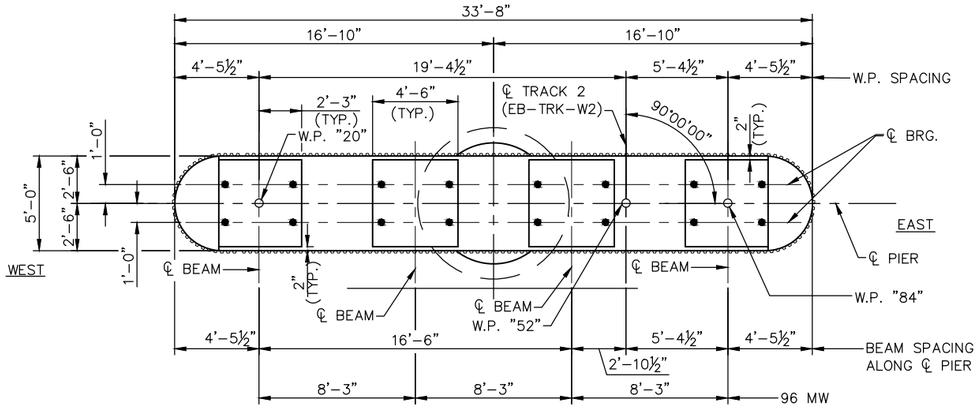
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 19 FOOTING PLAN

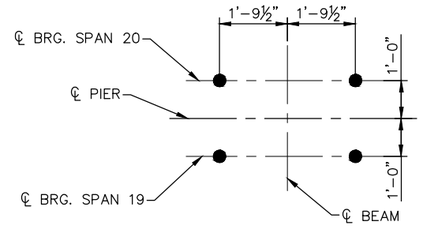
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_19a

SHEET 76 OF 264

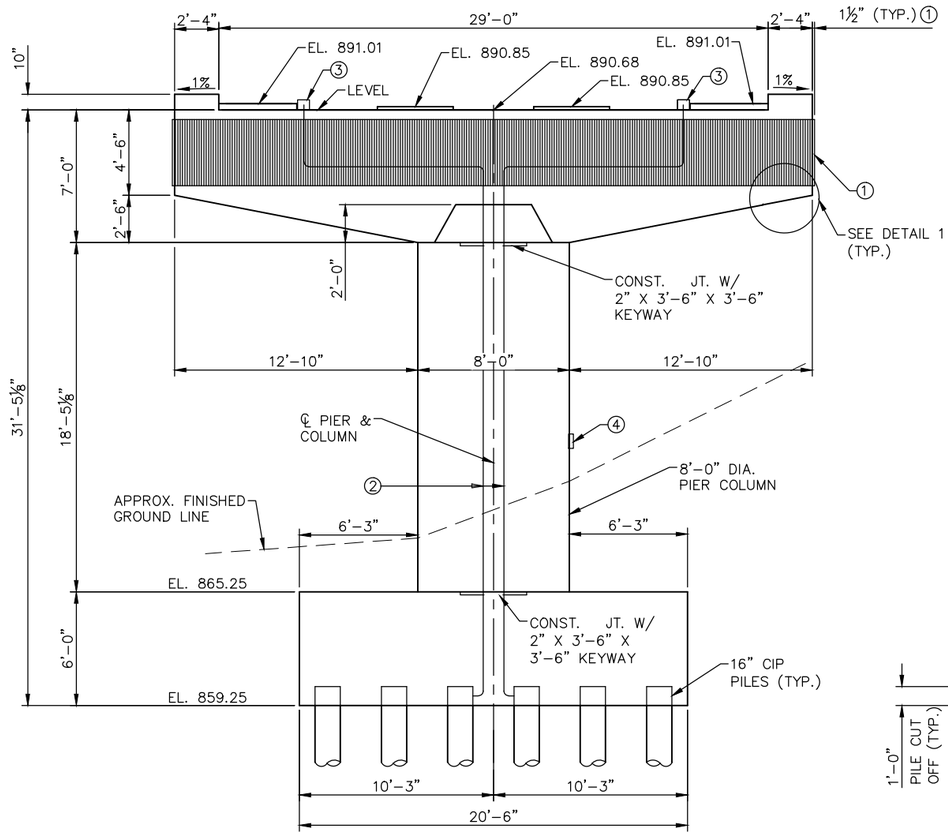
Jan. 18 2016 07:27 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



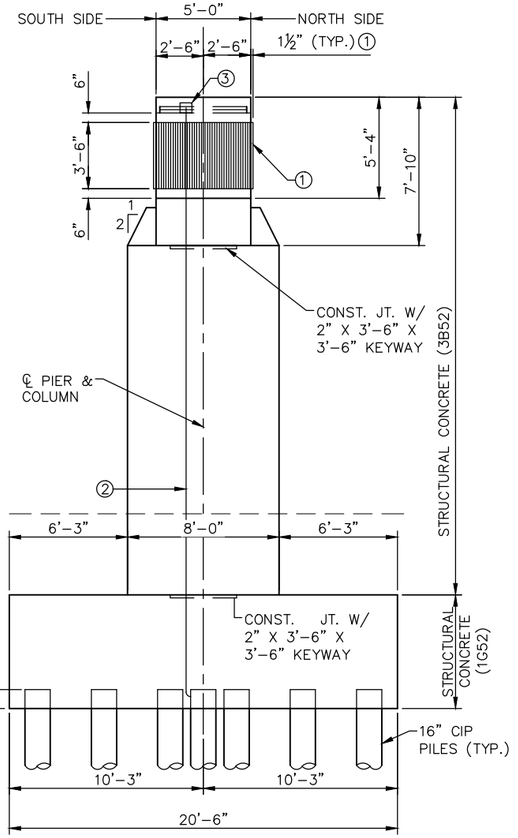
PIER 19 PLAN



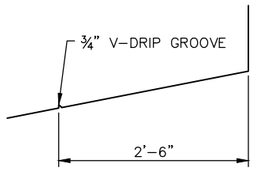
ANCHOR ROD LAYOUT



PIER 19 ELEVATION



PIER 19 END VIEW



DETAIL 1

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE, TYPE 1. "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)"

② GROUND WIRE PLACED INSIDE 1" PVC CONDUIT. SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600.

③ JUNCTION BOX, SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600.

④ GROUNDING TEST STATION, SEE GROUNDING PLANS IN VOLUME 12, SHEET ELE-SITE-DTL-600

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

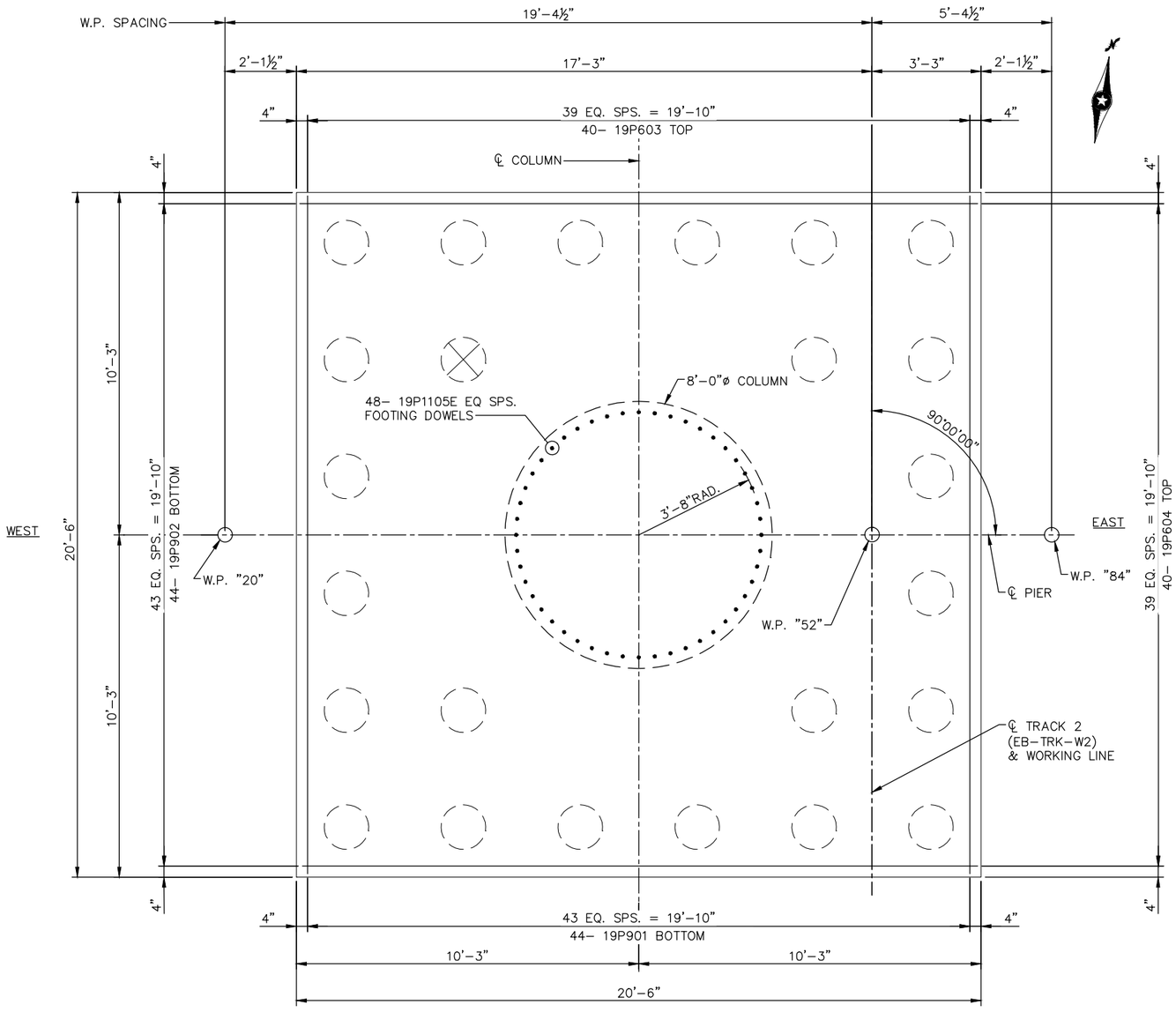
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 19 PLAN & ELEVATION

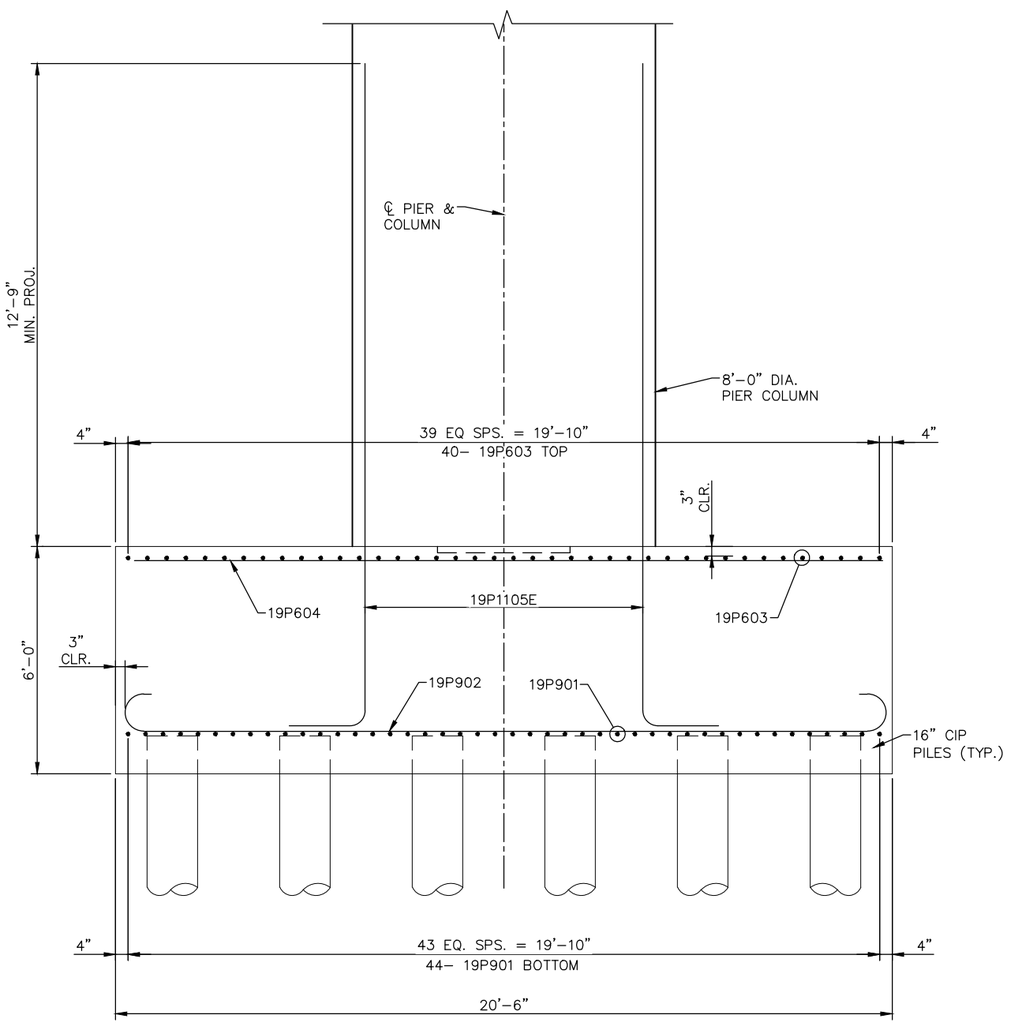
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_19

SHEET 77 OF 264

Jan, 18 2016 07:27 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



PIER 19 FOOTING PLAN



PIER 19 FOOTING ELEVATION

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

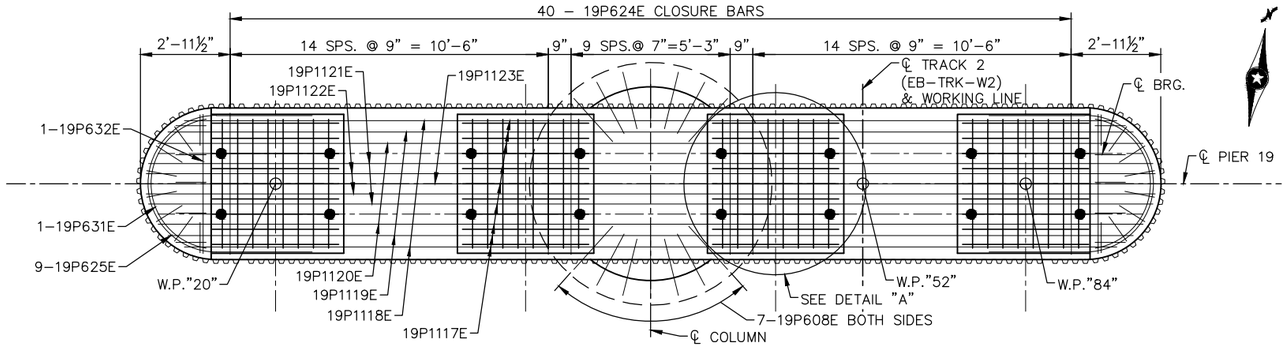
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 19 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

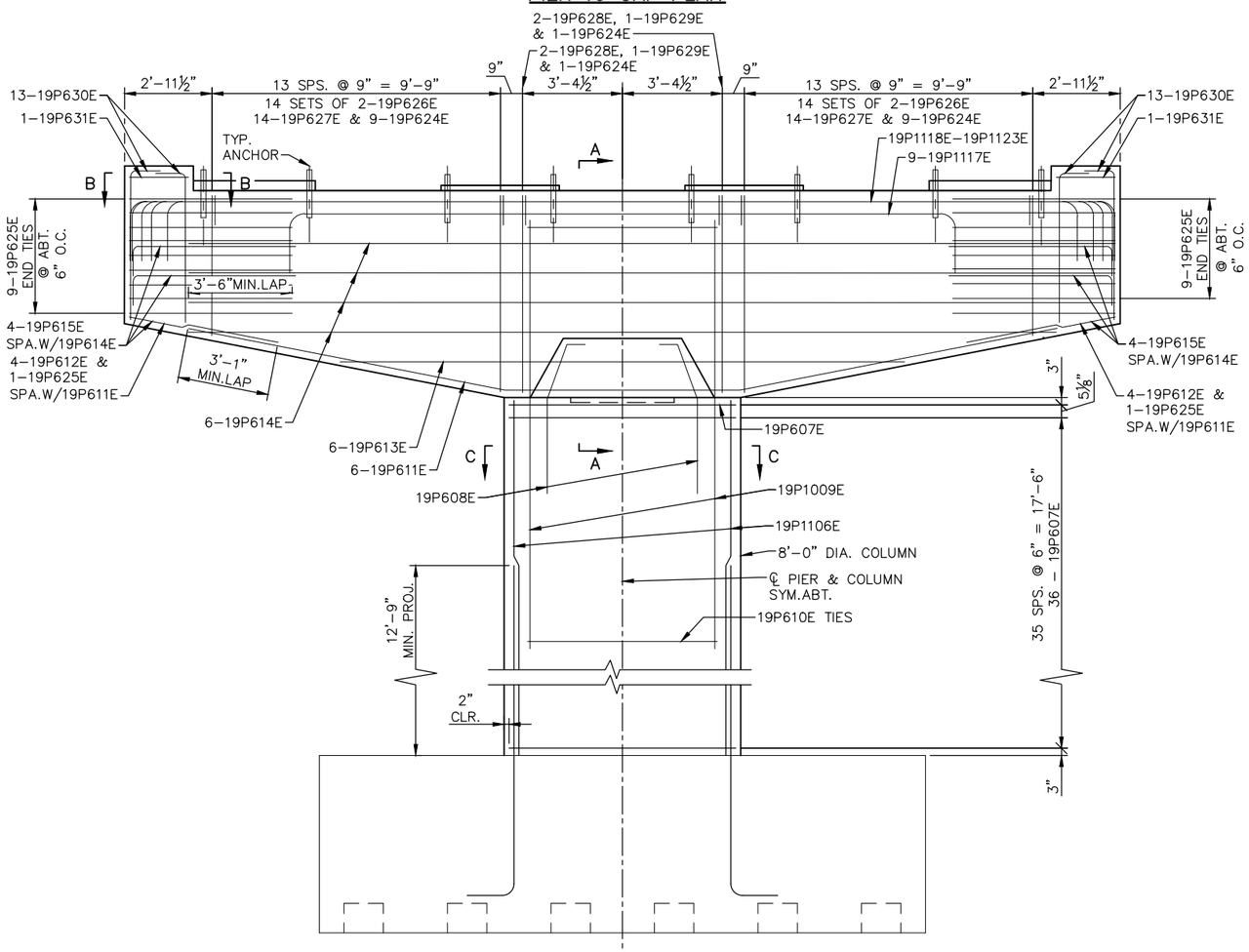
SHEET NAME: W2-STU-BRID-T212-PIER2R_19f

SHEET 78 OF 264

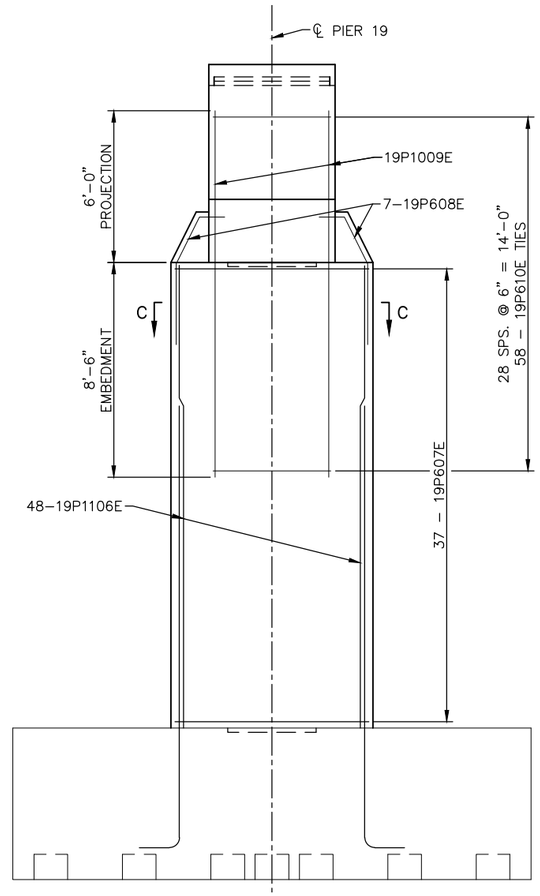
Jan, 18 2016 09:58 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2R.dwg By: hills



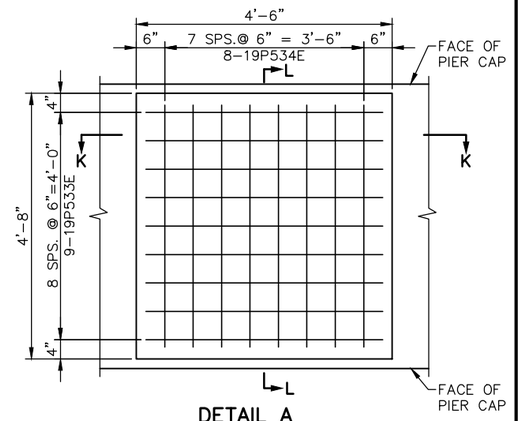
PIER 19 CAP PLAN



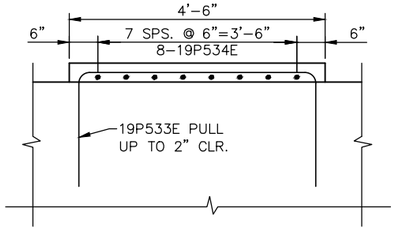
PIER 19 ELEVATION



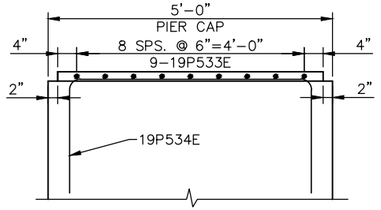
PIER 19 END VIEW



DETAIL A



SECTION K–K



SECTION L–L

NOTES:

FOR SECTIONS A–A, B–B & C–C SEE SHEET 80.

FOR DOWEL LAYOUT SEE SHEET 78.

ALL CAP REINFORCEMENT SHALL BE PLACED 2" CLEAR FROM BEARING ANCHORS.

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

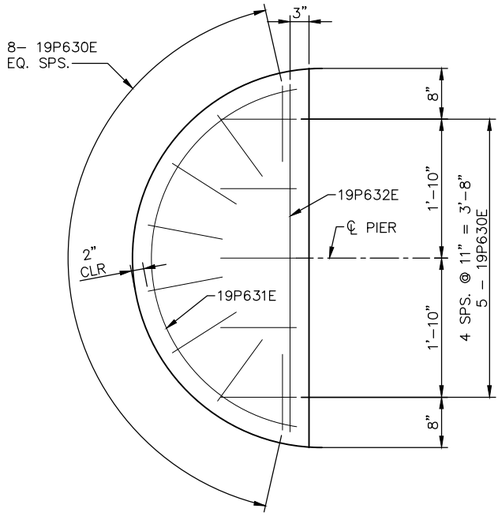
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 19 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-PIER3R_19P

SHEET 79 OF 264

Jan, 18 2016 07:29 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34 W2-STU-BRID-T212-PIER3R.dwg By: hills



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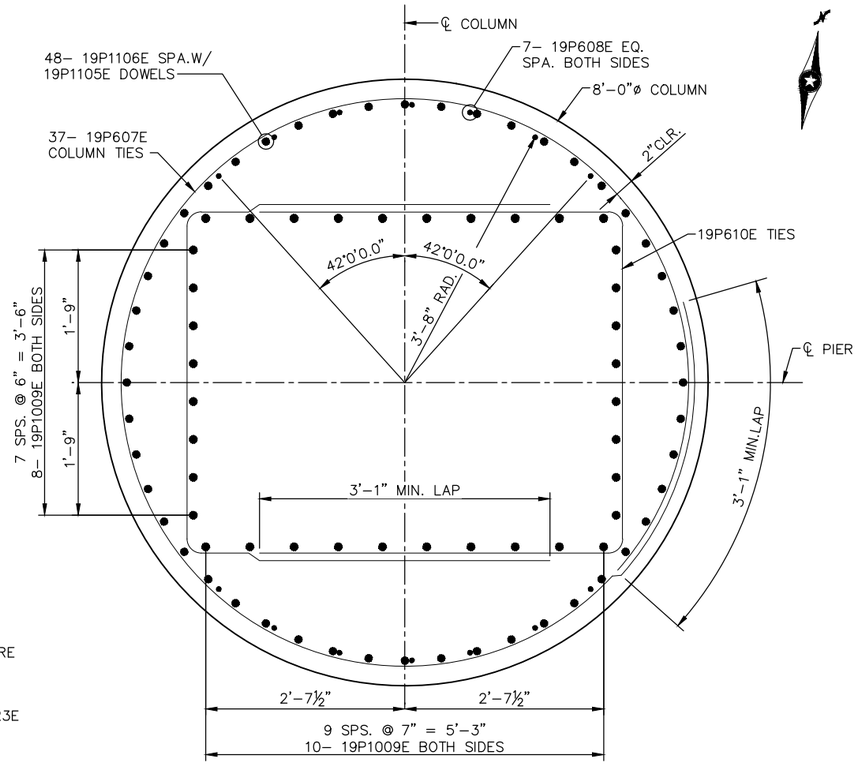
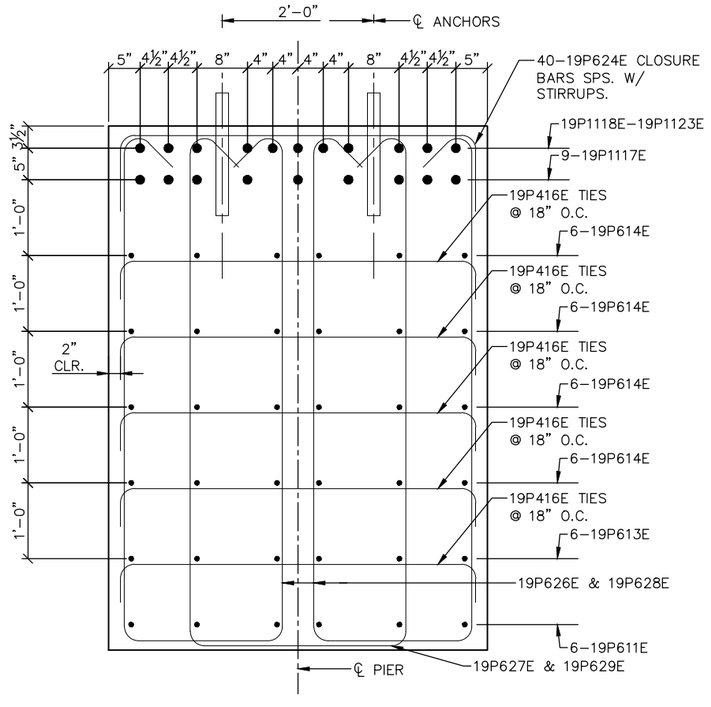
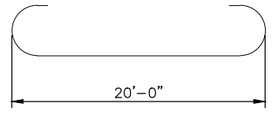


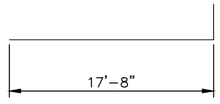
SECTION C–C



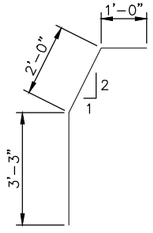
SECTION A–A



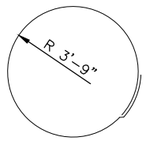
19P901 & 19P902



19P1105E



19P608E



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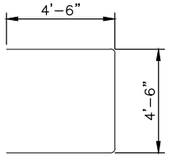

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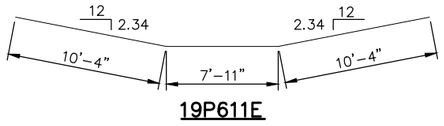

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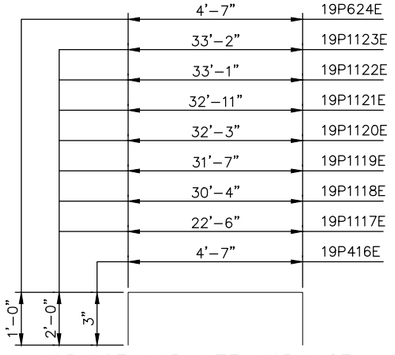
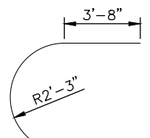


19P416E, 19P1117E, 19P1118E,
19P1119E, 19P1120E, 19P1121E,
19P1122E, 19P1123E & 19P624E



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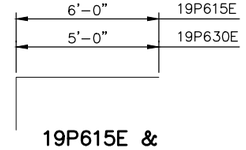
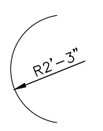
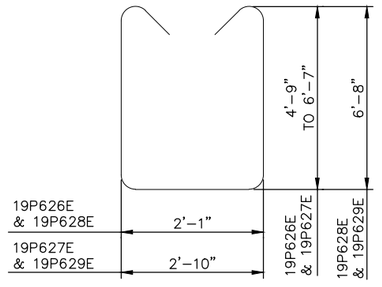


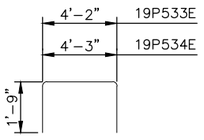
19P615E &
19P630E



19P631E



19P626E, 19P627E,
19P628 & 19P629E



19P533E & 19P534E

BILL OF REINFORCEMENT FOR PIER 19

BAR	NO.	LENGTH	SHAPE	LOCATION
19P901	44	22'–6"		FOOTING HORIZONTAL
19P902	44	22'–6"		FOOTING HORIZONTAL
19P603	40	20'–0"		FOOTING HORIZONTAL
19P604	40	20'–0"		FOOTING HORIZONTAL
19P1105E	48	19'–8"		FOOTING COLUMN DOWEL
19P1106E	48	18'–3"		COLUMN VERTICAL
19P607E	37	26'–8"		COLUMN TIE
19P608E	14	6'–3"		CAP DOWEL
19P1009E	36	14'–6"		CAP DOWEL
19P610E	58	13'–6"		CAP TIE HORIZONTAL
19P611E	6	28'–7"		CAP LONGITUDINAL
19P612E	8	5'–2"		CAP LONGITUDINAL
19P613E	6	18'–7"		CAP LONGITUDINAL
19P614E	24	28'–4"		CAP LONGITUDINAL
19P615E	24	7'–0"		CAP LONGITUDINAL
19P416E	70	5'–1"		CAP TIE
19P1117E	9	26'–6"		CAP LONGITUDINAL
19P1118E	2	34'–4"		CAP LONGITUDINAL
19P1119E	2	35'–7"		CAP LONGITUDINAL
19P1120E	2	36'–3"		CAP LONGITUDINAL
19P1121E	2	36'–11"		CAP LONGITUDINAL
19P1122E	2	37'–1"		CAP LONGITUDINAL
19P1123E	1	37'–2"		CAP LONGITUDINAL
19P624E	40	6'–7"		CAP TIE
19P625E	20	14'–4"		END TIE
19P626E	56	①		CAP STIRRUP
19P627E	28	②		CAP STIRRUP
19P628E	4	16'–9"		CAP STIRRUP
19P629E	2	17'–6"		CAP STIRRUP
19P630E	26	6'–0"		CAP VERTICAL
19P631E	2	6'–4"		CAP HORIZONTAL
19P632E	2	4'–7"		CAP HORIZONTAL
19P533E	36	7'–8"		PEDESTAL TIE
19P534E	32	7'–9"		PEDESTAL TIE

① 4–SERIES OF 14, 12'–11" TO 16'–7"
② 2–SERIES OF 14, 13'–8" TO 17'–4"

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

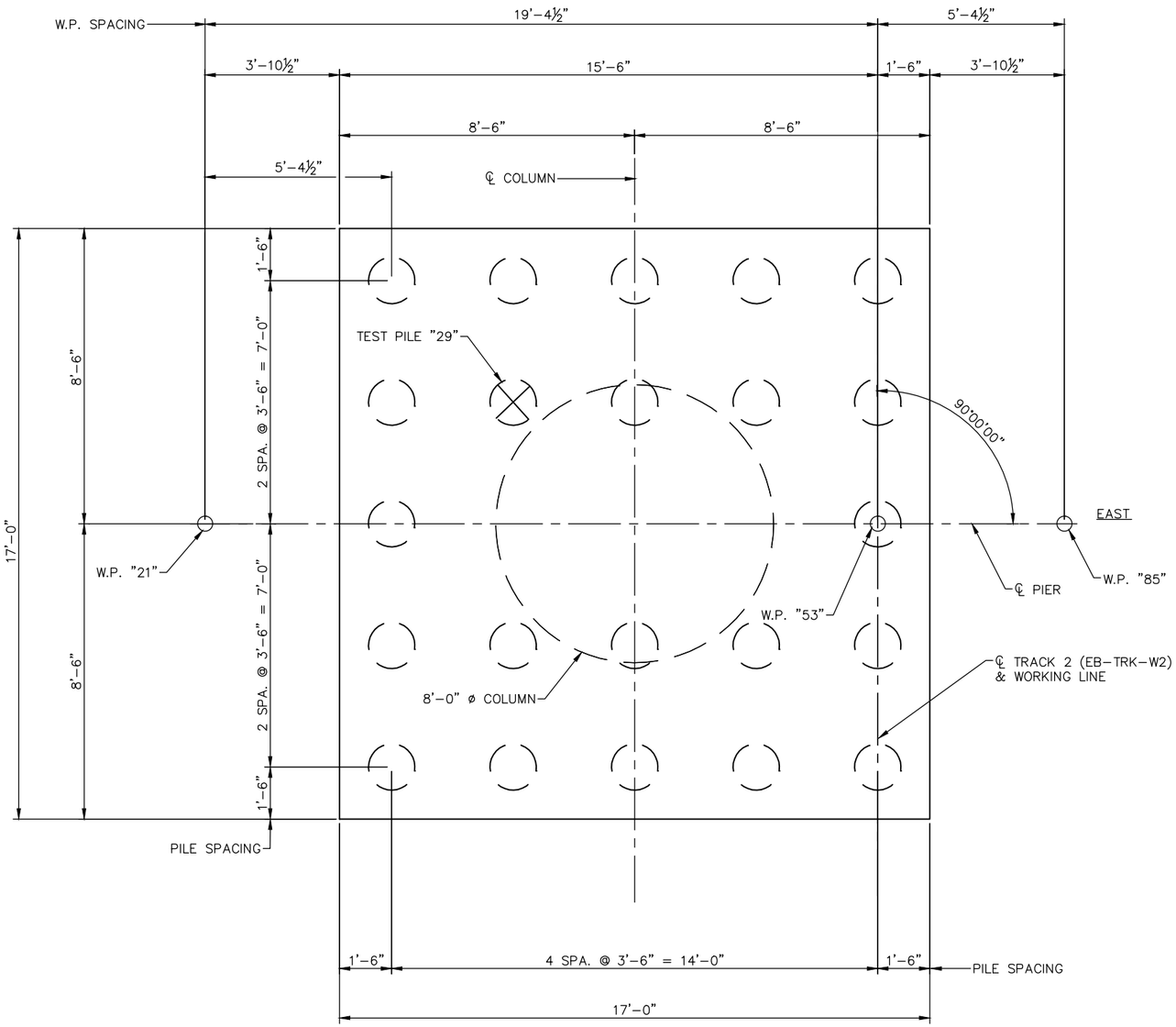
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 19 REINFORCEMENT 3

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-PIERR_19S

SHEET 80 OF 264

Jan, 18 2016 07:29 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



PIER 20 PILE LAYOUT

PIER 20 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	272.4
PDA	0.65	209.5

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

PIER 20 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	76.7
FACTORED LIVE LOAD	38.2
FACTORED OVERTURNING	21.3
FACTORED DESIGN LOAD	136.2
FACTORED DESIGN UPLIFT	N/A
LOAD COMBINATION	STRENGTH 5 (MOD)

PILE NOTES

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

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.3125 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

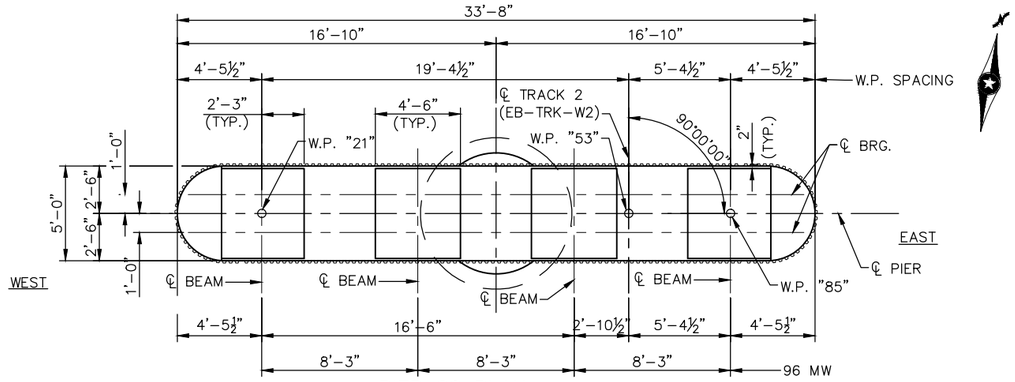
SOUTHWEST Green Line LRT Extension

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

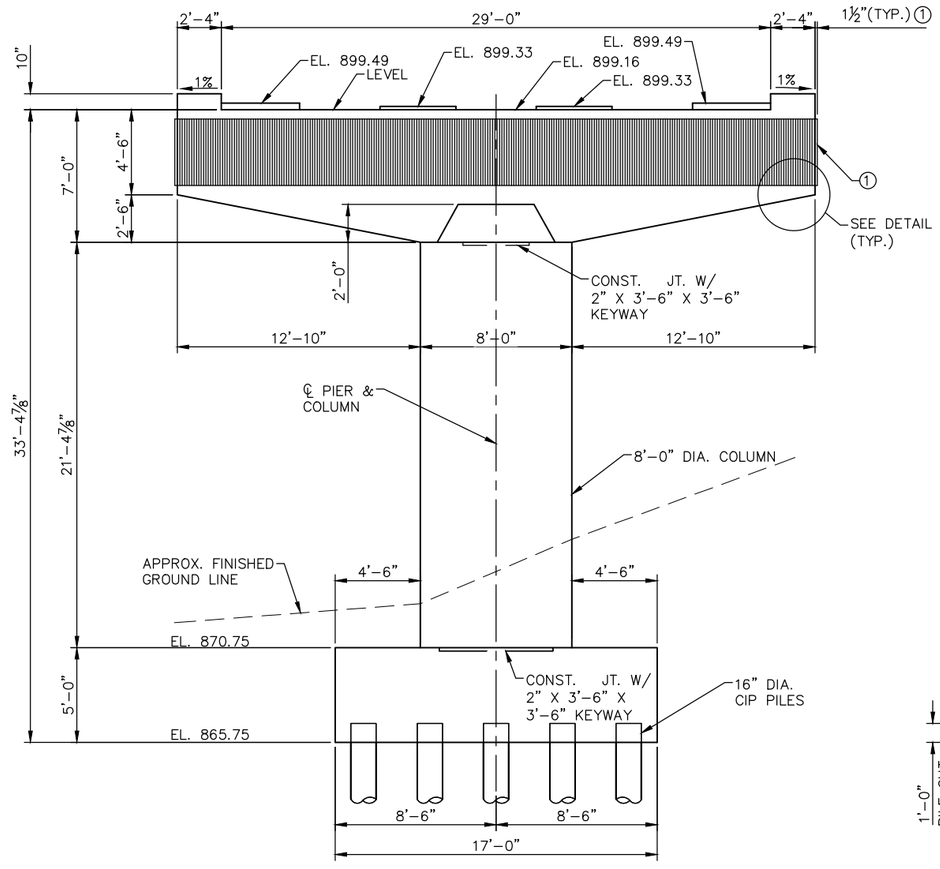
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_20a

SHEET 81 OF 264

Jan, 18 2016 07:30 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



PIER 20 PLAN



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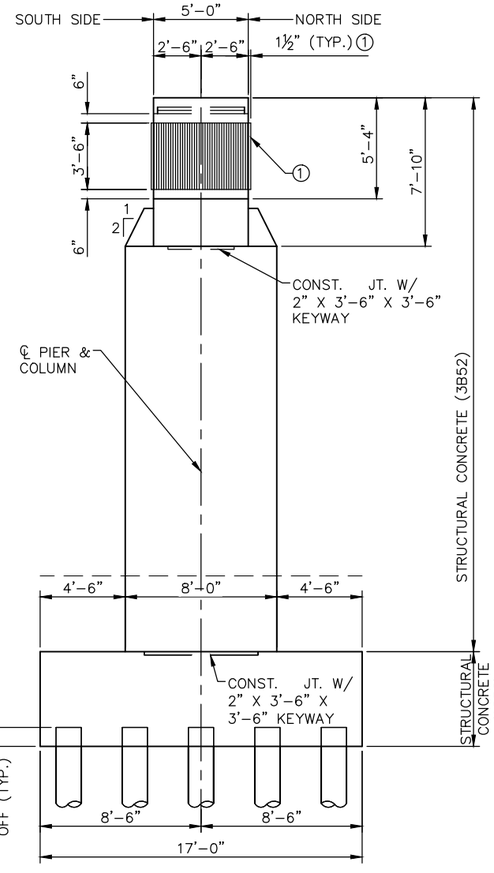
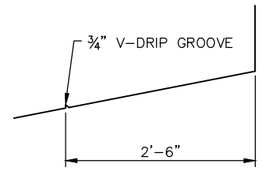


PIER 20 END VIEW



DETAIL 1

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE, TYPE 1 "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)"

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

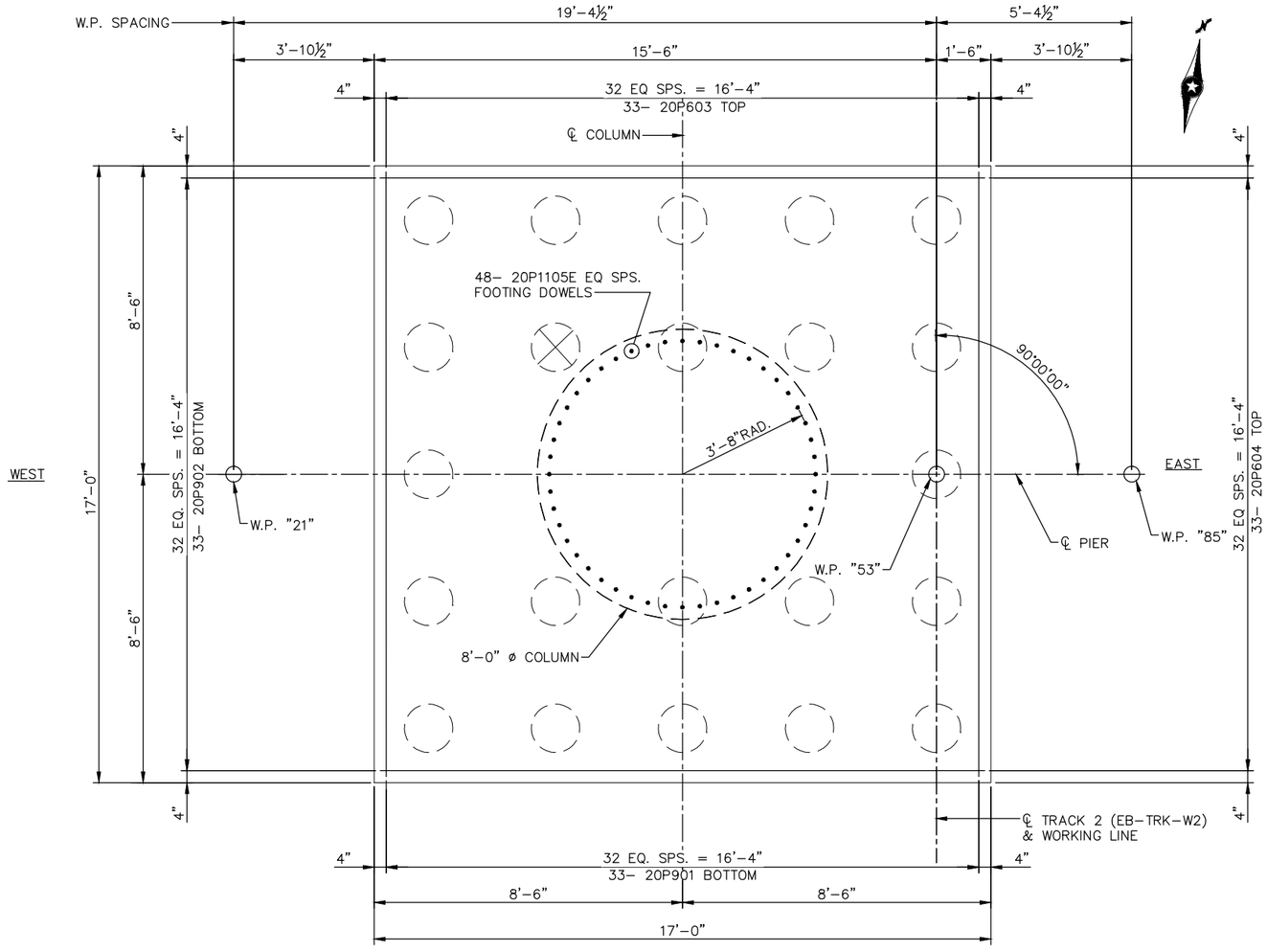
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 20 PLAN & ELEVATION

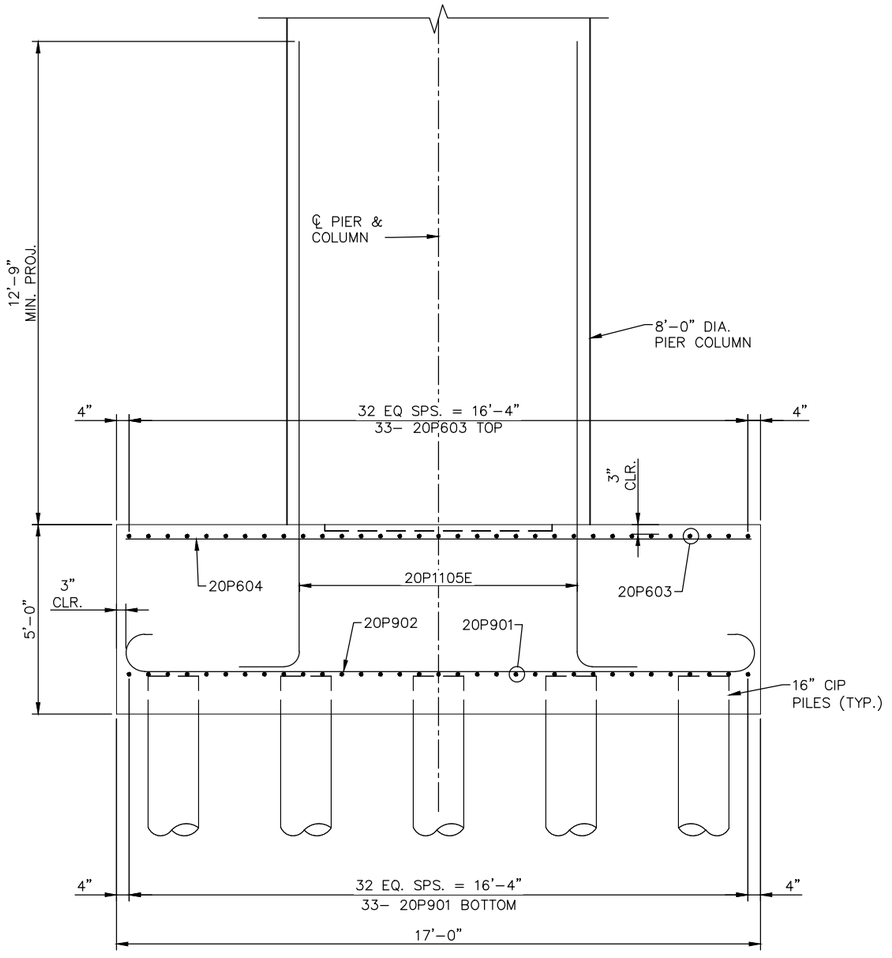
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_20

SHEET 82 OF 264

Jan, 18 2016 07:30 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



PIER 20 FOOTING PLAN



PIER 20 FOOTING ELEVATION

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: MJC CHECKED BY: EEM

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

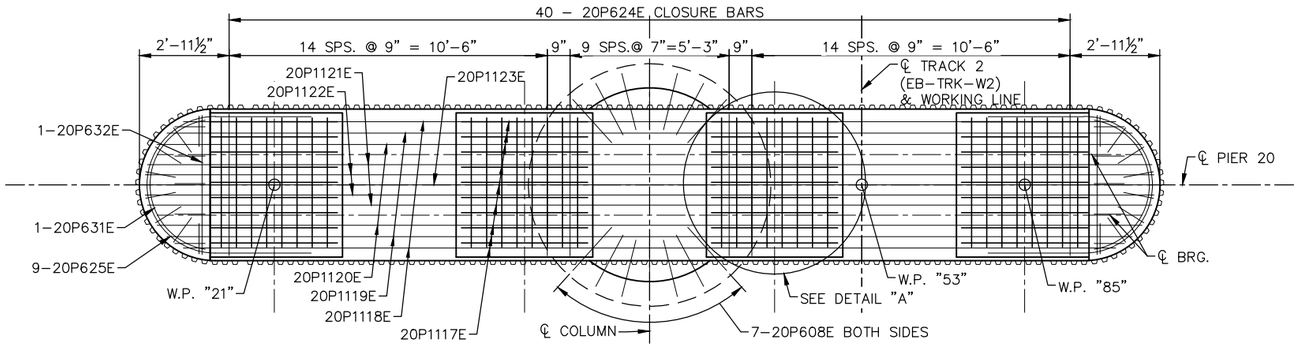
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 20 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

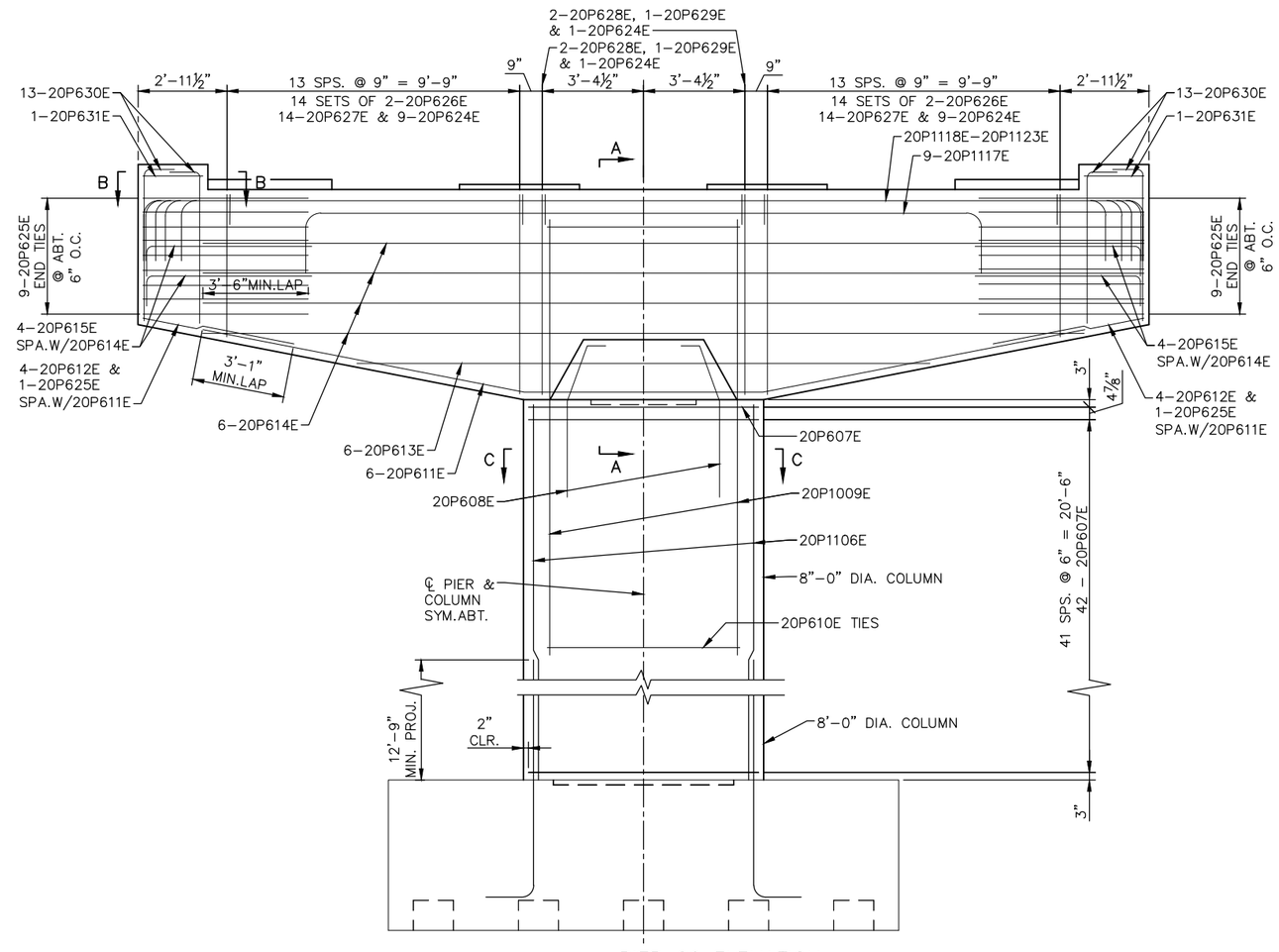
SHEET NAME: W2-STU-BRID-T212-PIER2R_20f

SHEET 83 OF 264

Jan. 18 2016 07:31 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2R.dwg By: hills



PIER 20 PLAN



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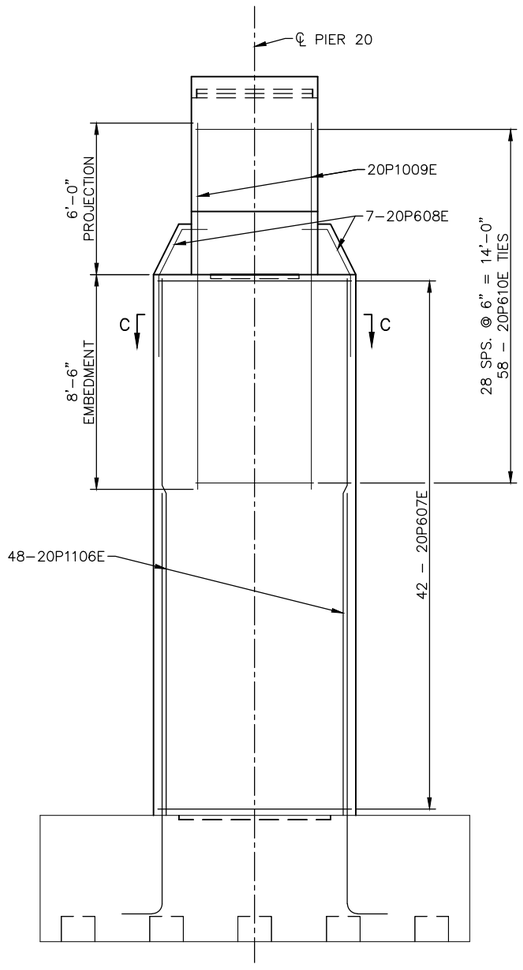
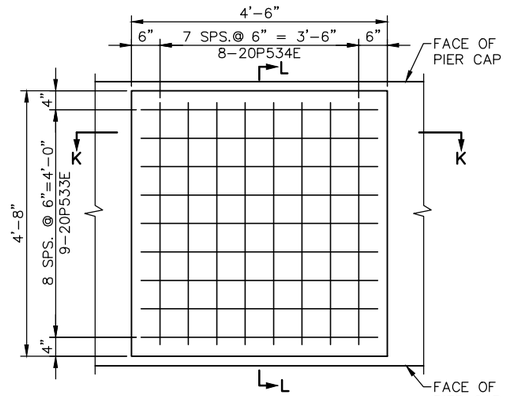
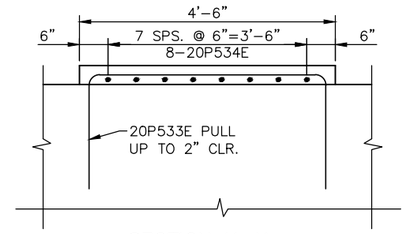


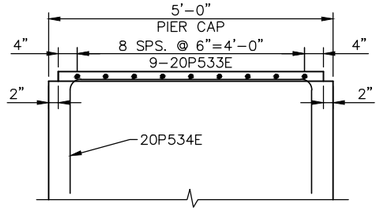
PIER 20 END VIEW



DETAIL A



SECTION K–K



SECTION L–L

NOTES:

FOR SECTIONS A–A, B–B & C–C SEE SHEET 85.

FOR DOWEL LAYOUT SEE SHEET 83.

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DESIGNED BY: MJC CHECKED BY: EEM

DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

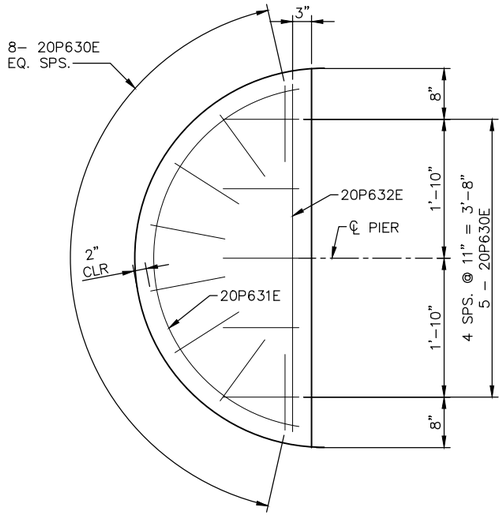
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 20 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

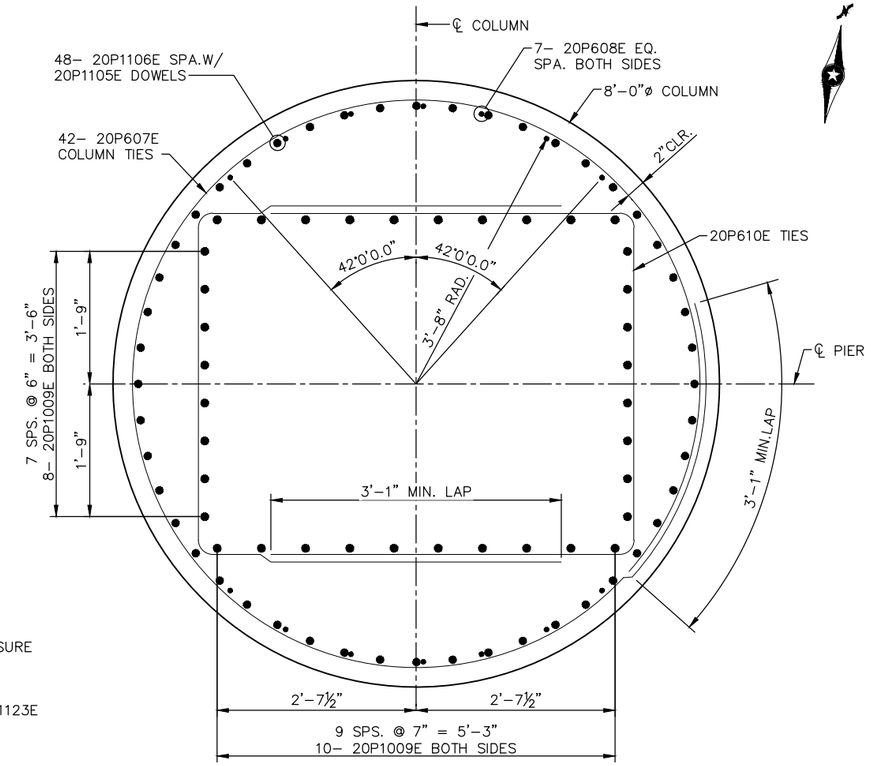
SHEET NAME: W2-STU-BRID-T212-PIER3R_20P

SHEET 84 OF 264

Jan. 18 2016 07:32 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



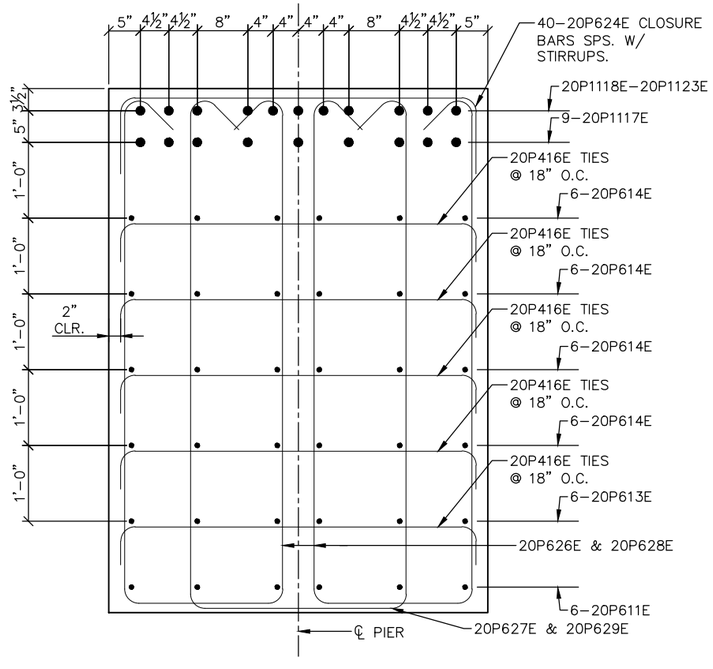
SECTION B–B



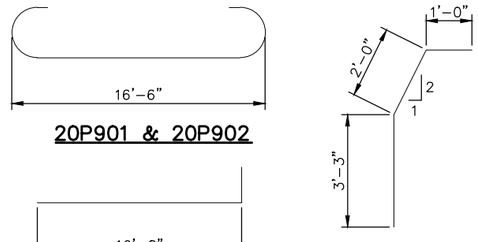
SECTION C–C

BILL OF REINFORCEMENT FOR PIER 20				
BAR	NO.	LENGTH	SHAPE	LOCATION
20P901	33	19'–0"		FOOTING HORIZONTAL
20P902	33	19'–0"		FOOTING HORIZONTAL
20P603	33	16'–6"		FOOTING HORIZONTAL
20P604	33	16'–6"		FOOTING HORIZONTAL
20P1105E	48	18'–8"		FOOTING COLUMN DOWEL
20P1106E	48	21'–1"		COLUMN VERTICAL
20P607E	42	26'–8"		COLUMN TIE
20P608E	14	6'–3"		CAP DOWEL
20P1009E	36	14'–6"		CAP DOWEL
20P610E	58	13'–6"		CAP TIE HORIZONTAL
20P611E	6	28'–7"		CAP LONGITUDINAL
20P612E	8	5'–2"		CAP LONGITUDINAL
20P613E	6	18'–7"		CAP LONGITUDINAL
20P614E	24	28'–4"		CAP LONGITUDINAL
20P615E	24	7'–0"		CAP LONGITUDINAL
20P416E	70	5'–1"		CAP TIE
20P1117E	9	26'–6"		CAP LONGITUDINAL
20P1118E	2	34'–4"		CAP LONGITUDINAL
20P1119E	2	35'–7"		CAP LONGITUDINAL
20P1120E	2	36'–3"		CAP LONGITUDINAL
20P1121E	2	36'–11"		CAP LONGITUDINAL
20P1122E	2	37'–1"		CAP LONGITUDINAL
20P1123E	1	37'–2"		CAP LONGITUDINAL
20P624E	40	6'–7"		CAP TIE
20P625E	20	14'–4"		END TIE
20P626E	56	①		CAP STIRRUP
20P627E	28	②		CAP STIRRUP
20P628E	4	16'–9"		CAP STIRRUP
20P629E	2	17'–6"		CAP STIRRUP
20P630E	26	6'–0"		CAP VERTICAL
20P631E	2	6'–4"		CAP HORIZONTAL
20P632E	2	4'–7"		CAP HORIZONTAL
20P533E	36	7'–8"		PEDESTAL TIE
20P534E	32	7'–9"		PEDESTAL TIE

① 4–SERIES OF 14, 12'–11" TO 16'–7"
② 2–SERIES OF 14, 13'–8" TO 17'–4"

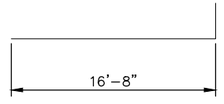


SECTION A–A



20P901 & 20P902

20P608E



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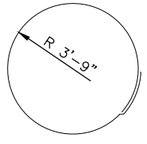
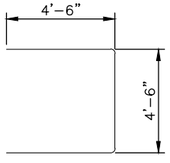
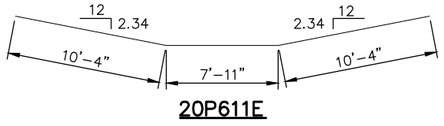


20P607E



20P610E



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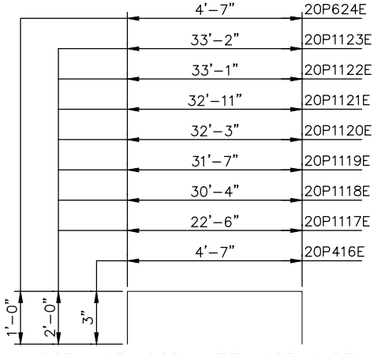

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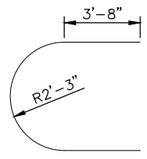

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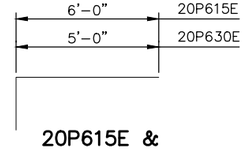

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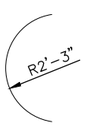

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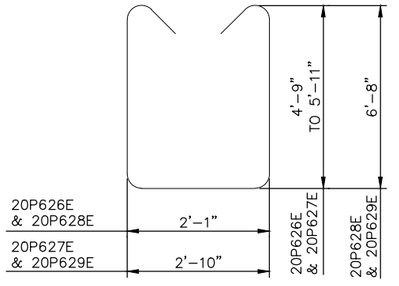
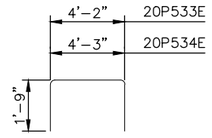


20P626E, 20P627E, 20P628E & 20P629E



20P533E & 20P534E

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

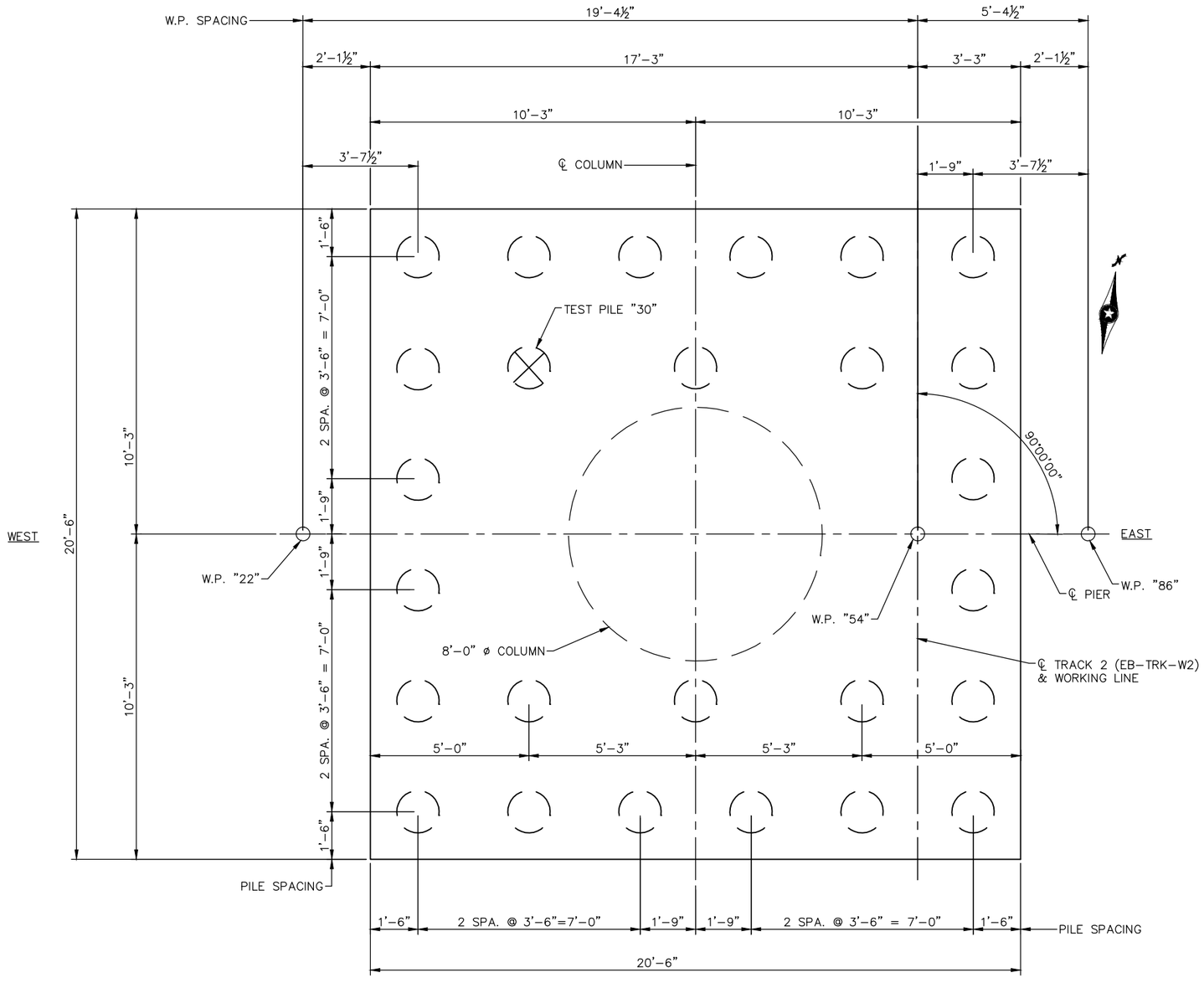
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 20 REINFORCEMENT 3

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-PIER3R_20S

SHEET 85 OF 264

Jan, 18 2016 10:00 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



PIER 21 PILE LAYOUT

PIER 21 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	268.8
PDA	0.65	206.8

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

PIER 21 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	72.5
FACTORED LIVE LOAD	46.9
FACTORED OVERTURNING	15.0
FACTORED DESIGN LOAD	134.4
FACTORED DESIGN UPLIFT	N/A
LOAD COMBINATION	STRENGTH 5 (MOD)

PILE NOTES

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

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.3125 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTH SHOWN IS BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

SEE GENERAL PLAN AND ELEVATION SHEETS FOR ANY REQUIRED SUPPORT OF EXCAVATION (SOE).

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DRAWN BY: SBM CHECKED BY: EEM

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

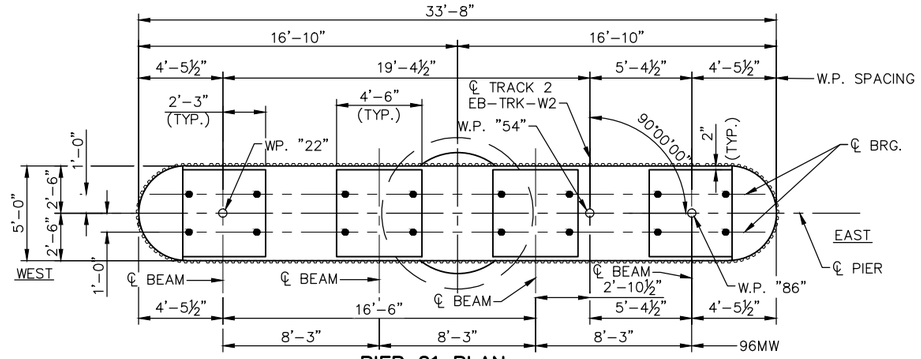
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 21 FOOTING PLAN

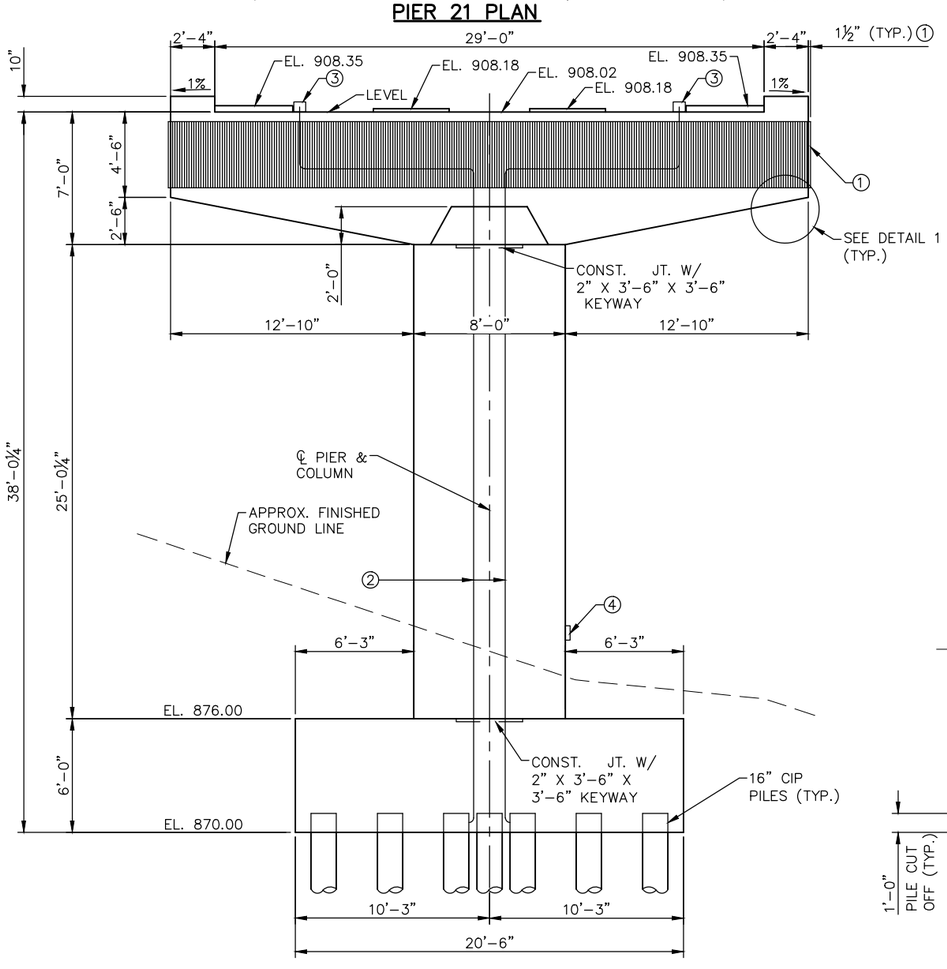
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_21a

SHEET 86 OF 264

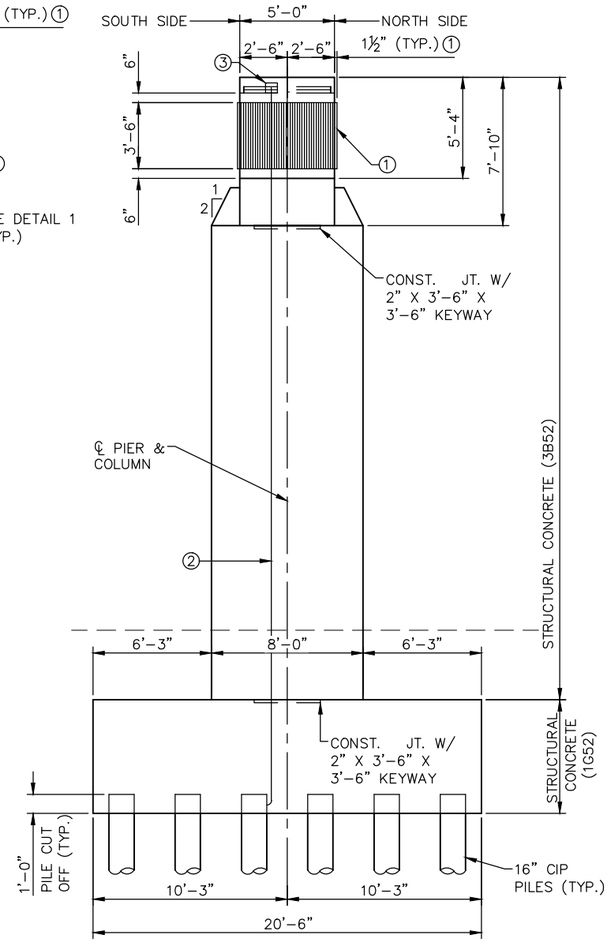
Jan, 18 2016 07:32 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



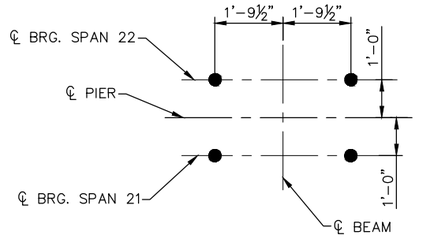
PIER 21 PLAN



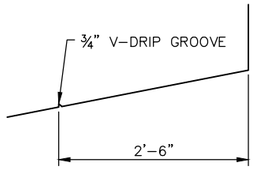
PIER 21 ELEVATION



PIER 21 END VIEW



ANCHOR ROD LAYOUT



DETAIL 1

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE, TYPE 1 "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)"

② GROUND WIRE PLACED INSIDE 1" PVC CONDUIT. SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600.

③ JUNCTION BOX, SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600.

④ GROUNDING TEST STATION, SEE GROUNDING PLANS IN VOLUME 12, SHEET ELE-SITE-DTL-600

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

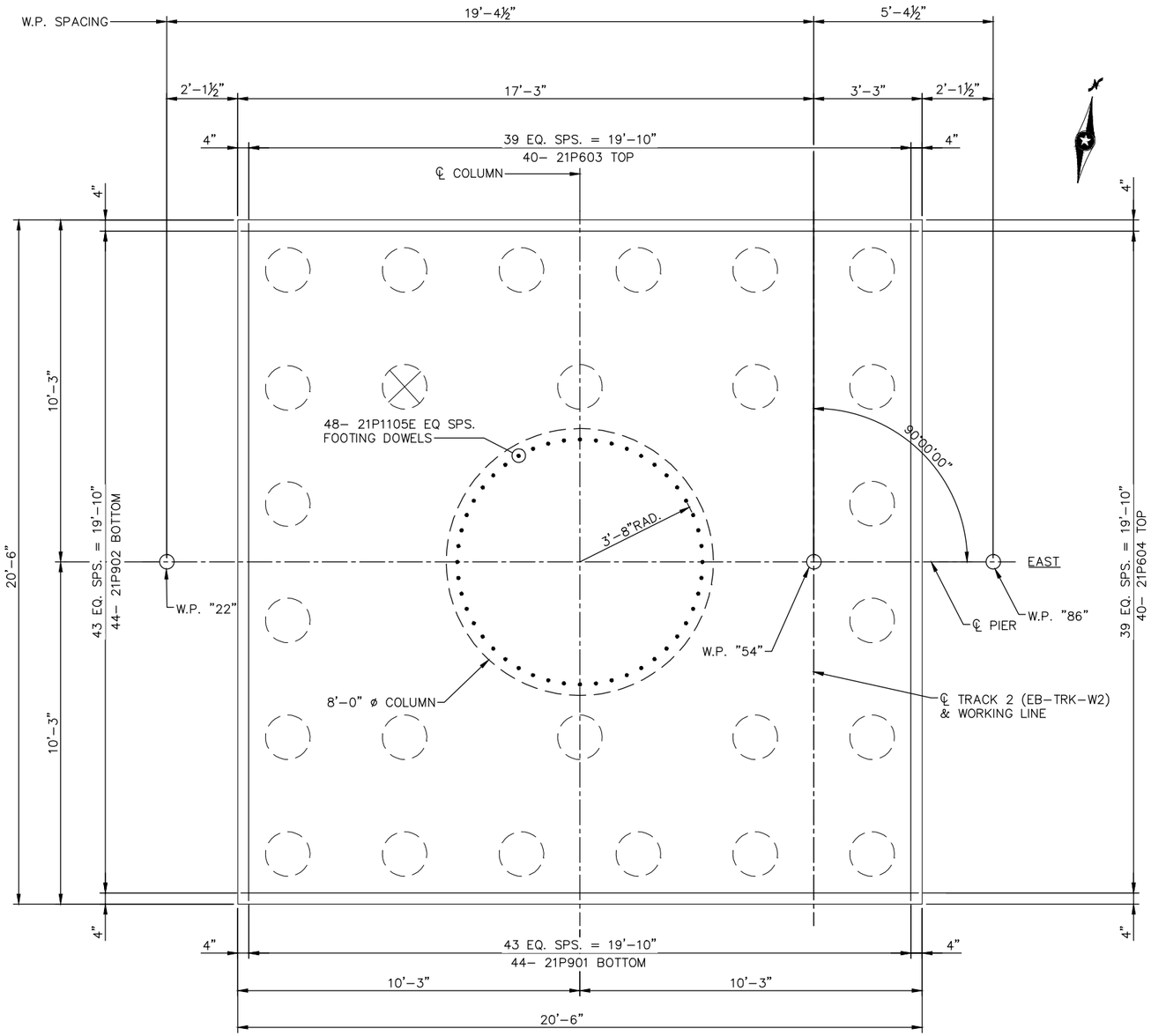
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 21 PLAN & ELEVATION

DISCIPLINE: STRUCTURES

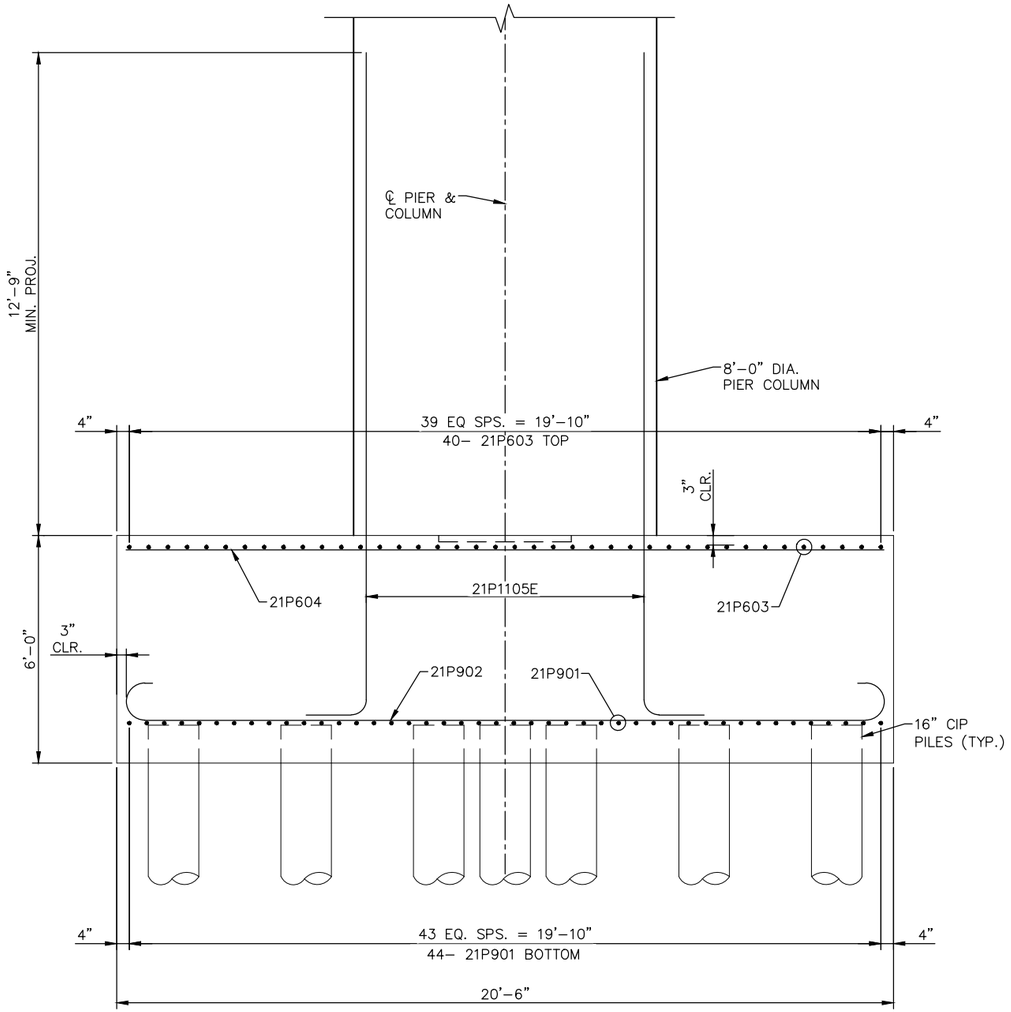
SHEET NAME: W2-STU-BRID-T212-PIER_21

SHEET 87 OF 264

Jan, 18 2016 07:33 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34 W2-STU-BRID-T212-PIER2.dwg By: hills



PIER 21 FOOTING PLAN



PIER 21 FOOTING ELEVATION

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: MJC | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

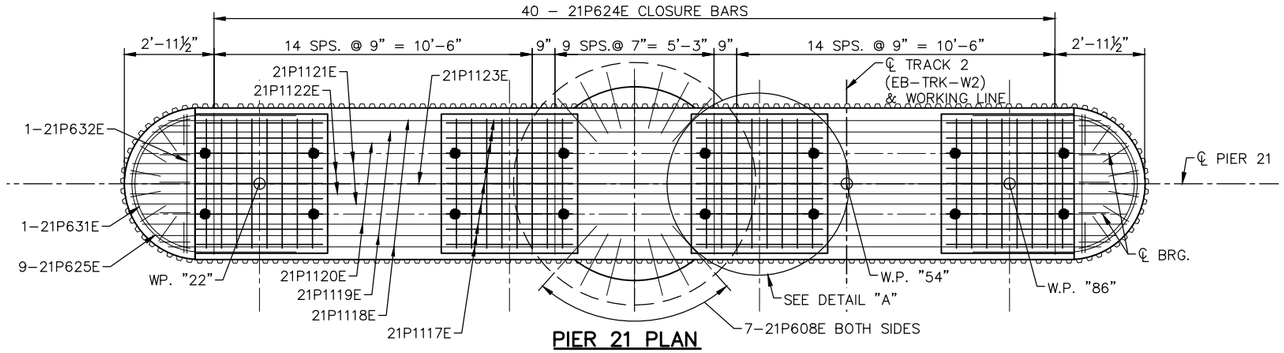
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 21 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

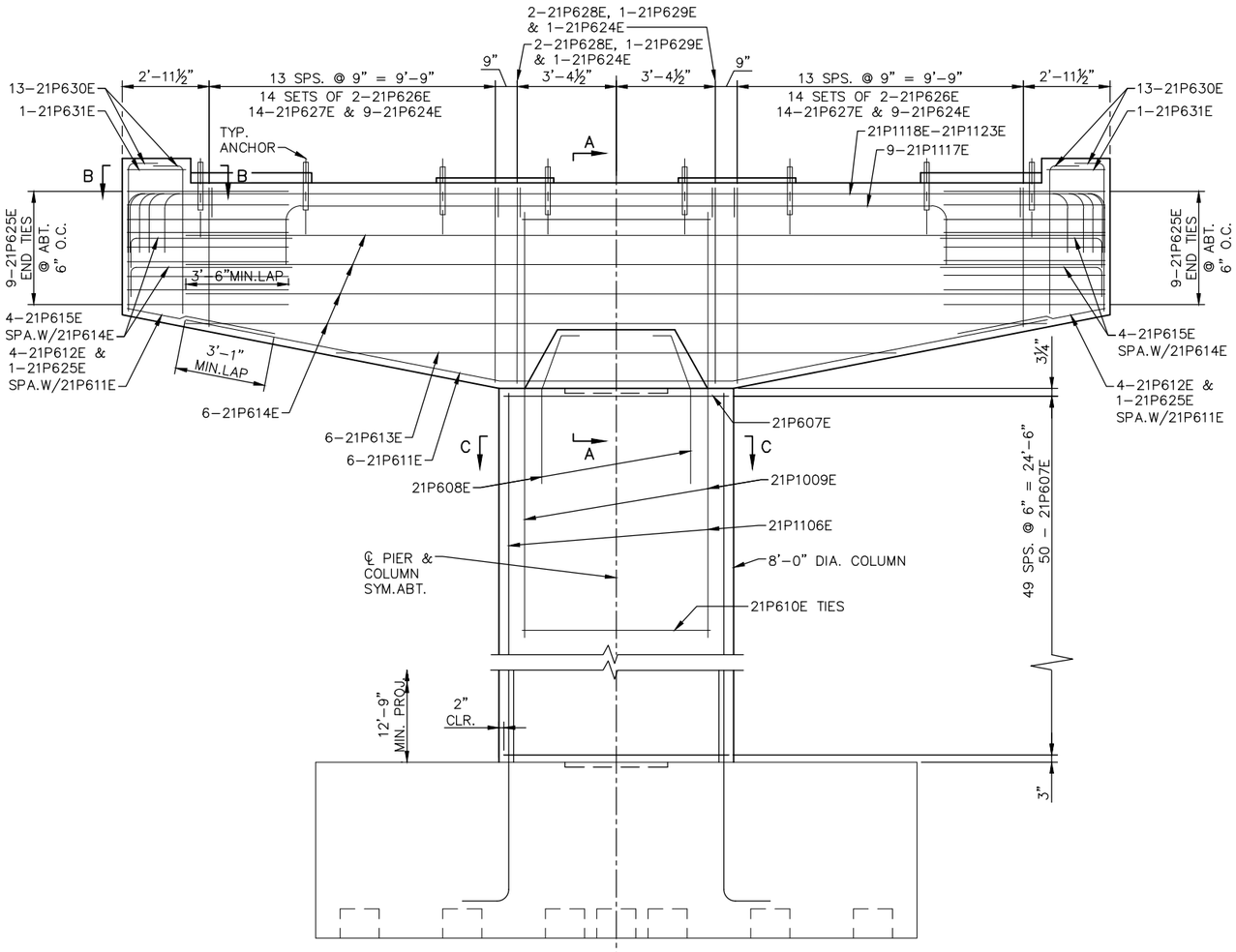
SHEET NAME: W2-STU-BRID-T212-PIER2R_21f

SHEET 88 OF 264

Jan, 18 2016 10:05 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2R.dwg By: hills



PIER 21 PLAN



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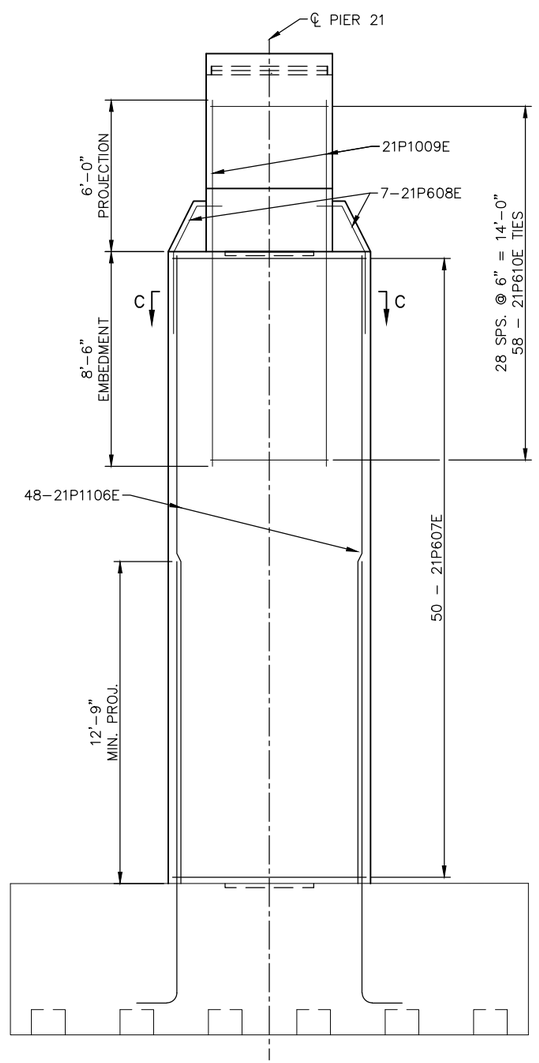
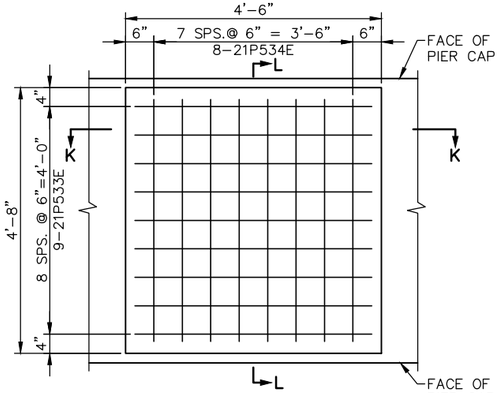
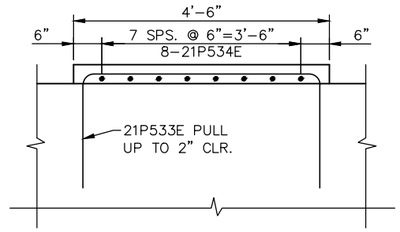


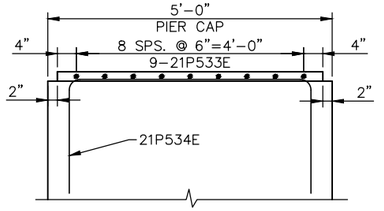
PIER 21 END VIEW



DETAIL A



SECTION K–K



SECTION L–L

NOTES:

FOR SECTIONS A–A, B–B & C–C SEE SHEET 90.

FOR DOWEL LAYOUT SEE SHEET 88.

ALL CAP REINFORCEMENT SHALL BE PLACED 2" CLEAR FROM BEARING ANCHORS.

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

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METROPOLITAN COUNCIL

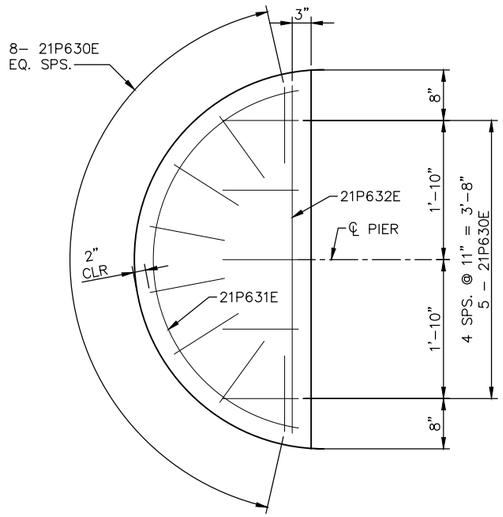
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 21 REINFORCEMENT 2

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER3R_21P

SHEET 89 OF 264

Jan, 18 2016 07:34 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



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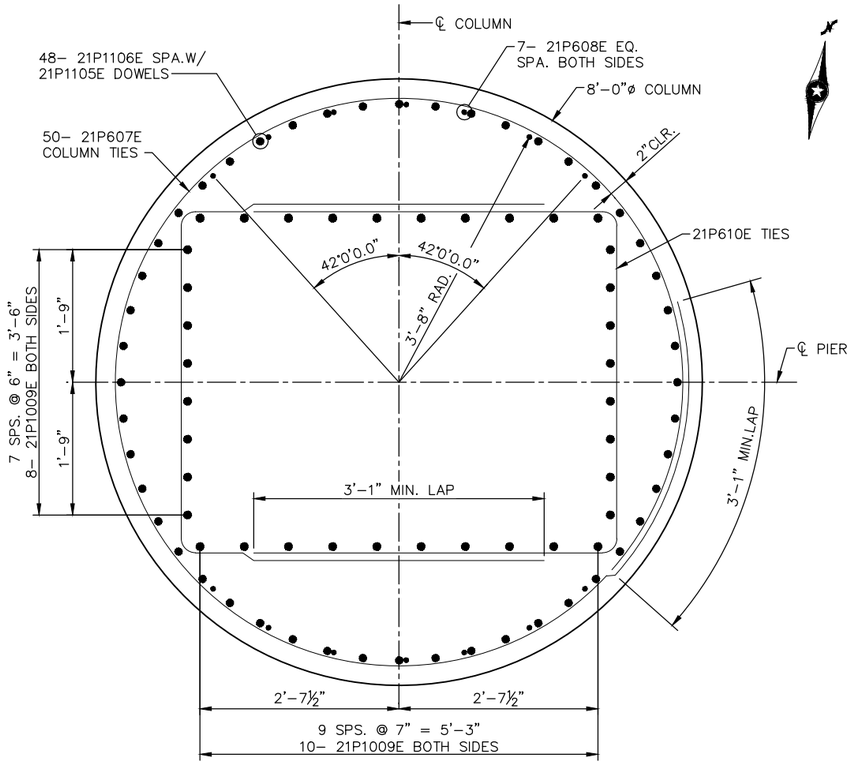

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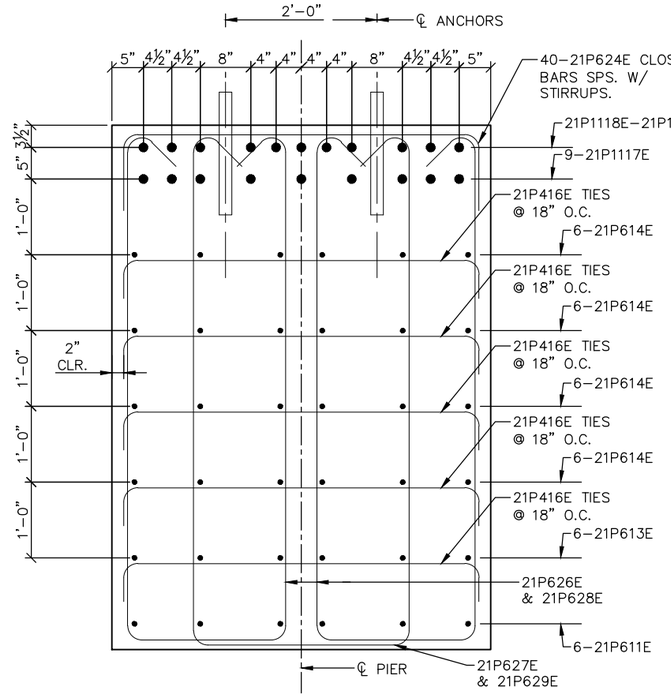
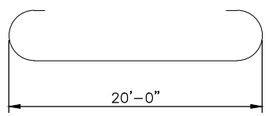
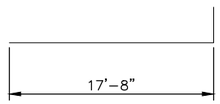


SECTION A–A



21P901 & 21P902



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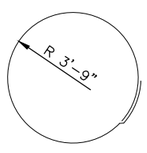

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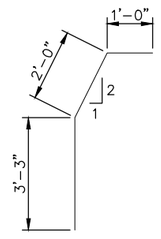

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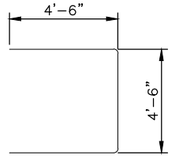

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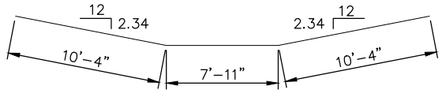

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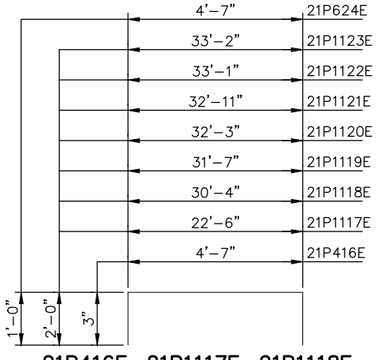
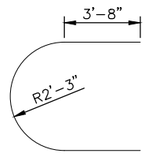
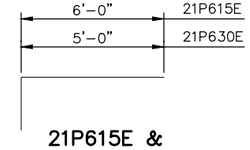


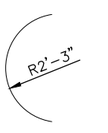
21P416E, 21P1117E, 21P1118E,
21P1119E, 21P1120E, 21P1121E,
21P1122E, 21P1123E & 21P624E



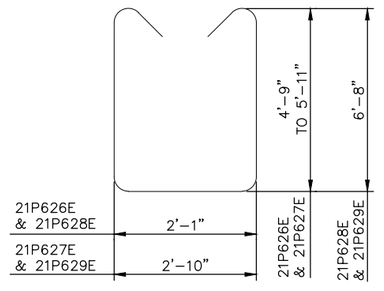
21P625E



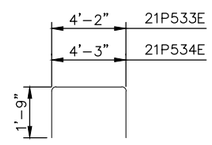
21P615E &
21P630E



21P631E



21P626E, 21P627E,
21P628E & 21P629E



21P533E & 21P534E

BILL OF REINFORCEMENT FOR PIER 21

BAR	NO.	LENGTH	SHAPE	LOCATION
21P901	44	22'–6"		FOOTING HORIZONTAL
21P902	44	22'–6"		FOOTING HORIZONTAL
21P603	40	20'–0"		FOOTING HORIZONTAL
21P604	40	20'–0"		FOOTING HORIZONTAL
21P1105E	48	19'–8"		FOOTING COLUMN DOWEL
21P1106E	48	24'–10"		COLUMN VERTICAL
21P607E	50	26'–8"		COLUMN TIE
21P608E	14	6'–3"		CAP DOWEL
21P1009E	36	14'–6"		CAP DOWEL
21P610E	58	13'–6"		CAP TIE HORIZONTAL
21P611E	6	28'–7"		CAP LONGITUDINAL
21P612E	8	5'–2"		CAP LONGITUDINAL
21P613E	6	18'–7"		CAP LONGITUDINAL
21P614E	24	28'–4"		CAP LONGITUDINAL
21P615E	24	7'–0"		CAP LONGITUDINAL
21P416E	70	5'–1"		CAP TIE
21P1117E	9	26'–6"		CAP LONGITUDINAL
21P1118E	2	34'–4"		CAP LONGITUDINAL
21P1119E	2	35'–7"		CAP LONGITUDINAL
21P1120E	2	36'–3"		CAP LONGITUDINAL
21P1121E	2	36'–11"		CAP LONGITUDINAL
21P1122E	2	37'–1"		CAP LONGITUDINAL
21P1123E	1	37'–2"		CAP LONGITUDINAL
21P624E	40	6'–7"		CAP TIE
21P625E	20	14'–4"		END TIE
21P626E	56	①		CAP STIRRUP
21P627E	28	②		CAP STIRRUP
21P628E	4	16'–9"		CAP STIRRUP
21P629E	2	17'–6"		CAP STIRRUP
21P630E	26	6'–0"		CAP VERTICAL
21P631E	2	6'–4"		CAP HORIZONTAL
21P632E	2	4'–7"		CAP HORIZONTAL
21P533E	36	7'–8"		PEDESTAL TIE
21P534E	32	7'–9"		PEDESTAL TIE

① 4–SERIES OF 14, 12'–11" TO 16'–7"
② 2–SERIES OF 14, 13'–8" TO 17'–4"

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 21 REINFORCEMENT 3

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-PIER33_21S

SHEET 90 OF 264

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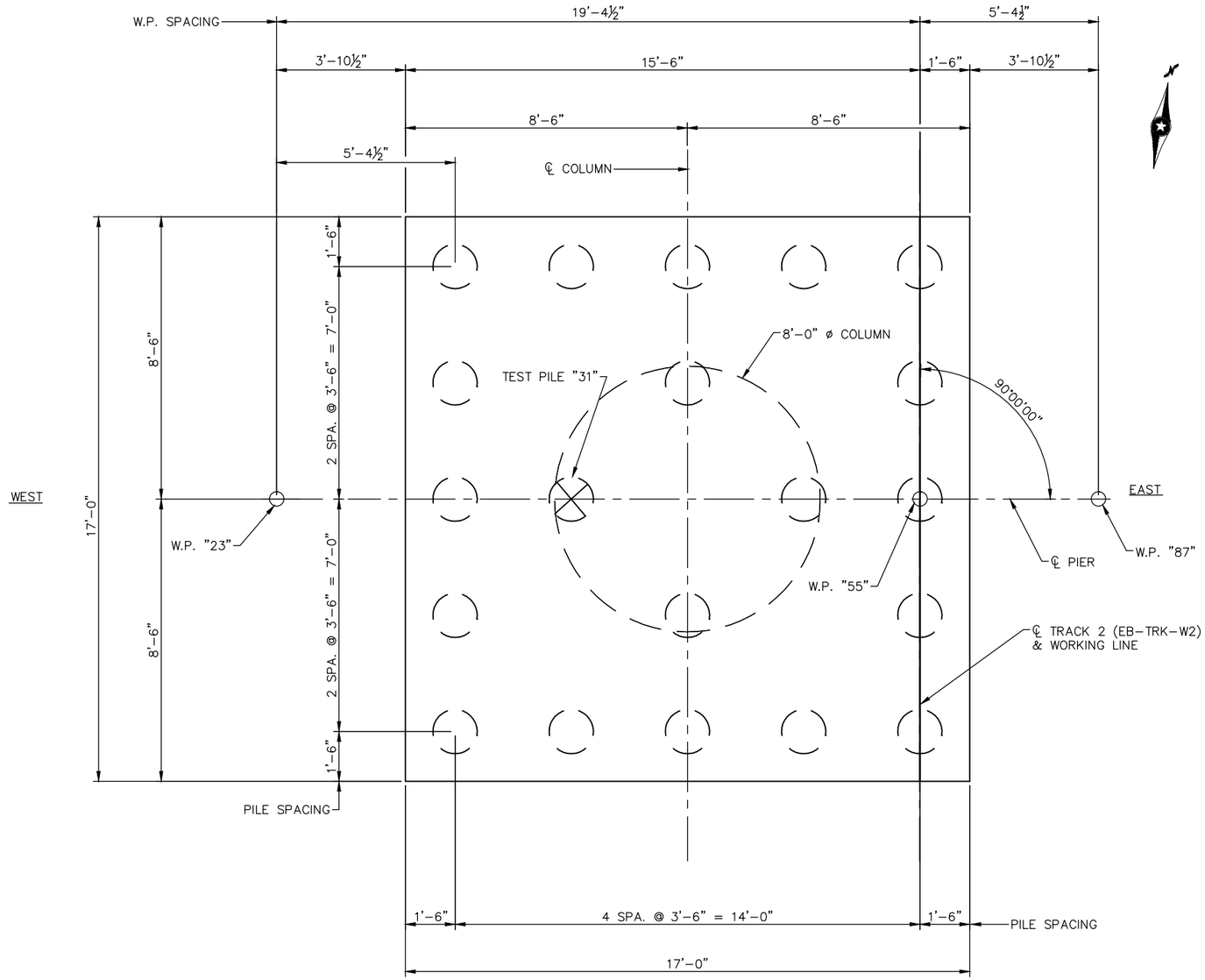

PIER 22 PILE LAYOUT

PIER 22 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} x \log\left(\frac{10}{S}\right)$	0.50	266.6
PDA	0.65	205.1

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

PIER 22 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	77.7
FACTORED LIVE LOAD	37.7
FACTORED OVERTURNING	17.9
FACTORED DESIGN LOAD	133.3
FACTORED DESIGN UPLIFT	N/A
LOAD COMBINATION	STRENGTH 5 (MOD)

PILE NOTES

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

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.3125 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

SEE GENERAL PLAN AND ELEVATION SHEETS FOR ANY REQUIRED SUPPORT OF EXCAVATION (SOE).

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

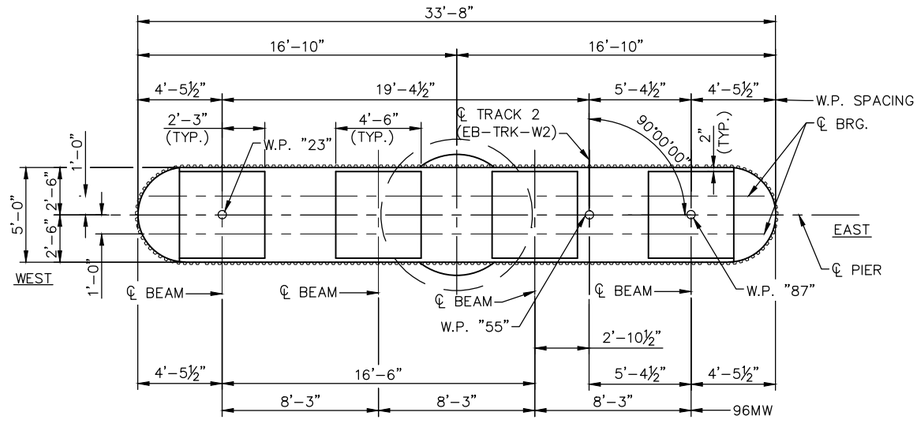
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

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

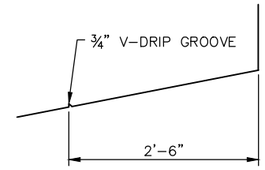
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_22a

SHEET 91 OF 264

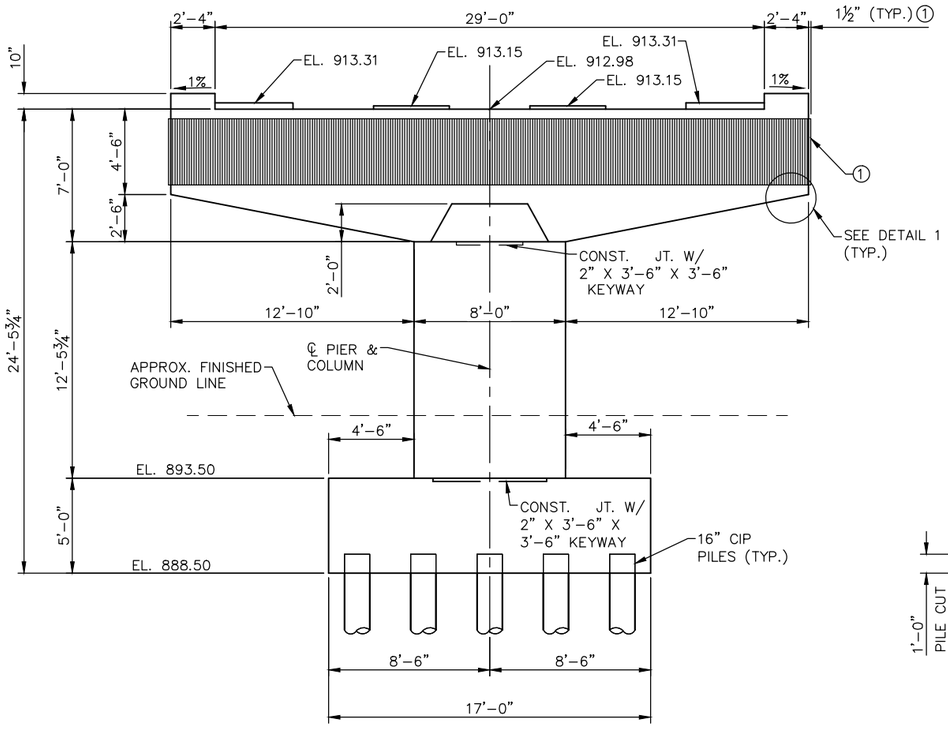
Jan, 18 2016 10:07 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



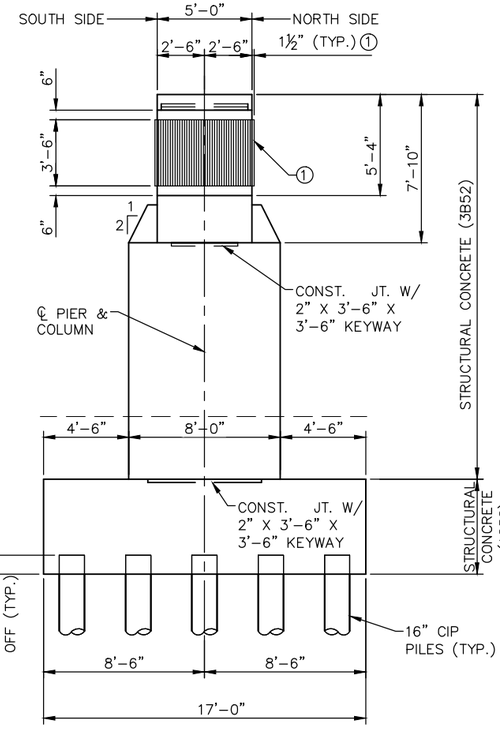
PIER 22 PLAN



DETAIL 1



PIER 22 ELEVATION



PIER 22 END VIEW

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE, TYPE 1 "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)"

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DESIGNED BY: MJC | CHECKED BY: EEM
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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

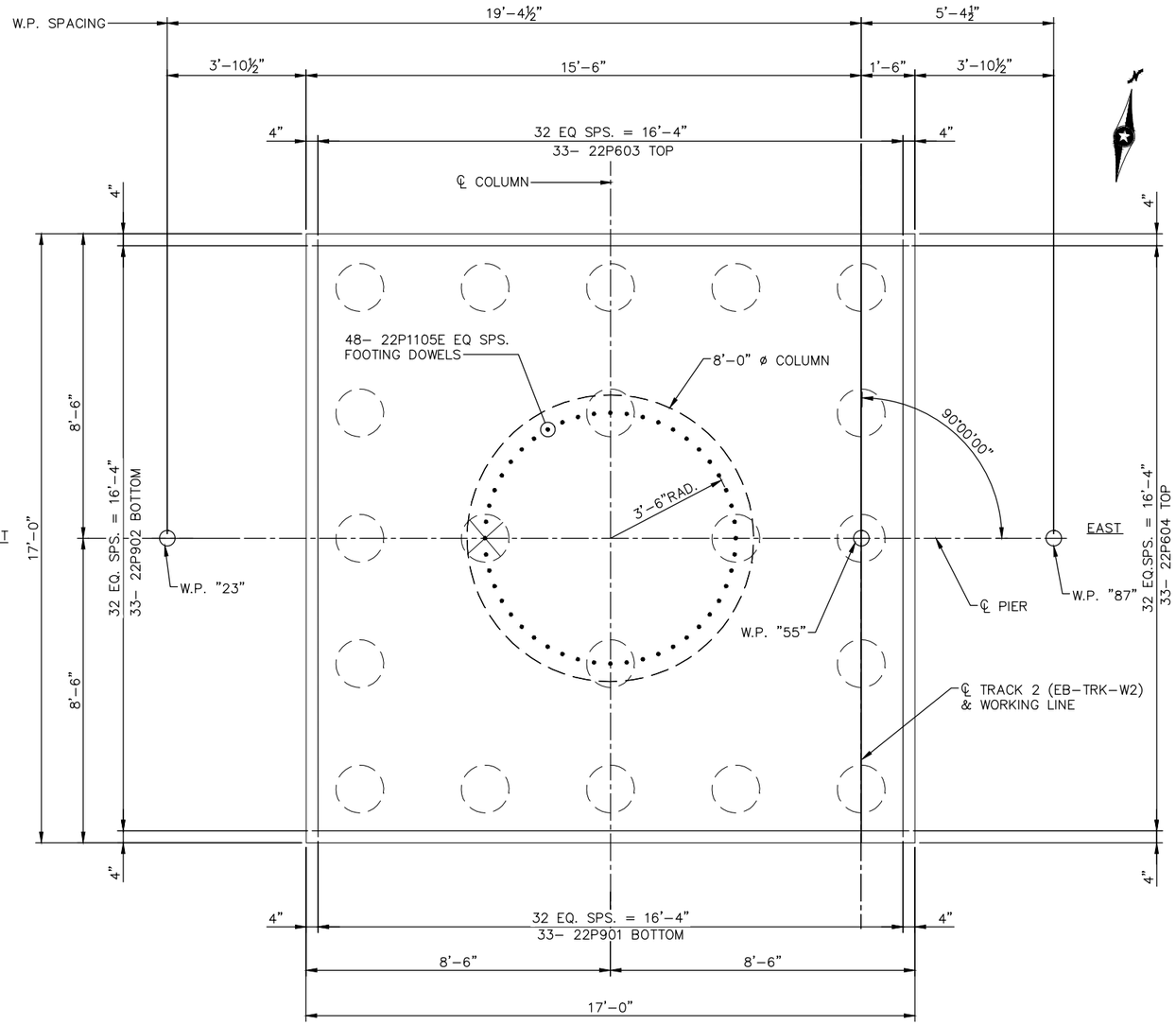
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 22 PLAN & ELEVATION

DISCIPLINE: STRUCTURES

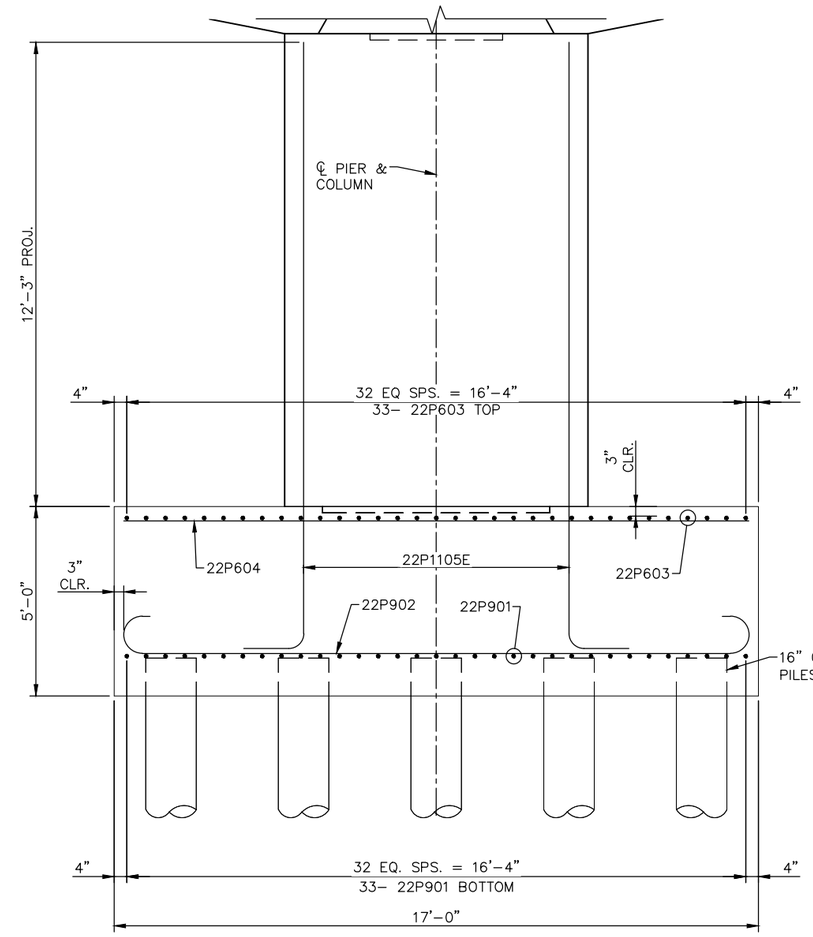
SHEET NAME: W2-STU-BRID-T212-PIER_22

SHEET 92 OF 264

Jan, 18 2016 07:35 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



PIER 22 FOOTING PLAN



PIER 22 FOOTING ELEVATION

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

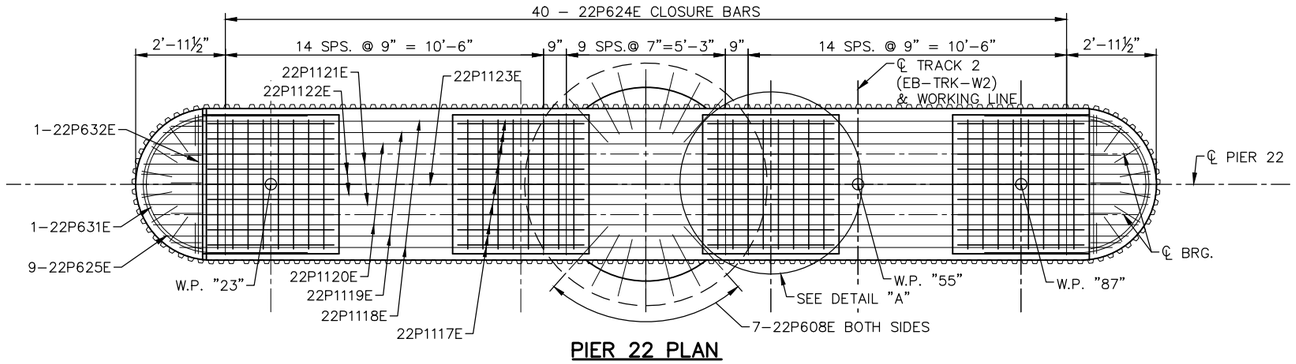
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 22 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

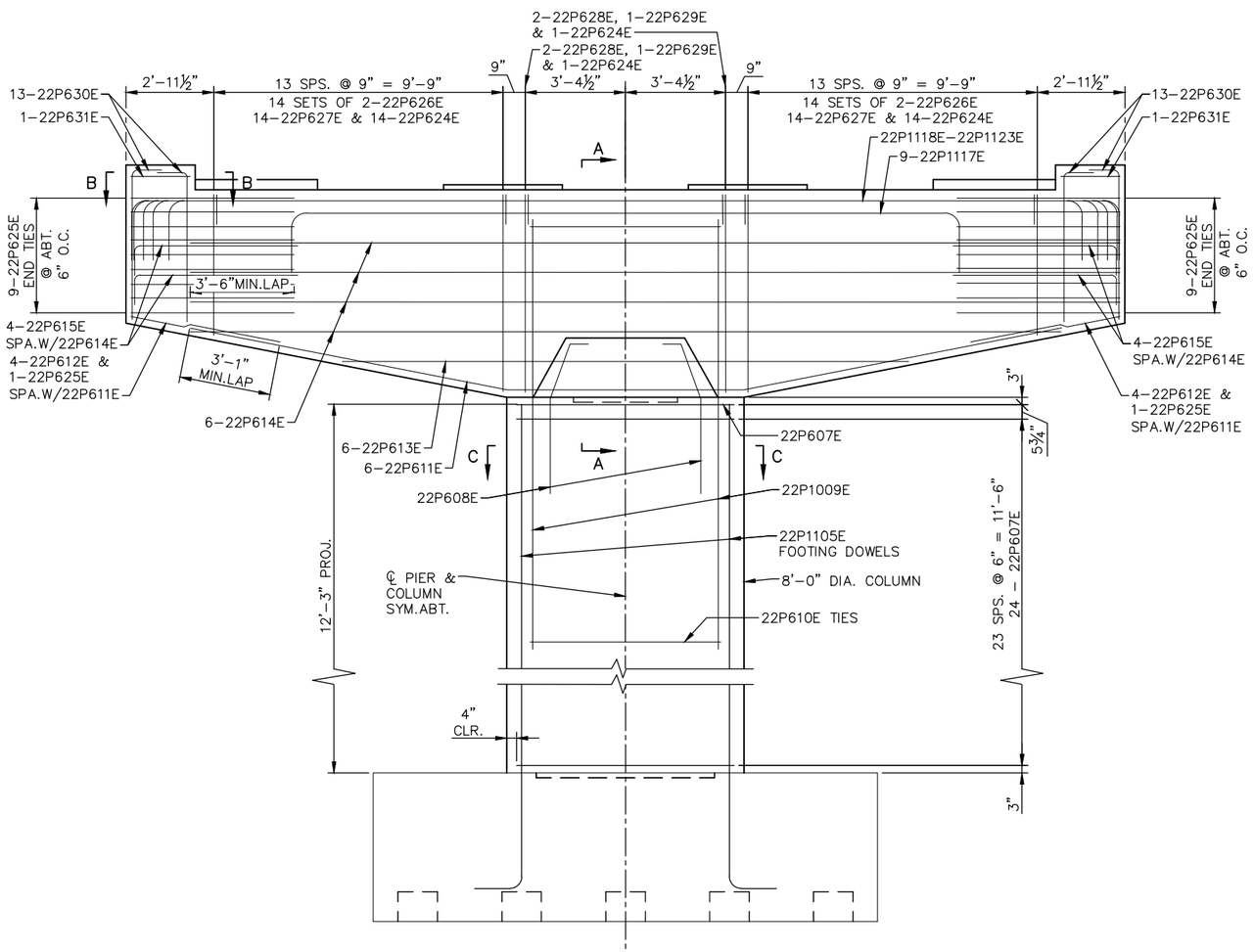
SHEET NAME: W2-STU-BRID-T212-PIER2R_22f

SHEET 93 OF 264

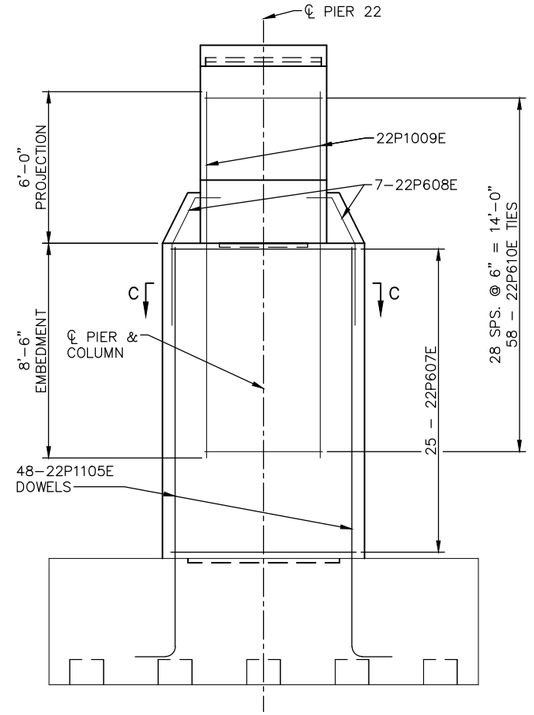
Jan, 18 2016 07:36 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2R.dwg By: hills



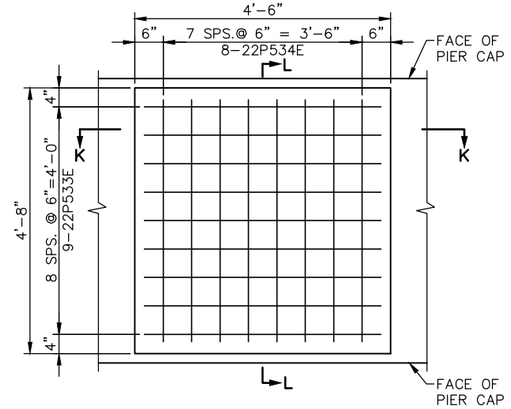
PIER 22 PLAN



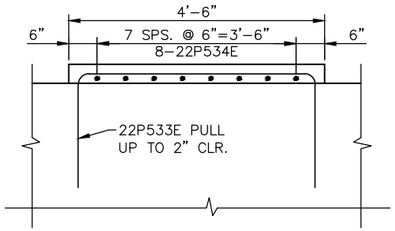
PIER 22 ELEVATION



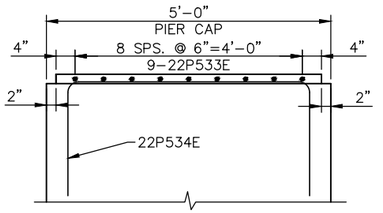
PIER 22 END VIEW



DETAIL A



SECTION K–K



SECTION L–L

NOTES:

FOR SECTIONS A–A, B–B & C–C SEE SHEET 95.

FOR DOWEL LAYOUT SEE SHEET 93.

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

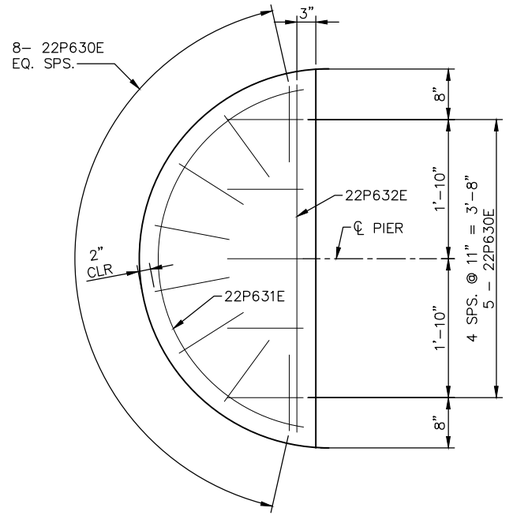
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 22 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-PIER3R_22P

SHEET 94 OF 264

Jan, 18 2016 07:37 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



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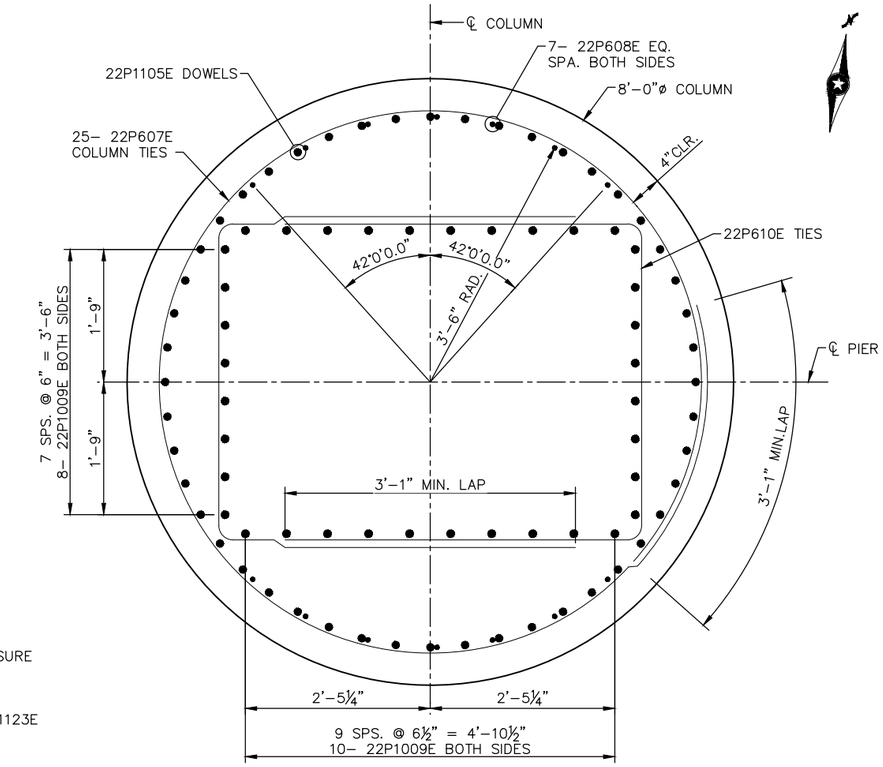

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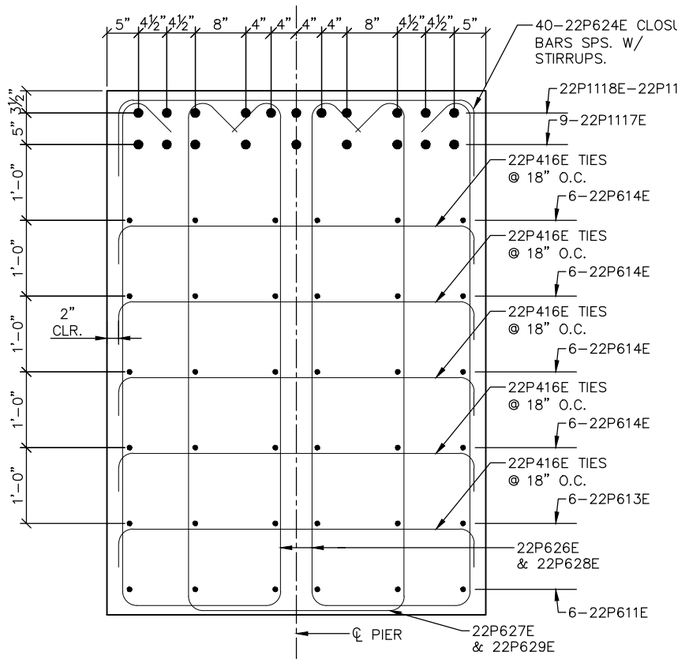
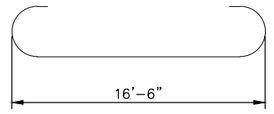
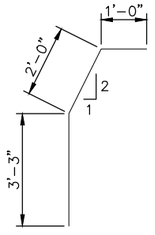


SECTION A–A



22P901 & 22P902



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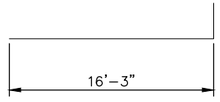

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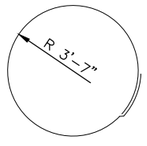

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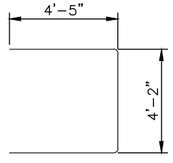

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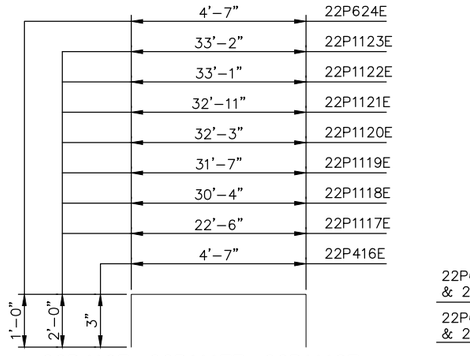

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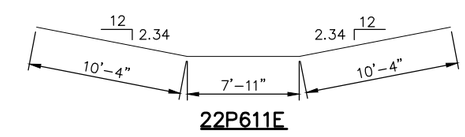
22P1119E, 22P1120E, 22P1121E,
22P1122E, 22P1123E & 22P624E



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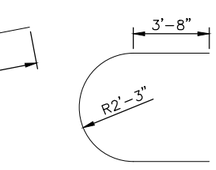

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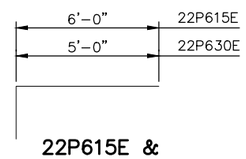
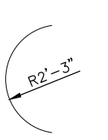


22P615E &
22P630E



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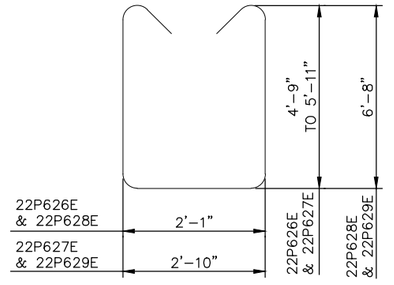
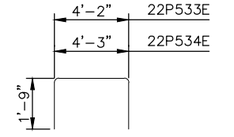


22P626E, 22P627E,
22P628E & 22P629E



22P533E & 22P534E

BILL OF REINFORCEMENT FOR PIER 22

BAR	NO.	LENGTH	SHAPE	LOCATION
22P901	33	19'–0"		FOOTING HORIZONTAL
22P902	33	19'–0"		FOOTING HORIZONTAL
22P603	33	16'–6"		FOOTING HORIZONTAL
22P604	33	16'–6"		FOOTING HORIZONTAL
22P1105E	48	18'–3"		FOOTING COLUMN DOWEL
NOT USED				
22P607E	25	25'–8"		COLUMN TIE
22P608E	14	6'–3"		CAP DOWEL
22P1009E	36	14'–6"		CAP DOWEL
22P610E	58	13'–0"		CAP TIE HORIZONTAL
22P611E	6	28'–7"		CAP LONGITUDINAL
22P612E	8	5'–2"		CAP LONGITUDINAL
22P613E	6	18'–7"		CAP LONGITUDINAL
22P614E	24	28'–4"		CAP LONGITUDINAL
22P615E	24	7'–0"		CAP LONGITUDINAL
22P416E	70	5'–1"		CAP TIE
22P1117E	9	26'–6"		CAP LONGITUDINAL
22P1118E	2	34'–4"		CAP LONGITUDINAL
22P1119E	2	35'–7"		CAP LONGITUDINAL
22P1120E	2	36'–3"		CAP LONGITUDINAL
22P1121E	2	36'–11"		CAP LONGITUDINAL
22P1122E	2	37'–1"		CAP LONGITUDINAL
22P1123E	1	37'–2"		CAP LONGITUDINAL
22P624E	40	6'–7"		CAP TIE
22P625E	20	14'–4"		END TIE
22P626E	56	①		CAP STIRRUP
22P627E	28	②		CAP STIRRUP
22P628E	4	16'–9"		CAP STIRRUP
22P629E	2	17'–6"		CAP STIRRUP
22P630E	26	6'–0"		CAP VERTICAL
22P631E	2	6'–4"		CAP HORIZONTAL
22P632E	2	4'–7"		CAP HORIZONTAL
22P533E	36	7'–8"		PEDESTAL TIE
22P534E	32	7'–9"		PEDESTAL TIE

① 4–SERIES OF 14, 12'–11" TO 16'–7"
② 2–SERIES OF 14, 13'–8" TO 17'–4"

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

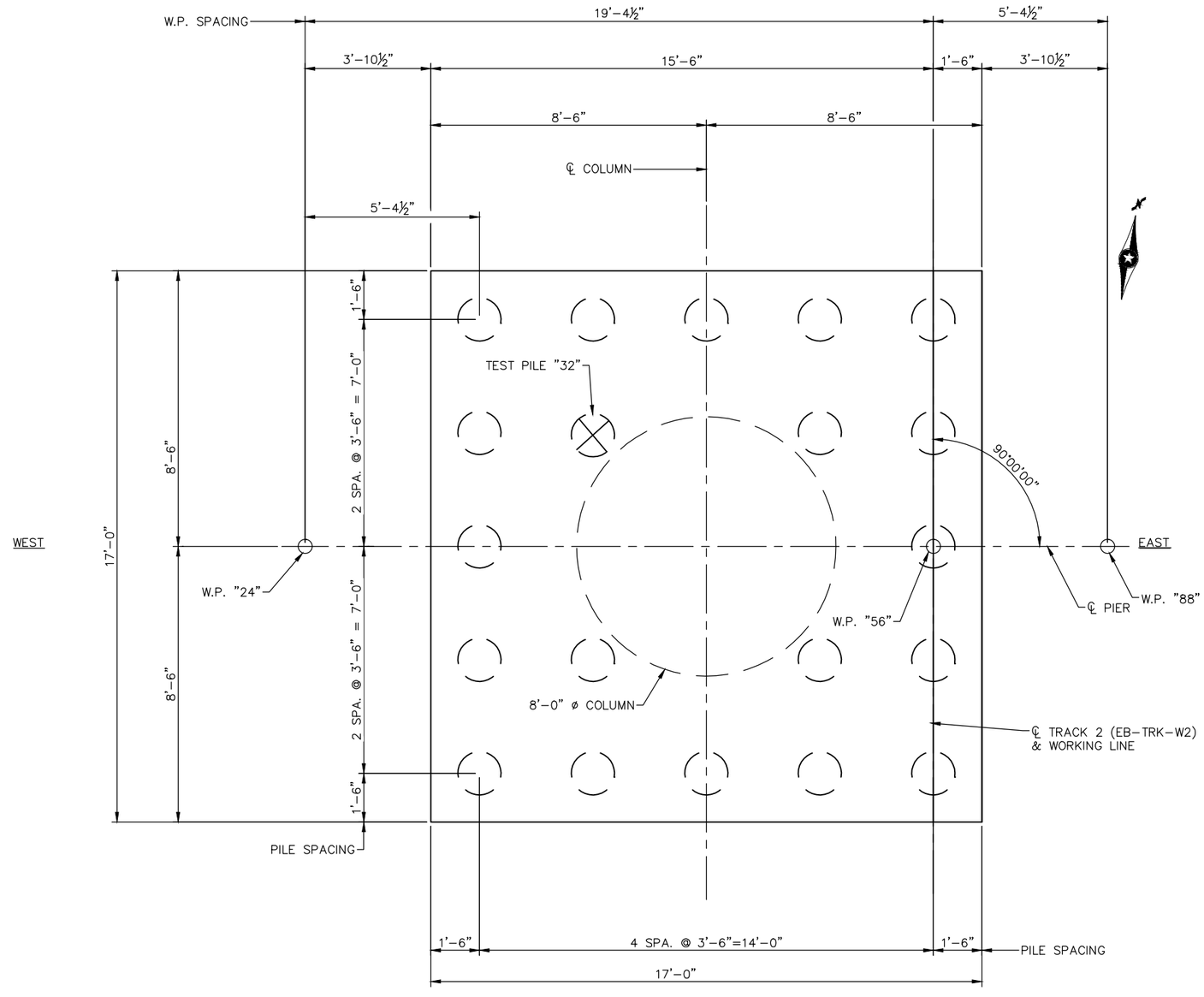
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 22 REINFORCEMENT 3

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-PIER3R_22S

SHEET 95 OF 264

Jan, 18 2016 07:37 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



PIER 23 PILE LAYOUT

PIER 23 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	274.0
PDA	0.65	210.8

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

PIER 23 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	75.4
FACTORED LIVE LOAD	43.0
FACTORED OVERTURNING	18.6
FACTORED DESIGN LOAD	137.0
FACTORED DESIGN UPLIFT	N/A
LOAD COMBINATION	STRENGTH 5 (MOD)

PILE NOTES

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

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.3125 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

SEE GENERAL PLAN AND ELEVATION SHEETS FOR ANY REQUIRED SUPPORT OF EXCAVATION (SOE).

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SBM CHECKED BY: EEM

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

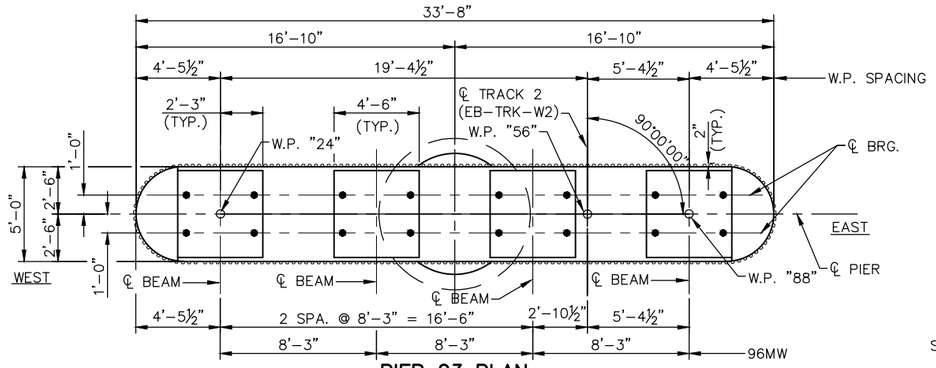
SOUTHWEST Green Line LRT Extension

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

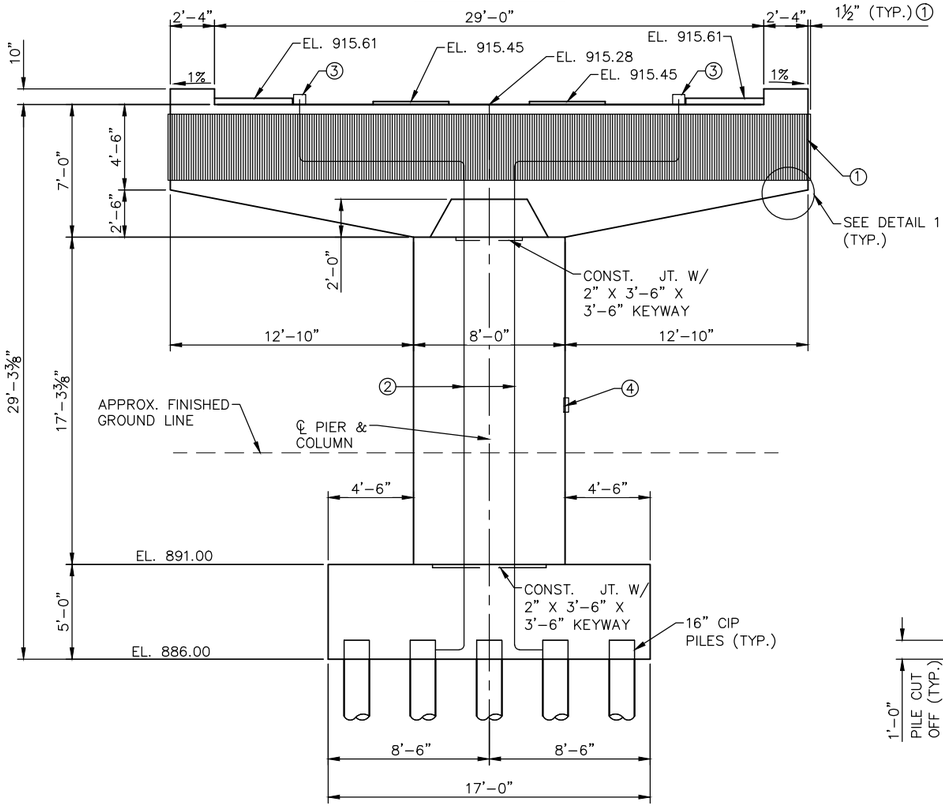
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_23a

SHEET 96 OF 264

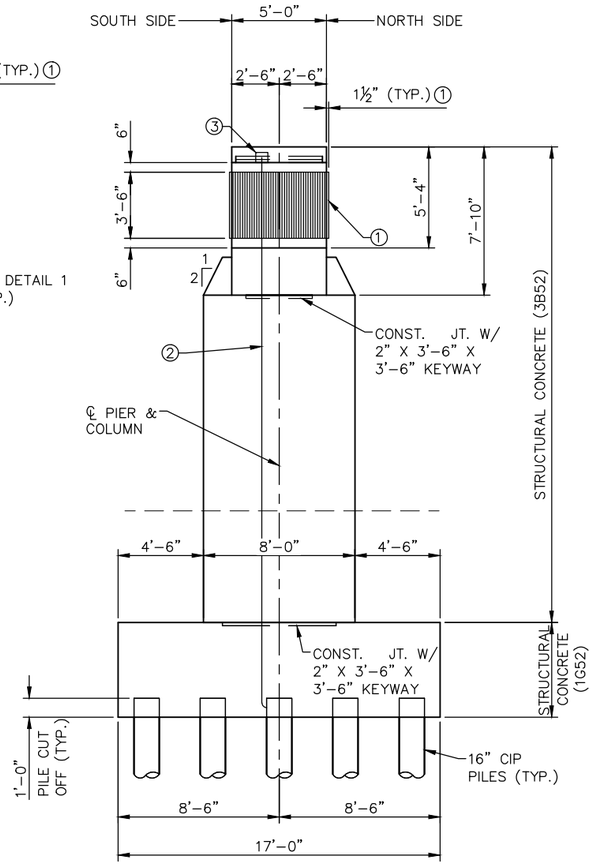
Jan, 18 2016 07:38 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



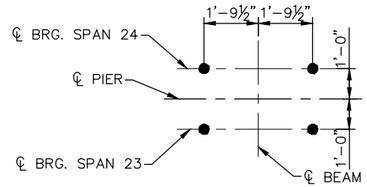
PIER 23 PLAN



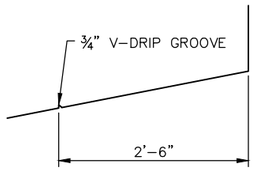
PIER 23 ELEVATION



PIER 23 END VIEW



ANCHOR ROD LAYOUT



DETAIL 1

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE, TYPE 1 "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)"

② GROUND WIRE PLACED INSIDE 1" PVC CONDUIT. SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600.

③ JUNCTION BOX, SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600.

④ GROUNDING TEST STATION, SEE GROUNDING PLANS IN VOLUME 12, SHEET ELE-SITE-DTL-600

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DESIGNED BY: MJC | CHECKED BY: EEM
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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 23 PLAN & ELEVATION

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_23

SHEET 97 OF 264

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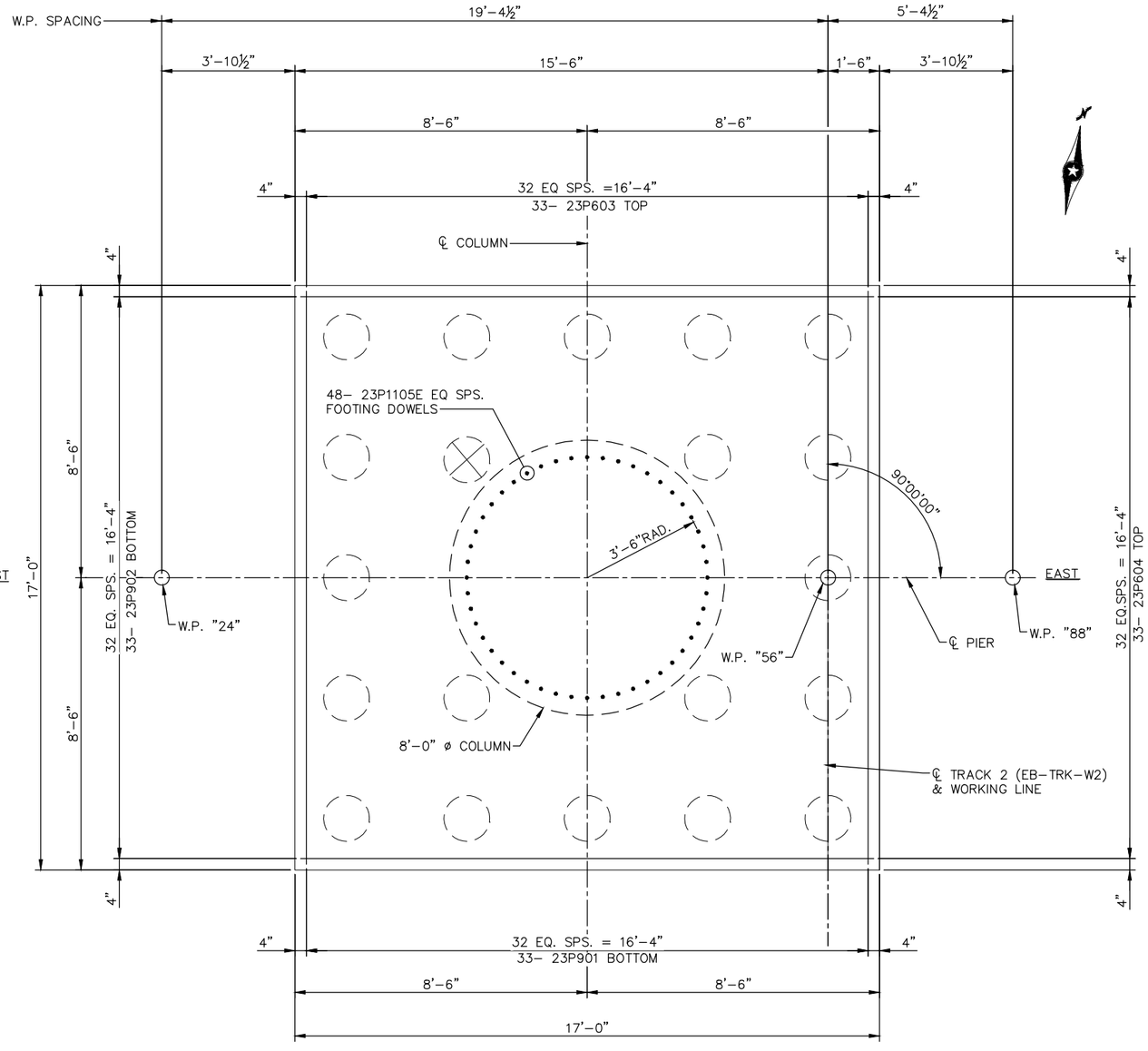
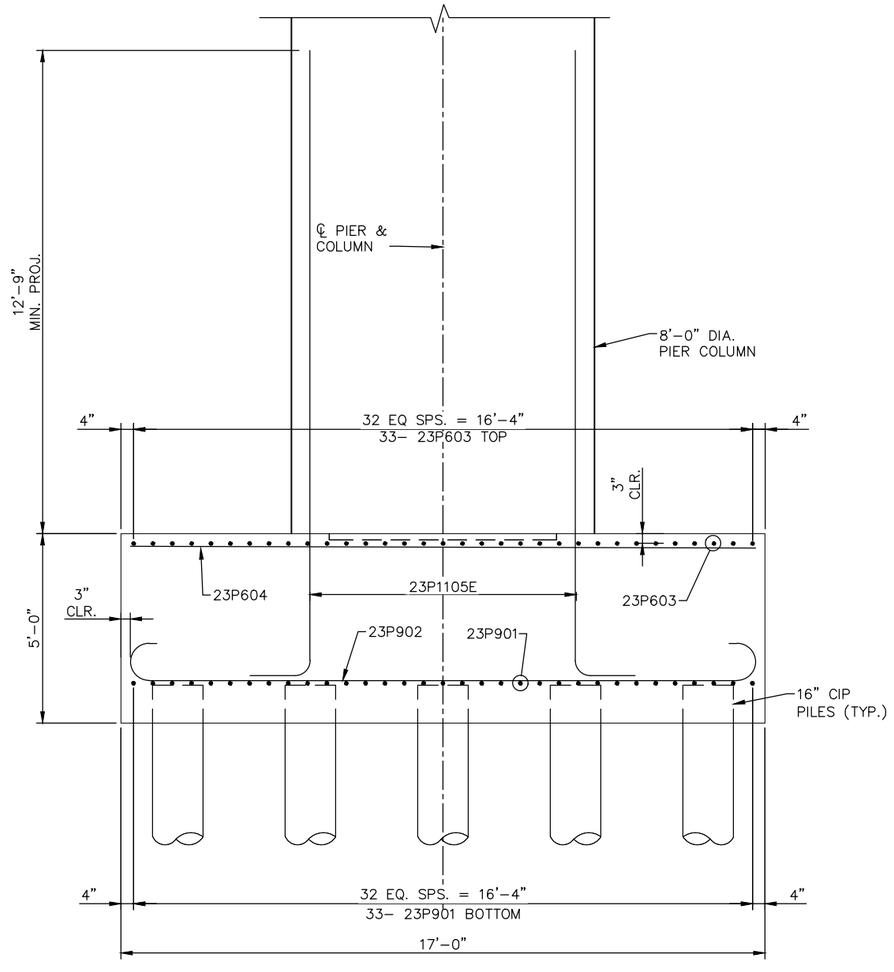


PIER 23 FOOTING PLAN



PIER 23 FOOTING ELEVATION

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

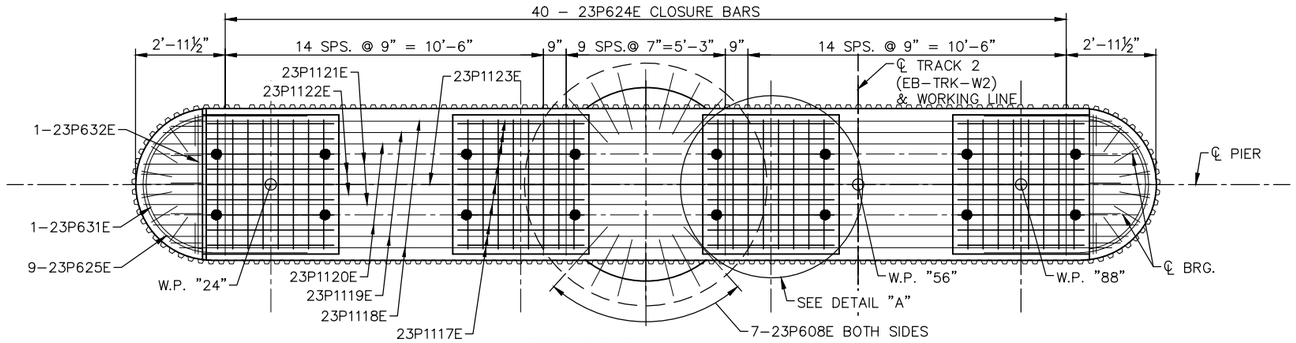
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 23 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-PIER2R_23f

SHEET 98 OF 264

Jan, 18 2016 07:38 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2R.dwg By: hills



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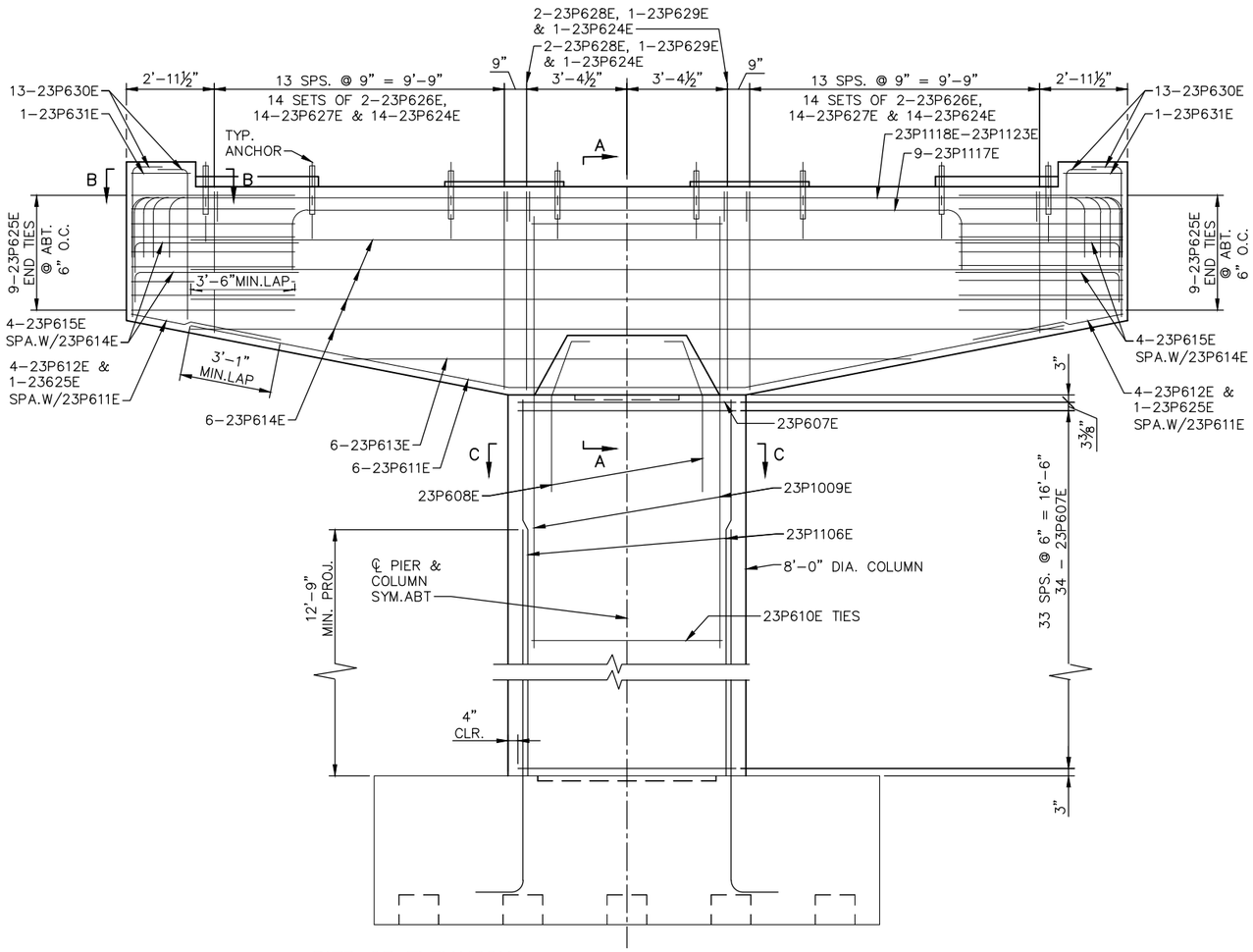

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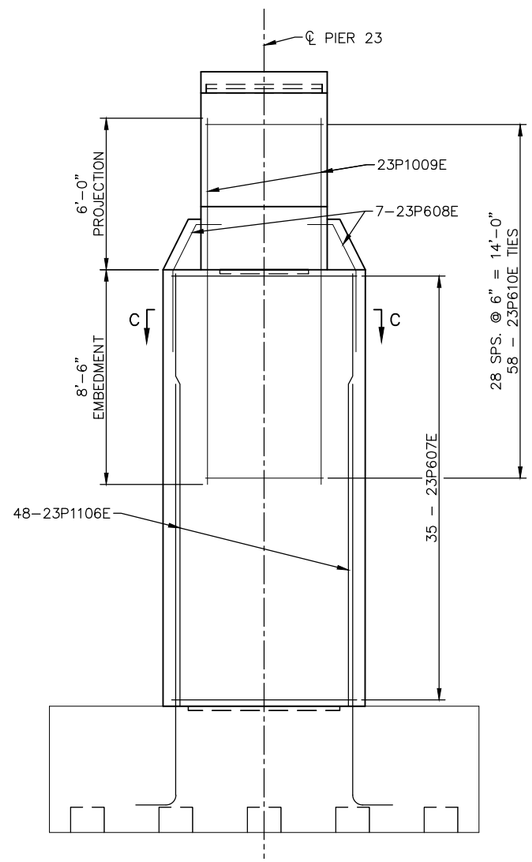
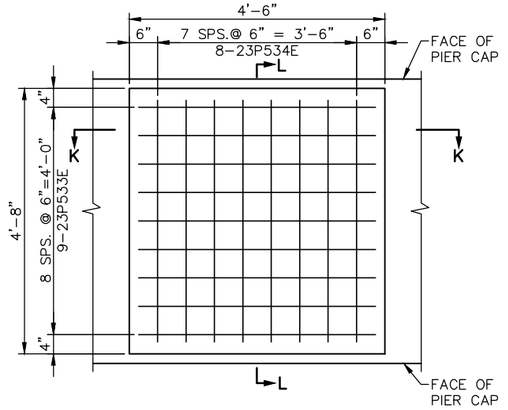
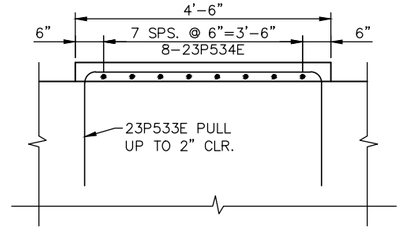


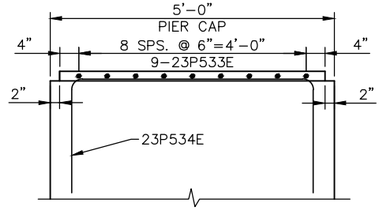
PIER 23 END VIEW



DETAIL A



SECTION K–K



SECTION L–L

NOTES:

FOR SECTIONS A–A, B–B & C–C SEE SHEET 100.

FOR DOWEL LAYOUT SEE SHEET 98.

ALL CAP REINFORCEMENT SHALL BE PLACED 2" CLEAR FROM BEARING ANCHORS.

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

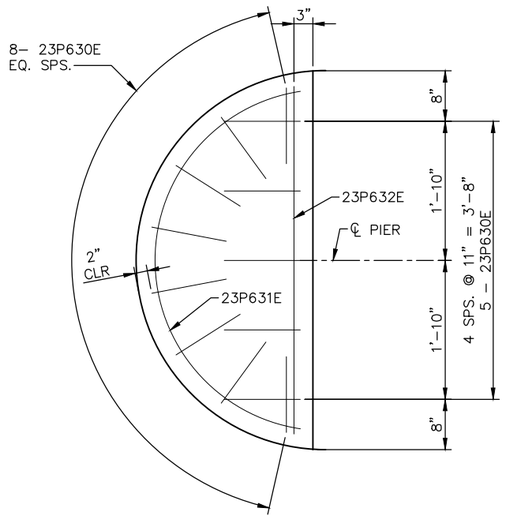
SOUTHWEST Green Line LRT Extension

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

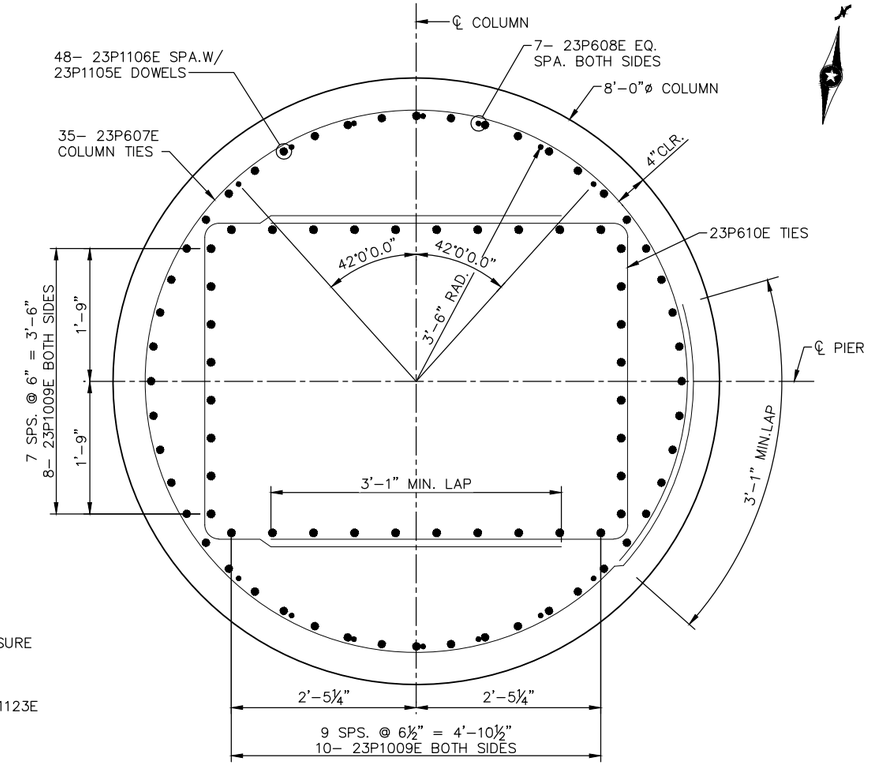
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER3R_23P

SHEET 99 OF 264

Jan, 18 2016 07:39 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34 W2-STU-BRID-T212-PIER3R.dwg By: hills



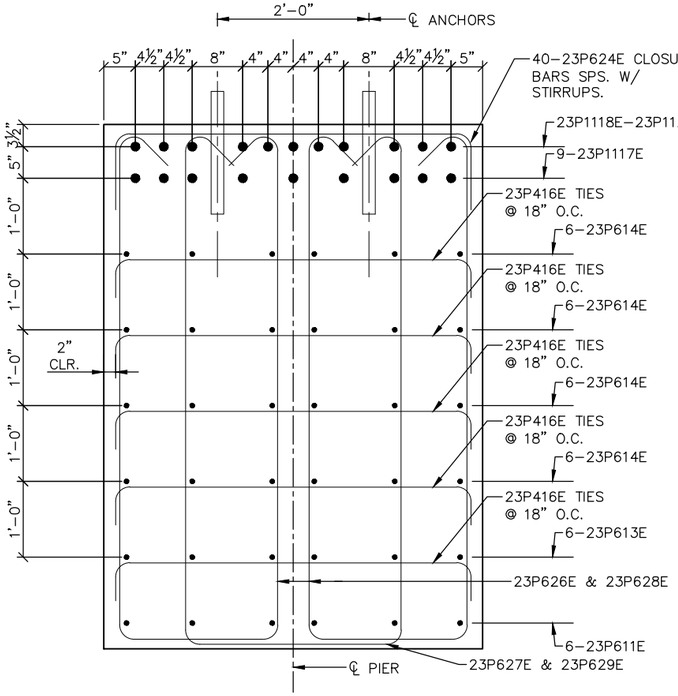
SECTION B–B



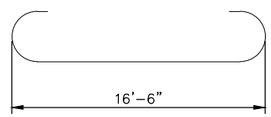
SECTION C–C

BILL OF REINFORCEMENT FOR PIER 23				
BAR	NO.	LENGTH	SHAPE	LOCATION
23P901	33	19'–0"		FOOTING HORIZONTAL
23P902	33	19'–0"		FOOTING HORIZONTAL
23P603	33	16'–6"		FOOTING HORIZONTAL
23P604	33	16'–6"		FOOTING HORIZONTAL
23P1105E	48	18'–8"		FOOTING COLUMN DOWEL
23P1106E	48	17'–1"		COLUMN VERTICAL
23P607E	35	25'–8"		COLUMN TIE
23P608E	14	6'–3"		CAP DOWEL
23P1009E	36	14'–6"		CAP DOWEL
23P610E	58	13'–0"		CAP TIE HORIZONTAL
23P611E	6	28'–7"		CAP LONGITUDINAL
23P612E	8	5'–2"		CAP LONGITUDINAL
23P613E	6	18'–7"		CAP LONGITUDINAL
23P614E	24	28'–4"		CAP LONGITUDINAL
23P615E	24	7'–0"		CAP LONGITUDINAL
23P416E	70	5'–1"		CAP TIE
23P1117E	9	26'–6"		CAP LONGITUDINAL
23P1118E	2	34'–4"		CAP LONGITUDINAL
23P1119E	2	35'–7"		CAP LONGITUDINAL
23P1120E	2	36'–3"		CAP LONGITUDINAL
23P1121E	2	36'–11"		CAP LONGITUDINAL
23P1122E	2	37'–1"		CAP LONGITUDINAL
23P1123E	1	37'–2"		CAP LONGITUDINAL
23P624E	40	6'–7"		CAP TIE
23P625E	20	14–4"		END TIE
23P626E	56	①		CAP STIRRUP
23P627E	28	②		CAP STIRRUP
23P628E	4	16'–9"		CAP STIRRUP
23P629E	2	17'–6"		CAP STIRRUP
23P630E	26	6'–0"		CAP VERTICAL
23P631E	2	6'–4"		CAP HORIZONTAL
23P632E	2	4'–7"		CAP HORIZONTAL
23P533E	36	7'–8"		PEDESTAL TIE
23P534E	32	7'–9"		PEDESTAL TIE

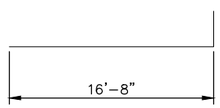
① 4–SERIES OF 14, 12'–11" TO 16'–7"
② 2–SERIES OF 14, 13'–8" TO 17'–4"



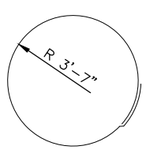
SECTION A–A



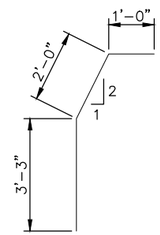
23P901 & 23P902



23P1105E



23P607E



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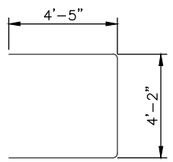

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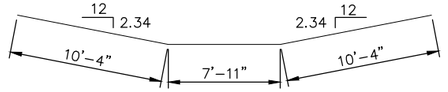

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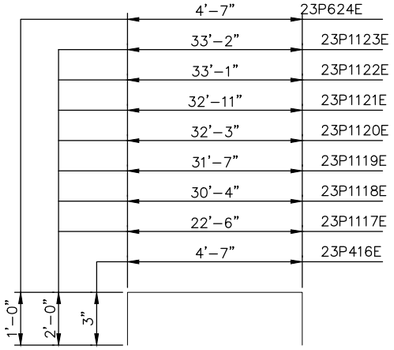
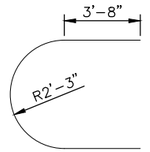


23P416E, 23P1117E, 23P1118E,
23P1119E, 23P1120E, 23P1121E,
23P1122E, 23P1123E & 23P624E



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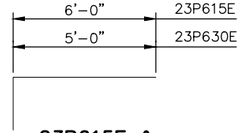
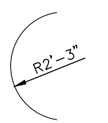


23P615E &
23P630E



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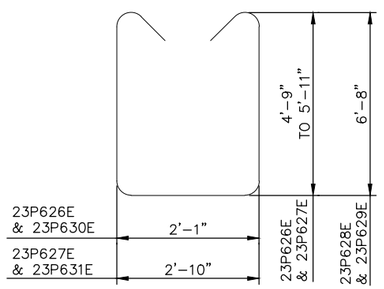
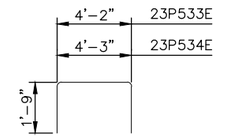


23P626E, 23P627E,
23P628E & 23P629E



23P533E & 23P534E

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

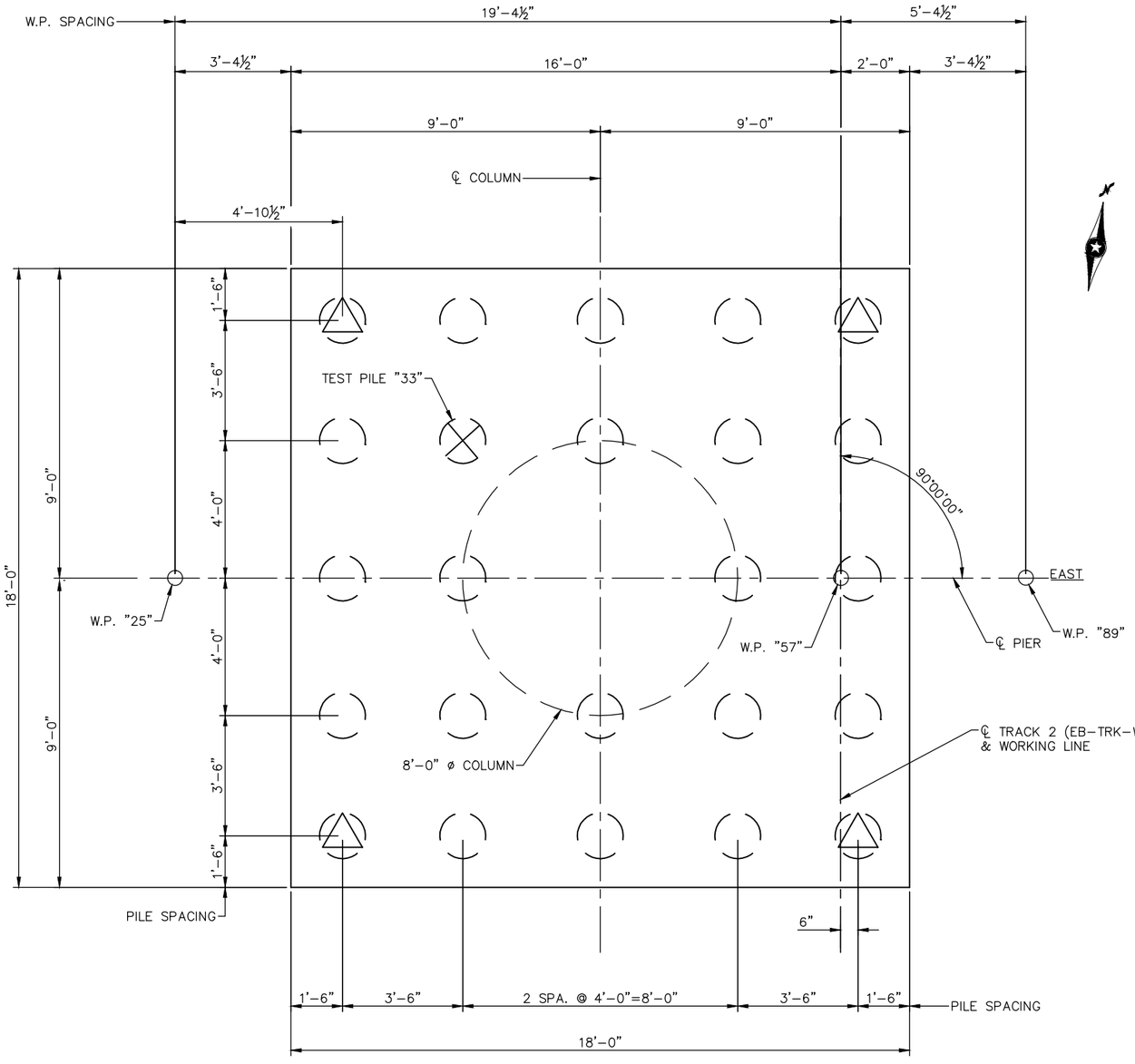
SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER3R_23S

SHEET 100 OF 264

Jan, 18 2016 07:40 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills

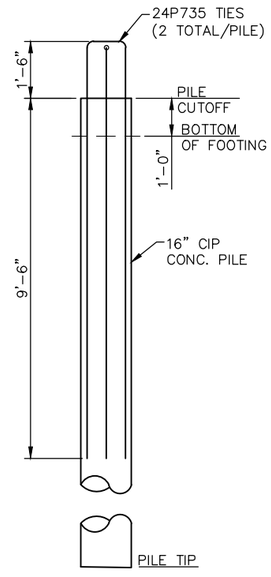


PIER 24 PILE LAYOUT

PIER 24 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	276.6
PDA	0.65	212.8

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

PIER 24 COMPUTED PILE LOAD – TONS/PILE		
FACTORED DEAD LOAD	68.6	47.2
FACTORED LIVE LOAD	44.5	–28.0
FACTORED OVERTURNING	25.2	–25.2
FACTORED DESIGN LOAD	138.3	N/A
FACTORED DESIGN UPLIFT	N/A	–6.0
LOAD COMBINATION	STRENGTH 5 (MOD)	STRENGTH 5 (MOD)



PILE ANCHORAGE DETAIL

PILE NOTES

1 CAST–IN–PLACE CONC. TEST PILE 65 FT. LONG
23 CAST–IN–PLACE CONC. PILES EST. LENGTH 55 FT.
24 CAST–IN–PLACE CONC. PILES REQ'D FOR PIER 24.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"AND WALL THICKNESS OF 0.3125 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

△ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL PLAN AND ELEVATION SHEETS FOR ANY REQUIRED SUPPORT OF EXCAVATION (SOE).

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

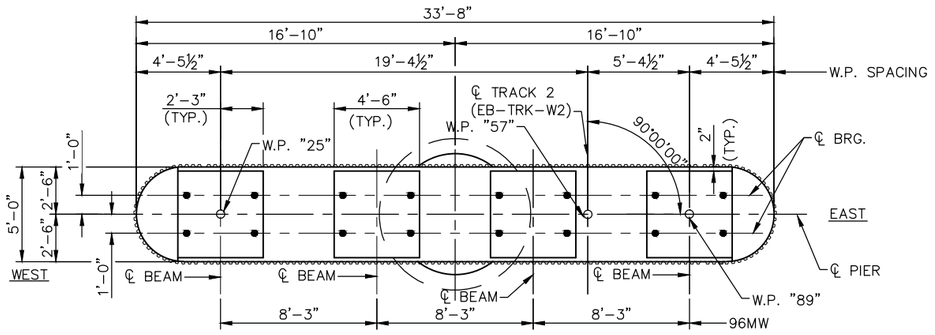
90% SUBMISSION - 01/22/16

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

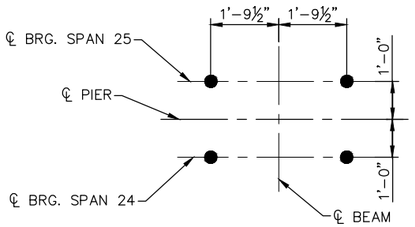
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_24a

SHEET 101 OF 264

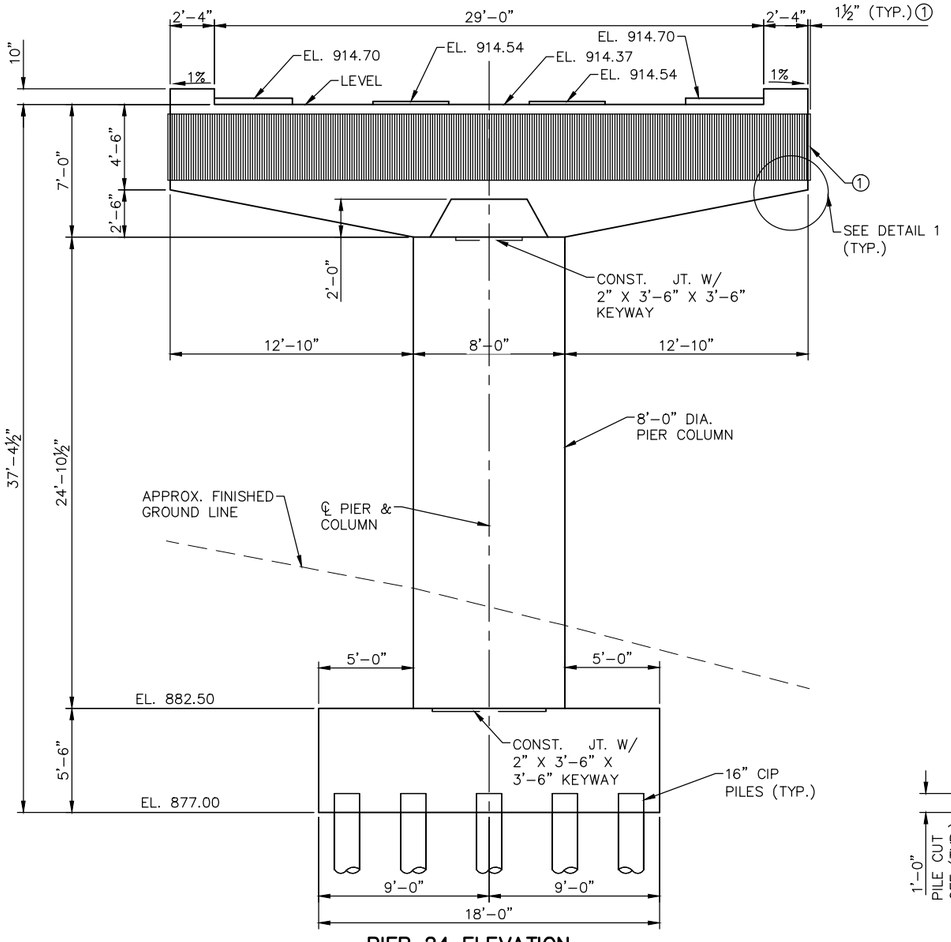
Jan, 18 2016 10:55 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



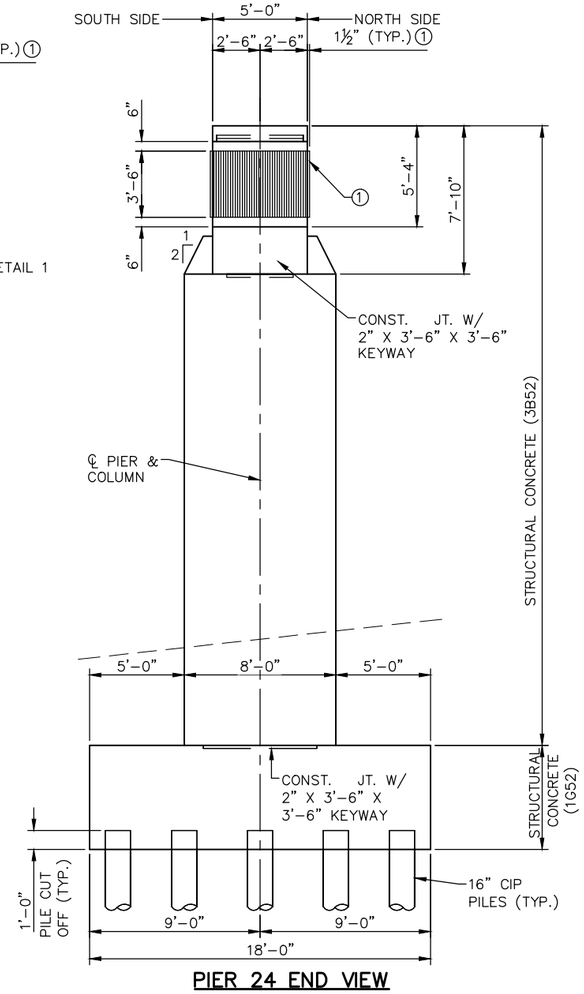
PIER 24 PLAN



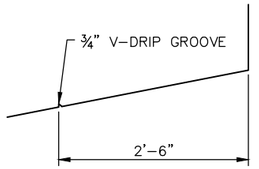
ANCHOR ROD LAYOUT



PIER 24 ELEVATION



PIER 24 END VIEW



DETAIL 1

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE, TYPE 1 "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)"

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AECOM PARSONS BRINCKERHOFF

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

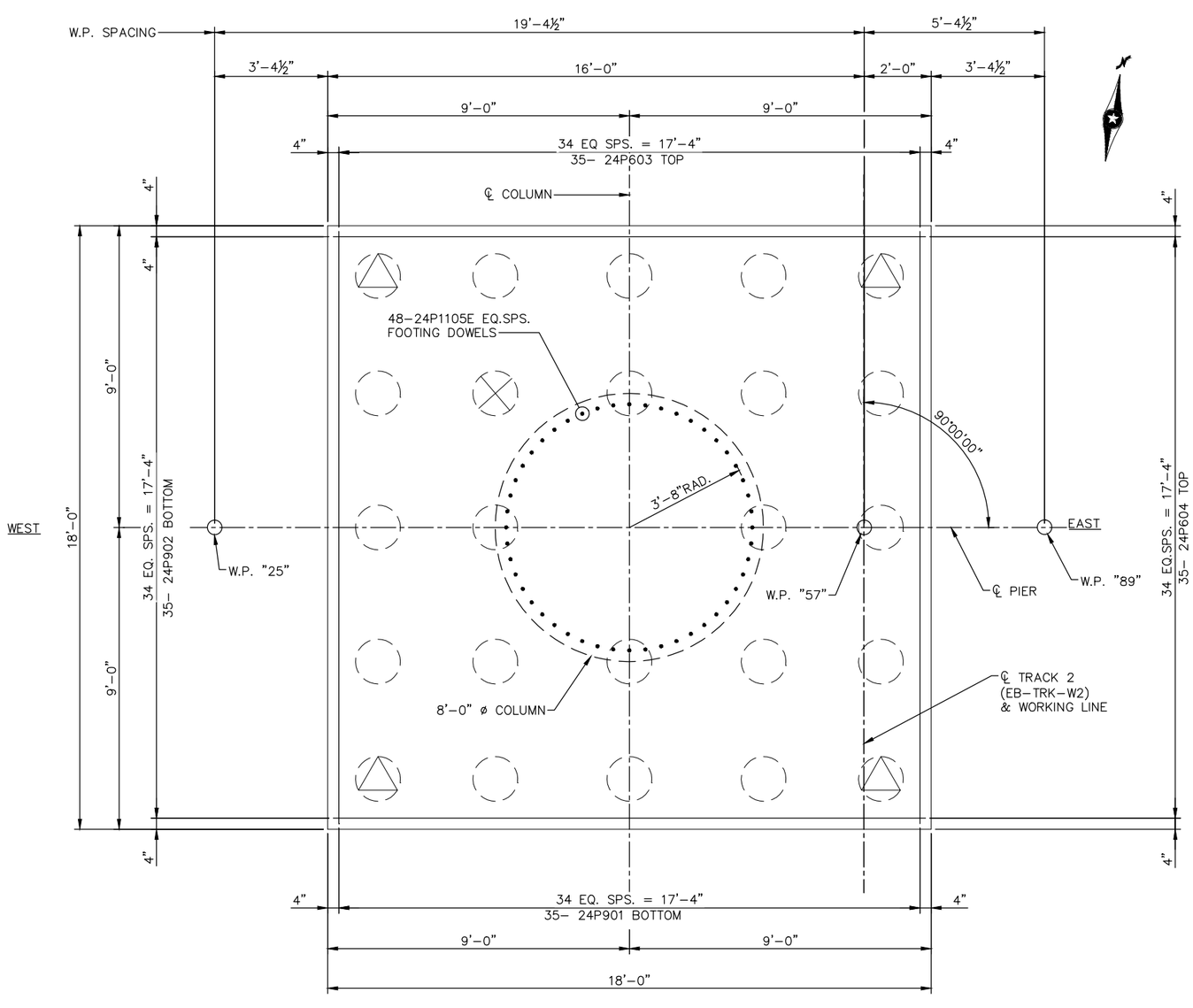
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 24 PLAN & ELEVATION

DISCIPLINE: STRUCTURES

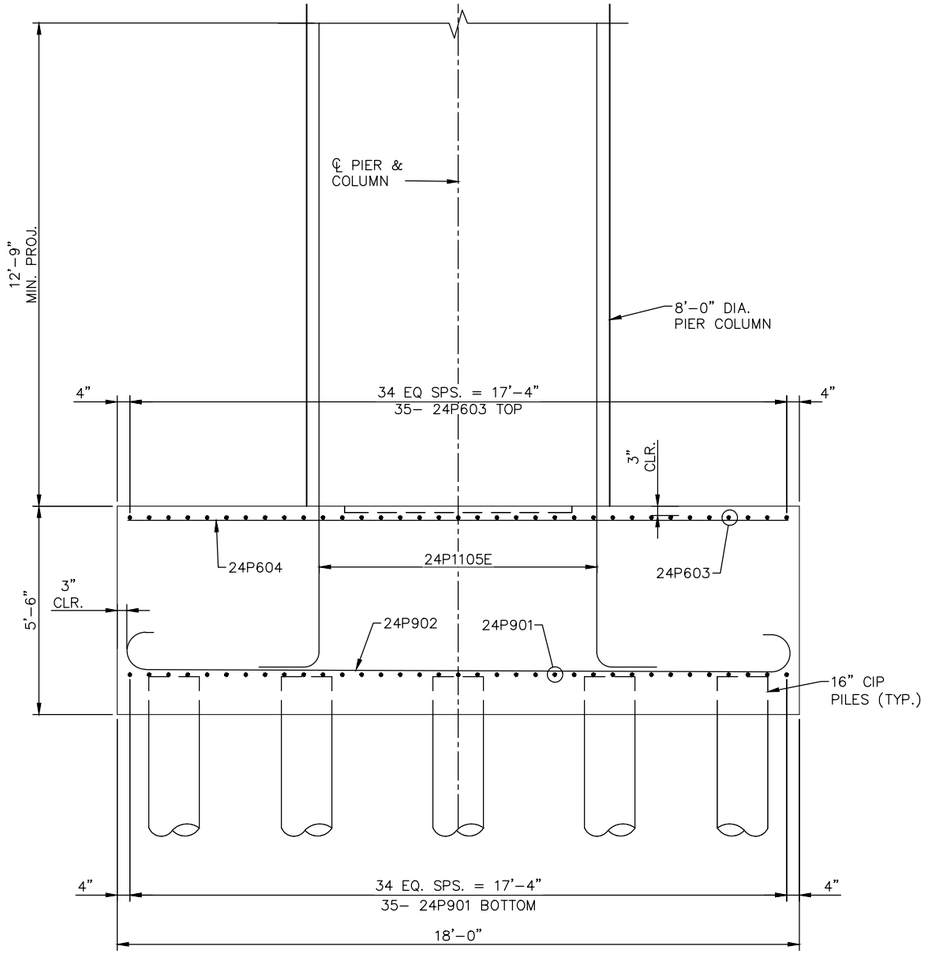
SHEET NAME: W2-STU-BRID-T212-PIER_24

SHEET 102 OF 264

Jan, 18 2016 07:40 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



PIER 24 FOOTING PLAN



PIER 24 FOOTING ELEVATION

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: MJC CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

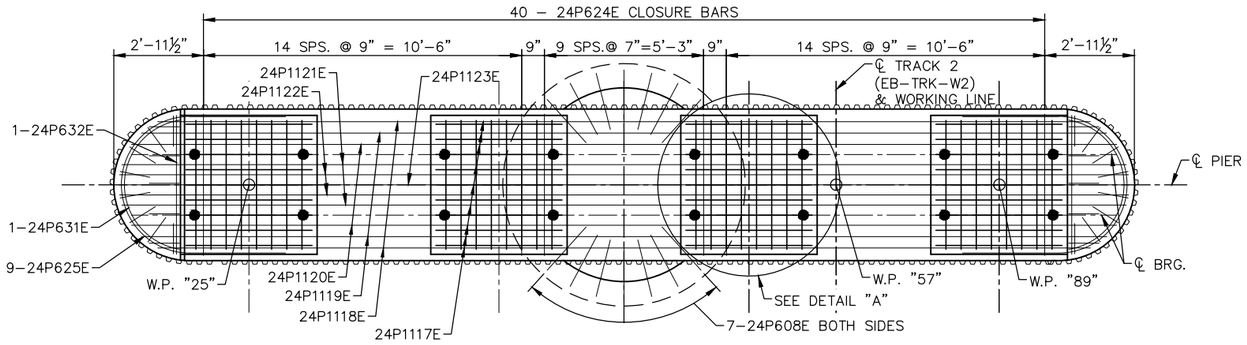
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 24 REINFORCEMENT

DISCIPLINE: STRUCTURES

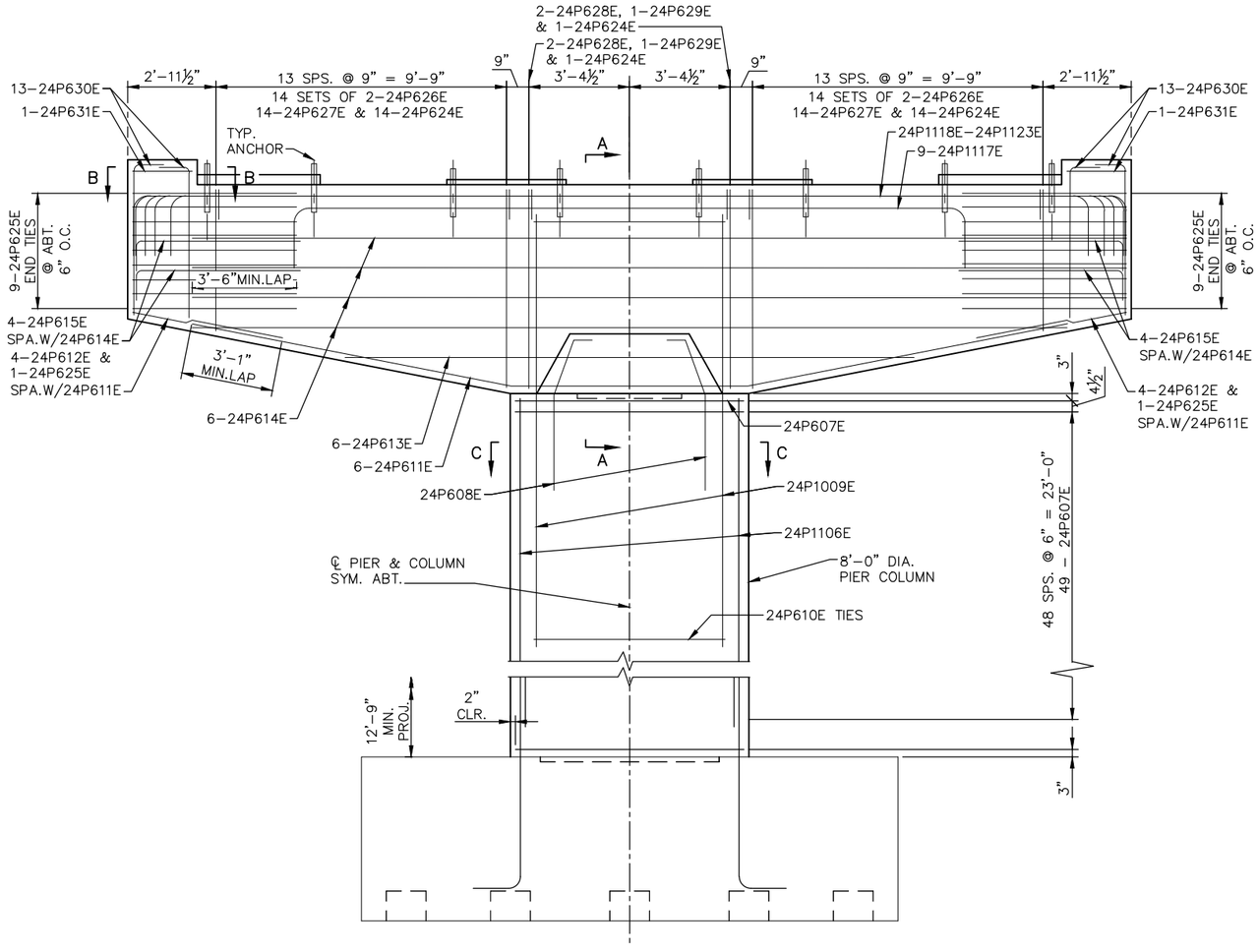
SHEET NAME: W2-STU-BRID-T212-PIER2R_24f

SHEET 103 OF 264

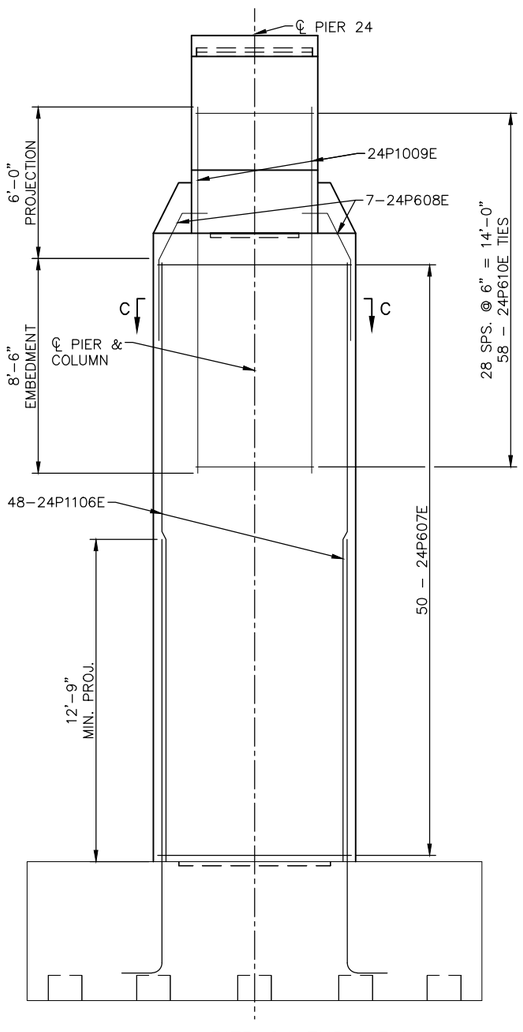
Jan, 18 2016 07:41 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34 W2-STU-BRID-T212-PIER2R.dwg By: hills



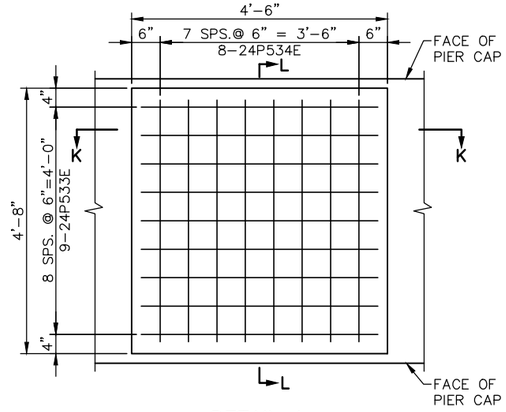
PIER 24 PLAN



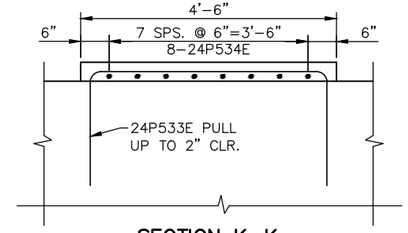
PIER 24 ELEVATION



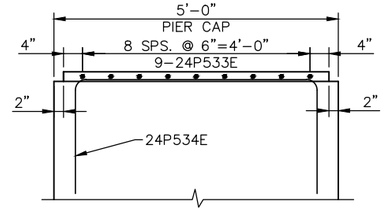
PIER 24 END VIEW



DETAIL A



SECTION K–K



SECTION L–L

NOTES:

FOR SECTIONS A–A, B–B & C–C SEE SHEET 105.

FOR DOWEL LAYOUT SEE SHEET 103.

ALL CAP REINFORCEMENT SHALL BE PLACED 2" CLEAR FROM BEARING ANCHORS.

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

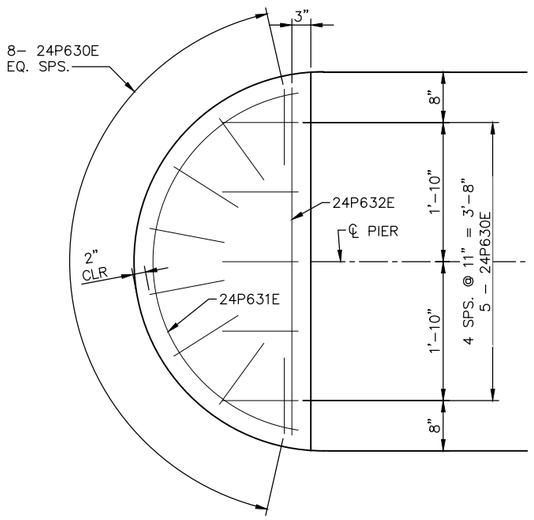
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 24 REINFORCEMENT 2

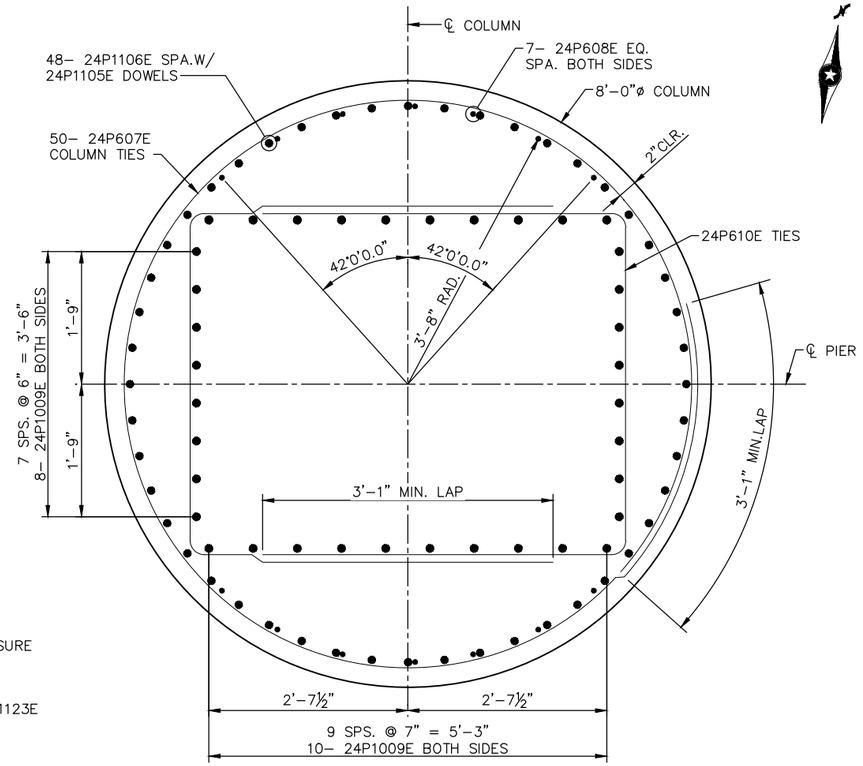
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER3R_24P

SHEET 104 OF 264

Jan. 18 2016 07:42 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



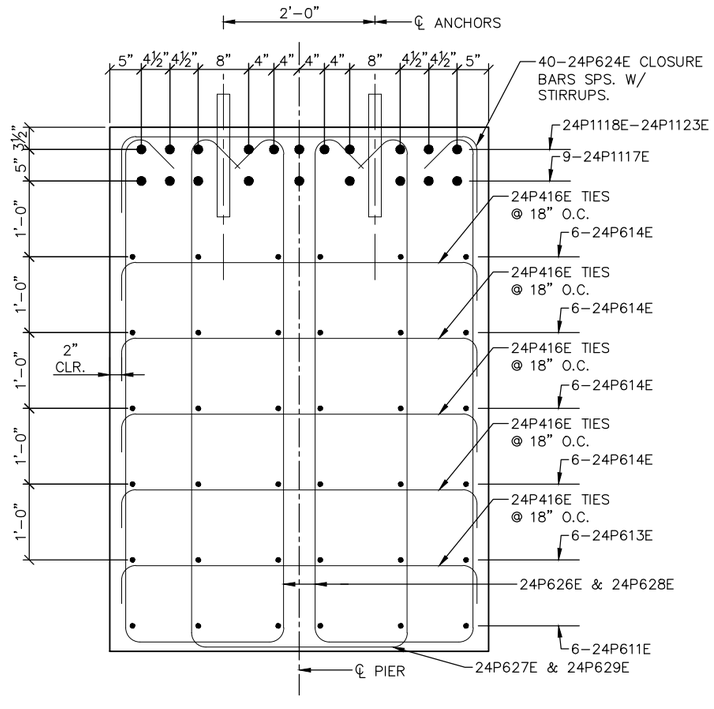
SECTION B-B



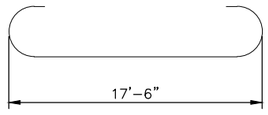
SECTION C-C

BILL OF REINFORCEMENT FOR PIER 24				
BAR	NO.	LENGTH	SHAPE	LOCATION
24P901	35	20'-0"		FOOTING HORIZONTAL
24P902	35	20'-0"		FOOTING HORIZONTAL
24P603	35	17'-6"		FOOTING HORIZONTAL
24P604	35	17'-6"		FOOTING HORIZONTAL
24P1105E	48	19'-3"		FOOTING COLUMN DOWEL
24P1106E	48	24'-8"		COLUMN VERTICAL
24P607E	50	26'-8"		COLUMN TIE
24P608E	14	6'-3"		CAP DOWEL
24P1009E	36	14'-6"		CAP DOWEL
24P610E	58	13'-6"		CAP TIE HORIZONTAL
24P611E	6	28'-7"		CAP LONGITUDINAL
24P612E	8	5'-2"		CAP LONGITUDINAL
24P613E	6	18'-7"		CAP LONGITUDINAL
24P614E	24	28'-4"		CAP LONGITUDINAL
24P615E	24	7'-0"		CAP LONGITUDINAL
24P416E	70	5'-1"		CAP TIE
24P1117E	9	26'-6"		CAP LONGITUDINAL
24P1118E	2	34'-4"		CAP LONGITUDINAL
24P1119E	2	35'-7"		CAP LONGITUDINAL
24P1120E	2	36'-3"		CAP LONGITUDINAL
24P1121E	2	36'-11"		CAP LONGITUDINAL
24P1122E	2	37'-1"		CAP LONGITUDINAL
24P1123E	1	37'-2"		CAP LONGITUDINAL
24P624E	40	6'-7"		CAP TIE
24P625E	20	14'-4"		END TIE
24P626E	56	①		CAP STIRRUP
24P627E	28	②		CAP STIRRUP
24P628E	4	16'-9"		CAP STIRRUP
24P629E	2	17'-6"		CAP STIRRUP
24P630E	26	6'-0"		CAP VERTICAL
24P631E	2	6'-4"		CAP HORIZONTAL
24P632E	2	4'-7"		CAP HORIZONTAL
24P533E	36	7'-8"		PEDESTAL TIE
24P534E	32	7'-9"		PEDESTAL TIE
24P735	8	23'-0"		PILE ANCHORAGE TIE

① 4-SERIES OF 14, 12'-11" TO 16'-7"
② 2-SERIES OF 14, 13'-8" TO 17'-4"



SECTION A-A



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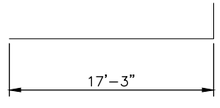

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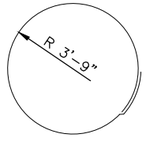

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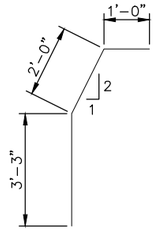

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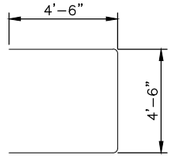

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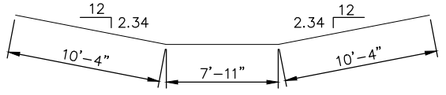

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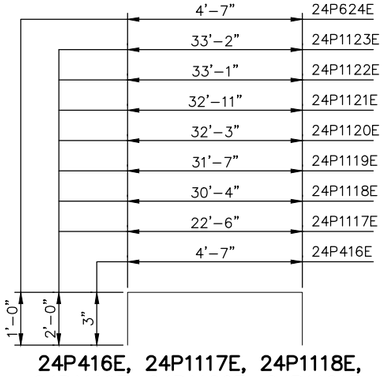

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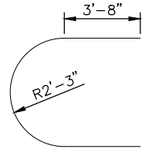
24P1122E, 24P1123E & 24P624E



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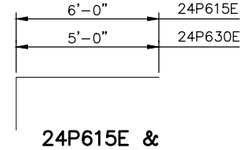

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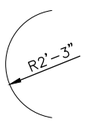

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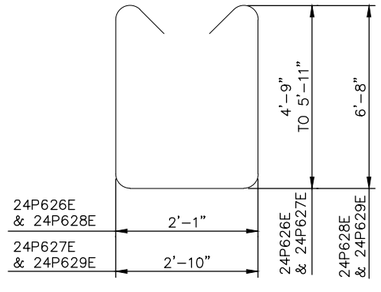
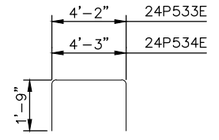


24P626E, 24P627E,
24P628E & 24P629E



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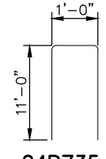

24P735

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DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

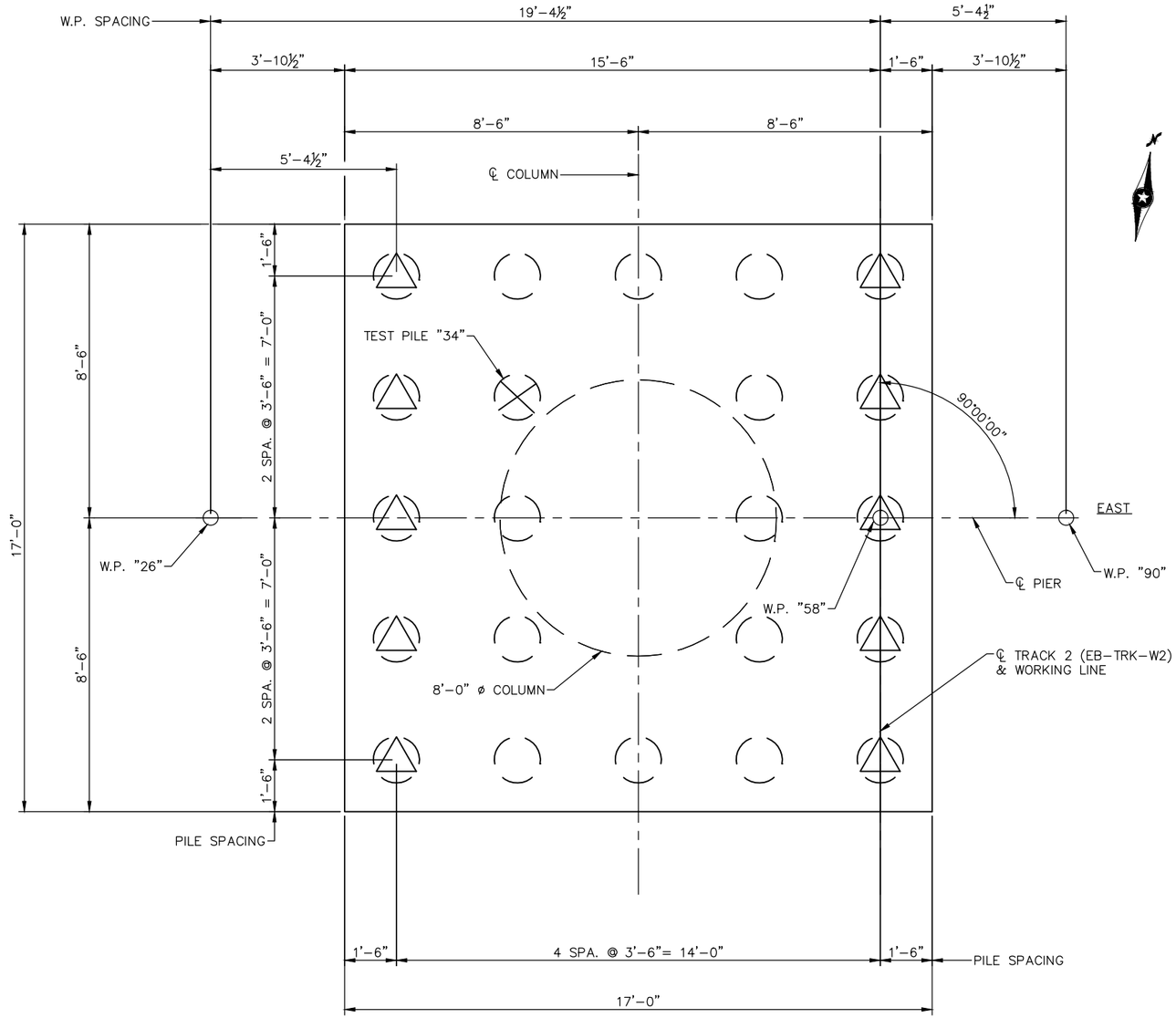
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 24 REINFORCEMENT 3

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-PIER3R_24S

SHEET 105 OF 264

Jan, 18 2016 07:42 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills

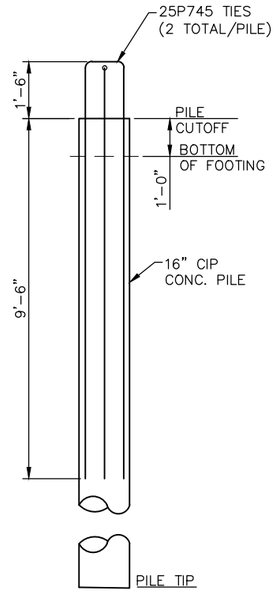


PIER 25 PILE LAYOUT

PIER 25 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	270.0
PDA	0.65	207.7

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

PIER 25 COMPUTED PILE LOAD – TONS/PILE		
FACTORED DEAD LOAD	69.7	44.7
FACTORED LIVE LOAD	37.3	0
FACTORED OVERTURNING	28.0	–49.3
FACTORED DESIGN LOAD	135.0	N/A
FACTORED DESIGN UPLIFT	N/A	–4.6
LOAD COMBINATION	STRENGTH 5 (MOD)	STRENGTH 3



PILE ANCHORAGE DETAIL

PILE NOTES

1 CAST–IN–PLACE CONC. TEST PILE 85 FT. LONG
21 CAST–IN–PLACE CONC. PILES EST. LENGTH 75 FT.
22 CAST–IN–PLACE CONC. PILES REQ'D FOR PIER 25.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.3125 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

△ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL PLAN AND ELEVATION SHEETS FOR ANY REQUIRED SUPPORT OF EXCAVATION (SOE).

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90% SUBMISSION - 01/22/16

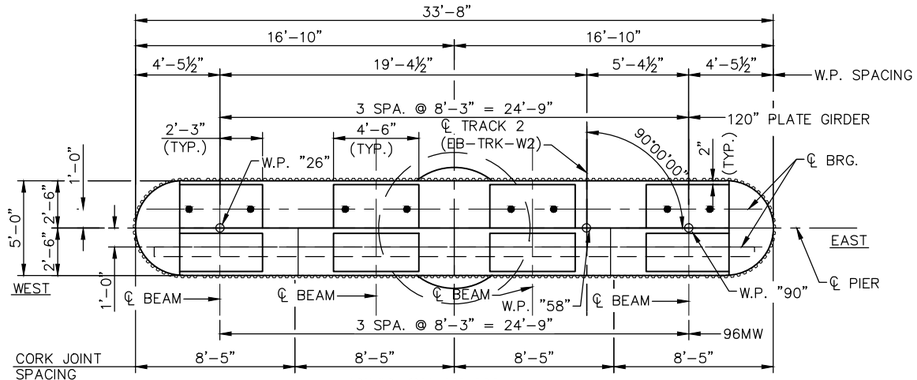
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 25 FOOTING PLAN

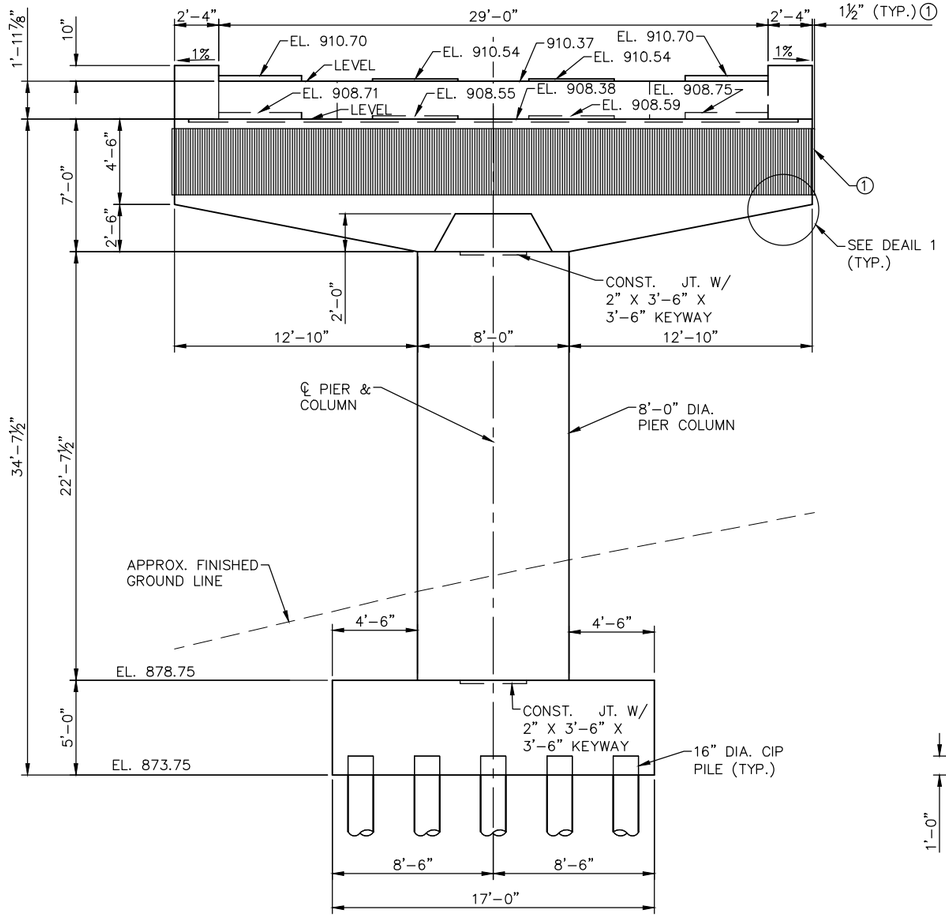
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_25a

SHEET 106 OF 264

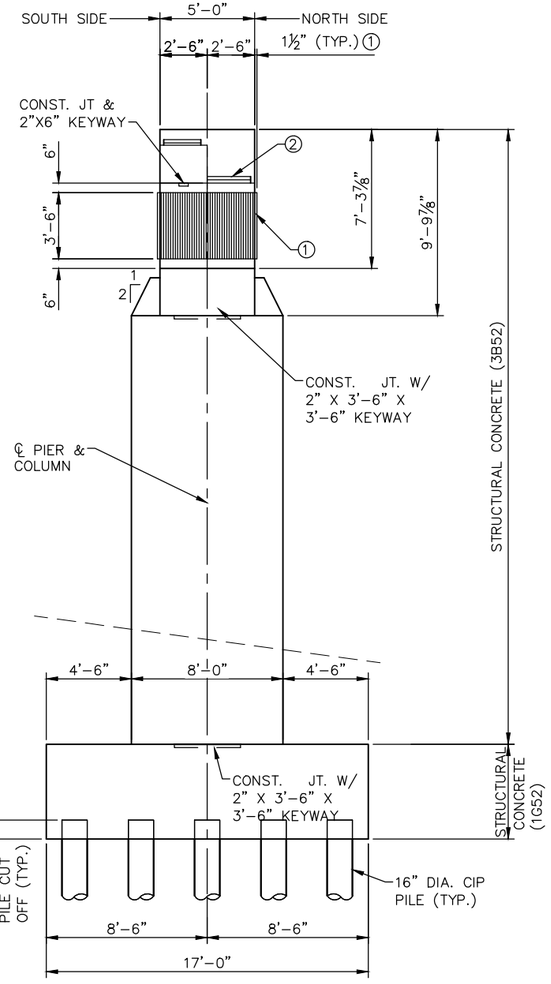
Jan 18 2016 10:27 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



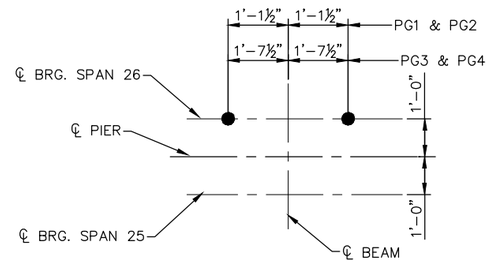
PIER 25 PLAN



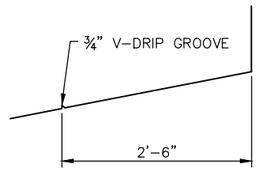
PIER 25 ELEVATION



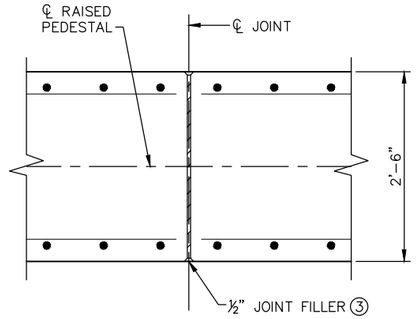
PIER 25 END VIEW



ANCHOR ROD LAYOUT



DETAIL 1



CORK JOINT DETAIL

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE, TYPE 1 "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)"

② THE CONSTRUCTION ELEVATIONS FOR BRIDGE SEATS SHALL BE DETERMINED BASED ON THE ACTUAL HEIGHT OF THE POT BEARING ASSEMBLIES FURNISHED BY THE CONTRACTOR. ANY REQUIRED ADJUSTMENT OF SEAT ELEVATIONS SHALL BE MADE BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT REVISED BEARING SEAT ADJUSTMENTS FOR APPROVAL.

③ JOINT FILLER SHALL BE CORK PER MNDOT STANDARD SPECIFICATION 3702.

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DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

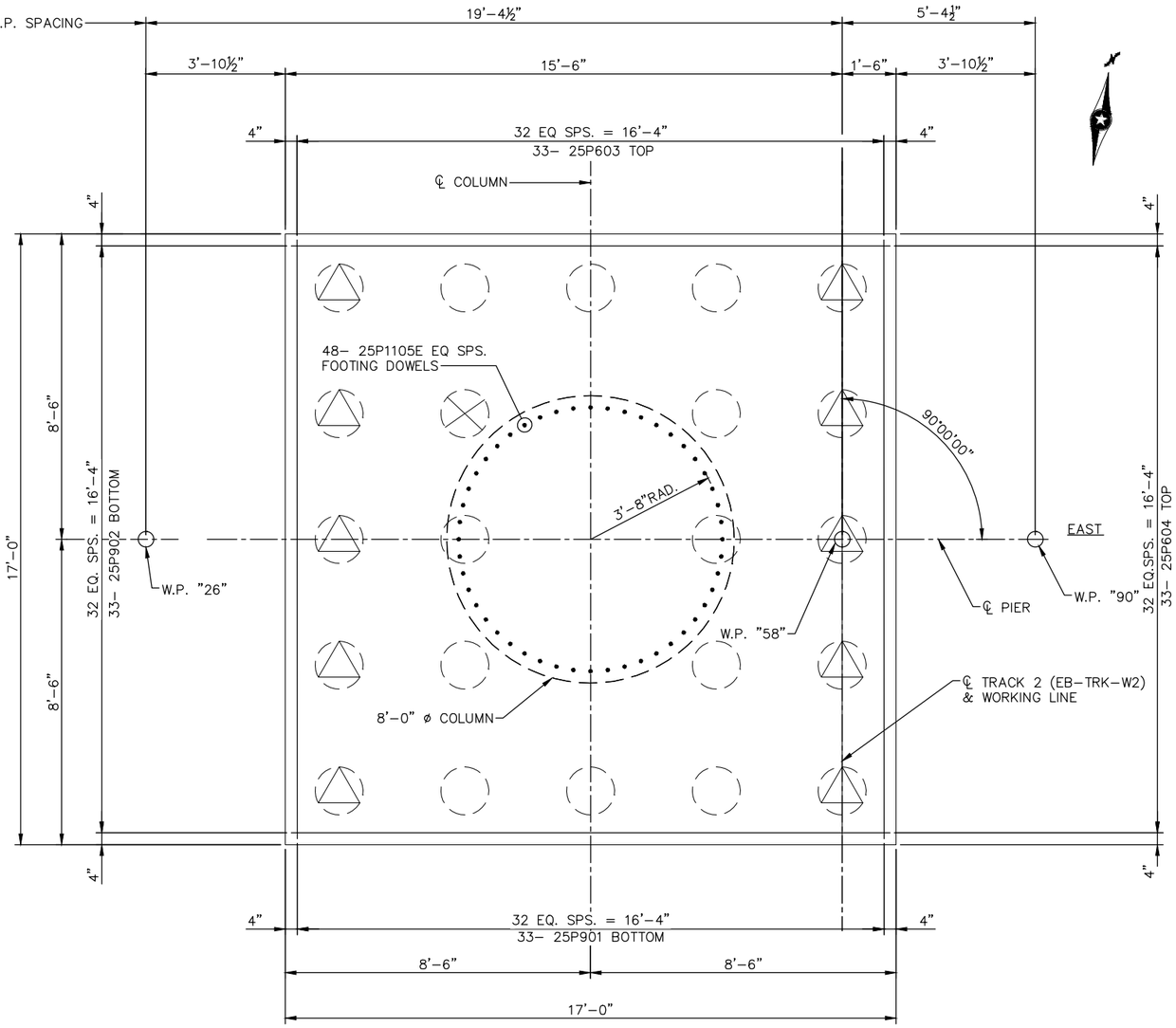
90% SUBMISSION - 01/22/16

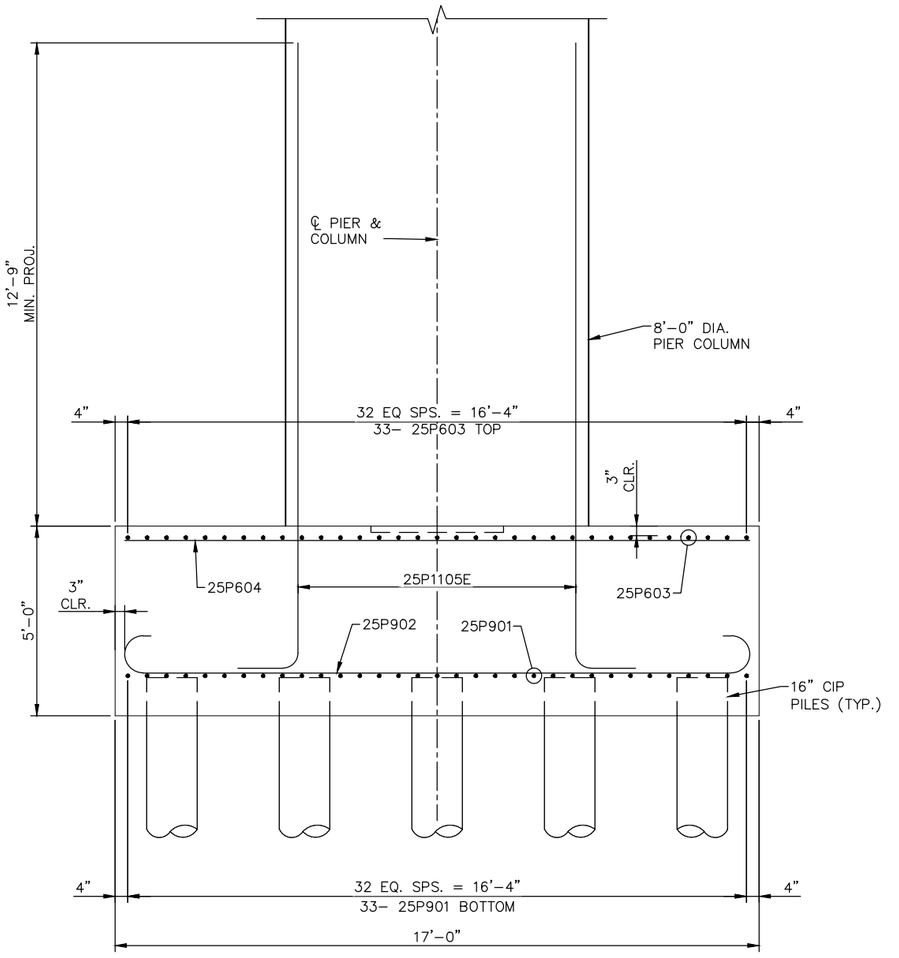
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 25 PLAN & ELEVATION

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_25

SHEET 107 OF 264

Jan, 17 2016 06:09 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills





PIER 25 FOOTING PLAN

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

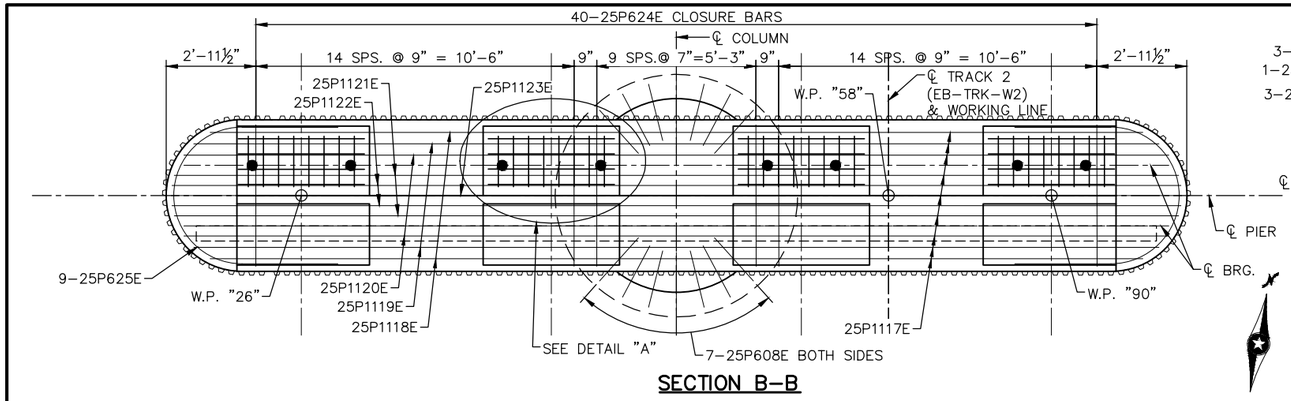
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 25 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

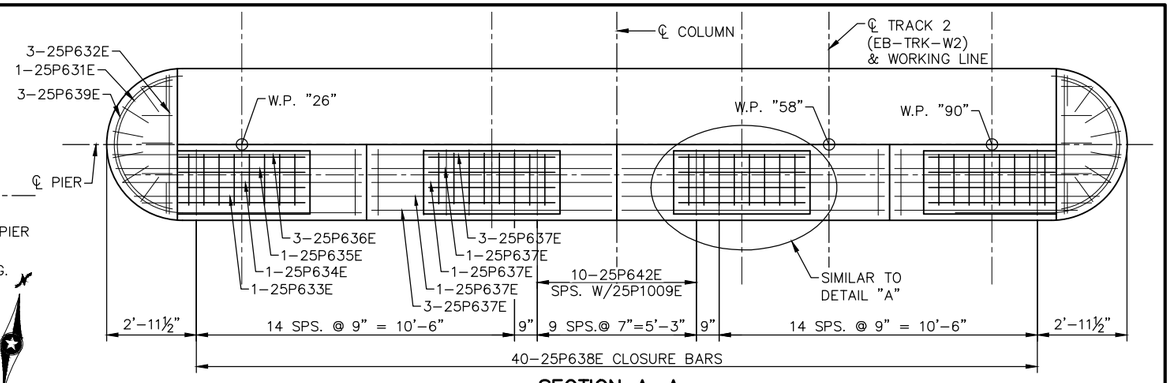
SHEET NAME: W2-STU-BRID-T212-PIER2R_25f

SHEET 108 OF 264

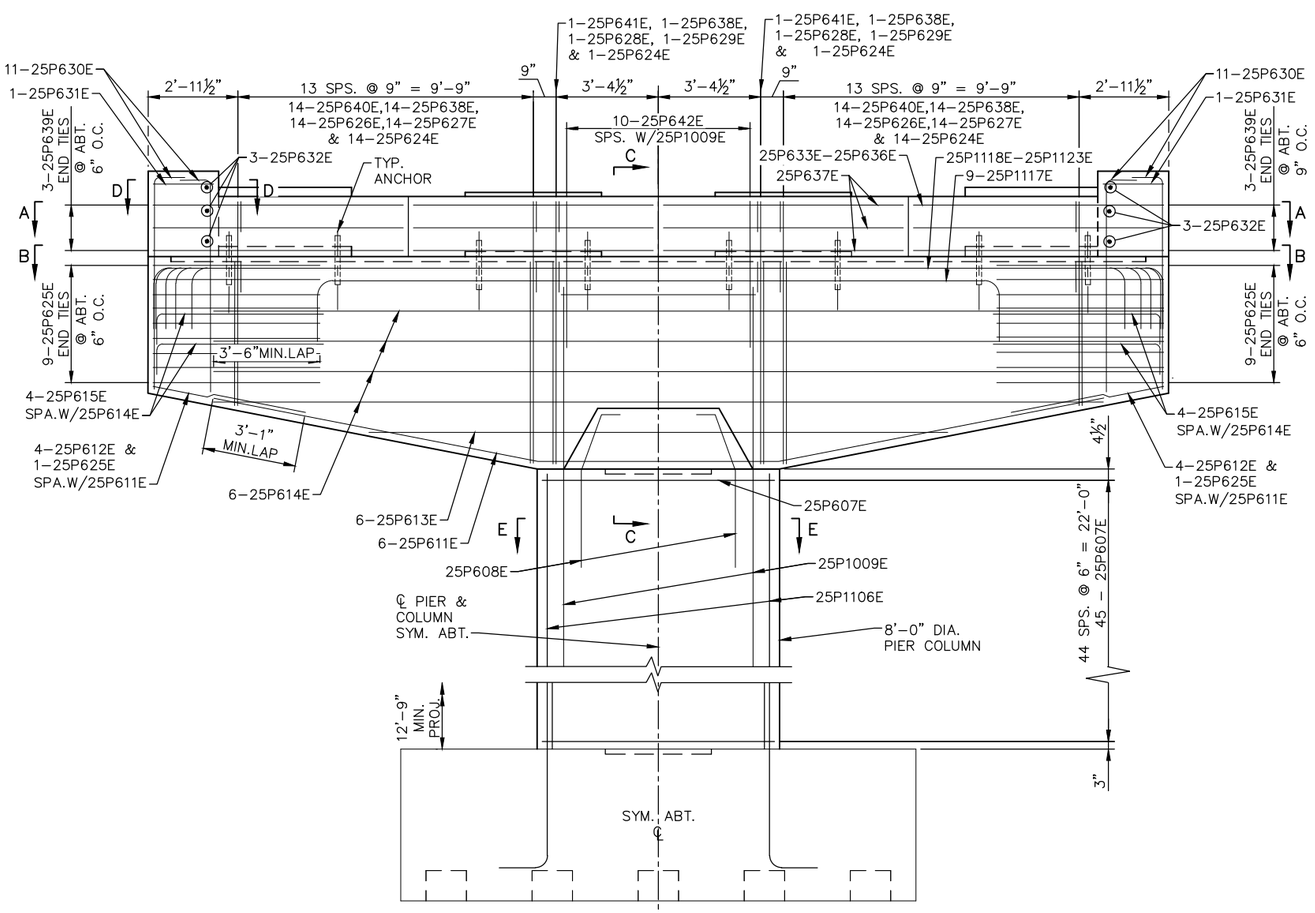
Jan. 17 2016 06:09 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2R.dwg By: hills



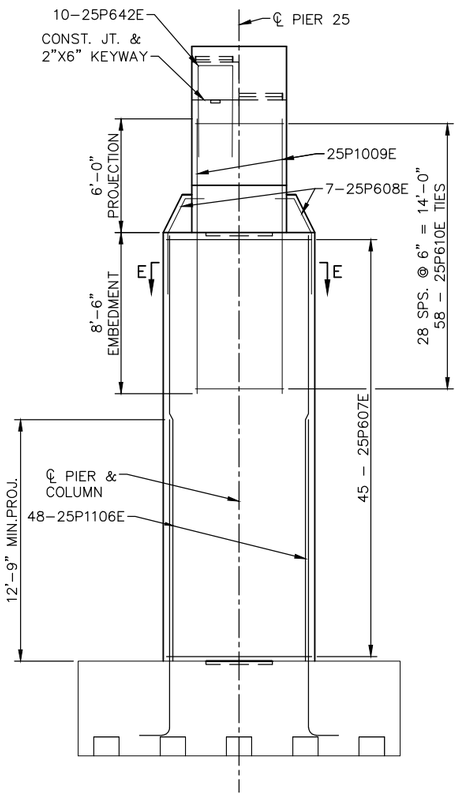
SECTION B–B



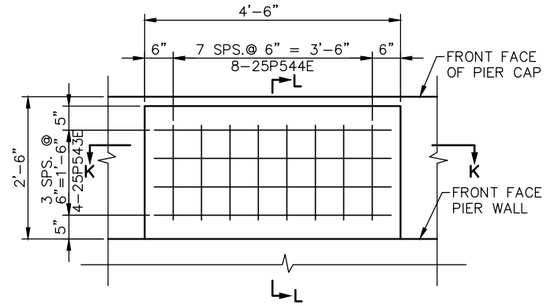
SECTION A–A



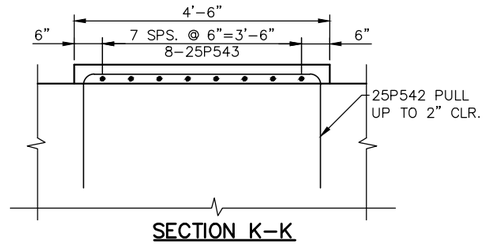
PIER 25 ELEVATION



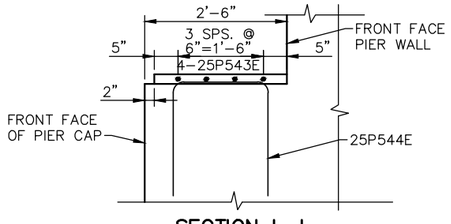
PIER 25 END VIEW



DETAIL A



SECTION K–K



SECTION L–L

NOTES:

FOR SECTIONS C–C, D–D & E–E SEE SHEET 110.

FOR DOWEL LAYOUT SEE SHEET 108.

ALL CAP REINFORCEMENT SHALL BE PLACED 2" CLEAR FROM BEARING ANCHORS.

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

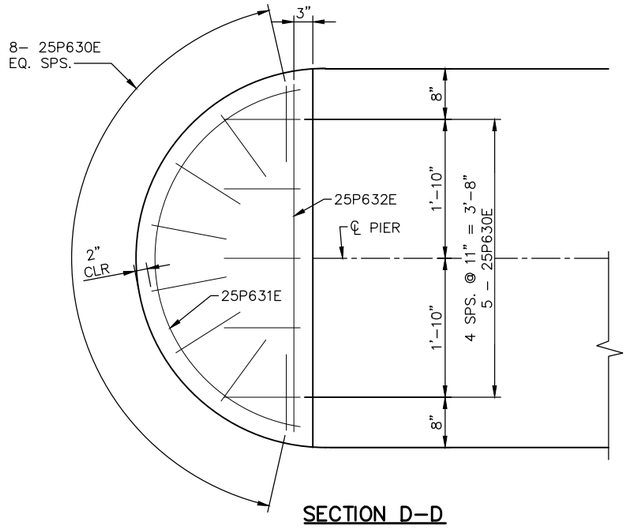
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 25 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-PIER3R_25P

SHEET 109 OF 264

Jan, 18 2016 09:32 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



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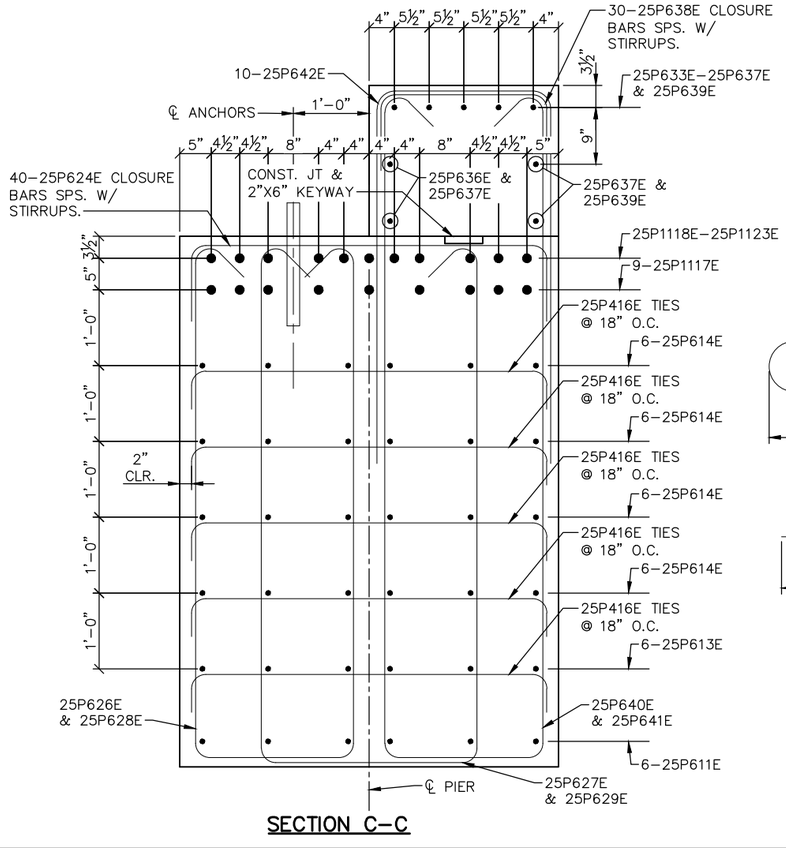

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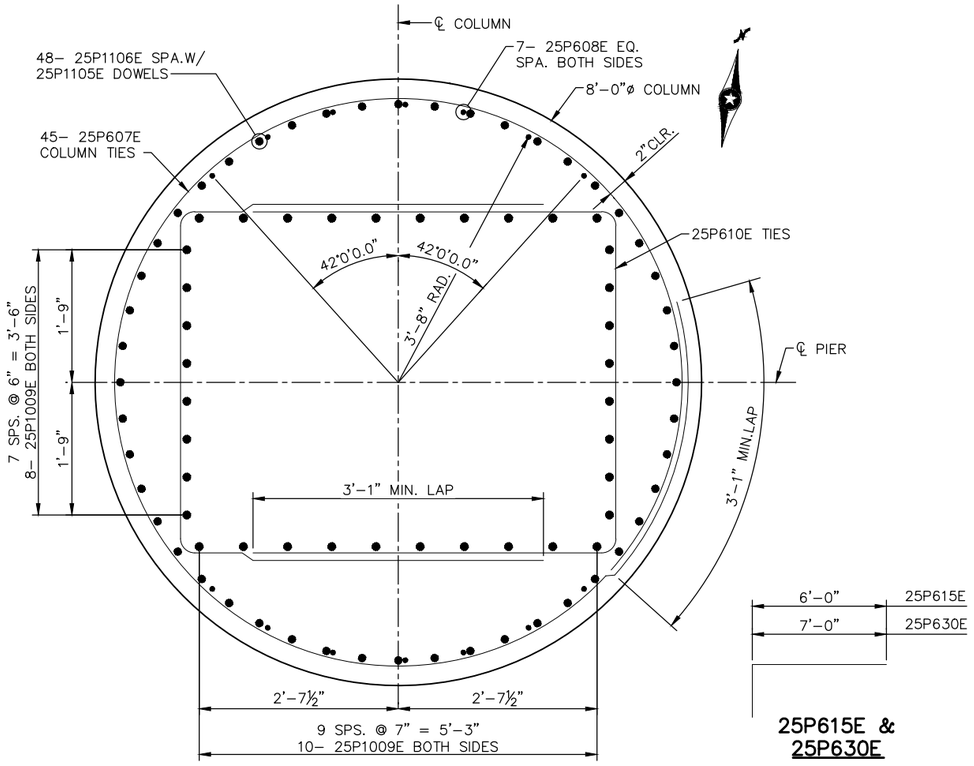
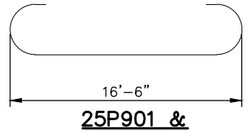


SECTION E–E

25P615E & 25P630E



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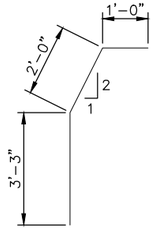

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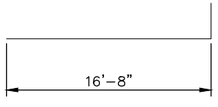

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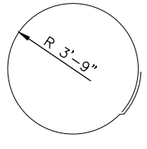

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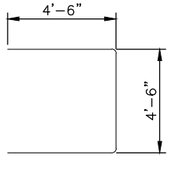

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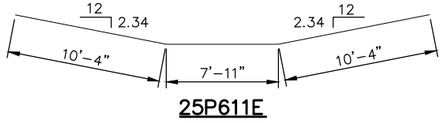

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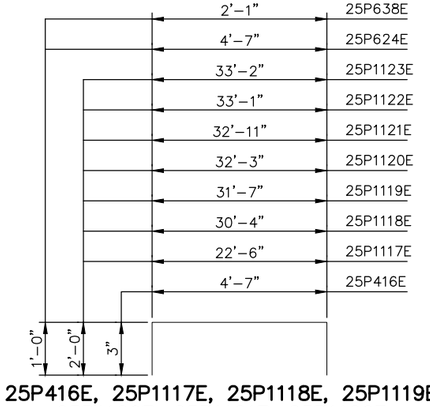

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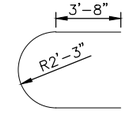

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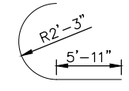

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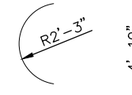

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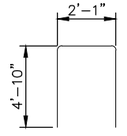

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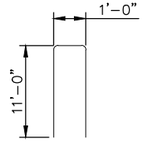

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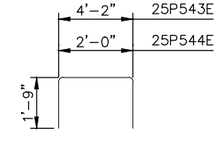
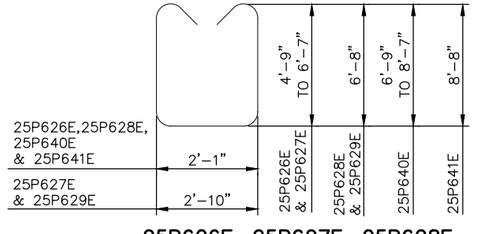


25P543E & 25P544



25P626E, 25P627E, 25P628E, 25P629E, 25P640E & 25P641E

BILL OF REINFORCEMENT FOR PIER 25

BAR	NO.	LENGTH	SHAPE	LOCATION
25P901	33	19'–0"		FOOTING HORIZONTAL
25P902	33	19'–0"		FOOTING HORIZONTAL
25P603	33	16'–6"		FOOTING HORIZONTAL
25P604	33	16'–6"		FOOTING HORIZONTAL
25P1105E	48	18'–8''		FOOTING COLUMN DOWEL
25P1106E	48	22'–5"		COLUMN VERTICAL
25P607E	45	26'–8"		COLUMN TIE
25P608E	14	6'–3"		CAP DOWEL
25P1009E	36	14'–6"		CAP DOWEL
25P610E	58	13'–6"		CAP TIE HORIZONTAL
25P611E	6	28'–7"		CAP LONGITUDINAL
25P612E	8	5'–2"		CAP LONGITUDINAL
25P613E	6	18'–7"		CAP LONGITUDINAL
25P614E	24	28'–4"		CAP LONGITUDINAL
25P615E	24	7'–0"		CAP LONGITUDINAL
25P416E	70	5'–1"		CAP TIE
25P1117E	9	26'–6"		CAP LONGITUDINAL
25P1118E	2	34'–4"		CAP LONGITUDINAL
25P1119E	2	35'–7"		CAP LONGITUDINAL
25P1120E	2	36'–3"		CAP LONGITUDINAL
25P1121E	2	36'–11"		CAP LONGITUDINAL
25P1122E	2	37'–1"		CAP LONGITUDINAL
25P1123E	1	37'–2"		CAP LONGITUDINAL
25P624E	40	6'–7"		CAP TIE
25P625E	20	14'–4"		END TIE
25P626E	28	①		CAP STIRRUP
25P627E	28	②		CAP STIRRUP
25P628E	2	16'–9"		CAP STIRRUP
25P629E	2	17'–6"		CAP STIRRUP
25P630E	22	8'–0"		CAP VERTICAL
25P631E	2	6'–4"		CAP HORIZONTAL
25P632E	6	4'–7"		CAP HORIZONTAL
25P633E	2	7'–6"		CAP LONGITUDINAL
25P634E	2	7'–10"		CAP LONGITUDINAL
25P635E	2	8'–1"		CAP LONGITUDINAL
25P636E	6	8'–1"		CAP LONGITUDINAL
25P637E	18	7'–11"		CAP LONGITUDINAL
25P638E	30	4'–1"		CAP TIE
25P639E	6	12'–5"		END TIE
25P640E	28	③		CAP STIRRUP
25P641E	2	20'–9"		CAP STIRRUP
25P642E	10	11'–9"		CAP VERTICAL
25P543E	32	7'–8"		PEDESTAL TIE
25P544E	64	5'–6"		PEDESTAL TIE
25P745	20	23'–0"		PILE ANCHORAGE TIE

① 2–SERIES OF 14, 12'–11" TO 16'–7"
② 2–SERIES OF 14, 13'–8" TO 17'–4"
③ 2–SERIES OF 14, 16'–11" TO 20'–7"

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

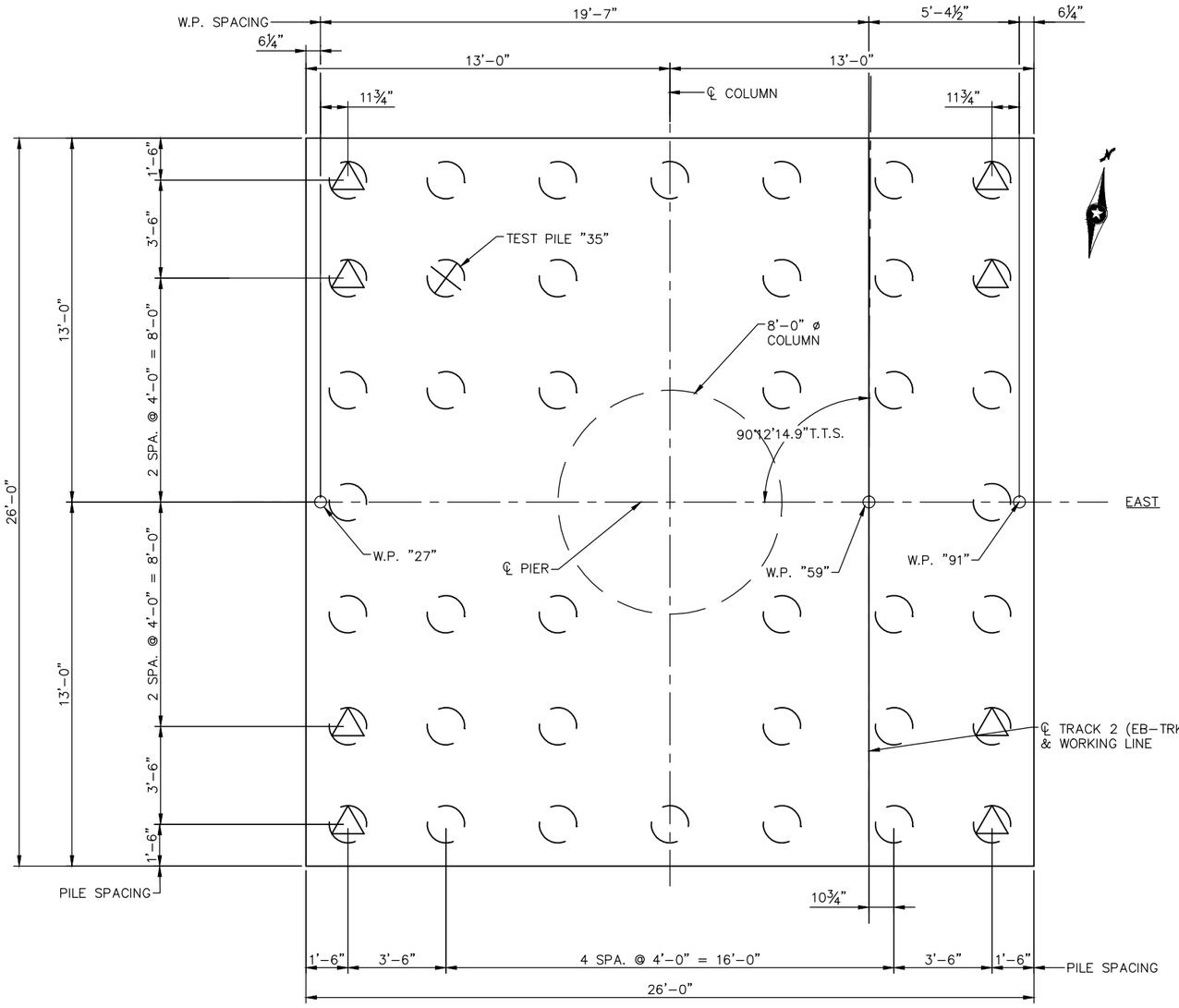
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 25 REINFORCEMENT 3

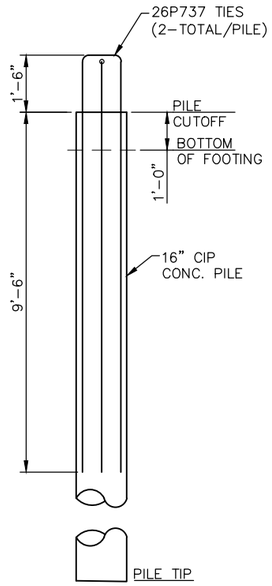
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_25S

SHEET 110 OF 264

Jan, 18 2016 09:32 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



PIER 26 PILE LAYOUT



PILE ANCHORAGE DETAIL

PIER 26
REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	274.8
PDA	0.65	211.3

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

PIER 26
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	66.8	40.6
FACTORED LIVE LOAD	46.5	–22.8
FACTORED OVERTURNING	24.1	–24.1
FACTORED DESIGN LOAD	137.4	N/A
FACTORED DESIGN UPLIFT	N/A	–6.3
LOAD COMBINATION	STRENGTH 5 (MOD)	STRENGTH 5 (MOD)

PILE NOTES

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

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.3125 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

△ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL PLAN AND ELEVATION SHEETS FOR ANY REQUIRED SUPPORT OF EXCAVATION (SOE).

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 26 FOOTING PLAN

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_26a

SHEET 111 OF 264

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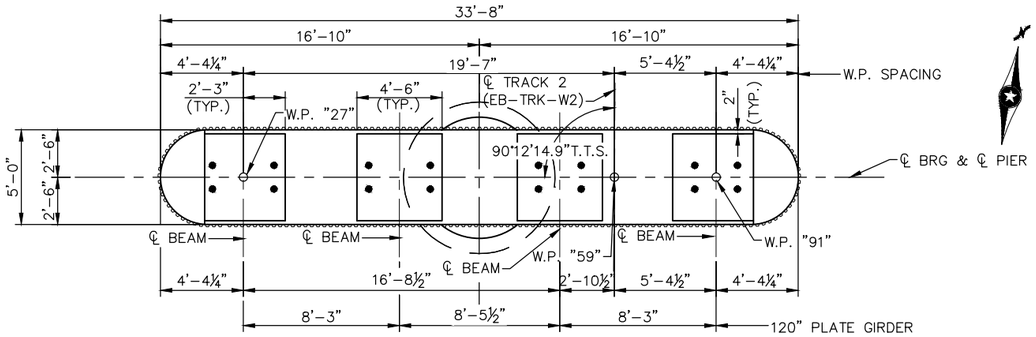
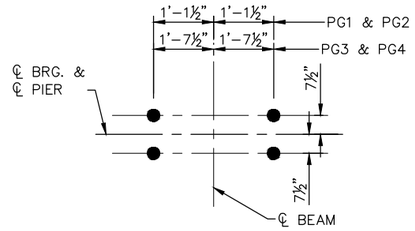
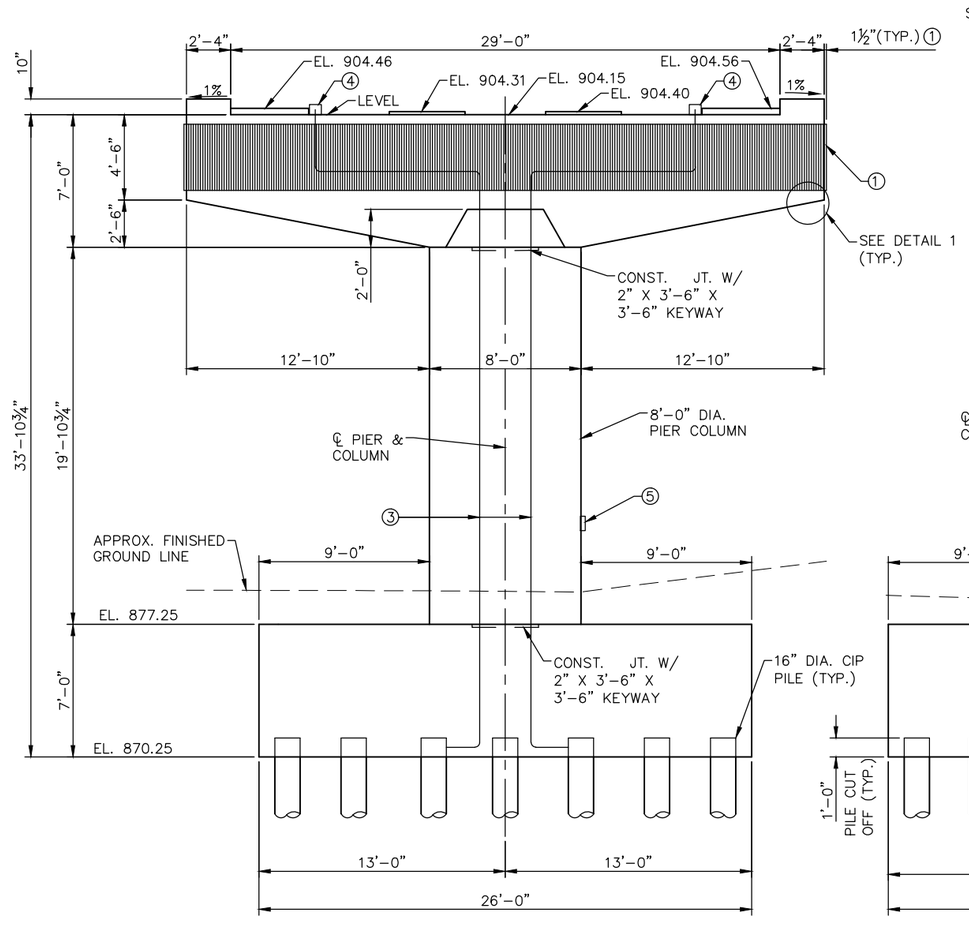


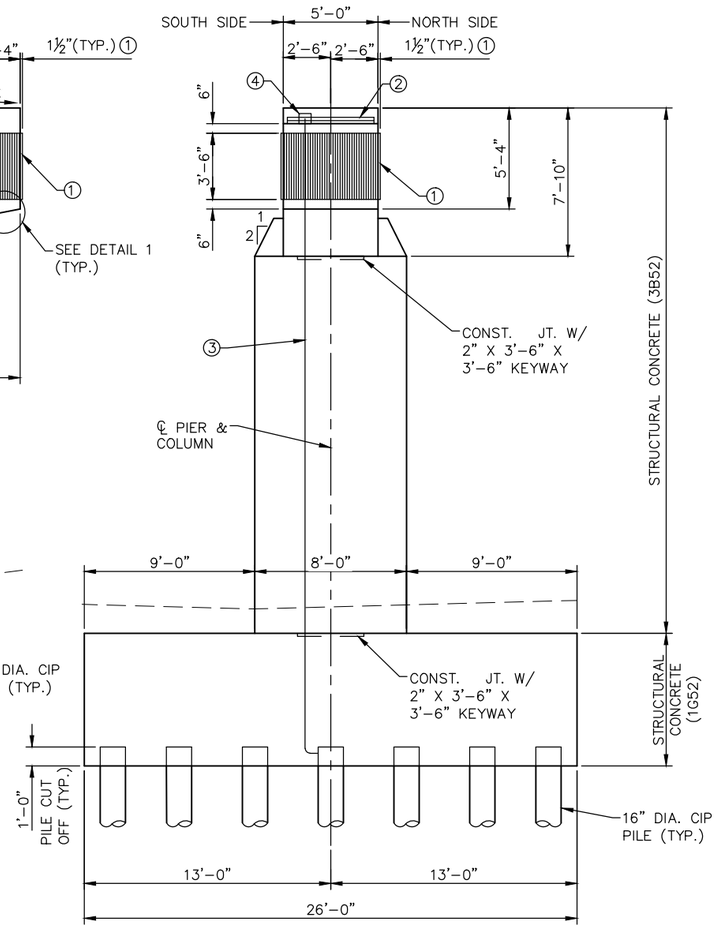
PIER 26 PLAN



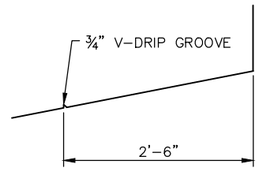
ANCHOR ROD LAYOUT



PIER 26 ELEVATION



PIER 26 END VIEW



DETAIL 1

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE, TYPE 1 "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)"

② THE CONSTRUCTION ELEVATIONS FOR BRIDGE SEATS SHALL BE DETERMINED BASED ON THE ACTUAL HEIGHT OF THE POT BEARING ASSEMBLIES FURNISHED BY THE CONTRACTOR. ANY REQUIRED ADJUSTMENT OF SEAT ELEVATIONS SHALL BE MADE BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT REVISED BEARING SEAT ADJUSTMENTS FOR APPROVAL.

③ GROUND WIRE PLACED INSIDE 1" PVC CONDUIT. SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600.

④ JUNCTION BOX, SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600.

⑤ GROUNDING TEST STATION, SEE GROUNDING PLANS IN VOLUME 12, SHEET ELE-SITE-DTL-600

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DRAWN BY: SBM | CHECKED BY: EEM

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METROPOLITAN COUNCIL

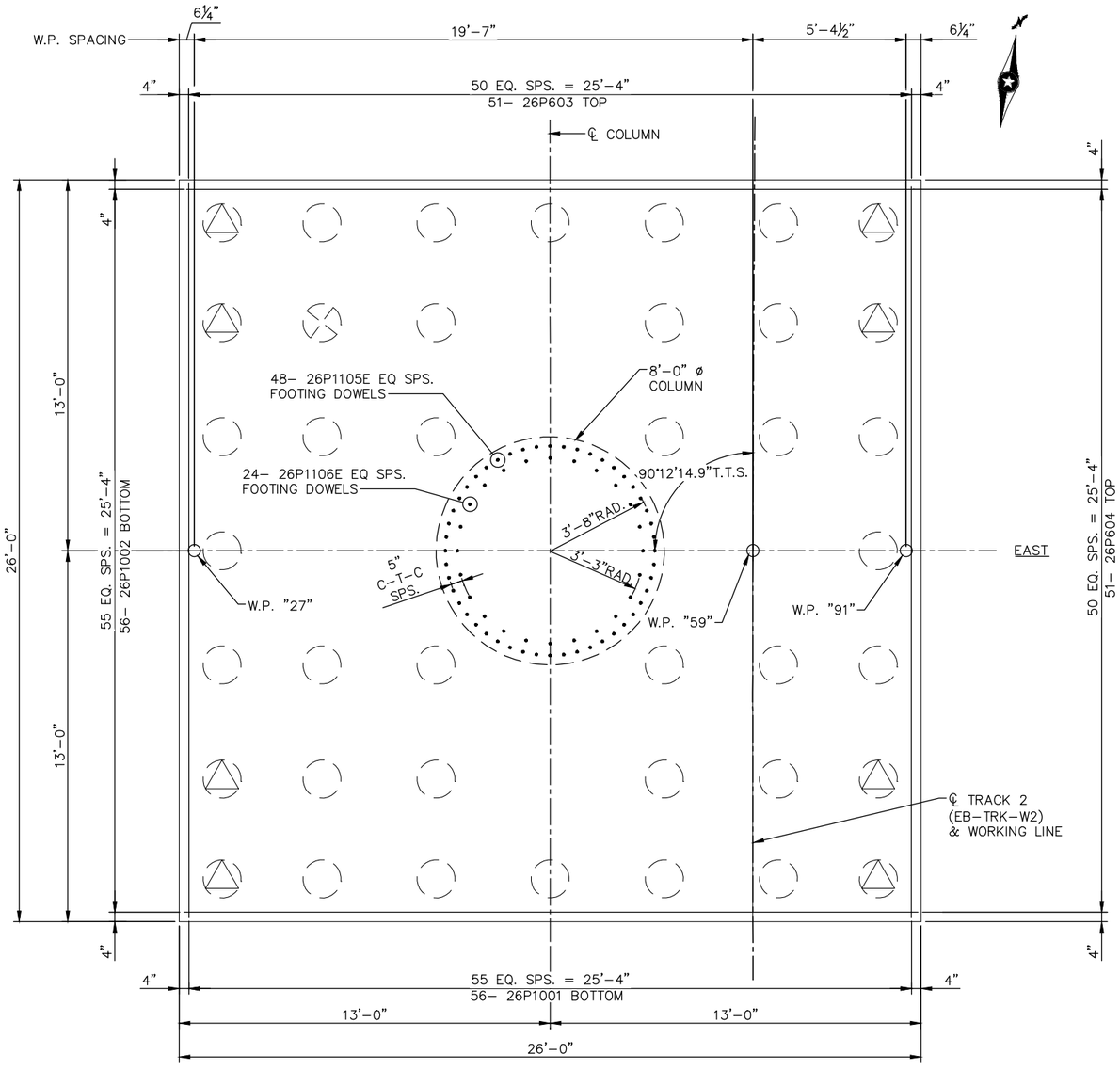
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 26 PLAN & ELEVATION

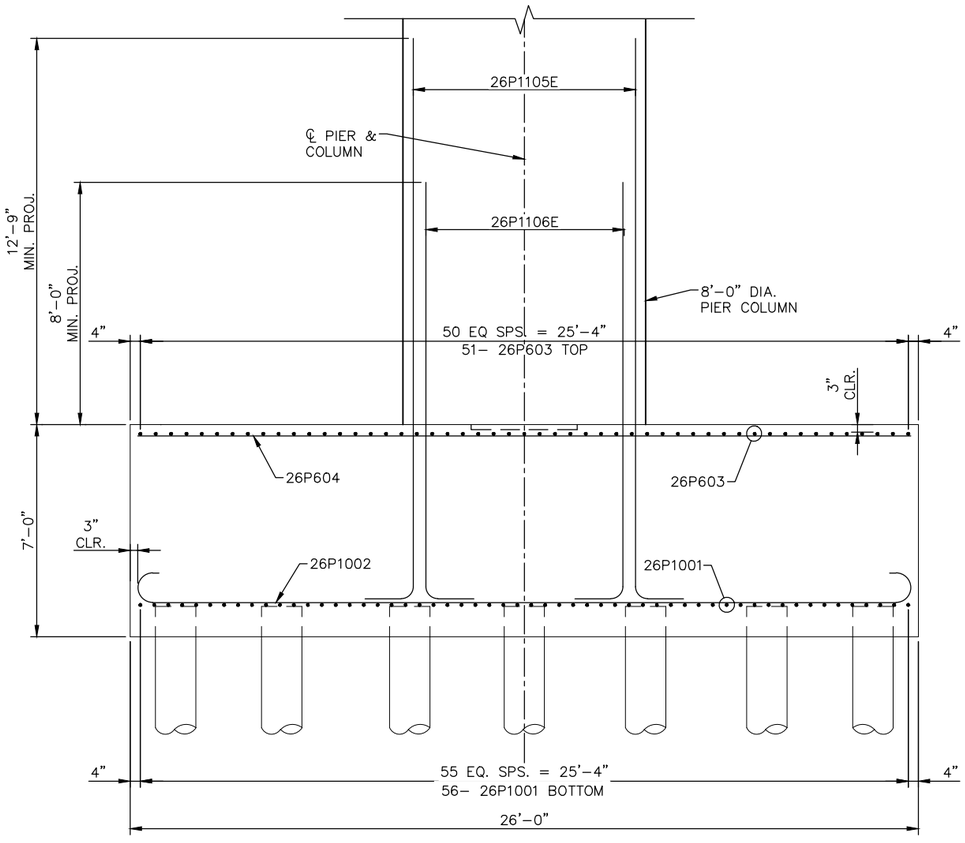
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER_26

SHEET 112 OF 264

Jan, 18 2016 09:33 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



PIER 26 FOOTING PLAN



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DESIGNED BY: MJC CHECKED BY: EEM
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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

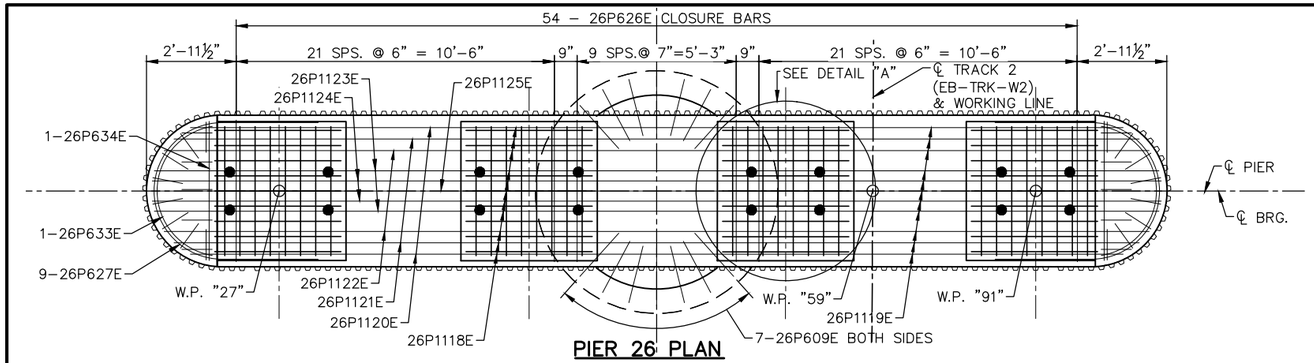
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 26 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

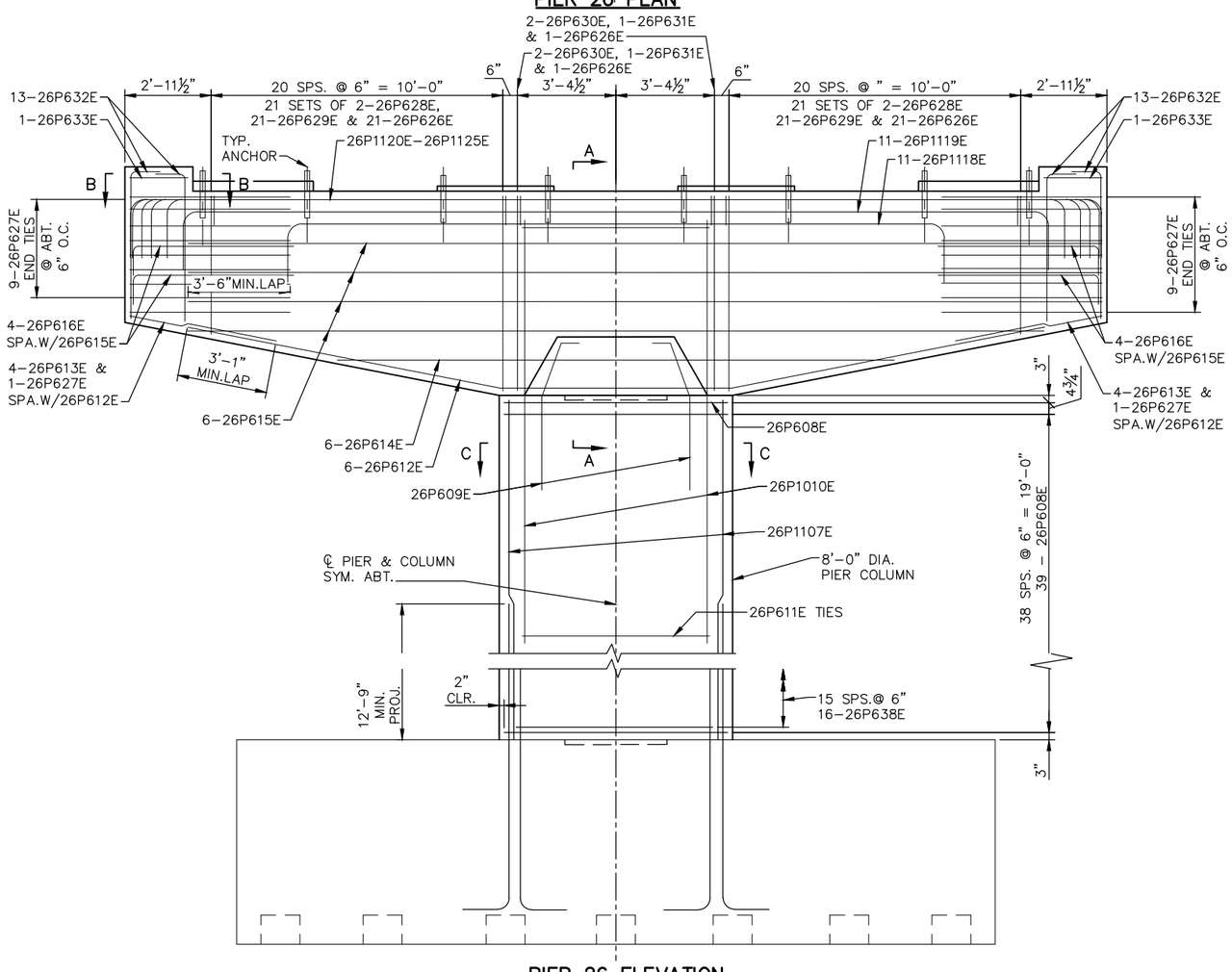
SHEET NAME: W2-STU-BRID-T212-PIER2R_26f

SHEET 113 OF 264

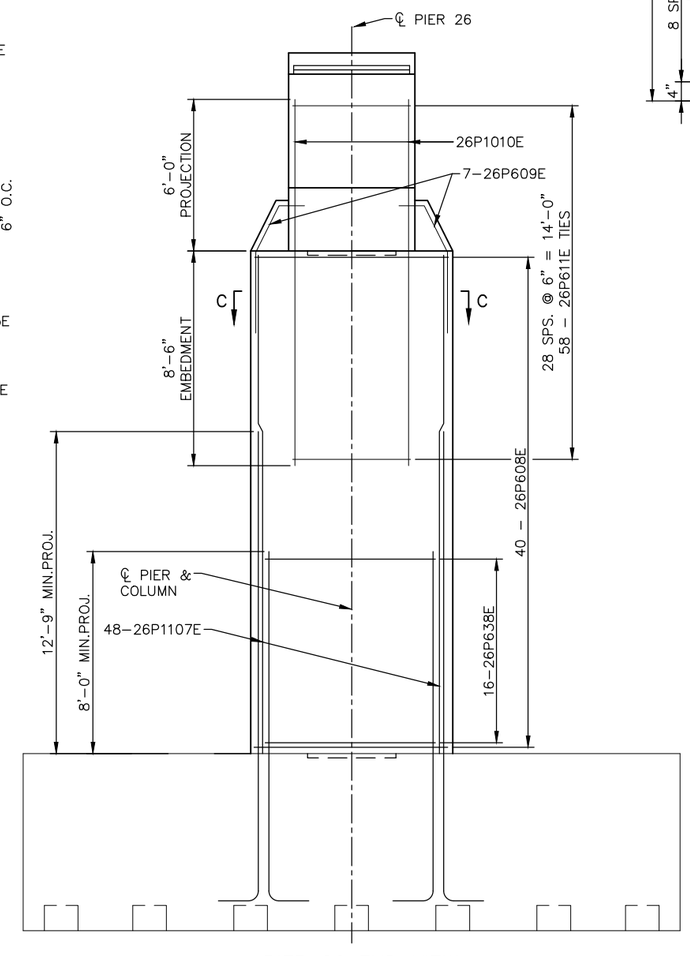
Jan, 18 2016 09:34 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2R.dwg By: hills



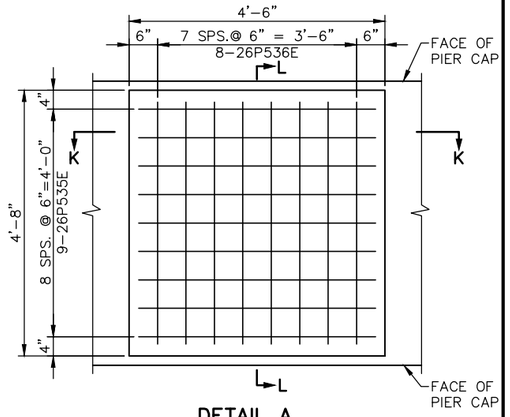
PIER 26 PLAN



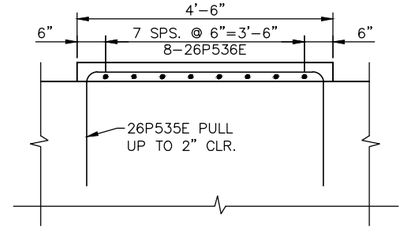
PIER 26 ELEVATION



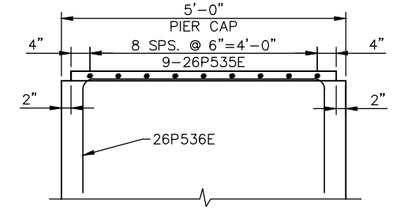
PIER 26 END VIEW



DETAIL A



SECTION K–K



SECTION L–L

NOTES:

FOR SECTIONS A–A, B–B & C–C SEE SHEET 115.

FOR DOWEL LAYOUT SEE SHEET 113.

ALL CAP REINFORCEMENT SHALL BE PLACED 2" CLEAR FROM BEARING ANCHORS.

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

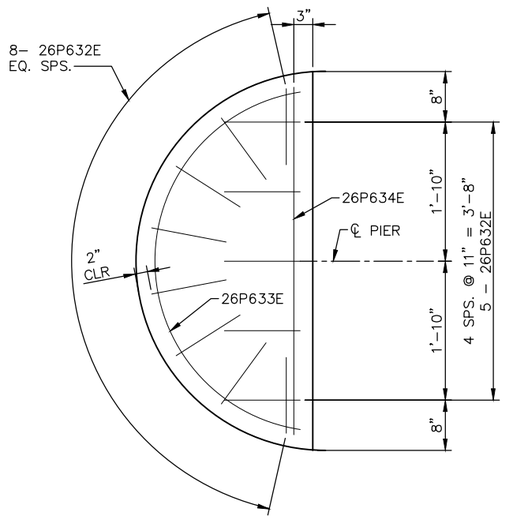
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 26 REINFORCEMENT 2

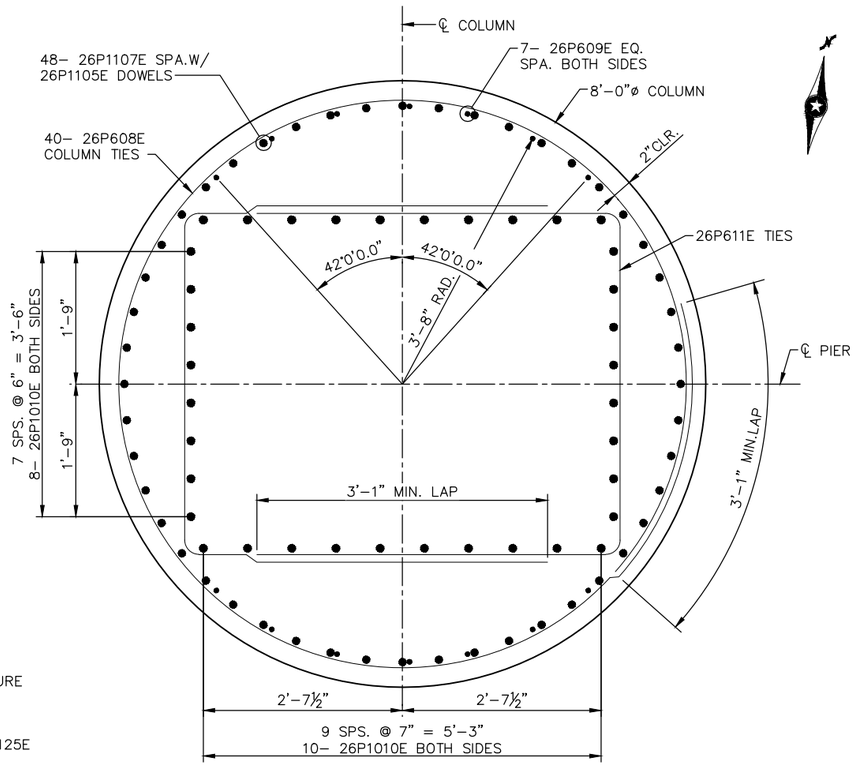
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER3R_26P

SHEET 114 OF 264

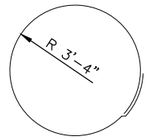
Jan, 18 2016 09:35 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



SECTION B–B



SECTION C–C

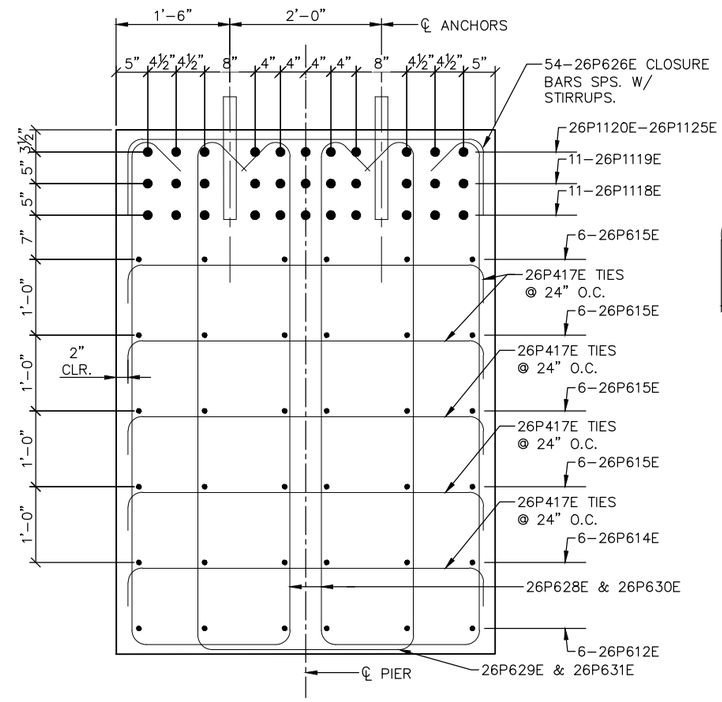


26P638E

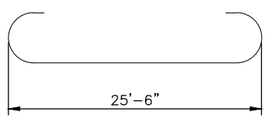
BILL OF REINFORCEMENT FOR PIER 26

BAR	NO.	LENGTH	SHAPE	LOCATION
26P1001	56	28'–8"		FOOTING HORIZONTAL
26P1002	56	28'–8"		FOOTING HORIZONTAL
26P603	51	25'–6"		FOOTING HORIZONTAL
26P604	51	25'–6"		FOOTING HORIZONTAL
26P1105E	48	20'–8''		FOOTING COLUMN DOWEL
26P1106E	24	15'–11"		FOOTING COLUMN DOWEL
26P1107E	48	19'–8"		COLUMN VERTICAL
26P608E	40	26'–8"		COLUMN TIE
26P609E	14	6'–3"		CAP DOWEL
26P1010E	36	14'–6"		CAP DOWEL
26P611E	58	13'–6"		CAP TIE HORIZONTAL
26P612E	6	28'–7"		CAP LONGITUDINAL
26P613E	8	5'–2"		CAP LONGITUDINAL
26P614E	6	18'–7"		CAP LONGITUDINAL
26P615E	24	28'–4"		CAP LONGITUDINAL
26P616E	24	7'–0"		CAP LONGITUDINAL
26P417E	70	5'–1"		CAP TIE
26P1118E	11	26'–6"		CAP LONGITUDINAL
26P1119E	11	33'–8"		CAP LONGITUDINAL
26P1120E	2	34'–4"		CAP LONGITUDINAL
26P1121E	2	35'–7"		CAP LONGITUDINAL
26P1122E	2	36'–3"		CAP LONGITUDINAL
26P1123E	2	36'–11"		CAP LONGITUDINAL
26P1124E	2	37'–1"		CAP LONGITUDINAL
26P1125E	1	37'–2"		CAP LONGITUDINAL
26P626E	54	6'–7"		CAP TIE
26P627E	20	14'–4"		END TIE
26P628E	84	①		CAP STIRRUP
26P629E	42	②		CAP STIRRUP
26P630E	4	16'–9"		CAP STIRRUP
26P631E	2	17'–6"		CAP STIRRUP
26P632E	26	6'–0"		CAP VERTICAL
26P633E	2	6'–4"		CAP HORIZONTAL
26P634E	2	4'–7"		CAP HORIZONTAL
26P535E	36	7'–8"		PEDESTAL TIE
26P536E	32	7'–9"		PEDESTAL TIE
26P737	16	23'–0"		PILE ANCHORAGE TIE
26P638E	16	24'–1"		COLUMN TIE

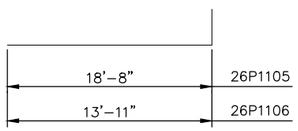
① 4–SERIES OF 14, 12'–11" TO 16'–7"
② 2–SERIES OF 14, 13'–8" TO 17'–4"



SECTION A–A



26P1001 & 26P1002



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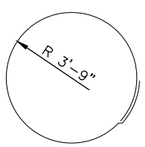

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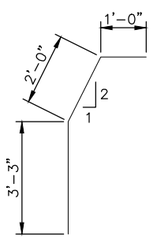

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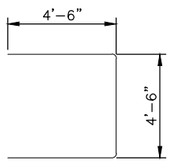

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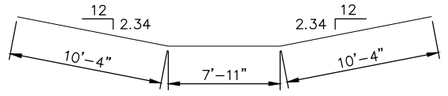

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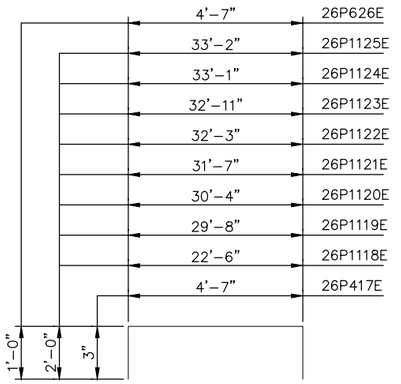
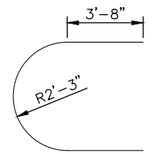


26P417E, 26P1118E, 26P1119E, 26P1120E,
26P1121E, 26P1122E, 26P1123E,
26P1124E, 26P1125E & 26P626E



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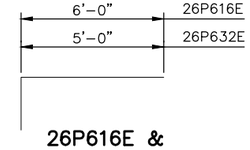

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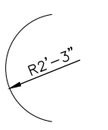

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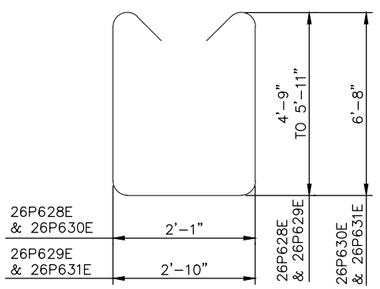
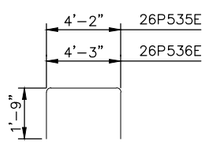
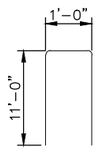


26P628E, 26P629E,
26P630E & 26P631E



24P535E & 24P536E



26P737

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

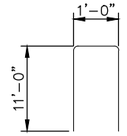
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 26 REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER3R_26S

SHEET 115 OF 264

Jan, 18 2016 11:00 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills

BILL OF REINFORCEMENT FOR PIER 27 PILES				
BAR	NO.	LENGTH	SHAPE	LOCATION
P710	8	20'-0"		TENSION PILE PIE

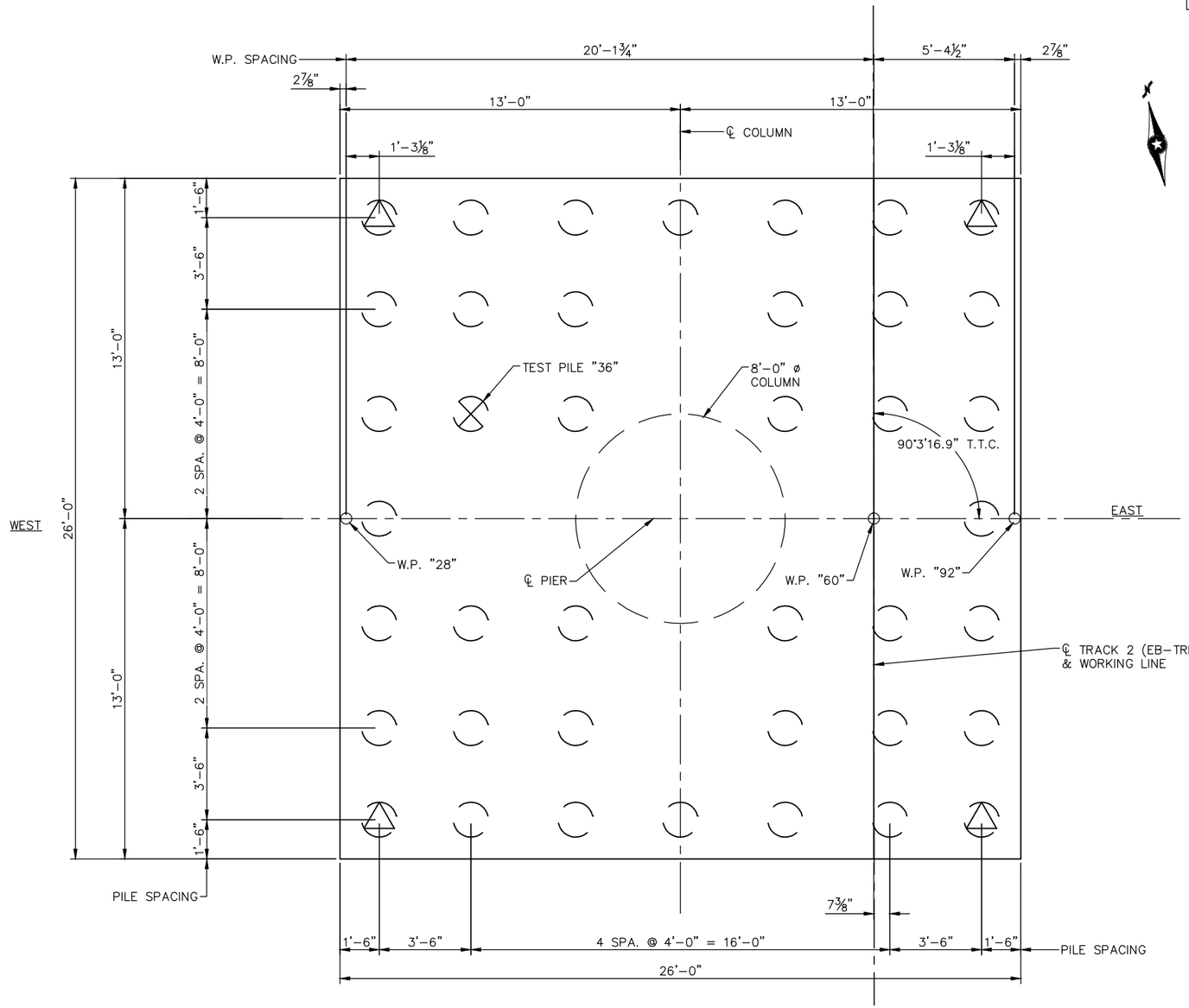


P701

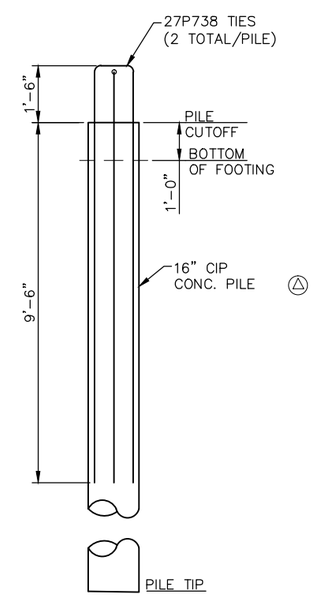
PIER 27 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	268.8
PDA	0.65	206.8

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

PIER 27 COMPUTED PILE LOAD – TONS/PILE		
FACTORED DEAD LOAD	68.0	42.5
FACTORED LIVE LOAD	42.3	–20.0
FACTORED OVERTURNING	24.1	–24.2
FACTORED DESIGN LOAD	134.4	N/A
FACTORED DESIGN UPLIFT	N/A	–1.7
LOAD COMBINATION	STRENGTH 5 (MOD)	STRENGTH 5 (MOD)



PIER 27 PILE LAYOUT



PILE ANCHORAGE DETAIL

PILE NOTES

1 CAST–IN–PLACE CONC. TEST PILE 65 FT. LONG
39 CAST–IN–PLACE CONC. PILES EST. LENGTH 55 FT.
40 CAST–IN–PLACE CONC. PILES REQ'D FOR PIER 27.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.3125 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER. (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

△ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL PLAN AND ELEVATION SHEETS FOR ANY REQUIRED SUPPORT OF EXCAVATION (SOE).

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

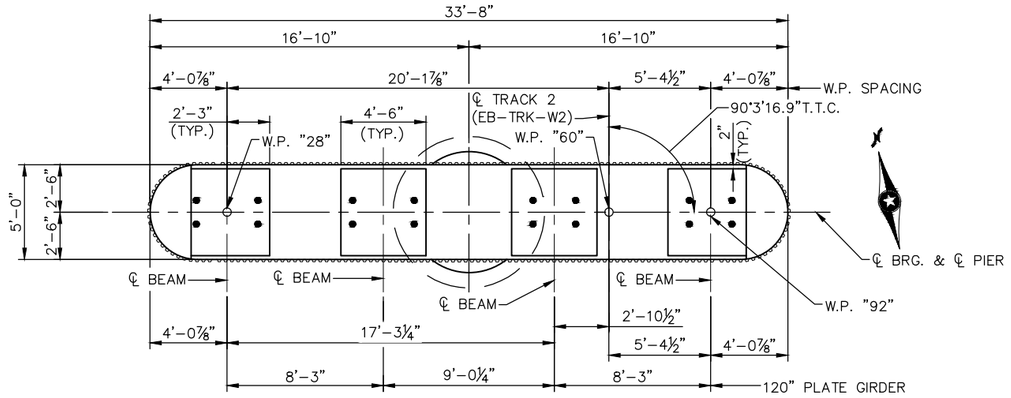
90% SUBMISSION - 01/22/16

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

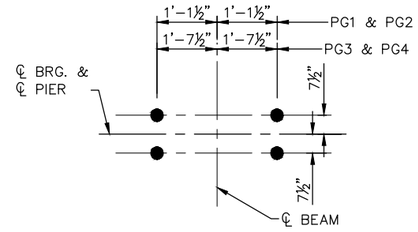
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_27a

SHEET 116 OF 264

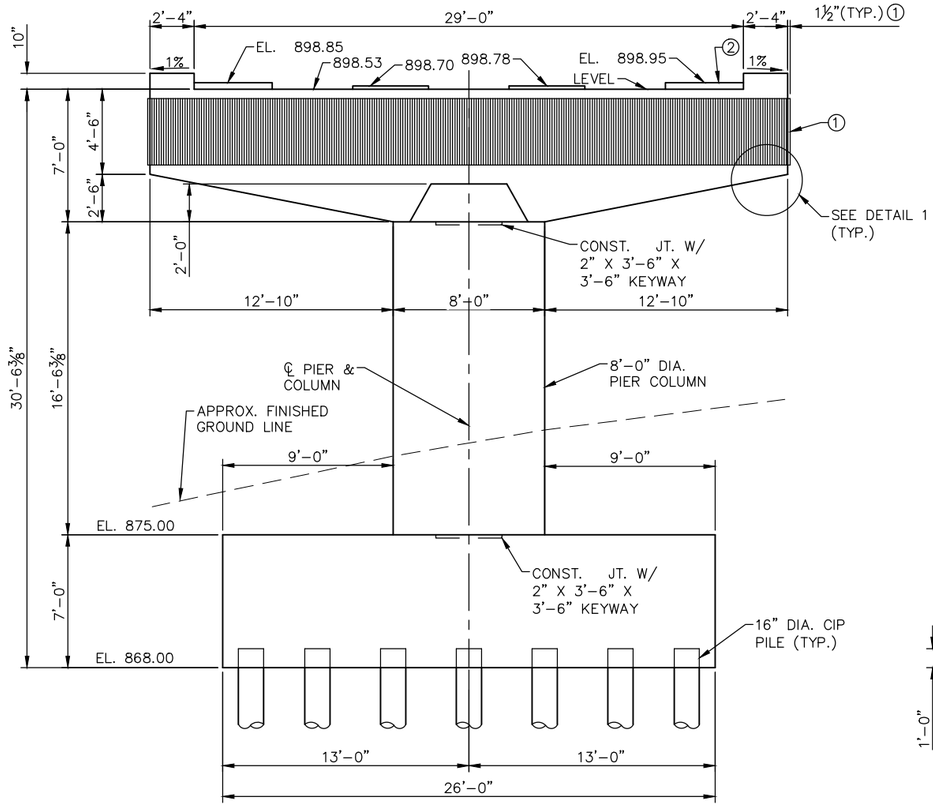
Jan, 18 2016 10:39 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



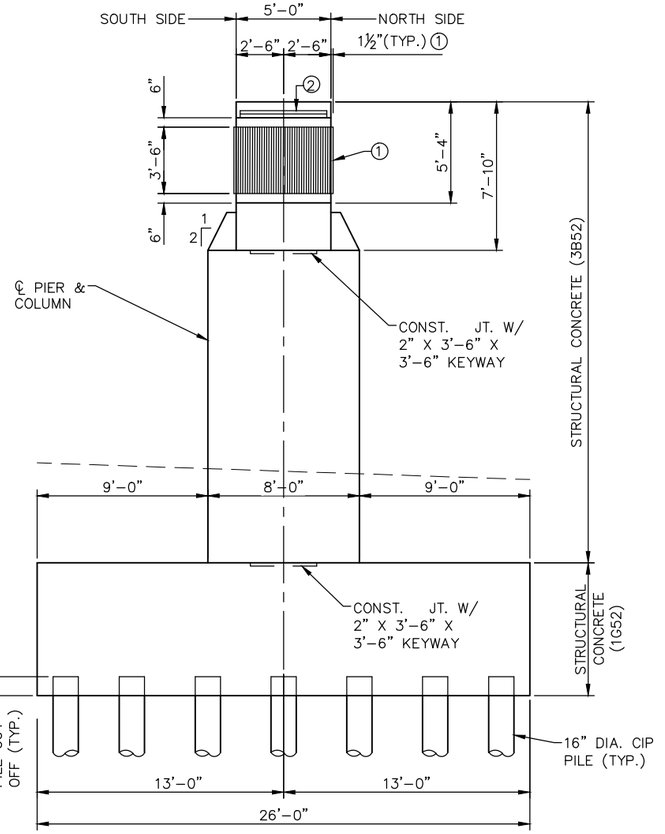
PIER 27 PLAN



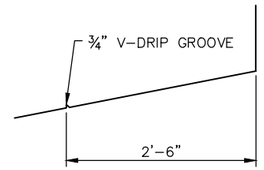
ANCHOR ROD LAYOUT



PIER 27 ELEVATION



PIER 27 END VIEW



DETAIL 1

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE, TYPE 1 "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)"

② THE CONSTRUCTION ELEVATIONS FOR BRIDGE SEATS SHALL BE DETERMINED BASED ON THE ACTUAL HEIGHT OF THE POT BEARING ASSEMBLIES FURNISHED BY THE CONTRACTOR. ANY REQUIRED ADJUSTMENT OF SEAT ELEVATIONS SHALL BE MADE BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT REVISED BEARING SEAT ADJUSTMENTS FOR APPROVAL.

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

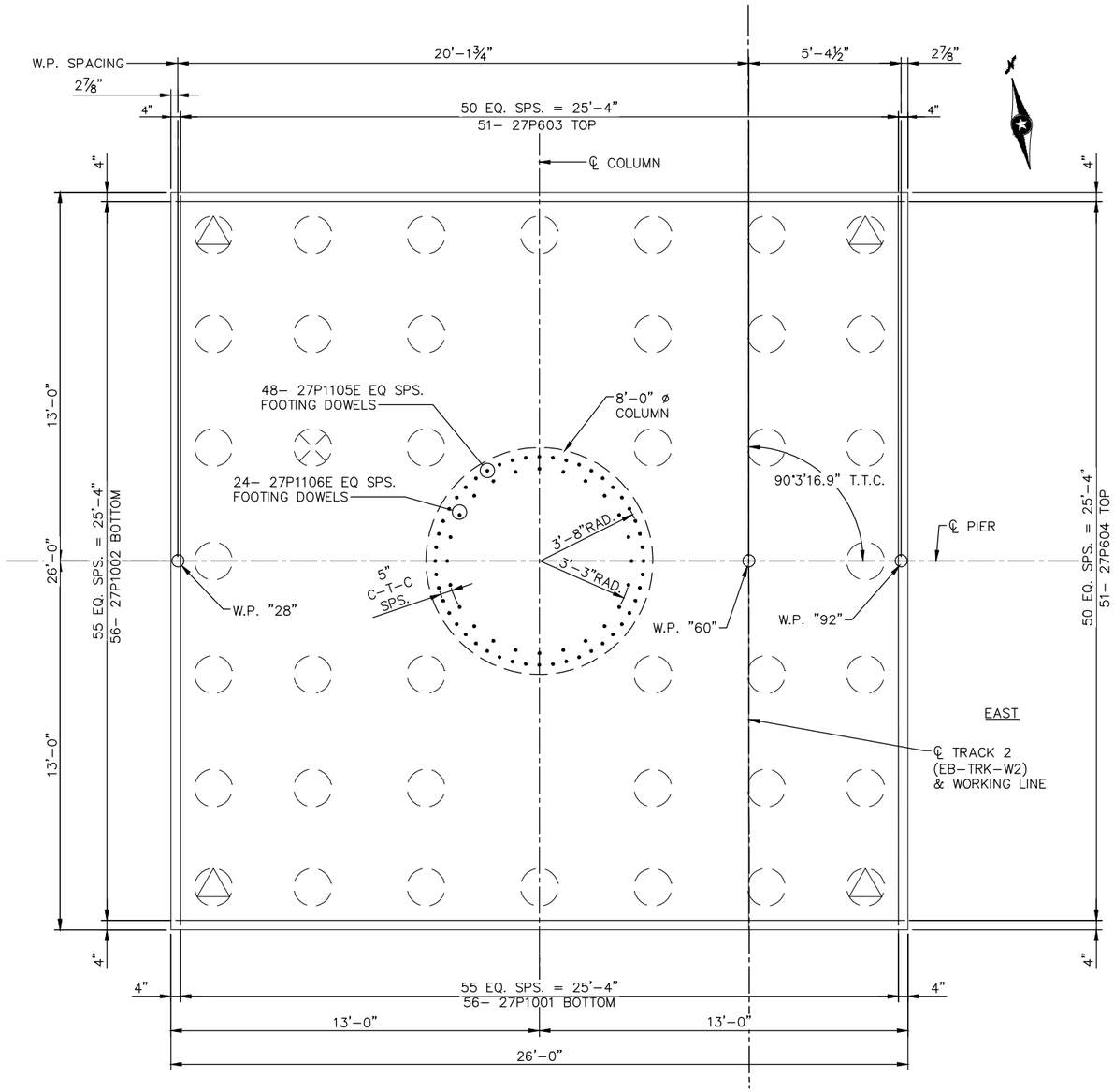
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 27 PLAN & ELEVATION

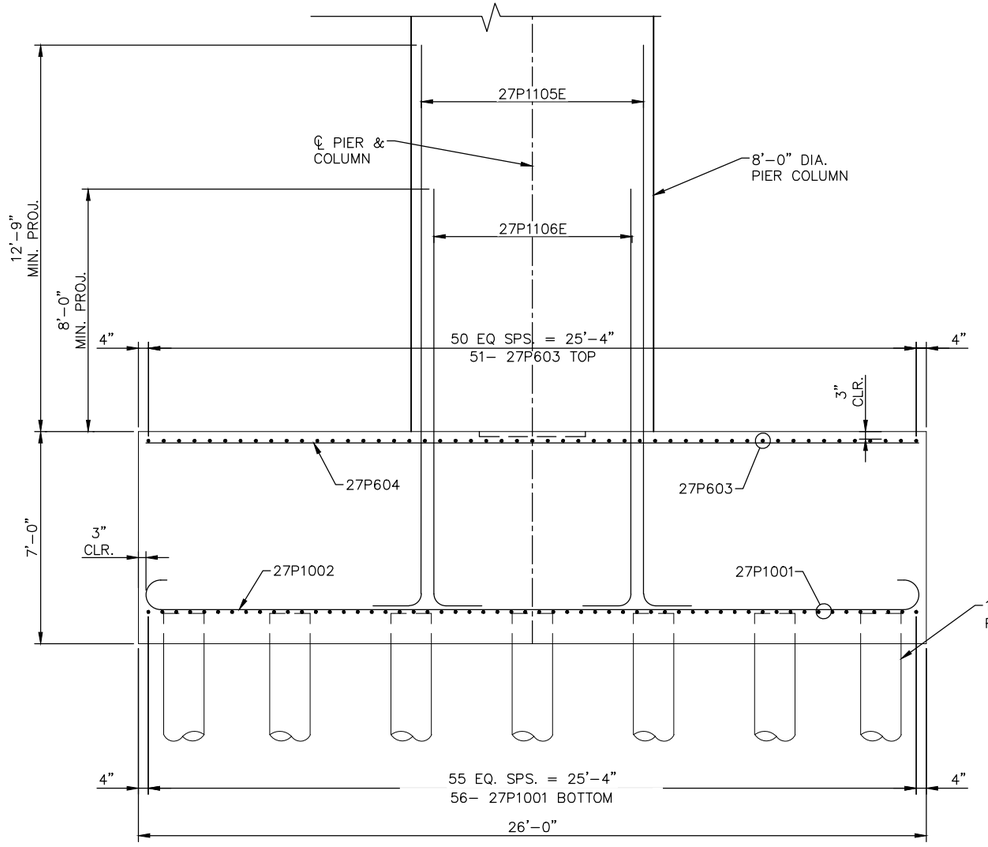
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_27

SHEET 117 OF 264

Jan, 18 2016 09:36 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



PIER 27 FOOTING PLAN



PIER 27 FOOTING ELEVATION

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: MJC | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

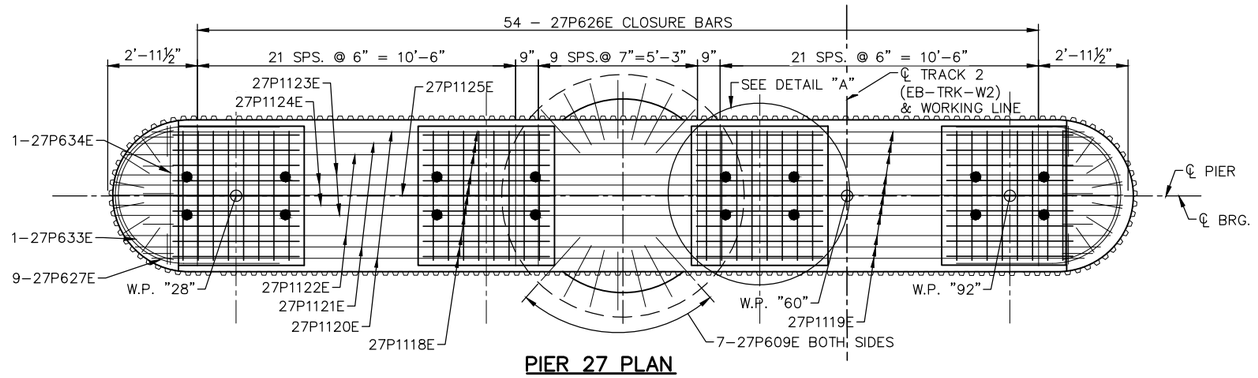
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 27 REINFORCEMENT 1

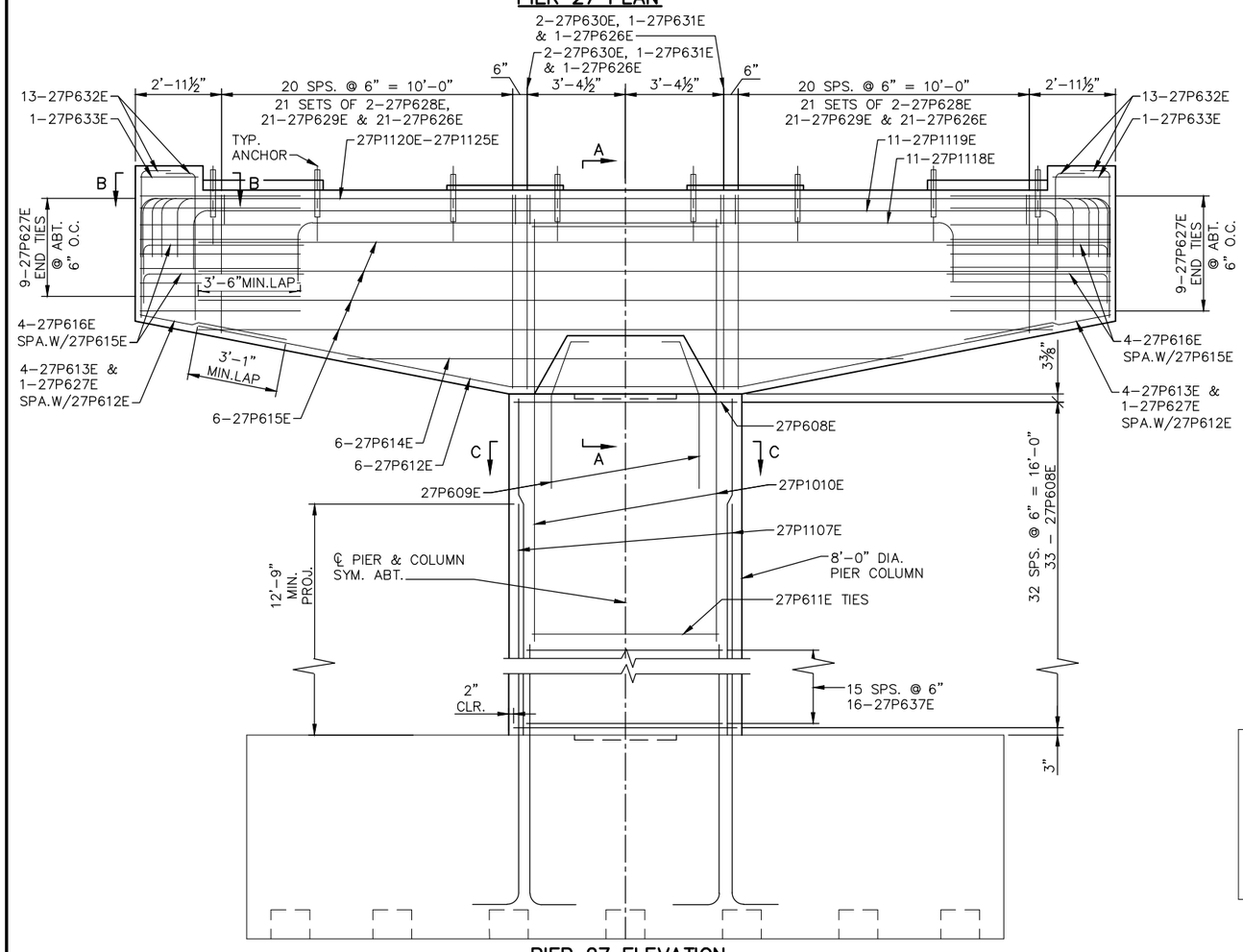
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2R_27f

SHEET 118 OF 264

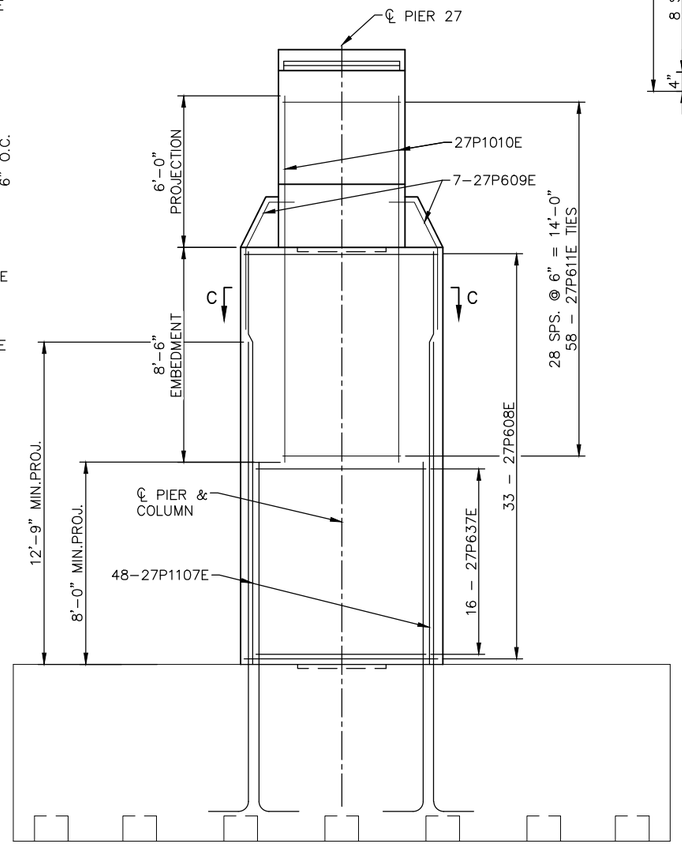
Jan. 18 2016 10:53 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2R.dwg By: hills



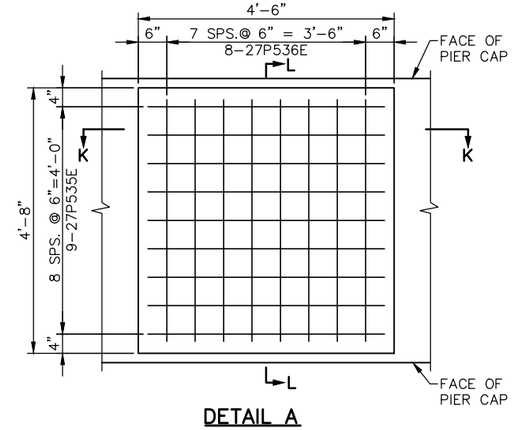
PIER 27 PLAN



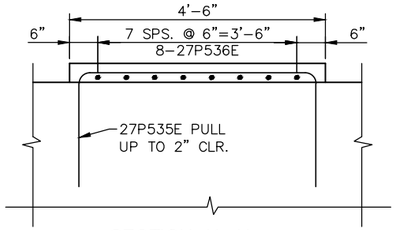
PIER 27 ELEVATION



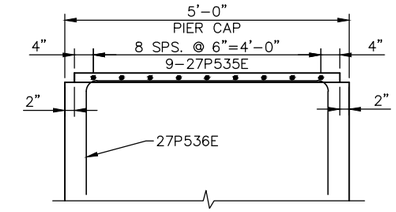
PIER 27 END VIEW



DETAIL A



SECTION K–K



SECTION L–L

NOTES:

FOR SECTIONS A–A, B–B & C–C SEE SHEET 120.

FOR DOWEL LAYOUT SEE SHEET 118.

ALL CAP REINFORCEMENT SHALL BE PLACED 2" CLEAR FROM BEARING ANCHORS.

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

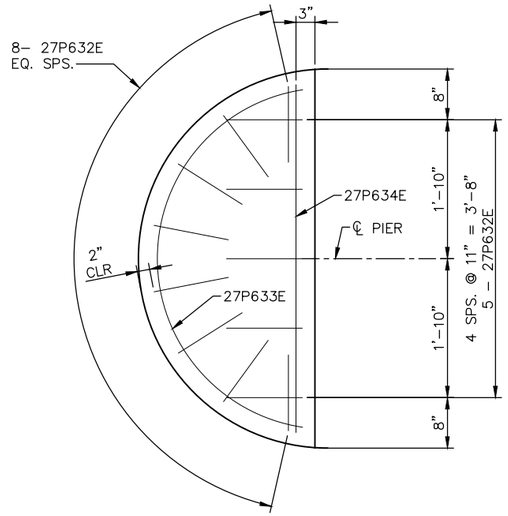
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 27 REINFORCEMENT 2

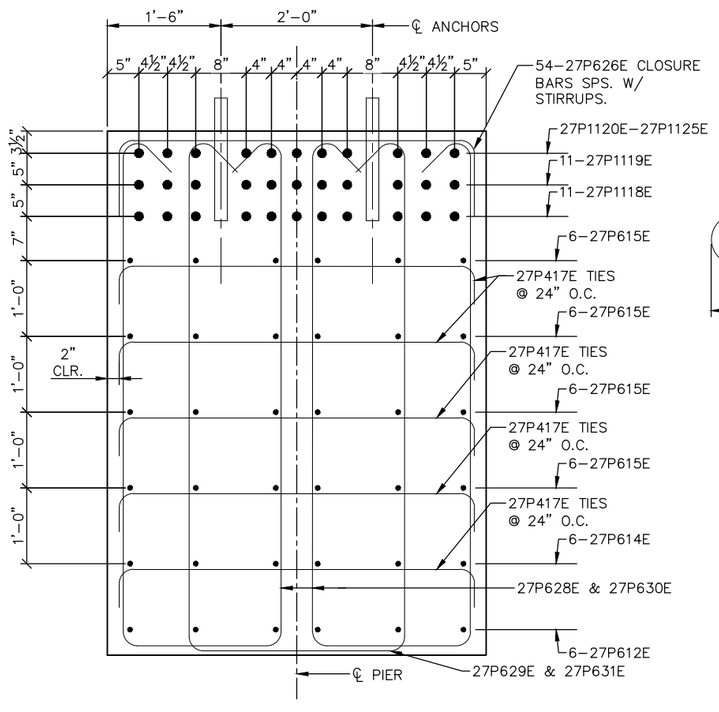
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER3R_27P

SHEET 119 OF 264

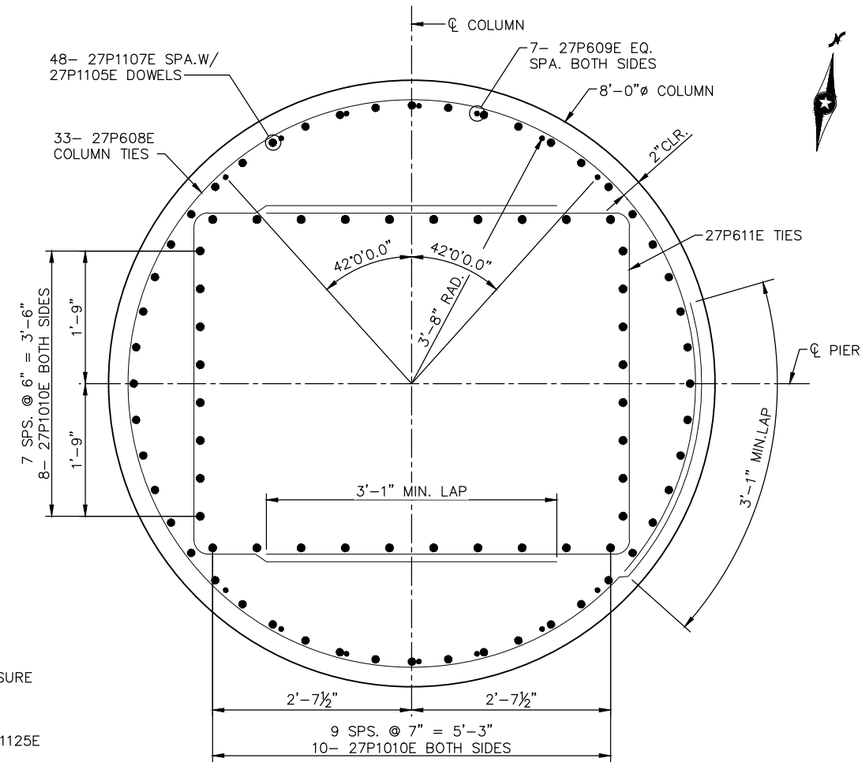
Jan, 18 2016 09:37 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



SECTION B–B



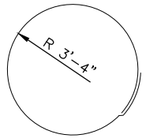
SECTION A–A



SECTION C–C

BILL OF REINFORCEMENT FOR PIER 27				
BAR	NO.	LENGTH	SHAPE	LOCATION
27P1001	56	28'–8"		FOOTING HORIZONTAL
27P1002	56	28'–8"		FOOTING HORIZONTAL
27P603	51	25'–6"		FOOTING HORIZONTAL
27P604	51	25'–6"		FOOTING HORIZONTAL
27P1105E	48	20'–8''		FOOTING COLUMN DOWEL
27P1106E	24	15'–11"		FOOTING COLUMN DOWEL
27P1107E	48	16'–4"		COLUMN VERTICAL
27P608E	33	26'–8"		COLUMN TIE
27P609E	14	6'–3"		CAP DOWEL
27P1010E	36	14'–6"		CAP DOWEL
27P611E	58	13'–6"		CAP TIE HORIZONTAL
27P612E	6	28'–7"		CAP LONGITUDINAL
27P613E	8	5'–2"		CAP LONGITUDINAL
27P614E	6	18'–7"		CAP LONGITUDINAL
27P615E	24	28'–4"		CAP LONGITUDINAL
27P616E	24	7'–0"		CAP LONGITUDINAL
27P417E	70	5'–1"		CAP TIE
27P1118E	11	26'–6"		CAP LONGITUDINAL
27P1119E	11	33'–8"		CAP LONGITUDINAL
27P1120E	2	34'–4"		CAP LONGITUDINAL
27P1121E	2	35'–7"		CAP LONGITUDINAL
27P1122E	2	36'–3"		CAP LONGITUDINAL
27P1123E	2	36'–11"		CAP LONGITUDINAL
27P1124E	2	37'–1"		CAP LONGITUDINAL
27P1125E	1	37'–2"		CAP LONGITUDINAL
27P626E	54	6'–7"		CAP TIE
27P627E	20	14'–4"		END TIE
27P628E	84	①		CAP STIRRUP
27P629E	42	②		CAP STIRRUP
27P630E	4	16'–9"		CAP STIRRUP
27P631E	2	17'–6"		CAP STIRRUP
27P632E	26	6'–0"		CAP VERTICAL
27P633E	2	6'–4"		CAP HORIZONTAL
27P634E	2	4'–7"		CAP HORIZONTAL
27P535E	36	7'–8"		PEDESTAL TIE
27P536E	32	7'–9"		PEDESTAL TIE
27P637E	16	24'–1"		COLUMN TIE
27P738	8	23'–0"		PILE ANCHORAGE TIE

① 4–SERIES OF 14, 12'–11" TO 16'–7"
② 2–SERIES OF 14, 13'–8" TO 17'–4"



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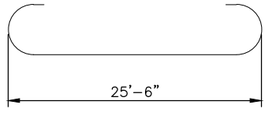
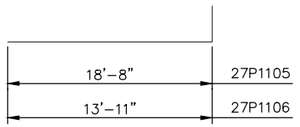


27P1001 & 27P1002



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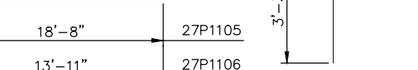

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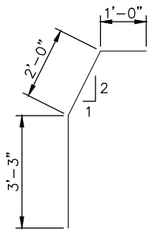

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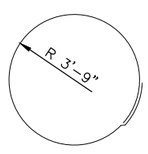

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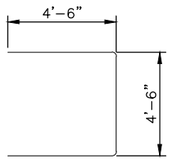

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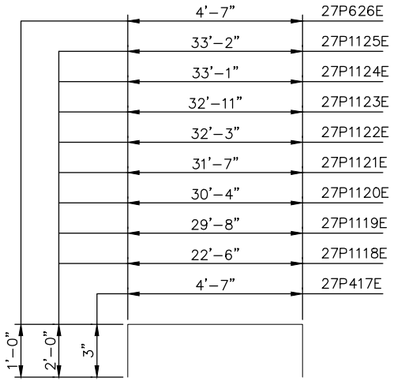
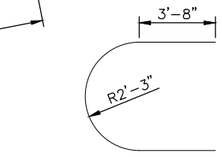


27P417E, 27P1118E, 27P1119E, 27P1120E, 27P1121E, 27P1122E, 27P1123E, 27P1124E, 27P1125E & 27P626E



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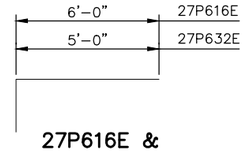
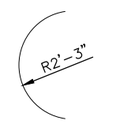


27P616E & 27P632E



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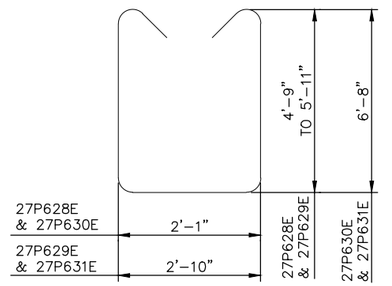
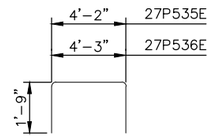


27P628E, 27P629E, 27P630E & 27P631E



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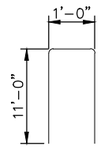

27P738

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

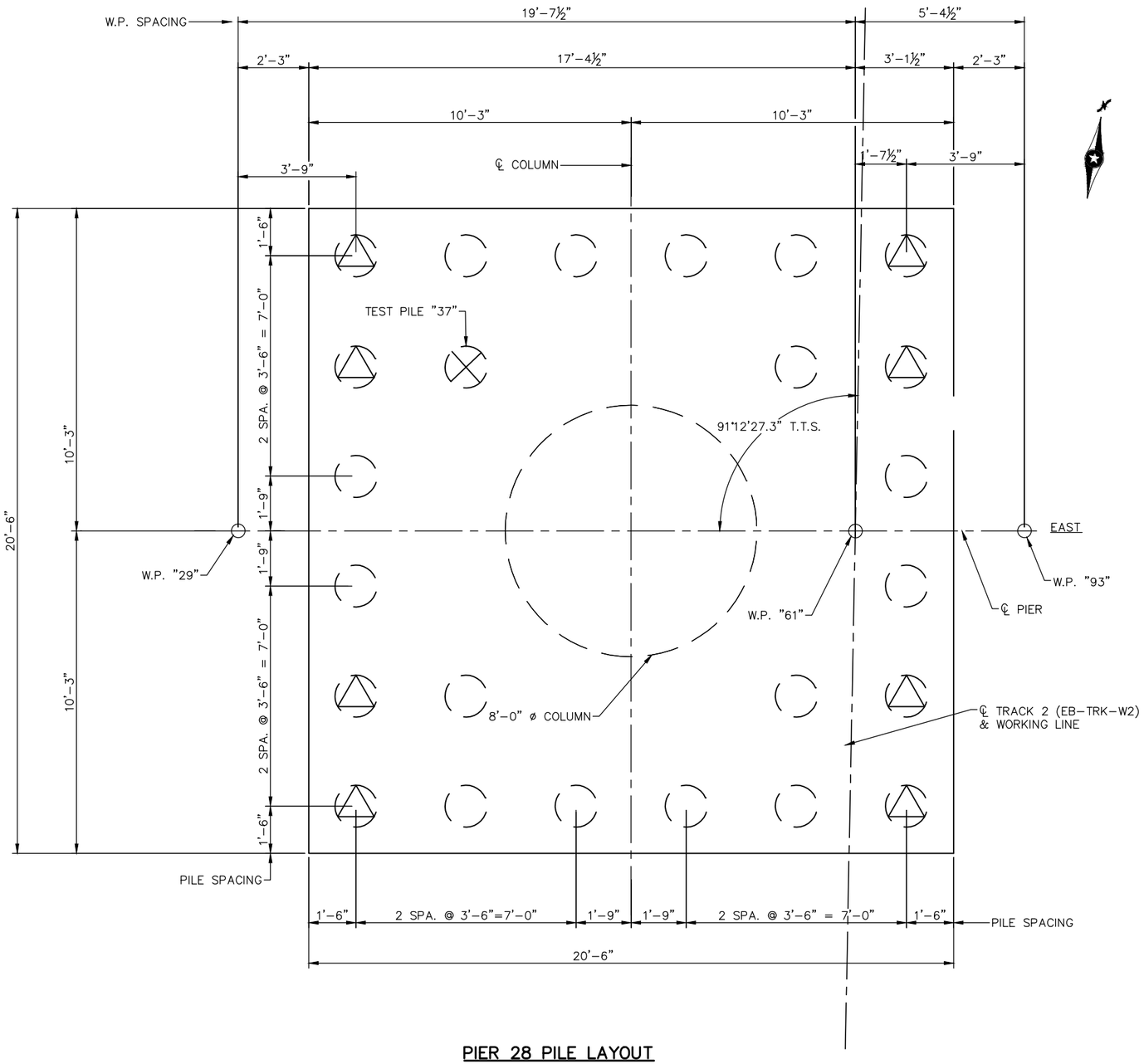
SOUTHWEST Green Line LRT Extension

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

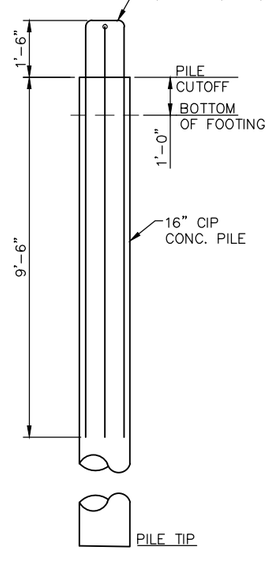
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER3R_27S

SHEET 120 OF 264

Jan, 18 2016 10:41 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



PIER 28 PILE LAYOUT



PILE ANCHORAGE DETAIL

PIER 28
REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	277.0
PDA	0.65	213.1

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

PIER 28
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD	67.5	40.3
FACTORED LIVE LOAD	47.7	–23.8
FACTORED OVERTURNING	23.3	–23.3
FACTORED DESIGN LOAD	138.5	N/A
FACTORED DESIGN UPLIFT	N/A	–6.8
LOAD COMBINATION	STRENGTH 5 (MOD)	STRENGTH 5 (MOD)

PILE NOTES

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

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.3125 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON THE USE OF A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

△ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

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DESIGNED BY: MJC CHECKED BY: EEM
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AECOM PARSONS BRINCKERHOFF

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METROPOLITAN COUNCIL

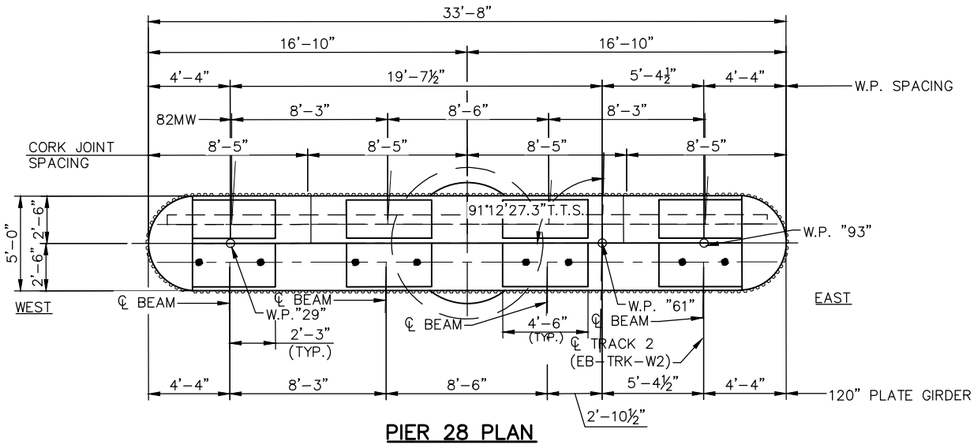
SOUTHWEST Green Line LRT Extension

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

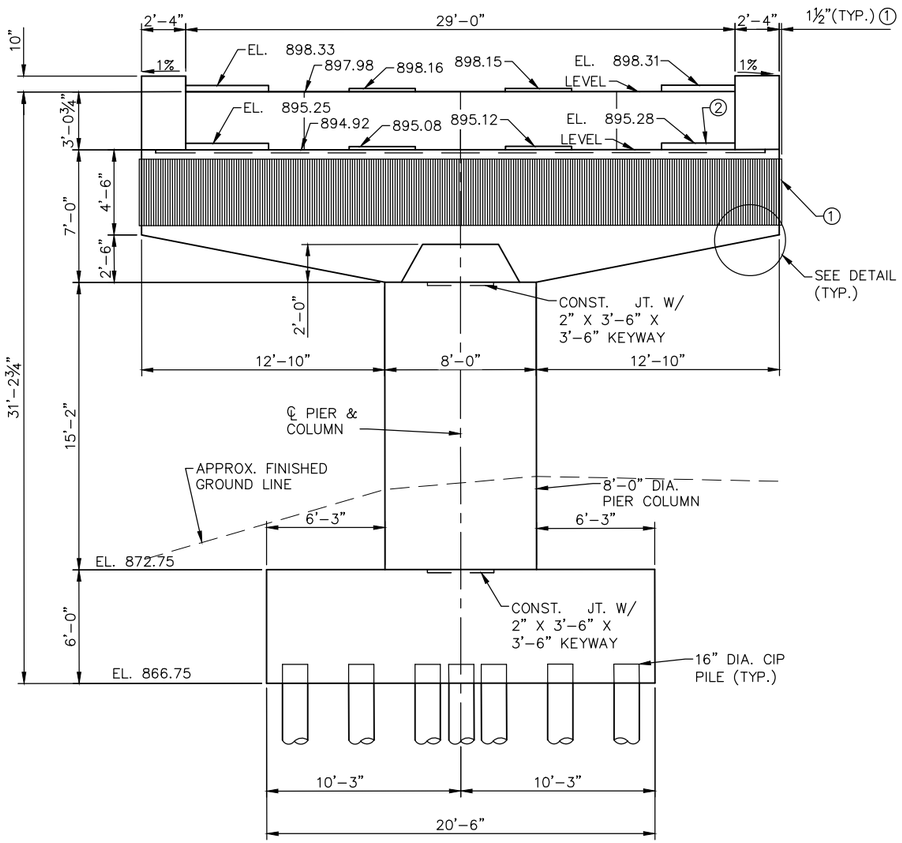
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_28a

SHEET 121 OF 264

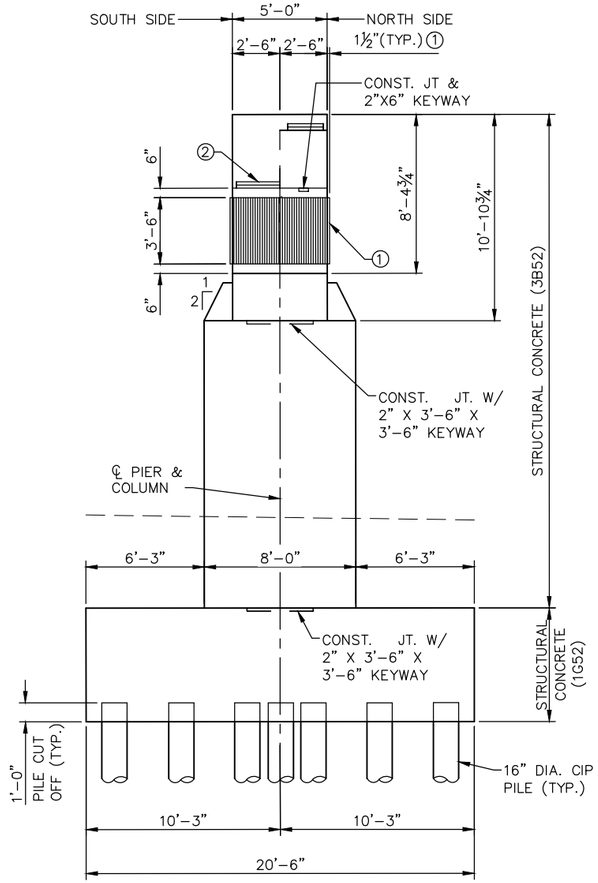
Jan, 18 2016 10:46 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



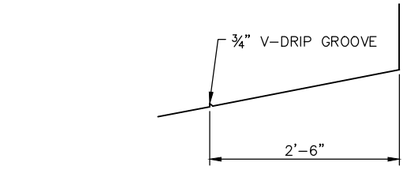
PIER 28 PLAN



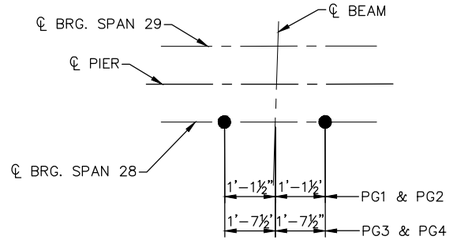
PIER 28 ELEVATION



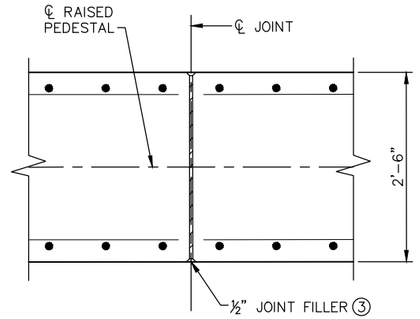
PIER 28 END VIEW



DETAIL 1



ANCHOR ROD LAYOUT



CORK JOINT DETAIL

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE, TYPE 1 "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)"

② THE CONSTRUCTION ELEVATIONS FOR BRIDGE SEATS SHALL BE DETERMINED BASED ON THE ACTUAL HEIGHT OF THE POT BEARING ASSEMBLIES FURNISHED BY THE CONTRACTOR. ANY REQUIRED ADJUSTMENT OF SEAT ELEVATIONS SHALL BE MADE BY THE CONTRACTOR. THE CONCTRACOR SHALL SUBMIT REVISED BEARING SEAT ADJUSTMENTS FOR APPROVAL.

③ JOINT FILLER SHALL BE CORK PER MNDOT STANDARD SPECIFICATION 3702.

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

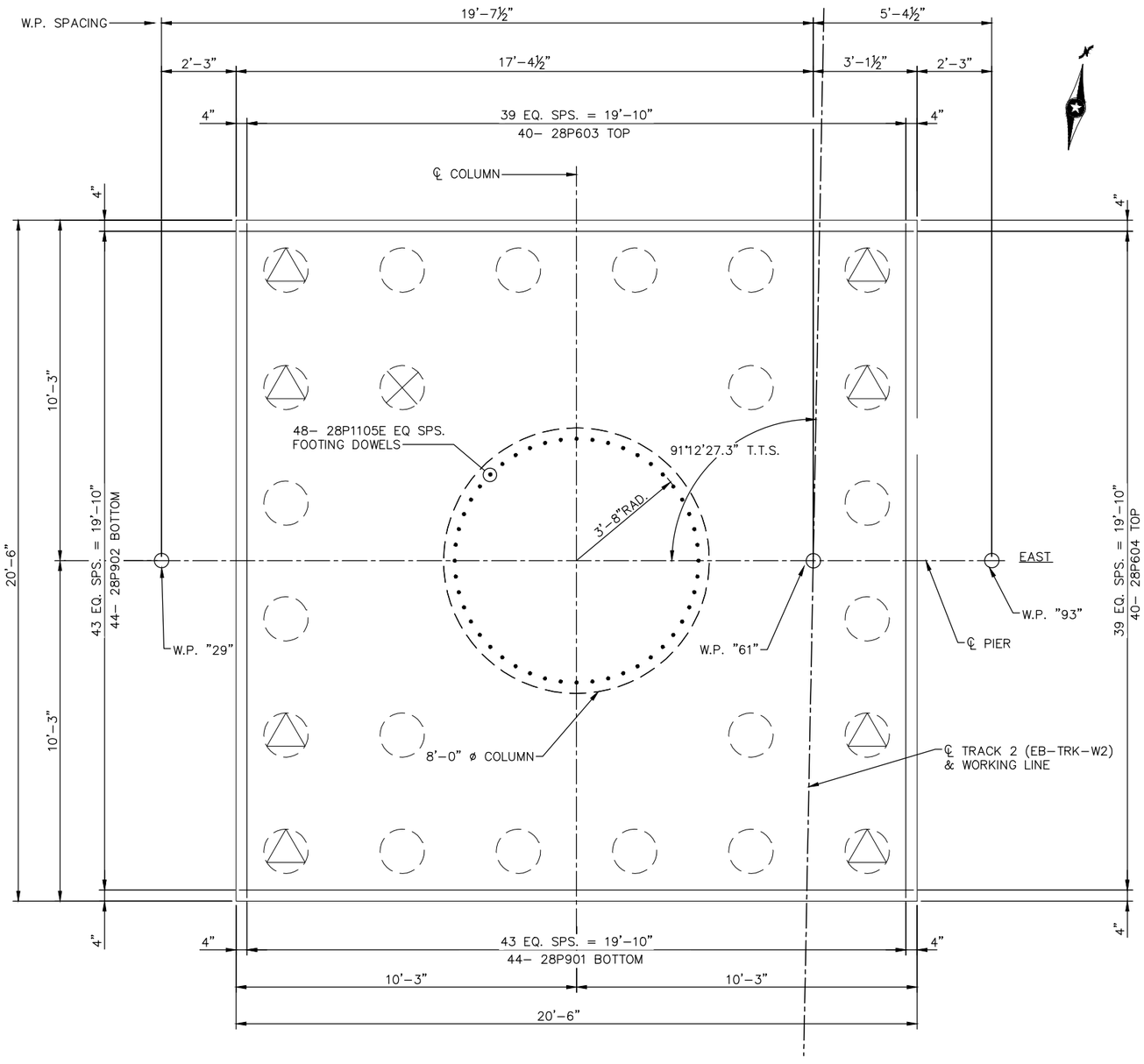
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 28 PLAN & ELEVATION

DISCIPLINE: STRUCTURES

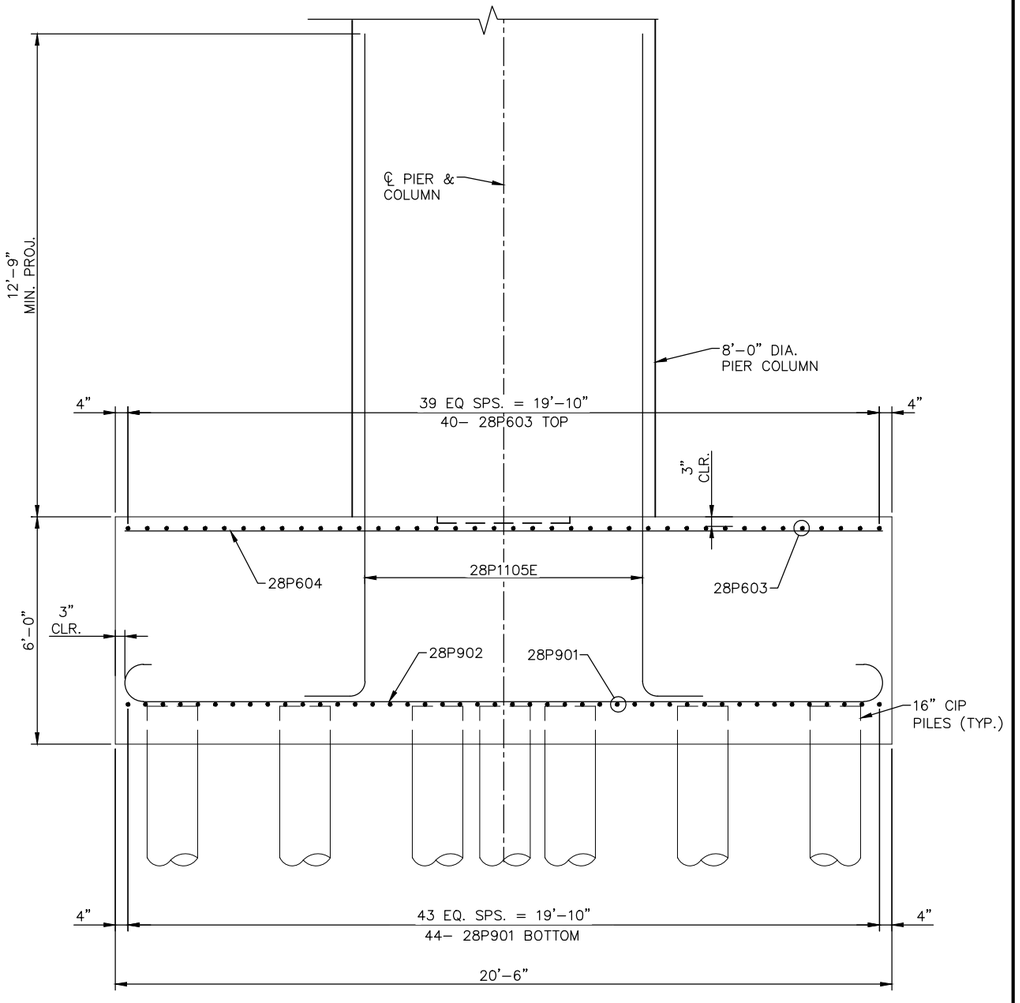
SHEET NAME: W2-STU-BRID-T212-PIER2_28

SHEET 122 OF 264

Jan. 17 2016 06:17 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



PIER 28 FOOTING PLAN



PIER 28 FOOTING ELEVATION

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: MJC CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

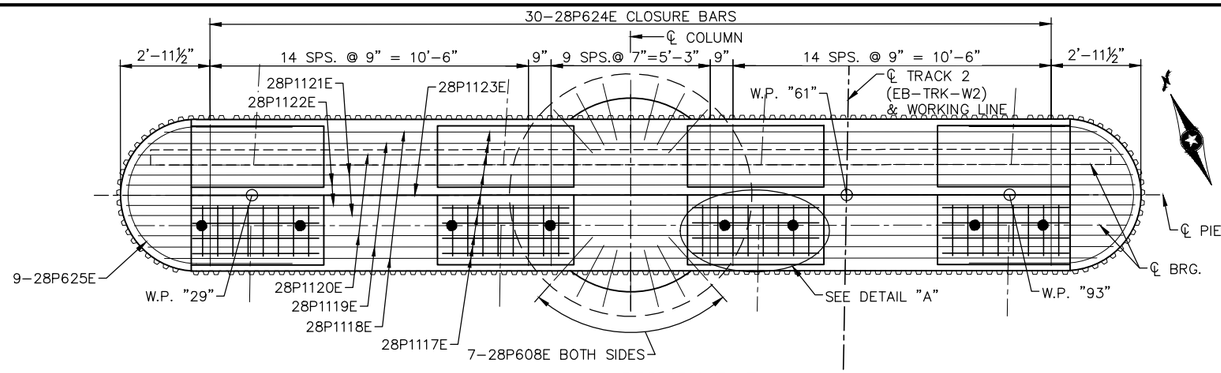
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 28 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

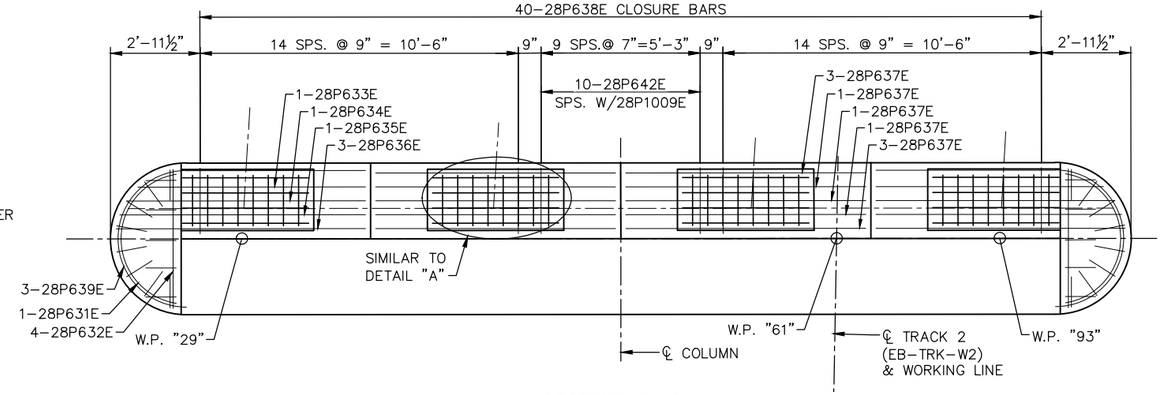
SHEET NAME: W2-STU-BRID-T212-PIER2R_28f

SHEET 123 OF 264

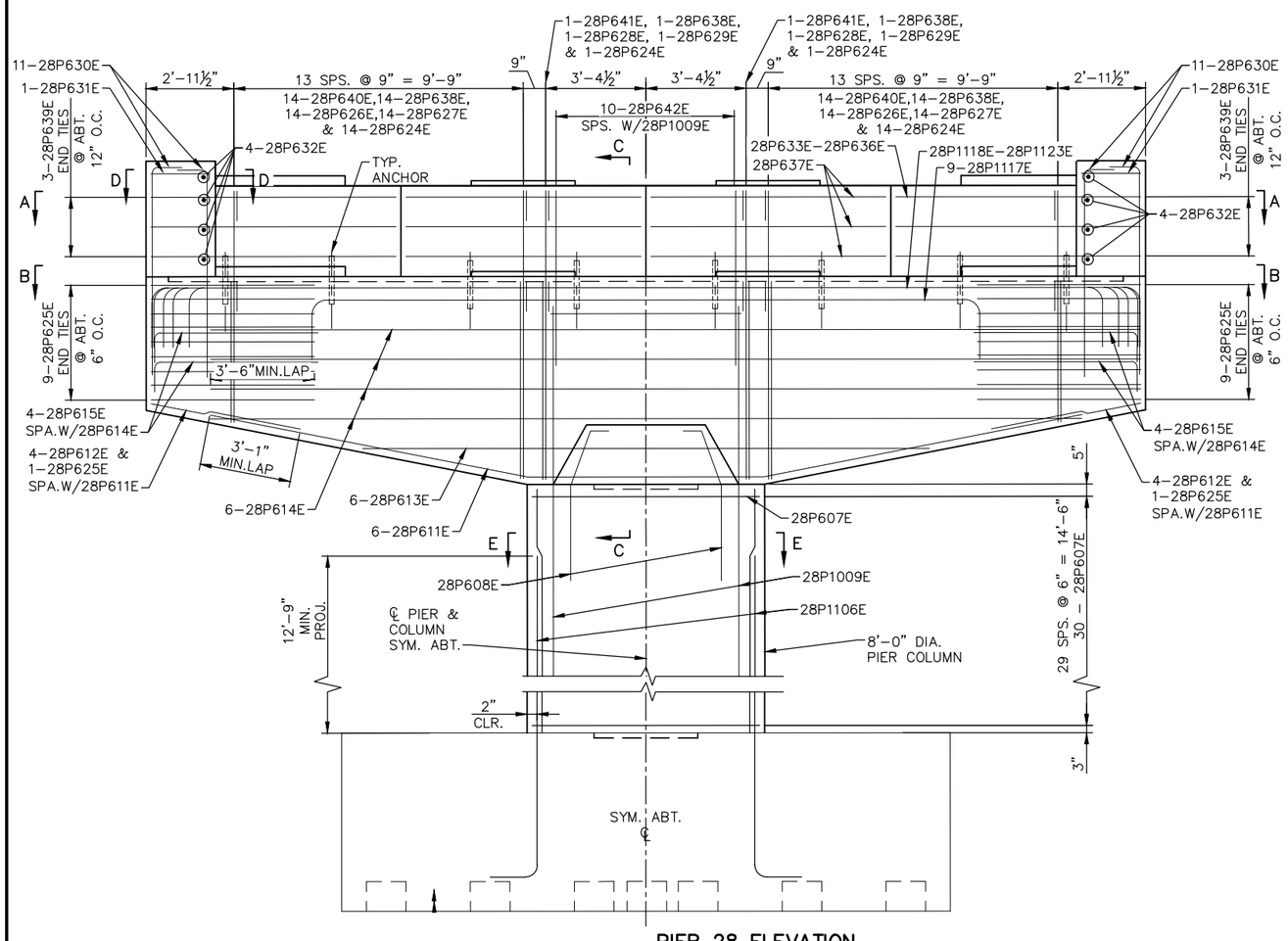
Jan, 17 2016 06:17 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34 W2-STU-BRID-T212-PIER2R.dwg By: hills



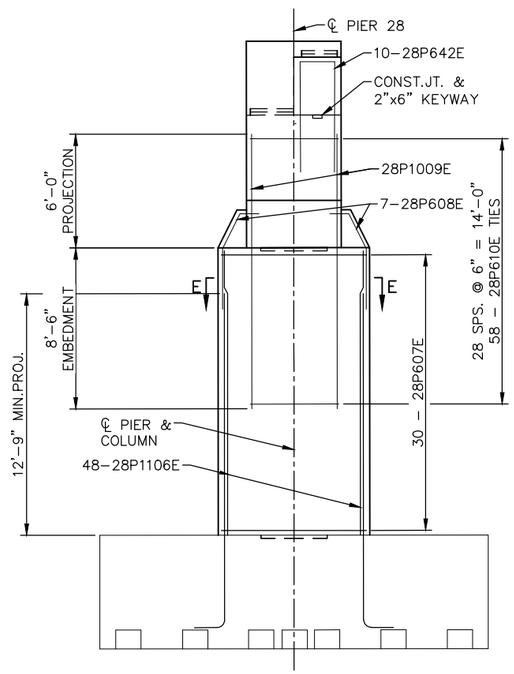
SECTION B–B



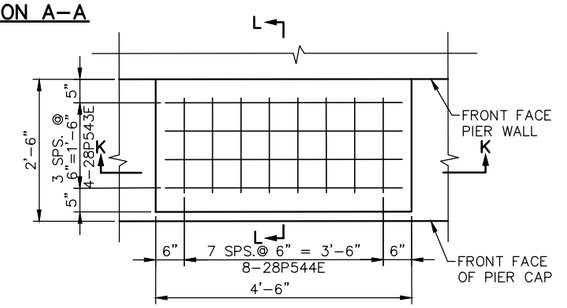
SECTION A–A



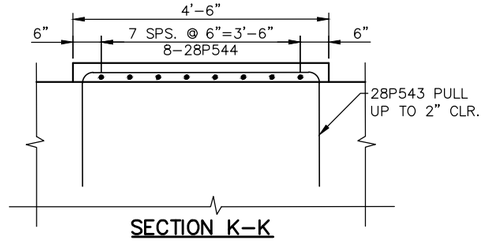
PIER 28 ELEVATION



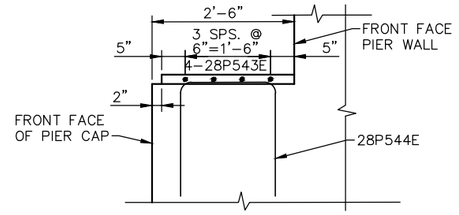
PIER 28 END VIEW



DETAIL A



SECTION K–K



SECTION L–L

NOTES:

FOR SECTIONS C–C, D–D & E–E SEE SHEET 125.

FOR DOWEL LAYOUT SEE SHEET 123.

ALL CAP REINFORCEMENT SHALL BE PLACED 2" CLEAR FROM BEARING ANCHORS.

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

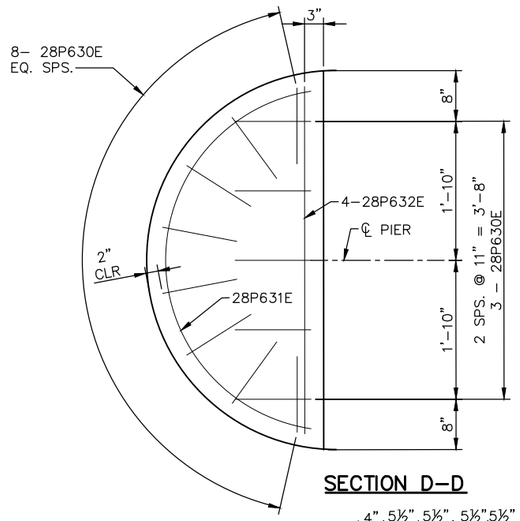
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 28 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

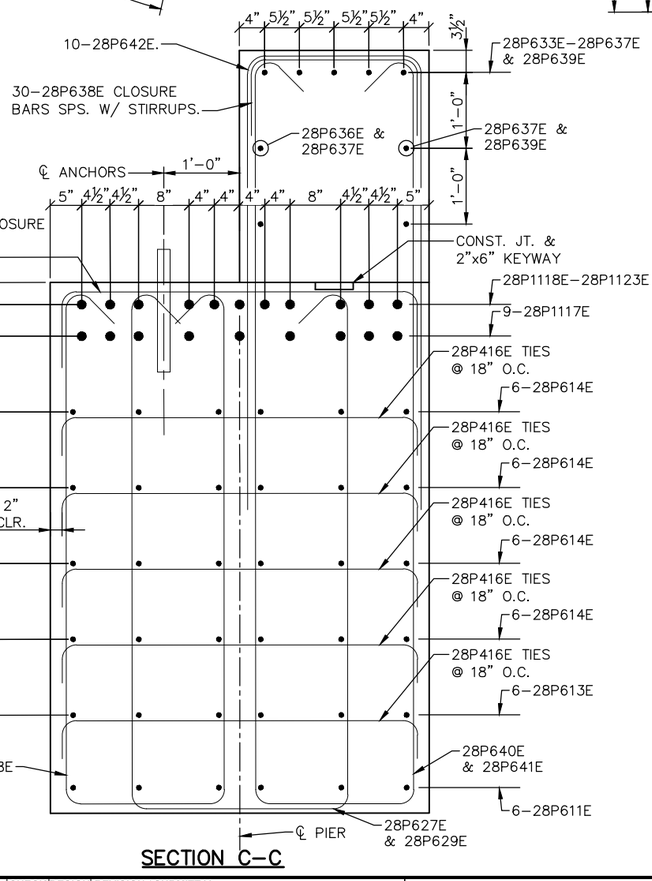
SHEET NAME: W2-STU-BRID-T212-PIER3R_28P

SHEET 124 OF 264

Jan, 18 2016 09:51 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



SECTION D–D



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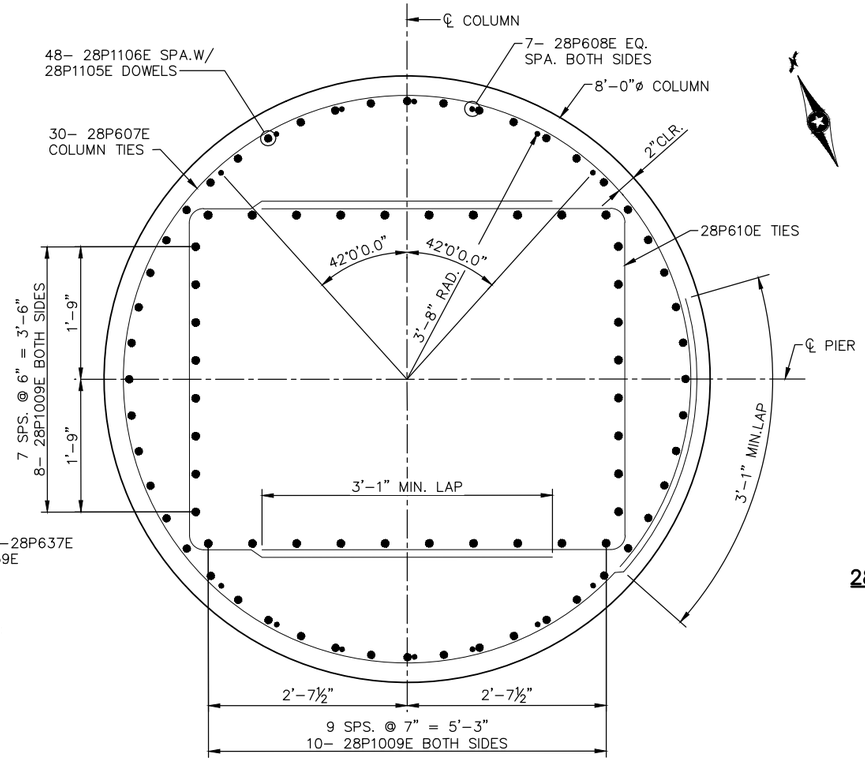

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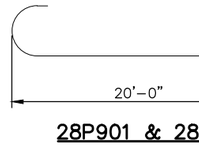
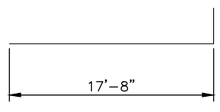


28P901 & 28P902



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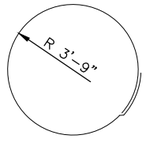

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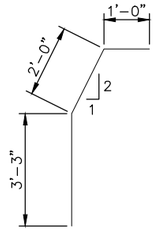

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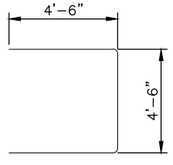

28P610E

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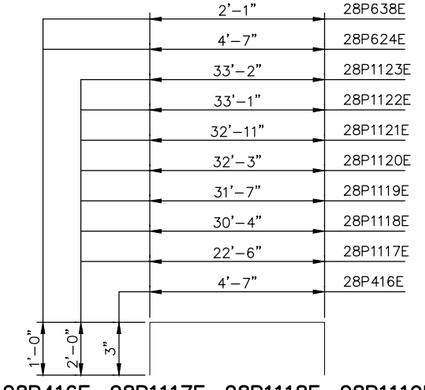

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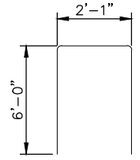

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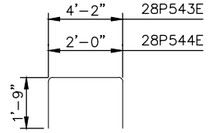
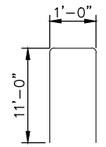


28P543E & 28P544E



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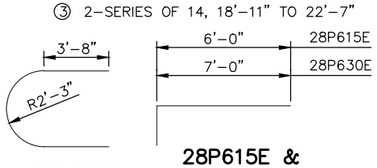
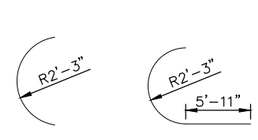


28P625E

28P615E & 28P630E



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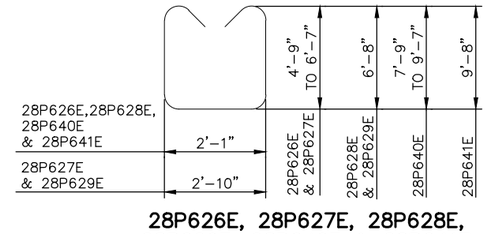

28P626E, 28P627E, 28P628E, 28P629E, 28P640E & 28P641E

BILL OF REINFORCEMENT FOR PIER 28

BAR	NO.	LENGTH	SHAPE	LOCATION
28P901	44	22'–6"		FOOTING HORIZONTAL
28P902	44	22'–6"		FOOTING HORIZONTAL
28P603	40	20'–0"		FOOTING HORIZONTAL
28P604	40	20'–0"		FOOTING HORIZONTAL
28P1105E	48	19'–8"		FOOTING COLUMN DOWEL
28P1106E	48	15'–0"		COLUMN VERTICAL
28P607E	30	26'–8"		COLUMN TIE
28P608E	14	6'–3"		CAP DOWEL
28P1009E	36	14'–6"		CAP DOWEL
28P610E	58	13'–6"		CAP TIE HORIZONTAL
28P611E	6	28'–7"		CAP LONGITUDINAL
28P612E	8	5'–2"		CAP LONGITUDINAL
28P613E	6	18'–7"		CAP LONGITUDINAL
28P614E	24	28'–4"		CAP LONGITUDINAL
28P615E	24	7'–0"		CAP LONGITUDINAL
28P416E	70	5'–1"		CAP TIE
28P1117E	9	26'–6"		CAP LONGITUDINAL
28P1118E	2	34'–4"		CAP LONGITUDINAL
28P1119E	2	35'–7"		CAP LONGITUDINAL
28P1120E	2	36'–3"		CAP LONGITUDINAL
28P1121E	2	36'–11"		CAP LONGITUDINAL
28P1122E	2	37'–1"		CAP LONGITUDINAL
28P1123E	1	37'–2"		CAP LONGITUDINAL
28P624E	40	6'–7"		CAP TIE
28P625E	20	14'–4"		END TIE
28P626E	28	①		CAP STIRRUP
28P627E	28	②		CAP STIRRUP
28P628E	2	16'–9"		CAP STIRRUP
28P629E	2	17'–6"		CAP STIRRUP
28P630E	22	8'–0"		CAP VERTICAL
28P631E	2	6'–4"		CAP HORIZONTAL
28P632E	8	4'–7"		CAP HORIZONTAL
28P633E	2	7'–6"		CAP LONGITUDINAL
28P634E	2	7'–10"		CAP LONGITUDINAL
28P635E	2	8'–1"		CAP LONGITUDINAL
28P636E	6	8'–1"		CAP LONGITUDINAL
28P637E	18	7'–11"		CAP LONGITUDINAL
28P638E	30	4'–1"		CAP TIE
28P639E	6	12'–5		END TIE
28P640E	28	③		CAP STIRRUP
28P641E	2	22'–9"		CAP STIRRUP
28P642E	10	14'–1"		CAP VERTICAL
28P543E	32	7'–8"		PEDESTAL TIE
28P544E	64	5'–6"		PEDESTAL TIE
28P745	16	23'–0"		PILE ANCHORAGE TIE

① 2–SERIES OF 14, 12'–11" TO 16'–7"
② 2–SERIES OF 14, 13'–8" TO 17'–4"
③ 2–SERIES OF 14, 18'–11" TO 22'–7"

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

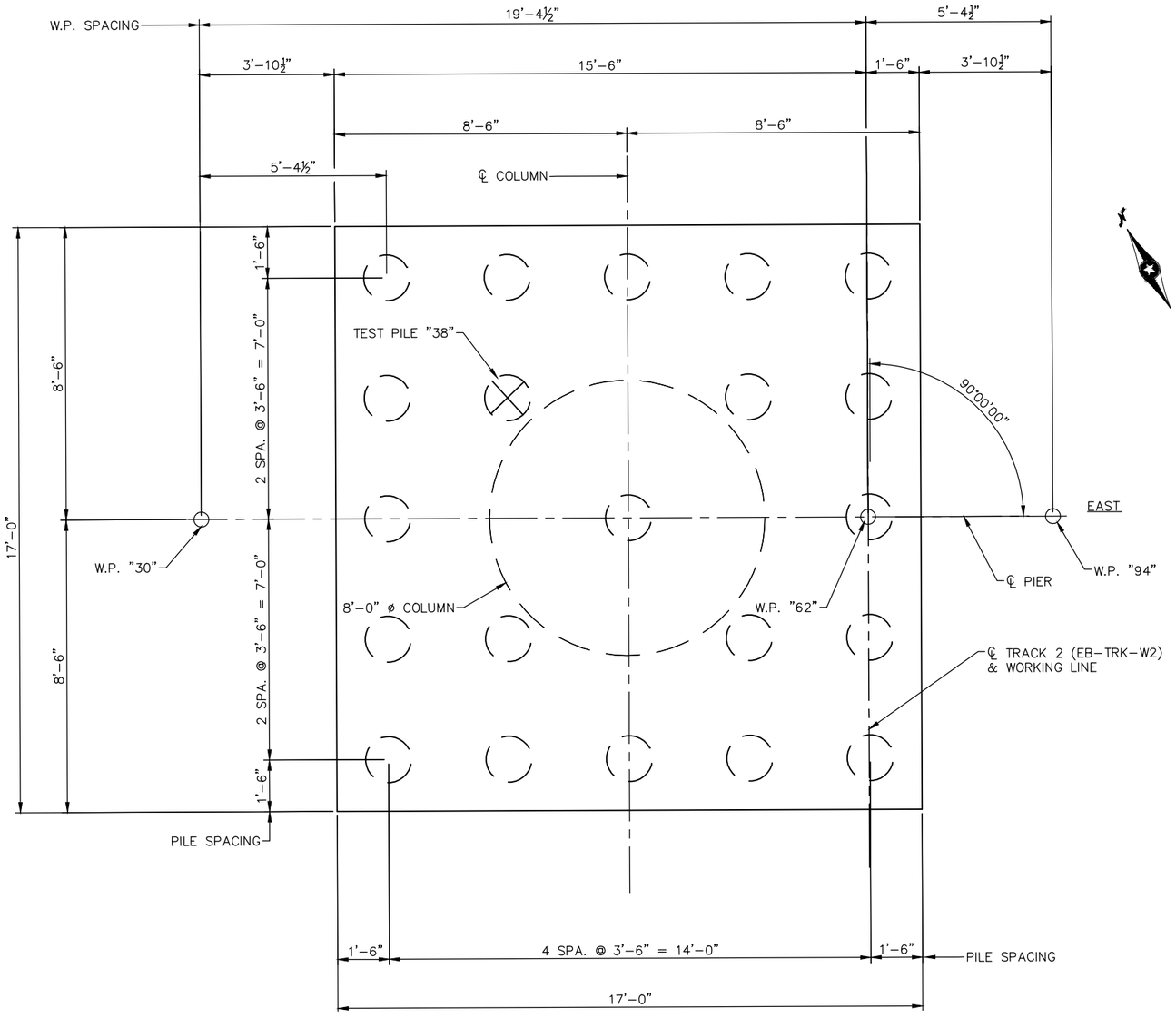
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 28 REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER3R_28S

SHEET 125 OF 264

Jan, 18 2016 09:51 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34 W2-STU-BRID-T212-PIER3R.dwg By: hills



PIER 29 PILE LAYOUT

PIER 29 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	270.8
PDA	0.65	208.2

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

PIER 29 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	72.6
FACTORED LIVE LOAD	42.3
FACTORED OVERTURNING	20.5
FACTORED DESIGN LOAD	135.4
FACTORED DESIGN UPLIFT	N/A
LOAD COMBINATION	STRENGTH 5 (MOD)

PILE NOTES

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

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.3125 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 29 FOOTING PLAN

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_29a

SHEET 126 OF 264

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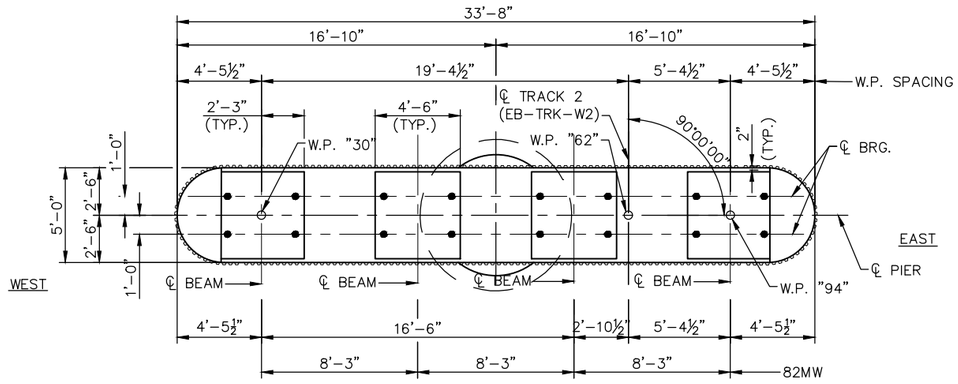
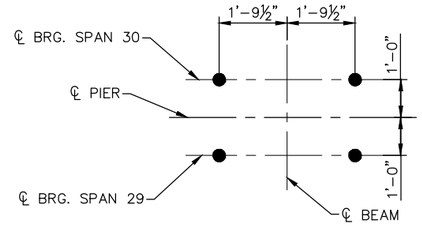
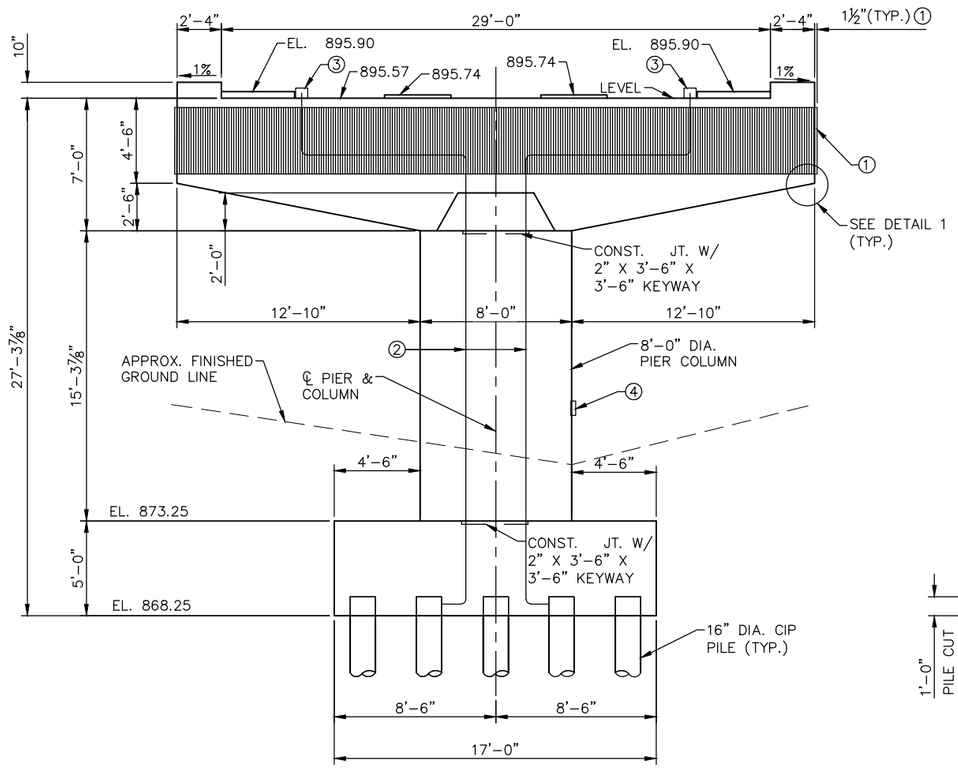


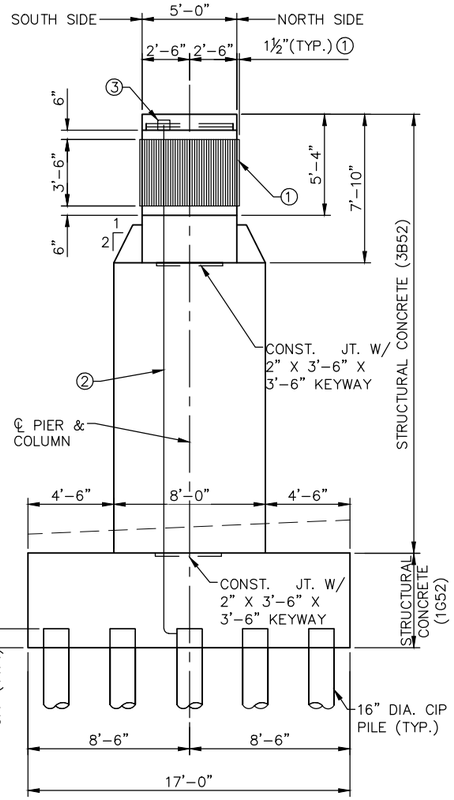
PIER 29 PLAN



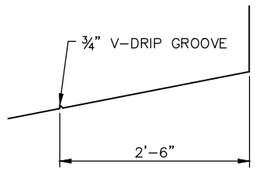
ANCHOR ROD LAYOUT



PIER 29 ELEVATION



PIER 29 END VIEW



DETAIL 1

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE, TYPE 1 "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)"

② GROUND WIRE PLACED INSIDE 1" PVC CONDUIT. SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600.

③ JUNCTION BOX, SEE GROUNDING PLANS VOLUME 12, SHEET ELE-SITE-DTL-600.

④ GROUNDING TEST STATION, SEE GROUNDING PLANS IN VOLUME 12, SHEET ELE-SITE-DTL-600

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DESIGNED BY: MJC | CHECKED BY: EEM
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

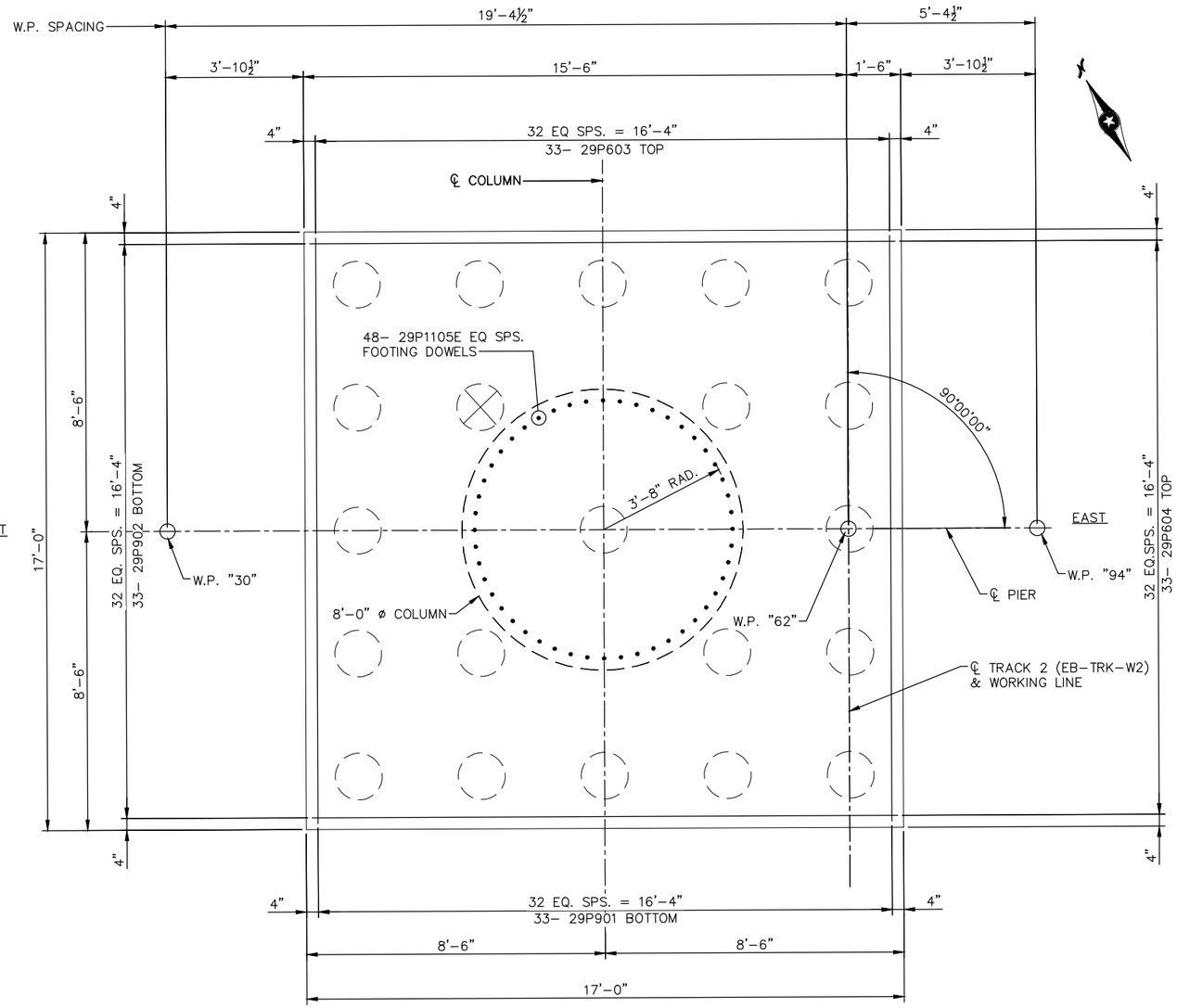
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 29 PLAN & ELEVATION

DISCIPLINE: STRUCTURES

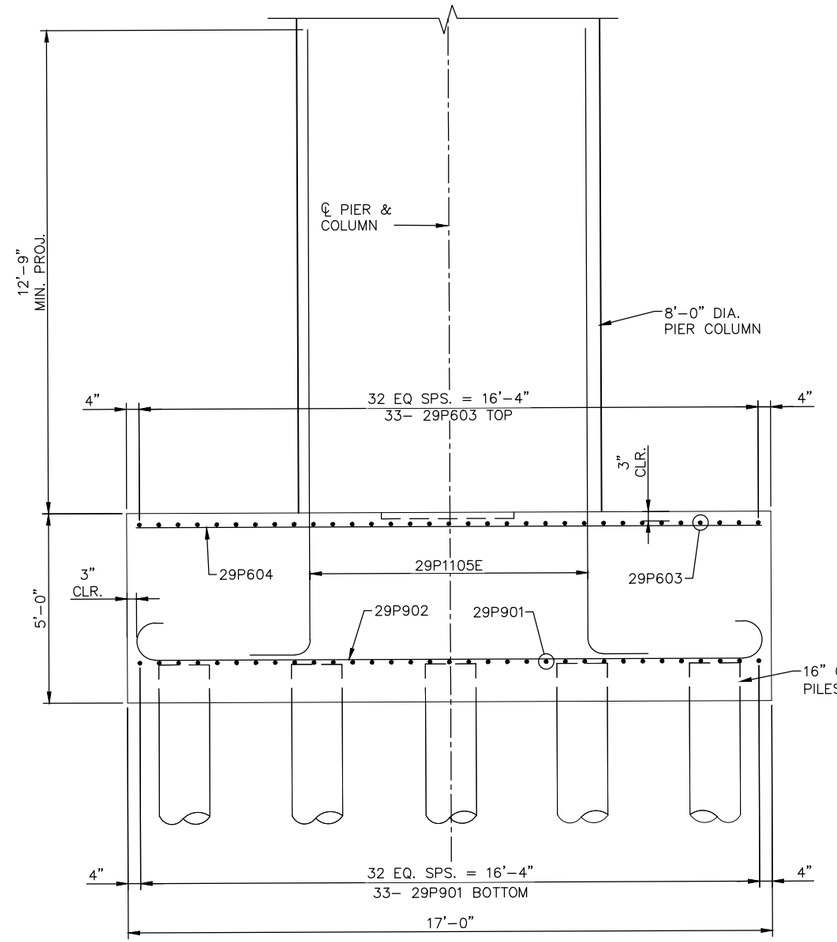
SHEET NAME: W2-STU-BRID-T212-PIER2_29

SHEET 127 OF 264

Jan, 17 2016 06:19 pm v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



PIER 29 FOOTING PLAN



PIER 29 FOOTING ELEVATION

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DESIGNED BY: MJC | CHECKED BY: EEM
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

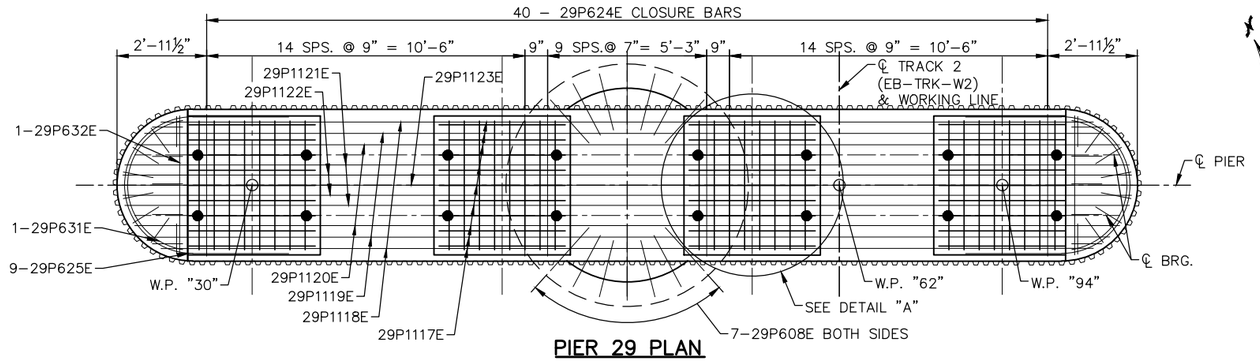
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 29 REINFORCEMENT 1

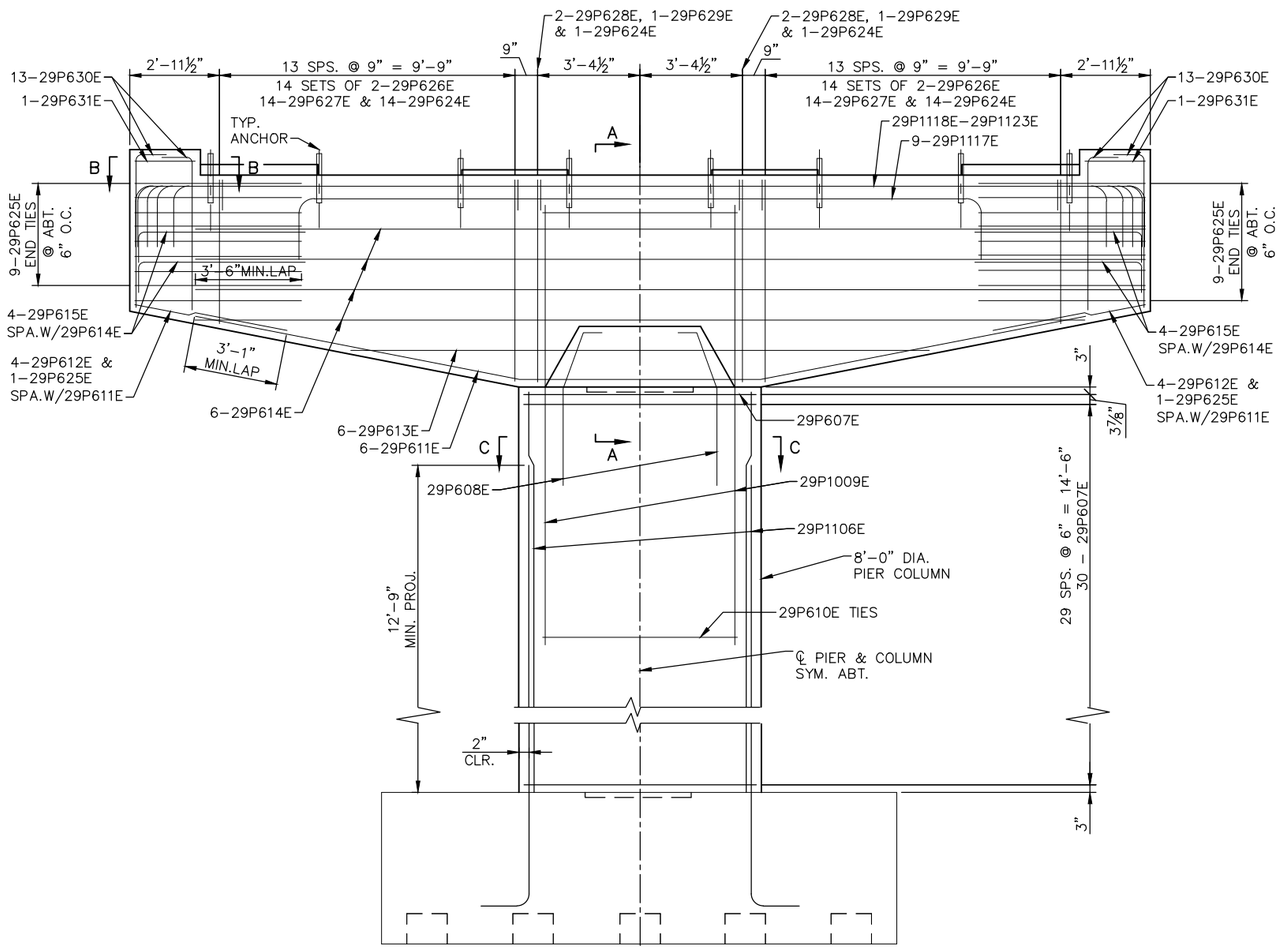
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2R_29f

SHEET 128 OF 264

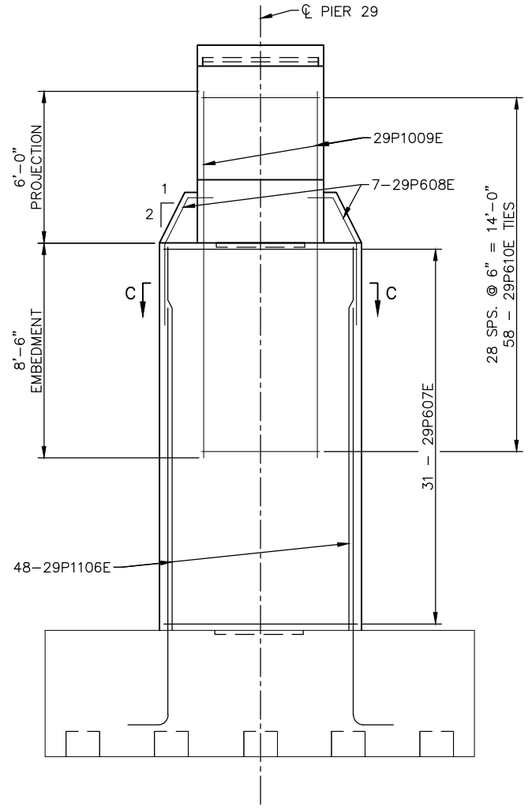
Jan, 18 2016 10:51 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2R.dwg By: hills



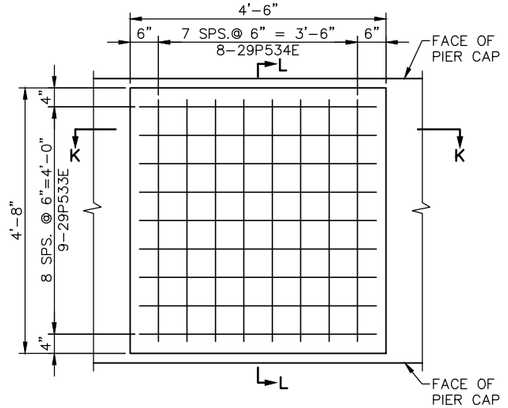
PIER 29 PLAN



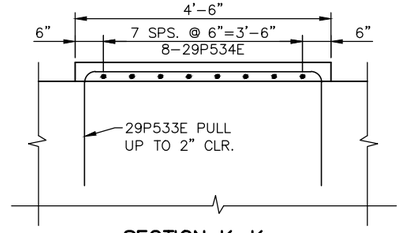
PIER 29 ELEVATION



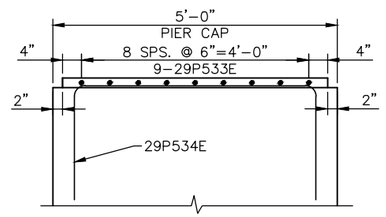
PIER 29 END VIEW



DETAIL A



SECTION K–K



SECTION L–L

NOTES:

FOR SECTIONS A–A, B–B & C–C SEE SHEET 130.

FOR DOWEL LAYOUT SEE SHEET 128.

ALL CAP REINFORCEMENT SHALL BE PLACED 2" CLEAR FROM BEARING ANCHORS.

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

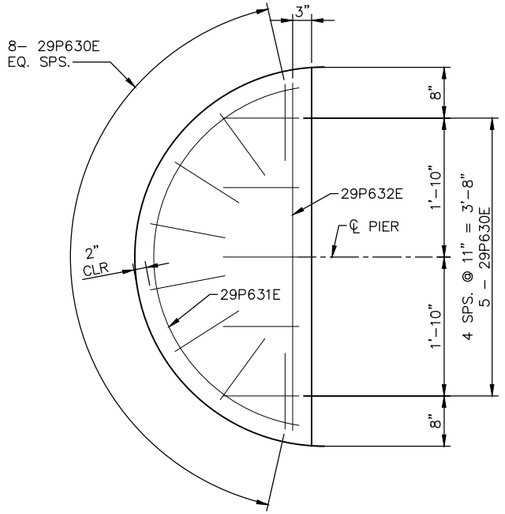
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 29 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

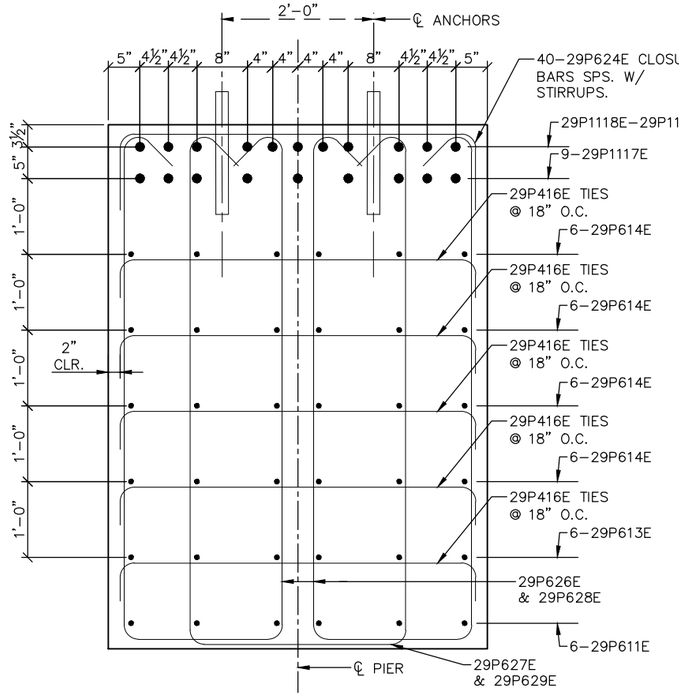
SHEET NAME: W2-STU-BRID-T212-PIER3R_29P

SHEET 129 OF 264

Jan, 17 2016 06:21 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



SECTION B–B



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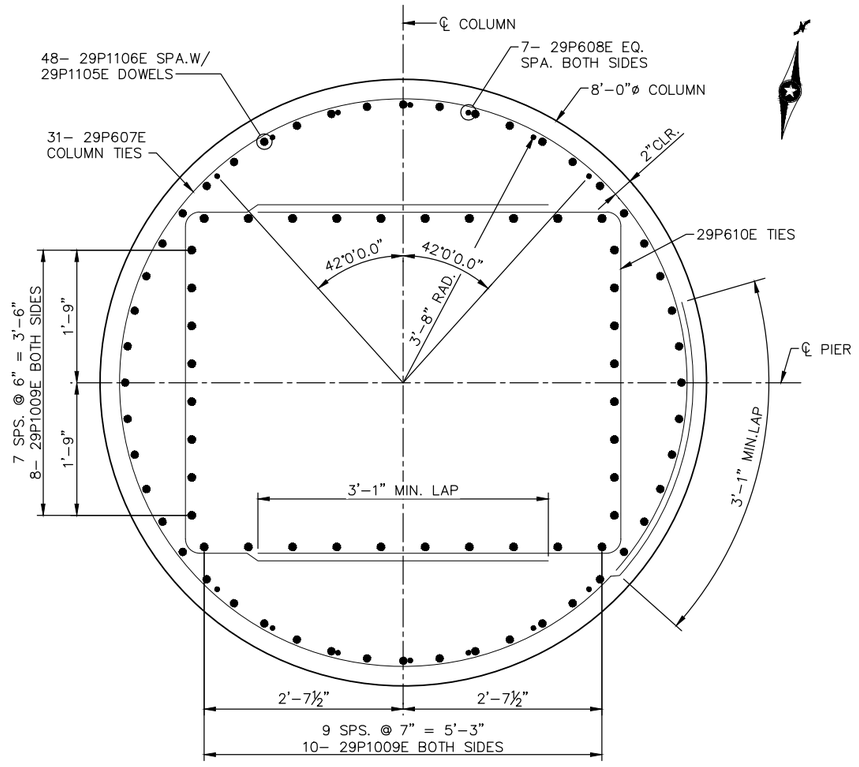

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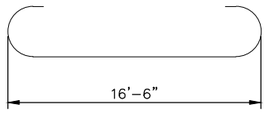
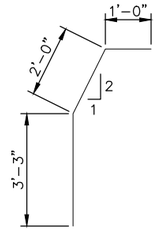


29P901 & 29P902



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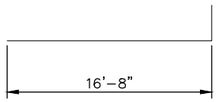

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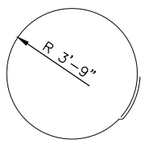

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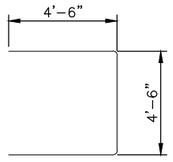

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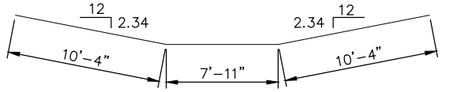

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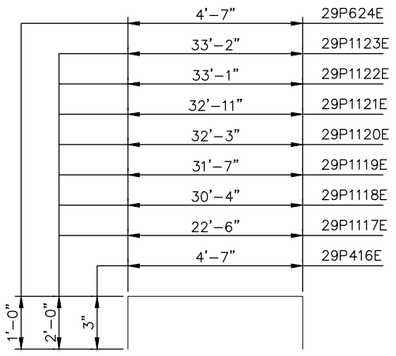

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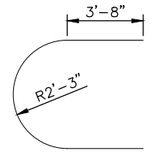
29P1119E, 29P1120E, 29P1121E,
29P1122E, 29P1123E & 29P624E



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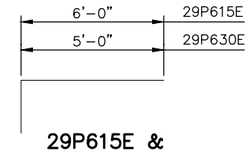

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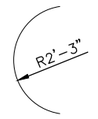
29P630E



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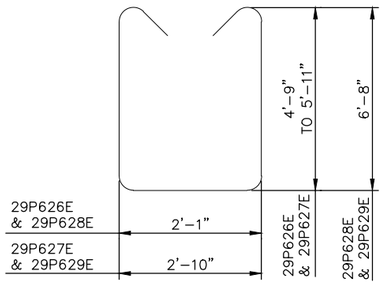

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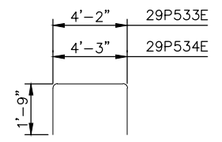
29P628E & 29P629E



29P533E & 29P534E

BILL OF REINFORCEMENT FOR PIER 29

BAR	NO.	LENGTH	SHAPE	LOCATION
29P901	33	19'–0"		FOOTING HORIZONTAL
29P902	33	19'–0"		FOOTING HORIZONTAL
29P603	33	16'–6"		FOOTING HORIZONTAL
29P604	33	16'–6"		FOOTING HORIZONTAL
29P1105E	48	18'–8"		FOOTING COLUMN DOWEL
29P1106E	48	15'–1"		COLUMN VERTICAL
29P607E	31	26'–8"		COLUMN TIE
29P608E	14	6'–3"		CAP DOWEL
29P1009E	36	14'–6"		CAP DOWEL
29P610E	58	13'–6"		CAP TIE HORIZONTAL
29P611E	6	28'–7"		CAP LONGITUDINAL
29P612E	8	5'–2"		CAP LONGITUDINAL
29P613E	6	18'–7"		CAP LONGITUDINAL
29P614E	24	28'–4"		CAP LONGITUDINAL
29P615E	24	7'–0"		CAP LONGITUDINAL
29P416E	70	5'–1"		CAP TIE
29P1117E	9	26'–6"		CAP LONGITUDINAL
29P1118E	2	34'–3"		CAP LONGITUDINAL
29P1119E	2	35'–7"		CAP LONGITUDINAL
29P1120E	2	36'–4"		CAP LONGITUDINAL
29P1121E	2	36'–11"		CAP LONGITUDINAL
29P1122E	2	37'–1"		CAP LONGITUDINAL
29P1123E	1	37'–2"		CAP LONGITUDINAL
29P624E	40	6'–7"		CAP TIE
29P625E	20	14'–4"		END TIE
29P626E	56	①		CAP STIRRUP
29P627E	28	②		CAP STIRRUP
29P628E	4	16'–9"		CAP STIRRUP
29P629E	2	17'–6"		CAP STIRRUP
29P630E	26	6'–0"		CAP VERTICAL
29P631E	2	6'–4"		CAP HORIZONTAL
29P632E	2	4'–7"		CAP HORIZONTAL
29P533E	36	7'–8"		PEDESTAL TIE
29P534E	32	7'–9"		PEDESTAL TIE

① 4–SERIES OF 9, 12'–11" TO 16'–7"
② 2–SERIES OF 9, 13'–8" TO 17'–4"

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

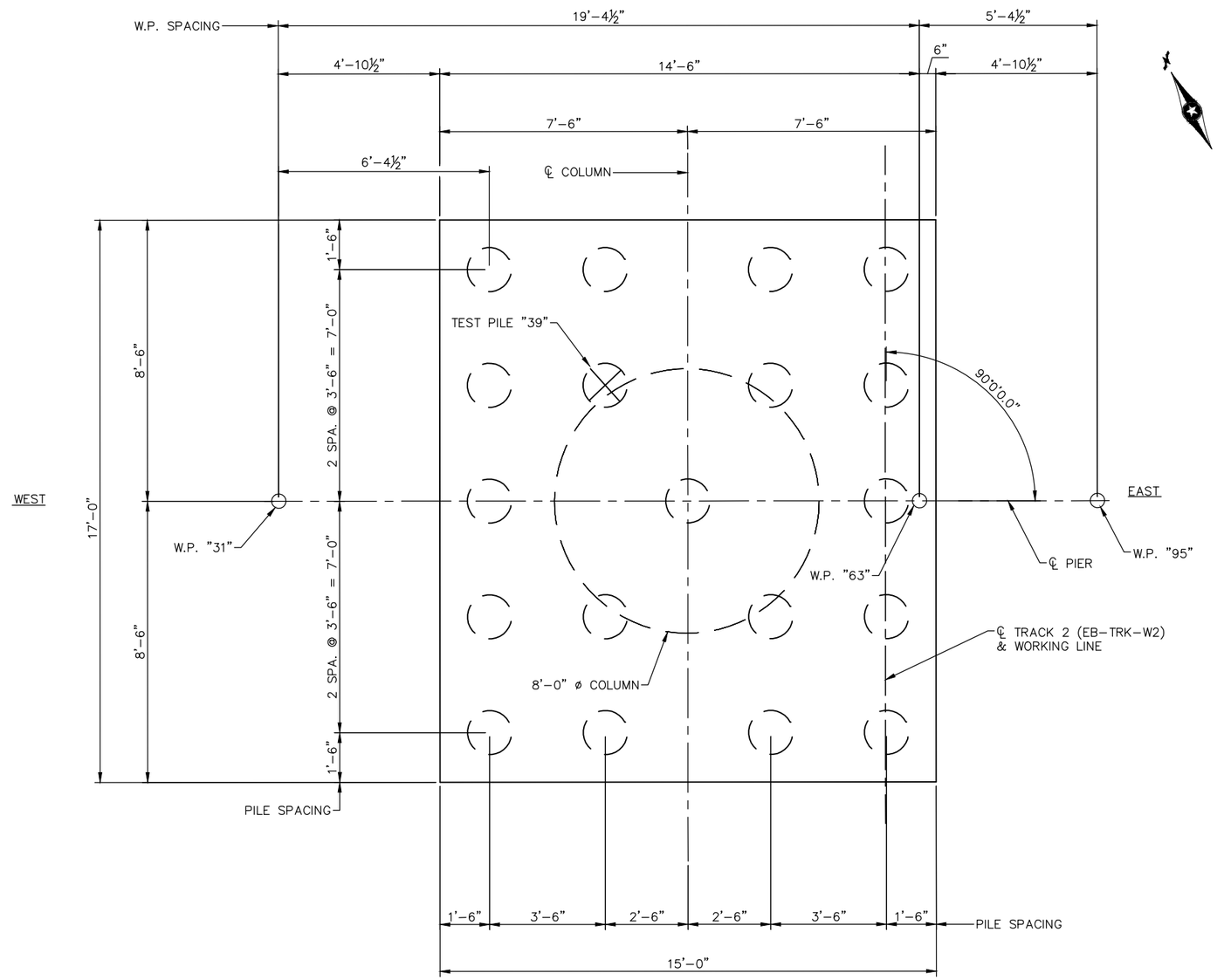
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 29 REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER3R_29S

SHEET 130 OF 264

Jan, 18 2016 10:49 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



PIER 30 PILE LAYOUT

PIER 30 REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{WxH}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	272.6
PDA	0.65	209.6

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

PIER 30 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	72.0
FACTORED LIVE LOAD	45.5
FACTORED OVERTURNING	18.8
FACTORED DESIGN LOAD	136.3
FACTORED DESIGN UPLIFT	N/A
LOAD COMBINATION	STRENGTH 5 (MOD)

PILE NOTES

1 CAST–IN–PLACE CONC. TEST PILE 75 FT. LONG
18 CAST–IN–PLACE CONC. PILES EST. LENGTH 65 FT.
19 CAST–IN–PLACE CONC. PILES REQ'D FOR PIER 30.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.3125 INCHES.

NOMINAL PILE BEARING RESISTANCE SHALL BE DETERMINED BY THE USE OF A PILE DRIVING ANALYZER (PDA). PILE LENGTHS SHOWN ARE BASED ON USING A PDA.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SBM CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

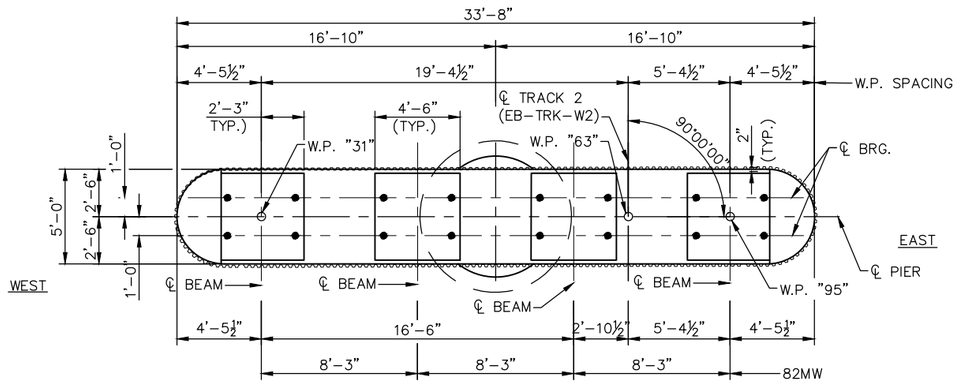
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 30 FOOTING PLAN

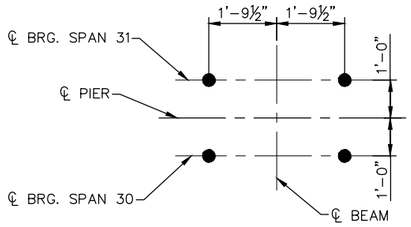
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_30a

SHEET 131 OF 264

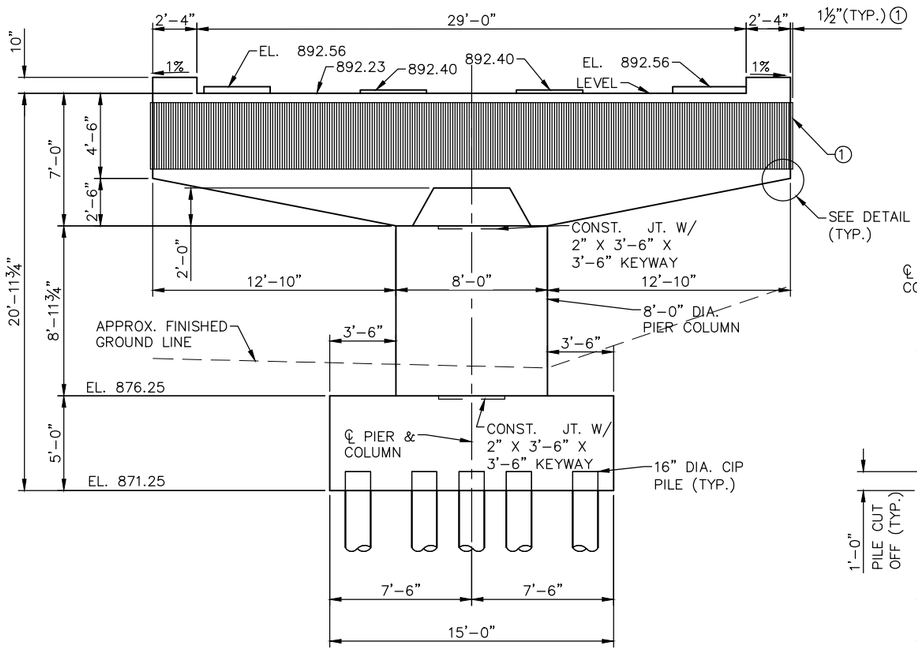
Jan, 17 2016 06:22 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



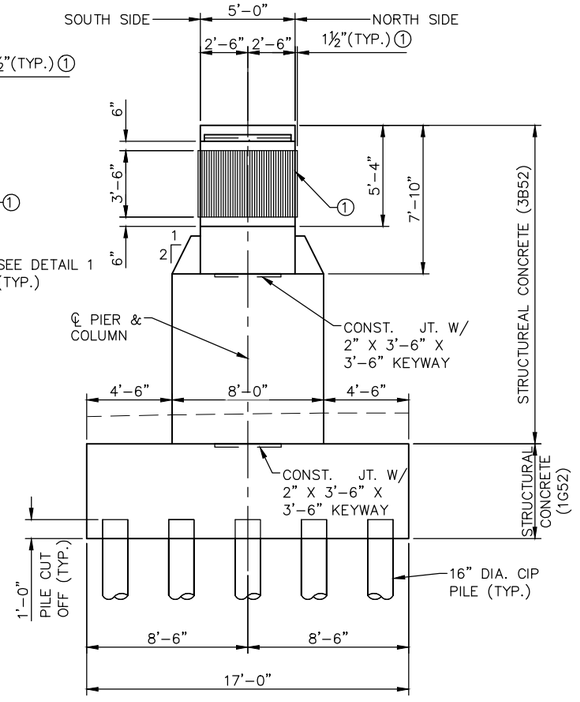
PIER 30 PLAN



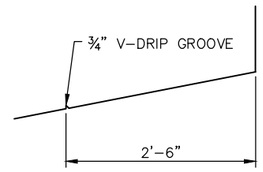
ANCHOR ROD LAYOUT



PIER 30 ELEVATION



PIER 30 END VIEW



DETAIL 1

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE, TYPE 1 "ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)"

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SBM | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

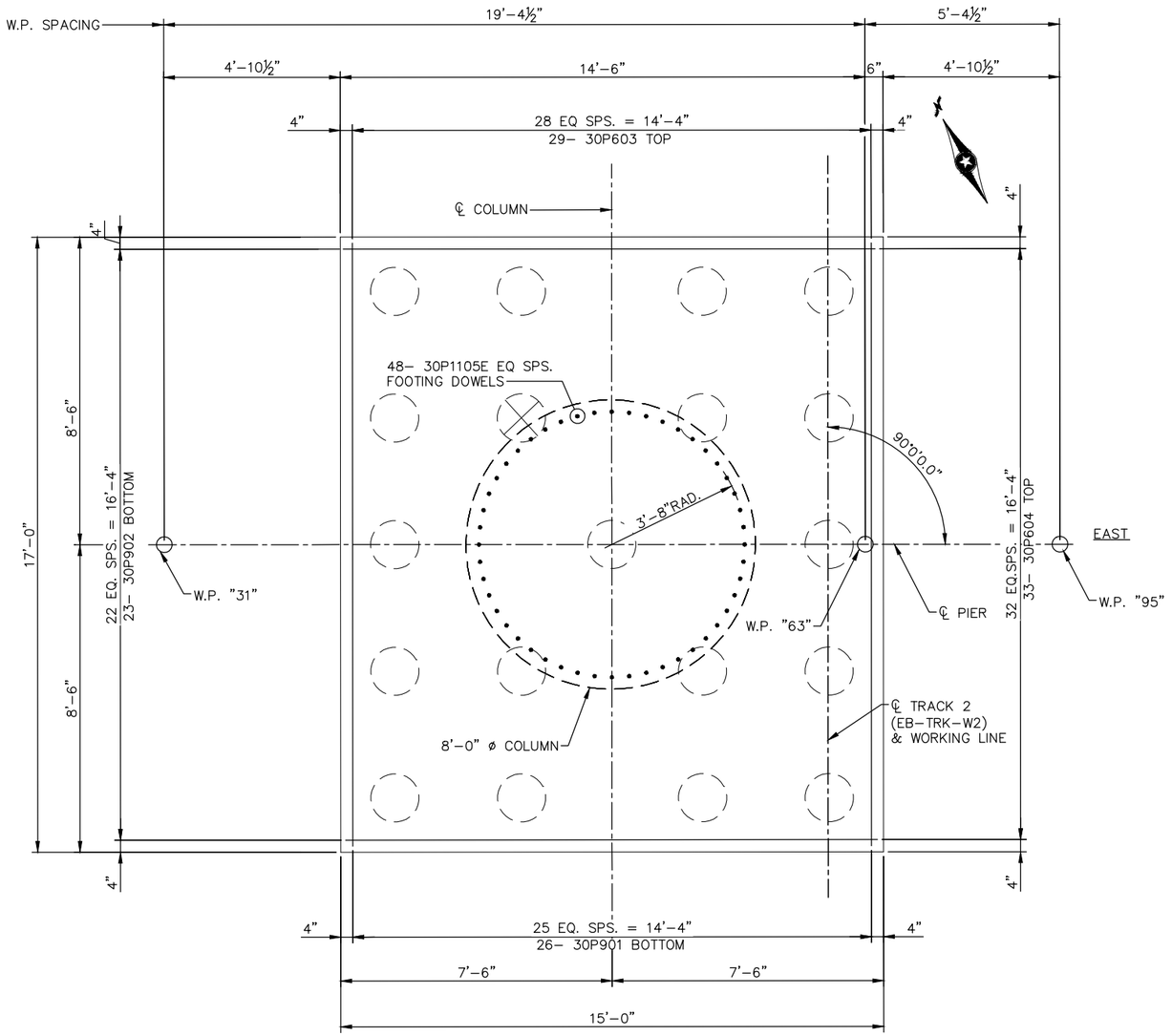
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 30 PLAN & ELEVATION

DISCIPLINE: STRUCTURES

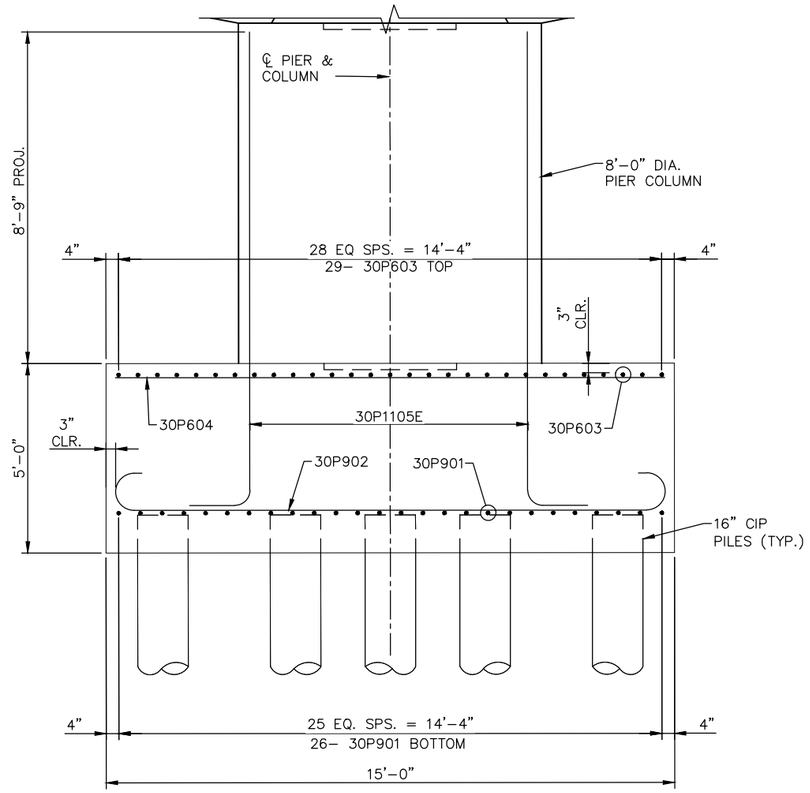
SHEET NAME: W2-STU-BRID-T212-PIER2_30

SHEET 132 OF 264

Jan, 17 2016 06:22 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2.dwg By: hills



PIER 30 FOOTING PLAN



PIER 30 FOOTING ELEVATION

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: MJC | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

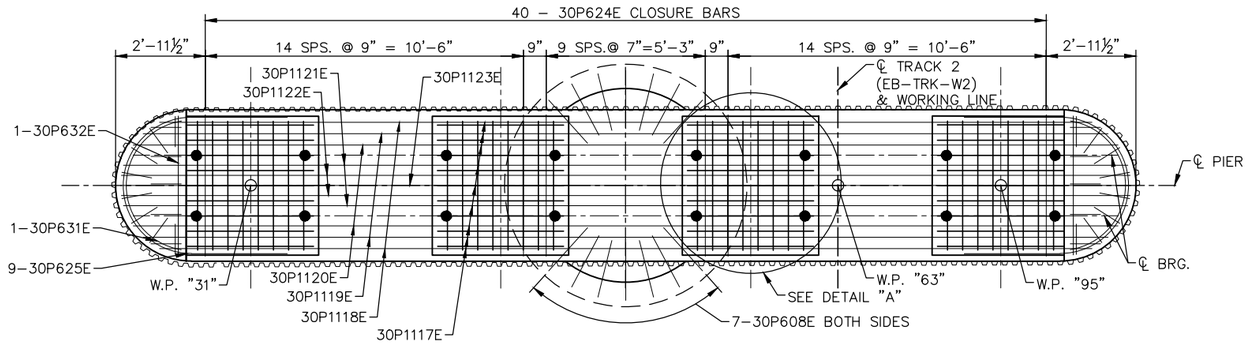
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 30 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

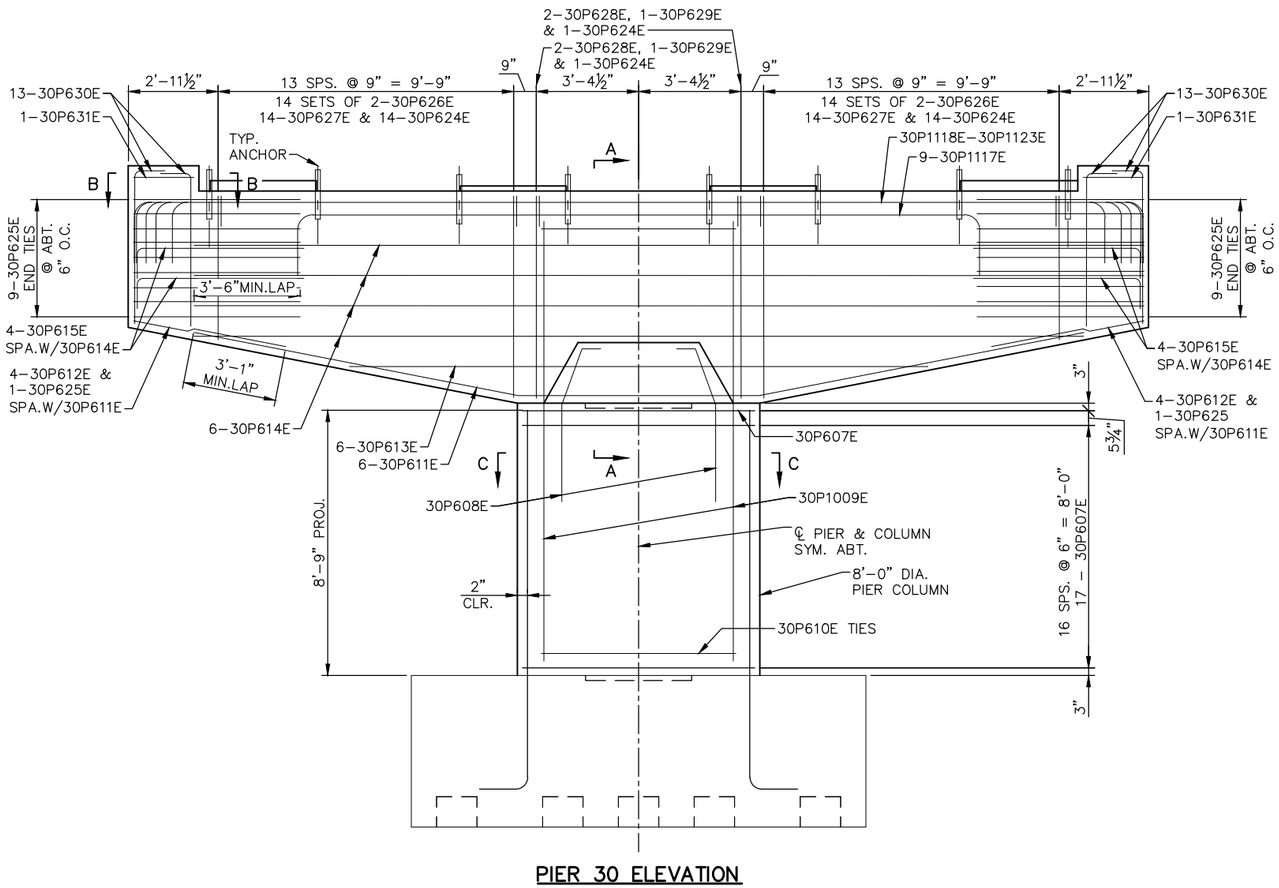
SHEET NAME: W2-STU-BRID-T212-PIER2R_30f

SHEET 133 OF 264

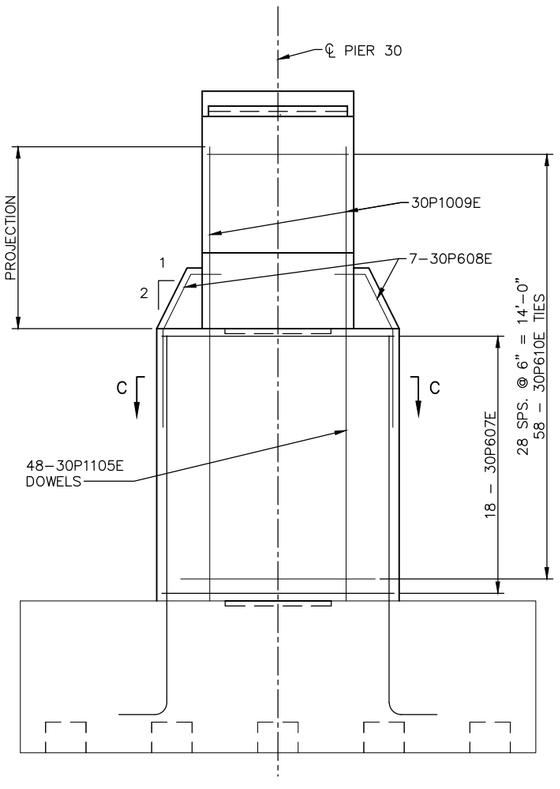
Jan, 17 2016 06:22 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER2R.dwg By: hills



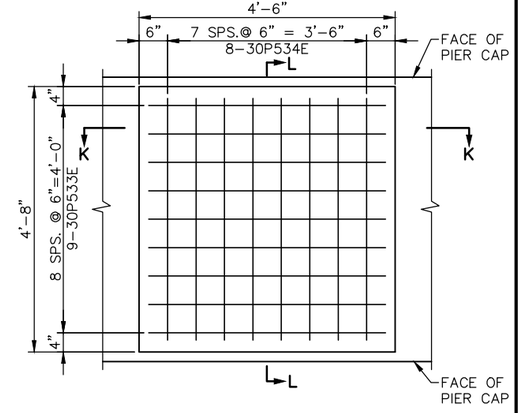
PIER 30 PLAN



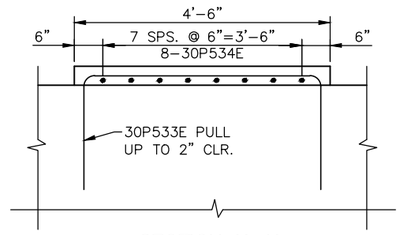
PIER 30 ELEVATION



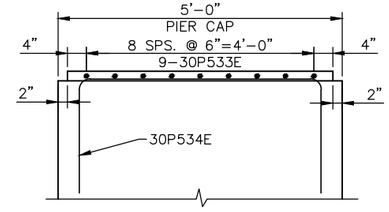
PIER 30 END VIEW



DETAIL A



SECTION K–K



SECTION L–L

NOTES:

FOR SECTIONS A–A, B–B & C–C SEE SHEET 135.

FOR DOWEL LAYOUT SEE SHEET 133.

ALL CAP REINFORCEMENT SHALL BE PLACED 2" CLEAR FROM BEARING ANCHORS.

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DESIGNED BY: MCJ CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

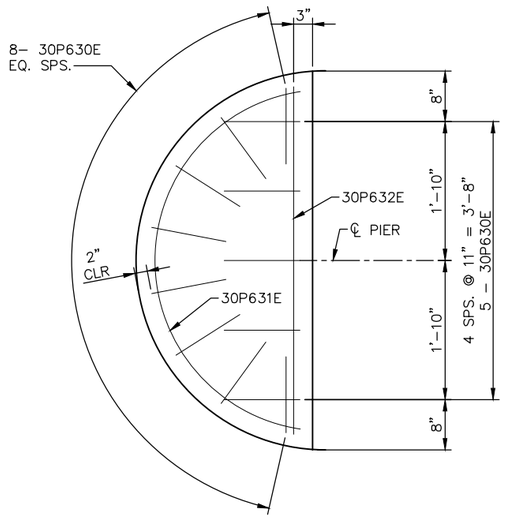
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 30 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-PIER3R_30P

SHEET 134 OF 264

Jan, 17 2016 06:23 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



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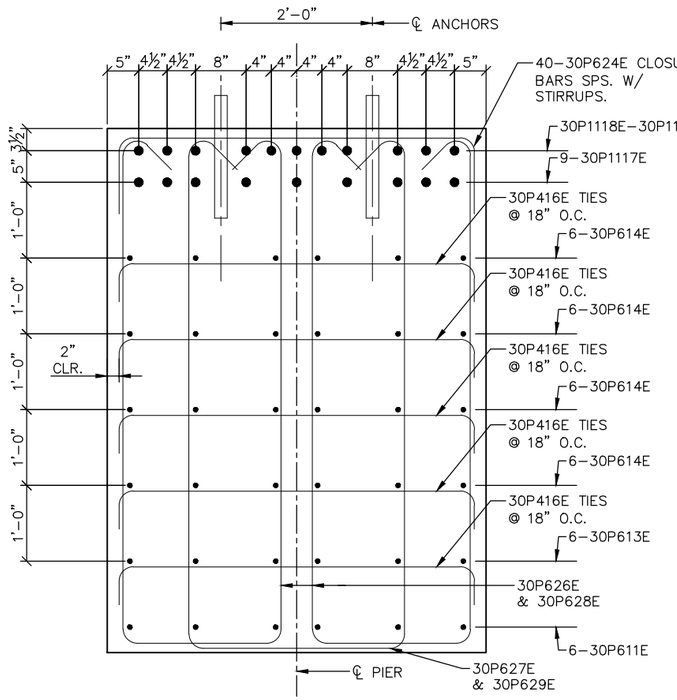
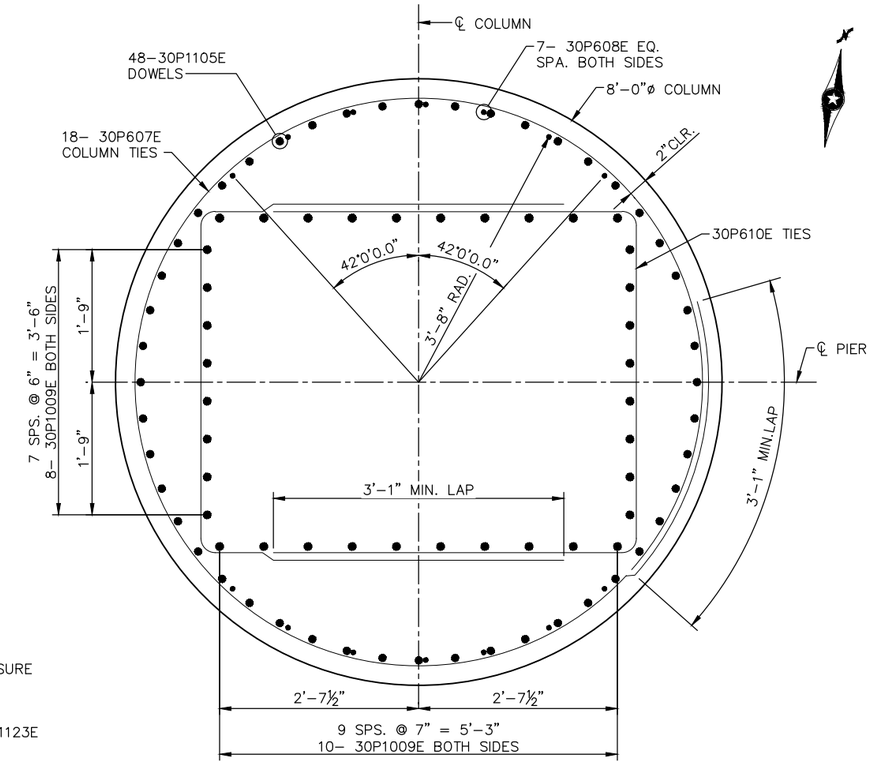
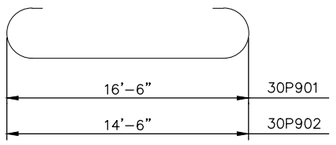


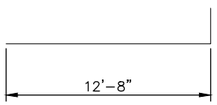
SECTION A–A



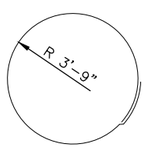
SECTION C–C



30P901 & 30P902



30P1105E



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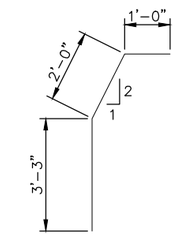

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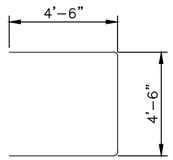

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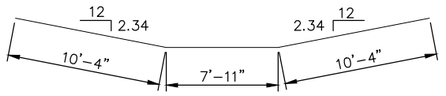

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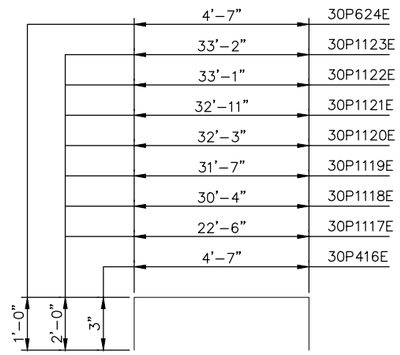
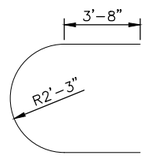


30P416E, 30P1117E, 30P1118E,
30P1119E, 30P1120E, 30P1121E,
30P1122E, 30P1123E & 30P624E



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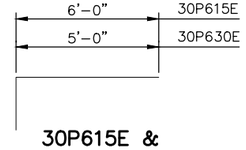

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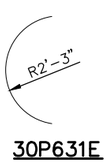
30P630E



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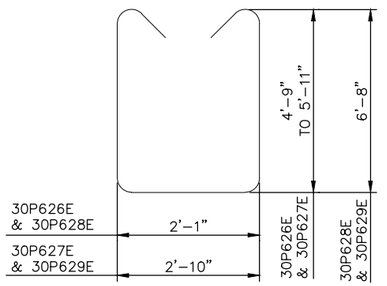
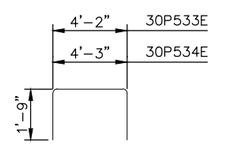


30P626E, 30P627E,
30P628E & 30P629E



30P533E & 30P534E

BILL OF REINFORCEMENT FOR PIER 30

BAR	NO.	LENGTH	SHAPE	LOCATION
30P901	26	19'–0"		FOOTING HORIZONTAL
30P902	23	17'–0"		FOOTING HORIZONTAL
30P603	29	16'–6"		FOOTING HORIZONTAL
30P604	33	14'–6"		FOOTING HORIZONTAL
30P1105E	48	14'–8"		FOOTING COLUMN DOWEL
NOT USED				
30P607E	18	26'–8"		COLUMN TIE
30P608E	14	6'–3"		CAP DOWEL
30P1009E	36	15'–0"		CAP DOWEL
30P610E	58	13'–6"		CAP TIE HORIZONTAL
30P611E	6	28'–7"		CAP LONGITUDINAL
30P612E	8	5'–2"		CAP LONGITUDINAL
30P613E	6	18'–7"		CAP LONGITUDINAL
30P614E	24	28'–4"		CAP LONGITUDINAL
30P615E	24	7'–0"		CAP LONGITUDINAL
30P416E	70	5'–1"		CAP TIE
30P1117E	9	26'–6"		CAP LONGITUDINAL
30P1118E	2	34'–4"		CAP LONGITUDINAL
30P1119E	2	35'–7"		CAP LONGITUDINAL
30P1120E	2	36'–3"		CAP LONGITUDINAL
30P1121E	2	36'–11"		CAP LONGITUDINAL
30P1122E	2	37'–1"		CAP LONGITUDINAL
30P1123E	1	37'–2"		CAP LONGITUDINAL
30P624E	40	6'–7"		CAP TIE
30P625E	20	14'–4"		END TIE
30P626E	56	①		CAP STIRRUP
30P627E	28	②		CAP STIRRUP
30P628E	4	16'–9"		CAP STIRRUP
30P629E	2	17'–6"		CAP STIRRUP
30P630E	26	6'–0"		CAP VERTICAL
30P631E	2	6'–4"		CAP HORIZONTAL
30P632E	2	4'–7"		CAP HORIZONTAL
30P533E	36	7'–8"		PEDESTAL TIE
30P534E	32	7'–9"		PEDESTAL TIE

① 4–SERIES OF 14, 12'–11" TO 16'–7"
② 2–SERIES OF 14, 13'–8" TO 17'–4"

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

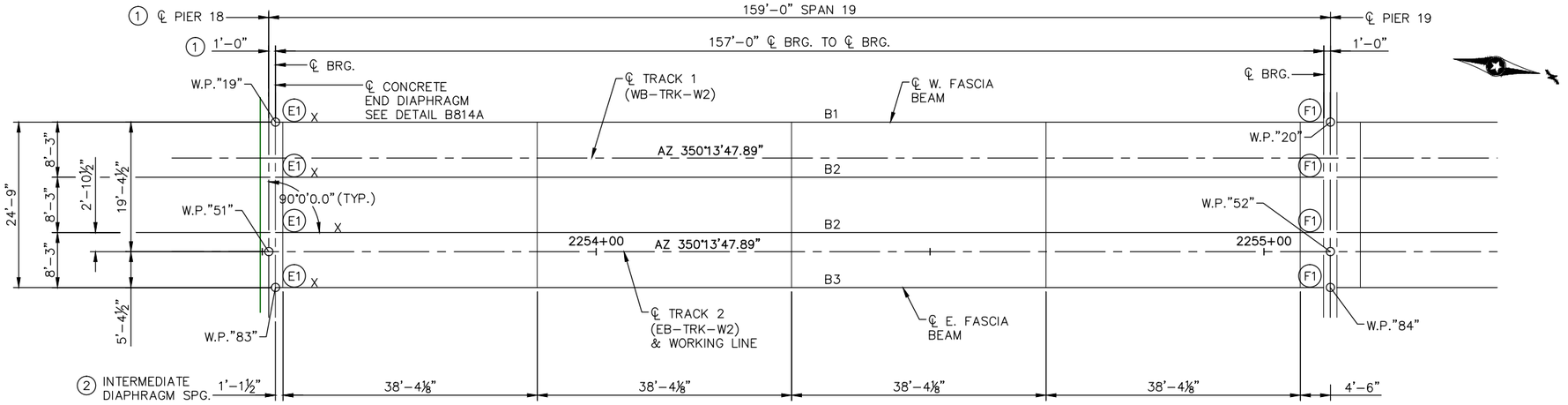
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 30 REINFORCEMENT 3

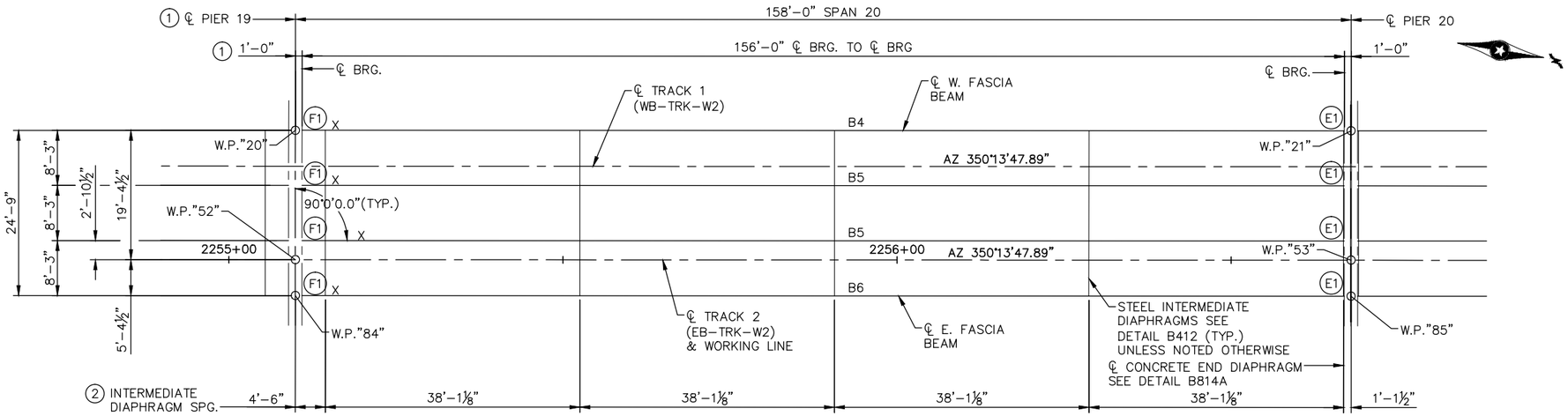
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER3R_30S

SHEET 135 OF 264

Jan, 18 2016 07:48 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PIER3R.dwg By: hills



FRAMING PLAN – SPAN 19



FRAMING PLAN – SPAN 20

NOTES:

1. MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)
2. INTERMEDIATE DIAPH. SPG. MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)

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

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

X = DENOTES MARKED END OF BEAM

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

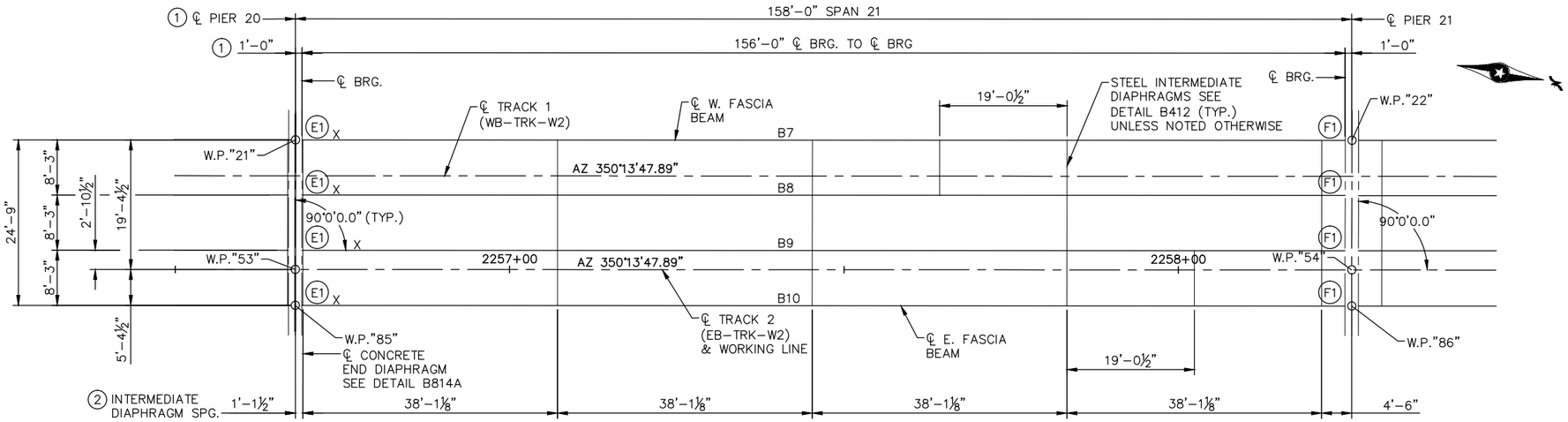
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
FRAMING PLAN (SPAN 19 & 20)

DISCIPLINE: STRUCTURES

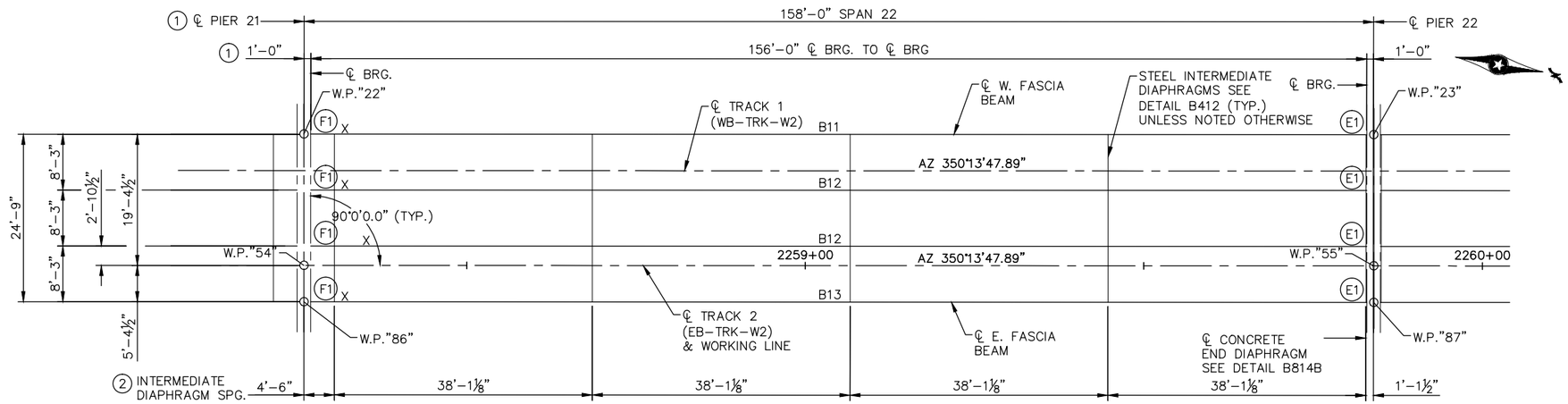
SHEET NAME: W2-STU-BRID-T212-SUP1-1

SHEET 136 OF 264

Jan, 17 2016 09:46 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP1.dwg By: hills



FRAMING PLAN – SPAN 21



FRAMING PLAN – SPAN 22

NOTES:

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

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

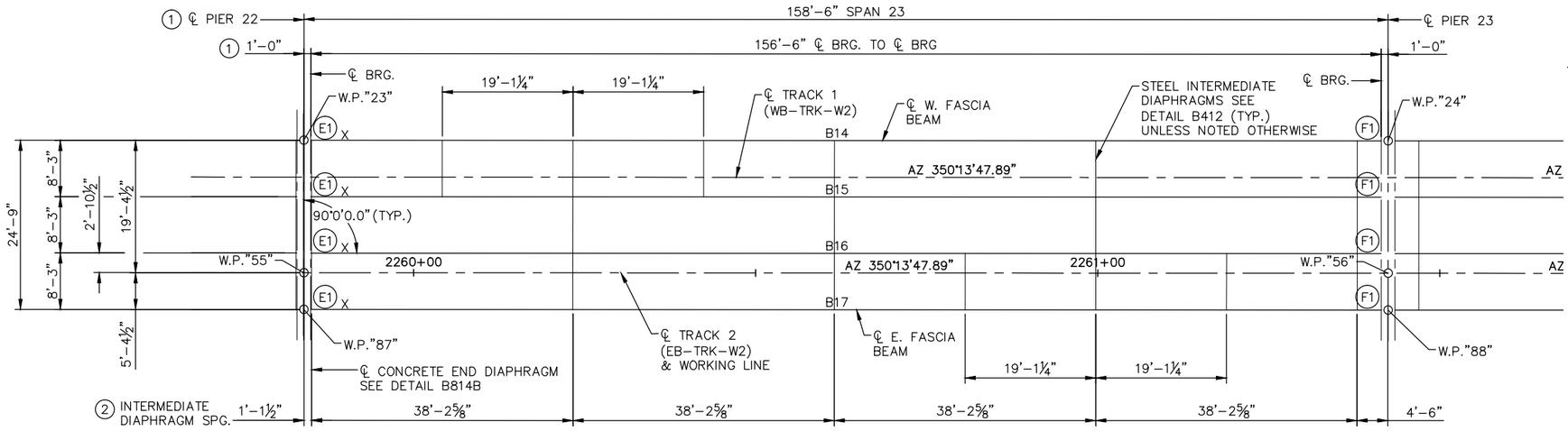
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
FRAMING PLAN (SPAN 21 & 22)

DISCIPLINE: STRUCTURES

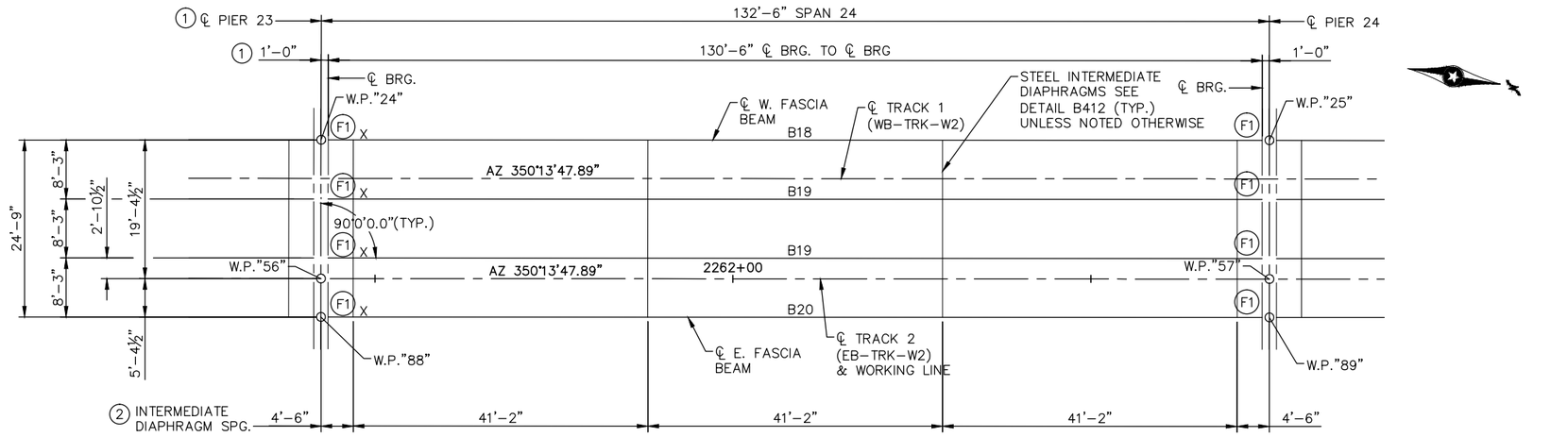
SHEET NAME: W2-STU-BRID-T212-SUP1-2

SHEET 137 OF 264

Jan, 17 2016 09:46 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34_W2-STU-BRID-T212-SUP1.dwg By: hills



FRAMING PLAN – SPAN 23



FRAMING PLAN – SPAN 24

NOTES:

1. MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)
2. INTERMEDIATE DIAPH. SPG. MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)

(E1) = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1 (4 REQUIRED)

(F1) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (12 REQUIRED)

X = DENOTES MARKED END OF BEAM

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METROPOLITAN COUNCIL

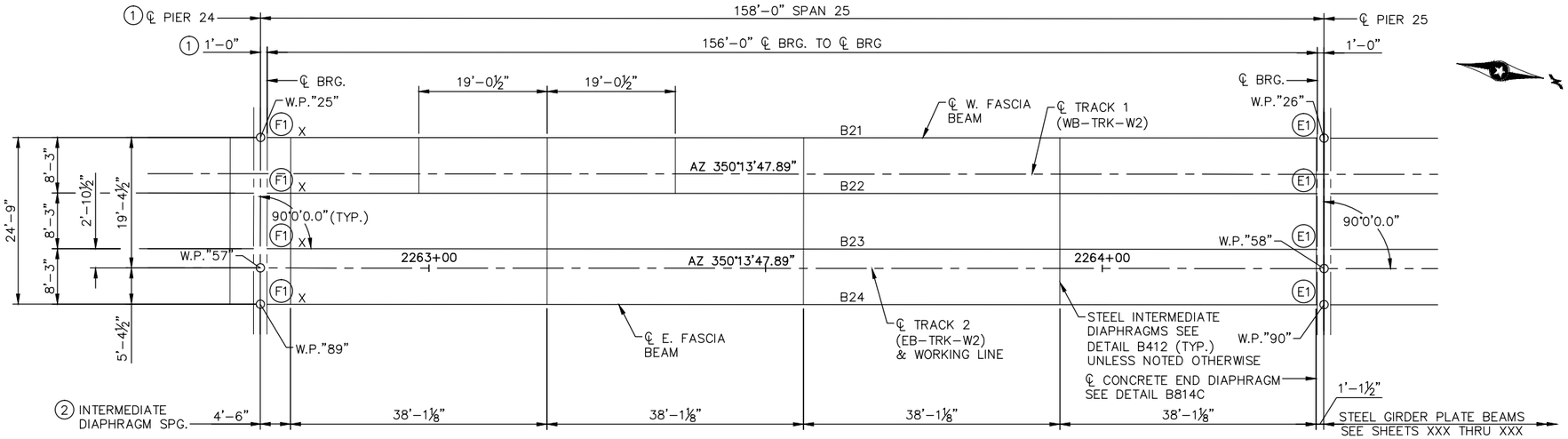
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
FRAMING PLAN (SPAN 23 & 24)

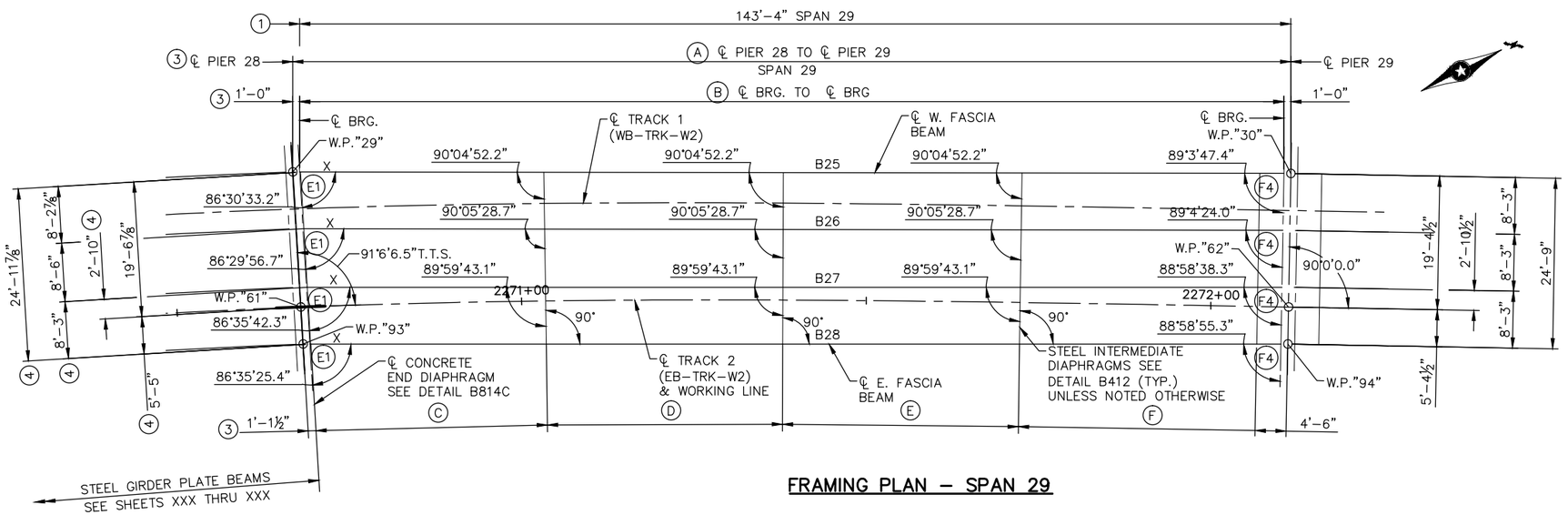
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP1-3

SHEET 138 OF 264

Jan, 17 2016 09:47 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP1.dwg By: hills



FRAMING PLAN – SPAN 25



FRAMING PLAN – SPAN 29

BEAM DIMENSIONS ③

BEAM	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ
B25	144'–9⅞"	142'–9⅞"	35'–9⅞"	34'–3¾"	34'–3¾"	34'–9"
B26	144'–2¼"	142'–2¼"	35'–3⅞"	34'–3¾"	34'–3¾"	34'–7¼"
B27	143'–6⅜"	141'–6⅜"	34'–9⅞"	34'–3¾"	34'–3¾"	34'–5½"
B28	142'–10¾"	140'–10¾"	34'–3¾"	34'–3¾"	34'–3¾"	34'–3¾"

NOTES:

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)

② INTERMEDIATE DIAPH. SPG. MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)

③ MEASURED ALONG ℄ BEAM

④ MEASURED ALONG ℄ BEARING

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

(F1) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (4 REQUIRED)

(F4) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 4 (4 REQUIRED)

X = DENOTES MARKED END OF BEAM

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

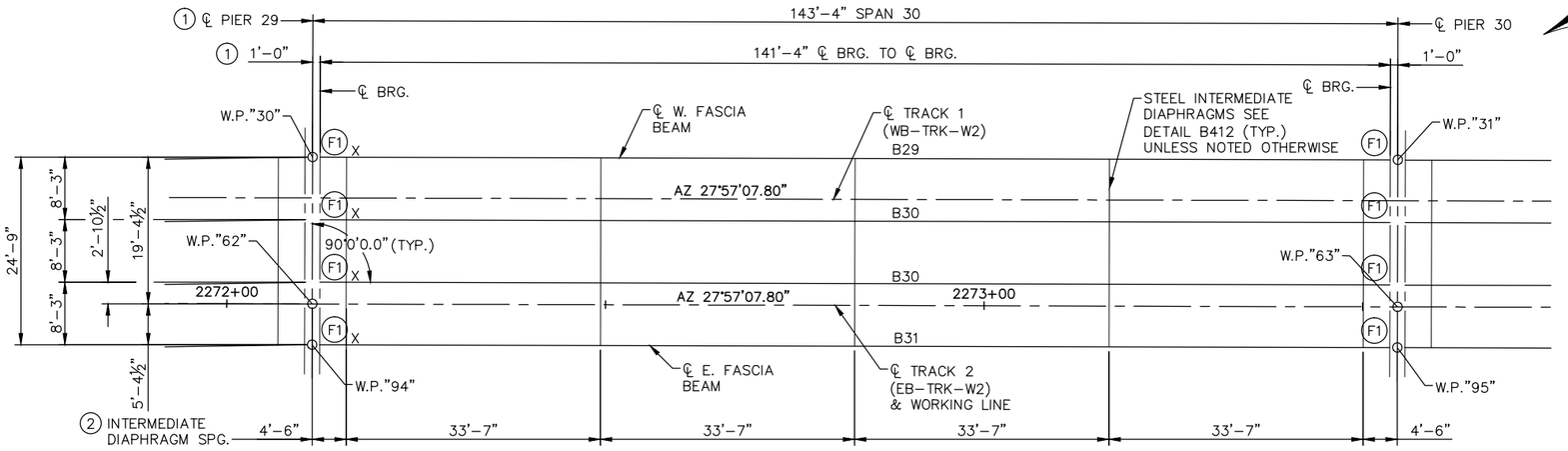
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
FRAMING PLAN (SPAN 25 & 29)

DISCIPLINE: STRUCTURES

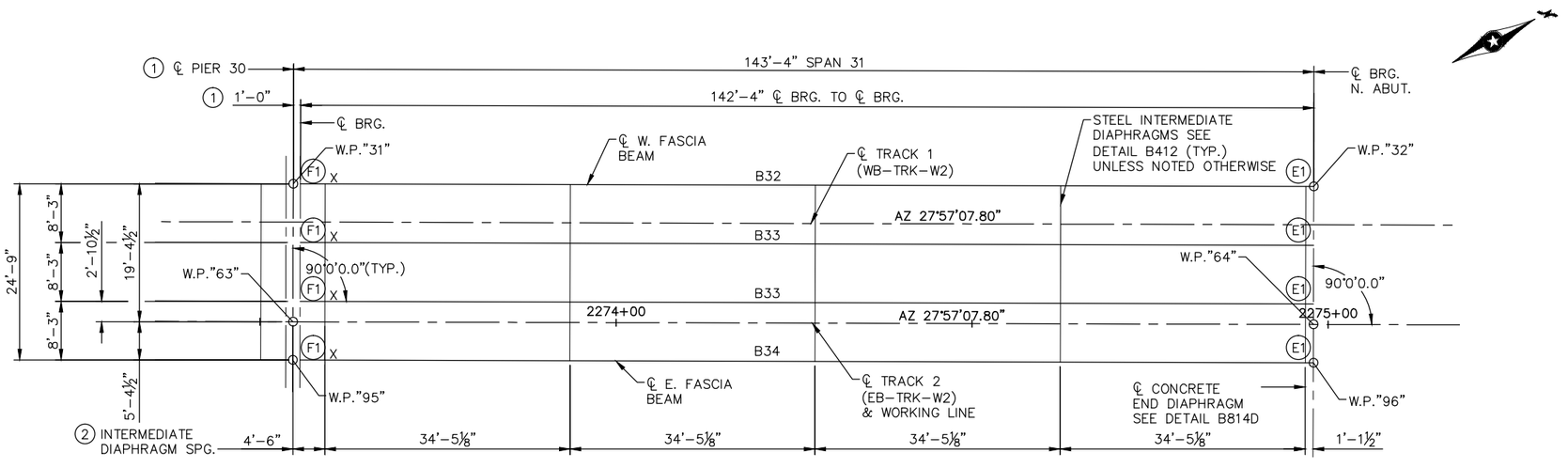
SHEET NAME: W2-STU-BRID-T212-SUP1-4

SHEET 139 OF 264

Jan. 17 2016 09:47 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP1.dwg By: hills



FRAMING PLAN – SPAN 30



FRAMING PLAN – SPAN 31

NOTES:

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

(2) INTERMEDIATE DIAPH. SPG. MEASURED ALONG ℄ TRACK 2 (EB-TRK-W2)

(E1) = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1 (4 REQUIRED)

(F1) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (12 REQUIRED)

X DENOTES MARKED END OF BEAM

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

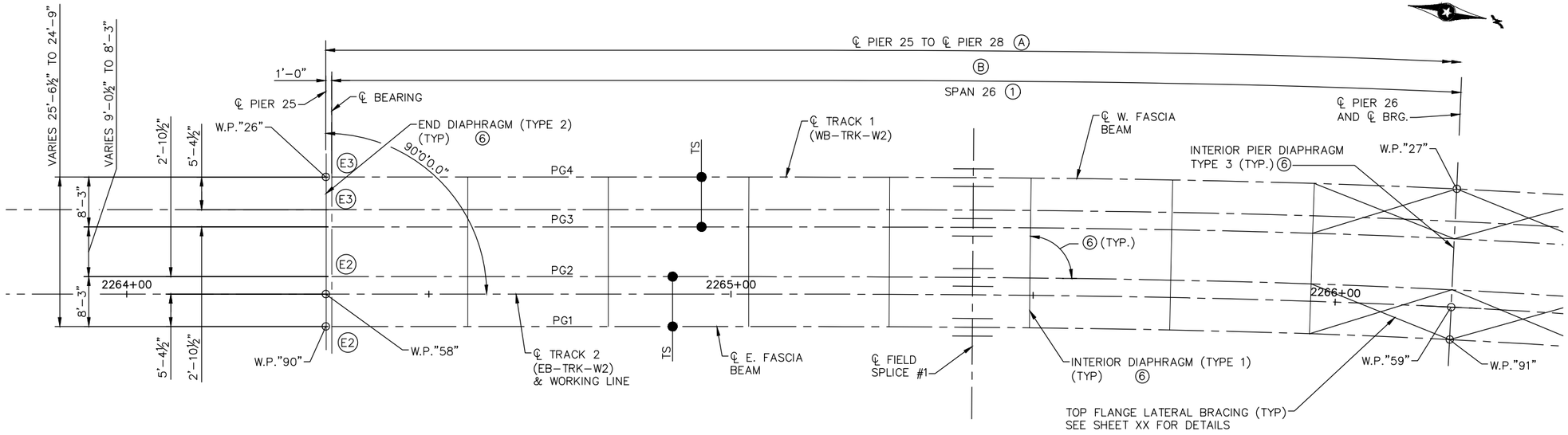
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
FRAMING PLAN (SPAN 30 & 31)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP1-5

SHEET 140 OF 264

Jan, 17 2016 09:47 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP1.dwg By: hills



FRAMING PLAN
(SPAN 26)

SPAN LENGTHS (DIMSENSIONS ARE ALONG ℄ BEAM) (7)

	BEAM	TS STA ●	● OFFSET	SC STA ⊕	⊕ OFFSET	RADIUS	CS STA ◉	◉ OFFSET	(A)	(B)	(C)	(D)
(4)	PG1	2264+90.34	5.375' RT	2267+10.34	5.375' RT	744'-7½"	2269+84.12	5.375' RT	631'-10½"	185'-0⅛"	261'-11½"	182'-10⅞"
(4)	PG2	2264+90.34	2.875' LT	2267+10.34	2.875' LT	752'-10½"	2269+84.12	2.875' LT	636'-8"	185'-4¾"	264'-8¼"	184'-7"
(5)	PG3	1264+95.12	2.875' RT	1267+15.12	2.875' RT	747'-1½"	1269+88.90	2.875' RT	641'-9⅝"	185'-9⅜"	267'-7⅝"	186'-4⅝"
(5)	PG4	1264+95.12	5.375' LT	1267+15.12	5.375' LT	755'-4½"	1269+88.90	5.375' LT	646'-7⅛"	186'-2"	270'-4⅜"	188'-0¾"

LEGEND:

● DENOTES TS STA. SEE TABLE FOR STATION AND OFFSET.
⊕ DENOTES SC STA. SEE TABLE FOR STATION AND OFFSET.
◉ DENOTES CS STA. SEE TABLE FOR STATION AND OFFSET.
TS "TANGENT TO SPIRAL" POINT
SC "SPIRAL TO CURVE" POINT
CS "CURVE TO SPIRAL" POINT
ST "SPIRAL TO TANGENT " POINT

NOTES:

(1) ℄ BRG. PIER 25 TO ℄ PIER 26
(2) ℄ PIER 26 TO ℄ PIER 27
(3) ℄ PIER 27 TO ℄ BRG. PIER 28
(4) TRACK 2 (EB-TRK-W2) ALIGNMENT
(5) TRACK 1 (WB-TRK-W2) ALIGNMENT
(6) SEE SHEETS XX-XX FOR DIAPHRAGM LAYOUT AND DETAILS
(7) SEE GENERAL PLAN AND ELEVATION FOR "ST" POINT
(E2) (E3) GUIDED EXPANSION POT BEARING ASSEMBLY. SEE DETAIL B314 MOD, SHT XX
(F2) (F3) FIXED POT BEARING ASSEMBLY. SEE DETAIL B316 MOD., SHT XX

STRUCTURAL STEEL NOTES:

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

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

FOR WELDED FLANGE SPLICES, SEE SPEC. 2471.3F1a.

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

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

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

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

WHERE SHEAR CONNECTIONS ARE TO BE PLACED ON FIELD SPLICE PLATES, LOCALLY ADJUST SPACING TO PROVIDE A MINIMUM CLEARANCE OF 1¼" BETWEEN SHEAR CONNECTIONS AND FIELD SPLICE BOLTS AND/OR PLATE EDGES.

SHEAR CONNECTORS TO PROJECT A MINIMUM OF 3" INTO DECK STRUCTURAL SLAB. IN NO CASE SHALL SHEAR CONNECTORS PROJECT CLOSER THAN 2" TO TOP OF DECK STRUCTURAL SLAB. ENGINEER TO FIELD VERIFY BEAM ELEVATION AND AUTHORIZE STUD LENGTH.

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

FLANGE PLATES FOR BEAMS SHALL BE CUT TO PROPER CURVATURE.

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

ALL BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANES OF THE CONNECTED PARTS.

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

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

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

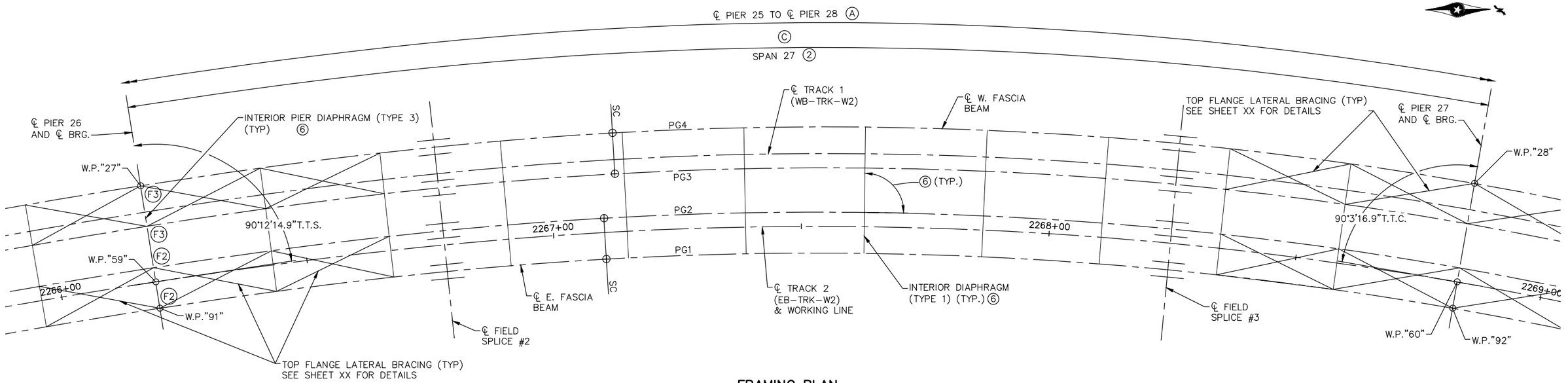
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
FRAMING PLAN (SPAN 26-28) 1

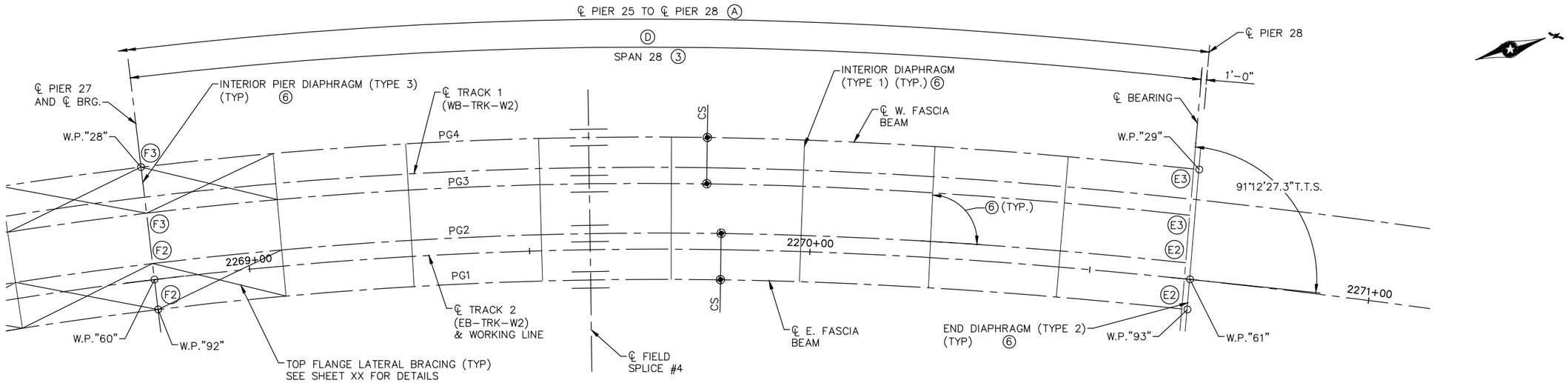
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP2

SHEET 141 OF 264

Jan. 17 2016 09:47 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP2.dwg By: hills



FRAMING PLAN
(SPAN 27)



FRAMING PLAN
(SPAN 28)

SEE SHEET 141 FOR NOTES

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

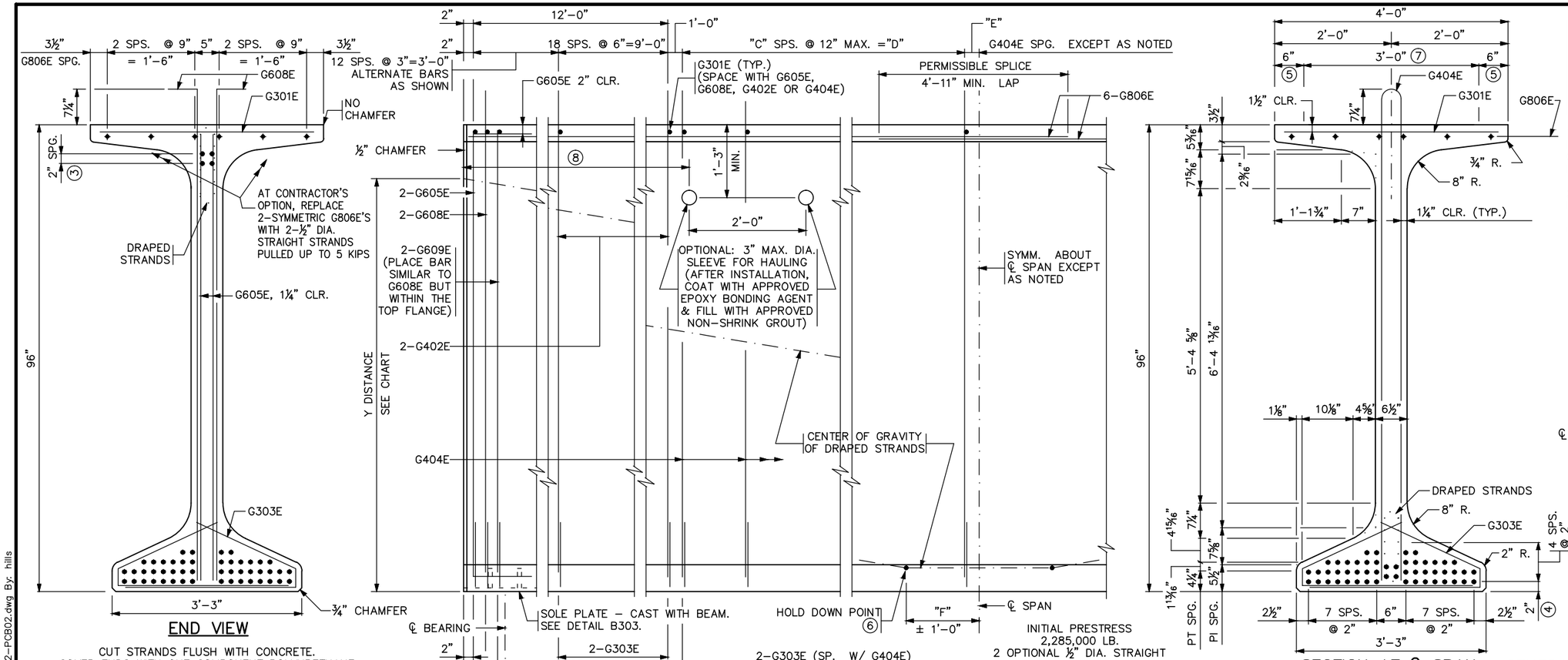
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
FRAMING PLAN (SPAN 26-28) 2

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP2_2

SHEET 142 OF 264

Jan, 17 2016 09:47 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP2.dwg By: hills

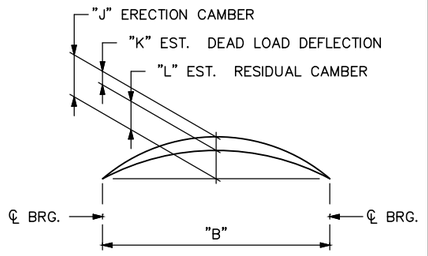


Y DISTANCES (INCHES)			
	NO.	℄ SPAN	END
STRAIGHT STRANDS	48	4.17	
DRAPED STRANDS	4	4.00	89.00 ▫
TOTAL STRANDS	52	4.15	

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.

2 OPTIONAL ½" DIA. STRAIGHT STRANDS ARE NOT INCLUDED IN THIS TABLE.

▫ 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, SIDEWALK, OCS AND RUNNING RAIL WHERE APPLICABLE.

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

GENERAL NOTES

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.

MARK EACH BEAM SHOWING BRIDGE NUMBER, CASTING DATE, AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS ON THE FACE OF THE BEAM, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED AFTER THE END DIAPHRAGMS HAVE BEEN CAST. MARK FASCIA BEAMS ON THE INSIDE FACE. INSURE 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 "M" TONS.

AS AN ALTERNATE TO THE 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 24 KIPS PER ANCHORAGE.

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

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

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

⑥ CENTER OF GRAVITY OF HOLD DOWNS WHEN MULTIPLE HOLD DOWNS ARE USED.

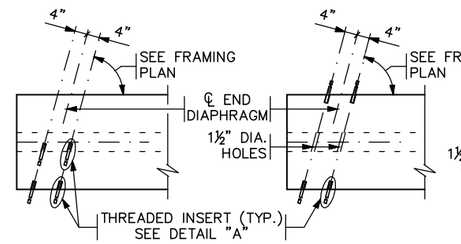
⑦ ROUGH FLOAT AND BROOM TRANSVERSELY FOR BOND PER SPEC. 2405.3D.

⑧ DIMENSIONS DETERMINED BY CONTRACTOR. MAINTAIN 2" MINIMUM CLEAR FROM STRANDS.

CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	"G" KSI
LONG TERM LOSSES	"H" KSI
TOTAL LOSSES	"I" KSI

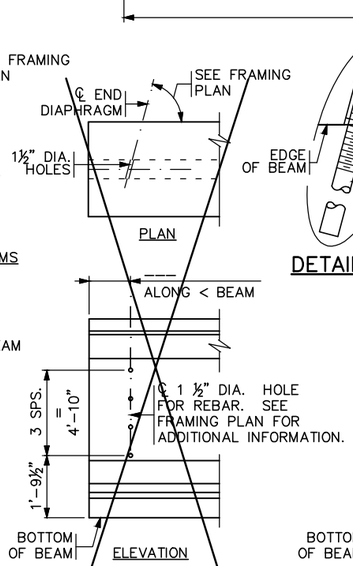
MINIMUM CONCRETE STRENGTH - K.S.I.	
① f'ci	② f'c
7.5 KSI	9.0 KSI

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



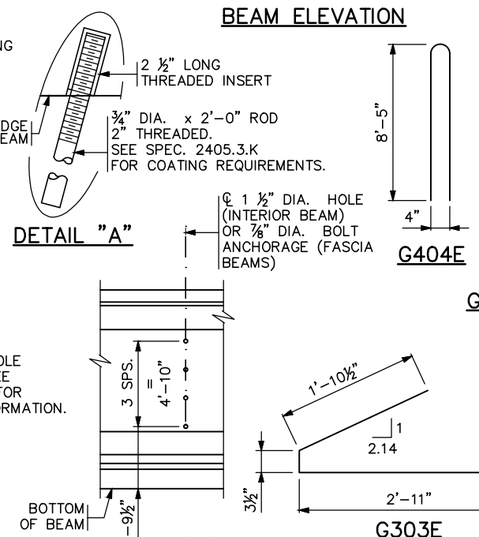
CONCRETE END DIAPHRAGM

PARAPET ABUTMENT
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)



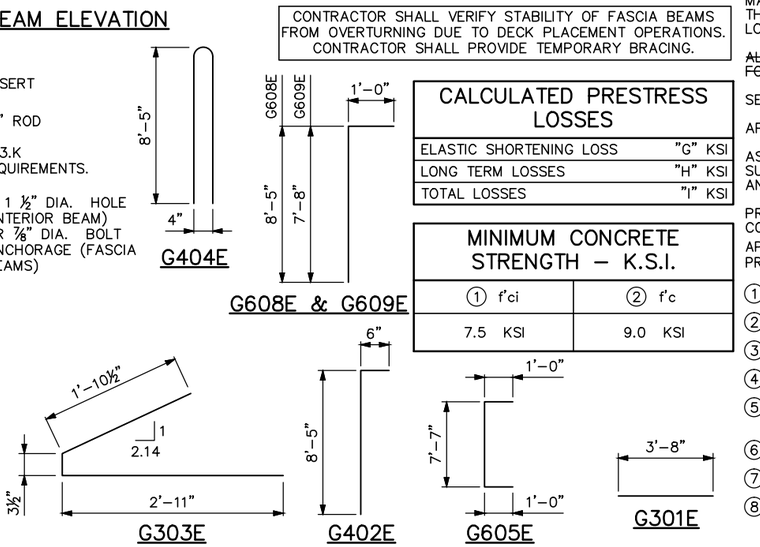
CONCRETE END DIAPHRAGM

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



STEEL INTERMEDIATE DIAPHRAGM

(SEE DETAIL B412 FOR DIAPHRAGM DETAILS)



REVISED:	
APPROVED: JANUARY 13, 2015	
Nancy Dorbenberger STATE BRIDGE ENGINEER	

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER _____ DATE

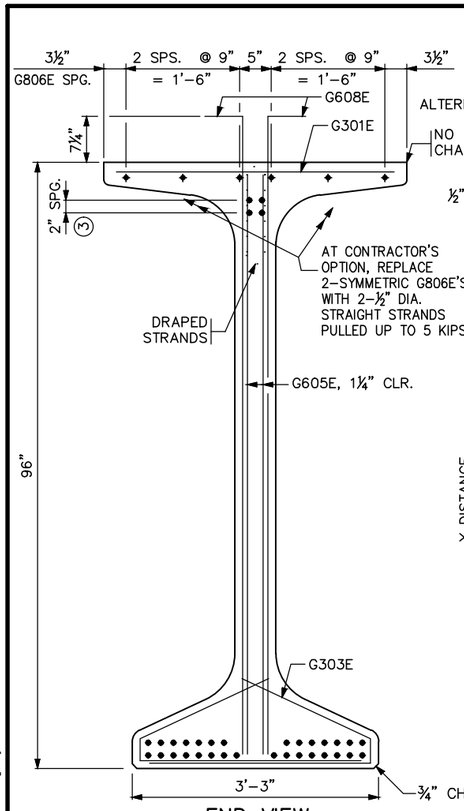
NAME: LIC. NO.

TITLE: 96MW PRESTRESSED CONCRETE BEAM 1

BEAMS B1-B17, B21-B24 — FIG. 5-397.532

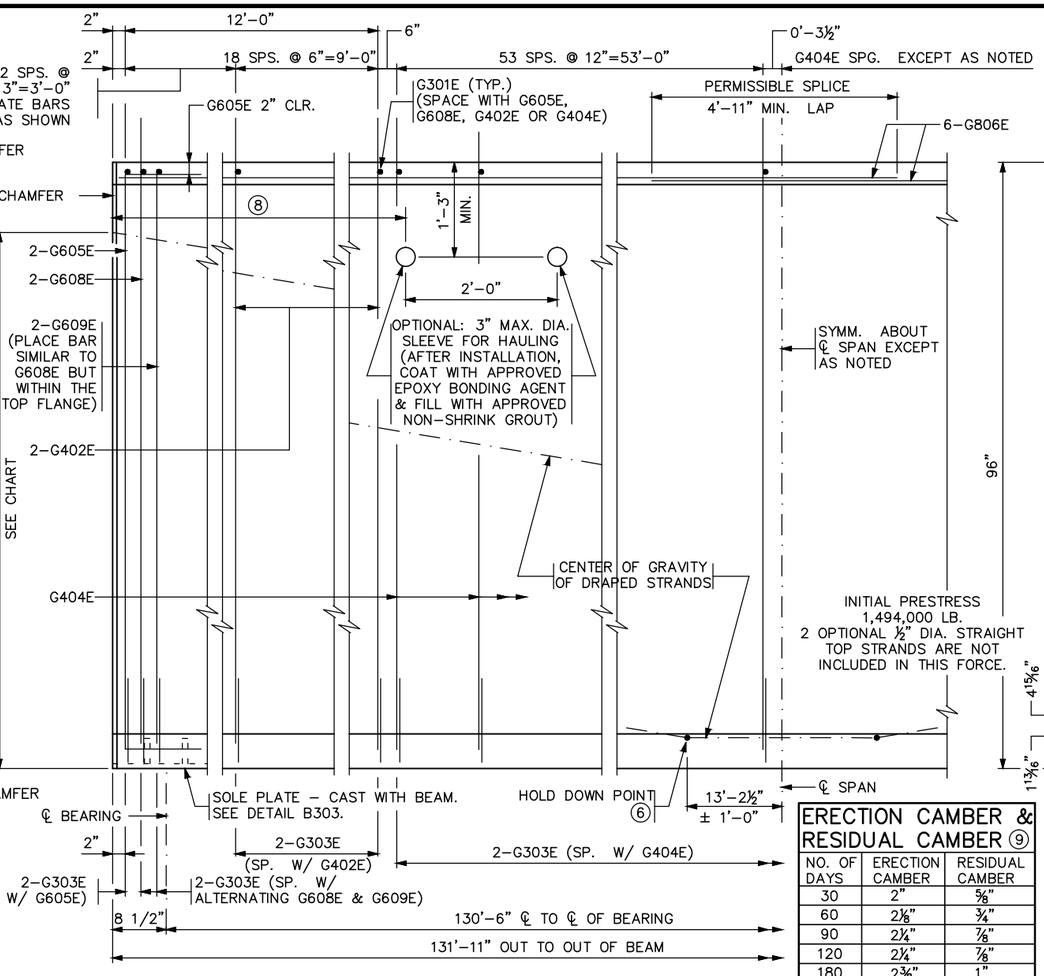
DES: MJC	DR: BAC	APPROVED:	BRIDGE NO.
CHK: EEM	CHK: DDL		
SHEET NO. 143 OF 264 SHEETS			B27R34

Jan. 17 2016 09:47 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34_W2-STU-BRID-T212-PCB02.dwg By: hills

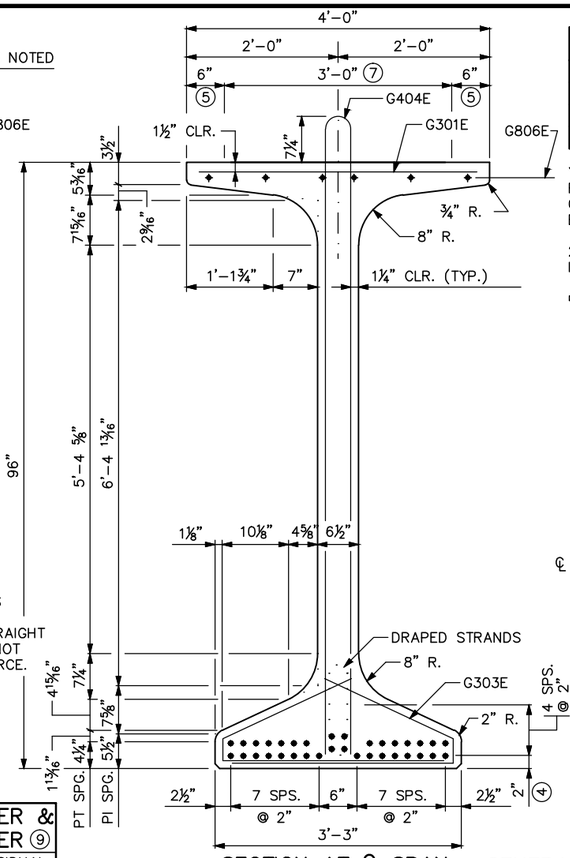


END VIEW

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



BEAM ELEVATION



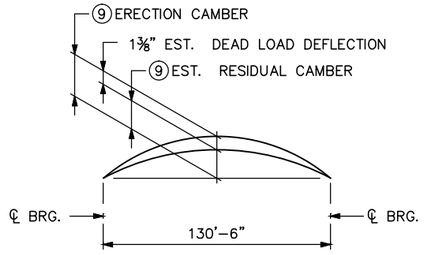
SECTION AT ℄ SPAN

Y DISTANCES (INCHES)	NO.	℄ SPAN	END
STRAIGHT STRANDS	30	2.93	☒
DRAPED STRANDS	4	4.00	☒
TOTAL STRANDS	34	3.06	☒

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.

2 OPTIONAL ½" DIA. STRAIGHT STRANDS ARE NOT INCLUDED IN THIS TABLE.

▫ A TOLERANCE OF ' 1" WILL BE PERMITTED IN THIS DIMENSION.



CAMBER DIAGRAM

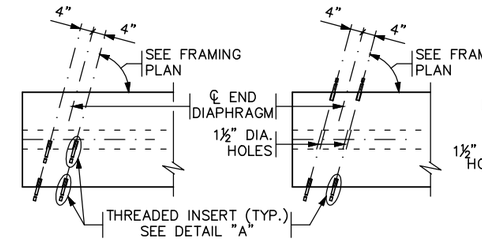
ERECTION CAMBER SHOWN IS AFTER DIAPHRAGMS ARE IN PLACE.

DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB, SIDEWALK, OCS AND RUNNING RAIL WHERE APPLICABLE.

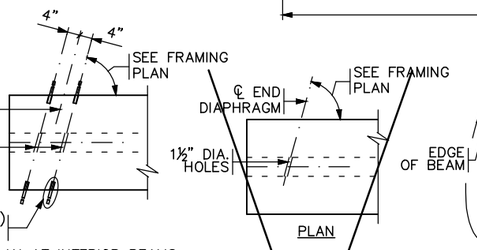
CONTRACTOR WILL TAKE ELEVATIONS AT TOP OF BEAMS AFTER ERECTION AND WILL ALLOW FOR DEFLECTION SHOWN TO ENABLE BUILDING FORMS TO CORRECT GRADE AND SPECIFIED SLAB THICKNESS. PROVIDE COPY OF ELEVATIONS TO THE ENGINEER.

ERECTION CAMBER & RESIDUAL CAMBER ⑨		
NO. OF DAYS	ERECTION CAMBER	RESIDUAL CAMBER
30	2"	⅝"
60	2⅛"	¾"
90	2¼"	⅞"
120	2¼"	⅞"
180	2⅜"	1"

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

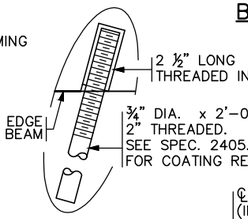


PLAN AT FASCIA BEAMS

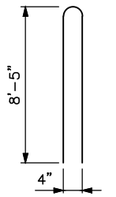


PLAN AT INTERIOR BEAMS

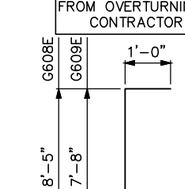
PLAN



DETAIL "A"



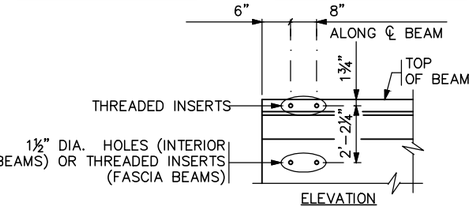
G404E



G608E & G609E

CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	12.62 KSI
LONG TERM LOSSES	16.34 KSI
TOTAL LOSSES	28.96 KSI

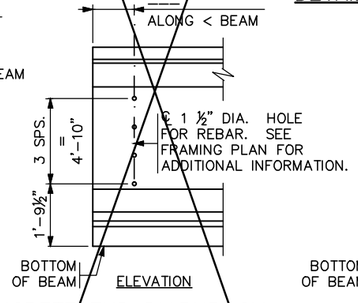
MINIMUM CONCRETE STRENGTH - K.S.I.	
① f'ci	② f'c
7.5 KSI	9.0 KSI



ELEVATION

CONCRETE END DIAPHRAGM

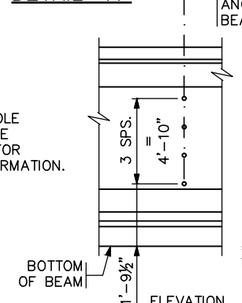
PARAPET ABUTMENT
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)



ELEVATION

CONCRETE END DIAPHRAGM

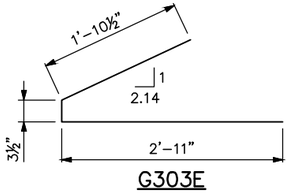
SEMI-INTEGRAL ABUTMENT
SEE SUPERSTRUCTURE DETAILS AND REINFORCEMENT FOR DIAPHRAGM DETAILS.



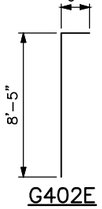
ELEVATION

STEEL INTERMEDIATE DIAPHRAGM

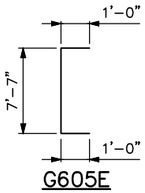
(SEE DETAIL B412 FOR DIAPHRAGM DETAILS)



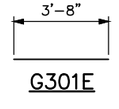
G303E



G402E



G605E



G301E

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. INSURE 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 82 TONS.

AS AN ALTERNATE TO THE 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 24 KIPS PER ANCHORAGE.

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

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

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

⑥ CENTER OF GRAVITY OF HOLD DOWNS WHEN MULTIPLE HOLD DOWNS ARE USED.

⑦ ROUGH FLOAT AND BROOM TRANSVERSELY FOR BOND PER SPEC. 2405.3D.

⑧ DIMENSIONS DETERMINED BY CONTRACTOR. MAINTAIN 2" MINIMUM CLEAR FROM STRANDS.

REVISED:

APPROVED: JANUARY 13, 2015
Nancy Lauenberger
STATE BRIDGE ENGINEER

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER _____ DATE

NAME: LIC. NO.

TITLE: 96MW PRESTRESSED CONCRETE BEAM 2

BEAMS B18-B20 | FIG. 5-397.532

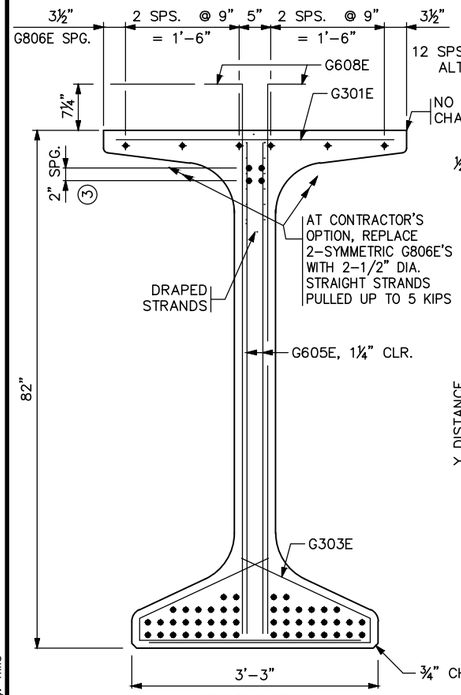
DES: MJC | DR: BAC | APPROVED:

CHK: EEM | CHK: DDL

SHEET NO. 144 OF 264 SHEETS

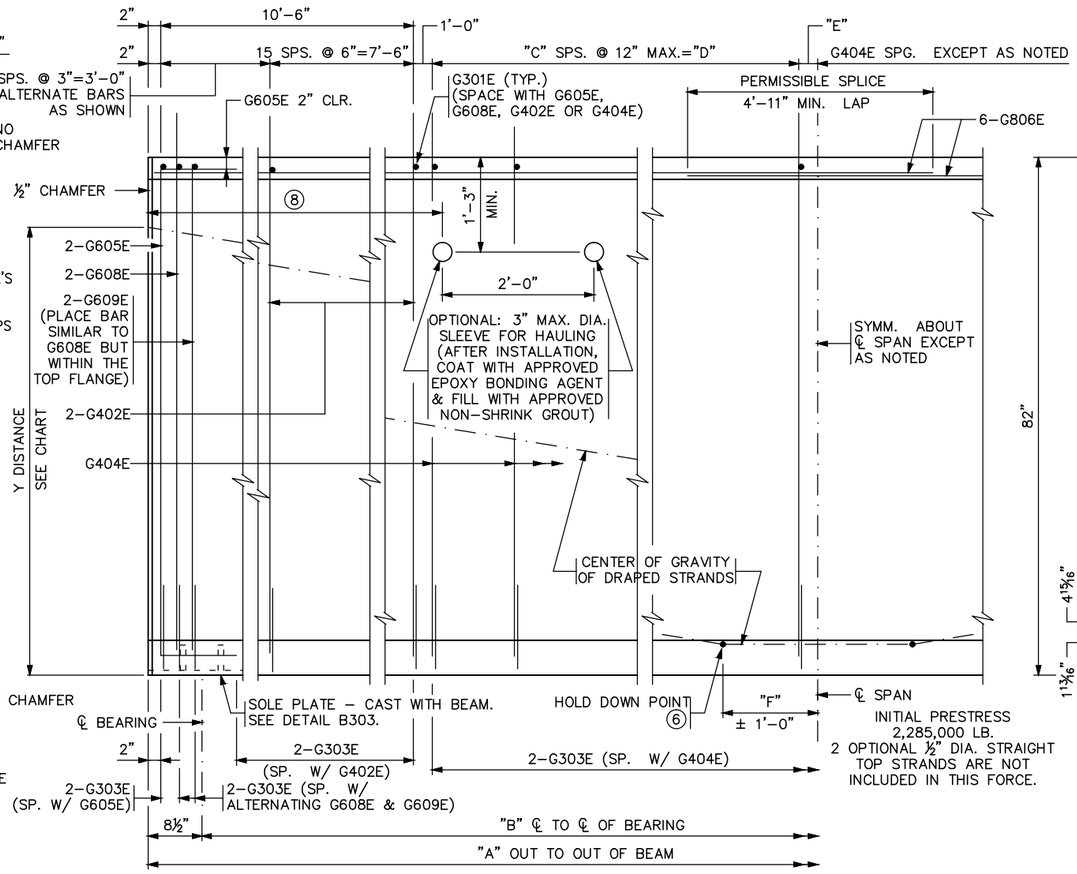
BRIDGE NO. 27R34

Jan. 17 2016 09:47 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PCB03.dwg By: hills

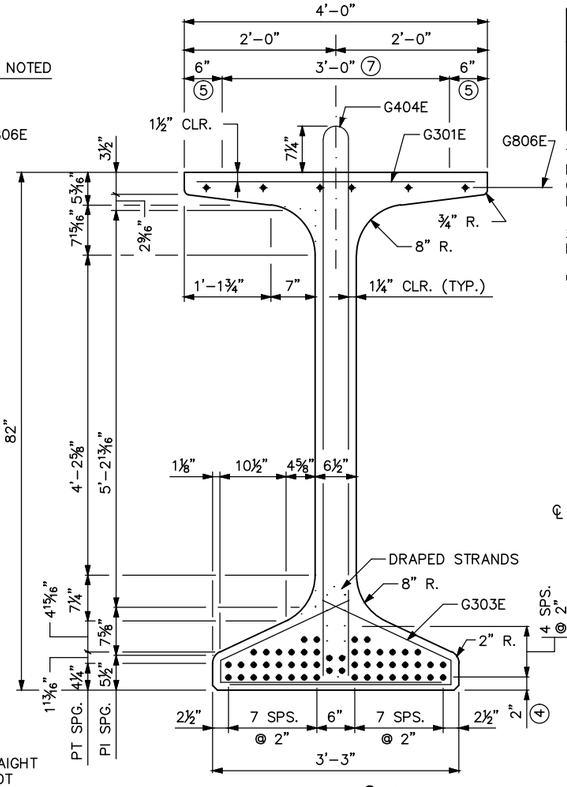


END VIEW

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



BEAM ELEVATION



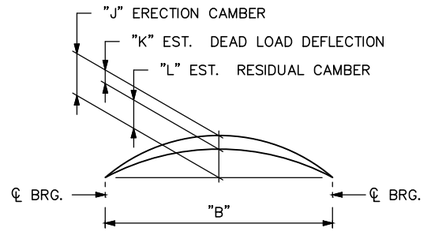
SECTION AT ℄ SPAN

Y DISTANCES (INCHES)	NO.	℄ SPAN	END
STRAIGHT STRANDS	48	4.17	
DRAPED STRANDS	4	4.00	75.00 ▫
TOTAL STRANDS	52	4.15	

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.

2 OPTIONAL ½" DIA. STRAIGHT STRANDS ARE NOT INCLUDED IN THIS TABLE.

▫ 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, SIDEWALK, OCS AND RUNNING RAIL WHERE APPLICABLE.

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

GENERAL NOTES

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.

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

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

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

APPROXIMATE WEIGHT OF BEAM IS "M" 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 24 KIPS PER ANCHORAGE.

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

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

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

⑥ CENTER OF GRAVITY OF HOLD DOWNS WHEN MULTIPLE HOLD DOWNS ARE USED.

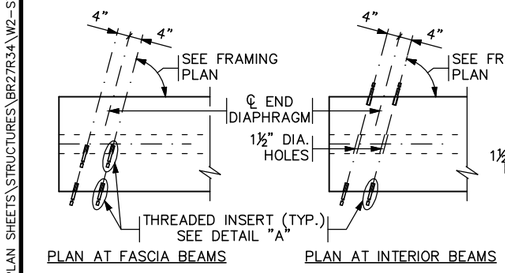
⑦ ROUGH FLOAT AND BROOM TRANSVERSELY FOR BOND PER SPEC. 2405.3D.

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

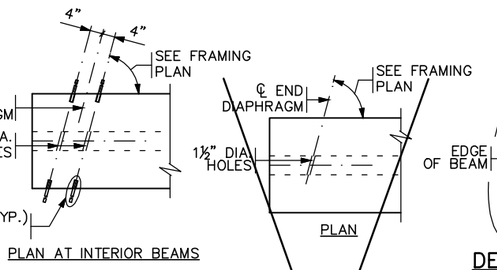
CONTRACTOR SHALL VERIFY STABILITY OF FASCIA BEAMS FROM OVERTURNING DUE TO DECK PLACEMENT OPERATIONS. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING.

CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	"G" KSI
LONG TERM LOSSES	"H" KSI
TOTAL LOSSES	"I" KSI

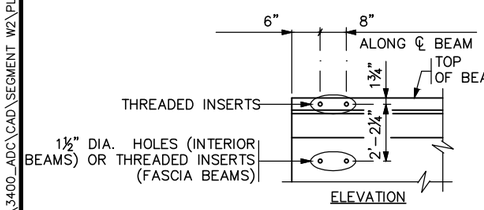
MINIMUM CONCRETE STRENGTH – K.S.I.	
① f'ci	② f'c
7.5 KSI	9.0 KSI



PLAN AT FASCIA BEAMS



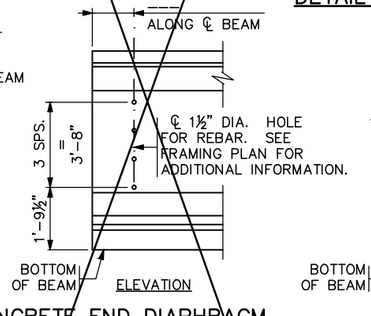
PLAN AT INTERIOR BEAMS



ELEVATION

CONCRETE END DIAPHRAGM

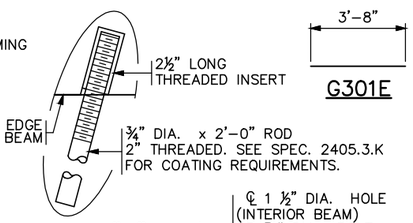
PARAPET ABUTMENT
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)



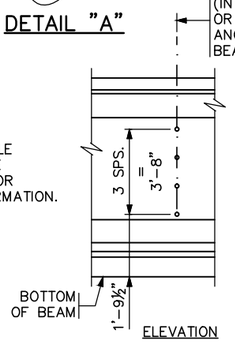
ELEVATION

CONCRETE END DIAPHRAGM

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



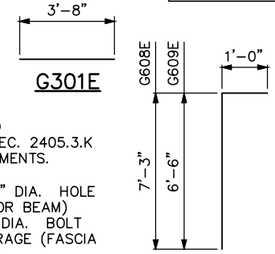
DETAIL "A"



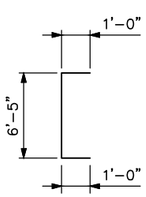
ELEVATION

STEEL INTERMEDIATE DIAPHRAGM

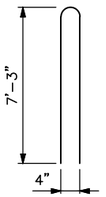
(SEE DETAIL B412 FOR DIAPHRAGM DETAILS)



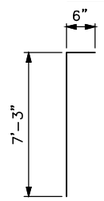
G608E & G609E



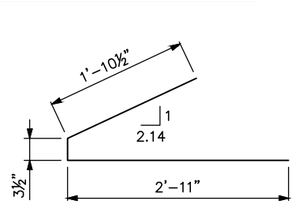
G605E



G404E



G402E



G303E

REVISED:

APPROVED: JANUARY 13, 2015
Nancy Dorbenberger
STATE BRIDGE ENGINEER

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

TITLE: 82MW PRESTRESSED CONCRETE BEAM 1

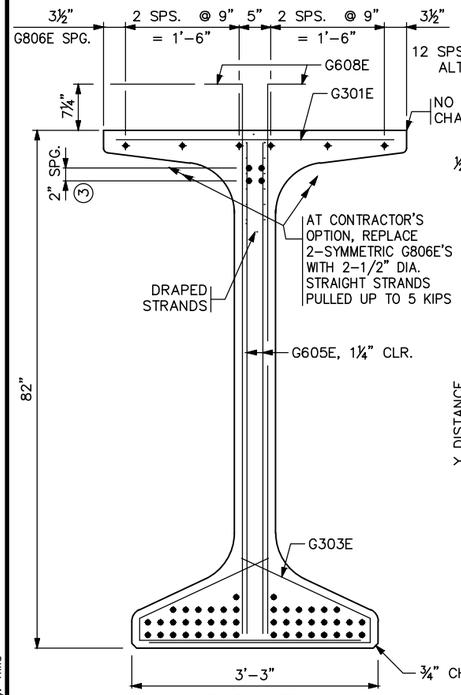
BEAMS B25–B28 | FIG. 5–397.531

DES: MJC | DR: BAC | APPROVED:
CHK: EEM | CHK: DDL

SHEET NO. 145 OF 264 SHEETS

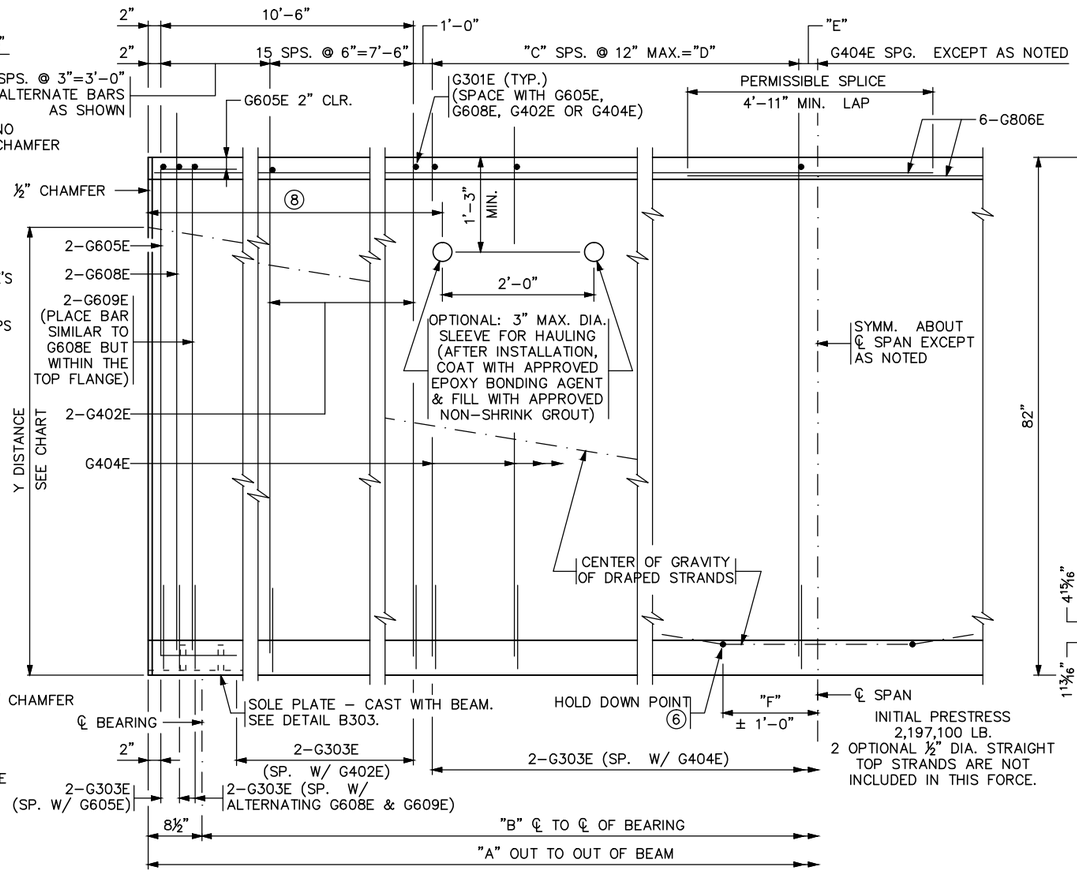
BRIDGE NO. 27R34

Jan. 17 2016 09:48 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-PCB04.dwg By: hills

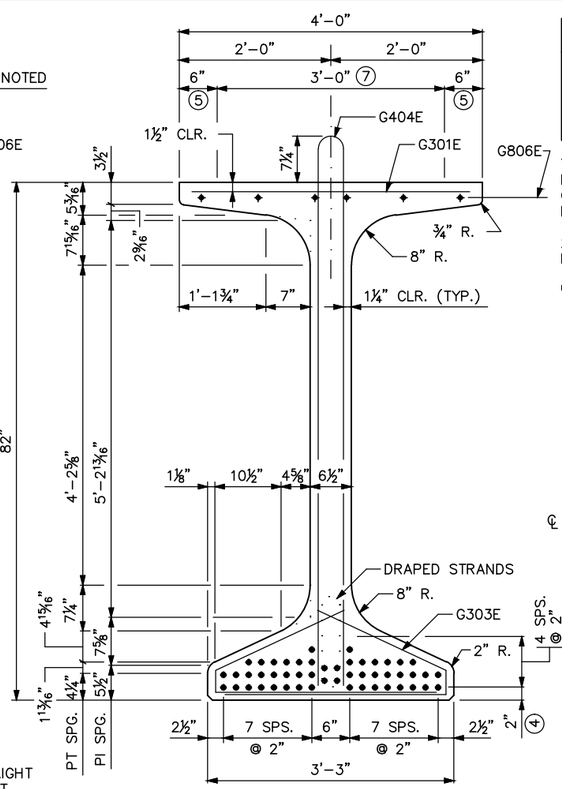


END VIEW

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



BEAM ELEVATION



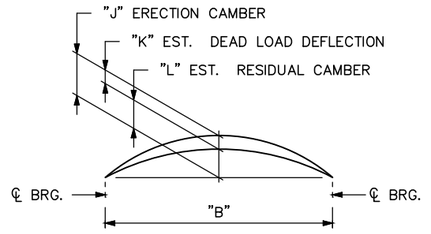
SECTION AT ℄ SPAN

Y DISTANCES (INCHES)	NO.	℄ SPAN	END
STRAIGHT STRANDS	46	4.0	
DRAPED STRANDS	4	4.0	75.0 ▫
TOTAL STRANDS	50	4.0	

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.

2 OPTIONAL ½" DIA. STRAIGHT STRANDS ARE NOT INCLUDED IN THIS TABLE.

▫ A TOLERANCE OF ' 1" WILL BE PERMITTED IN THIS DIMENSION.



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⑥ CENTER OF GRAVITY OF HOLD DOWNS WHEN MULTIPLE HOLD DOWNS ARE USED.

⑦ ROUGH FLOAT AND BROOM TRANSVERSELY FOR BOND PER SPEC. 2405.3D.

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

CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	"G" KSI
LONG TERM LOSSES	"H" KSI
TOTAL LOSSES	"I" KSI

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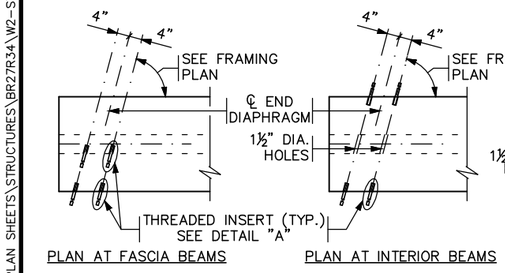
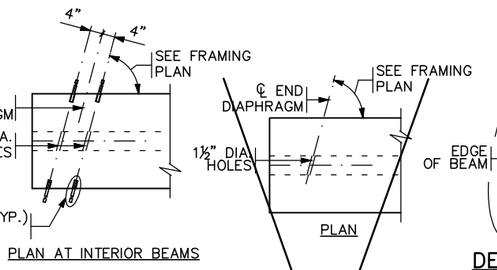
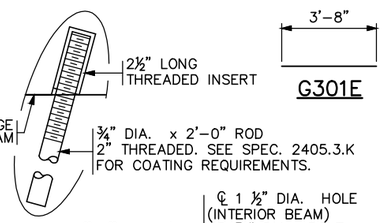


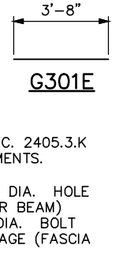
PLAN AT FASCIA BEAMS

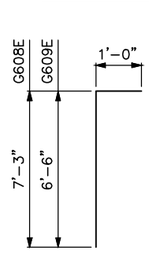


PLAN AT INTERIOR BEAMS

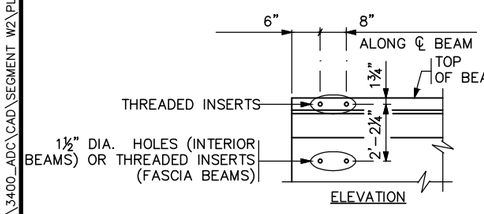


DETAIL "A"



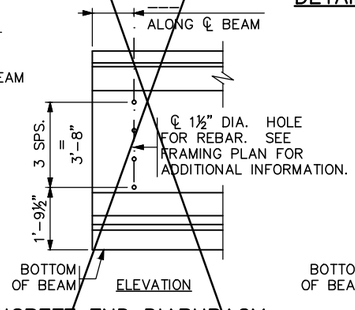


G608E & G609E



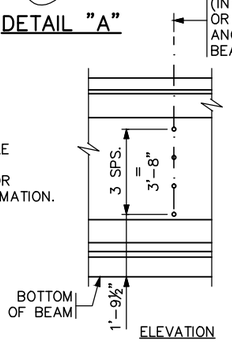
CONCRETE END DIAPHRAGM

PARAPET ABUTMENT
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)



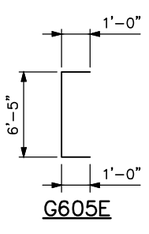
CONCRETE END DIAPHRAGM

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



STEEL INTERMEDIATE DIAPHRAGM

(SEE DETAIL B412 FOR DIAPHRAGM DETAILS)



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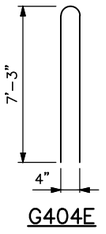

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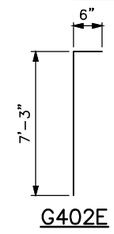

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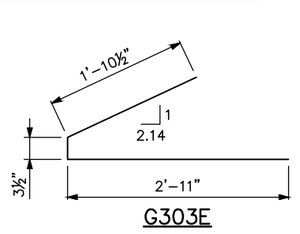

G303E

REVISED:

APPROVED: JANUARY 13, 2015
Nancy Dorbenberger
STATE BRIDGE ENGINEER

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

TITLE: 82MW PRESTRESSED CONCRETE BEAM 2

BEAMS B29-B34 | FIG. 5-397.531

DES: MJC | DR: BAC | APPROVED:
CHK: EEM | CHK: DDL

SHEET NO. 146 OF 264 SHEETS | BRIDGE NO. 27R34

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96MW PRESTRESSED CONCRETE BEAM TABLE

BEAM ID	BEAM DIMENSIONS			SHEAR REINFORCEMENT			HOLD DOWN	PRESTRESS LOSSES			CAMBER											WEIGHT OF BEAM
											"J"					"K"	"L"					"M"
	"A"	"B"	SLOPED LENGTH (1)	"C"	"D"	"E"	"F"	"G"	"H"	"I"	30 DAYS	60 DAYS	90 DAYS	120 DAYS	180 DAYS		30 DAYS	60 DAYS	90 DAYS	120 DAYS	180 DAYS	
B1 & B3	158'-8"	157'-3"	YES	66	66'-0"	0'-2"	15'-10½"	18.34	20.17	38.51	4⅛"	4½"	4¾"	4⅞"	5"	2¾"	1⅜"	1¾"	2"	2⅛"	2¼"	98.5
B2	158'-8"	157'-3"	YES	66	66'-0"	0'-2"	15'-10½"	18.34	20.17	38.51	4⅛"	4½"	4¾"	4⅞"	5"	2⅞"	1¼"	1⅝"	1⅞"	2"	2⅛"	98.5
B4 & B6	157'-8"	156'-3"	YES	65	65'-0"	0'-8"	15'-9"	18.43	20.17	38.60	4⅛"	4½"	4¾"	4⅞"	5"	2¾"	1⅜"	1¾"	2"	2⅛"	2¼"	98
B5	157'-8"	156'-3"	YES	65	65'-0"	0'-8"	15'-9"	18.43	20.17	38.60	4⅛"	4½"	4¾"	4⅞"	5"	2¾"	1⅜"	1¾"	2"	2⅛"	2¼"	98
B7 & B10	157'-7⅝"	156'-2⅝"	YES	65	65'-0"	0'-7¾"	15'-9"	18.43	20.17	38.60	4⅛"	4½"	4¾"	4⅞"	5"	2¾"	1⅜"	1¾"	2"	2⅛"	2¼"	98
B8 & B9	157'-7⅝"	156'-2⅝"	YES	65	65'-0"	0'-7¾"	15'-9"	18.43	20.17	38.60	4⅛"	4½"	4¾"	4⅞"	5"	2¾"	1⅜"	1¾"	2"	2⅛"	2¼"	98
B11 & B13	157'-6"	156'-1"	YES	65	65'-0"	0'-7"	15'-9"	18.43	20.17	38.60	4⅛"	4½"	4¾"	4⅞"	5"	2¾"	1⅜"	1¾"	2"	2⅛"	2¼"	98
B12	157'-6"	156'-1"	YES	65	65'-0"	0'-7"	15'-9"	18.43	20.17	38.60	4⅛"	4½"	4¾"	4⅞"	5"	2¾"	1⅜"	1¾"	2"	2⅛"	2¼"	98
B14 & B17	157'-11"	156'-6"	NO	65	65'-0"	0'-9½"	15'-9"	18.38	20.17	38.56	4⅛"	4½"	4¾"	4⅞"	5"	2¾"	1⅜"	1¾"	2"	2⅛"	2¼"	98
B15 & B16	157'-11"	156'-6"	NO	65	65'-0"	0'-9½"	15'-9"	18.38	20.17	38.56	4⅛"	4½"	4¾"	4⅞"	5"	2⅞"	1¼"	1⅝"	1⅞"	2"	2⅛"	98
B21 & B24	157'-5"	156'-0"	NO	65	65'-0"	0'-6½"	15'-9"	18.43	20.17	38.60	4⅛"	4½"	4¾"	4⅞"	5"	2¾"	1⅜"	1¾"	2"	2⅛"	2¼"	98
B22 & B23	157'-5"	156'-0"	NO	65	65'-0"	0'-6½"	15'-9"	18.43	20.17	38.60	4⅛"	4½"	4¾"	4⅞"	5"	2¾"	1⅜"	1¾"	2"	2⅛"	2¼"	98

82MW PRESTRESSED CONCRETE BEAM TABLE

BEAM ID	BEAM DIMENSIONS			SHEAR REINFORCEMENT			HOLD DOWN	PRESTRESS LOSSES			CAMBER											WEIGHT OF BEAM
											"J"					"K"	"L"					"M"
	"A"	"B"	SLOPED LENGTH (1)	"C"	"D"	"E"	"F"	"G"	"H"	"I"	30 DAYS	60 DAYS	90 DAYS	120 DAYS	180 DAYS		30 DAYS	60 DAYS	90 DAYS	120 DAYS	180 DAYS	
B25	144'-2⅞"	142'-9⅞"	NO	60	60'-0"	0'-5½"	14'-5"	20.07	21.12	41.19	4½"	5"	5⅛"	5⅜"	5½"	2⅞"	1⅝"	2⅛"	2¼"	2½"	2⅝"	82.5
B26	143'-7¼"	142'-2¼"	NO	59	59'-0"	1'-1⅝"	14'-4½"	20.11	21.12	41.23	4½"	4⅞"	5⅛"	5¼"	5½"	2¾"	1¾"	2⅛"	2⅜"	2½"	2¾"	82
B27	142'-11⅜"	141'-6⅜"	NO	59	59'-0"	0'-9¾"	14'-3½"	20.15	21.12	41.28	4½"	4⅞"	5⅛"	5¼"	5½"	2¾"	1¾"	2⅛"	2⅜"	2½"	2¾"	82
B28	142'-3¾"	140'-10¾"	NO	59	59'-0"	0'-5⅞"	14'-3"	20.20	21.12	41.32	4½"	4⅞"	5⅛"	5¼"	5½"	2½"	2"	2⅜"	2⅝"	2¾"	3"	81.5
B29 & B31	142'-9"	141'-4"	NO	59	59'-0"	0'-8½"	14'-3½"	19.33	20.66	39.99	4¼"	4⅝"	4⅞"	5"	5⅛"	2⅝"	1⅝"	2"	2¼"	2⅜"	2½"	82
B30	142'-9"	141'-4"	NO	59	59'-0"	0'-8½"	14'-3½"	19.33	20.66	39.99	4¼"	4⅝"	4⅞"	5"	5⅛"	2¾"	1½"	1⅞"	2⅛"	2¼"	2⅜"	82
B32 & B34	143'-9"	142'-4"	NO	60	60'-0"	0'-2½"	14'-4½"	19.23	20.66	39.89	4¼"	4⅝"	4⅞"	5"	5⅛"	2¾"	1½"	1⅞"	2⅛"	2¼"	2⅜"	82.5
B33	143'-9"	142'-4"	NO	60	60'-0"	0'-2½"	14'-4½"	19.23	20.66	39.89	4¼"	4⅝"	4⅞"	5"	5⅛"	2¾"	1½"	1⅞"	2⅛"	2¼"	2⅜"	82.5

NOTES:

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

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DESIGNED BY: MJC | CHECKED BY: EEM
DRAWN BY: BAC | CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PRESTRESSED CONCRETE BEAM DETAILS

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PCB06

SHEET 147 OF 264

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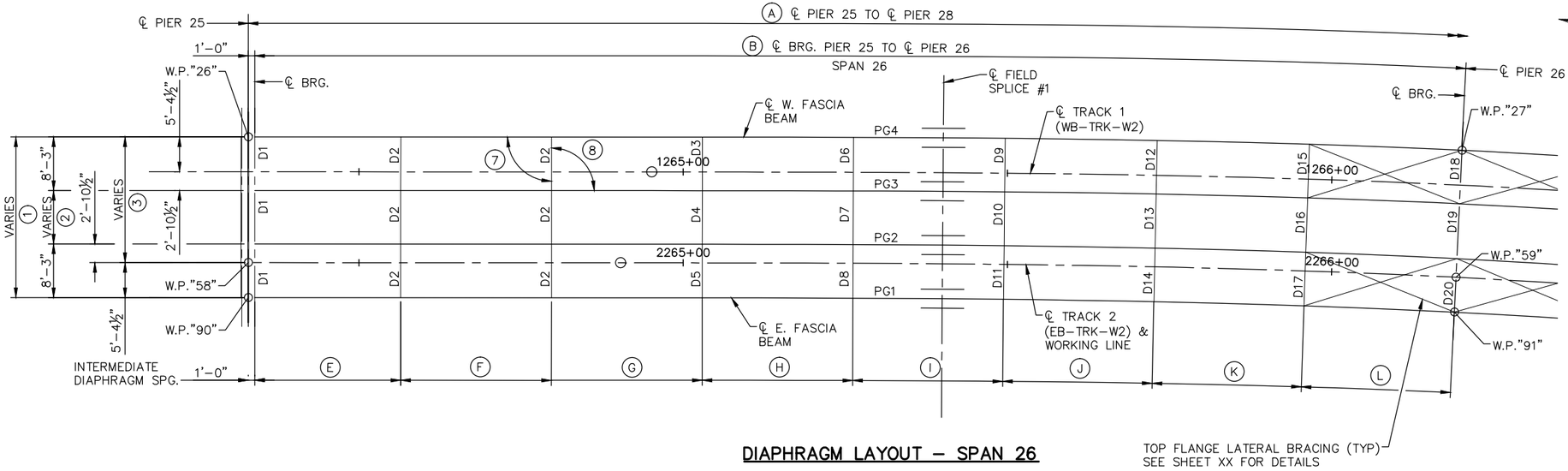
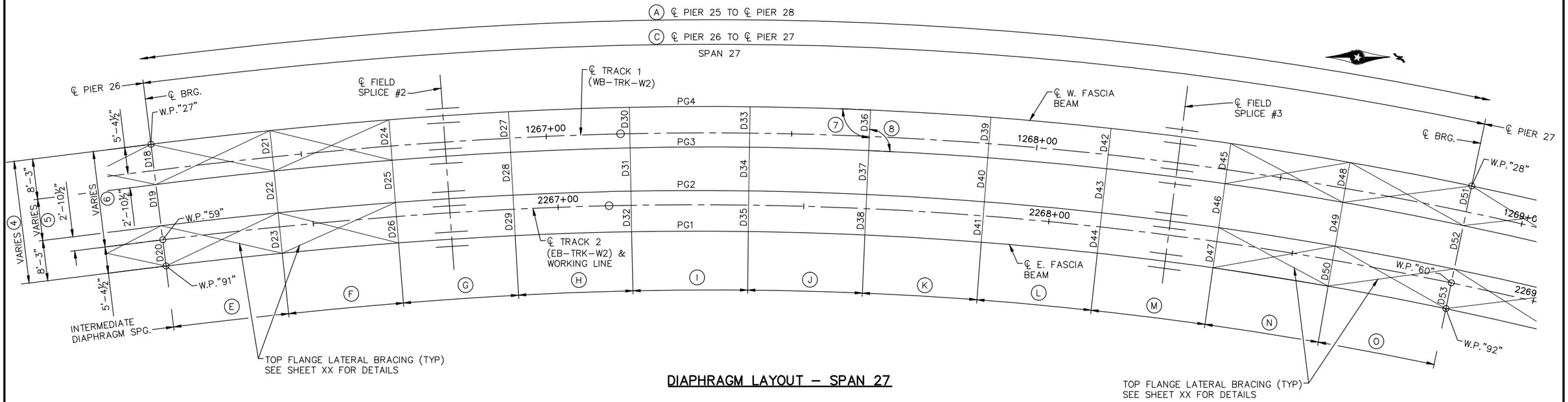


DIAPHRAGM LAYOUT – SPAN 26

NOTES:

1. VARIES 24'–9" TO 24'–11½"
2. VARIES 8'–3" TO 8'–5½"
3. VARIES 19'–4½" TO 19'–7"
4. VARIES 24'–11½" TO 25'–6½"
5. VARIES 8'–5½" TO 9'–0½"
6. VARIES 19'–7" TO 20'–2"

SEE SHEET XX FOR DIAPHRAGM SPACING AND DIMENSIONS TABLE
SEE SHEET XX FOR TABULATION OF (7) AND (8)
SEE SHEET XX FOR TABULATION OF (A) (B) AND (C)



DIAPHRAGM LAYOUT – SPAN 27

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

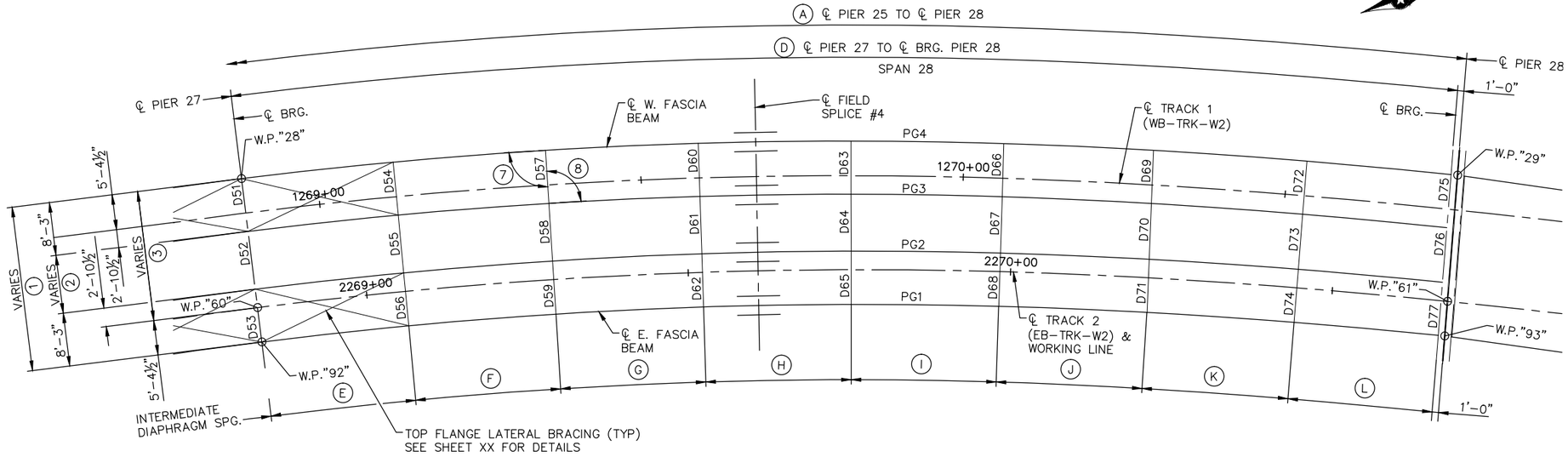
SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP3-1

SHEET 148 OF 264

Jan, 17 2016 09:48 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP3.dwg By: hills



DIAPHRAGM LAYOUT – SPAN 28

NOTES:

1. VARIES 25'–6½" TO 25'–0⅛"
2. VARIES 9'–0½" TO 8'–6⅛"
3. VARIES 20'–2" TO 19'–7⅝"

   BEAM DISTANCES ARE MEASURED HORIZONTALLY ALONG CENTERLINE OF BEAM WEB.

   SEE SHEET XX FOR TABULATION OF (A) AND (D)
4. 3 LOCATIONS THUS
5. 6 LOCATIONS THUS

INTERMEDIATE DIAPHRAGM LENGTHS

DIAPH. ID	LENGTH	DIAPH. TYPE	WEST END⑦	EAST END⑧
D1	8'-3"	2	90° 0' 0.0"	90° 0' 0.0"
D2	8'-3"	1	90° 0' 0.0"	90° 0' 0.0"
D3	8'-3"	1	89° 59' 24.5"	89° 59' 24.5"
D4	8'-3"	1	89° 59' 24.5"	90° 0' 26.1"
D5	8'-3"	1	90° 0' 26.1"	90° 0' 25.1"
D6	8'-3"	1	89° 59' 25.2"	89° 59' 26.0"
D7	8'-3 ¼'	1	89° 59' 26.0"	90° 2' 43.0"
D8	8'-3"	1	90° 2' 43.0"	90° 2' 43.7"
D9	8'-3"	1	89° 53' 0.0"	89° 52' 58.6"
D10	8'-3 ½"	1	89° 52' 58.6"	89° 58' 27.4"
D11	8'-3"	1	89° 58' 27.4"	89° 58' 27.1"
D12	8'-3"	1	89° 53' 43.5"	89° 53' 42.0"
D13	8'-4 ⅛"	1	89° 53' 42.0"	90° 1' 12.7"
D14	8'-3"	1	90° 1' 12.7"	90° 1' 13.0"
D15	8'-3"	1	89° 55' 58.6"	89° 55' 57.4"
D16	8'-4 ¾"	1	89° 55' 57.4"	90° 5' 15.5"
D17	8'-3"	1	90° 5' 15.5"	90° 5' 17.2"
D18	8'-3"	3	90° 1' 22.0"	90° 1' 22.6"
D19	8'-5 ⅝"	3	90° 1' 22.6"	90° 12' 12.2"
D20	8'-3"	3	90° 12' 12.2"	90° 12' 17.0"
D21	8'-3"	1	89° 45' 9.3"	89° 45' 1.1"
D22	8'-6 ½"	1	89° 45' 1.1"	89° 56' 54.9"
D23	8'-3"	1	89° 56' 54.9"	89° 56' 53.5"
D24	8'-3"	1	89° 57' 35.7"	89° 57' 34.5"
D25	8'-7 ⅝"	1	89° 57' 34.5"	90° 10' 13.0"
D26	8'-3"	1	90° 10' 13.0"	90° 10' 18.4"

INTERMEDIATE DIAPHRAGM LENGTHS

DIAPH. ID	LENGTH	DIAPH. TYPE	WEST END⑦	EAST END⑧
D27	8'-3"	1	90° 9' 19.8"	90° 9' 25.3"
D28	8'-8 ⅝"	1	90° 9' 25.3"	90° 22' 20.5"
D29	8'-3"	1	90° 22' 20.5"	90° 22' 34.1"
D30	8'-3"	1	89° 48' 10.0"	89° 48' 2.2"
D31	8'-9 ¾"	1	89° 48' 2.2"	89° 59' 59.3"
D32	8'-3"	1	89° 59' 59.3"	89° 59' 59.3"
D33	8'-3"	1	89° 50' 17.9"	89° 50' 11.5"
D34	8'-10 ⅝"	1	89° 50' 11.5"	90° 0' 0.0"
D35	8'-3"	1	90° 0' 0.0"	90° 0'0.0"
D36	8'-3"	1	89° 52' 25.6"	89° 52' 20.6"
D37	8'-11 ⅜"	1	89° 52' 20.6"	90° 0' 0.0"
D38	8'-3"	1	90° 0' 0.0"	90° 0' 0.0"
D39	8'-3"	1	89° 54' 33.9"	89° 54' 30.3"
D40	9'-0"	1	89° 54' 30.3"	90° 0' 0.0"
D41	8'-3"	1	90° 0' 0.0"	90° 0' 0.0"
D42	8'-3"	1	89° 56' 42.4"	89° 56' 40.2"
D43	9'-0 ⅜"	1	89° 56' 40.2"	90° 0' 0.0"
D44	8'-3"	1	90° 0' 0.0"	90° 0' 0.0"
D45	8'-3"	1	89° 58' 51.1"	89° 58' 50.4"
D46	9'-0 ½"	1	89° 58' 50.4"	90° 0' 0.0"
D47	8'-3"	1	90° 0' 0.0"	90° 0' 0.0"
D48	8'-3"	1	90° 1' 0.0"	90° 1' 0.6"
D49	9'-0 ½"	1	90° 1' 0.6"	90° 0' 0.0"
D50	8'-3"	1	90° 0' 0.0"	90° 0' 0.0"
D51	8'-3"	3	90° 0' 0.6"	90° 0' 0.6"
D52	9'-0 ⅜"	3	90° 0' 0.6"	89° 56' 43.8"

INTERMEDIATE DIAPHRAGM LENGTHS

DIAPH. ID	LENGTH	DIAPH. TYPE	WEST END⑦	EAST END⑧
D53	8'-3"	3	89° 56' 43.8"	89° 56' 41.6"
D54	8'-3"	1	90° 5' 16.4"	90° 5' 19.9"
D55	9'-0"	1	90° 5' 19.9"	90° 0' 0.0"
D56	8'-3"	1	90° 0' 0.0"	90° 0' 0.0"
D57	8'-3"	1	90° 7' 20.1"	90° 7' 25.0"
D58	8'-11 ⅜"	1	90° 7' 25.0"	90° 0' 0.0"
D59	8'-3"	1	90° 0' 0.0"	90° 0' 0.0"
D60	8'-3"	1	90° 9' 23.5"	90° 9' 29.7"
D61	8'-10 ¾"	1	90° 9' 29.7"	90° 0' 0.0"
D62	8'-3"	1	90° 0' 0.0"	90° 0' 0.0"
D63	8'-3"	1	90° 11' 26.3"	90° 11' 33.9"
D64	8'-9 ⅞"	1	90° 11' 33.9"	90° 0' 0.0"
D65	8'-3"	1	90° 0' 0.0"	90° 0' 0.0"
D66	8'-3"	1	90° 1' 1.0"	90° 1' 1.7"
D67	8'-8 ⅞"	1	90° 1' 1.7"	89° 48' 17.9"
D68	8'-3"	1	89° 48' 17.9"	89° 48' 10.6"
D69	8'-3"	1	91° 0' 28.6"	91° 1' 1.2"
D70	8'-7 ⅞"	1	91° 1' 1.2"	90° 48' 50.8"
D71	8'-3"	1	90° 48' 50.8"	90° 49' 17.9"
D72	8'-3"	1	90° 12' 14.1"	90° 12' 19.8"
D73	8'-6 ⅞"	1	90° 12' 19.8"	90° 0' 9.5"
D74	8'-3"	1	90° 0' 9.5"	90° 0' 9.7"
D75	8'-3"	2	91° 19' 38.1"	91° 20' 11.9"
D76	8'-6"	2	91° 20' 11.9"	91° 9' 27.3"
D77	8'-3"	2	91° 9' 27.3"	91° 9' 56.1"

DIAPHRAGM SPACING – SPAN 26

BEAM	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)
PG1	22'–6⅛"	23'–3"	23'–3"	23'–2⅞"	23'–2½"	23'–2⅜"	23'–1⅞"	23'–2⅜"	----	----	----
PG2	22'–6⅛"	23'–3"	23'–3"	23'–3⅛"	23'–3¼"	23'–3⅜"	23'–3⅛"	23'–3¾"	----	----	----
PG3	22'–6⅛"	23'–3"	23'–3"	23'–3⅜"	23'–4"	23'–4¼"	23'–4⅜"	23'–5¼"	----	----	----
PG4	22'–6⅛"	23'–3"	23'–3"	23'–3⅝"	23'–4⅞"	23'–5⅛"	23'–5½"	23'–6¾"	----	----	----

DIAPHRAGM SPACING – SPAN 27

BEAM	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)
PG1	23'–9⅜"	23'–9⅝"	23'–9½"	23'–8⅝"	23'–8⅞"	23'–9"	23'–8⅞"	23'–9"	23'–8⅞"	23'–9"	24'–4¾"
PG2	23'–11⅞"	23'–11⅝"	23'–11¾"	24'–0¼"	24'–0⅛"	24'–0⅛"	24'–0⅛"	24'–0⅛"	24'–0⅛"	24'–0⅛"	24'–8"
PG3	24'–2¼"	24'–1¾"	24'–2¼"	24'–4¼"	24'–3½"	24'–3⅝"	24'–3½"	24'–3⅝"	24'–3½"	24'–3⅝"	24'–11¾"
PG4	24'–4⅞"	24'–3¾"	24'–4⅝"	24'–7¾"	24'–6⅝"	24'–6⅝"	24'–6¾"	24'–6¾"	24'–6¾"	24'–6¾"	25'–3⅛"

DIAPHRAGM SPACING – SPAN 28

BEAM	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)
PG1	22'–11⅛"	22'–11"	22'–11"	22'–11"	22'–10⅝"	23'–0⅛"	22'–10½"	22'–5½"	----	----	----
PG2	23'–2"	23'–2⅛"	23'–2"	23'–2⅛"	23'–1¾"	23'–1¼"	23'–2¼"	22'–5½"	----	----	----
PG3	23'–5¼"	23'–5⅜"	23'–5⅜"	23'–5⅜"	23'–5⅜"	23'–2⅛"	23'–6¼"	22'–5½"	----	----	----
PG4	23'–8¼"	23'–8⅜"	23'–8⅜"	23'–8⅜"	23'–8¾"	23'–3⅛"	23'–10"	22'–5½"	----	----	----

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

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

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

SHEET 149 OF 264

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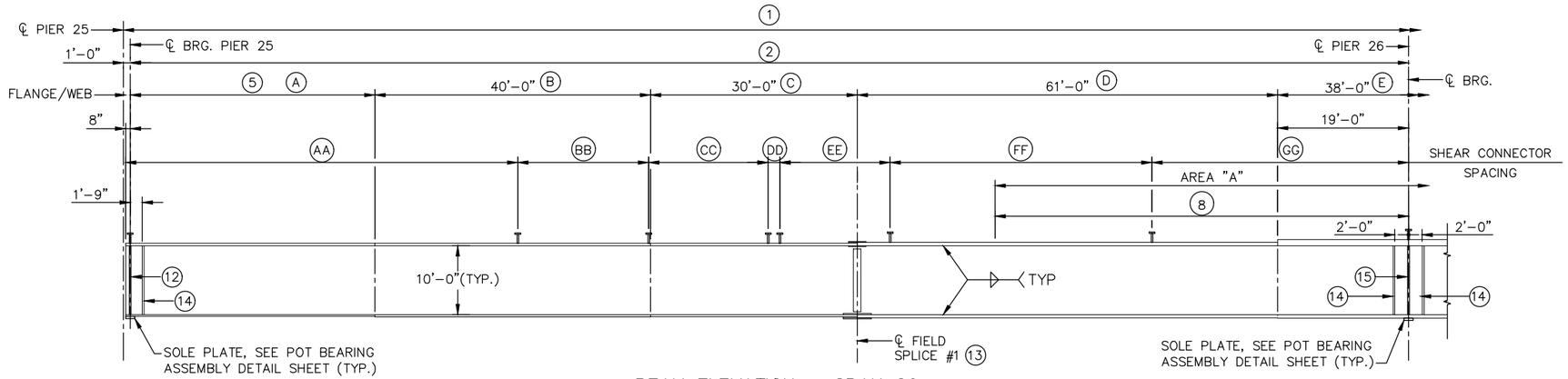
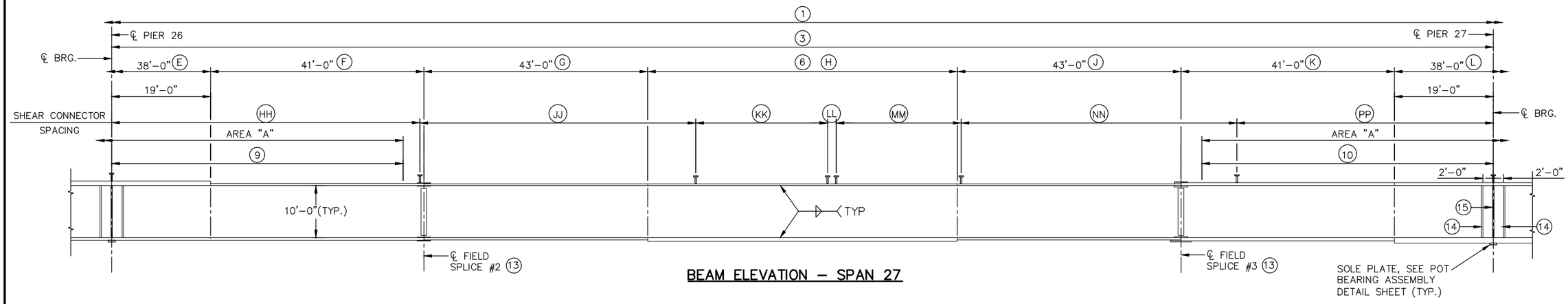
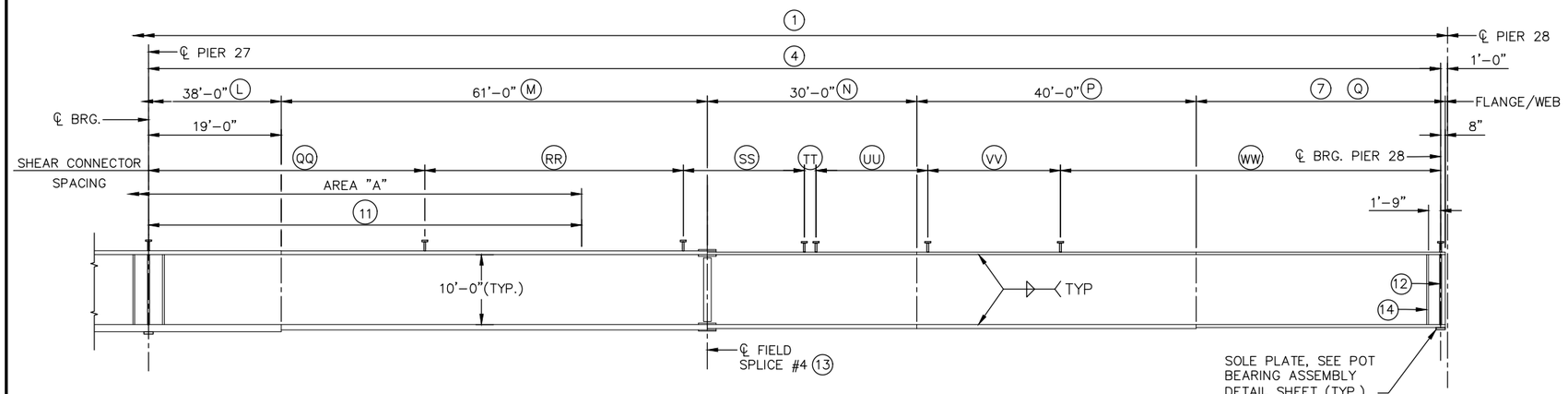


BEAM ELEVATION – SPAN 26



BEAM ELEVATION – SPAN 27



BEAM ELEVATION – SPAN 28

NOTES:

BEAM DISTANCES ARE MEASURED HORIZONTALLY ALONG CENTERLINE OF BEAM WEB.

(1) TO (11) SEE SHEET XX FOR BEAM DIMENSIONS.

(12) 10"x1¾"x 10'–0" BEARING STIFFENER EACH SIDE (PG1 & PG2)
14"x1¾"x 10'–0" BEARING STIFFENER EACH SIDE (PG3 & PG4)

(13) SEE SHEETS XX–XX FOR SPLICE DETAILS.

(14) 6"x 1 ⅜"x 9'–11¼" JACKING STIFFENER.

(15) 10"x1¾"x 9'–11¼" BEARING STIFFENER EACH SIDE (PG1 & PG2)
14"x1¾"x 9'–11¼" BEARING STIFFENER EACH SIDE (PG3 & PG4)

(AA) TO (WW) SEE SHEETS XX–XX FOR SHEAR STUD SPACING

(A) TO (Q) SEE SHEET XX FOR FLANGE AND WEB PLATE DIMENSIONS.

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP3-3

SHEET 150 OF 264

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BEAM DIMENSIONS

BEAM	①	②	③	④	⑤	⑥	⑦
PG1	631'–10½"	185'–0⅛"	261'–11½"	182'–10⅞"	35'–0⅛"	55'–11½"	32'–10⅞"
PG2	636'–8"	185'–4¾"	264'–8¼"	184'–7"	35'–4¾"	58'–8⅜"	34'–7"
PG3	641'–9⅝"	185'–9⅜"	267'–7⅝"	186'–4⅝"	35'–9⅜"	61'–7⅝"	36'–4⅝"
PG4	646'–7⅛"	186'–2"	270'–4⅜"	188'–0¾"	36'–2"	64'–4⅜"	38'–0¾"

FIELD SPLICE ELEVATION

BEAM	FIELD SPLICE #1	FIELD SPLICE #2	FIELD SPLICE #3	FIELD SPLICE #4
PG1	917.54	914.57	911.54	908.51
PG2	917.31	914.43	911.36	908.33
PG3	917.36	914.55	911.45	908.42
PG4	917.52	914.79	911.66	908.61

AREA "A"

BEAM	⑧	⑨	⑩	⑪
PG1	51'–0"	61'–3⅝"	59'–10½"	54'–10⅛"
PG2	58'–0¼"	57'–8⅝"	56'–7"	54'–11⅞"
PG3	67'–10⅜"	56'–1⅞"	55'–5¾"	65'–6⅜"
PG4	85'–4⅞"	54'–9½"	52–9"	73–0"

FLANGE AND WEB PLATE DIMENSIONS

BEAM		Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓙ	Ⓚ	Ⓛ	Ⓜ	Ⓝ	Ⓟ	Ⓠ
PG1	FLANGE WIDTH TOP	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"
	FLANGE WIDTH BOTTOM	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"
	PLATE TOP	1"	1"	1"	1½"	2"	1¾"	1"	1"	1"	1¾"	2"	1½"	1"	1"	1"
	PLATE BOTTOM	1"	1¼"	1"	1½"	2"	1¾"	1"	1½"	1"	1¾"	2"	1½"	1¼"	1¼"	1"
	WEB DEPTH	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"
	WEB THICKNESS	13⁄16"	13⁄16"	13⁄16"	⅞"	⅞"	⅞"	13⁄16"	13⁄16"	13⁄16"	⅞"	⅞"	⅞"	13⁄16"	13⁄16"	13⁄16"
PG2	FLANGE WIDTH TOP	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"
	FLANGE WIDTH BOTTOM	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"
	PLATE TOP	1"	1"	1"	1½"	2"	1¾"	1"	1"	1"	1¾"	2"	1½"	1"	1"	1"
	PLATE BOTTOM	1"	1¼"	1"	1½"	2"	1¾"	1"	1½"	1"	1¾"	2"	1½"	1"	1¼"	1"
	WEB DEPTH	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"
	WEB THICKNESS	13⁄16"	13⁄16"	13⁄16"	⅞"	⅞"	⅞"	13⁄16"	13⁄16"	13⁄16"	⅞"	⅞"	⅞"	13⁄16"	13⁄16"	13⁄16"
PG3	FLANGE WIDTH TOP	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"
	FLANGE WIDTH BOTTOM	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"
	PLATE TOP	1¼"	1¼"	1½"	2½"	3"	2¾"	1½"	2¾"	1½"	2¾"	3"	2½"	1½"	1¼"	1¼"
	PLATE BOTTOM	1½"	1¾"	1¾"	2½"	3"	2¾"	1¾"	3¼"	1¾"	2¾"	3"	2½"	1¾"	1¾"	1½"
	WEB DEPTH	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"
	WEB THICKNESS	13⁄16"	13⁄16"	13⁄16"	1"	1"	1"	13⁄16"	13⁄16"	13⁄16"	1"	1"	1"	13⁄16"	13⁄16"	13⁄16"
PG4	FLANGE WIDTH TOP	30"	30"	30"	30"	30"	30"	36"	36"	36"	30"	30"	30"	30"	30"	30"
	FLANGE WIDTH BOTTOM	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"
	PLATE TOP	1¼"	1¼"	1¾"	2¾"	3¼"	3"	1¾"	2¾"	1¾"	3"	3¼"	2¾"	1¾"	1¼"	1¼"
	PLATE BOTTOM	1½"	1¾"	1¾"	2¾"	3¼"	3"	2"	3½"	2"	3"	3¼"	2¾"	2"	1¾"	1½"
	WEB DEPTH	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"
	WEB THICKNESS	13⁄16"	13⁄16"	13⁄16"	1"	1"	1"	13⁄16"	13⁄16"	13⁄16"	1"	1"	1"	13⁄16"	13⁄16"	13⁄16"

SHEAR CONNECTOR SPACING

BEAM	(AA)	(BB)	(CC)	(DD)	(EE)	(FF)	(GG)	(HH)	(JJ)	(KK)	(LL)
PG1	75 SPA @ 9" = 56'–3"	19 SPA @ 12" = 19'–0"	13 SPA @ 16" = 17'–4"	0'–11⅛"	12 SPA @ 16" = 16'–0"	38 SPA @ 12" = 38'–0"	50 SPA @ 9" = 37'–6"	70 SPA @ 9" = 52'–6"	53 SPA @ 12" = 53'–0"	19 SPA @ 16" = 25'–4"	1'–7½"
PG2	75 SPA @ 9" = 56'–3"	19 SPA @ 12" = 19'–0"	13 SPA @ 16" = 17'–4"	1'–3¾"	12 SPA @ 16" = 16'–0"	38 SPA @ 12" = 38'–0"	50 SPA @ 9" = 37'–6"	71 SPA @ 9" = 53'–3"	53 SPA @ 12" = 53'–0"	19 SPA @ 16" = 25'–4"	1'–6¼"
PG3	75 SPA @ 9" = 56'–3"	19 SPA @ 12" = 19'–0"	13 SPA @ 16" = 17'–4"	1'–8⅜"	12 SPA @ 16" = 16'–0"	38 SPA @ 12" = 38'–0"	50 SPA @ 9" = 37'–6"	72 SPA @ 9" = 54'–0"	54 SPA @ 12" = 54'–0"	19 SPA @ 16" = 25'–4"	0'–11⅝"
PG4	75 SPA @ 9" = 56'–3"	19 SPA @ 12" = 19'–0"	13 SPA @ 16" = 17'–4"	0'–9"	13 SPA @ 16" = 17'–4"	38 SPA @ 12" = 38'–0"	50 SPA @ 9" = 37'–6"	73 SPA @ 9" = 54'–9"	55 SPA @ 12" = 55'–0"	19 SPA @ 16" = 25'–4"	1'–6⅜"

SHEAR CONNECTOR SPACING

BEAM	(MM)	(NN)	(PP)	(QQ)	(RR)	(SS)	(TT)	(UU)	(VV)	(WW)
PG1	18 SPA @ 16" = 24'–0"	53 SPA @ 12" = 53'–0"	70 SPA @ 9" = 52'–6"	49 SPA @ 9" = 36'–9"	37 SPA @ 12" = 37'–0"	13 SPA @ 16" = 17'–4"	1'–3⅞"	12 SPA @ 16" = 16'–0"	19 SPA @ 12" = 19'–0"	74 SPA @ 9" = 55'–6"
PG2	19 SPA @ 16" = 25'–4"	53 SPA @ 12" = 53'–0"	71 SPA @ 9" = 53'–3"	50 SPA @ 9" = 37'–6"	37 SPA @ 12" = 37'–0"	13 SPA @ 16" = 17'–4"	0'–11"	13 SPA @ 16" = 17'–4"	19 SPA @ 12" = 19'–0"	74 SPA @ 9" = 55'–6"
PG3	19 SPA @ 16" = 25'–4"	54 SPA @ 12" = 54'–0"	72 SPA @ 9" = 54'–0"	50 SPA @ 9" = 37'–6"	38 SPA @ 12" = 38'–0"	13 SPA @ 16" = 17'–4"	0'–11⅝"	13 SPA @ 16" = 17'–4"	19 SPA @ 12" = 19'–0"	75 SPA @ 9" = 56'–3"
PG4	18 SPA @ 16" = 24'–0"	55 SPA @ 12" = 55'–0"	73 SPA @ 9" = 54'–9"	51 SPA @ 9" = 38'–3"	38 SPA @ 12" = 38'–0"	13 SPA @ 16" = 17'–4"	1'–1¾"	13 SPA @ 16" = 17'–4"	19 SPA @ 12" = 19'–0"	76 SPA @ 9" = 57'–0"

NOTES:

BEAM DISTANCES ARE MEASURED HORIZONTALLY ALONG CENTERLINE OF BEAM WEB.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

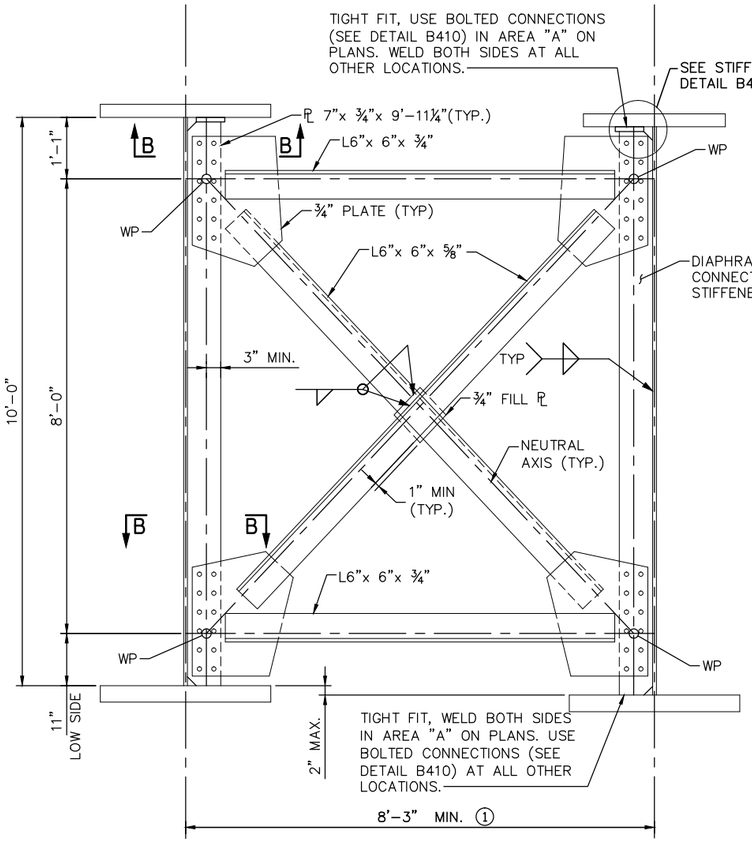
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BEAM SCHEDULE

DISCIPLINE: STRUCTURES

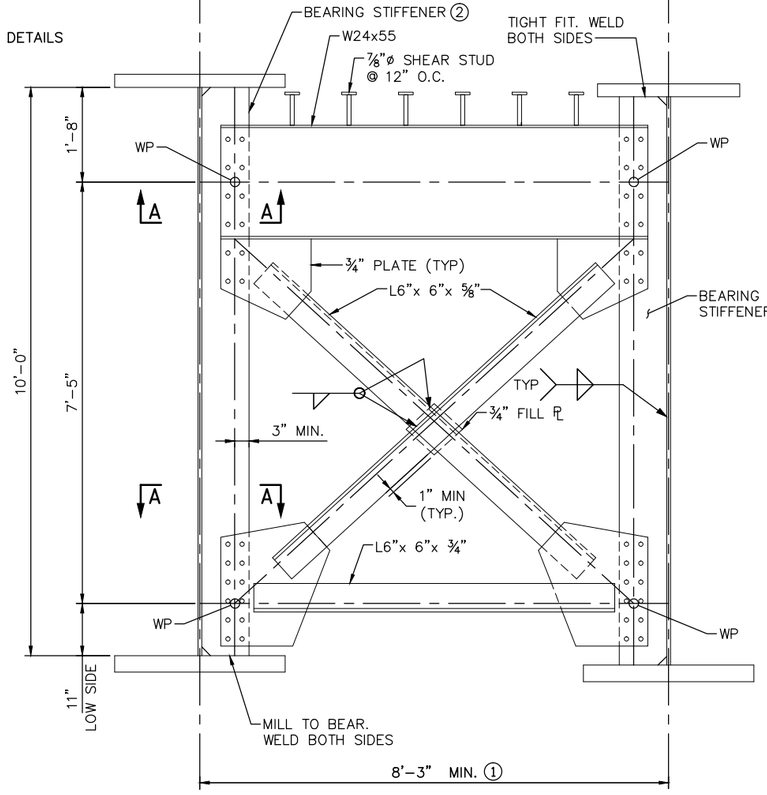
SHEET NAME: W2-STU-BRID-T212-SUP3-4

SHEET 151 OF 264

Jan. 17 2016 09:49 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP3.dwg By: hills



INTERIOR DIAPHRAGM (TYPE 1)



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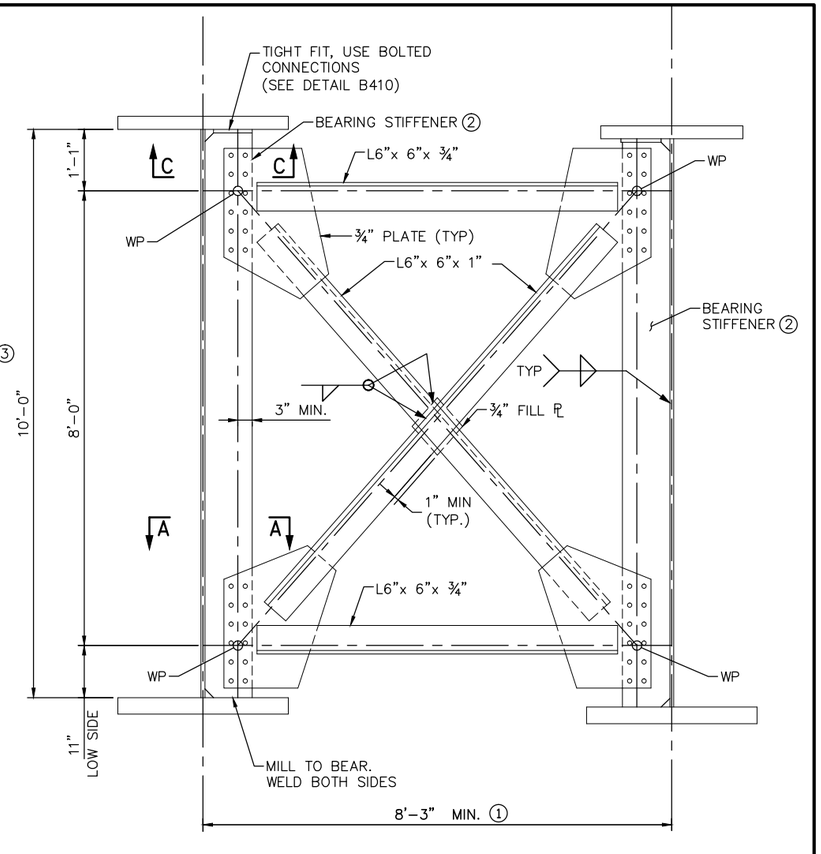
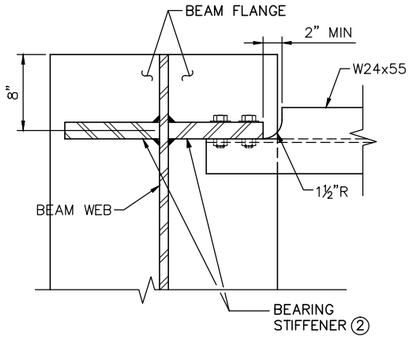
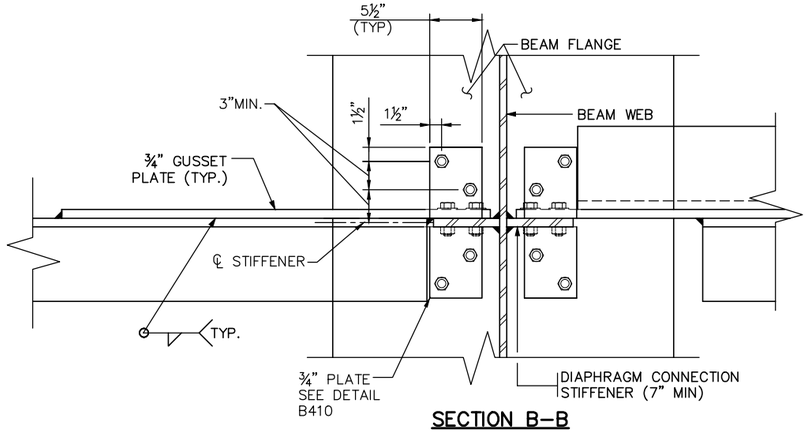


INTERIOR PIER DIAPHRAGM (TYPE 3)

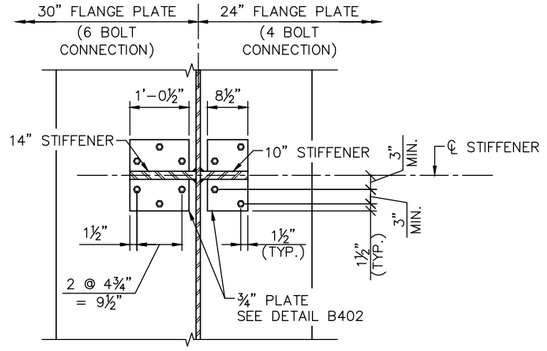


SECTION A–A



SECTION B–B

(BOLTED CONNECTION SHOWN)



SECTION C–C

(DIAPHRAGMS NOT SHOWN FOR CLARITY)

NOTES:

ALL STEEL SHALL CONFORM TO Mn/DOT SPEC. 3309.

ALL BOLTED DIAPHRAGM CONNECTIONS SHALL BE MADE WITH ⅞" ø A325 BOLTS. OVERSIZED HOLES SHALL NOT BE PERMITTED.

DIAPHRAGMS SHALL BE PLACED LEVEL.

SEE BRIDGE FRAMING PLAN AND GIRDER ELEVATIONS FOR ADDITIONAL INFORMATION.

SEE SHEET "DIAPHRAGM DETAILS 2" FOR ADDITIONAL DETAILS AT TOP AND BOTTOM CONNECTIONS.

① SEE SHEET "DIAPHRAGM LAYOUT SPAN 28 & TABLE" FOR TABLE OF DIAPHRAGM LENGTHS

② ℄ 10"x1¾"x 9'-11¼" @ PG1 & PG2, EACH SIDE
℄ 14"X1¾"X 9'-11¼" @ PG3 & PG4, EACH SIDE

③ ℄ 10"x1¾"x 10'-0" @ PG1 & PG2, EACH SIDE
℄ 14"X1¾"X 10'-0" @ PG3 & PG4, EACH SIDE

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DRAWN BY: BAC | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

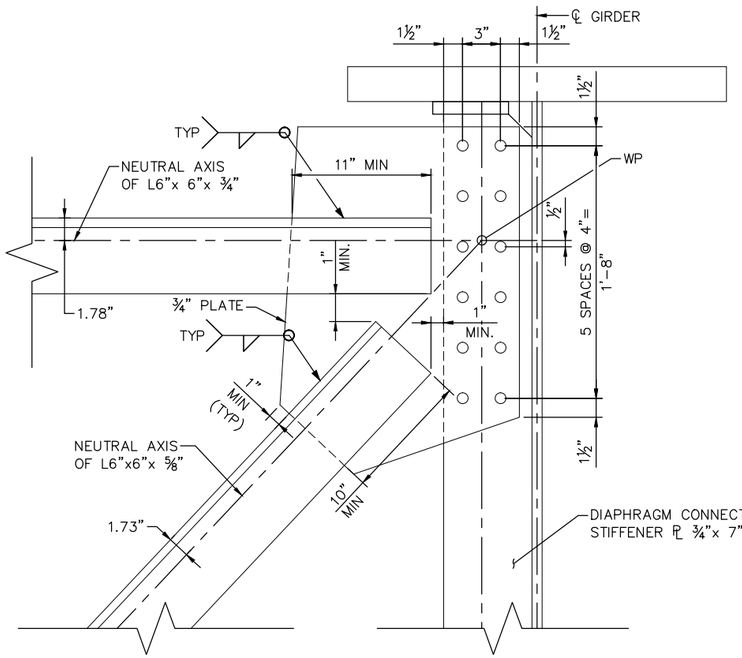
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
DIAPHRAGM DETAILS 1

DISCIPLINE: STRUCTURES

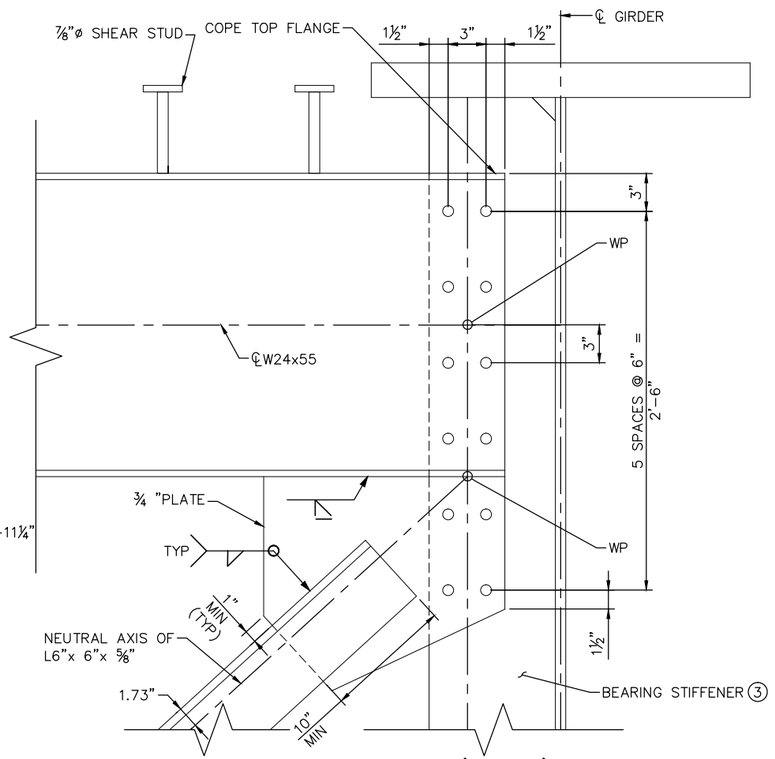
SHEET NAME: W2-STU-BRID-T212-SUP4_1

SHEET 152 OF 264

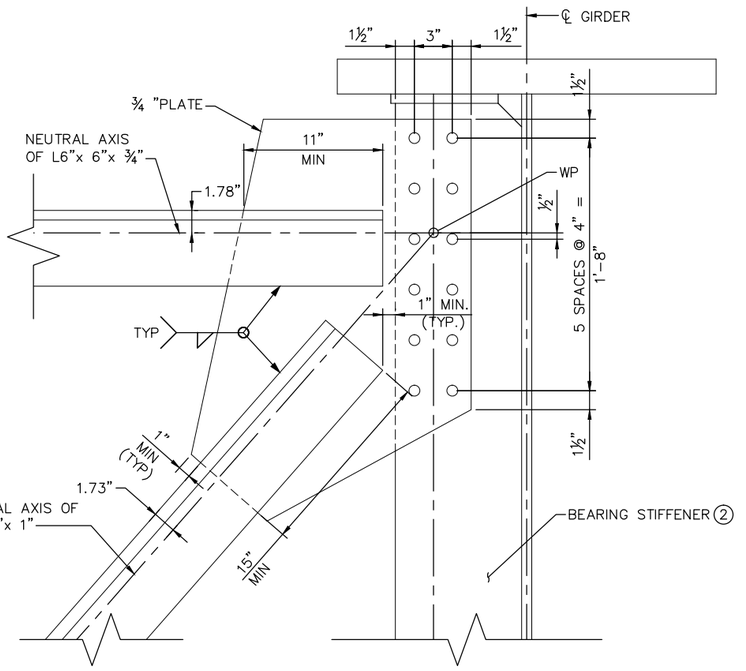
Jan, 17 2016 09:49 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP4.dwg By: hills



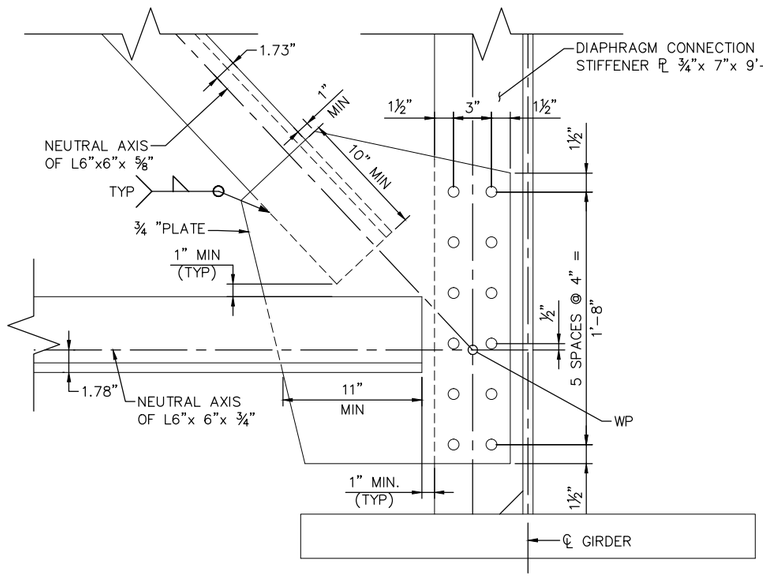
INTERIOR DIAPHRAGM (TYPE 1)



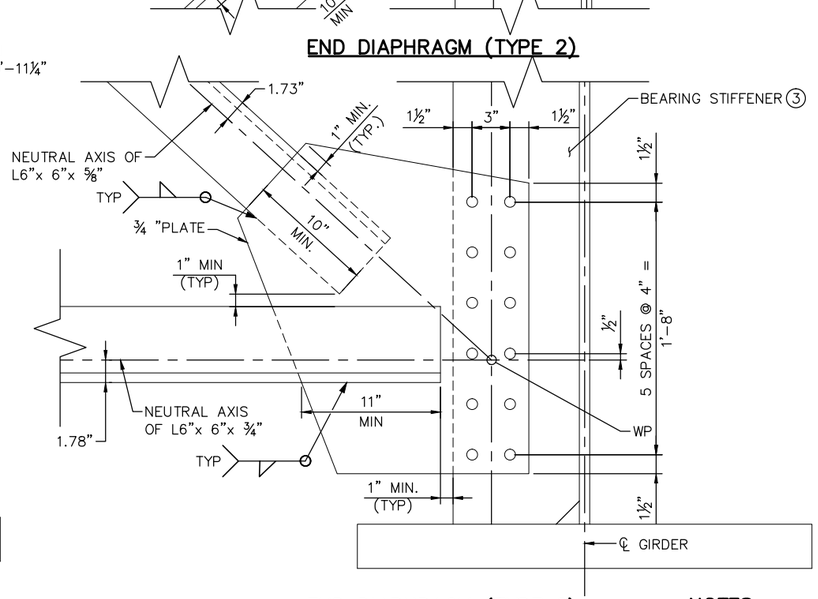
END DIAPHRAGM (TYPE 2)



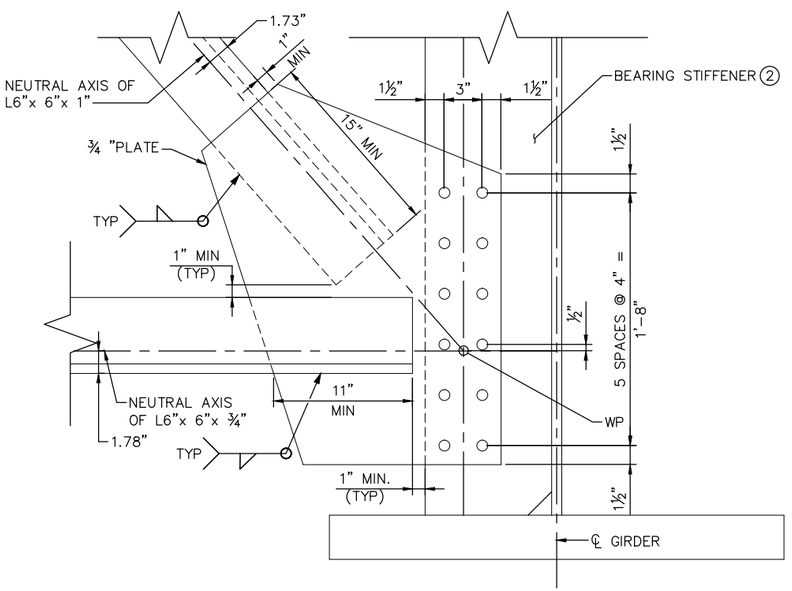
INTERIOR PIER DIAPHRAGM (TYPE 3)



INTERIOR DIAPHRAGM (TYPE 1)



END DIAPHRAGM (TYPE 2)



INTERIOR PIER DIAPHRAGM (TYPE 3)

NOTES:
SEE SHEET 152 FOR NOTES ② AND ③

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

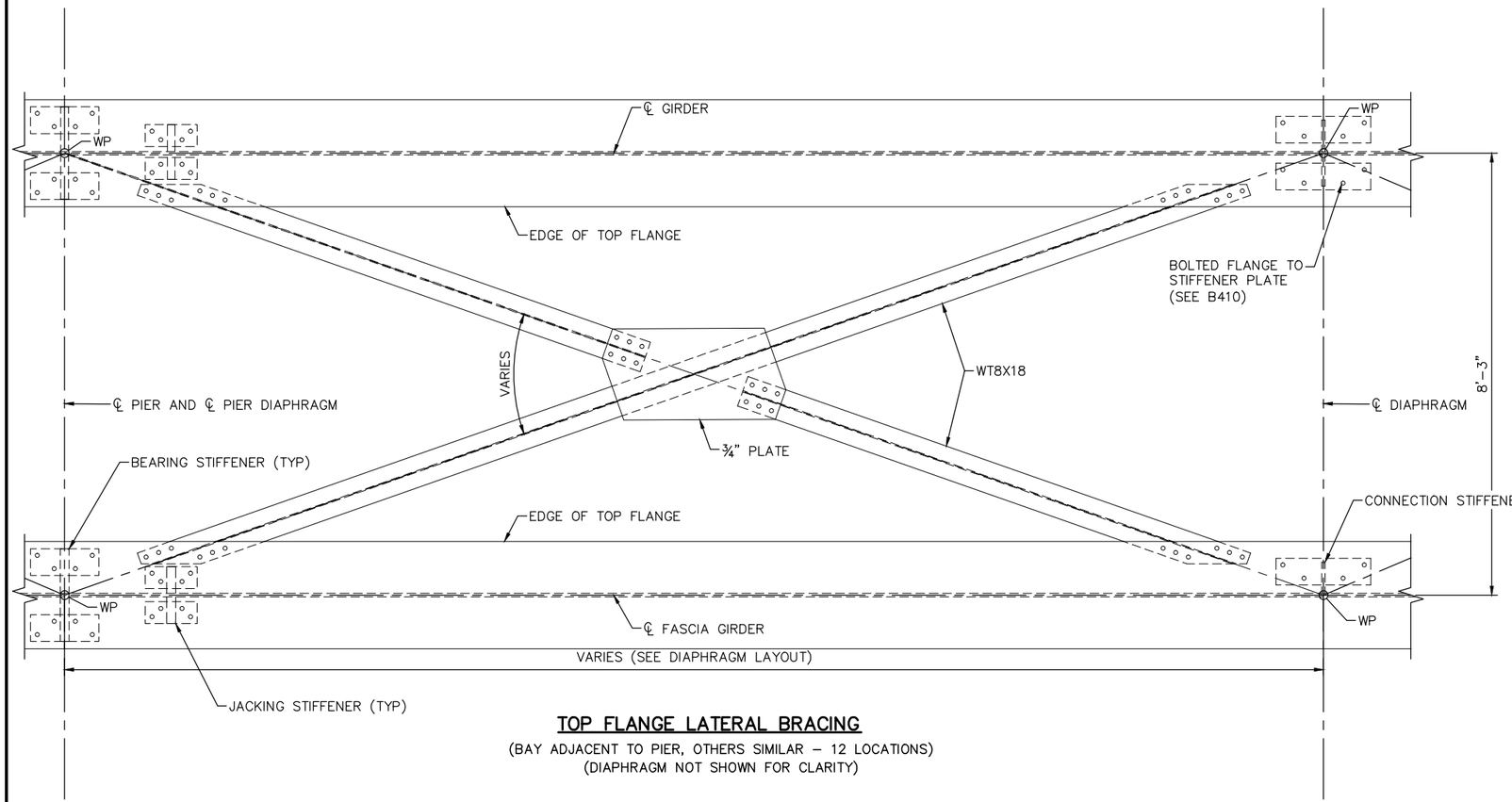
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
DIAPHRAGM DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP4_2

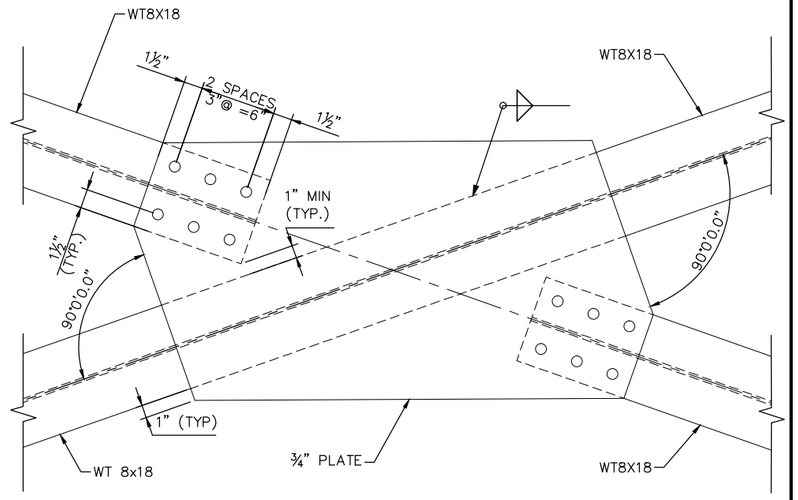
SHEET 153 OF 264

Jan, 17 2016 09:49 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP4.dwg By: hills

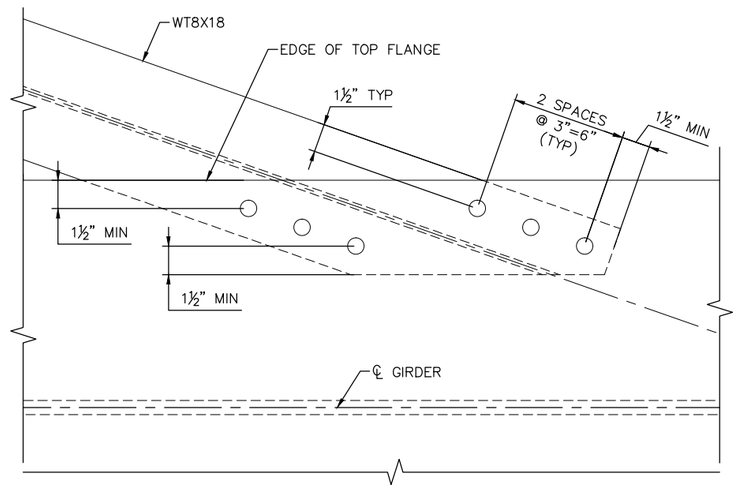


TOP FLANGE LATERAL BRACING

(BAY ADJACENT TO PIER, OTHERS SIMILAR – 12 LOCATIONS)
(DIAPHRAGM NOT SHOWN FOR CLARITY)



TOP FLANGE LATERAL BRACING DETAIL



TOP FLANGE LATERAL BRACING DETAIL

NOTES:

ALL STEEL SHALL CONFORM TO Mn/DOT SPEC. 3309.

ALL BOLTED CONNECTIONS SHALL BE MADE WITH ⅞" ø A325 BOLTS. OVERSIZED HOLES SHALL NOT BE PERMITTED.

SEE BRIDGE FRAMING PLAN AND GIRDER ELEVATIONS FOR ADDITIONAL INFORMATION.

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

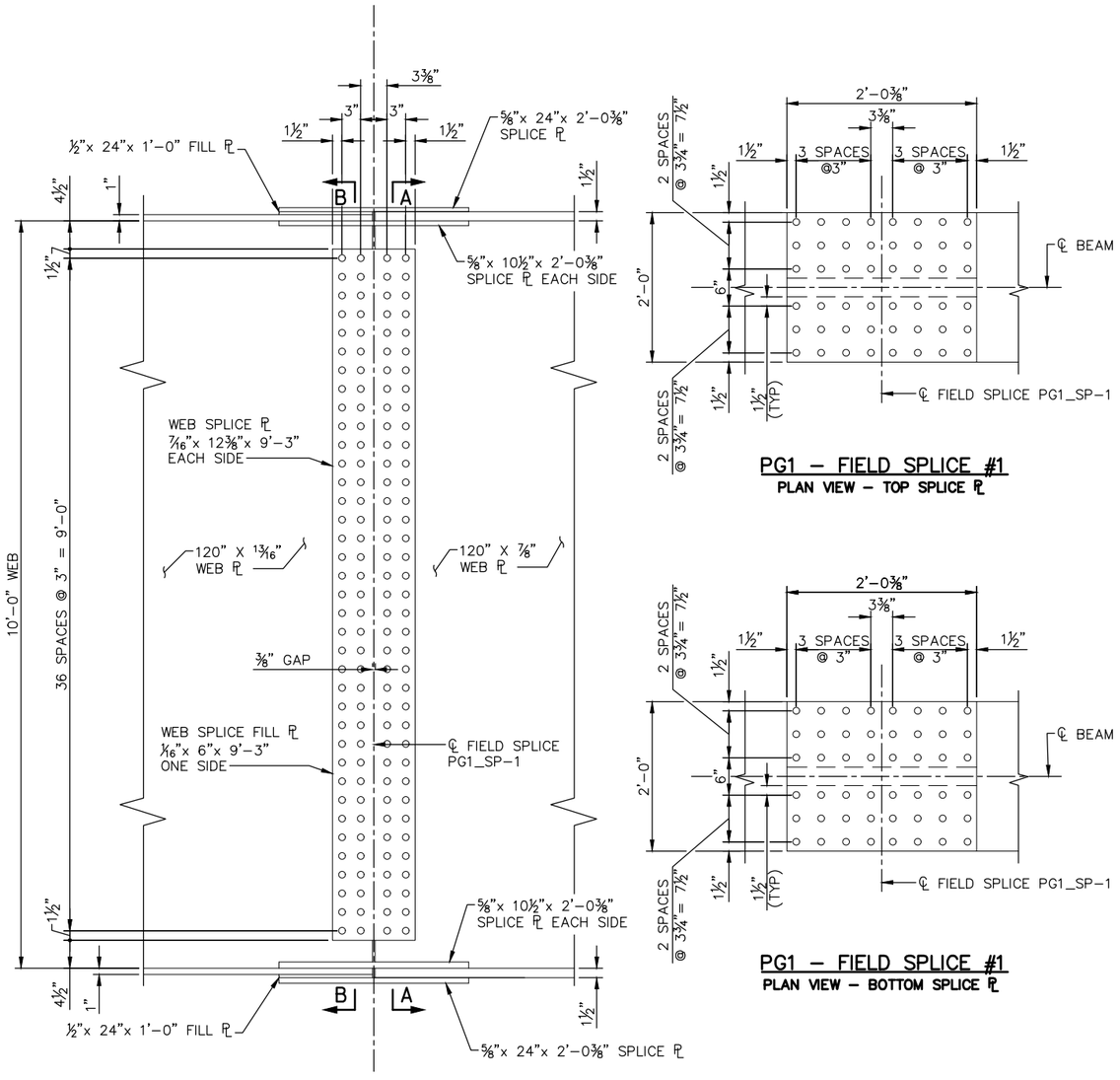
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
DIAPHRAGM DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP4_3

SHEET 154 OF 264

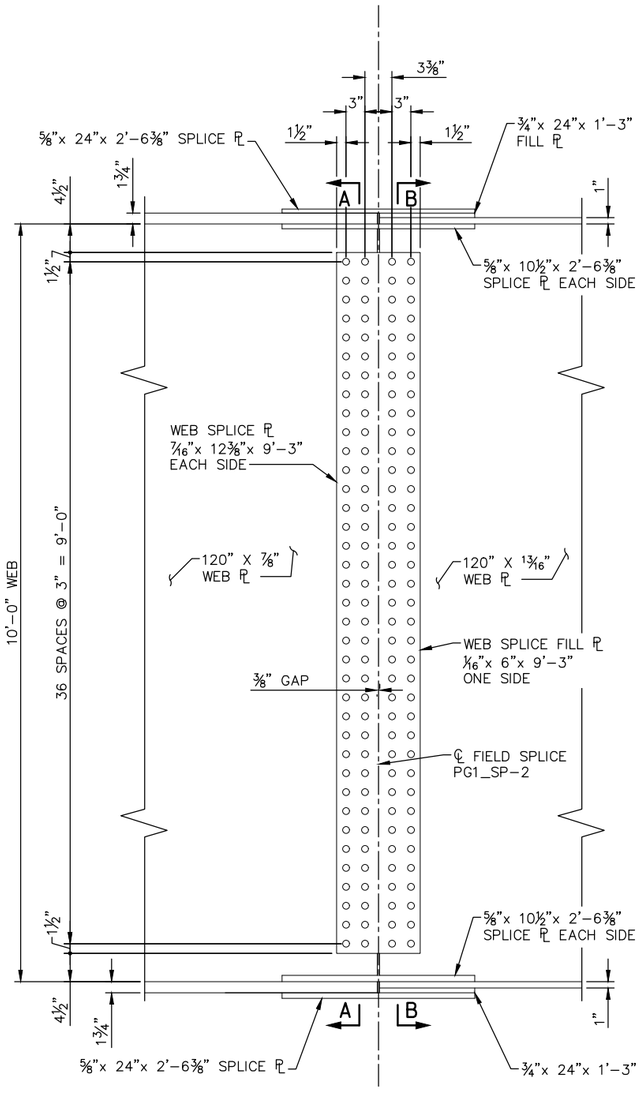
Jan, 17 2016 09:49 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP4.dwg By:



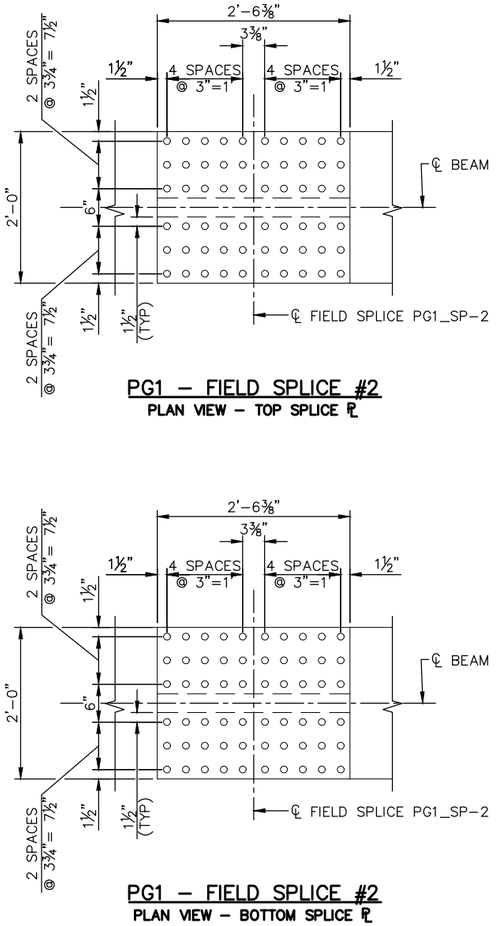
PG1 – FIELD SPLICE #1
ELEVATION

PG1 – FIELD SPLICE #1
PLAN VIEW – TOP SPLICE PL

PG1 – FIELD SPLICE #1
PLAN VIEW – BOTTOM SPLICE PL



PG1 – FIELD SPLICE #2
ELEVATION



PG1 – FIELD SPLICE #2
PLAN VIEW – TOP SPLICE PL

PG1 – FIELD SPLICE #2
PLAN VIEW – BOTTOM SPLICE PL

NOTES:

ALL STRUCTURAL STEEL FOR SPLICE PLATES AND FILL PLATES SHALL CONFORM TO MNDOT SPEC. 3309.

ALL BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANES OF THE CONNECTED PARTS.

ADJUST SHEAR CONNECTOR SPACING TO PROVIDE A MINIMUM CLEARANCE OF 1¼" BETWEEN SHEAR CONNECTORS AND FLANGE PLATE EDGES. WHERE SHEAR CONNECTORS ARE TO BE PLACED ON FIELD SPLICE PLATES. ADJUST SPACING TO PROVIDE A MINIMUM CLEARANCE OF 1¼" BETWEEN SHEAR CONNECTORS AND FIELD SPLICE BOLTS AND/OR PLATE EDGES.

SEE "STEEL DETAILS" FOR SECTIONS A–A & B–B ON SHEET 163.

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DESIGNED BY: DDL | CHECKED BY: CDR
DRAWN BY: SWH | CHECKED BY: EEM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

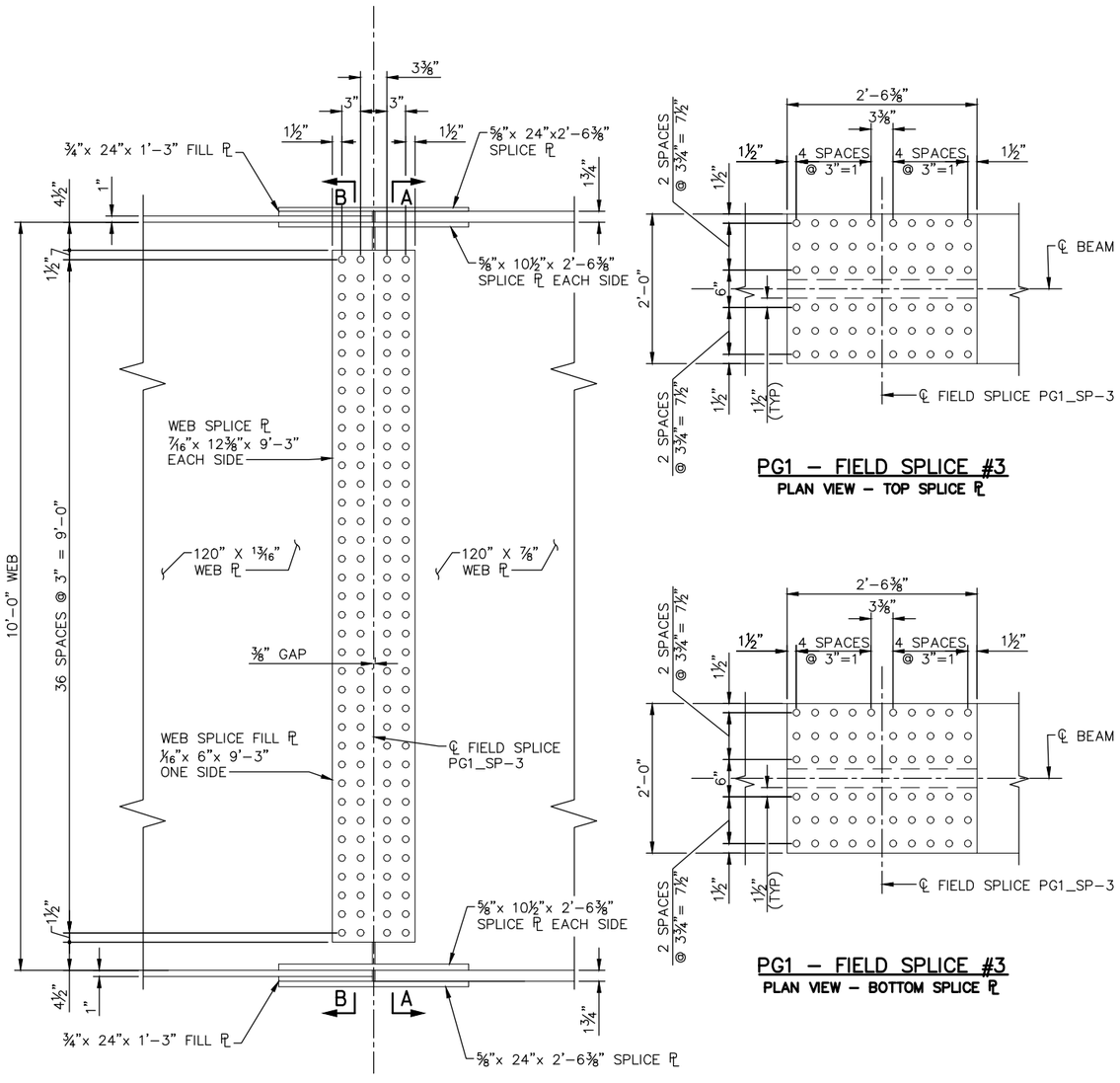
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
STEEL DETAILS (FIELD SPLICE) 1

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP13_1

SHEET 155 OF 264

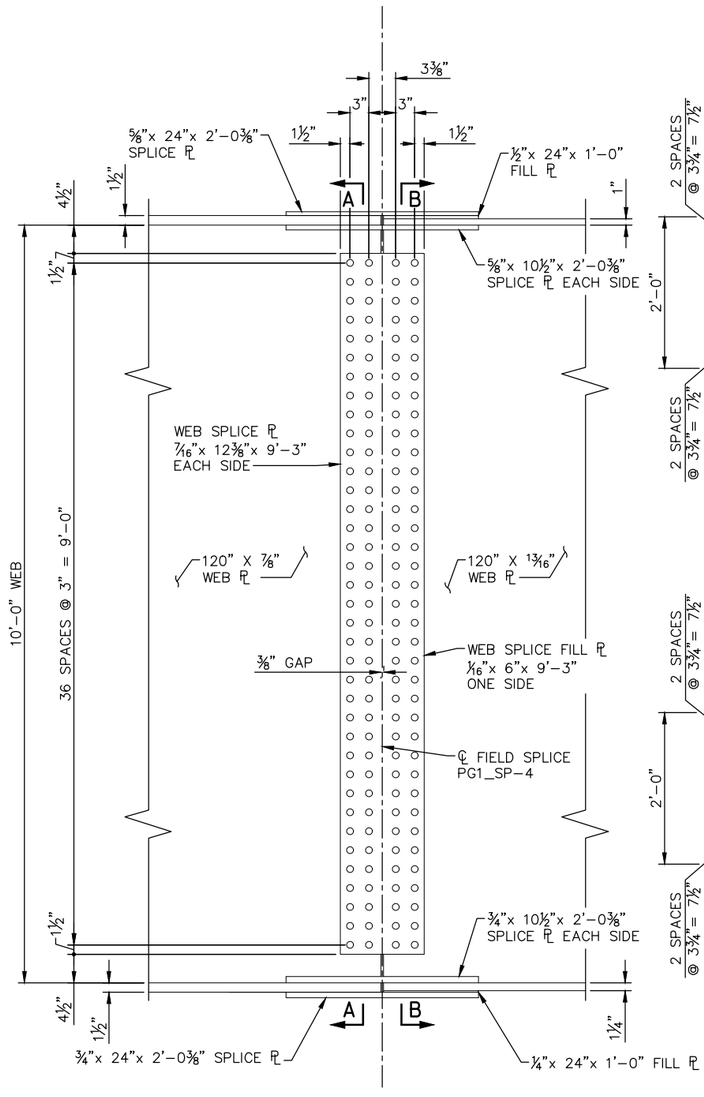
Jan, 17 2016 09:49 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34 W2-STU-BRID-T212-SUP13.dwg By: hills



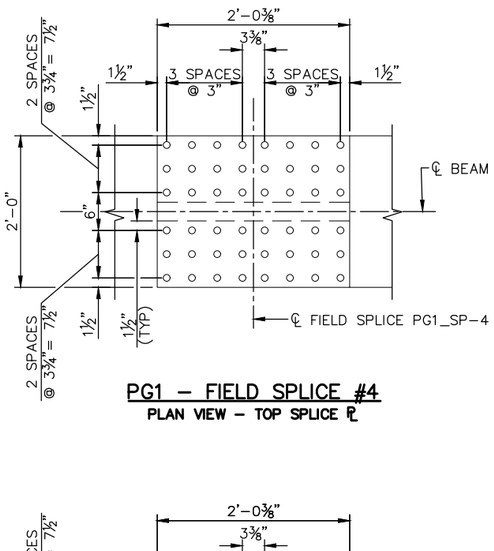
PG1 – FIELD SPLICE #3
ELEVATION

PG1 – FIELD SPLICE #3
PLAN VIEW – TOP SPLICE PL

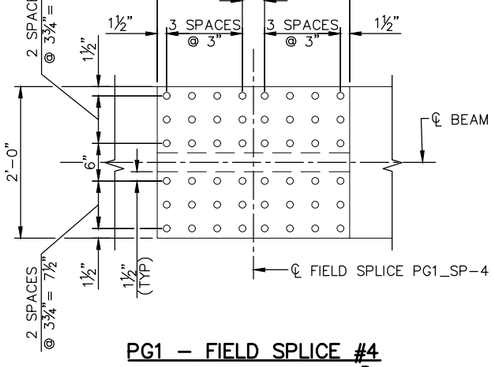
PG1 – FIELD SPLICE #3
PLAN VIEW – BOTTOM SPLICE PL



PG1 – FIELD SPLICE #4
ELEVATION



PG1 – FIELD SPLICE #4
PLAN VIEW – TOP SPLICE PL



PG1 – FIELD SPLICE #4
PLAN VIEW – BOTTOM SPLICE PL

NOTES:

SEE SHEET "STEEL DETAILS (FIELD SPLICE) 1" FOR NOTES

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

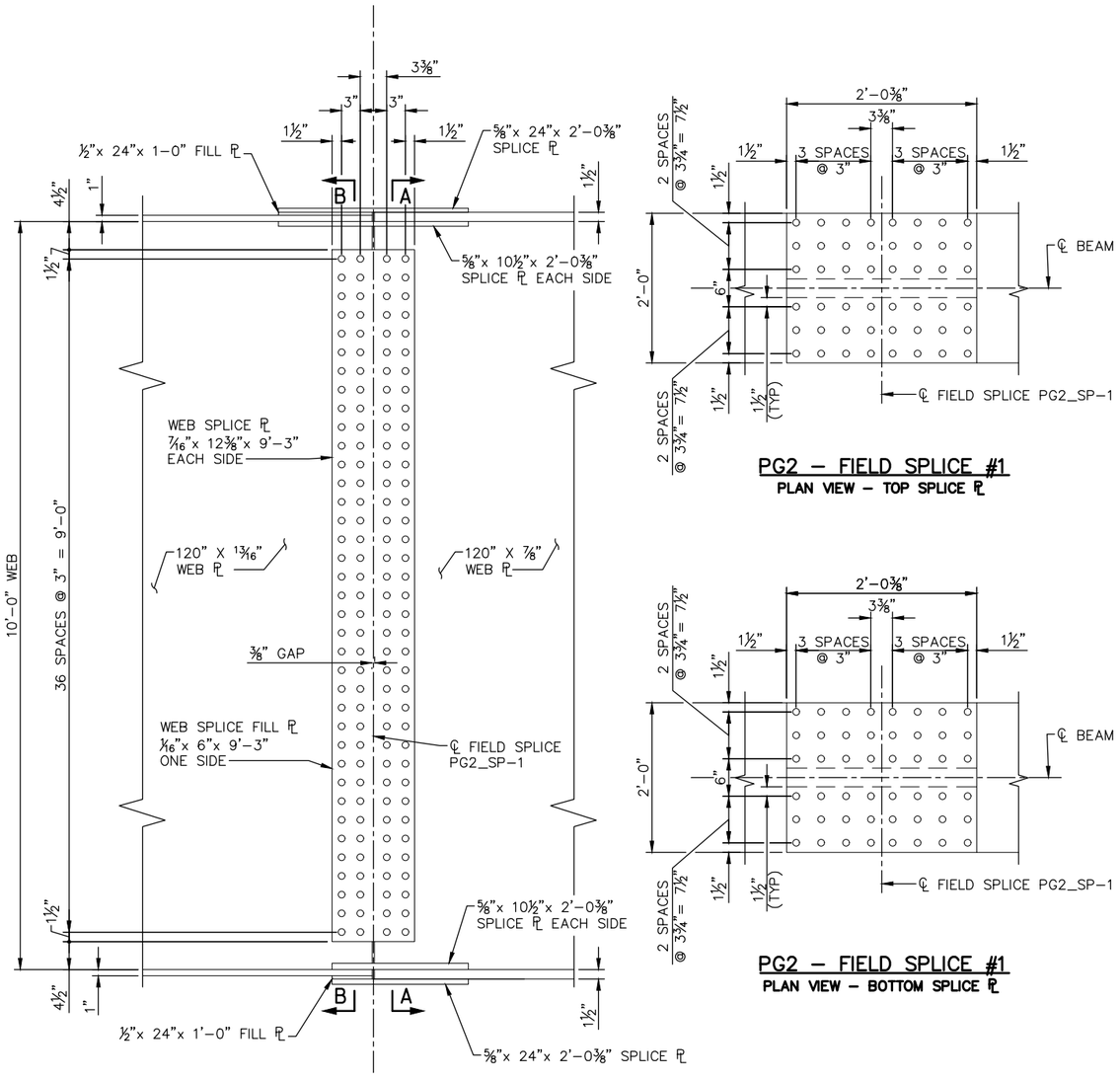
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
STEEL DETAILS (FIELD SPLICE) 2

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP13_2

SHEET 156 OF 264

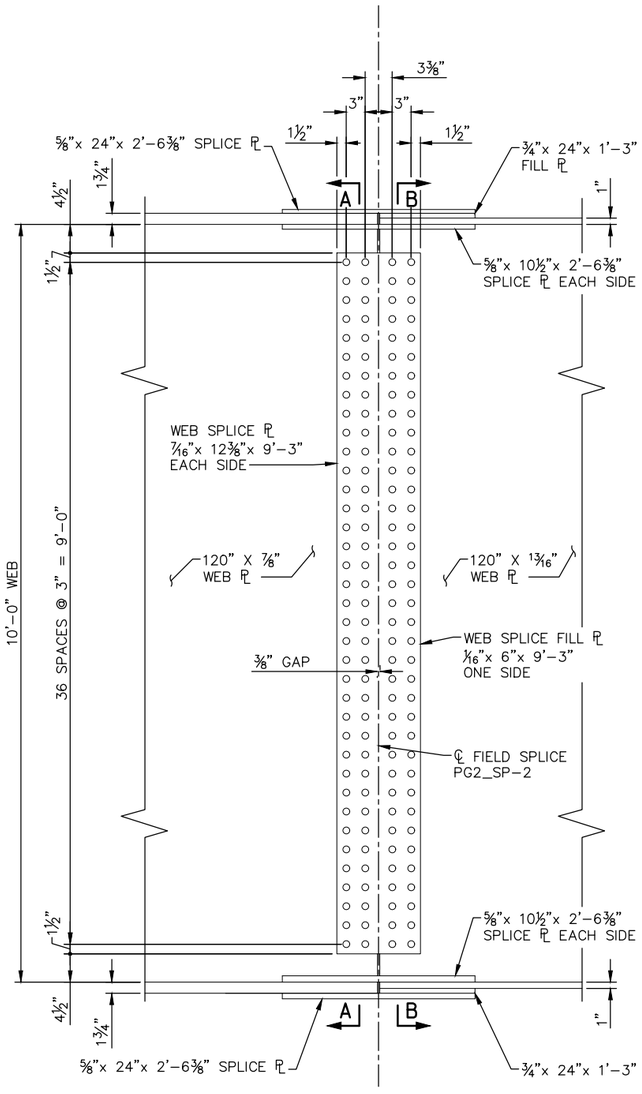
Jan, 17 2016 09:50 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP13.dwg By: hills



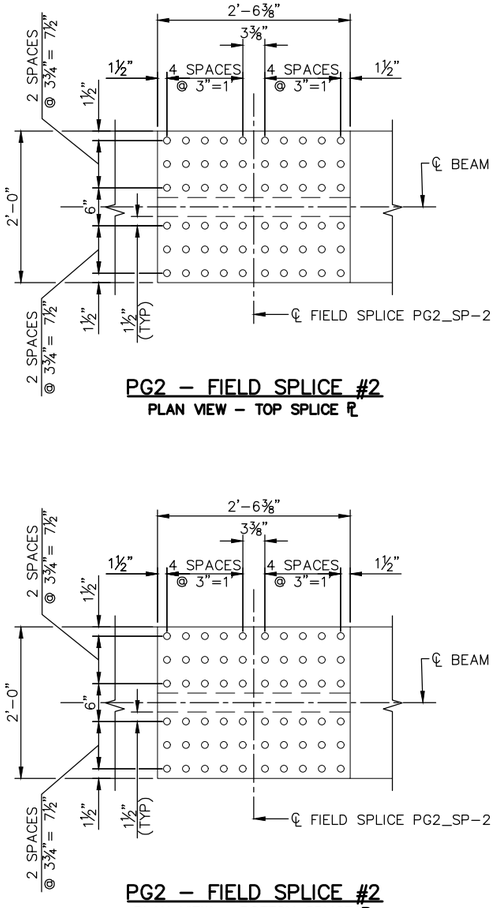
PG2 – FIELD SPLICE #1
ELEVATION

PG2 – FIELD SPLICE #1
PLAN VIEW – TOP SPLICE PL

PG2 – FIELD SPLICE #1
PLAN VIEW – BOTTOM SPLICE PL



PG2 – FIELD SPLICE #2
ELEVATION



PG2 – FIELD SPLICE #2
PLAN VIEW – TOP SPLICE PL

PG2 – FIELD SPLICE #2
PLAN VIEW – BOTTOM SPLICE PL

NOTES:

SEE SHEET "STEEL DETAILS (FIELD SPLICE) 1" FOR NOTES

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SOUTHWEST Green Line LRT Extension

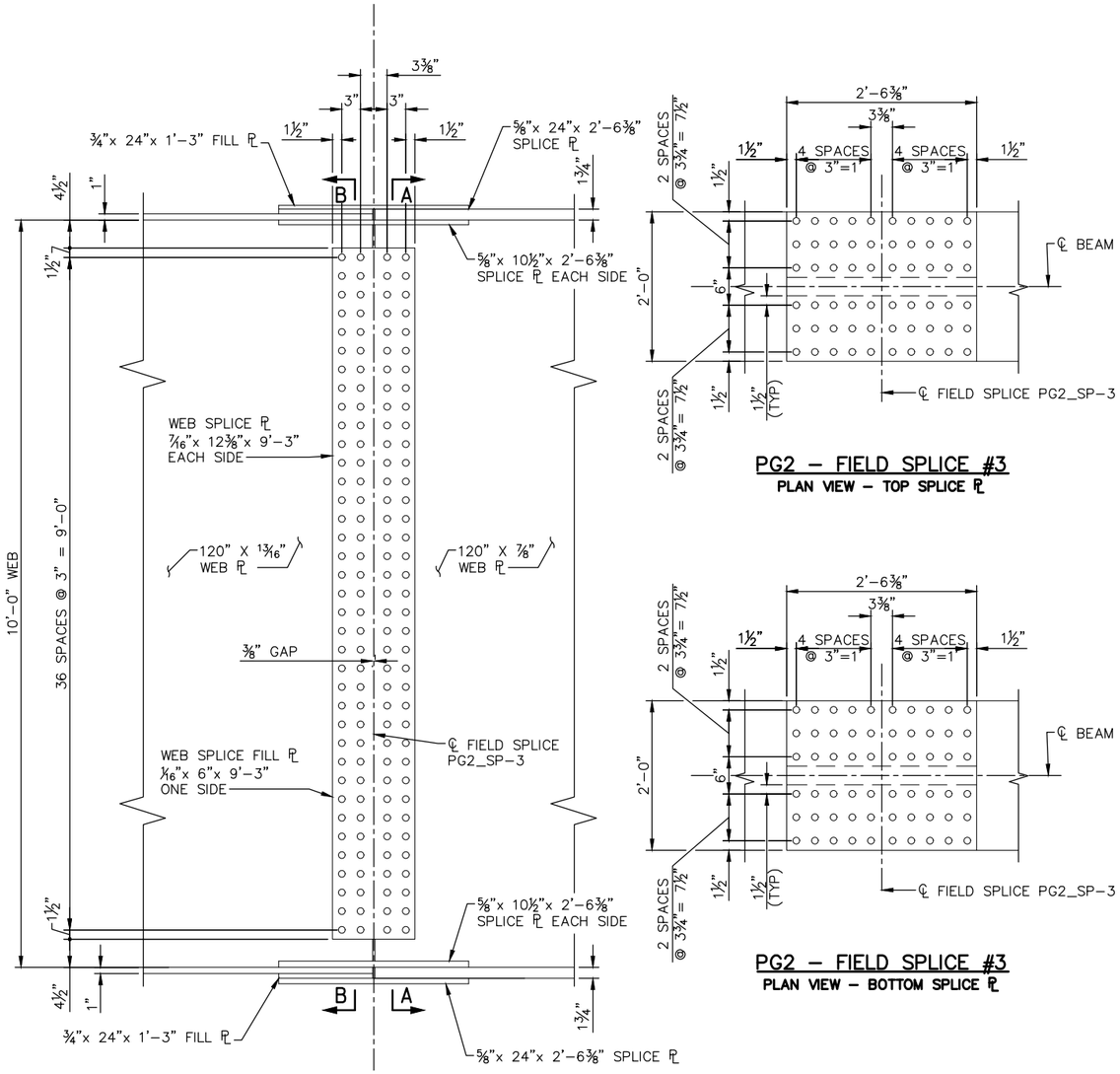
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
STEEL DETAILS (FIELD SPLICE) 3

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP13_3

SHEET 157 OF 264

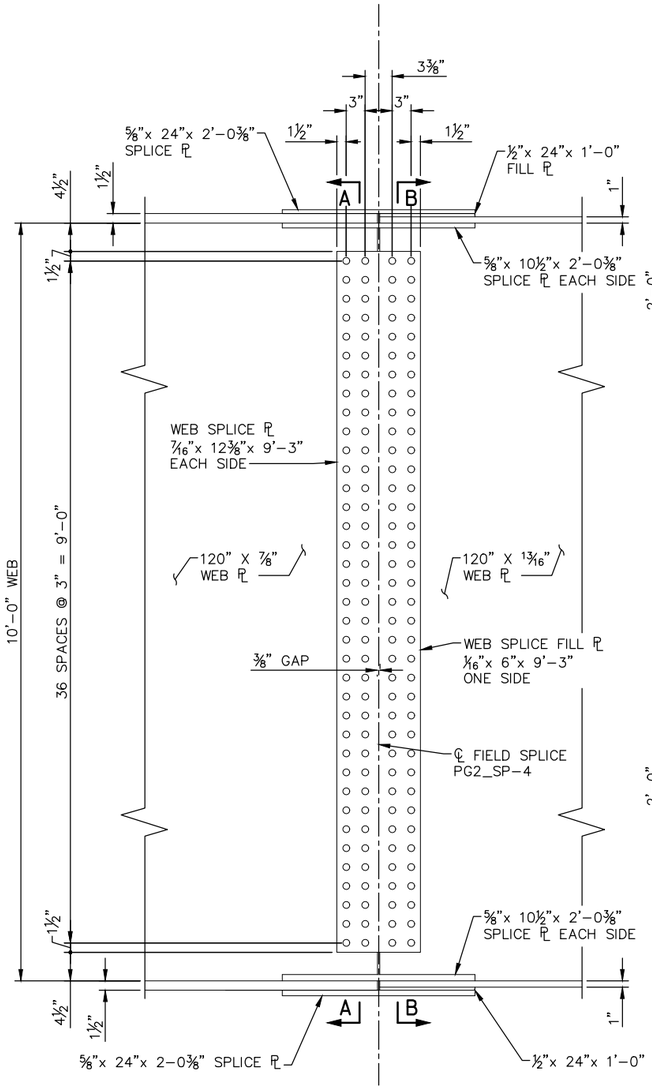
Jan, 17 2016 09:50 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP13.dwg By: hills

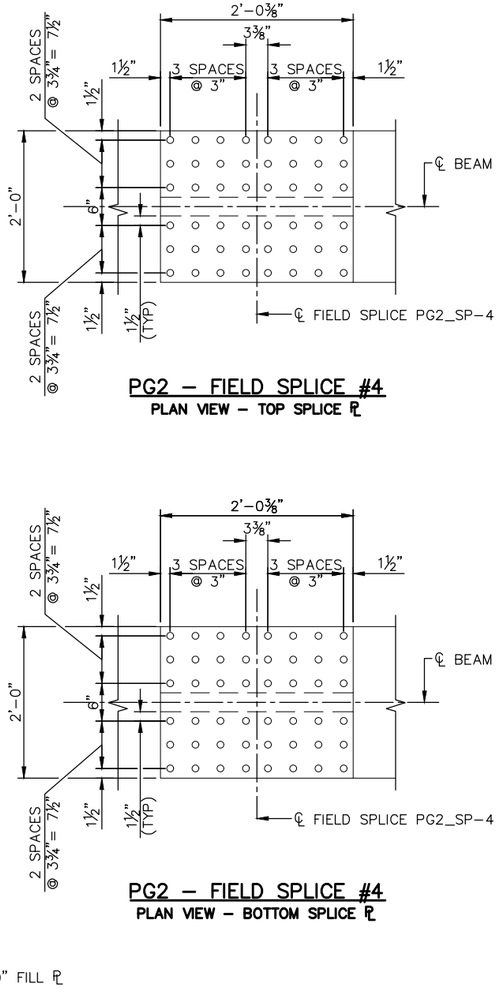


PG2 – FIELD SPLICE #3
PLAN VIEW – TOP SPLICE PL

PG2 – FIELD SPLICE #3
PLAN VIEW – BOTTOM SPLICE PL

PG2 – FIELD SPLICE #3
ELEVATION





PG2 – FIELD SPLICE #4
PLAN VIEW – TOP SPLICE PL

PG2 – FIELD SPLICE #4
PLAN VIEW – BOTTOM SPLICE PL

PG2 – FIELD SPLICE #4
ELEVATION

NOTES:

SEE SHEET "STEEL DETAILS (FIELD SPLICE) 1" FOR NOTES

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SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

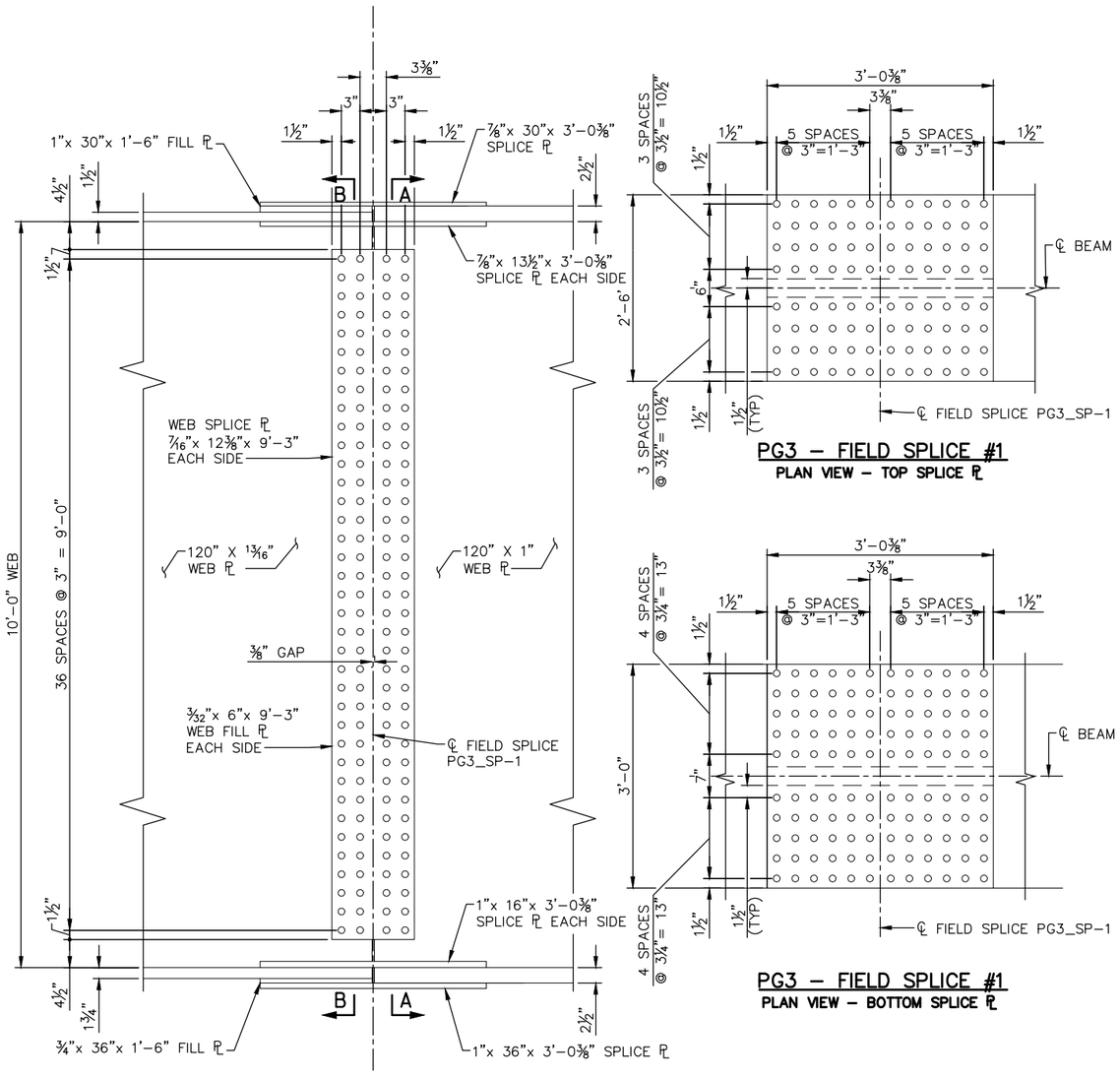
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
STEEL DETAILS (FIELD SPLICE) 4

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP13_4

SHEET 158 OF 264

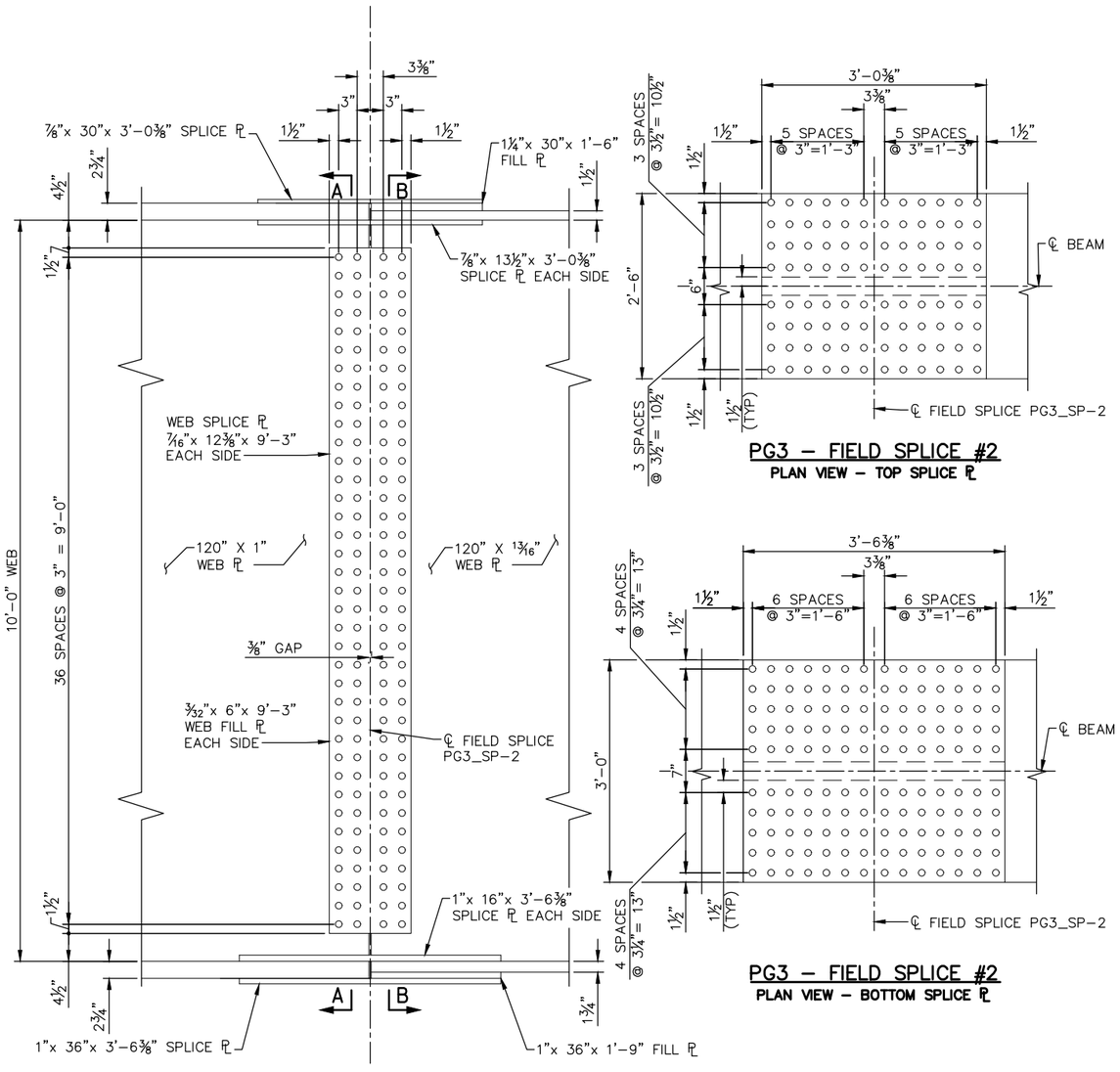
Jan, 17 2016 09:50 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP13.dwg By: hills



PG3 – FIELD SPLICE #1
ELEVATION

PG3 – FIELD SPLICE #1
PLAN VIEW – TOP SPLICE PL

PG3 – FIELD SPLICE #1
PLAN VIEW – BOTTOM SPLICE PL



PG3 – FIELD SPLICE #2
ELEVATION

PG3 – FIELD SPLICE #2
PLAN VIEW – TOP SPLICE PL

PG3 – FIELD SPLICE #2
PLAN VIEW – BOTTOM SPLICE PL

NOTES:

SEE SHEET "STEEL DETAILS (FIELD SPLICE) 1" FOR NOTES

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SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

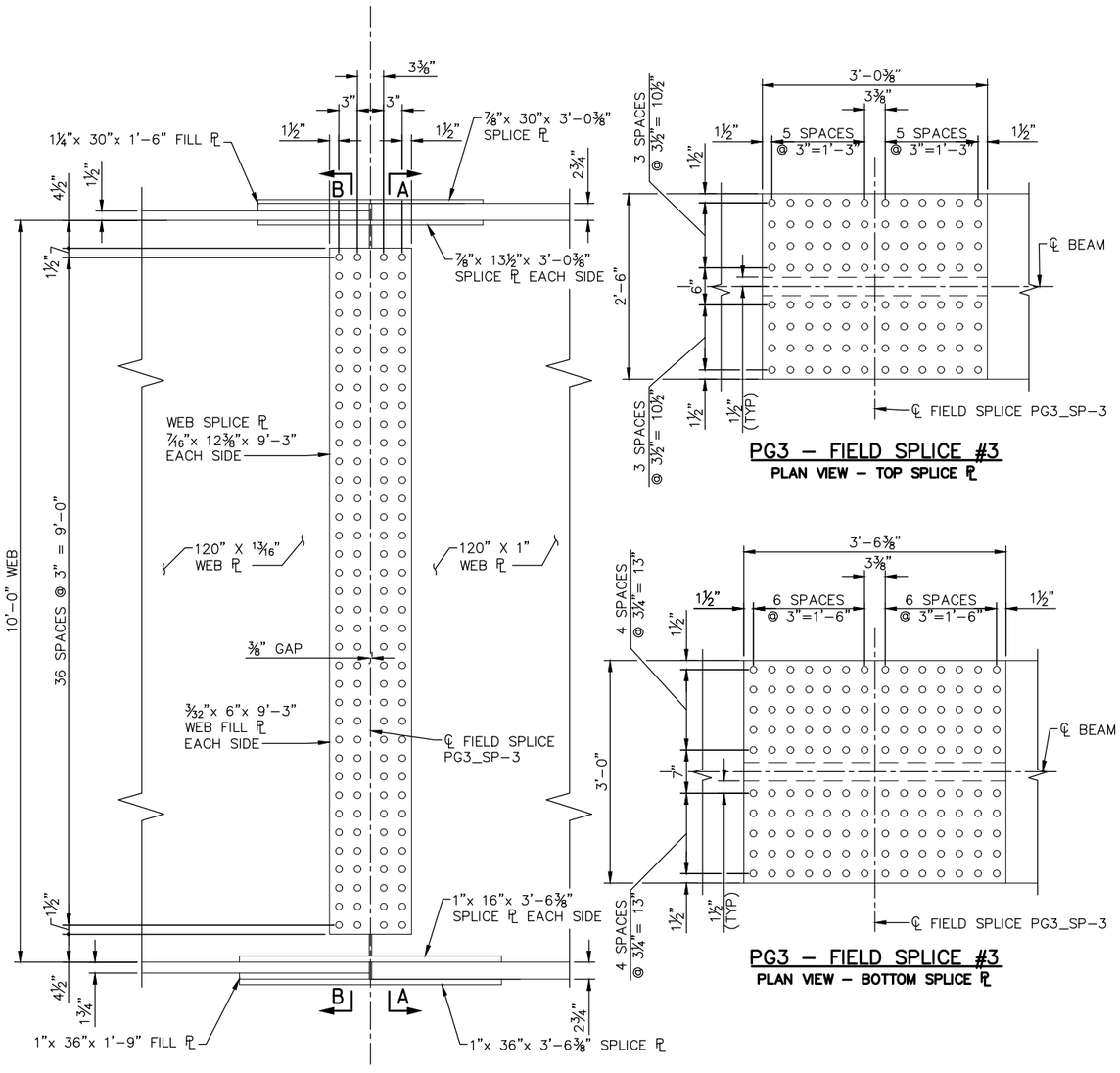
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
STEEL DETAILS (FIELD SPLICE) 5

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP13_5

SHEET 159 OF 264

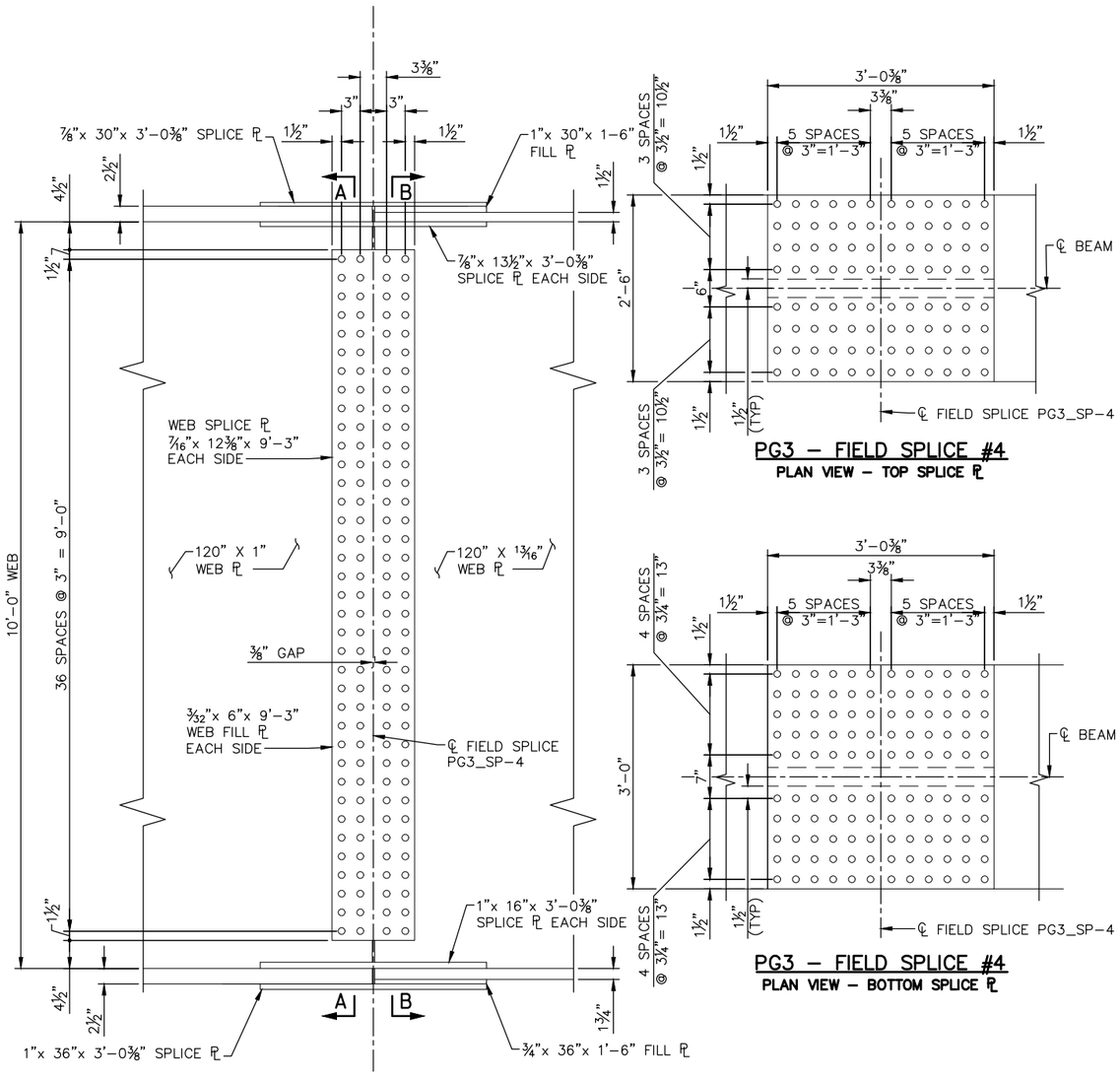
Jan, 17 2016 09:50 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP13.dwg By: hills



PG3 – FIELD SPLICE #3
PLAN VIEW – TOP SPLICE PL

PG3 – FIELD SPLICE #3
PLAN VIEW – BOTTOM SPLICE PL

PG3 – FIELD SPLICE #3
ELEVATION



PG3 – FIELD SPLICE #4
PLAN VIEW – TOP SPLICE PL

PG3 – FIELD SPLICE #4
PLAN VIEW – BOTTOM SPLICE PL

PG3 – FIELD SPLICE #4
ELEVATION

NOTES:

SEE SHEET "STEEL DETAILS (FIELD SPLICE) 1" FOR NOTES

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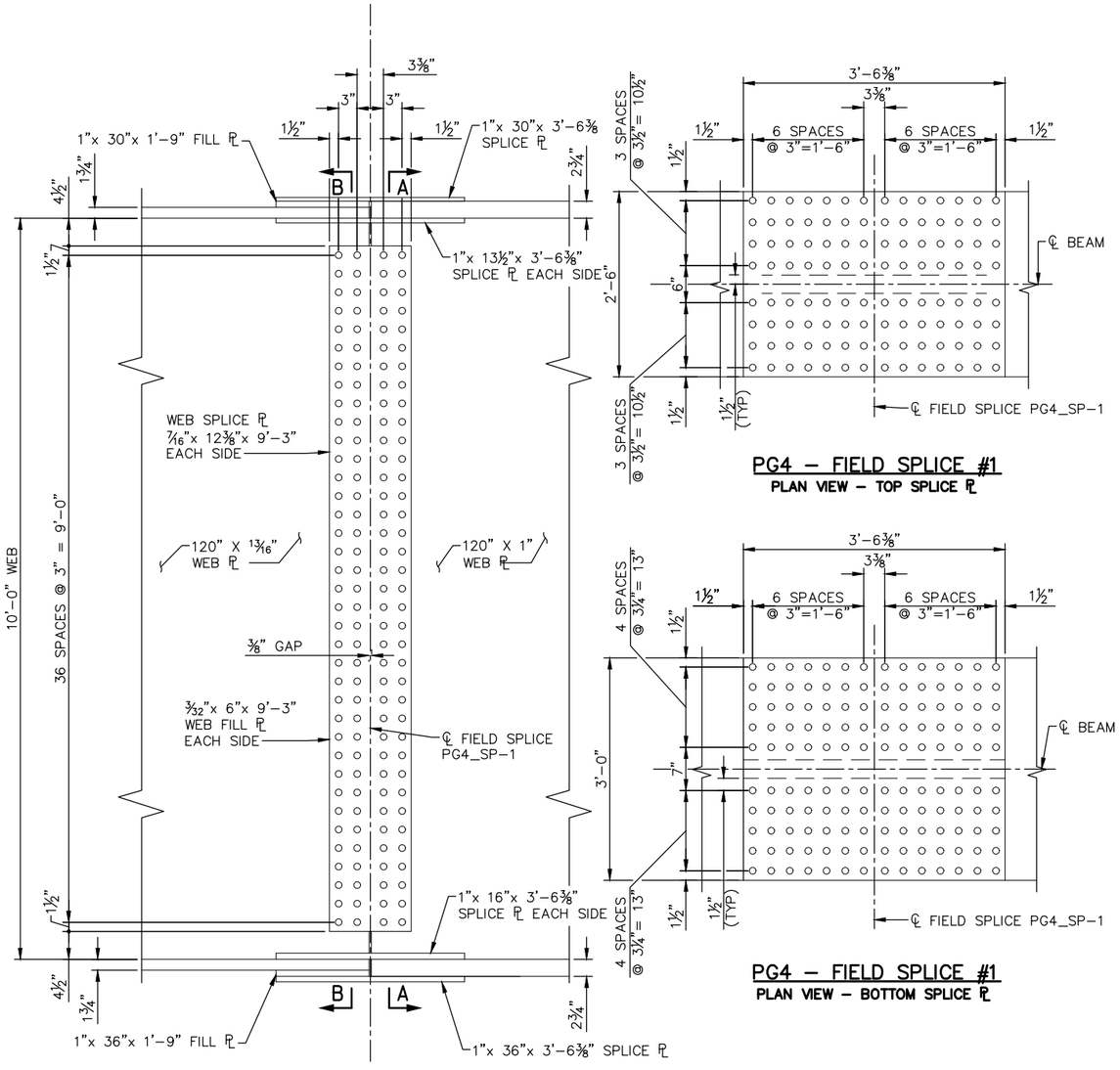
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
STEEL DETAILS (FIELD SPLICE) 6

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP13_6

SHEET 160 OF 264

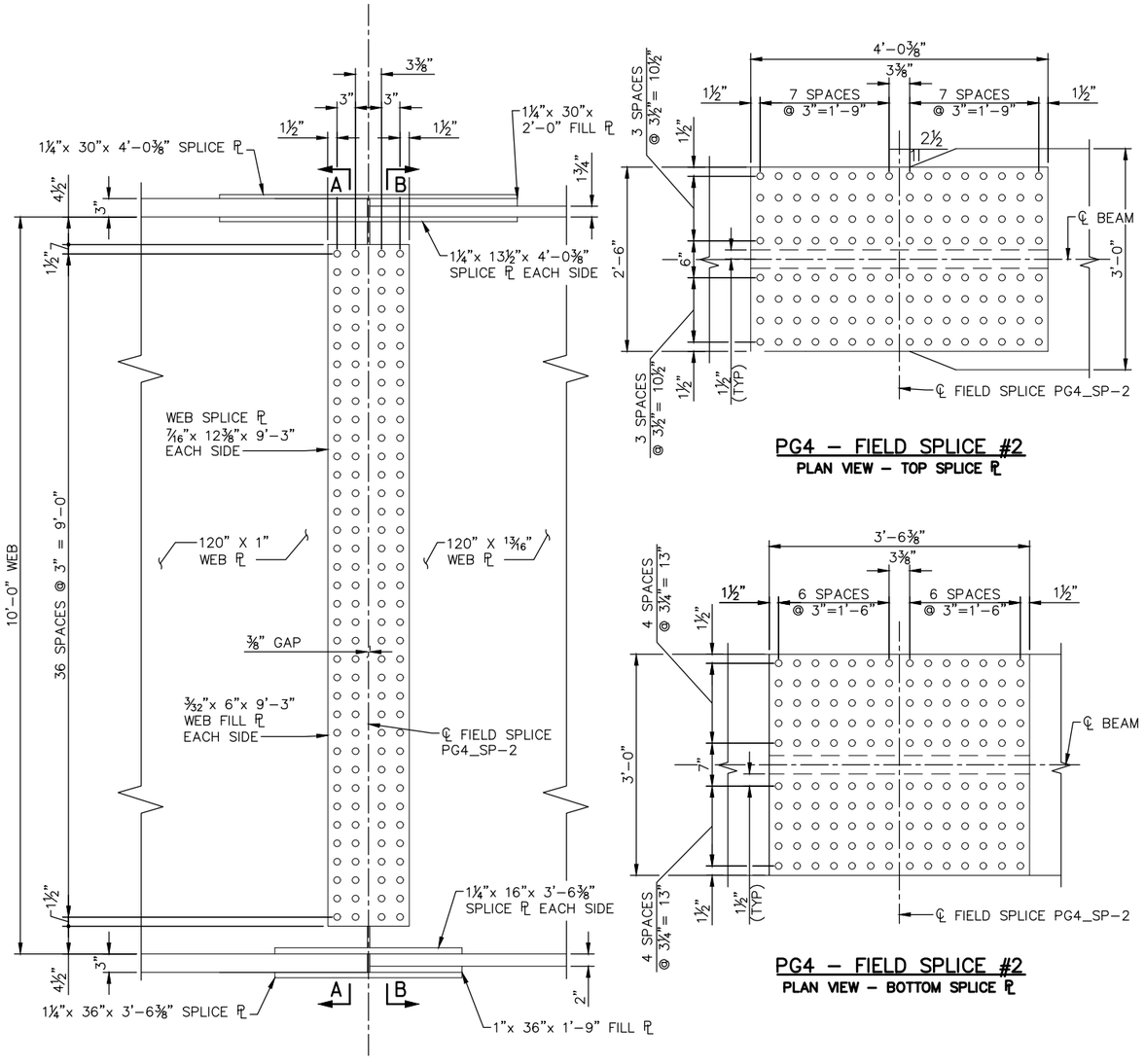
Jan, 17 2016 09:50 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP13.dwg By: hills



PG4 – FIELD SPLICE #1
PLAN VIEW – TOP SPLICE PL

PG4 – FIELD SPLICE #1
PLAN VIEW – BOTTOM SPLICE PL

PG4 – FIELD SPLICE #1
ELEVATION



PG4 – FIELD SPLICE #2
PLAN VIEW – TOP SPLICE PL

PG4 – FIELD SPLICE #2
PLAN VIEW – BOTTOM SPLICE PL

PG4 – FIELD SPLICE #2
ELEVATION

NOTES:

SEE SHEET "STEEL DETAILS (FIELD SPLICE) 1" FOR NOTES

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SOUTHWEST Green Line LRT Extension

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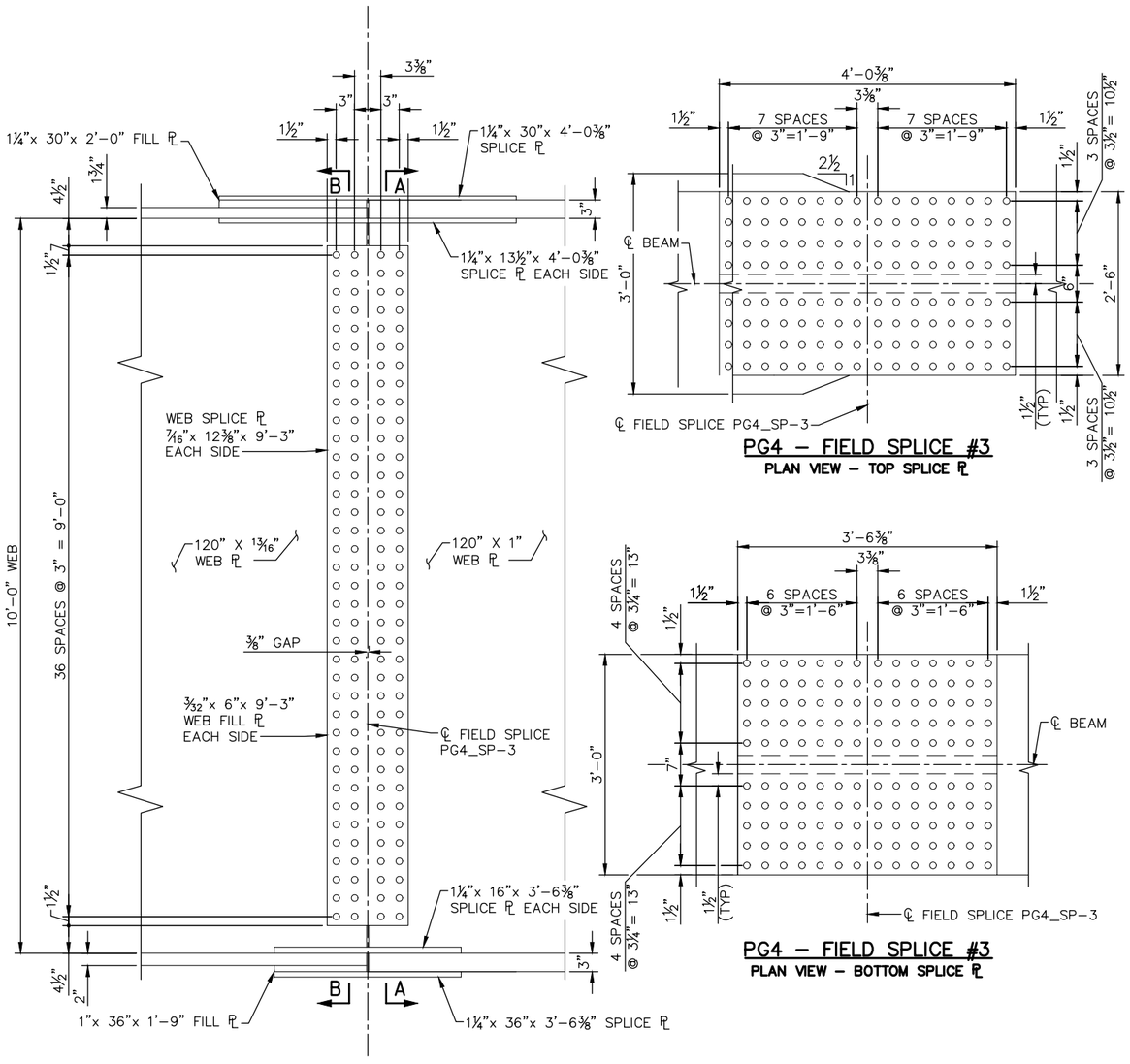
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
STEEL DETAILS (FIELD SPLICE) 7

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP13_7

SHEET 161 OF 264

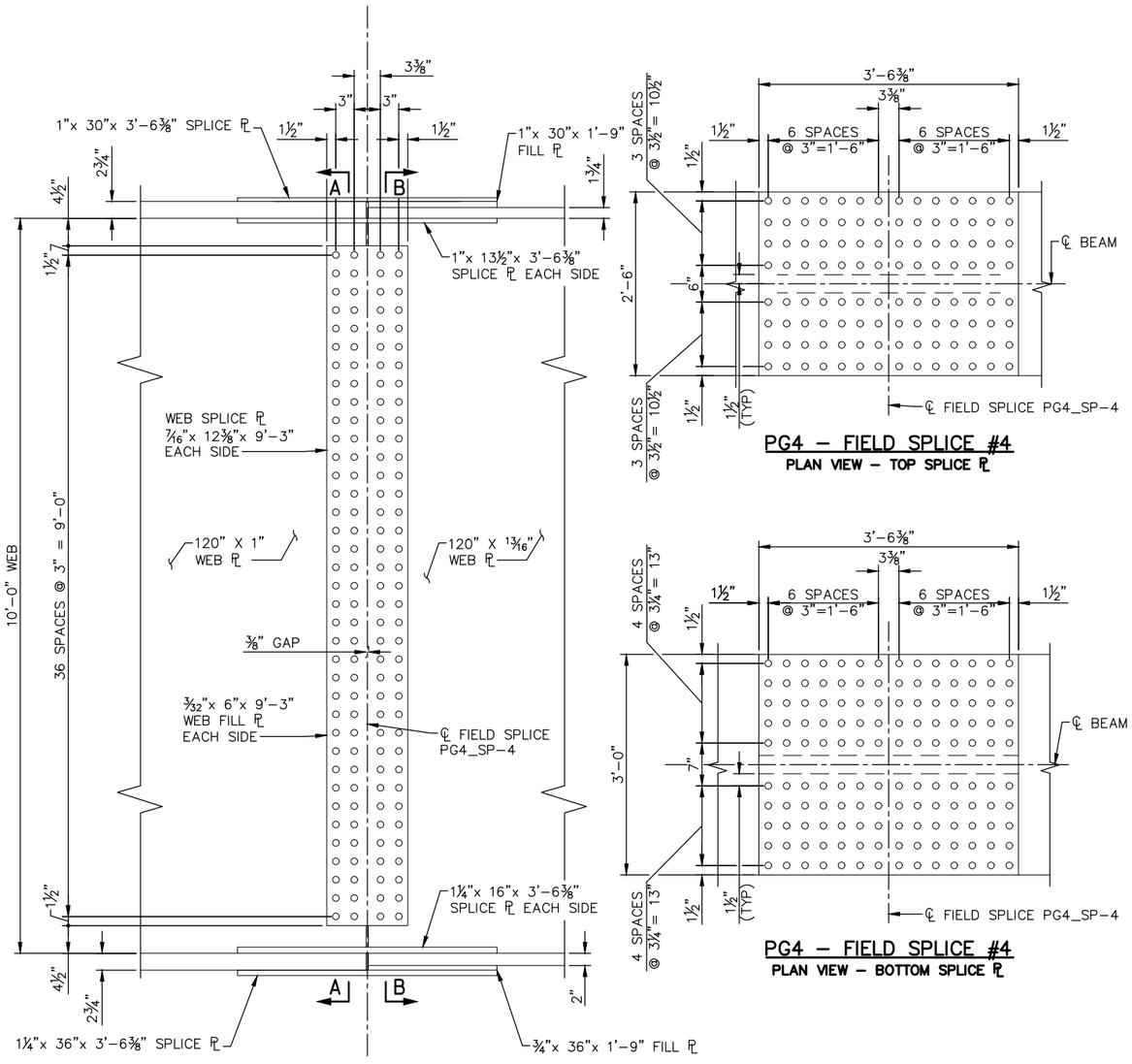
Jan, 17 2016 09:50 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP13.dwg By: hills



PG4 – FIELD SPLICE #3
PLAN VIEW – TOP SPLICE PL

PG4 – FIELD SPLICE #3
PLAN VIEW – BOTTOM SPLICE PL

PG4 – FIELD SPLICE #3
ELEVATION



PG4 – FIELD SPLICE #4
PLAN VIEW – TOP SPLICE PL

PG4 – FIELD SPLICE #4
PLAN VIEW – BOTTOM SPLICE PL

PG4 – FIELD SPLICE #4
ELEVATION

NOTES:

SEE SHEET "STEEL DETAILS (FIELD SPLICE) 1" FOR NOTES

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SOUTHWEST Green Line LRT Extension

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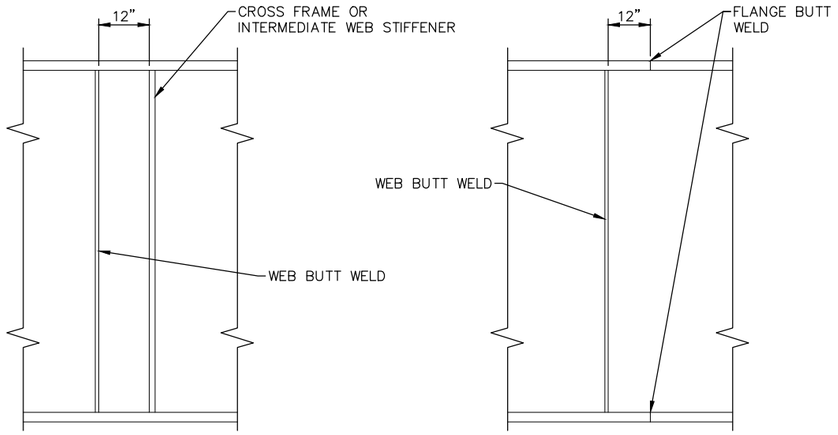
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
STEEL DETAILS (FIELD SPLICE) 8

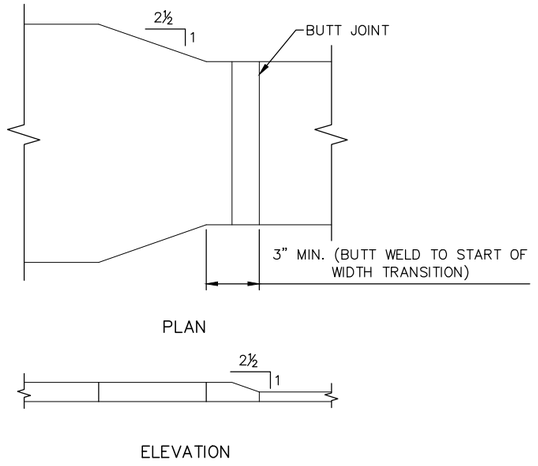
DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP13_8

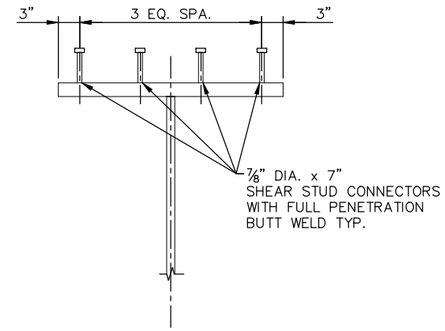
SHEET 162 OF 264

Jan, 17 2016 09:50 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP13.dwg By: hills

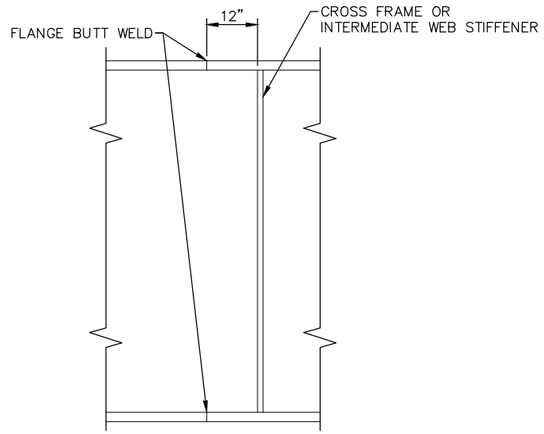




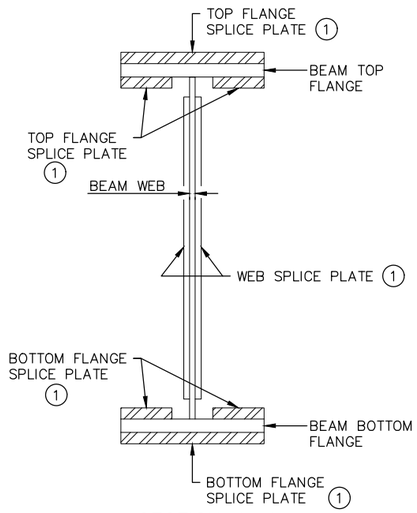
TYPICAL ASSEMBLY & FABRICATION DETAILS



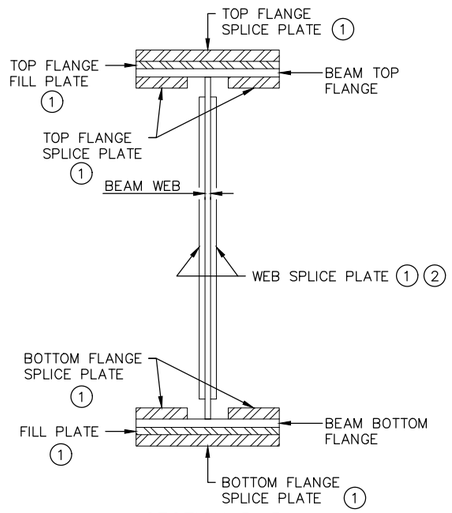
SHEAR STUD CONNECTOR DETAIL



TYPICAL ASSEMBLY & FABRICATION DETAILS



SECTION A–A



SECTION B–B

NOTES:

(1) SEE "STEEL DETAILS (FIELD SPLICE)" FOR PLATE SIZES

(2) WEB FILL PLATES NOT SHOWN WHERE REQUIRED

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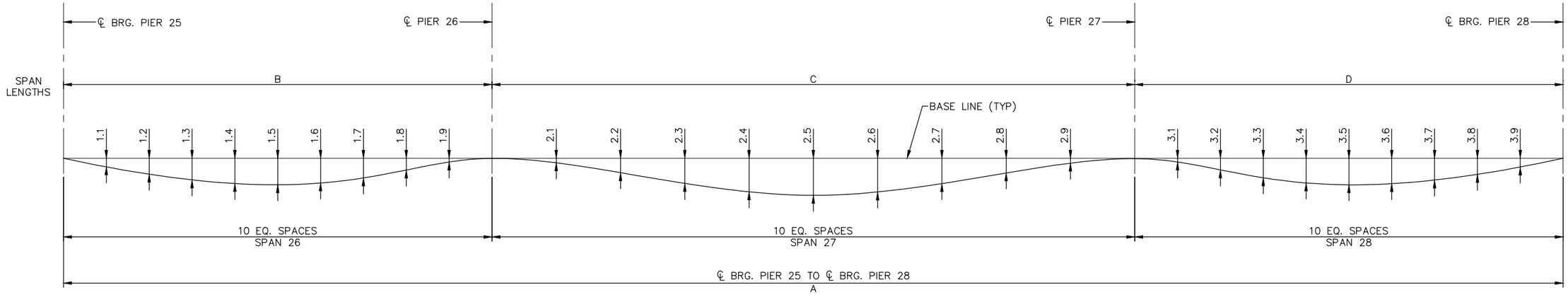
SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP13_9

SHEET 163 OF 264

Jan. 17 2016 09:50 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP13.dwg By: hills



DELFECTION DIAGRAM

PG1 TO PG4

NOTES:

1. DEFLECTIONS DUE TO WEIGHT OF STRUCTURAL STEEL. NEGATIVE SIGN INDICATES UPLIFT.
2. DEFLECTIONS DUE TO WEIGHT OF HAUNCH, SLAB, WALKWAY, PLINTHS, RUNNING RAIL AND OCS POLES. NEGATIVE SIGN INDICATES UPLIFT.

BASE LINE EQUALS STRAIGHT LINE FROM ℄ BEARING TO ℄ BEARING AT TOP OF WEB.

BEAM DISTANCES ARE MEASURED HORIZONTALLY ALONG ℄ OF BEAM WEB.

SEE SHEET 165 FOR TABULATION OF VALUE A, B, C AND D.

BEAM DELFECTIONS IN FEET (1)

BEAM NO.	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0
PG1	0.000	0.022	0.040	0.052	0.057	0.055	0.045	0.031	0.017	0.005	0.000	0.012	0.039	0.070	0.093	0.102	0.096	0.072	0.041	0.012	0.000	0.007	0.023	0.044	0.065	0.080	0.085	0.076	0.057	0.031	0.000
PG2	0.000	0.015	0.027	0.034	0.035	0.031	0.022	0.012	0.002	−0.003	0.000	0.024	0.063	0.103	0.132	0.141	0.133	0.104	0.064	0.024	0.000	−0.001	0.008	0.024	0.041	0.055	0.061	0.057	0.044	0.024	0.000
PG3	0.000	0.008	0.013	0.015	0.013	0.007	−0.001	−0.009	−0.014	−0.012	0.000	0.038	0.089	0.140	0.174	0.186	0.174	0.141	0.090	0.038	0.000	−0.010	−0.008	0.001	0.014	0.027	0.035	0.037	0.030	0.016	0.000
PG4	0.000	0.001	−0.001	−0.004	−0.010	−0.018	−0.025	−0.029	−0.028	−0.019	0.000	0.050	0.113	0.176	0.216	0.229	0.214	0.175	0.113	0.049	0.000	−0.018	−0.024	−0.020	−0.010	0.001	0.012	0.018	0.017	0.010	0.000

BEAM DELFECTIONS IN FEET (2)

BEAM NO.	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0
PG1	0.000	0.054	0.098	0.128	0.139	0.131	0.105	0.070	0.034	0.008	0.000	0.038	0.115	0.200	0.264	0.289	0.272	0.209	0.122	0.041	0.000	0.009	0.041	0.084	0.129	0.163	0.175	0.160	0.122	0.067	0.000
PG2	0.000	0.041	0.073	0.094	0.099	0.090	0.068	0.040	0.014	−0.002	0.000	0.046	0.125	0.207	0.267	0.288	0.270	0.211	0.127	0.046	0.000	0.001	0.024	0.061	0.099	0.130	0.143	0.134	0.103	0.056	0.000
PG3	0.000	0.027	0.048	0.059	0.059	0.049	0.031	0.010	−0.006	−0.012	0.000	0.055	0.135	0.216	0.272	0.289	0.269	0.214	0.132	0.052	0.000	−0.006	0.008	0.035	0.066	0.093	0.107	0.106	0.083	0.045	0.000
PG4	0.000	0.014	0.023	0.025	0.020	0.008	−0.007	−0.019	−0.026	−0.021	0.000	0.062	0.146	0.228	0.280	0.295	0.273	0.219	0.138	0.056	0.000	−0.014	−0.008	0.010	0.035	0.060	0.077	0.079	0.066	0.036	0.000

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DESIGNED BY: DDL CHECKED BY: CDR
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

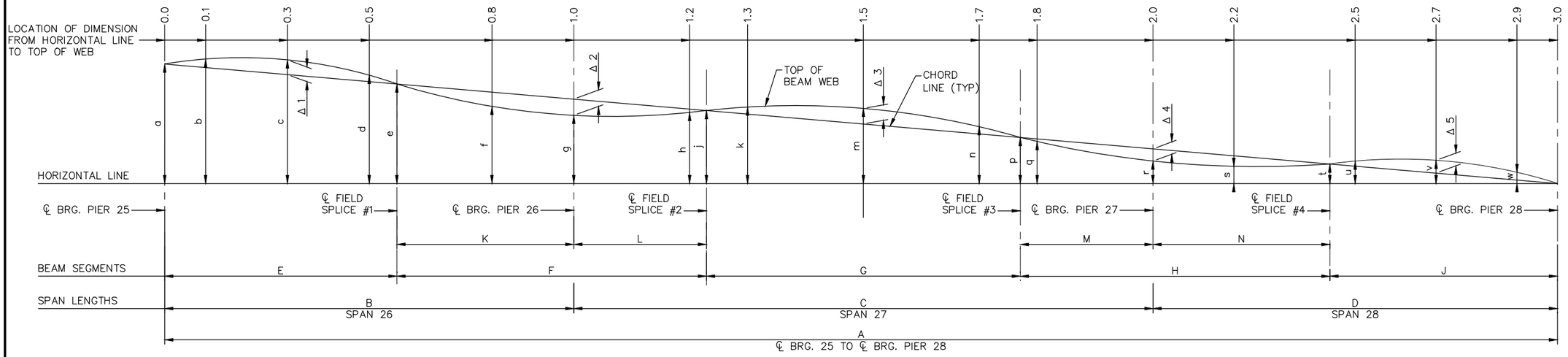
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
STEEL DETAILS (DEFLECTIONS)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP15_1

SHEET 164 OF 264

Jan, 17 2016 09:50 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP15.dwg By: hills



CAMBER DIAGRAM

PG1 TO PG4

NOTES:

CHORD LINES ARE STRAIGHT LINES FROM END TO END OF BEAM SEGMENTS AT THE TOP OF THE WEB.

CAMBER DIAGRAM IS FOR BEAMS IN UNLOADED POSTION AND PROVIDES FOR ALL DEAD LOAD DEFLECTIONS.

NO RESIDUAL CAMBER HAS BEEN INCLUDED IN THE CAMBER DETAIL.

HORIZONTAL DISTANCE FROM CL BRG. PIER 25 TO POINT SHOWN

BEAM NO.	0.0	0.1	0.3	0.5	FS#1	0.8	1.0	1.2	FS#2	1.3	1.5	1.7	FS#3	1.8	2.0	2.2	FS#4	2.5	2.7	2.9	3.0
PG1	0	18'–6"	55'–6"	92'–6"	105'–0⅛"	148'–0⅛"	185'–0⅛"	237'–4⅞"	245'–0⅛"	263'–7⅛"	315'–11⅞"	368'–4⅝"	386'–11⅝"	394'–6⅞"	446'–11⅝"	483'–6⅝"	526'–11⅝"	538'–5⅛"	575'–0"	611'–7"	629'–10½"
PG2	0	18'–6½"	55'–7⅜"	92'–8⅜"	105'–4¾"	148'–3¾"	185'–4¾"	238'–4"	245'–4¾"	264'–9⅝"	317'–8⅞"	370'–8⅛"	390'–1⅛"	397'–1¾"	450'–1"	487'–0"	530'–1⅛"	542'–4½"	579'–3½"	616'–2½"	634'–8"
PG3	0	18'–7"	55'–8⅞"	92'–10⅜"	105'–9⅜"	148'–7½"	185'–9⅜"	239'–3¾"	245'–9⅜"	266'–0⅞"	319'–7¼"	373'–1½"	393'–5"	399'–10⅝"	453'–5"	490'–8⅜"	533'–5"	546'–7⅜"	583'–10⅝"	621'–2"	639'–9⅝"
PG4	0	18'–7⅜"	55'–10¼"	93'–1"	106'–2"	148'–11¼"	186'–2"	240'–2⅞"	246'–2"	267'–3¼"	321'–4⅛"	375'–5⅛"	396'–6⅜"	402'–5½"	456'–6⅜"	494'–1¾"	536'–6⅜"	550'–6¾"	588'–2⅛"	625'–9½"	644'–7⅛"

DISTANCE FROM HORIZONTAL LINE TO CAMBER CURVE AT POINTS ALONG CL BEAM

BEAM NO.	a	b	c	d	e	f	g	h	j	k	m	n	p	q	r	s	t	u	v	w
PG1	13'–6⅛"	14'–0¼"	14'–5¾"	13'–9⅛"	13'–2⅞"	10'–11⅜"	9'–6⅝"	10'–3¼"	10'–6⅜"	11'–1⅜"	11'–5¼"	9'–0"	7'–7"	7'–0"	3'–11¾"	3'–10⅞"	4'–9"	4'–10½"	4'–0"	1'–6⅞"
PG2	13'–6⅛"	13'–9⅜"	13'–10⅛"	12'–11⅞"	12'–5¼"	10'–6⅜"	9'–6⅝"	10'–8¼"	10'–11⅛"	11'–7⅛"	11'–10¾"	9'–4¾"	7'–10¾"	7'–4¼"	3'–11¾"	3'–6⅜"	4'–1"	4'–2⅛"	3'–5¾"	1'–4¼"
PG3	13'–6⅛"	13'–6⅜"	13'–2½"	12'–2⅜"	11'–8⅛"	10'–1¼"	9'–6⅝"	11'–1⅜"	11'–4⅜"	12'–1⅝"	12'–5¼"	9'–10½"	8'–2⅞"	7'–8⅝"	3'–11¾"	3'–1⅞"	3'–4⅛"	3'–4⅞"	2'–10¾"	1'–1⅝"
PG4	13'–6⅛"	13'–3½"	12'–6⅞"	11'–4⅞"	10'–11⅛"	9'–8⅜"	9'–6⅝"	11'–6⅜"	11'–9⅝"	12'–8⅜"	13'–0⅜"	10'–4⅛"	8'–6¾"	8'–0⅞"	3'–11¾"	2'–9⅛"	2'–8"	2'–8⅜"	2'–4⅛"	0'–11⅜"

BEAM DIMENSIONS ALONG CL BEAM

BEAM NO.	A	B	C	D	E	F	G	H	J	K	L	M	N
PG1	629'–10½"	185'–0⅛"	261'–11½"	182'–10⅞"	105'–0⅛"	140'–0"	141'–11½"	140'–0"	102'–10⅞"	80'–0"	60'–0"	60'–0"	80'–0"
PG2	634'–8"	185'–4¾"	264'–8¼"	184"–7"	105'–4¾"	140'–0"	144'–8¼"	140'–0"	104'–7"	80'–0"	60'–0"	60'–0"	80'–0"
PG3	639'–9⅝"	185'–9⅜"	267'–7⅝"	186'–4⅝"	105'–9⅜"	140'–0"	147'–7⅝"	140'–0"	106'–4⅝"	80'–0"	60'–0"	60'–0"	80'–0"
PG4	644'–7⅛"	186–2"	270'–4⅜"	188'–0¾"	106'–2"	140'–0"	150'–4⅜"	140'–0"	108'–0¾"	80'–0"	60'–0"	60'–0"	80'–0"

CAMBER IN SEGMENT

	Δ1	Δ2	Δ3	Δ4	Δ5
PG1	1'–1⅜"	2'–1½"	2'–4¾"	2'–5¼"	1'–5¾"
PG2	0'–10¾"	2'–0⅜"	2'–5¾"	2'–3⅞"	1'–3⅞"
PG3	0'–7⅞"	1'–11⅜"	2'–7½"	2'–2½"	1'–1⅞"
PG4	0'–5"	1'–10½"	2'–10⅜"	2'–1¼"	0'–11½"

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

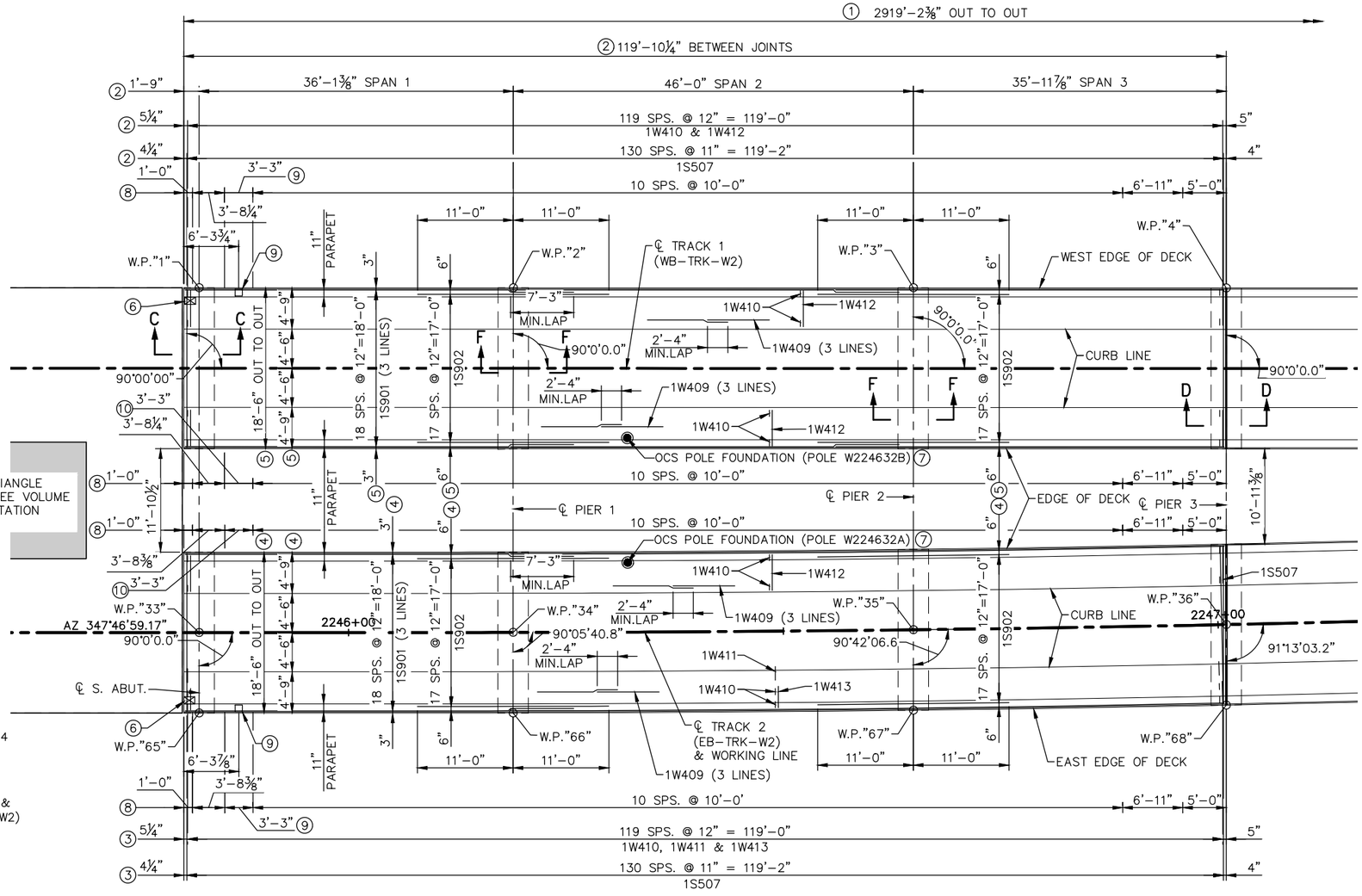
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
STEEL DETAILS (CAMBER)

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP15_2

SHEET 165 OF 264

Jan, 17 2016 09:50 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP15.dwg By: hills



PARTIAL DECK PLAN – SPAN 1 TO 3

TOP REINFORCEMENT SHOWN

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

FOR SECTIONS C–C, D–D AND F–F SEE SHEET 184

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)

② MEASURED ALONG ℄ TRACK 1 (WB–TRK–W2)

③ MEASURED ALONG EAST EDGE OF DECK TRACK 2 & LAYED PERPENDICULAR TO ℄ TRACK 2 (EB–TRK–W2)

④ MEASURED PARALLEL ℄ TRACK 2 (EB–TRK–W2)

⑤ MEASURED PARALLEL ℄ TRACK 1 (WB–TRK–W2)

⑥ STRAY CURRENT BOND TEST STATION. SEE STRAY CURRENT CORROSION CONTROL NOTES ON SHEET 3.

⑦ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 2131 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.

⑧ WIRE FENCE POST SPACING. MEASURED ALONG EDGE OF DECK.

⑨ INTRUSION DETECTION POST AND FENCE END FLARE SEE FENCE DETAILS ON SHEET 225

⑩ INTRUSION DETECTION OPENING AND FENCE END FLARE. PROVIDE 3" GAP IN WIRE FENCE FOR INTRUSION DETECTION SYSTEM. SEE FENCE DETAILS ON SHEET 225

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DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) TOP 1A

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP11_1

SHEET 166 OF 264

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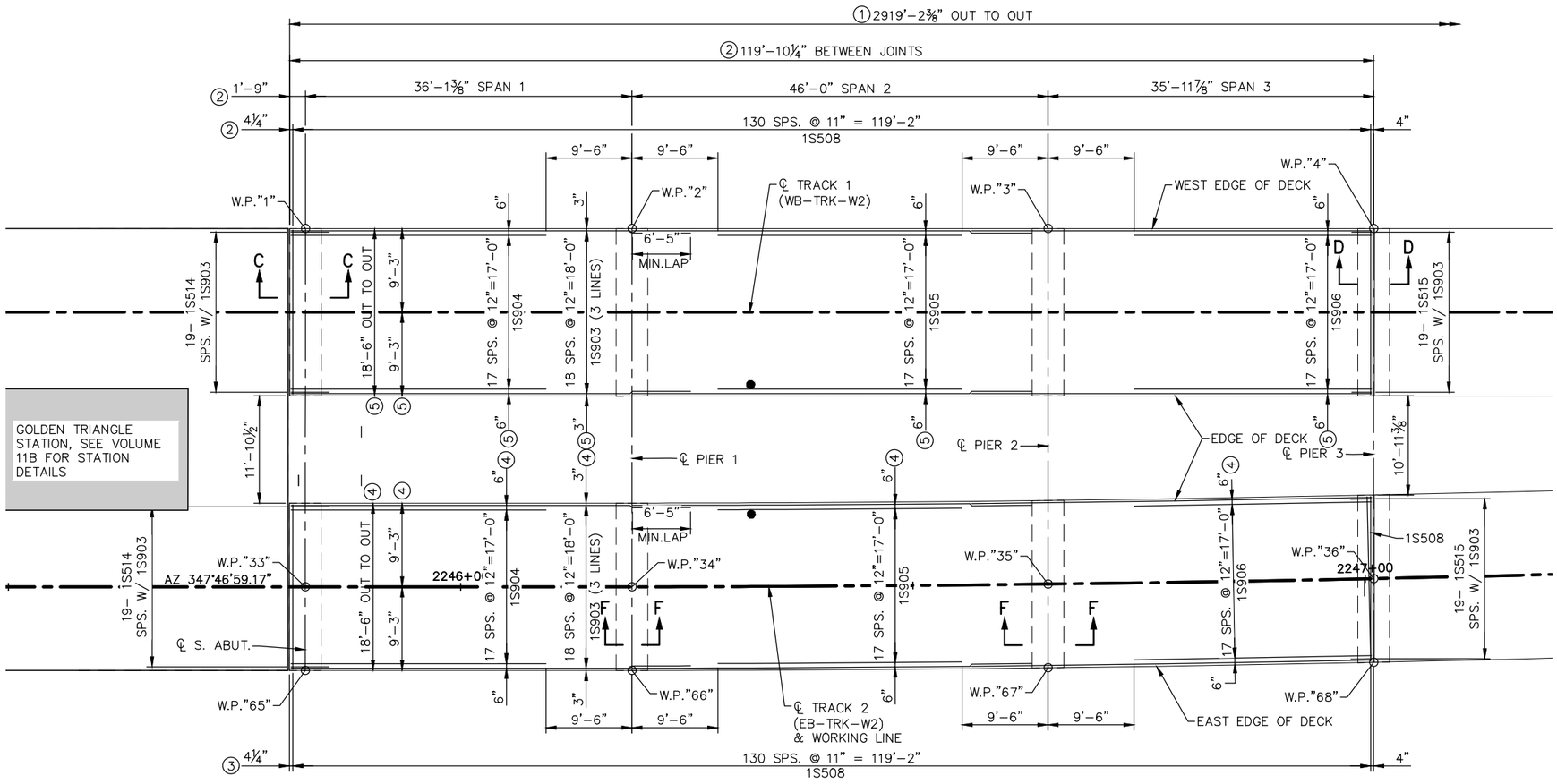

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

FOR SECTIONS C-C, D-D AND F-F SEE SHEET 184

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

② MEASURED ALONG ℄ TRACK 1 (WB-TRK-W2)

③ MEASURED ALONG EAST EDGE OF DECK TRACK 2 & LAYED PERPENDICULAR TO ℄ TRACK 2 (EB-TRK-W2)

④ MEASURED PARALLEL ℄ TRACK 2 (EB-TRK-W2)

⑤ MEASURED PARALLEL ℄ TRACK 1 (WB-TRK-W2)

PARTIAL DECK PLAN – SPAN 1 TO 3

BOTTOM REINFORCEMENT SHOWN

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AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) TOP 1B

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP11_1A

SHEET 167 OF 264

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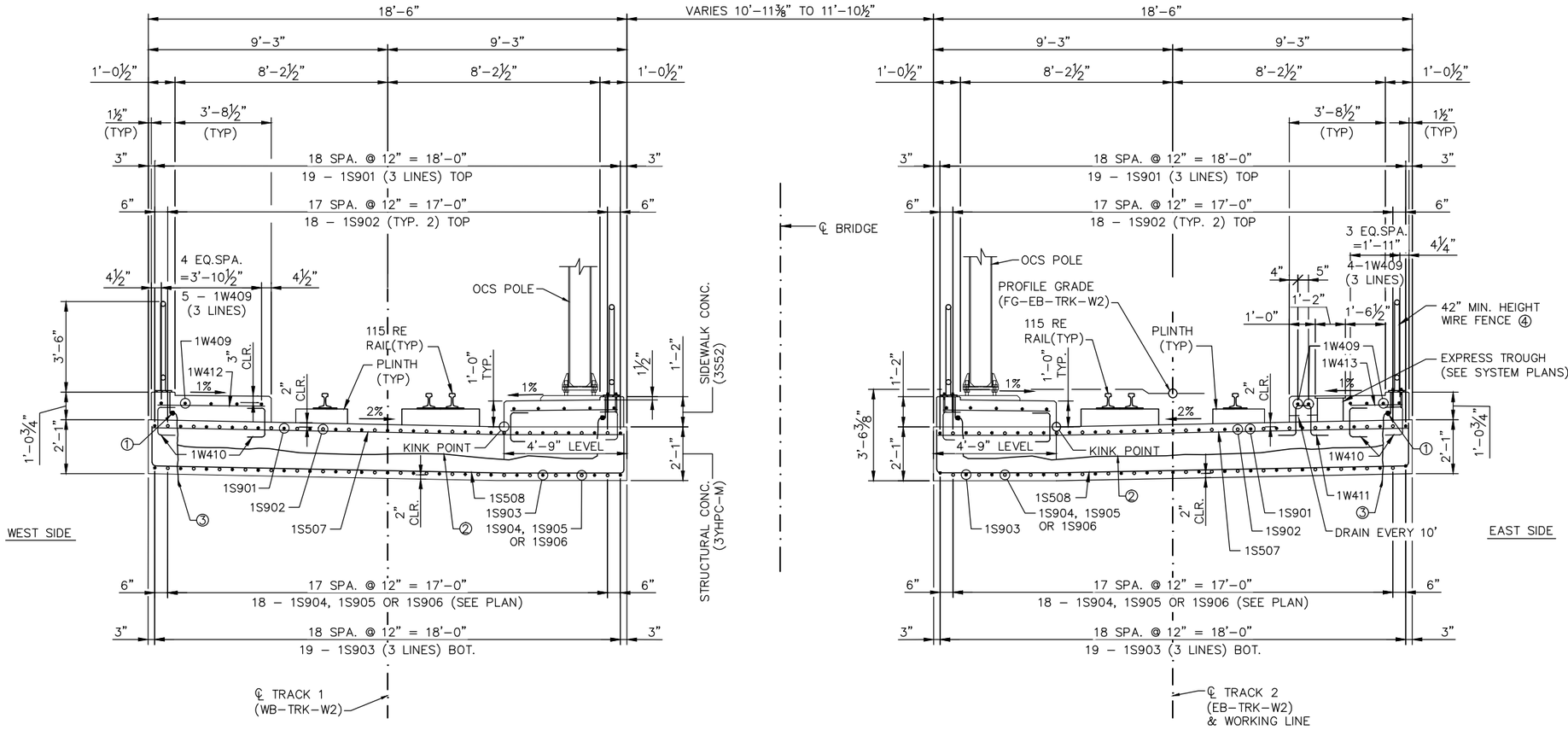

TRANSVERSE SECTION SPANS 1–3

SCALE 0 2.5 5 FEET

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

① GROUND WIRE, SEE GROUNDING PLANS.

② GROUND WIRE PLACED WITHIN THE SLAB AT PIER 1. SEE GROUNDING PLANS.

③ CONNECT TO GROUND WIRE IN PIER 1.

④ SEE SHEET "WIRE FENCE (DESIGN W-1)"

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SECTION & REINF) 1C

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP16_1

SHEET 168 OF 264

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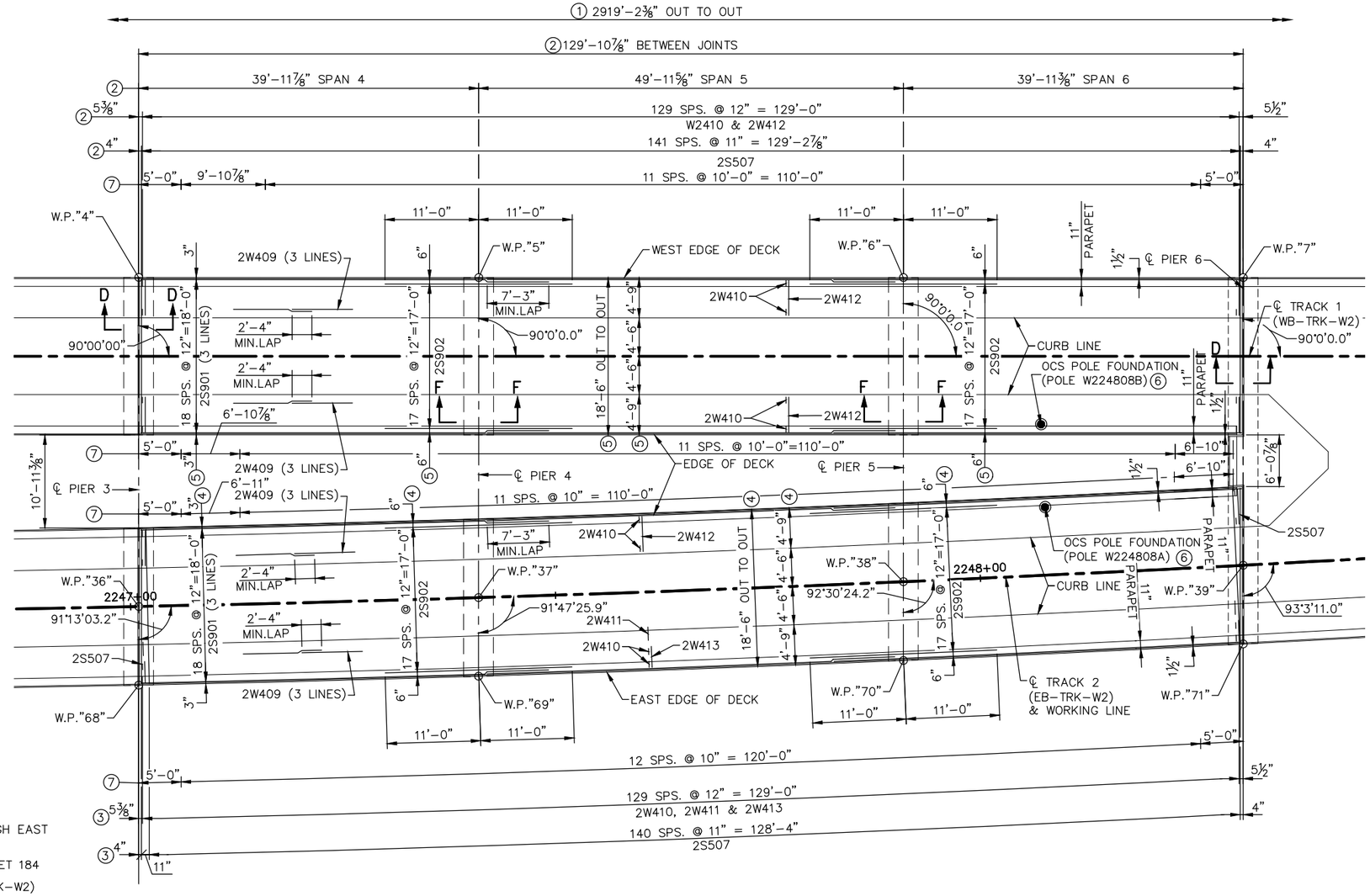

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

FOR SECTIONS D-D AND F-F SEE SHEET 184

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

② MEASURED ALONG ℄ TRACK 1 (WB-TRK-W2)

③ MEASURED ALONG EAST EDGE OF DECK TRACK 2 & LAYED PERPENDICULAR TO ℄ TRACK 2 (EB-TRK-W2)

④ MEASURED PARALLEL ℄ TRACK 2 (EB-TRK-W2)

⑤ MEASURED PARALLEL ℄ TRACK 1 (WB-TRK-W2)

⑥ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.

⑦ WIRE FENCE POST SPACING. MEASURED ALONG EDGE OF DECK.

PARTIAL DECK PLAN – SPAN 4 TO SPAN 6

TOP REINFORCEMENT SHOWN

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) TOP 2A

DISCIPLINE: STRUCTURES

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

SHEET 169 OF 264

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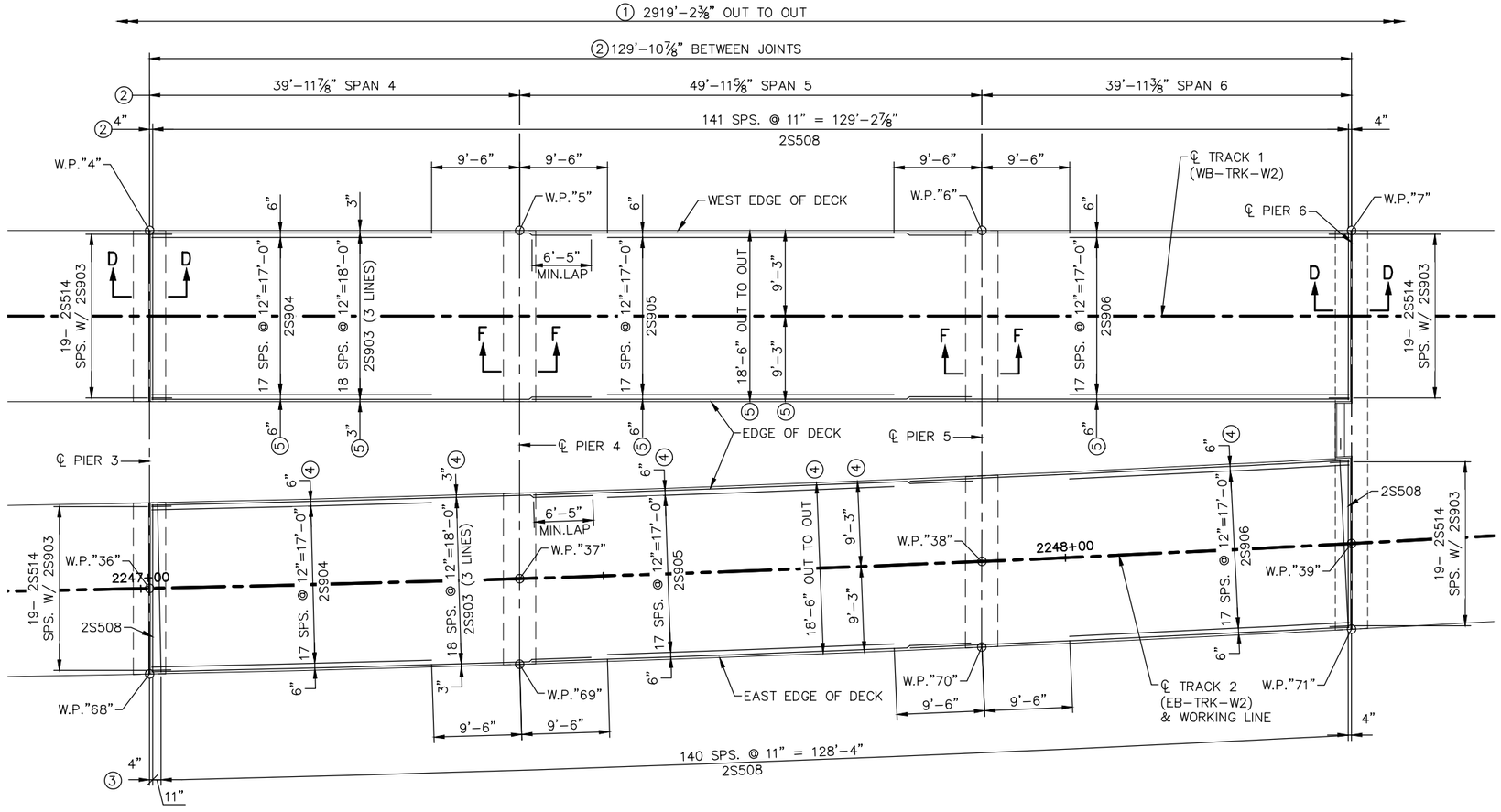

PARTIAL DECK PLAN – SPAN 4 TO SPAN 6

BOTTOM REINFORCEMENT SHOWN

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

FOR SECTION D–D AND F–F SEE SHEET 184

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)

② MEASURED ALONG ℄ TRACK 1 (WB–TRK–W2)

③ MEASURED ALONG EAST EDGE OF DECK TRACK 2 & LAYED PERPENDICULAR TO ℄ TRACK 2 (EB–TRK–W2)

④ MEASURED PARALLEL ℄ TRACK 2 (EB–TRK–W2)

⑤ MEASURED PARALLEL ℄ TRACK 1 (WB–TRK–W2)

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) TOP 2B

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP11_2A

SHEET 170 OF 264

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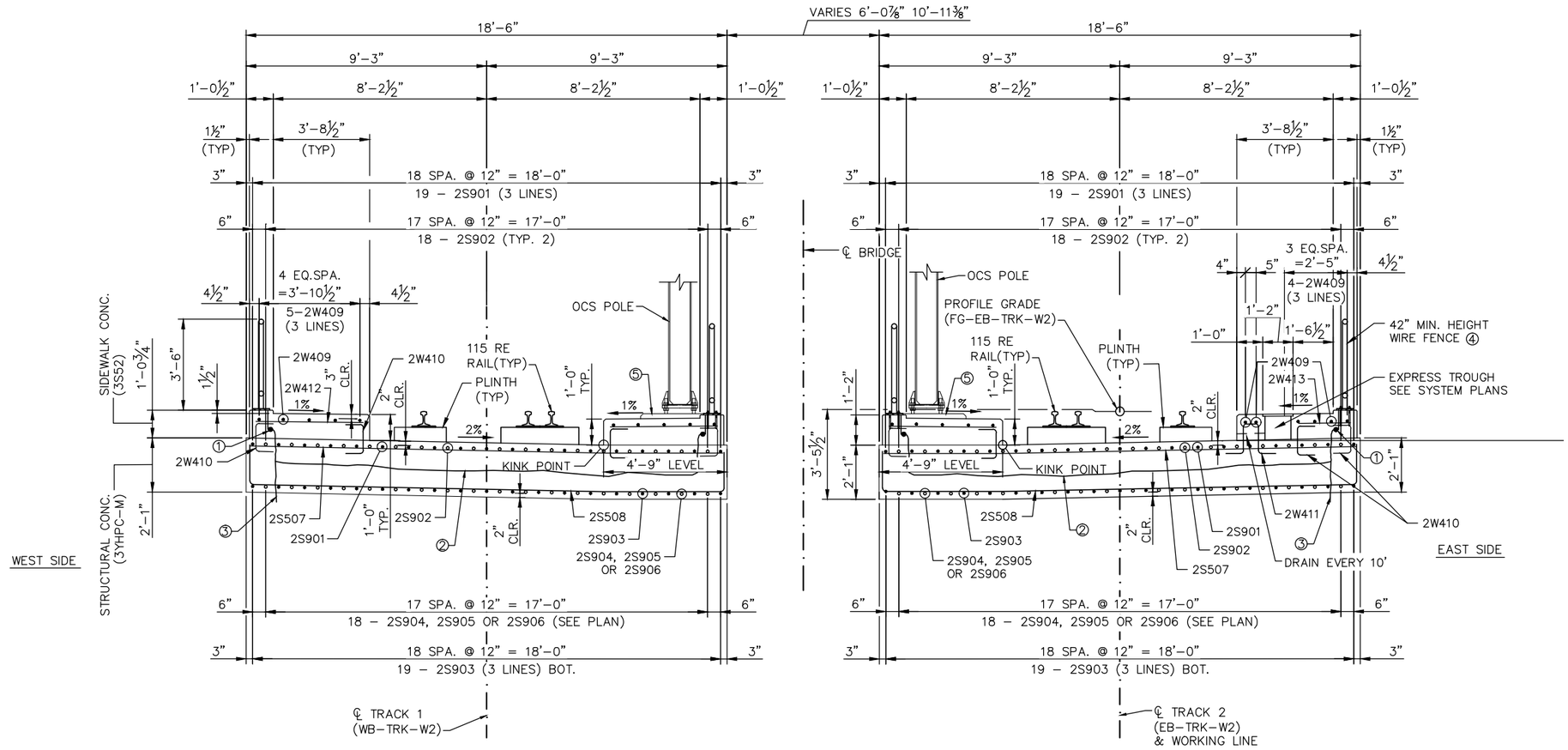

TRANSVERSE SECTION SPANS 4–6

SCALE 0 2.5 5 IN FEET

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

① GROUND WIRE, SEE GROUNDING PLANS.

② GROUND WIRE PLACED WITHIN THE SLAB AT PIER 4. SEE GROUNDING PLANS.

③ CONNECT TO GROUND WIRE IN PIER 4.

④ SEE SHEET "WIRE FENCE (DESIGN W–1)"

⑤ SEE SHEETS 212–213 FOR PEDESTAL REINFORCING AND DETAILS.

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

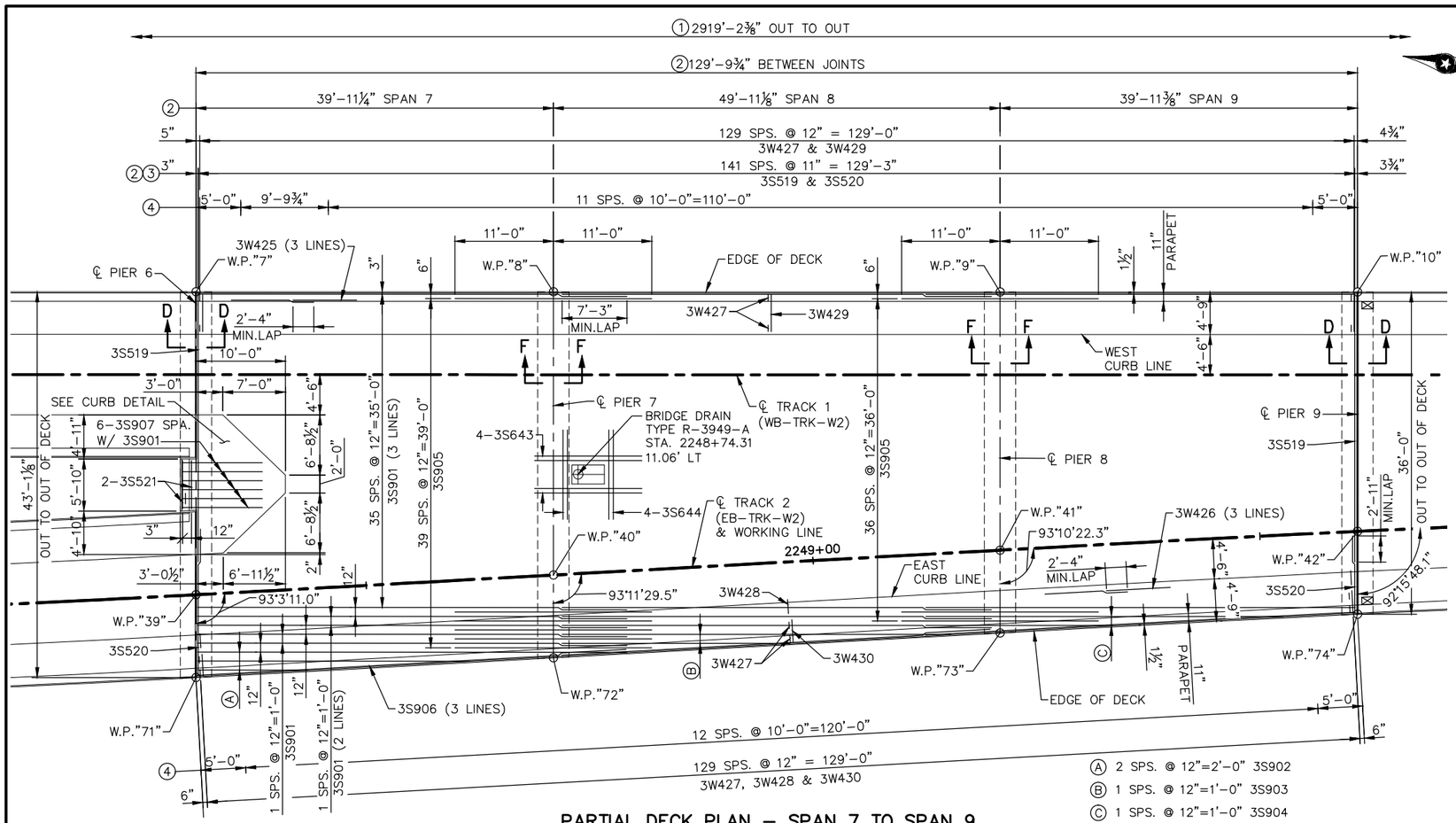
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SECTION & REINF) 2C

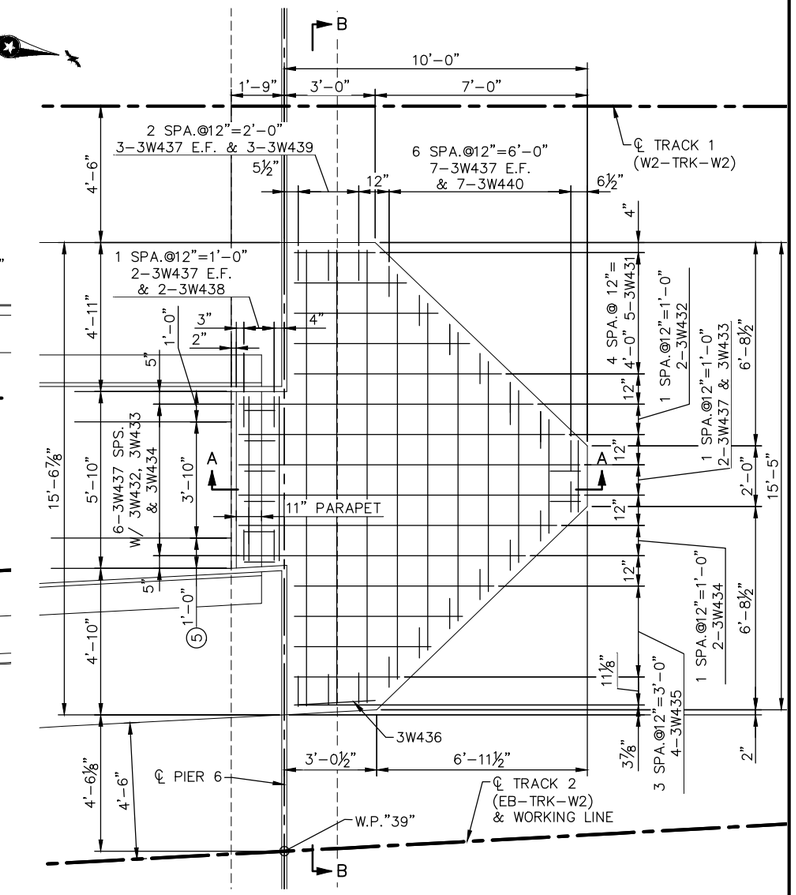
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP16_2

SHEET 171 OF 264

Jan. 17 2016 09:53 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP16.dwg By: hills



PARTIAL DECK PLAN – SPAN 7 TO SPAN 9
TOP REINFORCEMENT SHOWN



CURB DETAIL
TOP REINFORCEMENT SHOWN

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

MEASURED ALONG ℄ TRACK 1 (WB–TRK–W2)

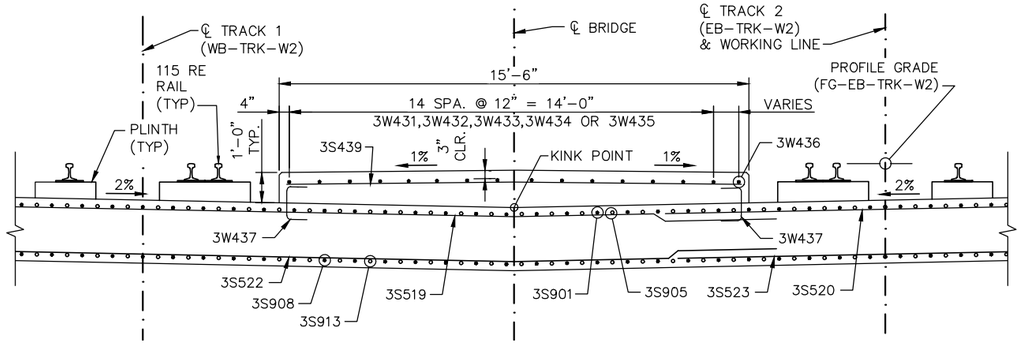
ALL LONGITUDINAL BARS MEASURED PARALLEL ℄ TRACK 1 (WB–TRK–W2) EXCEPT EAST EDGE OF DECK.

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)

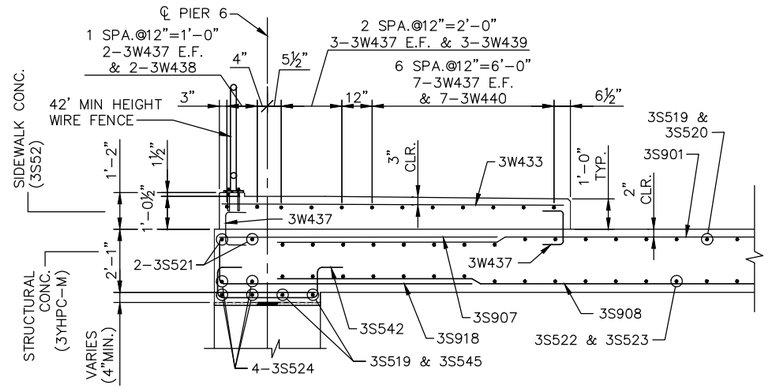
② FOR SECTIONS D–D AND F–F SEE SHEET 184

③ PERPENDICULAR TO ℄ TRACK 1 (WB–TRK–W2)

④ WIRE FENCE POST SPACING. MEASURED ALONG EDGE OF DECK.



SECTION B–B



SECTION A–A

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: SWH | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

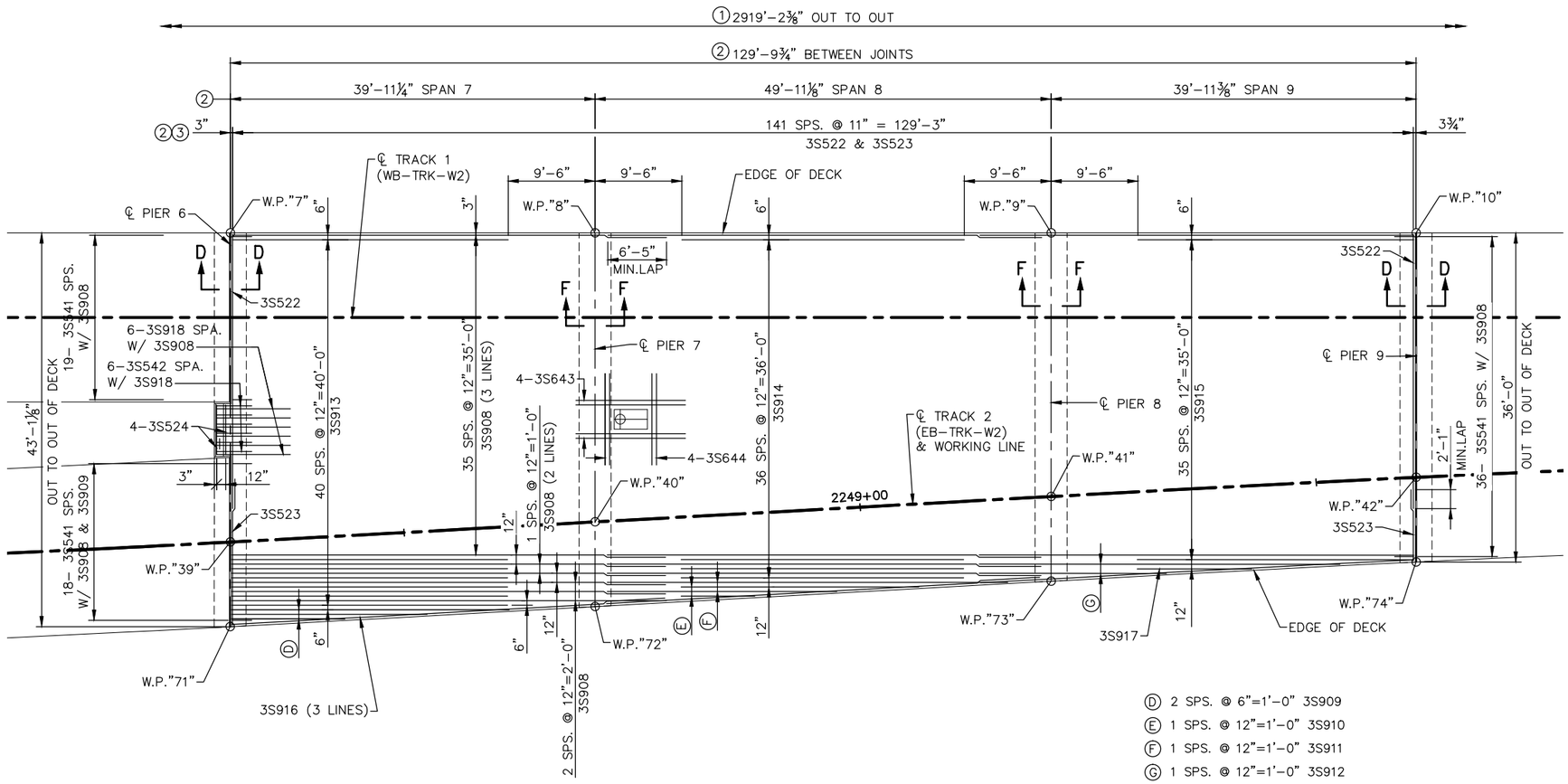
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) TOP 3A

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP11_3

SHEET 172 OF 264

Jan, 17 2016 09:54 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP11.dwg By: hills



NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

ALL LONGITUDINAL BARS MEASURED PARALLEL ℄ TRACK 1 (WB-TRK-W2) EXCEPT EAST EDGE OF DECK.

FOR SECTIONS D-D AND F-F SEE SHEET 184

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

② MEASURED ALONG ℄ TRACK 1 (WB-TRK-W2)

③ PERPENDICULAR TO ℄ TRACK 1 (WB-TRK-W2)

PARTIAL DECK PLAN – SPAN 7 TO SPAN 9

BOTTOM REINFORCEMENT SHOWN

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DESIGNED BY: DDL CHECKED BY: MJC

DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

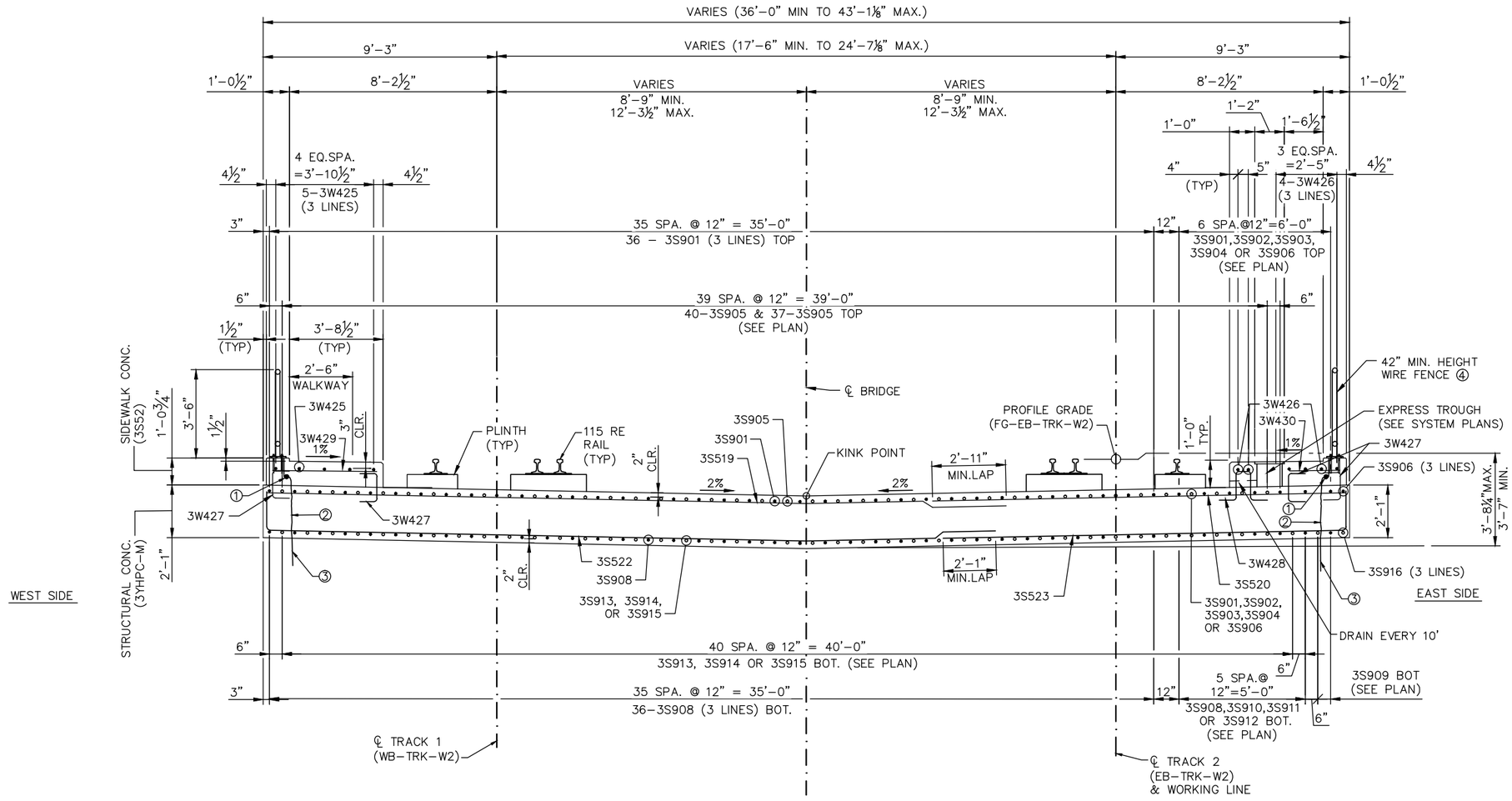
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) TOP 3B

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP11_3A

SHEET 173 OF 264

Jan, 17 2016 09:54 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP11.dwg By: hills



TRANSVERSE SECTION SPANS 7-9

0 2.5 5

SCALE IN FEET

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

① GROUND WIRE, SEE GROUNDING PLANS.

② GROUND WIRE PLACED WITHIN THE SLAB AT PIER 7. SEE GROUNDING PLANS.

③ CONNECT TO GROUND WIRE IN PIER 7.

④ SEE SHEET "WIRE FENCE (DESIGN W-1)"

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DESIGNED BY: DDL CHECKED BY: MJC

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extention

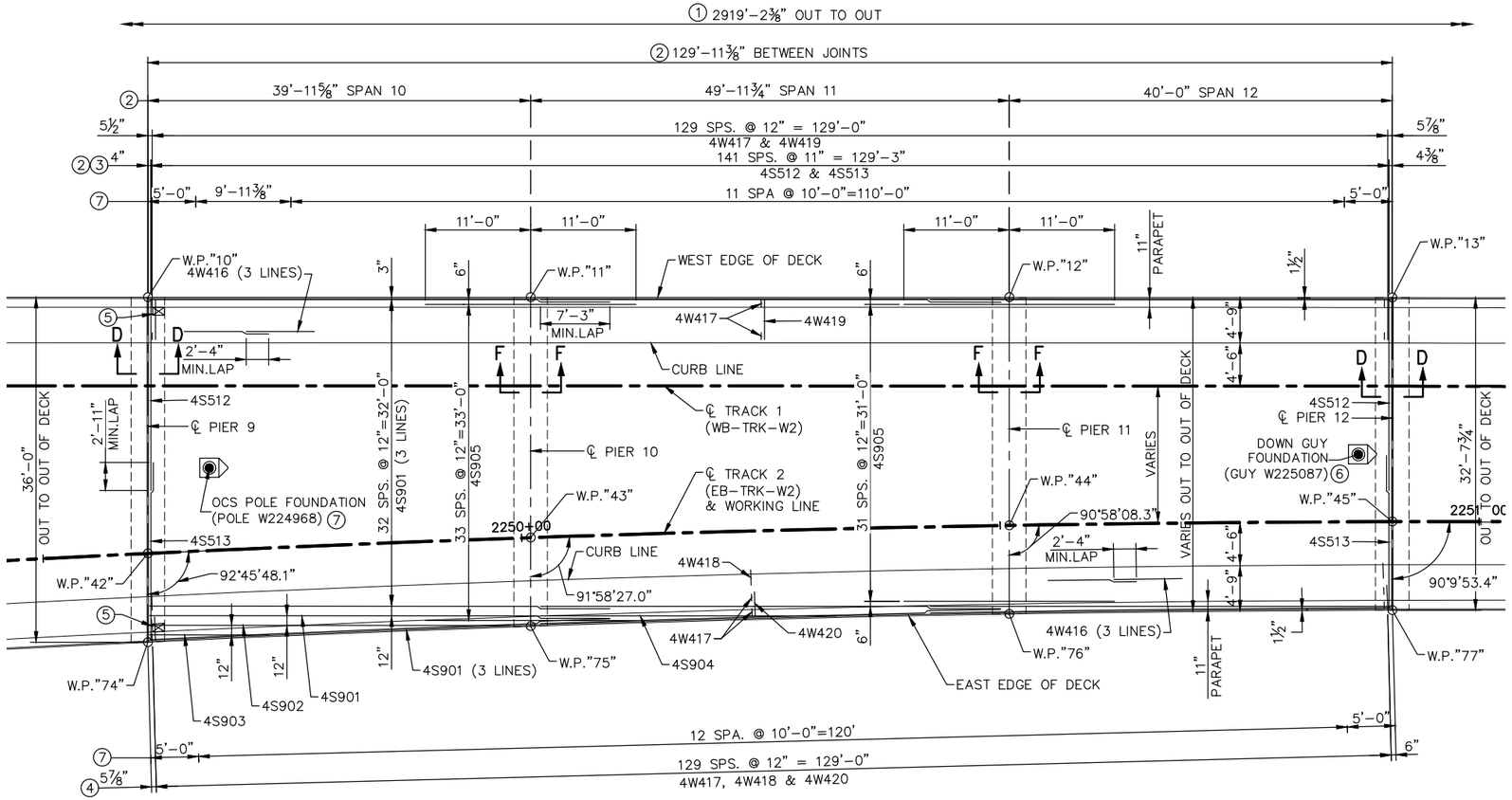
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SECTION & REINF) 3C

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP16_3

SHEET 174 OF 264

Jan, 17 2016 09:54 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP16.dwg By: hills



PARTIAL DECK PLAN – SPAN 10 TO SPAN 12

TOP REINFORCEMENT SHOWN

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

ALL LONGITUDINAL BARS MEASURED PARALLEL ℄ TRACK 1 (WB–TRK–W2) EXCEPT EAST EDGE OF DECK.

FOR SECTIONS D–D AND F–F SEE SHEET 184

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)

② MEASURED ALONG ℄ TRACK 1 (WB–TRK–W2)

③ PERPENDICULAR TO ℄ TRACK 1 (WB–TRK–W2)

④ MEASURED ALONG EAST EDGE OF DECK

⑤ STRAY CURRENT BOND TEST STATION. SEE STRAY CURRENT CORROSION CONTROL NOTES ON SHEET 3.

⑥ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.

⑦ WIRE FENCE POST SPACING. MEASURED ALONG EDGE OF DECK.

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DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

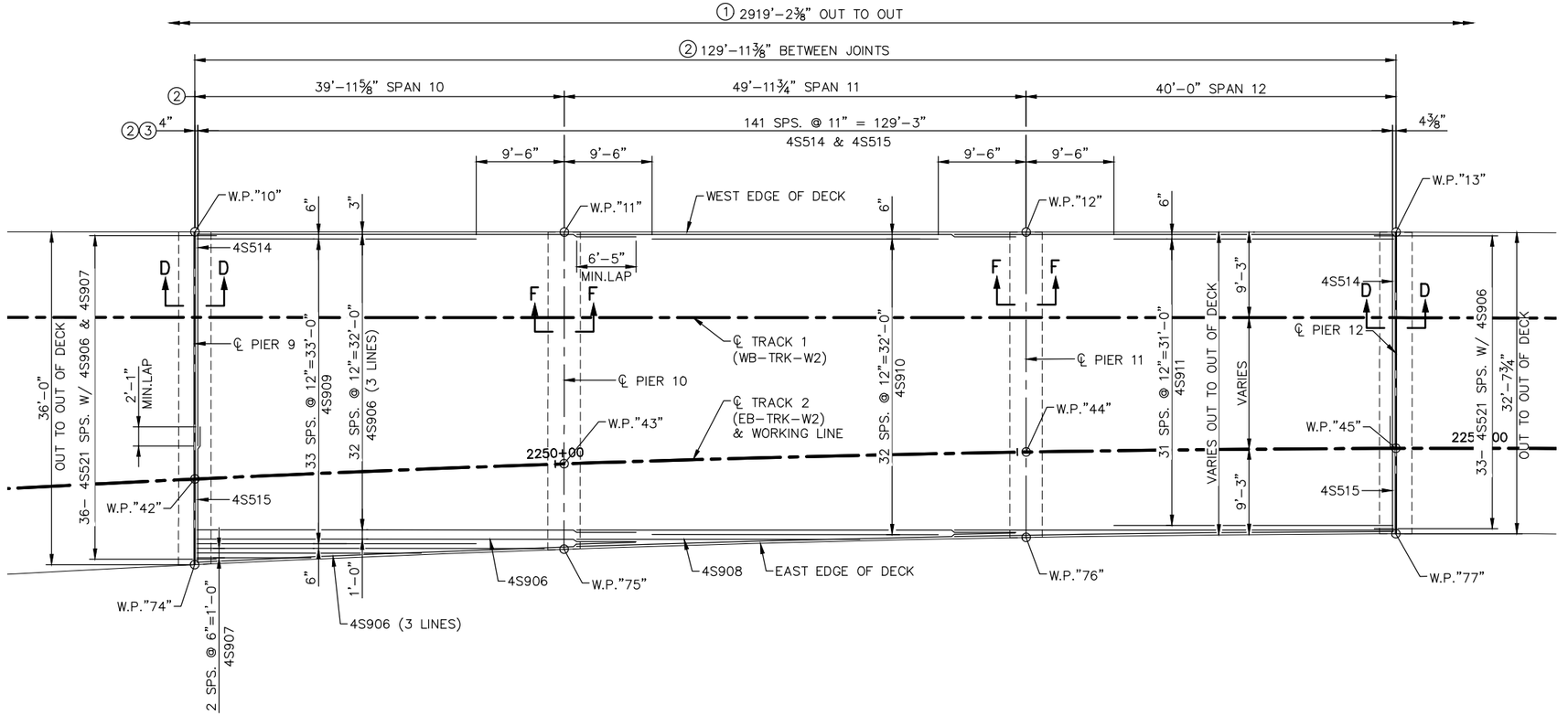
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) TOP 4A

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP11_4

SHEET 175 OF 264

Jan, 17 2016 09:55 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP11.dwg By: hills



PARTIAL DECK PLAN – SPAN 10 TO SPAN 12
BOTTOM REINFORCEMENT SHOWN

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

ALL LONGITUDINAL BARS MEASURED PARALLEL ℄ TRACK 1 (WB-TRK-W2) EXCEPT EAST EDGE OF DECK.

FOR SECTIONS D-D AND F-F SEE SHEET 184

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

② MEASURED ALONG ℄ TRACK 1 (WB-TRK-W2)

③ PERPENDICULAR TO ℄ TRACK 1 (WB-TRK-W2)

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DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

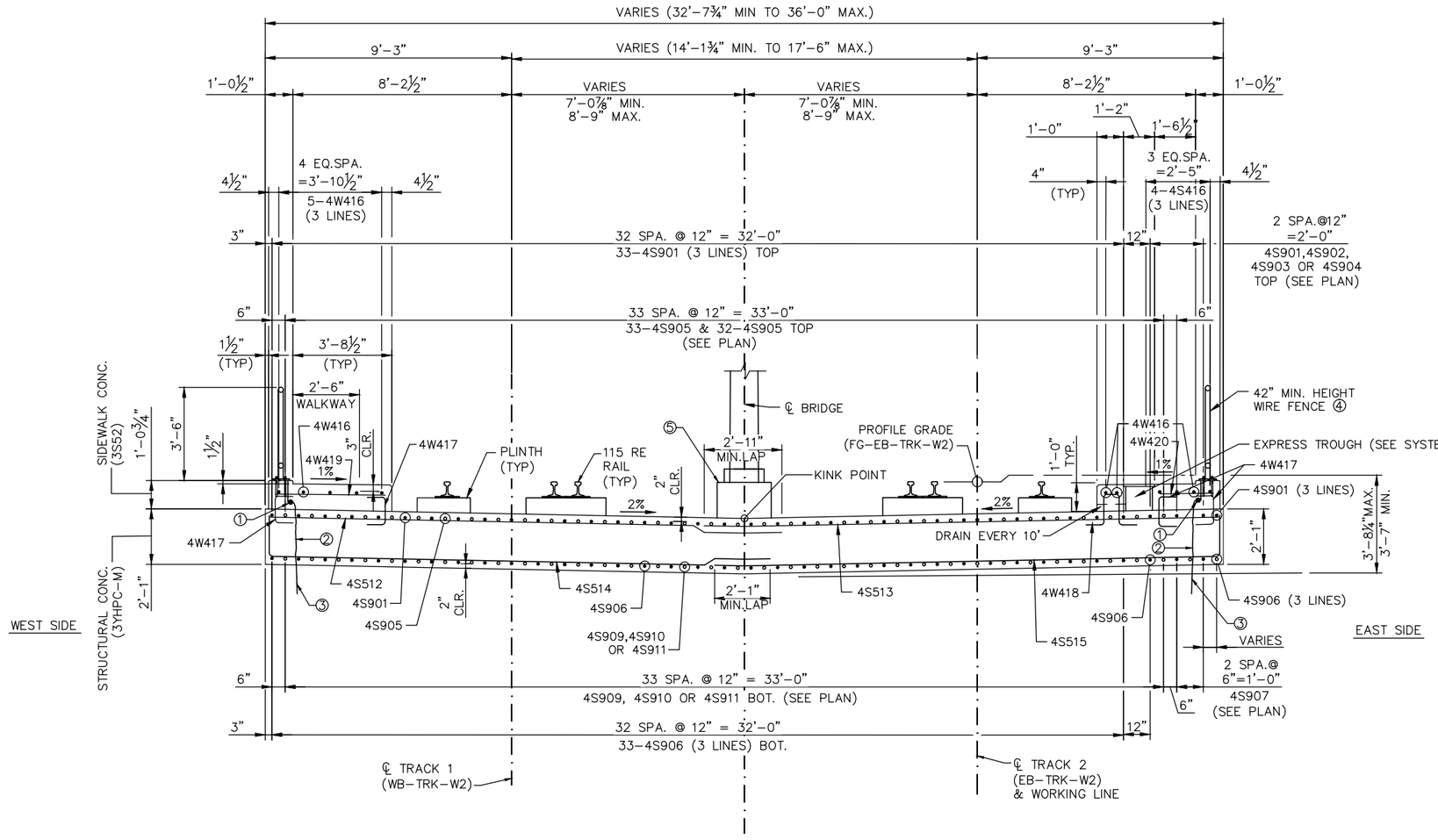
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) TOP 4B

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP11_4A

SHEET 176 OF 264

Jan, 17 2016 09:55 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP11.dwg By: hills



TRANSVERSE SECTION SPANS 10–12

0 2.5 5

SCALE IN FEET

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

① GROUND WIRE, SEE GROUNDING PLANS.

② GROUND WIRE PLACED WITHIN THE SLAB AT PIER 10. SEE GROUNDING PLANS.

③ CONNECT TO GROUND WIRE IN PIER 10.

④ SEE SHEET "WIRE FENCE (DESIGN W-1)"

⑤ SEE SHEETS 212–213 FOR PEDESTAL REINFORCING AND DETAILS.

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DESIGNED BY: DDL CHECKED BY: MJC

DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extention

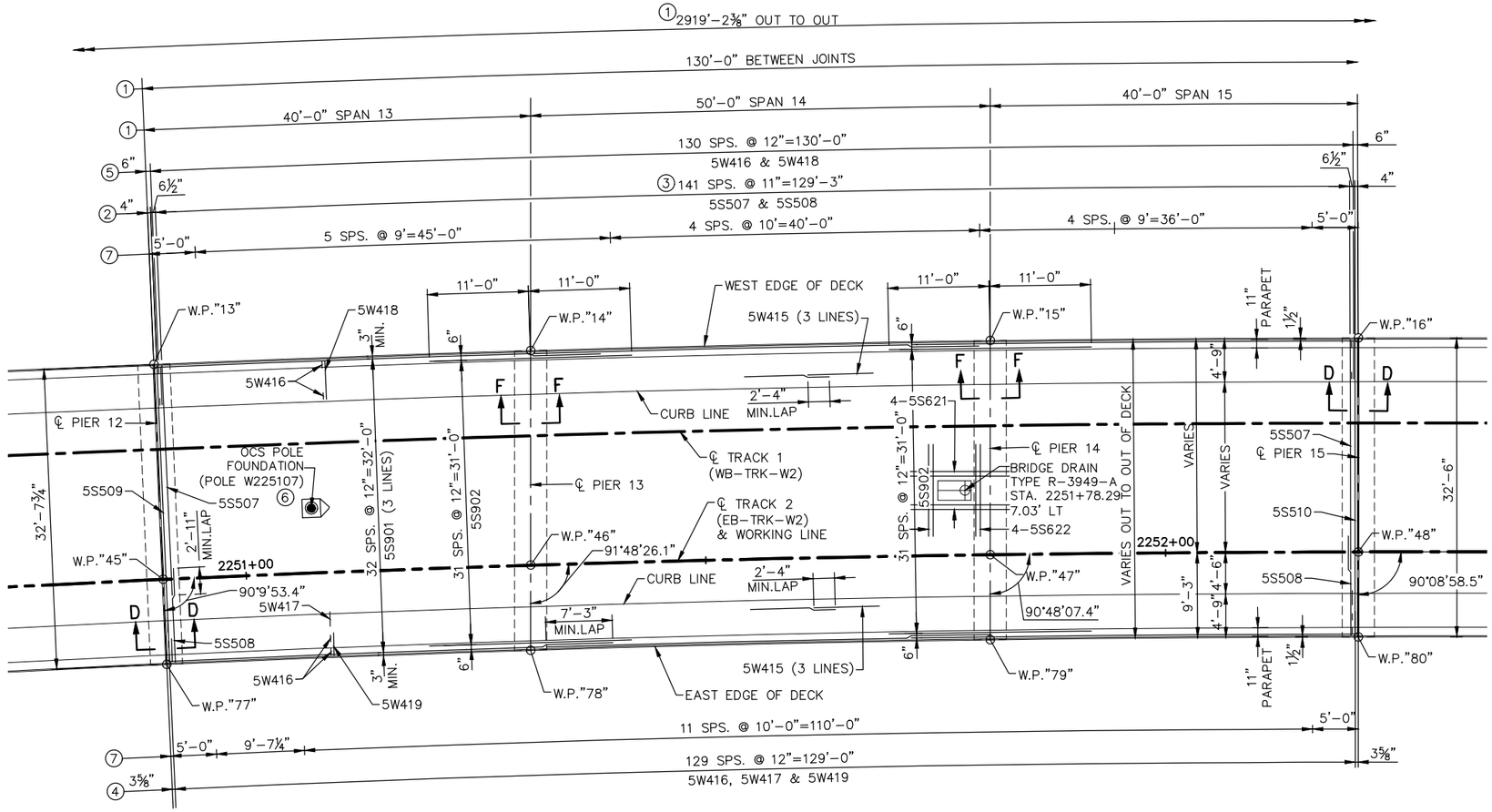
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SECTION & REINF) 4C

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP16_4

SHEET 177 OF 264

Jan, 17 2016 09:55 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP16.dwg By: hills



NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

ALL LONGITUDINAL BARS MEASURED PARALLEL ℄ TRACK 2 (EB-TRK-W2) EXCEPT EAST EDGE OF DECK.

FOR SECTIONS D-D AND F-F SEE SHEET 184

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

② MEASURED ALONG WEST EDGE OF DECK

③ BARS PERPENDICULAR TO ℄ TRACK 2 (EB-TRK-W2)

④ MEASURED ALONG EAST EDGE OF DECK

⑤ MEASURED ALONG WEST EDGE OF DECK

⑥ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.

⑦ WIRE POST FENCE SPACING. MEASURED ALONG EDGE OF DECK.

PARTIAL DECK PLAN – SPAN 13 TO SPAN 15

TOP REINFORCEMENT SHOWN

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

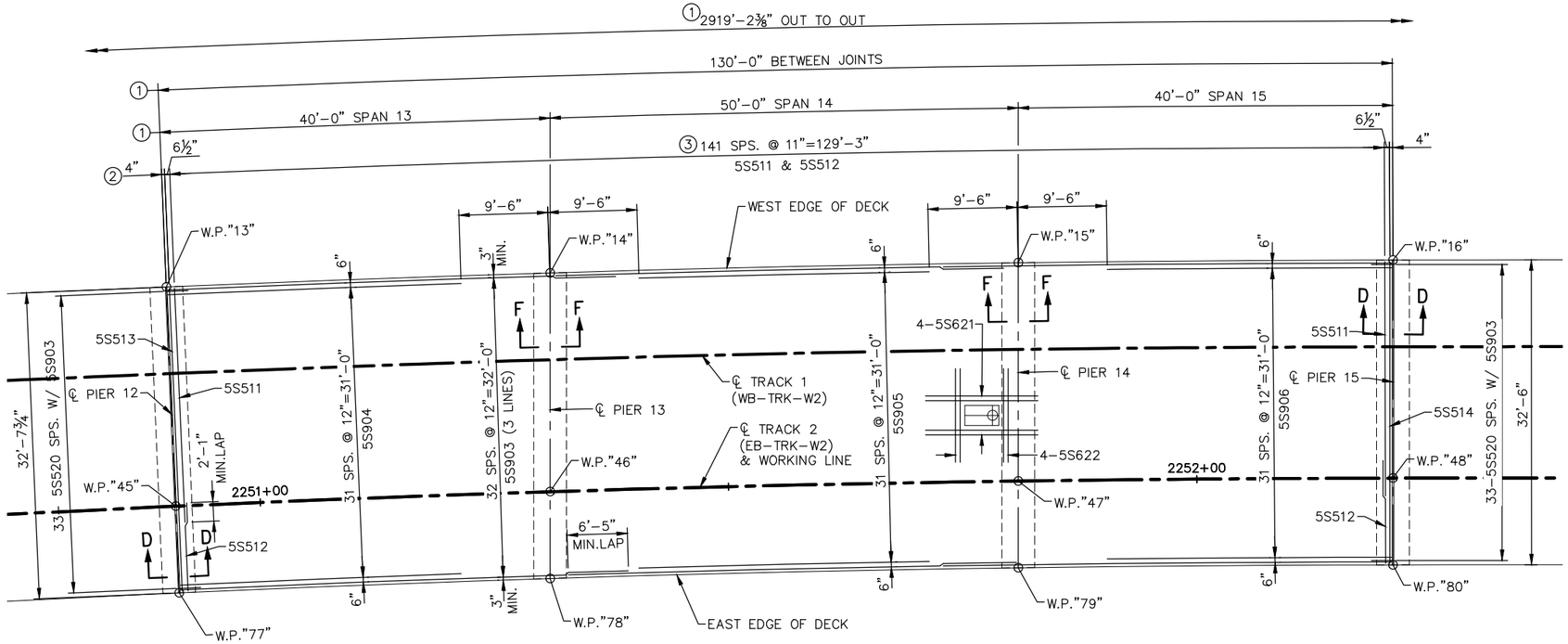
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) TOP 5A

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP11_5

SHEET 178 OF 264

Jan, 17 2016 09:56 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP11.dwg By: hills



NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

ALL LONGITUDINAL BARS MEASURED PARALLEL ℄ TRACK 2 (EB-TRK-W2) EXCEPT EAST EDGE OF DECK.

FOR SECTIONS D-D AND F-F SEE SHEET 184

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

② MEASURED ALONG WEST EDGE OF DECK

③ BARS PERPENDICULAR TO ℄ TRACK 2 (EB-TRK-W2)

PARTIAL DECK PLAN – SPAN 13 TO SPAN 15

BOTTOM REINFORCEMENT SHOWN

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DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

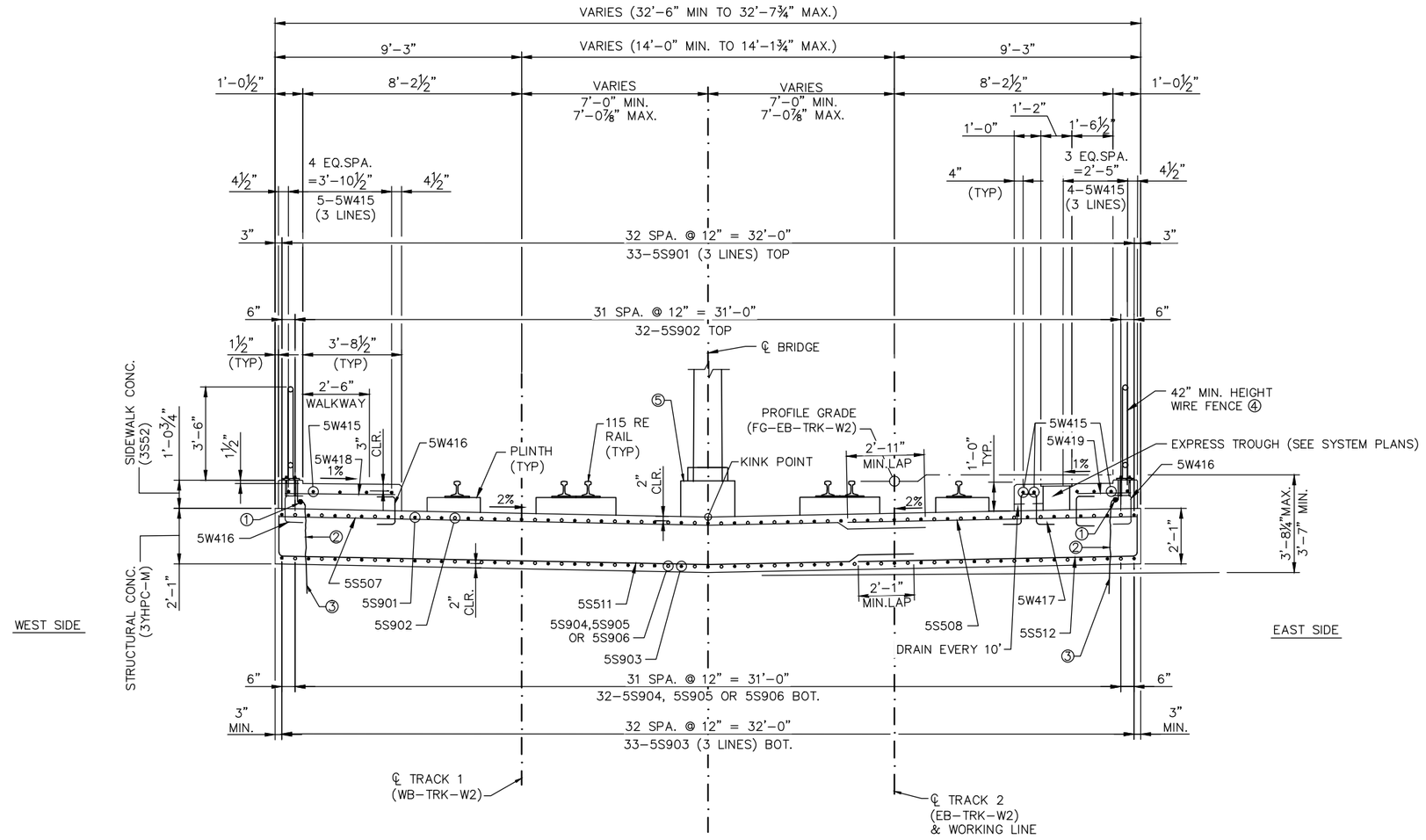
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) TOP 5B

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP11_5A

SHEET 179 OF 264

Jan, 17 2016 09:56 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP11.dwg By: hills



TRANSVERSE SECTION SPANS 13–15

0 2.5 5

SCALE IN FEET

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

① GROUND WIRE, SEE GROUNDING PLANS.

② GROUND WIRE PLACED WITHIN THE SLAB AT PIER 13. SEE GROUNDING PLANS.

③ CONNECT TO GROUND WIRE IN PIER 13.

④ SEE SHEET "WIRE FENCE (DESIGN W-1)"

⑤ SEE SHEETS 212–213 FOR PEDESTAL REINFORCING AND DETAILS.

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extention

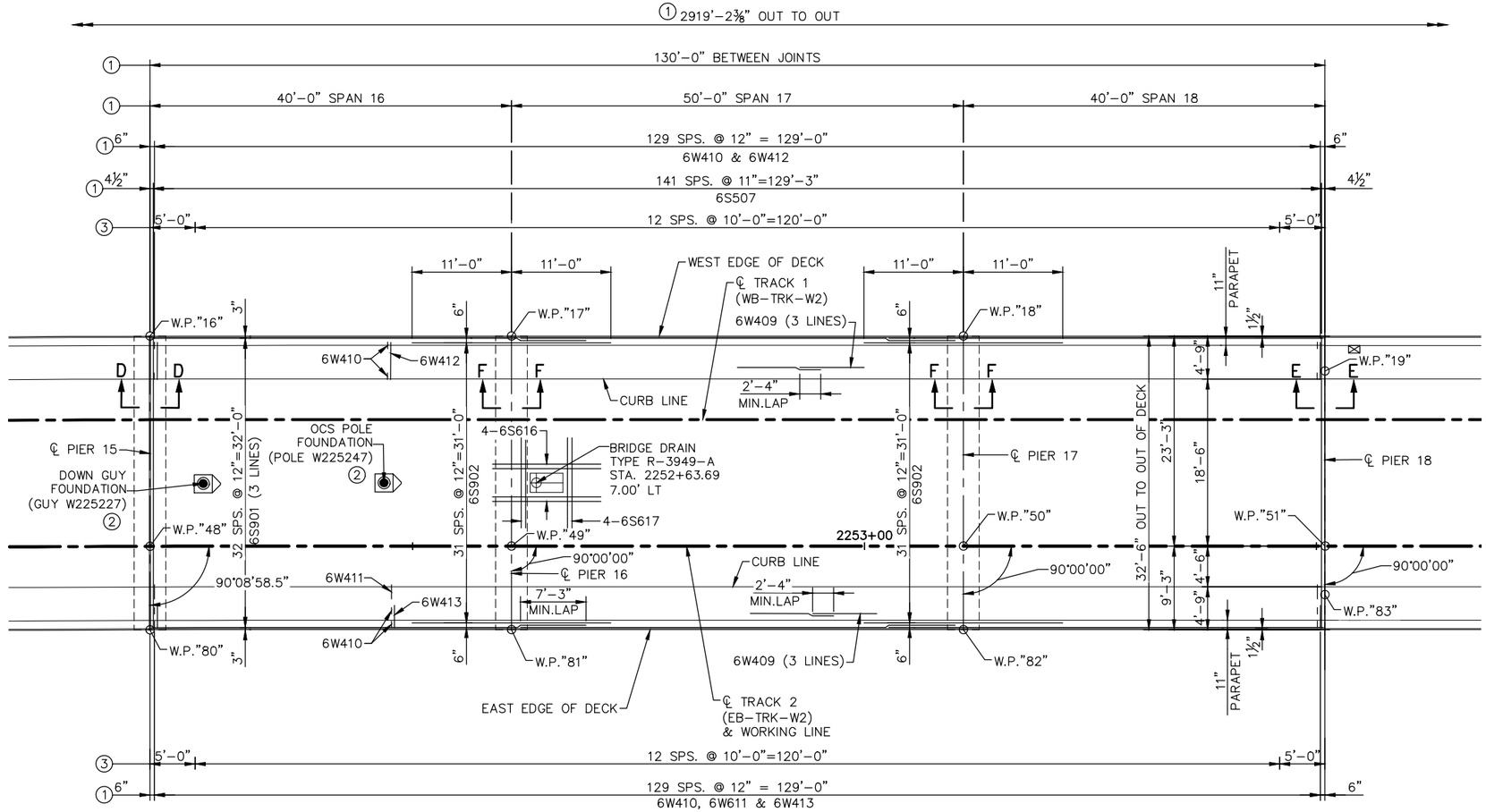
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SECTION & REINF) 5C

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP16_5

SHEET 180 OF 264

Jan, 17 2016 09:56 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP16.dwg By: hills



NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

FOR SECTIONS D-D, E-E AND F-F SEE SHEET 184

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

② SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.

③ WIRE FENCE POST SPACING. MEASURED ALONG EDGE OF DECK.

PARTIAL DECK PLAN – SPAN 16 TO SPAN 18

TOP OF REINFORCEMENT SHOWN

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

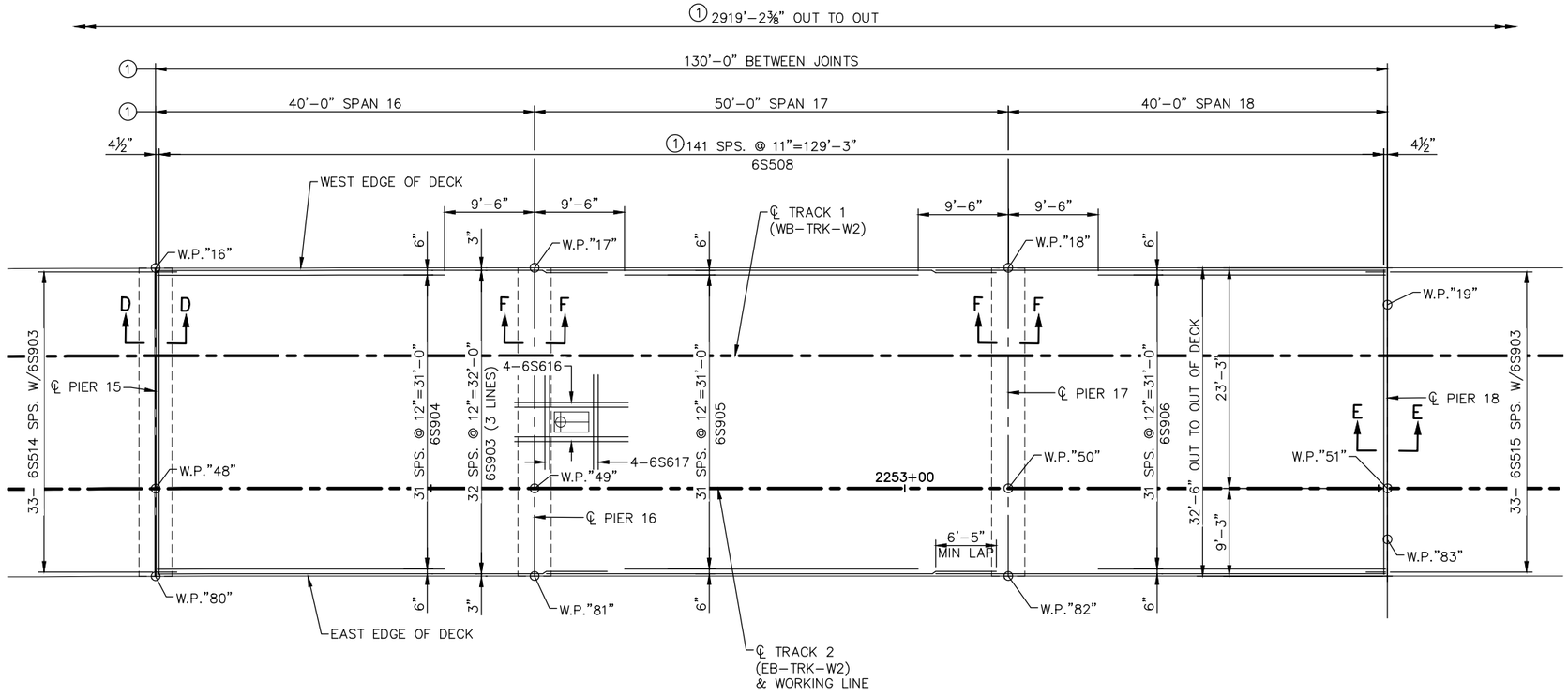
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) TOP 6A

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP11_6

SHEET 181 OF 264

Jan, 17 2016 09:57 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP11.dwg By: hills



PARTIAL DECK PLAN – SPAN 16 TO SPAN 18

BOTTOM OF REINFORCEMENT SHOWN

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

FOR SECTIONS D-D, E-E AND F-F SEE SHEET 184

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

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

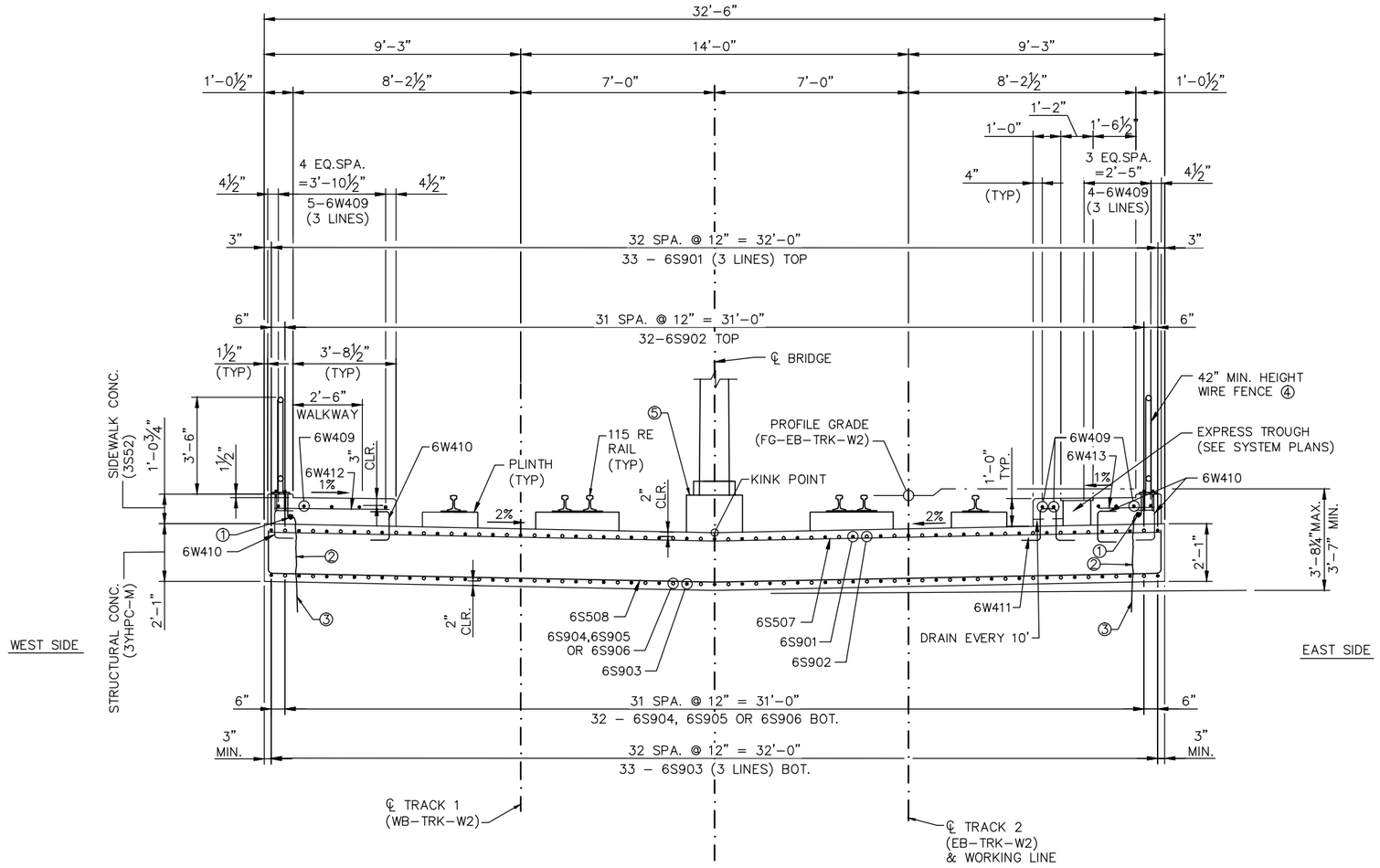
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) TOP 6B

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP11_6A

SHEET 182 OF 264

Jan, 17 2016 09:57 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP11.dwg By: hills



TRANSVERSE SECTION SPANS 16–18

0 2.5 5

SCALE IN FEET

NOTES:

SEE SHEET 184 FOR SECTION THROUGH EAST WALKWAY AND EXPRESS TROUGH.

① GROUND WIRE, SEE GROUNDING PLANS.

② GROUND WIRE PLACED WITHIN THE SLAB AT PIER 16. SEE GROUNDING PLANS.

③ CONNECT TO GROUND WIRE IN PIER 16.

④ SEE SHEET "WIRE FENCE (DESIGN W-1)"

⑤ SEE SHEETS 212-213 FOR PEDESTAL REINFORCING AND DETAILS.

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DESIGNED BY: DDL CHECKED BY: MJC

DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extention

90% SUBMISSION - 01/22/16

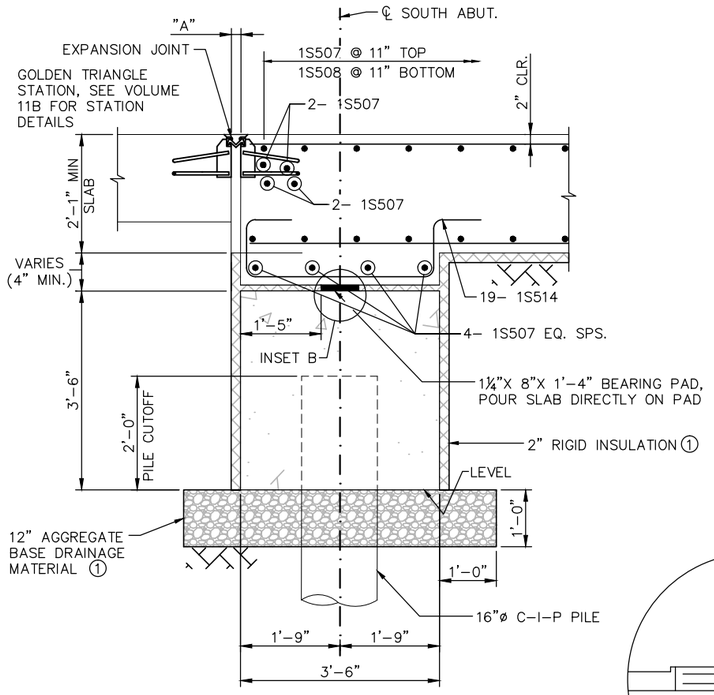
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SECTION & REINF) 6C

DISCIPLINE: STRUCTURES

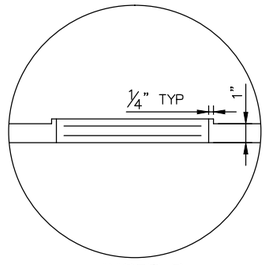
SHEET NAME: W2-STU-BRID-T212-SUP16_6

SHEET 183 OF 264

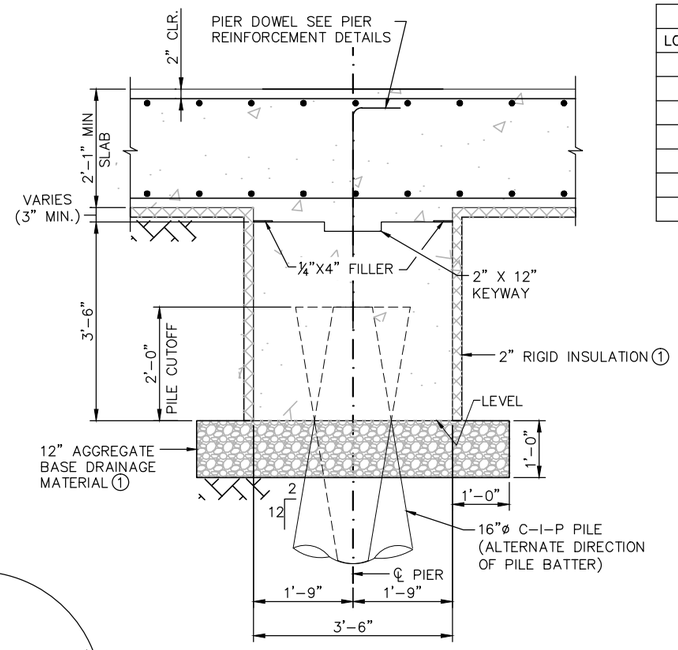
Jan. 17 2016 09:57 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP16.dwg By: hills



SECTION C-C

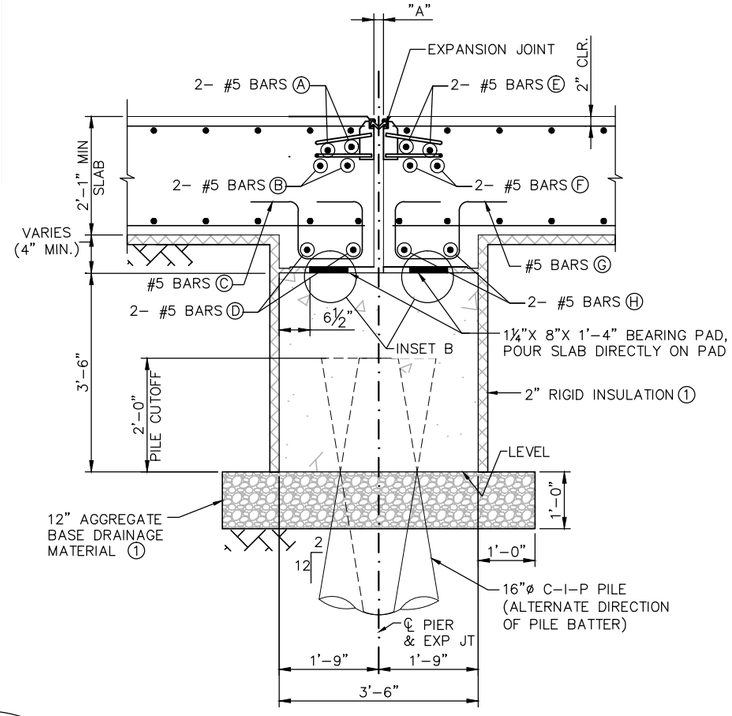


INSET B

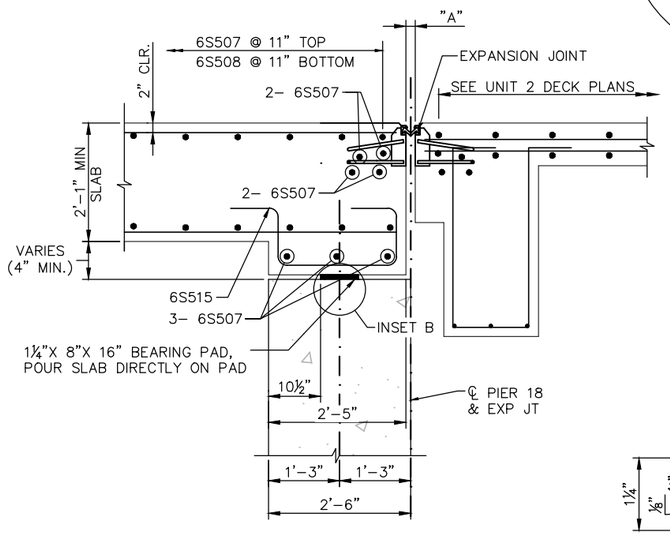


SECTION F-F

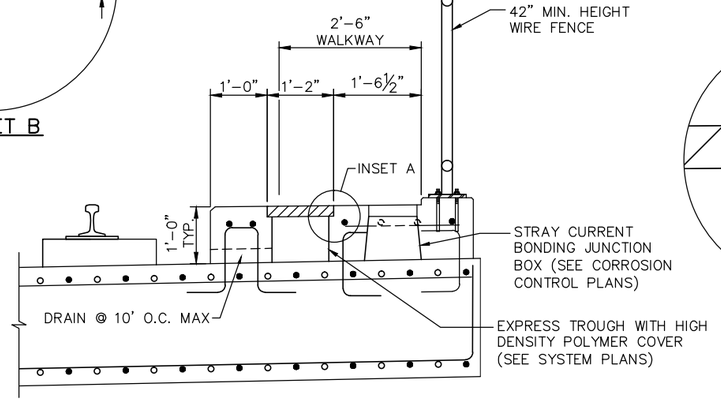
DIMENSION "A"		
LOCATION	90°	45°
SA	2"	2¼"
3	2"	2½"
6	2"	2½"
9	2"	2½"
12	2"	2½"
15	2"	2½"
18	1½"	2⅜"



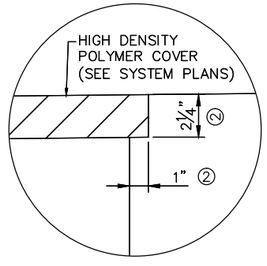
SECTION D-D



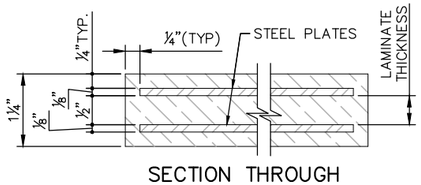
SECTION E-E



SECTION THROUGH EAST WALKWAY



INSET A



SECTION THROUGH ELASTOMERIC BEARING PAD

NOTES:

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

② CONTRACTOR TO COORDINATE FINAL BLOCKOUT & RECESS DIMENSIONS WITH SUPPLIER.

SLAB END REINFORCEMENT					
	PIER 3	PIER 6	PIER 9	PIER 12	PIER 15
Ⓐ	1S507	2S507	3S519 & 3S546	4S512 & 4S523	5S507 & 5S508
Ⓑ	1S507	2S507	3S519 & 3S546	4S512 & 4S523	5S507 & 5S508
Ⓒ	1S515	2S514	3S541	4S521	5S520
Ⓓ	1S507	2S507	3S519 & 3S546	4S512 & 4S523	5S507 & 5S508
Ⓔ	2S507	3S519 & 3S545	4S512 & 4S522	5S507 & 5S508	6S507
Ⓕ	2S507	3S519 & 3S545	4S512 & 4S522	5S507 & 5S508	6S507
Ⓖ	2S514	3S541 & 3S542	4S521	5S520	6S514
Ⓗ	2S507	3S519 & 3S545	4S512 & 4S522	5S507 & 5S508	6S507

ELASTOMERIC BEARING PAD NOTES:

FOR ELASTOMERIC MATERIAL AND PAD CONSTRUCTION SEE MNDOT SPEC. 3741.

THE STEEL PLATES IN THE BEARING PAD SHALL COMPLY WITH SPEC. 3306.

BEARING PAD SIZE SHALL BE 1¼"x 8"x 1'-4"
SHAPE FACTOR: S = 5.3

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

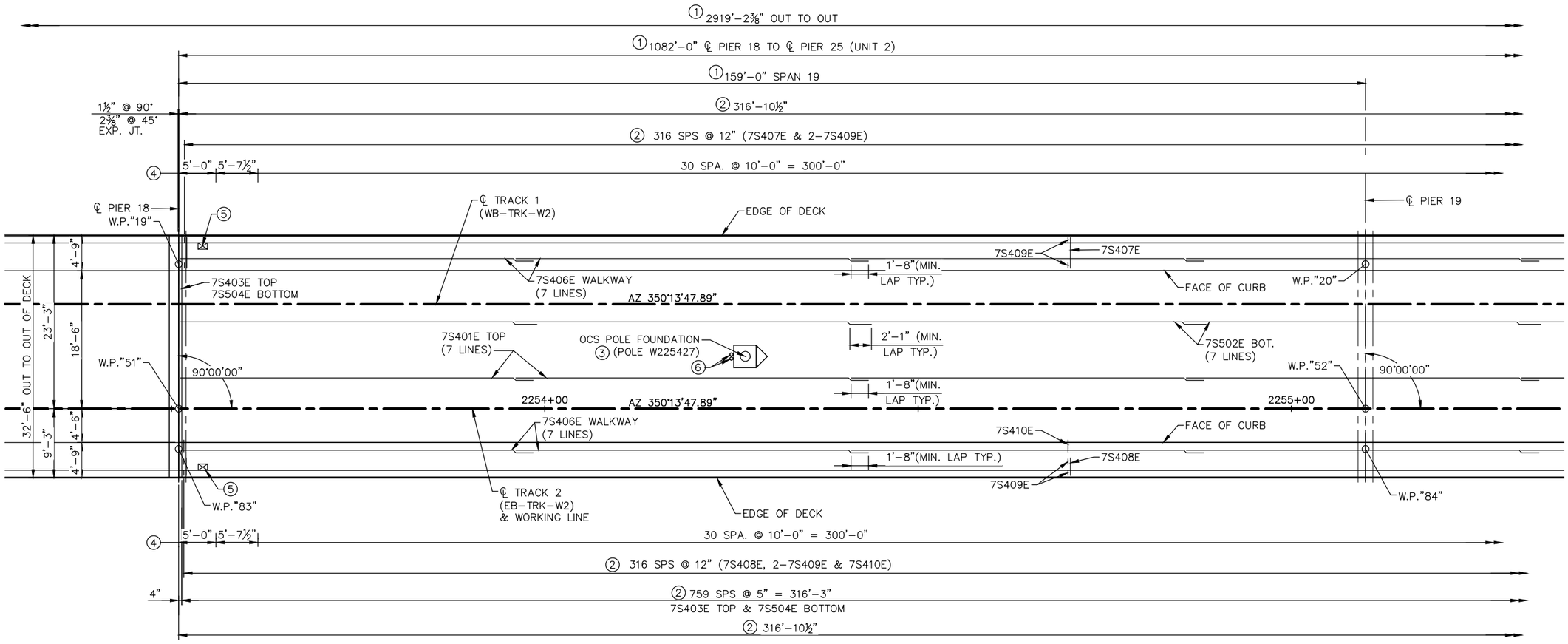
SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL& REINF) 1-6

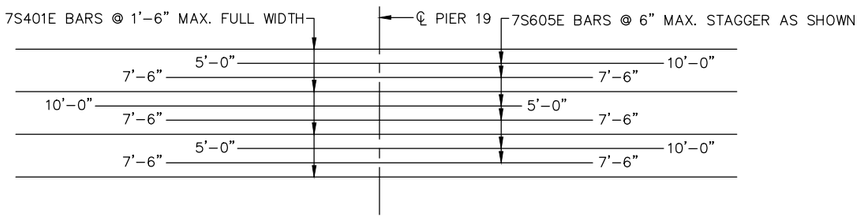
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP16_DT

SHEET 184 OF 264

Jan, 17 2016 09:57 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP16.dwg By: hills



PARTIAL DECK PLAN – SPAN 19



PLAN OF TOP LONGITUDINAL REINFORCEMENT AT PIER 19

NOTES:

1. MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)
2. MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.
3. SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.
4. WIRE FENCE POST SPACING MEASURED ALONG EDGE OF DECK, ℄ JOINT TO ℄ JOINT.
5. STRAY CURRENT BOND TEST STATION. SEE STRAY CURRENT CORROSION CONTROL NOTES ON SHEET 3.
6. 2–5"ø PVC SLEEVES FOR POS CONDUIT PENETRATION THROUGH DECK. STUB UP 3". STA. 2254+25, 7.0'L. PROVIDE A MINIMUM OF 2" CLEAR BETWEEN SLEEVES AND OCS PEDESTAL.

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: MJY CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

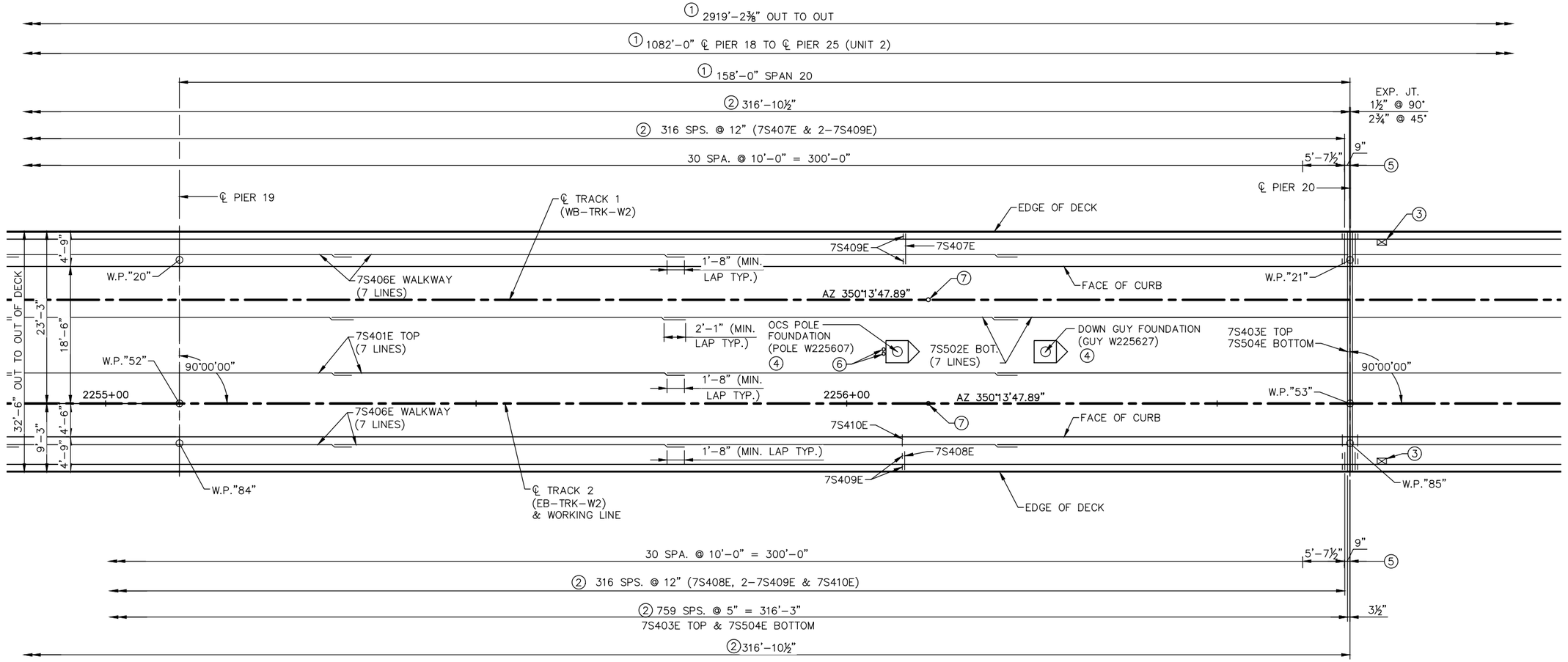
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 7A

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP9-19

SHEET 185 OF 264

Jan. 17 2016 09:58 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills



NOTES:

1. MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)
2. MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.
3. STRAY CURRENT BONDING JUNCTION BOX. SEE CORROSION CONTROL PLANS FOR ADDITIONAL INFORMATION AND WIRING REQUIREMENTS.
4. SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.
5. WIRE FENCE POST SPACING. MEASURED ALONG EDGE OF DECK ℄ JOINT TO ℄ JOINT.
6. 2–5"ø PVC SLEEVES FOR POS CONDUIT PENETRATION THROUGH DECK. STUB UP 3". STA. 2256+05, 7.0'L. PROVIDE A MINIMUM OF 2" CLEAR BETWEEN SLEEVES AND OCS PEDESTAL.
7. 1–6"ø PVC SLEEVE FOR NEG CONDUIT PENETRATION THROUGH DECK. STUB UP 3". STA. 2256+11, 14.0'L & 0

PARTIAL DECK PLAN – SPAN 20

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: MJY | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

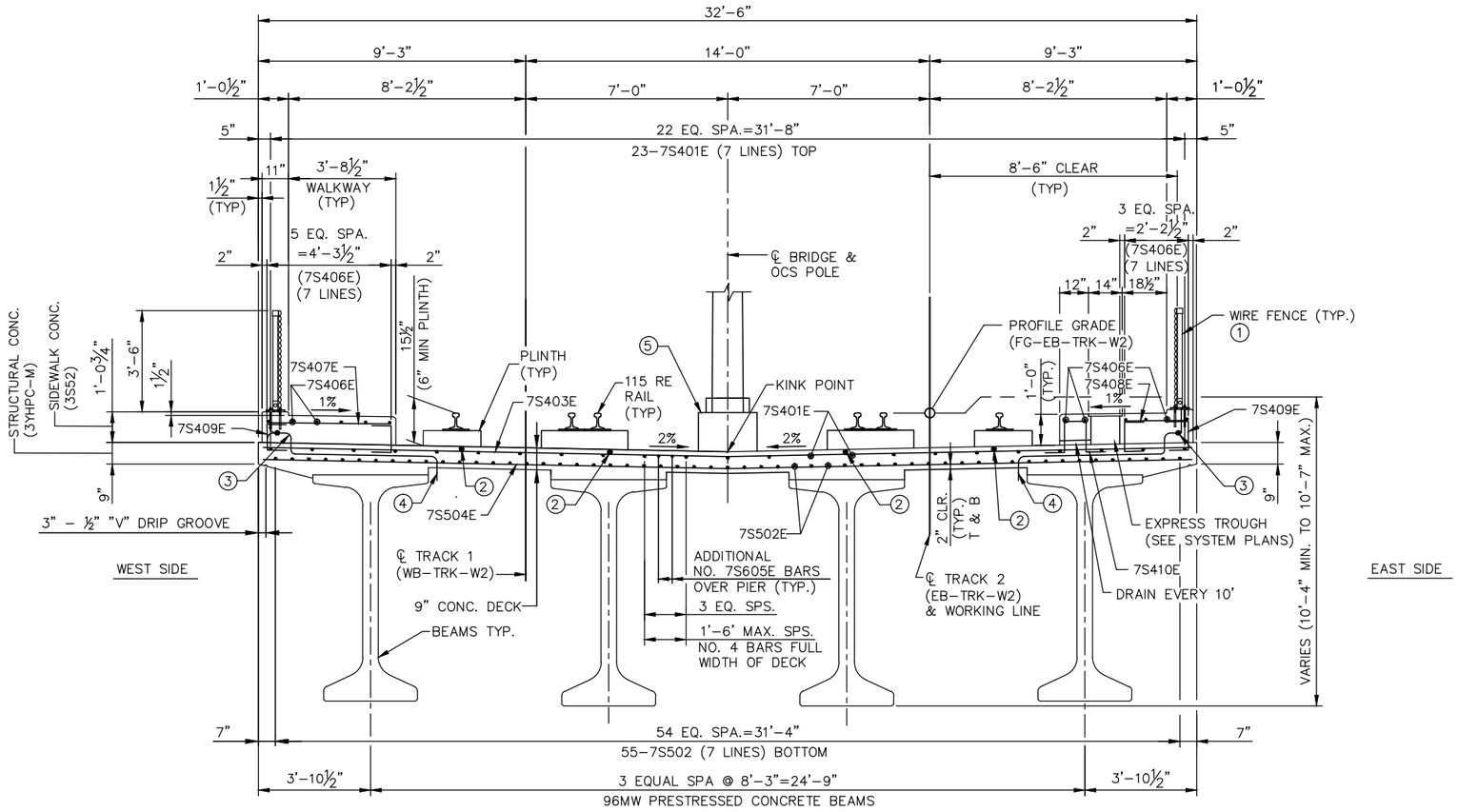
METROPOLITAN COUNCIL | SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 7B

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP9-20

SHEET 186 OF 264

Jan, 17 2016 09:58 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills



TRANSVERSE SECTION THRU DECK – SPANS 19–20

NOTES:

① SEE "WIRE FENCE (DESIGN W-1)"

② STRAY CURRENT COLLECTOR CABLE. SEE NOTE 15 ON SHEET 3.

③ GROUND WIRE, SEE GROUNDING PLANS

④ GROUND WIRE PLACED INSIDE 1½" PVC CONDUIT WITHIN THE DECK AT PIER 19

⑤ SEE SHEETS 212–213 FOR PEDESTAL REINFORCING AND DETAILS.

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: MJY CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

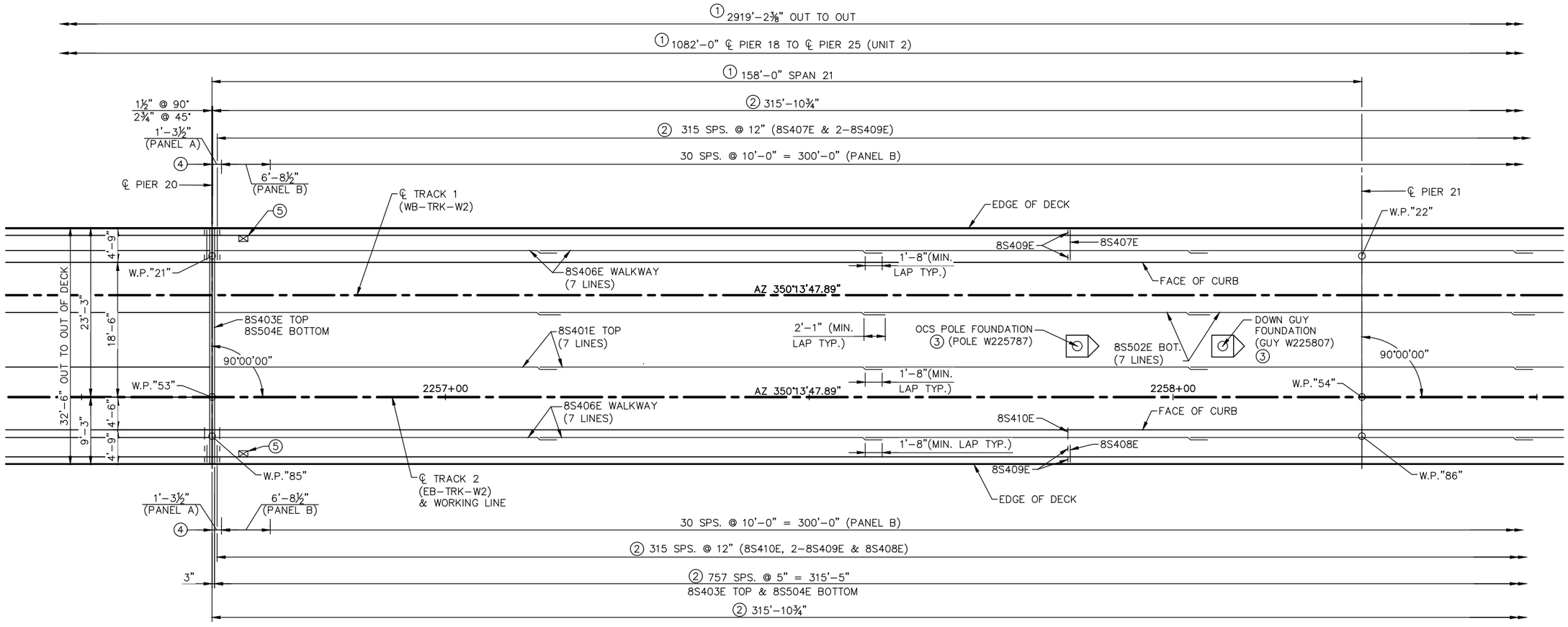
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SECTION & REINF) 7C

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP10-1

SHEET 187 OF 264

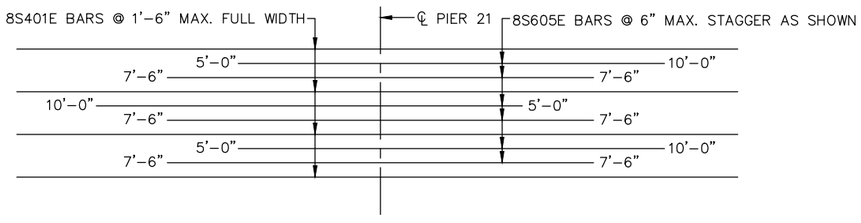
Jan. 17 2016 09:58 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP10.dwg By: hills



NOTES:

1. ① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)
2. ② MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.
3. ③ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.
4. ④ ORNAMENTAL METAL RAIL POST SPACING. MEASURED ALONG EDGE OF DECK ℄ JOINT TO ℄ JOINT.
5. ⑤ STRAY CURRENT BOND TEST STATION. SEE STRAY CURRENT CORROSION CONTROL NOTES ON SHEET 3.

PARTIAL DECK PLAN – SPAN 21



PLAN OF TOP LONGITUDINAL REINFORCEMENT AT PIER 21

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: MJY CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

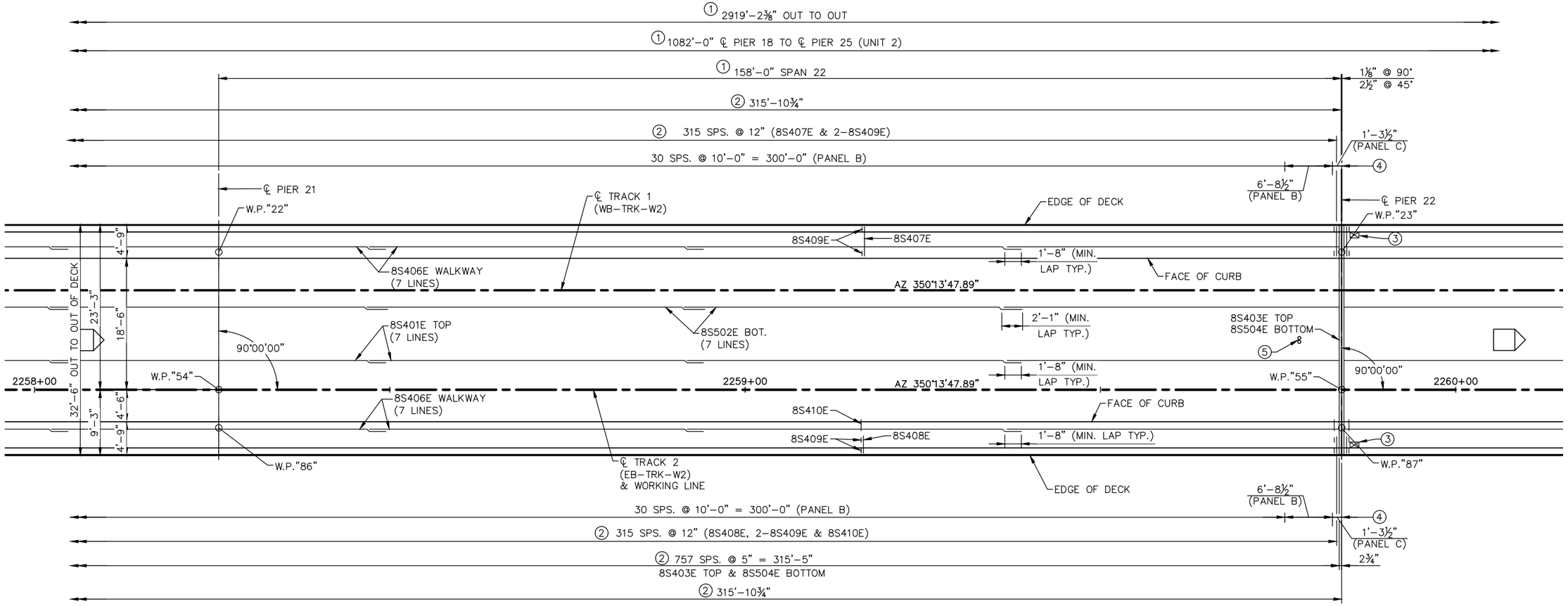
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 8A

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP9-21

SHEET 188 OF 264

Jan. 17 2016 09:58 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills



NOTES:

1. ① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)
2. ② MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.
3. ③ STRAY CURRENT BONDING JUNCTION BOX. SEE CORROSION CONTROL PLANS FOR ADDITIONAL INFORMATION AND WIRING REQUIREMENTS.
4. ④ ORNAMENTAL METAL RAIL POST SPACING. MEASURED ALONG EDGE OF DECK ℄ JOINT TO ℄ JOINT.
5. ⑤ 2–5"ø PVC SLEEVES FOR POS CONDUIT PENETRATION THROUGH DECK. STUB UP 3". STA. 2259+78, 7.0'L PROVIDE 2" MINIMUM CLEAR BETWEEN SLEEVES.

PARTIAL DECK PLAN – SPAN 22

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DESIGNED BY: DDL | CHECKED BY: MJC
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

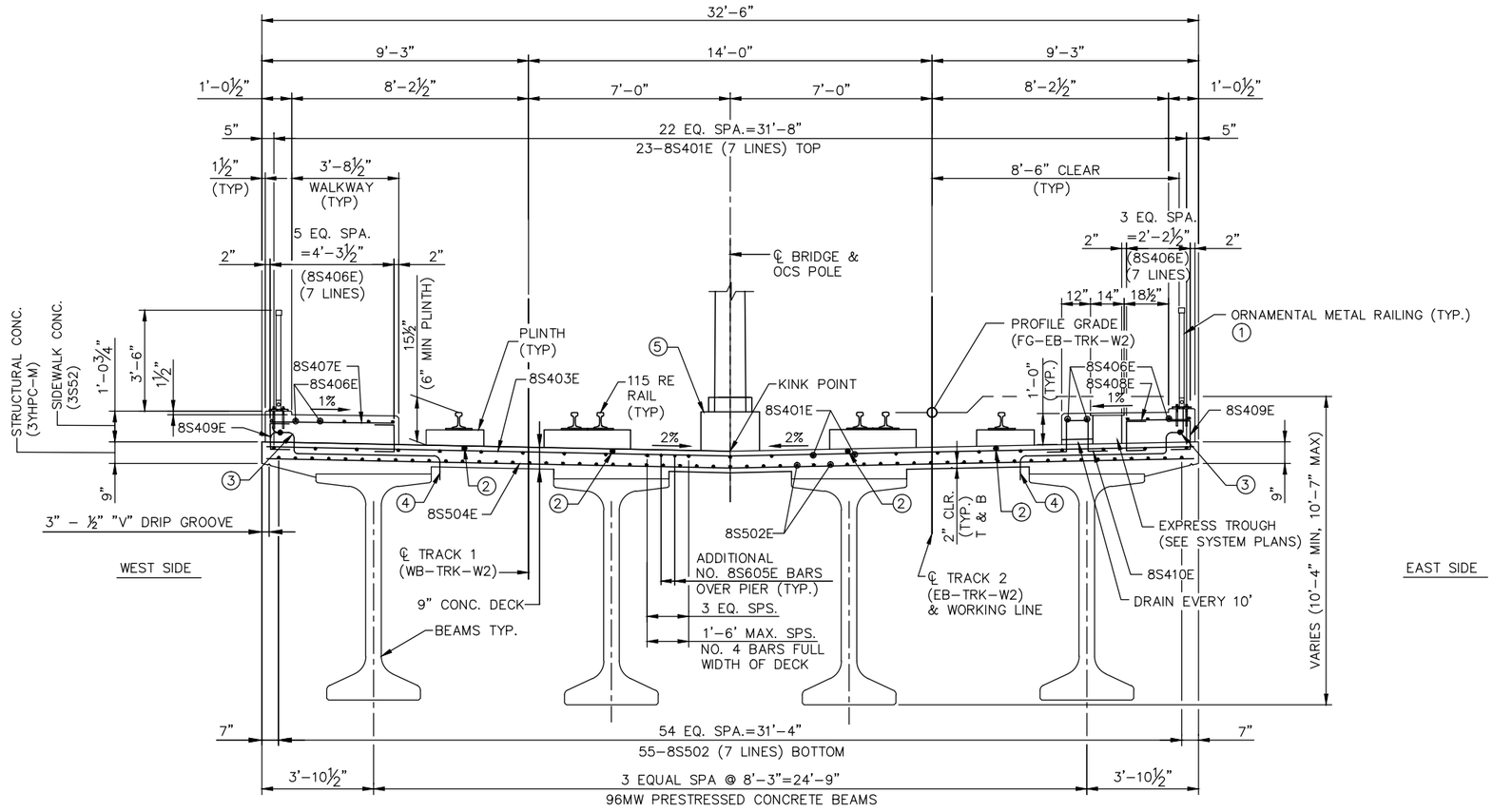
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 8B

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP9-22

SHEET 189 OF 264

Jan, 17 2016 09:58 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34_W2-STU-BRID-T212-SUP9.dwg By: hills



TRANSVERSE SECTION THRU DECK – SPANS 21–22

NOTES:

① SEE "ORNAMENTAL METAL RAILING"

② STRAY CURRENT COLLECTOR CABLE. SEE NOTE 15 ON SHEET 3.

③ GROUND WIRE, SEE GROUNDING PLANS

④ GROUND WIRE PLACED INSIDE 1½" PVC CONDUIT WITHIN THE DECK AT PIER 21

⑤ SEE SHEETS 212–213 FOR PEDESTAL REINFORCING AND DETAILS.

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: MJY CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

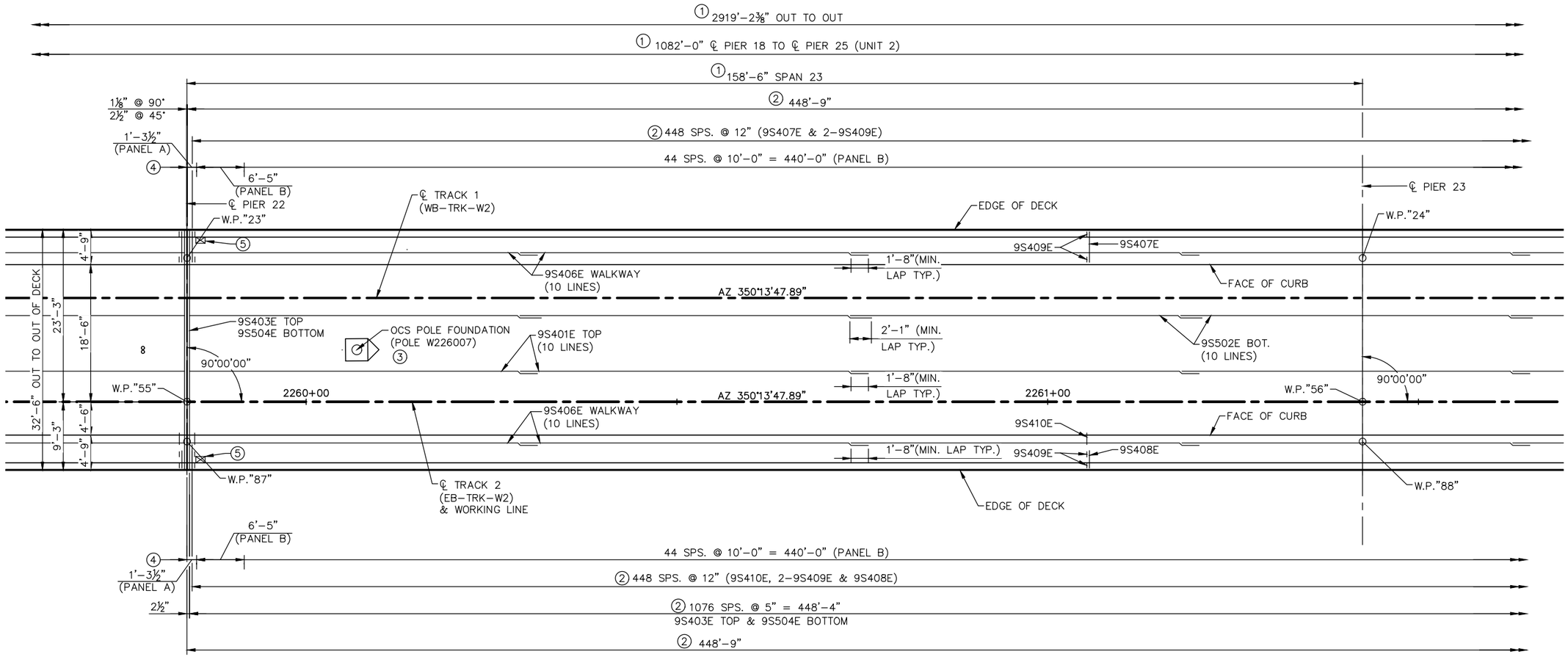
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SECTION & REINF) 8C

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP10-2

SHEET 190 OF 264

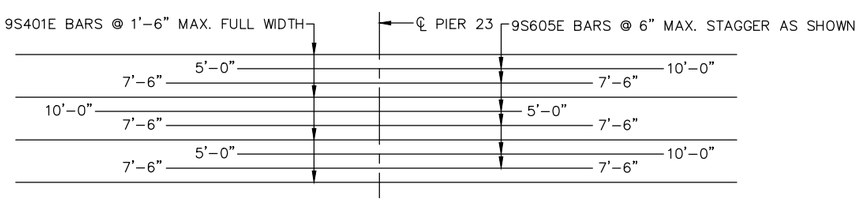
Jan, 17 2016 09:58 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP10.dwg By: hills



NOTES:

1. ① MEASURED ALONG ℄ TRACK 2 (EB-TRK-W2)
2. ② MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.
3. ③ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.
4. ④ ORNAMENTAL METAL RAIL POST SPACING. MEASURED ALONG EDGE OF DECK ℄ JOINT TO ℄ JOINT.
5. ⑤ STRAY CURRENT BOND TEST STATION. SEE STRAY CURRENT CORROSION CONTROL NOTES ON SHEET 3.

PARTIAL DECK PLAN – SPAN 23



PLAN OF TOP LONGITUDINAL REINFORCEMENT AT PIER 23

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DESIGNED BY: DDL | CHECKED BY: MJC
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

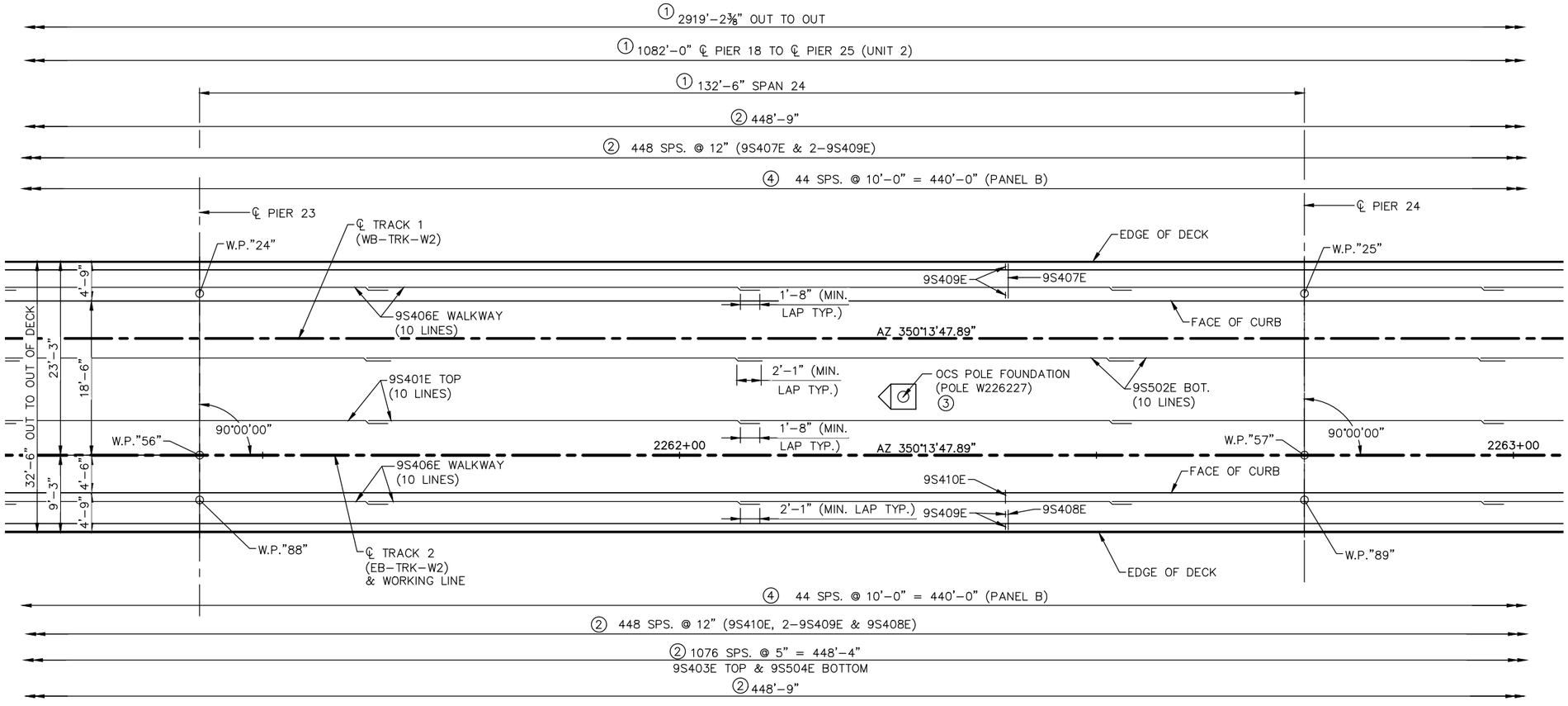
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 9A

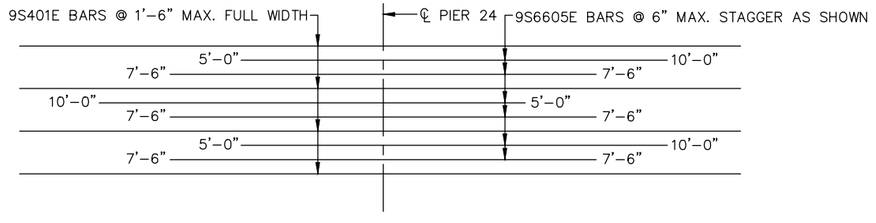
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP9-23

SHEET 191 OF 264

Jan, 17 2016 09:59 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills



PARTIAL DECK PLAN – SPAN 24



PLAN OF TOP LONGITUDINAL REINFORCEMENT AT PIER 24

NOTES:

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)
② MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.
③ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.
④ ORNAMENTAL METAL RAIL POST SPACING. MEASURED ALONG EDGE OF DECK ℄ JOINT TO ℄ JOINT.

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: MJY | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

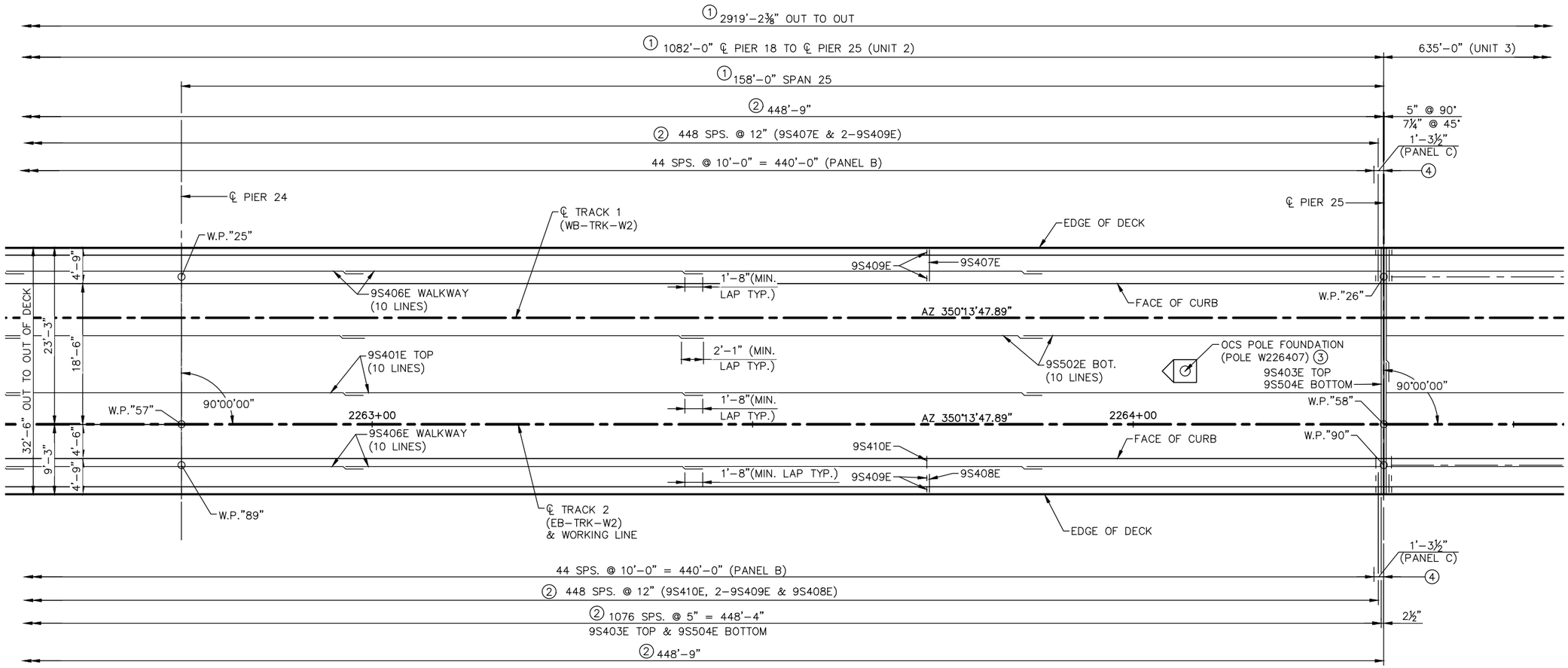
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 9B

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP9-24

SHEET 192 OF 264

Jan, 17 2016 09:59 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills



NOTES:

SEE "SUPERSTRUCTURE HAUNCH REINF." FOR REINFORCEMENT REQUIRED IN BEAM HAUNCHES.

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)

② MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.

③ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.

④ ORNAMENTAL METAL RAIL POST SPACING. MEASURED ALONG EDGE OF DECK ℄ JOINT TO ℄ JOINT.

PARTIAL DECK PLAN – SPAN 25

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DRAWN BY: MJY CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

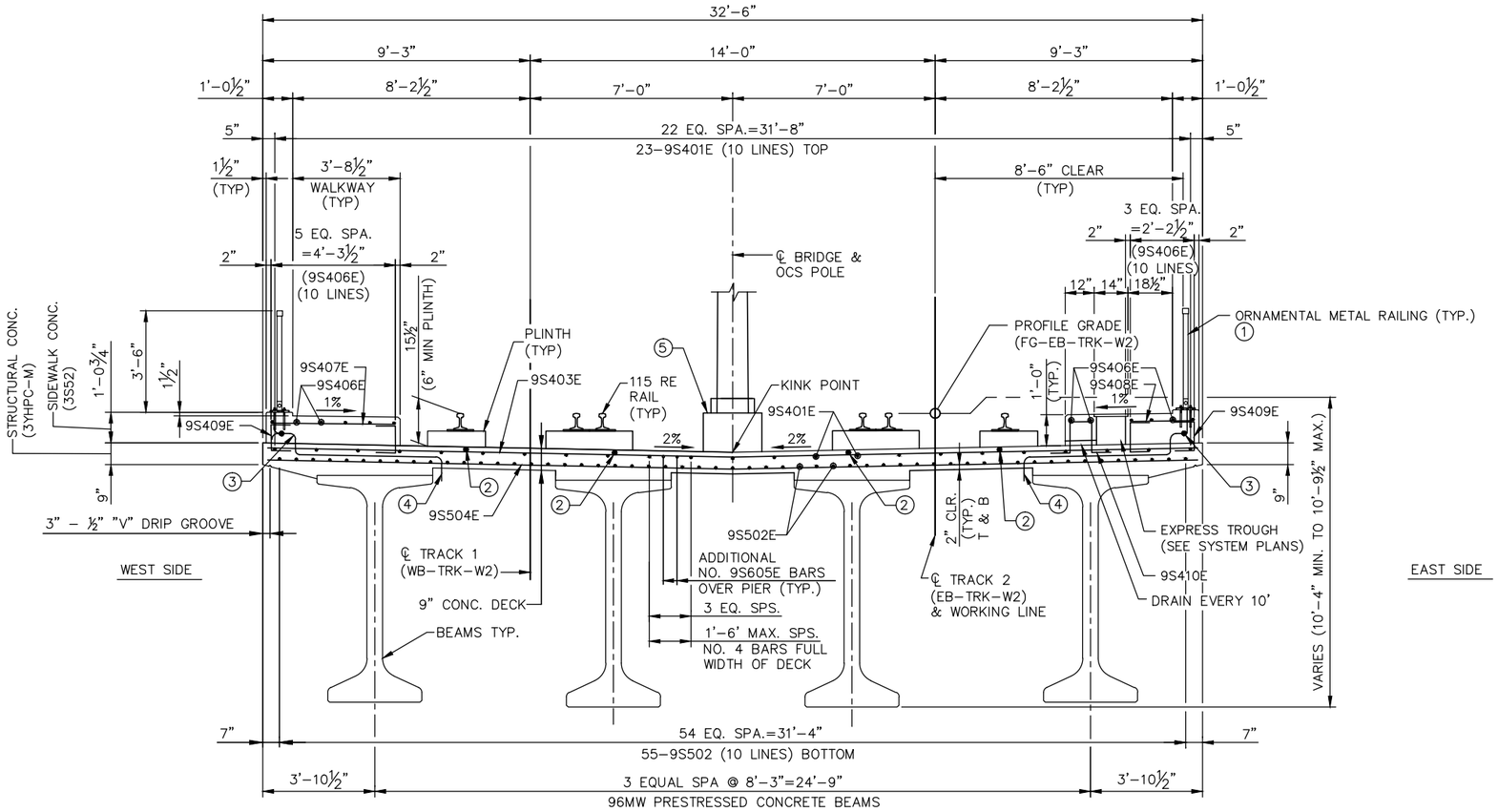
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 9C

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP9-25

SHEET 193 OF 264

Jan, 17 2016 09:59 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills



TRANSVERSE SECTION THRU DECK – SPANS 23–25

NOTES:

SEE "SUPERSTRUCTURE HAUNCH REINF." FOR REINFORCEMENT REQUIRED IN BEAM HAUNCHES.

① SEE "ORNAMENTAL METAL RAILING"

② STRAY CURRENT COLLECTOR CABLE. SEE NOTE 15 ON SHEET 3.

③ GROUND WIRE, SEE GROUNDING PLANS

④ GROUND WIRE PLACED INSIDE 1½" PVC CONDUIT WITHIN THE DECK AT PIER 23

⑤ SEE SHEETS 212–213 FOR PEDESTAL REINFORCING AND DETAILS.

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

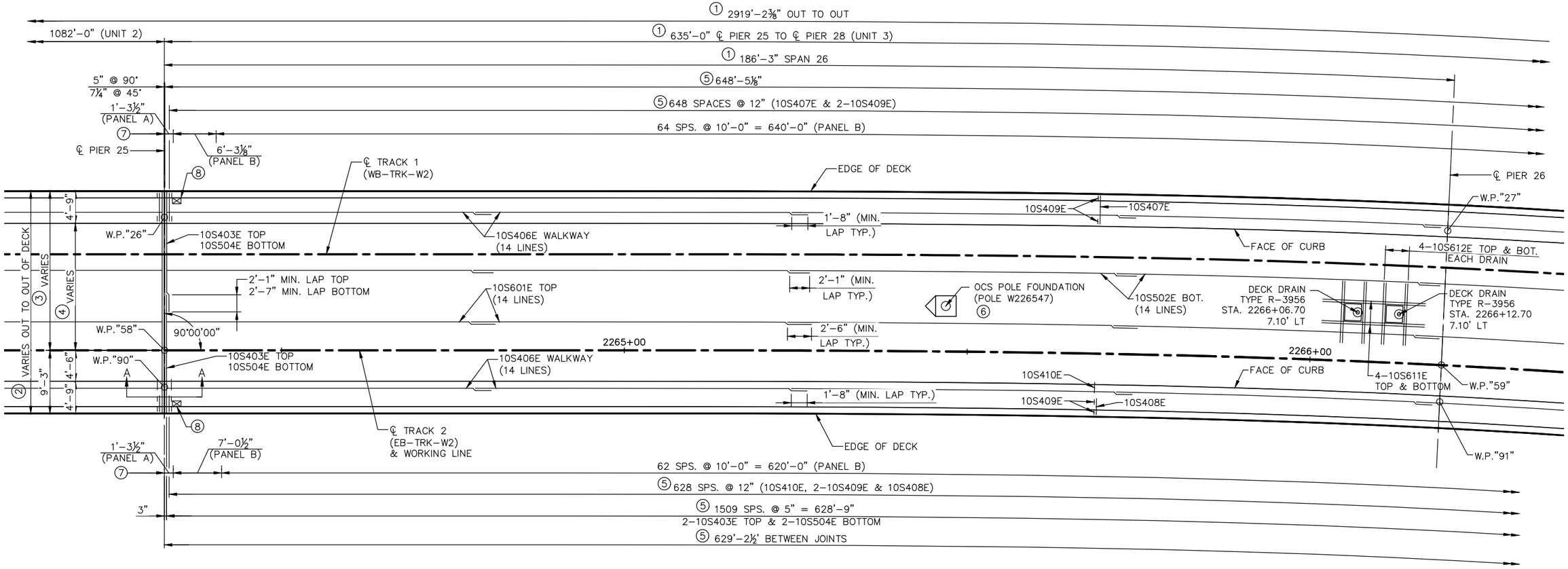
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 9D

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP10-3

SHEET 194 OF 264

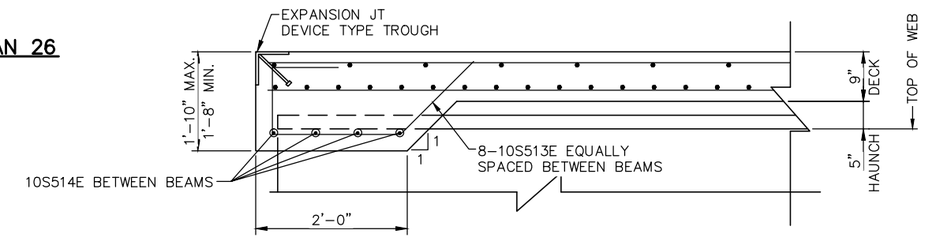
Jan, 17 2016 09:59 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP10.dwg By: hills



NOTES:

1. ① MEASURED ALONG ℄ TRACK 2 (EB-TRK-W2)
2. ② VARIES 32'-6" TO 32'-8½"
3. ③ VARIES 23'-3" TO 23'-5½"
4. ④ VARIES 18'-6" TO 18'-8½"
5. ⑤ MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.
6. ⑥ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.
7. ⑦ ORNAMENTAL METAL RAIL POST SPACING. MEASURED ALONG EDGE OF DECK ℄ JOINT TO ℄ JOINT.
8. ⑧ STRAY CURRENT BOND TEST STATION. SEE STRAY CURRENT CORROSION CONTROL NOTES ON SHEET 3.

PARTIAL DECK PLAN – SPAN 26



SECTION A–A

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METROPOLITAN COUNCIL

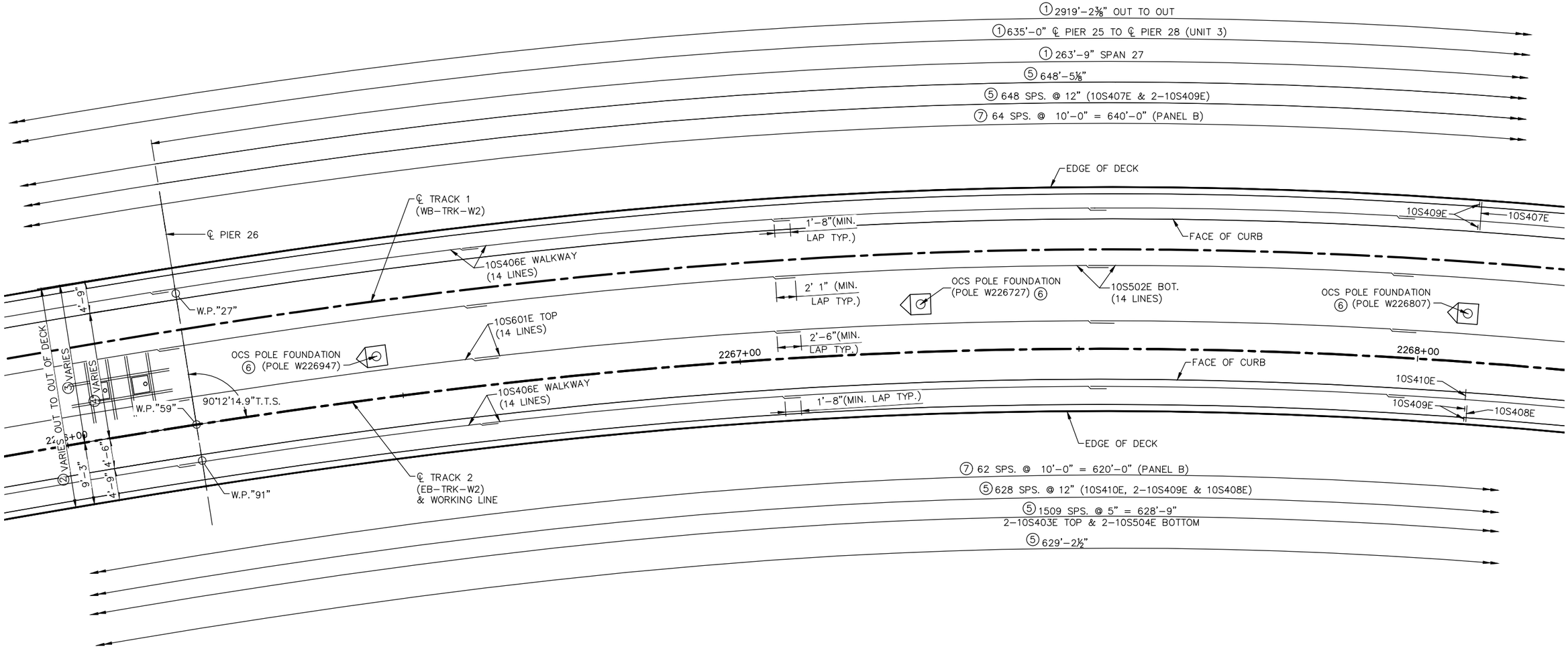
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 10A

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP9-26

SHEET 195 OF 264

Jan, 17 2016 10:00 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills



PARTIAL DECK PLAN – PARTIAL SPAN 27

NOTES:

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)

② VARIES 32'–8½" TO 33'–3½"

③ VARIES 23'–5½" TO 24'–0½"

④ VARIES 18'–8½" TO 19'–3½"

⑤ MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.

⑥ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.

⑦ ORNAMENTAL METAL RAIL POST SPACING. MEASURED ALONG EDGE OF DECK ℄ JOINT TO ℄ JOINT.

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DRAWN BY: MJY CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

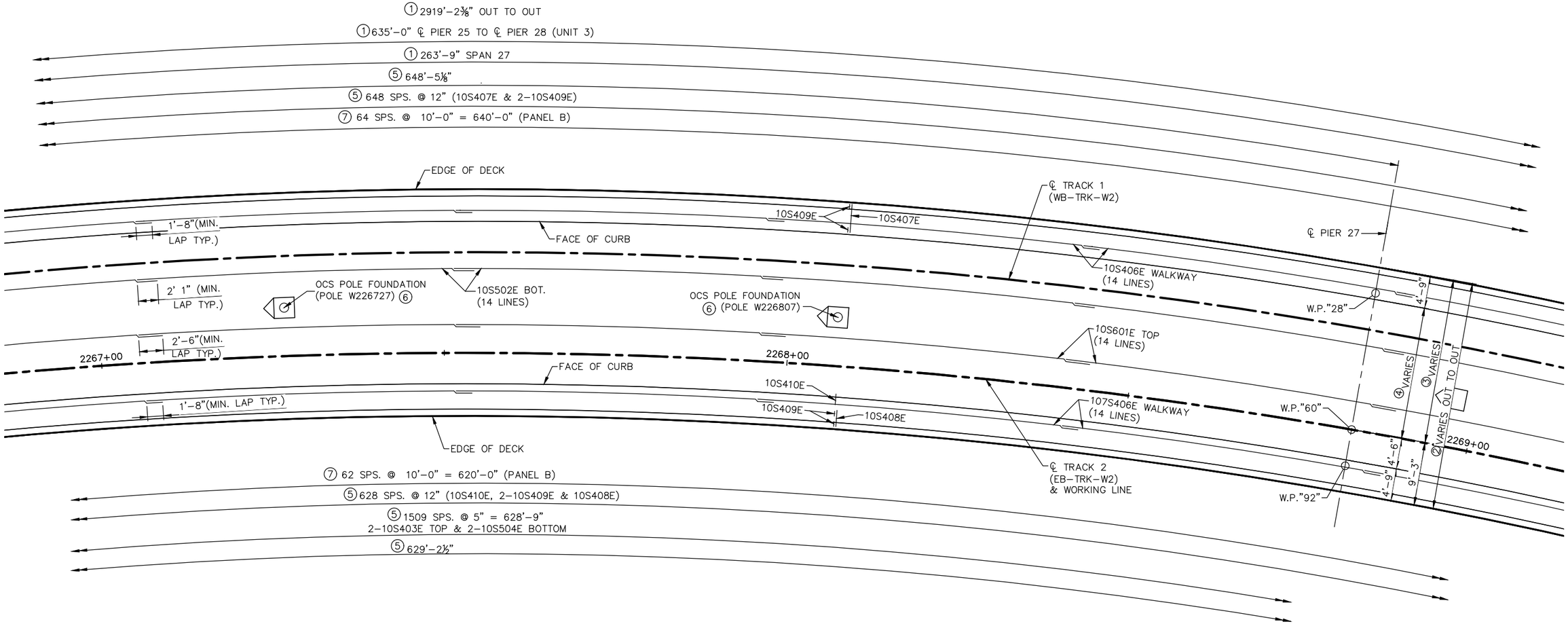
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 10B

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP9-27A

SHEET 196 OF 264

Jan, 17 2016 10:00 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34 W2-STU-BRID-T212-SUP9.dwg By: hills



PARTIAL DECK PLAN – PARTIAL SPAN 27

NOTES:

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)

② VARIES 32'–8½" TO 33'–3½"

③ VARIES 23'–5½" TO 24'–0½"

④ VARIES 18'–8½" TO 19'–3½"

⑤ MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.

⑥ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.

⑦ ORNAMENTAL METAL RAIL POST SPACING. MEASURED ALONG EDGE OF DECK ℄ JOINT TO ℄ JOINT.

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AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

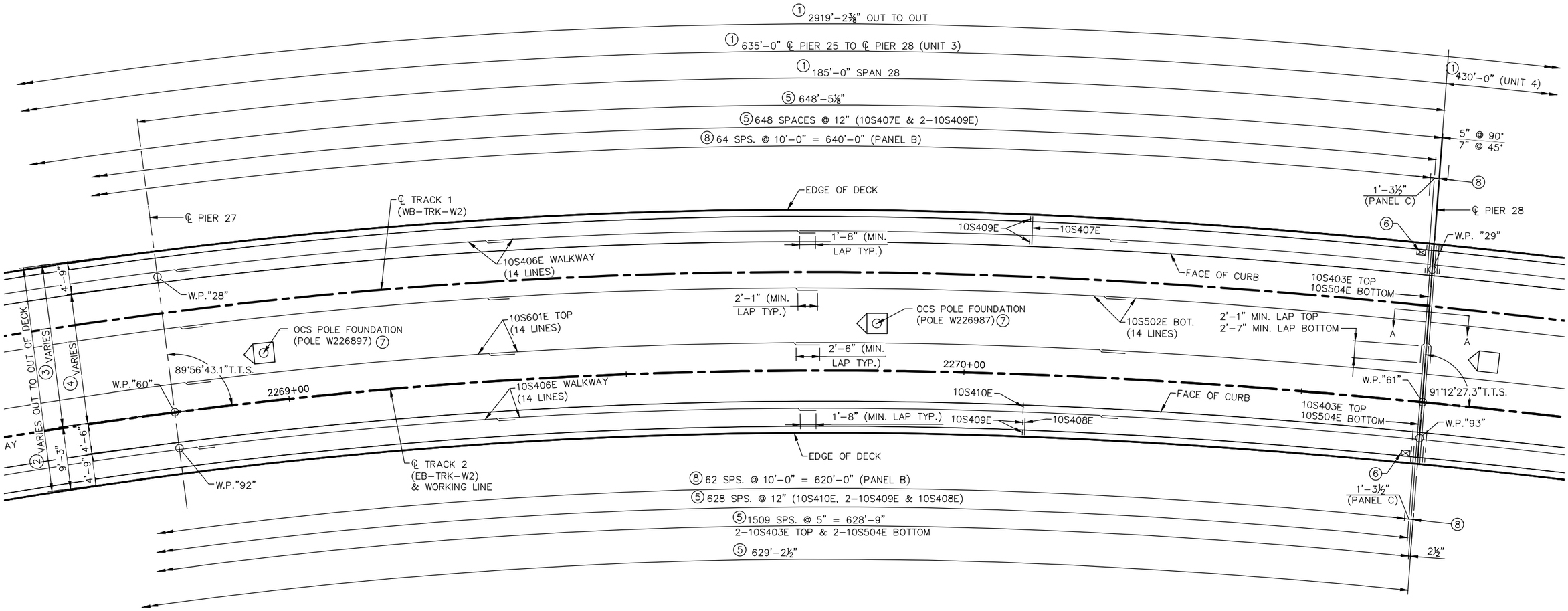
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 10C

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP9-27B

SHEET 197 OF 264

Jan, 17 2016 10:00 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills



NOTES:

SEE SHEET 195 FOR SECTION A–A

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)

② VARIES 33'–3½" TO 32'–9"

③ VARIES 24'–0½" TO 23'–6"

④ VARIES 19'–3½" TO 18'–9"

⑤ MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.

⑥ STRAY CURRENT BOND TEST STATION. SEE STRAY CURRENT CORROSION CONTROL NOTES ON SHEET 3.

⑦ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.

⑧ ORNAMENTAL METAL RAIL POST SPACING. MEASURED ALONG EDGE OF DECK ℄ JOINT TO ℄ JOINT.

PARTIAL DECK PLAN – SPAN 28

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

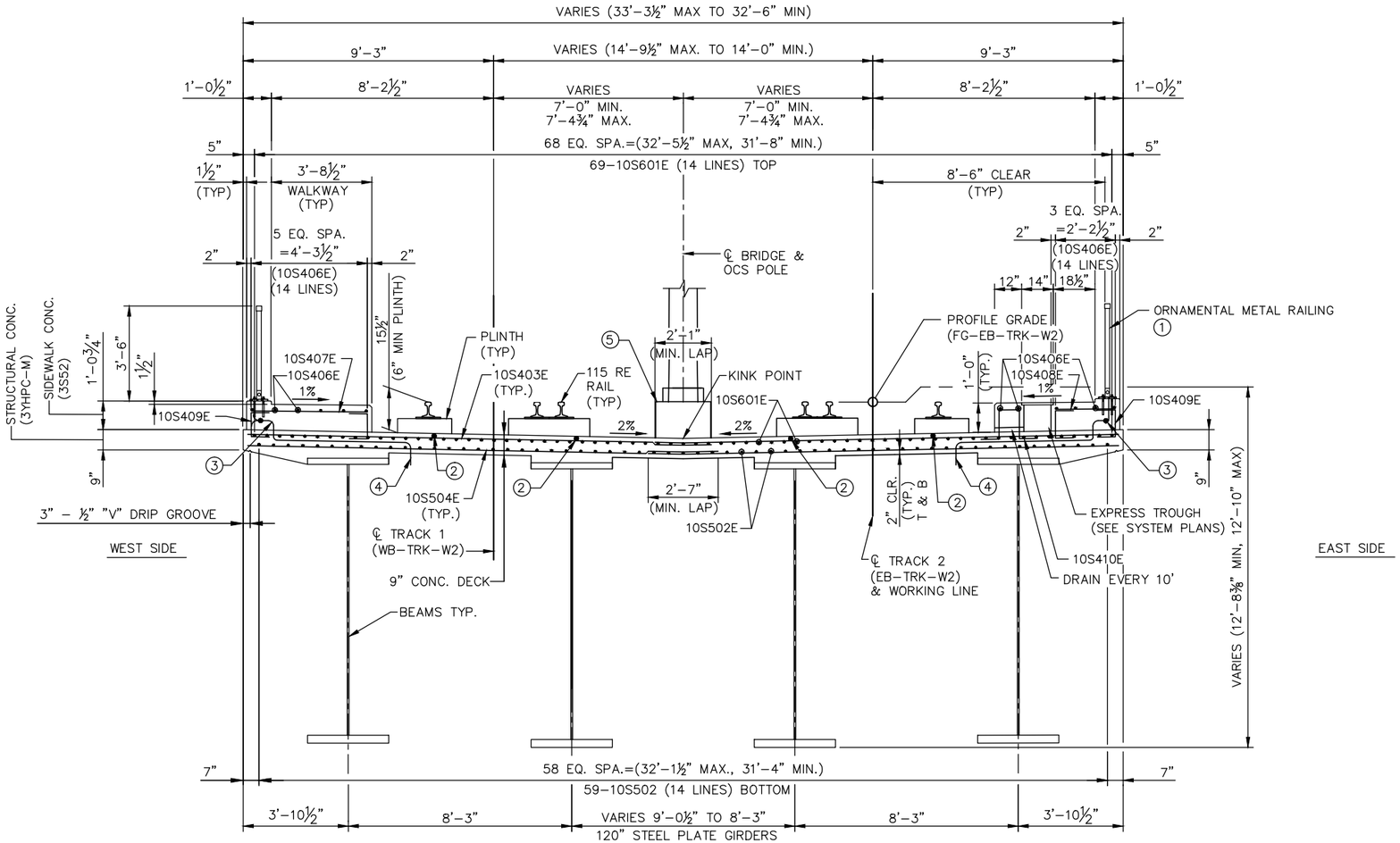
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 10D

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

SHEET 198 OF 264

Jan, 17 2016 10:00 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills



TRANSVERSE SECTION THRU DECK – SPANS 26–28

NOTES:

① SEE "ORNAMENTAL METAL RAILING"

② STRAY CURRENT COLLECTOR CABLE. SEE NOTE 15 ON SHEET 3.

③ GROUND WIRE, SEE GROUNDING PLANS

④ GROUND WIRE PLACED INSIDE 1½" PVC CONDUIT WITHIN THE DECK AT PIER 26

⑤ SEE SHEETS 212–213 FOR PEDESTAL REINFORCING AND DETAILS.

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

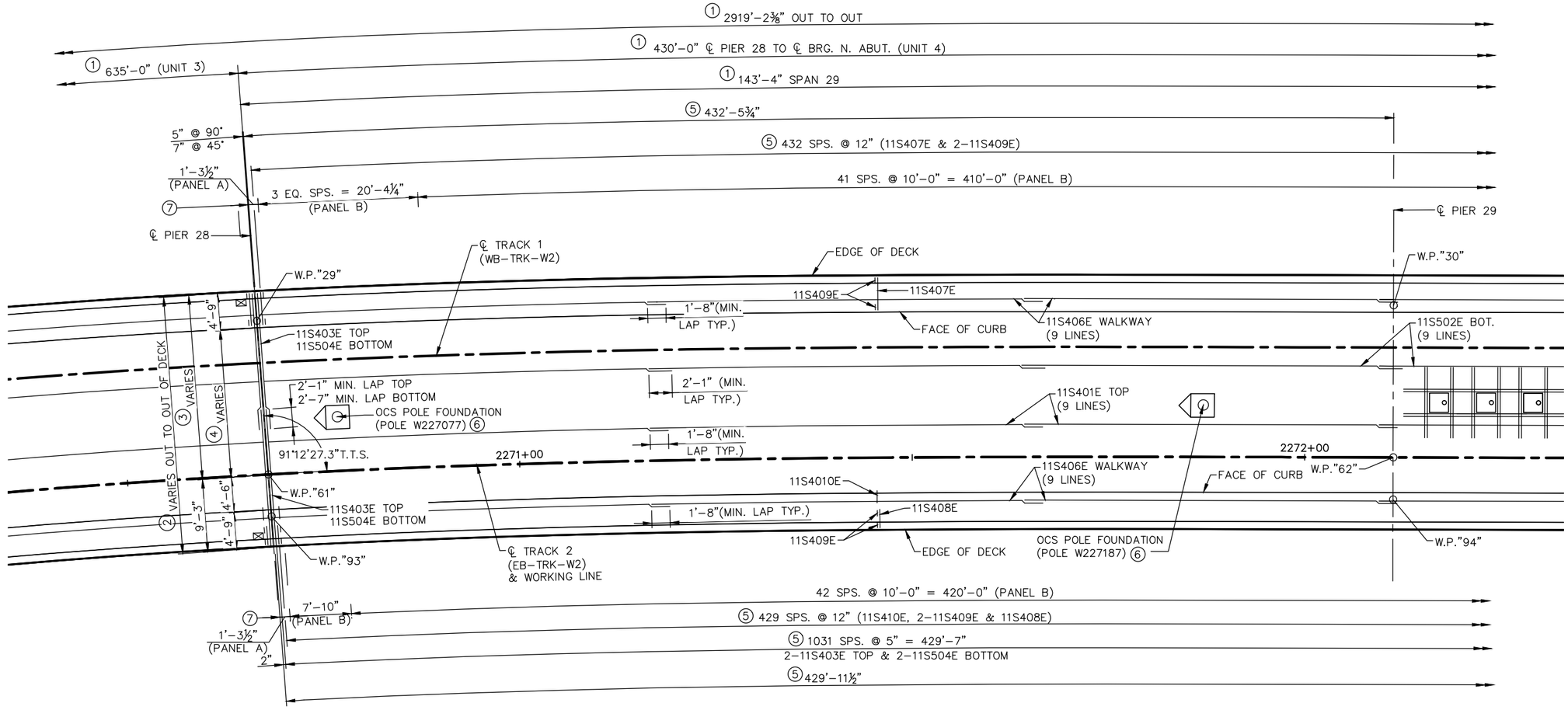
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SECTION & REINF) 10E

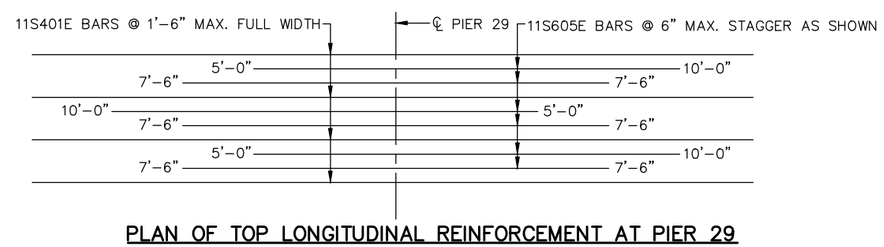
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP10-4

SHEET 199 OF 264

Jan, 17 2016 10:00 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP10.dwg By: hills



PARTIAL DECK PLAN – SPAN 29



PLAN OF TOP LONGITUDINAL REINFORCEMENT AT PIER 29

NOTES:

SEE "SUPERSTRUCTURE HAUNCH REINF." FOR REINFORCEMENT REQUIRED IN BEAM HAUNCHES.

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2)

② VARIES 32'–9" TO 32'–6"

③ VARIES 23'–6" TO 23'–3"

④ VARIES 18'–9" TO 18'–6"

⑤ MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.

⑥ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.

⑦ ORNAMENTAL METAL RAIL POST SPACING. MEASURED ALONG EDGE OF DECK ℄ JOINT TO ℄ JOINT.

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

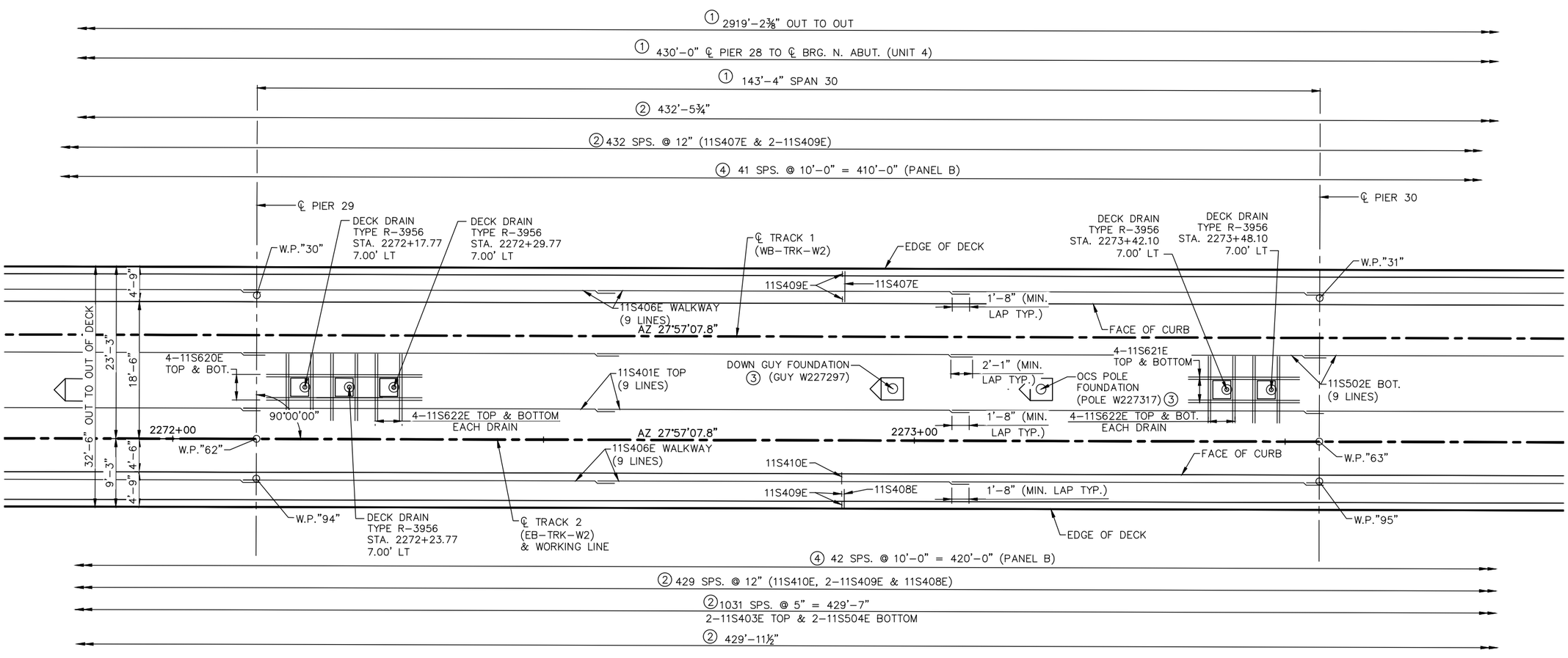
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 11A

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP9-29

SHEET 200 OF 264

Jan, 17 2016 10:00 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills



NOTES:

SEE "SUPERSTRUCTURE HAUNCH REINF." FOR REINFORCEMENT REQUIRED IN BEAM HAUNCHES.

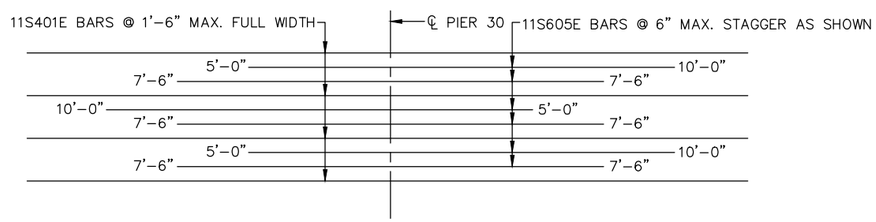
① MEASURED ALONG ℄ TRACK 2 (EB-TRK-W2)

② MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.

③ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.

④ ORNAMENTAL METAL RAIL POST SPACING. MEASURED ALONG EDGE OF DECK ℄ JOINT TO ℄ JOINT.

PARTIAL DECK PLAN – SPAN 30



PLAN OF TOP LONGITUDINAL REINFORCEMENT AT PIER 30

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

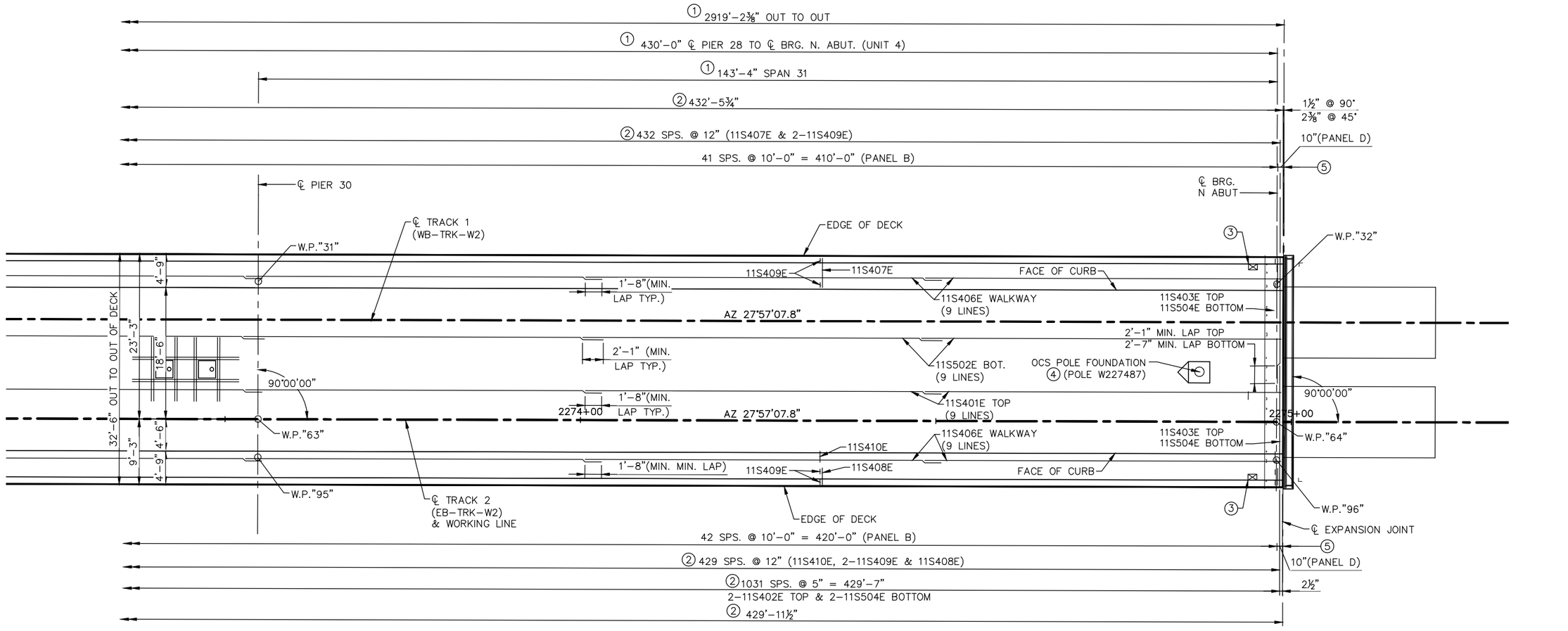
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 11B

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP9-30

SHEET 201 OF 264

Jan, 17 2016 10:00 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills



NOTES:

SEE "SUPERSTRUCTURE HAUNCH REINF." FOR REINFORCEMENT REQUIRED IN BEAM HAUNCHES.

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

② MEASURED ALONG EDGE OF DECK BETWEEN JOINTS.

③ STRAY CURRENT BOND TEST STATION. SEE STRAY CURRENT CORROSION CONTROL NOTES ON SHEET 3.

④ SEE SYSTEM PLANS FOR ANCHOR BOLTS AND REQUIREMENTS. SEE SHEETS 212 & 213 FOR PEDESTAL BASE AND ANCHORAGE DETAILS.

⑤ ORNAMENTAL METAL RAIL POST SPACING. MEASURED ALONG EDGE OF DECK ℄ JOINT TO ℄ JOINT.

PARTIAL DECK PLAN – SPAN 31

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: MJY CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

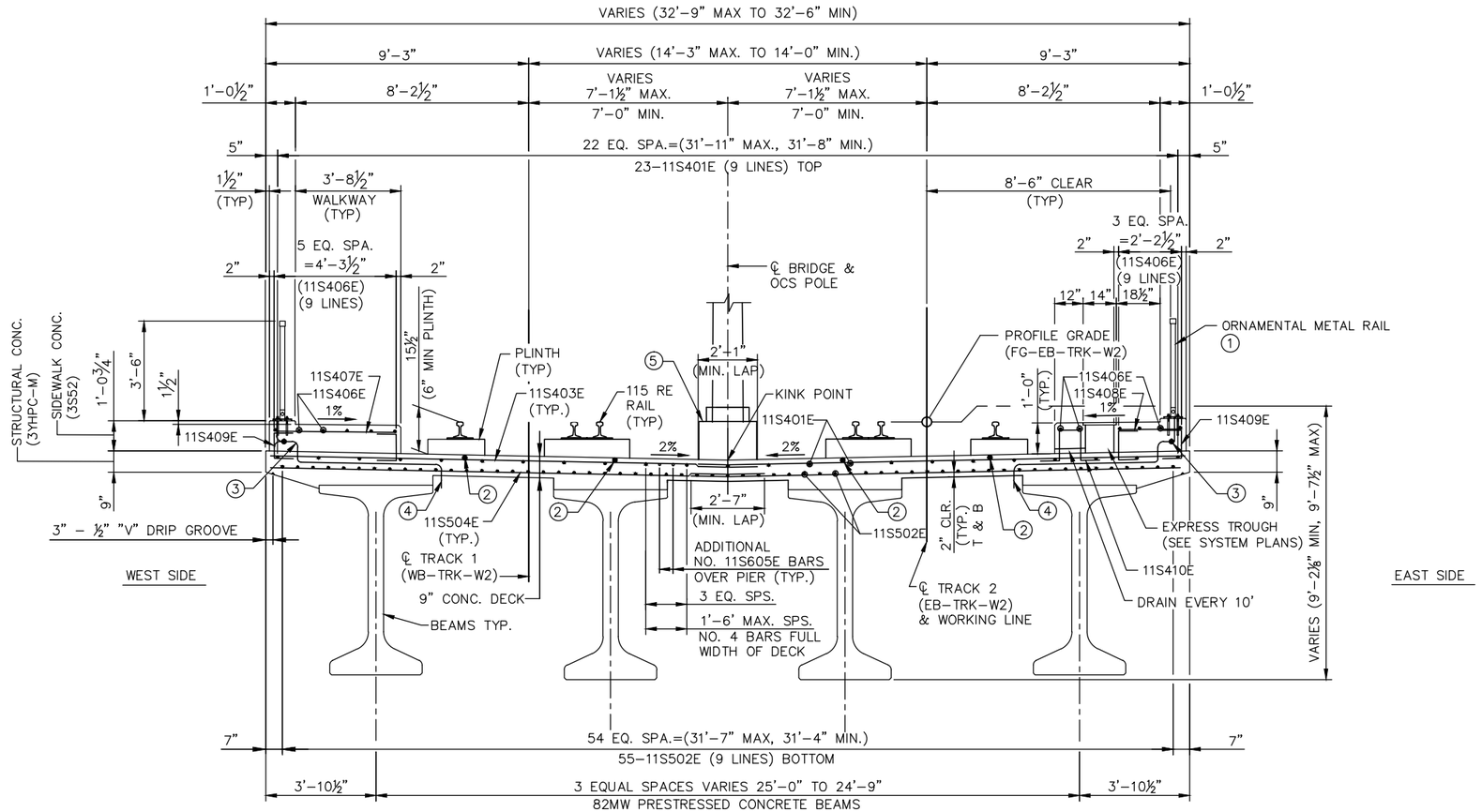
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (DETAIL & REINF) 11C

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

SHEET 202 OF 264

Jan. 17 2016 10:01 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills



TRANSVERSE SECTION THRU DECK – SPAN 29

NOTES:

SEE "SUPERSTRUCTURE HAUNCH REINF." FOR REINFORCEMENT REQUIRED IN BEAM HAUNCHES.

① SEE "ORNAMENTAL METAL RAILING"

② STRAY CURRENT COLLECTOR CABLE. SEE NOTE 15 ON SHEET 3.

③ GROUND WIRE, SEE GROUNDING PLANS

④ GROUND WIRE PLACED INSIDE 1½" PVC CONDUIT WITHIN THE DECK AT PIER 29

⑤ SEE SHEETS 212–213 FOR PEDESTAL REINFORCING AND DETAILS.

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: MJY | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

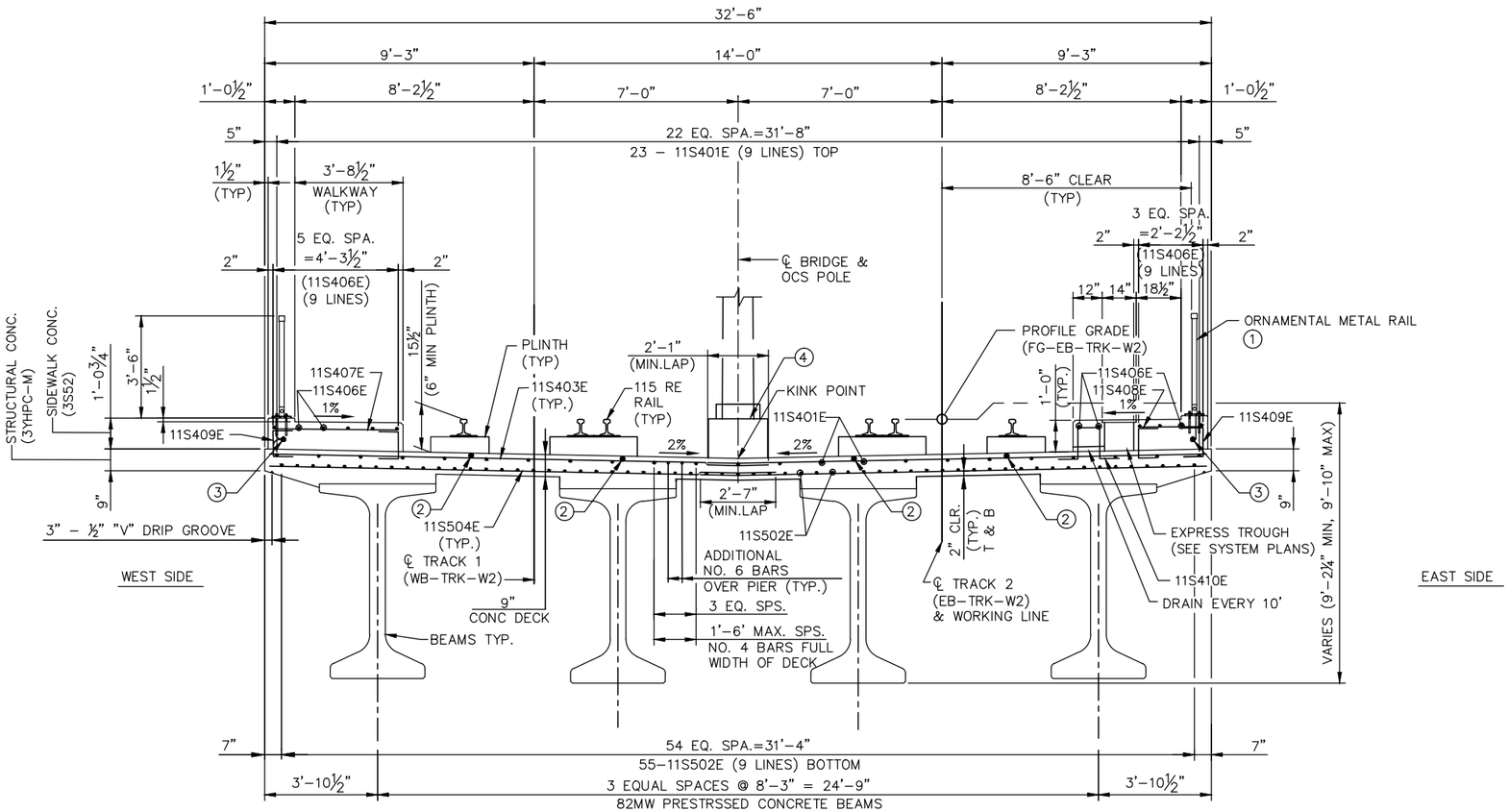
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SECTION AND REINF) 11D

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP10-5

SHEET 203 OF 264

Jan, 17 2016 10:01 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP10.dwg By: hills



TRANSVERSE SECTION THRU DECK – SPANS 30–31

NOTES:

SEE "SUPERSTRUCTURE HAUNCH REINF." FOR REINFORCEMENT REQUIRED IN BEAM HAUNCHES.

① SEE "ORNAMENTAL METAL RAILING".

② STRAY CURRENT COLLECTOR CABLE. SEE NOTE 15 ON SHEET 3.

③ GROUND WIRE, SEE GROUNDING PLANS

④ SEE SHEETS 212–213 FOR PEDESTAL REINFORCING AND DETAILS.

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: MJY | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

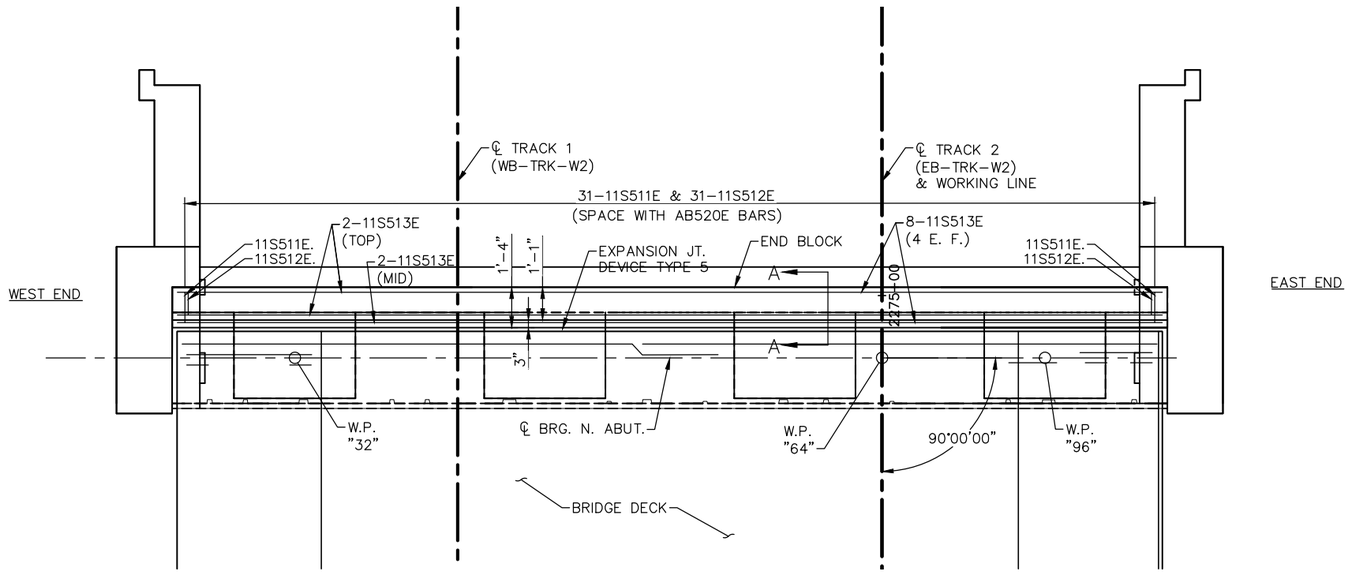
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SECTION AND REINF) 11E

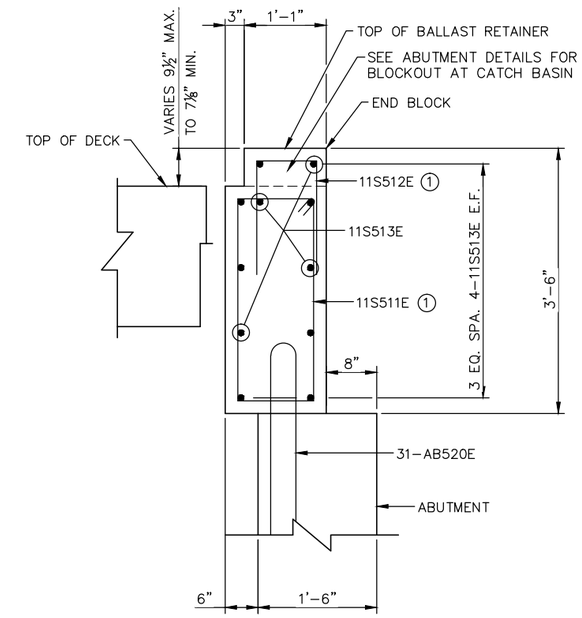
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP10-6

SHEET 204 OF 264

Jan, 17 2016 10:01 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP10.dwg By: hills



ADDITIONAL REINFORCEMENT AT NORTH END BLOCK



SECTION A–A

NOTES:

① PULL UP TO 2" CLEAR

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: MJY | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

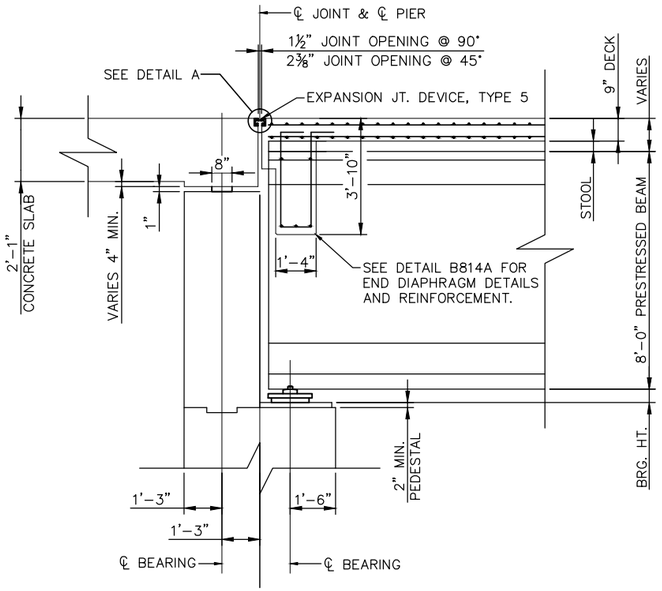
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (REINF AT N. END BLOCK)

DISCIPLINE: STRUCTURES

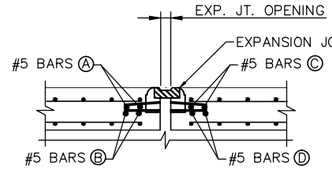
SHEET NAME: W2-STU-BRID-T212-SUP9-EB

SHEET 205 OF 264

Jan, 17 2016 10:01 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills

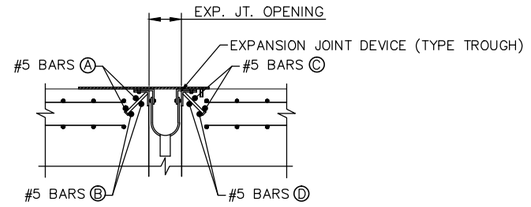


SECTION THRU PIER 18

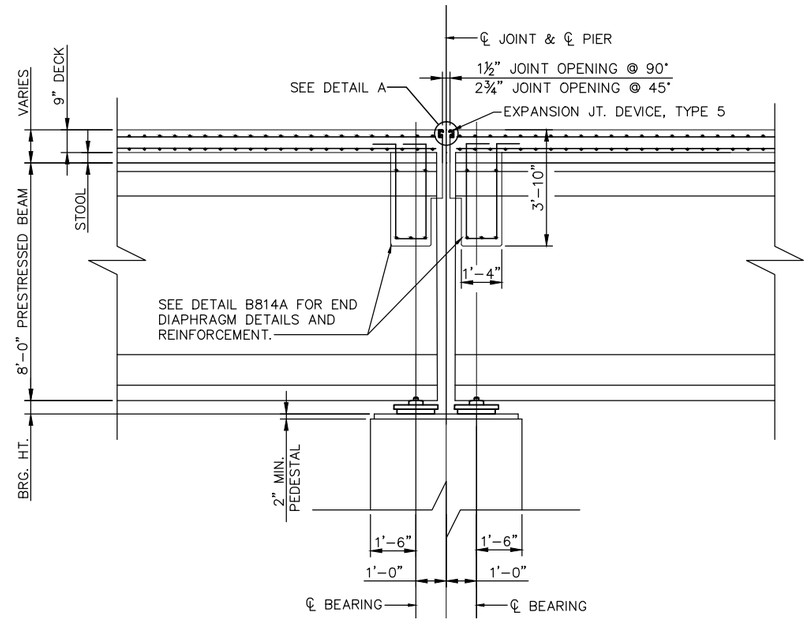


DETAIL A

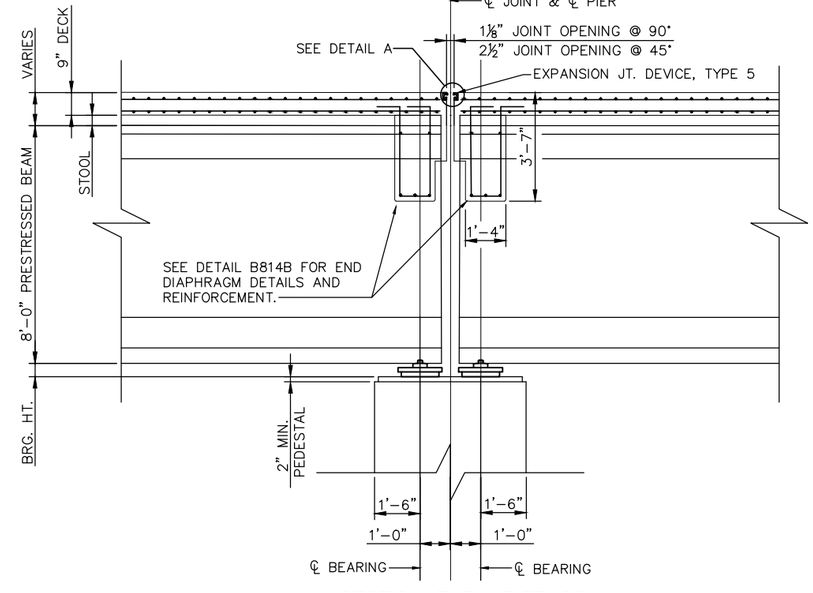
SLAB END REINFORCEMENT						
	PIER 18	PIER 20	PIER 22	PIER 25	PIER 28	N. ABUT.
A	–	7S403E	8S403E	9S403E	2–10S403E	2–11S403E
B	–	7S403E	8S403E	9S403E	2–10S403E	2–11S403E
C	7S403E	8S403E	9S403E	2–10S403E	2–11S403E	–
D	7S403E	8S403E	9S403E	2–10S403E	2–11S403E	–



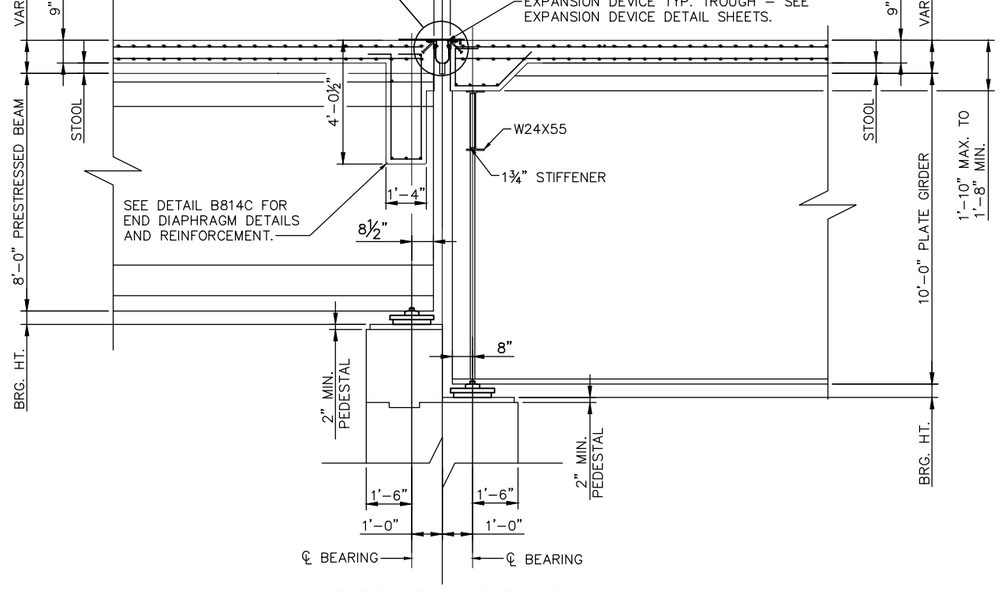
DETAIL B



SECTION THRU PIER 20



SECTION THRU PIER 22



SECTION THRU PIER 25

NOTES

① JOINT OPENINGS SHOWN ARE DIMENSIONED FROM END OF CONCRETE DECK.

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: MJY CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

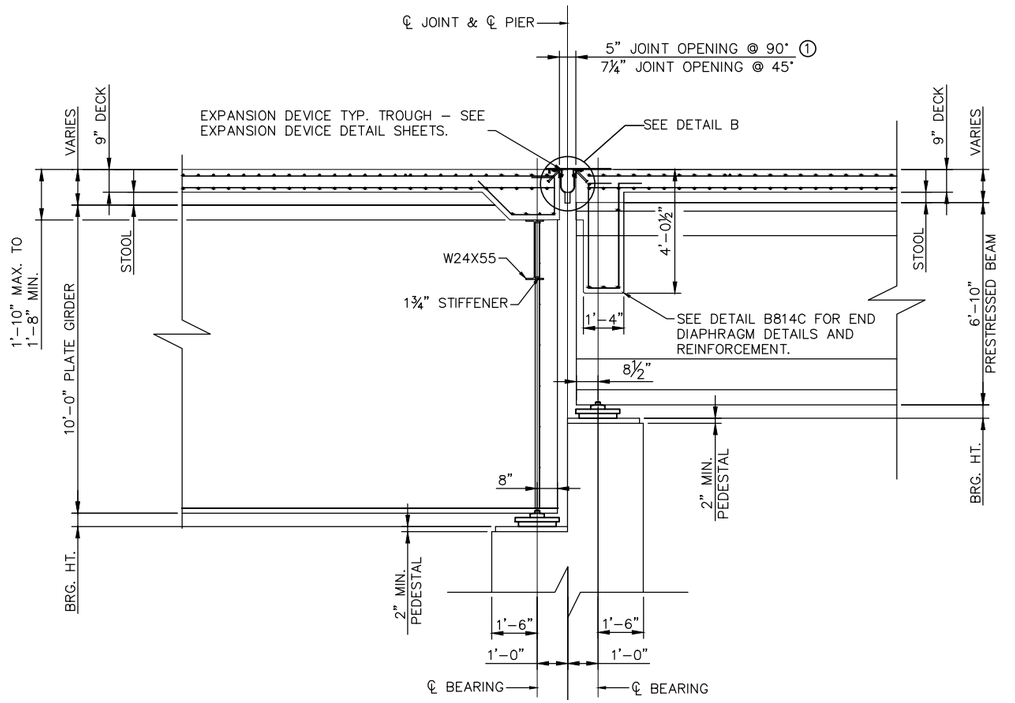
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SECTION AND REINF) 1

DISCIPLINE: STRUCTURES

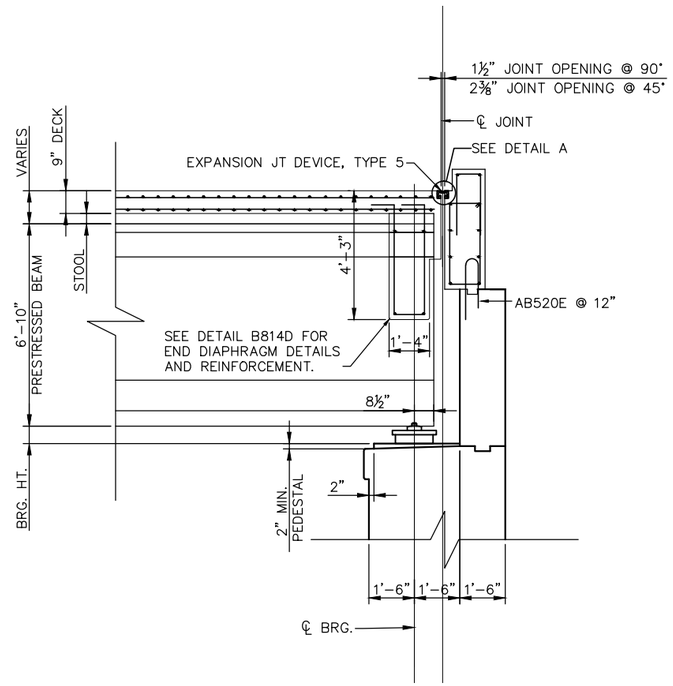
SHEET NAME: W2-STU-BRID-T212-SUP10-7

SHEET 206 OF 264

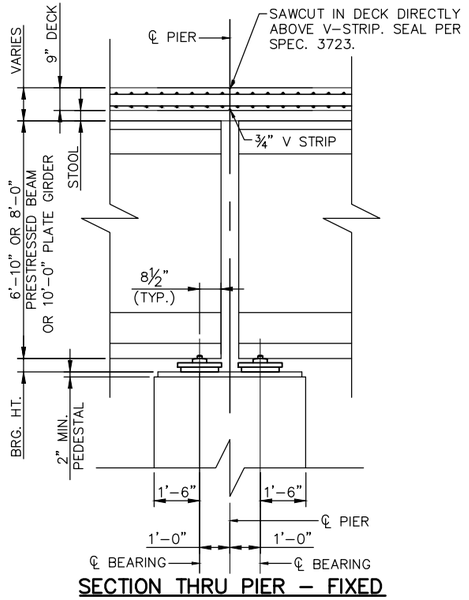
Jan, 17 2016 10:01 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP10.dwg By: hills



SECTION THRU PIER 28

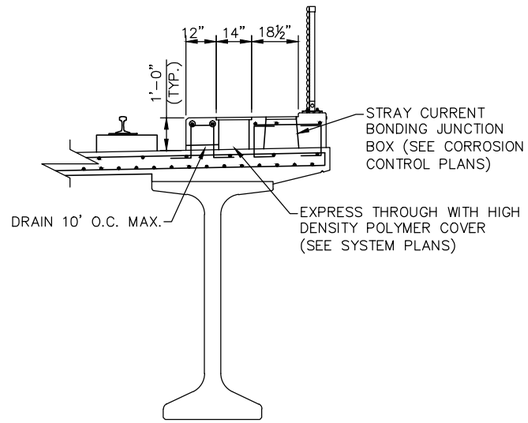


SECTION THRU N. ABUTMENT



SECTION THRU PIER – FIXED

82MW CONCRETE PRESTRESSED BEAMS SHOWN



SECTION THRU SIDEWALK WITH EXPRESS TROUGH

NOTES

SEE SHEET 206 FOR DETAILS A & B

① JOINT OPENINGS SHOWN ARE DIMENSIONED FROM END OF CONCRETE DECK.

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: MJY | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

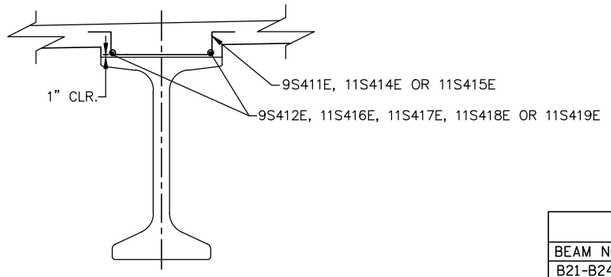
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SECTION AND REINF) 2

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP10-8

SHEET 207 OF 264

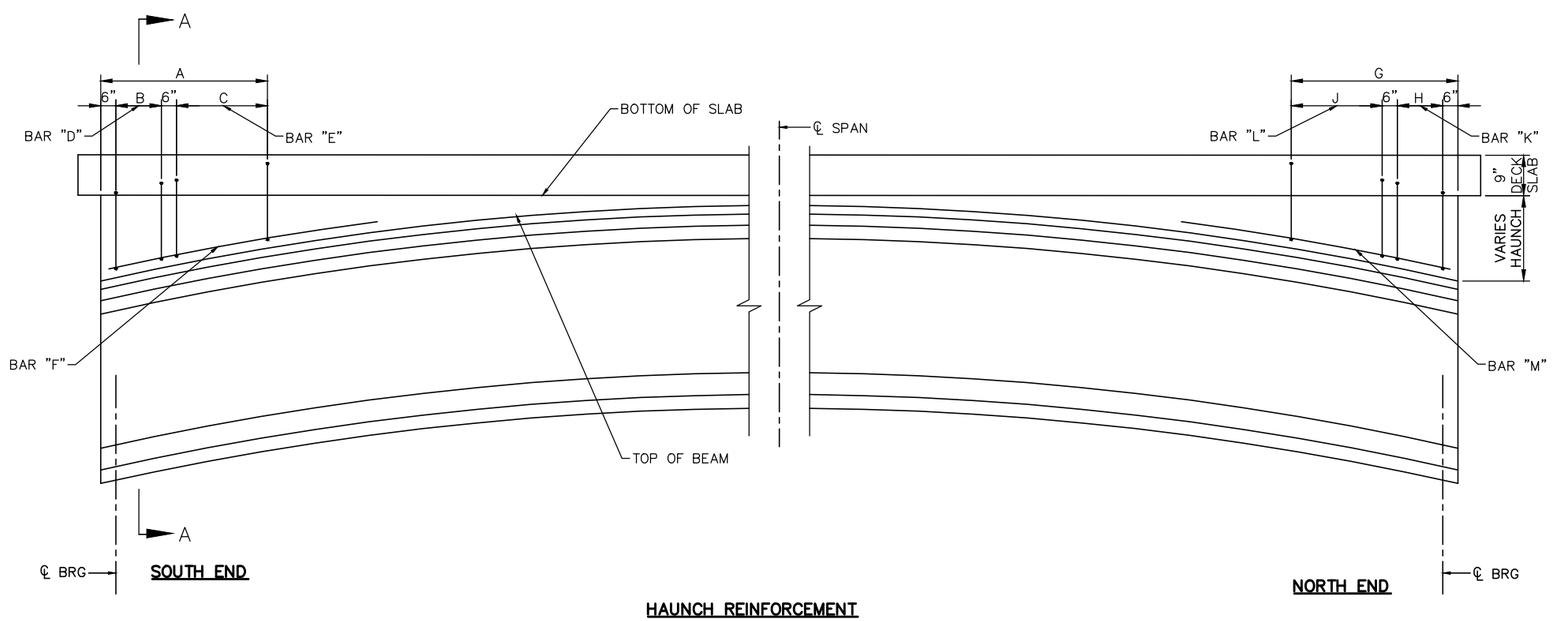
Jan, 17 2016 10:02 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP10.dwg By: hills



SECTION A–A

(DECK REINF. NOT SHOWN FOR CLARITY)

HAUNCH REINFORCEMENT TABLE												
BEAM NO.	A	B	C	D	E	F	G	H	J	K	L	M
B21-B24	-	-	-	-	-	-	30'-0"	25 BAR K @ 6"=12'-0"	18 BAR L @ 1'-0"=17'-0"	9S411E	9S411E	2-9S412E
B25-B28	25'-0"	25 BAR D @ 6"=12'-0"	13 BAR E @ 1'-0"=12'-0"	11S414E	11S414E	2-11S416E	-	-	-	-	-	-
B29-B31	-	-	-	-	-	-	29'-6"	22 BAR K @ 6"=10'-6"	19 BAR L @ 1'-0"=18'-0"	11S414E	11S414E	2-11S417E
B32-B34	20'-6"	22 BAR D @ 6"=10'-6"	10 BAR E @ 1'-0"=9'-0"	11S414E	11S414E	2-11S419E	34'-6"	22 BAR K @ 6"=10'-6"	24 BAR L @ 1'-0"=23'-0"	11S415E	11S414E	2-11S418E



HAUNCH REINFORCEMENT

NOTE:

HAUNCH REINFORCEMENT INCLUDED IN SUPERSTRUCTURE BILL OF REINFORCEMENT.

HAUNCH REINFORCEMENT PROVIDED WHERE HAUNCH HEIGHT EXCEEDS 5"

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DESIGNED BY: MJC CHECKED BY: EEM
DRAWN BY: SHW CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

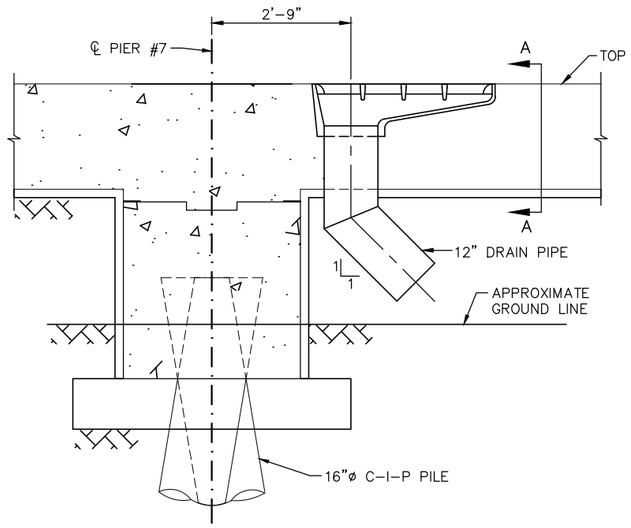
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE HAUNCH REINF

DISCIPLINE: STRUCTURES

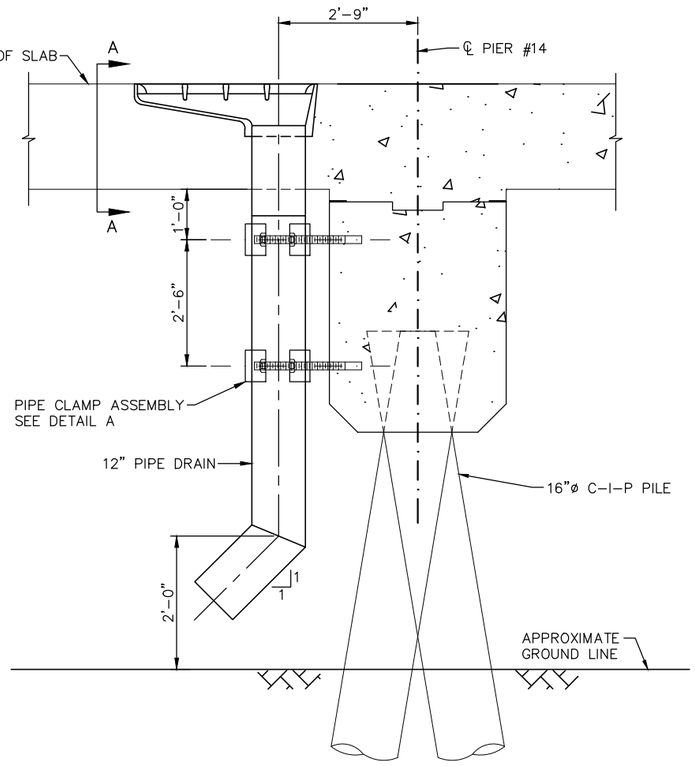
SHEET NAME: W2-STU-BRID-T212-SUP10-HD

SHEET 208 OF 264

Jan. 17 2016 10:02 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP10.dwg By: hills



PIER 7



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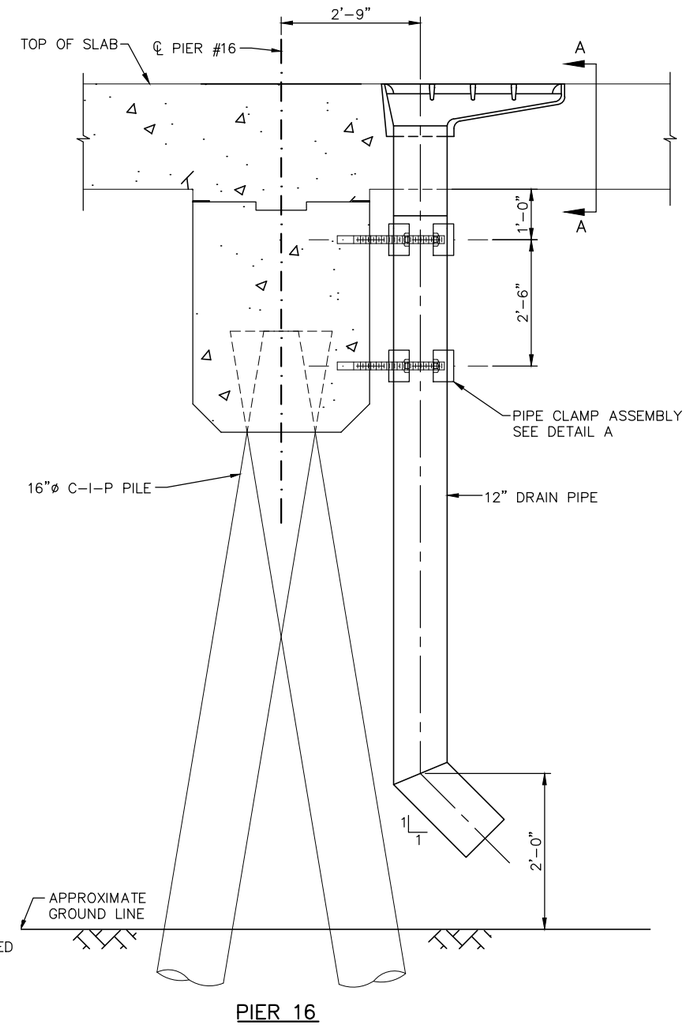

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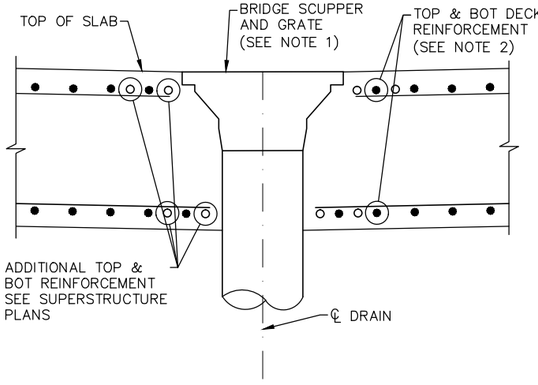
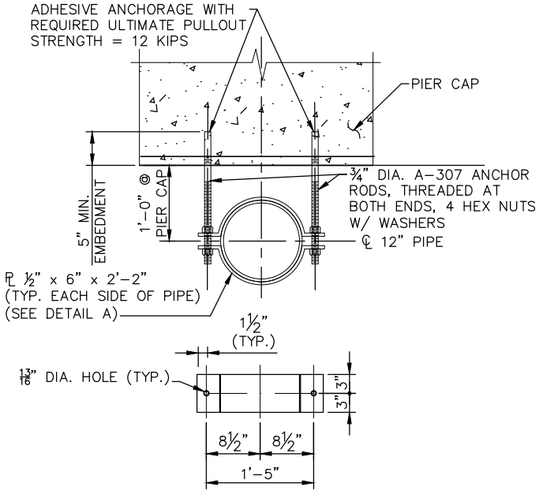


SECTION A-A



DETAIL A

GENERAL NOTES:

ALL PIER CAP, PIER COLUMN, AND PRESTRESSED BEAM REINFORCEMENT SHALL BE LOCATED PRIOR TO DRILLING ANCHORAGES. ANCHORAGES SHALL BE SHIFTED AS REQUIRED TO AVOID DAMAGE TO REINFORCEMENT DUE TO DRILLING.

CONCRETE INSERTS SHALL BE APPROVED TYPE MALLEABLE IRON. MATERIAL AS PER SPEC. 3324, GRADE 3501B. TAP AFTER GALVANIZING.

ALL DRAINAGE PIPES AND FITTINGS SHALL BE PIGMENTED FIBERGLASS REINFORCED THERMOSETTING RESIN PIPE. SEE SPECIAL PROVISIONS.

ALL EXPOSED PORTIONS OF DRAINAGE SYSTEM SHALL BE PAINTED IN ACCORDANCE WITH SPECIAL PROVISIONS.

THE BOTTOM OF THE 8", 10", OR 12" DIAMETER DOWN SPOUTS SHALL EXTEND 7" MINIMUM BELOW BOTTOM OF SLAB OR DECK.

PIPE CLAMP ASSEMBLY SHALL BE MOVED IF BOLTS INTERFERE PIER OR PRESTRESSED BEAM REINFORCING.

ALL HOLES IN PLATE GIRDER WEB SHALL BE 13/16" DIA. SHOP DRILLED. NO FIELD DRILLING ALLOWED.

FIELD VERIFY THE DRAIN PIPE LENGTH PRIOR TO FABRICATION.

NOTES:

1. DECK DRAIN DETAILS SHOWN ARE FOR NEENAH R-3949-A. THE BRIDGE SCUPPER SHALL CONFORM TO NEENAH R-3949-A OR APPROVED EQUAL.
2. DECK REINFORCEMENTS THAT INTERFERES WITH THE BRIDGE SCUPPER SHALL BE TERMINATED 2" CLEAR FROM THE SCUPPER.
3. WHEN ADDITIONAL REBAR PLACED INTERFERES WITH MAIN DECK REINFORCEMENTS, SUCH REBAR SHALL BE BUNDLED TO THE DECK REINFORCEMENT AT RESPECTIVE LOCATIONS.

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extention

90% SUBMISSION - 01/22/16

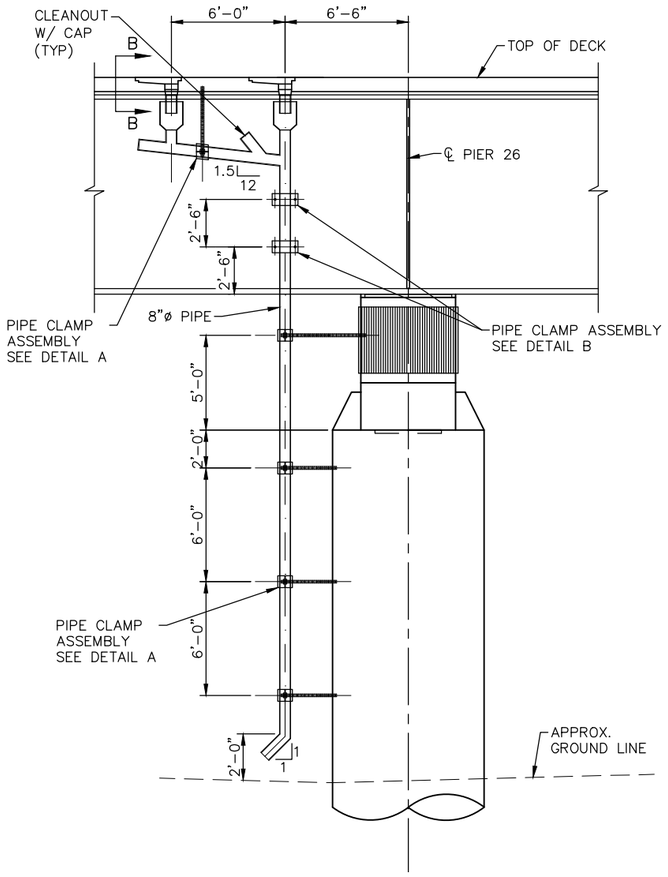
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE DRAINAGE DETAILS 1

DISCIPLINE: STRUCTURES

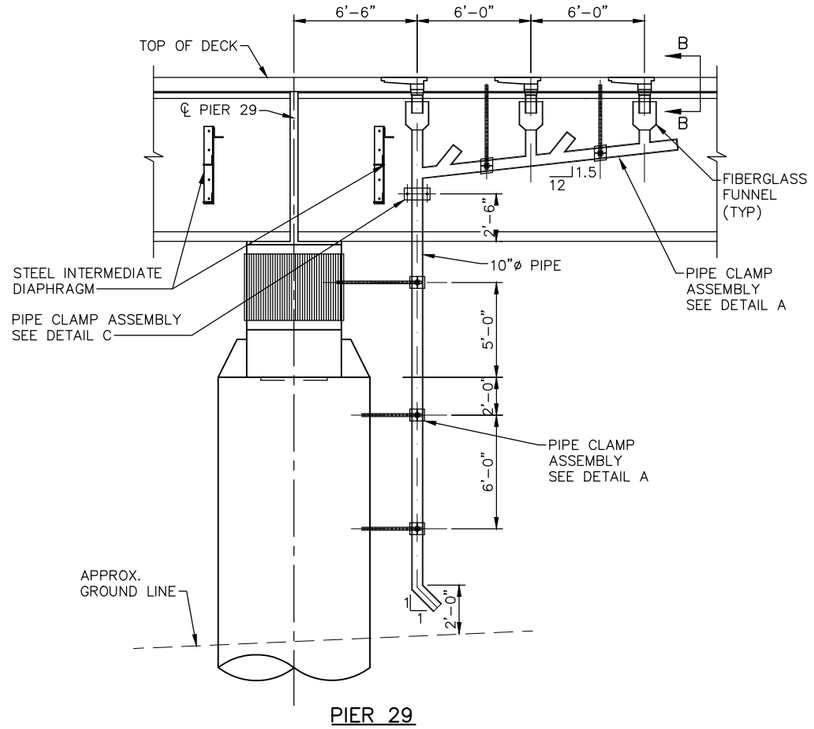
SHEET NAME: W2-STU-BRID-T212-DRN01_1

SHEET 209 OF 264

Jan, 17 2016 10:02 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-DRN01.dwg By: hills



PIER 26



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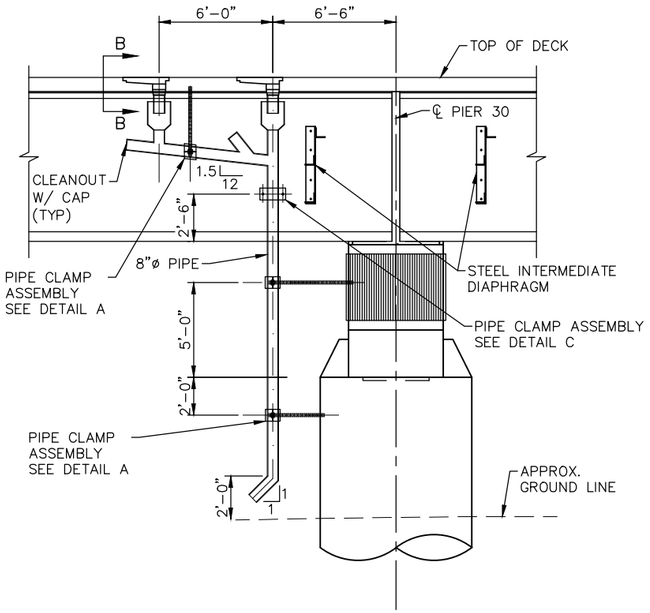
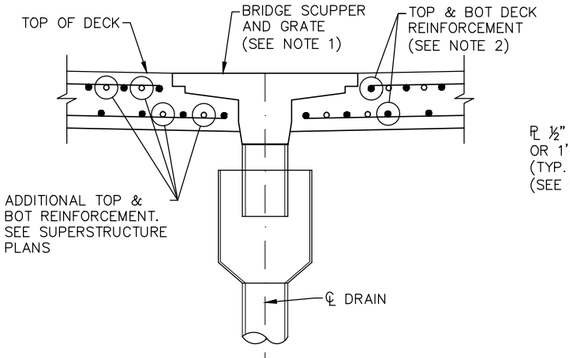
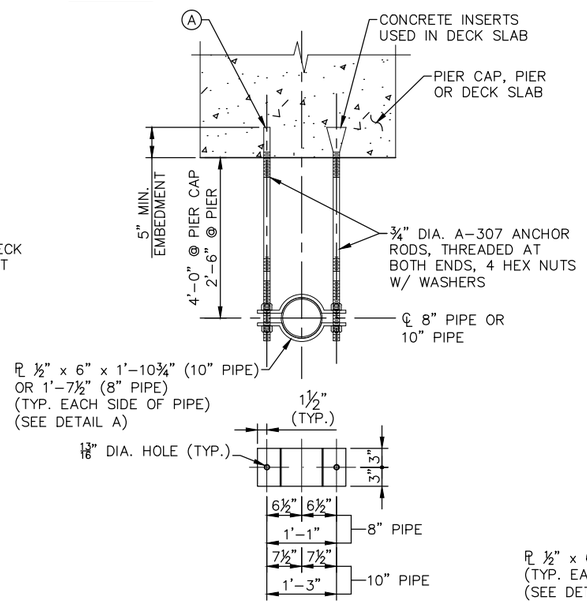


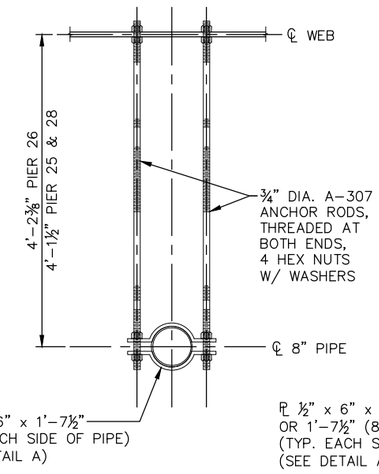
PIER 30



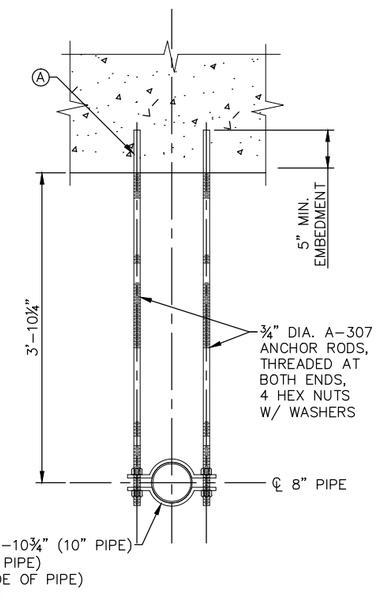
SECTION B–B



DETAIL A



DETAIL B



DETAIL C

NOTES:

SEE GENERAL NOTES ON SHEET 209.

1. DECK DRAIN DETAILS SHOWN ARE FOR NEENAH R–3956. THE BRIDGE SCUPPER SHALL CONFORM TO NEENAH R–3956 OR APPROVED EQUAL.
2. DECK REINFORCEMENTS THAT INTERFERES WITH THE BRIDGE SCUPPER SHALL BE TERMINATED 2" CLEAR FROM THE SCUPPER.
3. WHEN ADDITIONAL REBAR PLACED INTERFERES WITH MAIN DECK REINFORCEMENTS, SUCH REBAR SHALL BE BUNDLED TO THE DECK REINFORCEMENT AT RESPECTIVE LOCATIONS.

Ⓐ ADHESIVE ANCHORAGE WITH REQUIRED ULTIMATE PULLOUT STRENGTH = 12 KIPS. ADHESIVE ANCHORAGES USED IN PIER CAPS, COLUMNS AND CONCRETE GIRDER WEBS.

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

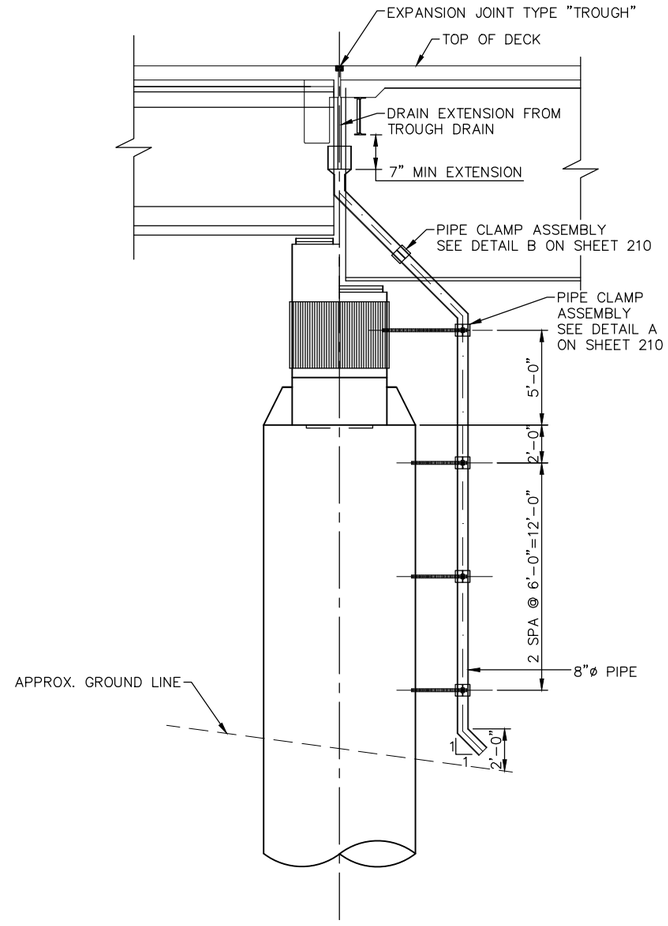
SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE DRAINAGE DETAILS 2

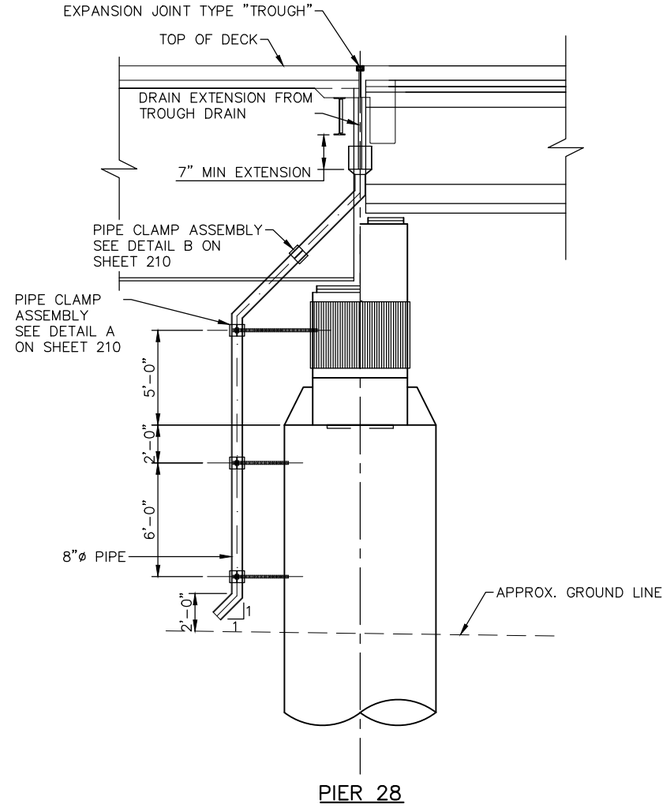
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-DRN01_2

SHEET 210 OF 264

Jan, 17 2016 10:02 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-DRN01.dwg By: hills



PIER 25



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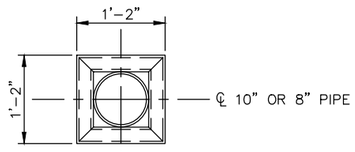
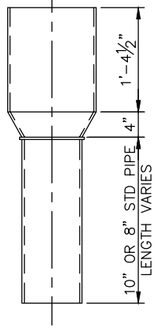


℄ DRAIN AND 10" OR 8" PIPE



FIBERGLASS FUNNEL

NOTES:

SEE GENERAL NOTES ON SHEET 209.

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

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

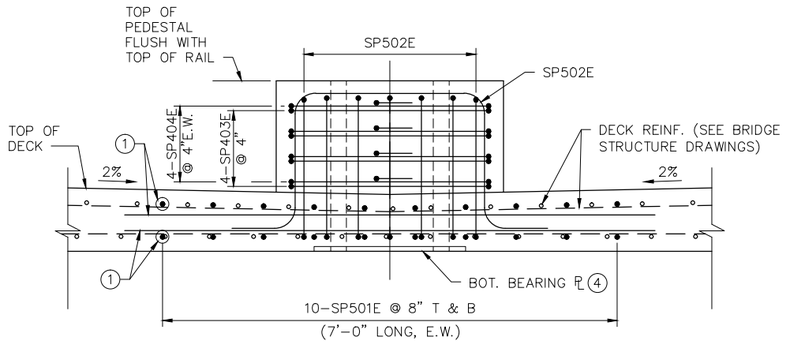
SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE DRAINAGE DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-DRN01_3

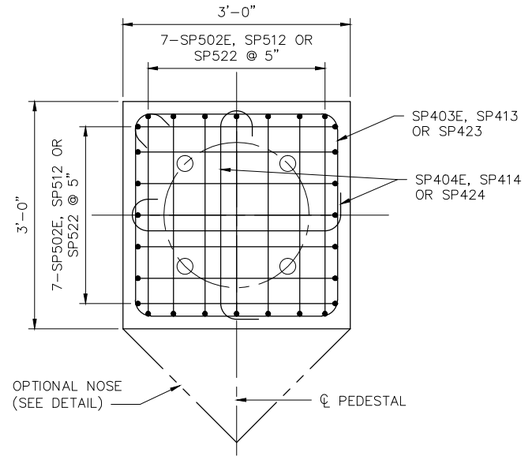
SHEET 211 OF 264

Jan, 17 2016 10:02 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-DRN01.dwg By: hills

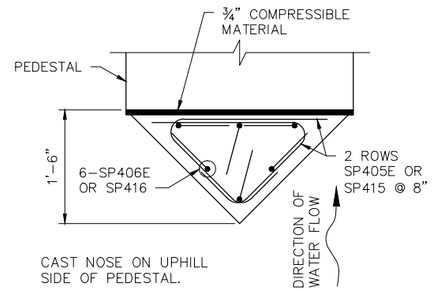


PEDESTAL REINF. ELEVATION - ON DECK

(THRU DECK CONNECTION)

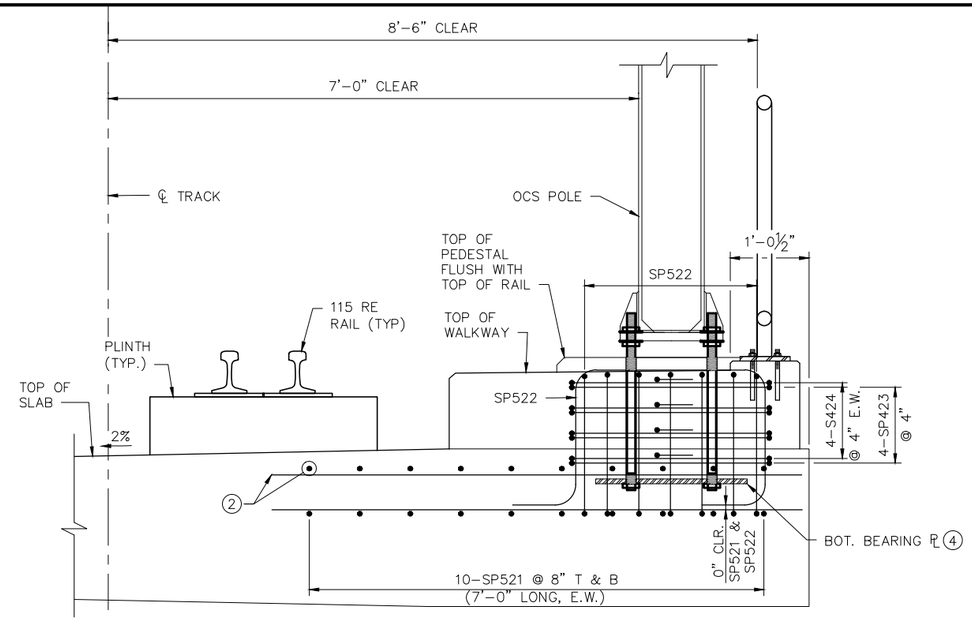


PEDESTAL REINF. PLAN



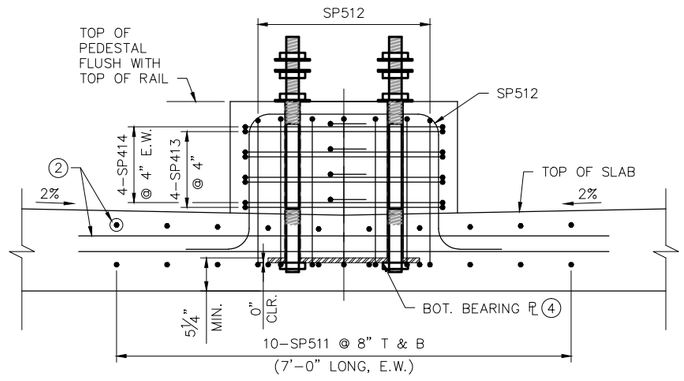
OPTIONAL NOSE DETAIL

FOR CENTER PEDESTALS ON SLABS & DECKS WITH INVERTED CROWN



PEDESTAL REINF. ELEVATION - ON SLAB WALKWAY

EMBEDDED PLATE
(CIP SLABS W/WALKWAY)



PEDESTAL REINF. ELEVATION - ON SLAB

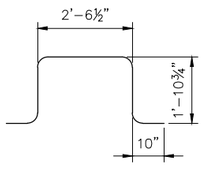
EMBEDDED PLATE
(CIP SLABS ≥ 2'–0")

BILL OF REINFORCEMENT - PEDESTAL

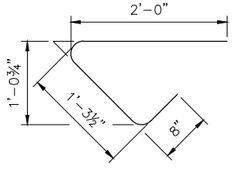
BAR	LOCATION	LOCATIONS NO. UNIT 1	LOCATIONS NO. UNIT 2	LOCATIONS NO. UNIT 3	LOCATIONS NO. UNIT 4	NO. PER LOCATION	TOTAL NUMBER	LENGTH	SHAPE	LOCATION
SP501E	DECK	–	8	6	5	40	760	7'–0"	——	DECK
SP502E	DECK	–	8	6	5	14	266	8'–0"	⎍	PEDESTAL
SP403E	DECK	–	8	6	5	4	76	11'–5"	□	PEDESTAL
SP404E	DECK	–	8	6	5	8	152	3'–7"	⊂	PEDESTAL
SP405E	DECK	–	8	6	5	4	76	4'–0"	◁	NOSE
SP406E	DECK	–	8	6	5	6	114	2'–8"	⌐	NOSE
SP511	SLAB	5	–	–	–	40	200	7'–0"	——	SLAB
SP512	SLAB	5	–	–	–	14	70	8'–0"	⎍	PEDESTAL
SP413	SLAB	5	–	–	–	4	20	11'–5"	□	PEDESTAL
SP414	SLAB	5	–	–	–	8	40	3'–7"	⊂	PEDESTAL
SP415	SLAB	5	–	–	–	4	20	4'–0"	◁	NOSE
SP416	SLAB	5	–	–	–	6	30	2'–8"	⌐	NOSE
SP521	SLAB WALKWAY	4	–	–	–	40	160	7'–0"	——	SLAB
SP522	SLAB WALKWAY	4	–	–	–	14	56	8'–0"	⎍	PEDESTAL
SP423	SLAB WALKWAY	4	–	–	–	4	16	11'–5"	□	PEDESTAL
SP424	SLAB WALKWAY	4	–	–	–	8	32	3'–7"	⊂	PEDESTAL

NOTES:

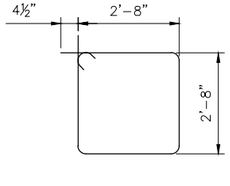
SEE SHEET 213 FOR NOTES.



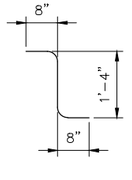
SP502E & SP512



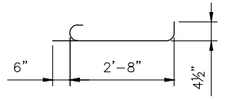
SP405E, SP415



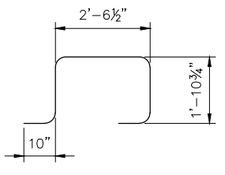
SP403E, SP413 & SP423



SP406E & SP416



SP404E, SP414 & SP424



SP522

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

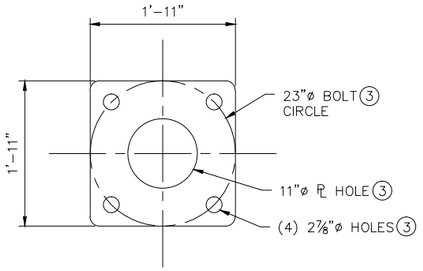
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
O.C.S. POLE SUPPORT DETAILS 1

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-DTL04_1

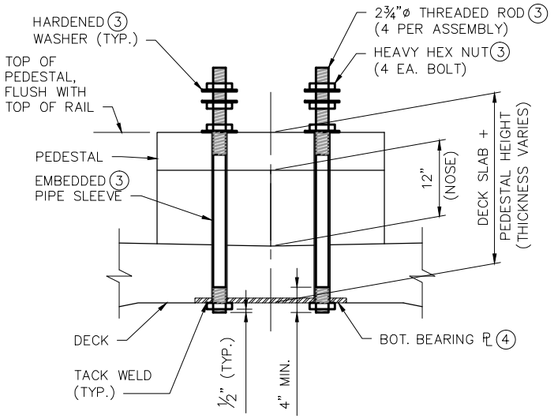
SHEET 212 OF 264

Jan, 17 2016 10:02 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-DTL04.dwg By: hills



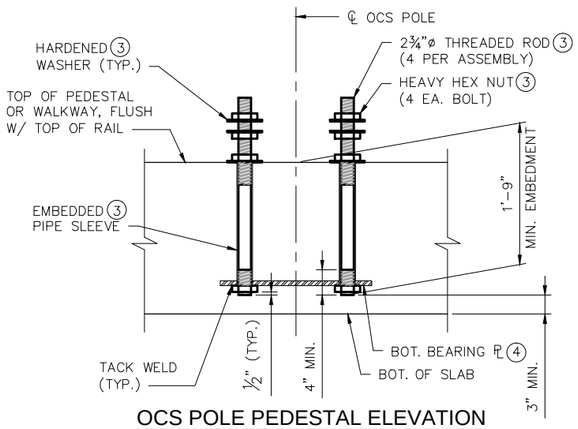
BOTTOM BEARING PLATE PLAN (4)

(POLE TYPE TT3 SHOWN OTHERS SIMILAR)



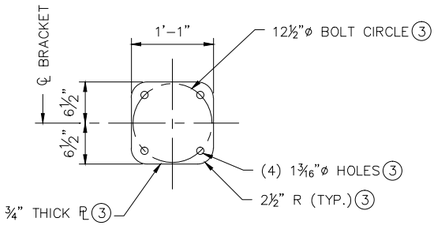
OCS POLE PEDESTAL ELEVATION

(POLE TYPE TT3 SHOWN OTHERS SIMILAR)
THRU SLAB CONNECTION

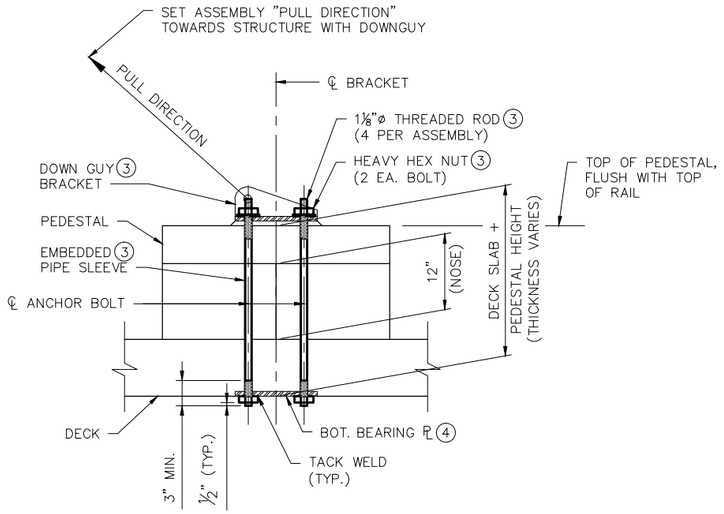


OCS POLE PEDESTAL ELEVATION

EMBEDDED PLATE (CIP SLABS ≥ 2'-0")
(POLE TYPE TT3 SHOWN, OTHERS SIMILAR)
(OCS POLE PLATE SHOWN – SLAB WALKWAY AND DOWN GUY SIMILAR)



DOWN GUY BOTTOM BEARING PLATE PLAN (4)



DOWN GUY BRACKET ELEVATION

THRU SLAB CONNECTION

NOTES:

1. ADDITIONAL DECK REINF. SHALL BE PLACED IN SAME PLANE AS AND BETWEEN STANDARD DECK REINF. AND IS SYM. ABOUT ℄ POLE.
2. ADDITIONAL DECK REINF. IN TOP SHALL BE PLACED IN SAME PLANE AS AND BETWEEN STANDARD DECK REINF. AND IS SYM. ABOUT ℄ POLE. FOR ANCHOR PLATE EMBEDMENT DETAILS SEE OCS POLE PEDESTAL ELEVATION ON THIS SHEET.
3. FOR ANCHOR BOLT ASSEMBLY DETAILS, ANCHOR SIZE AND DIMENSIONS, SEE VOLUME 12.
4. PLATE SIZE, THICKNESS AND ANCHOR BOLT LAYOUT SHOULD MATCH OCS POLE ASSEMBLY DRAWING. SEE VOLUME 12.
5. CONCRETE COVER FOR PEDESTAL SHALL BE 2" UNLESS OTHERWISE NOTED.
6. USE EMBEDDED SLEEVE THROUGH PEDESTAL AND DECK SLAB WITH A BOTTOM BEARING PLATE EQUAL IN PLAN SIZE TO THE TOP OCS POLE BEARING PLATE. (SEE OCS POLE ANCHORAGE ASSEMBLY DETAILS AND FOUNDATION SCHEDULES IN CIVIL VOLUME 12 FOR ADDITIONAL OCS PLATE DETAILS)
7. STRUCTURAL STEEL ELEMENTS SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS:
   - BEARING PLATES A572 GRADE 50
   - ANCHOR BOLTS (THREADED RODS) F1554 GRADE 55
   - HEXAGONAL NUTS A563, AND
   - WASHERS F436
8. ALL STEEL SHALL BE HOT–DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A–123 AND A–153.
9. CONTRACTOR MAY PROVIDE FULLY THREADED ROD IF DESIRED.
10. BARS SP502E, SP512 & SP522 MAY BE ADJUSTED TO AVOID CONFLICTS WITH OCS ANCHOR RODS.
11. ONCE OCS POLE BEARING PLATE AND ANCHOR BOLTS HAVE BEEN INSTALLED AND TIGHTENED, INTERSTITIAL SPACE BETWEEN SLEEVE AND BOLT IS FILLED WITH AN EPOXY GROUT.
12. EPOXY GROUT SHALL HAVE THE FOLLOWING PROPERTIES:
    - MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI
    - NON–SHRINK
    - NON–METALLIC
    - NON–CONDUCTIVE TO ELECTRICITY, AND
    - SUITABLE FOR ADHESION TO GALVANIZED ANCHOR BOLTS.
13. SEE VOLUME 12 FOR ANCHORAGE REQUIREMENTS AT EACH OCS POLE DOWN GUY PEDESTAL LOCATION.

Jan, 17 2016 10:02 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-DTL04.dwg By: hills

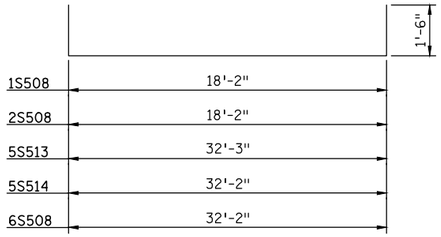
DESIGNED BY: DDL	CHECKED BY: MJC	AECOM PARSONS BRINCKERHOFF
DRAWN BY: SWH	CHECKED BY: MJC	90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL — SOUTHWEST Green Line LRT Extension

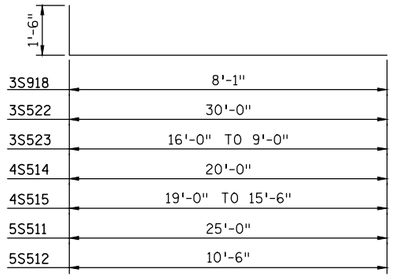
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
O.C.S. POLE SUPPORT DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-DTL04_2

SHEET 213 OF 264

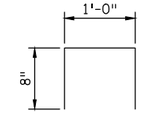


1S508, 2S508, 5S513, 5S514 OR 6S508

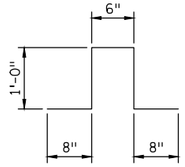


3S918, 3S522, 3S523, 4S514,
4S515, 5S511 OR 5S512

1S514, 1S515, 2S514, 3S541, 3S542,
4S521, 5S520, 6S514 OR 6S515



1W410, 2W410, 3W427, 3W437,
4W417, 5W416 OR 6W410



1W411, 2W411, 3W428,
4W418, 5W417 OR 6W411

Ⓐ 1 SERIES OF 3, 47'-11" TO 12'-4"
Ⓑ 1 SERIES OF 2, 43'-5" TO 25'-6"
Ⓒ 1 SERIES OF 2, 39'-11" TO 21'-11"
Ⓓ 1 SERIES OF 3, 30'-4" TO 12'-4"
Ⓔ 1 SERIES OF 2, 26'-0" TO 8'-1"
Ⓕ 1 SERIES OF 2, 43'-10" TO 25'-2"
Ⓖ 1 SERIES OF 2, 39'-6" TO 20'-6"
Ⓗ 1 SERIES OF 142, 16'-0" TO 9'-0"
Ⓘ 1 SERIES OF 142, 17'-6" 10'-6"
Ⓙ 1 SERIES OF 5, 2'-8" TO 6'-10"
Ⓚ 1 SERIES OF 2, 9'-8" TO 10'-8"
Ⓛ 1 SERIES OF 2, 10'-6" TO 9'-5"
Ⓜ 1 SERIES OF 4, 6'-7" TO 3'-5"
Ⓝ 1 SERIES OF 7, 13'-3" TO 2'-4"
Ⓞ 1 SERIES OF 3, 37'-7" TO 12'-4"
Ⓟ 1 SERIES OF 142, 19'-0" TO 15'-6"
Ⓠ 1 SERIES OF 142, 20'-6" TO 17'-0"

BILL OF REINFORCEMENT FOR UNIT 1 SLAB

BAR	NO.	LENGTH	SHAPE	LOCATION
SPAN 1 TO 3				
1S901	114	44'-8"	———	SLAB LONGITUDINAL TOP
1S902	72	22'-0"	———	SLAB LONGITUDINAL TOP
1S903	114	44'-2"	———	SLAB LONGITUDINAL BOTTOM
1S904	36	28'-3"	———	SLAB LONGITUDINAL BOTTOM
1S905	36	27'-0"	———	SLAB LONGITUDINAL BOTTOM
1S906	36	26'-3"	———	SLAB LONGITUDINAL BOTTOM
1S507	277	18'-2"	———	SLAB TRANSVERSE TOP
1S508	263	21'-2"	⌊⌋	SLAB TRANSVERSE BOTTOM
1W409	63	41'-5"	———	WALKWAY LONGITUDINAL
1W410	960	2'-4"	⊓	WALKWAY TIE
1W411	120	3'-10"	⊓	WALKWAY TRANSVERSE
1W412	360	4'-3"	———	WALKWAY TRANSVERSE
1W413	120	2'-0"	———	WALKWAY TRANSVERSE
1S514	38	6'-9"	⊏⊐	SLAB VERTICAL
1S515	38	4'-11"	⊏⊐	SLAB VERTICAL
SPAN 4 TO 6				
2S901	114	48'-0"	———	SLAB LONGITUDINAL TOP
2S902	72	22'-0"	———	SLAB LONGITUDINAL TOP
2S903	114	47'-6"	———	SLAB LONGITUDINAL BOTTOM
2S904	36	30'-3"	———	SLAB LONGITUDINAL BOTTOM
2S905	36	31'-0"	———	SLAB LONGITUDINAL BOTTOM
2S906	36	30'-3"	———	SLAB LONGITUDINAL BOTTOM
2S507	297	18'-2"	———	SLAB TRANSVERSE TOP
2S508	285	21'-2"	⌊⌋	SLAB TRANSVERSE BOTTOM
2W409	63	44'-11"	———	WALKWAY LONGITUDINAL
2W410	1040	2'-4"	⊓	WALKWAY TIE
2W411	130	3'-10"	⊓	WALKWAY TRANSVERSE
2W412	390	4'-3"	———	WALKWAY TRANSVERSE
2W413	130	2'-0"	———	WALKWAY TRANSVERSE
2S514	76	4'-11"	⊏⊐	SLAB VERTICAL
SPAN 7 TO 9				
3S901	114	48'-0"	———	SLAB LONGITUDINAL TOP
3S902	3	Ⓐ	———	SLAB LONGITUDINAL TOP
3S903	2	Ⓑ	———	SLAB LONGITUDINAL TOP
3S904	2	Ⓒ	———	SLAB LONGITUDINAL TOP
3S905	77	22'-0"	———	SLAB LONGITUDINAL TOP
3S906	3	48'-1"	———	SLAB LONGITUDINAL TOP
3S907	6	8'-11"	———	SLAB LONGITUDINAL BOTTOM
3S908	114	47'-6"	———	SLAB LONGITUDINAL BOTTOM
3S909	3	Ⓓ	———	SLAB LONGITUDINAL BOTTOM
3S910	2	Ⓔ	———	SLAB LONGITUDINAL BOTTOM
3S911	2	Ⓕ	———	SLAB LONGITUDINAL BOTTOM
3S912	2	Ⓖ	———	SLAB LONGITUDINAL BOTTOM
3S913	41	30'-3"	———	SLAB LONGITUDINAL BOTTOM
3S914	37	30'-11"	———	SLAB LONGITUDINAL BOTTOM
3S915	36	30'-3"	———	SLAB LONGITUDINAL BOTTOM
3S916	3	47'-6"	———	SLAB LONGITUDINAL BOTTOM
3S917	1	12'-7"	———	SLAB LONGITUDINAL BOTTOM
3S918	6	9'-7"	⌊	SLAB LONGITUDINAL BOTTOM
3S519	154	30'-0"	———	SLAB TRANSVERSE TOP
3S520	142	Ⓗ	———	SLAB TRANSVERSE TOP
3S521	2	5'-4"	———	SLAB TRANSVERSE TOP
3S522	142	31'-6"	⌊	SLAB TRANSVERSE BOTTOM
3S523	142	Ⓘ	⌊	SLAB TRANSVERSE BOTTOM
3S524	4	5'-4"	———	SLAB TRANSVERSE BOTTOM
3W425	15	44'-10"	———	WALKWAY LONGITUDINAL
3W426	18	45'-2"	———	WALKWAY LONGITUDINAL
3W427	520	2'-4"	⊓	WALKWAY TIE
3W428	130	3'-10"	⊓	WALKWAY TRANSVERSE
3W429	130	4'-3"	———	WALKWAY TRANSVERSE
3W430	130	2'-0"	———	WALKWAY TRANSVERSE
3W431	5	Ⓙ	———	CURB LONGITUDINAL
3W432	2	Ⓚ	———	CURB LONGITUDINAL
3W433	2	11'-4"	———	CURB LONGITUDINAL
3W434	2	Ⓛ	———	CURB LONGITUDINAL
3W435	4	Ⓜ	———	CURB LONGITUDINAL
3W436	1	2'-8"	———	CURB LONGITUDINAL
3W437	32	2'-4"	⊓	CURB TIE
3W438	2	5'-4"	———	CURB TRANSVERSE
3W439	3	15'-0"	———	CURB TRANSVERSE
3W440	7	Ⓝ	———	CURB TRANSVERSE
3S541	73	4'-11"	⊏⊐	SLAB VERTICAL
3S542	6	6'-9"	⊏⊐	SLAB VERTICAL
3S643	8	12'-0"	———	SLAB LONGITUDINAL TOP & BOTTOM DRAINAGE
3S644	8	10'-0"	———	SLAB TRANSVERSE TOP & BOTTOM DRAINAGE
3S545	6	16'-0"	———	SLAB TRANSVERSE
3S546	6	9'-0"	———	SLAB TRANSVERSE
SPAN 10 TO 12				
4S901	103	48'-1"	———	SLAB LONGITUDINAL TOP
4S902	1	37'-8"	———	SLAB LONGITUDINAL TOP
4S903	1	12'-6"	———	SLAB LONGITUDINAL TOP
4S904	1	30'-11"	———	SLAB LONGITUDINAL TOP
4S905	66	22'-0"	———	SLAB LONGITUDINAL TOP
4S906	103	47'-6"	———	SLAB LONGITUDINAL BOTTOM
4S907	3	Ⓞ	———	SLAB LONGITUDINAL BOTTOM
4S908	1	30'-6"	———	SLAB LONGITUDINAL BOTTOM
4S909	34	30'-3"	———	SLAB LONGITUDINAL BOTTOM
4S910	33	31'-0"	———	SLAB LONGITUDINAL BOTTOM
4S911	32	30'-3"	———	SLAB LONGITUDINAL BOTTOM
4S512	154	20'-0"	———	SLAB TRANSVERSE TOP
4S513	142	Ⓟ	———	SLAB TRANSVERSE TOP
4S514	142	21'-6"	⌊	SLAB TRANSVERSE BOTTOM
4S515	142	Ⓠ	⌊	SLAB TRANSVERSE BOTTOM
4W416	33	44'-11"	———	WALKWAY LONGITUDINAL
4W417	520	2'-4"	⊓	WALKWAY TIE
4W418	130	3'-10"	⊓	WALKWAY TRANSVERSE
4W419	130	4'-3"	———	WALKWAY TRANSVERSE
4W420	130	2'-0"	———	WALKWAY TRANSVERSE
4S521	69	4'-11"	⊏⊐	SLAB VERTICAL
4S522	6	19'-0"	———	SLAB TRANSVERSE
4S523	6	15'-6"	———	SLAB TRANSVERSE
SPAN 13 TO 15				
5S901	99	48'-5"	———	SLAB LONGITUDINAL TOP
5S902	64	22'-0"	———	SLAB LONGITUDINAL TOP
5S903	99	47'-10"	———	SLAB LONGITUDINAL BOTTOM
5S904	32	30'-4"	———	SLAB LONGITUDINAL BOTTOM
5S905	32	31'-0"	———	SLAB LONGITUDINAL BOTTOM
5S906	32	30'-4"	———	SLAB LONGITUDINAL BOTTOM
5S507	154	25'-0"	———	SLAB TRANSVERSE TOP
5S508	154	10'-6"	———	SLAB TRANSVERSE TOP
5S509	1	32'-3"	———	SLAB TRANSVERSE TOP
5S510	1	32'-2"	———	SLAB TRANSVERSE TOP
5S511	142	26'-6"	⌊	SLAB TRANSVERSE BOTTOM
5S512	142	12'-0"	⌊	SLAB TRANSVERSE BOTTOM
5S513	1	35'-3"	⌊⌋	SLAB TRANSVERSE BOTTOM
5S514	1	35'-2"	⌊⌋	SLAB TRANSVERSE BOTTOM
5W415	33	44'-11"	———	WALKWAY LONGITUDINAL
5W416	522	2'-4"	⊓	WALKWAY TIE
5W417	130	3'-10"	⊓	WALKWAY TRANSVERSE
5W418	131	4'-3"	———	WALKWAY TRANSVERSE
5W419	130	2'-0"	———	WALKWAY TRANSVERSE
5S520	66	4'-11"	⊏⊐	SLAB VERTICAL
5S621	8	12'-0"	———	SLAB LONGITUDINAL TOP & BOTTOM DRAINAGE
5S622	8	10'-0"	———	SLAB TRANSVERSE TOP & BOTTOM DRAINAGE
SPAN 16 TO 18				
6S901	99	48'-1"	———	SLAB LONGITUDINAL TOP
6S902	64	22'-0"	———	SLAB LONGITUDINAL TOP
6S903	99	47'-6"	———	SLAB LONGITUDINAL BOTTOM
6S904	32	30'-4"	———	SLAB LONGITUDINAL BOTTOM
6S905	32	31'-0"	———	SLAB LONGITUDINAL BOTTOM
6S906	32	30'-4"	———	SLAB LONGITUDINAL BOTTOM
6S507	149	32'-2"	———	SLAB TRANSVERSE TOP
6S508	142	35'-2"	⌊⌋	SLAB TRANSVERSE BOTTOM
6W409	33	44'-11"	———	WALKWAY LONGITUDINAL
6W410	520	2'-4"	⊓	WALKWAY TIE
6W411	130	3'-10"	⊓	WALKWAY TRANSVERSE
6W412	130	4'-3"	———	WALKWAY TRANSVERSE
6W413	130	2'-0"	———	WALKWAY TRANSVERSE
6S514	33	4'-11"	⊏⊐	SLAB VERTICAL
6S515	33	5'-8"	⊏⊐	SLAB VERTICAL
6S616	8	12'-0"	———	SLAB LONGITUDINAL TOP & BOTTOM DRAINAGE
6S617	8	10'-0"	———	SLAB TRANSVERSE TOP & BOTTOM DRAINAGE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

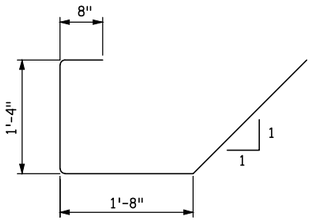
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (BILL OF REINF) 1

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP18

SHEET 214 OF 264

Jan. 17 2016 10:02 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP18.dwg By: hills



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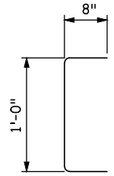
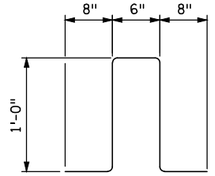


7S409E
8S409E
9S409E
10S409E
11S409E

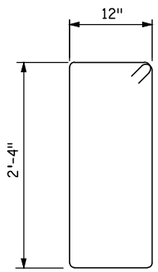


7S410E
8S410E
9S410E
10S410E
11S410E

BILL OF REINFORCEMENT SPANS 29- 31				
BAR	NO.	LENGTH	SHAPE	LOCATION
11S401E	207	49'-6"	———	SLAB - LONGITUDINAL, TOP
11S502E	495	49'-11"	———	SLAB - LONGITUDINAL, BOTTOM
11S403E	2072	17'-3"	———	SLAB - TRANSVERSE, TOP
11S504E	2064	17'-6"	———	SLAB - TRANSVERSE, BOTTOM
11S605E	88	15'-0"	———	SLAB - NEGATIVE, TOP
11S406E	108	49'-6"	———	SIDEWALK - LONGITUDINAL
11S407E	433	4'-3"	———	SIDEWALK - TRANSVERSE, TOP
11S408E	430	2'-0"	———	SIDEWALK - TRANSVERSE, TOP
11S409E	1726	2'-4"	⌐¬	SIDEWALK - TIE
11S410E	430	3'-10"	⌐¬	SIDEWALK - TIE
11S511E	31	7'-7"	□	END BLOCK - TIE
11S512E	31	3'-9"	⊓	END BLOCK - TIE
11S513E	11	32'-0"	———	TRANSVERSE
11S414E	540	6'-2"	⌐¬	HAUNCH - TIE
11S415E	88	6'-8"	⌐¬	HAUNCH - TIE
11S416E	8	25'-0"	———	HAUNCH - LONGITUDINAL
11S417E	8	29'-6"	———	HAUNCH - LONGITUDINAL
11S418E	8	34'-6"	———	HAUNCH - LONGITUDINAL
11S419E	8	20'-6"	———	HAUNCH - LONGITUDINAL
11S620E	8	21'-0"	———	REINF. AT DRAIN, T&B, LONGITUDINAL
11S621E	8	15'-0"	———	REINF. AT DRAIN, T&B, LONGITUDINAL
11S622E	40	9'-0"	———	REINF. AT DRAIN, T&B, TRANSVERSE

BILL OF REINFORCEMENT SPANS 19- 20				
BAR	NO.	LENGTH	SHAPE	LOCATION
7S401E	161	46'-9"	———	SLAB - LONGITUDINAL, TOP
7S502E	385	47'-3"	———	SLAB - LONGITUDINAL, BOTTOM
7S403E	768	32'-2"	———	SLAB - TRANSVERSE, TOP
7S504E	760	32'-2"	———	SLAB - TRANSVERSE, BOTTOM
7S605E	44	15'-0"	———	SLAB - NEGATIVE, TOP
7S406E	84	46'-9"	———	SIDEWALK - LONGITUDINAL
7S407E	317	4'-3"	———	SIDEWALK - TRANSVERSE, TOP
7S408E	317	2'-0"	———	SIDEWALK - TRANSVERSE, TOP
7S409E	1268	2'-4"	⌐¬	SIDEWALK - TIE
7S410E	317	3'-10"	⌐¬	SIDEWALK - TIE

BILL OF REINFORCEMENT SPANS 21- 22				
BAR	NO.	LENGTH	SHAPE	LOCATION
8S401E	161	46'-6"	———	SLAB - LONGITUDINAL, TOP
8S502E	385	46'-11"	———	SLAB - LONGITUDINAL, BOTTOM
8S403E	766	32'-2"	———	SLAB - TRANSVERSE, TOP
8S504E	758	32'-2"	———	SLAB - TRANSVERSE, BOTTOM
8S605E	44	15'-0"	———	SLAB - NEGATIVE, TOP
8S406E	84	46'-6"	———	SIDEWALK - LONGITUDINAL
8S407E	316	4'-3"	———	SIDEWALK - TRANSVERSE, TOP
8S408E	316	2'-0"	———	SIDEWALK - TRANSVERSE, TOP
8S409E	1264	2'-4"	⌐¬	SIDEWALK - TIE
8S410E	316	3'-10"	⌐¬	SIDEWALK - TIE



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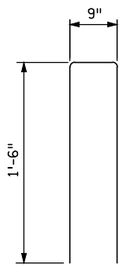

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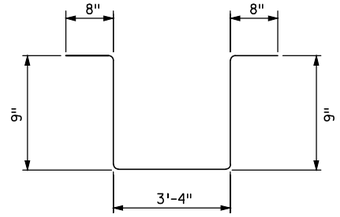
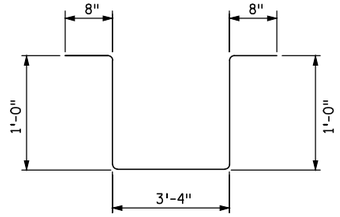


9S411E
11S414E



11S415E

BILL OF REINFORCEMENT SPANS 23- 25				
BAR	NO.	LENGTH	SHAPE	LOCATION
9S401E	230	46'-4"	———	SLAB - LONGITUDINAL, TOP
9S502E	550	46'-9"	———	SLAB - LONGITUDINAL, BOTTOM
9S403E	1085	32'-2"	———	SLAB - TRANSVERSE, TOP
9S504E	1077	32'-2"	———	SLAB - TRANSVERSE, BOTTOM
9S605E	88	15'-0"	———	SLAB - NEGATIVE, TOP
9S406E	120	46'-4"	———	SIDEWALK - LONGITUDINAL
9S407E	449	4'-3"	———	SIDEWALK - TRANSVERSE, TOP
9S408E	449	2'-0"	———	SIDEWALK - TRANSVERSE, TOP
9S409E	1796	2'-4"	⌐¬	SIDEWALK - TIE
9S410E	449	3'-10"	⌐¬	SIDEWALK - TIE
9S411E	172	6'-2"	⌐¬	HAUNCH - TIE
9S412E	8	30'-0"	———	HAUNCH - LONGITUDINAL

BILL OF REINFORCEMENT SPANS 26- 28				
BAR	NO.	LENGTH	SHAPE	LOCATION
10S601E	966	48'-8"	———	SLAB - LONGITUDINAL, TOP
10S502E	826	48'-3"	———	SLAB - LONGITUDINAL, BOTTOM
10S403E	3028	17'-6"	———	SLAB - TRANSVERSE, TOP
10S504E	3020	17'-10"	———	SLAB - TRANSVERSE, BOTTOM
10S406E	168	47'-11"	———	SIDEWALK - LONGITUDINAL
10S407E	649	4'-3"	———	SIDEWALK - TRANSVERSE, TOP
10S408E	629	2'-0"	———	SIDEWALK - TRANSVERSE, TOP
10S409E	2556	2'-4"	⌐¬	SIDEWALK - TIE
10S410E	629	3'-10"	⌐¬	SIDEWALK - TIE
10S611E	8	15'-0"	———	REINF. AT DRAIN, T&B, LONGITUDINAL
10S612E	16	9'-0"	———	REINF. AT DRAIN, T&B, TRANSVERSE
10S513E	48	5'-6"	◸	DECK ENDS
10S514E	24	7'-11"	———	DECK ENDS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: SWH | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

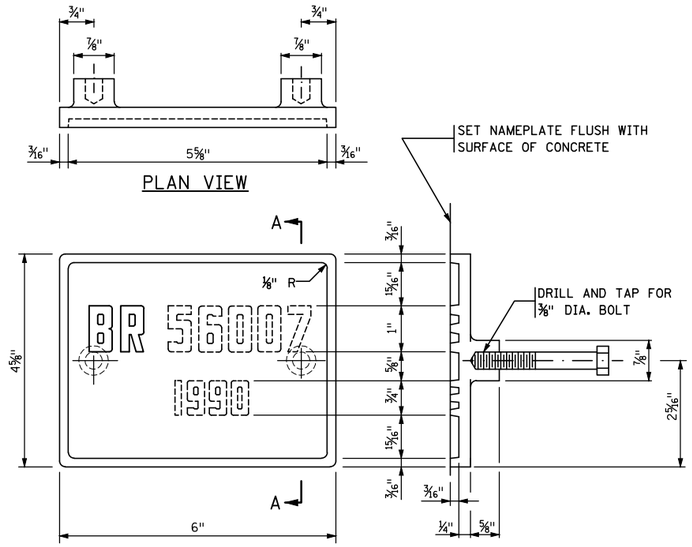
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (BILL OF REINF) 2

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP17

SHEET 215 OF 264

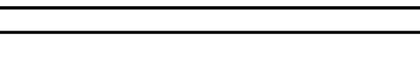
Jan, 17 2016 10:03 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP17.dwg By: hills



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

BRIDGE 27R34

YEAR 2019



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".

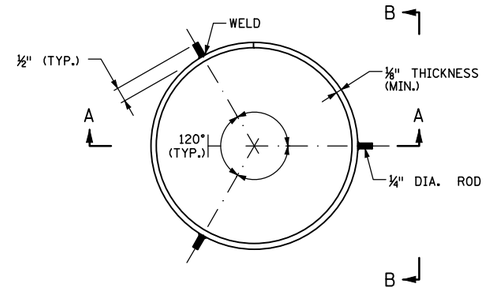
HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.

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

FURNISH 2 STEEL BOLTS ⅜" DIA. x 3" LONG WITH EACH PLATE.

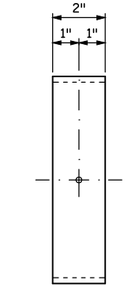
ALL DIMENSIONS FOR ¾" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

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



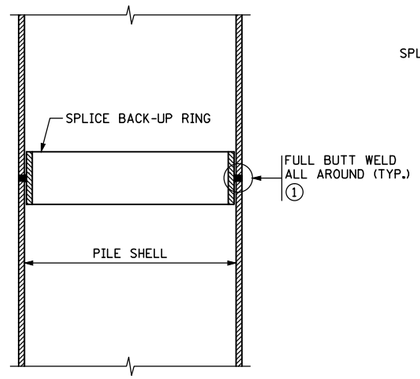
PLAN VIEW - SPLICE BACK-UP RING

PILE NOT SHOWN

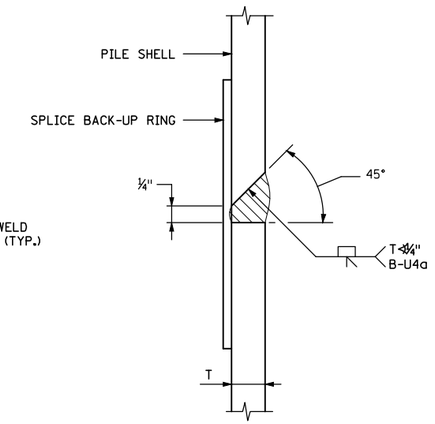


SECTION B-B

PILE NOT SHOWN



SECTION A-A



DETAIL "A"①

NOTES:

APPROVED COMMERCIAL PILE SPLICE BACK-UP RING MAY BE USED IN LIEU OF THE TYPE DETAILED, PROVIDED THAT ¼" ROOT IS MAINTAINED. BACK-UP RING SHALL HAVE A TIGHT FIT.

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

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

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

① FOR PILE SHELL THICKNESSES GREATER THAN ¼", USE A B-U4a WELD CONFIGURATION. SEE DETAIL "A".

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

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

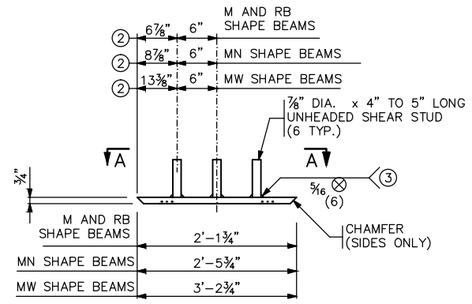
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE DETAILS 1

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP5_101-201

SHEET 216 OF 264

Jan. 17 2016 10:03 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP5_101-201.dwg By: hills



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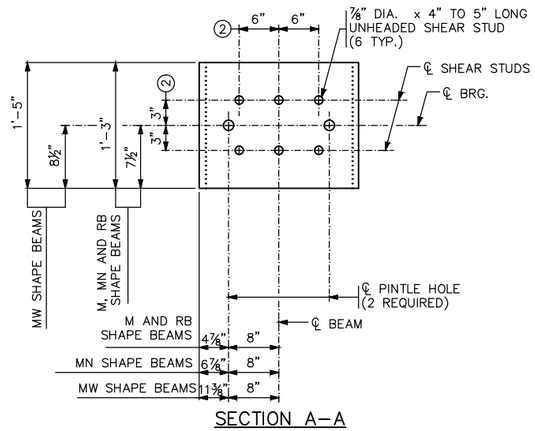
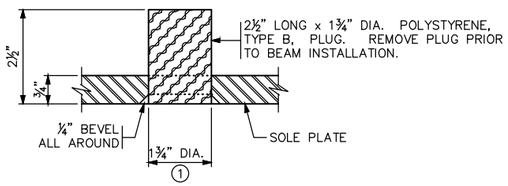


SECTION A–A



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 OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	SOLE PLATE (PRESTRESSED CONCRETE BEAMS) (FOR BEARINGS WITH PINTLES)		B303

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

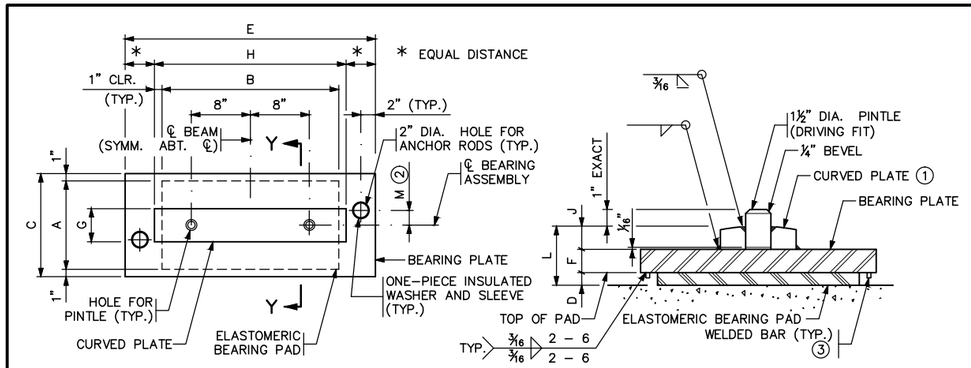
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP6_303

SHEET 217 OF 264

Jan, 17 2016 10:03 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP6_303.dwg By: hills



TABLE

ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE A	B	D	SHAPE FACTOR	BEARING PLATE SIZE C	E	F	CURVED PLATE SIZE G	H	J	ANCHOR ROD OFFSET +/- ②	M	ASSY. HEIGHT L	CURVED PLATE R ①
~~—~~	~~—~~	~~RB, M, & MN~~	~~12"~~	~~24"~~	~~½"~~	~~8.0~~	~~14"~~	~~—~~	~~1½"~~	~~4½"~~	~~26"~~	~~1¼"~~	~~—~~	~~—~~	~~3¼"~~	~~—~~
F1	PR 19,21,23,24,30	MW	16"	36"	½"	11.1	18"	47"	1½"	4½"	38"	1¼"	+	0"	3¼"	16"
F4	PR 29	MW	16"	36"	½"	11.1	18"	47"	1½"	4½"	38"	1¼"	–	⅜"	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.

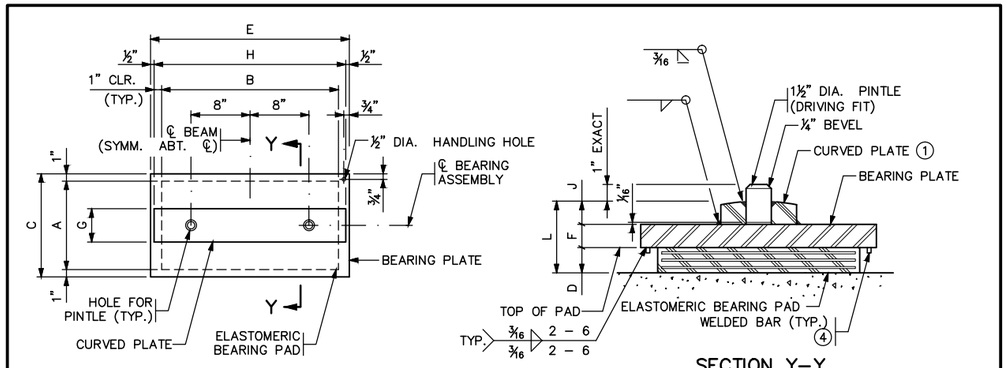
③ ⅜" X ⅜" BAR INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. BAR LENGTH IS 2" LESS THAN ADJACENT PAD DIMENSION, CENTERED ON PAD. CENTERLINE OF BAR TO EDGE OF PAD DIMENSION = ½".

④ ANCHOR RODS SHALL BE INSTALLED INTO THE HARDENED CONCRETE CAP WITH AN APPROVED ELASTOMERIC GROUT. PROVIDE 2" MINIMUM CLEARANCE BETWEEN ANCHOR ROD AND PIER CAP REINFORCEMENT.

MODIFICATION:
ANCHOR RODS TO BE INSTALLED WITH AN APPROVED ELASTOMERIC GROUT AND ONE-PIECE INSULATED WASHER AND SLEEVE.

DESIGN DATA:
MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1½" PINTLES.

APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (FIXED)	11-06-2013 11-03-2015	B310 MODIFIED



TABLE

ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE A	B	D	STEEL PLATES NO.	THICK.	LAMINATES NO.	THICK.	SHAPE FACTOR	BEARING PLATE SIZE C	E	F	CURVED PLATE SIZE G	H	J	ASSY. HEIGHT L	CURVED PLATE R ①
~~—~~	~~—~~	~~RB,M,&MN~~	~~12"~~	~~24"~~	~~—~~	~~—~~	~~⅛"~~	~~—~~	~~½"~~	~~—~~	~~14"~~	~~27"~~	~~1½"~~	~~4½"~~	~~26"~~	~~1¼"~~	~~—~~	~~—~~
E1	PR 18,20,22,25,28,N.ABUT.	MW	16"	36"	4⅜"	7	⅛"	6	½"	11.1	18"	39"	1½"	4½"	38"	1¼"	7⅛"	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	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (EXPANSION)	11-03-2015	B311

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: BAC ~~CHECKED~~ BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

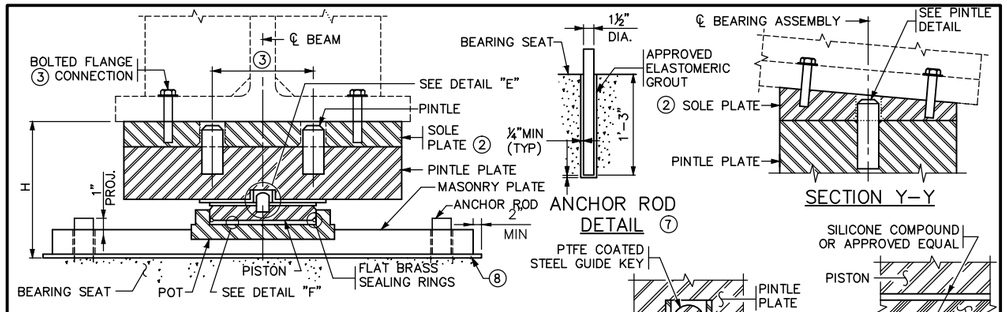
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP5_310-311

SHEET 218 OF 264

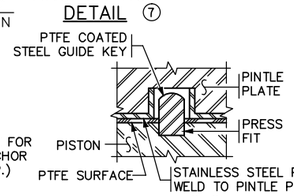
Jan. 17 2016 10:03 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34 W2-STU-BRID-T212-SUP6_310-311.dwg By: hills



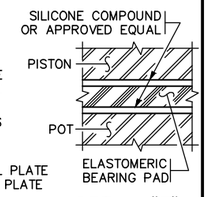
SECTION X–X

ANCHOR ROD DETAIL ⑦

SECTION Y–Y



DETAIL "E"



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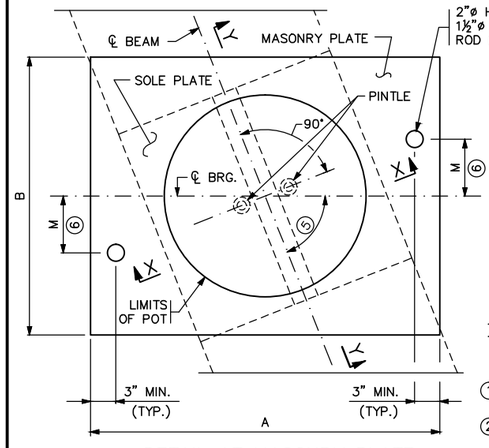
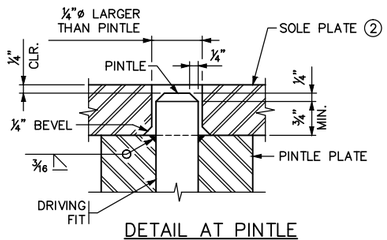


DETAIL AT MASONRY PLATE



DETAIL AT PINTLE

MODIFICATIONS:
ANCHOR RODS TO BE INSTALLED WITH AN APPROVED ELASTOMERIC GROUT. ADDED FRP SHIMMING PAD.

NOTES:

PROVIDE MATERIALS, DESIGN AND FABRICATION PER SPECIAL PROVISIONS.

PROVIDE STEEL PLATES AND PINTLES PER SPEC. 3309.

⑥ GALVANIZE SOLE PLATE, MASONRY PLATE AND PINTLE PLATE PER SPEC. 3394.

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

PERFORM SHIMMING UNDER MASONRY PLATE WITH PREFORMED FABRIC PADS PER AASHTO LRFD BRIDGE CONSTRUCTION SPEC. SECTION 18.10.

MANUFACTURER TO SUBMIT ANY BEARING ASSEMBLY DIMENSIONS, DETAILS, OR MATERIALS NOT SHOWN TO THE ENGINEER FOR APPROVAL.

~~ALL MATERIAL SHOWN IS INCLUDED IN THE PRICE BID FOR EACH BEARING ASSEMBLY, EXCEPT AS NOTED.~~

METALIZE PISTON AND POT PER SPEC. 2471.3.L.2.

① FACTORED LIVE LOAD (LL) ROTATION OR 0.02 RADIANS WHICHEVER IS GREATER.

② THE SOLE PLATE IS INCLUDED IN THE POT BEARING ASSEMBLY QUANTITY. 1¼" MIN. THICKNESS IS REQUIRED. TAPER SOLE PLATE TO FINISHED GRADE INCLUDING TRANSVERSE TAPER FOR SKEWED BRIDGES.

③ POT BEARING MANUFACTURER TO DETERMINE THE FINAL DIMENSIONS AND NUMBER OF ALL BEARING COMPONENTS INCLUDING PISTON, POT, MASONRY PLATE, SOLE PLATE, THREADED FASTENERS, BOLTED FLANGE CONNECTIONS, PINTLES AND OVERALL HEIGHT, AND COORDINATE SHARING THIS INFORMATION WITH THE BEAM FABRICATOR AND CONTRACTOR. MINIMUM PINTLE SIZE IS 1½" DIAMETER.

④ FACTORED HORIZONTAL RESISTANCE IS A MINIMUM OF 15% OF THE STRENGTH LIMIT STATE VERTICAL LOAD UNLESS STATED OTHERWISE.

⑤ SEE FRAMING PLAN

⑥ "+" DENOTES OFFSET AS SHOWN.
"–" DENOTES OFFSET OPPOSITE OF SHOWN.

⑦ ANCHOR RODS SHALL BE INSTALLED INTO THE HARDENED CONCRETE CAP WITH AN APPROVED ELASTOMERIC GROUT. PROVIDE 2" MINIMUM CLEARANCE BETWEEN ANCHOR ROD AND PIER CAP REINFORCEMENT.

⑧ ⅛" FRP (FIBERGLASS REINFORCED PLASTIC) SHIMMING PAD.

BEARING ASSEMBLY TABLE

ASSEMBLY TYPE	LOCATION	FACTORED LL ROTATION ①(RAD)	TOTAL MOVEMENT (INCHES)	MASONRY PLATE ③ A	MASONRY PLATE ③ B	ANCHOR ROD OFFSET +/–⑥	ANCHOR ROD OFFSET M	ASSUMED HEIGHT "H" ③	BOTTOM FLANGE WIDTH	DESIGN LOADS (KIPS) SERVICE LIMIT STATE VERTICAL	SERVICE LIMIT STATE HORIZONTAL	STRENGTH LIMIT STATE VERTICAL	STRENGTH LIMIT STATE HORIZONTAL④
E2	PR 25,28	0.02	4½"	33"	20"	+/–	0"	7½"	24"	272	70	350	59
E3	PR 25,28	0.02	4½"	45"	20"	+/–	0"	7½"	36"	325	70	420	63

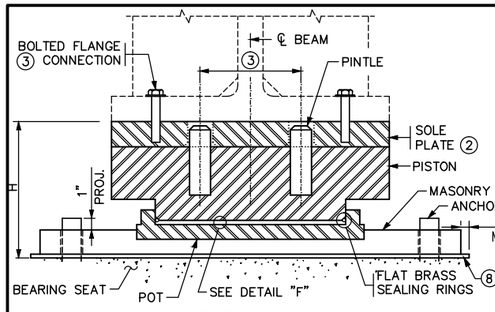
APPROVED: SEPTEMBER 18, 2007
Daniel D Dorgan
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

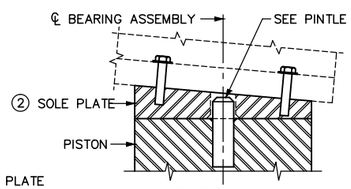
POT BEARING ASSEMBLY
(STEEL BEAMS)
(GUIDED EXPANSION)

REVISION 12–17–2008 11–03–2015

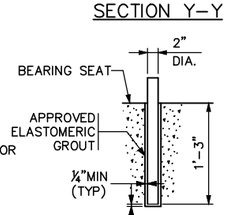
DETAIL NO. B314 MODIFIED



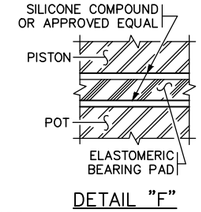
SECTION X–X



SECTION Y–Y



ANCHOR ROD DETAIL



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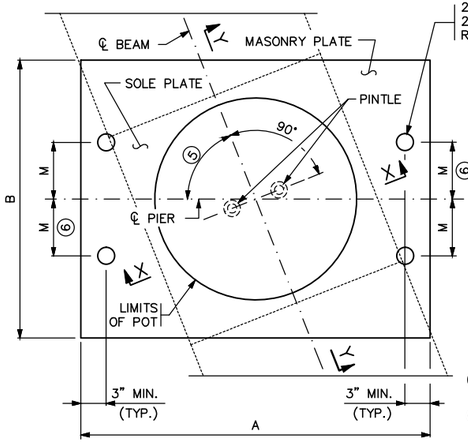
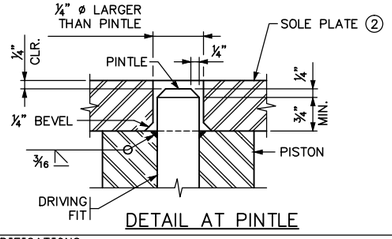


DETAIL AT MASONRY PLATE



DETAIL AT PINTLE

MODIFICATIONS:
MODIFIED ANCHOR BOLT SIZE AND NUMBER.
ANCHOR BOLTS TO BE INSTALLED WITH AN APPROVED ELASTOMERIC GROUT. ADDED FRP SHIMMING PAD.

NOTES:

PROVIDE MATERIALS, DESIGN AND FABRICATION PER SPECIAL PROVISIONS.

PROVIDE STEEL PLATES, PINTLES AND ANCHOR RODS PER SPEC. 3309.

⑥ GALVANIZE SOLE PLATE, AND MASONRY PLATE PER SPEC. 3394.

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

PERFORM SHIMMING UNDER MASONRY PLATE WITH PREFORMED FABRIC PADS PER AASHTO LRFD BRIDGE CONSTRUCTION SPEC. SECTION 18.10.

MANUFACTURER TO SUBMIT ANY BEARING ASSEMBLY DIMENSIONS, DETAILS, OR MATERIALS NOT SHOWN TO THE ENGINEER FOR APPROVAL.

~~ALL MATERIAL SHOWN IS INCLUDED IN THE PRICE BID FOR EACH BEARING ASSEMBLY, EXCEPT AS NOTED.~~

METALIZE PISTON AND POT PER SPEC. 2471.3.L.2.

① FACTORED LIVE LOAD (LL) ROTATION OR 0.02 RADIANS WHICHEVER IS GREATER.

② THE SOLE PLATE IS INCLUDED IN THE POT BEARING ASSEMBLY QUANTITY. 1¼" MIN. THICKNESS IS REQUIRED. TAPER SOLE PLATE TO FINISHED GRADE INCLUDING TRANSVERSE TAPER FOR SKEWED BRIDGES.

③ POT BEARING MANUFACTURER TO DETERMINE THE FINAL DIMENSIONS AND NUMBER OF ALL BEARING COMPONENTS INCLUDING PISTON, POT, MASONRY PLATE, SOLE PLATE, THREADED FASTENERS, BOLTED FLANGE CONNECTIONS, PINTLES AND OVERALL HEIGHT, AND COORDINATE SHARING THIS INFORMATION WITH THE BEAM FABRICATOR AND CONTRACTOR. MINIMUM PINTLE SIZE IS 1½" DIAMETER.

④ FACTORED HORIZONTAL RESISTANCE IS A MINIMUM OF 15% OF THE STRENGTH LIMIT STATE VERTICAL LOAD UNLESS STATED OTHERWISE.

⑤ SEE FRAMING PLAN

⑥ "+" DENOTES OFFSET AS SHOWN.
"–" DENOTES OFFSET OPPOSITE OF SHOWN.

⑦ ANCHOR RODS SHALL BE INSTALLED INTO THE HARDENED CONCRETE CAP WITH AN APPROVED ELASTOMERIC GROUT. PROVIDE 2" MINIMUM CLEARANCE BETWEEN ANCHOR ROD AND PIER CAP REINFORCEMENT.

⑧ ⅛" FRP (FIBERGLASS REINFORCED PLASTIC) SHIMMING PAD.

BEARING ASSEMBLY TABLE

ASSEMBLY TYPE	LOCATION	FACTORED LL ROTATION ①(RAD)	MASONRY PLATE ③ A	MASONRY PLATE ③ B	ANCHOR ROD OFFSET +/–⑥	ANCHOR ROD OFFSET M	ASSUMED HEIGHT "H" ③	BOTTOM FLANGE WIDTH	DESIGN LOADS (KIPS) SERVICE LIMIT STATE VERTICAL	SERVICE LIMIT STATE HORIZONTAL	STRENGTH LIMIT STATE VERTICAL	STRENGTH LIMIT STATE HORIZONTAL④
F2	PR 26,27	0.02	33"	24"	–"	7½"	9½"	24"	943	178	1206	181
F3	PR 26,27	0.02	45"	36"	–"	7½"	9½"	36"	1309	196	1673	251

APPROVED: SEPTEMBER 18, 2007
Daniel D Dorgan
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

POT BEARING ASSEMBLY
(STEEL BEAMS)
(FIXED)

REVISION 12–17–2008 11–03–2015

DETAIL NO. B316 MODIFIED

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: BAC CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

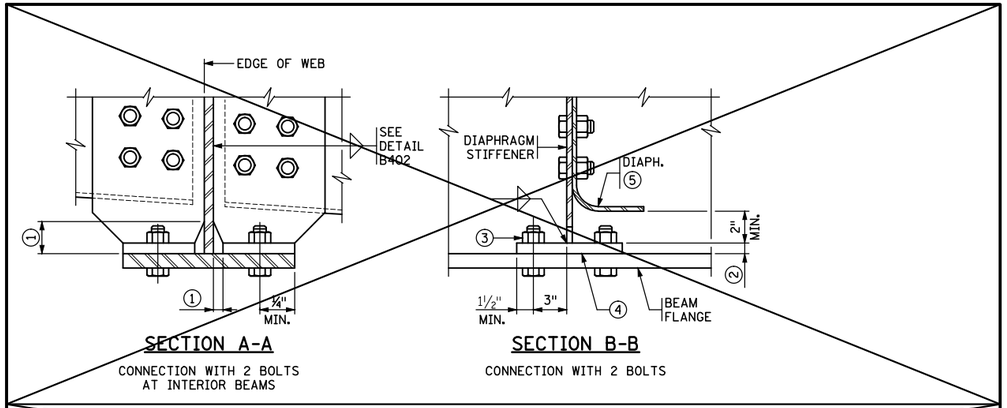
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE DETAILS 4

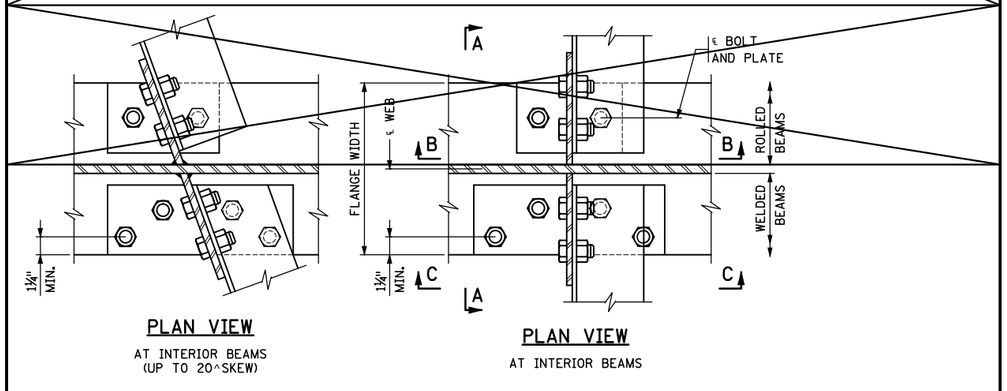
DISCIPLINE: STRUCTURES

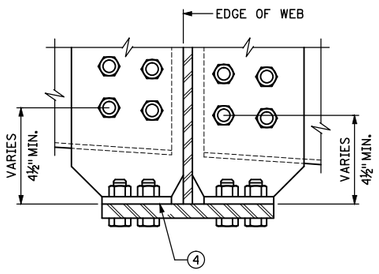
SHEET NAME: W2-STU-BRID-T212-SUP7_314-316

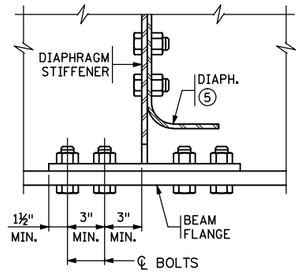
SHEET 219 OF 264

Jan. 17 2016 10:03 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34 W2-STU-BRID-T212-SUP7_314-316.dwg By: hills









NOTES:

ALL STEEL SHALL CONFORM TO SPEC. 3309.

① SEE DETAIL B411.

② MINIMUM PLATE THICKNESS SHALL BE ¾".

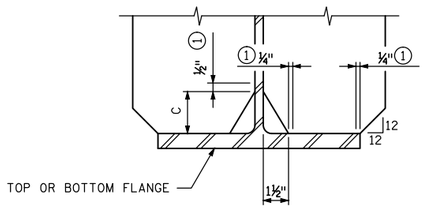
③ BOLT PLATE TO BEAM FLANGE PRIOR TO WELDING PLATE TO DIAPHRAGM STIFFENER.

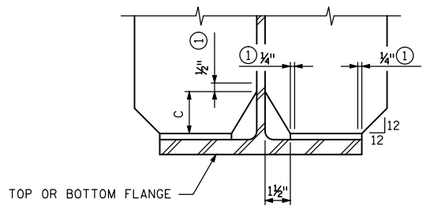
④ REMOVE LOOSE SCALE AND RUST FROM CONTACT AREA AT DIAPHRAGM CONNECTION. SURFACE MUST BE FLAT AND PRIMED.

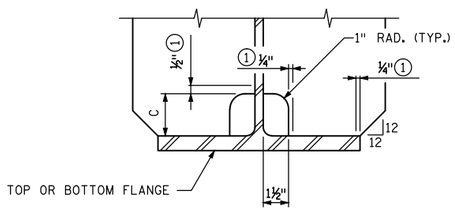
⑤ BENT PLATE DIAPHRAGMS SHOWN. FOR CROSS FRAME DIAPHRAGM SEE "DIAPHRAGM DETAILS 1" AND "DIAPHRAGM DETAILS 2".

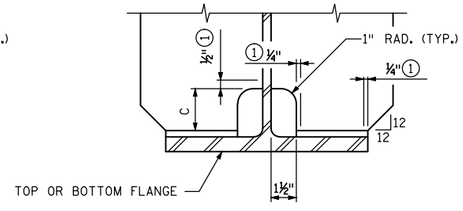
MODIFICATIONS: REVISED NOTES

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
Daniel T. Worzyan STATE BRIDGE ENGINEER	BOLTED FLANGE TO STIFFENER DETAIL	09-11-2004 10-28-2008 05-24-2012	MOD. B410



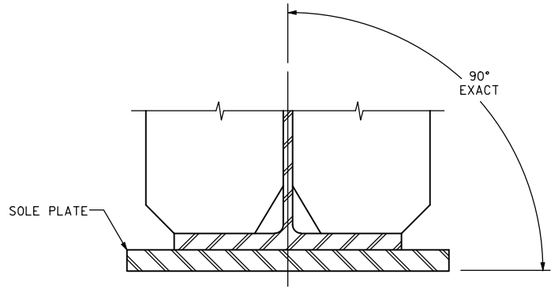






STIFFENER COPE DETAIL

PLATE GIRDER OR ROLLED BEAM



WEB THICKNESS	DIMENSION C
½", 3/16", 5/8"	2½"
11/16", ¾"	3"
13/16", 7/8", 1"	3½"

MODIFICATIONS: DIMENSION C FOR INCREASED WEB THICKNESS

NOTES:

① DO NOT WELD IN THIS AREA. SEE B410 FOR CONNECTION DETAILS.

APPROVED: OCTOBER 22, 2008	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Daniel T. Worzyan STATE BRIDGE ENGINEER	STIFFENER DETAILS (FOR STEEL BEAMS)		MOD. B411

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL CHECKED BY: EEM
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

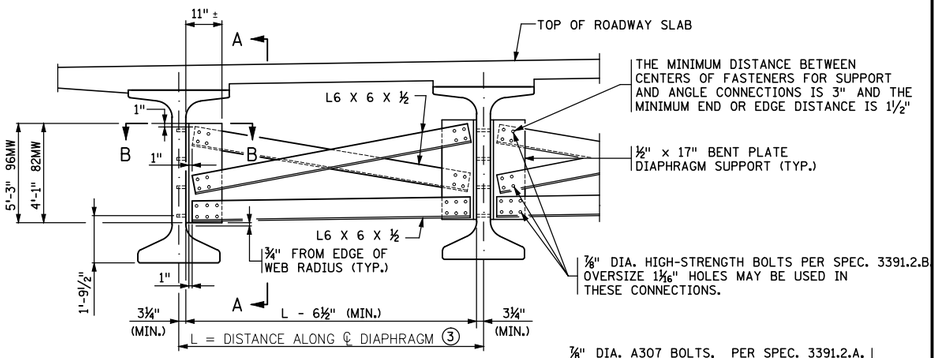
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE DETAILS 5

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP8_410-411

SHEET 220 OF 264

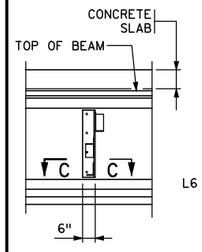
Jan. 17 2016 10:03 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34 W2-STU-BRID-T212-SUP8_410-411.dwg By: hills



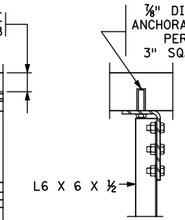
PART TRANSVERSE SECTION

SQUARE BRIDGE SHOWN

⅞" DIA. A307 BOLTS, PER SPEC. 3391.2.A, WITH TWO HEX NUTS, OR EQUAL, AND TWO HARDENED 3" SQ. x 5⁄16" PLATE WASHERS EACH AT ALL INTERIOR BEAM DIAPHRAGM CONNECTIONS

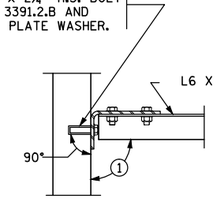


SECTION A-A



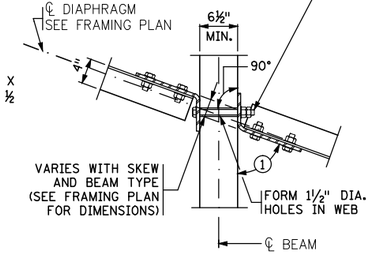
SECTION C-C

FASCIA BEAM



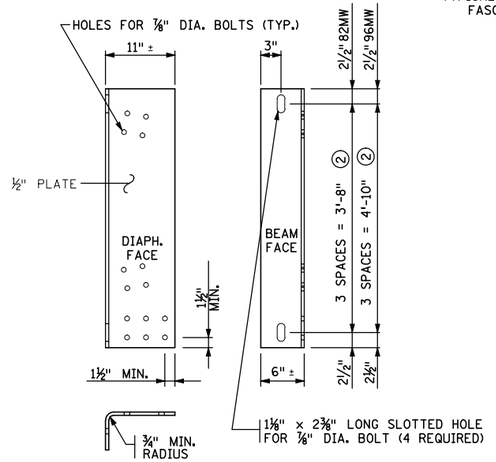
SECTION B-B

TYPICAL SECTION AT FASCIA BEAM



INTERMEDIATE DIAPHRAGM

TYPICAL SECTION AT INTERIOR BEAM WITH CONTINUOUS OR STAGGERED INTERMEDIATE DIAPHRAGMS



DIAPHRAGM SUPPORT

NOTES:

PROVIDE STEEL PER SPEC. 3306.

~~INCLUDE ALL STRUCTURAL STEEL SHOWN ON THIS DETAIL, INCLUDING BOLTS AND WASHERS, IN THE PAYMENT FOR DIAPHRAGMS FOR PRESTRESSED BEAMS.~~

INSTALLATION PER SPEC. 2405.3.K

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

GALVANIZE STEEL PLATES AND SHAPES PER SPEC. 3394.

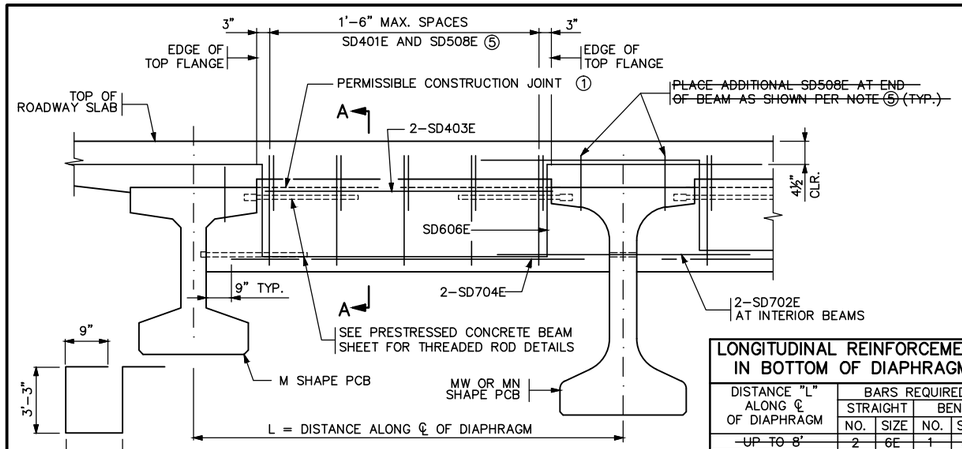
GALVANIZE BOLTS, NUTS AND WASHERS PER SPEC. 3392.

① FOR SKEW ANGLES UNDER 20°, USE 90° LESS THE SKEW ANGLE. FOR SKEW ANGLES OVER 20°, USE 90°.

② SPACE BOLT HOLES SO AS TO MISS PRESTRESSED STRANDS IN CONCRETE BEAMS. SEE PRESTRESSED CONCRETE BEAM SHEETS FOR MORE INFORMATION.

③ DIAPHRAGM SHOWN DESIGNED FOR BEAM SPACING UP TO 13'-0".

APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 09-11-2014 11-03-2015	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	STEEL INTERMEDIATE BOLTED DIAPHRAGM (ALL MW PRESTRESSED CONCRETE BEAMS)		B412



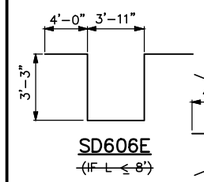
PART TRANSVERSE SECTION

~~(L > 8' SHOWN)~~

SD401E

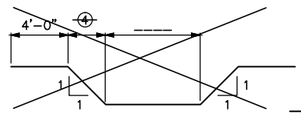
LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM

DISTANCE "L" ALONG ℄ OF DIAPHRAGM	BARS REQUIRED STRAIGHT NO.	STRAIGHT SIZE	BENT NO.	BENT 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~~



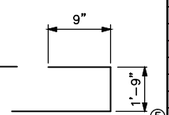
SD606E

~~(IF L ≤ 8')~~



SD___05E

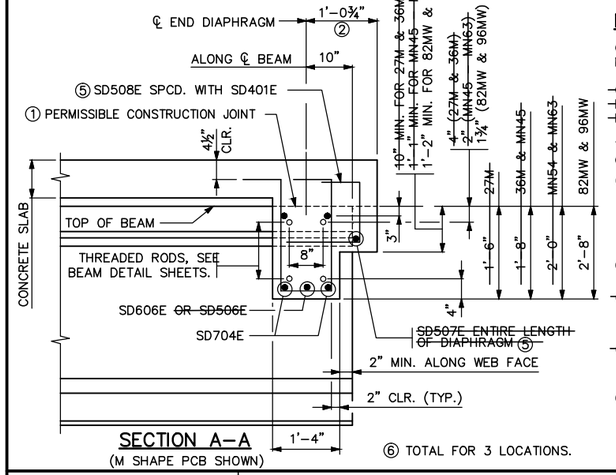
~~(IF L > 8')~~



SD508E ⑤

BILL OF REINFORCEMENT FOR END DIAPHRAGM ⑥

BAR	NO.	LENGTH	SHAPE	LOCATION
SD401E	36	9'-0"		VERTICAL TIE
SD702E	12	5'-0"		LONG. THRU BEAM
SD403E	18	3'-11"		LONG. TOP
SD704E	18	6'-2"		LONG. BOTTOM
~~SD___05E~~				~~LONGITUDINAL~~
SD606E	9	18'-5"		LONGITUDINAL
⑤ ~~SD507E~~				~~LONGITUDINAL~~
⑤ SD508E	36	3'-10"		VERTICAL TIE



SECTION A-A

(M SHAPE PCB SHOWN)

⑥ TOTAL FOR 3 LOCATIONS.

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 04-17-2013 11-06-2013	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CONCRETE END DIAPHRAGM ~~(27M & 36M, MN45 — MN63,~~ 82MW & 96MW PRESTRESSED CONCRETE BEAMS) (PARAPET ABUTMENT)		B814A

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: MJC CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

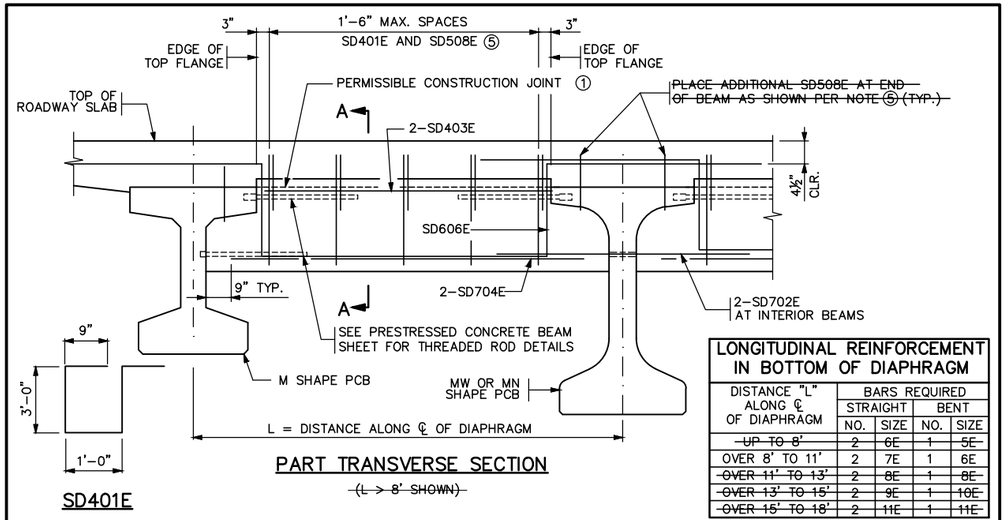
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE DETAILS 6

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP12_412-814A

SHEET 221 OF 264

Jan. 17 2016 10:04 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP12_B412-B814A-D.dwg By: hills

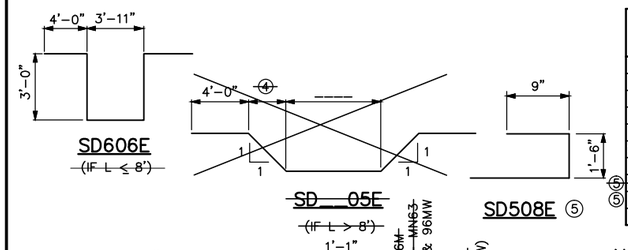


PART TRANSVERSE SECTION

~~(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~~



⑥ TOTAL FOR 2 LOCATIONS.

BILL OF REINFORCEMENT FOR END DIAPHRAGM ⑥				
BAR	NO.	LENGTH	SHAPE	LOCATION
SD401E	24	8'-6"		VERTICAL TIE
SD702E	8	5'-0"		LONG. THRU BEAM
SD403E	12	3'-11"		LONG. TOP
SD704E	12	6'-2"		LONG. BOTTOM
~~SD__05E~~				~~LONGITUDINAL~~
SD606E	6	17'-11"		LONGITUDINAL
~~SD507E~~				~~LONGITUDINAL~~
⑤ SD508E	24	3'-7"		VERTICAL TIE

NOTES:

CONCRETE FOR END DIAPHRAGMS SHALL BE THE SAME MIX AS USED IN DECK.

~~QUANTITIES FOR END DIAPHRAGM CONCRETE AND REINFORCEMENT SHOWN ON THIS DETAIL SHALL BE LISTED IN SUPERSTRUCTURE QUANTITIES.~~

THREADED RODS ARE INCIDENTAL TO PRESTRESSED CONCRETE BEAMS.

① USE OF CONSTRUCTION JOINT REQUIRES CLEARANCE FOR EXPANSION DEVICE. WHEN CONSTRUCTION JOINT IS USED AT THIS LOCATION, DIAPHRAGM FALSEWORK SHALL REMAIN INPLACE UNTIL COMPLETION OF SLAB CURING PERIOD.

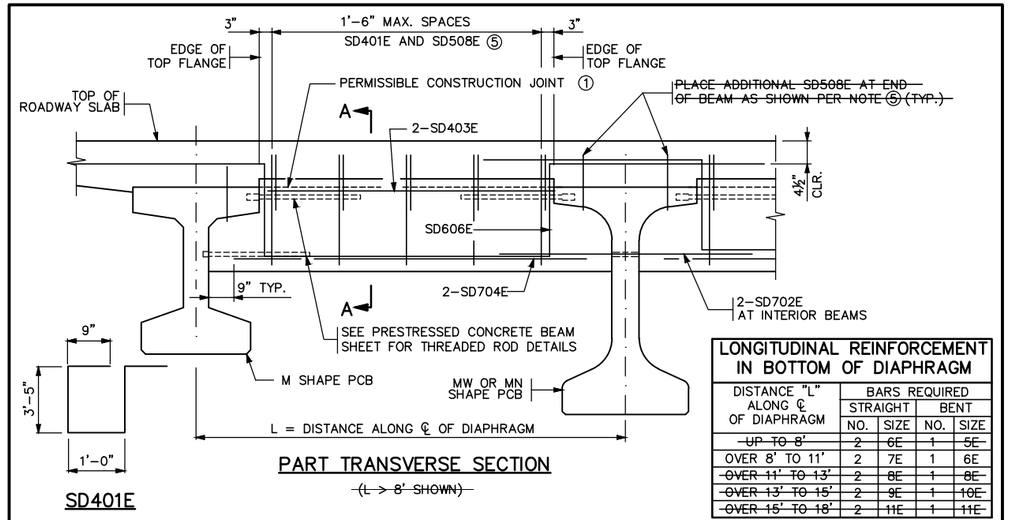
② PERPENDICULAR TO CENTERLINE OF DIAPHRAGM.

~~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 04-17-2013 11-06-2013	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CONCRETE END DIAPHRAGM ~~(27M & 36M, MN45 MN63,~~ 82MW & 96MW PRESTRESSED CONCRETE BEAMS) (PARAPET ABUTMENT)		B814B

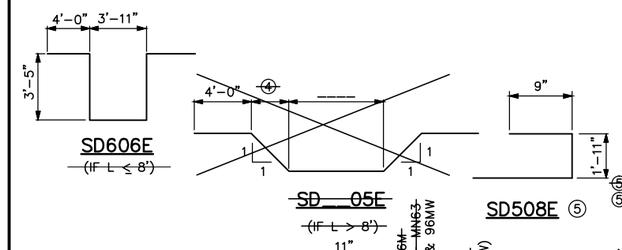


PART TRANSVERSE SECTION

~~(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~~



⑥ TOTAL FOR 2 LOCATIONS.

BILL OF REINFORCEMENT FOR END DIAPHRAGM ⑥				
BAR	NO.	LENGTH	SHAPE	LOCATION
SD401E	24	9'-4"		VERTICAL TIE
SD702E	8	5'-0"		LONG. THRU BEAM
SD403E	12	3'-11"		LONG. TOP
SD704E	12	6'-2"		LONG. BOTTOM
~~SD__05E~~				~~LONGITUDINAL~~
SD606E	6	18"-9"		LONGITUDINAL
~~SD507E~~				~~LONGITUDINAL~~
⑤ SD508E	24	4'-0"		VERTICAL TIE

NOTES:

CONCRETE FOR END DIAPHRAGMS SHALL BE THE SAME MIX AS USED IN DECK.

~~QUANTITIES FOR END DIAPHRAGM CONCRETE AND REINFORCEMENT SHOWN ON THIS DETAIL SHALL BE LISTED IN SUPERSTRUCTURE QUANTITIES.~~

THREADED RODS ARE INCIDENTAL TO PRESTRESSED CONCRETE BEAMS.

① USE OF CONSTRUCTION JOINT REQUIRES CLEARANCE FOR EXPANSION DEVICE. WHEN CONSTRUCTION JOINT IS USED AT THIS LOCATION, DIAPHRAGM FALSEWORK SHALL REMAIN 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 04-17-2013 11-06-2013	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CONCRETE END DIAPHRAGM ~~(27M & 36M, MN45 MN63,~~ 82MW & 96MW PRESTRESSED CONCRETE BEAMS) (PARAPET ABUTMENT)		B814C

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: MJC CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

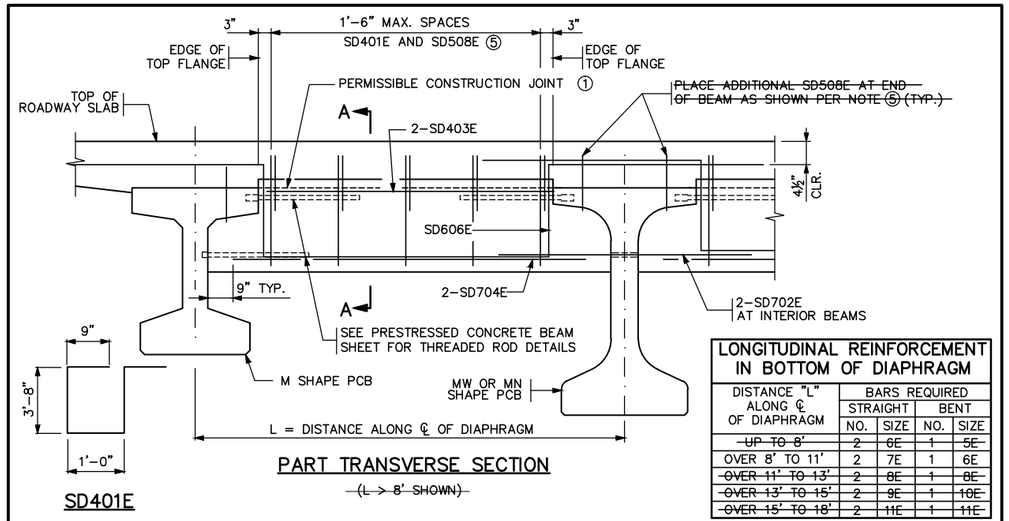
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE DETAILS 7

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212SUP12_814B-814C

SHEET 222 OF 264

Jan, 17 2016 10:04 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP12_B412-B814A-D.dwg By: hills



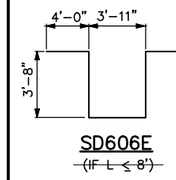
SD401E

PART TRANSVERSE SECTION

~~(L > 8' SHOWN)~~

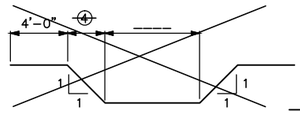
LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM

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~~



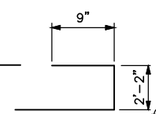
SD606E

~~(IF L ≤ 8')~~



~~SD__05E~~

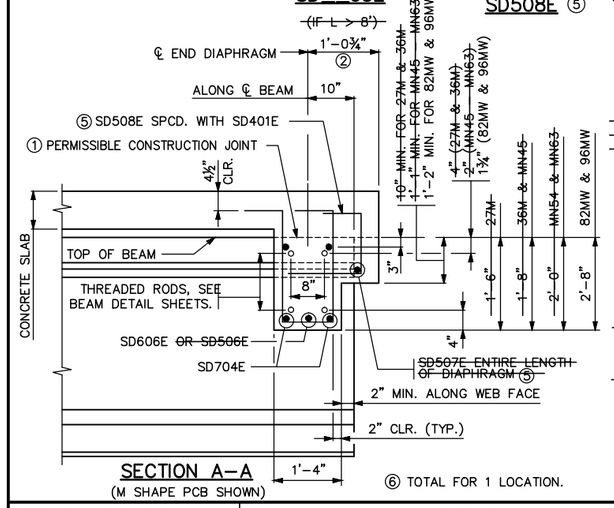
~~(IF L > 8')~~



SD508E ⑤

BILL OF REINFORCEMENT FOR END DIAPHRAGM ⑥

BAR	NO.	LENGTH	SHAPE	LOCATION
SD401E	12	9'-10"		VERTICAL TIE
SD702E	4	5'-0"		LONG. THRU BEAM
SD403E	6	3'-11"		LONG. TOP
SD704E	6	6'-2"		LONG. BOTTOM
~~SD__05E~~				~~LONGITUDINAL~~
SD606E	3	19'-3"		LONGITUDINAL
~~⑤ SD507E~~				~~LONGITUDINAL~~
⑤ SD508E	12	4'-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.

⑥ TOTAL FOR 1 LOCATION.

APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 04–17–2013 11–06–2013	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CONCRETE END DIAPHRAGM ~~(27M & 36M, MN45 – MN63,~~ 82MW & 96MW PRESTRESSED CONCRETE BEAMS) (PARAPET ABUTMENT)		B814D

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL CHECKED BY: MJC

DRAWN BY: MJC CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

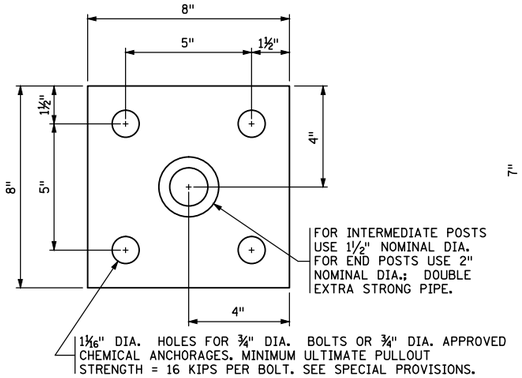
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE DETAILS 8

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP12_B814D

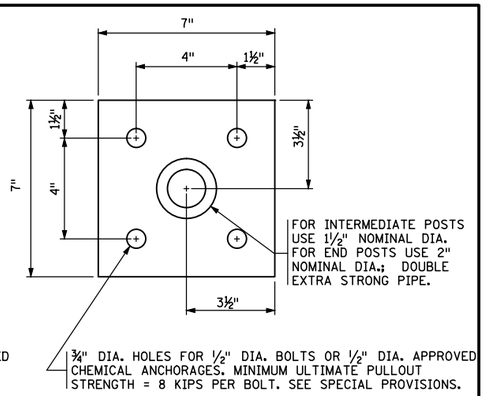
SHEET 223 OF 264

Jan, 17 2016 10:04 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP12_B8142-D.dwg By: hills



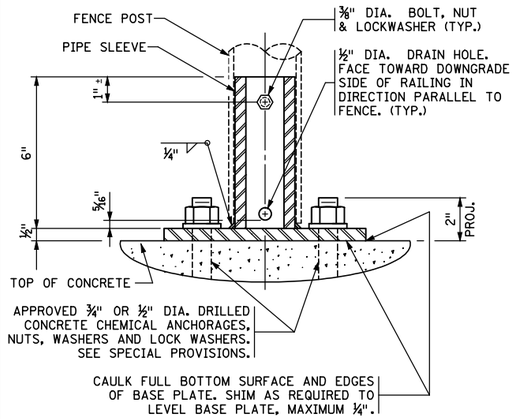
PLAN VIEW - TYPE A

ESTIMATED WEIGHT = 12 OR 14 LBS.

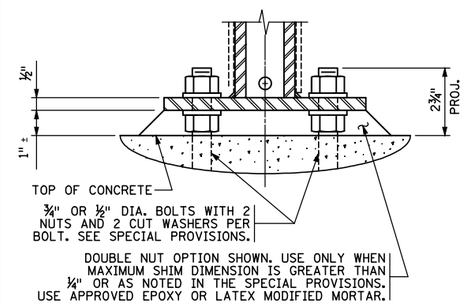


PLAN VIEW - TYPE B

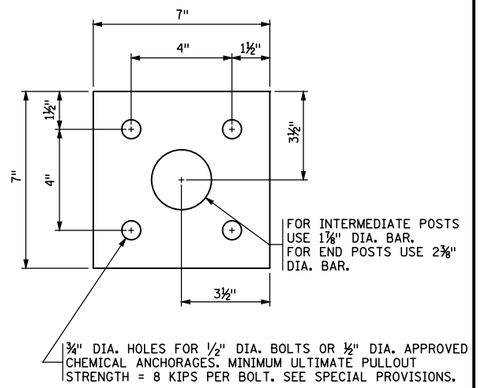
ESTIMATED WEIGHT = 10 OR 12 LBS.



TYPICAL SECTION



GROUT ALTERNATE



PLAN VIEW - TYPE C

ESTIMATED WEIGHT = 12 OR 15 LBS.

NOTES:

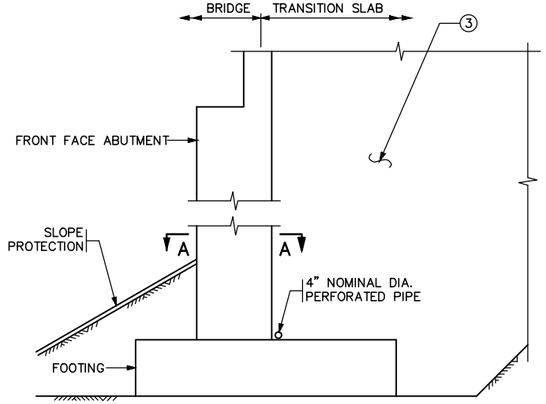
STRUCTURAL STEEL PER Mn/DOT SPEC. 3306

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.

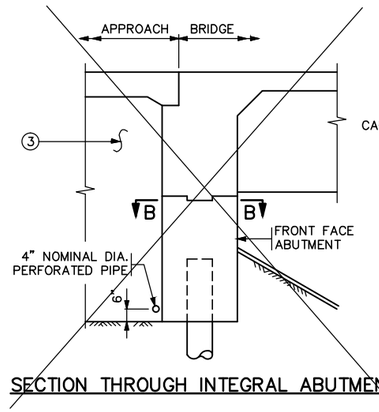
DOUBLE EXTRA STRONG PIPE WEIGHTS:
1½" NOMINAL DIA. = 6.41 LBS./FT.
2" NOMINAL DIA. = 9.03 LBS./FT.

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

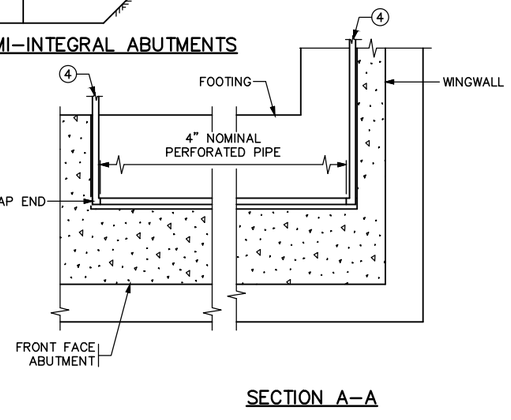


MODIFICATIONS:
REMOVED ALL DETAILS NOT RELATED TO PARAPET TYPE ABUTMENTS.
MODIFIED SECTION A–A AND NOTES.

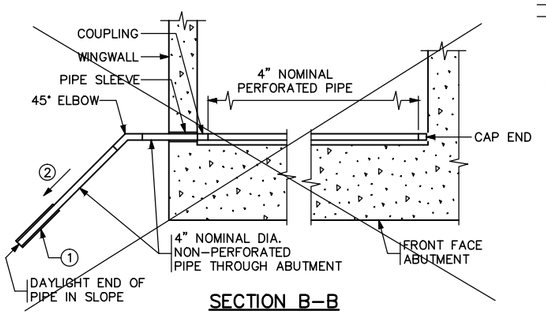
SECTION THROUGH PARAPET AND SEMI-INTEGRAL ABUTMENTS



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.

(4) CONNECT TO RETAINING WALL DRAINAGE SYSTEM. SEE RETAINING WALLS W206A AND W207A.

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

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

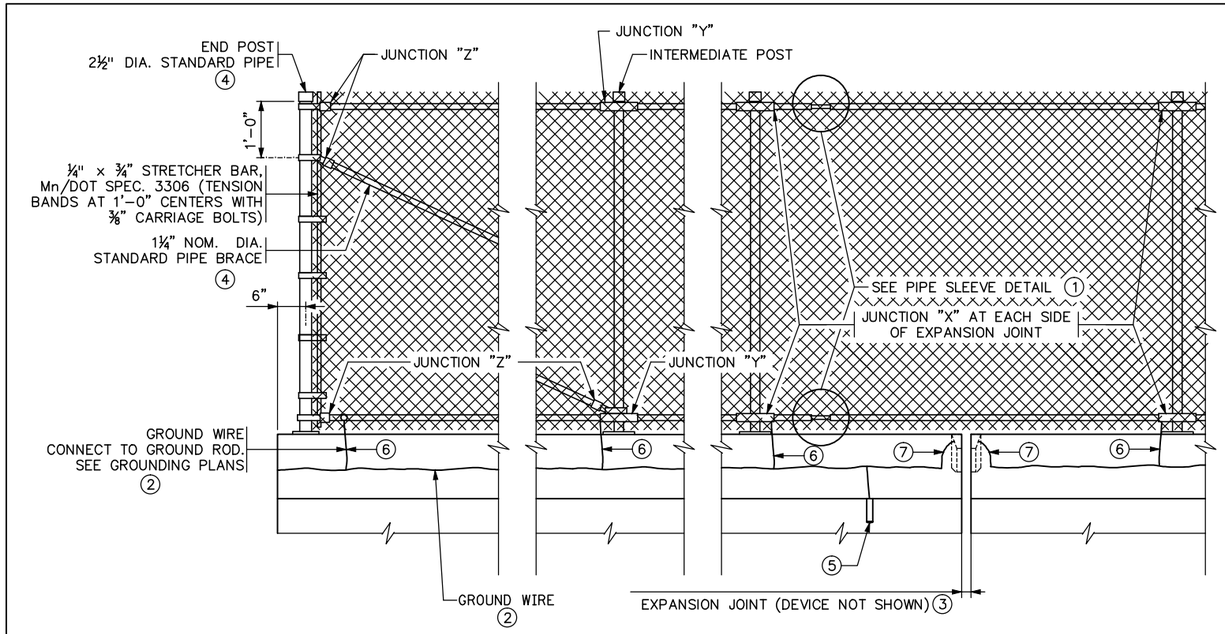
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE DETAILS 9

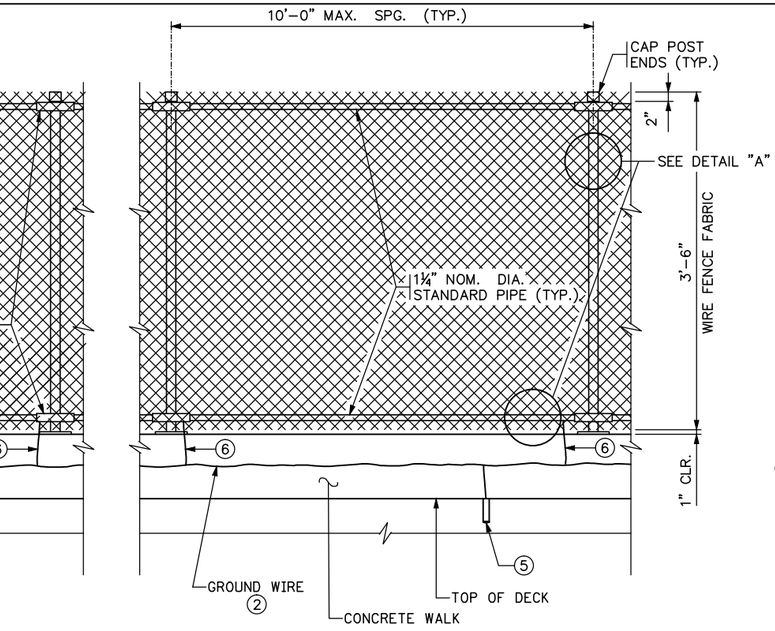
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP6_905-910

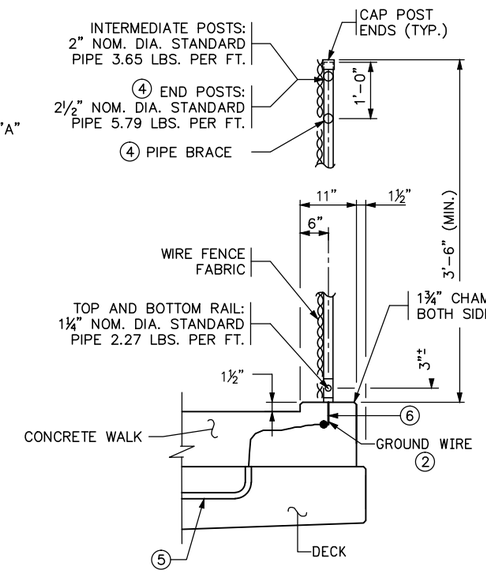
SHEET 224 OF 264

Jan. 17 2016 10:04 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP6_905-910.dwg By: hills



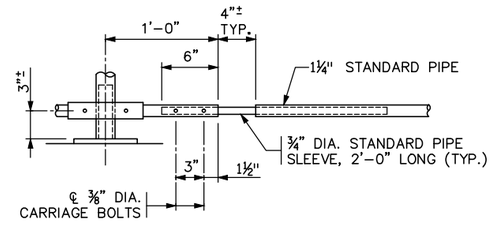
INSIDE ELEVATION OF RAILING





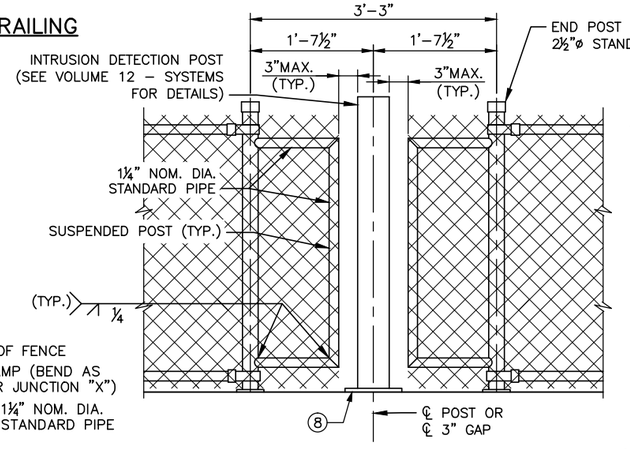
TYPICAL SECTION THROUGH FENCE

INTERMEDIATE POST SHOWN



PIPE SLEEVE DETAIL ①

MODIFICATION
REMOVED/REPLACED REFERENCES TO P-1 RAILING WITH SIDEWALK DETAILS.
ADDED TOP PIPE RAIL.
ADDED NOTATIONS OF REQUIRED FENCE GROUNDING.
ADDED DETAIL AT INTRUSION DETECTION POST.



DETAIL AT INTRUSION DETECTION POST

(SIMILAR DETAIL AT 3" GAP IN FENCE)

GENERAL NOTES

~~LENGTH OF "WIRE FENCE" FOR PAYMENT SHALL BE MEASURED BETWEEN THE CENTERS OF END RAILPOSTS.~~

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

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.

~~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.~~

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

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

② LONGITUDINAL COLLECTOR GROUND WIRE CONTINUOUS BETWEEN EXPANSION JOINTS

③ SEE SUPERSTRUCTURE PLANS FOR JOINT OPENINGS.

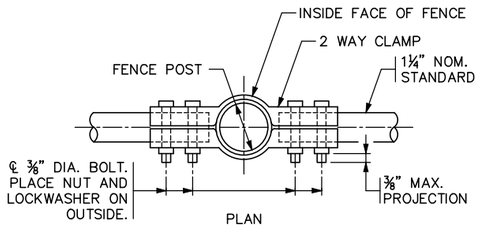
④ END POSTS AND BRACING SHALL BE AT 500 FT. MAXIMUM INTERVALS.

⑤ GROUND WIRE PLACED IN 1½" PVC CONDUIT AT FIXED PIERS IN UNITS 2 TO 4 AT LOCATIONS SHOWN ON PIER DETAILS. BARE GROUND WIRE AT FIXED PIERS IN UNIT 1 AT LOCATIONS SHOWN ON PIER DETAILS.

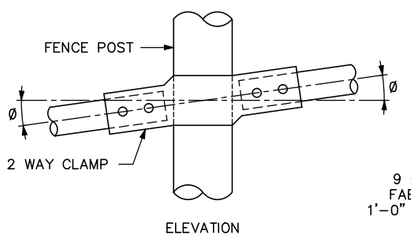
⑥ GROUND WIRE PIGTAIL PLACED WITHIN 6" OF EACH FENCE POST ANCHORAGE. GROUNDING PIGTAIL WIRES SHALL BE ATTACHED TO TRACK SIDE OF RAIL POST BASE PLATE. CONTRACTOR SHALL COORDINATE LOCATIONS WITH FENCE SUB CONTRACTOR.

⑦ GROUND WIRE PIGTAIL CONNECTION TO EXPANSION JOINT DEVICE AND EXPANSION JOINT COVER PLATES.

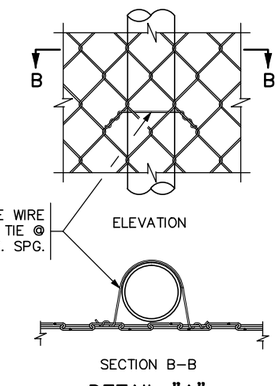
⑧ SEE VOLUME 12 – SYSTEMS FOR POST BASE PLATE DETAILS. ANCHOR POST BASE PLATE TO CURB W/ 4 – ⅝" DIA. APPROVED CHEMICAL ANCHORAGES. MINIMUM ULTIMATE PULLOUT STRENGTH = 8 KIP PER BOLT.



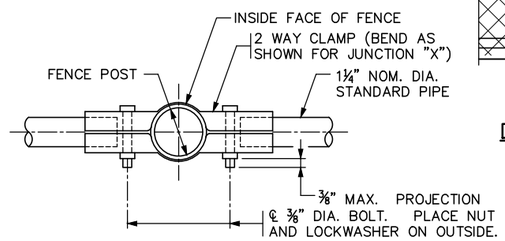
2 WAY CLAMP BENDING TABLE	
GRADE OF FENCE	Ø
0° TO 2°	0°
2° TO 6°	4°
6° TO 10°	8°



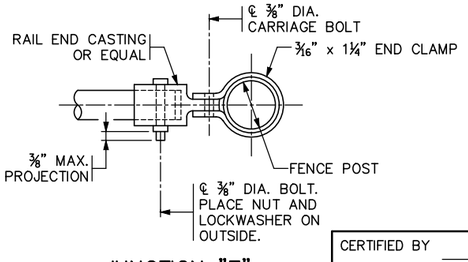
JUNCTION "X"



DETAIL "A"



JUNCTION "Y"

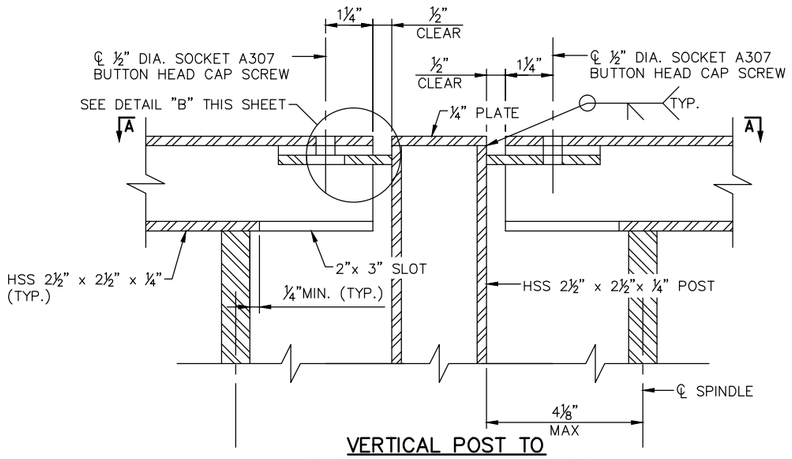


JUNCTION "Z"

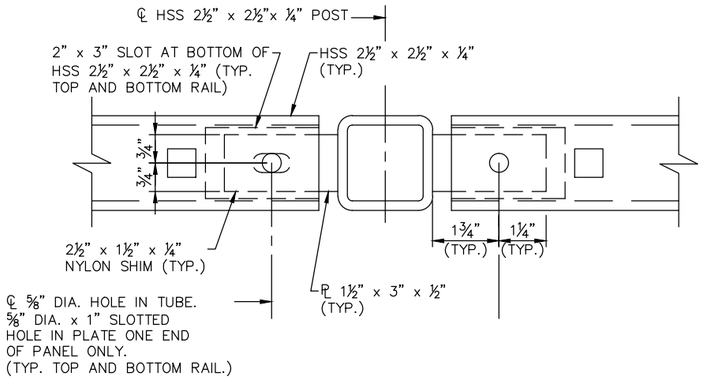
REVISED: 04-17-2013					
APPROVED: DECEMBER 18, 2003	CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER _____ DATE	TITLE: WIRE FENCE (DESIGN W-1) ~~AND CONCRETE PARAPET (TYPE P-1)~~ ~~(WITH INTEGRAL END POST)~~	DES: DDL	DR: SWH	APPROVED:
Daniel L. Hoyan STATE BRIDGE ENGINEER	NAME: LIC. NO.		CHK: MJC	CHK: MJC	BRIDGE NO. 27R34
			SHEET NO. 225 OF 264 SHEETS		

FIG. 5-397.119 (MOD.)

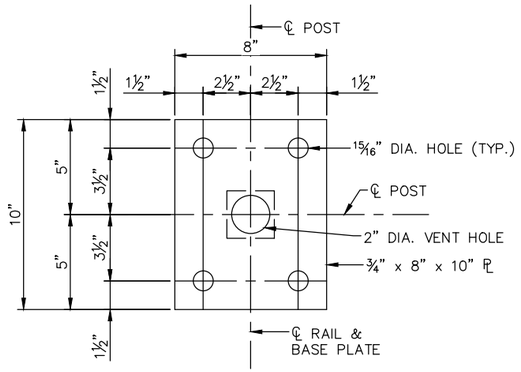
Jan. 17 2016 10:04 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-DTL02.dwg By: hills



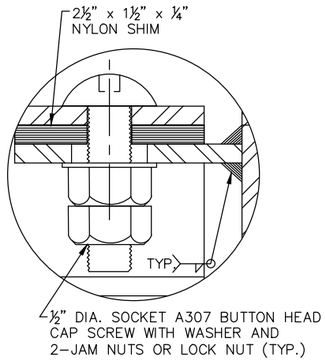
VERTICAL POST TO HORIZONTAL RAIL CONNECTION



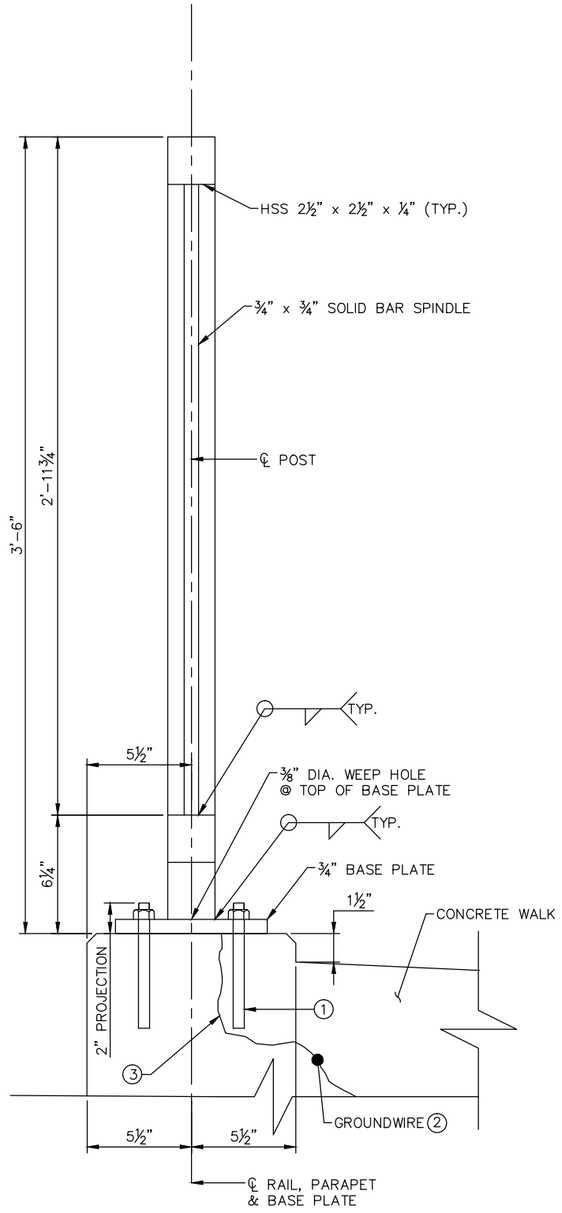
SECTION A–A



BASE PLATE



DETAIL "B"



TYPICAL RAILPOST

GENERAL NOTES:

USE A500, GRADE B STRUCTURAL STEEL TUBING (HSS) FOR RAILS & POST CONFORMING TO SPEC. 3361. ALL OTHER STEEL SHALL CONFORM TO SPEC. 3306.

VENT HOLES SHALL BE DRILLED IN THE RAIL POST AND THE RAIL TUBES AS NECESSARY TO FACILITATE GALVANIZING.

THE CONNECTION AT ONE END OF EACH PANEL SHALL ALLOW FOR EXPANSION.

INSTALL RAIL POSTS AND SPINDLES PLUMB.

CURVE HORIZONTAL RAILS WHERE APPLICABLE AND PLACE RAILS PARALLEL TO EDGE OF DECK AND PROFILE GRADE.

RAILING SHALL BE GROUNDED. GROUNDING PIGTAIL WIRES SHALL BE ATTACHED TO TRACK SIDE OF RAIL POST BASE PLATE. SEE GROUNDING PLANS.

GALV. BOLTS, NUTS, AND WASHERS AS PER SPEC. 3392.

GALVANIZE ALL OTHER STRUCTURAL STEEL AS PER SPEC. 3394 AFTER FABRICATION.

(1) GALVANIZED ADHESIVE ANCHORAGE WITH ⅝" DIA. ANCHOR ROD PER SPEC. 3385, TYPE A WITH HEX NUT AND WASHER. PROVIDE AND ADHESIVE WITH A MINIMUM CHARACTERISTIC BOND STRENGTH IN UNCRACKED CONCRETE OF 1.5 KSI. EMBED THE ANCHORAGE NO LESS THAN 8" REGARDLESS OF CHARACTERISTIC BOND STRENGTH. DRILL THROUGH REINFORCEMENT (IF ENCOUNTERED) TO ACHIEVE MINIMUM EMBEDMENT. ENSURE HEX NUT IS IN CONTACT WITH THE ADJACENT SURFACE AND TORQUE TO 60 FT–LBS UNLESS A HIGHER TORQUE IS RECOMMENDED BY THE MANUFACTURER. PROOF LOAD TO 9.6 KIPS. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

(2) LONGITUDINAL CONNECTOR GROUND WIRE CONTINUOUS BETWEEN EXPANSION JOINTS.

(3) GROUND WIRE PIGTAIL PLACED WITHIN 6" OF EACH POST ANCHORAGE. CONTRACTOR SHALL VERIFY LOCATIONS WITH SUBCONTRACTOR.

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DESIGNED BY: DDL | CHECKED BY: EEM
DRAWN BY: BAC | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

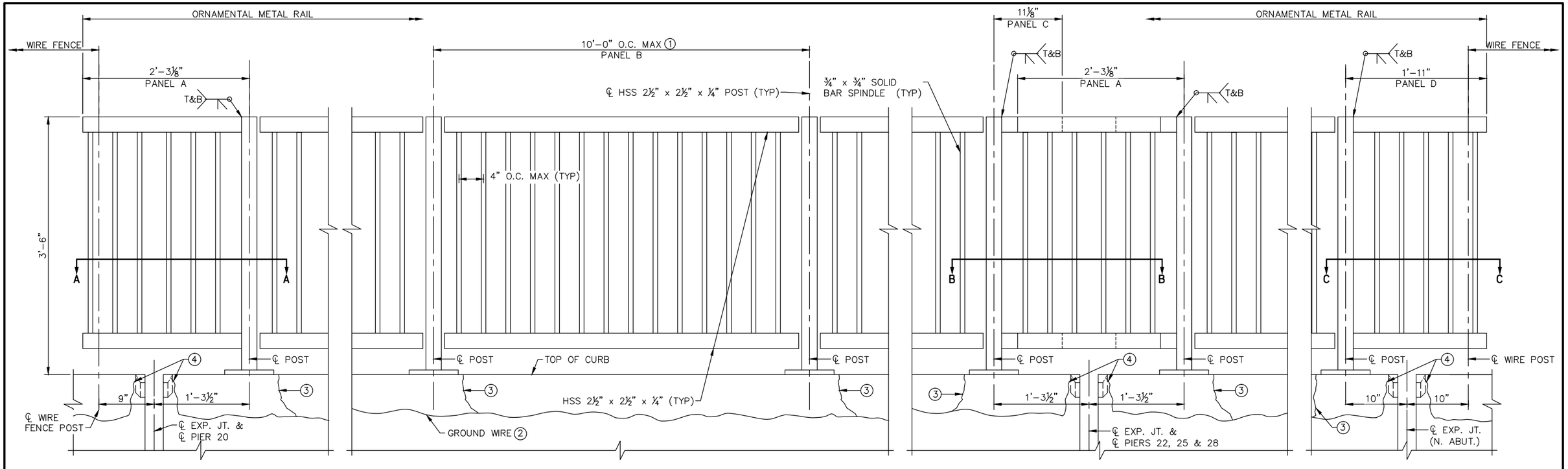
SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
ORNAMENTAL METAL RAILING 1

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-RAL01_1

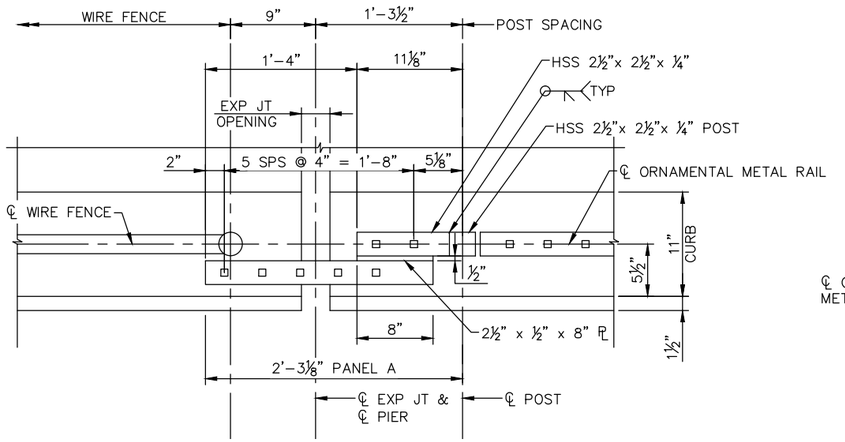
SHEET 226 OF 264

Jan, 17 2016 10:04 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-RAL01.dwg By: hills

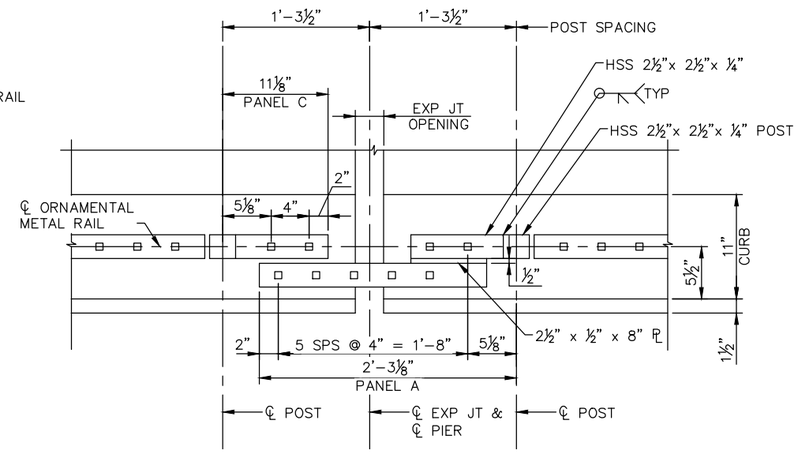


ORNAMENTAL METAL RAIL ELEVATION

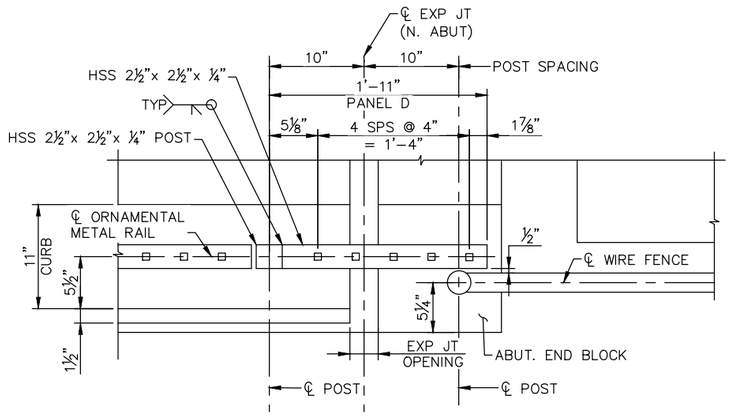
(WIRE FENCE NOT SHOWN FOR CLARITY)



SECTION A–A



SECTION B–B



SECTION C–C

NOTES

HORIZONTAL RAILS TO BE SET PARALLEL TO GRADE. VERTICAL SPINDLES & POSTS TO BE SET PLUMB.

(1) SEE SUPERSTRUCTURE PLANS FOR PANEL LENGTH.

(2) LONGITUDINAL COLLECTOR GROUND WIRE CONTINUOUS BETWEEN EXPANSION JOINTS.

(3) GROUND WIRE PIGTAIL PLACED WITHIN 6" OF EACH POST ANCHORAGE. CONTRACTOR SHALL VERIFY LOCATIONS WITH SUBCONTRACTOR.

(4) GROUND WIRE PIGTAIL CONNECTION TO EXPANSION JOINT DEVICE AND EXPANSION JOINT COVER PLATES.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: DDL | CHECKED BY: EEM
DRAWN BY: BAC | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extention

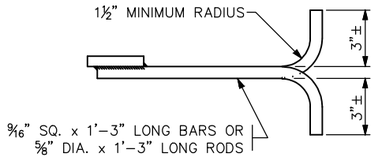
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
ORNAMENTAL METAL RAILING 2

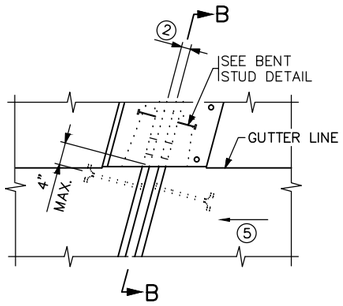
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-RAL01_2

SHEET 227 OF 264

Jan, 17 2016 10:04 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-RAL01.dwg By: hills

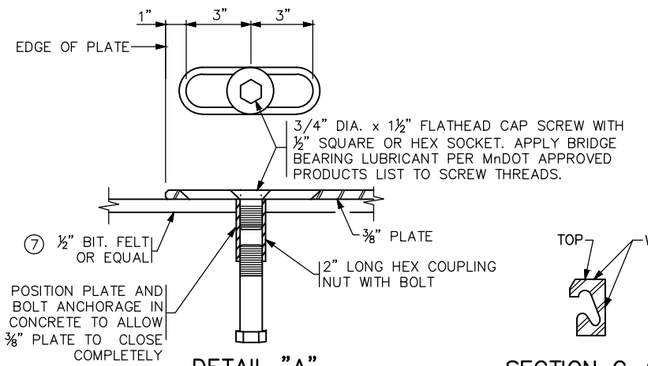


BAR-ROD DETAIL

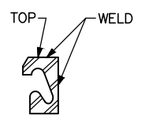


PLAN VIEW @ EXPANSION DEVICE

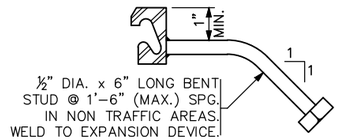
SIDEWALK ALTERNATE



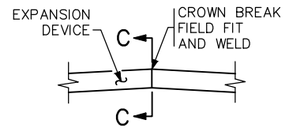
DETAIL "A"



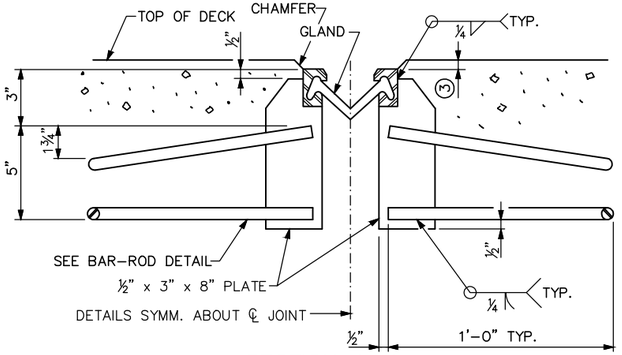
SECTION C-C



BENT STUD DETAIL

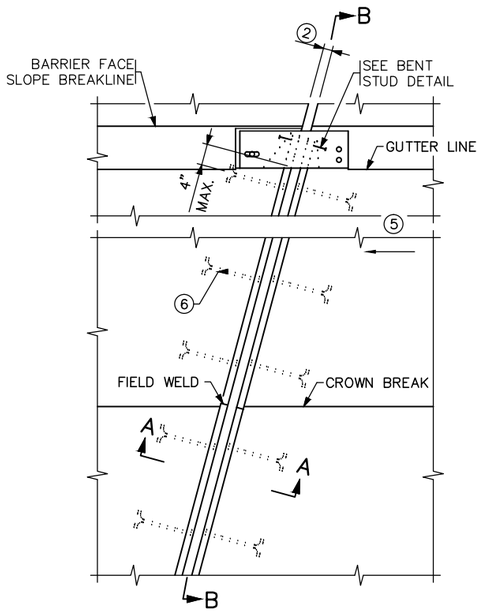


DETAIL "B"



SECTION A-A

(SEE SHEET 231 FOR SECTION THROUGH TYPE TROUGH JOINT)



PLAN VIEW @ EXPANSION DEVICE

WITH STRAIGHT DEVICE

TABLE OF EXPANSION JOINT ELEVATIONS AND DISTANCES

	(TYPE)	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	② @ 45° F	② @ 90° F
SOUTH ABUTMENT	TYPE 5	866.20	865.19	865.01	866.02	866.02	865.01	865.19	865.23	866.20	–	2¼"	2"
PIER 3	TYPE 5	866.60	865.59	865.41	866.42	866.42	865.41	865.59	865.63	866.60	–	2½"	2"
PIER 6	TYPE 5	867.67	866.66	866.33	866.66	866.70	867.67	–	–	–	12'-3½"	2½"	2"
PIER 9	TYPE 5	871.49	870.48	870.22	870.48	870.52	871.49	–	–	–	8'-9"	2½"	2"
PIER 12	TYPE 5	878.09	877.08	876.85	877.08	877.12	878.09	–	–	–	7'-0⅞"	2½"	2"
PIER 15	TYPE 5	885.33	884.32	884.09	884.32	884.36	885.33	–	–	–	7'-0"	2½"	2"
PIER 18	TYPE 5	892.57	891.56	891.33	891.56	891.60	892.57	–	–	–	7'-0"	2⅜"	1½"
PIER 20	TYPE 5	910.24	909.23	909.00	909.23	909.27	910.24	–	–	–	7'-0"	2¾"	1½"
PIER 22	TYPE 5	923.81	922.80	922.57	922.80	922.84	923.81	–	–	–	7'-0"	2½"	1⅛"
PIER 25	TYPE TROUGH	921.63	920.63	920.40	920.63	920.67	921.63	–	–	–	7'-0"	7¼"	5"
PIER 28	TYPE TROUGH	908.12	907.12	906.89	907.12	907.16	908.12	–	–	–	7'-1½"	7"	5"
NORTH ABUTMENT	TYPE 5	899.99	898.98	898.75	898.98	899.02	899.99	–	–	–	7'-0"	2⅜"	1½"

GENERAL NOTES

EXPANSION JOINT DEVICE AND EXPANSION JOINT COVER PLATE SHALL BE GROUNDED – SEE GROUNDING PLANS

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

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

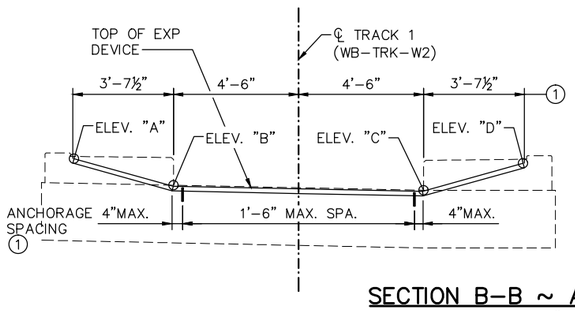
STRUCTURAL STEEL SHALL COMPLY WITH SPEC. 3306 OR SPEC. 3309.

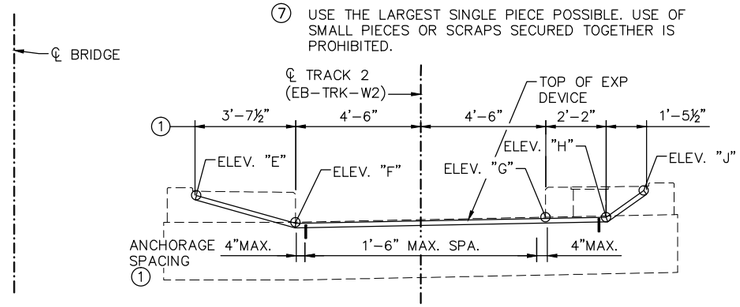
EXPANSION DEVICE SHALL BE STRAIGHTENED TO A TOLERANCE OF ⅛" IN 10 FT.

¾" DIA. X 1½" FLATHEAD CAP SCREW WITH ½" SQUARE OR HEX SOCKET PER SPEC 3391. CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW TOP OF PLATE. APPLY BRIDGE BEARING LUBRICANT PER MnDOT APPROVED PRODUCTS LIST TO SCREW THREADS.

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

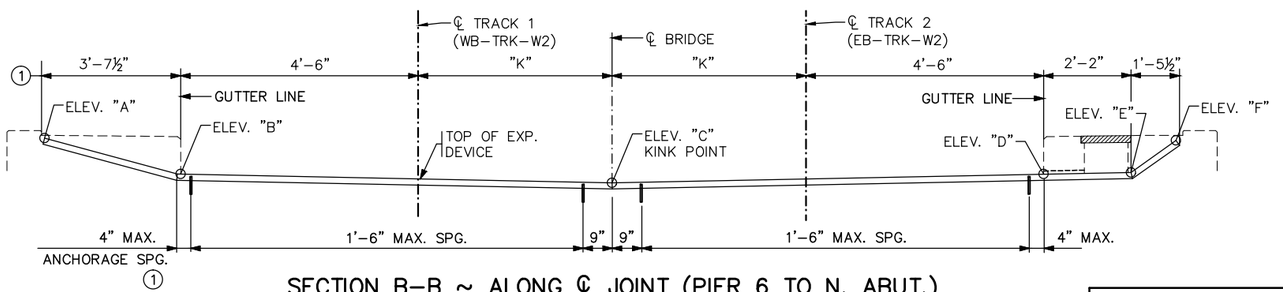
1. DIMENSIONS ARE ALONG CENTERLINE OF JOINT.
2. SEE TABLE
   ~~__AT 45° F; __ AT 90° F. 2" AT ALL TEMPS.~~
3. ⅛" (¼" MAX.). (TYPE 5 JOINT)
   ~~½" (⅝" MAX.) WHEN SNOWPLOW FINGERS ARE USED. SNOWPLOW FINGERS ARE REQUIRED FOR SKEWS OVER 15° AND LESS THAN 50°.~~ 0" (TYPE TROUGH JOINT)
4. ~~SEE SUPERSTRUCTURE DETAILS FOR RADIUS.~~
5. DIRECTION OF DRAINAGE FLOW
   ~~SEE SHEET NO. __ FOR DIRECTION OF TRAFFIC.~~
6. PLACE BAR-ROD NORMAL TO JOINT ON NEW BRIDGES AND JOINT REPLACEMENTS. ON JOINT REPLACEMENTS WHEN SKEW IS OVER 15° AND LESS THAN 50° BEND RODS PARALLEL TO ℄ ROADWAY.
7. USE THE LARGEST SINGLE PIECE POSSIBLE. USE OF SMALL PIECES OR SCRAPS SECURED TOGETHER IS PROHIBITED.





SECTION B-B ~ ALONG ℄ JOINT (S. ABUT. TO PIER 3)

NOTE: SEE "TABLE OF ELEVATIONS AND DISTANCES" ABOVE.



SECTION B-B ~ ALONG ℄ JOINT (PIER 6 TO N. ABUT.)

NOTE: SEE "TABLE OF ELEVATIONS" ABOVE.

MODIFICATIONS:
REVISED SECTION B-B. ADDED TABLE OF ELEVATIONS AND DIMENSIONS. REMOVED BARRIER DETAILS AND CURVED DEVICE PLAN.

REVISION: 09-11-2014

APPROVED: NOVEMBER 6, 1995

Donald J. Flemming
STATE BRIDGE ENGINEER

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER _____ DATE

NAME: LIC. NO.

TITLE: WATERPROOF EXPANSION DEVICE 1 ~~(WITH TYPE F BARRIER)~~

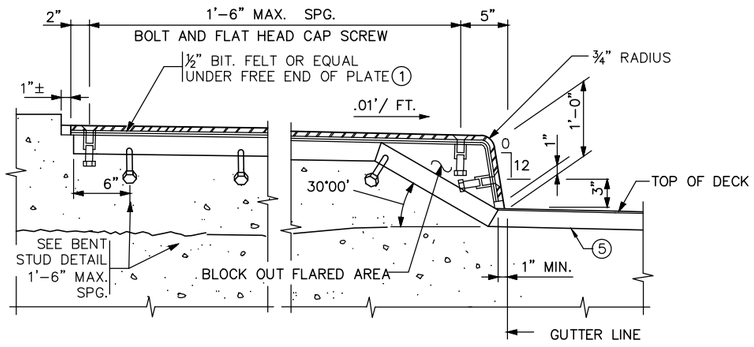
DES: DDL	DR: SWH	APPROVED:
CHK: MJC	CHK: MJC	

SHEET NO. 228 OF 264 SHEETS

FIG. 5-397.627(MOD.)

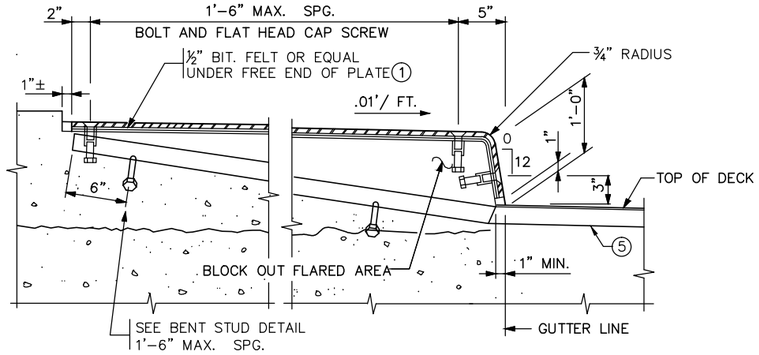
BRIDGE NO. 27R34

Jan, 17 2016 10:05 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-EXP01.dwg By: hills



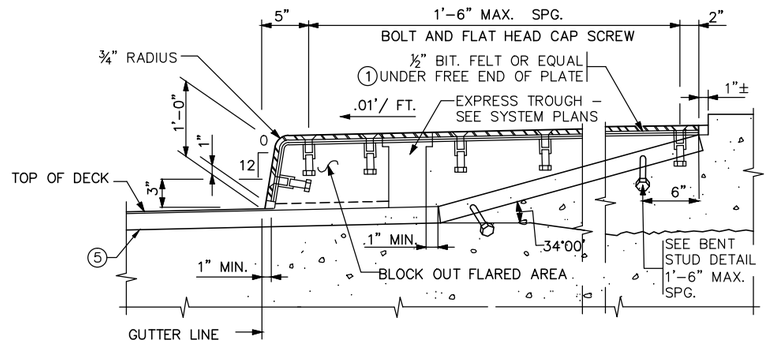
SECTION THROUGH LEFT SIDEWALK – OPTION 1

(LOOKING UPSTATION)



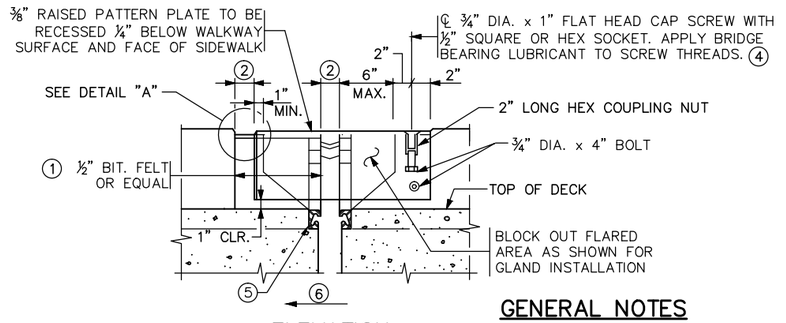
SECTION THROUGH LEFT SIDEWALK – OPTION 2

(LOOKING UPSTATION)



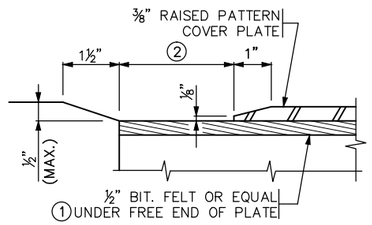
SECTION THROUGH RIGHT SIDEWALK

(LOOKING UPSTATION, AT EXPANSION JOINT WITH CABLE TROUGH)



ELEVATION

RAISED SIDEWALK DETAILS



DETAIL "A"

GENERAL NOTES

SEE STANDARD FIGURE 5–397.627 FOR ADDITIONAL DETAILS AND NOTES.

¾" DIA. X 1" FLAT HEAD CAP SCREW WITH ½" SQUARE OR HEX SOCKET PER SPEC 3391. CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW TOP OF PLATE. APPLY BRIDGE BEARING LUBRICANT TO SCREW THREADS. (4)

(1) USE LARGEST SINGLE PIECE POSSIBLE. USE OF SMALL PIECES OR SCRAPS SECURED TOGETHER IS PROHIBITED.

(2) SEE NOTE (2) ON STANDARD FIGURE 5–397.627, SHEET 28.

(3) ⅛" (¼" MAX.) (TYPE 5)
0" (TYPE TROUGH)

(4) LUBRICANT PER MnDOT APPROVED/QUALIFIED PRODUCTS LIST: BRIDGE – BRIDGE BEARING LUBRICANT.

(5) TYPE 5 EXPANSION JOINT SHOWN, TYPE TROUGH JOINT SIMILAR.

(6) DIRECTION OF DRAINAGE FLOW.

MODIFICATIONS:
REMOVED SECTIONS THROUGH BARRIERS.
REMOVED SECTIONS THROUGH MEDIANS.
MODIFIED SLOPE AT FACE OF SIDEWALK.

REVISION: 11–06–2013

APPROVED: SEPTEMBER 26, 2003
STATE BRIDGE ENGINEER

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

TITLE: WATERPROOF EXPANSION DEVICE 2
(RAISED MEDIAN OR SIDEWALK WITH PARAPET)

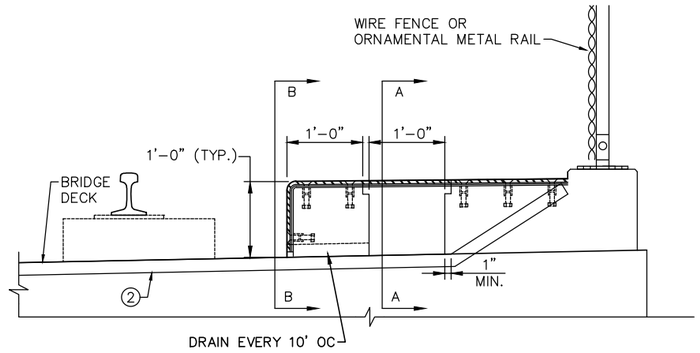
DES: DDL	DR: SWH	APPROVED:
CHK: MJC	CHK: MJC	

SHEET NO. 229 OF 264 SHEETS

FIG. 5–397.630 (MOD.)

BRIDGE NO. 27R34

Jan. 17 2016 10:05 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2–STU–BRID–T212–EXP02.dwg By: hills



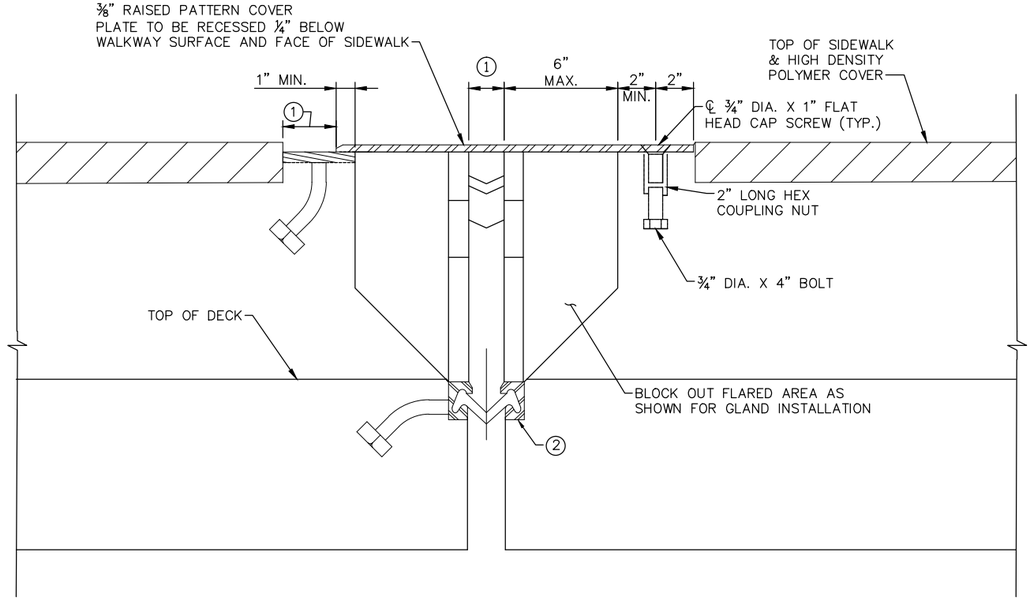
SECTION THOUGH RIGHT SIDEWALK

NOTES:

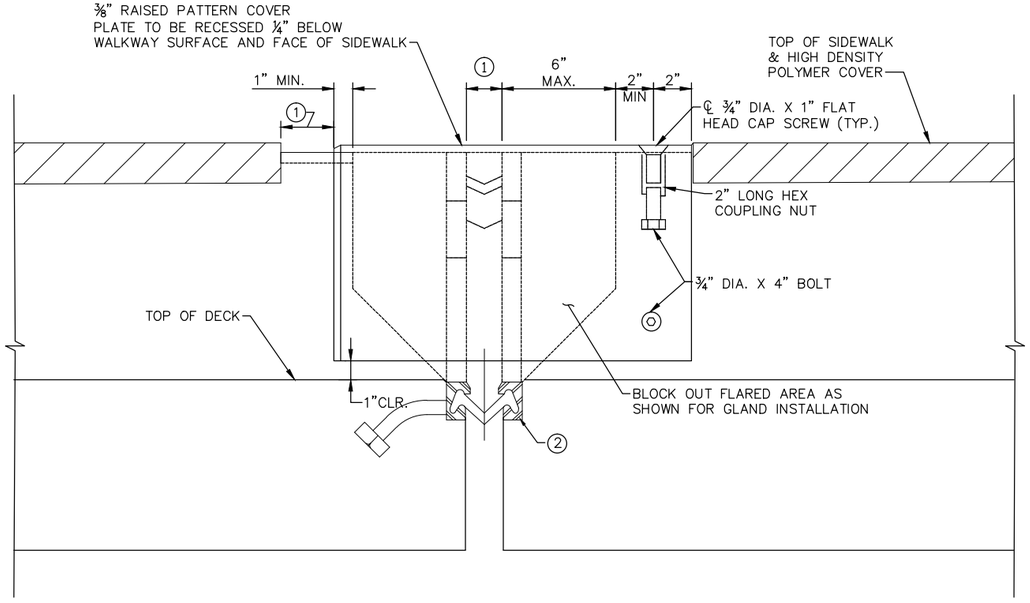
SEE SHEET 229 FOR ADDITIONAL DETAILS FOR RAISED PATTERN PLATE AT EXPANSION DEVICE.

(1) SEE NOTE (2) ON STANDARD FIGURE 5-397.627, SHEET 228.

(2) TYPE 5 EXPANSION JOINT SHOWN, TYPE TROUGH JOINT SIMILAR.



SECTION A-A



SECTION B-B

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

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

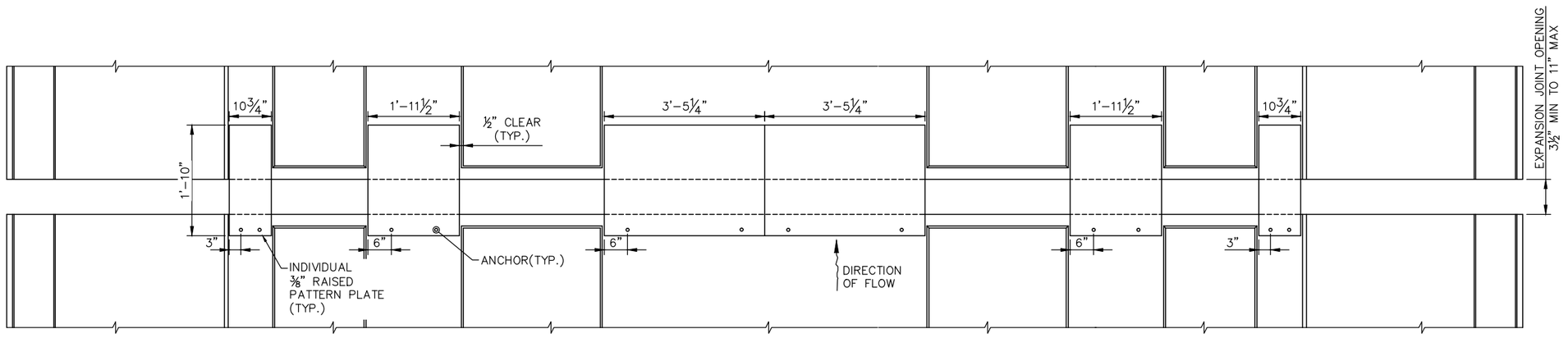
SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
WATERPROOF EXPANSION DEVICE 3

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-EXP03

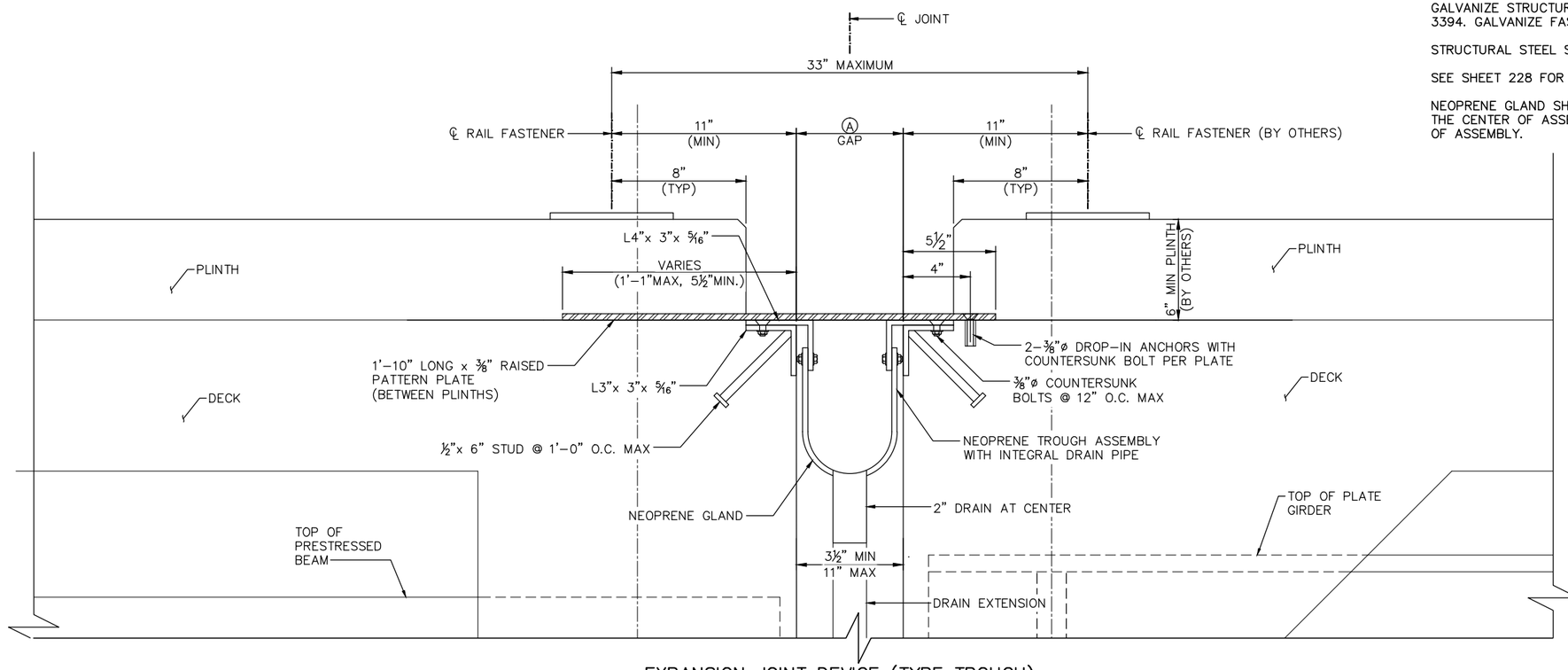
SHEET 230 OF 264

Jan, 17 2016 10:05 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-EXP03.dwg By: hills



PLAN VIEW
PIER 25 & 28

(SIDEWALK COVER PLATES NOT SHOWN FOR CLARITY)



EXPANSION JOINT DEVICE (TYPE TROUGH)
PIER 25 & 28

NOTES:

SEE SHEETS 229 & 230 FOR DETAILS OF COVER PLATES AT SIDEWALK.

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

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

SEE SHEET 228 FOR EXPANSION JOINT LENGTHS AND ELEVATIONS.

NEOPRENE GLAND SHALL HAVE AN INTEGRAL DRAIN PIPE LOCATED AT THE CENTER OF ASSEMBLY. GLAND SHALL BE SLOPED TO THE CENTER OF ASSEMBLY.

GAP DIMENSION Ⓐ		
LOCATION	TEMTRATURE	
	90°	45°
PIER 25	5"	7¼"
PIER 28	5"	7"

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

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
WATERPROOF EXPANSION DEVICE 4

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-EXP04

SHEET 231 OF 264

Jan, 17 2016 10:05 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-EXP04.dwg By: hills

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
STATE BRIDGE ENGINEER

AS-BUILT DETAILS
(AS NEEDED)

FIG. 5-397.900

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ---- CHECKED BY: ----
DRAWN BY: ---- CHECKED BY: DDL

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-DTL03

SHEET 232 OF 264

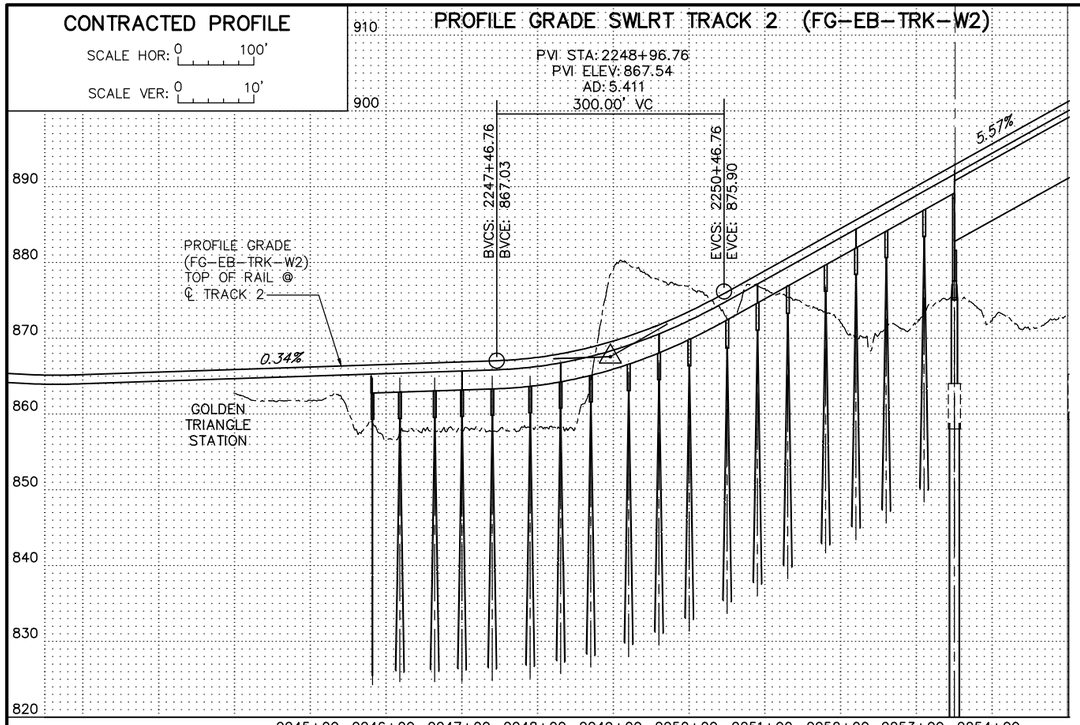
Jan. 17 2016 10:05 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-DTL03.dwg By: hills

CONTRACTED PROFILE

SCALE HOR: 0 100'

SCALE VER: 0 10'

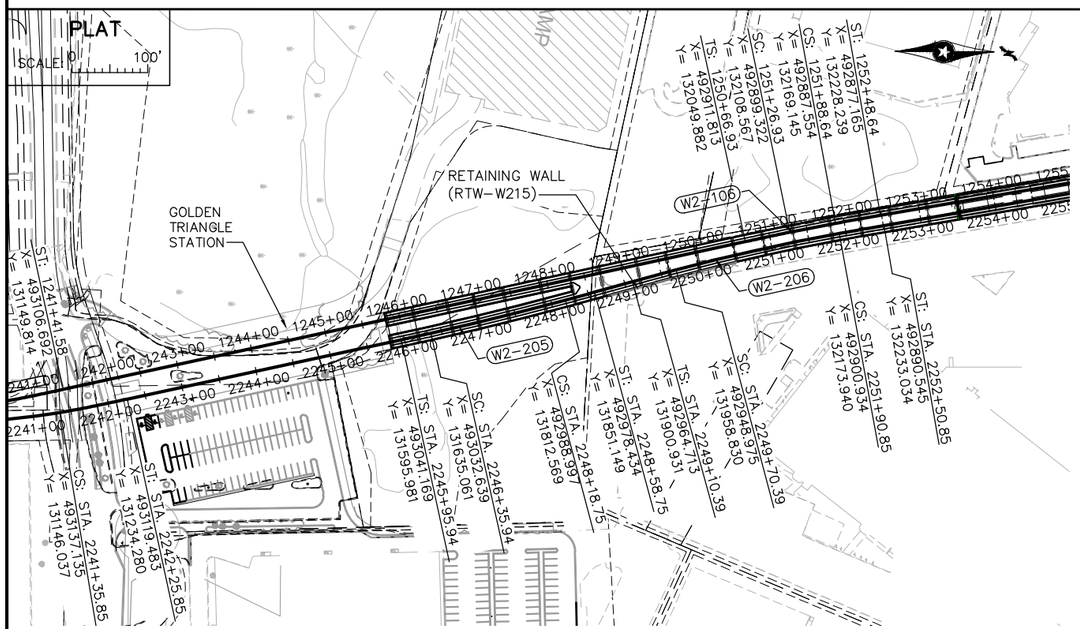
PROFILE GRADE SWLRT TRACK 2 (FG-EB-TRK-W2)



NOTE:
ALL ELEVATIONS ARE TOP OF LOW RAIL.

PLAT

SCALE: 0 100'



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

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

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

NOTES:

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

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

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

HYDRAULIC ENGINEERS RECOMMENDATION

DATE: XX-XX-XXXX

STREAM OR DITCH DESIGNATION: XXX

DRAINAGE AREA: XXX SQ. MI.

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

MAXIMUM OBSERVED HIGHWATER ELEVATION: XXX.X FT.

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

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

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

FLOWLINE ELEVATION: XXX FT. SKEW ANGLE: XX

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

SCOUR CONFIRMATION RECOMMENDATION

DATE: XX-XX-XXXX

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

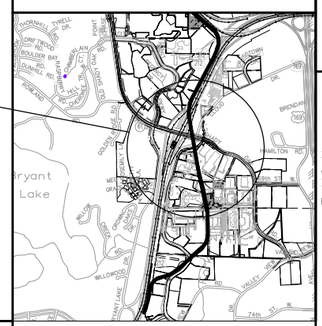
BRIDGE SURVEY = SHEETS MADE FROM 2015 SURVEYS

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

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

INDEX MAP

PROPOSED BRIDGE 27R33



BRIDGE SURVEY (SHEET 1)

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

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

SEC 1 T 116 N R 22 W

CITY OF EDEN PRAIRIE HENNEPIN COUNTY

BRIDGE 27R34

STATE PROJECT NO. 9909-01

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY 1

DISCIPLINE: STRUCTURES

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

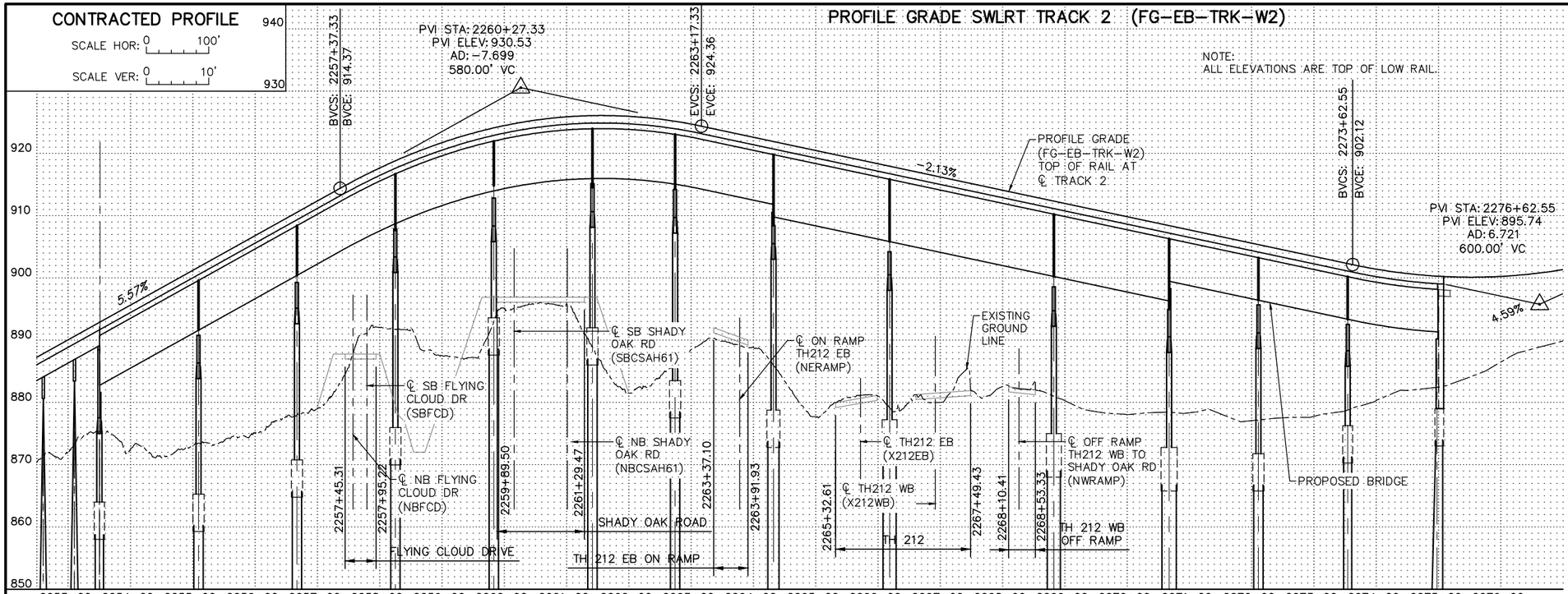
SHEET 233 OF 264

Jan, 17 2016 10:07 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR1.dwg By: hills

CONTRACTED PROFILE

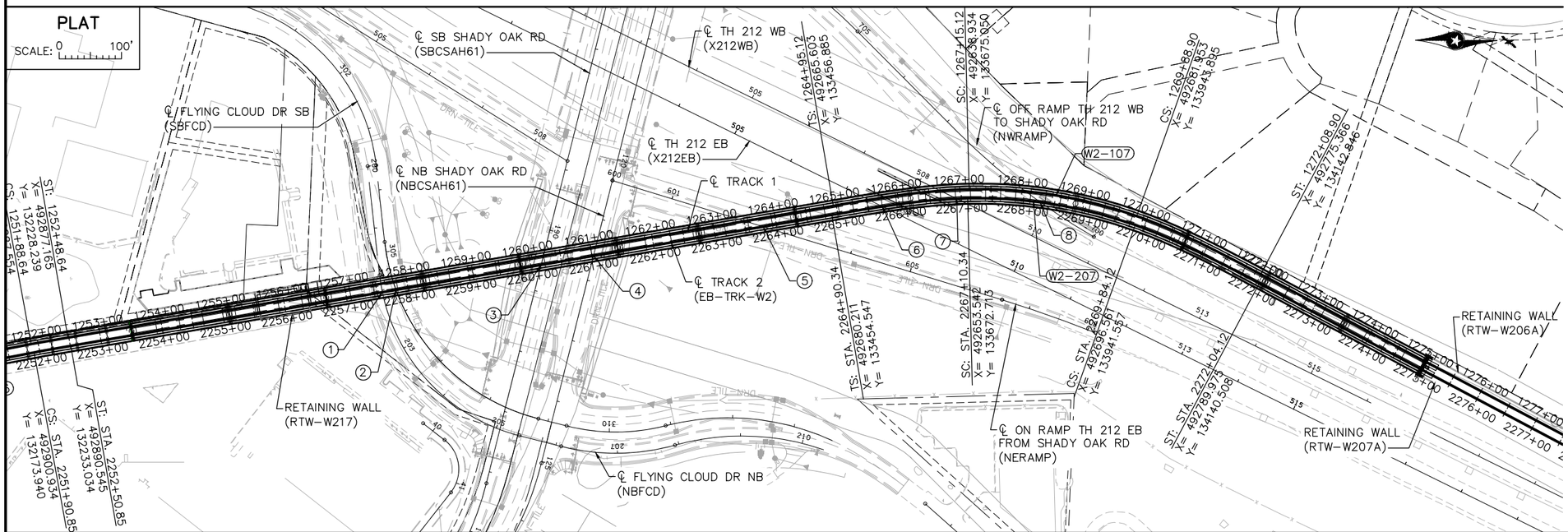
SCALE HOR: 0 100'
SCALE VER: 0 10'

PROFILE GRADE SWLRT TRACK 2 (FG-EB-TRK-W2)



PLAT

SCALE: 0 100'



1. ℄ TRACK 2 (EB-TRK-W2) P.O.T. STA 2257+58.11
   ℄ NB FLYING CLOUD DRIVE (NBFCD) P.O.C. STA 202+03.76
   X = 492804.467
   Y = 132732.933
   ANGLE: 88°6'37.2" TTC
2. ℄ TRACK 2 (EB-TRK-W2) P.O.T. STA 2257+80.28
   ℄ NB FLYING CLOUD DRIVE (SBFCD) P.O.C. STA 305+63.36
   X = 492800.703
   Y = 132754.790
   ANGLE: 79°42'37.9" TTC
3. ℄ TRACK 2 (EB-TRK-W2) P.O.T. STA 2260+16.84
   ℄ SB SHADY OAK RD (SBCSAH61)P.O.C. STA 190+57.65
   X = 492760.561
   Y = 132987.916
   ANGLE: 66°7'53.7" TTC
4. ℄ TRACK 2 (EB-TRK-W2) P.O.T. STA 2261+02.14
   ℄ NB SHADY OAK RD (NBCSAH61) P.O.C. STA 121+59.85
   X = 492746.087
   Y = 133071.974
   ANGLE: 66°7'53.7" TTC
5. ℄ TRACK 2 (EB-TRK-W2) P.O.T. STA 2263+78.63
   ℄ ON RAMP TH212 EB (NERAMP) P.O.C. STA 602+53.18
   X = 492699.168
   Y = 133344.454
   ANGLE: 26°48'3.8" TTC
6. ℄ TRACK 2 (EB-TRK-W2) P.O.T. STA 2265+72.64
   ℄ TH 212 EB (X212EB) P.O.C. STA 507+64.26
   X = 492666.801
   Y = 133535.744
   ANGLE: 35°1'23.0" TTC
7. ℄ TRACK 2 (EB-TRK-W2) P.O.T. STA 2266+92.48
   ℄ TH 212 WB (X212WB) P.O.C. STA 508+65.52
   X = 492654.174
   Y = 133654.868
   ANGLE: 28°55'55.8" TTC
8. ℄ TRACK 2 (EB-TRK-W2) P.O.T. STA 2268+26.85
   ℄ TH 212 WB OFF RAMP (NWRAMP)
   P.O.C. STA 701+02.55
   X = 492659.804
   Y = 133788.941
   ANGLE: 28°37'14.9" TTC

NOTE:
ALL ELEVATIONS ARE TOP OF LOW RAIL.

NOTES:

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

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

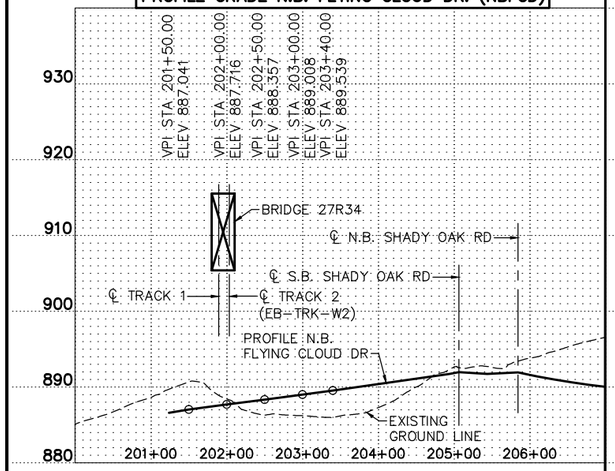
CIVIL - VOLUME 4A
SHADY OAK ROAD BRIDGE 27R34
BRIDGE SURVEY 2

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUR1-2

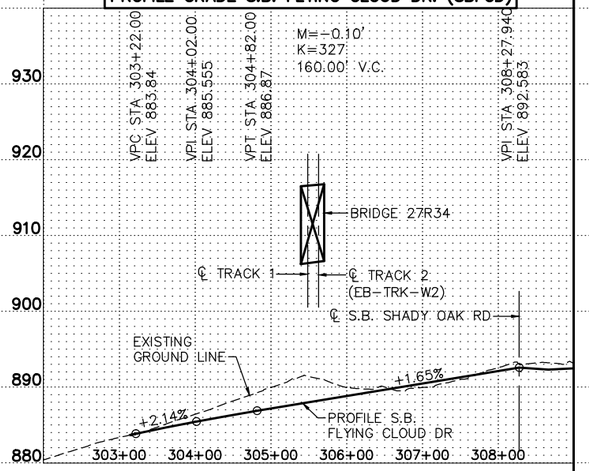
SHEET 234 OF 264

Jan, 17 2016 10:08 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR1.dwg By: hills

PROFILE GRADE N.B. FLYING CLOUD DR. (NBFCD)



PROFILE GRADE S.B. FLYING CLOUD DR. (SBFCD)



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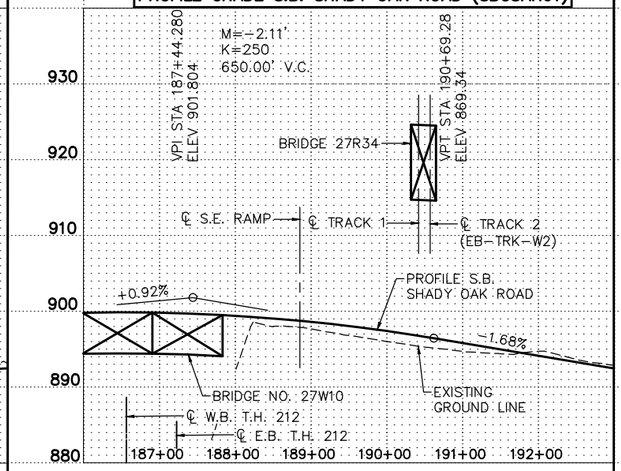
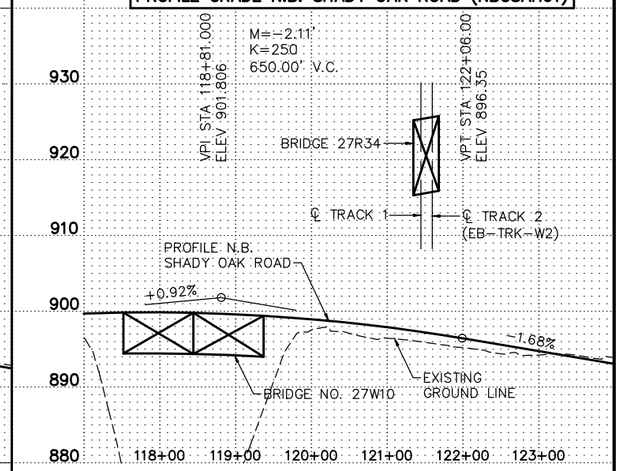


PROFILE GRADE N.B. SHADY OAK ROAD (NBCSAH61)



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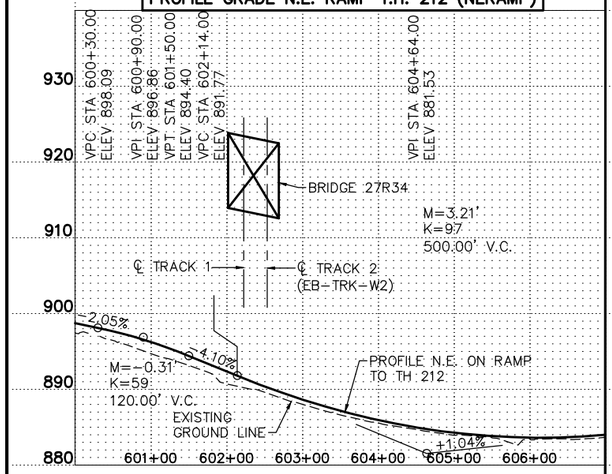
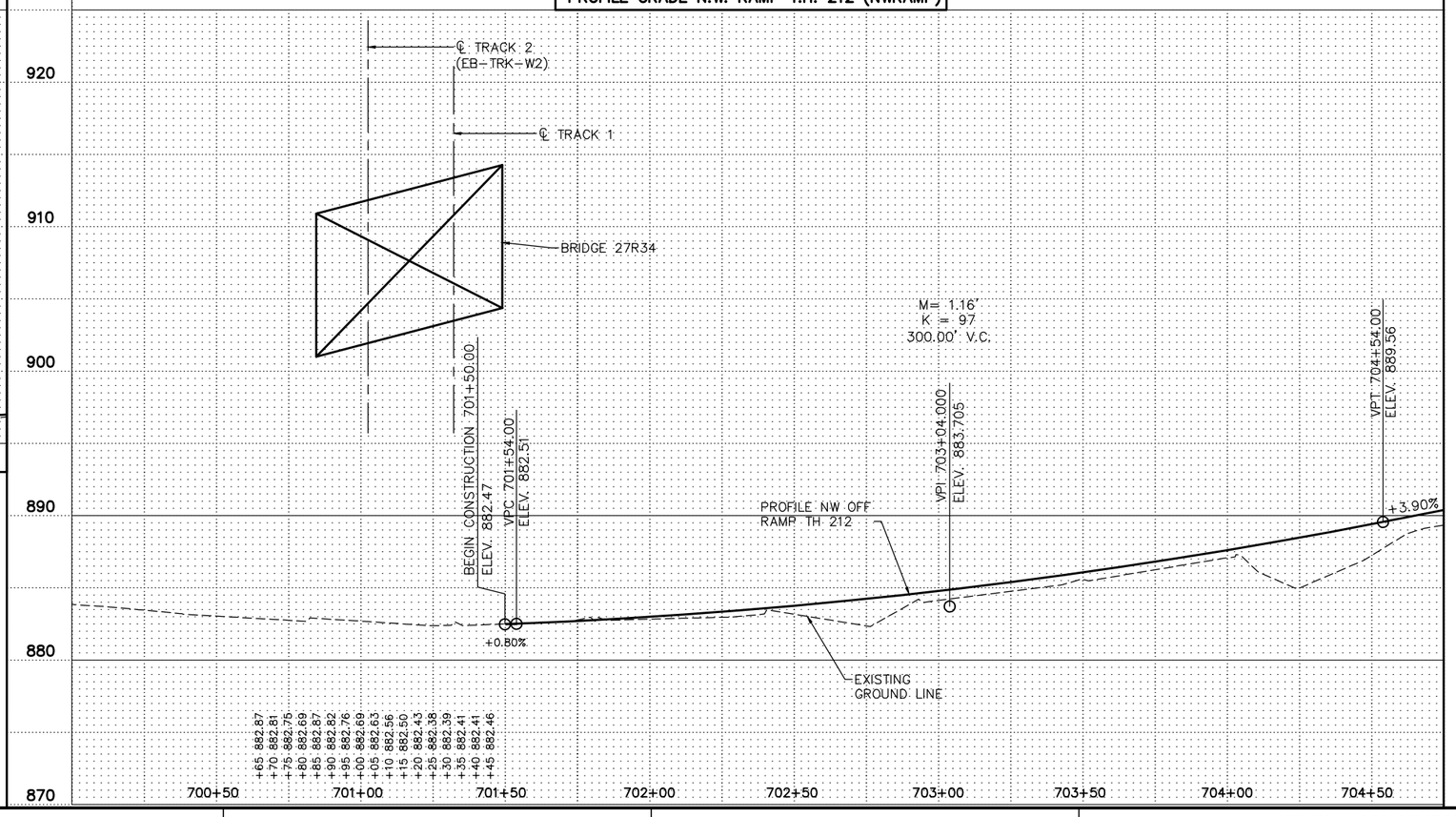


PROFILE GRADE N.W. RAMP T.H. 212 (NWRAMP)



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DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

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

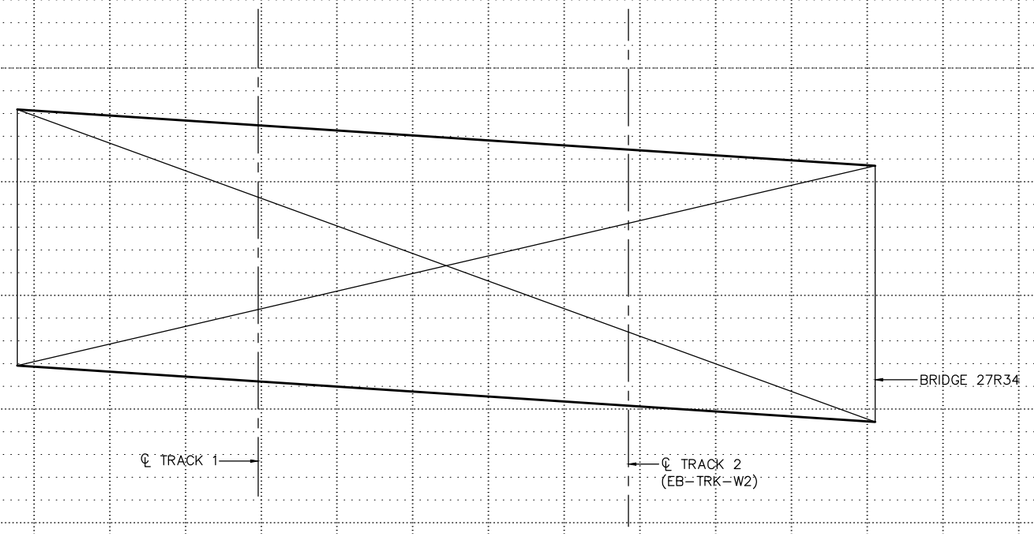
DISCIPLINE: STRUCTURES

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

SHEET 235 OF 264

Jan, 17 2016 10:09 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR2.dwg By: hills

PROFILE GRADE E.B. T.H. 212 (X212EB)



925 920 915 910 905 900 895 890 885 880

PROFILE E.B. T.H. 212

880.42 506+75 | 880.45 506+80 | 880.50 506+85 | 880.58 506+90 | 880.61 506+95 | 880.64 507+00 | 880.62 507+05 | 880.69 507+10 | 880.71 507+15 | 880.79 507+20 | 880.83 507+25 | 880.79 507+30 | 880.88 507+35 | 880.96 507+40 | 881.01 507+45 | 881.02 507+50 | 881.10 507+55 | 881.13 507+60 | 881.13 507+65 | 881.19 507+70 | 881.24 507+75 | 881.28 507+80 | 881.24 507+85 | 881.25 507+90 | 881.34 507+95 | 881.39 508+00 | 881.41 508+05 | 881.44 508+10 | 881.46 508+15 | 881.38 508+20 | 881.52 508+25

507+00 507+50 508+00

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DRAWN BY: SWH | CHECKED BY: MJC

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

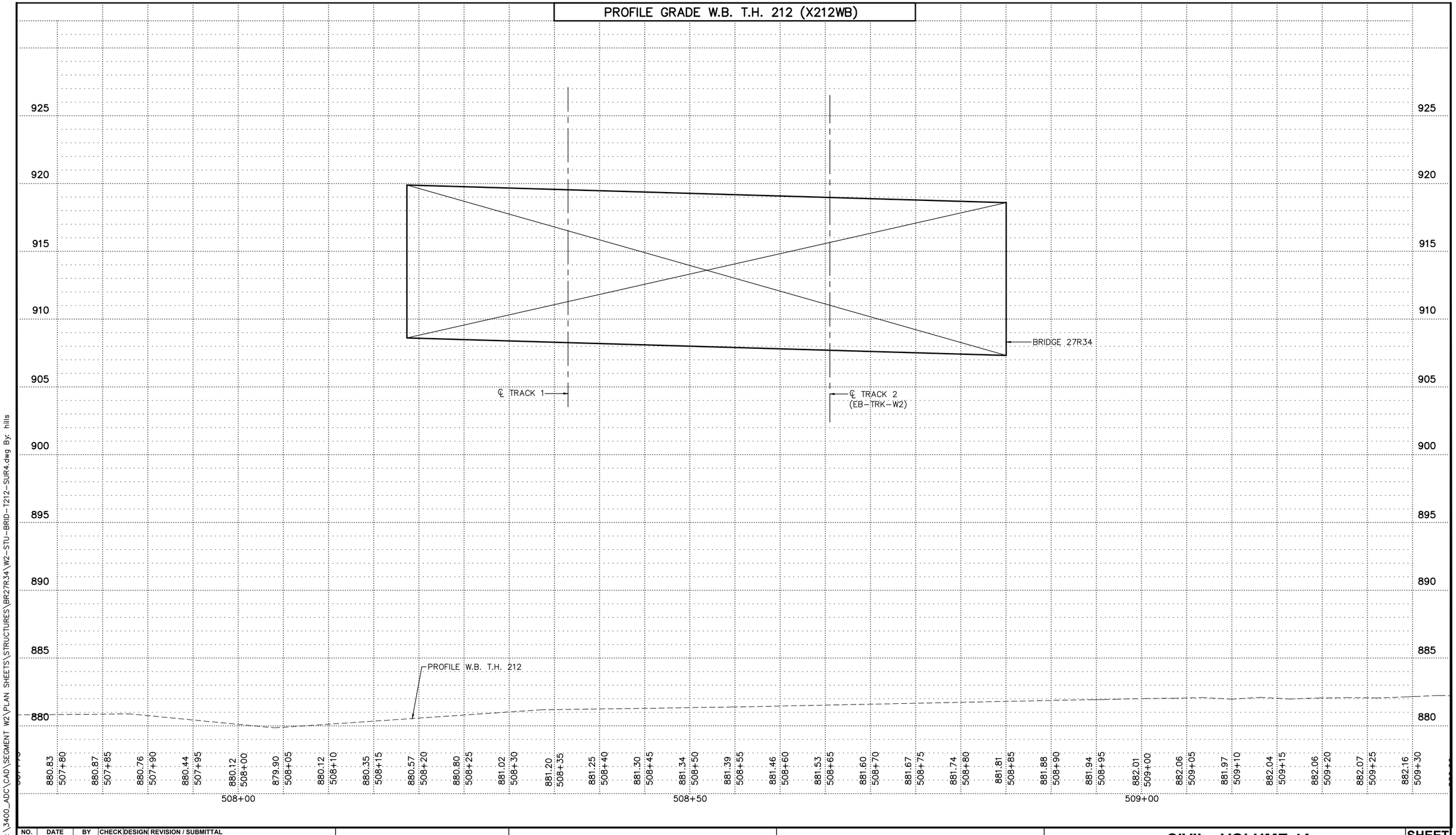
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY 4

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUR4A

SHEET 236 OF 264

Jan, 17 2016 10:10 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR4.dwg By: hills

PROFILE GRADE W.B. T.H. 212 (X212WB)



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METROPOLITAN COUNCIL

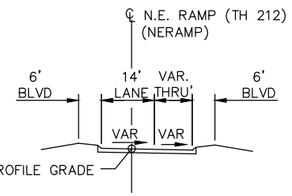
SOUTHWEST Green Line LRT Extension

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

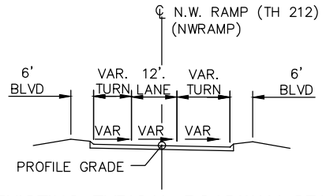
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUR4B

SHEET 237 OF 264

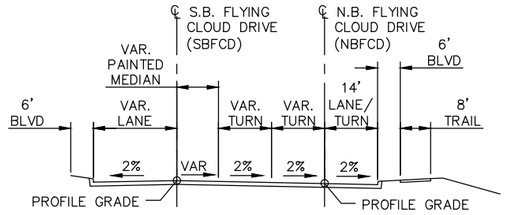
Jan, 17 2016 10:10 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR4.dwg By: hills



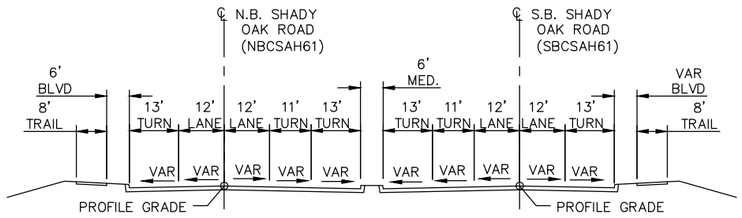
EXISTING TYPICAL ROADWAY SECTION
N.E. RAMP (T.H. 212)



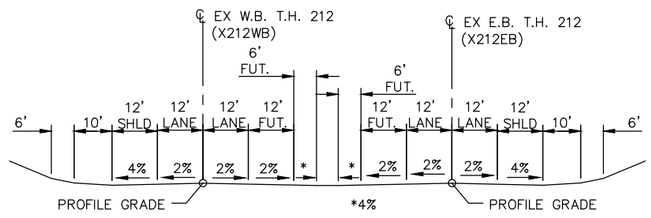
EXISTING TYPICAL ROADWAY SECTION
N.W. RAMP (T.H. 212)



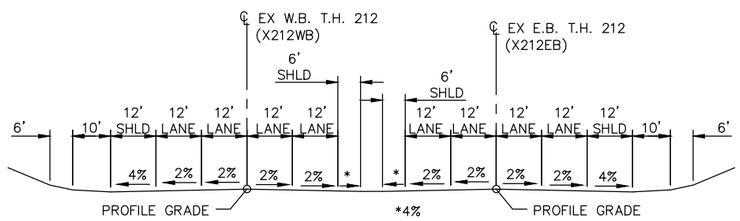
EXISTING TYPICAL ROADWAY SECTION
FLYING CLOUD DRIVE



EXISTING TYPICAL ROADWAY SECTION
SHADY OAK ROAD



EXISTING TYPICAL ROADWAY SECTION
T.H. 212



FUTURE TYPICAL ROADWAY SECTION
T.H. 212

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DRAWN BY: SWH | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

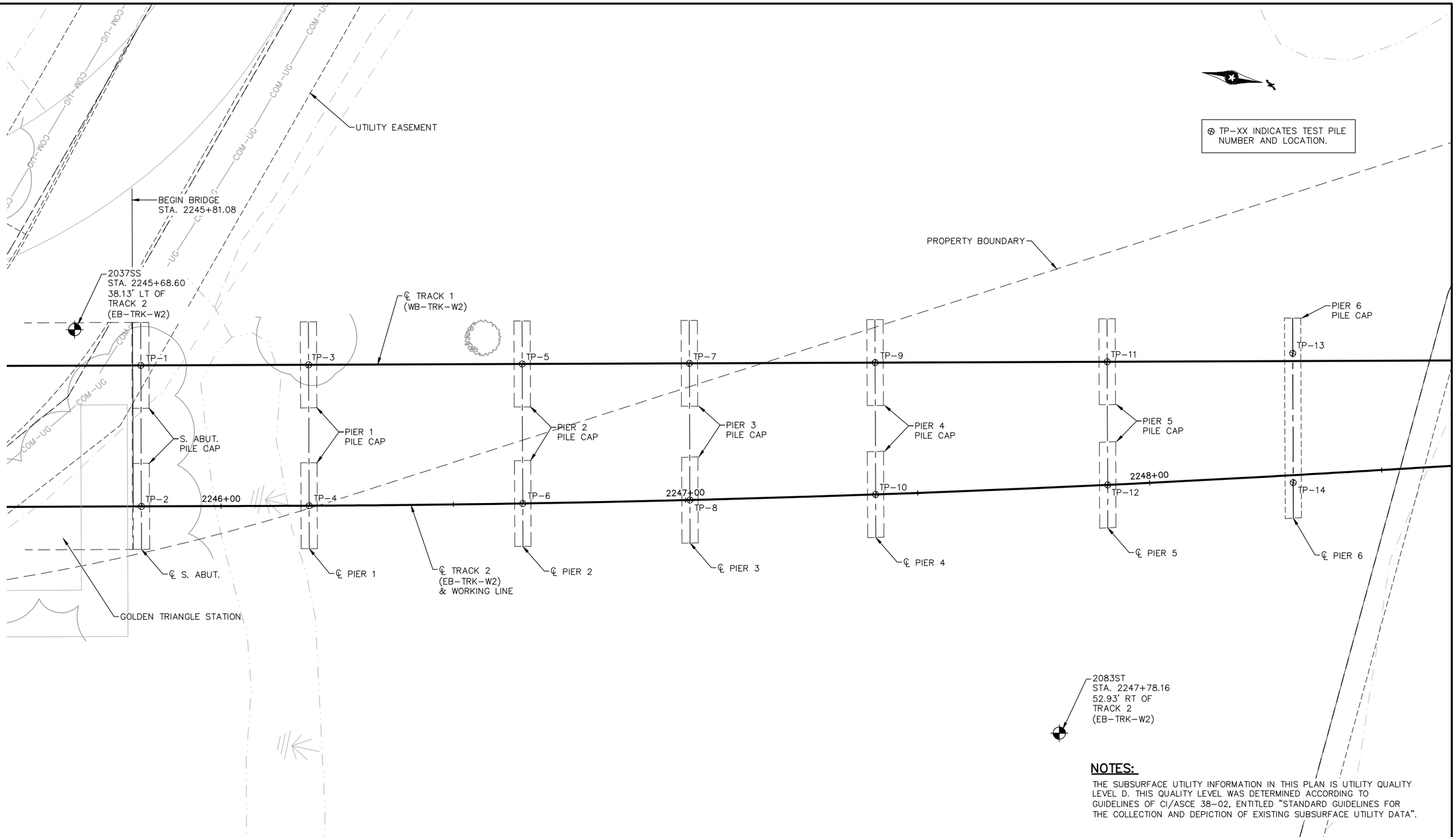
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY 6

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUR8

SHEET 238 OF 264

Jan, 17 2016 10:10 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR8.dwg By: hills



NOTES:

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

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DRAWN BY: SWH | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

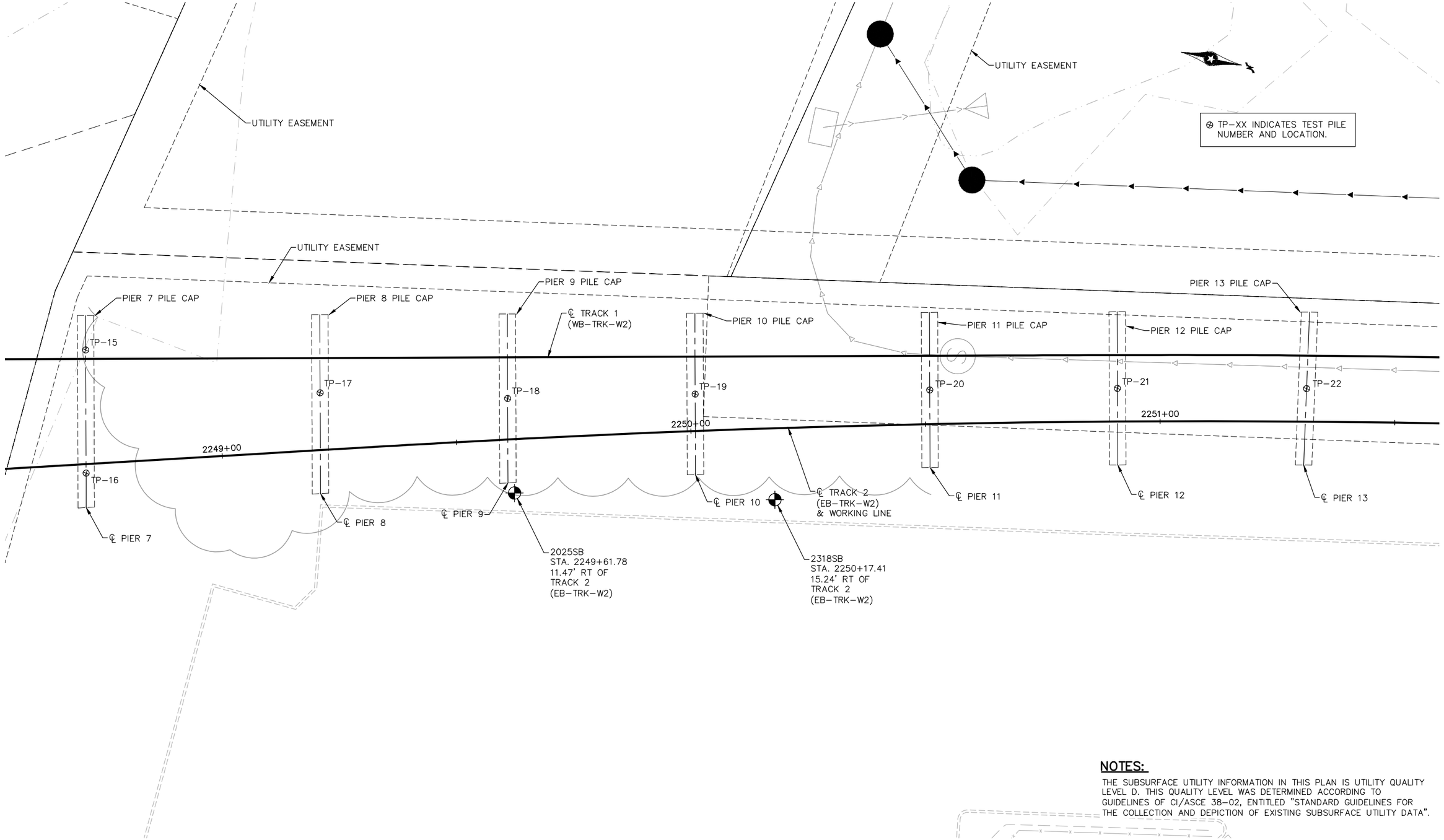
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN 1

DISCIPLINE: STRUCTURES

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

SHEET 239 OF 264

Jan, 17 2016 10:12 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR3.dwg By: hills



NOTES:

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DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

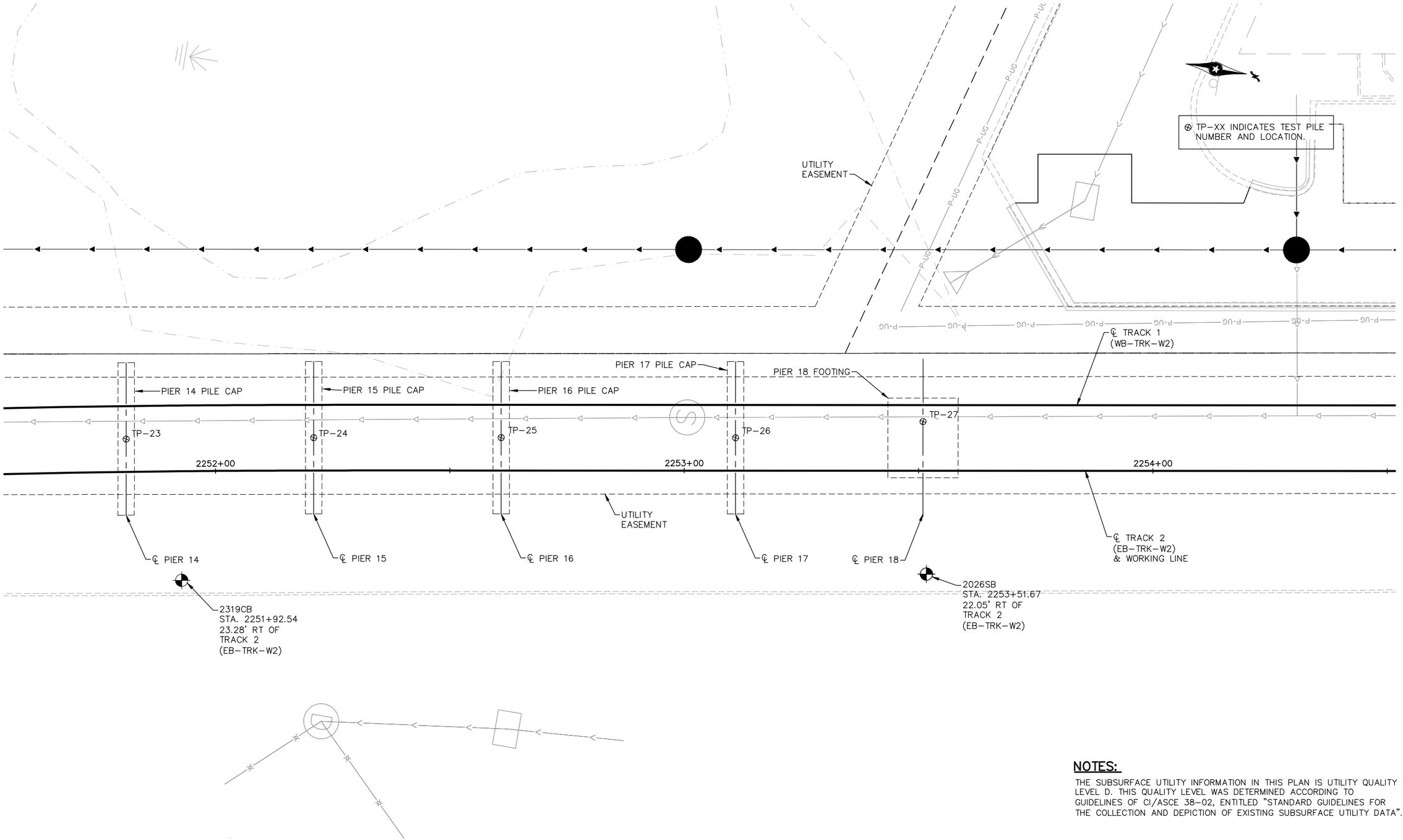
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN 2

DISCIPLINE: STRUCTURES

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

SHEET 240 OF 264

Jan, 17 2016 10:12 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34_W2-STU-BRID-T212-SUR3.dwg By: hills



NOTES:

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

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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: SWH | CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

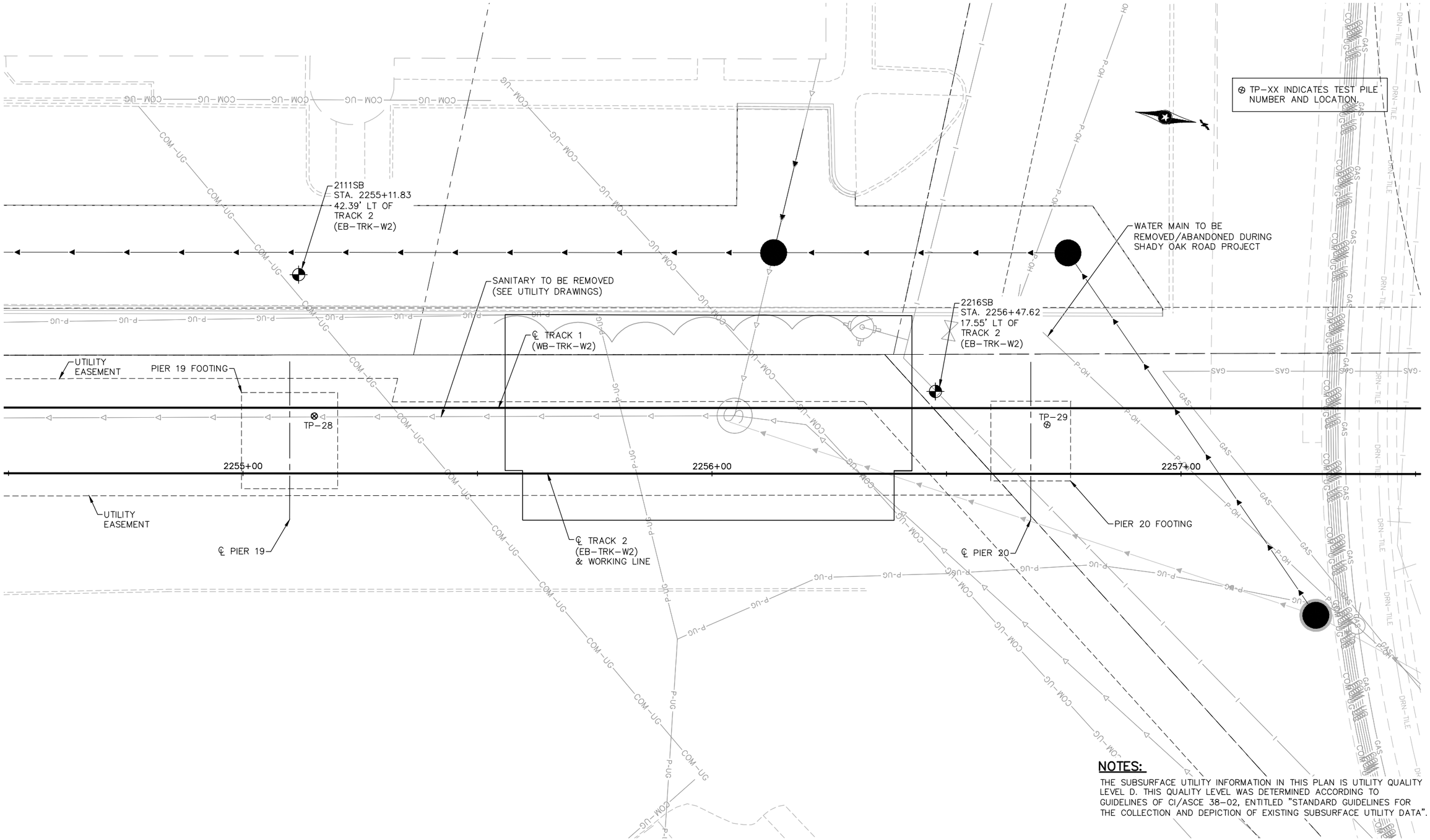
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN 3

DISCIPLINE: STRUCTURES

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

SHEET 241 OF 264

Jan, 17 2016 10:13 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR3.dwg By: hills



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DESIGNED BY: DDL | CHECKED BY: MJC
DRAWN BY: SWH | CHECKED BY: MJC

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

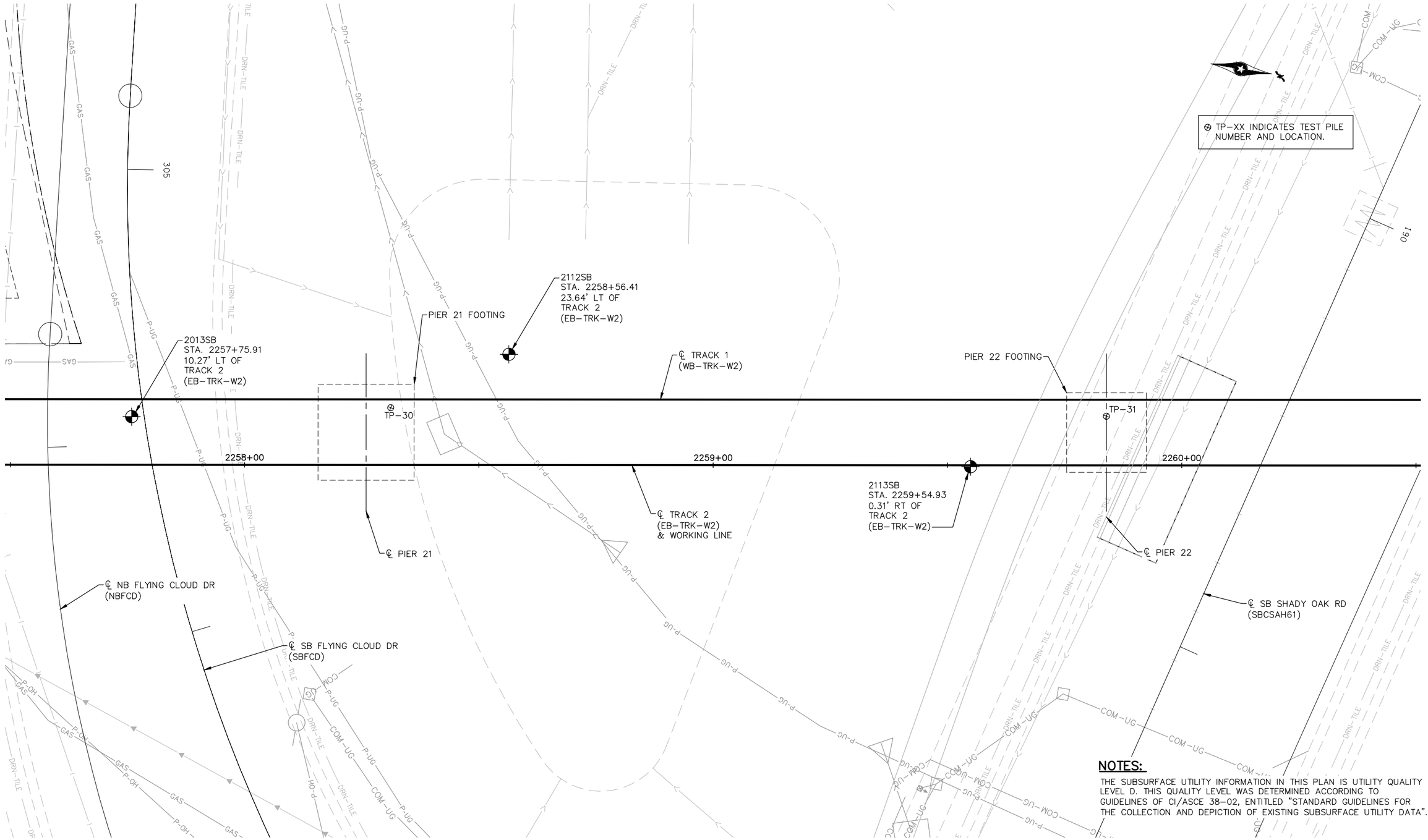
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN 4

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUR3-4

SHEET 242 OF 264

Jan, 17 2016 10:14 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR3.dwg By: hills



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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

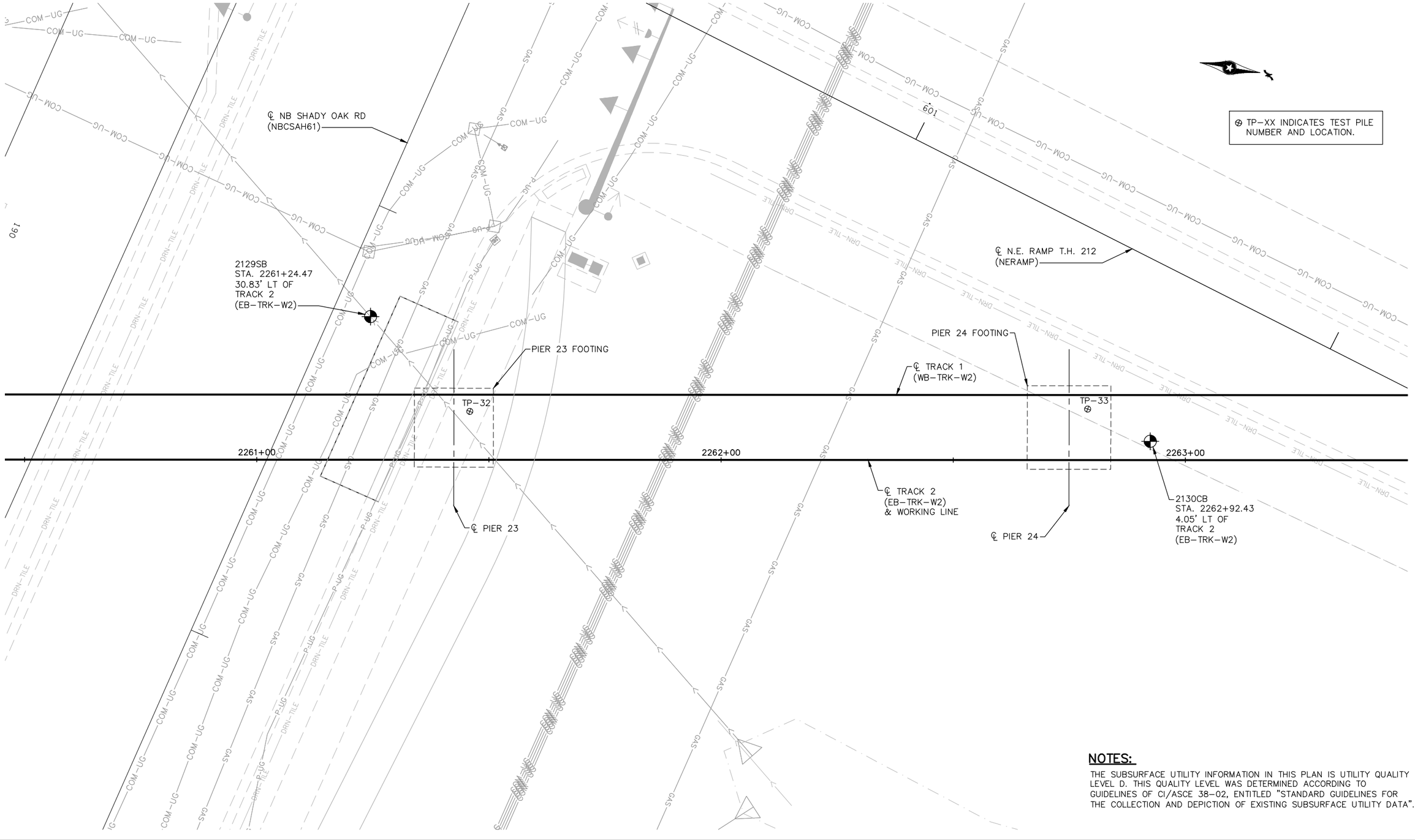
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN 5

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUR3-5

SHEET 243 OF 264

Jan, 17 2016 10:14 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR3.dwg By: hills



NOTES:

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

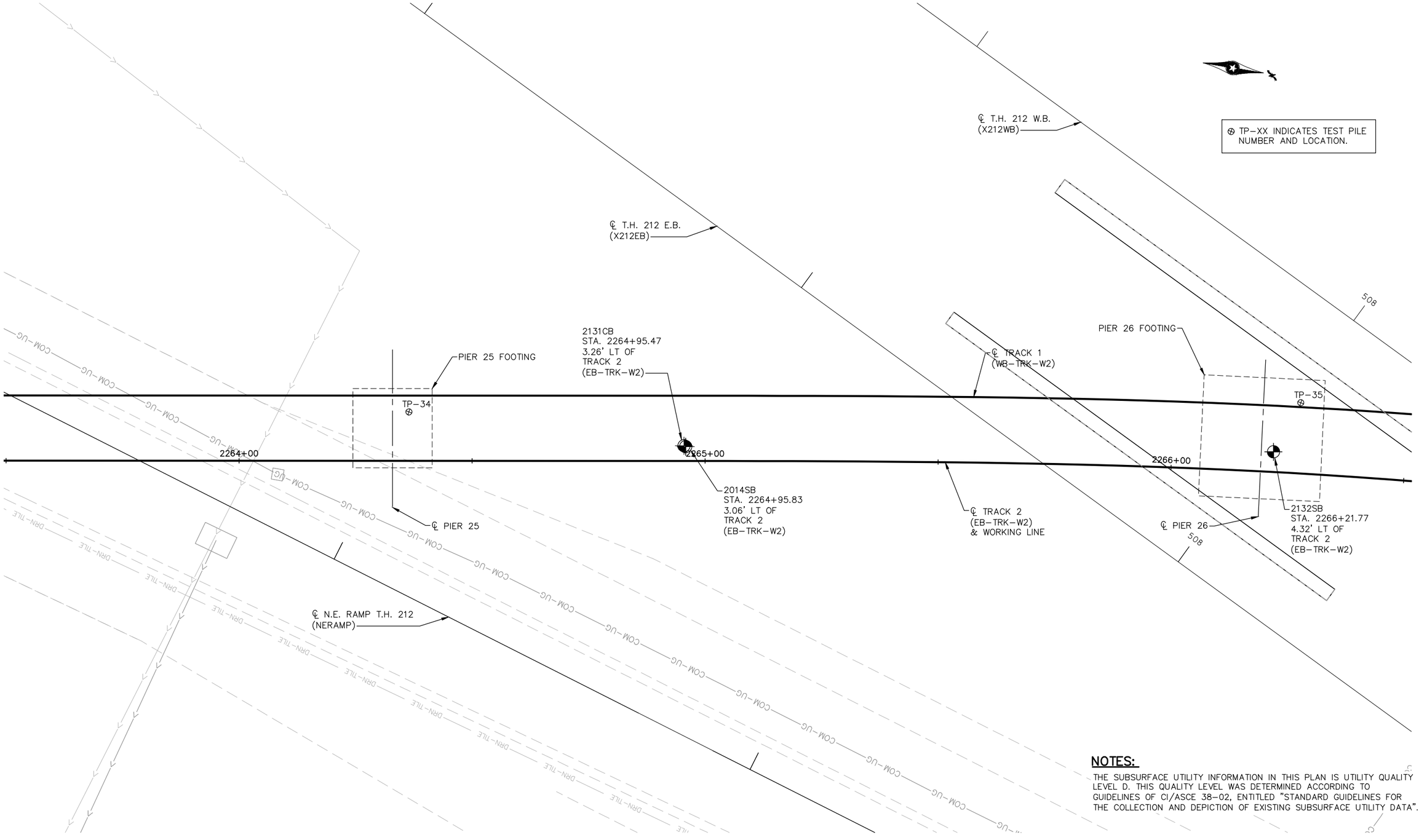
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN 6

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUR3-6

SHEET 244 OF 264

Jan, 17 2016 10:15 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR3.dwg By: hills



NOTES:

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

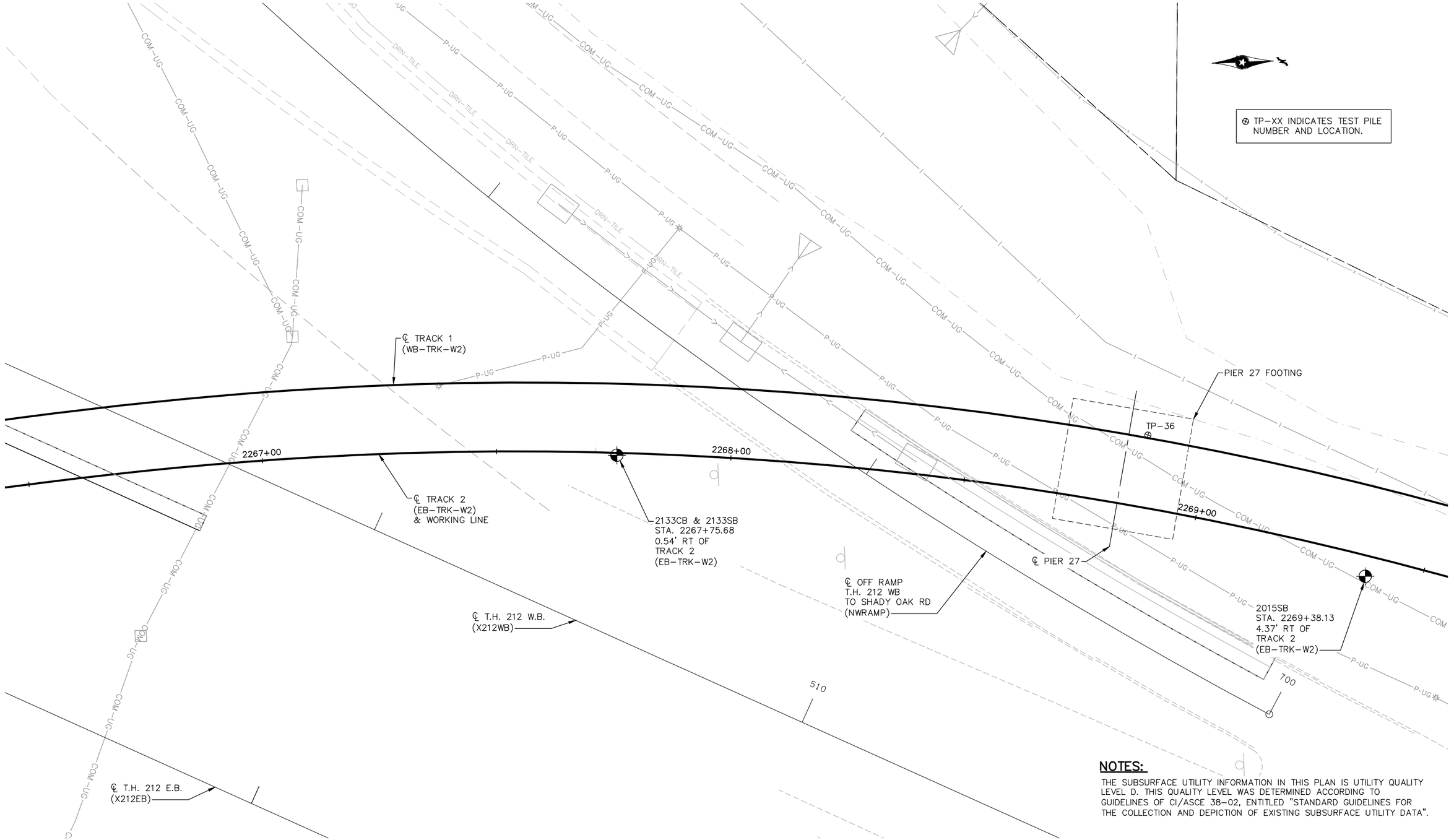
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN 7

DISCIPLINE: STRUCTURES

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

SHEET 245 OF 264

Jan, 17 2016 10:15 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR3.dwg By: hills



NOTES:

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SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN 8

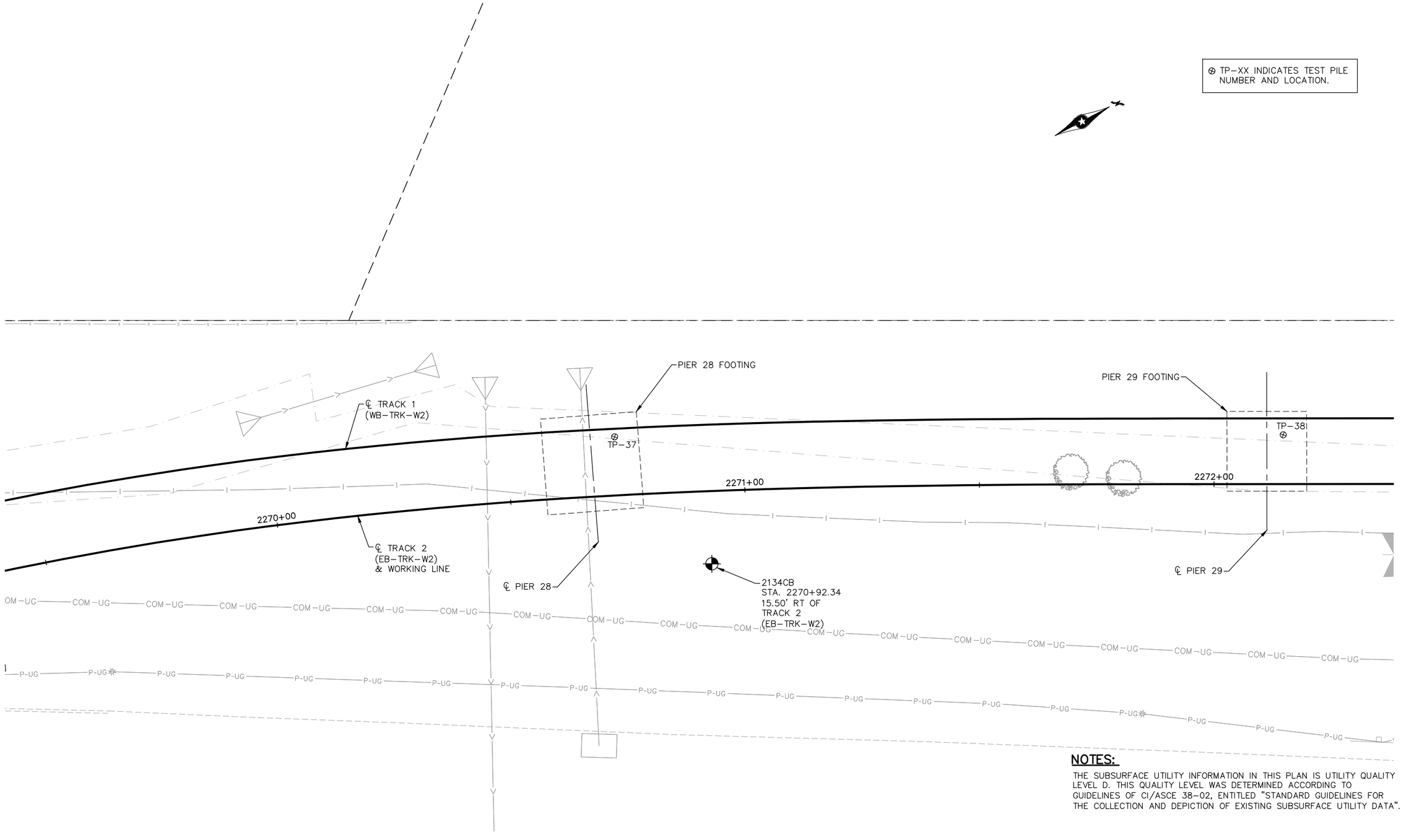
DISCIPLINE: STRUCTURES

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

SHEET 246 OF 264

Jan. 17 2016 10:16 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR3.dwg By: hills

⊛ TP-XX INDICATES TEST PILE NUMBER AND LOCATION.



NOTES:

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

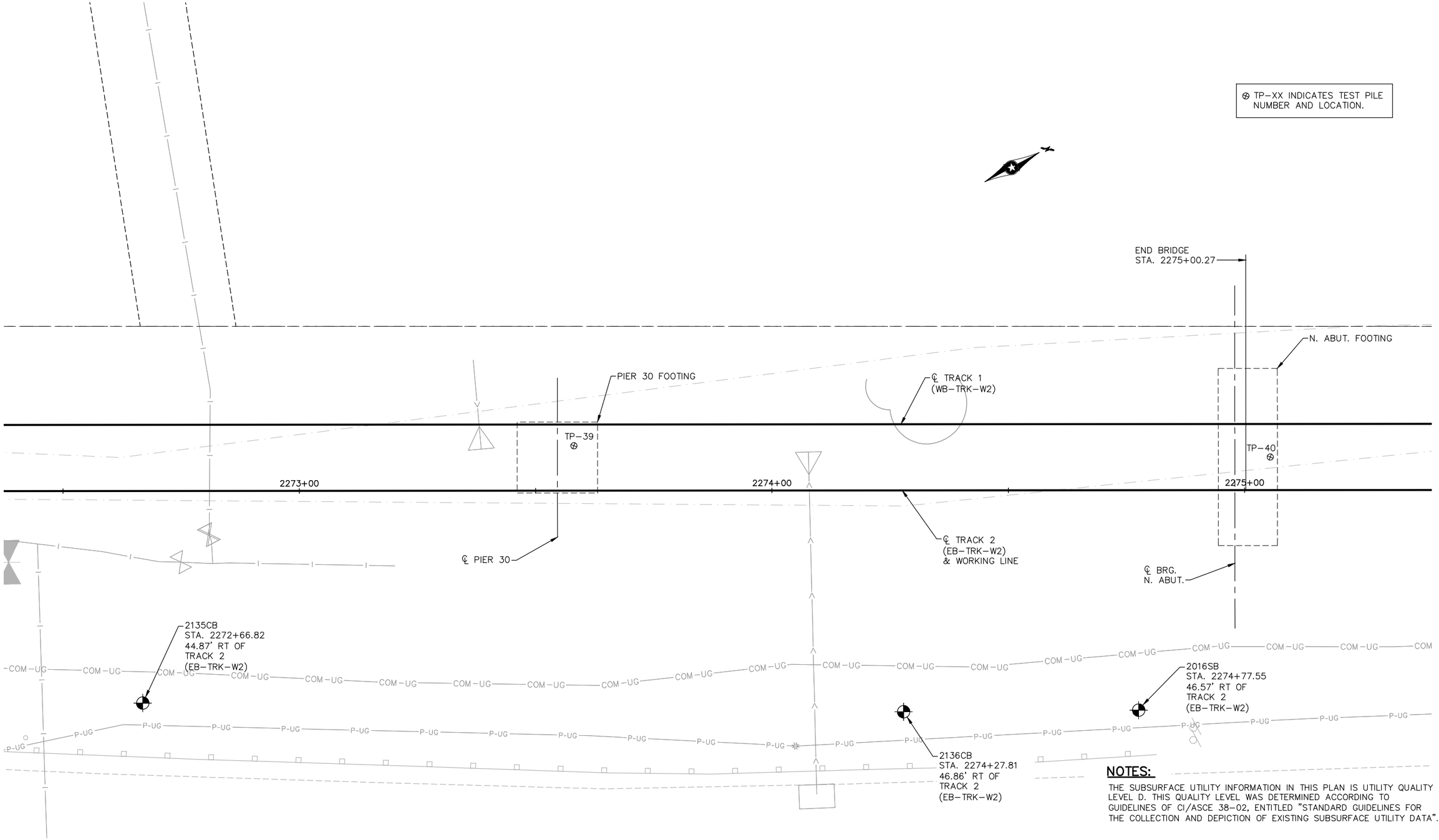
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN 9

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUR3-9

SHEET 247 OF 264

Jan, 17 2016 10:17 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR3.dwg By: hills



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DESIGNED BY: DDL | CHECKED BY: MJC
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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

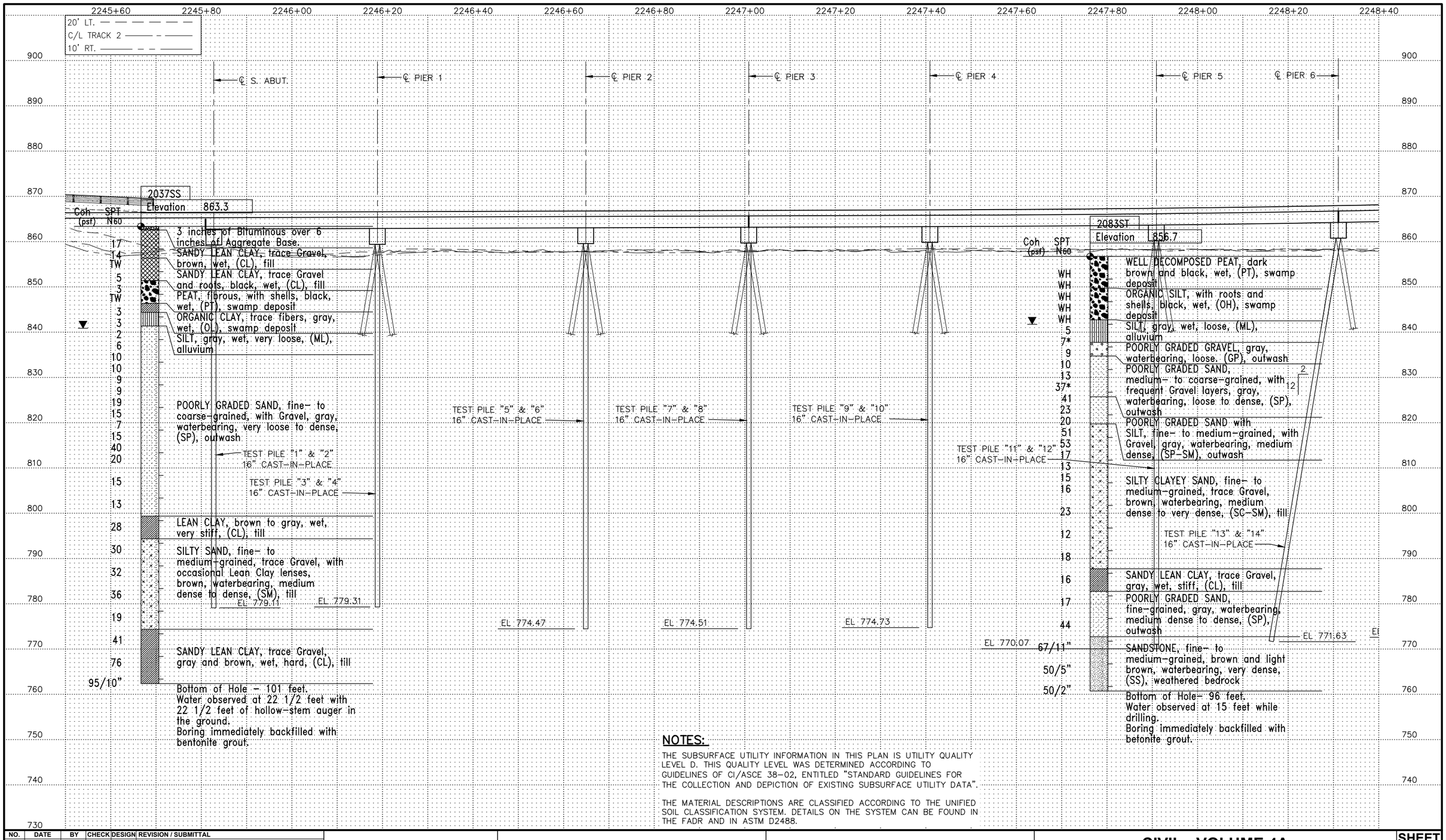
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN 10

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUR3-10

SHEET 248 OF 264

Jan, 17 2016 10:17 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR3.dwg By: hills



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DESIGNED BY: DDL CHECKED BY: MJC
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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

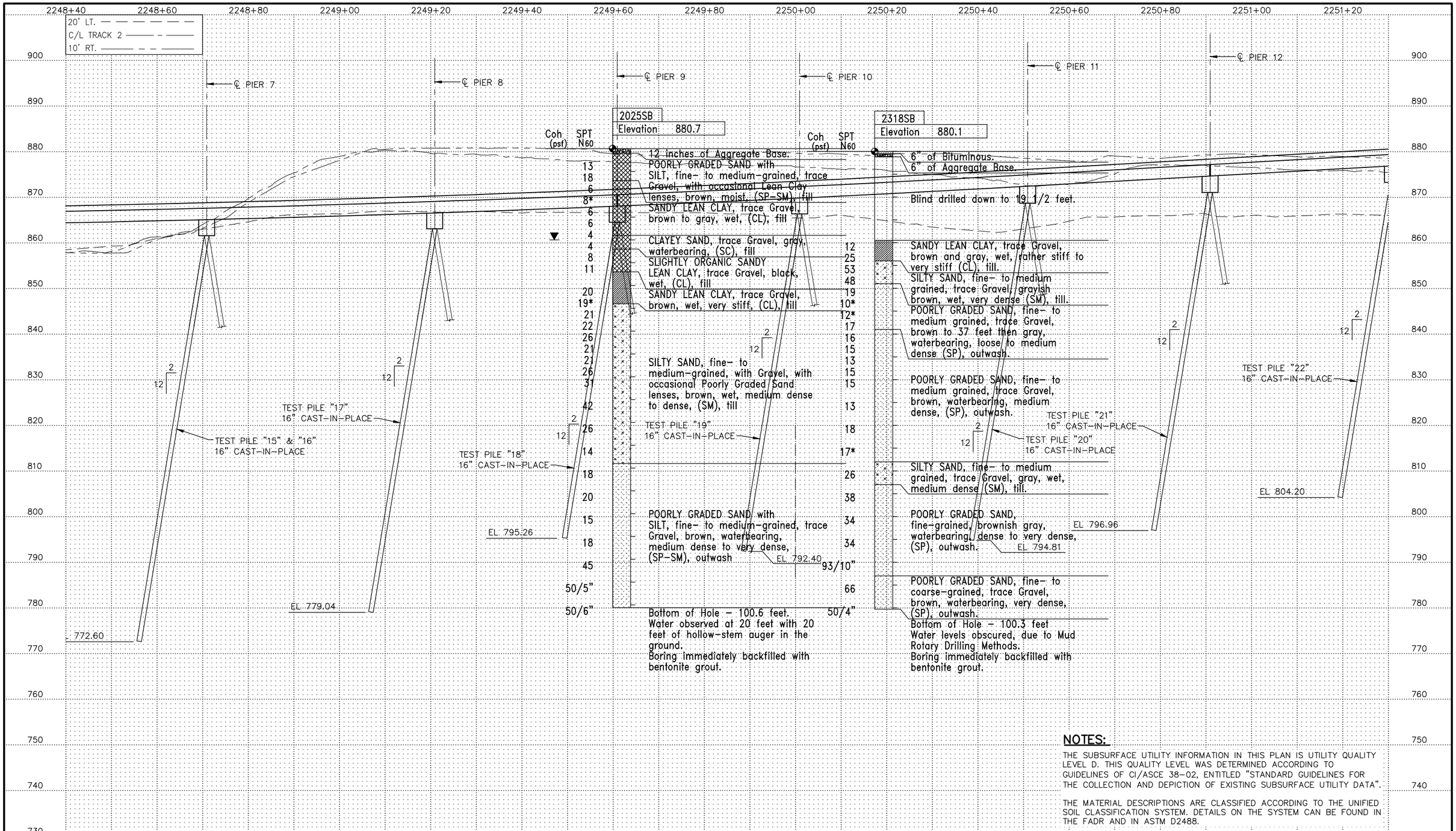
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE 1

DISCIPLINE: STRUCTURES

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

SHEET 249 OF 264

Jan, 17 2016 10:18 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR5.dwg By: hills



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DESIGNED BY: DDL CHECKED BY: MJC
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

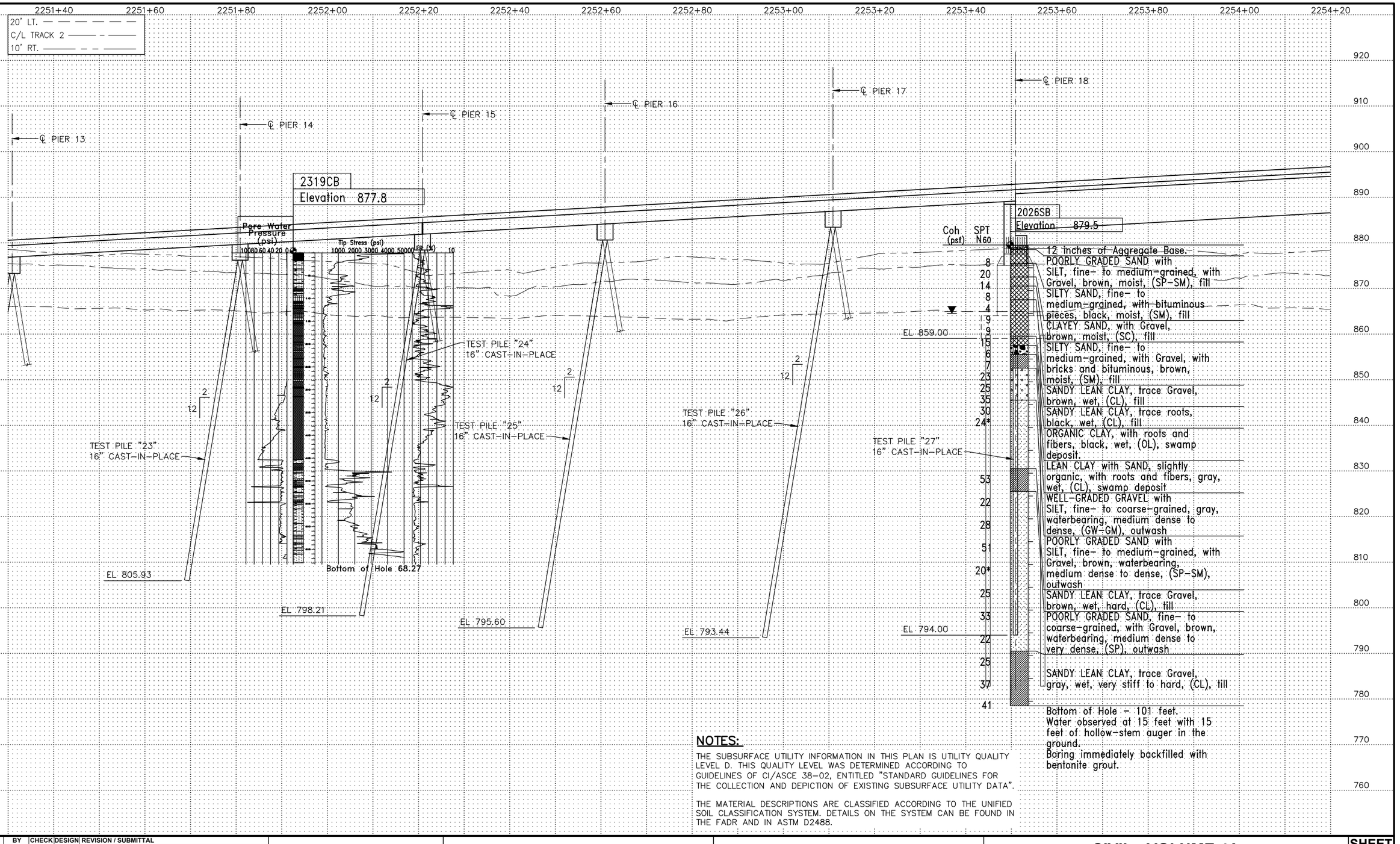
CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE 2

DISCIPLINE: STRUCTURES

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

SHEET 250 OF 264

Jan, 17 2016 10:19 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR5.dwg By: hills



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DESIGNED BY: DDL CHECKED BY: MJC
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

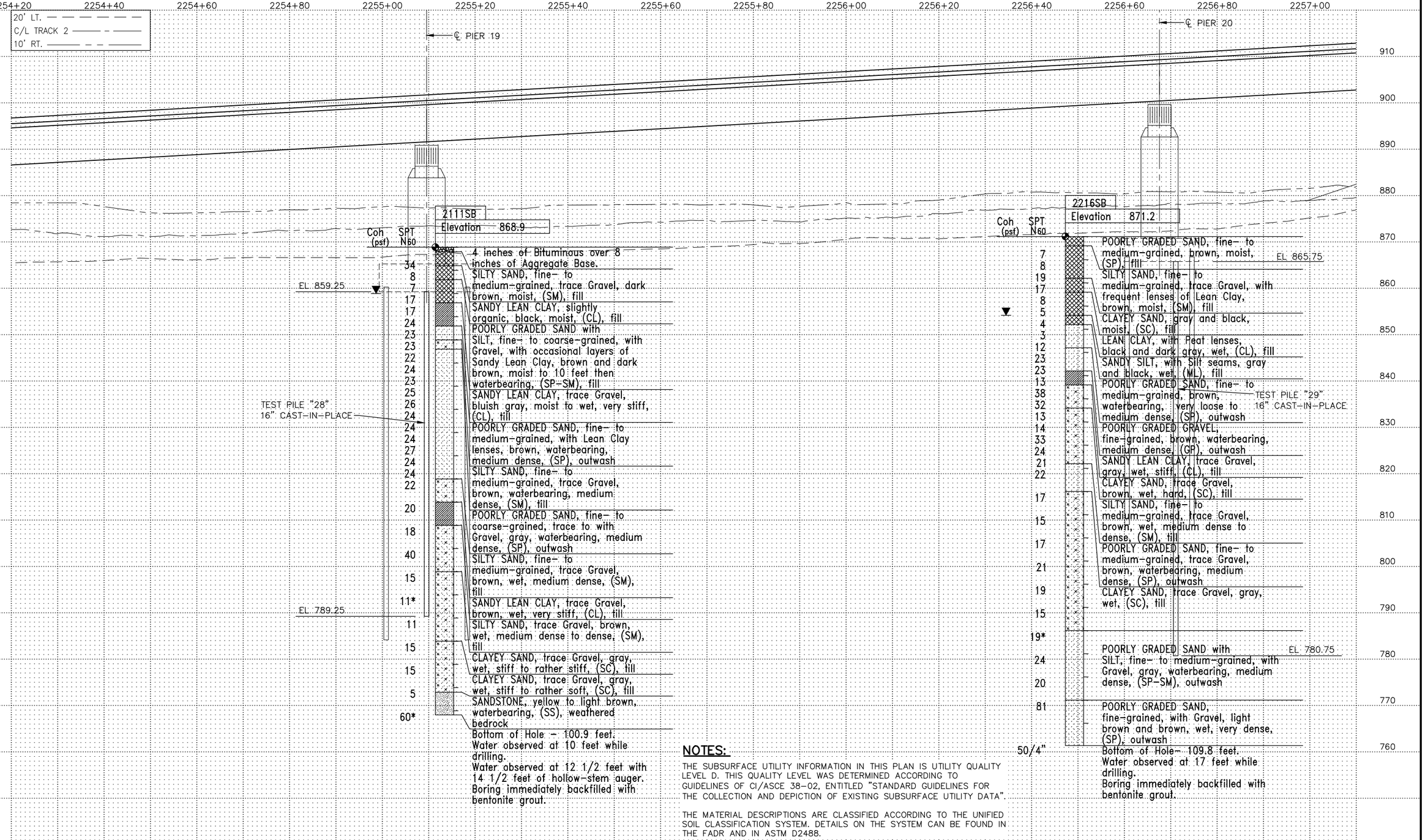
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE 3

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

SHEET 251 OF 264

Jan, 17 2016 10:19 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR5.dwg By: hills



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METROPOLITAN COUNCIL

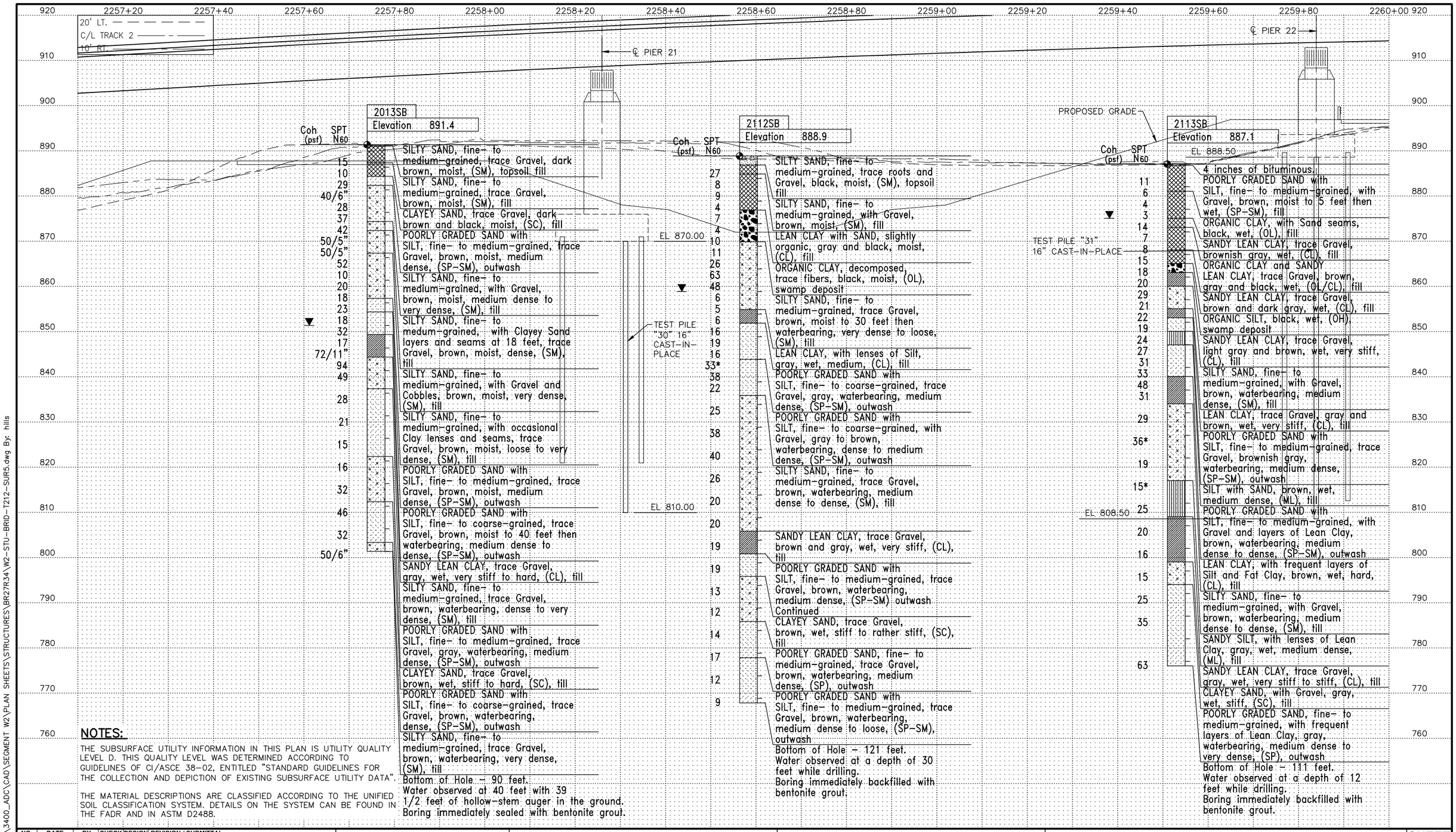
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE 4

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUR5-4

SHEET 252 OF 264

Jan. 17 2016 10:19 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR5.dwg By: hills



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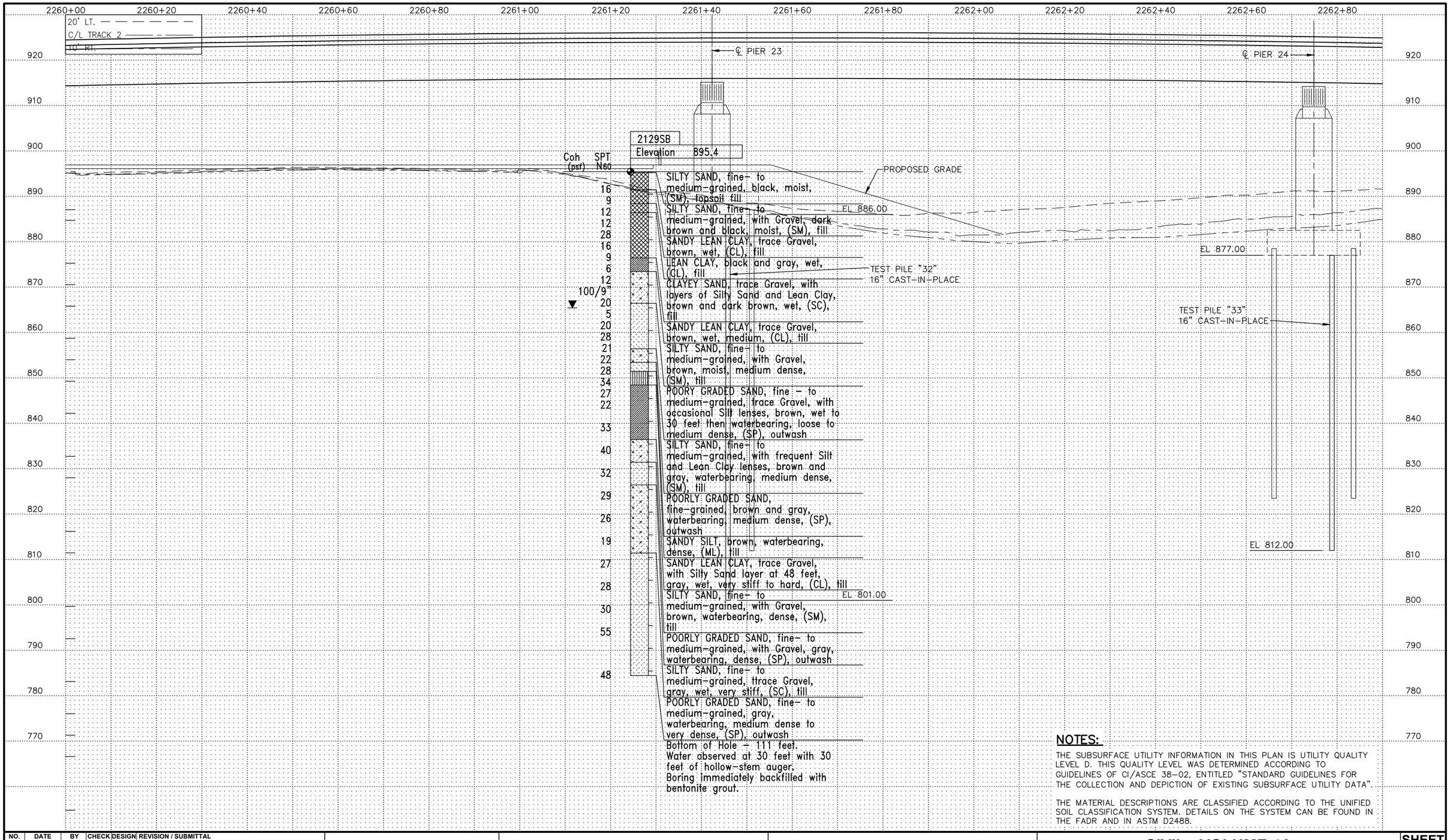
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE 5

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

SHEET 253 OF 264

Jan. 17 2016 10:19 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR5.dwg By: hills



NOTES:

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

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

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

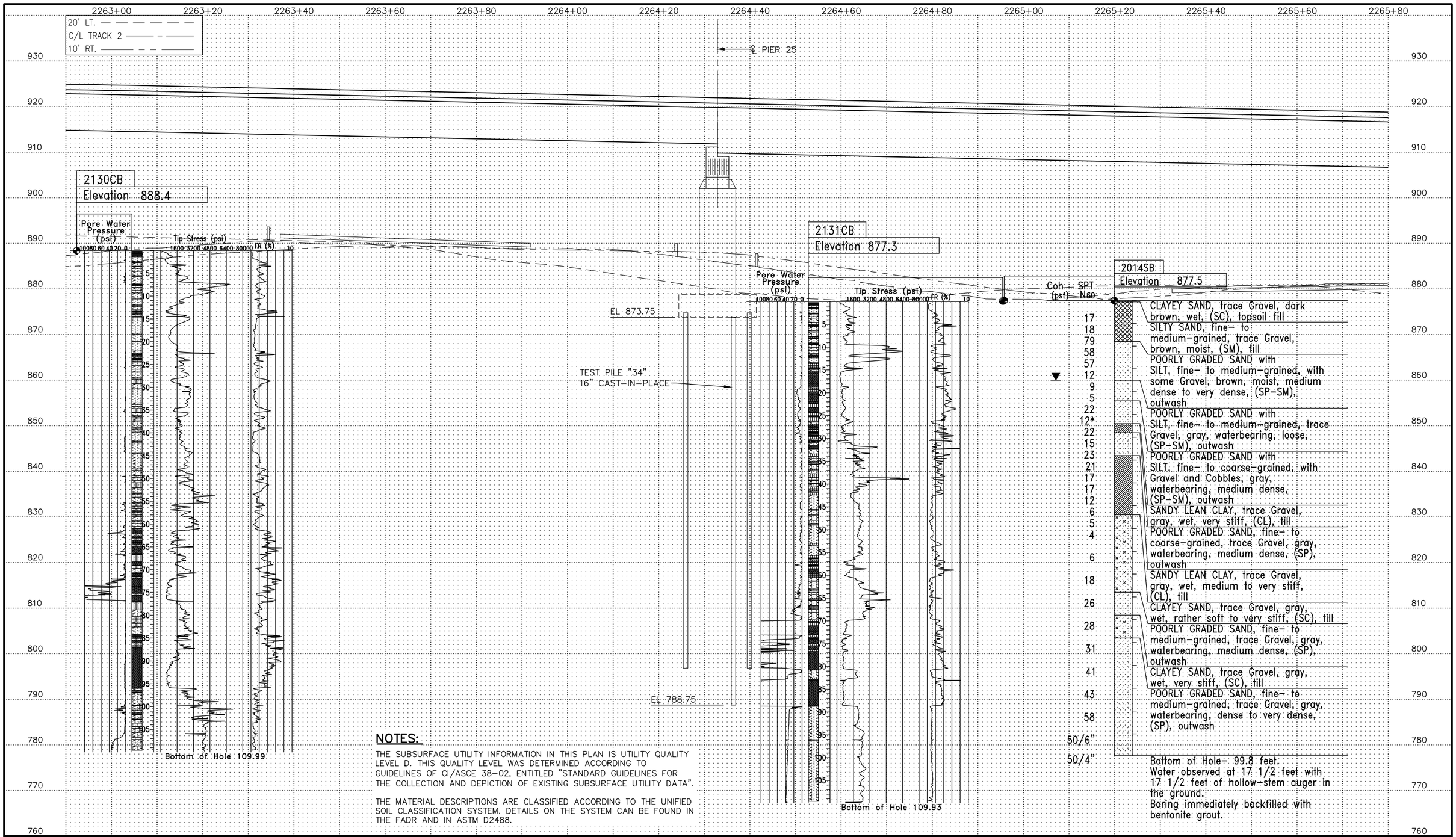
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVET PROFILE 6

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

SHEET 254 OF 264

Jan, 17 2016 10:19 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR5.dwg By: hills



NOTES:

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DRAWN BY: SWH | CHECKED BY: MJC

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SOUTHWEST Green Line LRT Extension

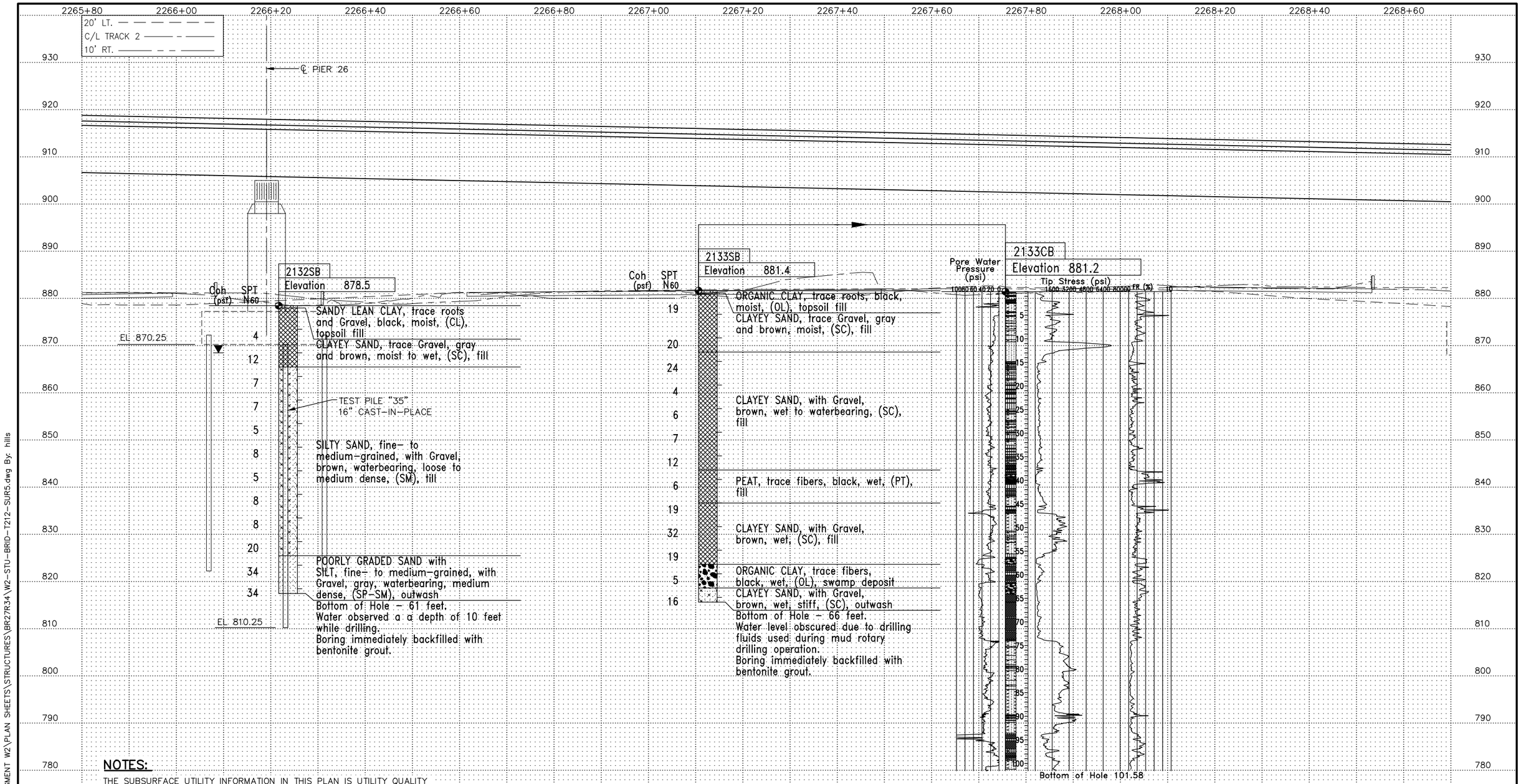
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE 7

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

SHEET 255 OF 264

Jan, 17 2016 10:20 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR5.dwg By: hills



NOTES:

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE 8

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

SHEET 256 OF 264

Jan, 17 2016 10:20 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34 W2-STU-BRID-T212-SUR5.dwg By: hills

2268+80 2269+00 2269+20 2269+40 2269+60 2269+80 2270+00 2270+20 2270+40 2270+60 2270+80 2271+00 2271+20 2271+40 2271+60

20' LT.
C/L TRACK 2
10' RT.

℄ PIER 27

℄ PIER 28

EL 868.00

EL 803.00

EL 866.75

EL 796.75

TEST PILE "36"
16" CAST-IN-PLACE

TEST PILE "37"
16" CAST-IN-PLACE

2015SB
Elevation 879.6

Coh (psf)	SPT N60	
		SILTY SAND, fine-grained, trace Gravel, black, wet, (SM), topsoil fill
	13	
	15	CLAYEY SAND, trace Gravel,
	18	brown and gray, wet, (SC), fill
	14	SILTY SAND, fine- to
	7	medium-grained, trace Gravel,
	6	brown, moist to 12 1/2 feet then
	10	waterbearing, loose to medium
	11	dense, (SM), till
	17	POORLY GRADED SAND with
	18	SILT, fine- to coarse-grained, trace
	14	Gravel, brown, waterbearing,
	16	medium dense, (SP-SM), outwash
	10	SILTY SAND, fine- to
	11*	medium-grained, with some Gravel,
	10*	brown, waterbearing, medium
	8	dense, (SM), till
	11	CLAYEY SAND, trace Gravel, gray,
	18	wet, medium, (SC), till
	22	LEAN CLAY, gray, wet, rather stiff,
	24	(CL), till
	31	POORLY GRADED SAND with
	38	SILT, fine- to coarse-grained, trace
	48*	Gravel, gray, waterbearing, medium
	35	dense, (SP-SM), outwash
	30	SILTY SAND, fine- to
	35	medium-grained, trace Gravel,
	27	brown, waterbearing, dense, (SM),
	20	till
	40	
	54	
	50/5"	POORLY GRADED SAND with
		SILT, fine- to medium-grained, trace
		Gravel, brown, waterbearing,
		medium dense to very dense,
		(SP-SM), outwash

Bottom of Hole – 110.5
Water observed at 12 1/2 feet with 12 feet of hollow-stem auger in the ground.
Boring immediately backfilled with bentonite grout.

2134CB
Elevation 880.5

Pore Water Pressure (psi) 100 80 60 40 20 0

Tip Stress (psi) 1600 3200 4800 6400 8000

FR (%) 10

Bottom of Hole 77.21

NOTES:

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

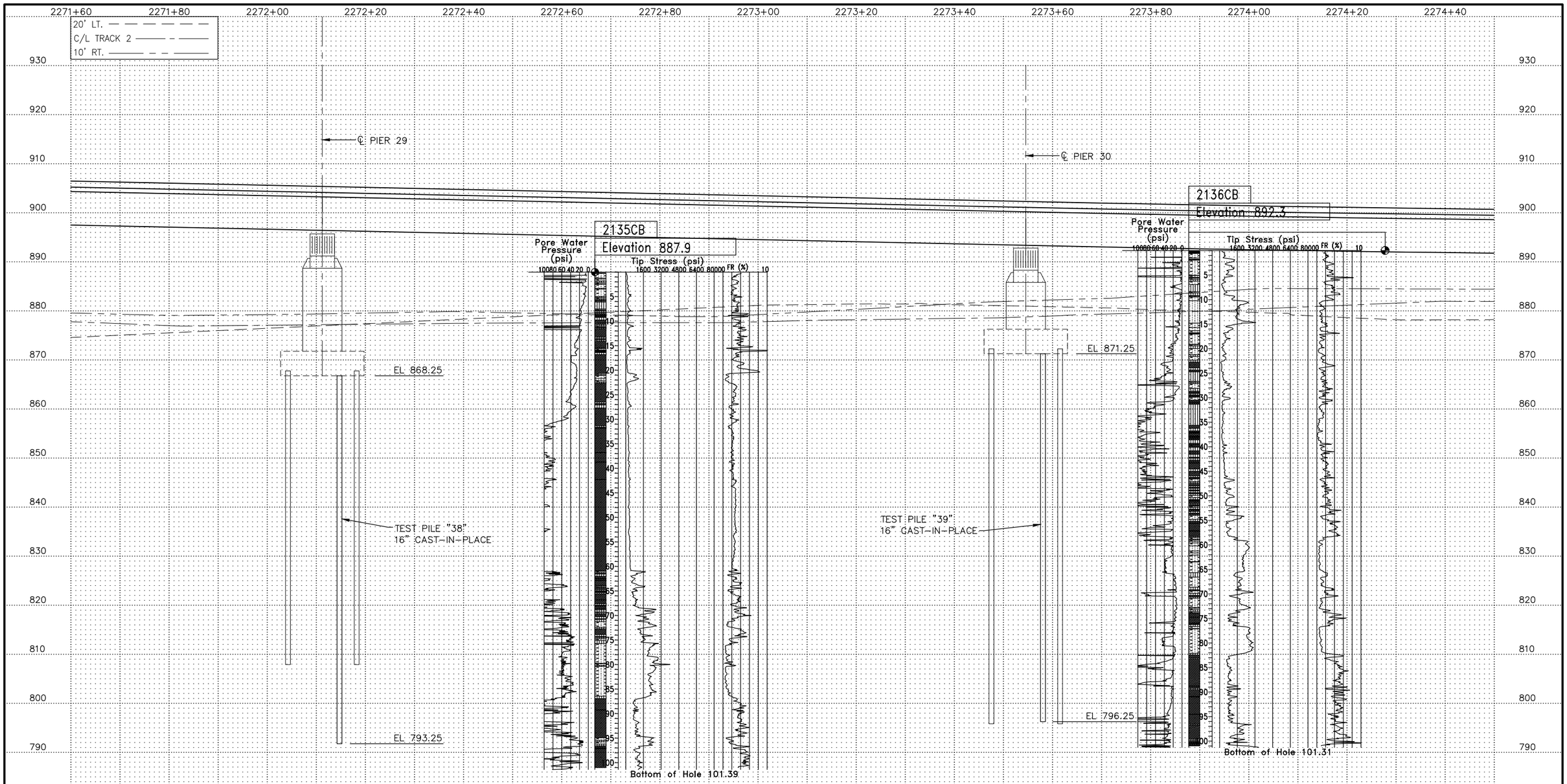
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE 9

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

SHEET 257 OF 264

Jan, 17 2016 10:20 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34 W2-STU-BRID-T212-SUR5.dwg By: hills



NOTES:

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

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE 10

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUR5-10

SHEET 258 OF 264

Jan, 17 2016 10:20 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR5.dwg By: hills

2274+60 2274+80 2275+00 2275+20 2275+40 2275+60 2275+80 2276+00 2276+20 2276+40 2276+60 2276+80 2277+00 2277+20 2277+40

20' LT. — — — — — —
C/L TRACK 2 ——— - ———
10' RT. ——— - - ———

930 920 910 900 890 880 870 860 850 840 830 820 810 800 790 780 770

℄ BRG. N. ABUT.

2016SB
Elevation 893.9

Coh (psf)	SPT N60	
	25	SILTY SAND, fine- to medium-grained, trace Gravel, brown, moist, (SM), topsoil fill
	22	
	15	SILTY SAND, fine- to coarse-grained, trace Gravel, brown, moist, (SM), fill
	13*	
	19	
	32	CLAYEY SAND, trace Gravel, brown, wet, stiff to very stiff, (SC), till
	10	
	8	EL. 872.50
	6	POORLY GRADED SAND with SILT, fine- to coarse-grained, trace Gravel, brown, moist to ±7 1/2 feet then waterbearing, loose to dense, (SP-SM), outwash
	9	
	5	
	TW	
	10	SILTY SAND, fine- to medium-grained, trace Gravel, with occasional Clay lenses and seams, brown, waterbearing, loose, (SM), fill
	12	
	16	
	13	
	20	
	24	SANDY LEAN CLAY, trace Gravel, gray, wet, rather soft to hard, (CL), fill
	31	
	35	
	43	TEST PILE "40" 16" CAST-IN-PLACE
	51	CLAYEY SAND, with Gravel, brown, wet, hard, (SC), till
	39	
	26	CLAYEY SAND, trace Gravel, gray, wet, very stiff, (SC), till
	24	
	30	SILTY SAND, fine- to coarse-grained, trace Gravel, gray, waterbearing, medium dense, (SM), till
	38	
	23	CLAYEY SAND, trace Gravel, gray, wet, hard to very stiff, (SC), till
		EL. 797.50
	21	SILTY SAND, fine- to medium-grained, trace Gravel, gray, waterbearing, medium dense to dense, (SM), till
	44	
	50/6"	SANDSTONE, light yellow and white, wet, (SS), weathered bedrock
	50/4"	Bottom of Hole = 119.3. Water observed at 17 1/2 feet with 17 feet of hollow-stem auger in the ground. Boring immediately backfilled with bentonite grout.

NOTES:

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DESIGNED BY: DDL CHECKED BY: MJC
DRAWN BY: SWH CHECKED BY: MJC

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE 11

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

SHEET 259 OF 264

Jan. 17 2016 10:20 am v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR5.dwg By: hills

℄ SHADY OAK RD NB
℄ SHADY OAK RD SB
℄ TRACK 2
℄ TRACK 1
℄ TH 212 EB
℄ TH 212 WB
℄ NE RAMP (TH 212)
℄ FLYING CLOUD DR NB
℄ FLYING CLOUD DR SB
BP: 300+00.00
BP: 200+00.00
PT: 303+60.21
PC: 304+84.26
PC: 201+75.87
PRC: 310+91.42
PC: 309+30.50
PRC: 207+93.40
PC: 125+02.95
PC: 194+18.97
PT: 205+39.05
PT: 308+83.76
PC: 206+08.70
PT: 196+68.03
PCC: 314+05.27
EP: 211+59.61
PT: 315+45.95
EP: 317+47.11
300+00
301+00
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0 25 50 100
HORIZONTAL SCALE IN FEET

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

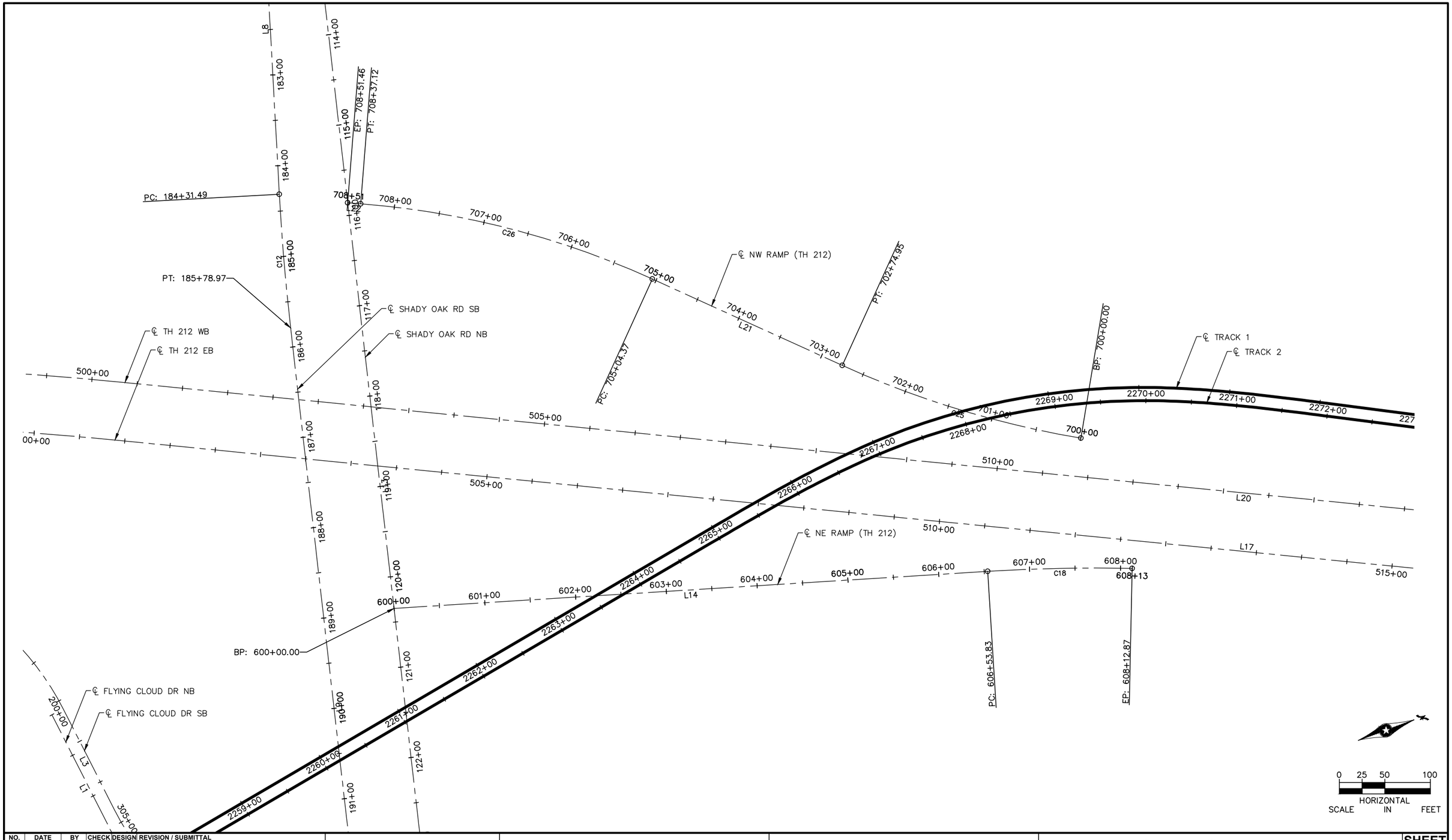
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
ALIGNMENT PLAN 1

DISCIPLINE: CIVIL
SHEET NAME: W2-STU-BRID-T212-ALG-1

SHEET 260 OF 264

Jan, 18 2016 09:47 am V:\3400_ADC\CAD\SEGMENT W2\EXHIBITS\CIVIL\EXHB-W2-CIV-ROAD-ALGN-MNDOT.dwg By: kmcclement



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
ALIGNMENT PLAN 2

DISCIPLINE: CIVIL

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

SHEET 261 OF 264

Jan, 18 2016 09:47 am V:\3400_ADC\CAD\SEGMENT W2\EXHIBITS\CIVIL\EXHB-W2-CIV-ROAD-ALGN-MNDOT.dwg By: kmcclement

ALIGNMENT DATA
TH 212 EB

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
L15	433+03.80	436+66.72							362.92	127197.76	489690.42	127275.37	490044.95	77°39'09"
C20	436+66.72	459+50.08	449+67.16		68°30'32"	3°00'01.29"	1909.63	1300.44	2283.36	127275.37	490044.95	128837.37	491521.96	77°39'09" 9°08'37"
L16	459+50.08	489+49.24							2999.16	128837.37	491521.96	131798.42	491998.56	9°08'37"
C21	489+49.24	500+89.22	495+23.50		17°05'59"	1°30'00.00"	3819.72	574.26	1139.98	131798.42	491998.56	132880.45	492343.74	9°08'37" 26°14'36"
L17	500+89.22	525+88.95							2499.72	132880.45	492343.74	135122.51	493449.08	26°14'36"
C19	525+88.95	542+28.64	534+63.16		49°11'29"	3°00'00.15"	1909.83	874.22	1639.69	135122.51	493449.08	136126.47	494681.77	26°14'36" 75°26'05"

ALIGNMENT DATA
TH 212 WB

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
L18	433+03.80	436+66.72							362.92	127260.28	489676.74	127337.88	490031.26	77°39'09"
C23	436+66.72	458+73.55	449+23.58		68°30'32"	3°06'15.84"	1845.63	1256.86	2206.83	127337.88	490031.26	128847.54	491458.77	77°39'09" 9°08'37"
L19	458+73.55	488+72.72							2999.16	128847.54	491458.77	131808.59	491935.37	9°08'37"
C24	488+72.72	500+31.80	494+56.60		17°05'59"	1°28'31.01"	3883.72	583.88	1159.08	131808.59	491935.37	132908.75	492286.34	9°08'37" 26°14'36"
L20	500+31.80	525+14.03							2482.23	132908.75	492286.34	135135.12	493383.94	26°14'36"
C22	525+14.03	542+20.81	534+23.96		49°10'02"	2°52'50.57"	1988.94	909.92	1706.77	135135.12	493383.94	136180.46	494666.88	26°14'36" 75°24'38"

ALIGNMENT DATA
SHADY OAK RD NB

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
L11	80+00.00	90+02.98							1002.98	136056.92	490625.08	135064.23	490768.44	171°46'57"
C14	90+02.98	93+08.23	91+55.62		1°57'32"	0°38'30.44"	8927.52	152.64	305.24	135064.23	490768.44	134761.40	490806.62	171°50'06" 173°47'39"
L12	93+08.23	95+65.03							256.81	134761.40	490806.62	134506.27	490835.90	173°27'09"
C15	95+65.03	112+95.99	105+54.37		69°21'15"	4°00'24.11"	1430.00	989.33	1730.95	134506.27	490835.90	133282.40	491908.24	173°27'09" 104°05'54"
L13	112+95.99	125+02.95							1206.96	133282.40	491908.24	132988.40	493078.85	104°05'54"
C16	125+02.95	128+51.07	126+84.40		39°53'31"	11°27'32.96"	500.00	181.45	348.12	132988.40	493078.85	132797.42	493361.52	104°05'54" 143°59'25"
C17	128+51.07	129+47.75	128+99.57		11°21'04"	11°44'27.38"	488.00	48.50	96.68	132797.42	493361.52	132725.34	493425.71	143°59'25" 132°38'21"

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

SRF Consulting Group, Inc.

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
ALIGNMENT TABULATION 1

DISCIPLINE: CIVIL

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

SHEET 262 OF 264

Jan, 18 2016 09:47 am V:\3400_ADC\CAD\SEGMENT W2\EXHIBITS\CIVIL\EXHB-W2-CIV-ROAD-ALGN-MNDOT.dwg By: kmcclement

ALIGNMENT DATA
SHADY OAK RD SB

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
L6	150+00.00	150+81.07							81.07	135854.81	490602.59	135774.92	490616.35	170°13'35"
C9	150+81.07	152+98.35	151+89.72		1°33'22"	0°42'58.31"	8000.00	108.65	217.28	135774.92	490616.35	135560.31	490650.32	170°13'35" 171°46'57"
L7	152+98.35	160+92.52							794.17	135560.31	490650.32	134774.30	490763.83	171°46'57"
C10	160+92.52	163+86.37	162+39.46		2°06'16"	0°42'58.31"	8000.00	146.94	293.85	134774.30	490763.83	134482.76	490800.48	171°46'57" 173°53'14"
C11	163+86.37	180+66.99	173+35.38		66°24'31"	3°57'05.16"	1450.00	949.01	1680.62	134482.76	490800.48	133254.12	491806.73	173°53'14" 107°28'43"
L8	180+66.99	184+31.49							364.50	133254.12	491806.73	133144.64	492154.40	107°28'43"
C12	184+31.49	185+78.97	185+05.25		3°22'48"	2°17'30.59"	2500.00	73.76	147.48	133144.64	492154.40	133104.52	492296.30	107°28'43" 104°05'54"
L9	185+78.97	194+18.97							840.00	133104.52	492296.30	132899.90	493111.00	104°05'54"
C13	194+18.97	196+68.03	195+46.14		28°32'27"	11°27'32.96"	500.00	127.17	249.07	132899.90	493111.00	132782.78	493327.89	104°05'54" 132°38'21"
L10	196+68.03	197+78.90							110.87	132782.78	493327.89	132707.68	493409.45	132°38'21"

ALIGNMENT DATA
FLYING CLOUD DR NB

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
L1	200+00.00	201+75.87							175.87	132709.18	492602.13	132728.57	492776.92	83°40'07"
C1	201+75.87	205+39.05	203+83.45		69°21'47"	19°05'54.94"	300.00	207.59	363.18	132728.57	492776.92	132952.62	493034.54	83°40'07" 14°18'19"
L2	205+39.05	206+08.70							69.65	132952.62	493034.54	133020.11	493051.74	14°18'19"
C2	206+08.70	207+93.40	207+03.21		29°53'42"	16°11'06.89"	354.00	94.51	184.71	133020.11	493051.74	133202.71	493049.70	14°18'19" 344°24'37"
C3	207+93.40	211+59.61	209+90.47		52°27'19"	14°19'26.20"	400.00	197.06	366.21	133202.71	493049.70	133550.19	493114.96	344°24'37" 36°51'56"

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METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
ALIGNMENT TABULATION 2

DISCIPLINE: CIVIL

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

SHEET 263 OF 264

ALIGNMENT DATA
FLYING CLOUD DR SB

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
C4	300+00.00	303+60.21	302+05.09		68°26'17"	18°59'57.70"	301.57	205.09	360.21	132502.59	492342.87	132723.09	492600.58	15°13'50" 83°40'07"
L3	303+60.21	304+84.26							124.05	132723.09	492600.58	132736.77	492723.88	83°40'07"
C5	304+84.26	308+83.76	307+12.61		69°21'47"	17°21'44.49"	330.00	228.35	399.50	132736.77	492723.88	132983.22	493007.25	83°40'07" 14°18'19"
L4	308+83.76	309+30.50							46.73	132983.22	493007.25	133028.51	493018.80	14°18'19"
C6	309+30.50	310+91.42	310+12.70		28°48'47"	17°54'17.75"	320.00	82.20	160.92	133028.51	493018.80	133187.74	493018.52	14°18'19" 345°29'32"
C7	310+91.42	314+05.27	312+56.93		44°57'20"	14°19'26.20"	400.00	165.50	313.85	133187.74	493018.52	133490.64	493060.93	345°29'32" 30°26'52"
C8	314+05.27	315+45.95	314+75.84		11°15'16"	7°59'59.95"	716.20	70.57	140.68	133490.64	493060.93	133604.17	493143.63	30°26'52" 41°42'08"
L5	315+45.95	317+47.11							201.16	133604.17	493143.63	133754.36	493277.46	41°42'08"

ALIGNMENT DATA
NE RAMP (TH 212)

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
L14	600+00.00	606+53.83							653.83	133102.38	492625.02	133727.54	492816.52	17°01'52"
C18	606+53.83	608+12.87	607+33.40		4°46'59"	3°00'26.56"	1905.17	79.57	159.05	133727.54	492816.52	133877.49	492869.39	17°01'52" 21°48'51"

ALIGNMENT DATA
NW RAMP (TH 212)

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
C25	700+00.00	702+74.95	701+38.27		15°00'21"	5°27'27.34"	1049.84	138.27	274.95	133875.05	492715.42	133657.72	492548.29	210°03'26" 225°03'47"
L21	702+74.95	705+04.37							229.42	133657.72	492548.29	133495.67	492385.88	225°03'47"
C26	705+04.37	708+37.12	706+72.45		19°57'52"	6°00'00.00"	954.93	168.08	332.74	133495.67	492385.88	133224.75	492195.61	225°03'47" 205°05'54"
L22	708+37.12	708+51.46							14.35	133224.75	492195.61	133211.76	492189.53	205°05'54"

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
ALIGNMENT TABULATION 3

DISCIPLINE: CIVIL

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

SHEET 264 OF 264

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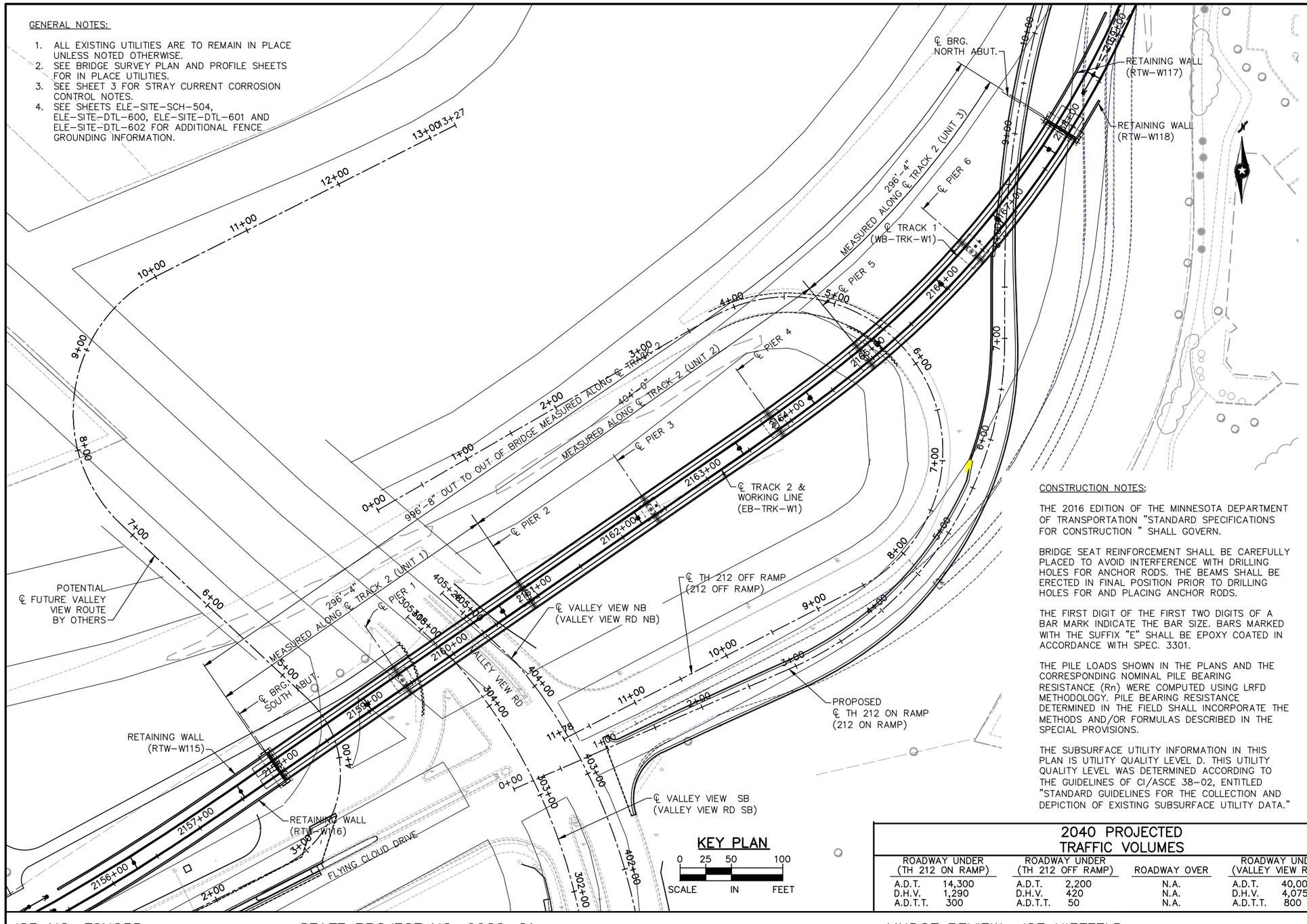
GENERAL NOTES:

1. ALL EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS NOTED OTHERWISE.
2. SEE BRIDGE SURVEY PLAN AND PROFILE SHEETS FOR IN PLACE UTILITIES.
3. SEE SHEET 3 FOR STRAY CURRENT CORROSION CONTROL NOTES.
4. SEE SHEETS ELE-SITE-SCH-504, ELE-SITE-DTL-600, ELE-SITE-DTL-601 AND ELE-SITE-DTL-602 FOR ADDITIONAL FENCE GROUNDING INFORMATION.



CONSTRUCTION NOTES:

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

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

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

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

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

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 SHEET 6

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4000 PSI n = 8
fy = 60000 PSI

PRESTRESSED CONCRETE:
f'c = 9000 PSI n = 1
fpu = 270 ksi FOR 0.6"ø LOW RELAXATION STRANDS
0.75 fpu FOR INITIAL PRESTRESS

DESIGN SPEED: OVER = N/A MPH (LRT)
UNDER = 45 MPH (VALLEY VIEW ROAD)
UNDER = 30 MPH (TH 212 OFF RAMP)
UNDER = 50 MPH (TH 212 ON RAMP)

DECK AREA 32,422 SQ. FT.

LIST OF SHEETS

2040 PROJECTED TRAFFIC VOLUMES

ROADWAY UNDER (TH 212 ON RAMP)		ROADWAY UNDER (TH 212 OFF RAMP)		ROADWAY OVER		ROADWAY UNDER (VALLEY VIEW ROAD)	
A.D.T.	14,300	A.D.T.	2,200	A.D.T.	N.A.	A.D.T.	40,000
D.H.V.	1,290	D.H.V.	420	D.H.V.	N.A.	D.H.V.	4,075
A.D.T.T.	300	A.D.T.T.	50	A.D.T.T.	N.A.	A.D.T.T.	800

90% SUBMISSION

BRIDGE NO. 27R33

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

BRIDGE I.D. NO. 501

KEY PLAN

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

APPROVED: _____
STATE BRIDGE ENGINEER DATE

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

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: APV CHECKED BY: ECM
DRAWN BY: RCK CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: STRUCTURES

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

SHEET 1 OF 116

Jan, 18 2016 12:02 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-BL01.dwg By: kucera

SCHEDULE OF QUANTITIES			
SPEC. SECTION (3)	COMPONENT ITEM	UNIT	QUANTITY
–	BR 27R33	LUMP SUM	LS

	COMPONENT ITEM SUMMARY (BRIDGE 27R33)		
SPEC. SECTION (3)	COMPONENT ITEM	UNIT (2)	QUANTITY (2)
2401	SUPERSTRUCTURE EXCAVATION CLASS E (4)	CU YD	XXXX
2401	STRUCTURAL CONCRETE (1G52)	CU YD	XXXX
2401	STRUCTURAL CONCRETE (3B52)	CU YD	XXXX
2401	STRUCTURAL CONCRETE	CU YD	XXXX
2401	STRUCTURAL CONCRETE	CU YD	XXXX
2401	REINFORCEMENT BARS	POUND	XXXX
2401	REINFORCEMENT BARS (EPOXY COATED)	POUND	XXXX
3741	ELASTOMERIC BEARING PAD	EA	XXXX
2402	STRUCTURAL STEEL (3309)	POUND	XXXX
2402	EXPANSION JOINT DEVICES TYPE 5	LIN FT	XXXX
2402	FIXED BEARING ASSEMBLY TYPE F1	EA	XXXX
2402	FIXED BEARING ASSEMBLY TYPE F2	EA	XXXX
2402	FIXED BEARING ASSEMBLY TYPE F3	EA	XXXX
2402	FIXED BEARING ASSEMBLY TYPE F4	EA	XXXX
2402	FIXED BEARING ASSEMBLY TYPE F5	EA	XXXX
2402	EXPANSION BEARING ASSEMBLY TYPE E1	EA	XXXX
2402	FLOOR DRAIN, TYPE R-3956	EA	XXXX
2405	PRESTRESSED CONCRETE BEAMS 82MW	LF	XXXX
2405	DIAPHRAGM FOR TYPE 82MW PRESTRESSED BEAMS	LF	XXXX
2411	ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM)	SF	XXXX
2411	ARCHITECTURAL CONCRETE TEXTURE (TYPE 1)	SF	XXXX
2411	ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE)	SF	XXXX
2411	ARCHITECTURAL CONCRETE TEXTURE (SINGLE COLOR)	SF	XXXX
2452	C.I.P. CONCRETE PILING 16"	LF	XXXX
2452	C.I.P. CONCRETE TEST PILE 40 FT LONG 16"	EA	XXXX
2452	C.I.P. CONCRETE TEST PILE 45 FT LONG 16"	EA	XXXX
2452	C.I.P. CONCRETE TEST PILE 50 FT LONG 16"	EA	XXXX
2452	C.I.P. CONCRETE TEST PILE 55 FT LONG 16"	EA	XXXX
2452	C.I.P. CONCRETE TEST PILE 65 FT LONG 16"	EA	XXXX
2452	PILE ANALYSIS	EA	XXXX
2557	WIRE FENCE DESIGN W-1	LF	XXXX

SCHEDULE OF QUANTITIES AND COMPONENT ITEM SUMMARY NOTES

(1) A BENCH MARK IS REQUIRED. LOCATED AT THE SOUTHEAST CORNER OF THE BRIDGE. STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE. PAYMENT FOR PLACING SHALL BE CONSIDERED INCIDENTAL TO CONCRETE PAY ITEMS.

(2) QUANTITIES LISTED FOR THE COMPONENT ITEMS OF BR 27R33 ARE FOR INFORMATIONAL PURPOSES. ANY ADDITIONAL ITEMS OR CHANGES IN QUANTITIES REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

(3) MEASUREMENT AND PAYMENT FOR COMPONENT ITEMS SHALL BE PART OF THE LUMP SUM PAYMENT FOR BR 27R33. REFER TO MNDOT STANDARD SPECIFICATION OR SPECIAL PROVISION FOR TECHNICAL SPECIFICATION REQUIREMENTS FOR ALL PROVISIONS OTHER THAN MEASUREMENT & PAYMENT REQUIREMENTS.

(4) STRUCTURE EXCAVATIONS INCLUDES TEMPORARY SUPPORT EXCAVATION.

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DESIGNED BY: AMB | CHECKED BY: APV
DRAWN BY: RCK | CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SCHEDULE OF QUANTITIES

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-BL02

SHEET 2 OF 116

NOTES FOR VALLEY VIEW BRIDGE

1. ALL EPOXY COATED REBAR SHALL BE TIED TOGETHER USING NON-METALLIC OR NON-METALLIC COATED TIES. ALL EPOXY COATED REBAR SHALL BE ISOLATED FROM BLACK BARS. EPOXY COATED DOWELS SHOULD EXTEND OUT OF ABUTMENT FOOTINGS.

2. BLACK REBAR SHALL BE USED IN THE FOOTING FOR THE ABUTMENTS. ALL HORIZONTAL REBARS IN THE ABUTMENT FOOTINGS SHALL BE MADE ELECTRICALLY CONTINUOUS WITHIN FOOTING. STEEL SHELLS OF CIP PILES IN ABUTMENT FOOTING SHALL BE MADE ELECTRICALLY CONTINUOUS WITH WELDED BLACK REBAR IN FOOTING. SEE DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008 AND DETAIL 2 ON SHEET E0-SYS-CORR-DTL-013.

3. THE BEARINGS AT ALL PIERS SHALL PROVIDE ELECTRICAL ISOLATION OF THE STEEL ELEMENTS IN THE PRECAST BEAMS OR DECK FROM STEEL ELEMENTS IN THE PIER CAPS AND COLUMNS.

4. A 3/8-INCH UNCOATED, GALVANIZED STEEL CABLE SHALL BE INSTALLED IN A 1" X 2" DEEP LONGITUDINAL GROOVE IN THE DECK POSITIONED DIRECTLY BELOW EACH RUNNING RAIL. THE CABLE SHALL BE POSITIONED IN THE DECK SUCH THAT IT DOES NOT INTERFERE WITH INSTALLATION OF THE PLINTH ANCHOR INSERTS. SEE SHEET E0-SYS-CORR-DTL-010.

5. INSTALL STRAY CURRENT BOND TEST STATION ALONG BRIDGE HOUSING TWO INSULATED #1/0 AWG CABLES FROM THE TWO 3/8" UNCOATED GALVANIZED STEEL CABLES ON EACH SIDE OF EXPANSION JOINT IN TRACK SLAB. SEE DETAIL 3 ON SHEET E0-SYS-CORR-DTL-003 AND SHEET E0-SYS-CORR-DTL-010. SEE NOTE 10. SUFFICIENT SLACK SHALL BE AVAILABLE IN THE CABLES THAT SPAN THE EXPANSION JOINT TO ACCOUNT FOR MOVEMENT OF THE JOINT. NO REFERENCE ELECTRODE IS TO BE INSTALLED IN THE DECK SINCE THERE IS NO BLACK REBAR IN THE DECK.

6. INSTALL STRAY CURRENT BOND TEST STATION ALONG BRIDGE HOUSING TWO INSULATED #1/0 AWG CABLES FROM THE 3/8" UNCOATED GALVANIZED STEEL CABLES IN TRACK SLAB, TWO #1/0 AWG CABLES FROM WELDED REBAR IN TRANSITION SLAB AND 250 MCM CABLE TO GROUND ROD ARRAY AT BASE OF ABUTMENT. SEE DETAIL 2 ON SHEET E0-SYS-CORR-DTL-003, SHEET E0-SYS-CORR-DTL-010 AND DETAILS 2 AND 3 ON SHEET E0-SYS-CORR-DTL-013. SEE NOTE 10. SUFFICIENT SLACK SHALL BE AVAILABLE IN THE CABLES THAT SPAN THE EXPANSION JOINT TO ACCOUNT FOR MOVEMENT OF THE JOINT. NO REFERENCE ELECTRODE IS TO BE INSTALLED IN THE DECK SINCE THERE IS NO BLACK REBAR IN THE DECK.

7. INSTALL STRAY CURRENT TEST STATIONS ALONG NORTH AND SOUTH SIDES OF WEST AND EAST ABUTMENTS HOUSING TWO #1/0 AWG CABLES FROM WELDED REBAR/STEEL PILE SHELLS IN ABUTMENT FOOTINGS AND ONE #14 AWG HMWPE CABLE FROM COPPER/COPPER SULFATE REFERENCE CELL. SEE NOTE 10. 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.

8. LONGITUDINAL REBAR IN TRANSITION SLAB SHALL BE MADE ELECTRICALLY CONTINUOUS WITHIN SLAB. 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 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 BRIDGE TRACK SLAB AND GROUND ROD ARRAY. SEE SHEET E0-SYS-CORR-DTL-010. SUFFICIENT SLACK SHALL BE AVAILABLE IN THE CABLES THAT SPAN THE EXPANSION JOINT TO ACCOUNT FOR MOVEMENT OF THE JOINT.

9. 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 3 AND 4 ON SHEET E0-SYS-CORR-DTL-013.

10. ALL STRAY CURRENT TEST STATIONS SHALL BE INSTALLED AT LOCATIONS WHERE THEY WILL BE ACCESSIBLE AFTER COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND DURING REVENUE OPERATIONS OF THE LRT LINE.

11. NO SPECIAL STRAY CURRENT CORROSION CONTROL MEASURES ARE REQUIRED WITH REGARD TO MSE WALLS RTW W115, W116, W117 AND W118 OR WITH REGARD TO THE FOOTINGS/PILES AT PIERS 1 THROUGH 6.

12. THE CONCRETE/SOIL INTERFACE ALONG EACH STEEL SLEEVE FOR THE CIP PILES UNDER THE FOOTINGS FOR THE ABUTMENTS AND PIERS 1 THROUGH 6 SHALL BE COATED WITH A DIELECTRIC COATING OR HEAT SHRINK SLEEVE. 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.

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DESIGNED BY: JPJ CHECKED BY: IKS
DRAWN BY: KHN CHECKED BY: IKS

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

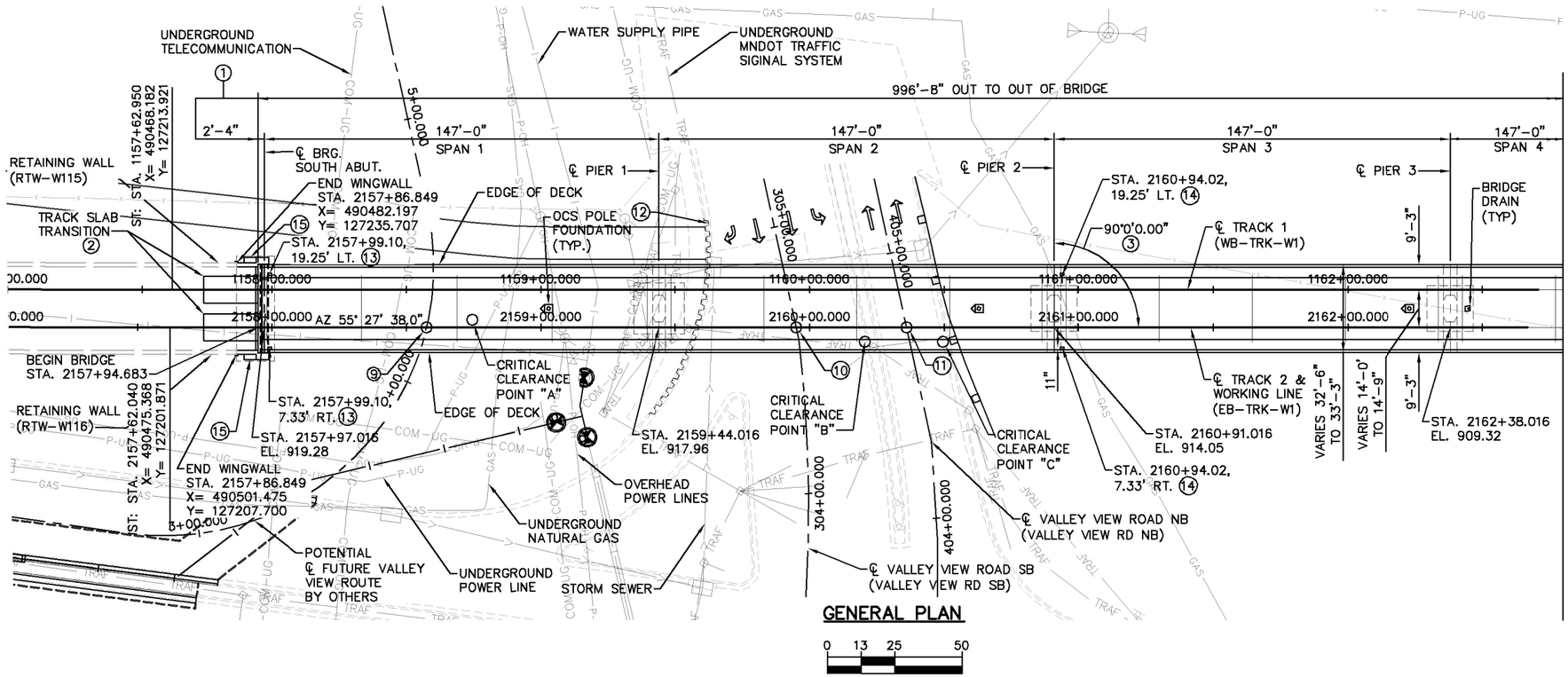
SOUTHWEST

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
STRAY CURRENT/CORROSION CONTROL NOTES

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-BL03

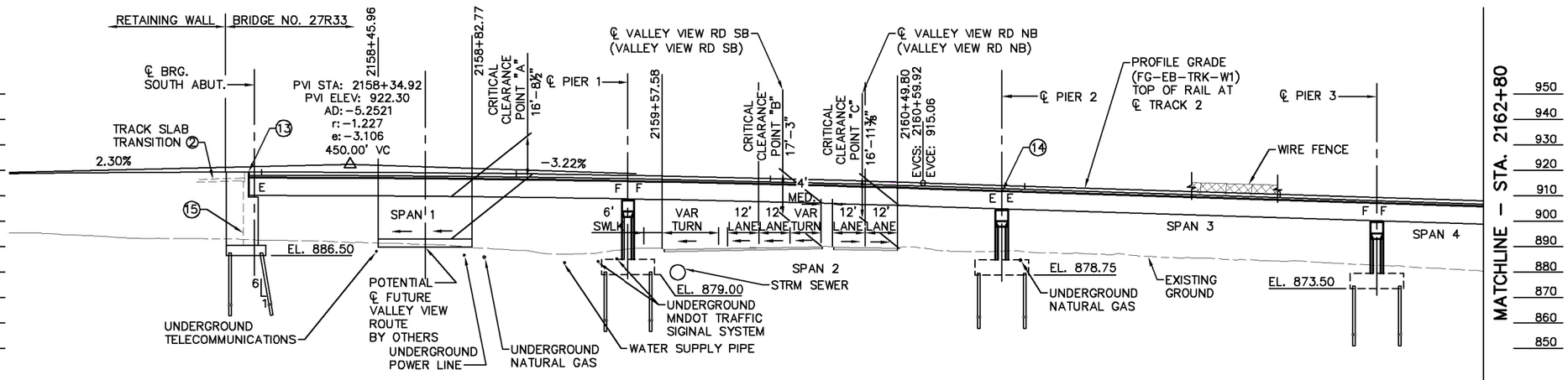
SHEET 3 OF 116

Jan, 18 2016 03:10 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-BL03.dwg By: vickersa



GENERAL PLAN

0 13 25 50



GENERAL ELEVATION

0 13 25 50

NOTES:

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

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: APV CHECKED BY: ECM
DRAWN BY: RCK CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

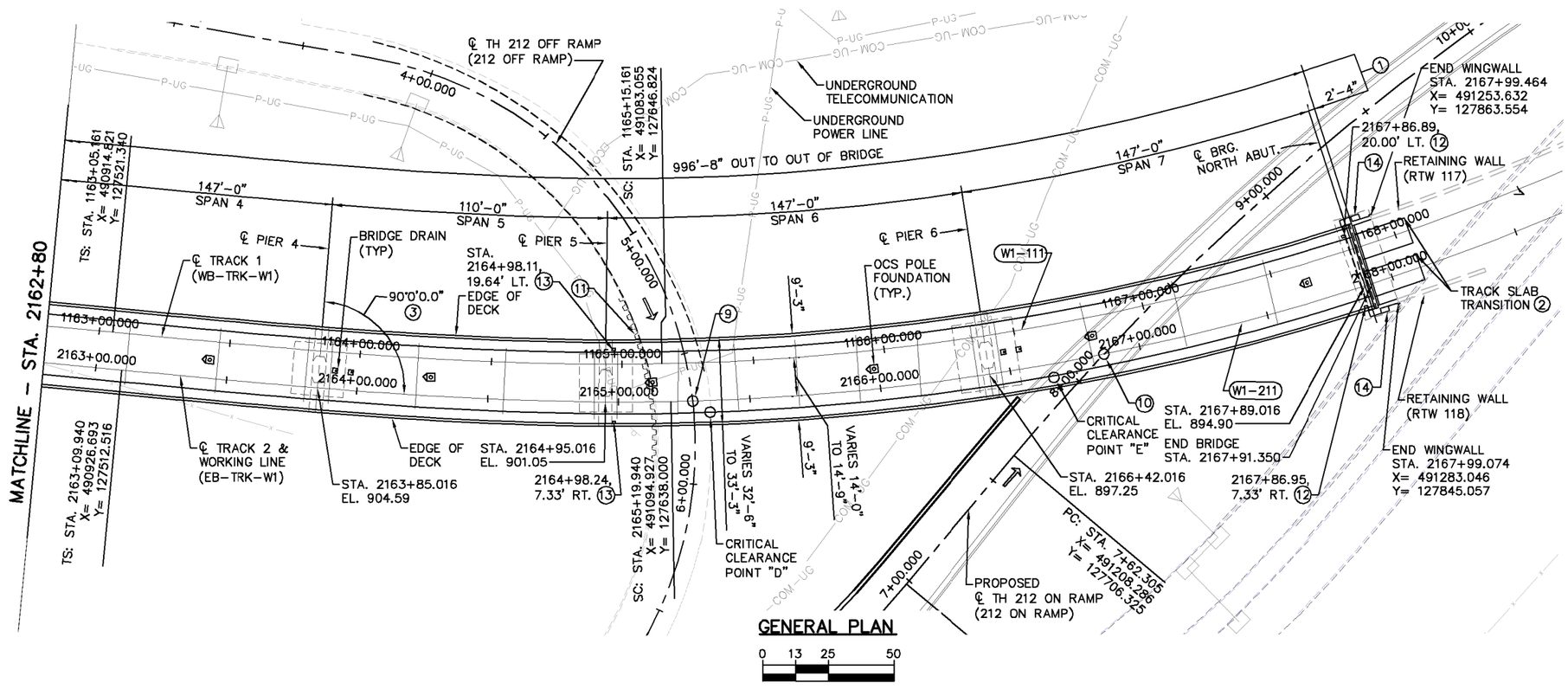
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
GENERAL PLAN & ELEVATION 1

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-GE01-1

SHEET 4 OF 116

Jan, 17 2016 02:24 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-GE01.dwg By: kucera



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

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

NOTES:

1. ALL DIMENSIONS ARE MEASURED ALONG ℄ TRACK 2 (EB–TRK–W1)
2. SEE TRACK PLANS FOR TRANSITION SLAB DETAILS
3. T.C.C. TYP. UNLESS SHOWN OTHERWISE
4. SEE BRIDGE SURVEY SHEET FOR ADDITIONAL INPLACE UTILITIES
5. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38–02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
6. SEE BORING SHEETS FOR INPLACE UTILITIES.
7. TRAFFIC TO BE DETOURED DURING CONSTRUCTION.
8. VERTICAL CLEARANCE BASED ON SURVEY DATA.

⑨ CONTROL POINT
℄ TRACK 2 (EB–TRK–W1) P.O.T. STA 2165+28.30
℄ TH 212 OFF RAMP
P.O.C. STA 5+68.382
X = 491101.207
Y = 127643.525
ANGLE: 76°55'12.7" TTC

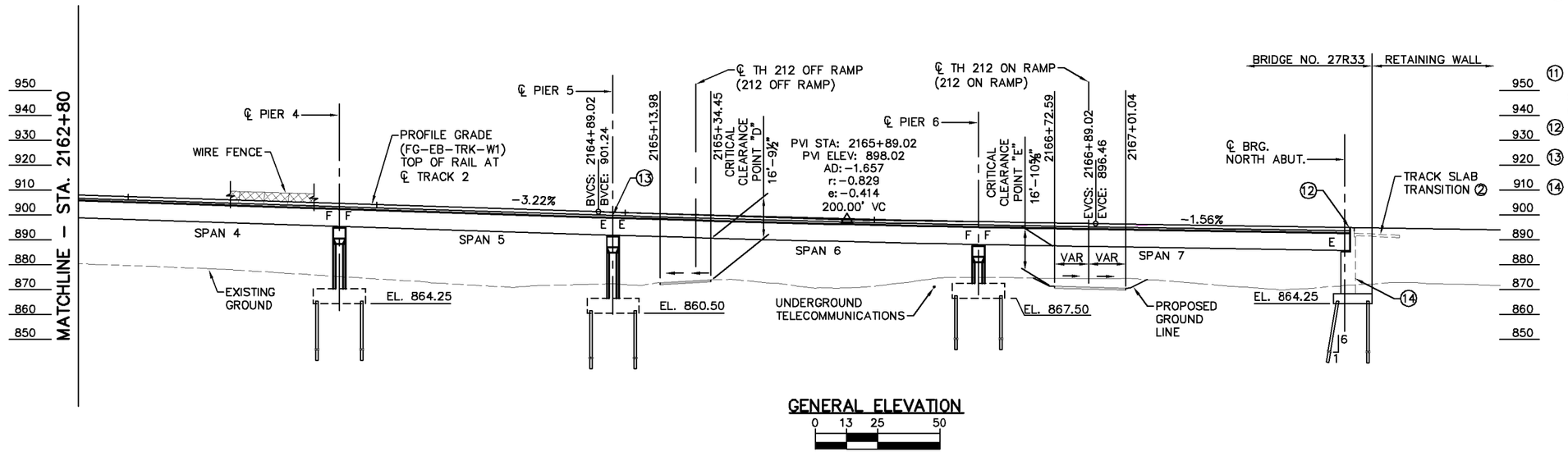
⑩ CONTROL POINT
℄ TRACK 2 (EB–TRK–W1) P.O.T. STA 2166+86.12
℄ TH 212 ON RAMP P.O.C. STA 8+13.89
X = 491209.679
Y = 127757.886
ANGLE: 35°28'36" TTC

⑪ TEMPORARY SHORING SYSTEM TO BE DESIGNED BY THE CONTRACTOR. STEEL SHEET PILING SHOWN, OTHER SHORING SYSTEMS MAY BE UTILIZED AT THE CONTRACTOR'S OPTION. SEE SPECIAL PROVISIONS.

⑫ STRAY CURRENT BONDING JUNCTION BOX, SEE NOTE 6 ON SHEET 3.

⑬ STRAY CURRENT JUNCTION BOX, SEE NOTE 5 ON SHEET 3.

⑭ STRAY CURRENT JUNCTION BOX, SEE NOTE 7 ON SHEET 3.



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DESIGNED BY: APV CHECKED BY: ECM
DRAWN BY: RCK CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

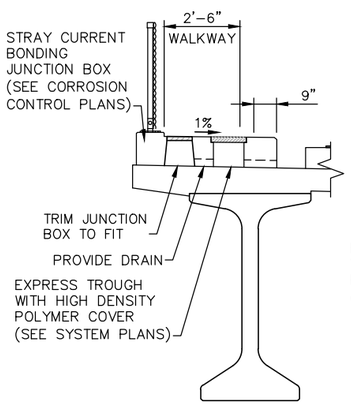
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
GENERAL PLAN & ELEVATION 2

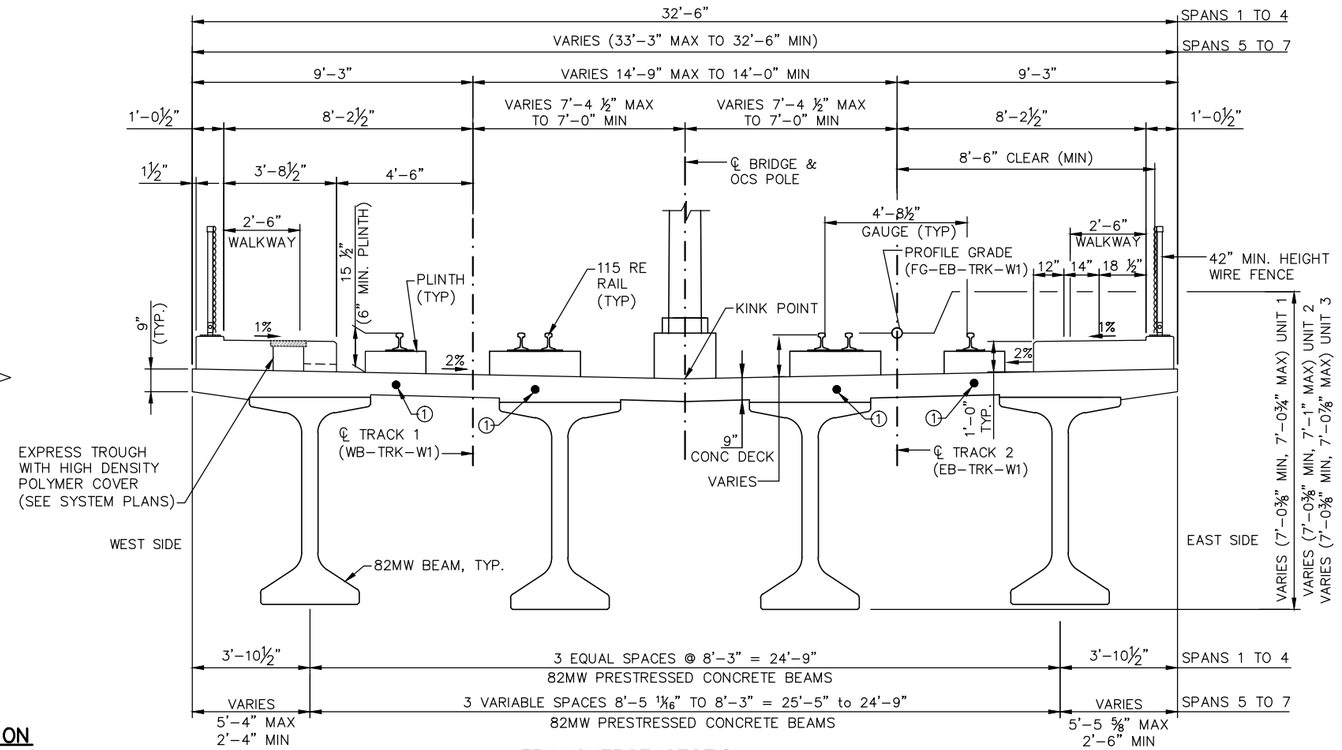
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-GE01-2

SHEET 5 OF 116

Jan, 17 2016 03:09 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-GE01.dwg By: kucera



PART TRANSVERSE SECTION AT STRAY CURRENT BONDING JUNCTION BOX

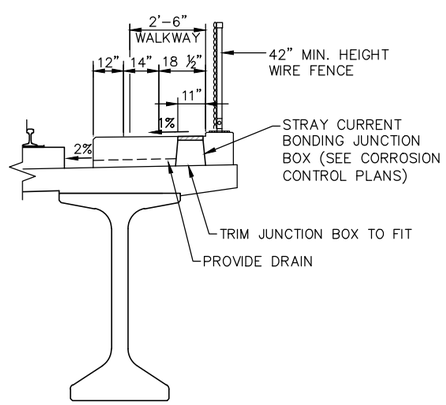


TRANSVERSE SECTION

SCALE 0 2.5 5 IN FEET

NOTES:

① STRAY CURRENT COLLECTOR CABLE. SEE SHEET E0-SYS-CORR-DTL-010.



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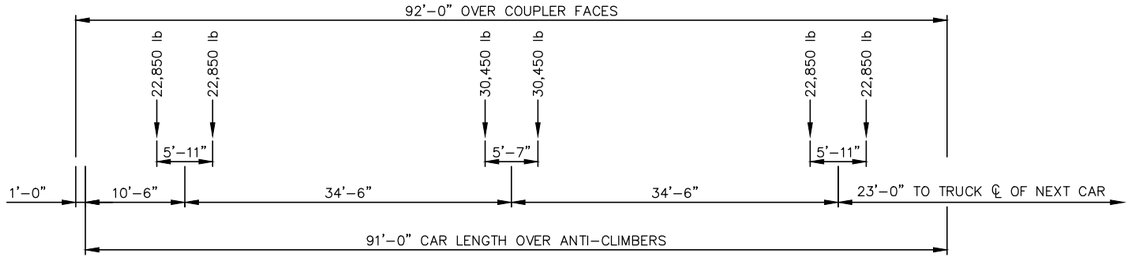
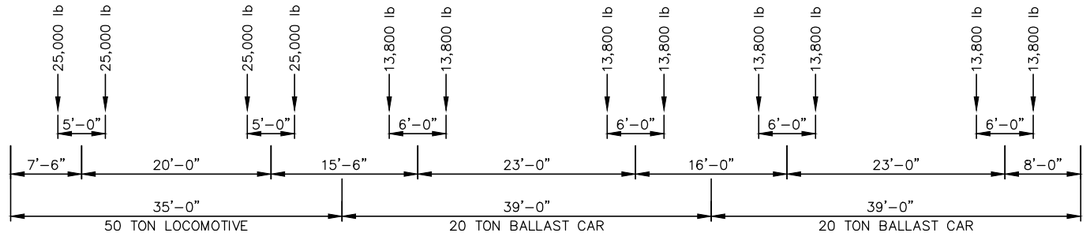


LIGHT RAIL VEHICLE LOADING DIAGRAM

NOTES:

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



MAINTENANCE TRAIN LOADING DIAGRAM

NOTES:

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

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: APV CHECKED BY: ECM
DRAWN BY: RCK CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

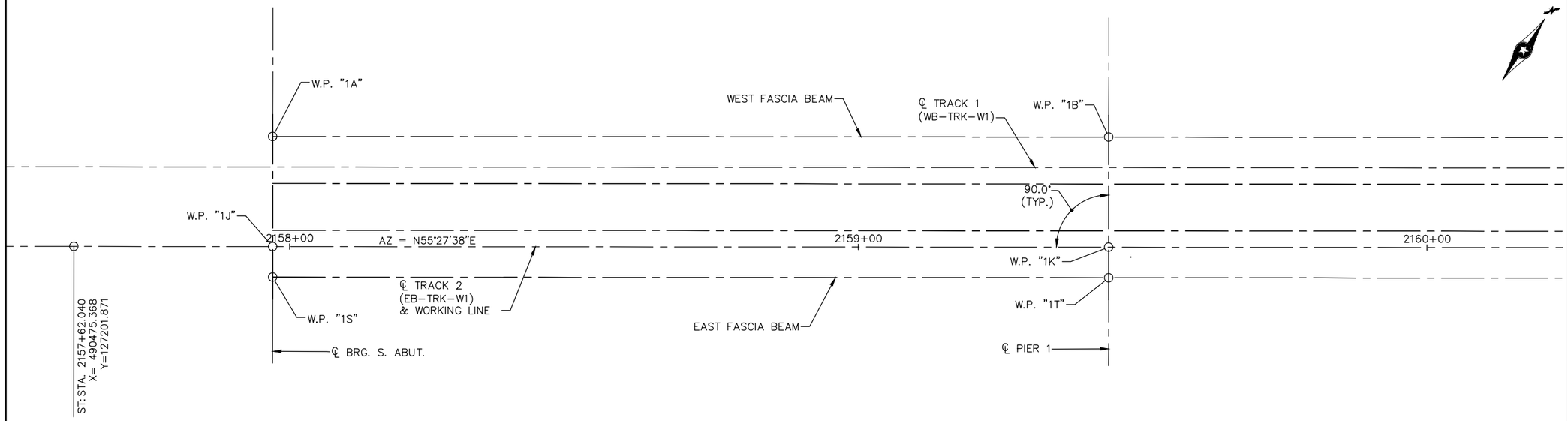
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
TRANSVERSE SECTION & LOADING DIAGRAM

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-TYP1

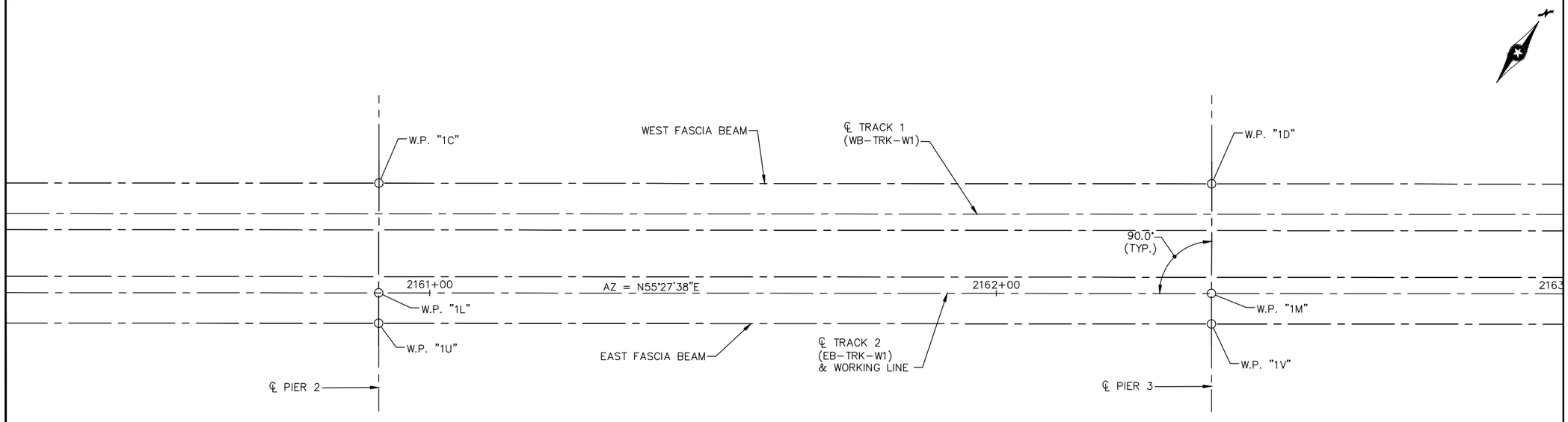
SHEET 6 OF 116

Jan, 18 2016 12:15 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-TYP1.DWG By: kucera



WORKING POINT LAYOUT

MATCHLINE - STA. 2160+25.00



WORKING POINT LAYOUT

MATCHLINE - STA. 2163+00.00

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DESIGNED BY: APV | CHECKED BY: ECM
DRAWN BY: RCK | CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

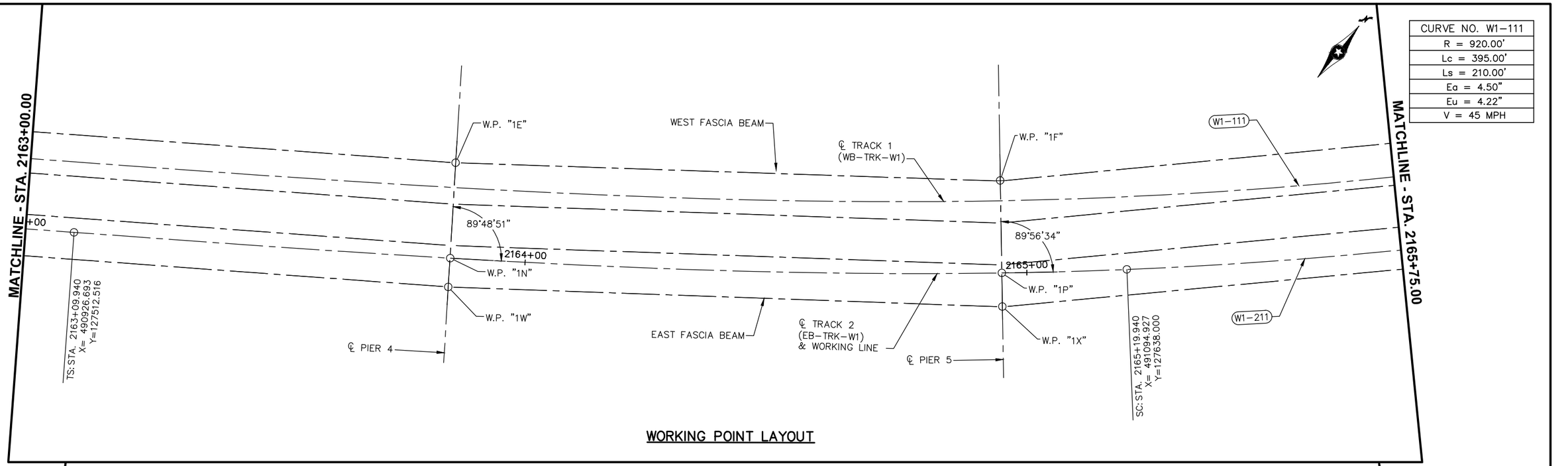
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE LAYOUT

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-WPTS01_1

SHEET 7 OF 116

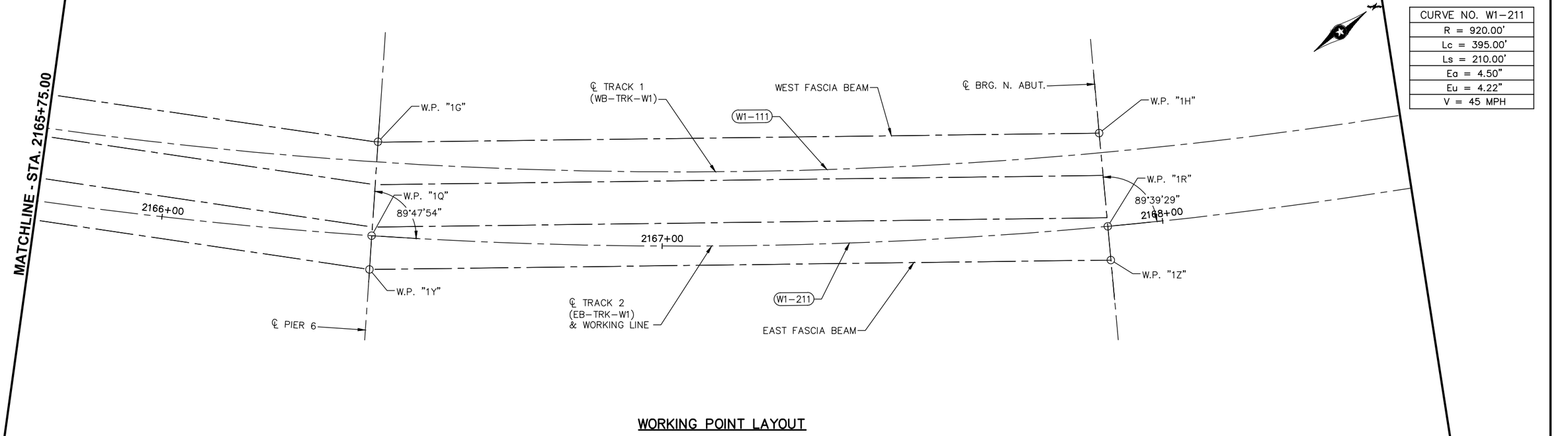
Jan, 18 2016 12:15 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-WPTS01.dwg By: kucera



CURVE NO. W1-111

R = 920.00'
Lc = 395.00'
Ls = 210.00'
Ea = 4.50"
Eu = 4.22"
V = 45 MPH

WORKING POINT LAYOUT



CURVE NO. W1-211

R = 920.00'
Lc = 395.00'
Ls = 210.00'
Ea = 4.50"
Eu = 4.22"
V = 45 MPH

WORKING POINT LAYOUT

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DESIGNED BY: APV | CHECKED BY: ECM
DRAWN BY: RCK | CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

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

DISCIPLINE: STRUCTURES

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

SHEET 8 OF 116

Jan, 18 2016 12:15 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-WPTS01.dwg By: kucera

	DIMENSIONS BETWEEN WORKING POINTS (FT.)																									ELEVATIONS			
POINT	STATION	X-COORDINATE	Y-COORDINATE	1A	1B	1C	1D	1E	1F	1G	1H	1J	1K	1L	1M	1N	1P	1Q	1R	1S	1T	1U	1V	1W	1X	1Y	1Z	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	POINT
1A	2157+97.016	490493.194	127237.662		147.00							19.38	148.27	294.64							149.07	295.04						918.03	9.760	908.27	1A
1B	2158+44.016	490614.284	127321.007			147.00						148.27	19.37	148.27	294.64					149.07		149.07	295.04					917.90			1B
1C	2160+91.016	490735.373	127404.352				147.00					294.64	148.27	19.37	148.27	294.61				295.04	149.07		149.07	295.11				912.80			1C
1D	2162+38.016	490856.462	127487.697					146.75					294.64	148.27	19.37	148.22	257.23				295.04	149.07		149.14	258.28			908.07			1D
1E	2163+85.044	490977.345	127570.900						108.55					294.39	148.02	19.01	110.98	255.12				294.79	148.82		112.62	256.59		903.46			1E
1F	2164+94.994	491064.249	127635.945							143.95					256.31	110.70	18.29	146.57	290.45				256.86	111.98		148.09	292.01	900.36			1F
1G	2166+42.016	491167.347	127736.401								143.86					254.59	146.54	18.67	146.54					255.65	148.06		148.08	896.76			1G
1H	2167+89.016	491253.403	127851.689														290.37	146.54	18.67						291.92	148.08		893.76	9.969	883.79	1H
1J	2157+97.016	490504.180	127221.702										147.00							5.37	147.10	294.05						917.92			1J
1K	2158+44.016	490625.269	127305.047											147.00						147.10	5.38	147.10	294.05					917.79			1K
1L	2160+91.016	490746.358	127388.392												147.00					294.05	147.10	5.38	147.10	294.12				912.70			1L
1M	2162+38.016	490867.447	127471.737													147.00					294.05	147.10	5.37	147.17	257.46			907.96			1M
1N	2163+85.016	490988.328	127555.382														109.98					294.05	147.11	5.74	110.47	257.33		903.36			1N
1P	2164+95.02	491075.931	127621.871															146.84					257.09	110.32	6.74	147.53	293.90	900.28			1P
1Q	2166+42.016	491181.365	127724.077																146.84					257.01	147.52	6.75	147.54		896.68			1Q
1R	2167+89.016	491269.208	127841.750																						293.88	147.54	6.75	893.68			1R
1S	2157+97.016	490507.227	127217.274																		147.00							918.03	9.760	908.27	1S
1T	2158+44.016	490628.316	127300.620																			147.00						917.90			1T
1U	2160+91.016	490749.405	127383.965																				147.00					912.80			1U
1V	2162+38.016	490870.495	127467.310																					147.07				908.07			1V
1W	2163+85.008	490991.644	127550.697																						110.46			903.47			1W
1X	2164+95.024	491080.236	127616.679																							147.90		900.41			1X
1Y	2166+42.016	491186.435	127719.621																								147.92	896.81			1Y
1Z	2167+89.016	491274.922	127838.157																									893.81	9.969	883.85	1Z

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DESIGNED BY: ECM CHECKED BY: APV
DRAWN BY: BLM CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL SOUTHWEST

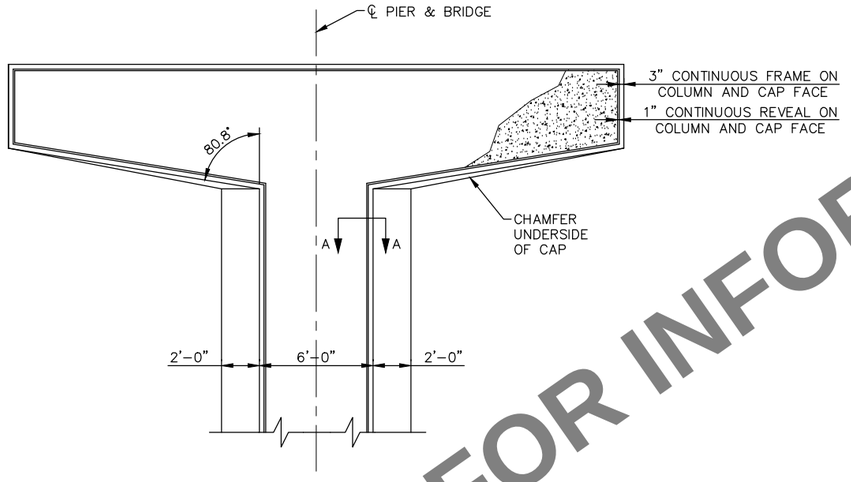
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE LAYOUT 3

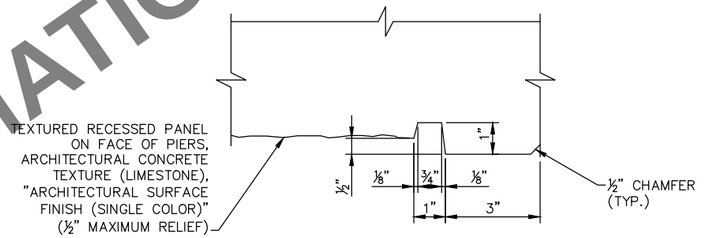
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-WPTS

SHEET 9 OF 116

Jan, 18 2016 12:16 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-WPTS.dwg By: kucera



PIER ELEVATION



SECTION A–A

INCLUDED FOR INFORMATION ONLY

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: DDL CHECKED BY: -
DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL SOUTHWEST

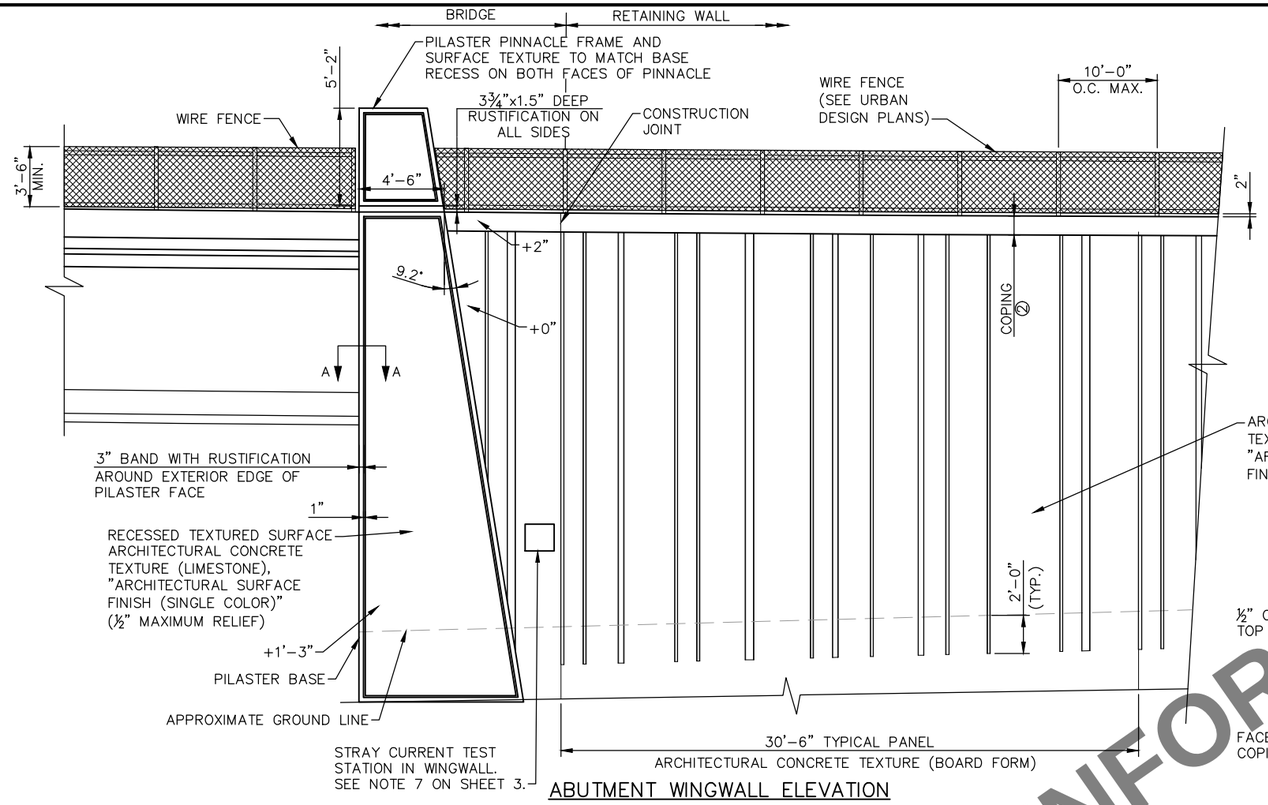
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
AESTHETIC DETAILS 1

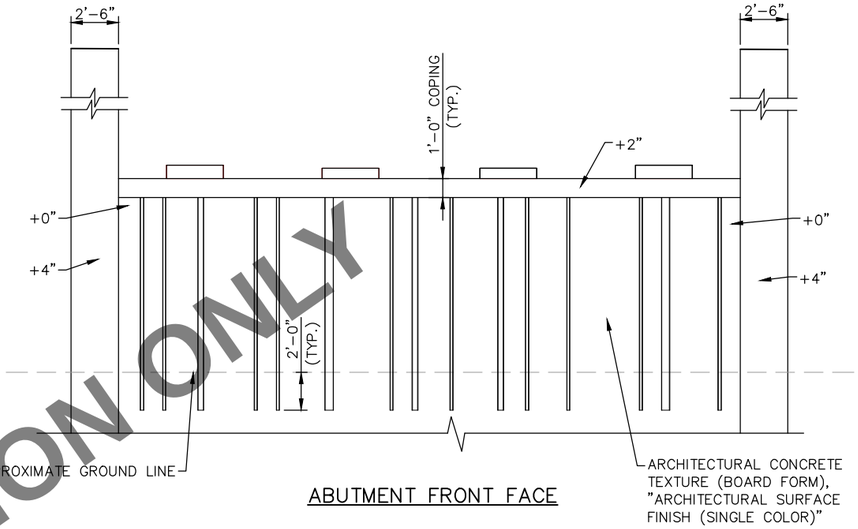
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-AES1

SHEET 10 OF 116

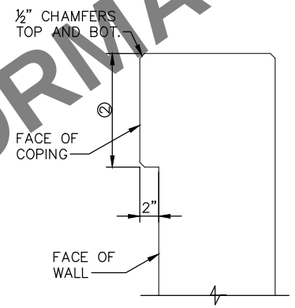
Jan, 18 2016 01:19 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-AES1.dwg By: vickersa



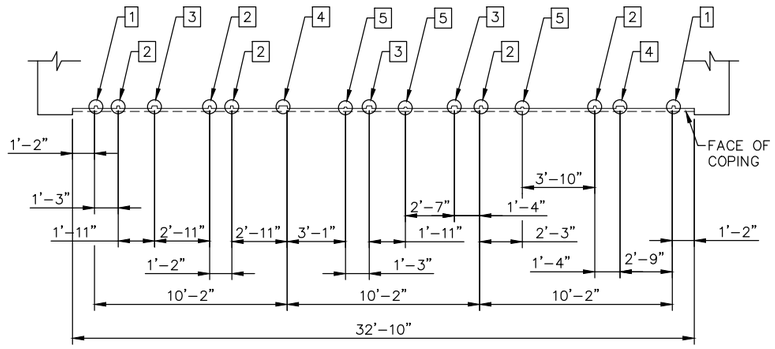
ABUTMENT WINGWALL ELEVATION



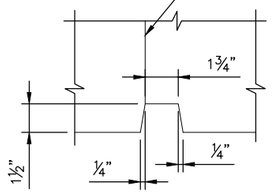
ABUTMENT FRONT FACE



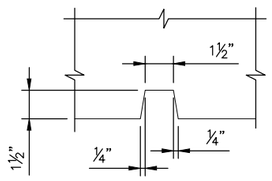
SECTION THRU COPING



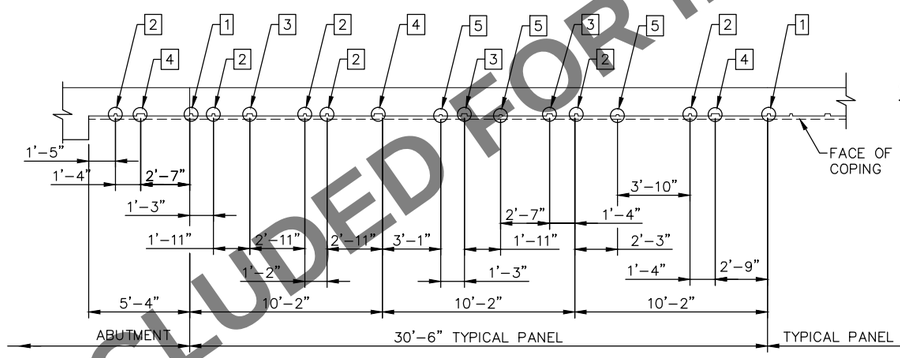
ABUTMENT FRONT FACE PLAN



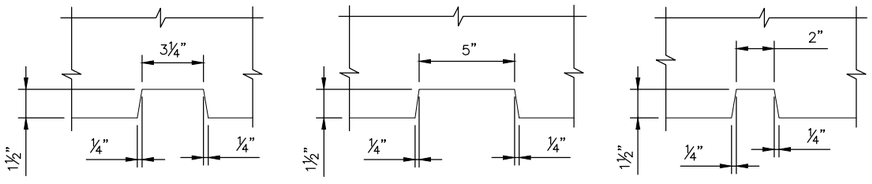
DETAIL 1



DETAIL 2



ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM)



DETAIL 3 DETAIL 4 DETAIL 5

NOTES:

1. SEE SHEET 12 FOR SECTION A–A.

② COPING DEPTH TO MATCH MSE WALL PRECAST DEPTH.

INCLUDED FOR INFORMATION ONLY

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DESIGNED BY: DDL CHECKED BY: -
DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
AESTHETIC DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-AES2

SHEET 11 OF 116

Jan, 18 2016 01:20 pm V:\19140A_MN_Valley_View_Rood_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-AES2.dwg By: vickerso

SOUTH ABUTMENT COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	118.0
FACTORED LIVE LOAD	18.9
*FACTORED DESIGN LOAD	136.9

*BASED ON STRENGTH I LOAD COMBINATION.

SOUTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES Rn – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	*R_n
MN/DOT PILE FORMULA 2012 (MPF12) $Rn=20\sqrt{\frac{WxH}{1000}}\times\log(\frac{10}{S})$	0.50	242.6
PDA	0.65	210.6

*R_n = (FACTORED DESIGN LOAD)/φ_{dyn}

PILE NOTES

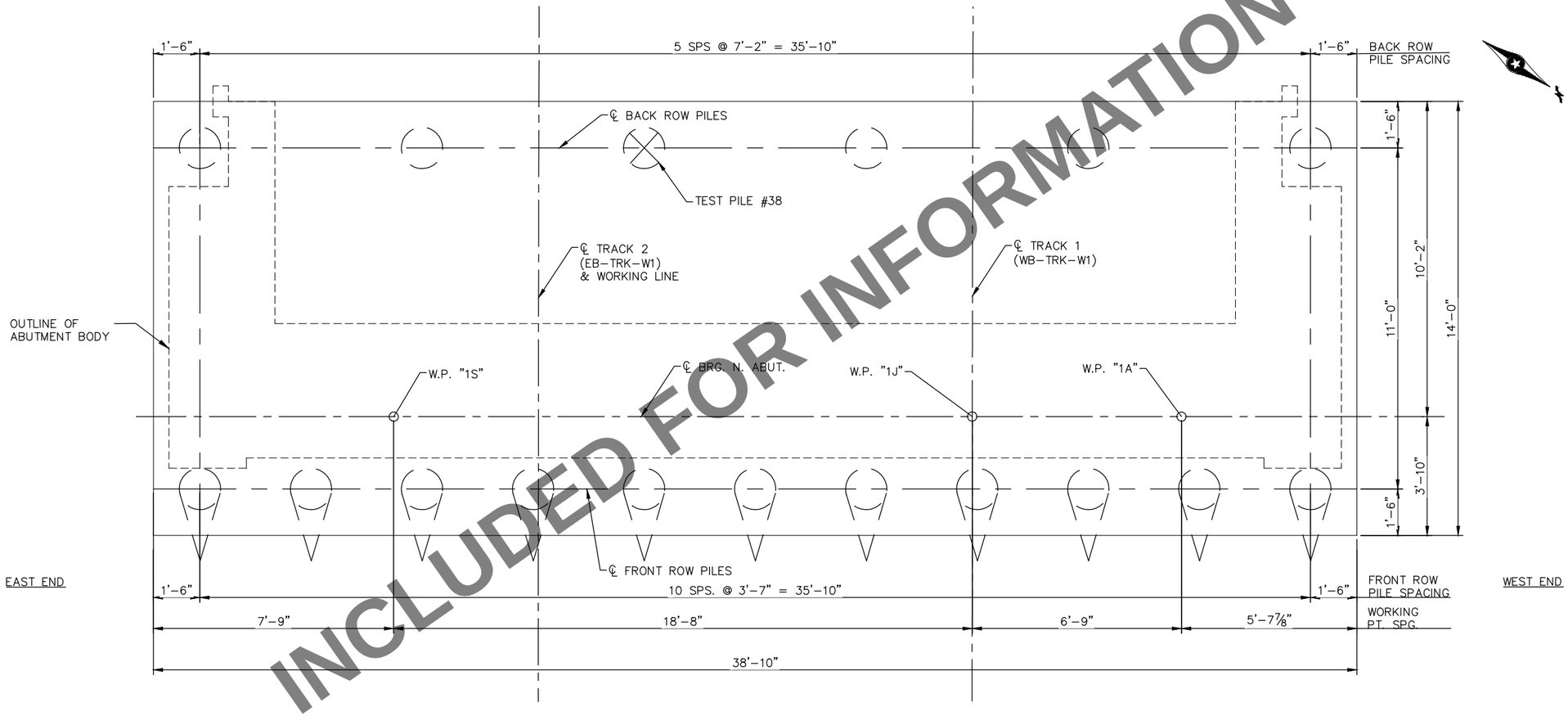
1 CAST–IN–PLACE CONC. TEST PILES 45 FT. LONG
16 CAST–IN–PLACE CONC. PILES EST. LENGTH 35 FT.
17 CAST–IN–PLACE CONC. PILES REQ'D FOR SOUTH ABUTMENT

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND A WALL THICKNESS OF 0.375".

FOR PILE SPLICE DETAILS SEE DETAIL B201.



FOOTING PLAN & PILE LAYOUT

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AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SOUTH ABUTMENT DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-ABT-S-1

SHEET 12 OF 116

Jan, 18 2016 01:20 pm v:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-S.dwg By: vickersa

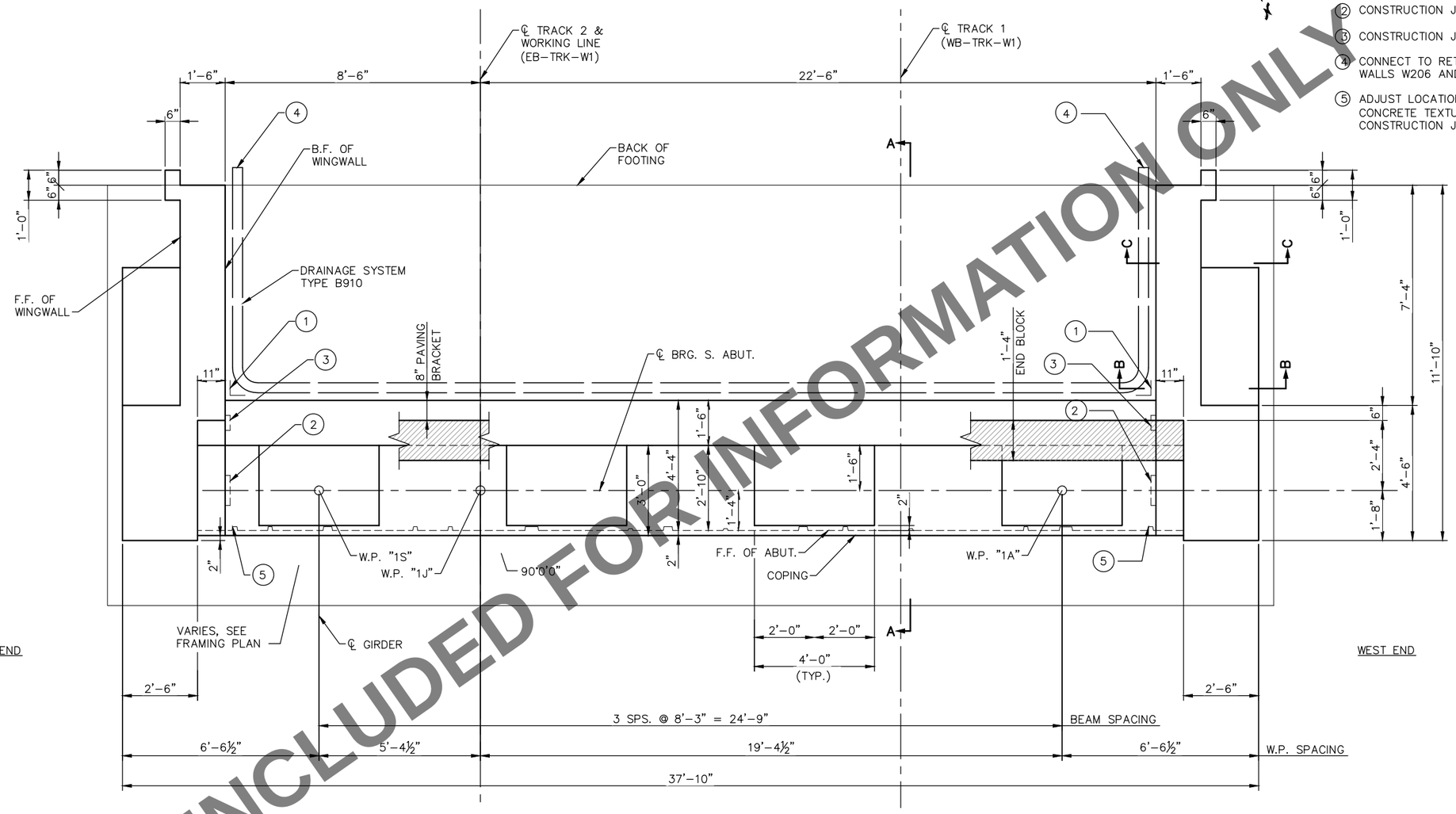
NOTES:

SEE SHEET XX FOR AESTHETIC DETAILS.

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

FOR DRAINAGE SYSTEM DETAILS SEE SHEET X.

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



PLAN

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

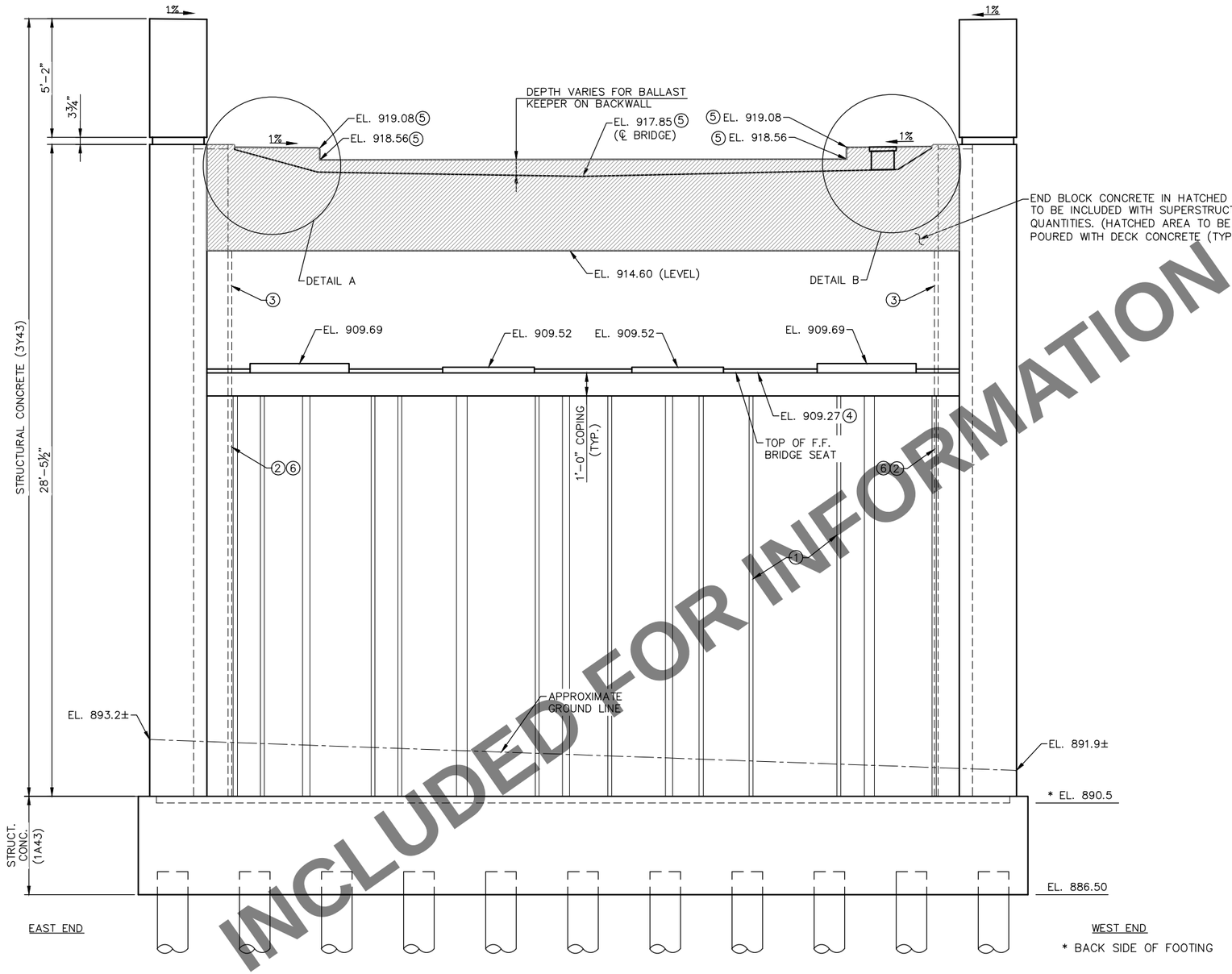
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SOUTH ABUTMENT DETAILS 2

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-ABT-S-2

SHEET 13 OF 116

Jan. 18 2016 01:20 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-S.dwg By: vickersa



ELEVATION

NOTES:

SEE SHEET XX FOR AESTHETIC DETAILS.

① APPLY ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM), ARCHITECTURAL SURFACE FINISH (SINGLE COLOR) (TYP.) TO TOP OF FOOTING FOR FUTURE GROUNDLINE CONFIGURATION.

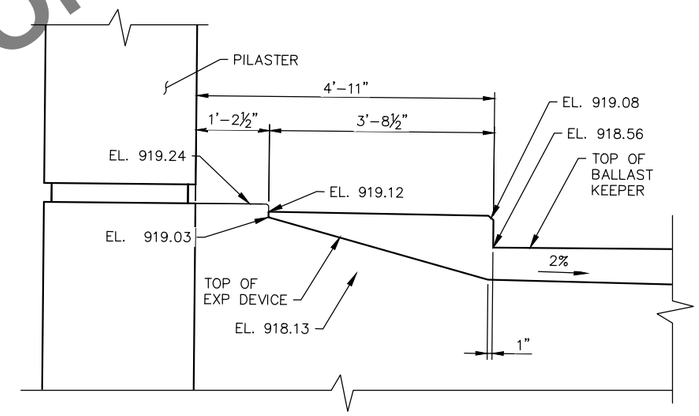
② CONSTRUCTION JOINT AND 2" X 12" KEYWAY IN STEM (TYP.).

③ CONSTRUCTION JOINT AND 2" X 6" KEYWAY IN BACKWALL (TYP.).

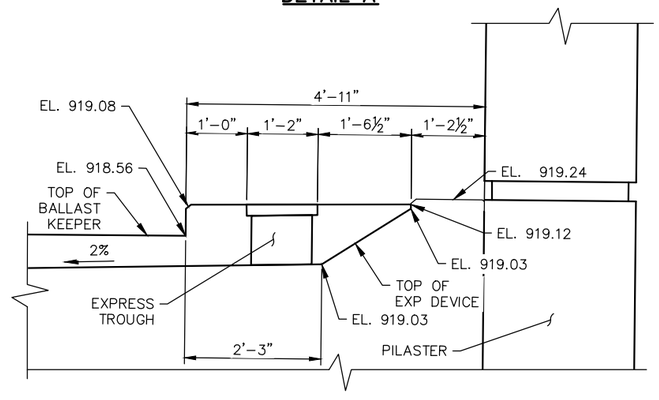
④ ELEVATIONS GIVEN ARE ALONG FRONT FACE OF ABUTMENT SEAT.

⑤ ELEVATIONS AT FRONT FACE OF PAVING BRACKET.

⑥ ADJUST LOCATION OF VERTICAL REVEAL IN ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) TO ALIGN WITH CONSTRUCTION JOINT



DETAIL A



DETAIL B

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DESIGNED BY: GHD CHECKED BY: -
DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

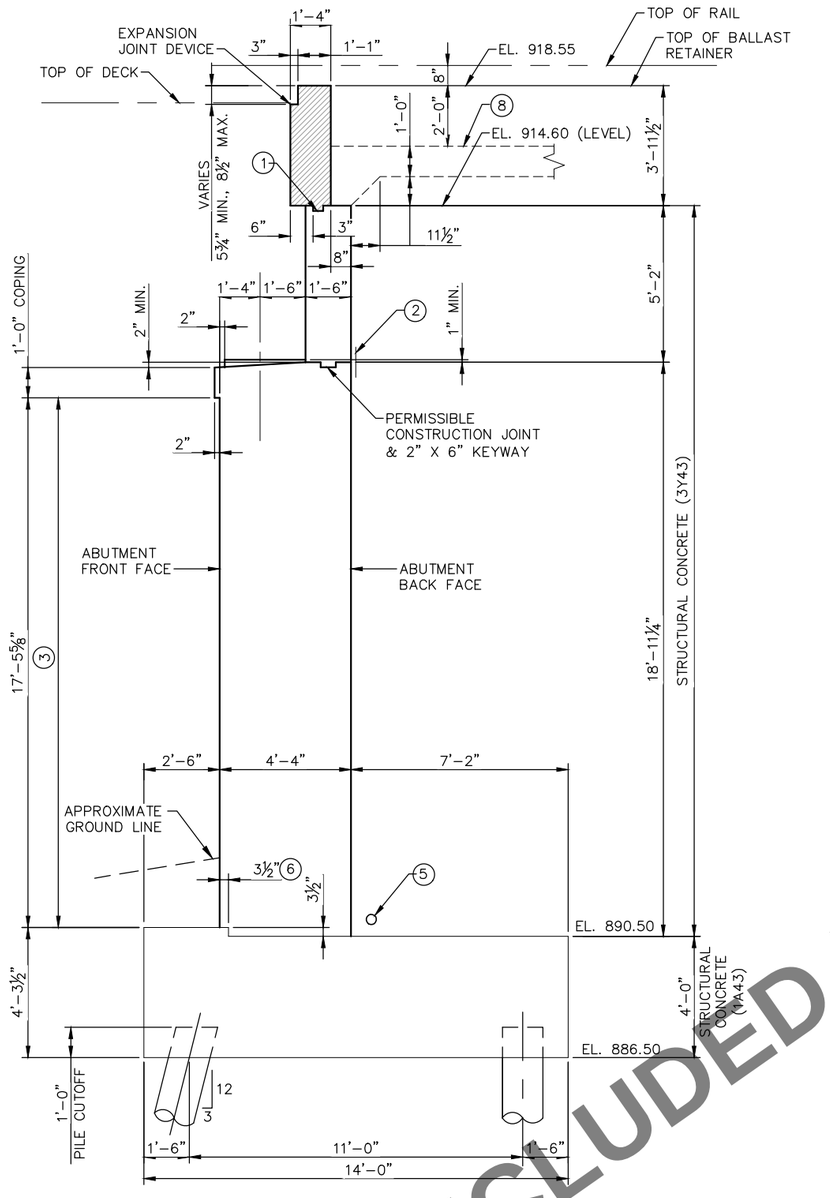
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SOUTH ABUTMENT DETAILS 3

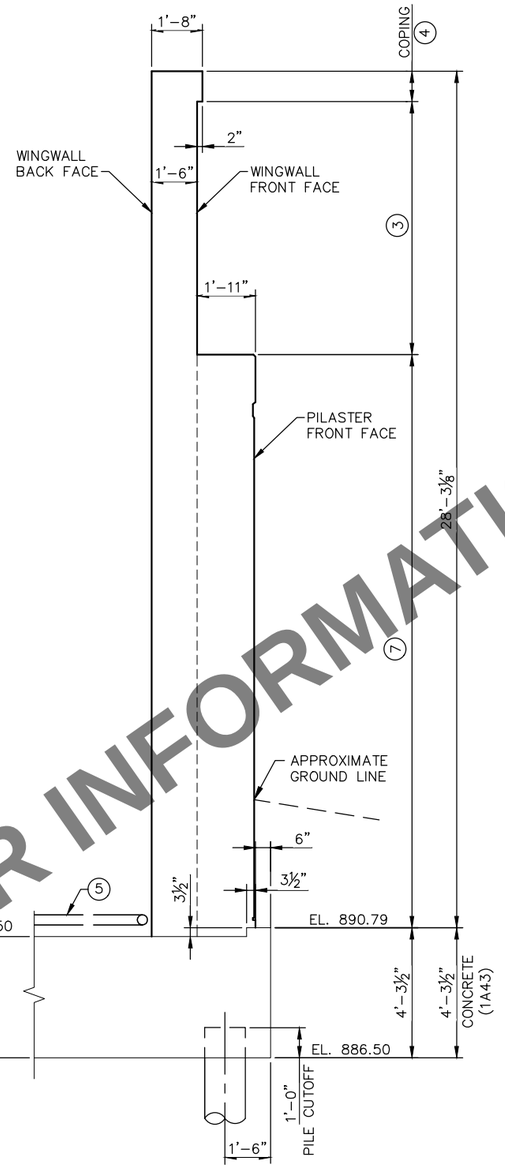
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-ABT-S-3

SHEET 14 OF 116

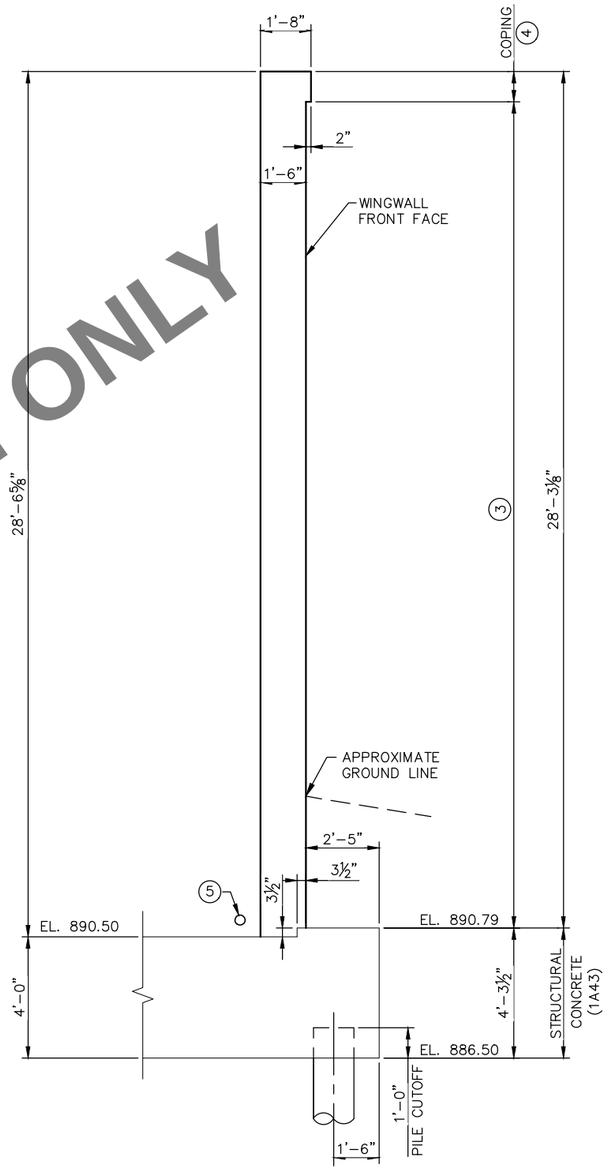
Jan, 18 2016 01:20 pm v:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-S.dwg By: vickersa



SECTION A–A



SECTION B–B



SECTION C–C

NOTES:

1. ① CONSTRUCTION JOINT & 2" X 4" KEYWAY.
2. ② MEMBRANE WATERPROOFING SYSTEM PER SPEC.2481.3B IF JOINT IS USED.
3. ③ ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM).
4. ④ COPING DEPTH TO MATCH MSE WALL PRECAST DEPTH.
5. ⑤ 4" DIA. PERFORATED PIPE INCLUDED IN "DRAINAGE SYSTEM TYPE (B910)".
6. ⑥ KEYWAY DIMENSION MAY BE ADJUSTED SLIGHTLY TO FACILITATE FORM WORK.
7. ⑦ RECESSED TEXTURED SURFACE (TBD) (½" MAXIMUM RELIEF).
8. ⑧ TRANSITION SLAB, SEE TRACK PLANS.

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

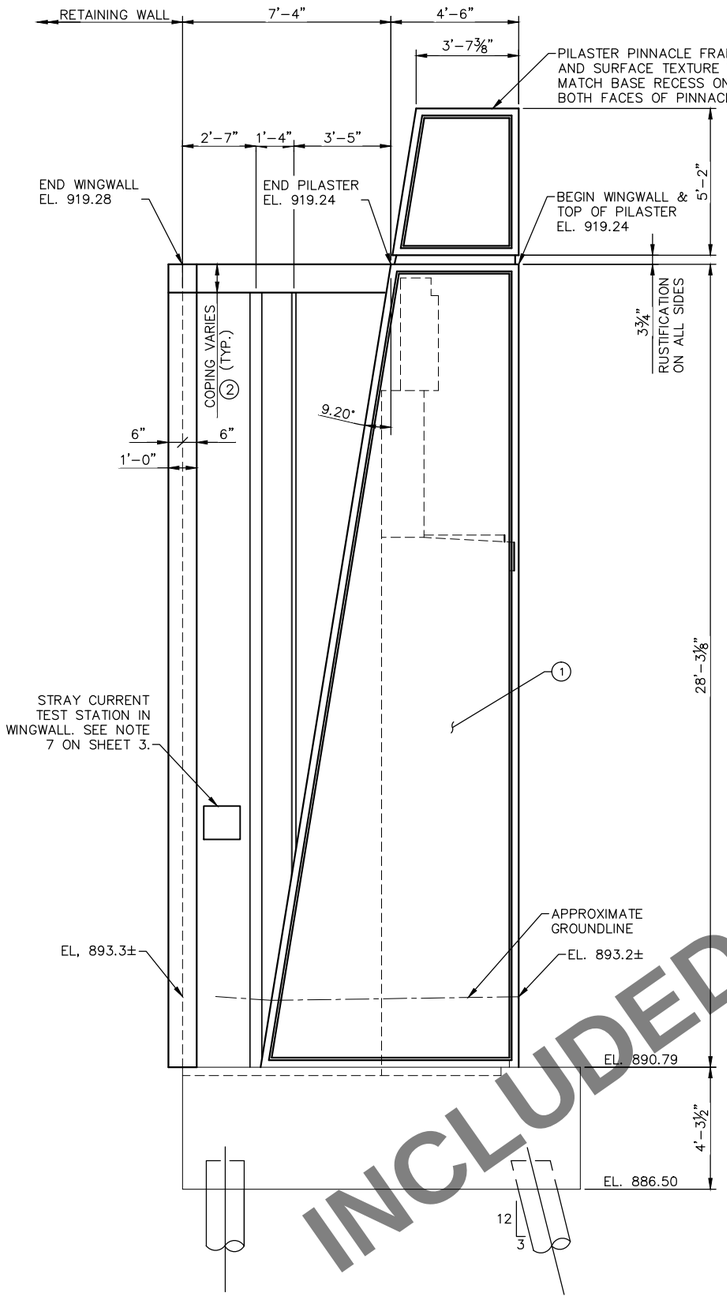
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SOUTH ABUTMENT DETAILS 4

DISCIPLINE: STRUCTURES

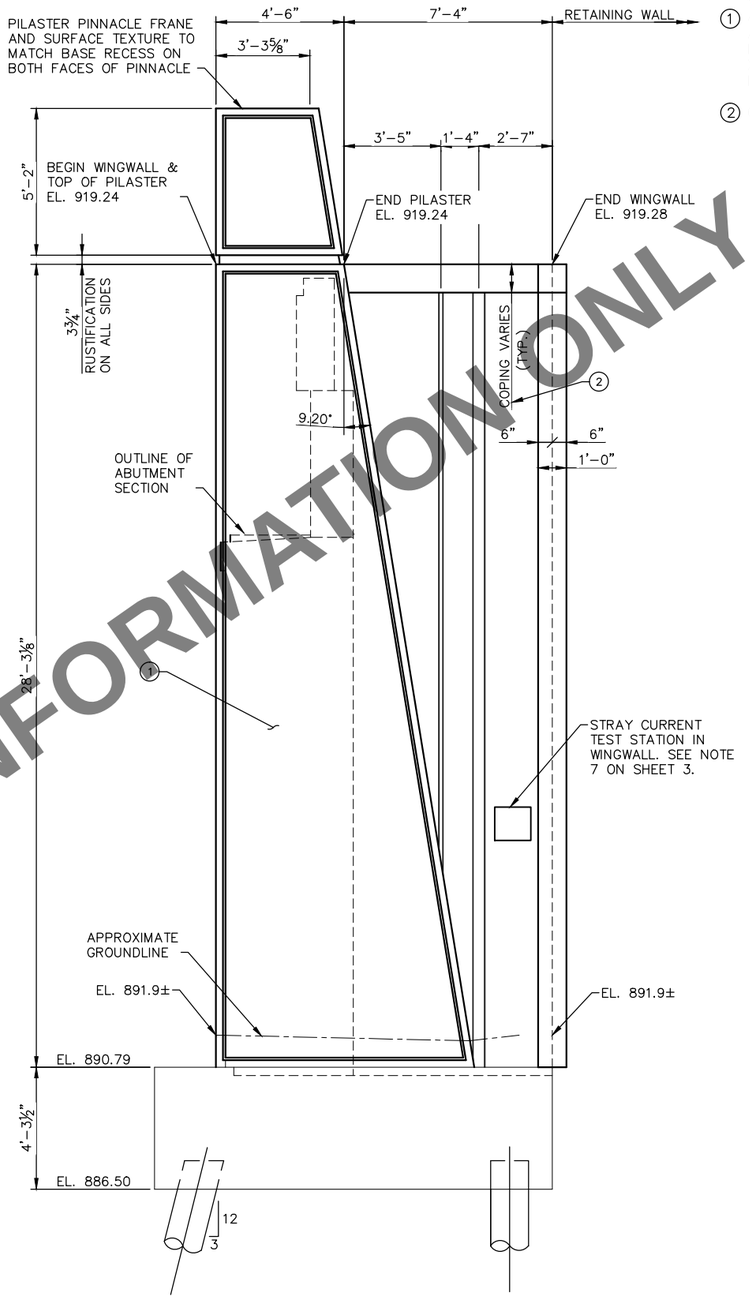
SHEET NAME: W1-STU-BRG-FCVV-ABT-S-4

SHEET 15 OF 116

Jan, 18 2016 01:20 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-S.dwg By: vickersa



SOUTHEAST WINGWALL ELEVATION



SOUTHWEST WINGWALL ELEVATION

NOTES:

① APPLY ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM), ARCHITECTURAL SURFACE FINISH (SINGLE COLOR) TO TOP OF FOOTING FOR FUTURE GROUNDLINE CONFIGURATION. SEE SHEET XX FOR AESTHETIC DETAILS INCLUDING REVEAL LOCATIONS AND DIMENSIONS.

② COPING DEPTH TO MATCH MSE WALL PRECAST CAP DEPTH.

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

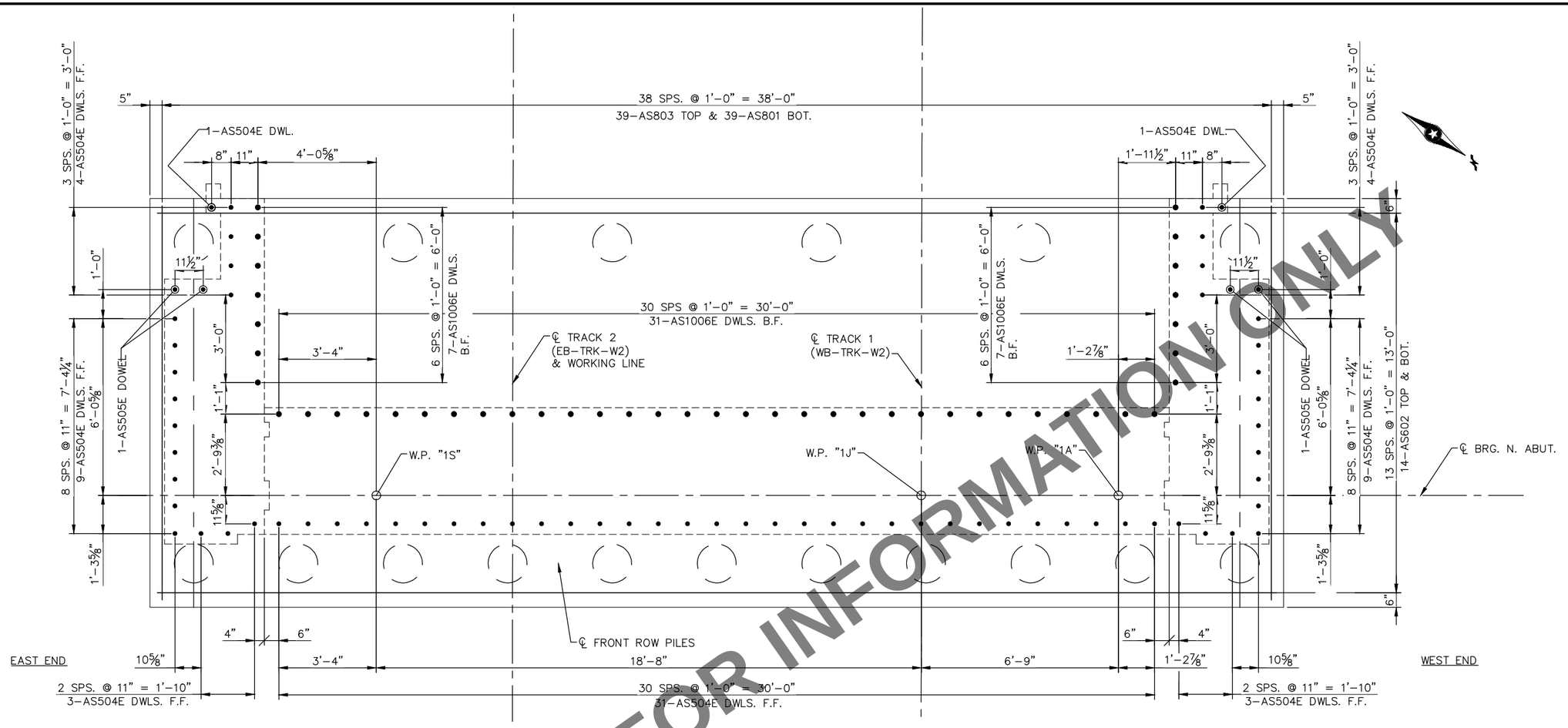
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SOUTH ABUTMENT DETAILS 5

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-ABT-S-5

SHEET 16 OF 116

Jan. 18 2016 01:20 pm v:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-S.dwg By: vickersa



FOOTING REINFORCEMENT & DOWEL LAYOUT PLAN

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METROPOLITAN COUNCIL

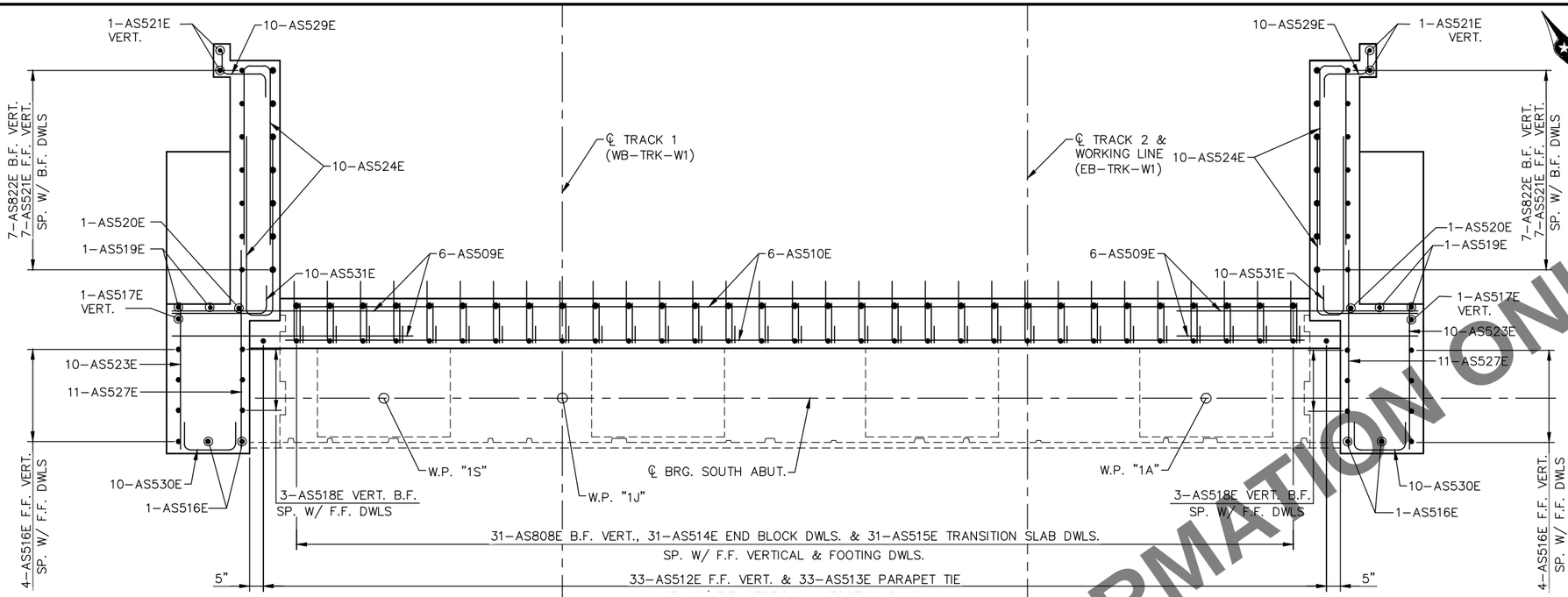
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SOUTH ABUTMENT REINFORCEMENT 1

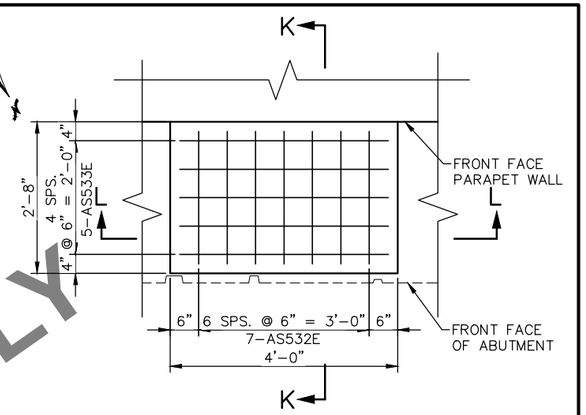
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-ABT-S2-1

SHEET 17 OF 116

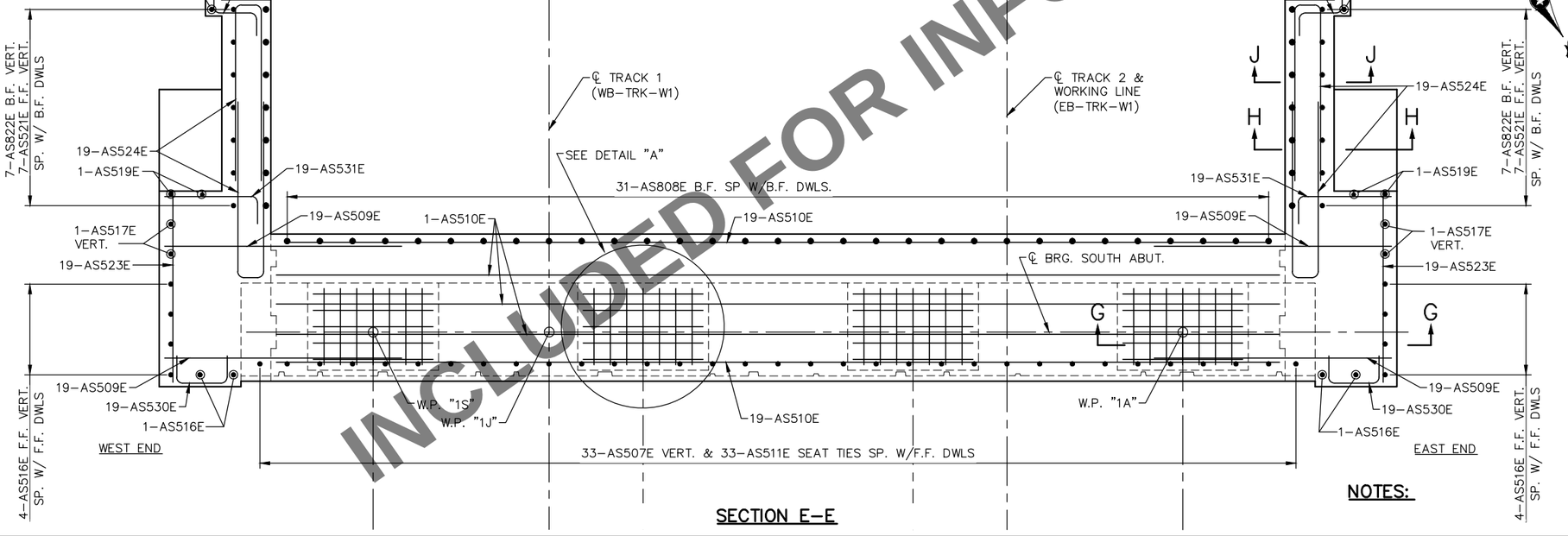
Jan, 18 2016 01:21 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-S2.dwg By: vickersa



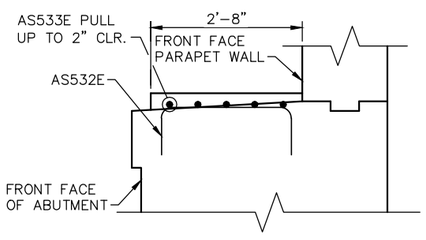
SECTION F–F



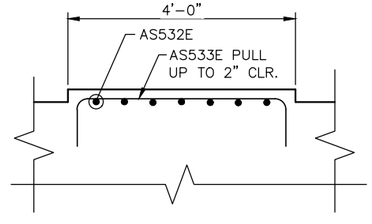
DETAIL "A"



SECTION E–E



SECTION K–K



SECTION L–L

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DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SOUTH ABUTMENT REINFORCEMENT 2

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-ABT-S2-2

SHEET 18 OF 116

Jan, 18 2016 01:21 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-S2.dwg By: vickersa

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NOTES:

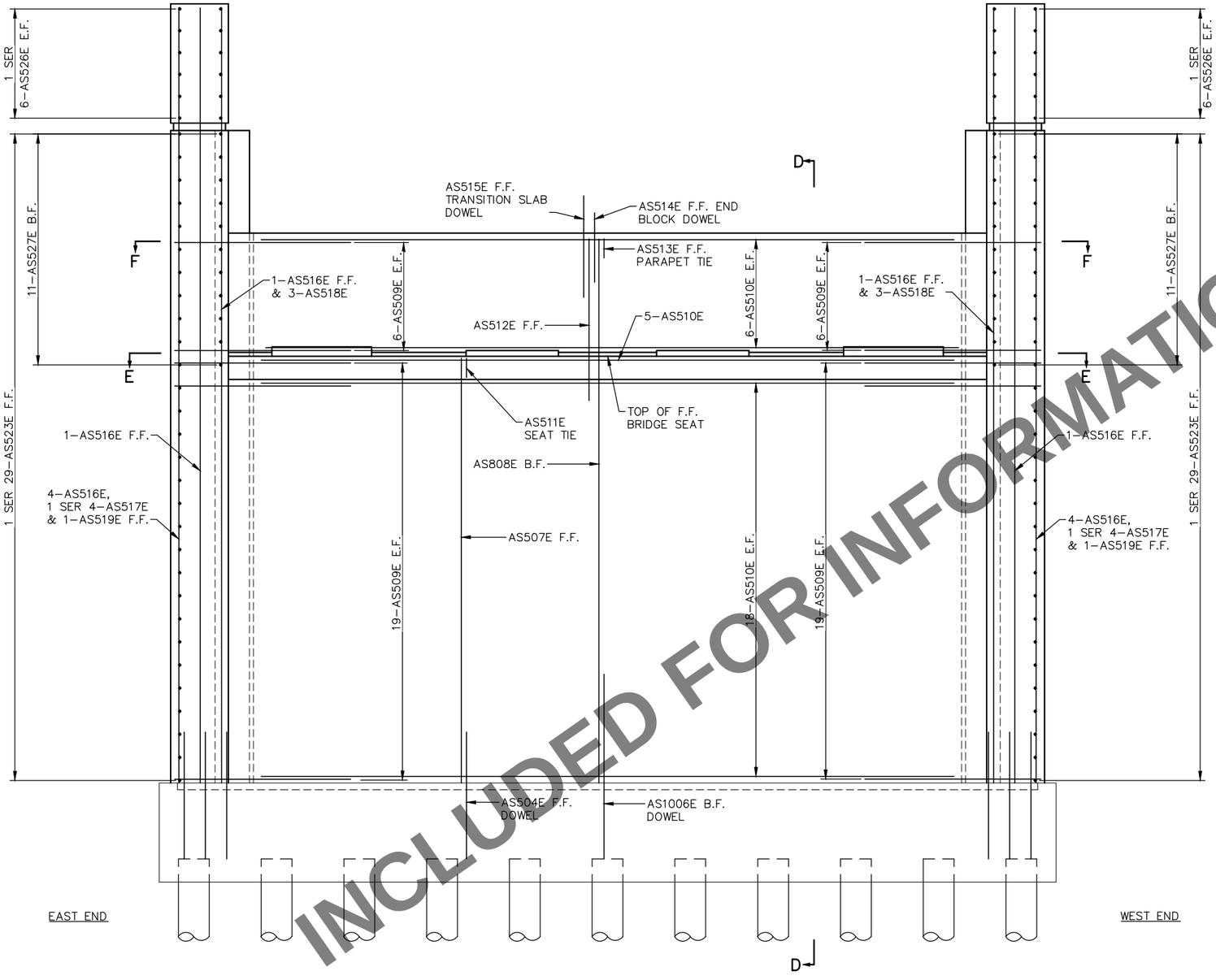
1. PULL UP TO 2" CLEAR.
2. PLACE LONGER LEG IN FRONT.

F.F. DENOTES FRONT FACE.

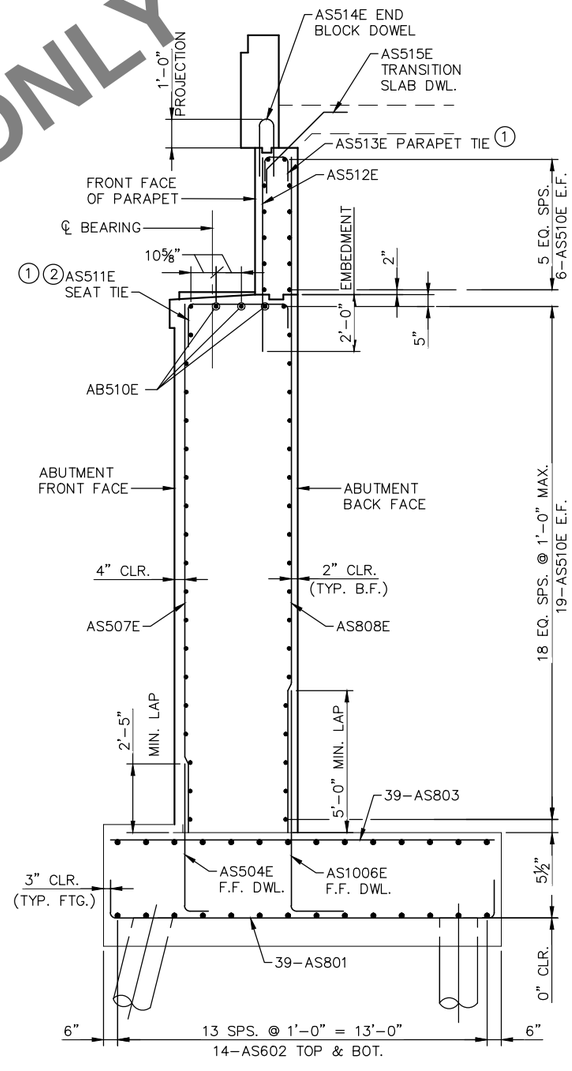
B.F. DENOTES BACK FACE.

E.F. DENOTES EACH FACE.

SEE SHEET 18 FOR SECTIONS E-E AND F-F.



ELEVATION



SECTION D-D

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DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

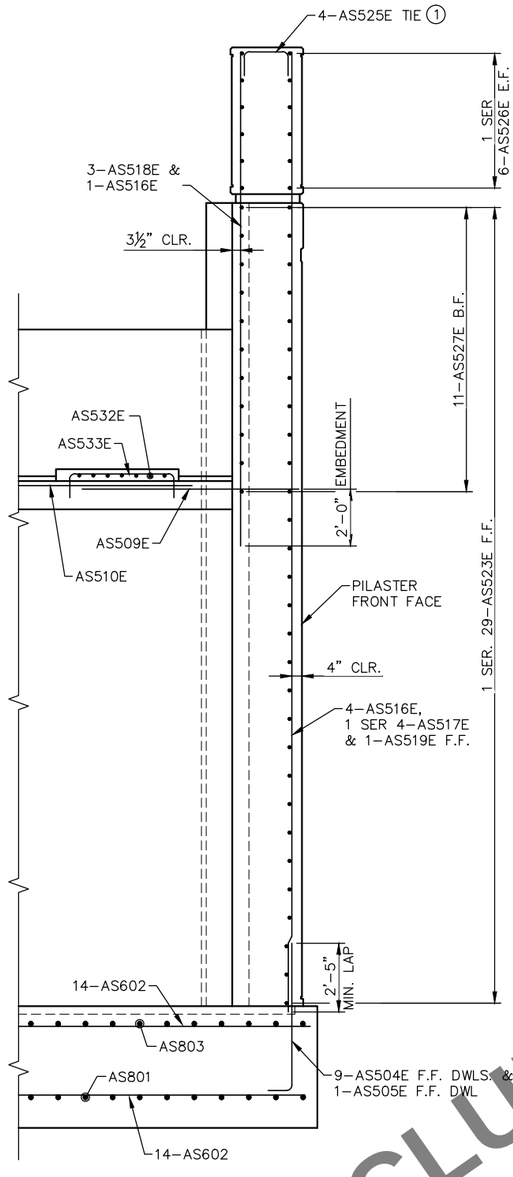
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SOUTH ABUTMENT REINFORCEMENT 3

DISCIPLINE: STRUCTURES

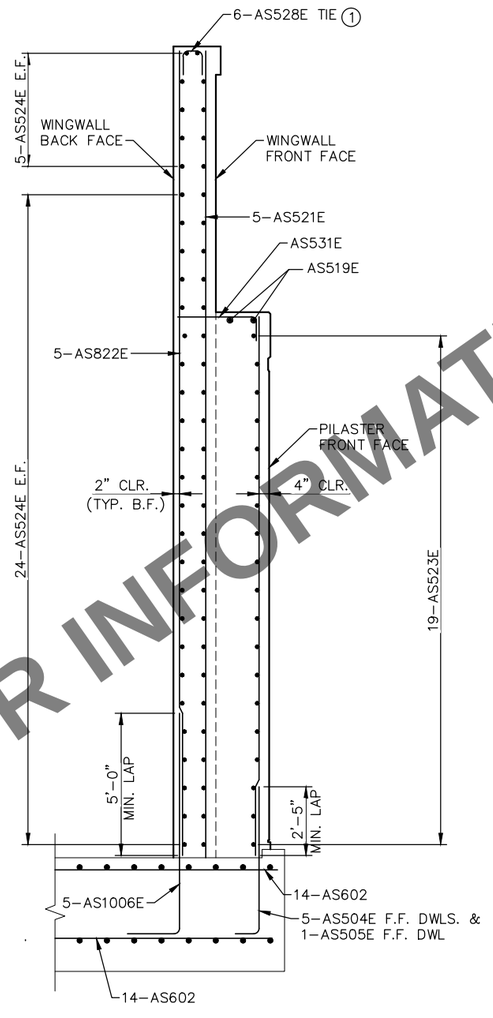
SHEET NAME: W1-STU-BRG-FCVV-ABT-S2-3

SHEET 19 OF 116

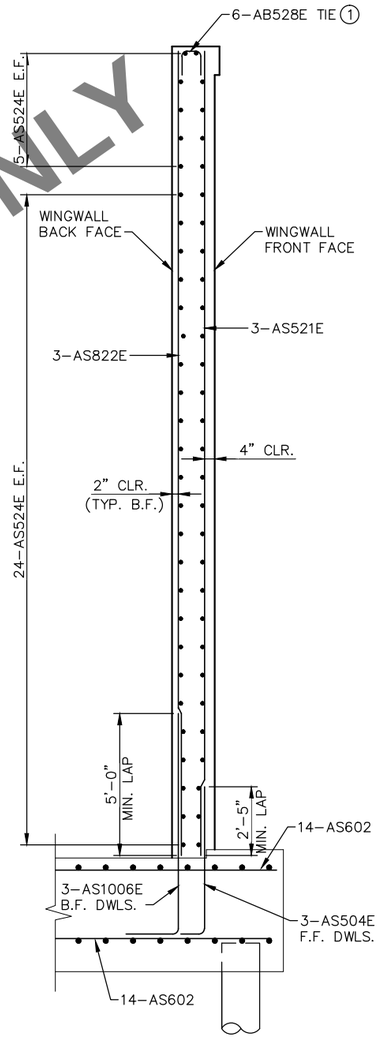
Jan, 18 2016 01:21 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-S2.dwg By: vickersa



SECTION G–G



SECTION H–H



SECTION J–J

NOTES:

(1) PULL UP TO 2" CLEAR.
F.F. DENOTES FRONT FACE.
B.F. DENOTES BACK FACE.
E.F. DENOTES EACH FACE.

NOTES:

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DESIGNED BY: GHD CHECKED BY: -
DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

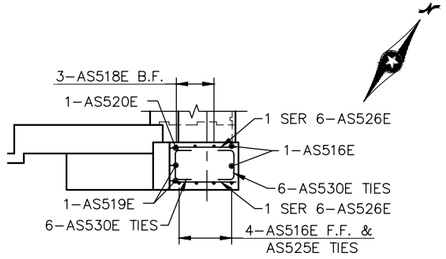
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SOUTH ABUTMENT REINFORCEMENT 4

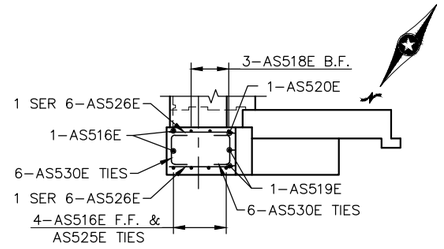
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-ABT-S2-4

SHEET 20 OF 116

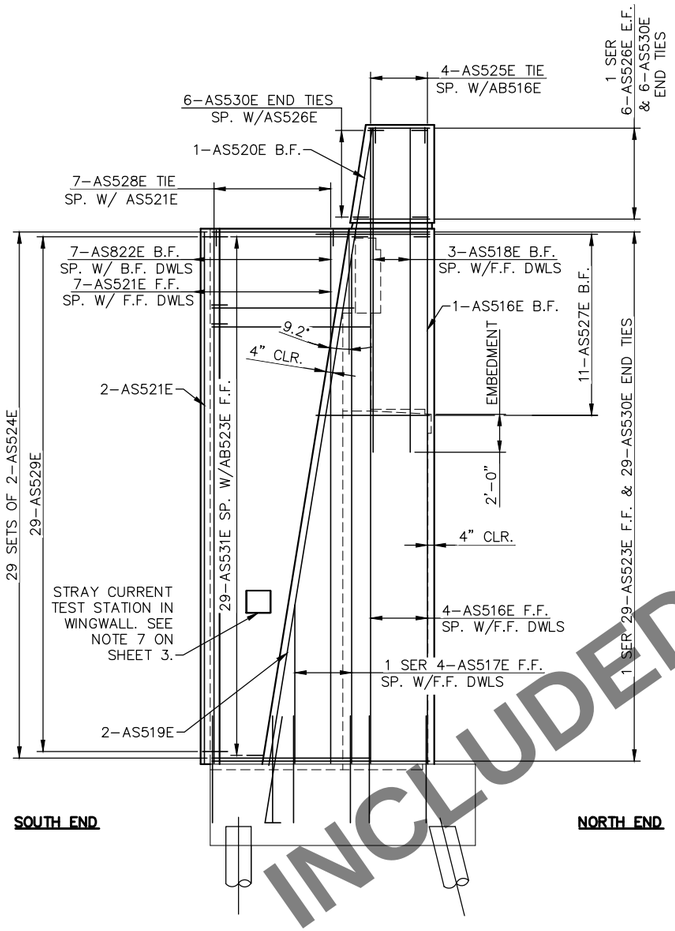
Jan, 18 2016 01:21 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-S2.dwg By: vickersa



SOUTHEAST WINGWALL PLAN

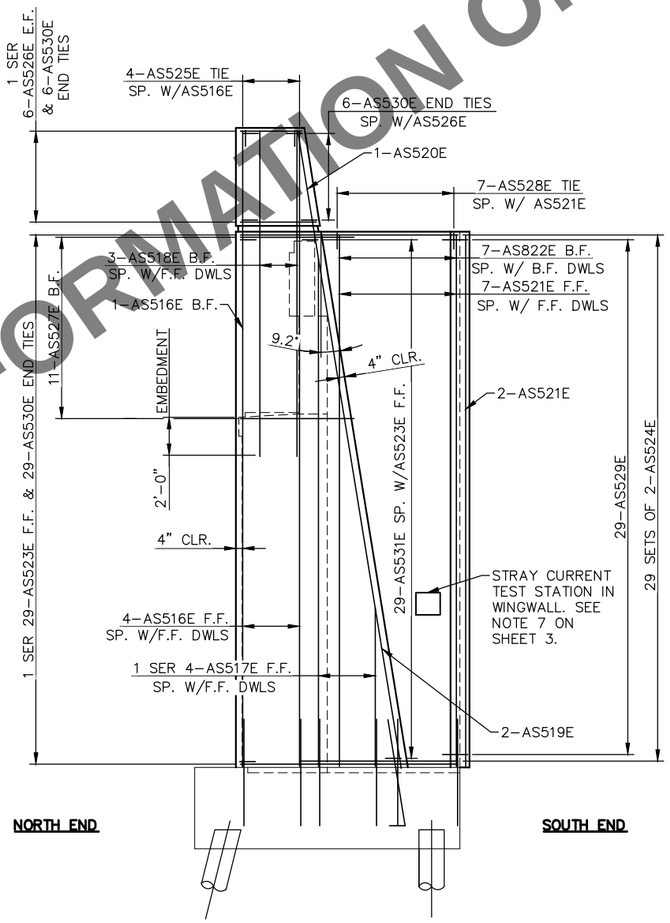


SOUTHWEST WINGWALL PLAN



SOUTH END NORTH END

SOUTHEAST WINGWALL ELEVATION



NORTH END SOUTH END

SOUTHWEST WINGWALL ELEVATION

NOTES:

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

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DESIGNED BY: GHD | CHECKED BY: -
DRAWN BY: RCK | DATE: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

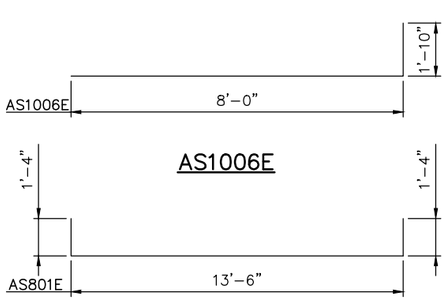
SOUTHWEST Green Line LRT Extension

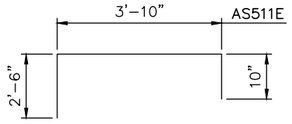
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SOUTH ABUTMENT REINFORCEMENT 5

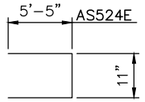
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-ABT-S2-5

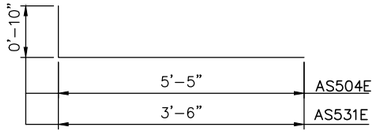
SHEET 21 OF 116

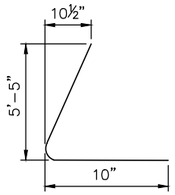
Jan, 18 2016 01:21 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-S2.dwg By: vickersa

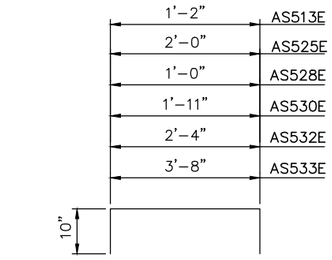


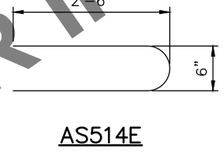


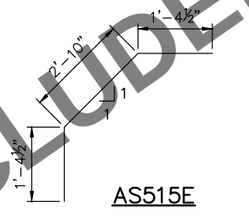


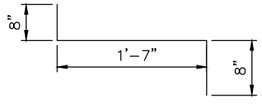












BILL OF REINFORCEMENT FOR SOUTH ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
AS1006E	45	9'–6"	⌐¬	FOOTING BACK FACE DOWEL
AS801	39	15'–9"	⌐¬	FOOTING TRANSVERSE BOTTOM
AS803	39	13'–6"	—	FOOTING TRANSVERSE TOP
AS808E	31	23'–8"	—	BRIDGE SEAT VERTICAL BACK FACE
AS822E	14	28'–2"	—	WINGWALL VERTICAL BACK FACE
AS602	28	38'–4"	—	FOOTING LONGITUDINAL TOP & BOTTOM
AS504E	65	6'–2"	⌐¬	FOOTING DOWEL
AS505E	4	6'–2"	∠	FOOTING DOWEL SLOPED FACE OF PILASTER
AS507E	33	18'–5"	—	BRIDGE SEAT VERTICAL FRONT FACE
AS509E	100	6'–9"	—	BRIDGE SEAT AND PARAPET END TIE
AS510E	53	30'–0"	—	BRIDGE SEAT AND PARAPET HORIZONTAL
AS511E	33	6'–11"	⊓	BRIDGE SEAT TIE
AS512E	33	7'–0"	—	BRIDGE PARAPET VERTICAL FRONT FACE
AS513E	33	2'–7"	⊓	PARAPET TIE
AS514E	31	5'–3"	⊐⊏	END BLOCK DOWEL
AS515E	31	5'–7"	⌒	TRANSITION SLAB DOWEL
AS516E	12	33'–7"	—	PILASTER VERTICAL FRONT FACE
AS517E	8	①	—	PILASTER VERTICAL FRONT FACE (SLOPE)
AS518E	6	17'–1"	—	PILASTER VERTICAL BACK FACE
AS519E	4	34'–0"	—	PILASTER SLOPED FACE
AS520E	2	7'–7"	—	PILASTER SLOPED FACE BACK
AS521E	18	28'–1"	—	WINGWALL VERTICAL FRONT FACE
AS523E	58	②	—	PILASTER HORIZONTAL FRONT FACE
AS524E	116	11'–6"	⌐¬	WINGWALL HORIZONTAL
AS525E	8	3'–5"	⊓	PILASTER PINNACLE TOP TIE
AS526E	24	③	—	PILASTER PINNACLE HORIZONTAL
AS527E	22	5'–4"	—	PILASTER HORIZONTAL BACK FACE
AS528E	14	2'–5"	⊓	WINGWALL TIE
AS529E	58	2'–8"	⌐¬	WINGWALL KEY
AS530E	82	3'–4"	⊓	PILASTER END TIE
AS531E	58	4'–2"	⌐¬	PILASTER SLOPE TIE
AS532E	28	3'–9"	⊓	BEAM SEAT TRANSVERSE
AS533E	20	5'–1"	⊓	BEAM SEAT LONGITUDINAL

NOTES:

① 2 SERIES OF 4, 8'–6" TO 27'–0"

② 2 SERIES OF 29, 3'–11" TO 8'–6"

③ 4 SERIES OF 6, 3'–3" TO 4'–0"

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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GHD CHECKED BY: -

DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SOUTH ABUTMENT REINFORCEMENT 6

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-ABT-S3

SHEET 22 OF 116

Jan, 18 2016 01:21 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-S3.dwg By: vickersa

NORTH ABUTMENT COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	118.9
FACTORED LIVE LOAD	20.7
*FACTORED DESIGN LOAD	139.6

*BASED ON STRENGTH I LOAD COMBINATION.

NORTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES Rn – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	*R_n
MN/DOT PILE FORMULA 2012 (MPF12) $Rn=20\sqrt{\frac{WxH}{1000}}\times\log(\frac{10}{S})$	0.50	242.6
PDA	0.65	214.8

*R_n = (FACTORED DESIGN LOAD)/φ_{dyn}

PILE NOTES

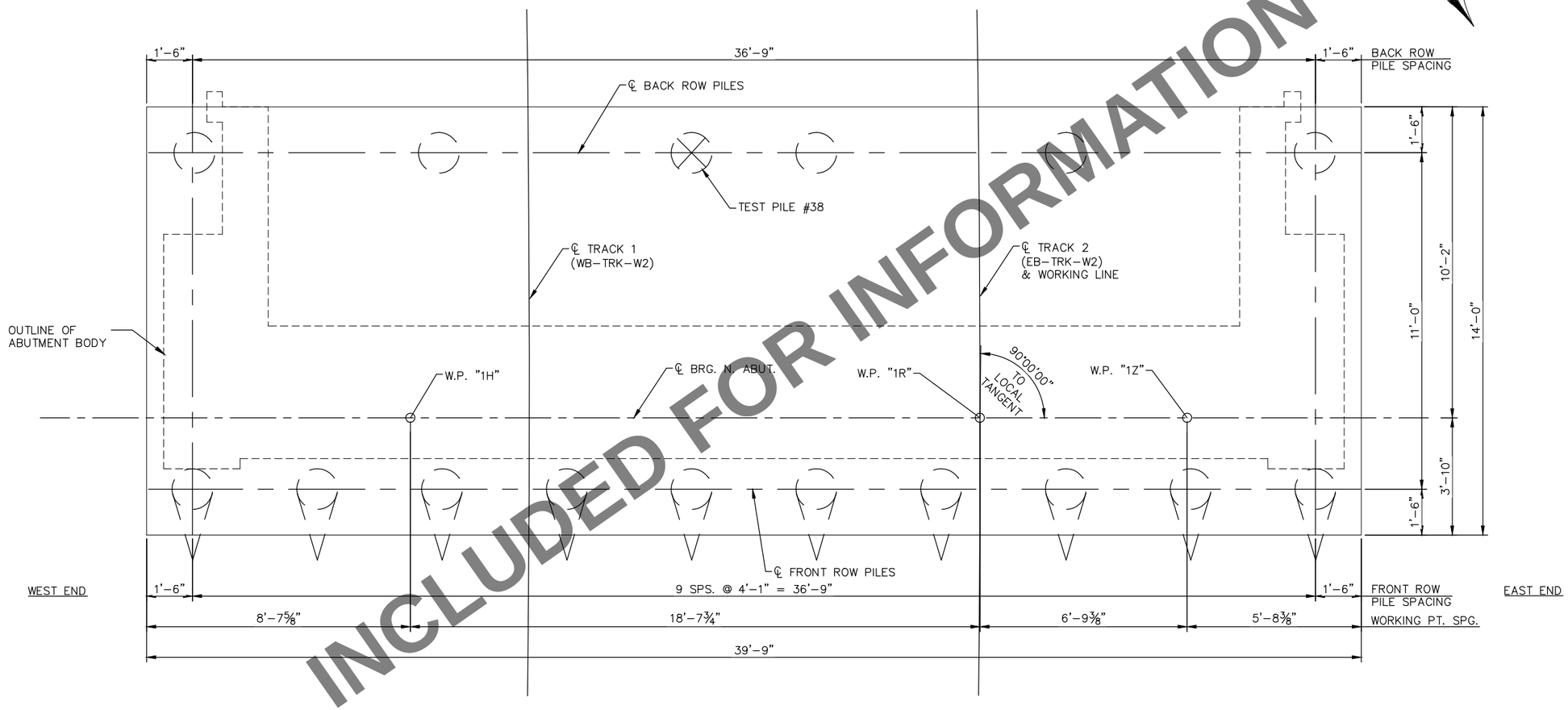
1 CAST–IN–PLACE CONC. TEST PILES 65 FT. LONG
15 CAST–IN–PLACE CONC. PILES EST. LENGTH 55 FT.
16 CAST–IN–PLACE CONC. PILES REQ'D FOR NORTH ABUTMENT

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

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

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375".

FOR PILE SPLICE DETAILS SEE DETAIL B201.



FOOTING PLAN & PILE LAYOUT

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DESIGNED BY: GHD CHECKED BY: -
DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
NORTH ABUTMENT DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-ABT-N-1

SHEET 23 OF 116

Jan. 18 2016 01:22 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-N.dwg By: vickersa

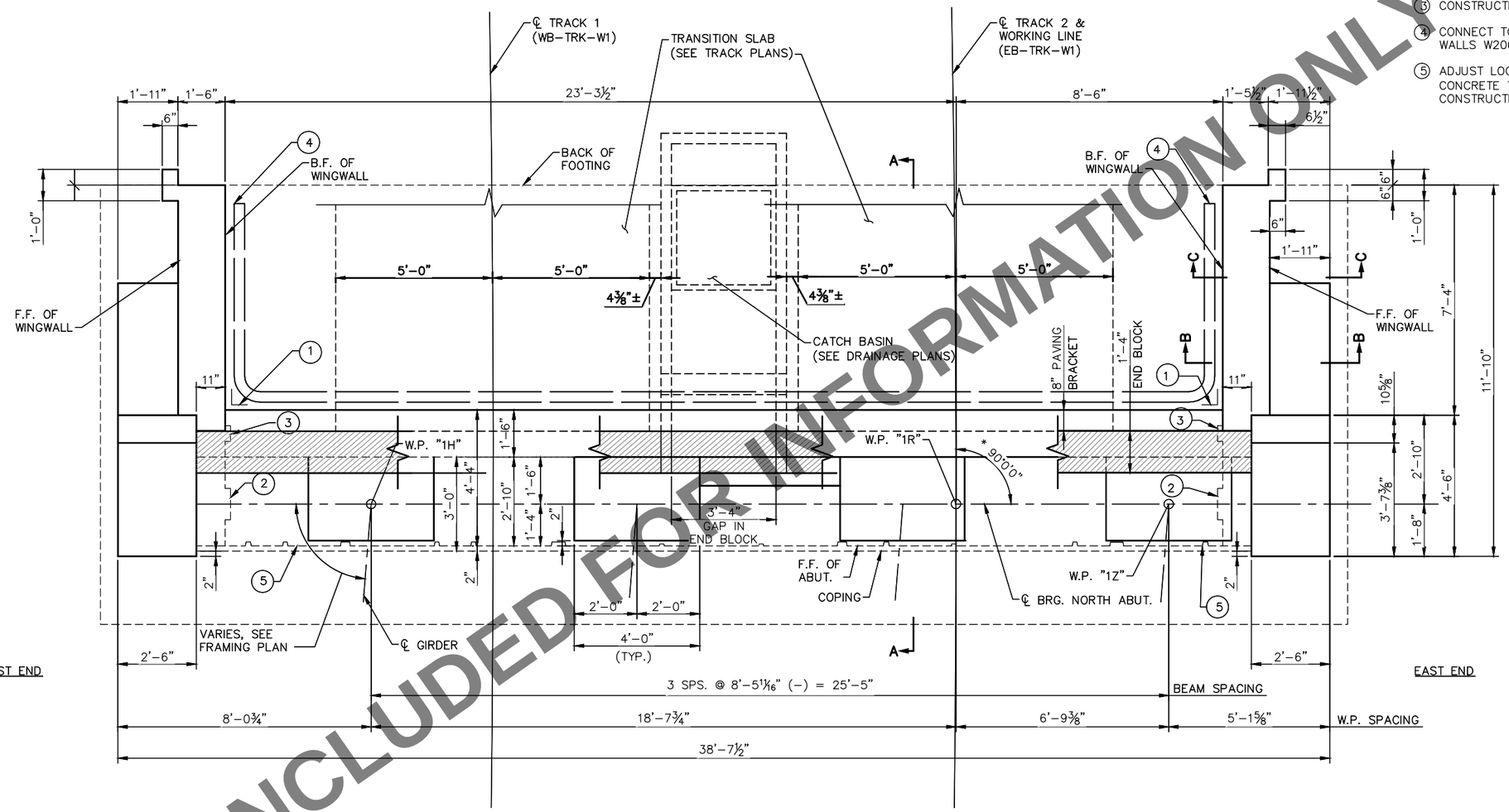
NOTES:

SEE SHEET XX FOR AESTHETIC DETAILS.

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

FOR DRAINAGE SYSTEM DETAILS SEE SHEET X.

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



PLAN

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METROPOLITAN COUNCIL

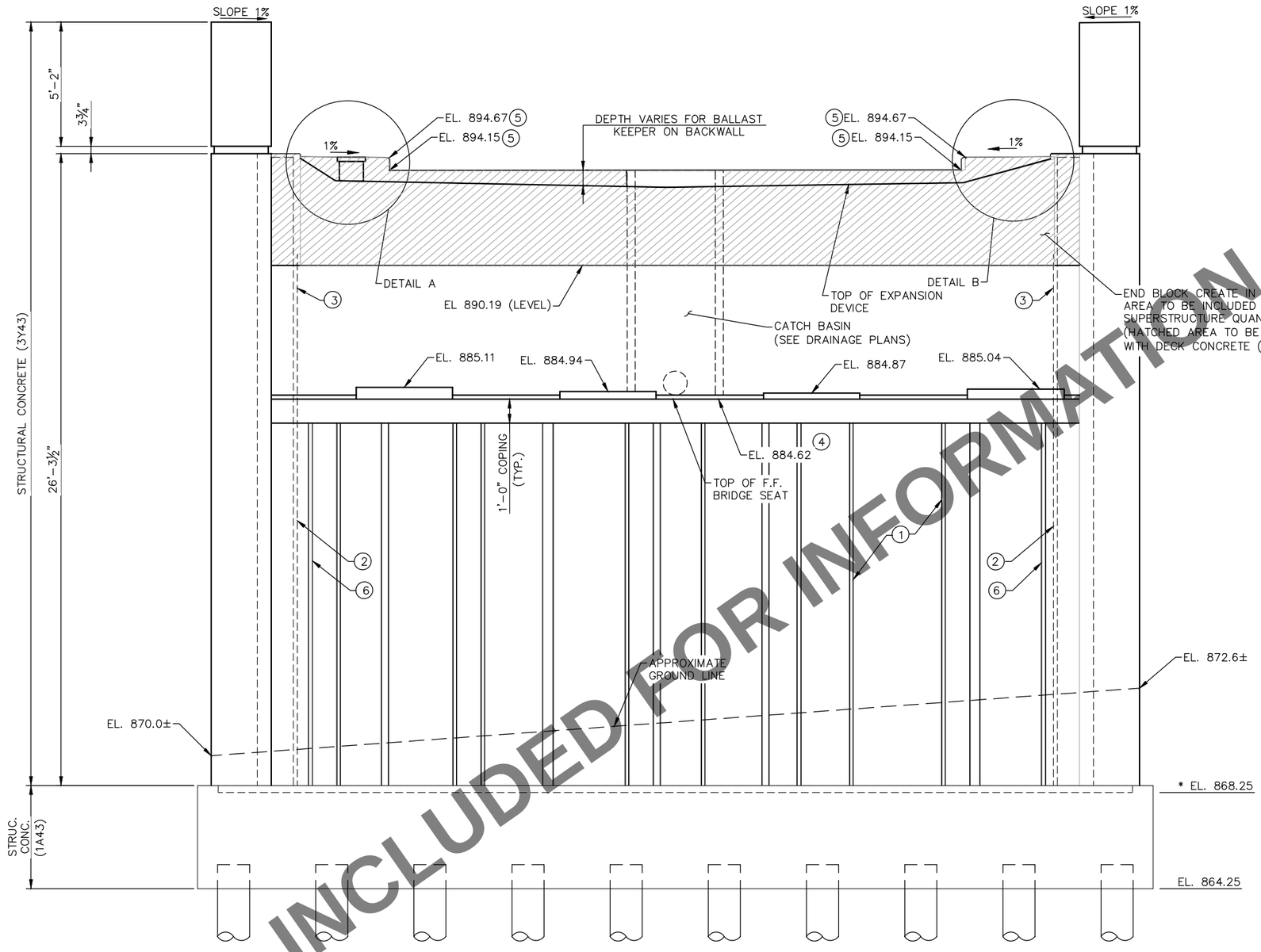
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
NORTH ABUTMENT DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-ABT-N-2

SHEET 24 OF 116

Jan, 18 2016 01:22 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-N.dwg By: vickersa

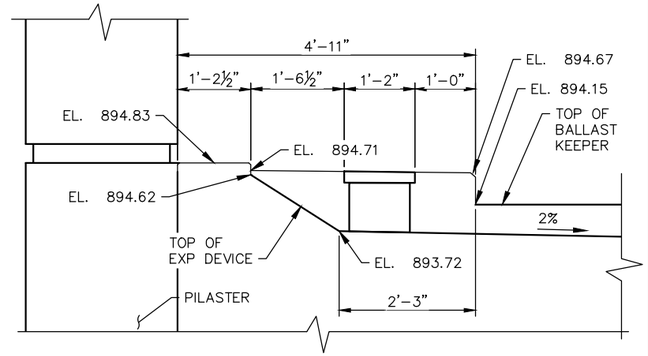


ELEVATION

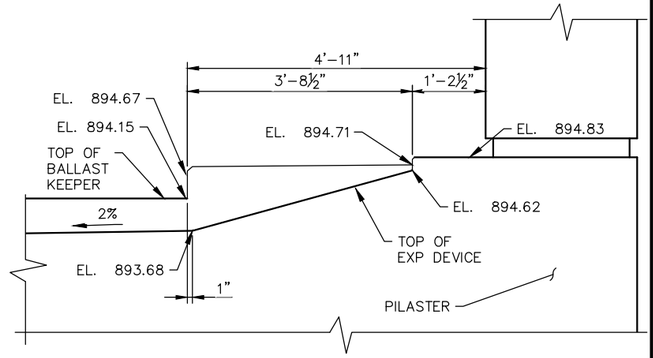
NOTES:

SEE SHEET XX FOR AESTHETIC DETAILS.

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



DETAIL A



DETAIL B

* BACK SIDE OF FOOTING

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DESIGNED BY: GHD CHECKED BY: -
DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

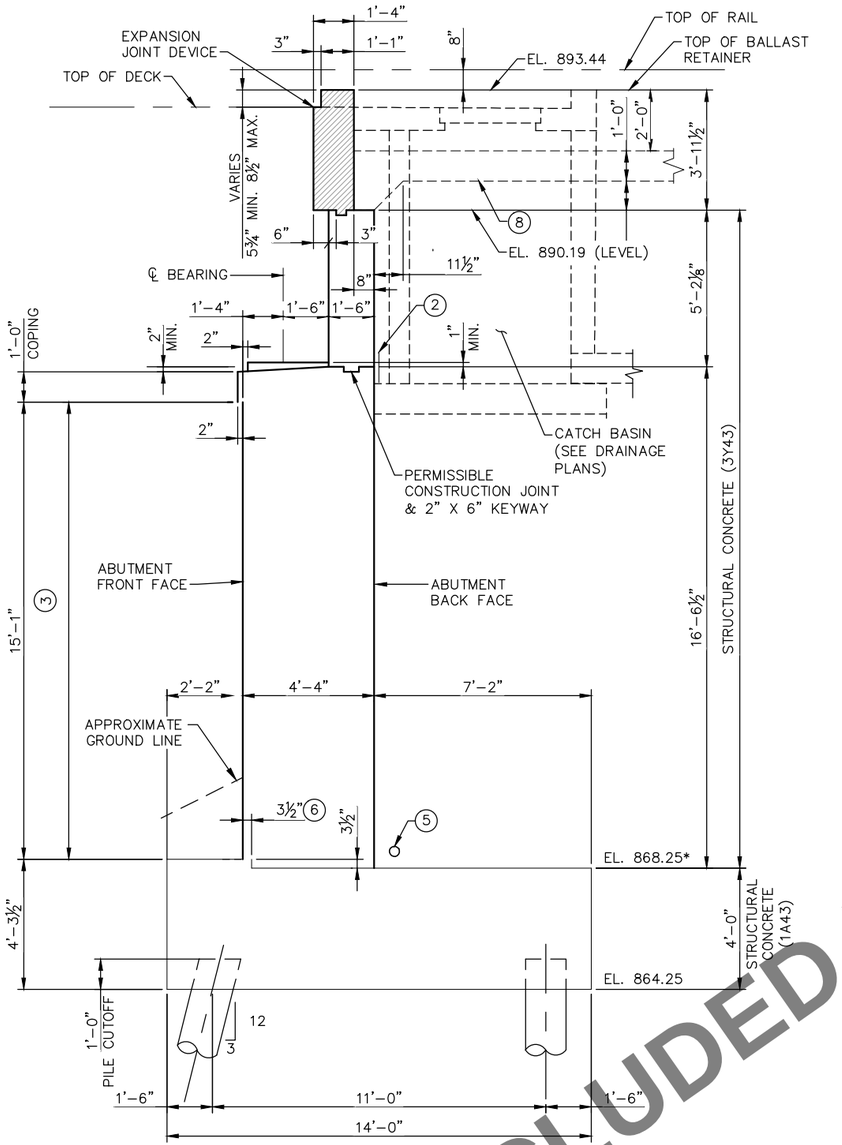
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
NORTH ABUTMENT DETAILS 3

DISCIPLINE: STRUCTURES

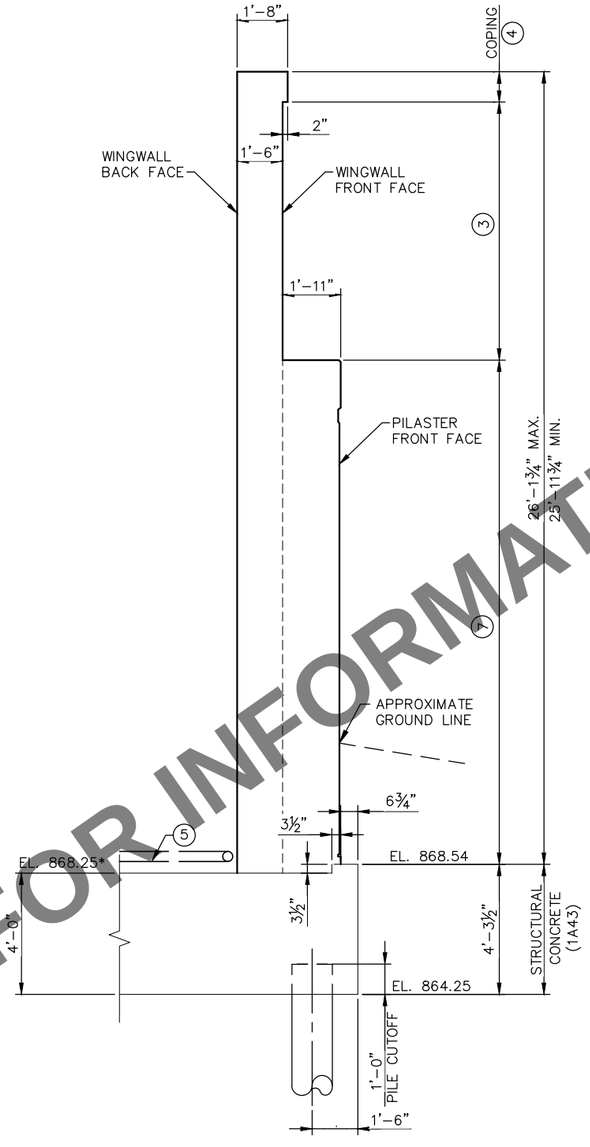
SHEET NAME: W1-STU-BRG-FCVV-ABT-N-3

SHEET 25 OF 116

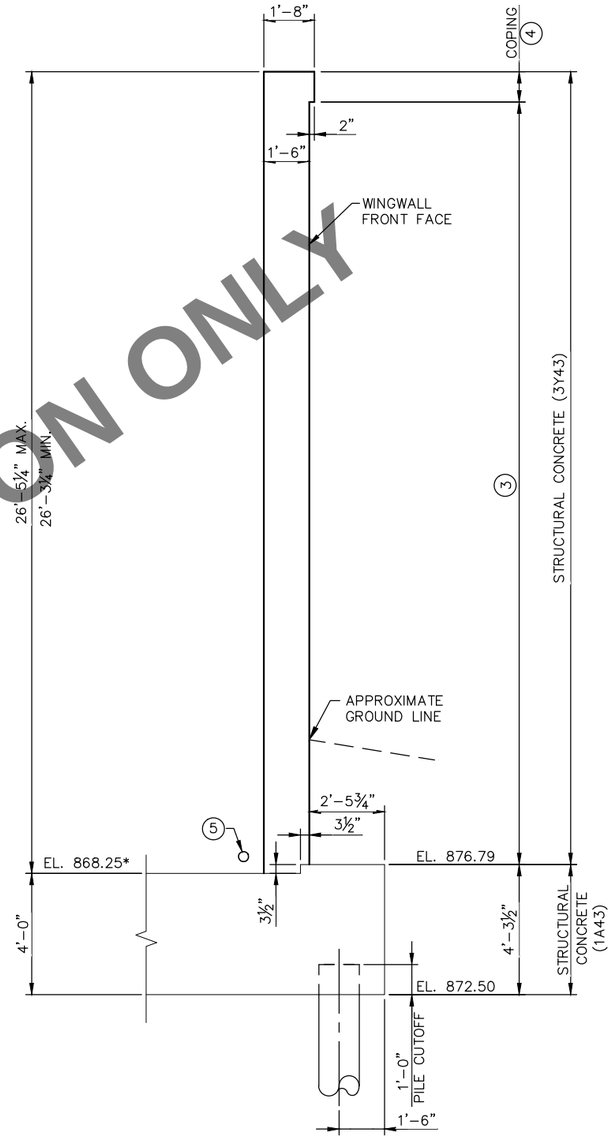
Jan, 18 2016 01:22 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-N.dwg By: vickersa



SECTION A–A



SECTION B–B



SECTION C–C

NOTES:

1. CONSTRUCTION JOINT & 2" X 4" KEYWAY.
2. MEMBRANE WATERPROOFING SYSTEM PER SPEC.2481.3B IF JOINT IS USED
3. ARCHITECTURAL CONCRETE TEXTURE (BOARD ON BOARD), ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)
4. COPING DEPTH TO MATCH MSE WALL PRECAST DEPTH.
5. 4" DIA. PERFORATED PIPE INCLUDED IN "DRAINAGE SYSTEM TYPE (B910)".
6. KEYWAY DIMENSION MAY BE ADJUSTED SLIGHTLY TO FACILITATE FORM WORK.
7. RECESSED TEXTURED SURFACE (TBD) (½" MAXIMUM RELIEF)
8. TRANSITION SLAB, SEE TRACK PLANS.

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SOUTHWEST Green Line LRT Extension

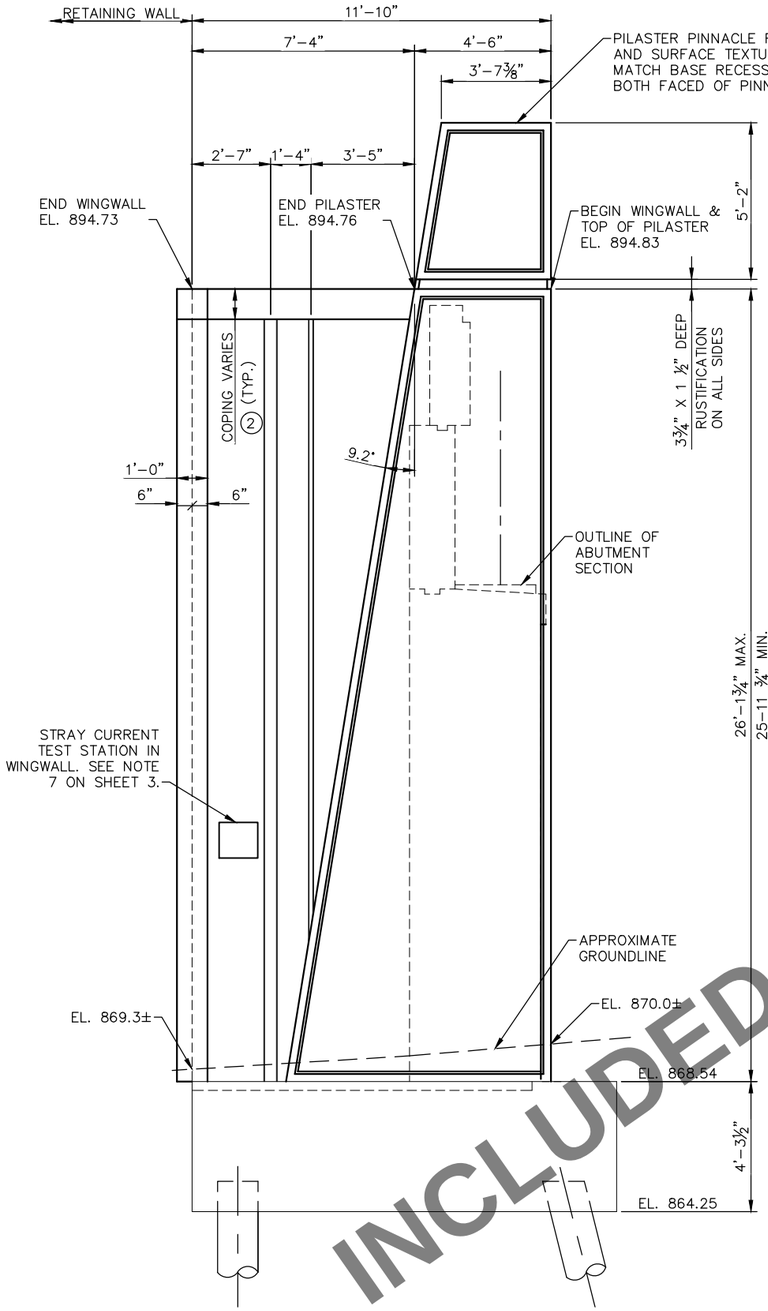
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
NORTH ABUTMENT DETAILS 4

DISCIPLINE: STRUCTURES

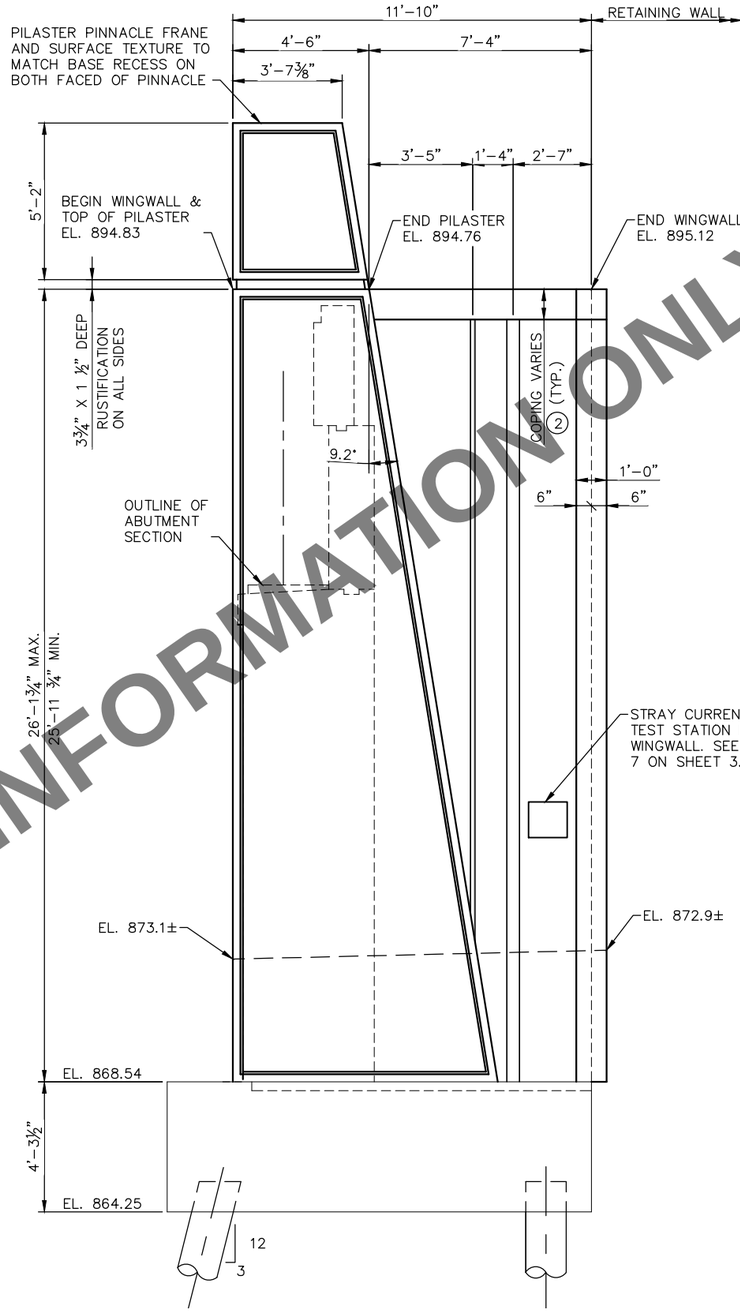
SHEET NAME: W1-STU-BRG-FCVV-ABT-N-4

SHEET 26 OF 116

Jan, 18 2016 01:22 pm V:\19140A_MN_Valley_View_Rood_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-N.dwg By: vickersa



NORTHWEST WINGWALL ELEVATION
(CATCH BASIN NOT SHOWN FOR CLARITY)



NORTHEAST WINGWALL ELEVATION
(CATCH BASIN NOT SHOWN FOR CLARITY)

NOTES:

1. APPLY ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM) TO TOP OF FOOTING FOR FUTURE GROUNDLINE CONFIGURATION. SEE SHEET XX FOR AESTHETIC DETAILS INCLUDING REVEAL LOCATIONS AND DIMENSIONS.
2. COPING DEPTH TO MATCH MSE WALL PRECAST CAP DEPTH.

INCLUDED FOR INFORMATION ONLY

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METROPOLITAN COUNCIL

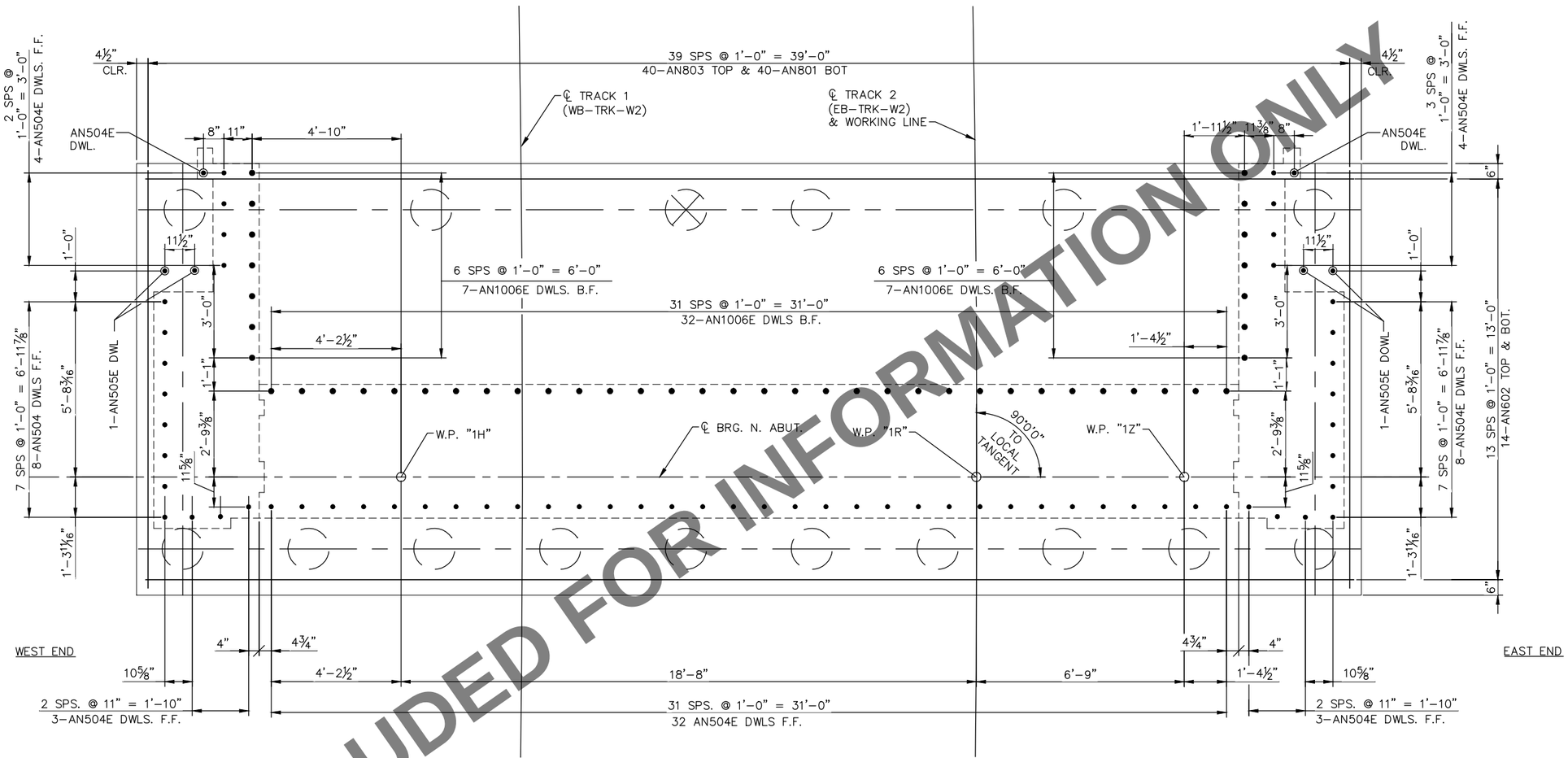
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
NORTH ABUTMENT DETAILS 5

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-ABT-N-5

SHEET 27 OF 116

Jan, 18 2016 01:22 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-N.dwg By: vickersa



FOOTING REINFORCEMENT & DOWEL LAYOUT PLAN

INCLUDED FOR INFORMATION ONLY

NOTES:

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

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SOUTHWEST Green Line LRT Extension

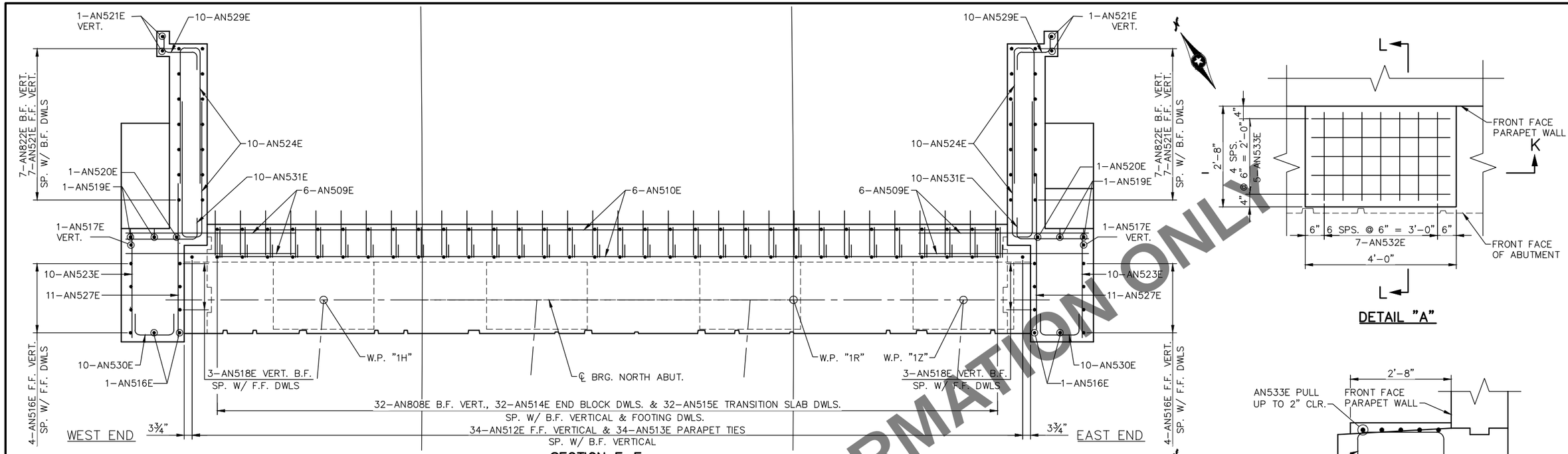
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
NORTH ABUTMENT REINFORCEMENT 1

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-ABT-N2-1

SHEET 28 OF 116

Jan. 18 2016 01:23 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-N2.dwg By: vickersa



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SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
NORTH ABUTMENT REINFORCEMENT 2

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-ABT-N2-2

SHEET 29 OF 116

Jan, 18 2016 01:23 pm v:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-N2.dwg By: vickersa

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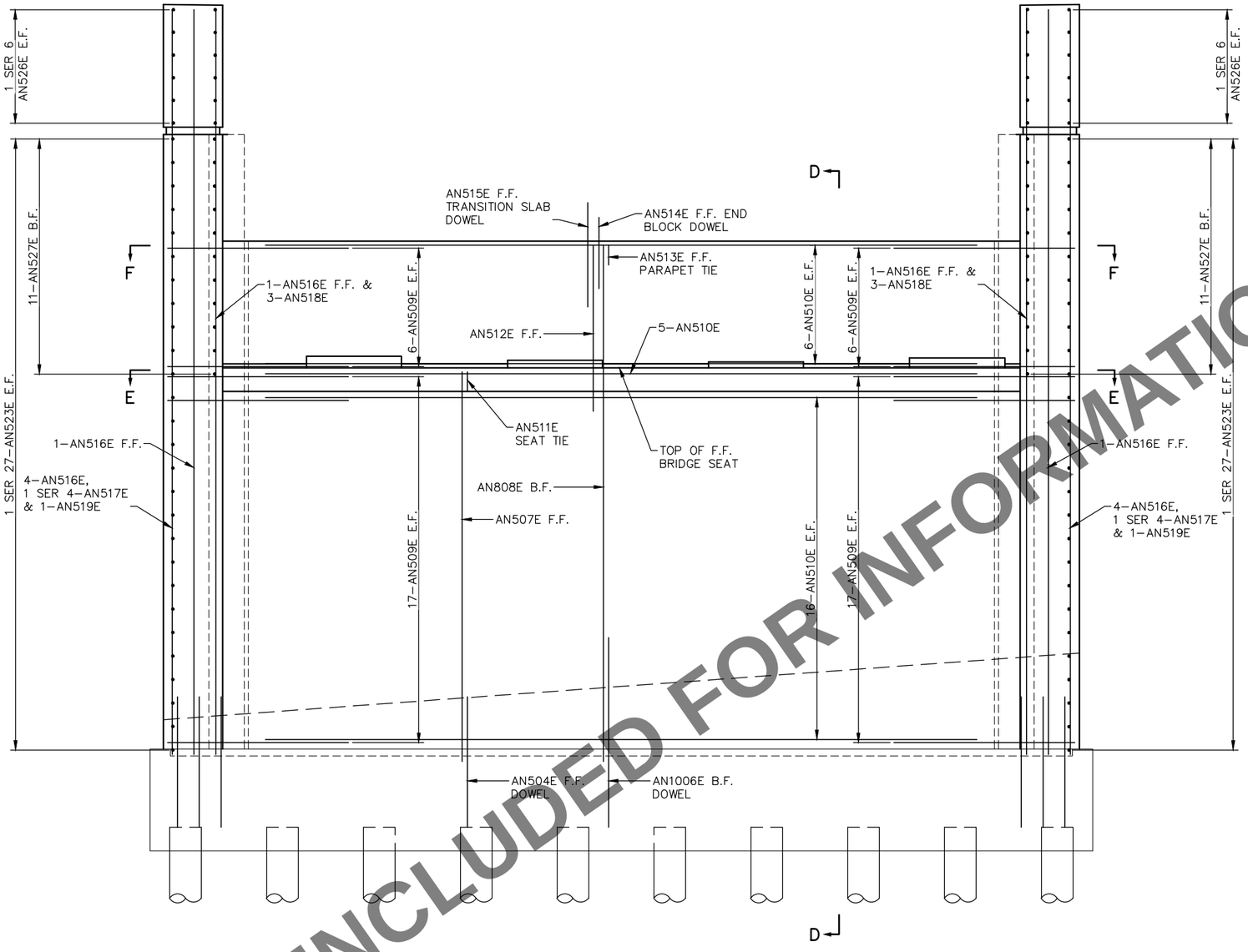
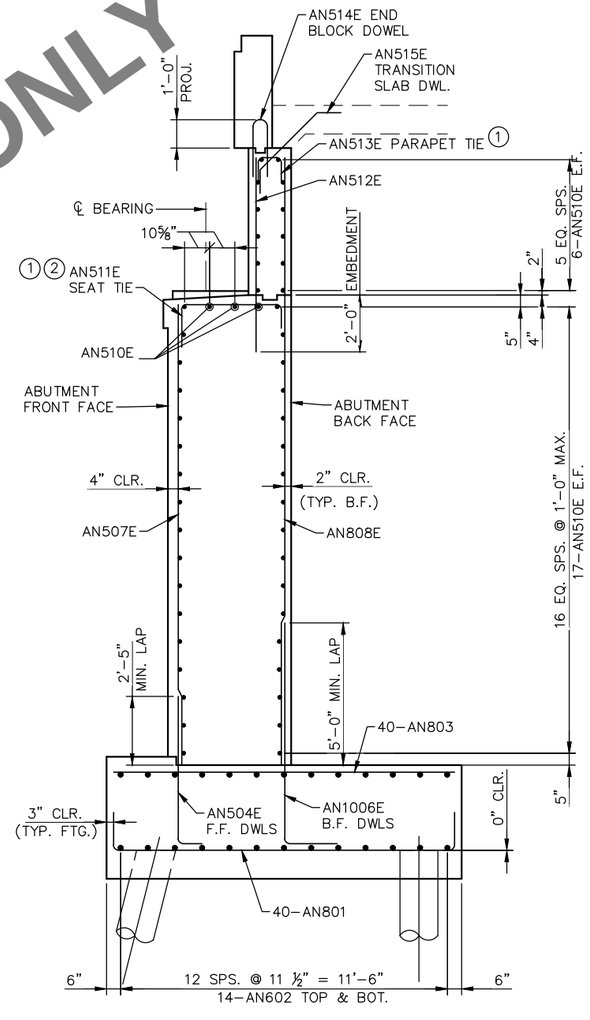


ELEVATION

NOTES:

1. PULL UP TO 2" CLEAR.
2. PLACE LONGER LEG IN FRONT.



SECTION D–D

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SOUTHWEST Green Line LRT Extension

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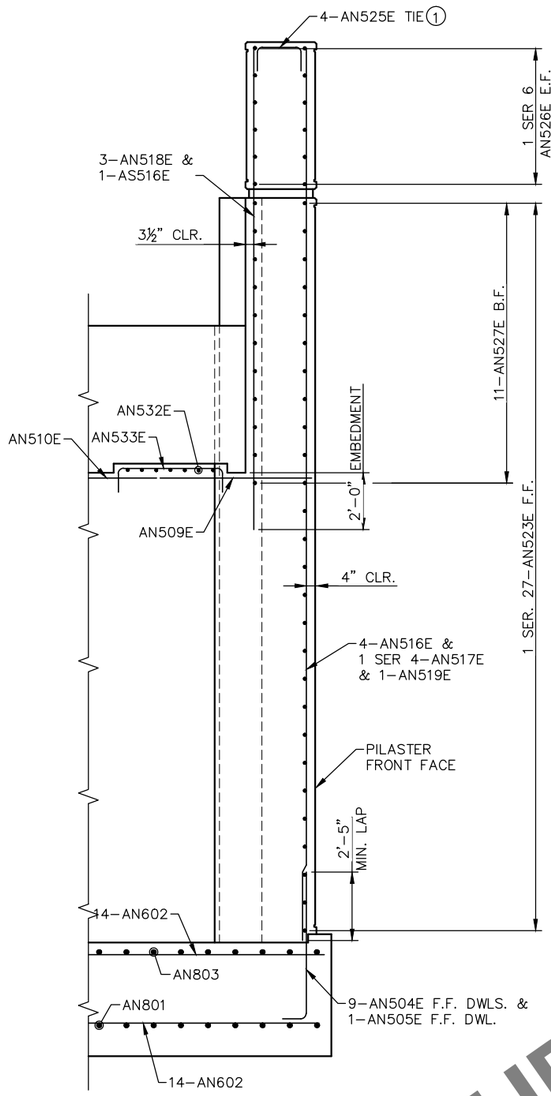
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
NORTH ABUTMENT REINFORCEMENT 3

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-ABT-N2-3

SHEET 30 OF 116



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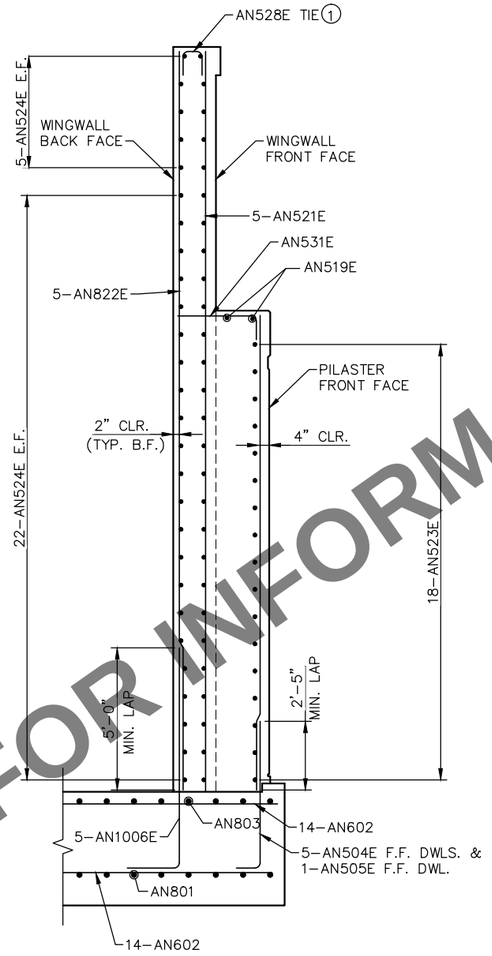

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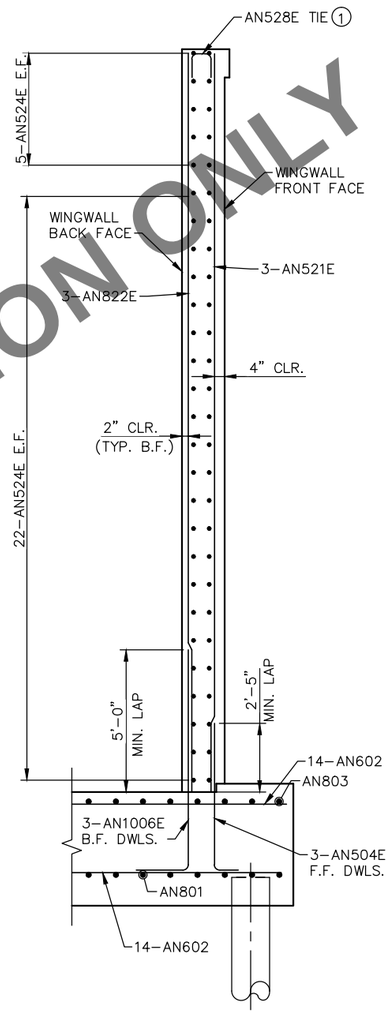

SECTION J–J

NOTES:

(1) PULL UP TO 2" CLEAR

F.F. DENOTES FRONT FACE

B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

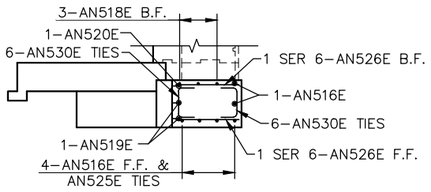
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
NORTH ABUTMENT REINFORCEMENT 4

DISCIPLINE: STRUCTURES

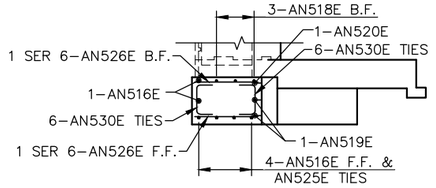
SHEET NAME: W1-STU-BRG-FCVV-ABT-N2-4

SHEET 31 OF 116

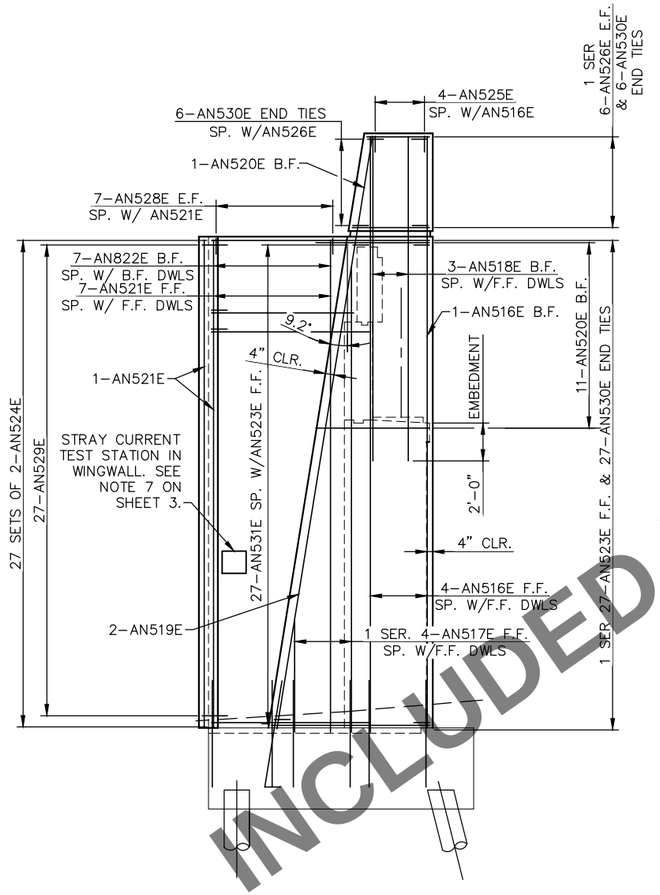
Jan, 18 2016 01:23 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-N2.dwg By: vickersa



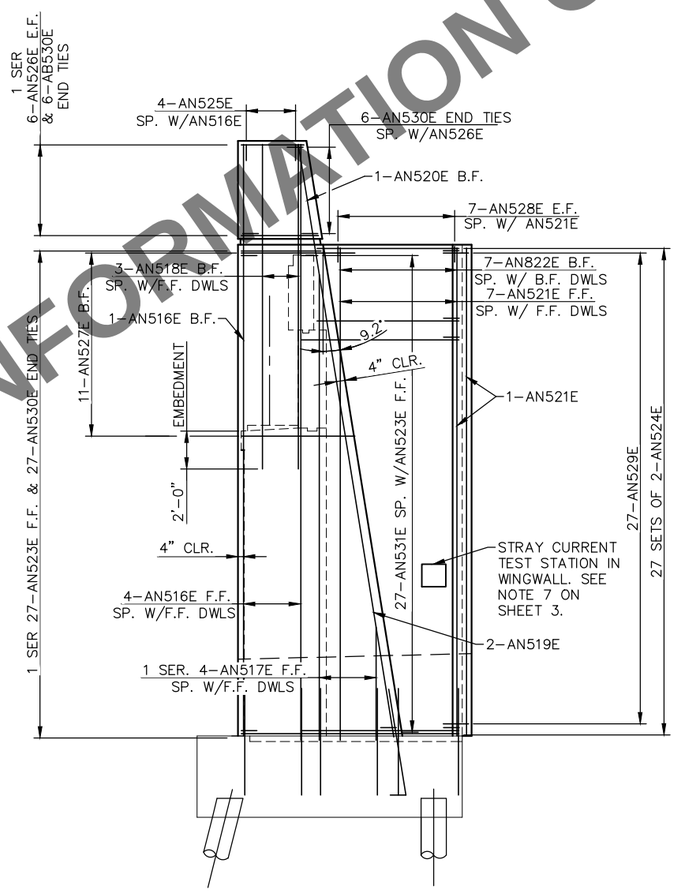
NORTHWEST WINGWALL PLAN



NORTHEAST WINGWALL PLAN



NORTHWEST WINGWALL ELEVATION



NORTHEAST WINGWALL ELEVATION

NOTES:

F.F DENOTES FRONT FACE

B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

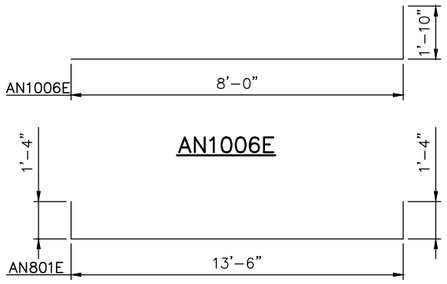
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
NORTH ABUTMENT REINFORCEMENT 5

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-ABT-N2-5

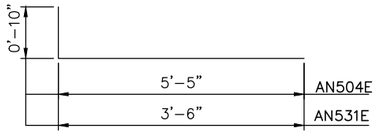
SHEET 32 OF 116

Jan, 18 2016 01:23 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-N2.dwg By: vickersa

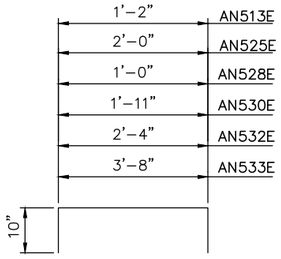


AN1006E

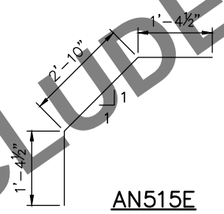
AN801



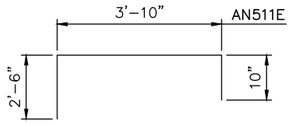
AN504E, AN531E



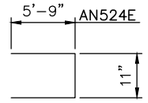
AN513E, AN525E, AN528E, AN530E,
AN532E, AN533E



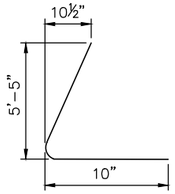
AN515E



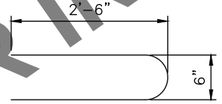
AN511E



AN524E



AN505E



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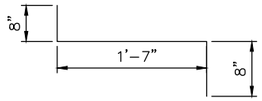

AN529E

BILL OF REINFORCEMENT FOR NORTH ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
AN1006E	46	9'–6"		FOOTING BACK FACE DOWEL
AN801	40	15'–9"		FOOTING TRANSVERSE BOTTOM
AN803	40	13'–6"		FOOTING TRANSVERSE TOP
AN808E	32	21'–6"		BRIDGE SEAT VERTICAL BACK FACE
AN822E	14	25'–10"		WINGWALL VERTICAL BACK FACE
AN602	28	38'–2"		FOOTING LONGITUDINAL TOP & BOTTOM
AN504E	64	6'–2"		FOOTING DOWEL
AN505E	4	6'–2"		FOOTING DOWEL SLOPED FACE OF PILASTER
AN507E	34	16'–1"		BRIDGE SEAT VERTICAL FRONT FACE
AN509E	92	6'–9"		BRIDGE SEAT AND PARAPET END TIE
AN510E	49	31'–1"		BRIDGE SEAT AND PARAPET HORIZONTAL
AN511E	34	6'–11"		BRIDGE SEAT TIE
AN512E	34	7'–0"		BRIDGE PARAPET VERTICAL FRONT FACE
AN513E	34	2'–7"		PARAPET TIE
AN514E	32	5'–3"		END BLOCK DOWEL
AN515E	32	5'–7"		TRANSITION SLAB DOWEL
AN516E	12	31'–9"		PILASTER VERTICAL FRONT FACE
AN517E	8	①		PILASTER VERTICAL FRONT FACE (SLOPE)
AN518E	6	17'–5"		PILASTER VERTICAL BACK FACE
AN519E	4	32'–2"		PILASTER SLOPED FACE
AN520E	2	7'–7"		PILASTER SLOPED FACE BACK
AN521E	18	26'–1"		WINGWALL VERTICAL FRONT FACE
AN523E	54	②		PILASTER HORIZONTAL FRONT FACE
AN524E	108	12'–2"		WINGWALL HORIZONTAL
AN525E	8	3'–5"		PILASTER PINNACLE TOP TIE
AN526E	24	③		PILASTER PINNACLE HORIZONTAL
AN527E	22	5'–4"		PILASTER HORIZONTAL BACK FACE
AN528E	14	2'–5"		WINGWALL TIE
AS529E	54	2'–8"		WINGWALL KEY
AN530E	78	3'–4"		PILASTER END TIE
AN531E	54	4'–2"		PILASTER SLOPE TIE
AN532E	28	3'–9"		BEAM SEAT TRANSVERSE
AN533E	20	5'–1"		BEAM SEAT LONGITUDINAL

NOTES:

① 2 SERIES OF 4, 6'–0" TO 24'–7"

② 2 SERIES OF 27, 4'–2" TO 8'–4"

③ 4 SERIES OF 6, 3'–3" TO 4'–0"

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AECOM PARSONS BRINCKERHOFF

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METROPOLITAN COUNCIL SOUTHWEST

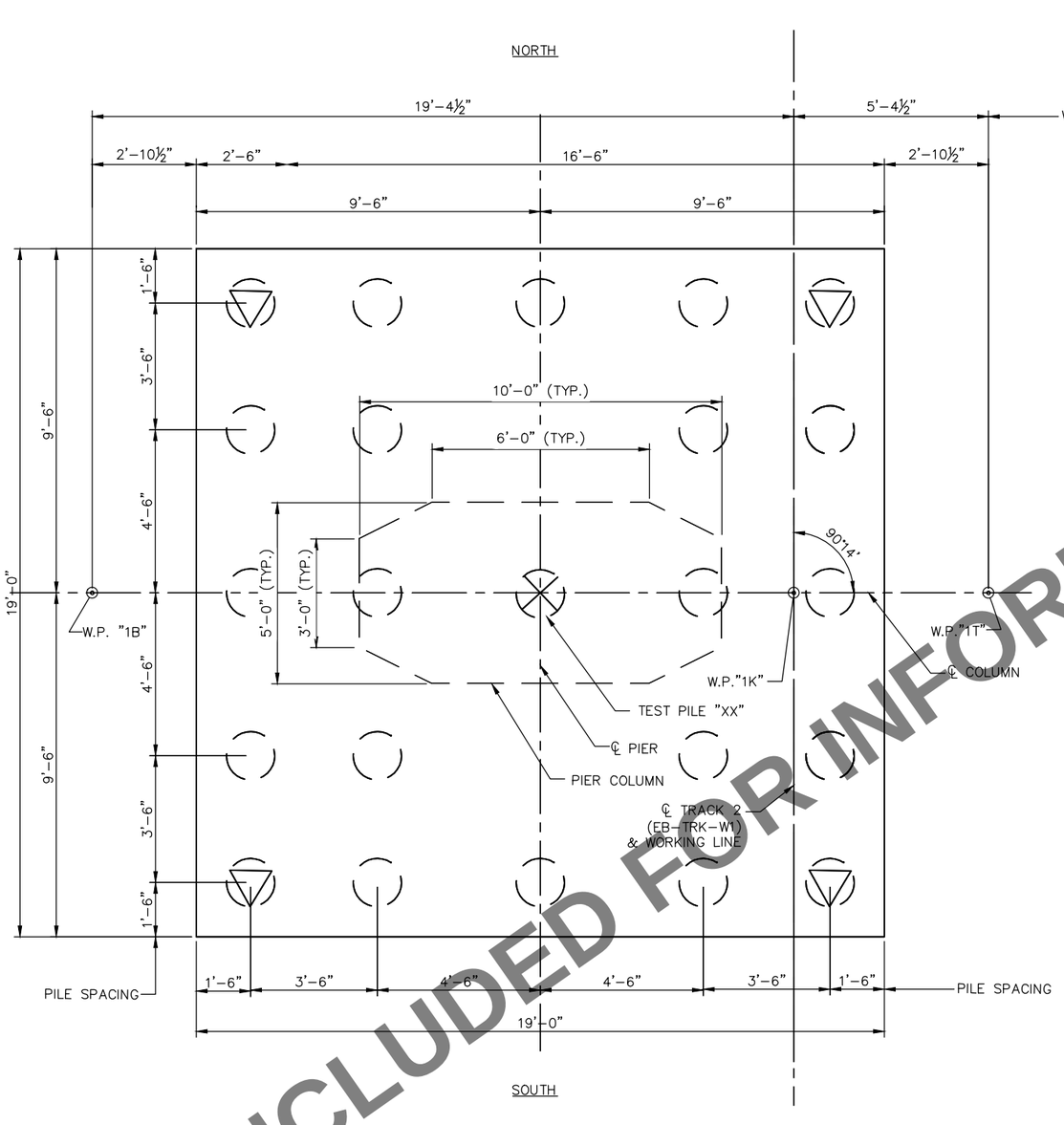
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
NORTH ABUTMENT REINFORCEMENT 6

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-ABT-S3

SHEET 33 OF 116

Jan, 18 2016 01:23 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-ABT-N3.dwg By: vickersa



PIER 1 PILE LAYOUT

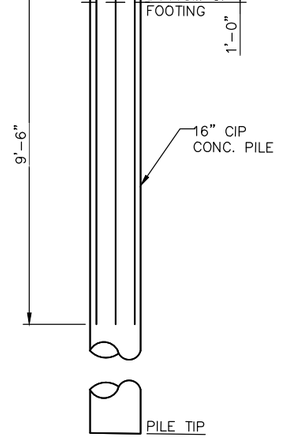
PIER 1
REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $Rn=20\sqrt{\frac{WxH}{1000}}\times\log(\frac{10}{S})$	0.50	274.8
PDA	0.65	211.4

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

PIER 1
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	66.4	45.6
FACTORED LIVE LOAD	56.5	–35.8
FACTORED OVERTURNING	14.6	–14.1
FACTORED DESIGN LOAD	137.4	N/A
FACTORED DESIGN UPLIFT	N/A	–4.3
LOAD COMBINATION	STRENGTH 5 (MOD)	STRENGTH 5 (MOD)



PILE ANCHORAGE DETAIL

PILE NOTES

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

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375".

FOR PILE SPLICE DETAILS SEE DETAIL XXXX.

△ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY REQUIRED TEMPORARY SHORING.

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DRAWN BY: KHN CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

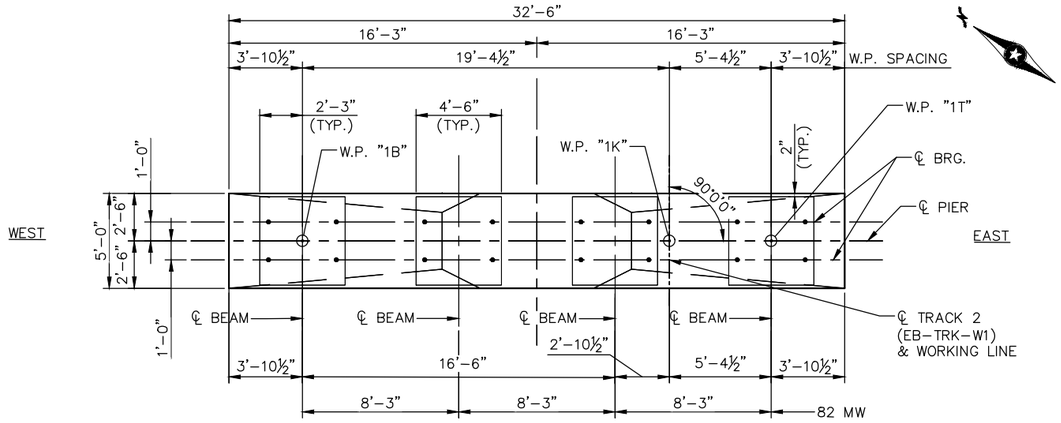
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 1 FOOTING PLAN

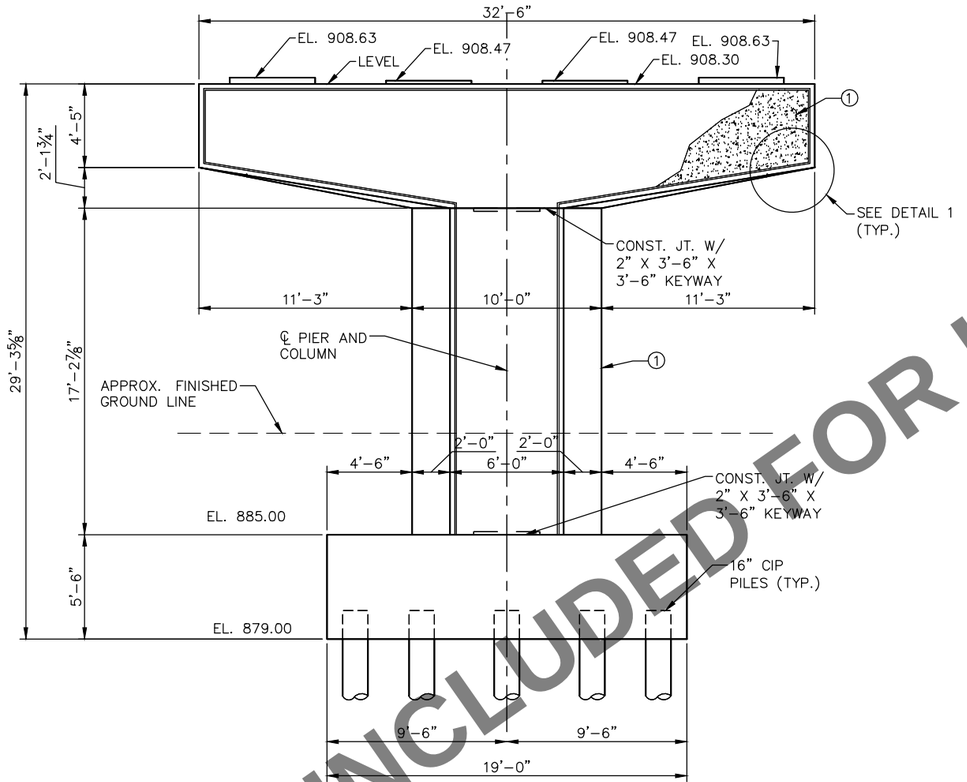
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PIER1-1a

SHEET 34 OF 116

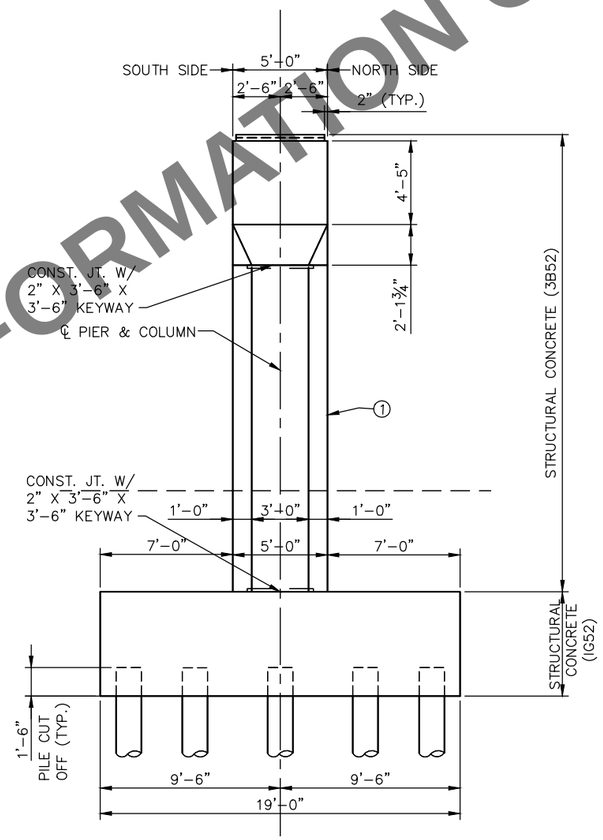
Jan, 18 2016 01:24 pm v:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER1.dwg By: vickersa



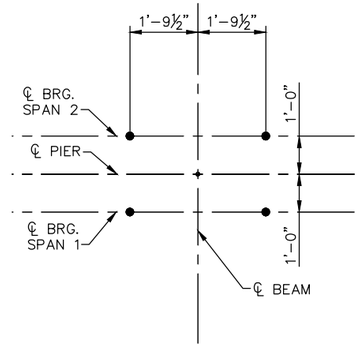
PIER 1 PLAN



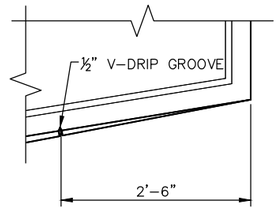
PIER 1 ELEVATION



PIER 1 END VIEW



ANCHOR ROD LAYOUT



DETAIL 1

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) ARCHITECTURAL SURFACE FINISH (SINGLE COLOR), SEE SHEETS 10 & 11.

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DESIGNED BY: APV CHECKED BY: -
DRAWN BY: KHN CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

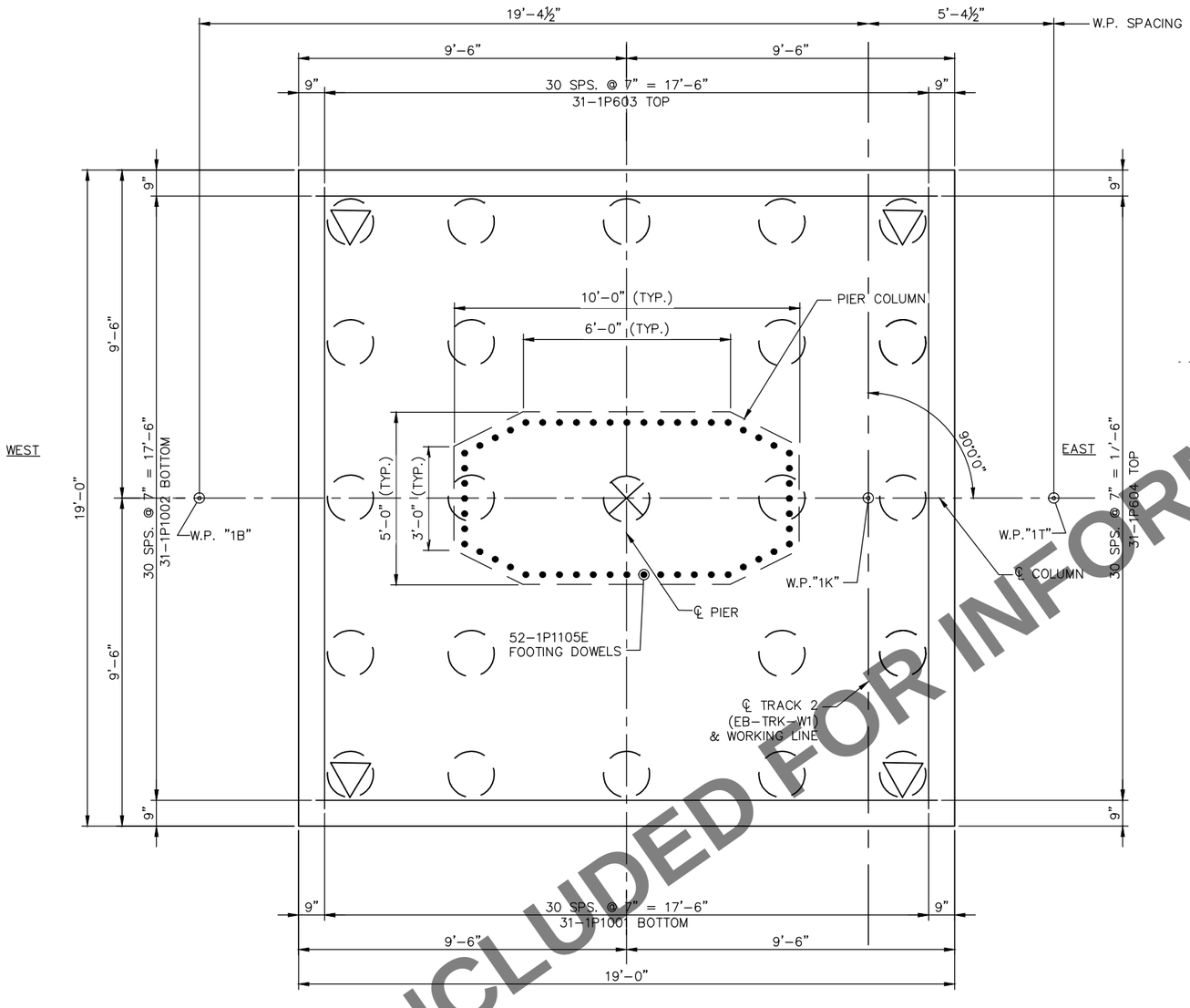
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 1 PLAN & ELEVATION

DISCIPLINE: STRUCTURES

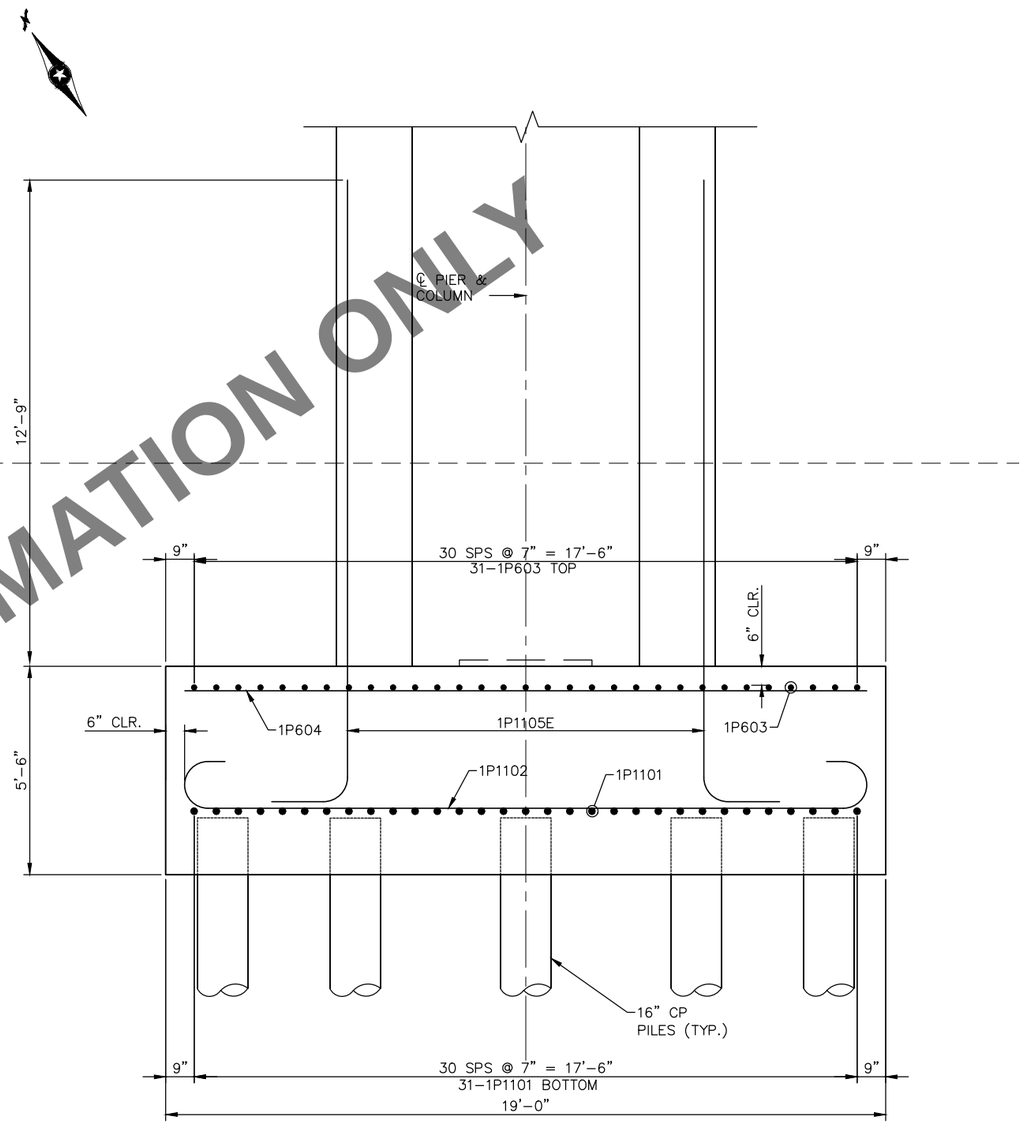
SHEET NAME: W1-STU-BRG-FCVV-PIER1-1

SHEET 35 OF 116

Jan, 18 2016 01:24 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER1.dwg By: vickersa



PIER 1 REINFORCEMENT LAYOUT



PIER 1 FOOTING ELEVATION

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AECOM PARSONS BRINCKERHOFF

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

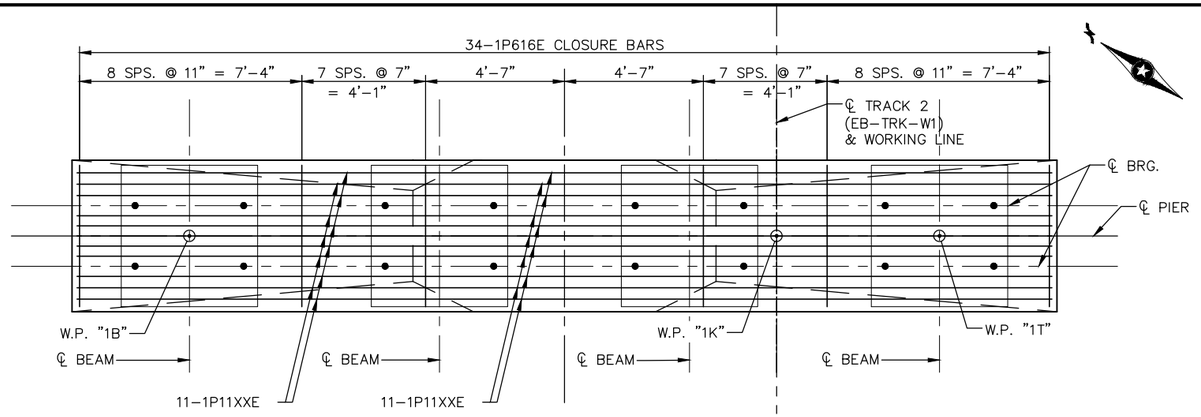
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 1 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

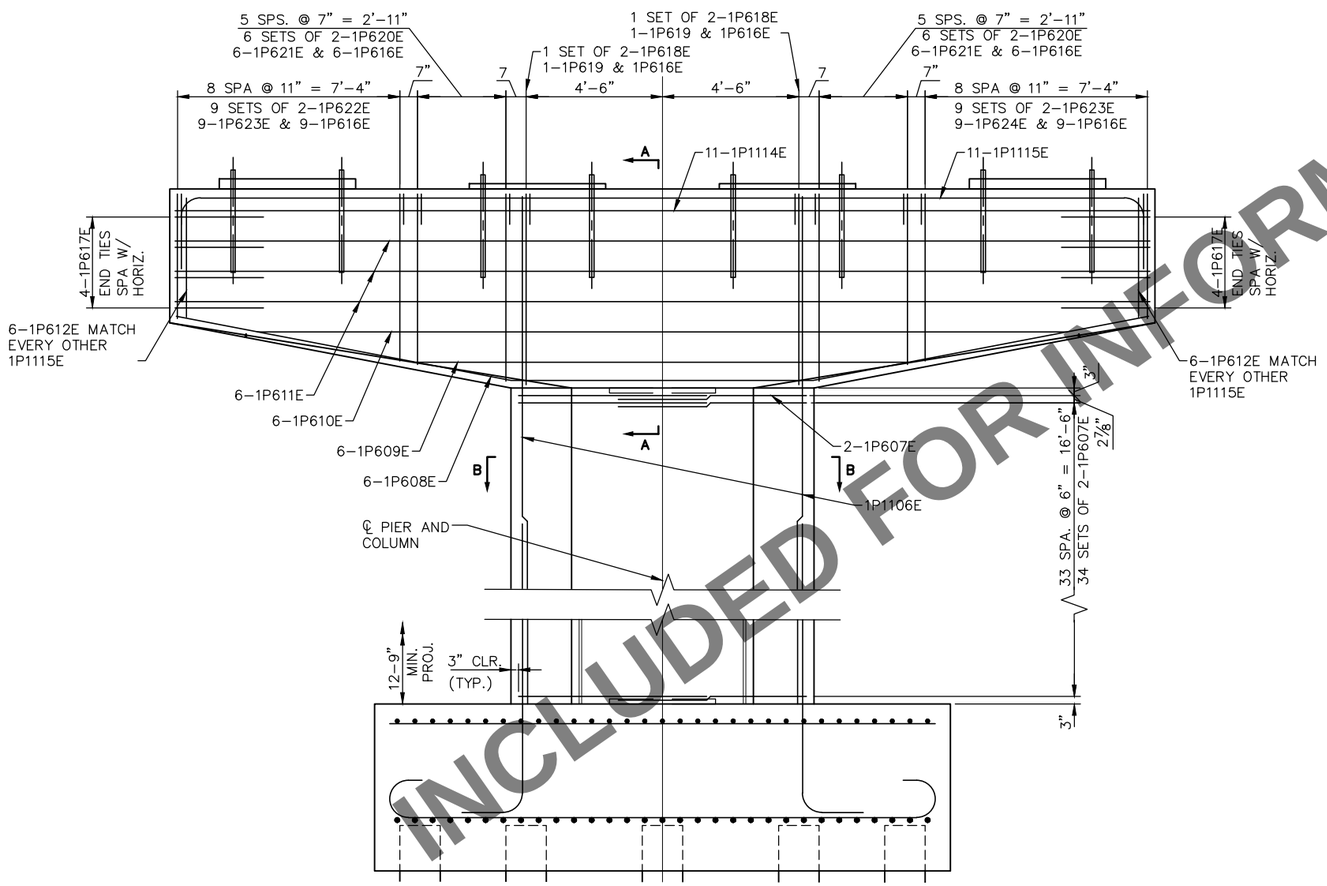
SHEET NAME: W1-STU-BRG-FCVV-PIER1R-1f

SHEET 36 OF 116

Jan, 18 2016 01:24 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER1F.dwg By: vickersa



PIER 1 PLAN



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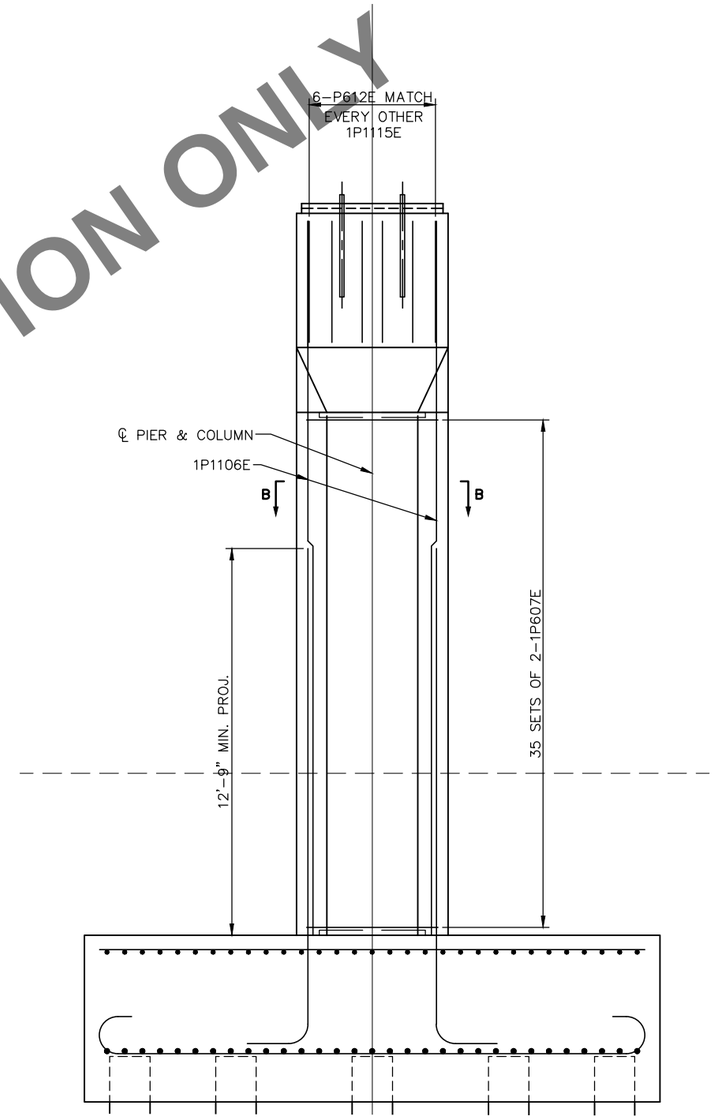

PIER 1 END VIEW

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DRAWN BY: RCK | CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

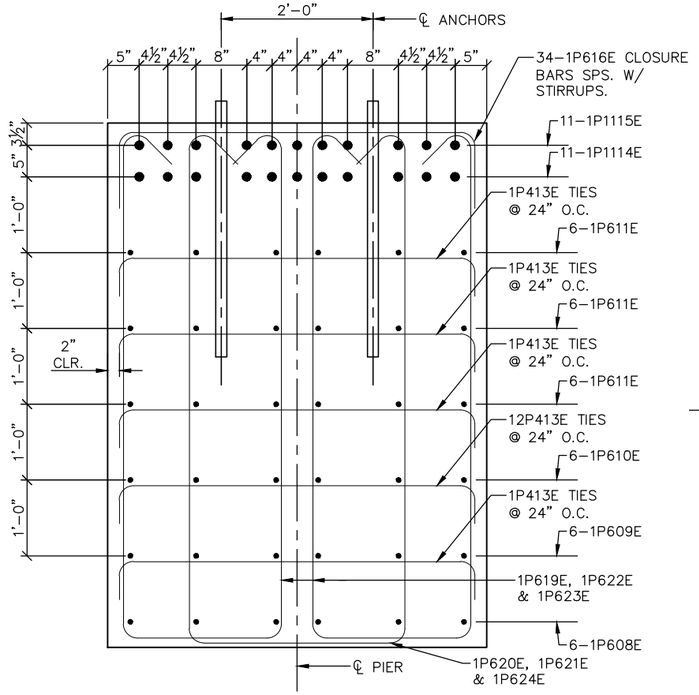
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 1 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

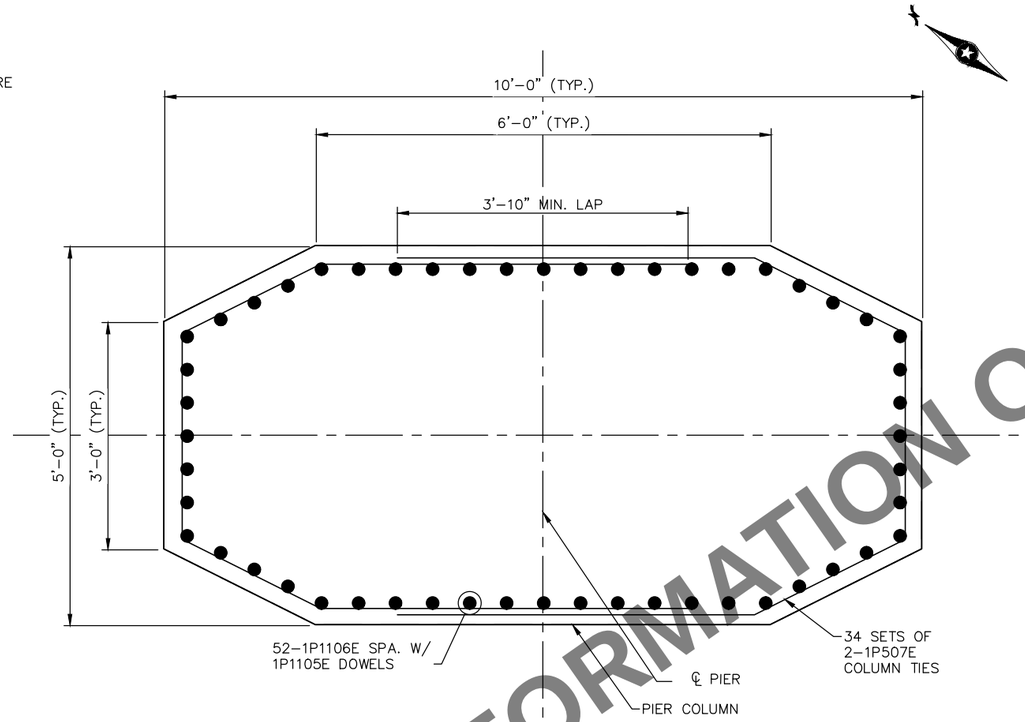
SHEET NAME: W1-STU-BRG-FCVV-PIER1R-1

SHEET 37 OF 116

Jan, 18 2016 01:24 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER1R.dwg By: vickersa



SECTION A-A

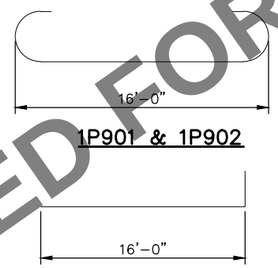


SECTION C-C

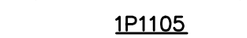
BILL OF REINFORCEMENT FOR PIER 22

BAR	NO.	LENGTH	SHAPE	LOCATION
1P901	44	18'-6"		FOOTING HORIZONTAL
1P902	44	18'-6"		FOOTING HORIZONTAL
1P603	40	16'-0"		FOOTING HORIZONTAL
1P604	40	16'-0"		FOOTING HORIZONTAL
1P1105	48	18'-3"		FOOTING COLUMN DOWEL
NOT USED				
1P607E	25	26'-2"		COLUMN TIE
1P608E	14	6'-3"		CAP DOWEL
1P1009E	36	14'-6"		CAP DOWEL
1P610E	58	13'-8"		CAP TIE HORIZONTAL
1P611E	6	29'-9"		CAP LONGITUDINAL
1P612E	12	5'-2"		CAP LONGITUDINAL
1P613E	6	19'-1"		CAP LONGITUDINAL
1P614E	24	29'-4"		CAP LONGITUDINAL
1P615E	12	7'-6"		CAP LONGITUDINAL
1P416E	70	5'-1"		CAP TIE
1P1117E	9	26'-6"		CAP LONGITUDINAL
1P1118E	2	34'-7"		CAP LONGITUDINAL
1P1119E	2	35'-8"		CAP LONGITUDINAL
1P1120E	2	36'-4"		CAP LONGITUDINAL
1P1121E	2	36'-11"		CAP LONGITUDINAL
1P1122E	2	37'-1"		CAP LONGITUDINAL
1P1123E	1	37'-2"		CAP LONGITUDINAL
1P624E	30	6'-7"		CAP TIE
1P625E	18	13'-8"		END TIE
1P626E	56	①		CAP STIRRUP
1P627E	28	②		CAP STIRRUP
1P628E	4	16'-9"		CAP STIRRUP
1P629E	2	17'-6"		CAP STIRRUP
1P630E	26	6'-0"		CAP VERTICAL
1P631E	2	6'-7"		CAP HORIZONTAL
1P632E	2	4'-7"		CAP HORIZONTAL

① 4-SERIES OF 14, 12'-11" TO 16'-7"
② 2-SERIES OF 14, 13'-8" TO 17'-4"



1P901 & 1P902



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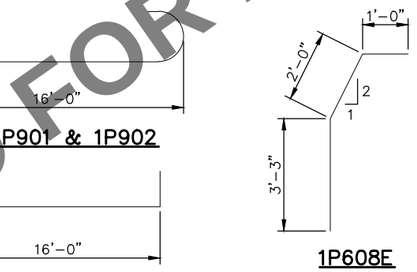
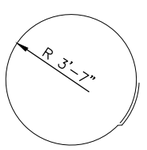


1P608E



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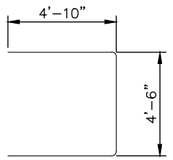

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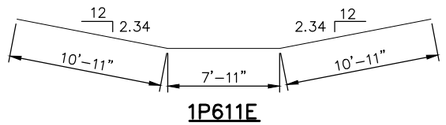

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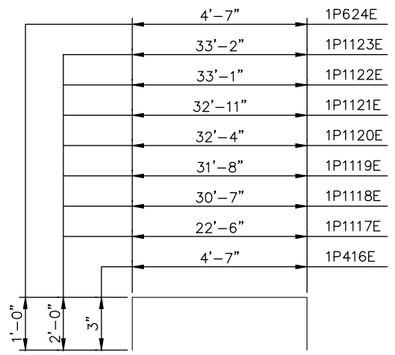
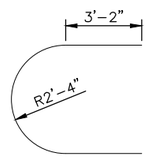


1P416E, 1P1117E, 1P1118E, 1P1119E, 1P1120E, 1P1121E, 1P1122E, 1P1123E & 1P624E



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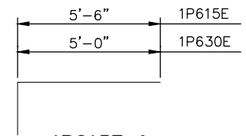
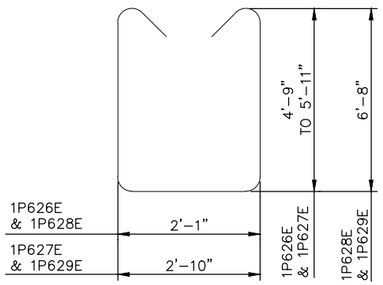


1P615E & 1P630E

1P631E



1P626E, 1P627E, 1P628E & 1P629E

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DESIGNED BY: APV | CHECKED BY: -
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

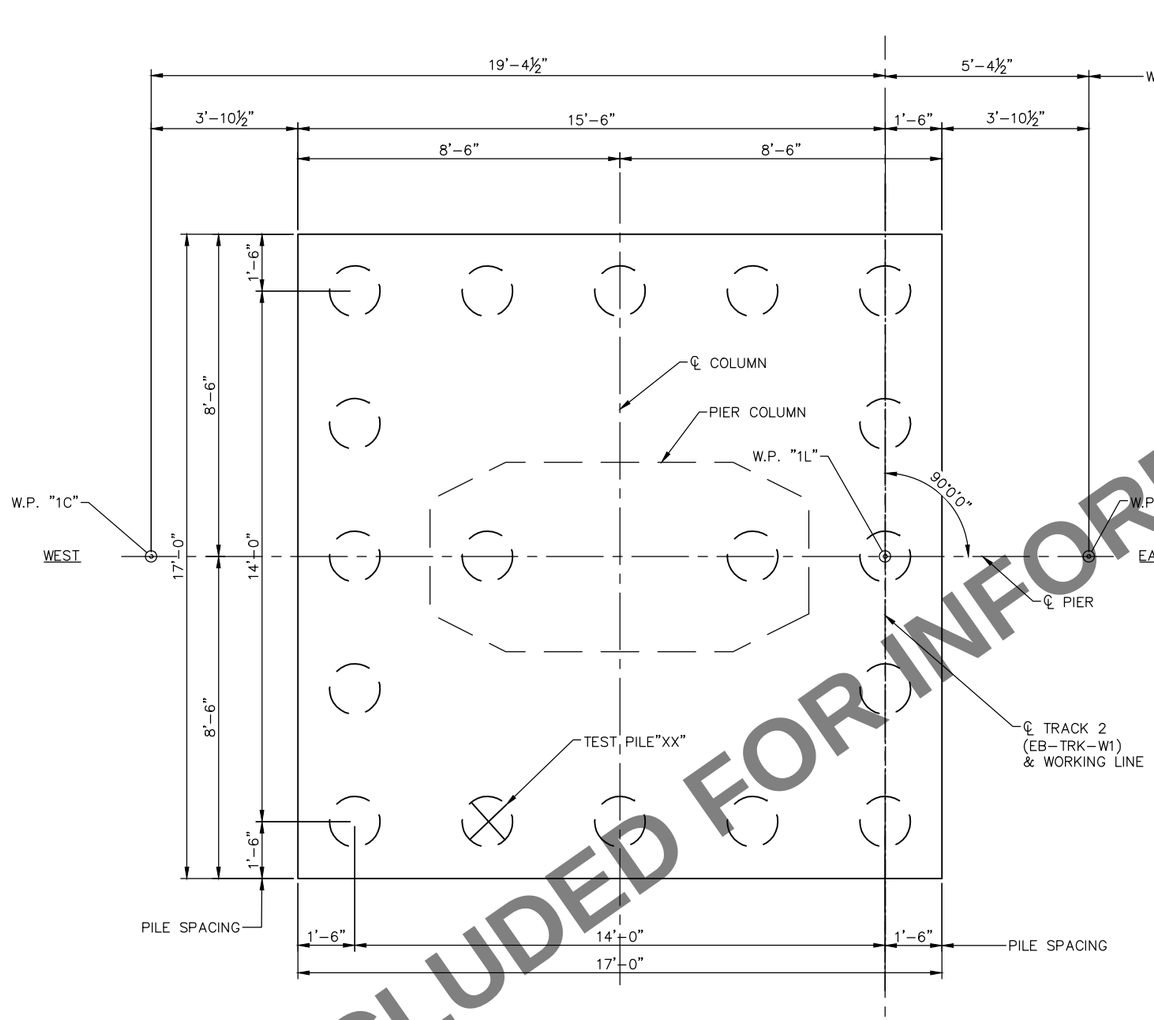
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 1 REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PIER1R-1a

SHEET 38 OF 116

Jan, 18 2016 01:24 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER1R.dwg By: vickersa



PIER 2 PILE LAYOUT

PIER 2 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $Rn=20\sqrt{\frac{WxH}{1000}}x\log(\frac{10}{S})$	0.50	278.0
PDA	0.65	213.8

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

PIER 2 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	79.3
FACTORED LIVE LOAD	43.1
FACTORED OVERTURNING	16.7
FACTORED DESIGN LOAD	139.0
FACTORED DESIGN UPLIFT	N/A
LOAD COMBINATION	STRENGTH 5 (MOD)

PILE NOTES

1 CAST–IN–PLACE CONC. TEST PILE 65 FT. LONG
17 CAST–IN–PLACE CONC. PILES EST. LENGTH 55 FT.
18 CAST–IN–PLACE CONC. PILES REQ'D FOR PIER 2.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND A WALL THICKNESS OF 0.375".

FOR PILE SPLICE DETAILS SEE DETAIL XXXX.

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY REQUIRED TEMPORARY SHORING.

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DESIGNED BY: APV | CHECKED BY: -
DRAWN BY: RCK | CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

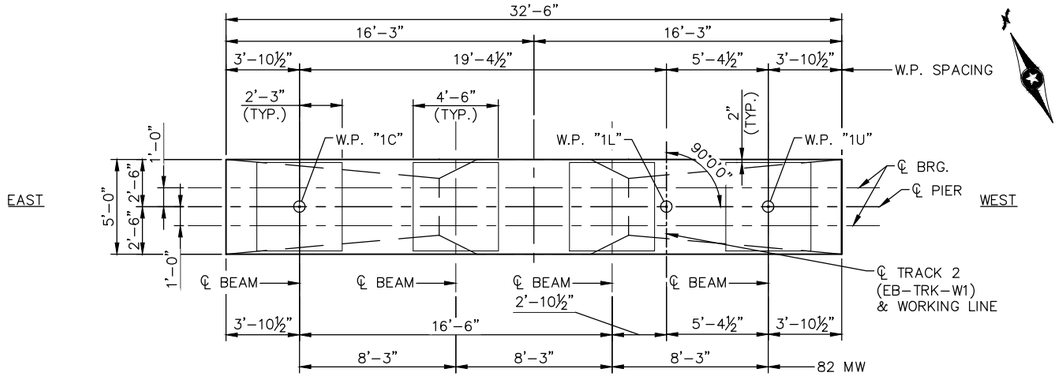
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 2 FOOTING PLAN

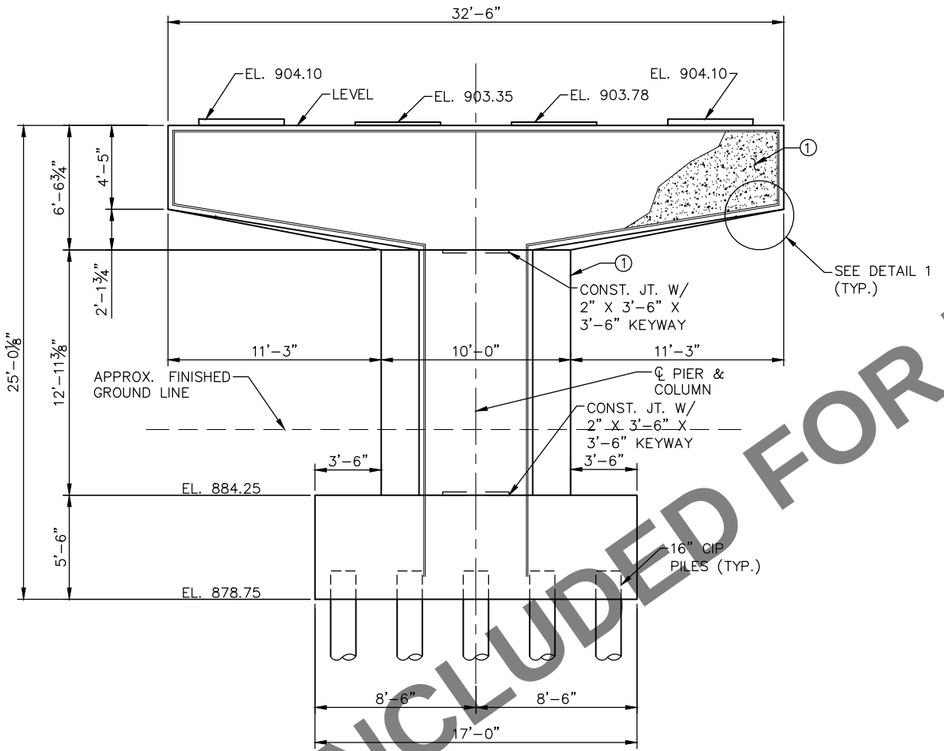
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PIER2-2a

SHEET 39 OF 116

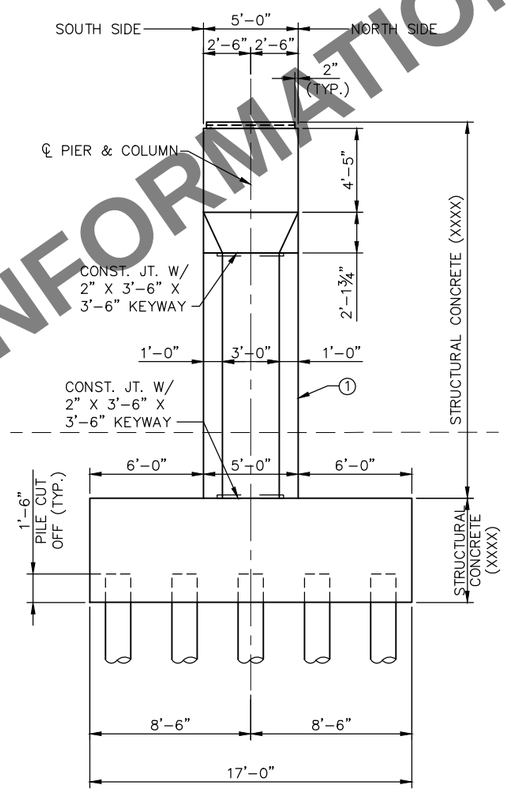
Jan, 18 2016 01:25 pm V:\19140A_MN_Valley_View_Rood_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER2.dwg By: vickersa



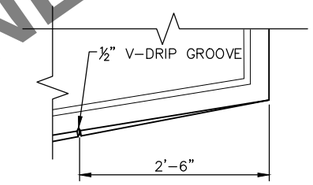
PIER 2 PLAN



PIER 2 ELEVATION



PIER 2 END VIEW



DETAIL 1

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① ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) ARCHITECTURAL SURFACE FINISH (SINGLE COLOR), SEE SHEETS 10 & 11.

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DESIGNED BY: APV | CHECKED BY: -
DRAWN BY: RCK | CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

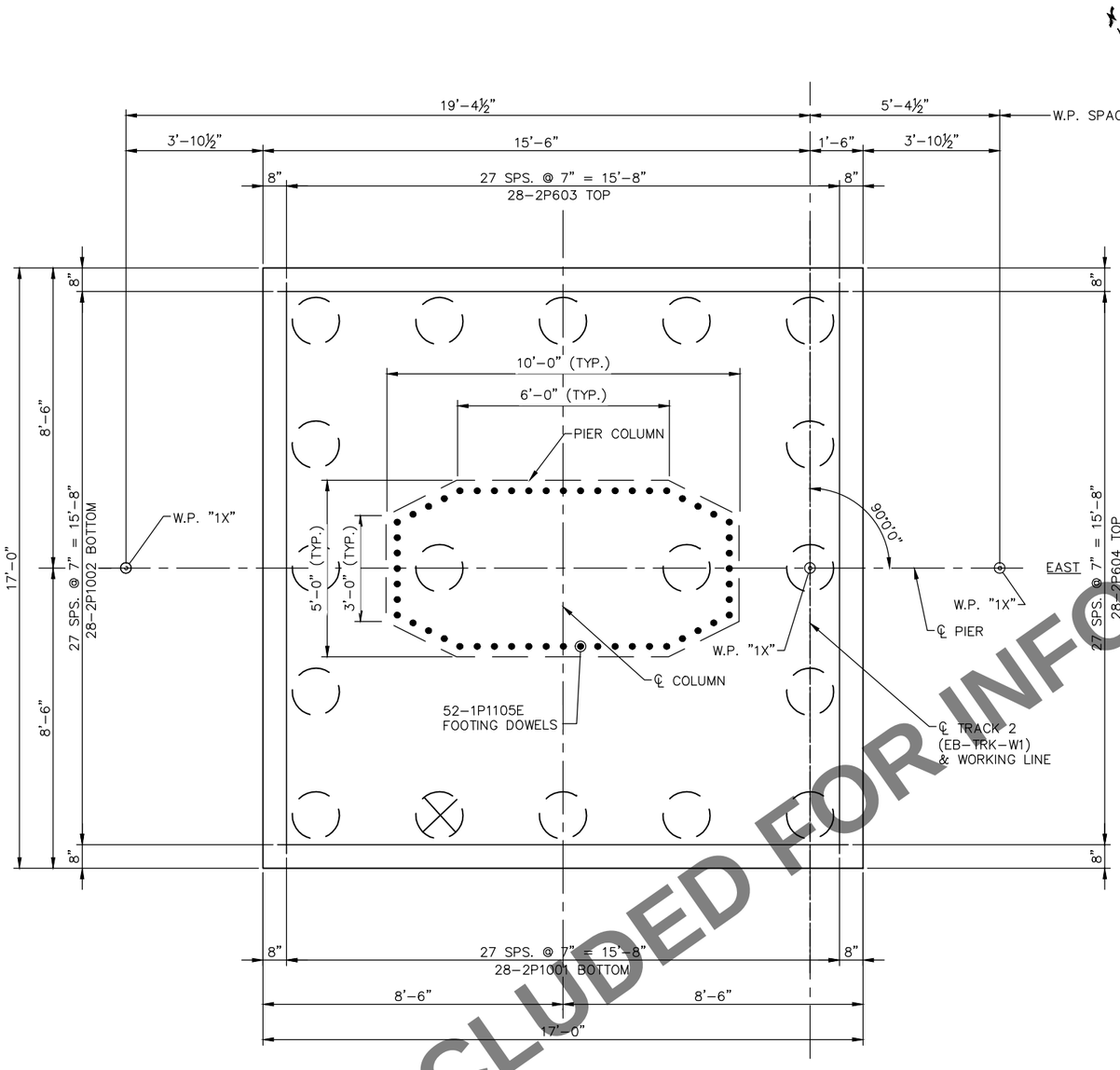
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 2 PLAN & ELEVATION

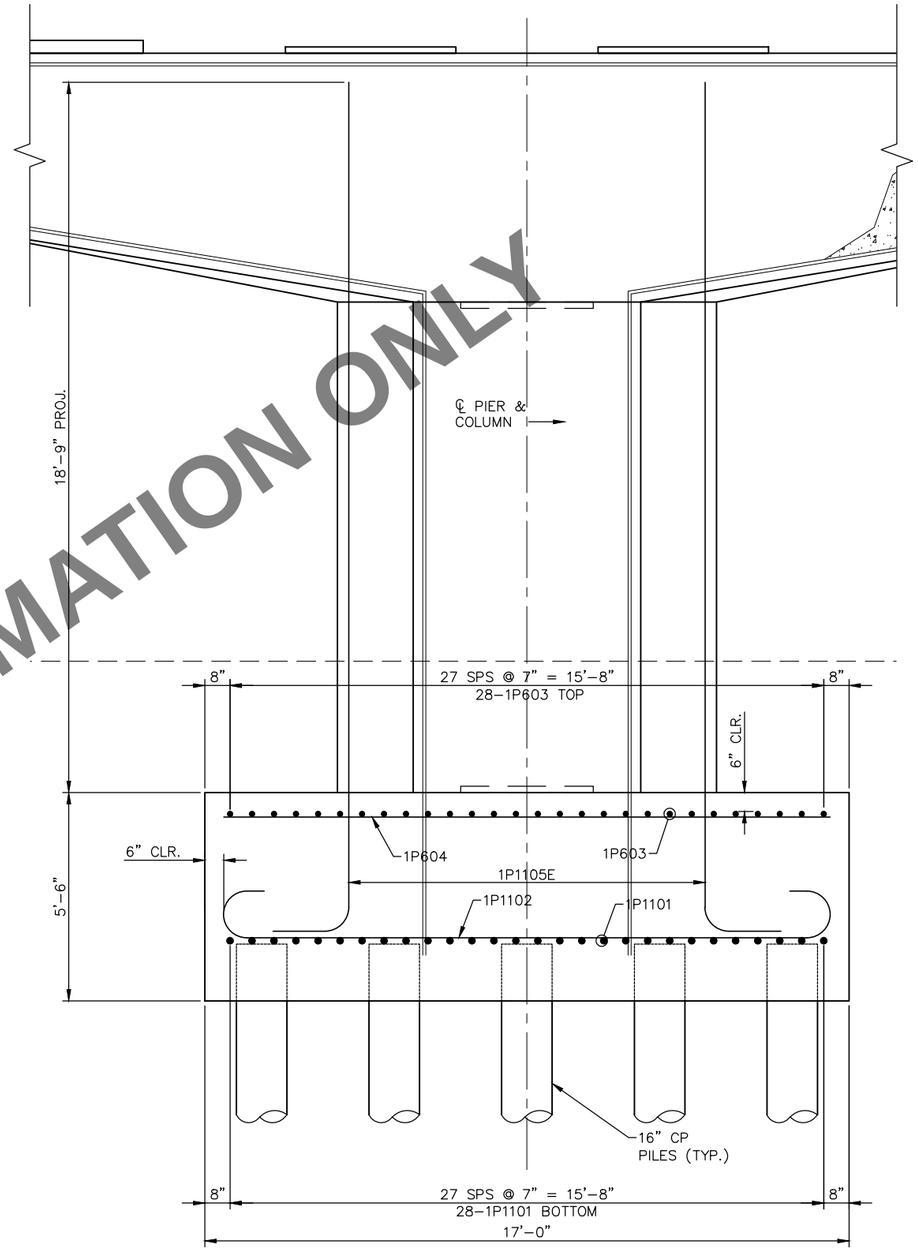
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PIER2-2

SHEET 40 OF 116

Jan, 18 2016 01:25 pm V:\19140A_MN_Valley_View_Rood_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER2.dwg By: vickersa



PIER 2 REINFORCEMENT LAYOUT



PIER 2 FOOTING ELEVATION

INCLUDED FOR INFORMATION ONLY

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

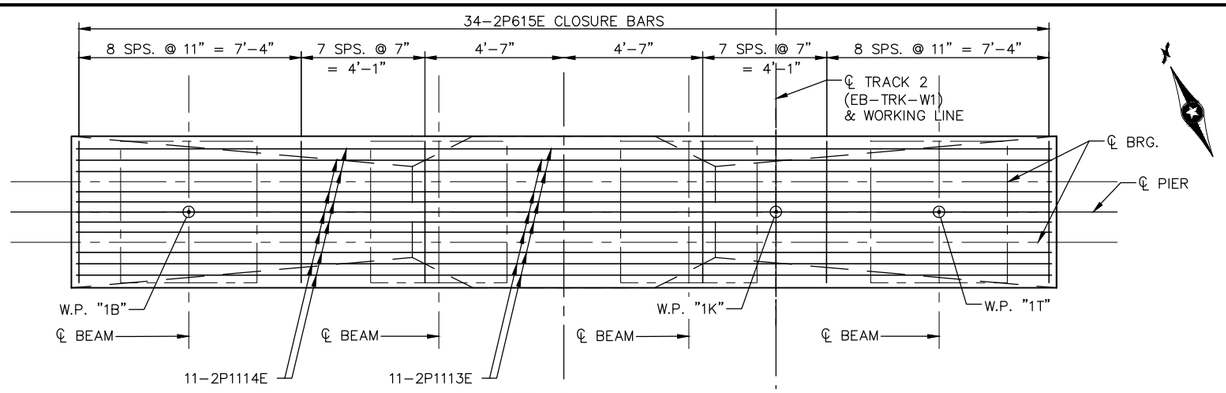
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 2 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

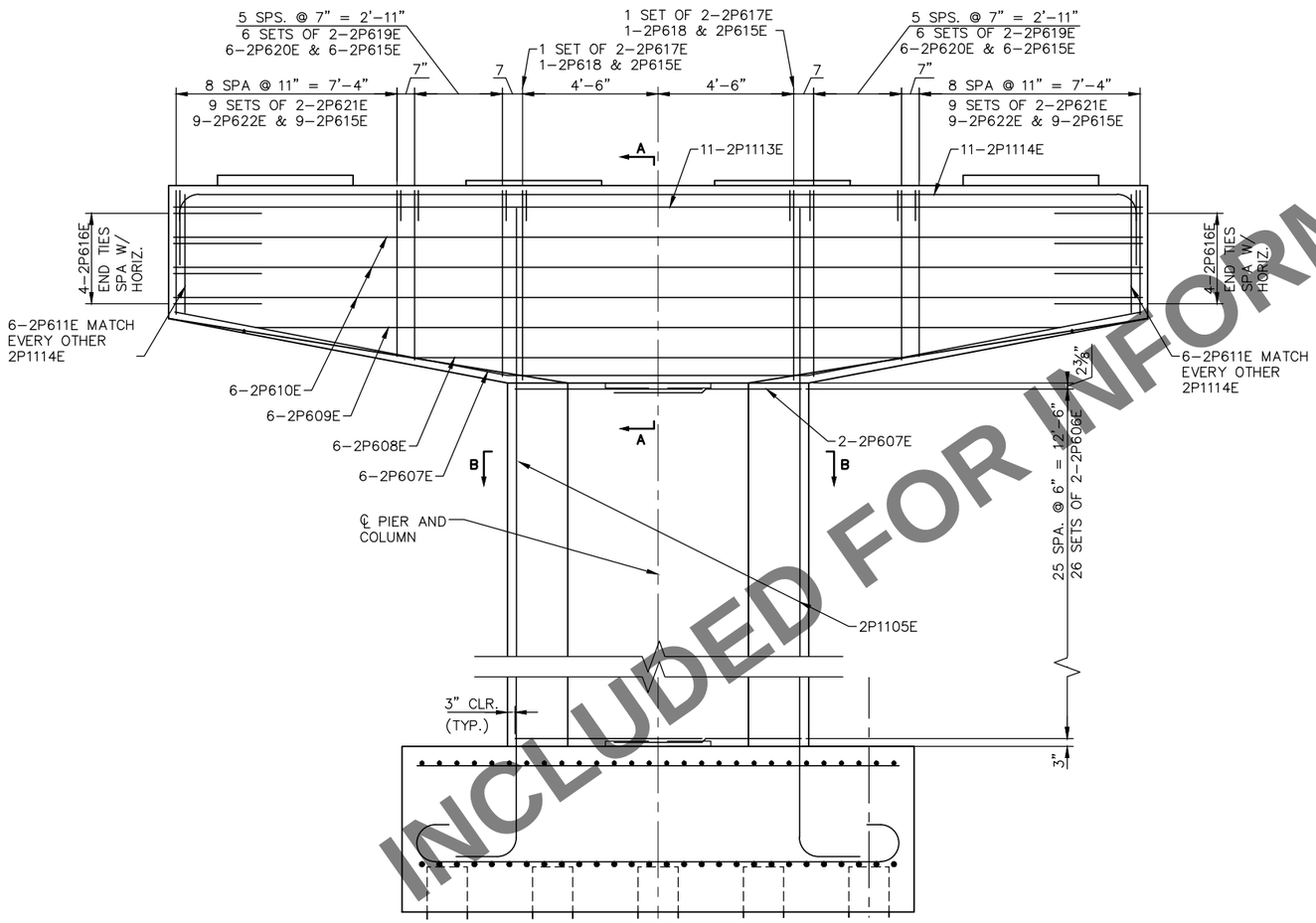
SHEET NAME: W1-STU-BRG-FCVV-PIER2R-2f

SHEET 41 OF 116

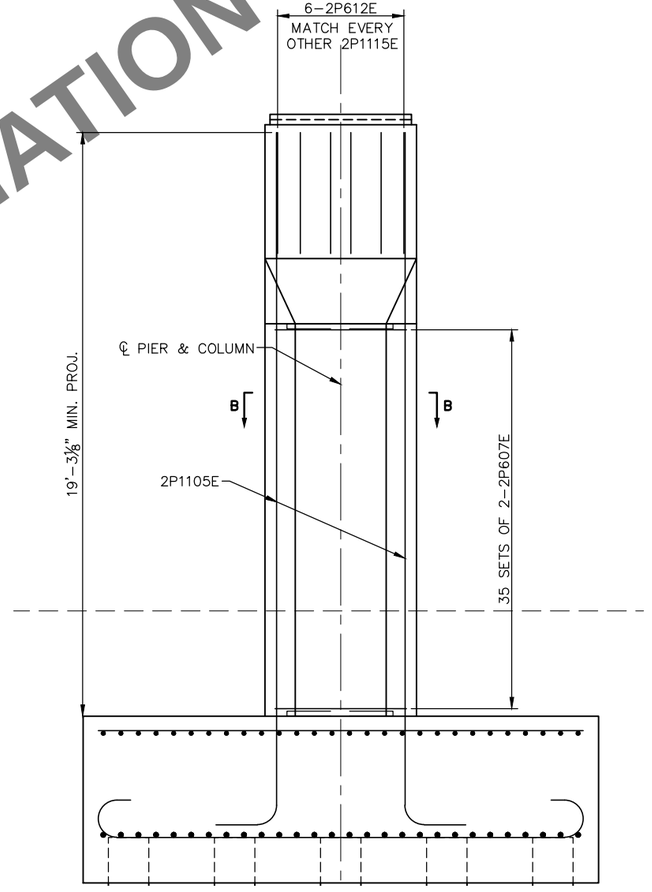
Jan, 18 2016 01:25 pm v:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER2F.dwg By: vickersa



PIER 2 PLAN



PIER 2 ELEVATION



PIER 2 END VIEW

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DESIGNED BY: APV | CHECKED BY: -
DRAWN BY: RCK | CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

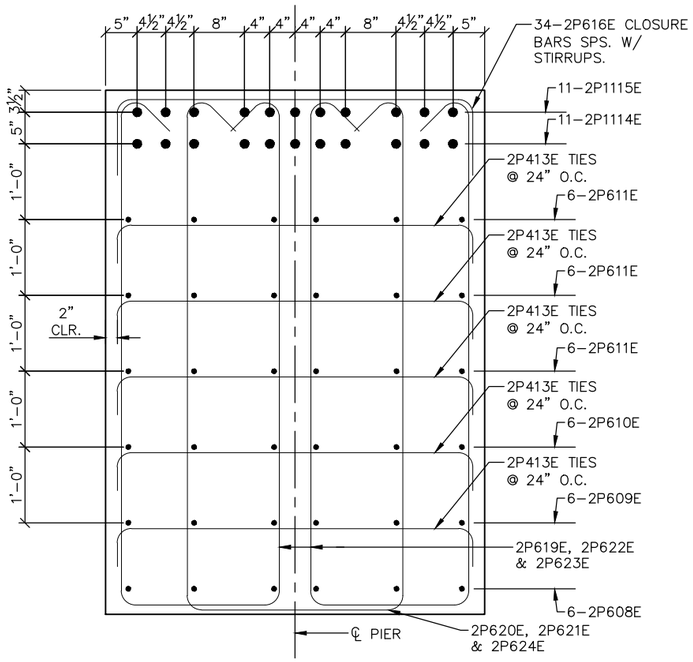
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 2 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

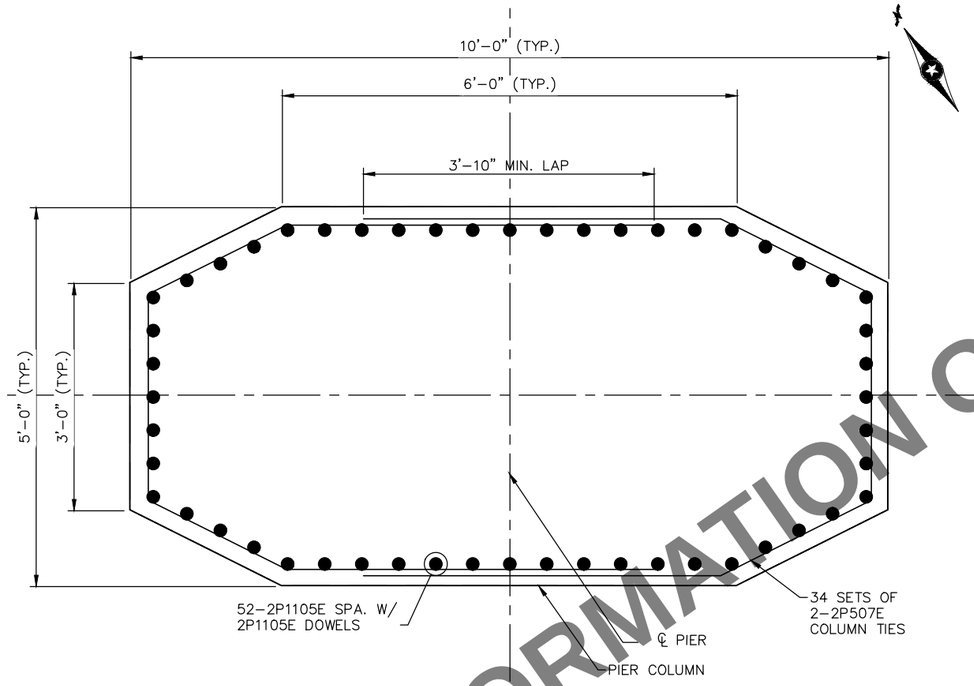
SHEET NAME: W1-STU-BRG-FCVV-PIER2R-2

SHEET 42 OF 116

Jan, 18 2016 01:25 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER2R.dwg By: vickersa



SECTION A–A

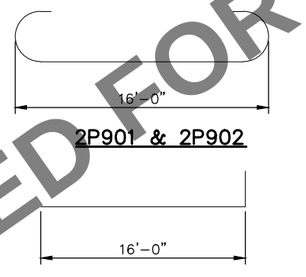


SECTION C–C

BILL OF REINFORCEMENT FOR PIER 22

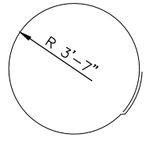
BAR	NO.	LENGTH	SHAPE	LOCATION
2P901	44	18'–6"		FOOTING HORIZONTAL
2P902	44	18'–6"		FOOTING HORIZONTAL
2P603	40	16'–0"		FOOTING HORIZONTAL
2P604	40	16'–0"		FOOTING HORIZONTAL
2P1105	48	18'–3"		FOOTING COLUMN DOWEL
NOT USED				
2P607E	25	26'–2"		COLUMN TIE
2P608E	14	6'–3"		CAP DOWEL
2P1009E	36	14'–6"		CAP DOWEL
2P610E	58	13'–8"		CAP TIE HORIZONTAL
2P611E	6	29'–9"		CAP LONGITUDINAL
2P612E	12	5'–2"		CAP LONGITUDINAL
2P613E	6	19'–1"		CAP LONGITUDINAL
2P614E	24	29'–4"		CAP LONGITUDINAL
2P615E	12	7'–6"		CAP LONGITUDINAL
2P416E	70	5'–1"		CAP TIE
2P1117E	9	26'–6"		CAP LONGITUDINAL
2P1118E	2	34'–7"		CAP LONGITUDINAL
2P1119E	2	35'–8"		CAP LONGITUDINAL
2P1120E	2	36'–4"		CAP LONGITUDINAL
2P1121E	2	36'–11"		CAP LONGITUDINAL
2P1122E	2	37'–1"		CAP LONGITUDINAL
2P1123E	1	37'–2"		CAP LONGITUDINAL
2P624E	30	6'–7"		CAP TIE
2P625E	18	13'–8"		END TIE
2P626E	56	①		CAP STIRRUP
2P627E	28	②		CAP STIRRUP
2P628E	4	16'–9"		CAP STIRRUP
2P629E	2	17'–6"		CAP STIRRUP
2P630E	26	6'–0"		CAP VERTICAL
2P631E	2	6'–7"		CAP HORIZONTAL
2P632E	2	4'–7"		CAP HORIZONTAL

① 4–SERIES OF 14, 12'–11" TO 16'–7"
② 2–SERIES OF 14, 13'–8" TO 17'–4"



2P901 & 2P902

2P1105



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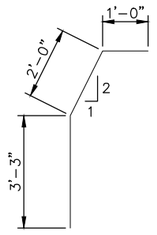

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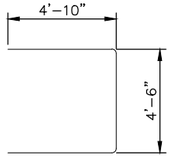

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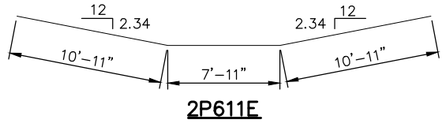

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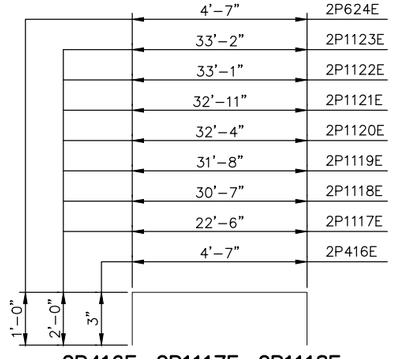
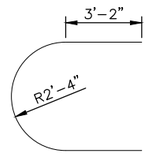


2P416E, 2P1117E, 2P1118E, 2P1119E, 2P1120E, 2P1121E, 2P1122E, 2P1123E & 2P624E



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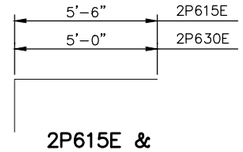
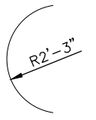


2P615E & 2P630E



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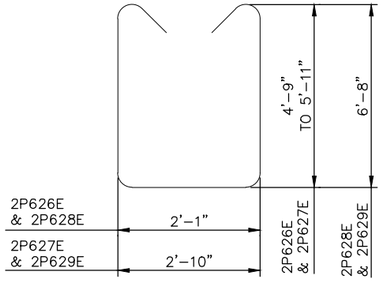

2P626E, 2P627E, 2P628E & 2P629E

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DESIGNED BY: APV CHECKED BY: -
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

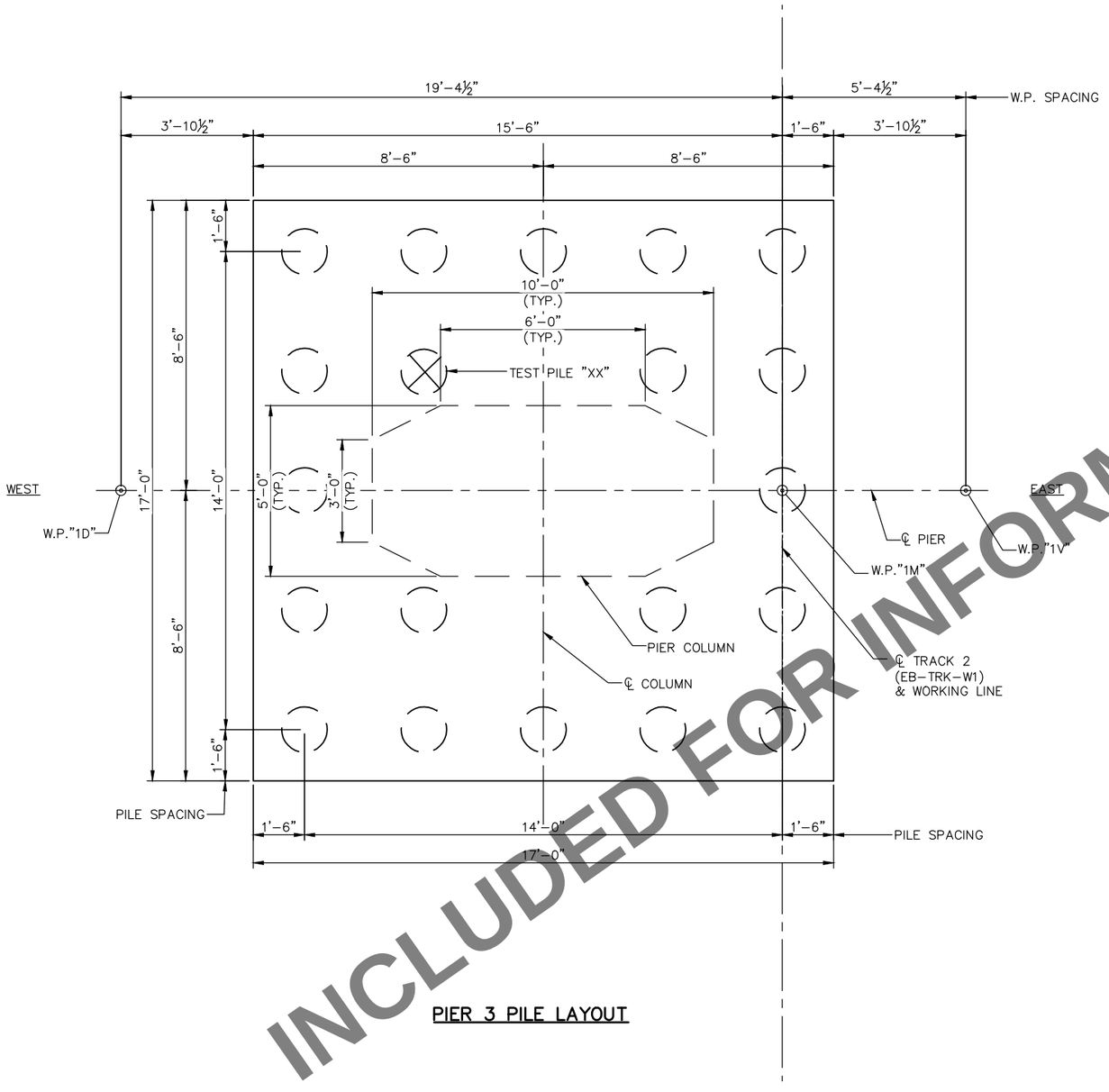
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 2 REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PIER2R-2a

SHEET 43 OF 116

Jan, 18 2016 01:26 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER2R.dwg By: vickersa



PIER 3 PILE LAYOUT

PIER 3 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $Rn=20\sqrt{\frac{WxH}{1000}}\times\log(\frac{10}{S})$	0.50	276.0
PDA	0.65	212.3

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

PIER 3 COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD	71.9
FACTORED LIVE LOAD	48.8
FACTORED OVERTURNING	17.3
FACTORED DESIGN LOAD	138.0
FACTORED DESIGN UPLIFT	N/A
LOAD COMBINATION	STRENGTH 5 (MOD)

PILE NOTES

1 CAST-IN-PLACE CONC. TEST PILE 50 FT. LONG
19 CAST-IN-PLACE CONC. PILES EST. LENGTH 40 FT.
20 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 3.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375".

FOR PILE SPLICE DETAILS SEE DETAIL XXXX.

INCLUDED FOR INFORMATION ONLY

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY REQUIRED TEMPORARY SHORING.

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AECOM PARSONS BRINCKERHOFF

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

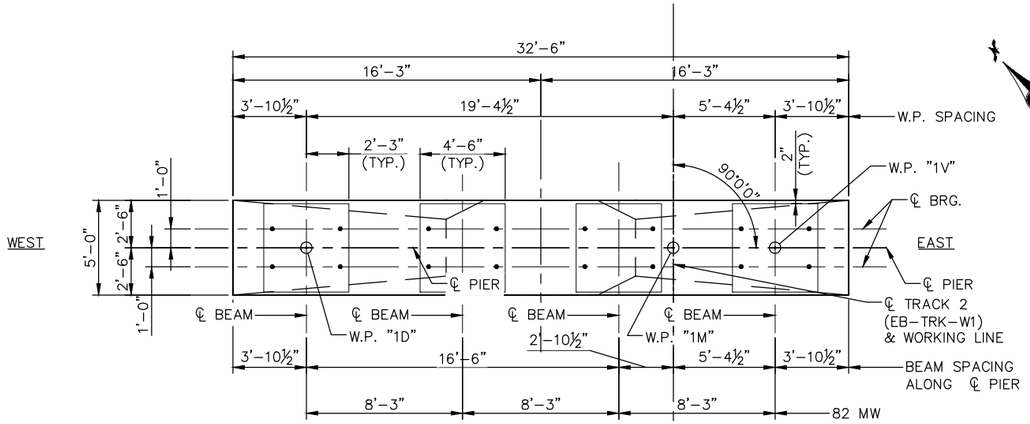
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 3 FOOTING PLAN

DISCIPLINE: STRUCTURES

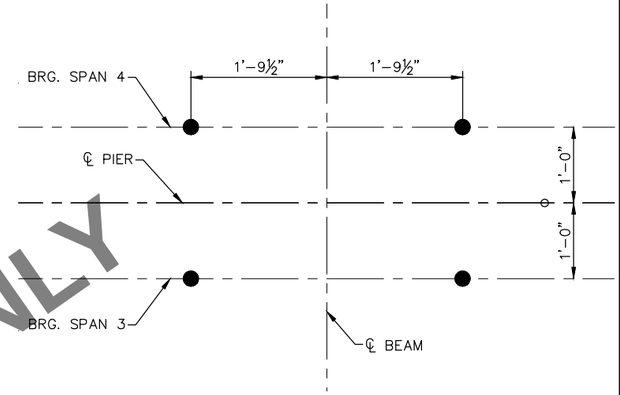
SHEET NAME: W1-STU-BRG-FCVV-PIER3-3a

SHEET 44 OF 116

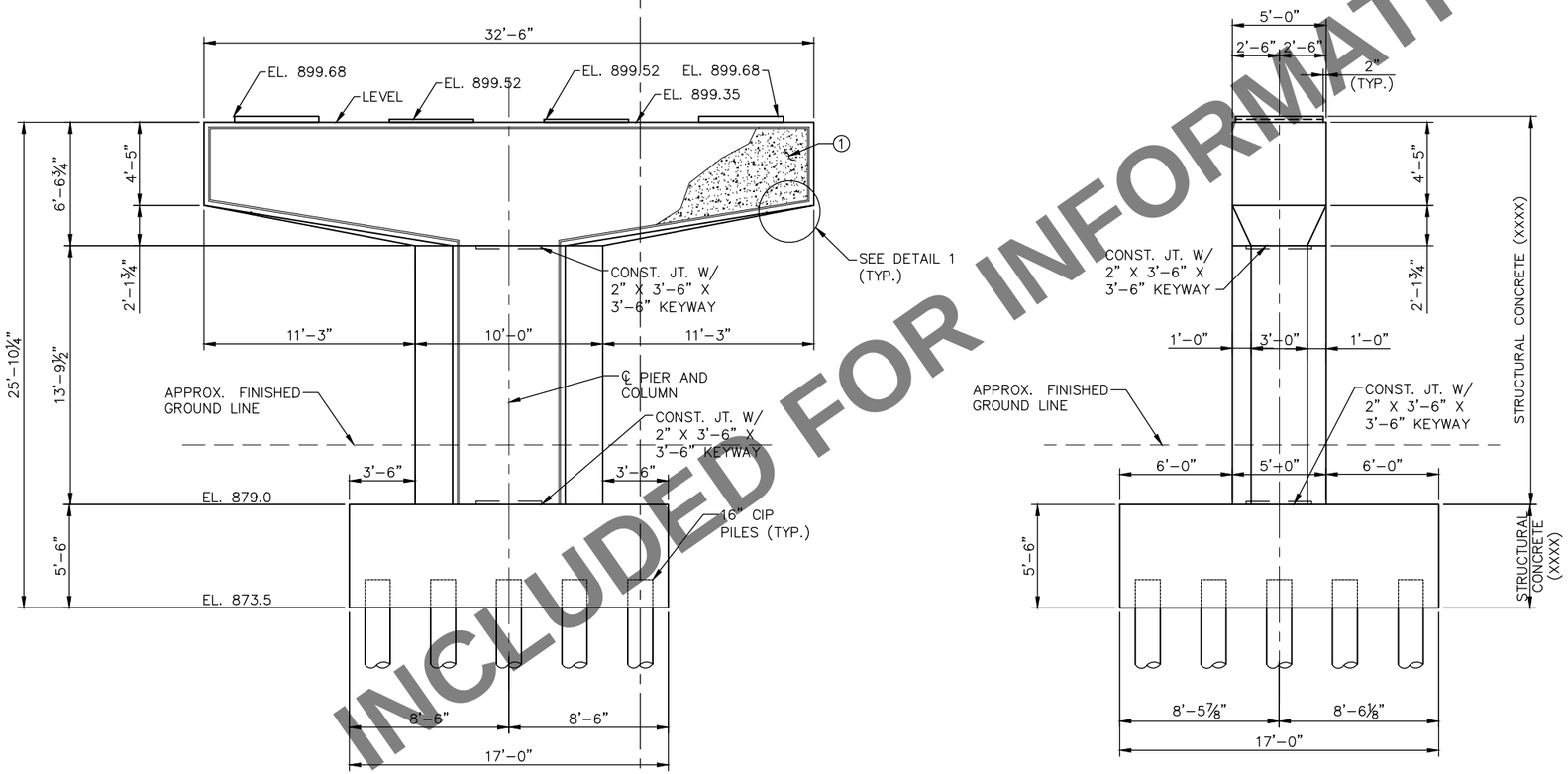
Jan. 18 2016 01:26 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER3.dwg By: vickersa



PIER 3 PLAN

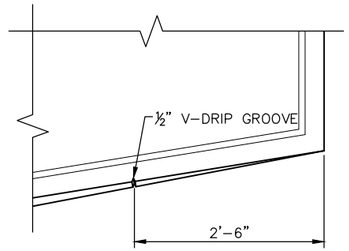


ANCHOR ROD LAYOUT



PIER 3 ELEVATION

PIER 3 END VIEW



DETAIL 1

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) ARCHITECTURAL SURFACE FINISH (SINGLE COLOR), SEE SHEETS 10 & 11.

INCLUDED FOR INFORMATION ONLY

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

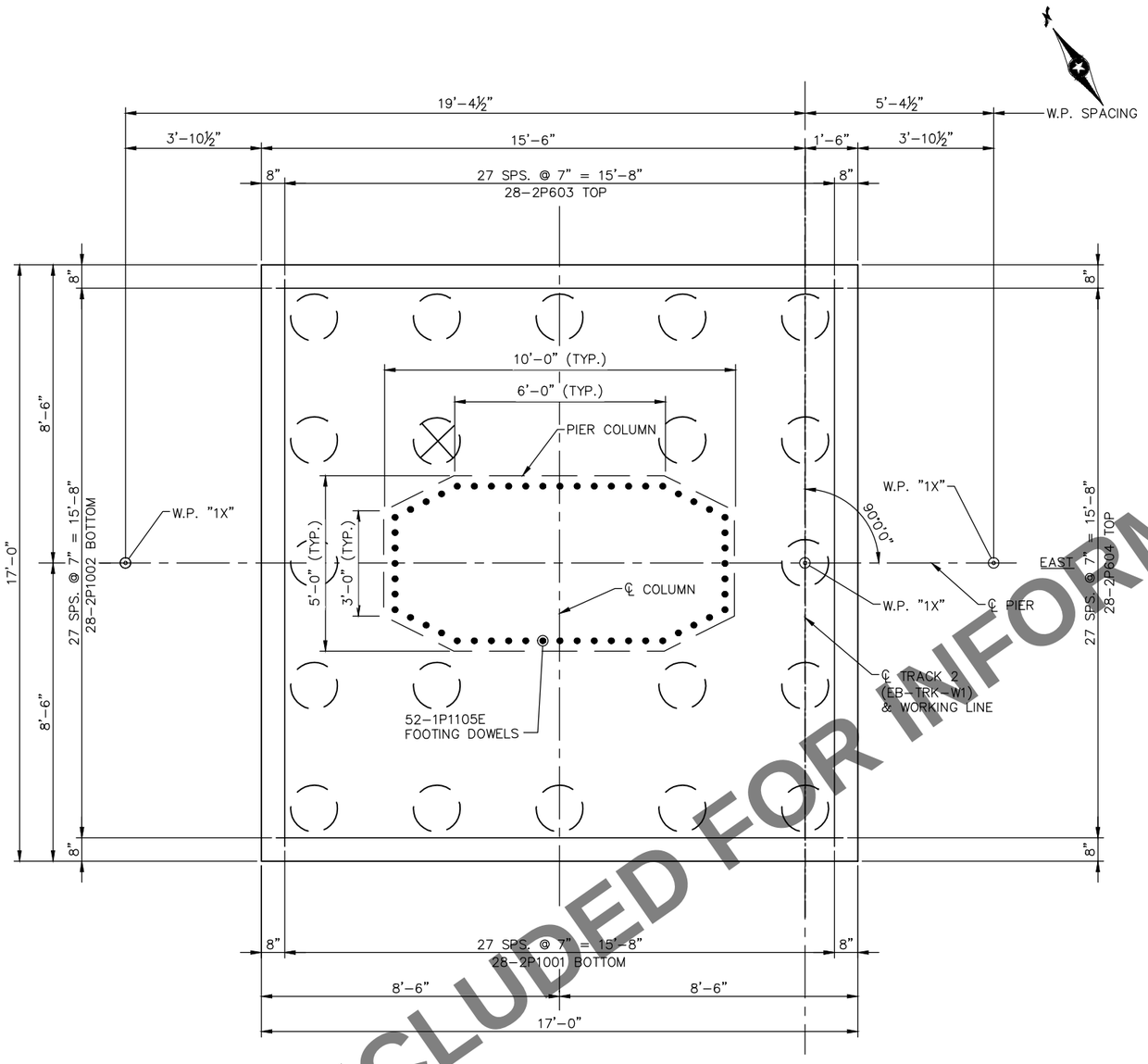
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 3 PLAN & ELEVATION

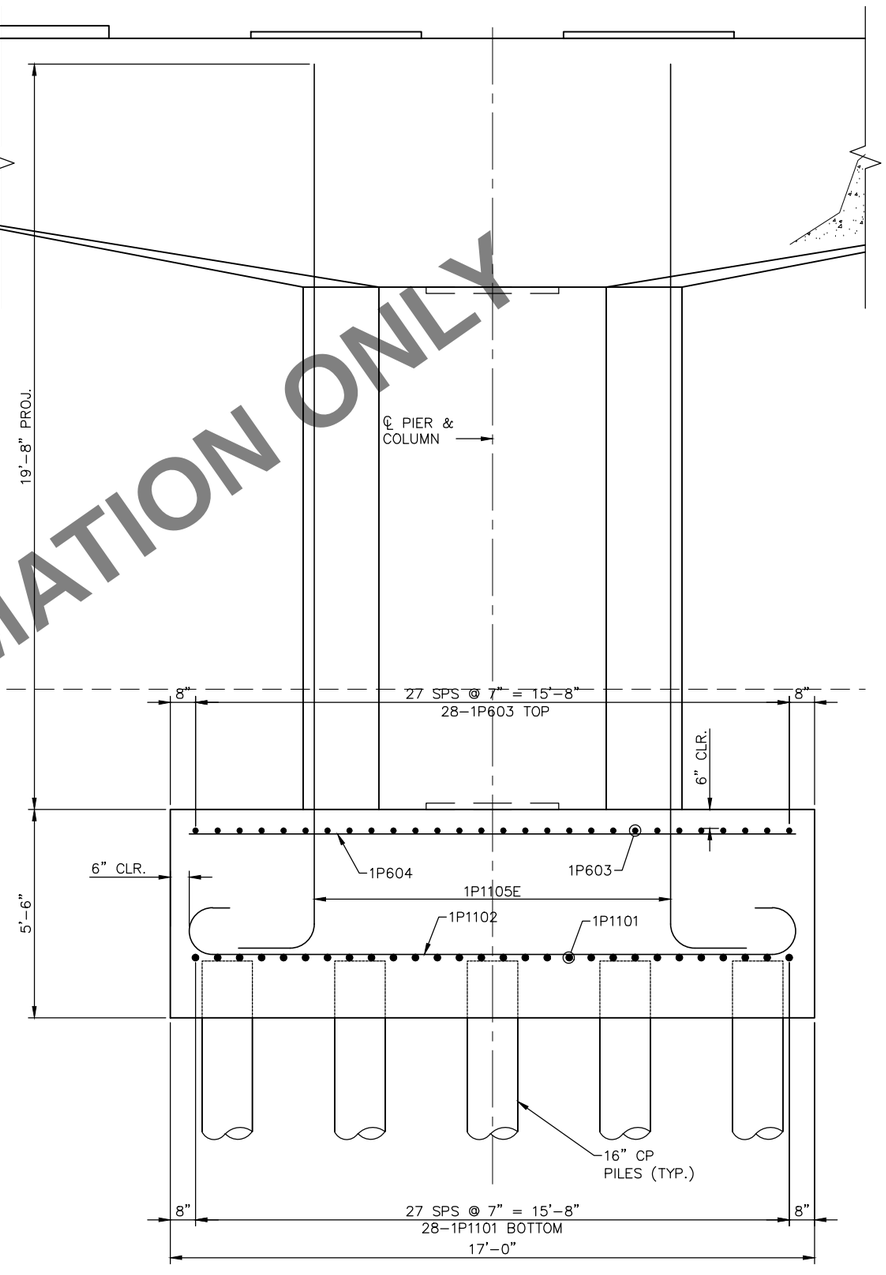
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PIER3-3

SHEET 45 OF 116

Jan, 18 2016 01:26 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER3.dwg By: vickersa



PIER 3 REINFORCEMENT LAYOUT



PIER 3 FOOTING ELEVATION

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DRAWN BY: RCK | CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

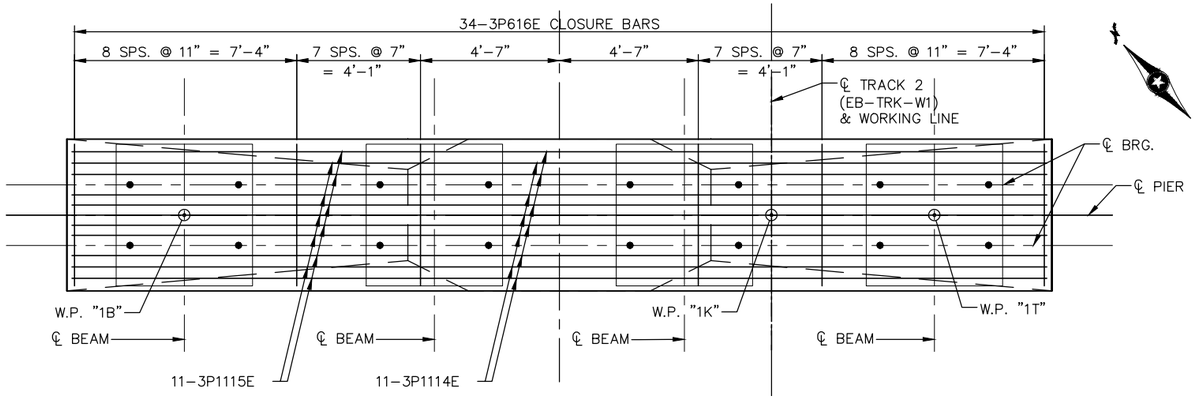
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 3 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

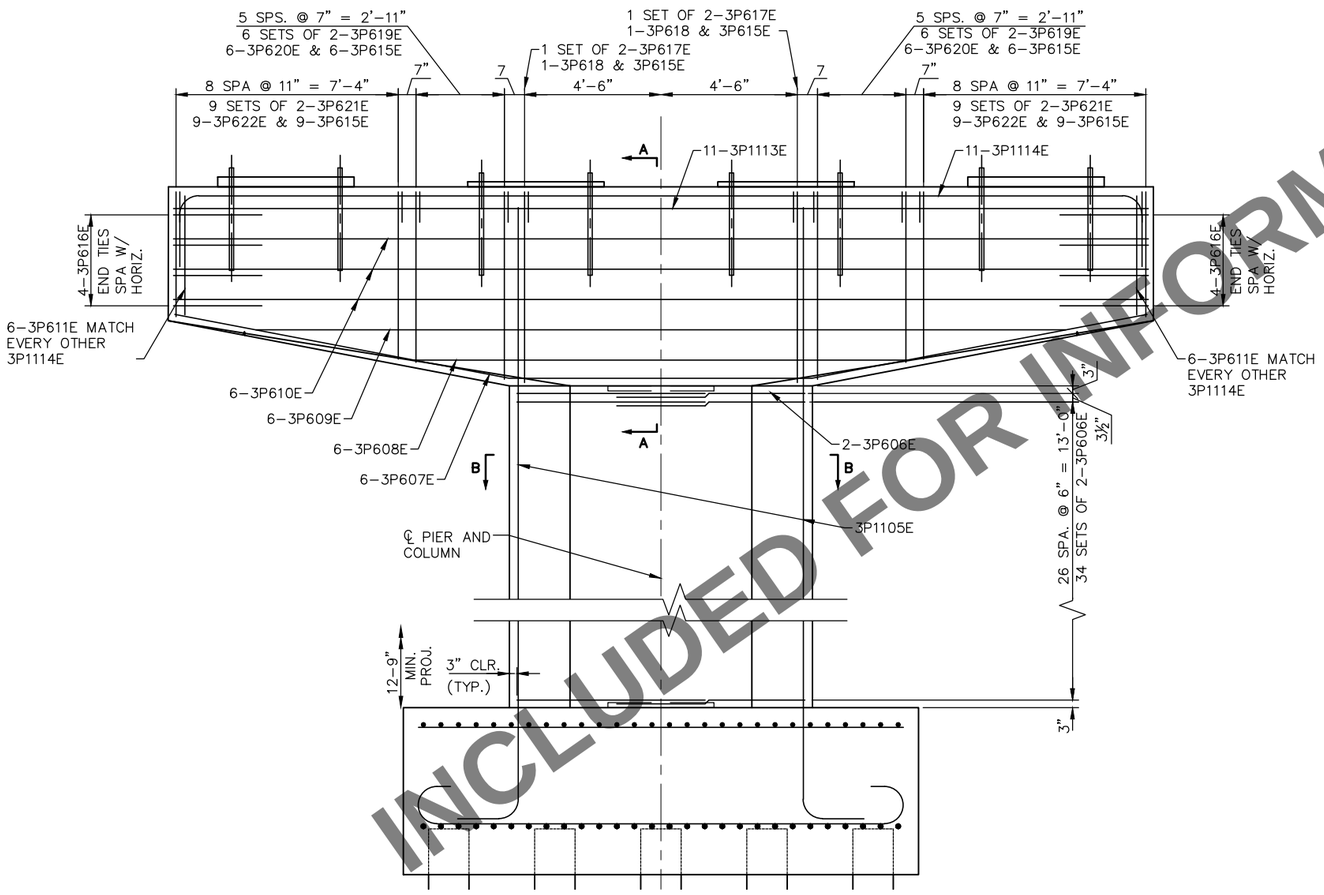
SHEET NAME: W1-STU-BRG-FCVV-PIER3R-3f

SHEET 46 OF 116

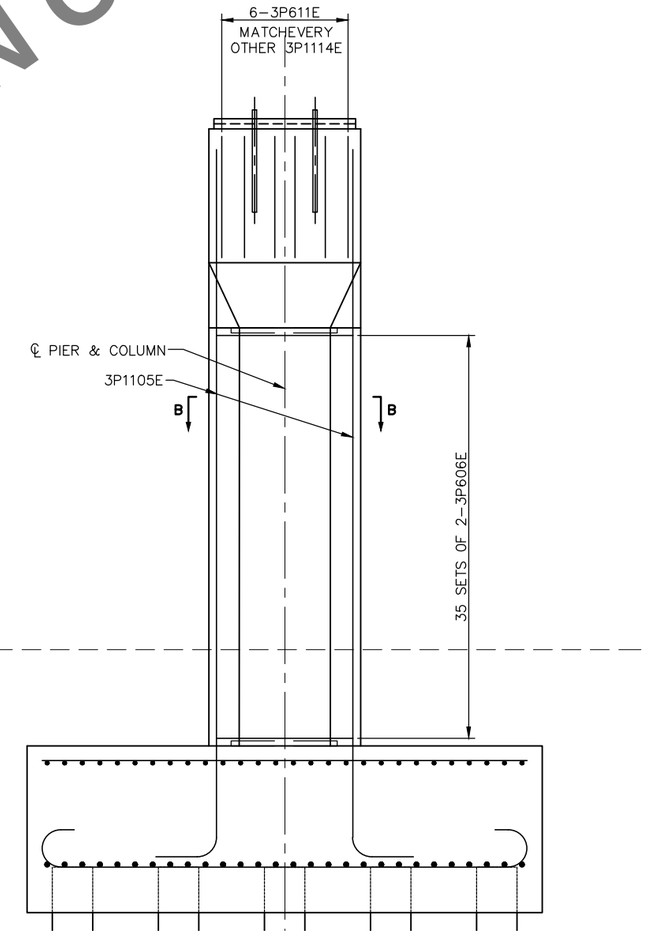
Jan, 18 2016 01:26 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER3F.dwg By: vickersa



PIER 3 PLAN



PIER 3 ELEVATION



PIER 3 END VIEW

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DRAWN BY: RCK | CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

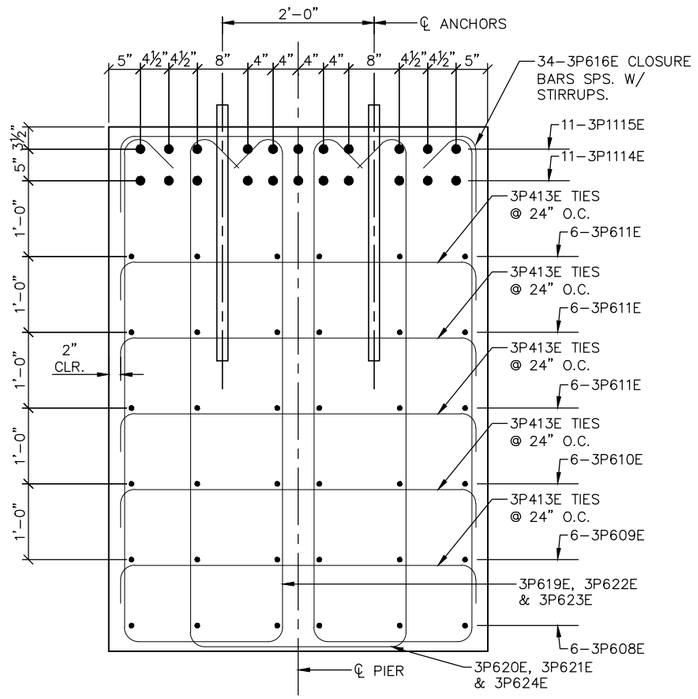
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 3 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

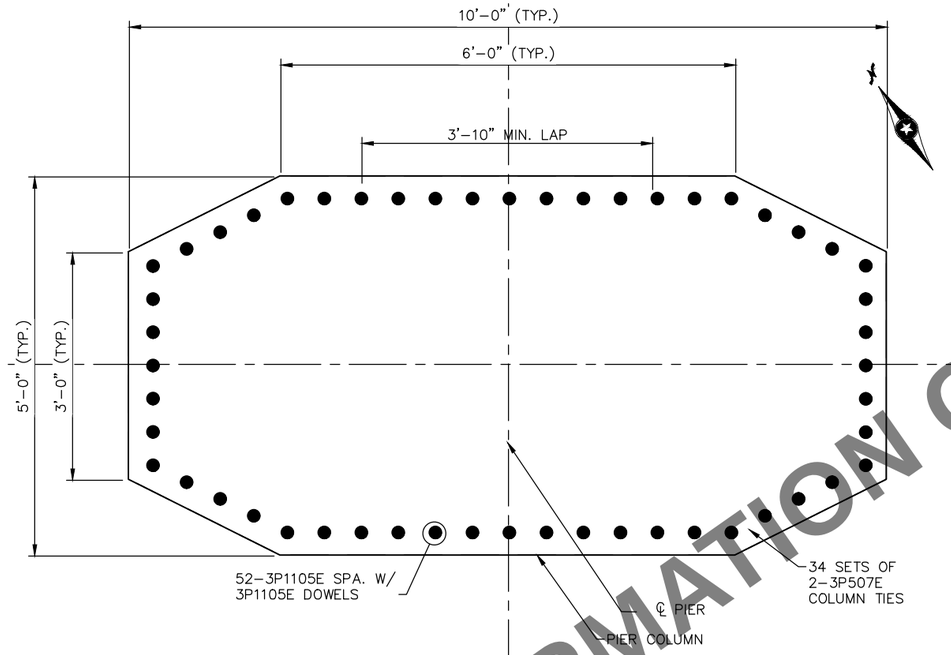
SHEET NAME: W1-STU-BRG-FCVV-PIER3R-3

SHEET 47 OF 116

Jan, 18 2016 01:27 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER3R.dwg By: vickersa



SECTION A-A

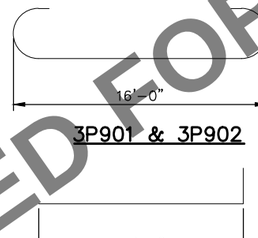


SECTION C-C

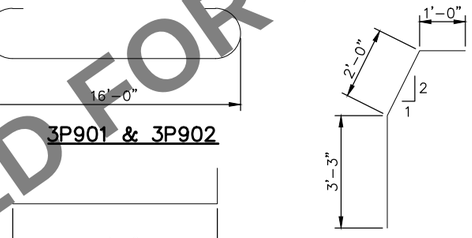
BILL OF REINFORCEMENT FOR PIER 22

BAR	NO.	LENGTH	SHAPE	LOCATION
3P901	44	18'-6"		FOOTING HORIZONTAL
3P902	44	18'-6"		FOOTING HORIZONTAL
3P603	40	16'-0"		FOOTING HORIZONTAL
3P604	40	16'-0"		FOOTING HORIZONTAL
3P1105	48	18'-3"		FOOTING COLUMN DOWEL
NOT USED				
3P607E	25	26'-2"		COLUMN TIE
3P608E	14	6'-3"		CAP DOWEL
3P1009E	36	14'-6"		CAP DOWEL
3P610E	58	13'-8"		CAP TIE HORIZONTAL
3P611E	6	29'-9"		CAP LONGITUDINAL
3P612E	12	5'-2"		CAP LONGITUDINAL
3P613E	6	19'-1"		CAP LONGITUDINAL
3P614E	24	29'-4"		CAP LONGITUDINAL
3P615E	12	7'-6"		CAP LONGITUDINAL
3P416E	70	5'-1"		CAP TIE
3P1117E	9	26'-6"		CAP LONGITUDINAL
3P1118E	2	34'-7"		CAP LONGITUDINAL
3P1119E	2	35'-8"		CAP LONGITUDINAL
3P1120E	2	36'-4"		CAP LONGITUDINAL
3P1121E	2	36'-11"		CAP LONGITUDINAL
3P1122E	2	37'-1"		CAP LONGITUDINAL
3P1123E	1	37'-2"		CAP LONGITUDINAL
3P624E	30	6'-7"		CAP TIE
3P625E	18	13'-8"		END TIE
3P626E	56	①		CAP STIRRUP
3P627E	28	②		CAP STIRRUP
3P628E	4	16'-9"		CAP STIRRUP
3P629E	2	17'-6"		CAP STIRRUP
3P630E	26	6'-0"		CAP VERTICAL
3P631E	2	6'-7"		CAP HORIZONTAL
3P632E	2	4'-7"		CAP HORIZONTAL

① 4-SERIES OF 14, 12'-11" TO 16'-7"
② 2-SERIES OF 14, 13'-8" TO 17'-4"



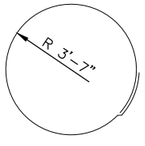
3P901 & 3P902



3P1105

3P608E

PIER 3 PILE LAYOUT



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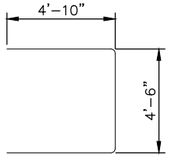

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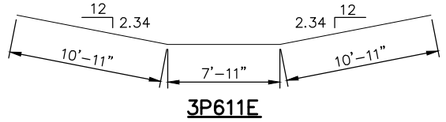

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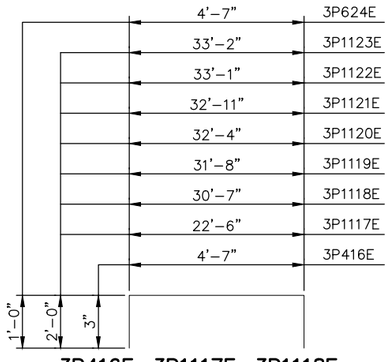
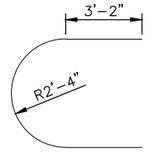


3P416E, 3P1117E, 3P1118E, 3P1119E, 3P1120E, 3P1121E, 3P1122E, 3P1123E & 3P624E



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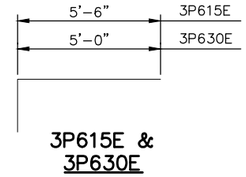
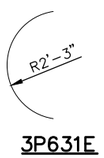


3P615E & 3P630E



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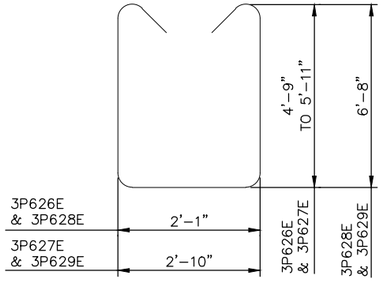

3P626E, 3P627E, 3P628E & 3P629E

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DESIGNED BY: APV CHECKED BY: -
DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 3 REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PIER3R-3a

SHEET 48 OF 116

Jan, 18 2016 01:27 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER3R.dwg By: vickersa

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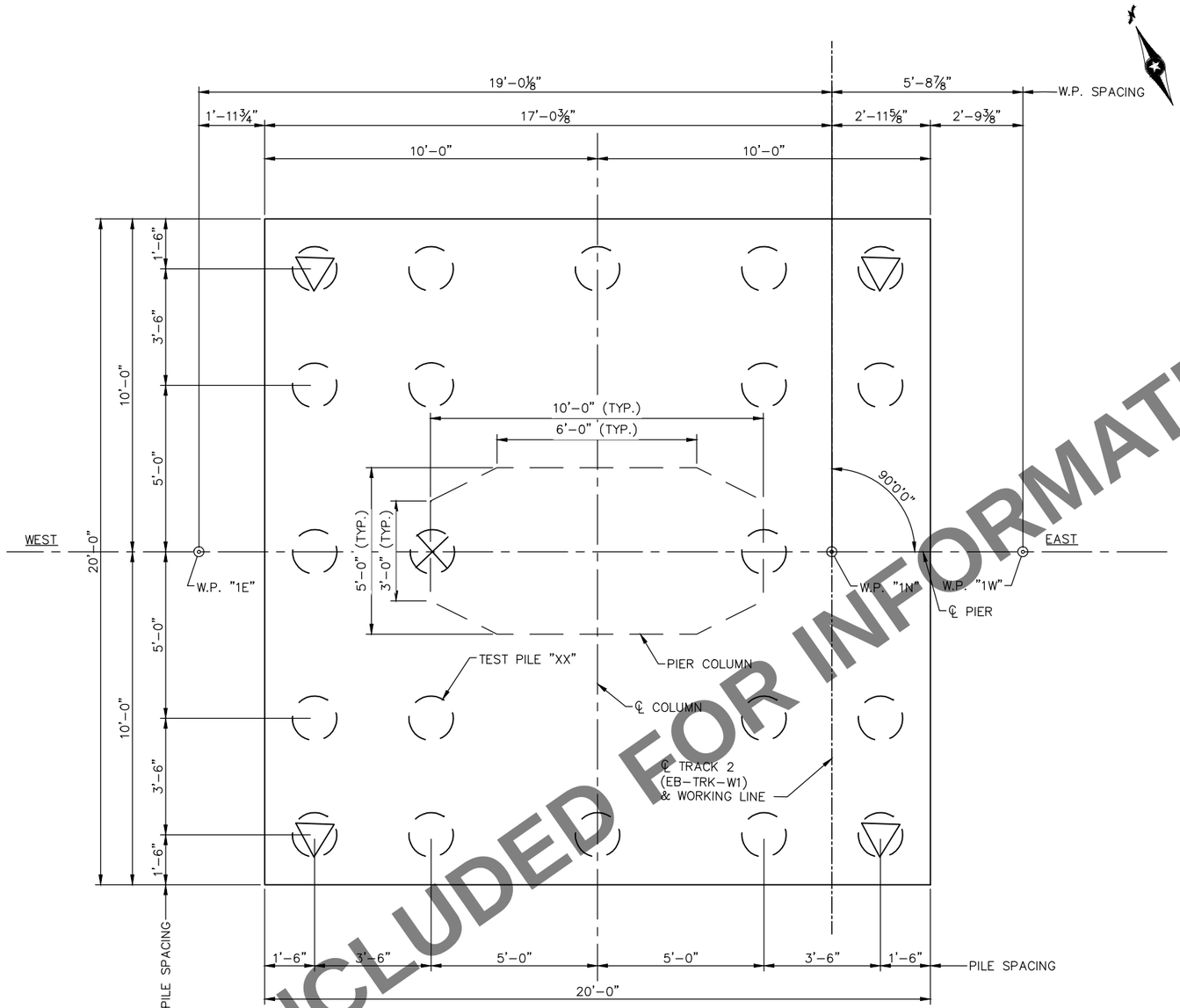
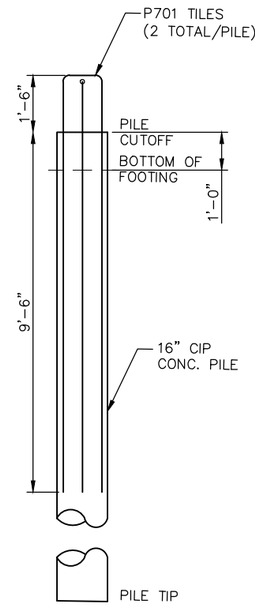


PIER 4 PILE LAYOUT

PIER 4 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $Rn=20\sqrt{\frac{Wxh}{1000}}x\log(\frac{10}{S})$	0.50	275.0
PDA	0.65	211.5

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

PIER 4 COMPUTED PILE LOAD – TONS/PILE		
FACTORED DEAD LOAD	66.0	41.1
FACTORED LIVE LOAD	53.5	–27.5
FACTORED OVERTURNING	18.0	–17.5
FACTORED DESIGN LOAD	137.5	N/A
FACTORED DESIGN UPLIFT	N/A	–3.9
LOAD COMBINATION	STRENGTH 5 (MOD)	STRENGTH 5 (MOD)



PILE ANCHORAGE DETAIL

PILE NOTES

1 CAST-IN-PLACE CONC. TEST PILE 45 FT. LONG
21 CAST-IN-PLACE CONC. PILES EST. LENGTH 35 FT.
22 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 4.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375".

FOR PILE SPLICE DETAILS SEE DETAIL XXXX.

△ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL.

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY REQUIRED TEMPORARY SHORING.

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90% SUBMISSION - 01/22/16

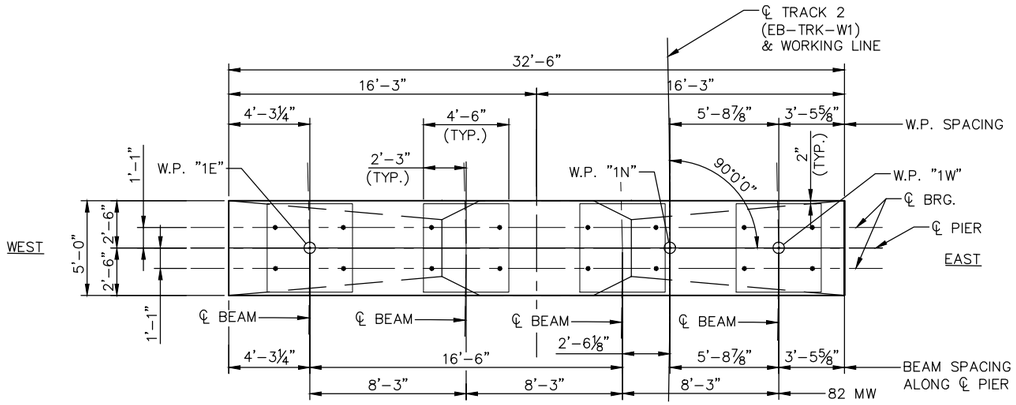
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

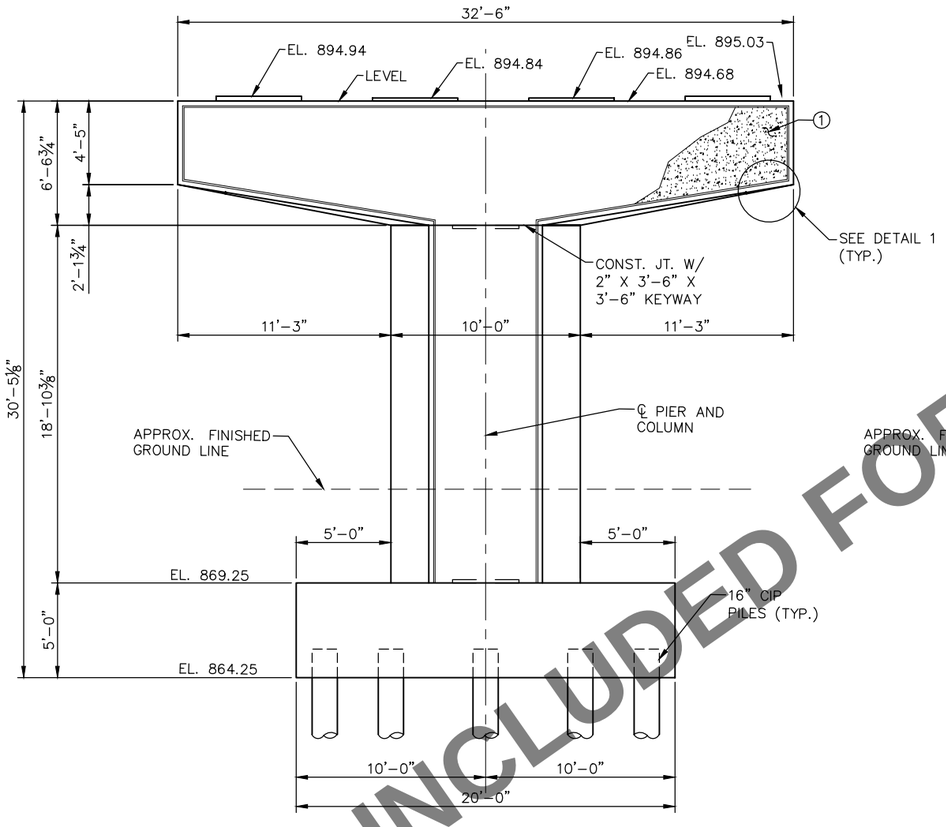
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 4 FOOTING PLAN

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PIER4-4a

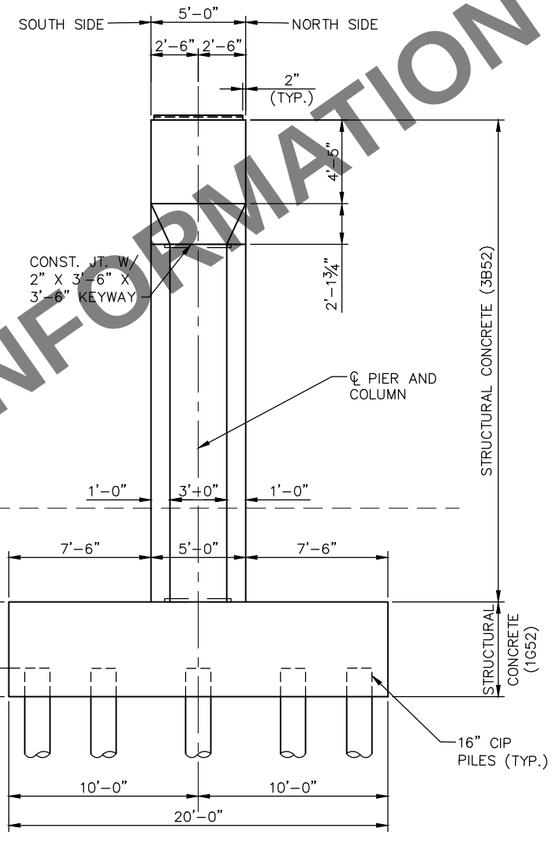
SHEET 49 OF 116



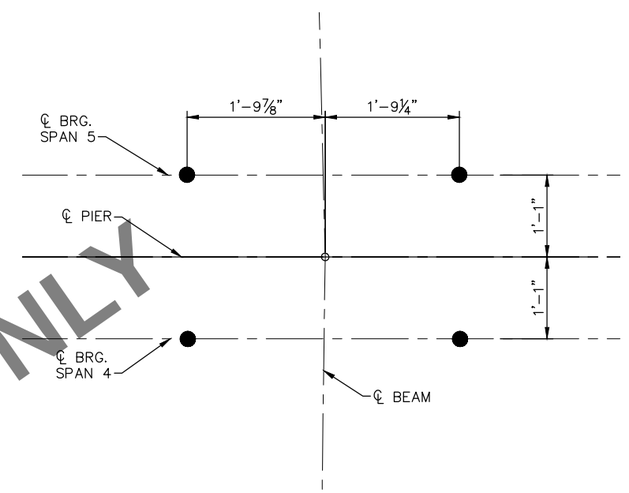
PIER 4 PLAN



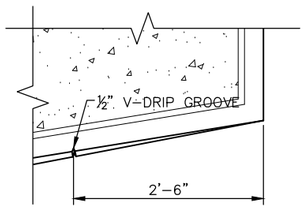
PIER 4 ELEVATION



PIER 4 END VIEW



ANCHOR ROD LAYOUT



DETAIL 1

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) ARCHITECTURAL SURFACE FINISH (SINGLE COLOR), SEE SHEETS 10 & 11.

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DRAWN BY: RCK | CHECKED BY: -

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METROPOLITAN COUNCIL

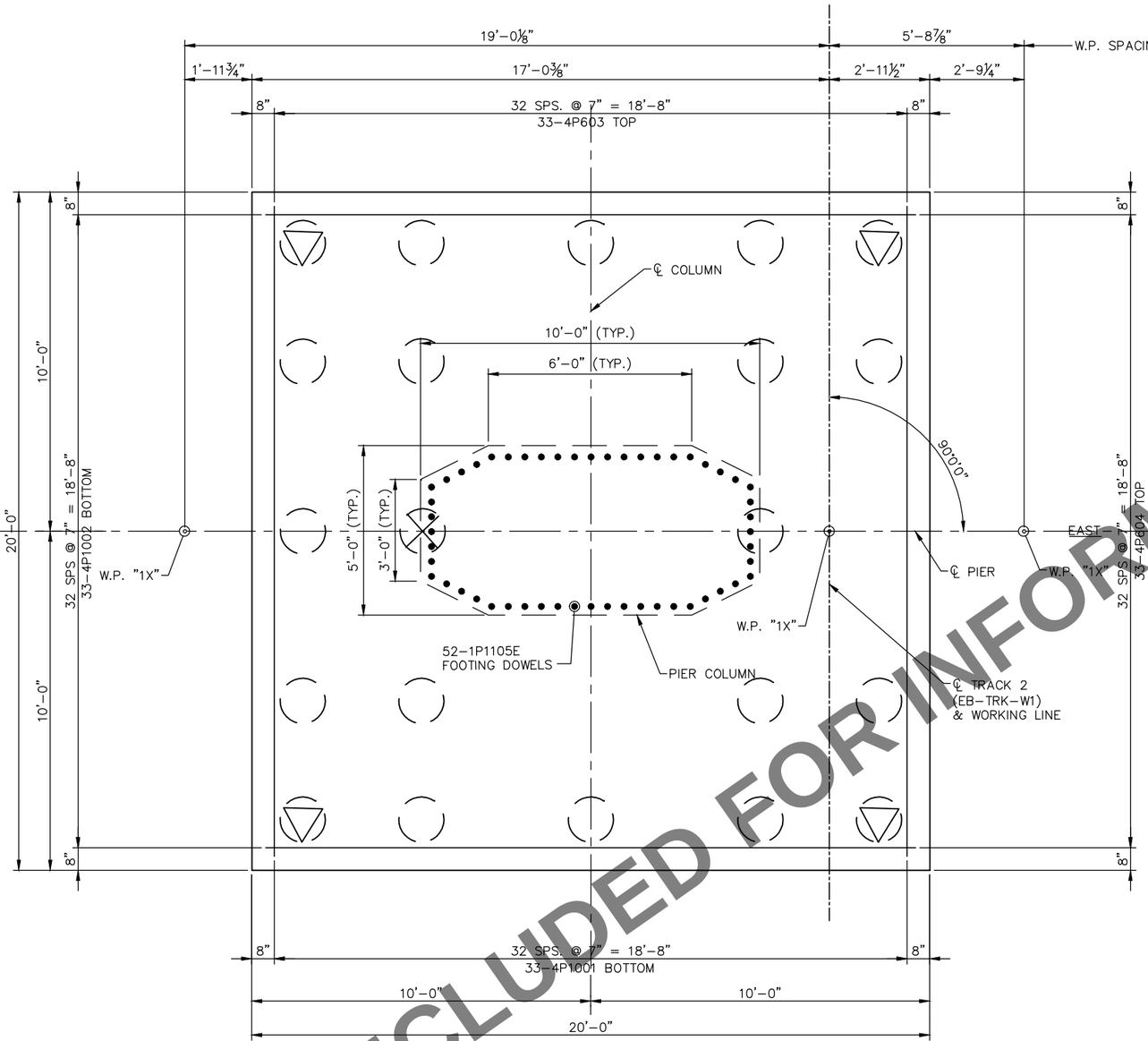
SOUTHWEST Green Line LRT Extension

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

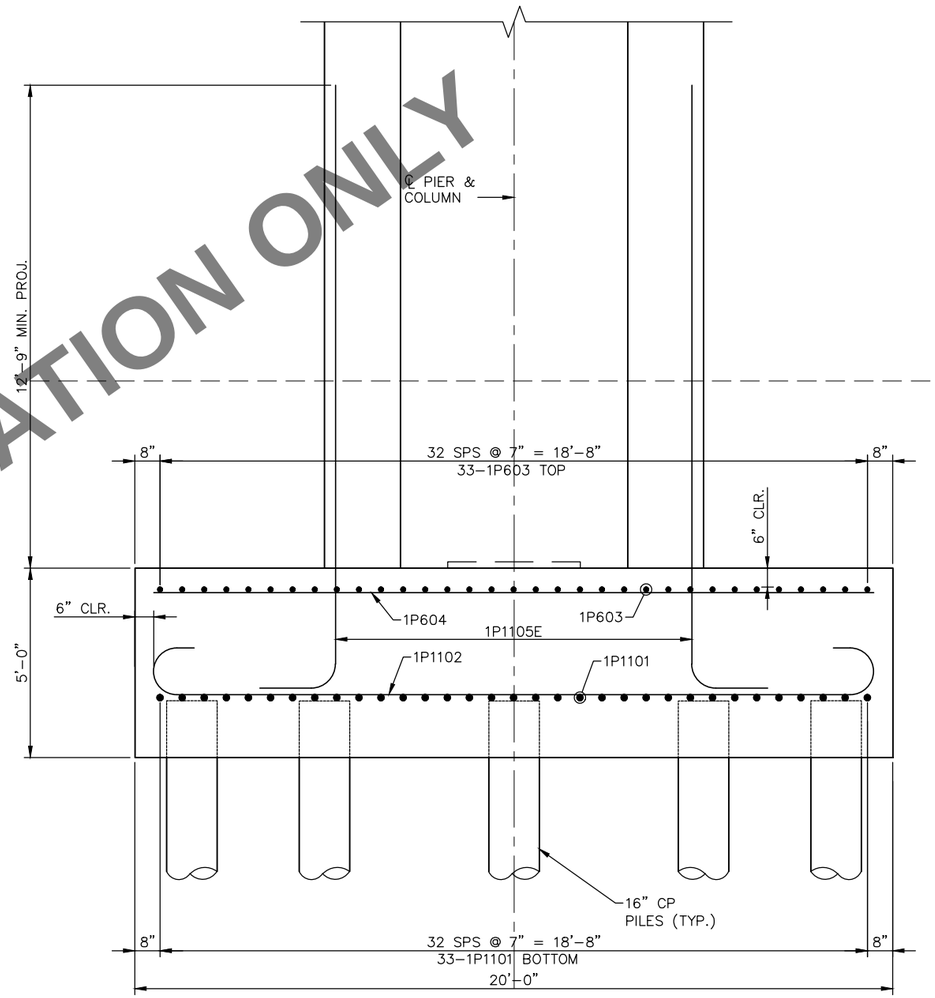
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PIER4-4

SHEET 50 OF 116

Jan, 18 2016 01:27 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% SUBMITTAL\W1-STU-BRG-FCVV-PIER4.dwg By: vickersa



PIER 4 REINFORCEMENT LAYOUT



PIER 4 FOOTING ELEVATION

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DESIGNED BY: APV | CHECKED BY: -
DRAWN BY: RCK | CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

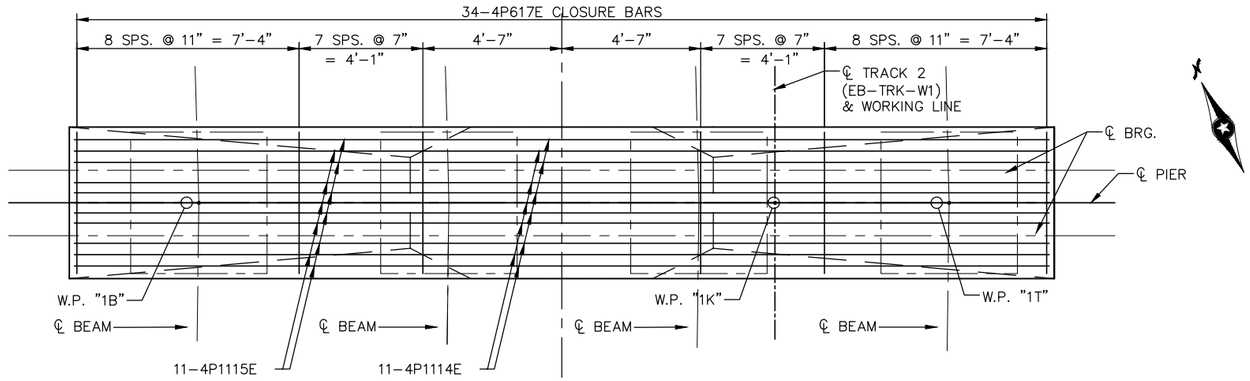
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 4 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

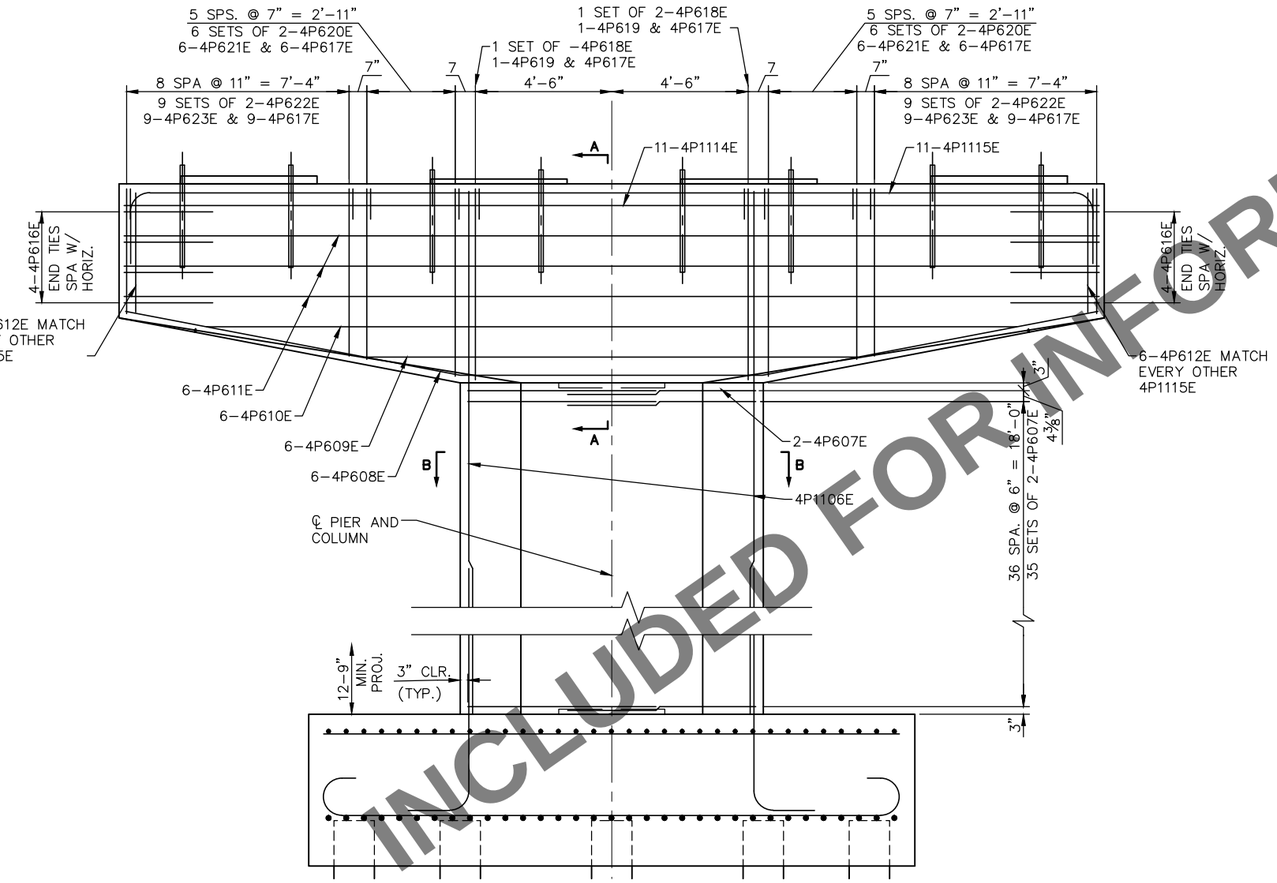
SHEET NAME: W1-STU-BRG-FCVV-PIER4R-4f

SHEET 51 OF 116

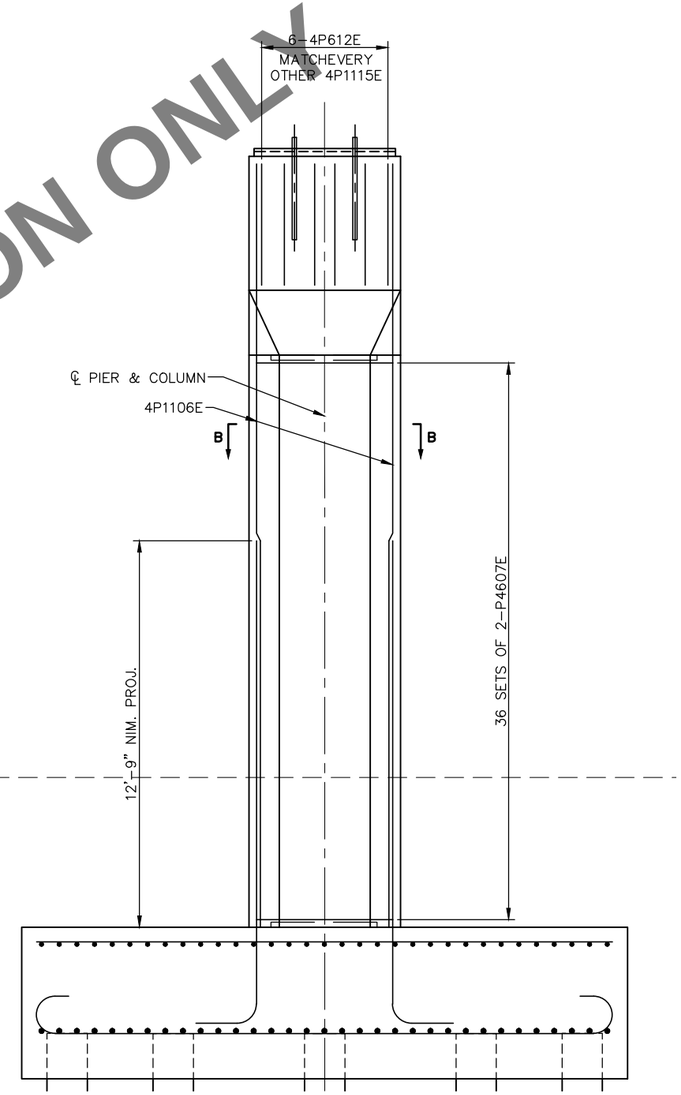
Jan, 18 2016 01:27 pm v:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER4f.dwg By: vickersa



PIER 4 PLAN



PIER 4 ELEVATION



PIER 4 END VIEW

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

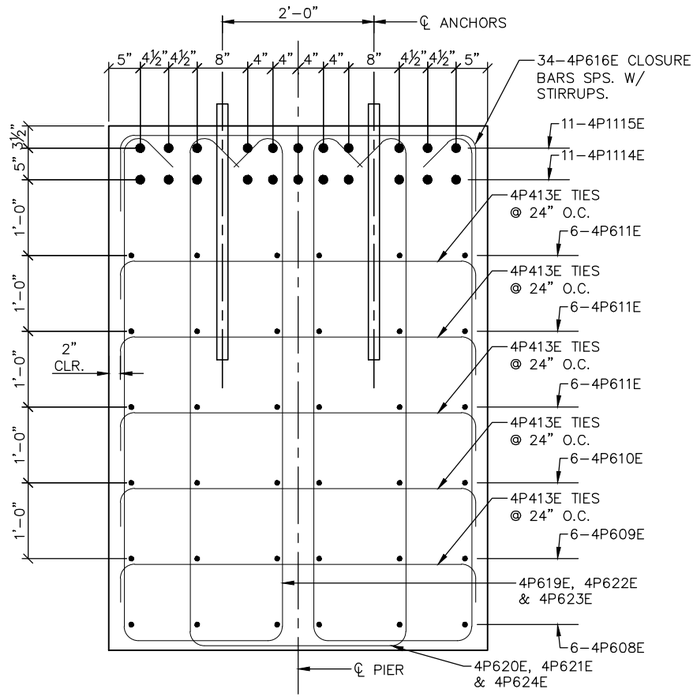
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 4 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

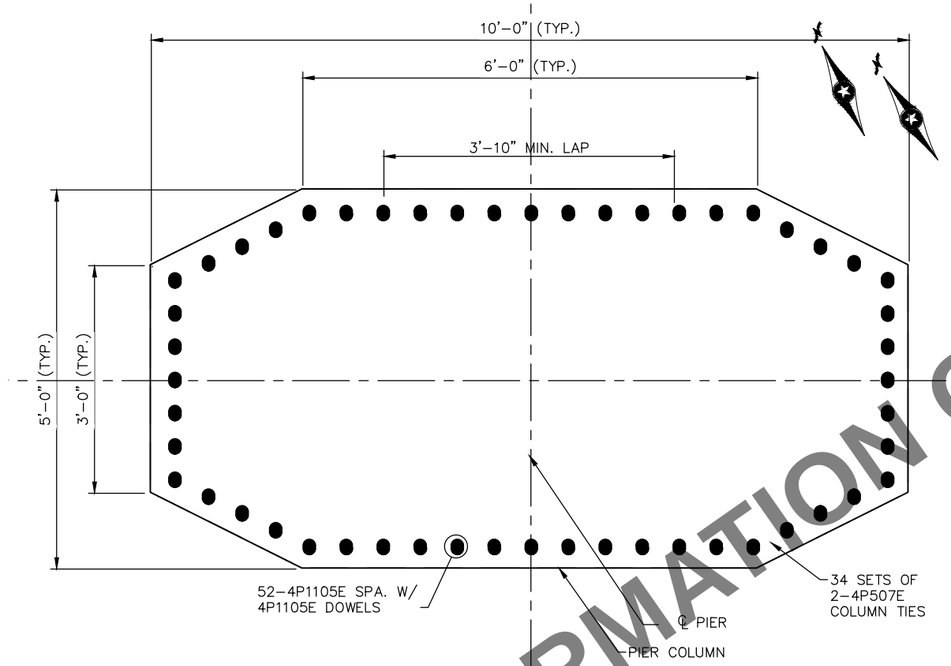
SHEET NAME: W1-STU-BRG-FCVV-PIER4R-4

SHEET 52 OF 116

Jan, 18 2016 01:28 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER4R.dwg By: vickersa



SECTION A-A

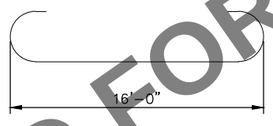


SECTION C-C

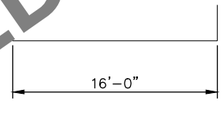
BILL OF REINFORCEMENT FOR PIER 22

BAR	NO.	LENGTH	SHAPE	LOCATION
4P901	44	18'-6"		FOOTING HORIZONTAL
4P902	44	18'-6"		FOOTING HORIZONTAL
4P603	40	16'-0"		FOOTING HORIZONTAL
4P604	40	16'-0"		FOOTING HORIZONTAL
4P1105	48	18'-3"		FOOTING COLUMN DOWEL
NOT USED				
4P607E	25	26'-2"		COLUMN TIE
4P608E	14	6'-3"		CAP DOWEL
4P1009E	36	14'-6"		CAP DOWEL
4P610E	58	13'-8"		CAP TIE HORIZONTAL
4P611E	6	29'-9"		CAP LONGITUDINAL
4P612E	12	5'-2"		CAP LONGITUDINAL
4P613E	6	19'-1"		CAP LONGITUDINAL
4P614E	24	29'-4"		CAP LONGITUDINAL
4P615E	12	7'-6"		CAP LONGITUDINAL
4P416E	70	5'-1"		CAP TIE
4P1117E	9	26'-6"		CAP LONGITUDINAL
4P1118E	2	34'-7"		CAP LONGITUDINAL
4P1119E	2	35'-8"		CAP LONGITUDINAL
4P1120E	2	36'-4"		CAP LONGITUDINAL
4P1121E	2	36'-11"		CAP LONGITUDINAL
4P1122E	2	37'-1"		CAP LONGITUDINAL
4P1123E	1	37'-2"		CAP LONGITUDINAL
4P624E	30	6'-7"		CAP TIE
4P625E	18	13'-8"		END TIE
4P626E	56	①		CAP STIRRUP
4P627E	28	②		CAP STIRRUP
4P628E	4	16'-9"		CAP STIRRUP
4P629E	2	17'-6"		CAP STIRRUP
4P630E	26	6'-0"		CAP VERTICAL
4P631E	2	6'-7"		CAP HORIZONTAL
4P632E	2	4'-7"		CAP HORIZONTAL

① 4-SERIES OF 14, 12'-11" TO 16'-7"
② 2-SERIES OF 14, 13'-8" TO 17'-4"

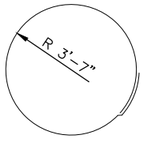


4P901 & 4P902

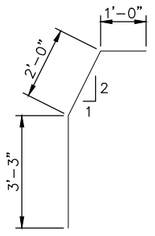


4P1105

PIER 3 PILE LAYOUT



4P607E



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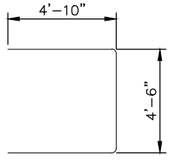

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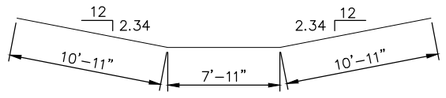

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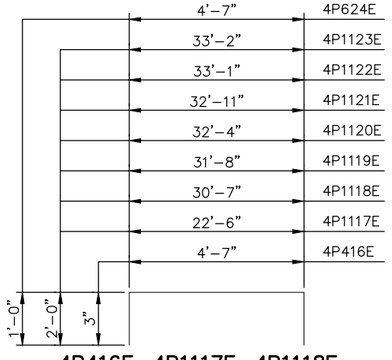
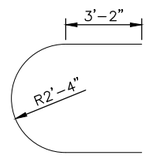


4P416E, 4P1117E, 4P1118E, 4P1119E, 4P1120E, 4P1121E, 4P1122E, 4P1123E & 4P624E



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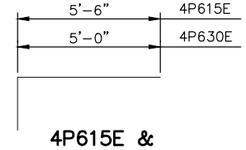
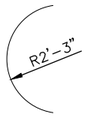
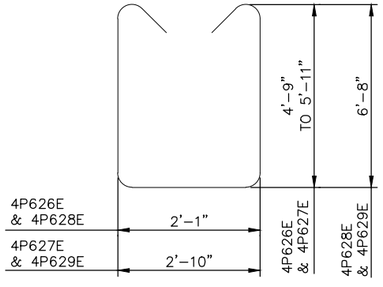


4P615E & 4P630E



4P631E



4P626E, 4P627E, 4P628E & 4P629E

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DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 4 REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PIER4R-4a

SHEET 53 OF 116

Jan, 18 2016 01:28 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER4R.dwg By: vickersa

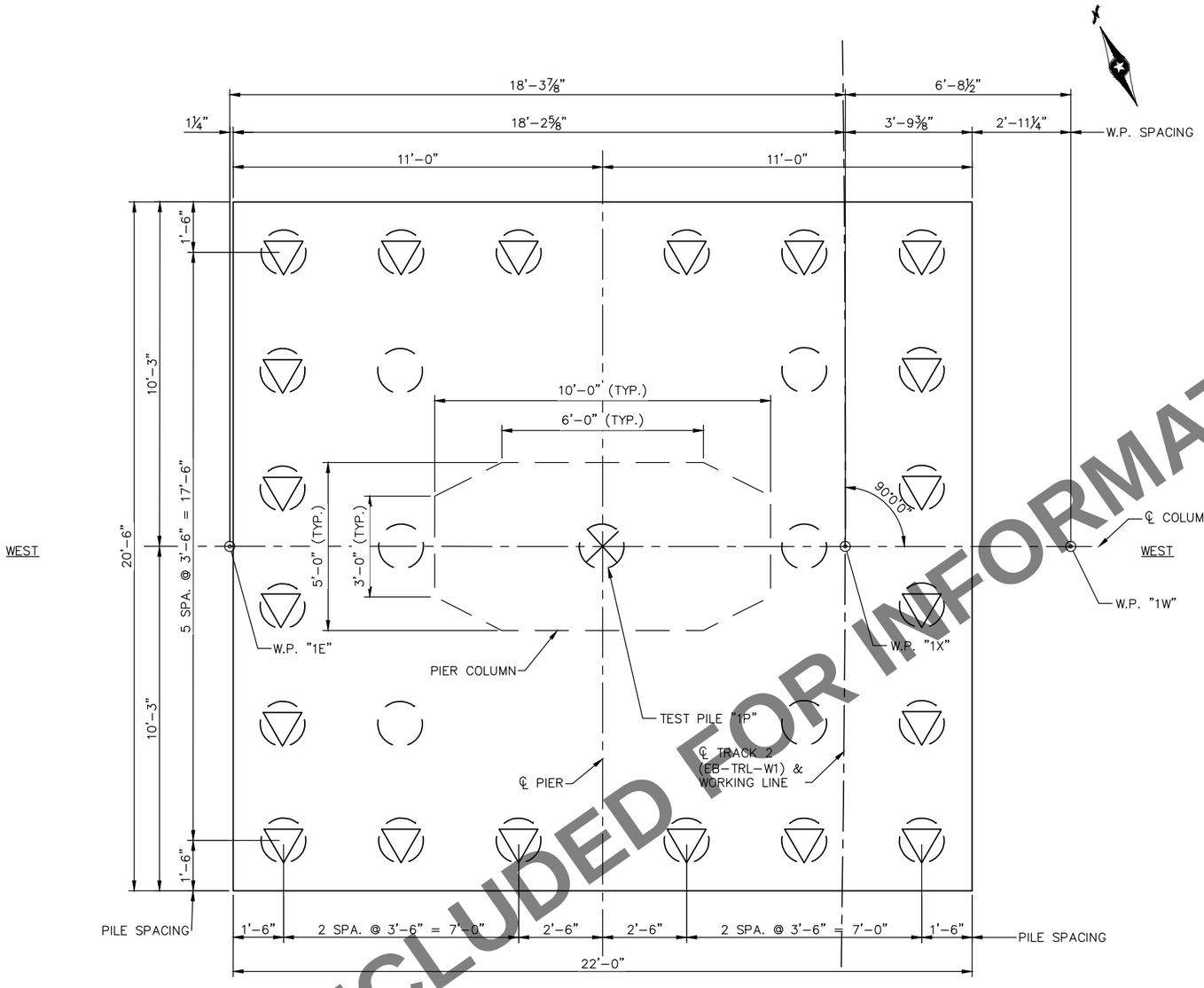
PIER 5
REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $Rn=20\sqrt{\frac{WxH}{1000}}\times\log(\frac{10}{S})$	0.50	276.6
PDA	0.65	212.7

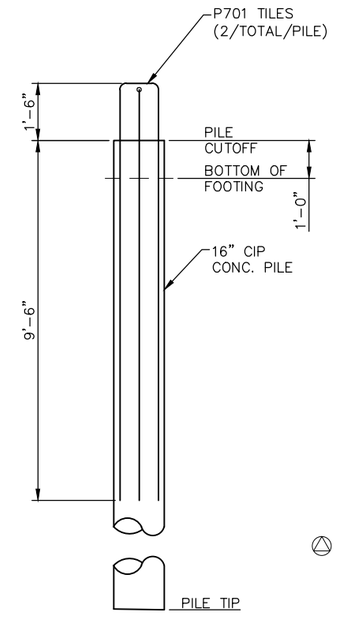
$*R_n$ = (FACTORED DESIGN LOAD) / φ_{dyn}

PIER 5
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	63.1	30.8
FACTORED LIVE LOAD	61.8	–28.7
FACTORED OVERTURNING	13.5	–13.0
FACTORED DESIGN LOAD	138.3	N/A
FACTORED DESIGN UPLIFT	N/A	–10.9
LOAD COMBINATION	STRENGTH 5 (MOD)	STRENGTH 5 (MOD)



PIER 5 PILE LAYOUT



PILE ANCHORAGE DETAIL

PILE NOTES

1 CAST–IN–PLACE CONC. TEST PILE 55 FT. LONG
26 CAST–IN–PLACE CONC. PILES EST. LENGTH 45 FT.
27 CAST–IN–PLACE CONC. PILES REQ'D FOR PIER 5.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375".

FOR PILE SPLICE DETAILS SEE DETAIL XXXX.

△ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL.

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY REQUIRED TEMPORARY SHORING.

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METROPOLITAN COUNCIL

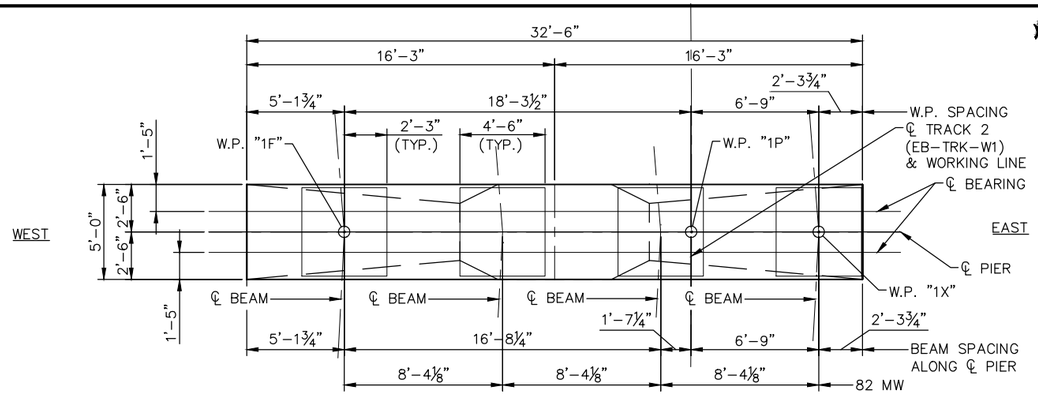
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 5 FOOTING PLAN

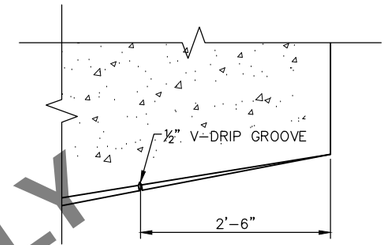
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PIER5-5a

SHEET 54 OF 116

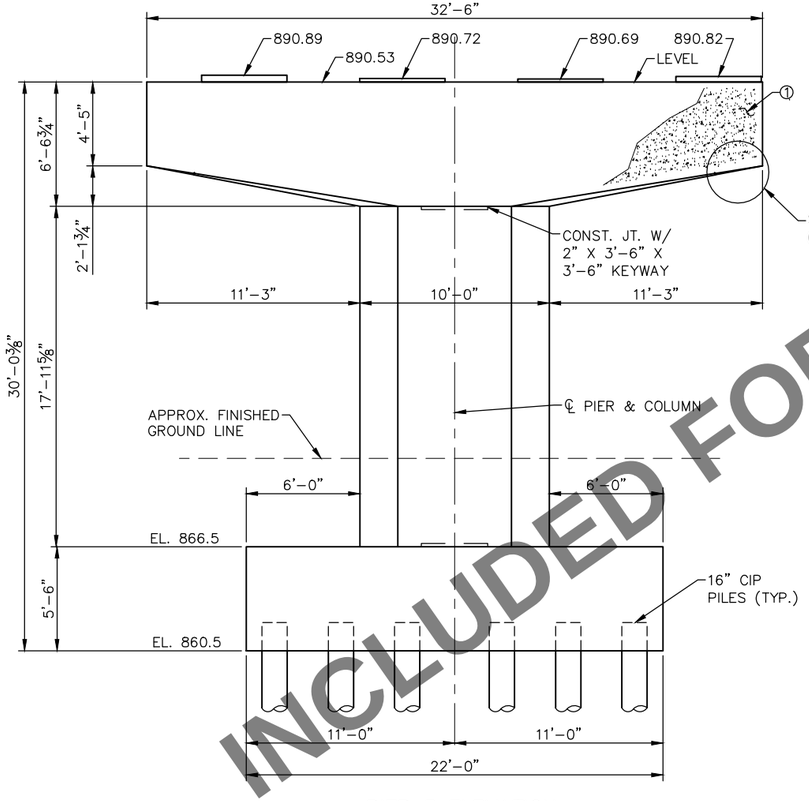
Jan, 18 2016 01:28 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER5.dwg By: vickersa



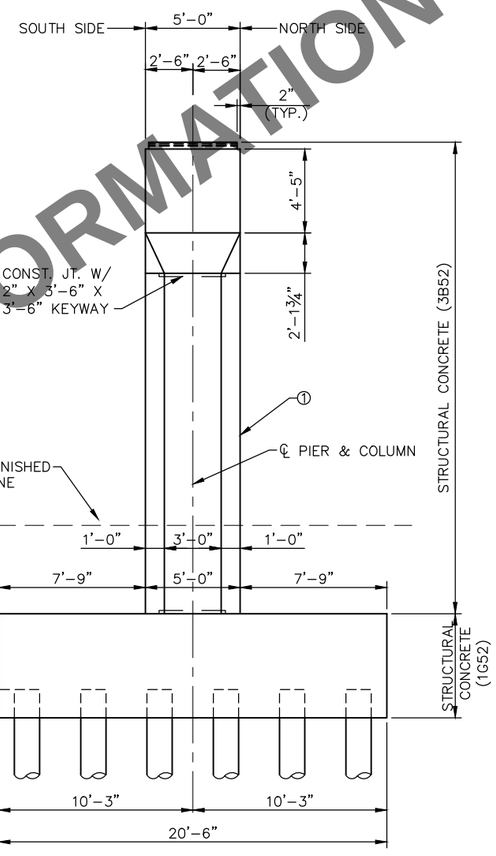
PIER 5 PLAN



DETAIL 1



PIER 5 ELEVATION



PIER 5 END VIEW

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) ARCHITECTURAL SURFACE FINISH (SINGLE COLOR), SEE SHEETS 10 & 11.

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DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

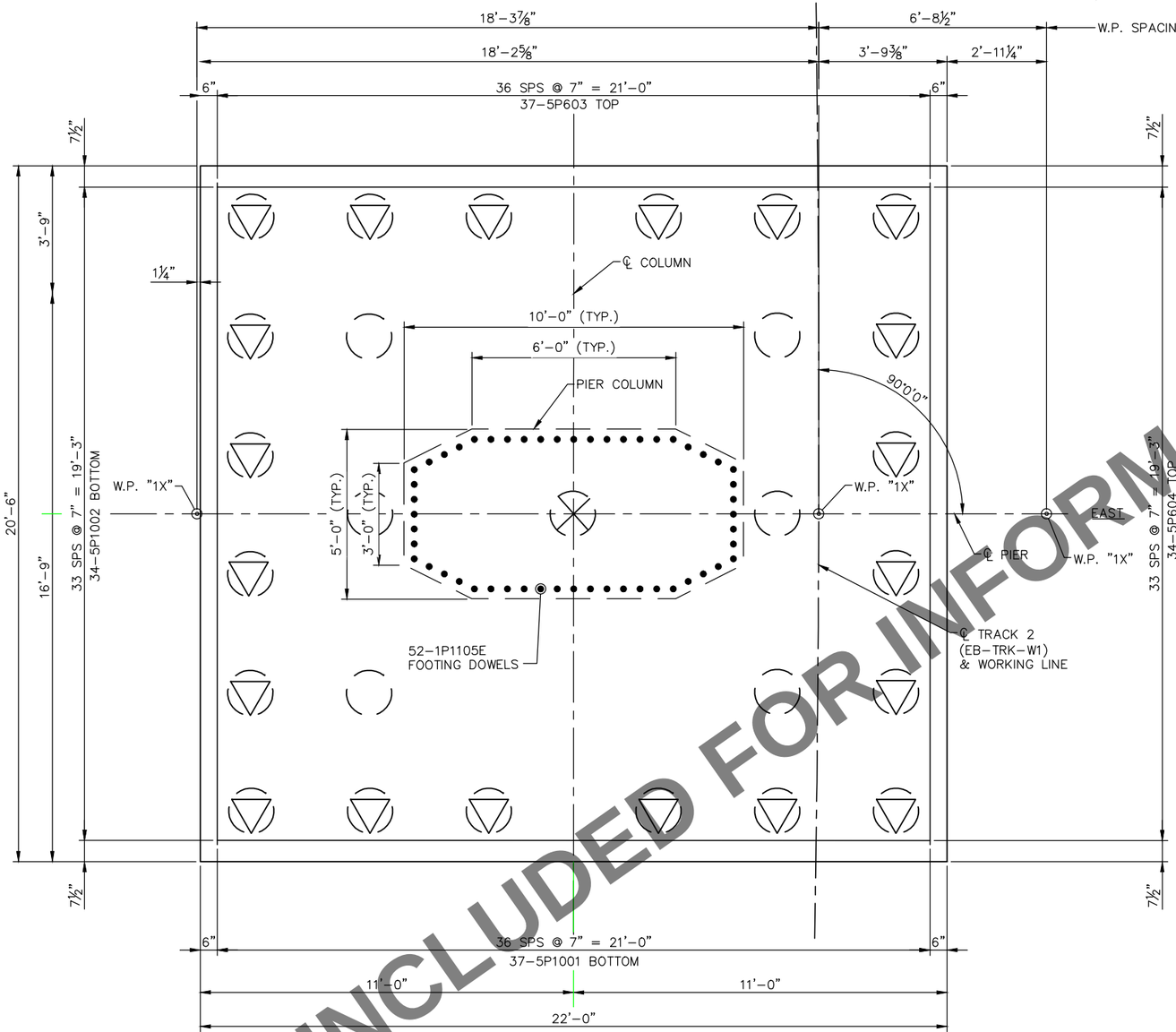
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 5 PLAN & ELEVATION

DISCIPLINE: STRUCTURES

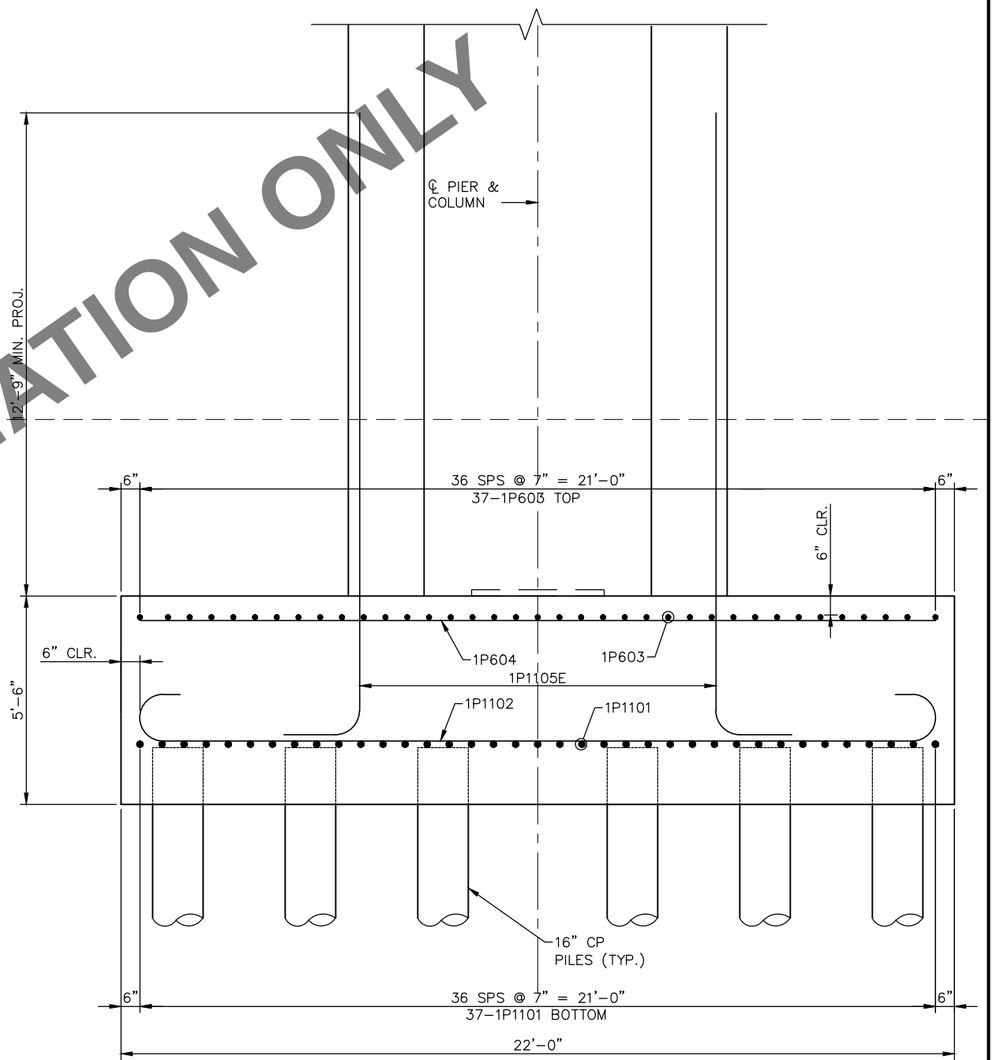
SHEET NAME: W1-STU-BRG-FCVV-PIER5-5

SHEET 55 OF 116

Jan, 18 2016 01:28 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER5.dwg By: vickersa



PIER 5 REINFORCEMENT LAYOUT



PIER 5 FOOTING ELEVATION

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

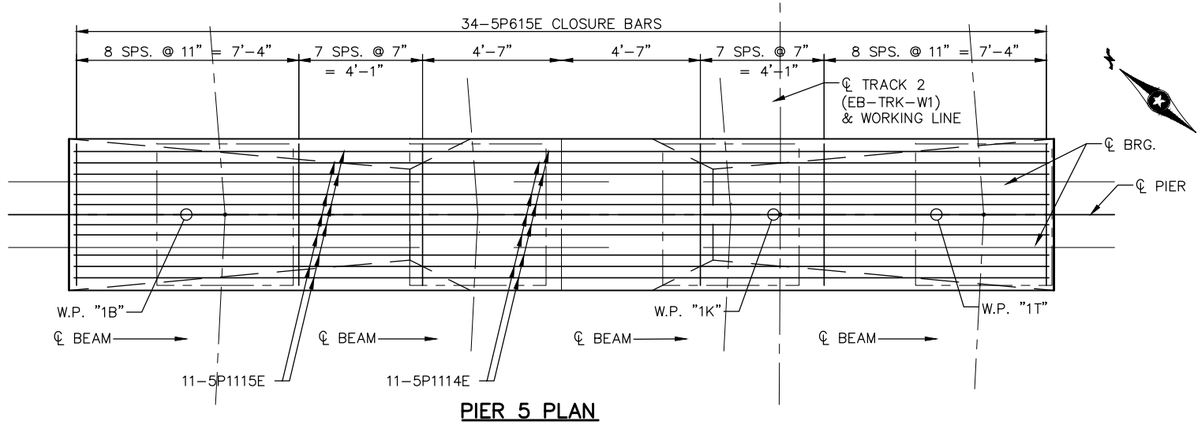
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 5 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

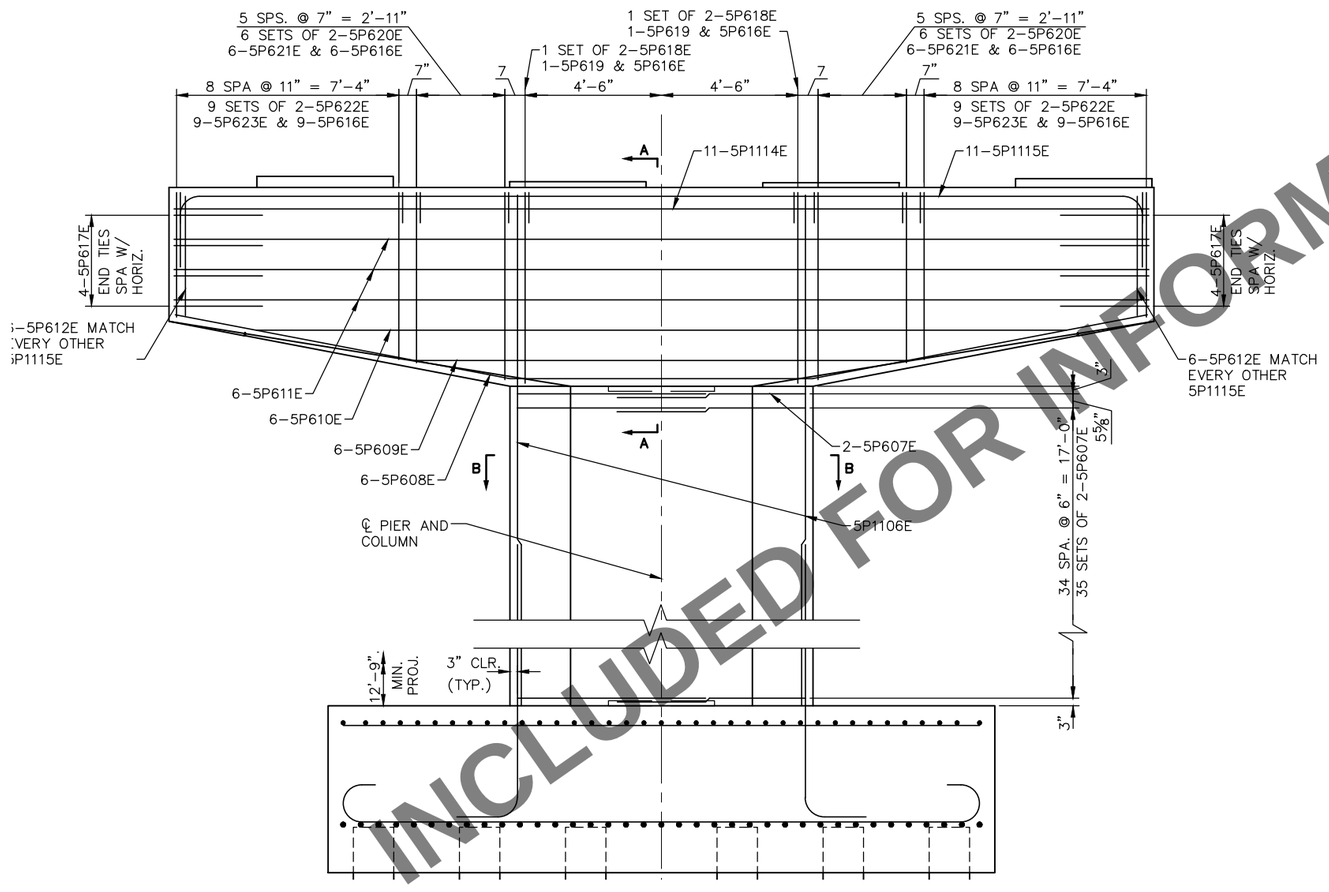
SHEET NAME: W1-STU-BRG-FCVV-PIER5R-5f

SHEET 56 OF 116

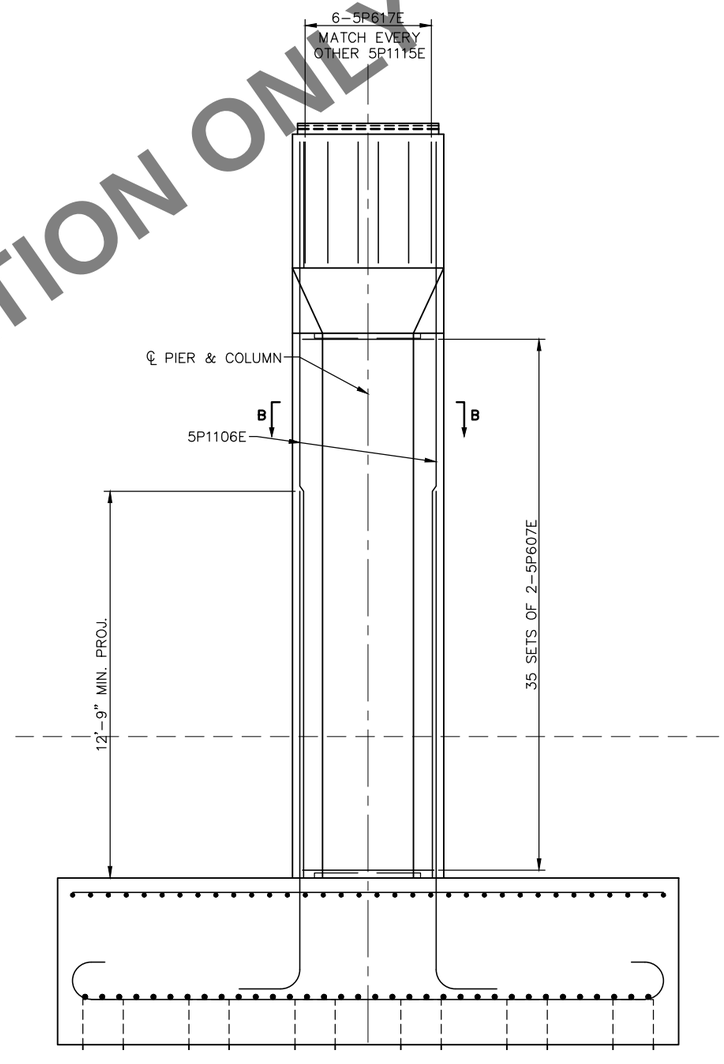
Jan. 18 2016 01:29 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER5F.dwg By: vickersa



PIER 5 PLAN



PIER 5 ELEVATION



PIER 5 END VIEW

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

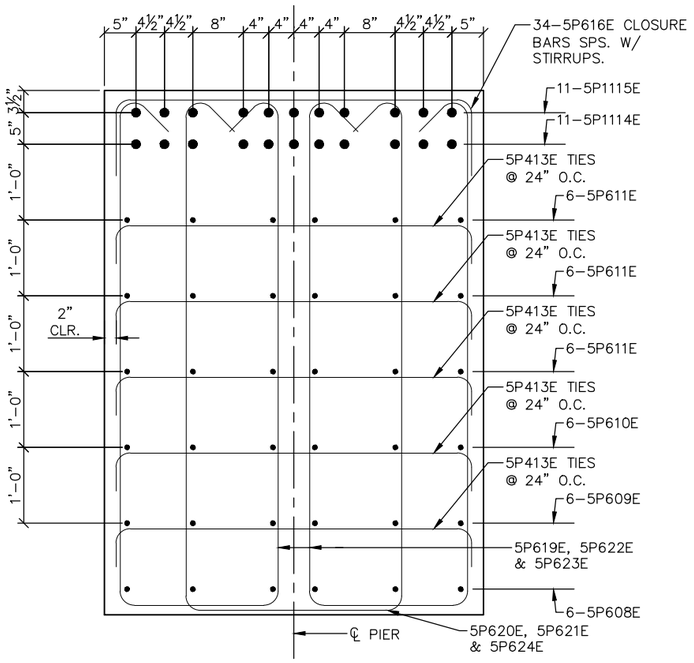
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 5 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

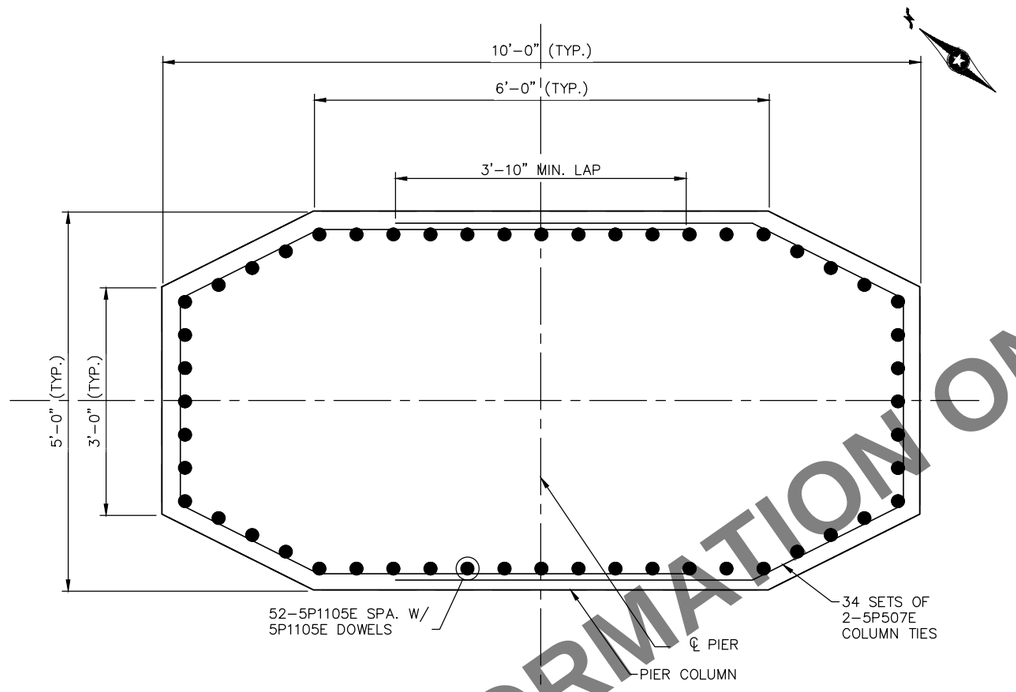
SHEET NAME: W1-STU-BRG-FCVV-PIER5R-5

SHEET 57 OF 116

Jan, 18 2016 01:29 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER5R.dwg By: vickersa



SECTION A–A

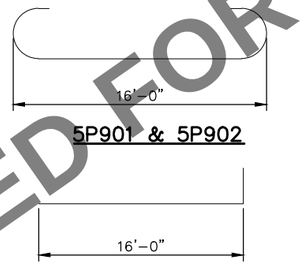


SECTION C–C

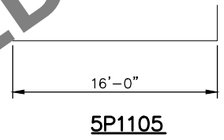
BILL OF REINFORCEMENT FOR PIER 22

BAR	NO.	LENGTH	SHAPE	LOCATION
5P901	44	18'–6"		FOOTING HORIZONTAL
5P902	44	18'–6"		FOOTING HORIZONTAL
5P603	40	16'–0"		FOOTING HORIZONTAL
5P604	40	16'–0"		FOOTING HORIZONTAL
5P1105	48	18'–3"		FOOTING COLUMN DOWEL
NOT USED				
5P607E	25	26'–2"		COLUMN TIE
5P608E	14	6'–3"		CAP DOWEL
5P1009E	36	14'–6"		CAP DOWEL
5P610E	58	13'–8"		CAP TIE HORIZONTAL
5P611E	6	29'–9"		CAP LONGITUDINAL
5P612E	12	5'–2"		CAP LONGITUDINAL
5P613E	6	19'–1"		CAP LONGITUDINAL
5P614E	24	29'–4"		CAP LONGITUDINAL
5P615E	12	7'–6"		CAP LONGITUDINAL
5P416E	70	5'–1"		CAP TIE
5P1117E	9	26'–6"		CAP LONGITUDINAL
5P1118E	2	34'–7"		CAP LONGITUDINAL
5P1119E	2	35'–8"		CAP LONGITUDINAL
5P1120E	2	36'–4"		CAP LONGITUDINAL
5P1121E	2	36'–11"		CAP LONGITUDINAL
5P1122E	2	37'–1"		CAP LONGITUDINAL
5P1123E	1	37'–2"		CAP LONGITUDINAL
5P624E	30	6'–7"		CAP TIE
5P625E	18	13'–8"		END TIE
5P626E	56	①		CAP STIRRUP
5P627E	28	②		CAP STIRRUP
5P628E	4	16'–9"		CAP STIRRUP
5P629E	2	17'–6"		CAP STIRRUP
5P630E	26	6'–0"		CAP VERTICAL
5P631E	2	6'–7"		CAP HORIZONTAL
5P632E	2	4'–7"		CAP HORIZONTAL

① 4–SERIES OF 14, 12'–11" TO 16'–7"
② 2–SERIES OF 14, 13'–8" TO 17'–4"



5P901 & 5P902



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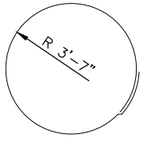

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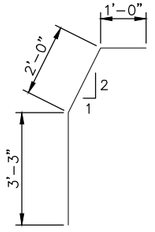

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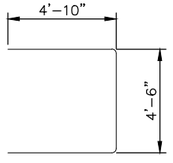

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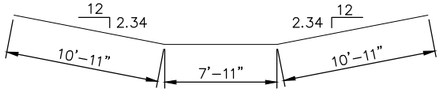

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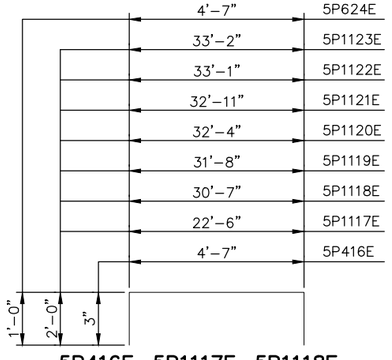

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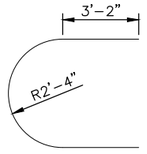

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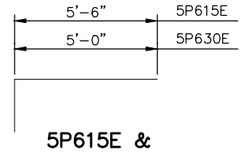
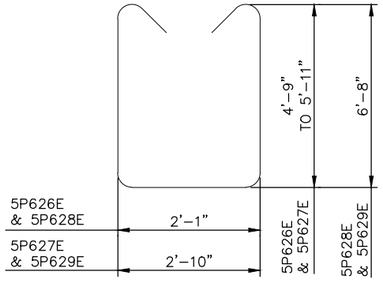


5P615E & 5P630E

5P631E



5P626E, 5P627E, 5P628E & 5P629E

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DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

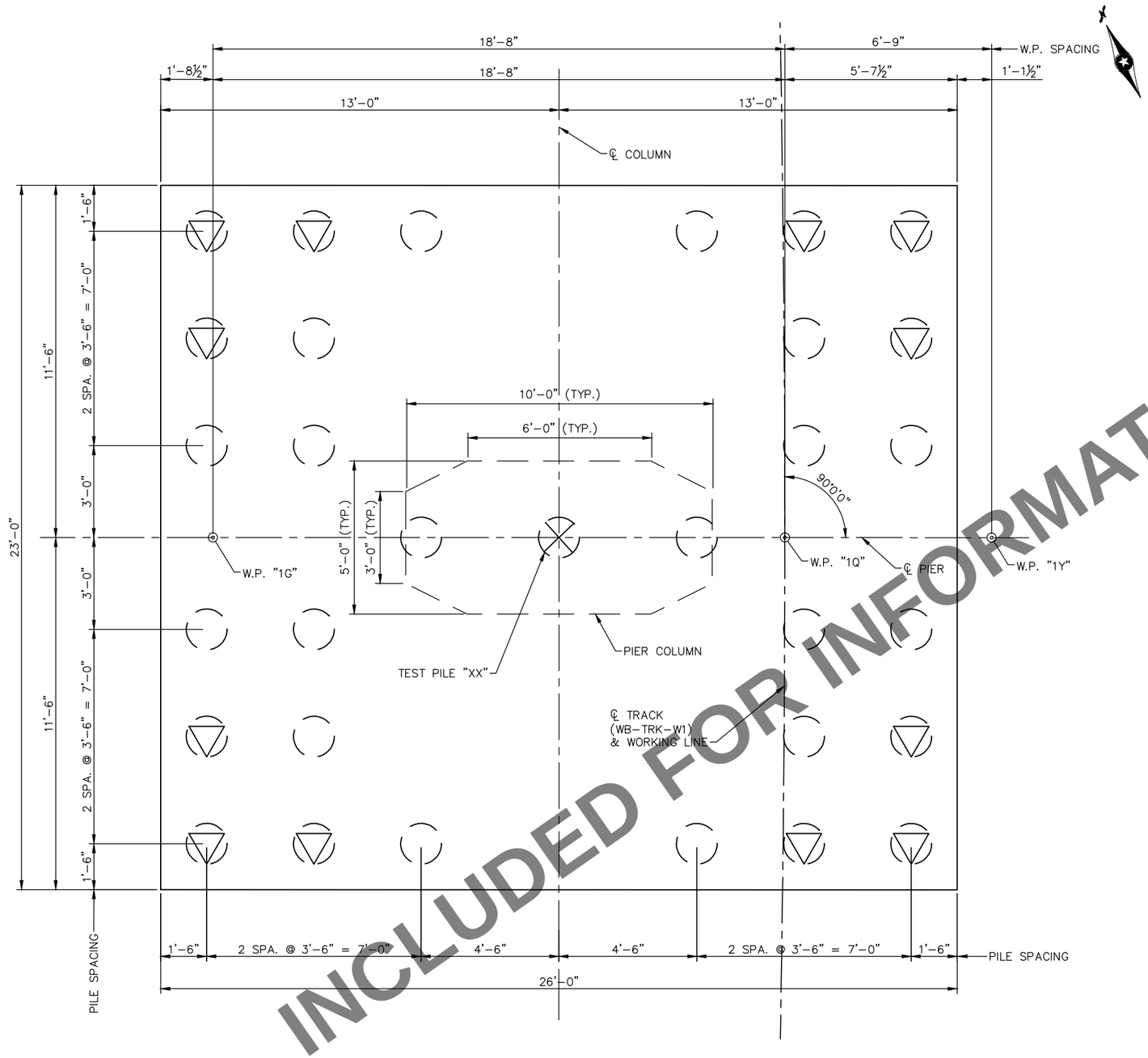
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 5 REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PIER5R-5a

SHEET 58 OF 116

Jan, 18 2016 01:29 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER5R.dwg By: vickersa

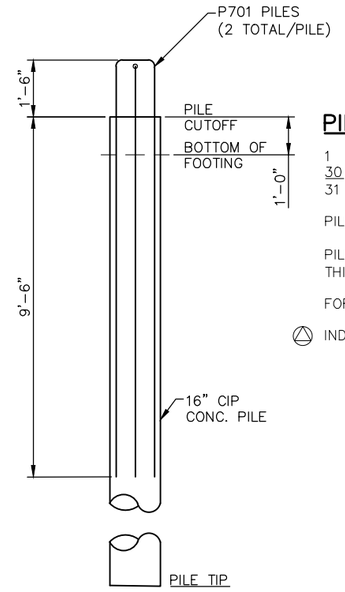


PIER 6 PILE LAYOUT

PIER 6 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $Rn=20\times\frac{WxH}{1000}\times\log(\frac{10}{S})$	0.50	269.0
PDA	0.65	206.9

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

PIER 6 COMPUTED PILE LOAD – TONS/PILE		
FACTORED DEAD LOAD	58.1	31.9
FACTORED LIVE LOAD	62.8	–32.0
FACTORED OVERTURNING	13.7	–13.2
FACTORED DESIGN LOAD	134.5	N/A
FACTORED DESIGN UPLIFT	N/A	–13.3
LOAD COMBINATION	STRENGTH 5 (MOD)	STRENGTH 5 (MOD)



PILE ANCHORAGE DETAIL

PILE NOTES

1 CAST-IN-PLACE CONC. TEST PILE 40 FT. LONG
30 CAST-IN-PLACE CONC. PILES EST. LENGTH 30 FT.
31 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 6.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16" AND WALL THICKNESS OF 0.375".

FOR PILE SPLICE DETAILS SEE DETAIL XXXX.

△ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL.

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY REQUIRED TEMPORARY SHORING.

INCLUDED FOR INFORMATION ONLY

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: APV CHECKED BY: -
DRAWN BY: RCK CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

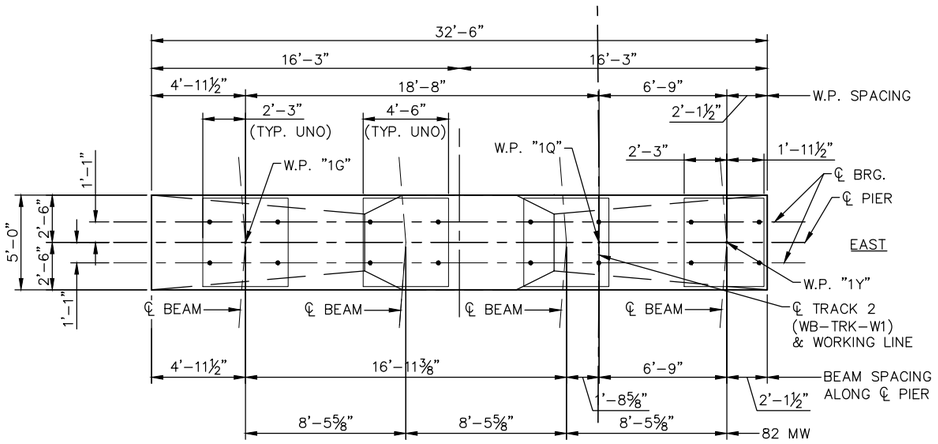
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 6 FOOTING PLAN

DISCIPLINE: STRUCTURES

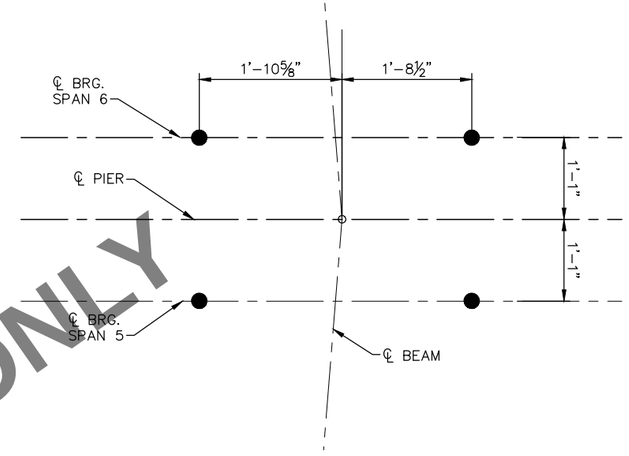
SHEET NAME: W1-STU-BRG-FCVV-PIER6-6a

SHEET 59 OF 116

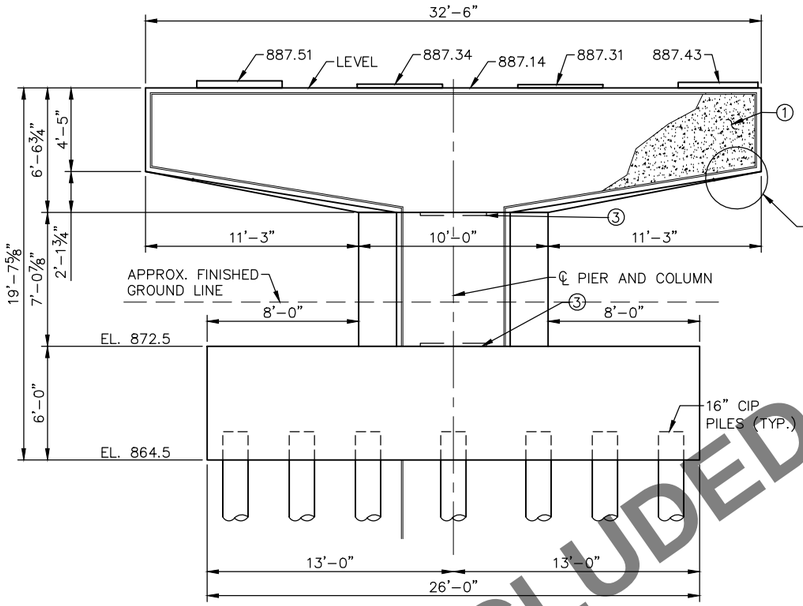
Jan, 18 2016 01:29 pm v:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER6.dwg By: vickersa



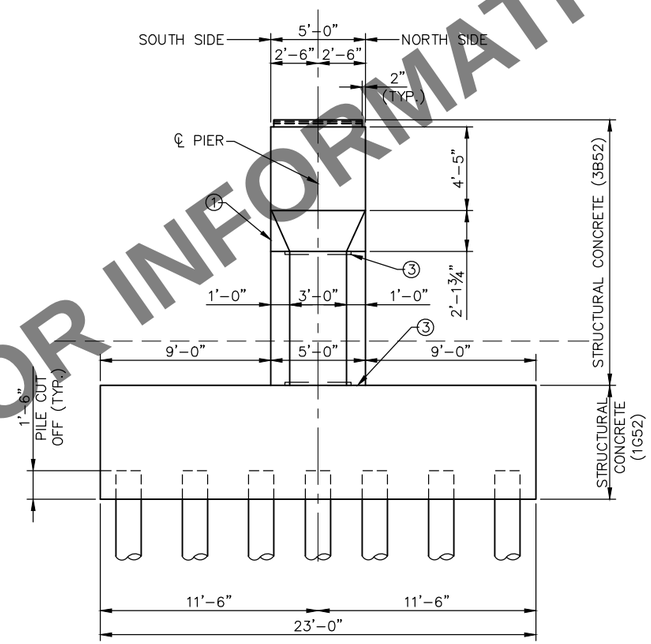
PIER 6 PLAN



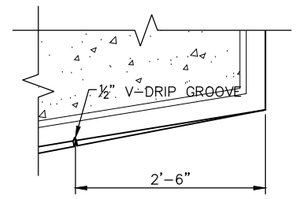
ANCHOR ROD LAYOUT



PIER 6 ELEVATION



PIER 6 END VIEW



DETAIL 1

NOTES:

① ARCHITECTURAL CONCRETE TEXTURE (LIMESTONE) ARCHITECTURAL SURFACE FINISH (SINGLE COLOR), SEE SHEETS 10 & 11.

② CONSTRUCTION JOINT W/ 2" X 3'-6" X 3'-6" KEYWAY.

INCLUDED FOR INFORMATION ONLY

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DESIGNED BY: APV | CHECKED BY: -
DRAWN BY: RCK | CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

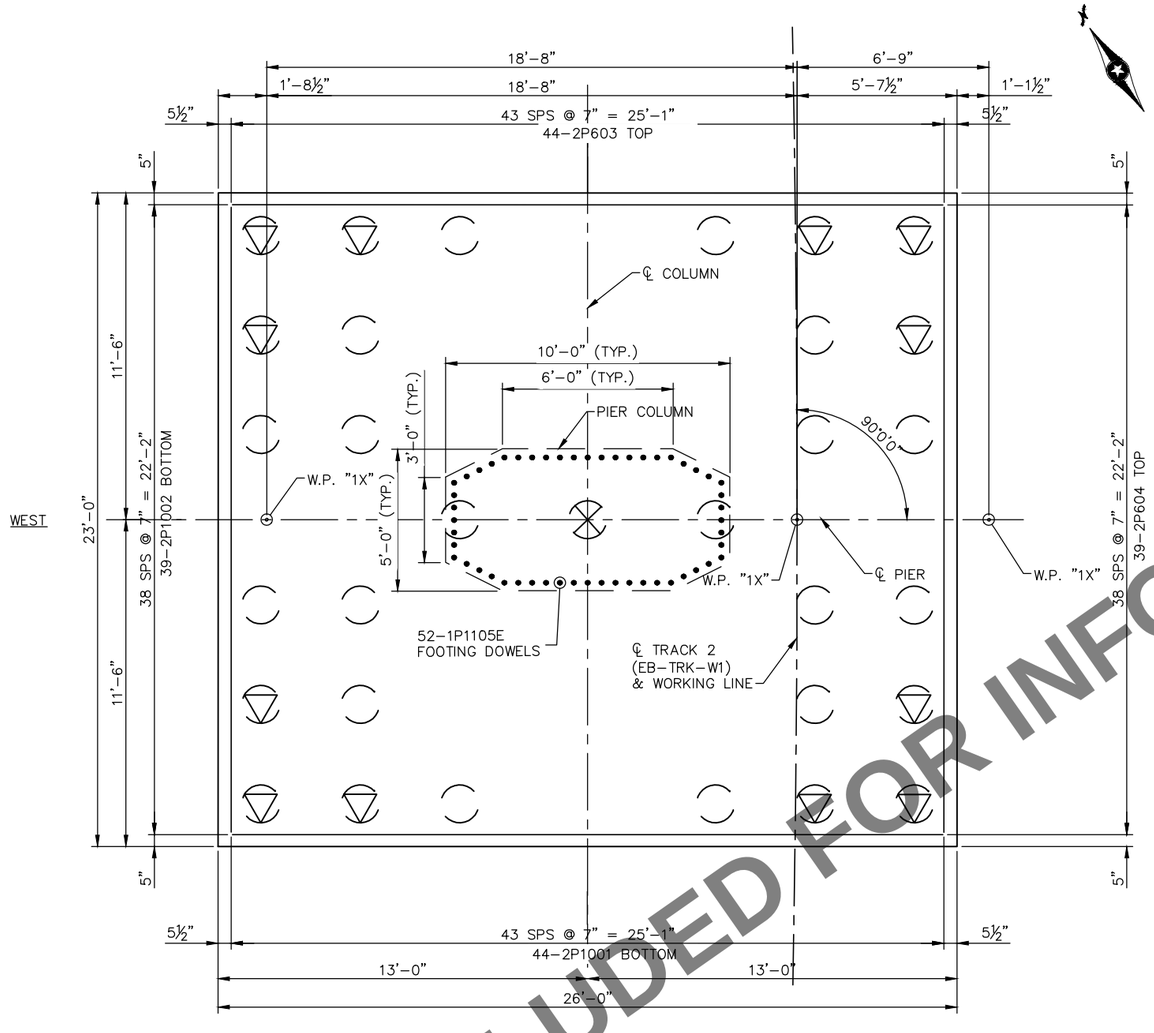
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 6 PLAN & ELEVATION

DISCIPLINE: STRUCTURES

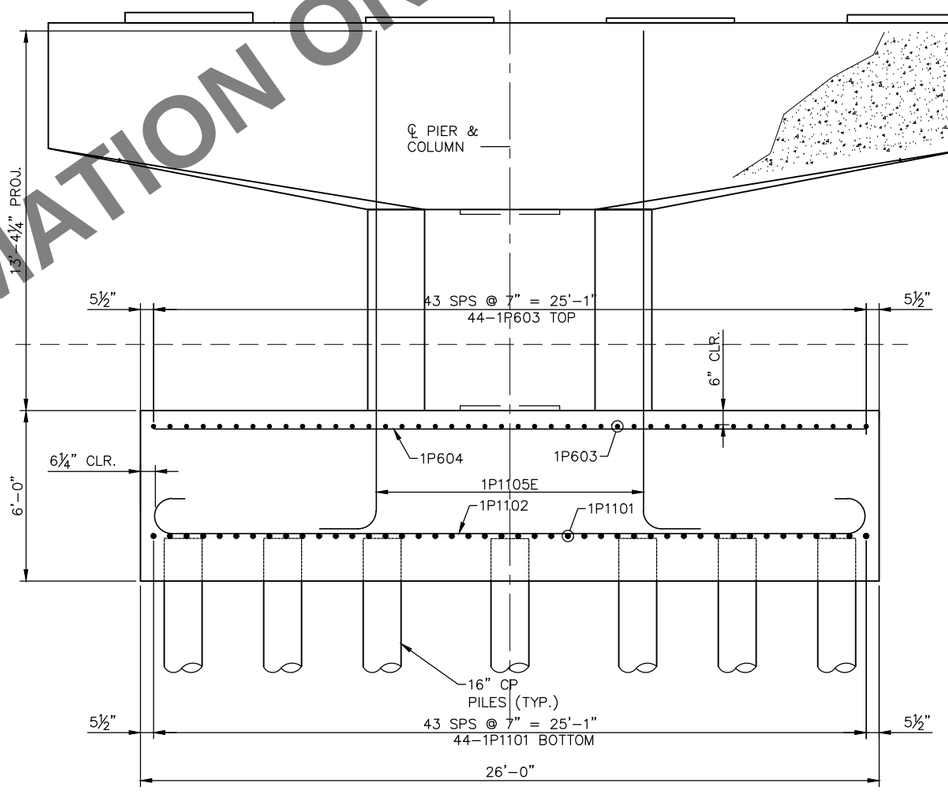
SHEET NAME: W1-STU-BRG-FCVV-PIER6-6

SHEET 60 OF 116

Jan. 18 2016 01:30 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER6.dwg By: vickersa



PIER 6 REINFORCEMENT LAYOUT



PIER 6 FOOTING ELEVATION

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DRAWN BY: RCK | CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

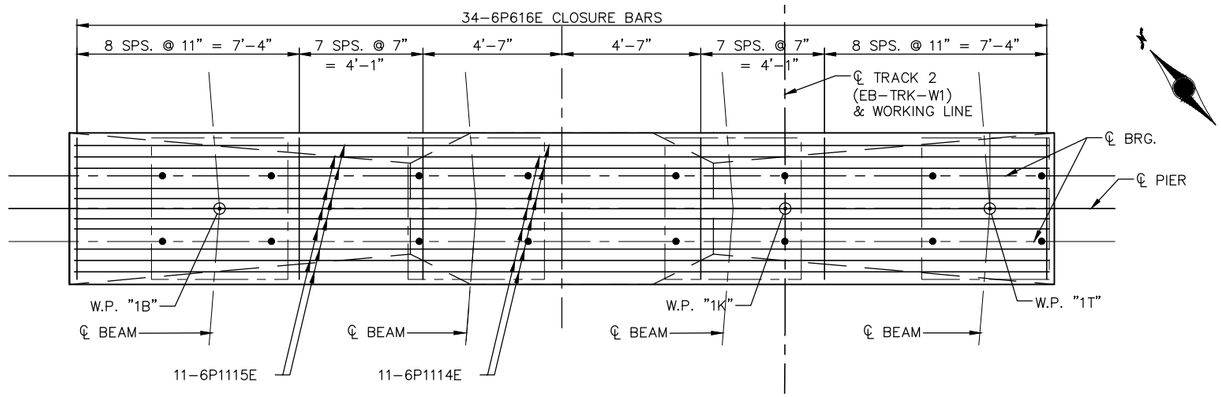
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 6 REINFORCEMENT 1

DISCIPLINE: STRUCTURES

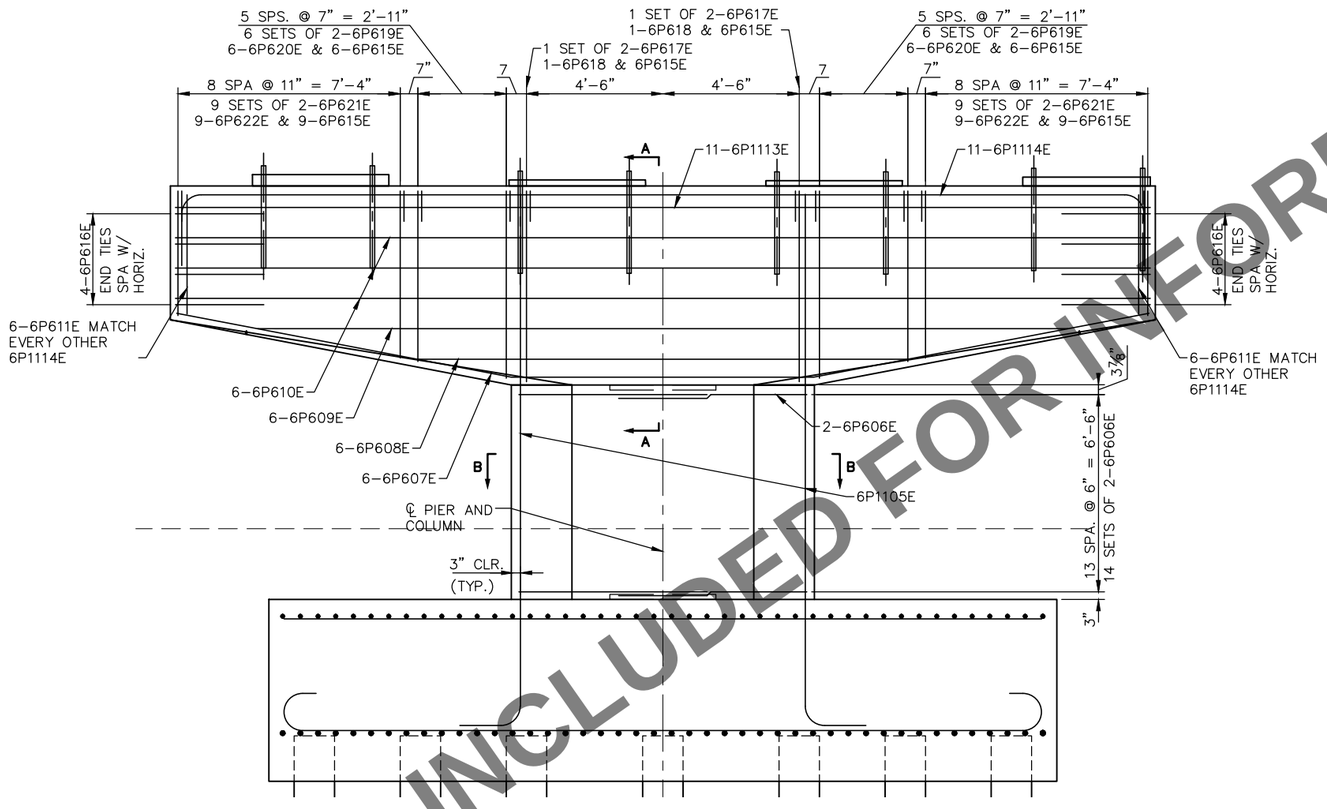
SHEET NAME: W1-STU-BRG-FCVV-PIER6R-6f

SHEET 61 OF 116

Jan, 18 2016 01:30 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER6F.dwg By: vickersa



PIER 6 PLAN



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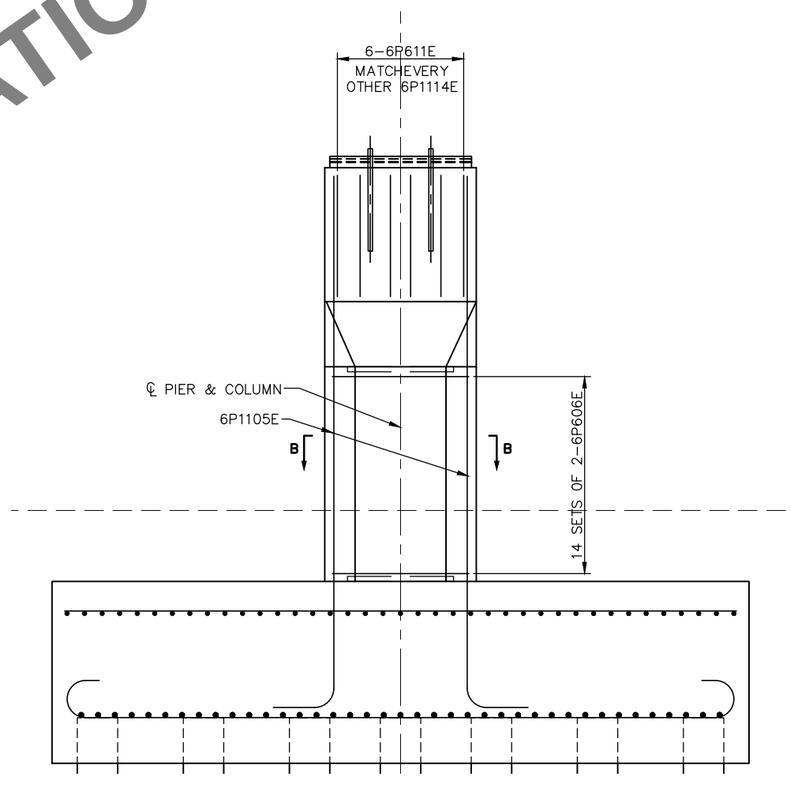

PIER 6 END VIEW

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DRAWN BY: RCK | CHECKED BY: -

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

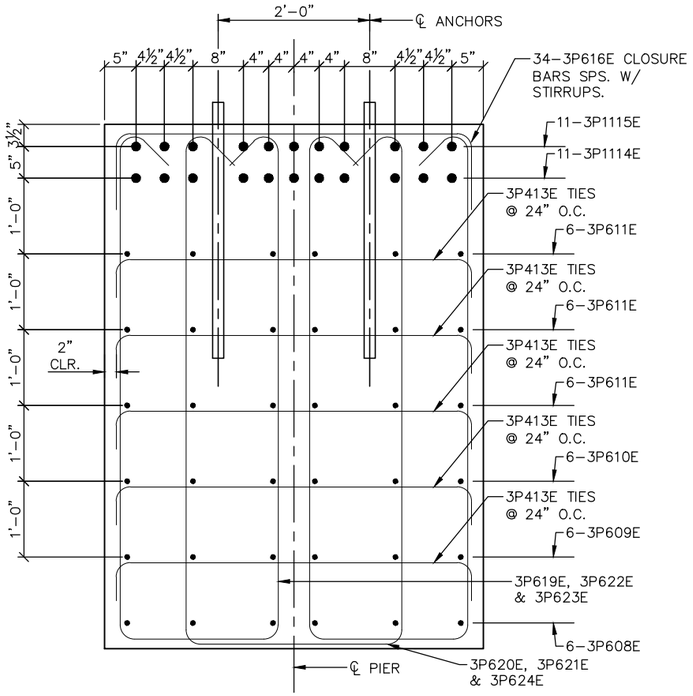
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 6 REINFORCEMENT 2

DISCIPLINE: STRUCTURES

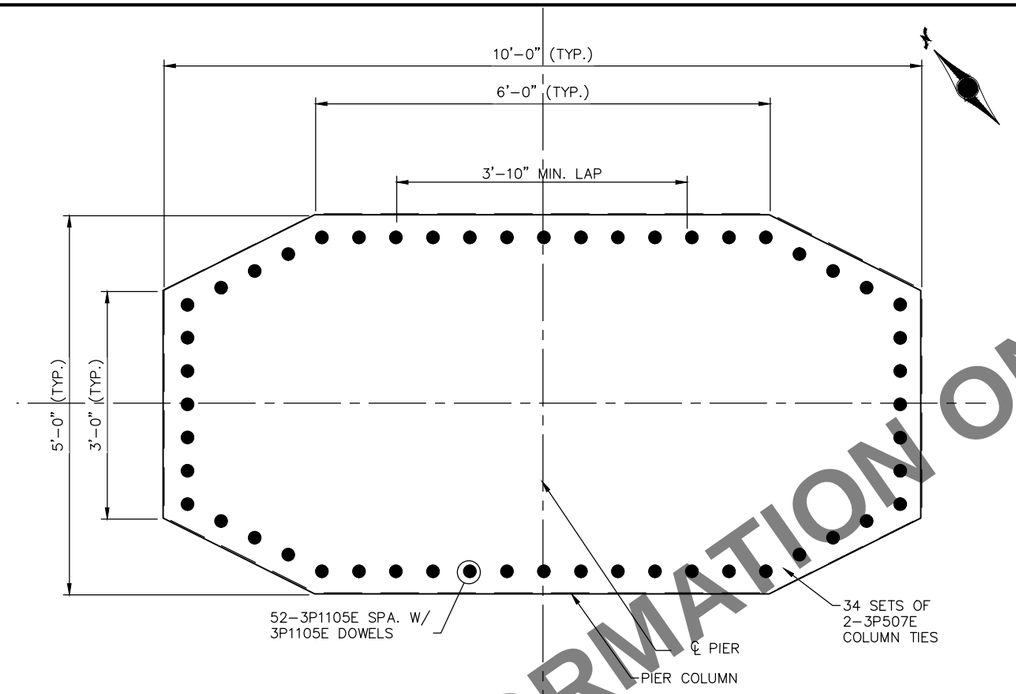
SHEET NAME: W1-STU-BRG-FCVV-PIER6R-6

SHEET 62 OF 116

Jan, 18 2016 01:30 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER6R.dwg By: vickersa



SECTION A-A



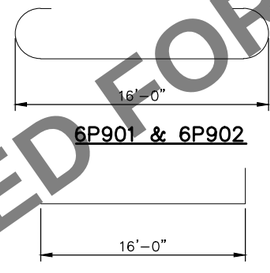
SECTION C-C

BILL OF REINFORCEMENT
FOR PIER 22

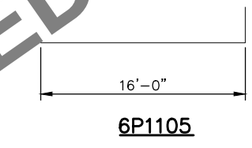
BAR	NO.	LENGTH	SHAPE	LOCATION
6P901	44	18'-6"		FOOTING HORIZONTAL
6P902	44	18'-6"		FOOTING HORIZONTAL
6P603	40	16'-0"		FOOTING HORIZONTAL
6P604	40	16'-0"		FOOTING HORIZONTAL
6P1105	48	18'-3"		FOOTING COLUMN DOWEL
NOT USED				
6P607E	25	26'-2"		COLUMN TIE
6P608E	14	6'-3"		CAP DOWEL
6P1009E	36	14'-6"		CAP DOWEL
6P610E	58	13'-8"		CAP TIE HORIZONTAL
6P611E	6	29'-9"		CAP LONGITUDINAL
6P612E	12	5'-2"		CAP LONGITUDINAL
6P613E	6	19'-1"		CAP LONGITUDINAL
6P614E	24	29'-4"		CAP LONGITUDINAL
6P615E	12	7'-6"		CAP LONGITUDINAL
6P416E	70	5'-1"		CAP TIE
6P1117E	9	26'-6"		CAP LONGITUDINAL
6P1118E	2	34'-7"		CAP LONGITUDINAL
6P1119E	2	35'-8"		CAP LONGITUDINAL
6P1120E	2	36'-4"		CAP LONGITUDINAL
6P1121E	2	36'-11"		CAP LONGITUDINAL
6P1122E	2	37'-1"		CAP LONGITUDINAL
6P1123E	1	37'-2"		CAP LONGITUDINAL
6P624E	30	6'-7"		CAP TIE
6P625E	18	13'-8"		END TIE
6P626E	56	①		CAP STIRRUP
6P627E	28	②		CAP STIRRUP
6P628E	4	16'-9"		CAP STIRRUP
6P629E	2	17'-6"		CAP STIRRUP
6P630E	26	6'-0"		CAP VERTICAL
6P631E	2	6'-7"		CAP HORIZONTAL
6P632E	2	4'-7"		CAP HORIZONTAL

① 4-SERIES OF 14, 12'-11" TO 16'-7"
② 2-SERIES OF 14, 13'-8" TO 17'-4"

INCLUDED FOR INFORMATION ONLY

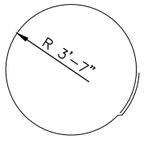


6P901 & 6P902



6P1105

PIER 3 PILE LAYOUT



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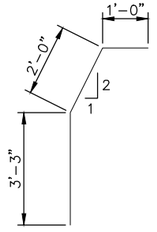

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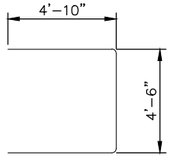

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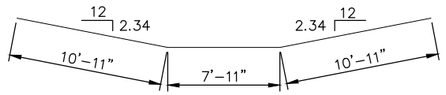

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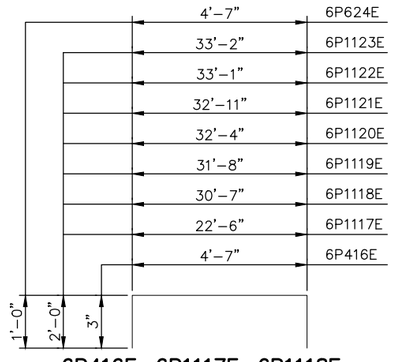

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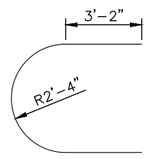

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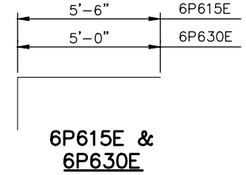
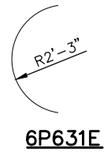


6P615E & 6P630E



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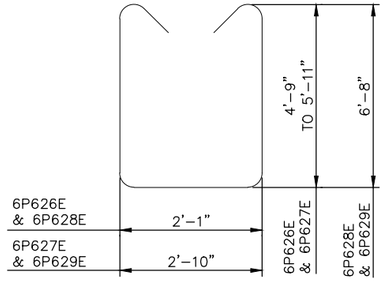

6P626E, 6P627E, 6P628E & 6P629E

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DESIGNED BY: APV | CHECKED BY: -
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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

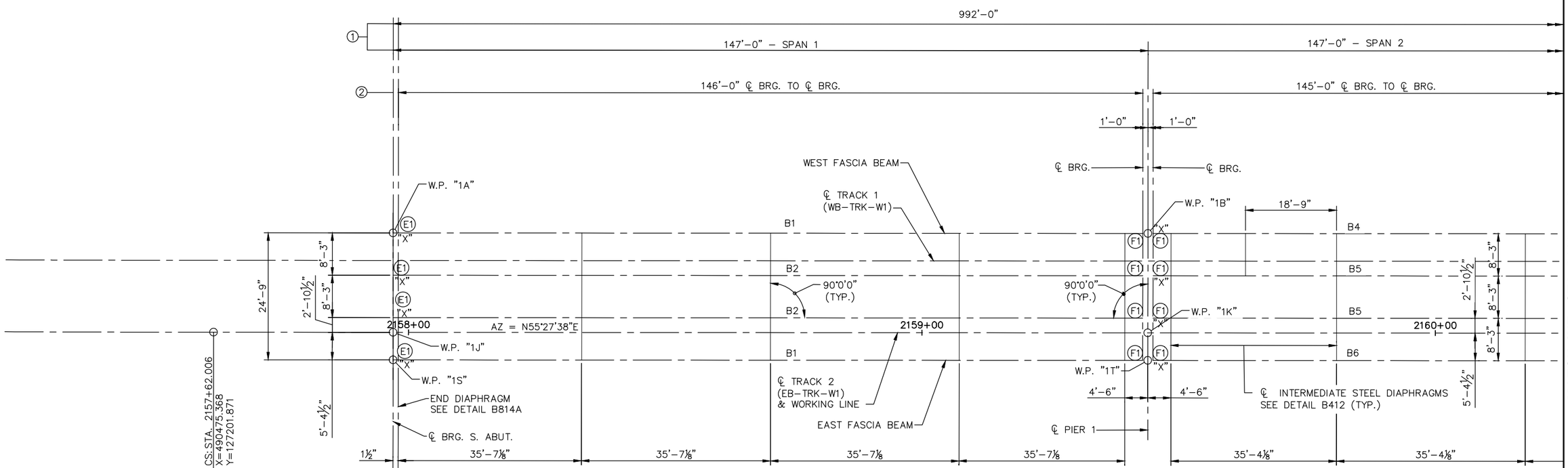
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PIER 6 REINFORCEMENT 3

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PIER6R-6a

SHEET 63 OF 116

Jan, 18 2016 01:30 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PIER6R.dwg By: vickersa



FRAMING PLAN

NOTES:

1. MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1)
2. INTERMEDIATE DIAPH. SPC. MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1)
3. FROM ℄ PIER TO ℄ DIAPHRAGM (ALONG BEAM LINE)

"X" = MARKS END OF BEAM

(E1) = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1 (4 REQUIRED)

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

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DESIGNED BY: APV | CHECKED BY: GHD
DRAWN BY: KHN | CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

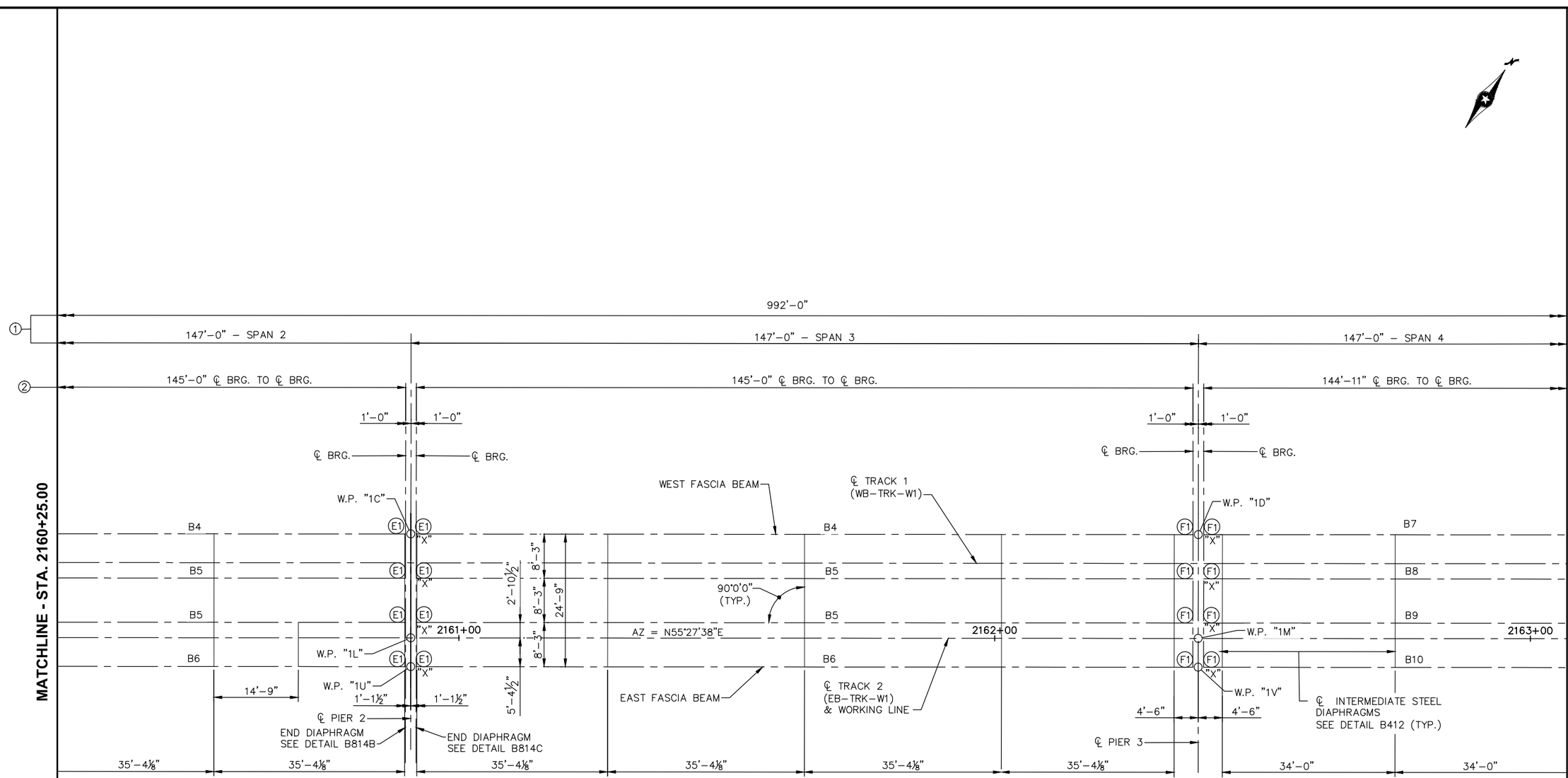
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
FRAMING PLAN 1

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-FRAM1-1

SHEET 64 OF 116

Jan. 18 2016 12:26 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-FRAM1.dwg By: kucera



FRAMING PLAN

NOTES:

1. ①MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1)
2. ②INTERMEDIATE DIAPH. SPG. MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1)
3. ③FROM ℄ PIER TO ℄ DIAPHRAGM (ALONG BEAM LINE)

"X" = MARKS END OF BEAM

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

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

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DESIGNED BY: APV CHECKED BY: GHD
DRAWN BY: KHN CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
FRAMING PLAN 2

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

SHEET 65 OF 116

Jan, 18 2016 12:26 pm V:\19140A_MN_Valley_View_Rood_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-FRAM1.dwg By: kucera

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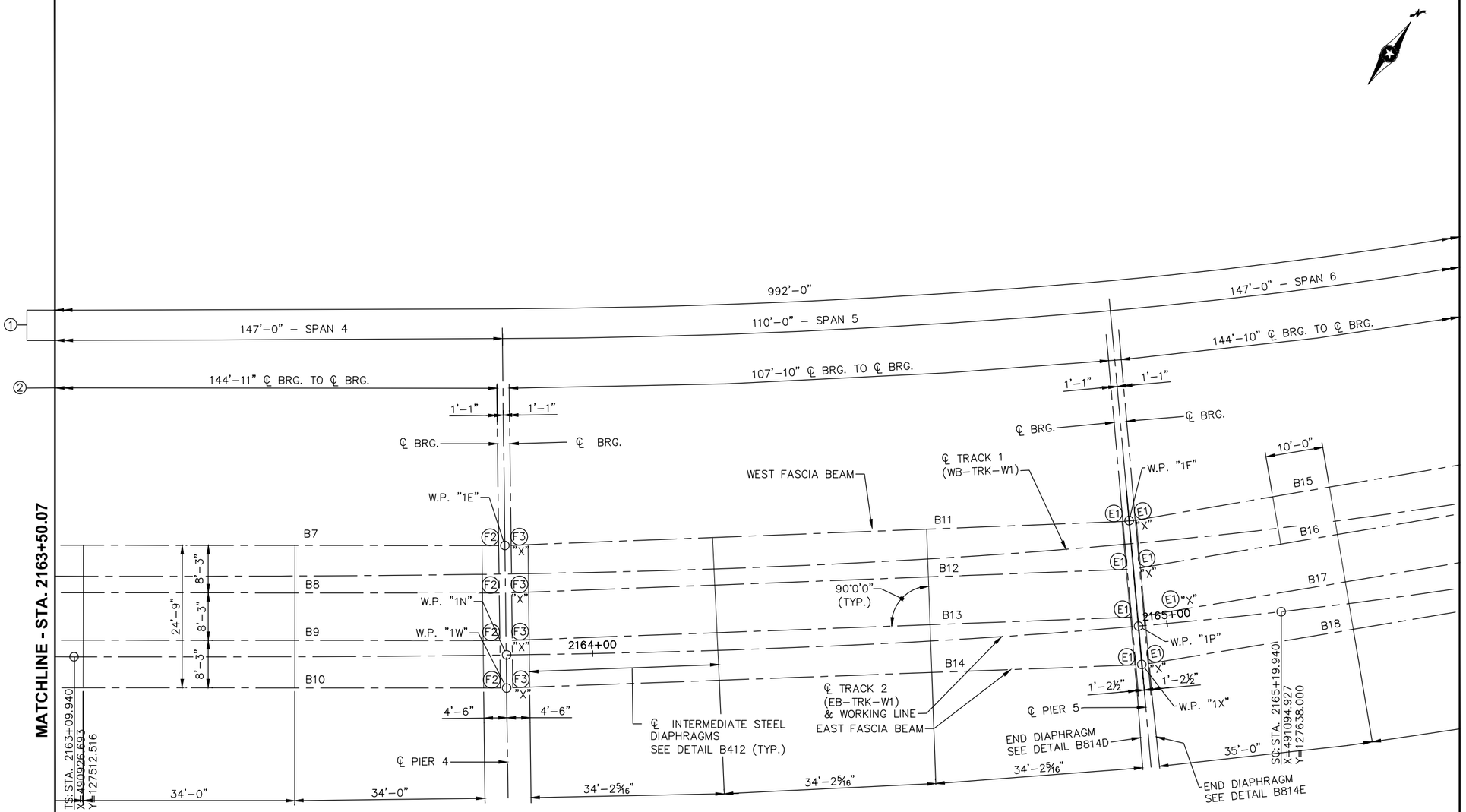

FRAMING PLAN

NOTES:

1. MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1)
2. INTERMEDIATE DIAPH. SPG. MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1)
3. FROM ℄ PIER TO ℄ DIAPHRAGM (ALONG BEAM LINE)

"X" = MARKS END OF BEAM

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

(F2) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (4 REQUIRED)

(F3) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (4 REQUIRED)

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DESIGNED BY: APV CHECKED BY: GHD
DRAWN BY: KHN CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

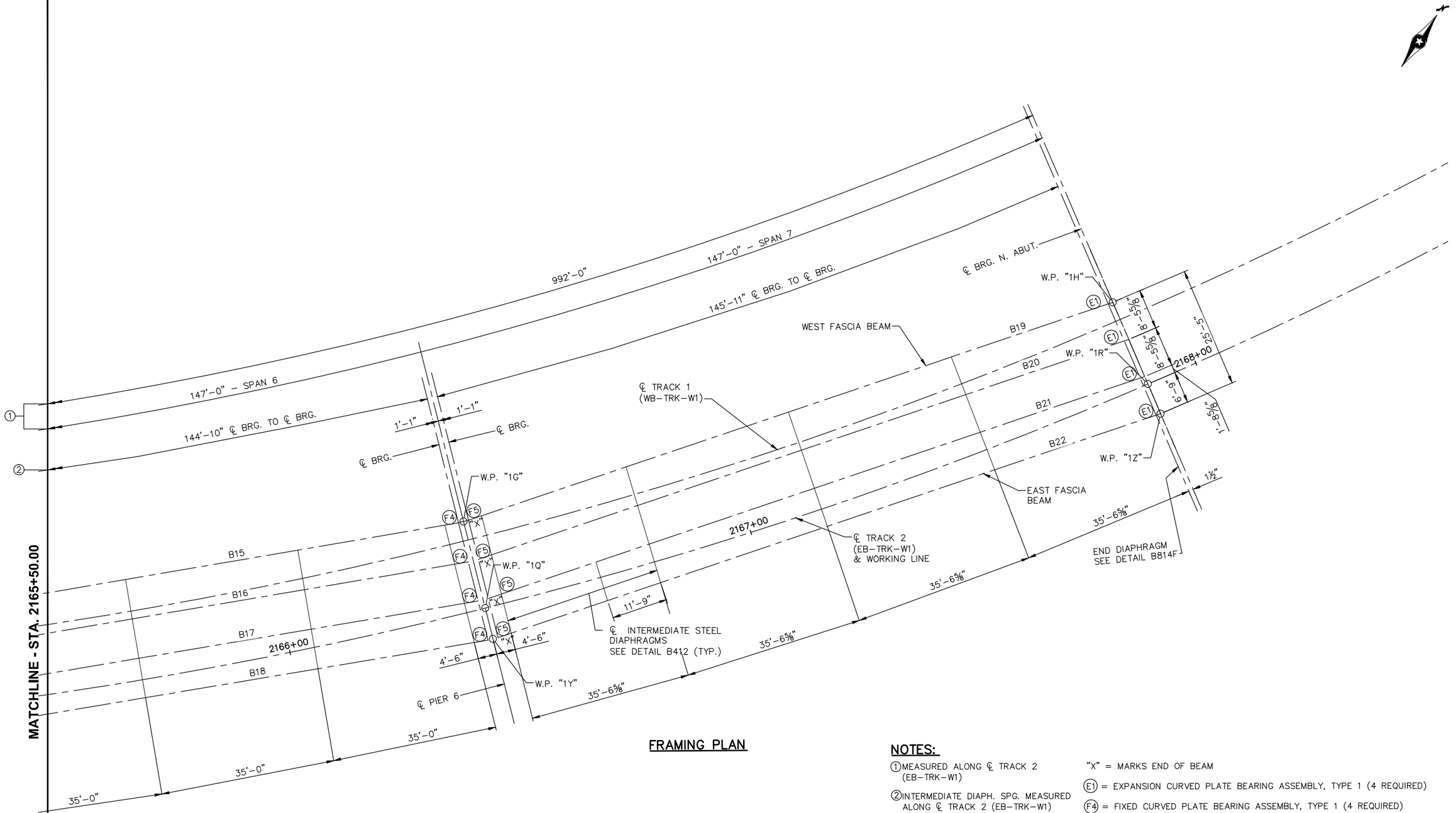
METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
FRAMING PLAN 3

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

SHEET 66 OF 116



FRAMING PLAN

NOTES:

1. MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1)
2. INTERMEDIATE DIAPH. SPG. MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1)
3. FROM ℄ PIER TO ℄ DIAPHRAGM (ALONG BEAM LINE)

"X" = MARKS END OF BEAM

(E1) = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1 (4 REQUIRED)

(F4) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (4 REQUIRED)

(F5) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (4 REQUIRED)

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DESIGNED BY: APV CHECKED BY: GHD

DRAWN BY: KHN CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

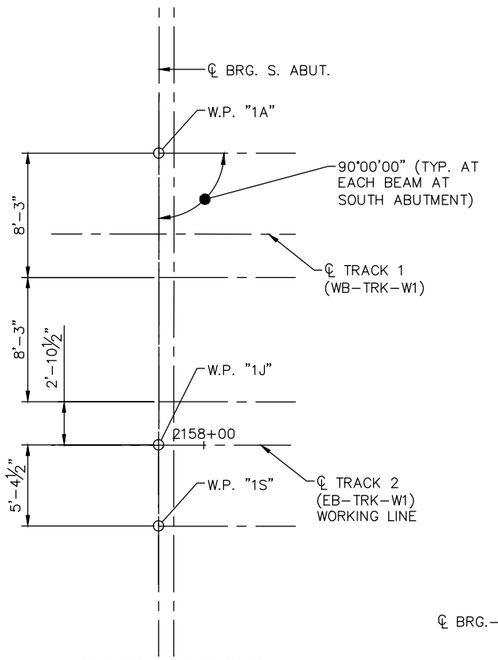
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
FRAMING PLAN 4

DISCIPLINE: STRUCTURES

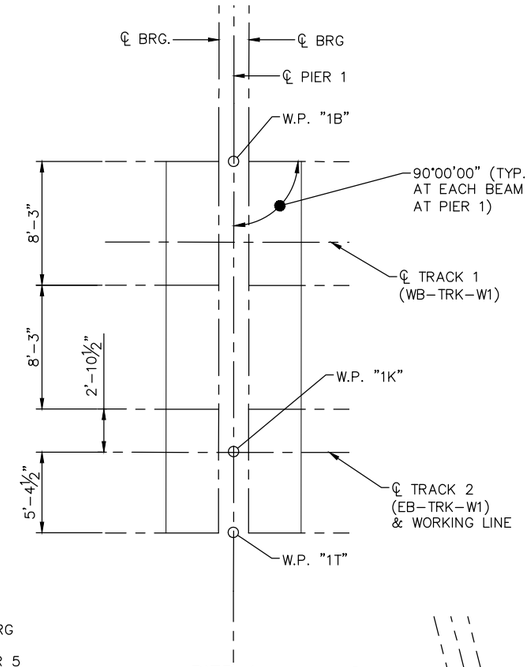
SHEET NAME: W1-STU-BRG-FCVV-FRAM1-4

SHEET 67 OF 116

Jan, 18 2016 12:26 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-FRAM1.dwg By: kucera

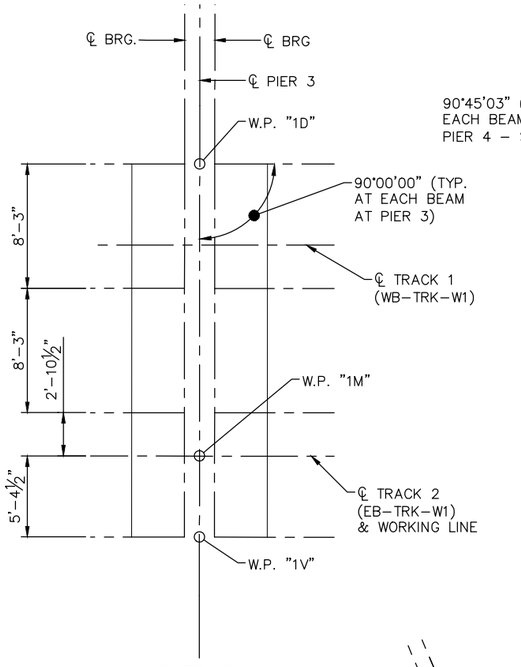


SOUTH ABUTMENT



PIER 1

(BEAM SPACING SHOWN AT PIER 1, SIMILAR AT PIER 2)



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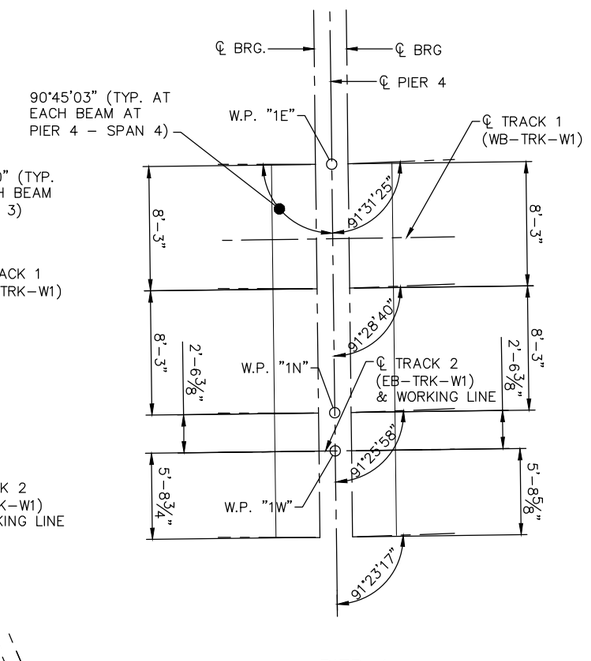
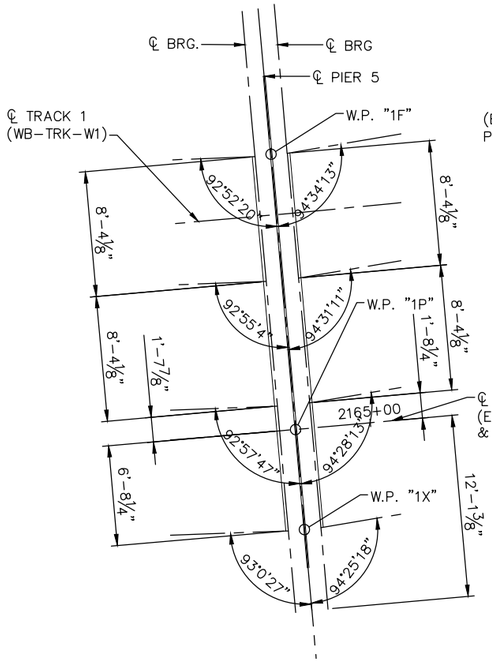


PIER 4



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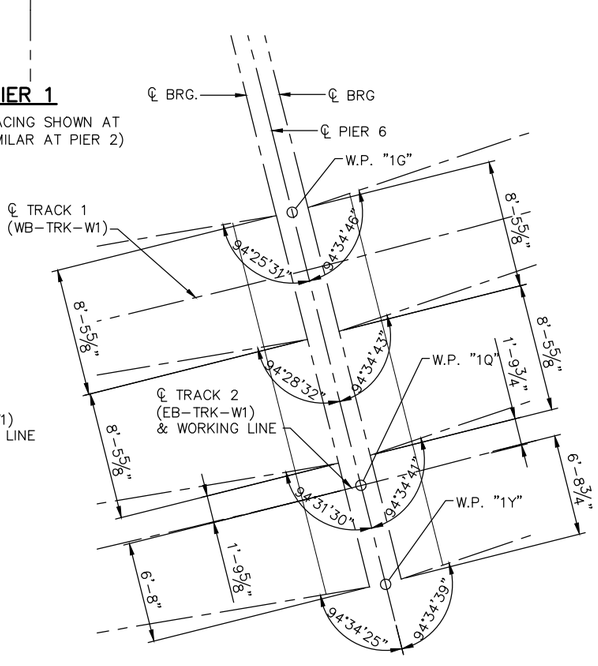
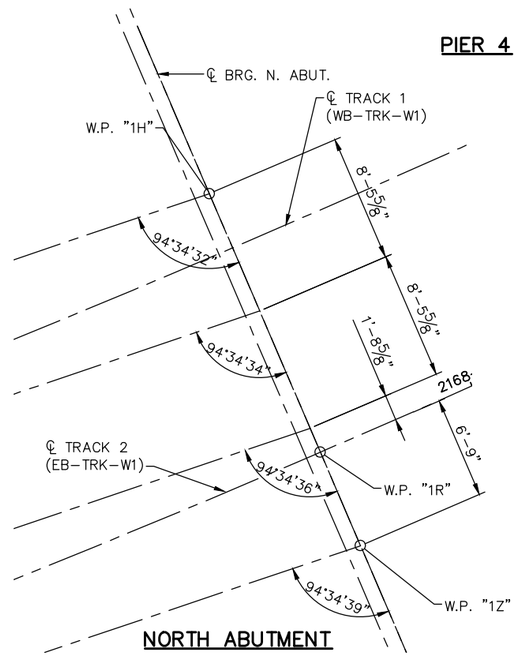


PIER 6



NORTH ABUTMENT

NOTES:

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

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DESIGNED BY: APV CHECKED BY: GHD
DRAWN BY: KHN CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

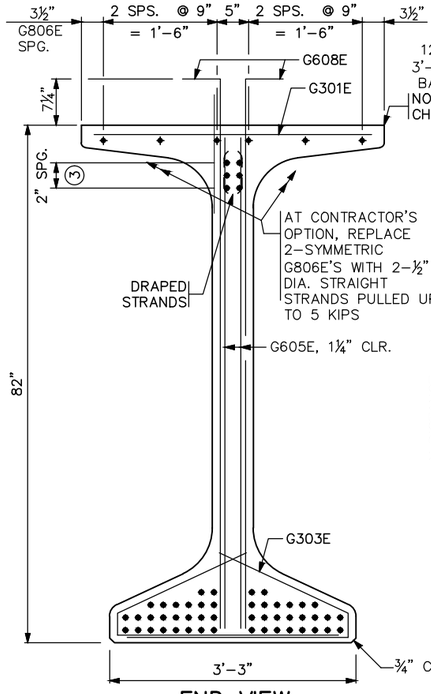
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
FRAMING PLAN DETAILS 5

DISCIPLINE: STRUCTURES

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

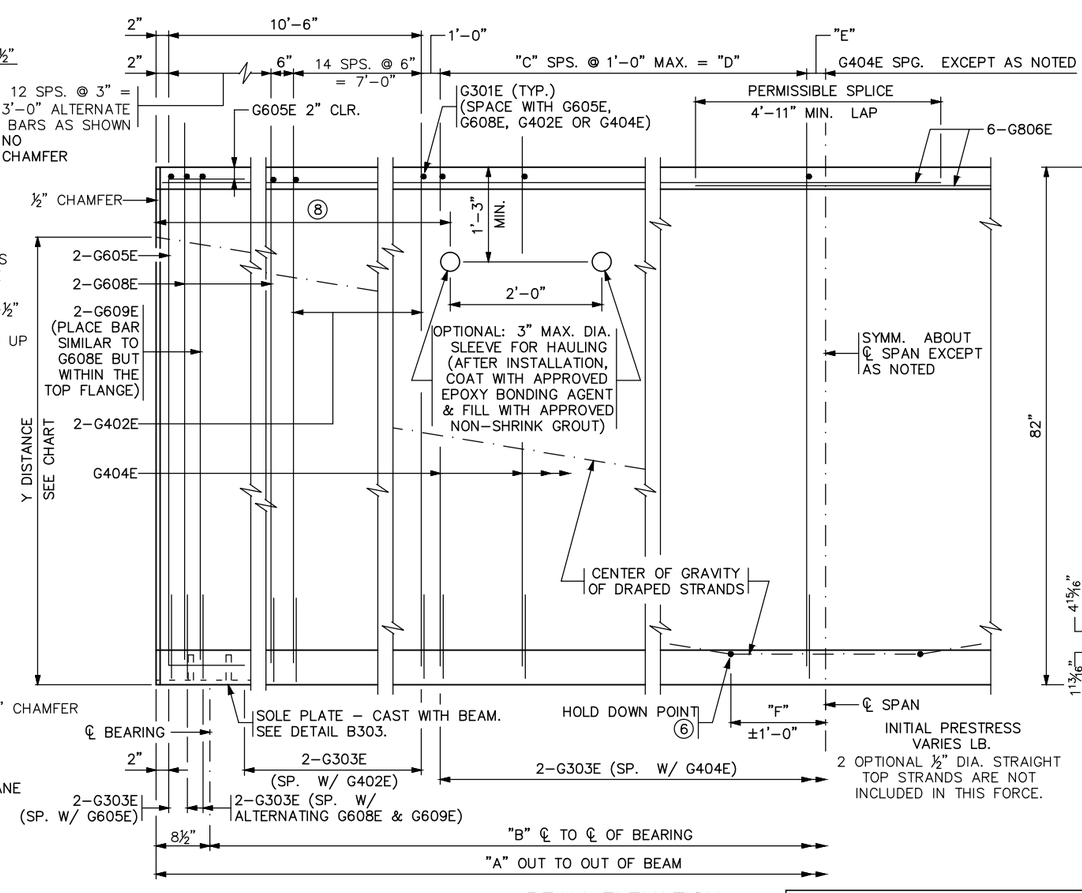
SHEET 68 OF 116

Jan. 18 2016 12:26 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-FRAM1.dwg By: kucera



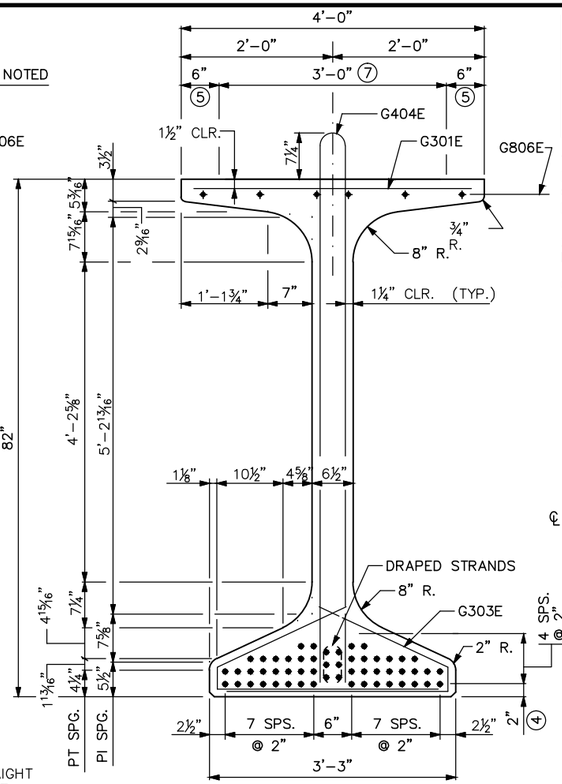
END VIEW

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



INITIAL PRESTRESS VARIES LB.
2 OPTIONAL ½" DIA. STRAIGHT TOP STRANDS ARE NOT INCLUDED IN THIS FORCE.

BEAM ELEVATION



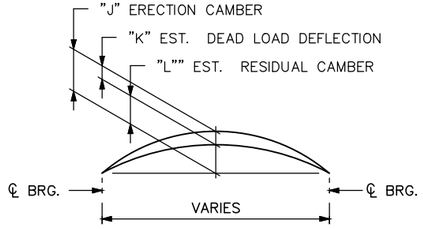
SECTION AT ℄ SPAN

Y DISTANCES (INCHES)	NO.	℄ SPAN	END
STRAIGHT STRANDS	42	4.95	
DRAPED STRANDS	6	5	76 □
TOTAL STRANDS	48	4.96	

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.

2 OPTIONAL ½" DIA. STRAIGHT STRANDS ARE NOT INCLUDED IN THIS TABLE.

□ 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, SIDEWALK, OCS AND RUNNING RAIL WHERE APPLICABLE.

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

GENERAL NOTES

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.

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

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

APPROXIMATE WEIGHT OF BEAM IS "M" TONS.

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

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

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

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

⑥ CENTER OF GRAVITY OF HOLD DOWNS WHEN MULTIPLE HOLD DOWNS ARE USED.

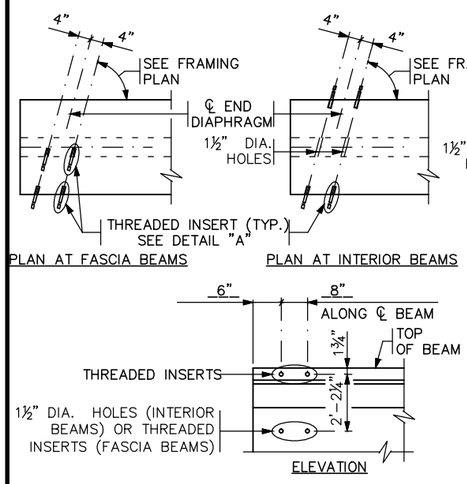
⑦ ROUGH FLOAT AND BROOM TRANSVERSELY FOR BOND PER SPEC. 2405.3D.

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

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

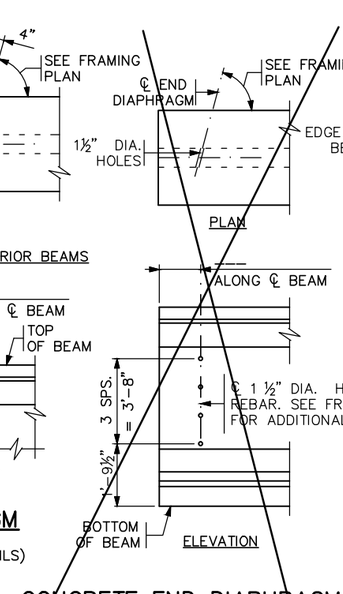
CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	"G" KSI
LONG TERM LOSSES	"H" KSI
TOTAL LOSSES	"I" KSI

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



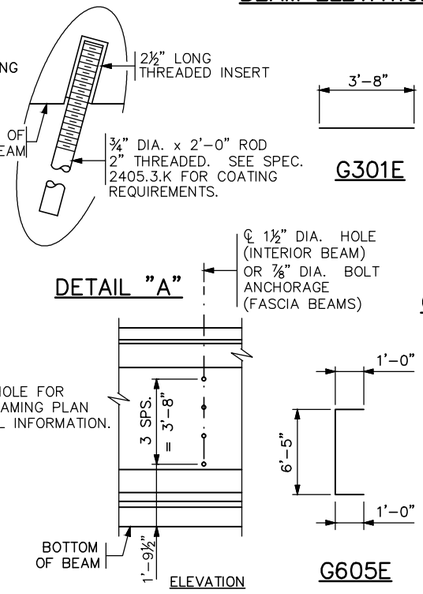
CONCRETE END DIAPHRAGM

PARAPET ABUTMENT
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)



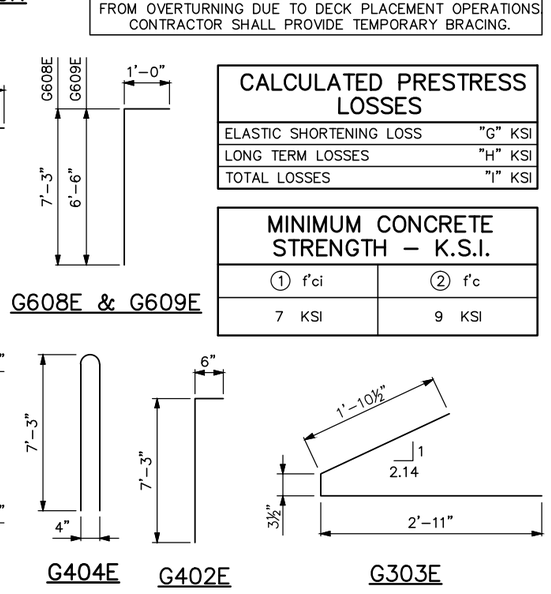
CONCRETE END DIAPHRAGM

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



STEEL INTERMEDIATE DIAPHRAGM

(SEE DETAIL B412 FOR DIAPHRAGM DETAILS)



REVISED:	
APPROVED: JANUARY 13, 2015	
Nancy Dreubenberger	
STATE BRIDGE ENGINEER	

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

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

BEAMS 1-10, 15-22

FIG. 5-397.531

DES: APV	DR: EMB	APPROVED:
CHK: GHD	CHK: GHD	

SHEET NO. 69 OF 116 SHEETS

BRIDGE NO. 27R33

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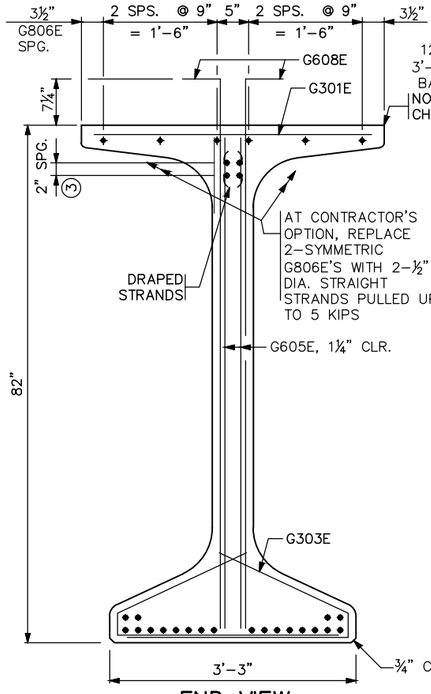

END VIEW

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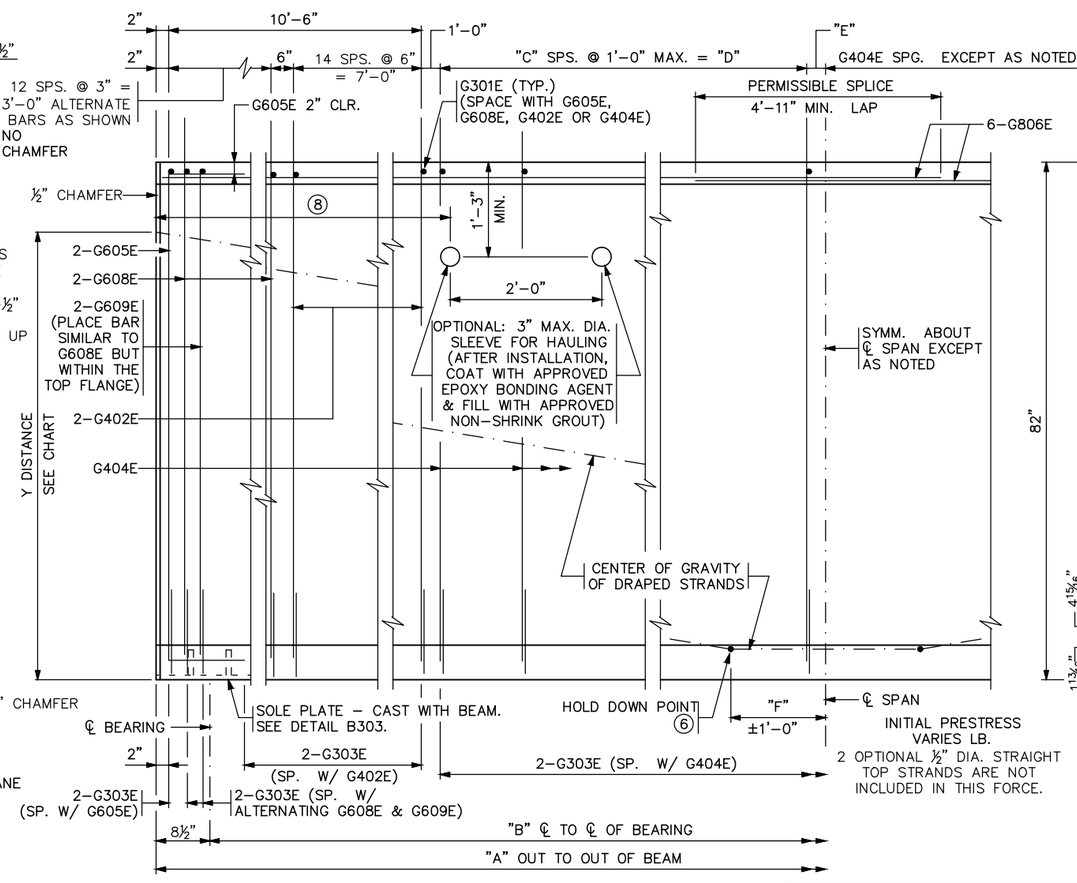

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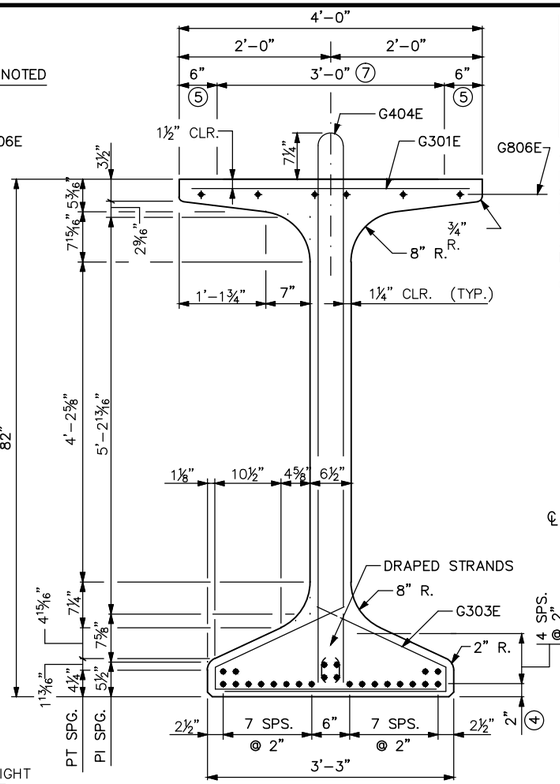

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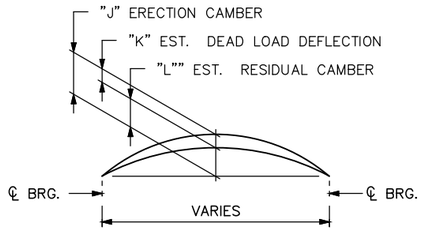

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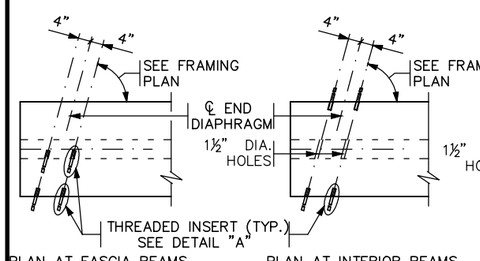
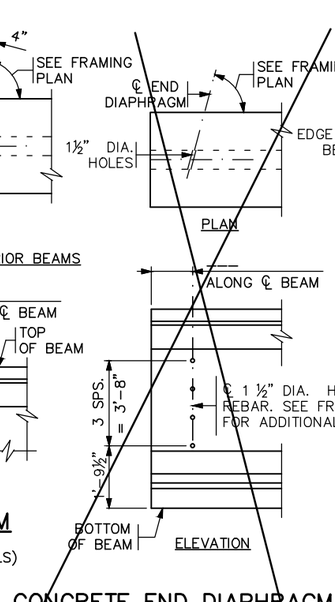


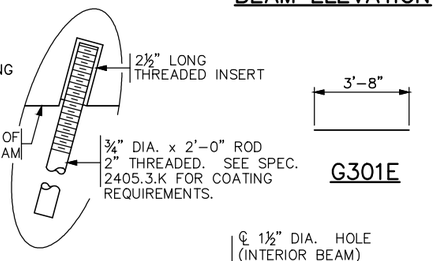
CONCRETE END DIAPHRAGM

PARAPET ABUTMENT
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)



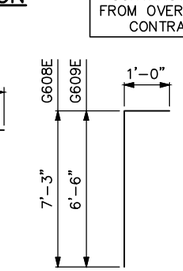
CONCRETE END DIAPHRAGM

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

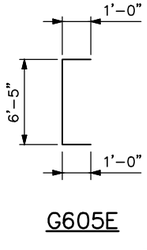


STEEL INTERMEDIATE DIAPHRAGM

(SEE DETAIL B412 FOR DIAPHRAGM DETAILS)



G608E & G609E



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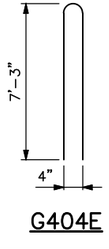

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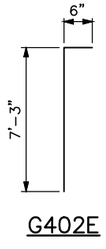
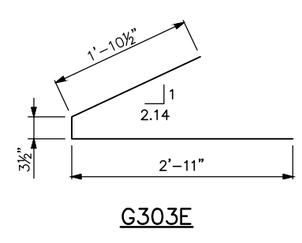


G402E



G303E

REVISED:

APPROVED: JANUARY 13, 2015
Nancy Daubenberger
STATE BRIDGE ENGINEER

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

TITLE: 82MW PRESTRESSED CONCRETE BEAM (PRETENSIONED) 82MW– VARIES

BEAMS 11–14

FIG. 5–397.531

DES: APV	DR: EMB	APPROVED:
CHK: GHD	CHK: GHD	

SHEET NO. 70 OF 116 SHEETS

BRIDGE NO. 27R33

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82MW PRESTRESSED CONCRETE BEAM TABLE

BEAM ID	BEAM DIMENSIONS			SHEAR REINFORCEMENT			HOLD DOWN	PRESTRESS LOSSES			CAMBER											WEIGHT OF BEAM
											"J"					"K"	"L"					"M"
	"A"	"B"	SLOPED LENGTH (1)	"C"	"D"	"E"	"F"	"G"	"H"	"I"	30 DAYS	60 DAYS	90 DAYS	120 DAYS	180 DAYS		30 DAYS	60 DAYS	90 DAYS	120 DAYS	180 DAYS	
B1	147'–5"	146'–0"	NO	61	61'–0"	1'–½"	14'–8⅞"	21.07	23.21	44.28	4¾"	5⁵⁄₁₆"	5⁹⁄₁₆"	5¹¹⁄₁₆"	5⅞"	3⅝"	1⅛"	1⅝"	1¹⁵⁄₁₆"	2⅛"	2¼"	84.0
B2	147'–5"	146'–0"	NO	61	61'–0"	1'–½"	14'–8⅞"	21.07	23.21	44.28	4¾"	5⁵⁄₁₆"	5⁹⁄₁₆"	5¹¹⁄₁₆"	5⅞"	3⅝"	1⅛"	1⅝"	1¹⁵⁄₁₆"	2⅛"	2¼"	84.0
B3	147'–5"	146'–0"	NO	61	61'–0"	1'–½"	14'–8⅞"	21.07	23.21	44.28	4¾"	5⁵⁄₁₆"	5⁹⁄₁₆"	5¹¹⁄₁₆"	5⅞"	3⅝"	1⅛"	1⅝"	1¹⁵⁄₁₆"	2⅛"	2¼"	84.0
B4	146'–5"	145'–0"	NO	60	60'–0"	1'–6½"	14'–7¹⁄₁₆"	21.16	23.21	44.37	4¾"	5¼"	5⁹⁄₁₆"	5¹¹⁄₁₆"	5⅞"	3¹¹⁄₁₆"	1¹⁄₁₆"	1⁹⁄₁₆"	1⅞"	2"	2³⁄₁₆"	83.5
B5	146'–5"	145'–0"	NO	60	60'–0"	1'–6½"	14'–7¹⁄₁₆"	21.16	23.21	44.37	4¾"	5¼"	5⁹⁄₁₆"	5¹¹⁄₁₆"	5⅞"	3¹¹⁄₁₆"	1¹⁄₁₆"	1⁹⁄₁₆"	1⅞"	2"	2³⁄₁₆"	83.5
B6	146'–5"	145'–0"	NO	60	60'–0"	1'–6½"	14'–7¹⁄₁₆"	21.16	23.21	44.37	4¾"	5¼"	5⁹⁄₁₆"	5¹¹⁄₁₆"	5⅞"	3¹¹⁄₁₆"	1¹⁄₁₆"	1⁹⁄₁₆"	1⅞"	2"	2³⁄₁₆"	83.5
B7	146'–1"	144'–8"	NO	60	60'–0"	1'–4½"	14'–7⁵⁄₁₆"	21.17	23.21	44.38	4¾"	5¼"	5⁹⁄₁₆"	5¹¹⁄₁₆"	5⅞"	3¹¹⁄₁₆"	1¹⁄₁₆"	1⁹⁄₁₆"	1⅞"	2"	2³⁄₁₆"	83.5
B8	146'–2⁵⁄₁₆"	144'–9⁵⁄₁₆"	NO	60	60'–0"	1'–5⅛"	14'–7⁷⁄₁₆"	21.17	23.21	44.38	4¾"	5¼"	5⁹⁄₁₆"	5¹¹⁄₁₆"	5⅞"	3¹¹⁄₁₆"	1¹⁄₁₆"	1⁹⁄₁₆"	1⅞"	2"	2³⁄₁₆"	83.5
B9	146'–3⁹⁄₁₆"	144'–10⁹⁄₁₆"	NO	60	60'–0"	1'–5¹³⁄₁₆"	14'–7⁹⁄₁₆"	21.17	23.21	44.38	4¾"	5¼"	5⁹⁄₁₆"	5¹¹⁄₁₆"	5⅞"	3¹¹⁄₁₆"	1¹⁄₁₆"	1⁹⁄₁₆"	1⅞"	2"	2³⁄₁₆"	83.5
B10	146'–4⅞"	144'–11⅞"	NO	60	60'–0"	1'–6⁷⁄₁₆"	14'–7¹⁄₁₆"	21.17	23.21	44.38	4¾"	5¼"	5⁹⁄₁₆"	5¹¹⁄₁₆"	5⅞"	3¹¹⁄₁₆"	1¹⁄₁₆"	1⁹⁄₁₆"	1⅞"	2"	2³⁄₁₆"	83.5
B11	107'–9⁹⁄₁₆"	106'–4⁹⁄₁₆"	NO	42	42'–0"	2¹³⁄₁₆"	10'–9⅜"	9.90	15.69	25.59	1⅛"	1¼"	1⁵⁄₁₆"	1⅜"	1⁷⁄₁₆"	¾"	⅜"	½"	⅝"	⅝"	1¹⁄₁₆"	61.5
B12	108'–5¼"	107'–¼"	NO	42	42'–0"	6⅝"	10'–10⅛"	9.90	15.69	25.59	1⅛"	1¼"	1⁵⁄₁₆"	1⅜"	1⁷⁄₁₆"	¾"	⅜"	½"	⅝"	⅝"	1¹⁄₁₆"	62.0
B13	109'–⅞"	107'–7⅞"	NO	42	42'–0"	10⁷⁄₁₆"	10'–10⅞"	9.90	15.69	25.59	1⅛"	1¼"	1⁵⁄₁₆"	1⅜"	1⁷⁄₁₆"	¾"	⅜"	½"	⅝"	⅝"	1¹⁄₁₆"	62.5
B14	109'–8⁹⁄₁₆"	108'–3⁹⁄₁₆"	NO	42	42'–0"	1'–2¼"	10'–11⅝"	9.90	15.69	25.59	1⅛"	1¼"	1⁵⁄₁₆"	1⅜"	1⁷⁄₁₆"	¾"	⅜"	½"	⅝"	⅝"	1¹⁄₁₆"	62.5
B15	143'–2¼"	141'–9¼"	NO	59	59'–0"	11⅛"	14'–3¹³⁄₁₆"	21.29	23.21	44.50	4¹¹⁄₁₆"	5³⁄₁₆"	5½"	5⅝"	5¹³⁄₁₆"	3¾"	1"	1½"	1¾"	1¹⁵⁄₁₆"	2⅛"	82.0
B16	144'–6⅛"	143'–1⅛"	NO	60	60'–0"	7⅛"	14'–5⁷⁄₁₆"	21.29	23.21	44.50	4¾"	5¼"	5½"	5¹¹⁄₁₆"	5⅞"	3¹¹⁄₁₆"	1¹⁄₁₆"	1⁹⁄₁₆"	1¹³⁄₁₆"	2"	2³⁄₁₆"	82.5
B17	145'–9¹⁵⁄₁₆"	144'–4¹⁵⁄₁₆"	NO	61	61'–0"	2¹⁵⁄₁₆"	14'–7"	21.29	23.21	44.50	4¾"	5¼"	5½"	5¹¹⁄₁₆"	5⅞"	3¹¹⁄₁₆"	1"	1⁹⁄₁₆"	1¹³⁄₁₆"	2"	2³⁄₁₆"	83.5
B18	147'–1¾"	145'–8¾"	NO	61	61'–0"	10⅞"	14'–8⅛"	21.29	23.21	44.50	4¾"	5⁵⁄₁₆"	5⁹⁄₁₆"	5¹¹⁄₁₆"	5⅞"	3¹³⁄₁₆"	¹⁵⁄₁₆"	1½"	1¾"	1¹⁵⁄₁₆"	2⅛"	84.0
B19	144'–2⁵⁄₁₆"	142'–9⁵⁄₁₆"	NO	60	60'–0"	5³⁄₁₆"	14'–5¹⁄₁₆"	21.20	23.21	44.41	4¾"	5¼"	5½"	5¹¹⁄₁₆"	5⅞"	3¹¹⁄₁₆"	1"	1½"	1¹³⁄₁₆"	1¹⁵⁄₁₆"	2⅛"	82.5
B20	145'–6⁹⁄₁₆"	144'–1⁹⁄₁₆"	NO	60	60'–0"	1'–1¼"	14'–6⅝"	21.20	23.21	44.41	4¾"	5¼"	5½"	5¹¹⁄₁₆"	5⅞"	3⅝"	1⅛"	1⅝"	1⅞"	2¹⁄₁₆"	2¼"	83.0
B21	146'–10¹³⁄₁₆"	145'–5¹³⁄₁₆"	NO	61	61'–0"	9⅜"	14'–8¼"	21.20	23.21	44.41	4¾"	5¼"	5⁹⁄₁₆"	5¹¹⁄₁₆"	5⅞"	3⅝"	1⅛"	1⅝"	1⅞"	2¹⁄₁₆"	2¼"	84.0
B22	148'–3"	146'–10"	NO	62	62'–0"	5½"	14'–9⅞"	21.20	23.21	44.41	4¾"	5⁵⁄₁₆"	5⁹⁄₁₆"	5¾"	5¹⁵⁄₁₆"	3¾"	1"	1½"	1¹³⁄₁₆"	1¹⁵⁄₁₆"	2⅛"	84.5

NOTES:

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

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DESIGNED BY: ECM | CHECKED BY: APV
DRAWN BY: RCK | CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

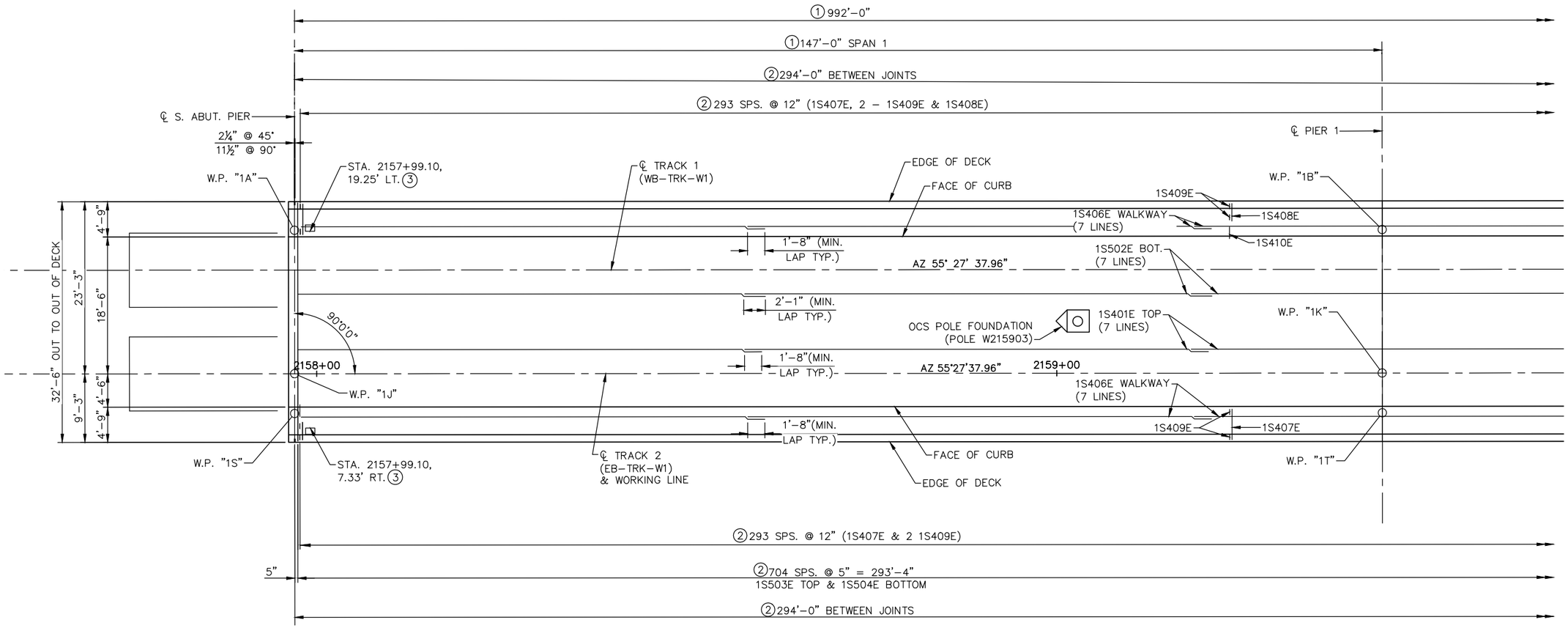
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
PRESTRESSED CONCRETE BEAM DETAILS

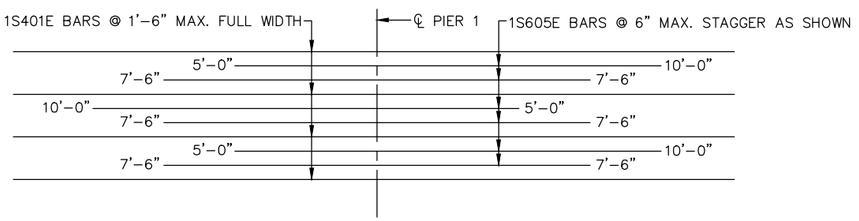
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-PCB

SHEET 71 OF 116

Jan. 18 2016 02:58 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-PCB.dwg By: vickersa



PARTIAL DECK PLAN – SPAN 1



PLAN OF TOP LONGITUDINAL REINFORCEMENT AT PIER 1

NOTES:

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W1).

② MEASURED ALONG EDGE OF DECK.

③ CURRENT BONDING JUNCTION BOX. SEE NOTE 6 ON SHEET 3.

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DESIGNED BY: GHD | CHECKED BY: DWS
DRAWN BY: KHN | CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

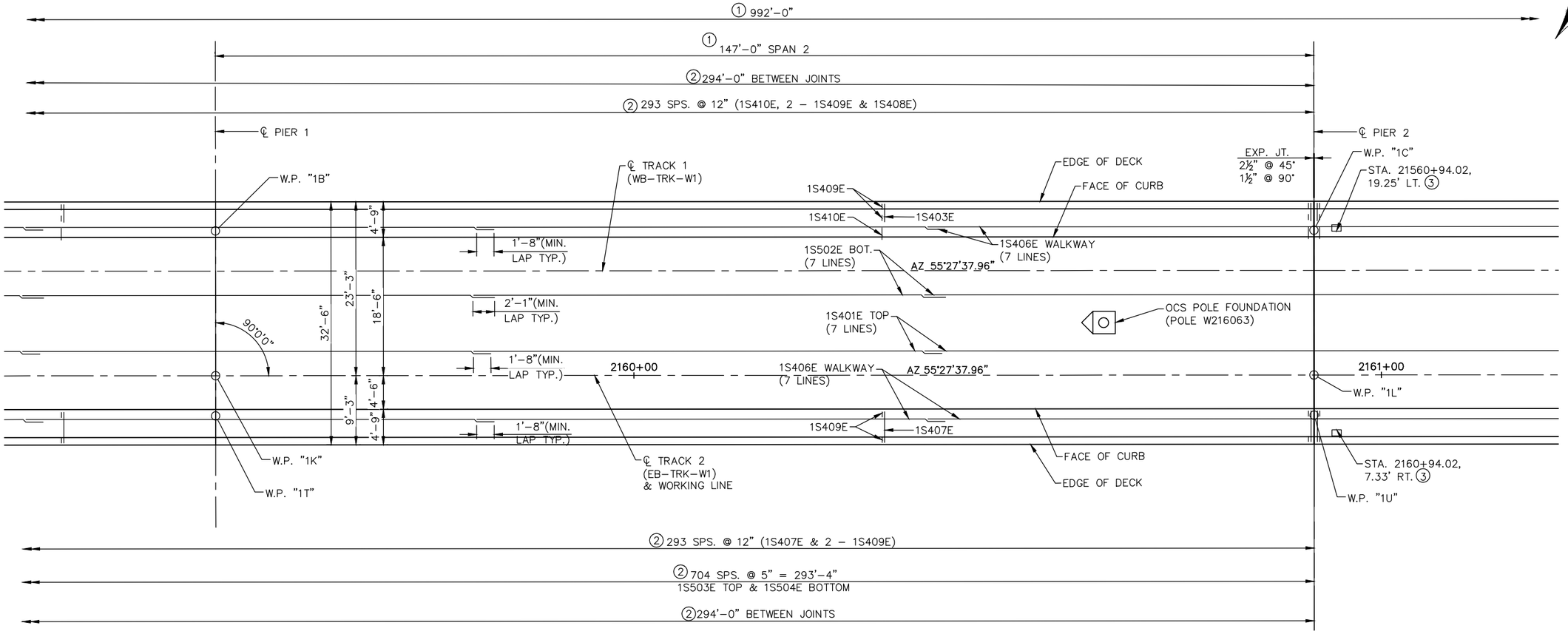
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (DETAIL & REINF) 1

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUP1-1

SHEET 72 OF 116

Jan, 18 2016 12:27 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP1.dwg By: kucera



PARTIAL DECK PLAN – SPAN 2

NOTES:

① MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1).

② MEASURED ALONG EDGE OF DECK.

③ CURRENT BONDING JUNCTION BOX. SEE NOTE 5 ON SHEET 3.

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DESIGNED BY: GHD CHECKED BY: DWS
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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

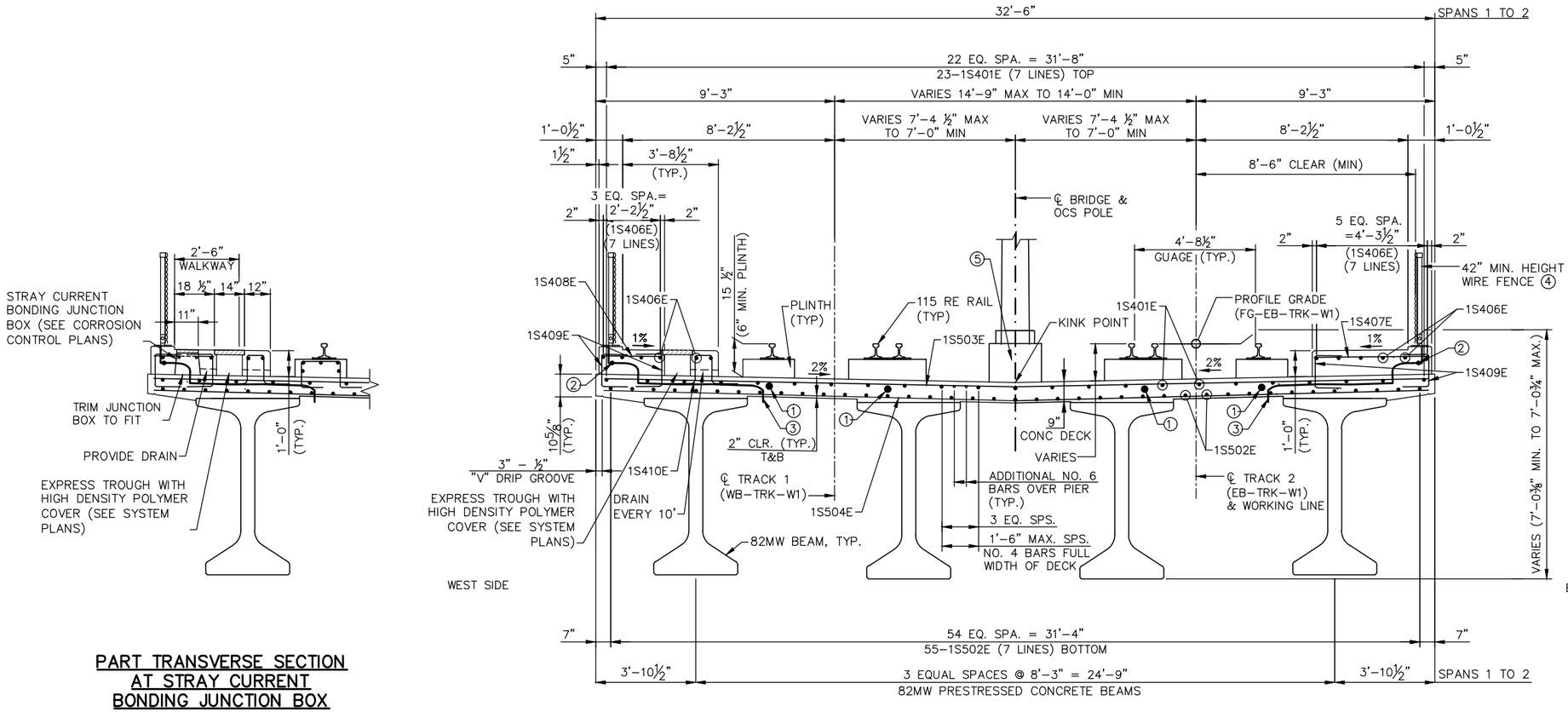
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (DETAIL & REINF) 2

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-SUP1-2

SHEET 73 OF 116

Jan, 18 2016 12:27 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP1.dwg By: kucera



PART TRANSVERSE SECTION AT STRAY CURRENT BONDING JUNCTION BOX

PART TRANSVERSE SECTION AT STRAY CURRENT BONDING JUNCTION BOX

TRANSVERSE SECTION THRU DECK – SPANS 1 TO 2

SCALE 0 2.5 5 IN FEET

NOTES:

① STRAY CURRENT COLLECTOR CABLE, SEE NOTE 4 ON SHEET 3.

② GROUND WIRE, SEE GROUNDING PLANS.

③ GROUND WIRE PLACED INSIDE 1½" PVC CONDUIT WITHIN DECK AT PIER XX, SEE GROUNDING PLANS.

④ WIRE FENCE, SEE RAILING SHEETS.

⑤ SEE SHEET 87 FOR PEDESTAL REINFORCING AND DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GHD CHECKED BY: DWS
DRAWN BY: RCK CHECKED BY: GHD

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90% SUBMISSION - 01/22/16

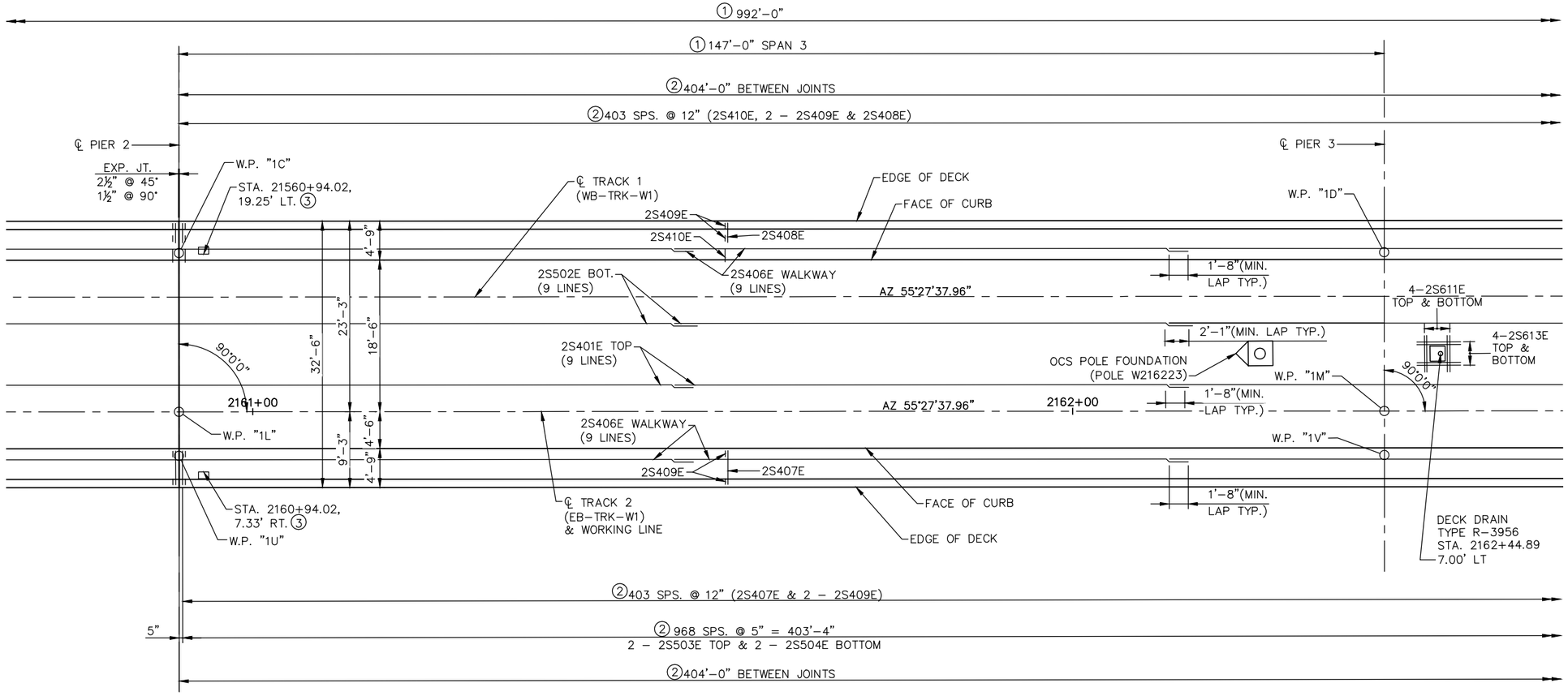
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (SECTION & REINF) 1

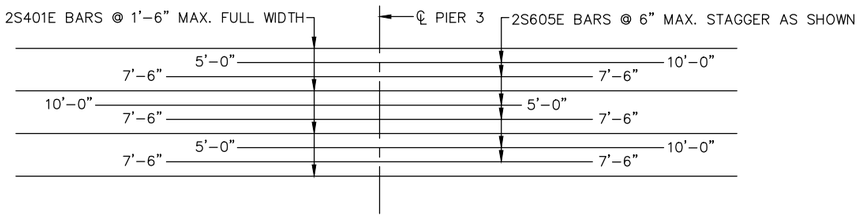
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-TYP2

SHEET 74 OF 116

Jan, 18 2016 12:28 pm V:\19140A_MN_Valley_View_Rood_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTS\90% Submittal\W1-STU-BRG-FCVV-TYP2.DWG By: kucera



PARTIAL DECK PLAN – SPAN 3



PLAN OF TOP LONGITUDINAL REINFORCEMENT AT PIER 3

NOTES:

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W1).

② MEASURED ALONG EDGE OF DECK.

③ CURRENT BONDING JUNCTION BOX. SEE NOTE 5 ON SHEET 3.

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

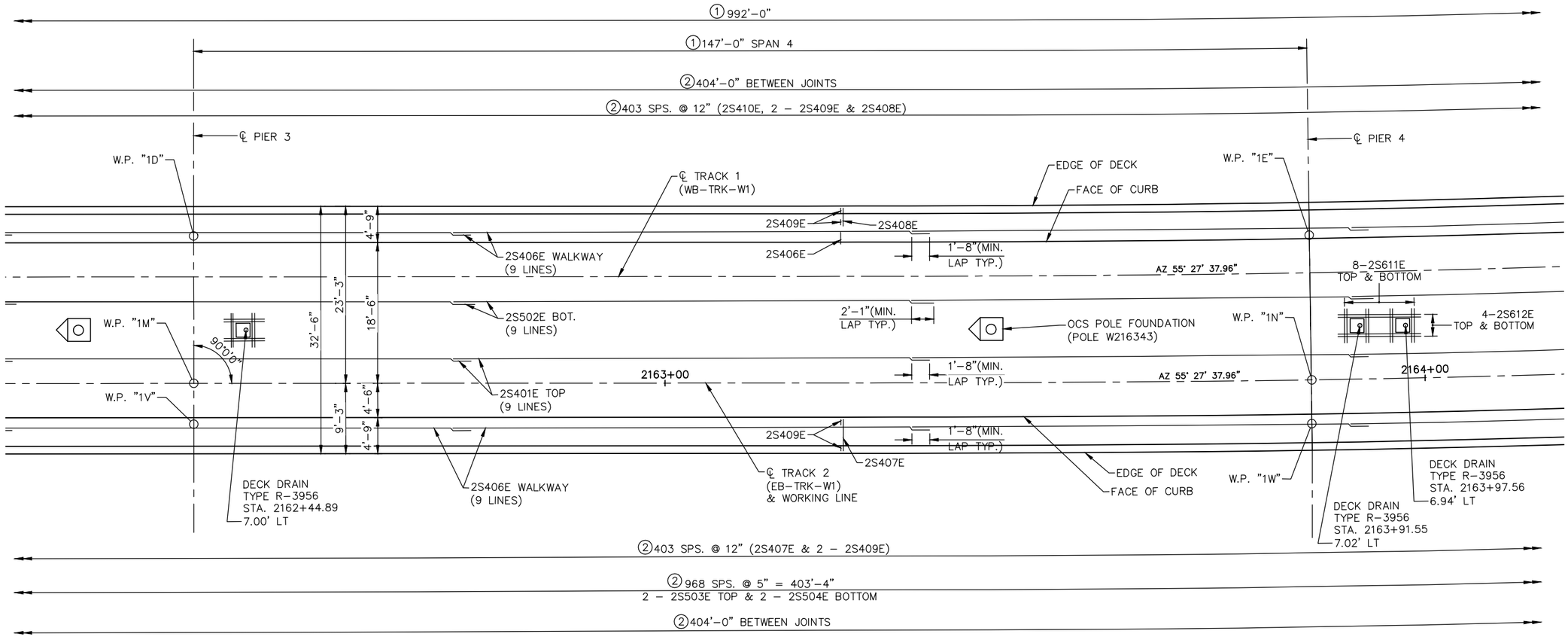
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (DETAIL & REINF) 3

DISCIPLINE: STRUCTURES

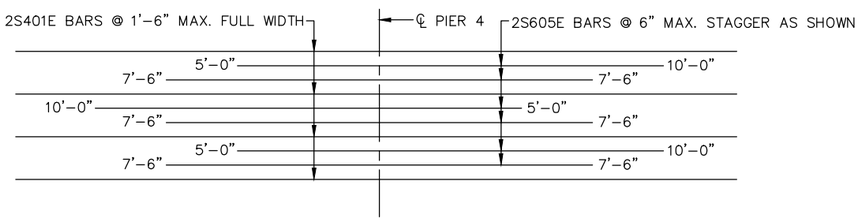
SHEET NAME: W1-STU-BRG-FCVV-SUP1-3

SHEET 75 OF 116

Jan, 18 2016 12:28 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP1.dwg By: kucera



PARTIAL DECK PLAN – SPAN 4



PLAN OF TOP LONGITUDINAL REINFORCEMENT AT PIER 4

NOTES:

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

② MEASURED ALONG EDGE OF DECK

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DRAWN BY: KHN | CHECKED BY: GHD

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

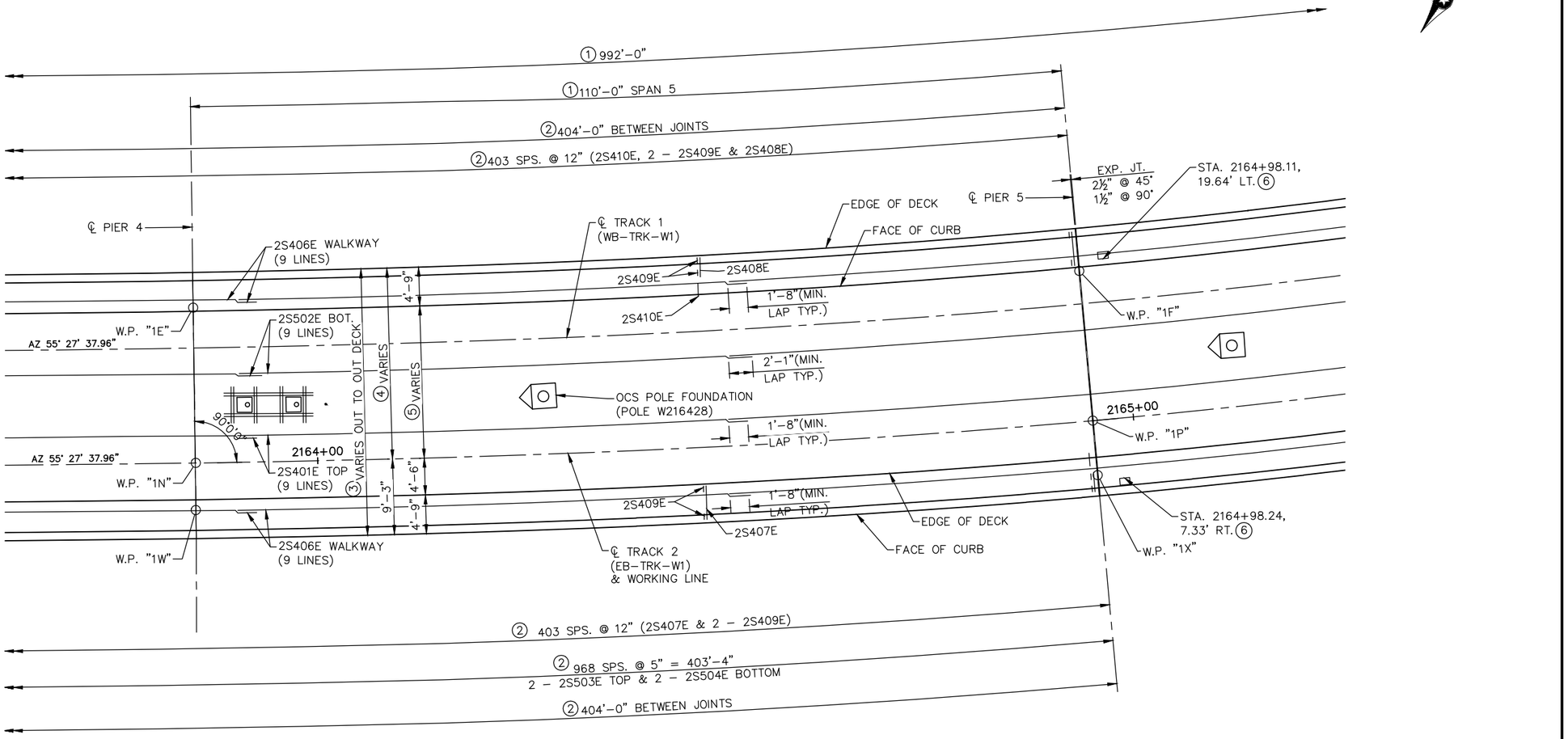
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (DETAIL & REINF) 4

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-SUP1-4

SHEET 76 OF 116

Jan, 18 2016 12:28 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP1.dwg By: kucera



NOTES:

1. MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1)
2. MEASURED ALONG EDGE OF DECK
3. VARIES 32'-6" TO 33'-3"
4. VARIES 23'-9" TO 24'-0"
5. VARIES 23'-0" TO 23'-9"
6. CURRENT BONDING JUNCTION BOX. SEE NOTE 5 ON SHEET 3.

PARTIAL DECK PLAN - SPAN 5

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

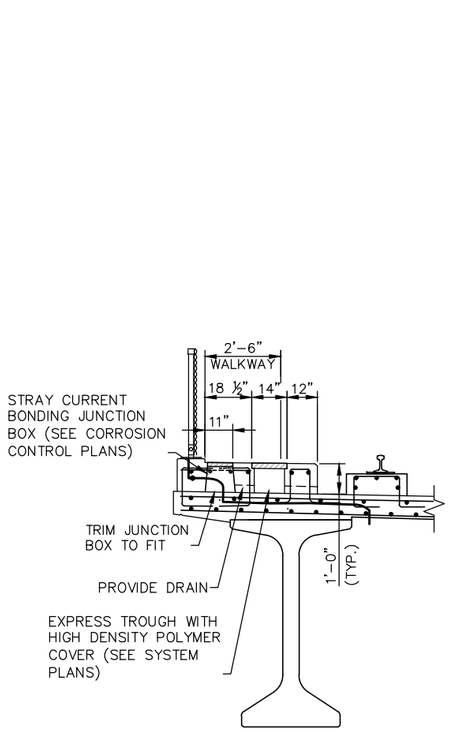
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (DETAIL & REINF) 5

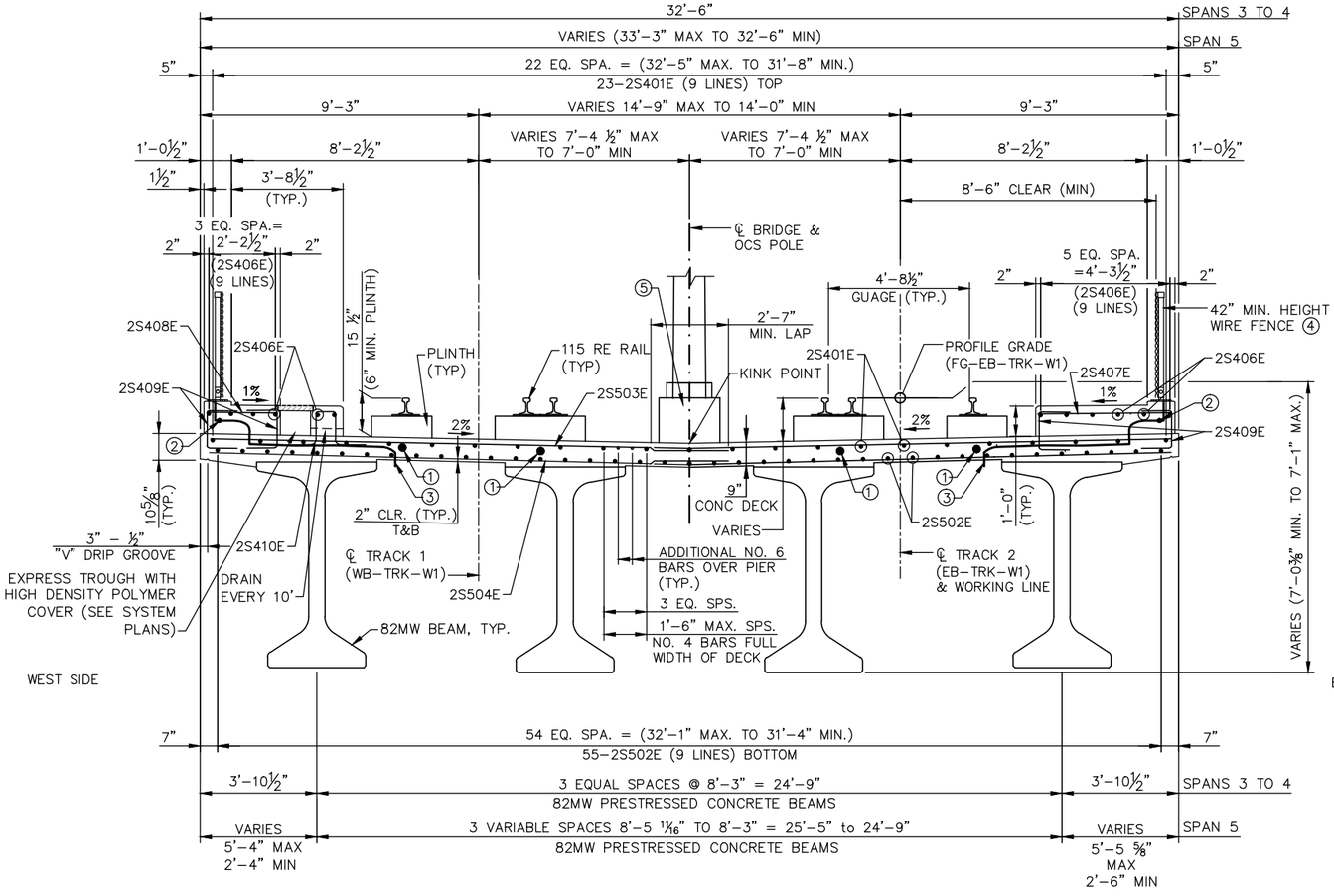
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUP1-5

SHEET 77 OF 116

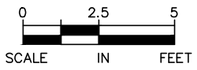
Jan. 18 2016 12:28 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP1.dwg By: kucera

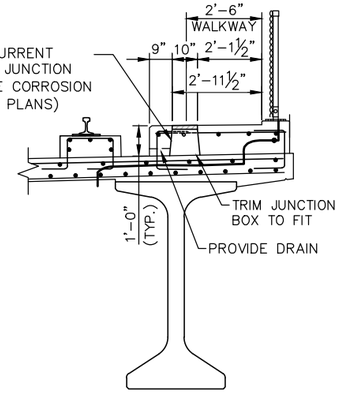


PART TRANSVERSE SECTION
AT STRAY CURRENT
BONDING JUNCTION BOX



TRANSVERSE SECTION THRU DECK – SPANS 3 TO 5





PART TRANSVERSE SECTION
AT STRAY CURRENT
BONDING JUNCTION BOX

NOTES:

① STRAY CURRENT COLLECTOR CABLE, SEE NOTE 4 ON SHEET 3.

② GROUND WIRE, SEE GROUNDING PLANS.

③ GROUND WIRE PLACED INSIDE 1½" PVC CONDUIT WITHIN DECK AT PIER XX, SEE GROUNDING PLANS.

④ WIRE FENCE, SEE RAILING SHEETS.

⑤ SEE SHEET 87 FOR PEDESTAL REINFORCING AND DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GHD CHECKED BY: DWS
DRAWN BY: RCK CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

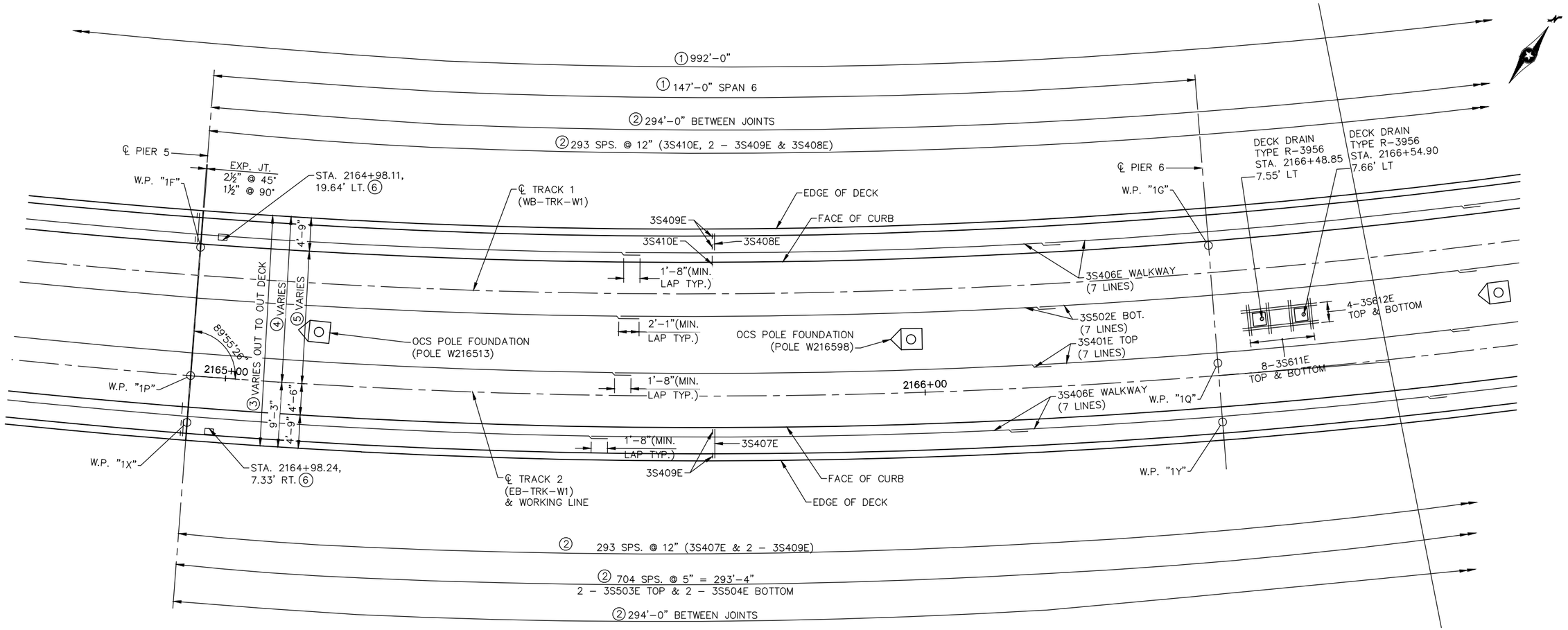
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (SECTION & REINF) 2

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-TYP3

SHEET 78 OF 116

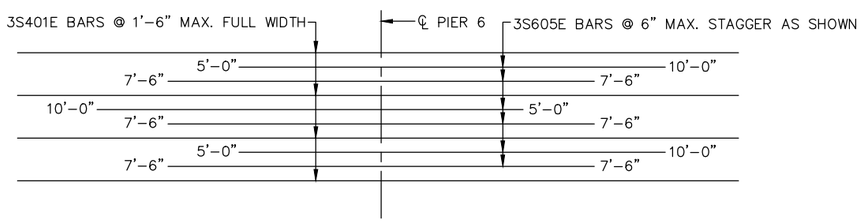
Jan, 18 2016 12:28 pm V:\19140A_MN_Valley_View_Rood_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTS\90% Submittal\W1-STU-BRG-FCVV-TYP2.DWG By: kucera



PARTIAL DECK PLAN – SPAN 6

NOTES:

1. ① MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1)
2. ② MEASURED ALONG EDGE OF DECK
3. ③ VARIES 32'-6" TO 33'-3"
4. ④ VARIES 23'-9" TO 24'-0"
5. ⑤ VARIES 23'-0" TO 23'-9"
6. ⑥ CURRENT BONDING JUNCTION BOX. SEE NOTE 5 ON SHEET 3.



PLAN OF TOP LONGITUDINAL REINFORCEMENT AT PIER 6

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DESIGNED BY: GHD CHECKED BY: DWS
DRAWN BY: KHN CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

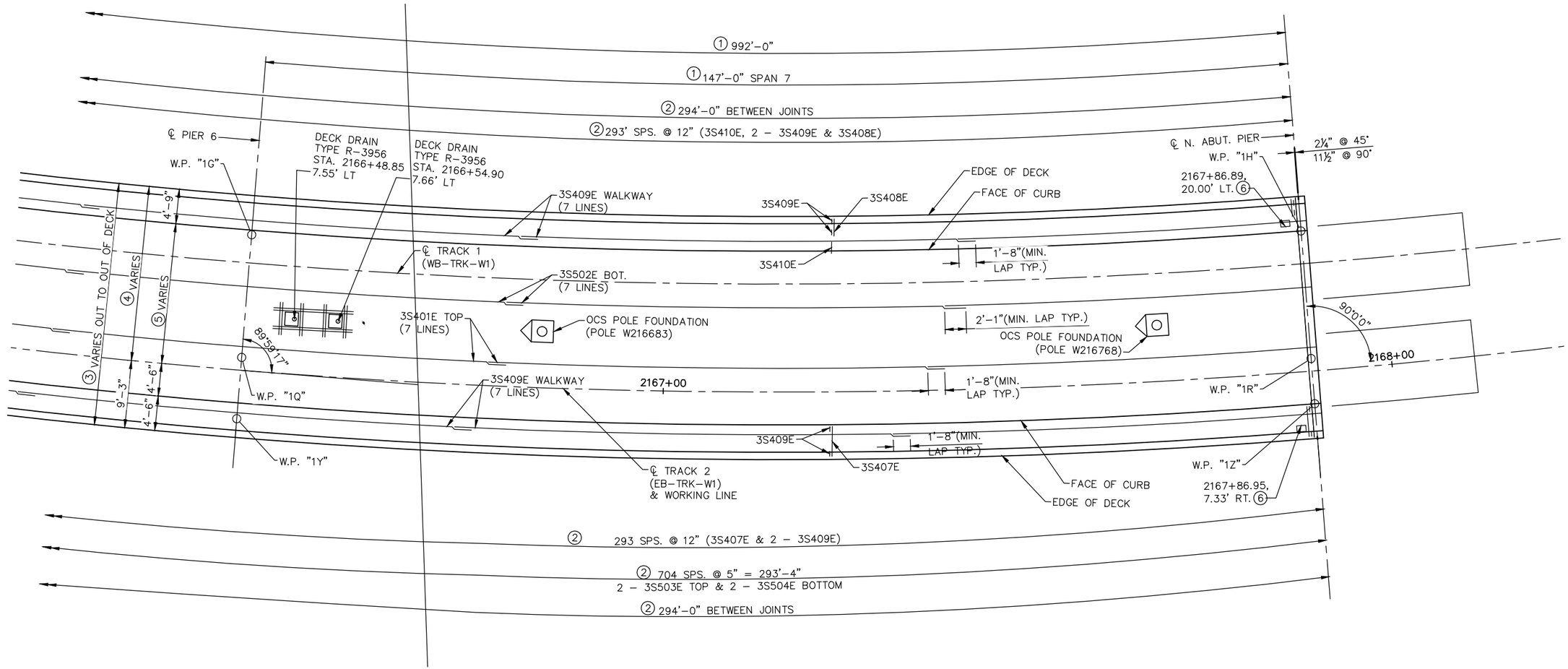
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (DETAIL & REINF) 6

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUP1-6

SHEET 79 OF 116

Jan. 18 2016 12:29 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP1.dwg By: kucera



NOTES:

1. MEASURED ALONG ℄ TRACK 2 (EB–TRK–W1)
2. MEASURED ALONG EDGE OF DECK
3. VARIES 32'–6" TO 33'–3"
4. VARIES 23'–9" TO 24'–0"
5. VARIES 23'–0" TO 23'–9"
6. CURRENT BONDING JUNCTION BOX. SEE NOTE 6 ON SHEET 3.

PARTIAL DECK PLAN – SPAN 7

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DESIGNED BY: GHD | CHECKED BY: DWS
DRAWN BY: KHN | CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

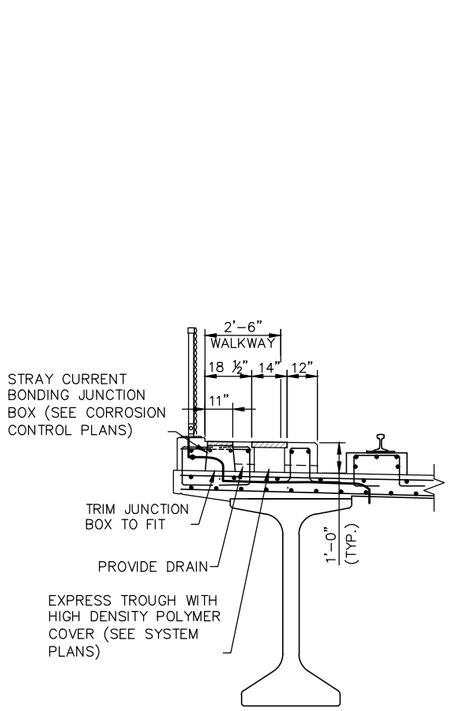
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (DETAIL & REINF) 7

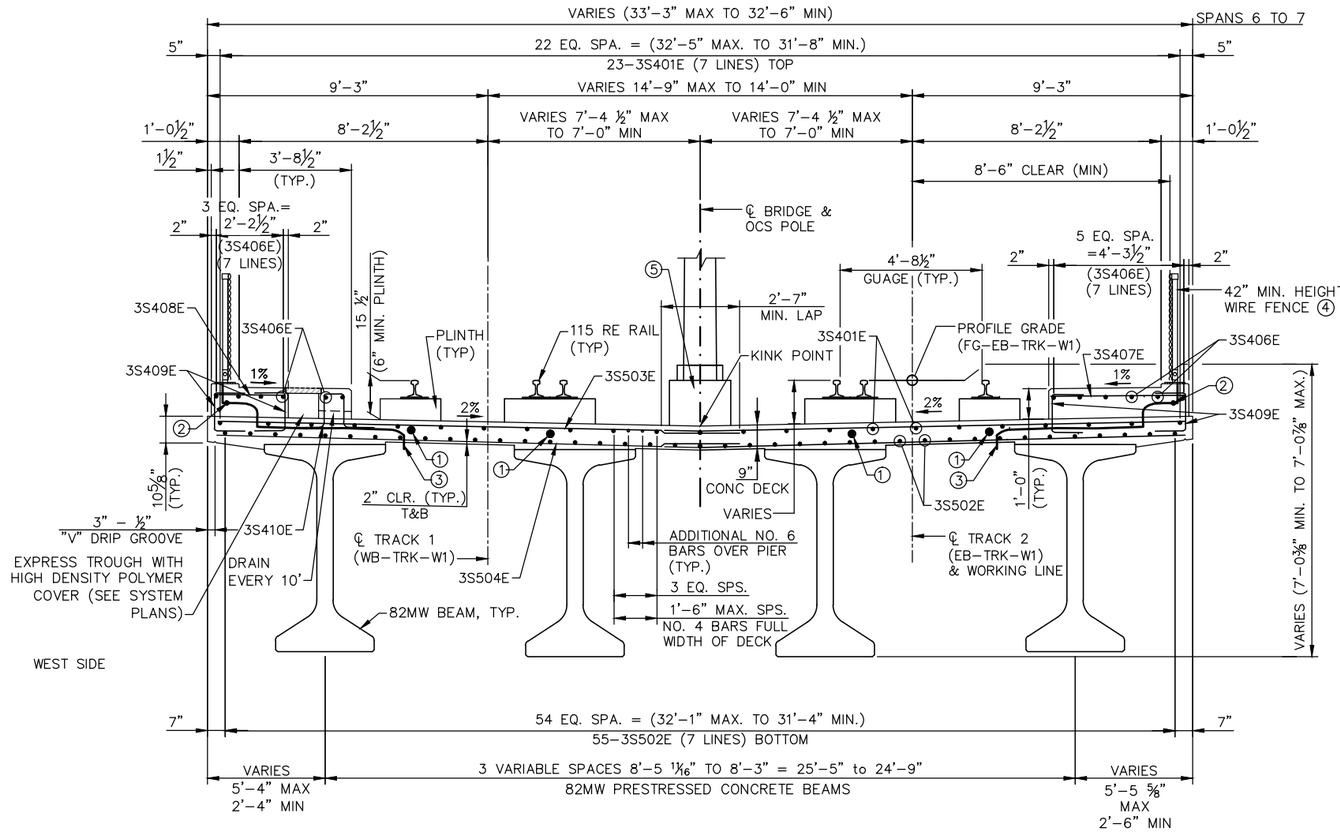
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUP1-7

SHEET 80 OF 116

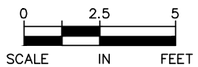
Jan, 18 2016 12:29 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP1.dwg By: kucera

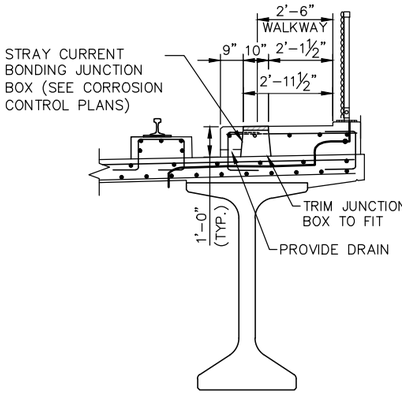


PART TRANSVERSE SECTION AT STRAY CURRENT BONDING JUNCTION BOX



TRANSVERSE SECTION THRU DECK – SPANS 6 TO 7





PART TRANSVERSE SECTION AT STRAY CURRENT BONDING JUNCTION BOX

NOTES:

① STRAY CURRENT COLLECTOR CABLE, SEE NOTE 4 ON SHEET 3.

② GROUND WIRE, SEE GROUNDING PLANS.

③ GROUND WIRE PLACED INSIDE 1½" PVC CONDUIT WITHIN DECK AT PIER XX, SEE GROUNDING PLANS.

④ WIRE FENCE, SEE RAILING SHEETS.

⑤ SEE SHEET 87 FOR PEDESTAL REINFORCING AND DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: GHD | CHECKED BY: DWS
DRAWN BY: RCK | CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

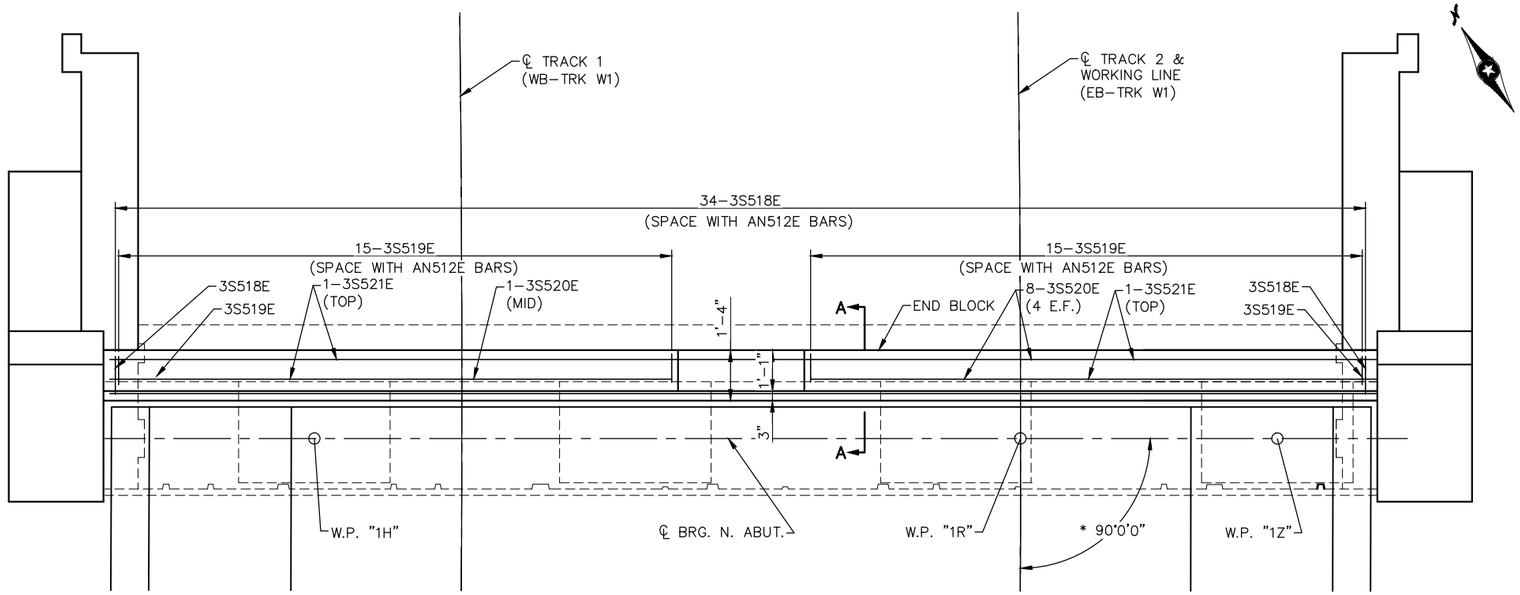
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (SECTION & REINF) 3

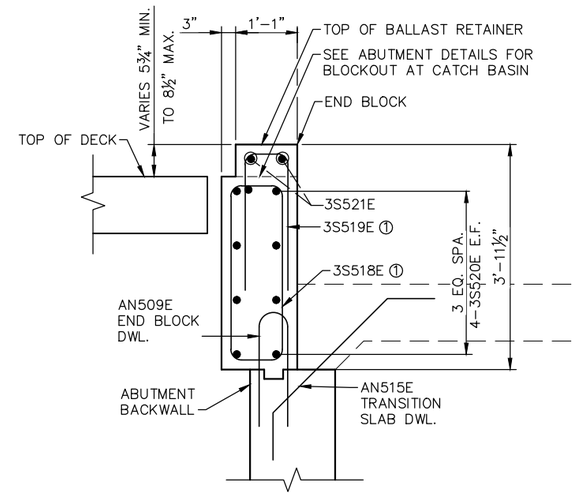
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-TYP4

SHEET 81 OF 116

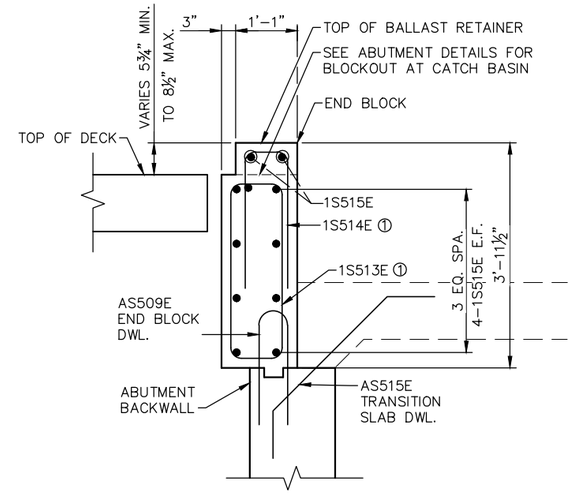
Jan, 18 2016 12:29 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-TYP2.DWG By: kucera



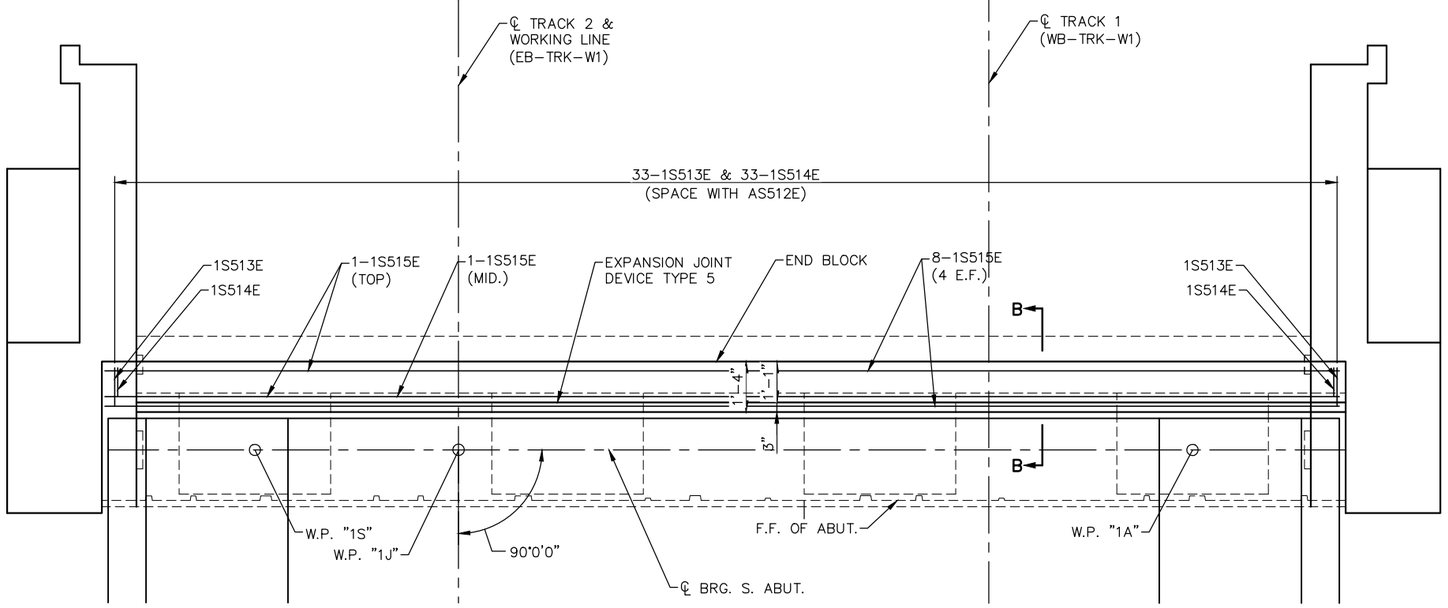
ADDITIONAL REINFORCEMENT AT NORTH END BLOCK



SECTION A–A



SECTION B–B



ADDITIONAL REINFORCEMENT AT SOUTH END BLOCK

NOTES:

① PULL UP TO 2" CLEAR.

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DESIGNED BY: APV | CHECKED BY: ECM
DRAWN BY: RCK | CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

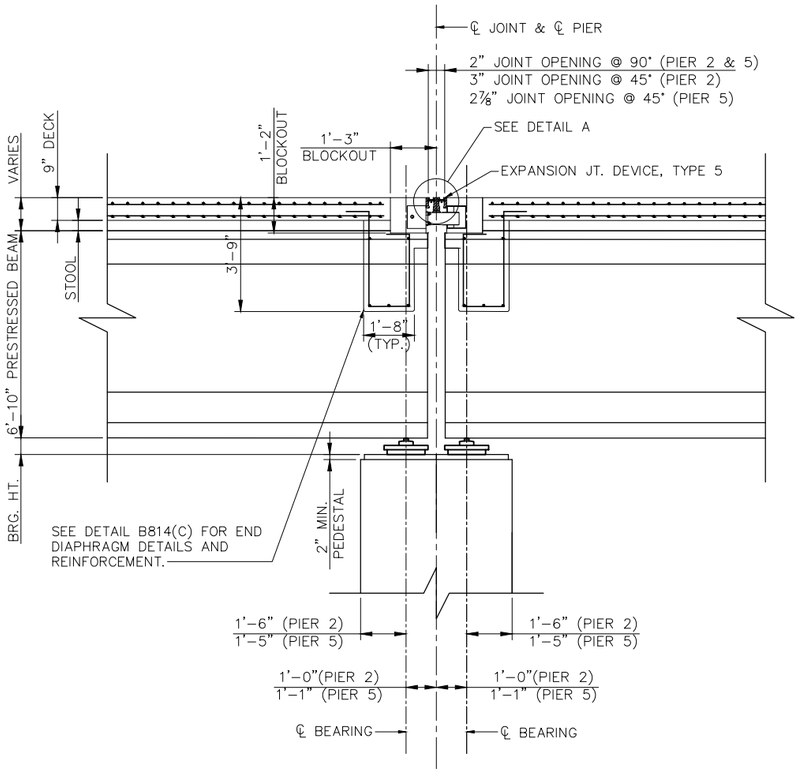
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (REINF AT END BLOCKS)

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-SUP6-EB

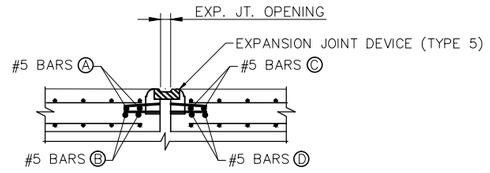
SHEET 82 OF 116

Jan, 18 2016 01:03 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP6-EB.dwg By: kucera



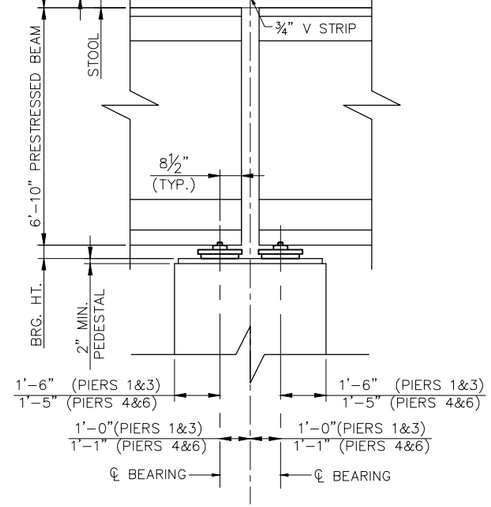
SECTION THRU EXPANSION PIERS 2 & 5

82MW CONCRETE PRESTRESSED BEAMS SHOWN



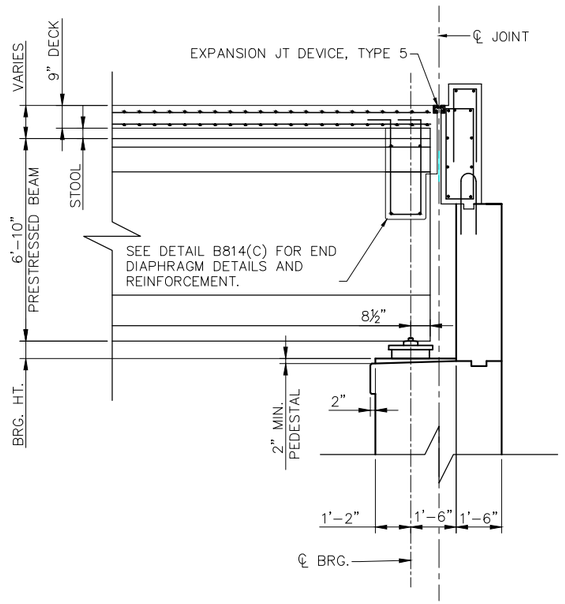
DETAIL A

SLAB END REINFORCEMENT				
	S. ABUT.	PIER 2	PIER 5	N. ABUT.
A	–	1S503E	2–2S503E	2–3S503E
B	–	1S503E	2–2S503E	2–3S503E
C	1S503E	2–2S503E	2–3S503E	–
D	1S503E	2–2S503E	2–3S503E	–



SECTION THRU FIXED PIERS 1, 3, 4 & 6

82MW CONCRETE PRESTRESSED BEAMS SHOWN



SECTION THRU NORTH AND SOUTH ABUTMENTS

82MW CONCRETE PRESTRESSED BEAMS SHOWN

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DESIGNED BY: APV CHECKED BY: ECM
DRAWN BY: KHN CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (SECTION & REINF) 4

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUP2

SHEET 83 OF 116

Jan, 18 2016 12:29 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP2.dwg By: kucera

HAUNCH REINFORCEMENT TABLE

SPAN NO.	BEAM NO.	X_1	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5	E1	E2	E3	E4	E5
1	B1	0'–8½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B2	0'–8½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B3	0'–8½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B4	0'–8½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2	B1	1'–2½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B2	1'–2½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B3	1'–2½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B4	1'–2½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
3	B1	1'–2½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B2	1'–2½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B3	1'–2½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B4	1'–2½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
4	B1	1'–0½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B2	1'–1"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B3	1'–2"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B4	1'–2½"	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5	B1	0'–11"	10'–6"	21 @ 6"	21	2S414E	2S421E*	10'–6"	11 @ 12"	11	2S414E	2S421E*	10'–6"	11 @ 12"	11	2S415E	2S421E*	10'–6"	11 @ 12"	11	2S415E	2S421E*	10'–6"	11 @ 12"	11	2S415E	2S421E*
	B2	1'–2½"	–	–	–	–	–	10'–6"	11 @ 12"	11	2S414E	2S422E*	10'–6"	11 @ 12"	11	2S414E	2S422E*	10'–6"	11 @ 12"	11	2S414E	2S421E*	10'–6"	11 @ 12"	11	2S415E	2S421E*
	B3	0'–6½"	–	–	–	–	–	–	–	–	–	–	11'–0"	11 @ 12"	11	2S414E	2S423E*	11'–0"	11 @ 12"	11	2S414E	2S421E*	11'–0"	11 @ 12"	11	2S415E	2S421E*
	B4	0'–10½"	–	–	–	–	–	11'–0"	11 @ 12"	11	2S414E	2S424E*	11'–0"	11 @ 12"	11	2S414E	2S424E*	11'–0"	11 @ 12"	11	2S414E	2S421E*	11'–0"	11 @ 12"	11	2S415E	2S421E*
6	B1	0'–7"	14'–0"	28 @ 6"	29	3S413E	3S418E*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B2	0'–3"	14'–6"	29 @ 6"	30	3S413E	3S418E*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B3	0'–11"	14'–6"	29 @ 6"	30	3S414E	3S418E*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B4	0'–7"	14'–6"	29 @ 6"	30	3S414E	3S418E*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
7	B1	1'–2"	14'–6"	29 @ 6"	30	3S413E	3S418E*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B2	0'–9"	14'–6"	29 @ 6"	30	3S413E	3S418E*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B3	0'–5"	14'–6"	29 @ 6"	30	3S413E	3S418E*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	B4	1'–1½"	14'–6"	29 @ 6"	30	3S414E	3S418E*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

* – LONGITUDINAL HAUNCH REINFORCEMENT IS CONTINUOUS THROUGH MULTIPLE TENTH POINT SEGMENTS, SEE BILL OF REINFORCEMENT ON SHEET 95 FOR ACTUAL REINFORCEMENT QUANTITIES. LONGITUDINAL HAUNCH REINFORCEMENT SHALL HAVE A MINIMUM LAP LENGTH OF 1'–8'.

HAUNCH REINFORCEMENT TABLE

SPAN NO.	BEAM NO.	F1	F2	F3	F4	F5	G1	G2	G3	G4	G5	H1	H2	H3	H4	H5	J1	J2	J3	J4	J5	K1	K2	K3	K4	K5	X_2
1	B1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0'–8½"
	B2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0'–8½"
	B3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0'–8½"
	B4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0'–8½"
2	B1	–	–	–	–	–	–	–	–	–	–	14'–6"	14 @ 12"	14	1S411E	1S413E*	14'–6"	14 @ 12"	14	1S411E	1S413E*	14'–6"	28 @ 6"	29	1S412E	1S413E*	1'–2½"
	B2	–	–	–	–	–	–	–	–	–	–	14'–6"	14 @ 12"	14	1S411E	1S413E*	14'–6"	14 @ 12"	14	1S411E	1S413E*	14'–6"	28 @ 6"	29	1S412E	1S413E*	1'–2½"
	B3	–	–	–	–	–	–	–	–	–	–	14'–6"	14 @ 12"	14	1S411E	1S413E*	14'–6"	14 @ 12"	14	1S411E	1S413E*	14'–6"	28 @ 6"	29	1S412E	1S413E*	1'–2½"
	B4	–	–	–	–	–	–	–	–	–	–	14'–6"	14 @ 12"	14	1S411E	1S413E*	14'–6"	14 @ 12"	14	1S411E	1S413E*	14'–6"	28 @ 6"	29	1S412E	1S413E*	1'–2½"
3	B1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–6"	28 @ 6"	29	2S415E	2S419E*	1'–2½"
	B2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–6"	28 @ 6"	29	2S415E	2S419E*	1'–2½"
	B3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–6"	28 @ 6"	29	2S415E	2S419E*	1'–2½"
	B4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–6"	28 @ 6"	29	2S415E	2S419E*	1'–2½"
4	B1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–6"	14 @ 12"	14	2S414E	2S420E*	14'–6"	29 @ 6"	30	2S415E	2S420E*	1'–0½"
	B2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–6"	29 @ 6"	30	2S414E	2S419E*	1'–1"
	B3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–6"	29 @ 6"	30	2S414E	2S419E*	1'–2"
	B4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–6"	29 @ 6"	30	2S414E	2S419E*	1'–2½"
5	B1	10'–6"	11 @ 12"	11	2S415E	2S421E*	10'–6"	11 @ 12"	11	2S416E	2S421E*	10'–6"	11 @ 12"	11	2S416E	2S421E*	10'–6"	11 @ 12"	11	2S416E	2S421E*	10'–6"	21 @ 6"	22	2S417E	2S421E*	0'–11"
	B2	10'–6"	11 @ 12"	11	2S415E	2S421E*	10'–6"	11 @ 12"	11	2S415E	2S421E*	10'–6"	11 @ 12"	11	2S416E	2S421E*	10'–6"	11 @ 12"	11	2S416E	2S421E*	10'–6"	21 @ 6"	22	2S417E	2S421E*	1'–2½"
	B3	11'–0"	11 @ 12"	11	2S415E	2S421E*	11'–0"	11 @ 12"	11	2S416E	2S421E*	11'–0"	11 @ 12"	11	2S416E	2S421E*	11'–0"	11 @ 12"	11	2S417E	2S421E*	11'–0"	22 @ 6"	23	2S418E	2S421E*	0'–6½"
	B4	11'–0"	11 @ 12"	11	2S415E	2S421E*	11'–0"	11 @ 12"	11	2S416E	2S421E*	11'–0"	11 @ 12"	11	2S417E	2S421E*	11'–0"	11 @ 12"	11	2S418E	2S421E*	11'–0"	22 @ 6"	23	2S418E	2S421E*	0'–10½"
6	B1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–0"	14 @ 12"	14	3S413E	3S419E*	14'–0"	28 @ 6"	29	3S415E	3S419E*	0'–7"
	B2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–6"	14 @ 12"	14	3S413E	3S419E*	14'–6"	29 @ 6"	30	3S415E	3S419E*	0'–3"
	B3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–6"	14 @ 12"	14	3S414E	3S419E*	14'–6"	29 @ 6"	30	3S416E	3S419E*	0'–11"
	B4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–6"	14 @ 12"	14	3S414E	3S419E*	14'–6"	29 @ 6"	30	3S417E	3S419E*	0'–7"
7	B1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1'–2"
	B2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0'–9"
	B3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–6"	29 @ 6"	30	3S413E	3S418E*	0'–5"
	B4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14'–6"	29 @ 6"	30	3S413E	3S418E*	1'–1½"

* – LONGITUDINAL HAUNCH REINFORCEMENT IS CONTINUOUS THROUGH MULTIPLE TENTH POINT SEGMENTS, SEE BILL OF REINFORCEMENT ON SHEET 95 FOR ACTUAL REINFORCEMENT QUANTITIES. LONGITUDINAL HAUNCH REINFORCEMENT SHALL HAVE A MINIMUM LAP LENGTH OF 1'–8'.

NOTE:

SEE SHEET 95 FOR REINFORCEMENT DIMENSIONS.

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DESIGNED BY: ECM | CHECKED BY: APV
DRAWN BY: RCK | CHECKED BY: ECM

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

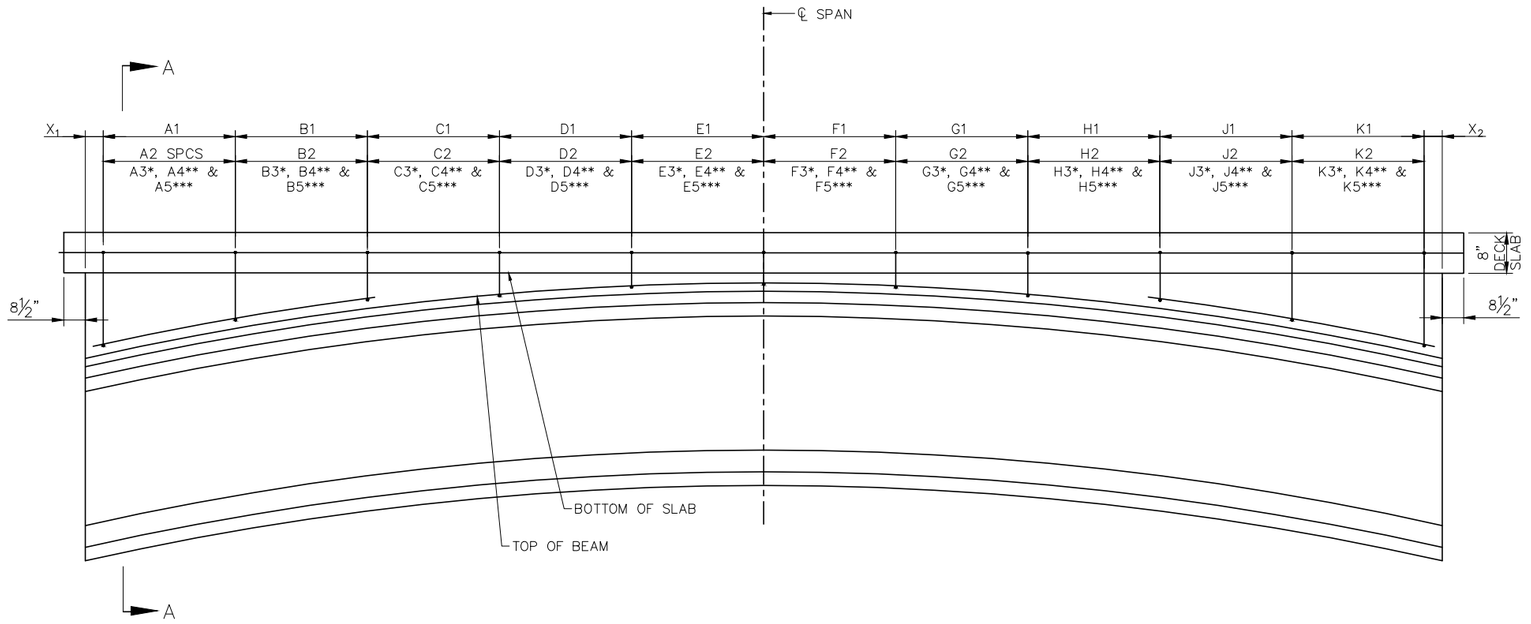
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (HAUNCH REINF) 1

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-SUP3-1

SHEET 84 OF 116

Jan. 18 2016 12:29 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP3.dwg By: kucera

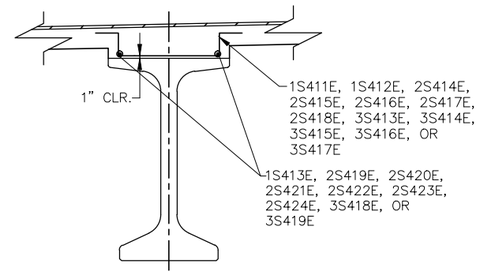


SOUTH END

NORTH END

HAUNCH REINFORCEMENT

(LENGTH OF BEAM DIVIDED INTO TENTHS)



SECTION A–A

(DECK REINF. NOT SHOWN FOR CLARITY)

NOTES:

1. SEE SHEET 95 FOR DIMENSIONS.

X3* – # OF REINFORCEMENT
X4** – TYPE OF HAUNCH REINFORCEMENT
X5*** – TYPE OF LONGITUDINAL REINFORCEMENT

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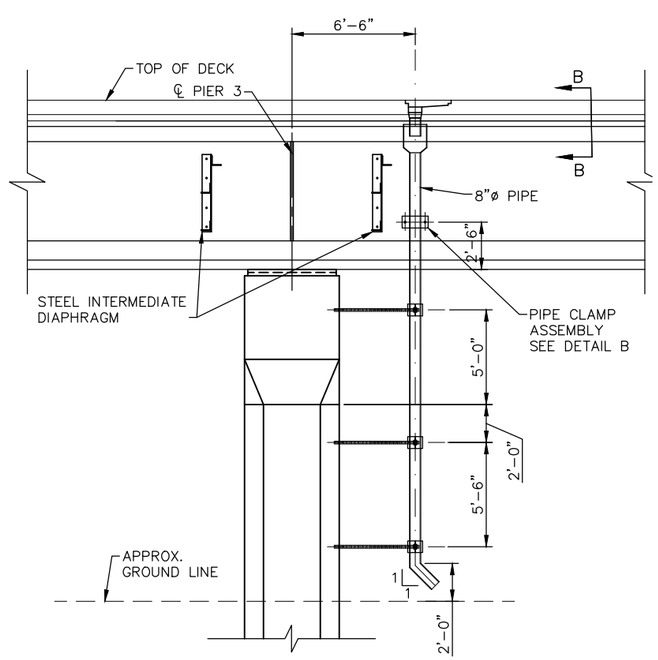
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (HAUNCH REINF) 2

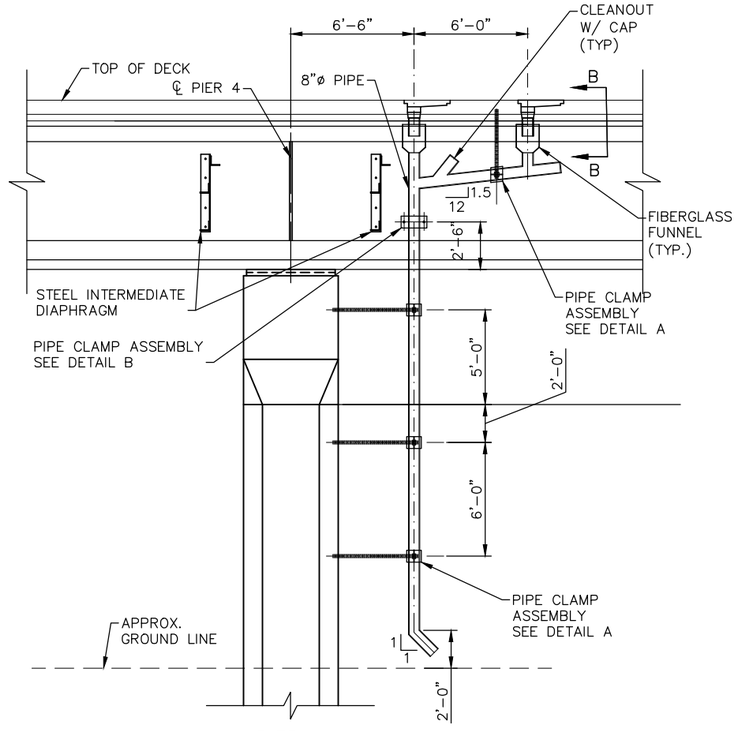
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUP3-2

SHEET 85 OF 116

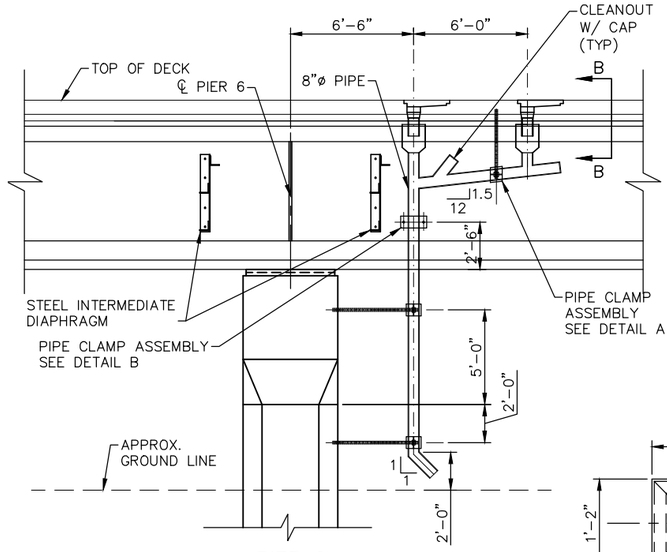
Jan. 18 2016 12:29 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP3.dwg By: kucera



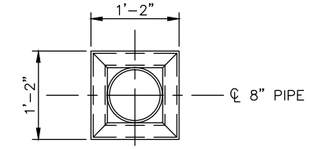
PIER 3

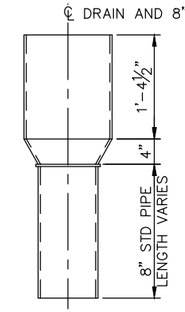


PIER 4

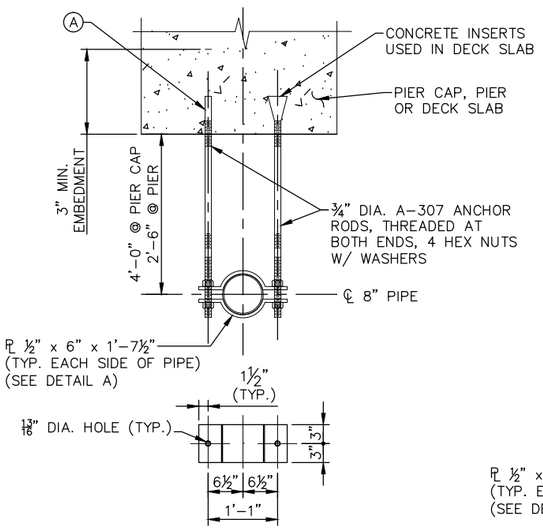


PIER 6

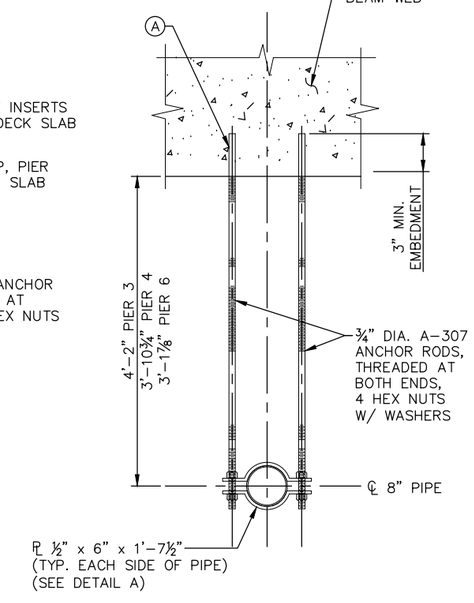




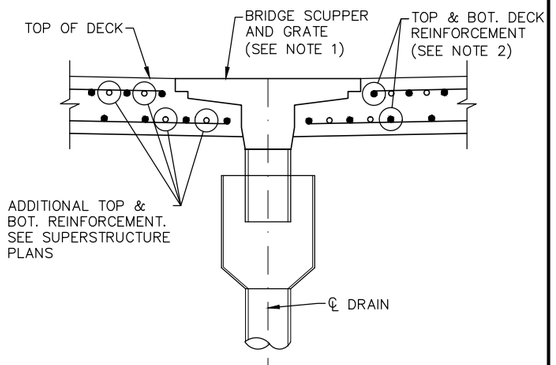
FIBERGLASS FUNNEL



DETAIL A



DETAIL B



SECTION B-B

GENERAL NOTES:

ALL PIER CAP, PIER COLUMN, AND PRESTRESSED BEAM REINFORCEMENT SHALL BE LOCATED PRIOR TO DRILLING ANCHORAGES. ANCHORAGES SHALL BE SHIFTED AS REQUIRED TO AVOID DAMAGE TO REINFORCEMENT DUE TO DRILLING.

CONCRETE INSERTS SHALL BE APPROVED TYPE MALLEABLE IRON. MATERIAL AS PER SPEC. 3324, GRADE 3501B. TAP AFTER GALVANIZING.

ALL EXPOSED PORTIONS OF THE DRAINAGE SYSTEM WILL BE PAINTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

ALL DRAINAGE PIPES AND FITTINGS SHALL BE PIGMENTED FIBERGLASS REINFORCED THERMOSETTING RESIN PIPE. SEE SPECIAL PROVISIONS.

THE BOTTOM OF THE 8" DIAMETER DOWN SPOUTS SHALL EXTEND 7" MINIMUM BELOW BOTTOM OF SLAB OR DECK.

PIPE CLAMP ASSEMBLY SHALL BE MOVED IF BOLTS INTERFERE PIER OR PRESTRESSED BEAM REINFORCING.

ALL HOLES IN PLATE GIRDER WEB SHALL BE 13/16" DIA. SHOP DRILLED. NO FIELD DRILLING ALLOWED.

FIELD VERIFY THE DRAIN PIPE LENGTH PRIOR TO FABRICATION.

NOTES:

1. DECK DRAIN DETAILS SHOWN ARE FOR NEENAH R-3956. THE BRIDGE SCUPPER SHALL CONFORM TO NEENAH R-3956 OR APPROVED EQUAL.
2. DECK REINFORCEMENTS THAT INTERFERES WITH THE BRIDGE SCUPPER SHALL BE TERMINATED 2" CLEAR FROM THE SCUPPER.
3. WHEN ADDITIONAL REBAR PLACED INTERFERES WITH MAIN DECK REINFORCEMENTS, SUCH REBAR SHALL BE BUNDLED TO THE DECK REINFORCEMENT AT RESPECTIVE LOCATIONS.

(A) ADHESIVE ANCHORAGE WITH REQUIRED ULTIMATE PULLOUT STRENGTH = 12 KIPS. ADHESIVE ANCHORAGES USED IN PIER CAPS COLUMNS AND CONCRETE GIRDER WEBS.

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DESIGNED BY: DDL | CHECKED BY: MJC
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AECOM PARSONS BRINCKERHOFF

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE DRAINAGE DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-DRN01

SHEET 86 OF 116

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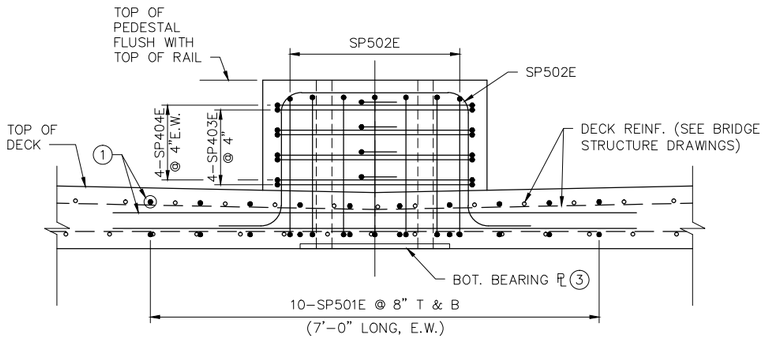
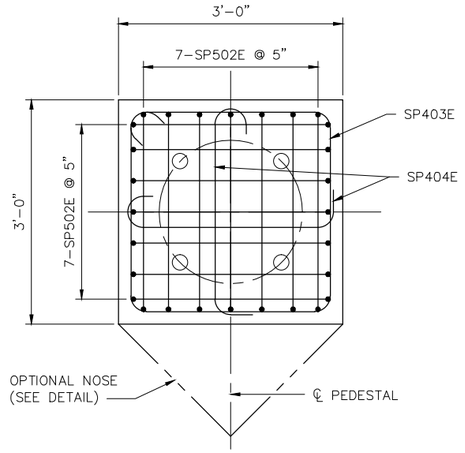
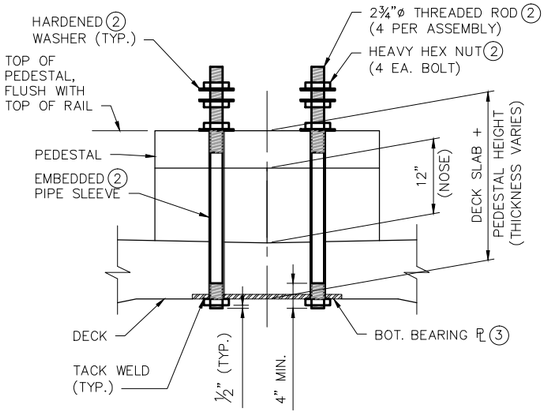


PEDESTAL REINF. ELEVATION - ON DECK

(THRU DECK CONNECTION)

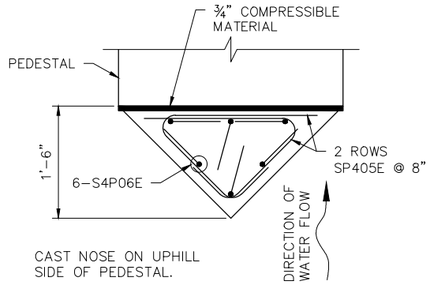


PEDESTAL REINF. PLAN



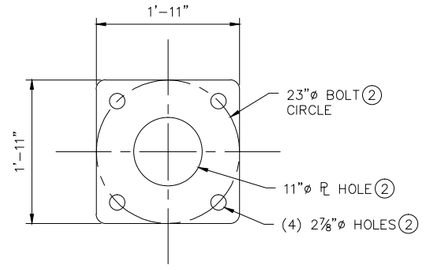
OCS POLE PEDESTAL ELEVATION

(POLE TYPE TT3 SHOWN OTHERS SIMILAR)
THRU SLAB CONNECTION



OPTIONAL NOSE DETAIL

FOR CENTER PEDESTALS ON SLABS & DECKS WITH INVERTED CROWN



BOTTOM BEARING PLATE PLAN ③

(POLE TYPE TT3 SHOWN OTHERS SIMILAR)

NOTES:

① ADDITIONAL DECK REINF. SHALL BE PLACED IN SAME PLANE AS AND BETWEEN STANDARD DECK REINF. AND IS SYM. ABOUT ℄ POLE.

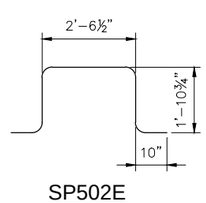
② FOR ANCHOR BOLT ASSEMBLY DETAILS, ANCHOR SIZE AND DIMENSIONS, SEE VOLUME 12.

③ PLATE SIZE, THICKNESS AND ANCHOR BOLT LAYOUT SHOULD MATCH OCS POLE ASSEMBLY DRAWING. SEE VOLUME 12.

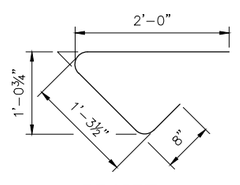
4. CONCRETE COVER FOR PEDESTAL SHALL BE 2" UNLESS OTHERWISE NOTED.
5. USE EMBEDDED SLEEVE THROUGH PEDESTAL AND DECK SLAB WITH A BOTTOM BEARING PLATE EQUAL IN PLAN SIZE TO THE TOP OCS POLE BEARING PLATE. (SEE OCS POLE ANCHORAGE ASSEMBLY DETAILS AND FOUNDATION SCHEDULES IN CIVIL VOLUME 12 FOR ADDITIONAL OCS PLATE DETAILS)
6. STRUCTURAL STEEL ELEMENTS SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS:
   - BEARING PLATES A572 GRADE 50
   - ANCHOR BOLTS (THREADED RODS) F1554 GRADE 55
   - HEXAGONAL NUTS A563, AND
   - WASHERS F436
7. ALL STEEL SHALL BE HOT–DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A–123 AND A–153.
8. CONTRACTOR MAY PROVIDE FULLY THREADED ROD IF DESIRED.
9. SP502E BARS MAY BE ADJUSTED TO AVOID CONFLICTS WITH OCS ANCHOR RODS.
10. ONCE OCS POLE BEARING PLATE AND ANCHOR BOLTS HAVE BEEN INSTALLED AND TIGHTENED, INTERSTITIAL SPACE BETWEEN SLEEVE AND BOLT IS FILLED WITH AN EPOXY GROUT.
11. EPOXY GROUT SHALL HAVE THE FOLLOWING PROPERTIES:
    - MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI
    - NON–SHRINK
    - NON–METALLIC
    - NON–CONDUCTIVE TO ELECTRICITY, AND
    - SUITABLE FOR ADHESION TO GALVANIZED ANCHOR BOLTS.

BILL OF REINFORCEMENT - PEDESTAL

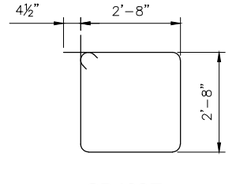
BAR	LOCATION	LOCATIONS NO. UNIT 1	LOCATIONS NO. UNIT 2	LOCATIONS NO. UNIT 3	NO. PER LOCATION	TOTAL NUMBER	LENGTH	SHAPE	LOCATION
SP501E	DECK	2	3	4	40	360	7'–0"	——	DECK
SP502E	DECK	2	3	4	14	126	8'–0"	⌐¬	PEDESTAL
SP403E	DECK	2	3	4	4	36	11'–5"	□	PEDESTAL
SP404E	DECK	2	3	4	8	72	3'–7"	⊂⊃	PEDESTAL
SP405E	DECK	2	3	4	4	36	4'–0"	▽	NOSE
SP406E	DECK	2	3	4	6	54	2'–8"	⌐	NOSE



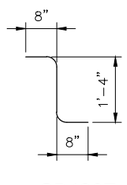
SP502E



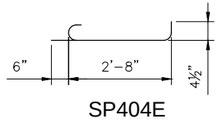
SP405E



SP403E



SP406E



SP404E

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METROPOLITAN COUNCIL

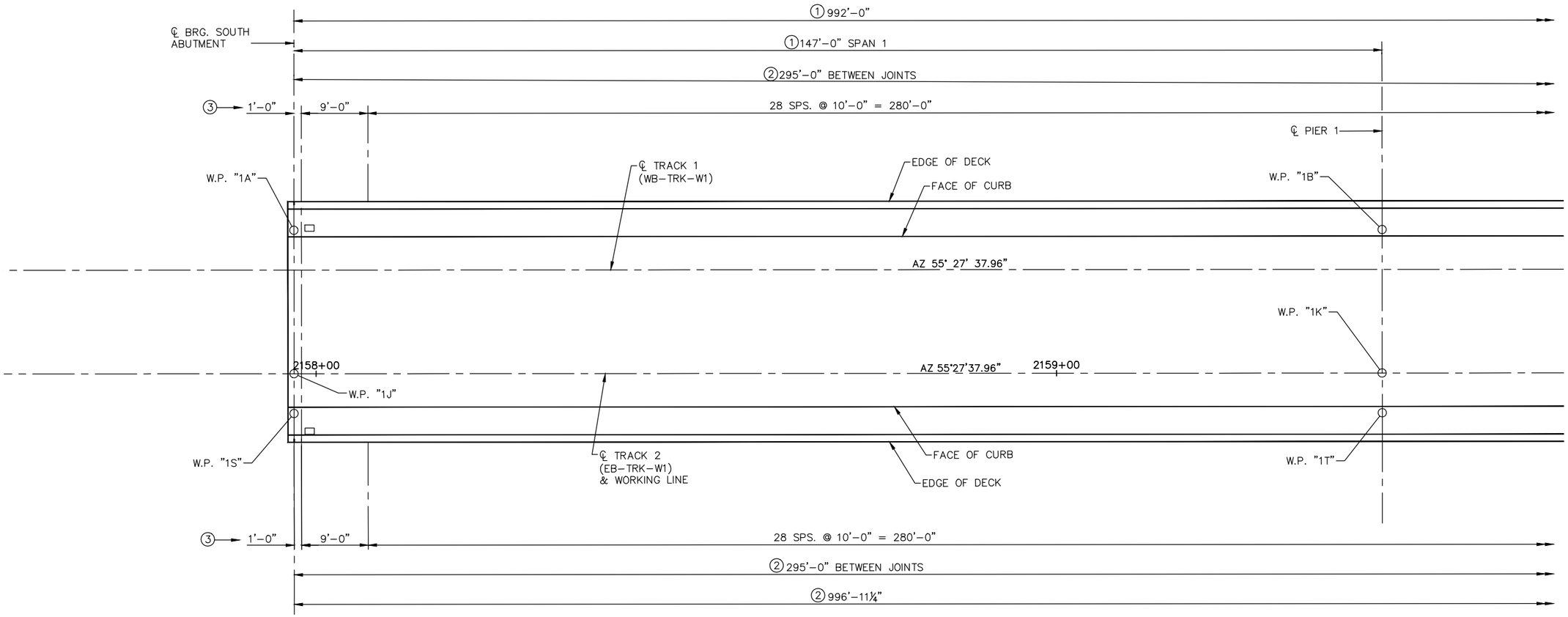
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
O.C.S. POLE SUPPORT DETAILS

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-DTL01

SHEET 87 OF 116

Jan, 18 2016 12:30 pm v:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-DTL01.dwg By: kucera



PARTIAL FENCE POST PLAN – SPAN 1

NOTES:

1. ① MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1).
2. ② MEASURED ALONG EDGE OF DECK.
3. ③ WIRE FENCE POST SPACING, MEASURED ALONG EDGE OF DECK.

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DESIGNED BY: ECM | CHECKED BY: APV
DRAWN BY: RCK | CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

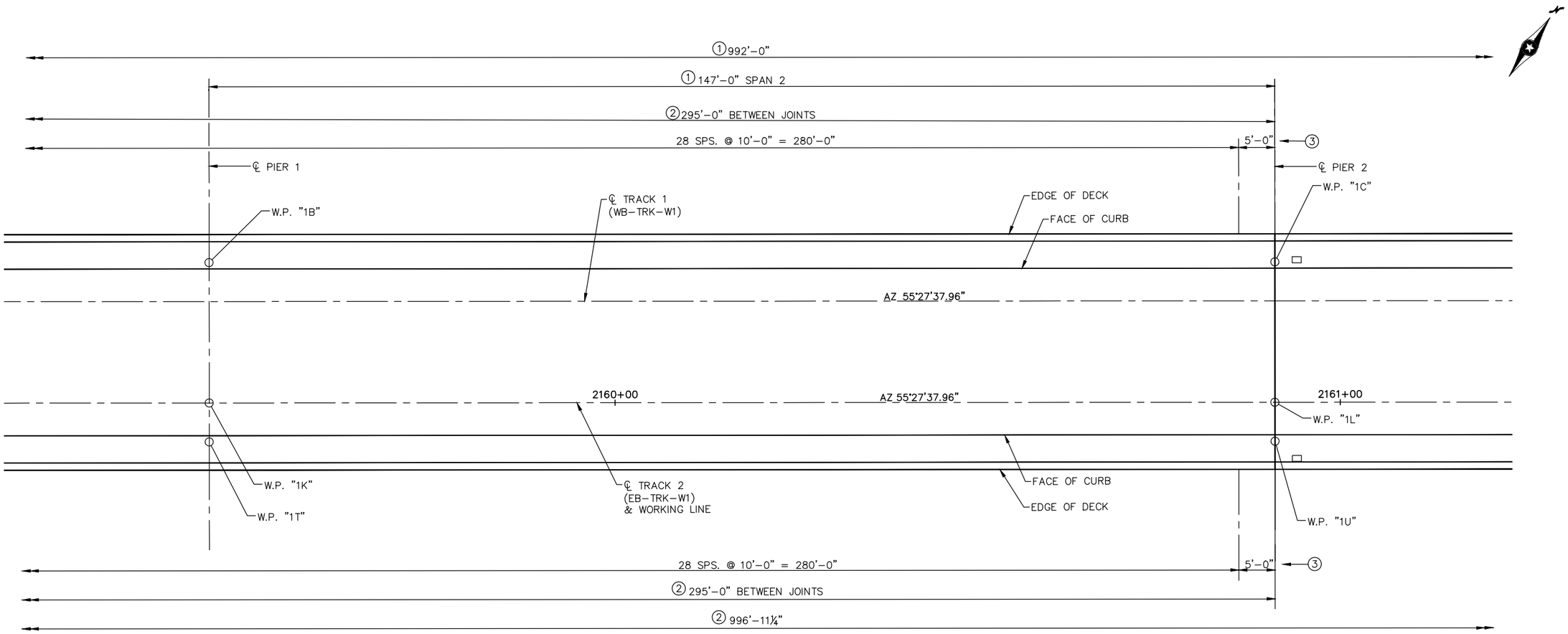
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (WIRE FENCE) 1

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-SUP4-1

SHEET 88 OF 116

Jan, 18 2016 12:30 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP4.dwg By: kucera



PARTIAL FENCE POST PLAN – SPAN 2

NOTES:

1. MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1).
2. MEASURED ALONG EDGE OF DECK.
3. WIRE FENCE POST SPACING, MEASURED ALONG EDGE OF DECK.

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DESIGNED BY: ECM | CHECKED BY: APV
DRAWN BY: RCK | CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

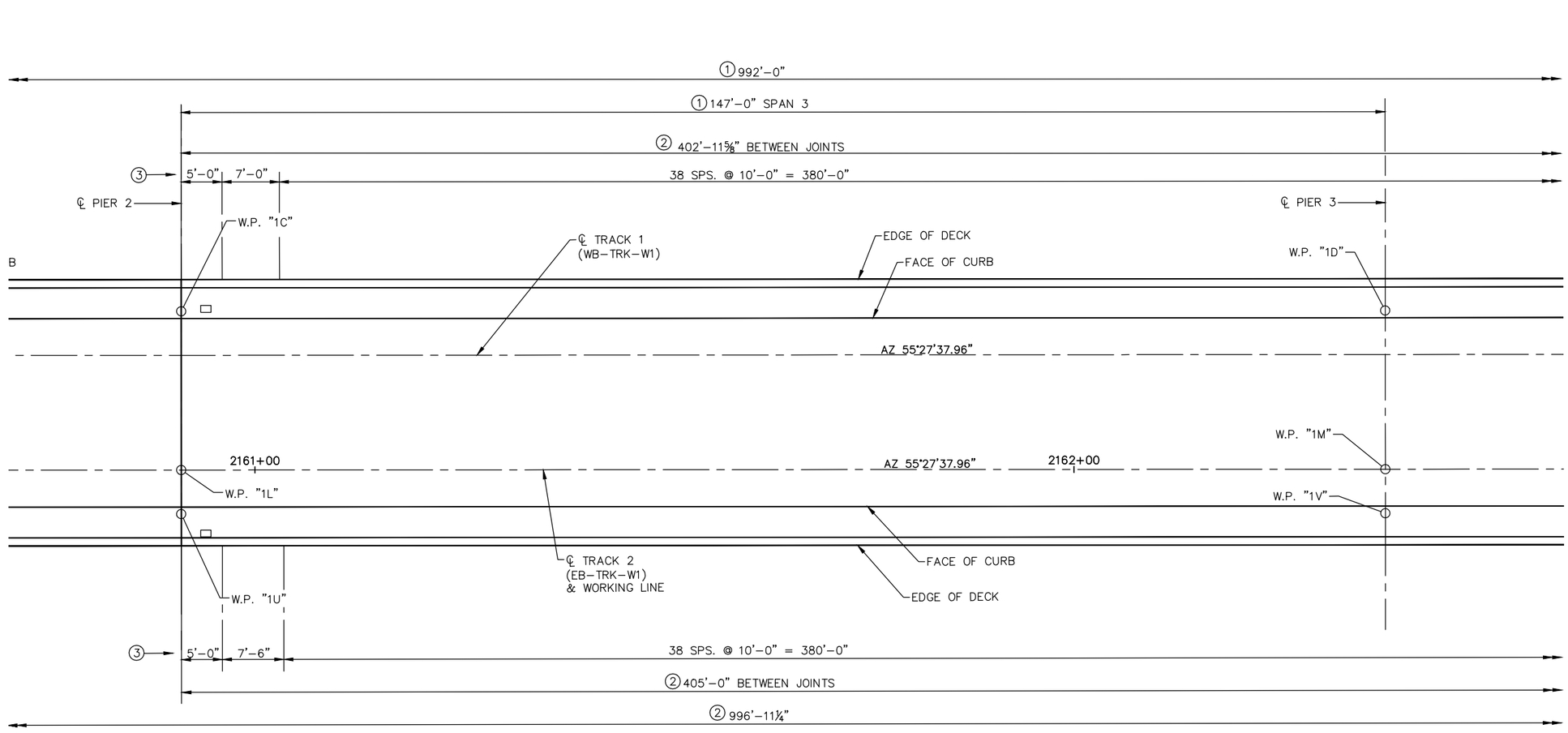
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (WIRE FENCE) 2

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUP4-2

SHEET 89 OF 116

Jan, 18 2016 12:30 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP4.dwg By: kucera



PARTIAL FENCE POST PLAN – SPAN 3

NOTES:

1. (1) MEASURED ALONG ℄ TRACK 2 (EB–TRK–W1).
2. (2) MEASURED ALONG EDGE OF DECK.
3. (3) WIRE FENCE POST SPACING, MEASURED ALONG EDGE OF DECK.

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DESIGNED BY: ECM CHECKED BY: APV
DRAWN BY: RCK CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

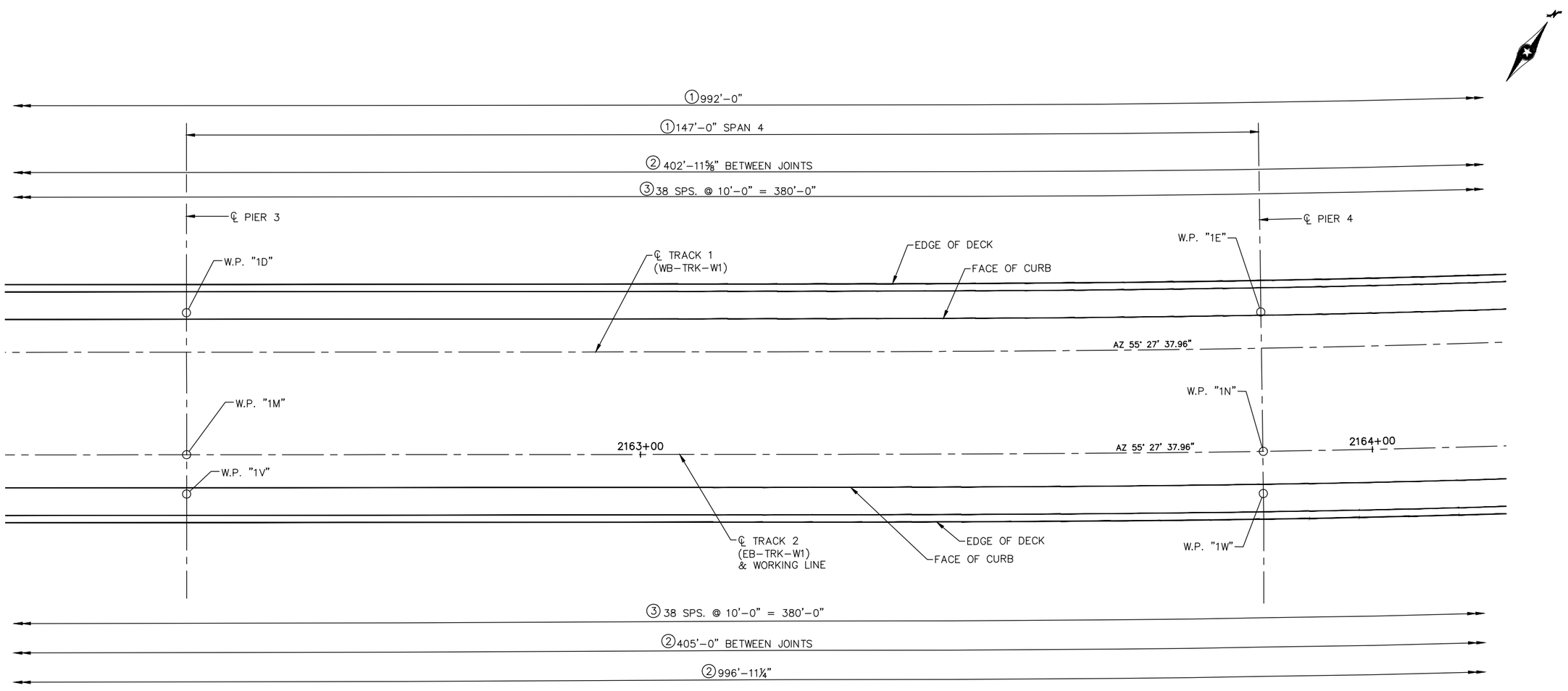
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (WIRE FENCE) 3

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUP4-3

SHEET 90 OF 116

Jan. 18 2016 12:30 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP4.dwg By: kucera



PARTIAL FENCE POST PLAN – SPAN 4

NOTES:

① MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1).

② MEASURED ALONG EDGE OF DECK.

③ WIRE FENCE POST SPACING, MEASURED ALONG EDGE OF DECK.

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DESIGNED BY: ECM | CHECKED BY: APV
DRAWN BY: RCK | CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

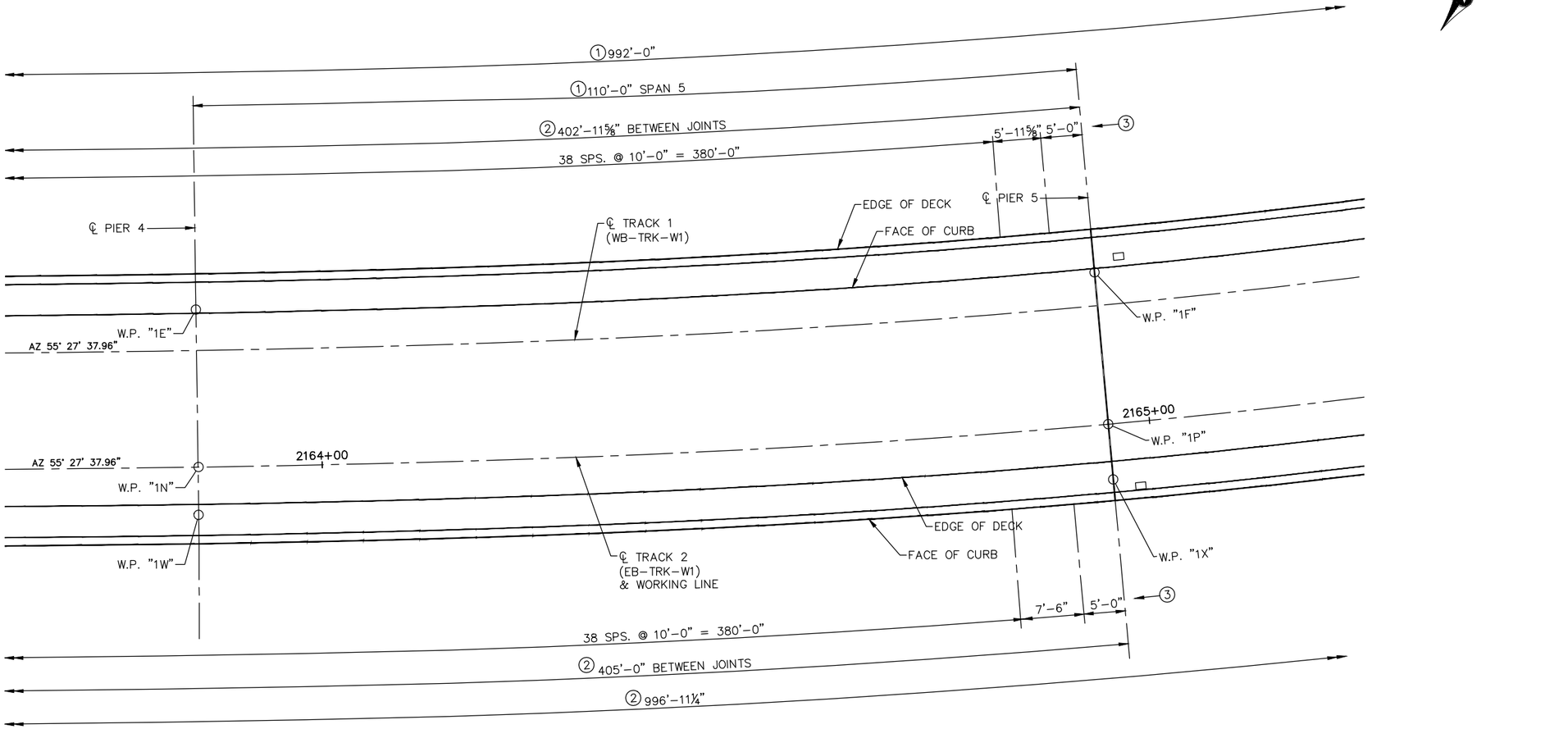
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (WIRE FENCE) 4

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-SUP4-4

SHEET 91 OF 116

Jan, 18 2016 12:30 pm V:\19140A_MN_Valley_View_Rood_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP4.dwg By: kucera



PARTIAL FENCE POST PLAN – SPAN 5

NOTES:

① MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1).

② MEASURED ALONG EDGE OF DECK.

③ WIRE FENCE POST SPACING, MEASURED ALONG EDGE OF DECK.

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DESIGNED BY: ECM CHECKED BY: APV
DRAWN BY: RCK CHECKED BY: GHD

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

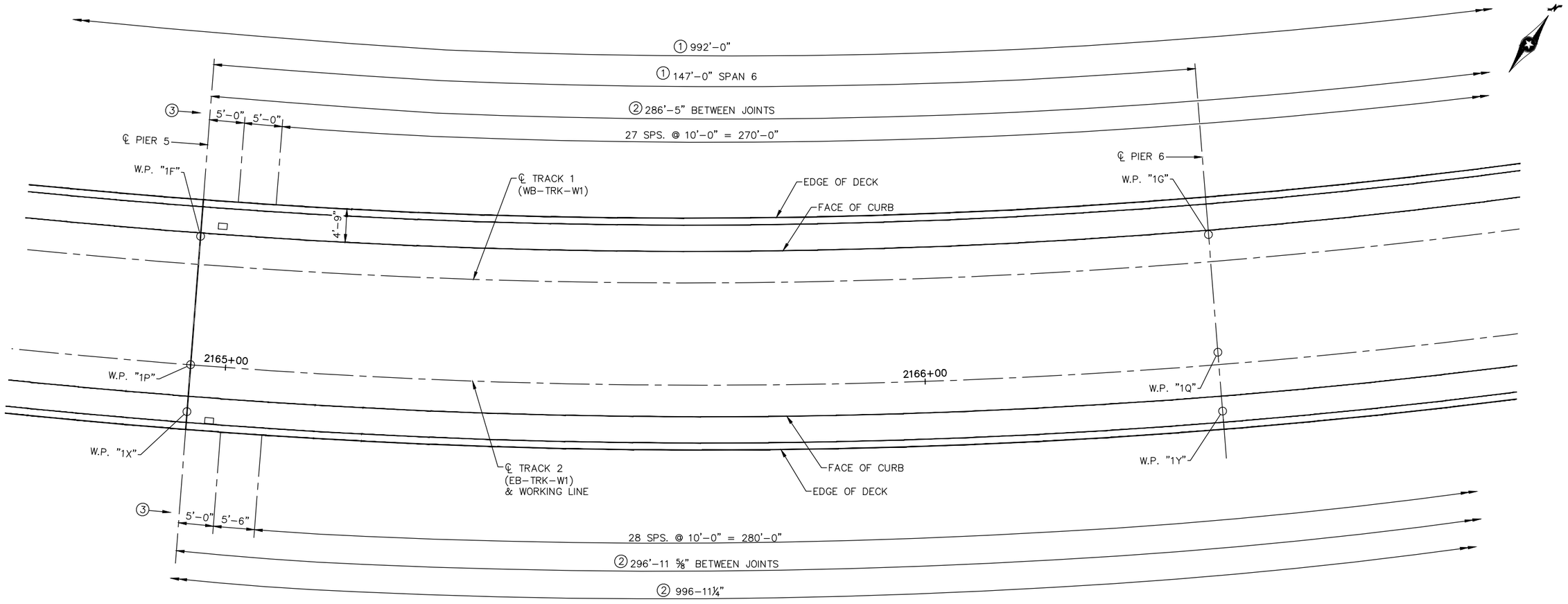
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (WIRE FENCE) 5

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUP4-5

SHEET 92 OF 116

Jan. 18 2016 12:30 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP4.dwg By: kucera



PARTIAL FENCE POST PLAN – SPAN 6

NOTES:

① MEASURED ALONG ℄ TRACK 2 (EB-TRK-W1).

② MEASURED ALONG EDGE OF DECK.

③ WIRE FENCE POST SPACING, MEASURED ALONG EDGE OF DECK.

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

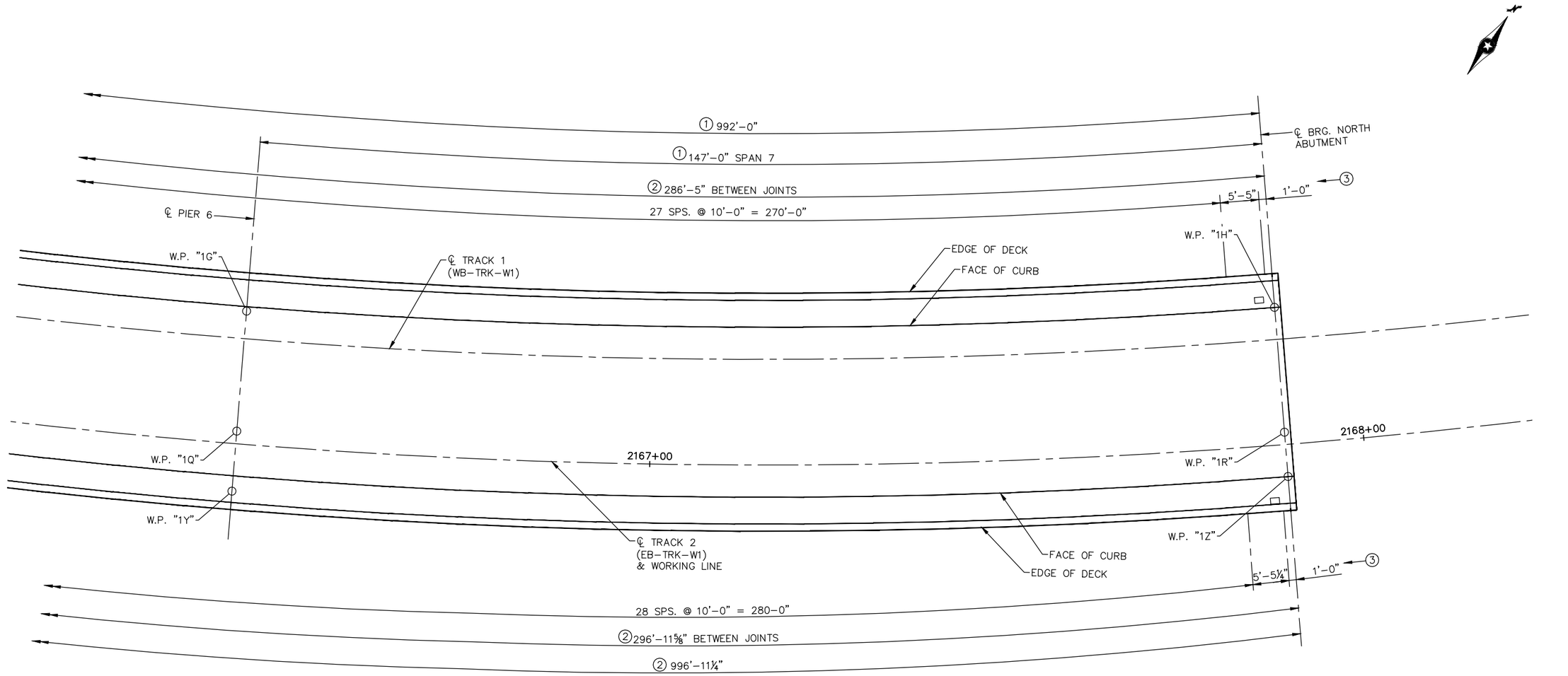
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (WIRE FENCE) 6

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUP4-6

SHEET 93 OF 116

Jan, 18 2016 12:31 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP4.dwg By: kucera



PARTIAL FENCE POST PLAN – SPAN 7

NOTES:

① MEASURED ALONG ℄ TRACK 2 (EB–TRK–W1).

② MEASURED ALONG EDGE OF DECK.

③ WIRE FENCE POST SPACING, MEASURED ALONG EDGE OF DECK.

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AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

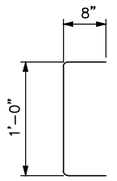
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (WIRE FENCE) 7

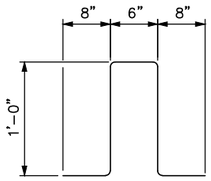
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUP4-7

SHEET 94 OF 116

Jan. 18 2016 12:31 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP4.dwg By: kucera



1S409E
2S409E
3S409E



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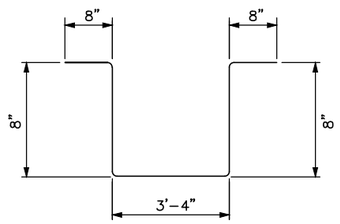
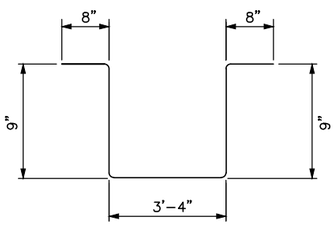
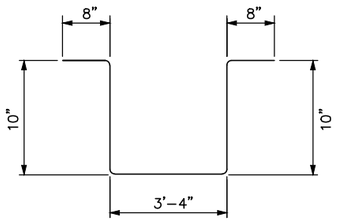


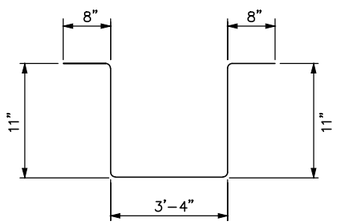
1S411E
2S414E
3S413E



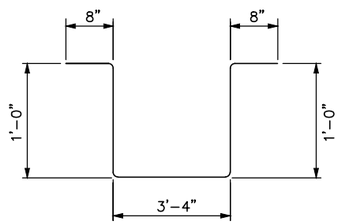
1S412E
2S415E
3S414E



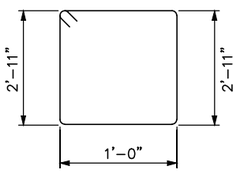
2S416E
3S415E



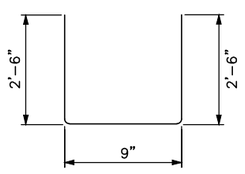
2S417E
3S416E



2S418E
3S417E



1S513E
3S518E



1S514E
3S519E

BILL OF REINFORCEMENT SPANS 1–2

BAR	NO.	LENGTH	SHAPE	LOCATION
1S401E	161	43'–5"	———	SLAB – LONGITUDINAL, TOP
1S502E	385	43'–9"	———	SLAB – LONGITUDINAL, BOTTOM
1S503E	713	32'–2"	———	SLAB – TRANSVERSE, TOP
1S504E	705	31'–10"	———	SLAB – TRANSVERSE, BOTTOM
1S605E	44	15'–0"	———	SLAB – NEGATIVE, TOP
1S406E	84	43'–5"	———	SIDEWALK – LONGITUDINAL
1S407E	294	4'–3"	———	SIDEWALK – TRANSVERSE, TOP
1S408E	294	2'–1"	———	SIDEWALK – TRANSVERSE, TOP
1S409E	1176	2'–4"	⌐¬	SIDEWALK – TIE
1S410E	294	3'–10"	⌐¬	SIDEWALK – TIE
1S411E	112	6'–0"	⌐¬	HAUNCH – TIE
1S412E	116	6'–2"	⌐¬	HAUNCH – TIE
1S413E	2	43'–6"	———	HAUNCH – LONGITUDINAL
1S513E	33	8'–9"	□	END BLOCK – TIE
1S514E	33	5'–9"	⊔	END BLOCK – TIE
1S515E	11	32'–6"	———	END BLOCK – TRANSVERSE

BILL OF REINFORCEMENT SPANS 3–5

BAR	NO.	LENGTH	SHAPE	LOCATION
2S401E	207	46'–4"	———	SLAB – LONGITUDINAL, TOP
2S502E	495	46'–9"	———	SLAB – LONGITUDINAL, BOTTOM
2S503E	1954	17'–9"	———	SLAB – TRANSVERSE, TOP
2S504E	1938	17'–8"	———	SLAB – TRANSVERSE, BOTTOM
2S605E	88	15'–0"	———	SLAB – NEGATIVE, TOP
2S406E	108	46'–4"	———	SIDEWALK – LONGITUDINAL
2S407E	404	4'–3"	———	SIDEWALK – TRANSVERSE, TOP
2S408E	404	2'–1"	———	SIDEWALK – TRANSVERSE, TOP
2S409E	1616	2'–4"	⌐¬	SIDEWALK – TIE
2S410E	404	3'–10"	⌐¬	SIDEWALK – TIE
2S611E	24	9'–0"	———	REINF. AT DRAIN, T&B, TRANSVERSE
2S612E	8	12'–0"	———	REINF. AT DRAIN, T&B, LONGITUDINAL
2S613E	8	9'–0"	———	REINF. AT DRAIN, T&B, LONGITUDINAL
2S414E	224	6'–0"	⌐¬	HAUNCH – TIE
2S415E	267	6'–2"	⌐¬	HAUNCH – TIE
2S416E	88	6'–4"	⌐¬	HAUNCH – TIE
2S417E	66	6'–6"	⌐¬	HAUNCH – TIE
2S418E	57	6'–8"	⌐¬	HAUNCH – TIE
2S419E	14	14'–6"	———	HAUNCH – LONGITUDINAL
2S420E	2	29'–0"	———	HAUNCH – LONGITUDINAL
2S421E	26	27'–6"	———	HAUNCH – LONGITUDINAL
2S422E	2	17'–0"	———	HAUNCH – LONGITUDINAL
2S423E	2	10'–6"	———	HAUNCH – LONGITUDINAL
2S424E	2	21'–6"	———	HAUNCH – LONGITUDINAL

BILL OF REINFORCEMENT SPANS 6–7

BAR	NO.	LENGTH	SHAPE	LOCATION
3S401E	161	43'–5"	———	SLAB – LONGITUDINAL, TOP
3S502E	385	43'–9"	———	SLAB – LONGITUDINAL, BOTTOM
3S503E	1426	17'–9"	———	SLAB – TRANSVERSE, TOP
3S504E	1410	17'–8"	———	SLAB – TRANSVERSE, BOTTOM
3S605E	44	15'–0"	———	SLAB – NEGATIVE, TOP
3S406E	84	43'–5"	———	SIDEWALK – LONGITUDINAL
3S407E	294	4'–3"	———	SIDEWALK – TRANSVERSE, TOP
3S408E	294	2'–1"	———	SIDEWALK – TRANSVERSE, TOP
3S409E	1176	2'–4"	⌐¬	SIDEWALK – TIE
3S410E	294	3'–10"	⌐¬	SIDEWALK – TIE
3S611E	16	9'–0"	———	REINF. AT DRAIN, T&B, TRANSVERSE
3S612E	8	12'–0"	———	REINF. AT DRAIN, T&B, LONGITUDINAL
3S413E	237	6'–0"	⌐¬	HAUNCH – TIE
3S414E	118	6'–2"	⌐¬	HAUNCH – TIE
3S415E	59	6'–4"	⌐¬	HAUNCH – TIE
3S416E	30	6'–6"	⌐¬	HAUNCH – TIE
3S417E	30	6'–8"	⌐¬	HAUNCH – TIE
3S418E	20	14'–6"	———	HAUNCH – LONGITUDINAL
3S419E	8	29'–0"	———	HAUNCH – LONGITUDINAL
3S518E	34	8'–9"	□	END BLOCK – TIE
3S519E	30	5'–9"	⊔	END BLOCK – TIE
3S520E	9	33'–3"	———	END BLOCK – TRANSVERSE
3S521E	4	14'–8"	———	END BLOCK – TRANSVERSE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: MJY | CHECKED BY: APV
DRAWN BY: MJY | CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/2016

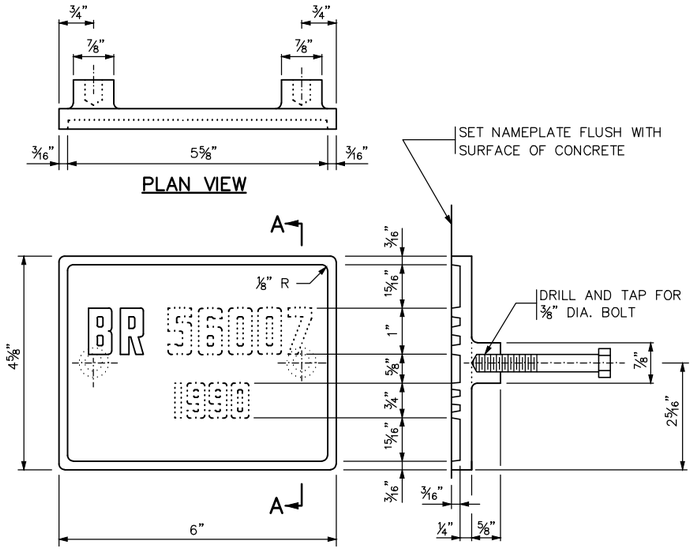
METROPOLITAN COUNCIL SOUTHWEST

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
SUPERSTRUCTURE (BILL OF REINF)

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUP5

SHEET 95 OF 116

Jan. 18 2016 12:31 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUP5.dwg By: kucera



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

BRIDGE 27R33

YEAR 2018

NUMBERS FOR NAMEPLATE

NOTES:

MATERIAL SHALL COMPLY WITH SPEC. 3327.

LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.

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

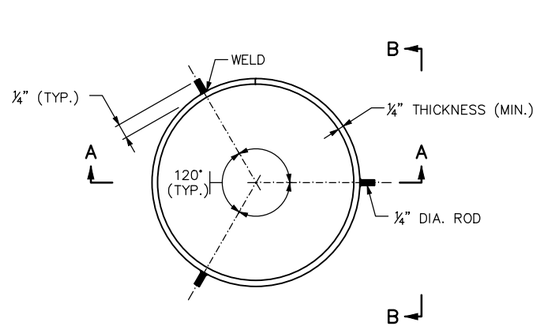
HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.

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

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

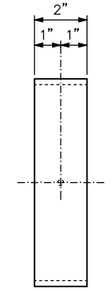
ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR 1" HIGH LETTERS AND NUMBERS.

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



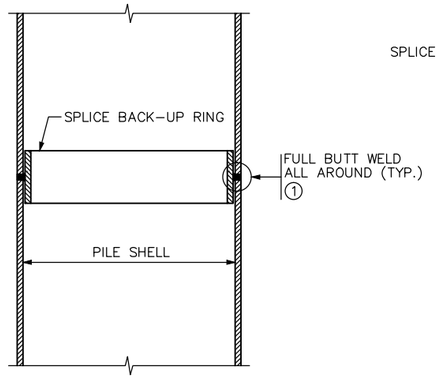
PLAN VIEW – SPLICE BACK-UP RING

PILE NOT SHOWN

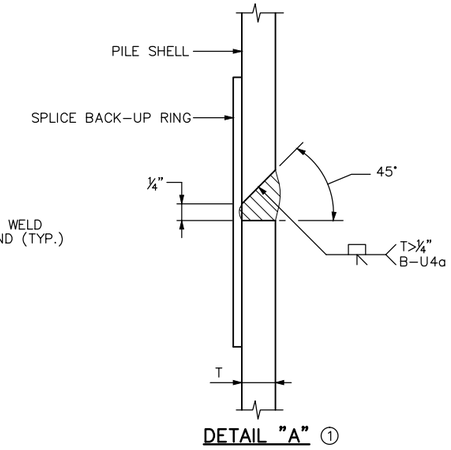


SECTION B-B

PILE NOT SHOWN



SECTION A-A



DETAIL "A" ①

NOTES:

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

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

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

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

① FOR PILE SHELL THICKNESSES GREATER THAN 1/2", USE A B-U4a WELD CONFIGURATION. SEE DETAIL "A".

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

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ECM CHECKED BY: APV
DRAWN BY: EMB CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

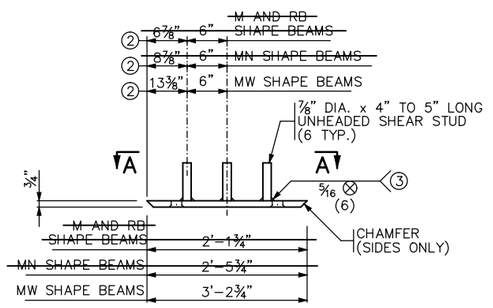
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE DETAILS 1

DISCIPLINE: STRUCTURES

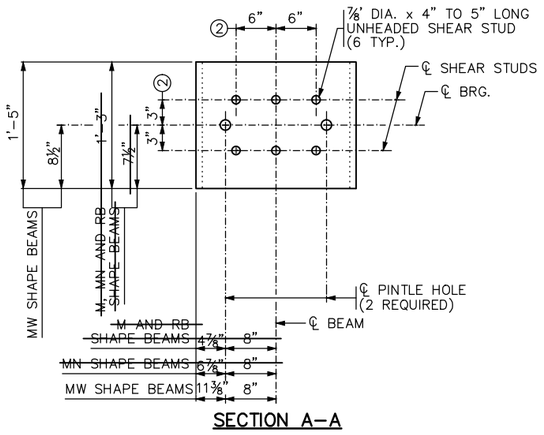
SHEET NAME: W1-STU-BRG-FCVV-BDTL-001_101-201

SHEET 96 OF 116

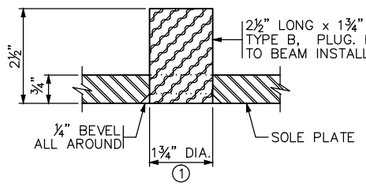
Jan. 18 2016 12:31 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-BDTL-001_101-201.dwg By: kucera



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.

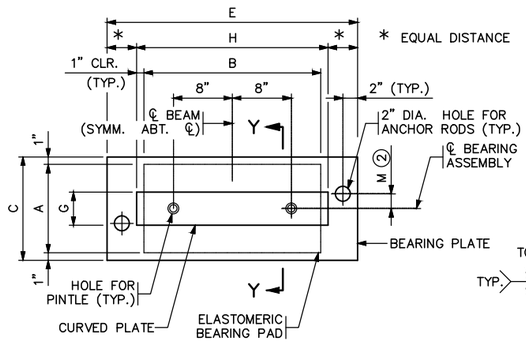
SOLE PLATES ARE INCIDENTAL TO PRESTRESSED CONCRETE BEAMS.

① FOR 1½" DIA. PINTLES.

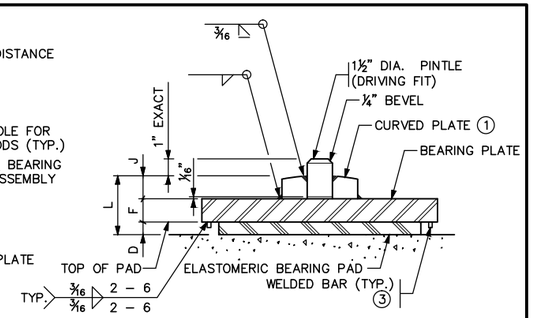
② THESE DIMENSIONS MAY BE MODIFIED TO CLEAR PRESTRESSED STRANDS. HOWEVER, CHANGES MUST BE APPROVED BY THE ENGINEER.

③ THE REQUIREMENTS FOR WELDING STUDS SHALL COMPLY WITH AASHTO/AWS D1.1.

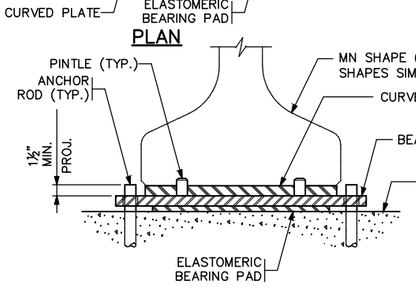
APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	SOLE PLATE (PRESTRESSED CONCRETE BEAMS) (FOR BEARINGS WITH PINTLES)		B303



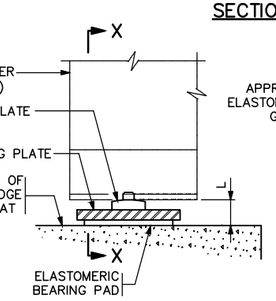
PLAN



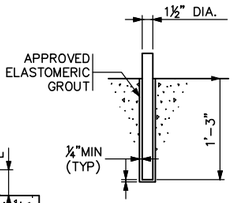
SECTION Y–Y



SECTION X–X



SIDE ELEVATION



ANCHOR ROD DETAIL ④

ANCHOR RODS NOT SHOWN

TABLE

ASSEMBLY TYPE	LOCATION ⑤	BEAM SIZE	BEARING PAD SIZE A	B	D	SHAPE FACTOR	BEARING PLATE SIZE C	E	F	CURVED PLATE SIZE G	H	J	ANCHOR ROD OFFSET +/–②	M	ASSY. HEIGHT L	CURVED PLATE R ①
F1	P1 & 3	MW	16"	36"	½"	11.1	18"	47"	1½"	4½"	26"	1¼"		0	3¼"	16"
F2	P4	D	MW	16"	36"	½"	11.1	18"	47"	1½"	4½"	26"	1¼"	–	¼"	3¼"	16"
F3	P4	U	MW	16"	36"	½"	11.1	18"	47"	1½"	4½"	26"	1¼"	+	½"	3¼"	16"
F4	P6	D	MW	16"	36"	½"	11.1	18"	47"	1½"	4½"	26"	1¼"	–	1⅝"	3¼"	16"
F5	P6	U	MW	16"	36"	½"	11.1	18"	47"	1½"	4½"	26"	1¼"	+	1¾"	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 ANCHOR RODS SHALL BE INSTALLED INTO THE HARDENED CONCRETE CAP WITH AN APPROVED ELASTOMERIC GROUT. PROVIDE 2" MINIMUM CLEARANCE BETWEEN ANCHOR ROD AND PIER CAP REINFORCEMENT.

⑤ "D" DENOTES DOWNSTATION. "U" DENOTES UPSTATION.

MODIFICATION:

ANCHOR RODS TO BE INSTALLED WITH AN APPROVED ELASTOMERIC GROUT

DESIGN DATA:

MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1½" PINTLES.

APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (FIXED)	11–06–2013 11–03–2015	B310 MODIFIED

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ECM CHECKED BY: WAH
DRAWN BY: EMB CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

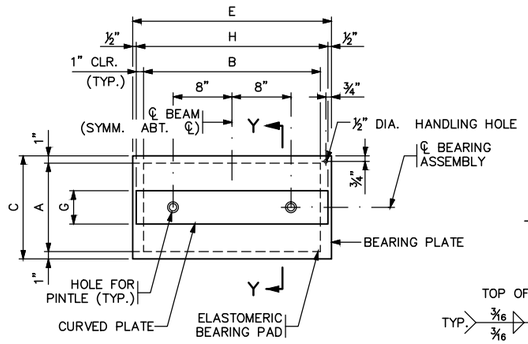
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE DETAILS 2

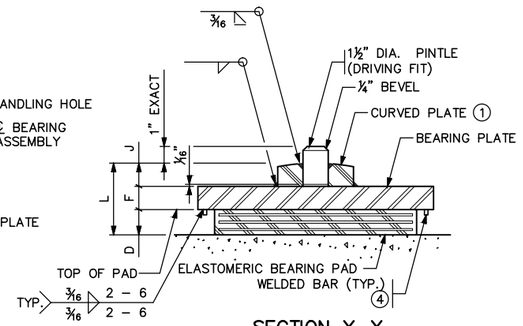
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-BDTL-002_303-905

SHEET 97 OF 116

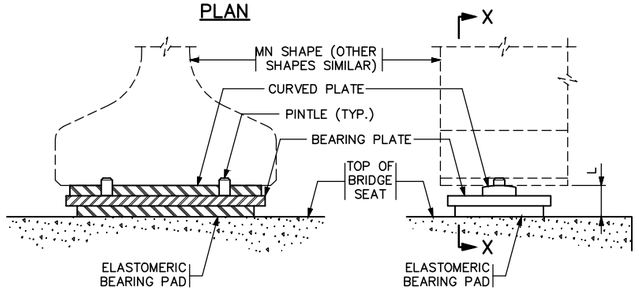
Jan, 18 2016 12:31 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-BDTL-002_303-310.dwg By: kucera



PLAN

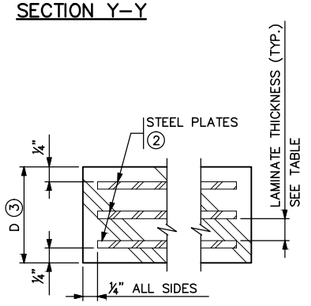


SECTION Y–Y



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	⑤	MW	16"	36"	4⅜"	7	⅛"	6	½"	11.1	18"	39"	1½"	4½"	38"	1¼"	7⅞"	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.

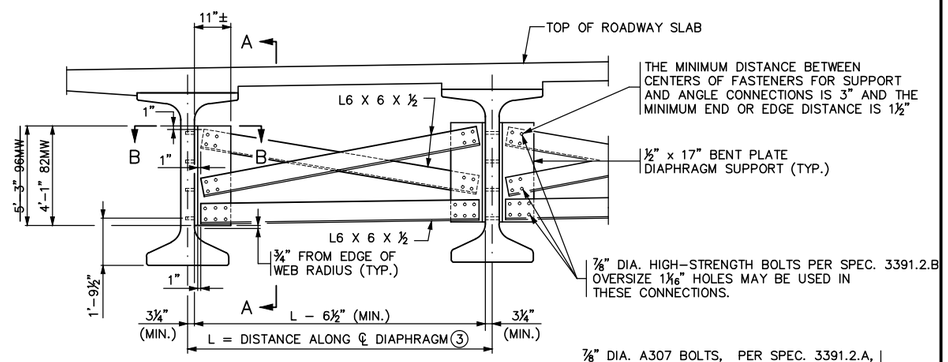
④ ⅜" X ⅜" BAR INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. BAR LENGTH IS 2" LESS THAN ADJACENT PAD DIMENSION, CENTERED ON PAD. CENTERLINE OF BAR TO EDGE OF PAD DIMENSION = ½".

⑤ PIERS 2, 5, SOUTH ABUTMENT & NORTH ABUTMENT

DESIGN DATA:

MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1½" PINTLES.

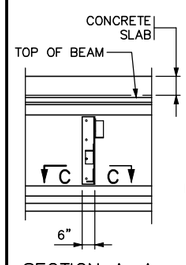
APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 11–03–2015	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (EXPANSION)		B311



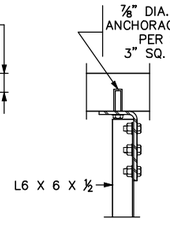
PART TRANSVERSE SECTION

SQUARE BRIDGE SHOWN

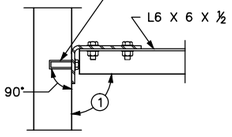
⅞" DIA. A307 BOLTS, PER SPEC. 3391.2.A, WITH TWO HEX NUTS, OR EQUAL, AND TWO HARDENED 3" SQ. x 5⁄16" PLATE WASHERS EACH AT ALL INTERIOR BEAM DIAPHRAGM CONNECTIONS



SECTION A–A

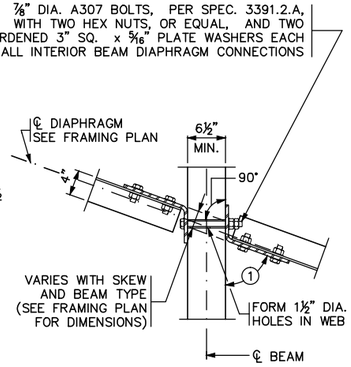


SECTION C–C



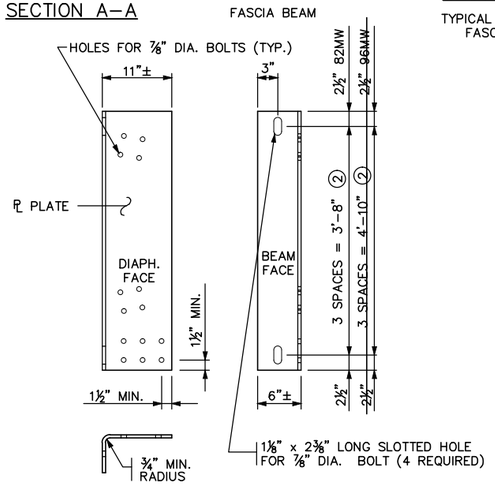
SECTION B–B

TYPICAL SECTION AT FASCIA BEAM



INTERMEDIATE DIAPHRAGM

TYPICAL SECTION AT INTERIOR BEAM WITH CONTINUOUS OR STAGGERED INTERMEDIATE DIAPHRAGMS



DIAPHRAGM SUPPORT

NOTES:

PROVIDE STEEL PER SPEC. 3306.

INCLUDE ALL STRUCTURAL STEEL SHOWN ON THIS DETAIL, INCLUDING BOLTS AND WASHERS, IN THE PAYMENT FOR DIAPHRAGMS FOR PRESTRESSED BEAMS.

INSTALLATION PER SPEC. 2405.3.K

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

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°.

② SPACE BOLT HOLES SO AS TO MISS PRESTRESSED STRANDS IN CONCRETE BEAMS. SEE PRESTRESSED CONCRETE BEAM SHEETS FOR MORE INFORMATION.

③ DIAPHRAGM SHOWN DESIGNED FOR BEAM SPACING UP TO 13'–0".

APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 09–11–2014 11–03–2015	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	STEEL INTERMEDIATE BOLTED DIAPHRAGM (ALL MW PRESTRESSED CONCRETE BEAMS)		B412

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ECM | CHECKED BY: WAH
DRAWN BY: EMB | CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL SOUTHWEST

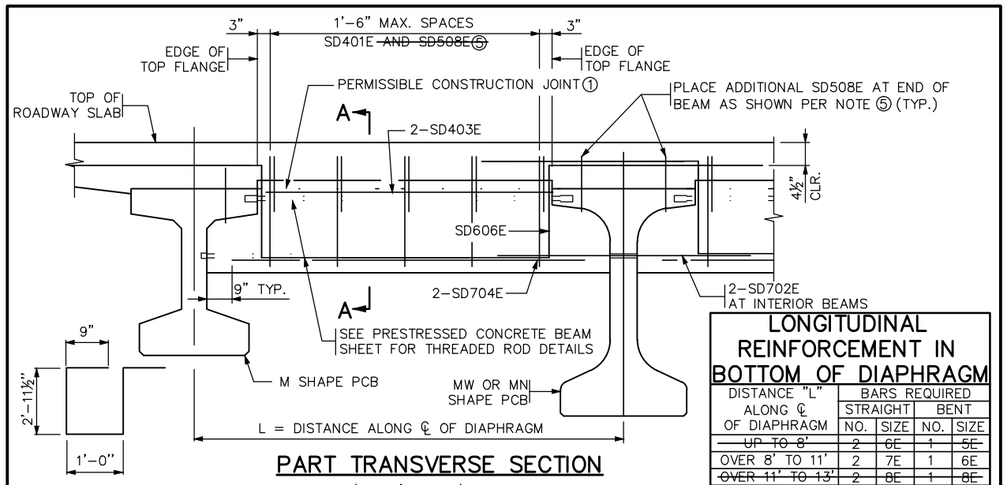
90% SUBMISSION - 01/22/16

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-BDTL-003_310-311

SHEET 98 OF 116

Jan, 18 2016 12:31 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-BDTL-003_311-412.dwg By: kucera

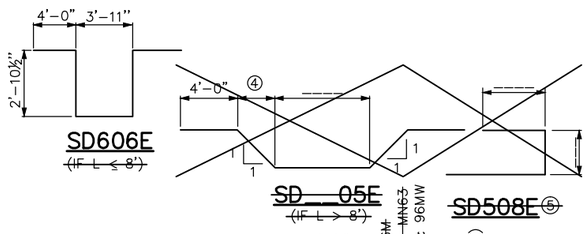


PART TRANSVERSE SECTION

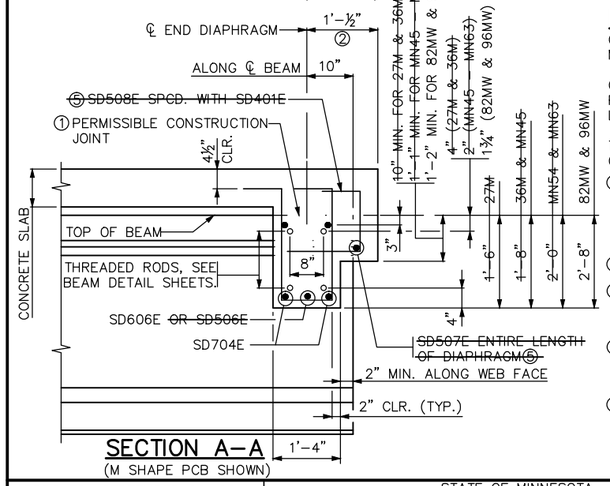
(L > 8' SHOWN)

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	12	8'–5"		VERTICAL TIE
SD702E	4	5'–0"		LONG. THRU BEAM
SD403E	6	3'–11"		LONG. TOP
SD704E	6	6'–2"		LONG. BOTTOM
~~SD__05E~~				~~LONGITUDINAL~~
SD606E	3	17'–8"		LONGITUDINAL
⑤ ~~SD507E~~				~~LONGITUDINAL~~
⑤ ~~SD508E~~				~~VERTICAL TIE~~



SECTION A–A

(M SHAPE PCB SHOWN)

1'–4"

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.

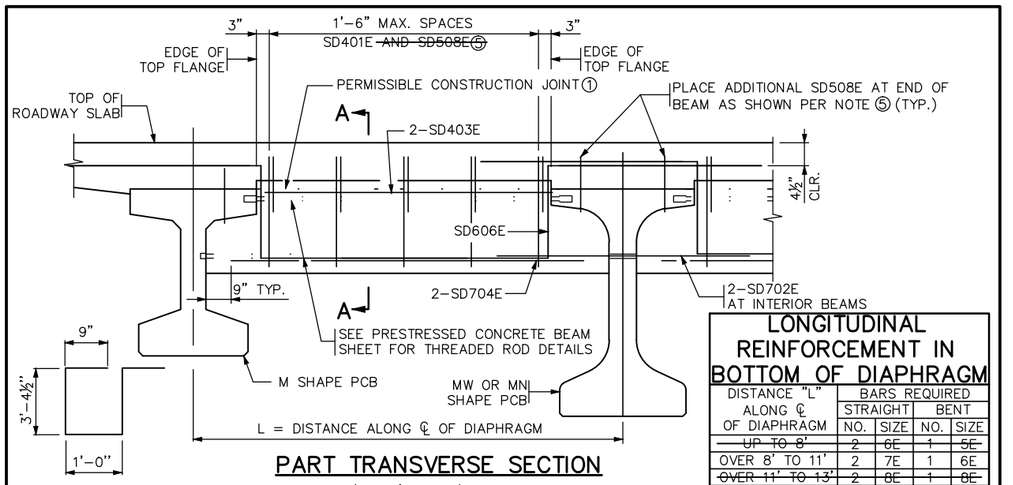
② PERPENDICULAR TO CENTERLINE OF DIAPHRAGM.

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	B814A

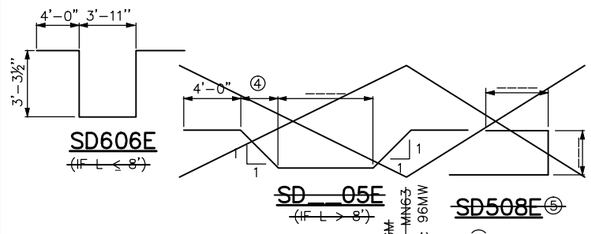


PART TRANSVERSE SECTION

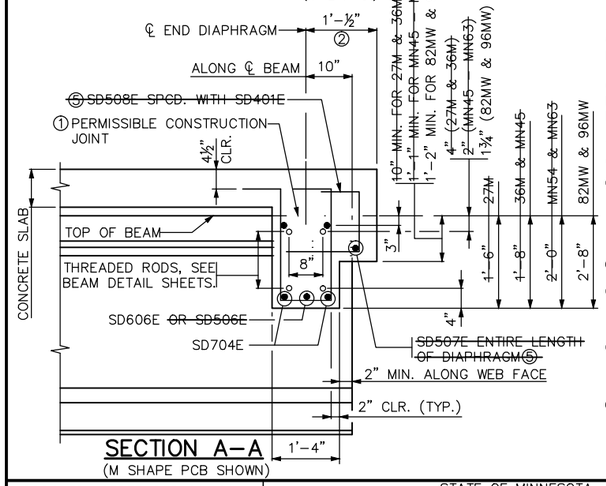
(L > 8' SHOWN)

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	12	9'–3"		VERTICAL TIE
SD702E	4	5'–0"		LONG. THRU BEAM
SD403E	6	3'–11"		LONG. TOP
SD704E	6	6'–2"		LONG. BOTTOM
~~SD__05E~~				~~LONGITUDINAL~~
SD606E	3	18'–6"		LONGITUDINAL
⑤ ~~SD507E~~				~~LONGITUDINAL~~
⑤ ~~SD508E~~				~~VERTICAL TIE~~



SECTION A–A

(M SHAPE PCB SHOWN)

1'–4"

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	B814B

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ECM CHECKED BY: APV
DRAWN BY: EMB CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL SOUTHWEST

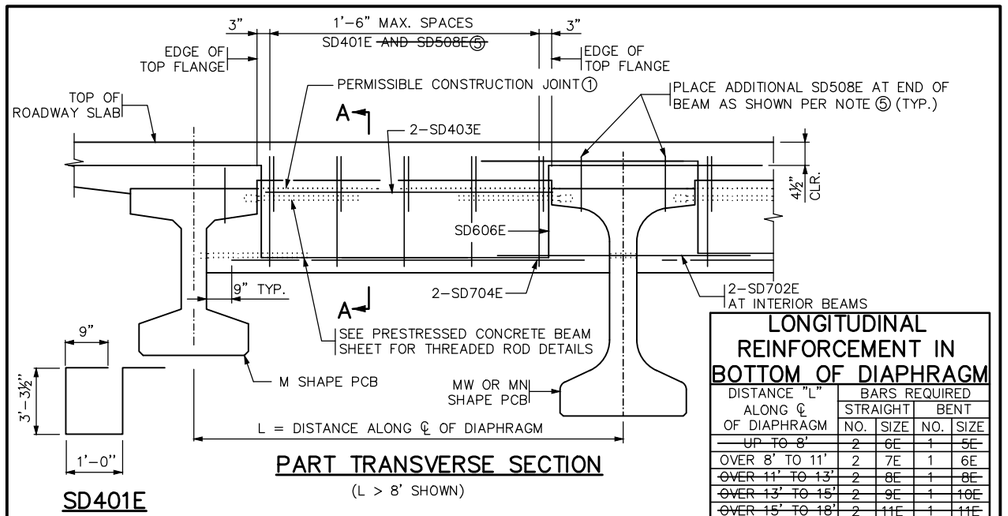
90% SUBMISSION - 01/22/16

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

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-BDTL-004_412

SHEET 99 OF 116

Jan, 18 2016 12:32 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-BDTL-004_814a-814b.dwg By: kucera



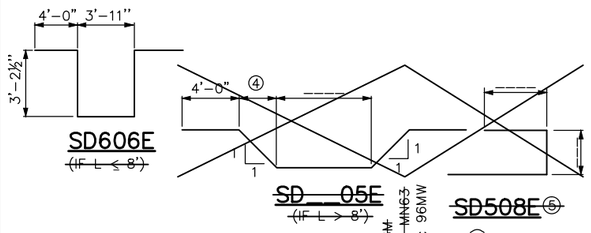
PART TRANSVERSE SECTION

(L > 8' SHOWN)

SD401E

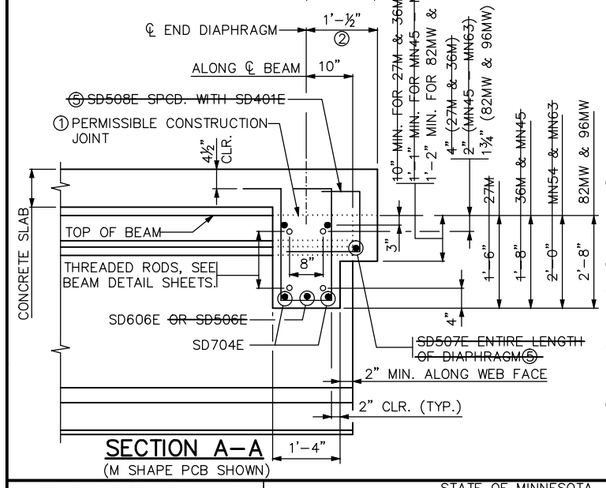
LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM

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	12	9'-1"	⊏⊐	VERTICAL TIE
SD702E	4	5'-0"	———	LONG. THRU BEAM
SD403E	6	3'-11"	———	LONG. TOP
SD704E	6	6'-2"	———	LONG. BOTTOM
~~SD__05E~~			~~⊐⊏~~	~~LONGITUDINAL~~
SD606E	3	18'-4"	⊐⊏	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.

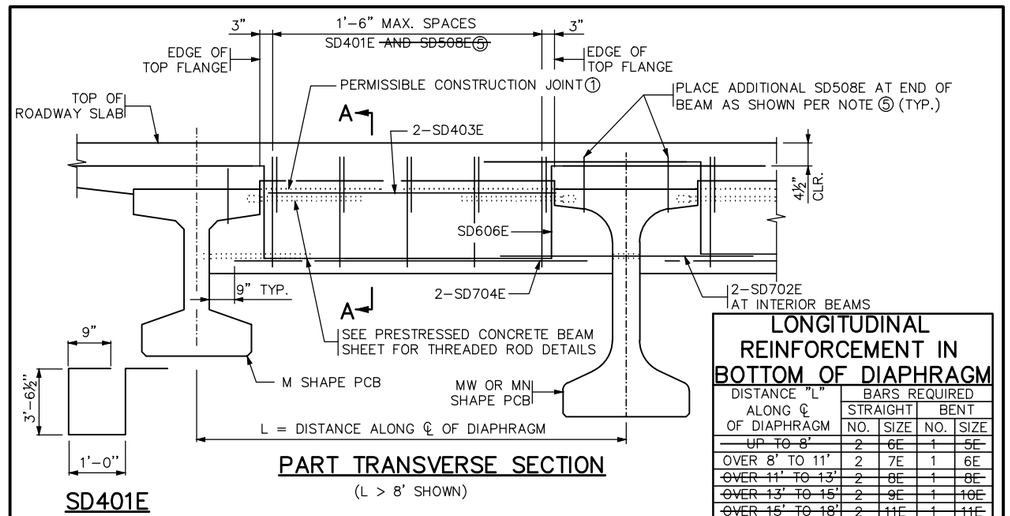
② PERPENDICULAR TO CENTERLINE OF DIAPHRAGM.

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 04–17–2013 11–06–2013	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CONCRETE END DIAPHRAGM ~~(27M & 36M, MN45 — MN63,~~ 82MW ~~& 96MW~~ PRESTRESSED CONCRETE BEAMS (PARAPET ABUTMENT)		B814C



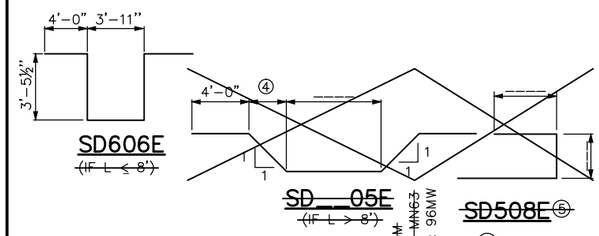
PART TRANSVERSE SECTION

(L > 8' SHOWN)

SD401E

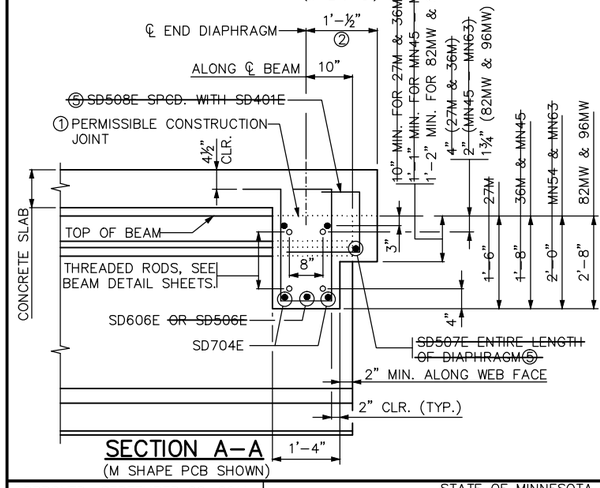
LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM

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	12	9'-7"	⊏⊐	VERTICAL TIE
SD702E	4	5'-0"	———	LONG. THRU BEAM
SD403E	6	3'-11"	———	LONG. TOP
SD704E	6	6'-2"	———	LONG. BOTTOM
~~SD__05E~~			~~⊐⊏~~	~~LONGITUDINAL~~
SD606E	3	18'-10"	⊐⊏	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 04–17–2013 11–06–2013	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CONCRETE END DIAPHRAGM ~~(27M & 36M, MN45 — MN63,~~ 82MW ~~& 96MW~~ PRESTRESSED CONCRETE BEAMS (PARAPET ABUTMENT)		B814D

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ECM CHECKED BY: APV
DRAWN BY: EMB CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

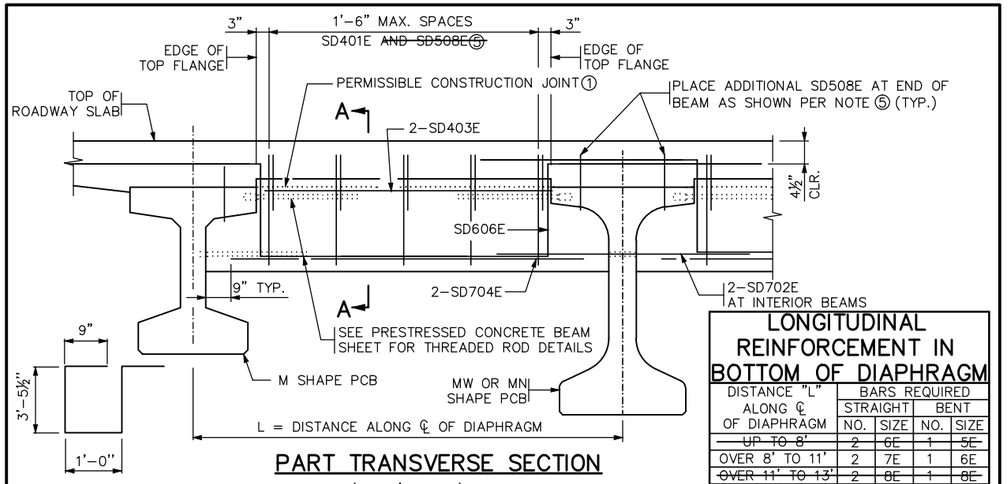
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE DETAILS 5

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-BDTL-007_814a-910

SHEET 100 OF 116

Jan. 18 2016 12:32 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-BDTL_005_814c-814d.dwg By: kucera



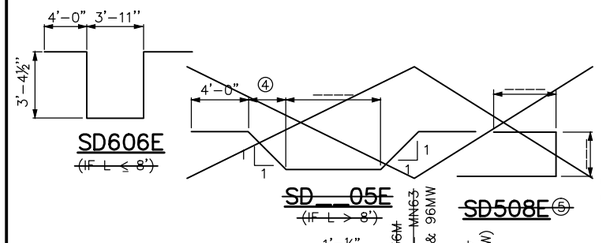
PART TRANSVERSE SECTION

(L > 8' SHOWN)

SD401E

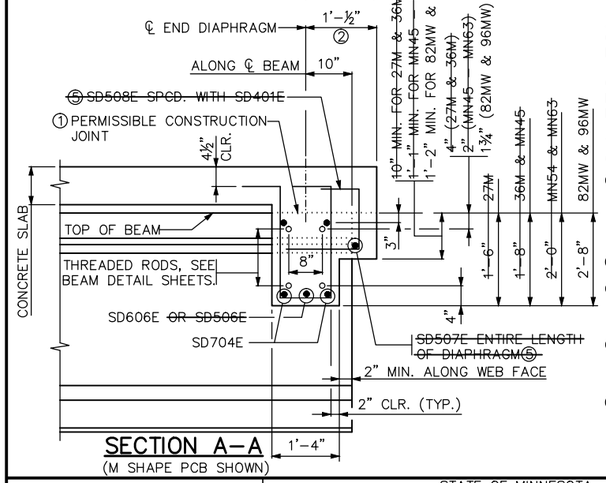
LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM

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	12	9'–5"		VERTICAL TIE
SD702E	4	5'–0"		LONG. THRU BEAM
SD403E	6	3'–11"		LONG. TOP
SD704E	6	6'–2"		LONG. BOTTOM
~~SD__05E~~				~~LONGITUDINAL~~
SD606E	3	18'–8"		LONGITUDINAL
⑤ ~~SD507E~~				~~LONGITUDINAL~~
⑤ ~~SD508E~~				~~VERTICAL TIE~~



SECTION A–A

(M SHAPE PCB SHOWN)

1'–4"

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.

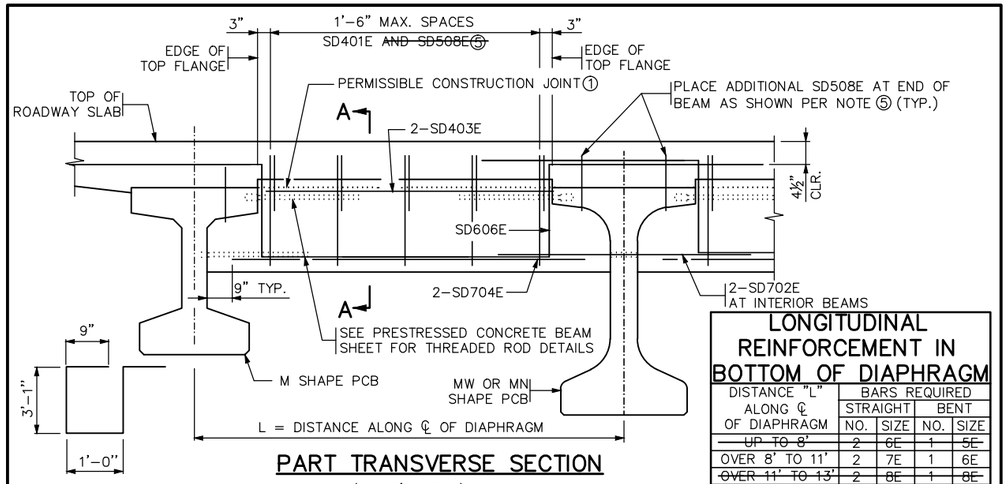
② PERPENDICULAR TO CENTERLINE OF DIAPHRAGM.

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	B814E



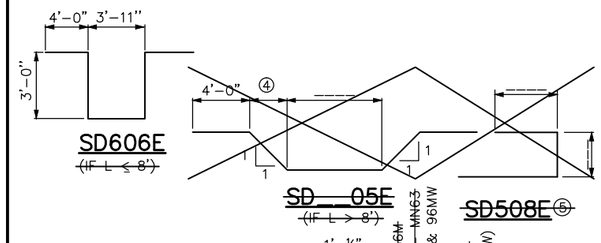
PART TRANSVERSE SECTION

(L > 8' SHOWN)

SD401E

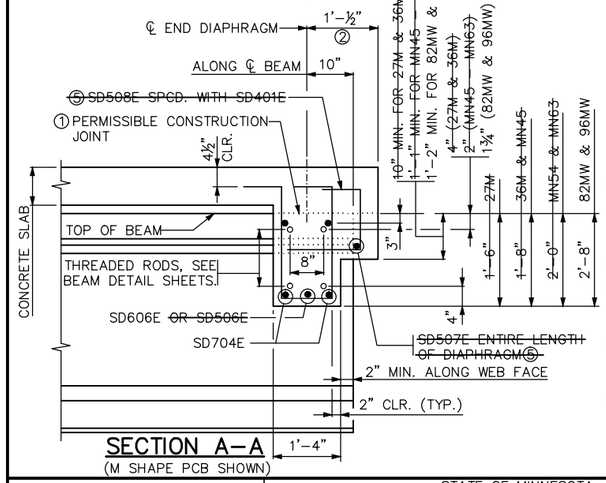
LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM

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	12	8'–8"		VERTICAL TIE
SD702E	4	5'–0"		LONG. THRU BEAM
SD403E	6	3'–11"		LONG. TOP
SD704E	6	6'–2"		LONG. BOTTOM
~~SD__05E~~				~~LONGITUDINAL~~
SD606E	3	17'–11"		LONGITUDINAL
⑤ ~~SD507E~~				~~LONGITUDINAL~~
⑤ ~~SD508E~~				~~VERTICAL TIE~~



SECTION A–A

(M SHAPE PCB SHOWN)

1'–4"

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	B814F

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ECM CHECKED BY: APV
DRAWN BY: EMB CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

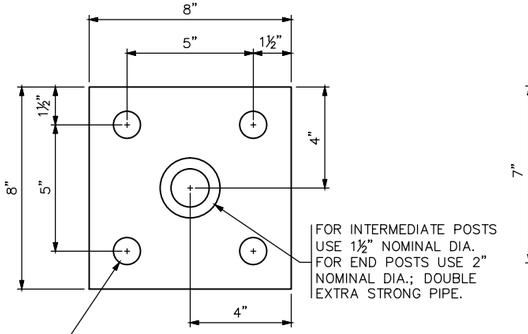
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE DETAILS 6

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-BDTL-006_814b-814c

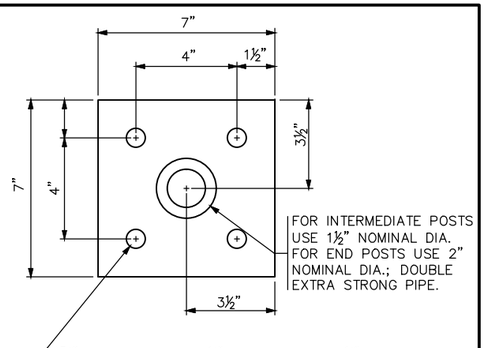
SHEET 101 OF 116

Jan, 18 2016 12:32 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-BDTL-006_814e-814f.dwg By: kucera



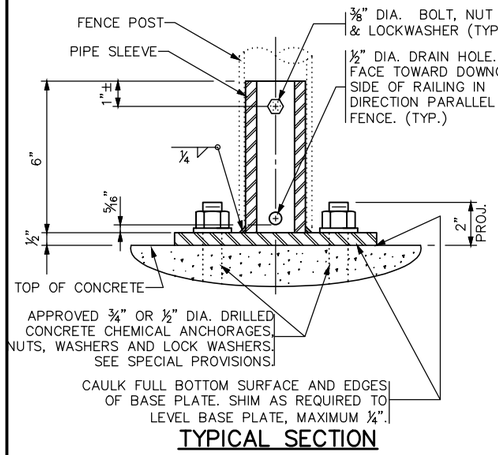
PLAN VIEW – TYPE A

ESTIMATED WEIGHT = 12 OR 14 LBS.

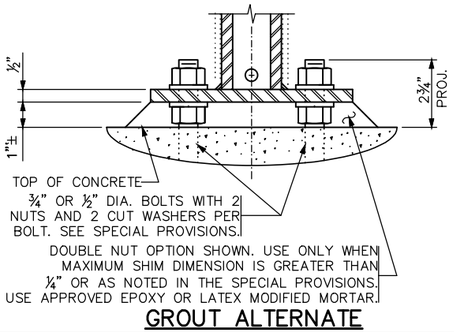


PLAN VIEW – TYPE B

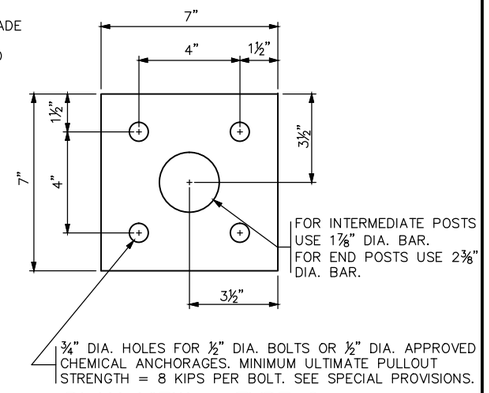
ESTIMATED WEIGHT = 10 OR 12 LBS.



TYPICAL SECTION



GROUT ALTERNATE



PLAN VIEW – TYPE C

ESTIMATED WEIGHT = 12 OR 15 LBS.

NOTES:

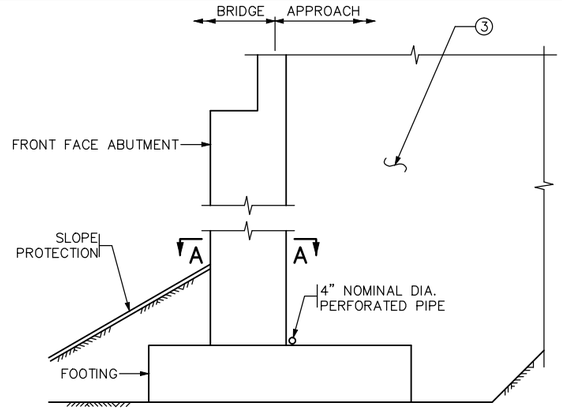
STRUCTURAL STEEL PER Mn/DOT SPEC. 3306.

STRUCTURAL PIPE PER Mn/DOT SPEC. 3362.

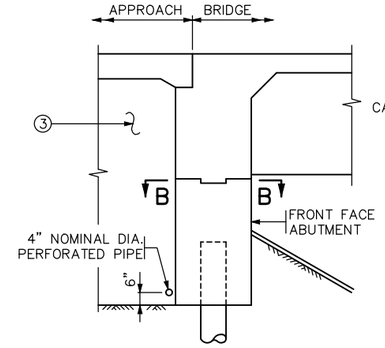
GALVANIZE THE FENCE POST ANCHORAGE AFTER FABRICATION PER Mn/DOT SPEC. 3394. GALVANIZE THE FASTENERS PER Mn/DOT SPEC. 3392.

DOUBLE EXTRA STRONG PIPE WEIGHTS:
½" NOMINAL DIA. = 6.41 LBS./FT.
2" NOMINAL DIA. = 9.03 LBS./FT.

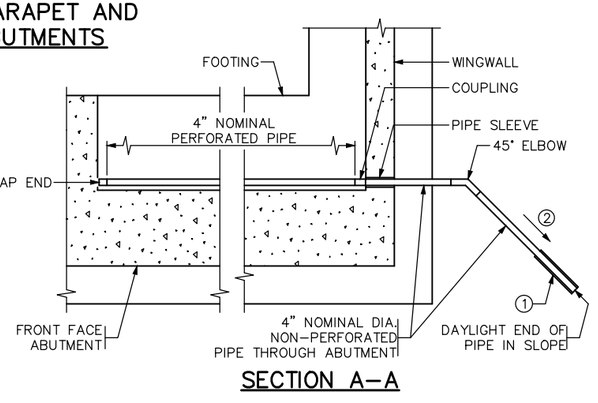
APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
STATE BRIDGE ENGINEER	FENCE POST ANCHORAGE		B905



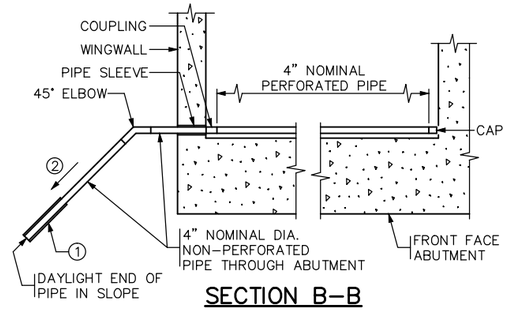
SECTION THROUGH PARAPET AND SEMI–INTEGRAL ABUTMENTS



SECTION 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 MAINTAINED.

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

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ECM CHECKED BY: APV
DRAWN BY: EMB CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

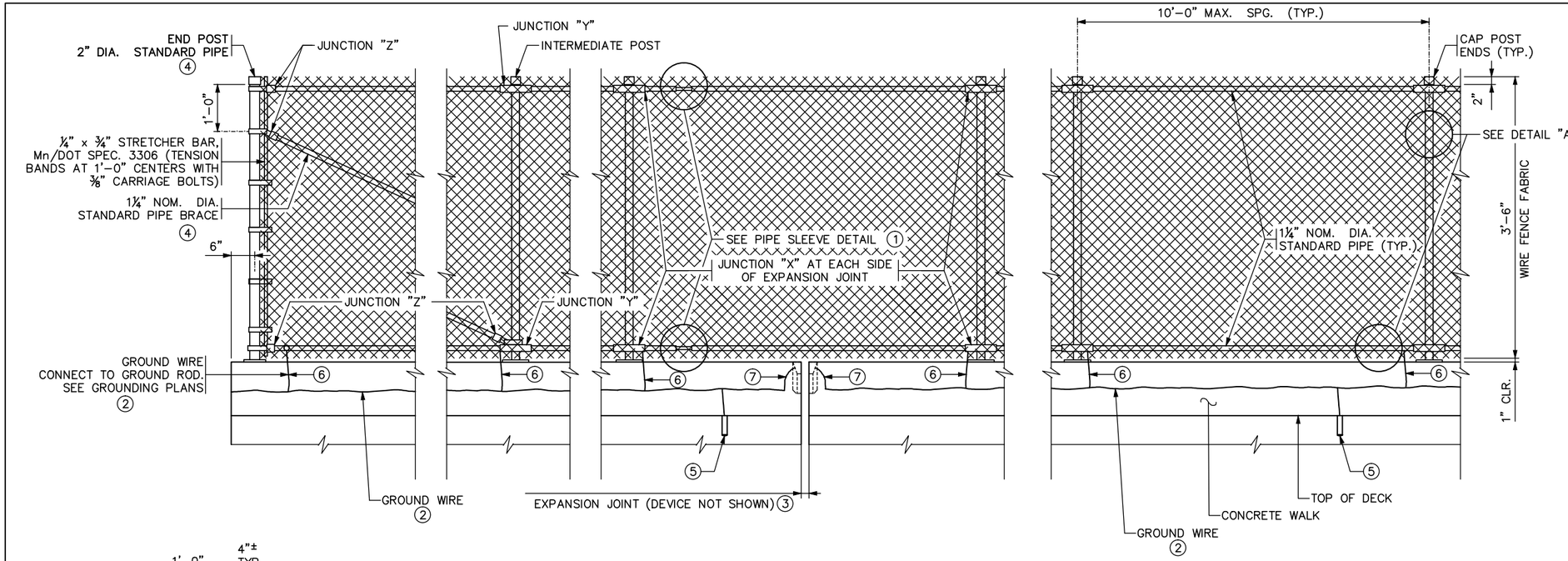
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE DETAILS 7

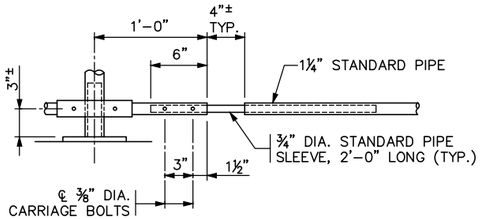
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-BDTL-006_814d-814e

SHEET 102 OF 116

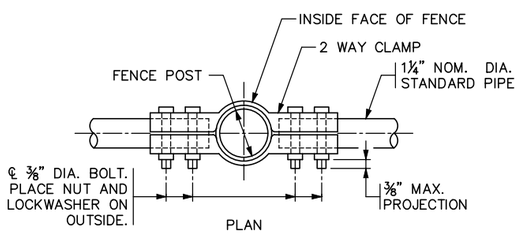
Jan, 18 2016 12:32 pm v:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-BDTL-007_905-910.dwg By: kucera



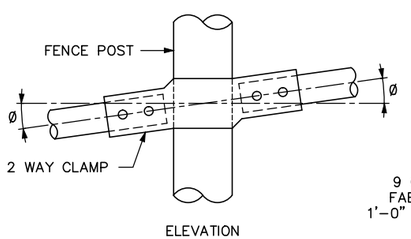
INSIDE ELEVATION OF RAILING



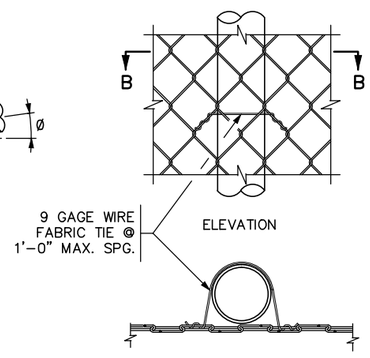
PIPE SLEEVE DETAIL ①



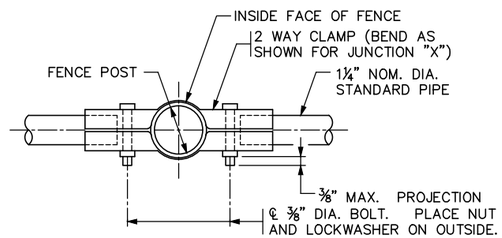
2 WAY CLAMP BENDING TABLE	
GRADE OF FENCE	Ø
0° TO 2°	0°
2° TO 6°	4°
6° TO 10°	8°



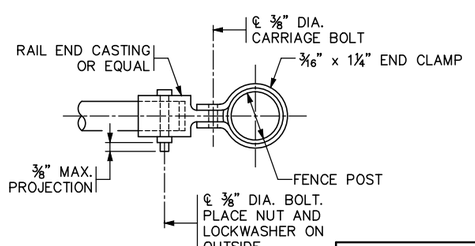
JUNCTION "X"



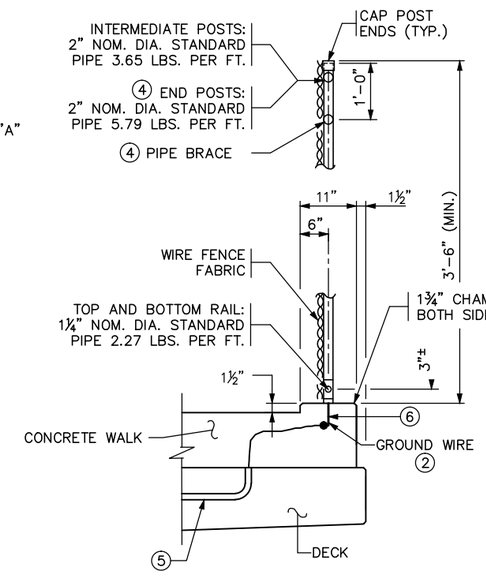
DETAIL "A"



JUNCTION "Y"



JUNCTION "Z"



TYPICAL SECTION THROUGH FENCE

INTERMEDIATE POST SHOWN

MODIFICATION
REMOVED/REPLACED REFERENCES TO P-1 RAILING WITH SIDEWALK DETAILS.
ADDED TOP PIPE RAIL.
ADDED NOTATIONS OF REQUIRED FENCE GROUNDING.

GENERAL NOTES

~~LENGTH OF "WIRE FENCE" FOR PAYMENT SHALL BE MEASURED BETWEEN THE CENTERS OF END RAILPOSTS.~~

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

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.

~~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.~~

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

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

② LONGITUDINAL COLLECTOR GROUND WIRE CONTINUOUS BETWEEN EXPANSION JOINTS.

③ SEE SUPERSTRUCTURE PLANS FOR JOINT OPENINGS.

④ END POSTS AND BRACING SHALL BE AT 500 FT. MAXIMUM INTERVALS.

⑤ GROUND WIRE PLACED IN 1½" PVC CONDUIT AT FIXED PIERS AT LOCATIONS SHOWN ON PIER DETAILS.

⑥ GROUND WIRE PIGTAIL PLACED WITHIN 6" OF EACH FENCE POST ANCHORAGE. GROUNDING PIGTAIL WIRES SHALL BE ATTACHED TO TRACK SIDE OF RAIL POST BASE PLATE. CONTRACTOR SHALL COORDINATE LOCATIONS WITH FENCE SUB CONTRACTOR.

⑦ GROUND WIRE PIGTAIL CONNECTION TO EXPANSION JOINT DEVICE AND EXPANSION JOINT COVER PLATES.

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) ~~AND CONCRETE PARAPET (TYPE P-1)~~ ~~(WITH INTEGRAL END POST)~~

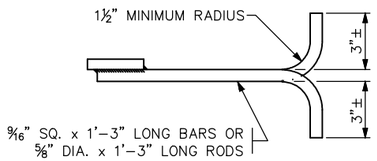
DES: DDL	DR: SWH	APPROVED:
CHK: EEM	CHK: EEM	

SHEET NO. **103** OF **116** SHEETS

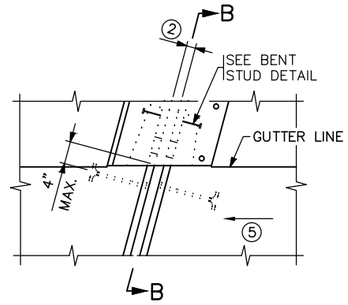
FIG. 5-397.119 (MOD.)

BRIDGE NO. **27R33**

Jan, 18 2016 12:33 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-BDTL-Fig5-397_119_mod.dwg By: kucera

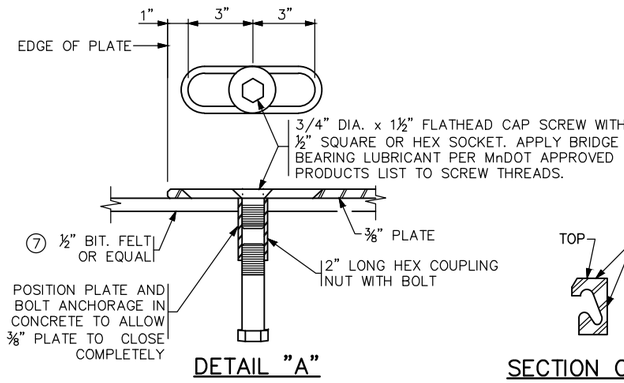


BAR-ROD DETAIL

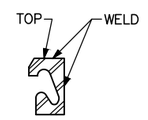


PLAN VIEW @ EXPANSION DEVICE

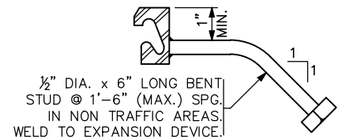
SIDEWALK ALTERNATE



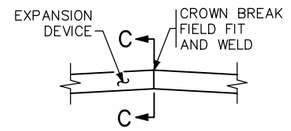
DETAIL "A"



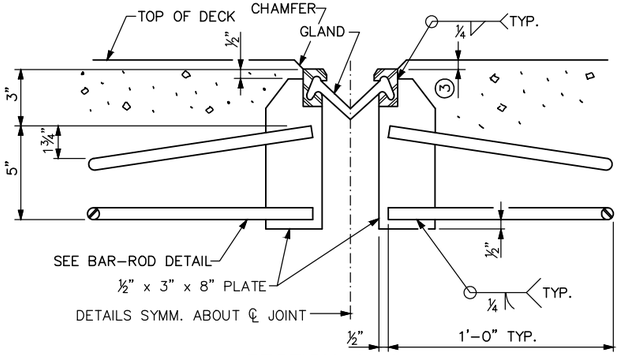
SECTION C-C



BENT STUD DETAIL

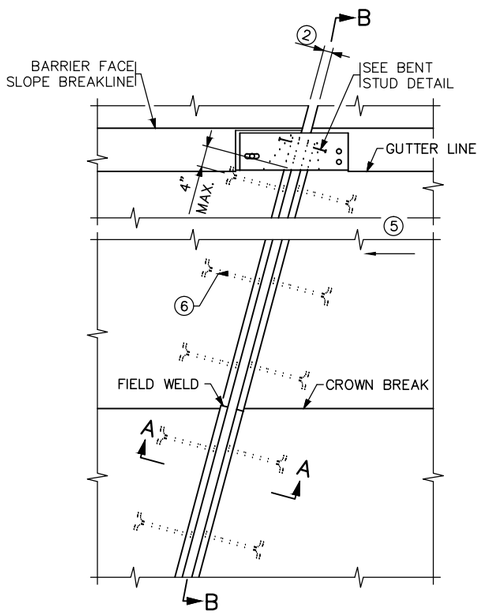


DETAIL "B"



SECTION A-A

(SEE SHEET 230 FOR SECTION THROUGH TYPE TROUGH JOINT)



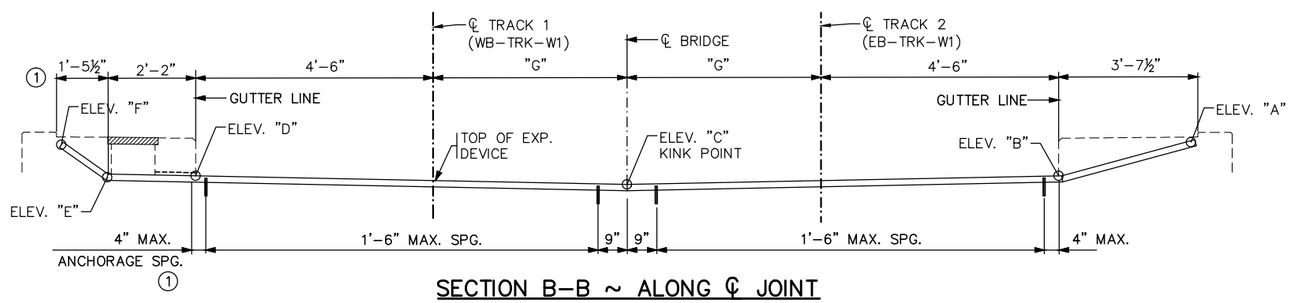
PLAN VIEW @ EXPANSION DEVICE

WITH STRAIGHT DEVICE

MODIFICATIONS:
REVISED SECTION B-B. ADDED TABLE OF ELEVATIONS AND DIMENSIONS. REMOVED BARRIER DETAILS AND CURVED DEVICE PLAN.

TABLE OF EXPANSION JOINT ELEVATIONS AND DISTANCES

	(TYPE)	"A"	"B"	"C"	"D"	"E"	"F"	"G"	② @ 45° F	② @ 90° F
SOUTH ABUTMENT	TYPE 5	919.01	918.00	917.77	918.00	918.05	919.01	7'-0"	2¾"	2"
PIER 2	TYPE 5	913.78	912.78	912.55	912.78	912.82	913.78	7'-0"	3"	2"
PIER 5	TYPE 5	900.77	899.77	899.54	899.77	899.81	900.77	7'-2¼"	2⅞"	2"
NORTH ABUTMENT	TYPE 5	894.61	893.61	893.37	893.61	893.65	894.61	7'-4½"	2¾"	2"



SECTION B-B ~ ALONG ℄ JOINT

NOTE: SEE "TABLE OF ELEVATIONS" ABOVE.

GENERAL NOTES

EXPANSION JOINT DEVICE AND EXPANSION JOINT COVER PLATED SHALL BE GROUNDED – SEE GROUNDING PLANS

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

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

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

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

¾" DIA. X 1½" FLATHEAD CAP SCREW WITH ½" SQUARE OR HEX SOCKET PER SPEC 3391. CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW TOP OF PLATE. APPLY BRIDGE BEARING LUBRICANT PER MnDOT APPROVED PRODUCTS LIST TO SCREW THREADS.

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

① DIMENSIONS ARE ALONG CENTERLINE OF JOINT.

② SEE TABLE
~~__AT 45° F; __ AT 90° F. 2" AT ALL TEMPS.~~

③ ⅛" (¼" MAX.). (TYPE 5 JOINT)
~~½" (⅝" MAX.) WHEN SNOWPLOW FINGERS ARE USED. SNOWPLOW FINGERS ARE REQUIRED FOR SKEWS OVER 15° AND LESS THAN 50°. 0" (TYPE TROUGH JOINT)~~

④ SEE SUPERSTRUCTURE DETAILS FOR RADIUS.

⑤ ~~DIRECTION OF DRAINAGE FLOW~~
SEE SHEET NO. __ FOR DIRECTION OF TRAFFIC.

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

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

REVISION: 09-11-2014

APPROVED: NOVEMBER 6, 1995

Donald J. Flemming
STATE BRIDGE ENGINEER

FIG. 5-397.627(MOD.)

CERTIFIED BY _____ _____
LICENSED PROFESSIONAL ENGINEER DATE

NAME: LIC. NO.

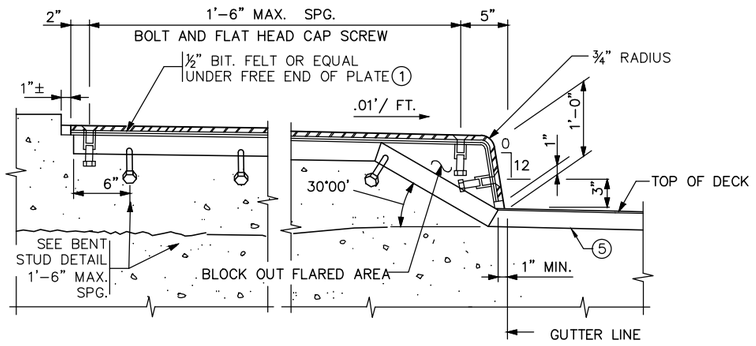
TITLE: WATERPROOF EXPANSION DEVICE 1 ~~(WITH TYPE F BARRIER)~~

DES: APV	DR: KHN	APPROVED:
CHK: ECM	CHK: ECM	

SHEET NO. 104 OF 116 SHEETS

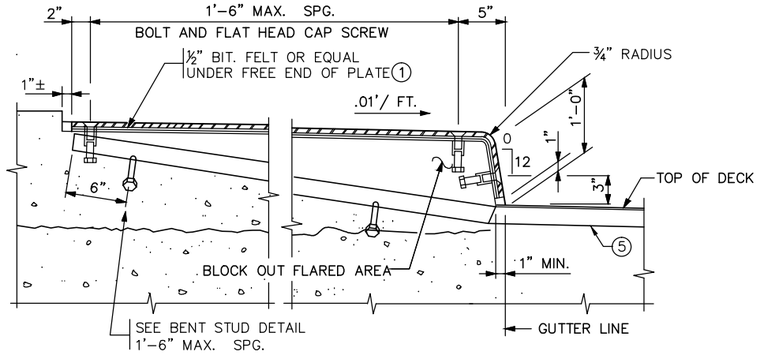
BRIDGE NO. 27R33

Jan. 18 2016 12:33 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-BDTL-Fig5-397_627.dwg By: kucera



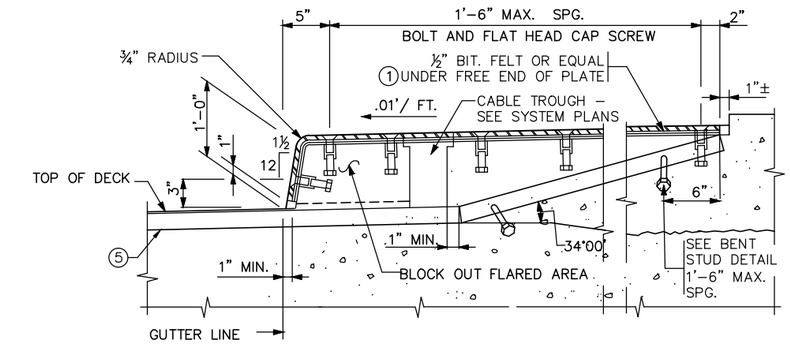
SECTION THROUGH EAST SIDEWALK – OPTION 1

(LOOKING DOWNSTATION)



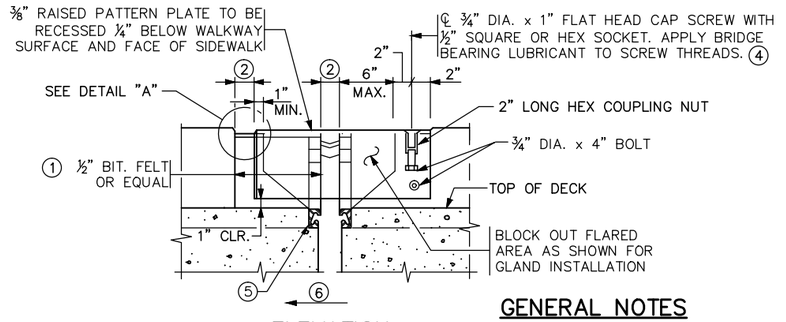
SECTION THROUGH EAST SIDEWALK – OPTION 2

(LOOKING DOWNSTATION)



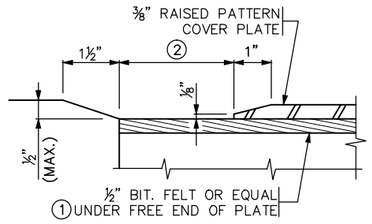
SECTION THROUGH WEST SIDEWALK

(LOOKING DOWNSTATION, AT EXPANSION JOINT WITH CABLE TROUGH)



ELEVATION

RAISED SIDEWALK DETAILS



DETAIL "A"

GENERAL NOTES

SEE STANDARD FIGURE 5–397.627 FOR ADDITIONAL DETAILS AND NOTES.

¾" DIA. X 1" FLAT HEAD CAP SCREW WITH ½" SQUARE OR HEX SOCKET PER SPEC 3391. CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW TOP OF PLATE. APPLY BRIDGE BEARING LUBRICANT TO SCREW THREADS. (4)

(1) USE LARGEST SINGLE PIECE POSSIBLE. USE OF SMALL PIECES OR SCRAPS SECURED TOGETHER IS PROHIBITED.

(2) SEE NOTE (2) ON STANDARD FIGURE 5–397.627.

(3) ⅛" (¼" MAX.) (TYPE 5)
0" (TYPE TROUGH)

(4) LUBRICANT PER MnDOT APPROVED/QUALIFIED PRODUCTS LIST: BRIDGE – BRIDGE BEARING LUBRICANT.

(5) TYPE 5 EXPANSION JOINT SHOWN, TYPE TROUGH JOINT SIMILAR.

(6) DIRECTION OF DRAINAGE FLOW.

MODIFICATIONS:
REMOVED SECTIONS THROUGH BARRIERS.
REMOVED SECTIONS THROUGH MEDIANS.
MODIFIED SLOPE AT FACE OF SIDEWALK.

REVISION: 11–06–2013

APPROVED: SEPTEMBER 26, 2003
STATE BRIDGE ENGINEER

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

TITLE: WATERPROOF EXPANSION DEVICE 2
(RAISED MEDIAN OR SIDEWALK WITH PARAPET)

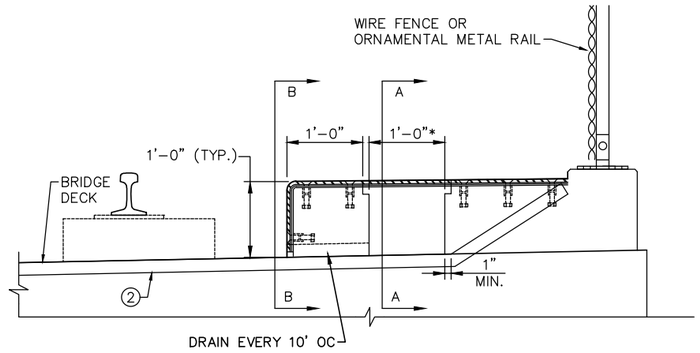
DES: APV	DR: KHN	APPROVED:
CHK: ECM	CHK: ECM	

SHEET NO. 105 OF 116 SHEETS

FIG. 5–397.630 (MOD.)

BRIDGE NO. 27R33

Jan. 18 2016 12:33 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-BDTL-Fig5-397_630.dwg By: kucera

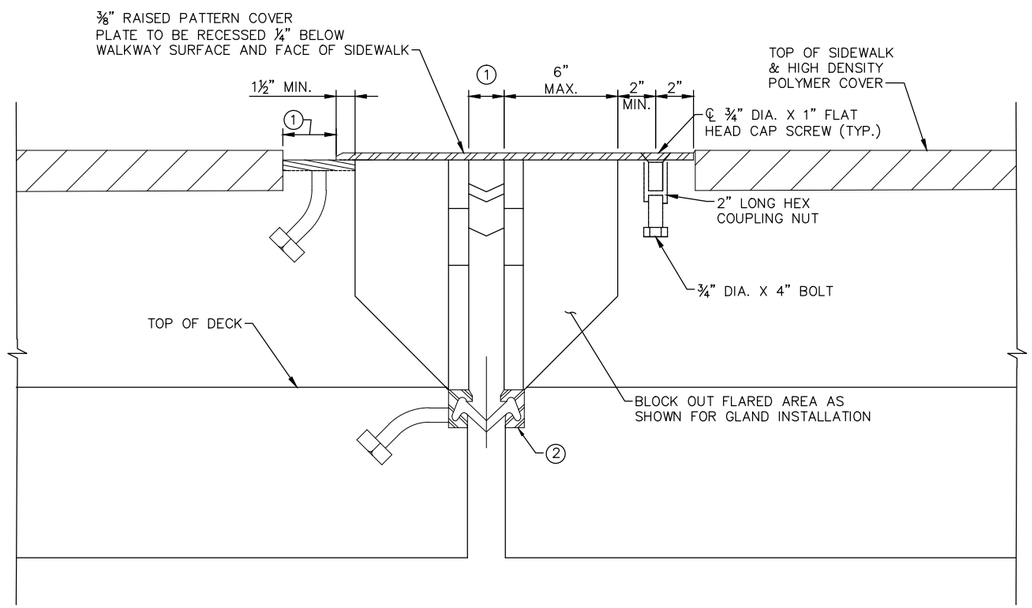


SECTION THROUGH WEST SIDEWALK
(LOOKING DOWNSTATION)

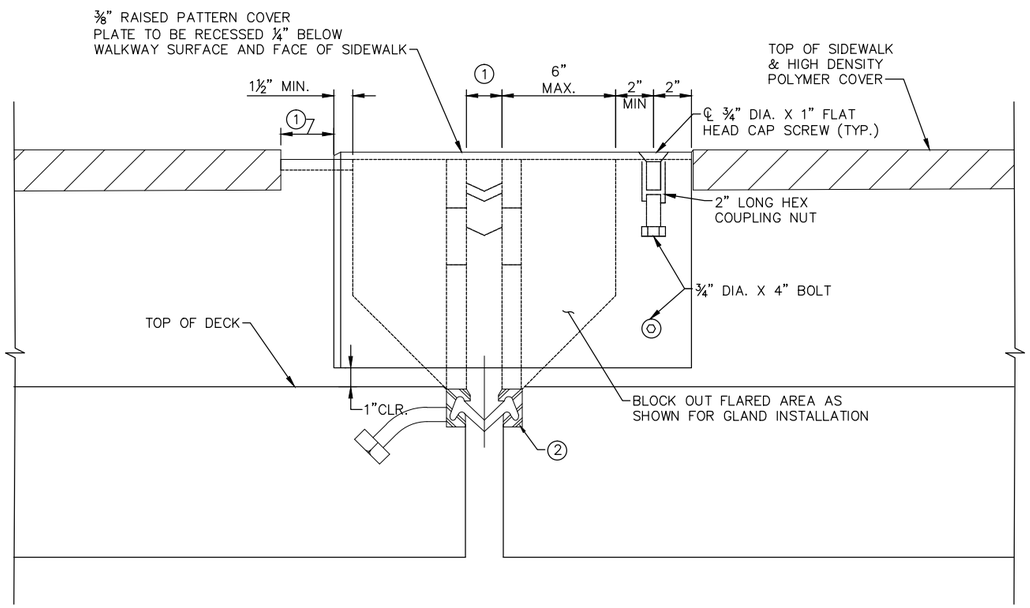
NOTES:

SEE SHEET 228 FOR ADDITIONAL DETAILS FOR RAISED PATTERN PLATE AT EXPANSION DEVICE.

(1) SEE NOTE (2) ON STANDARD FIGURE 5-397.627, SHEET 225.



SECTION A-A



SECTION B-B

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: APV | CHECKED BY: ECM
DRAWN BY: KHN | CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extention

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
WATERPROOF EXPANSION DEVICE 3

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-EXP01

SHEET 106 OF 116

Jan, 18 2016 12:33 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submitt By: kucera

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 Hegeon
STATE BRIDGE ENGINEER

AS–BUILT DETAILS
(AS NEEDED)

FIG. 5–397.900

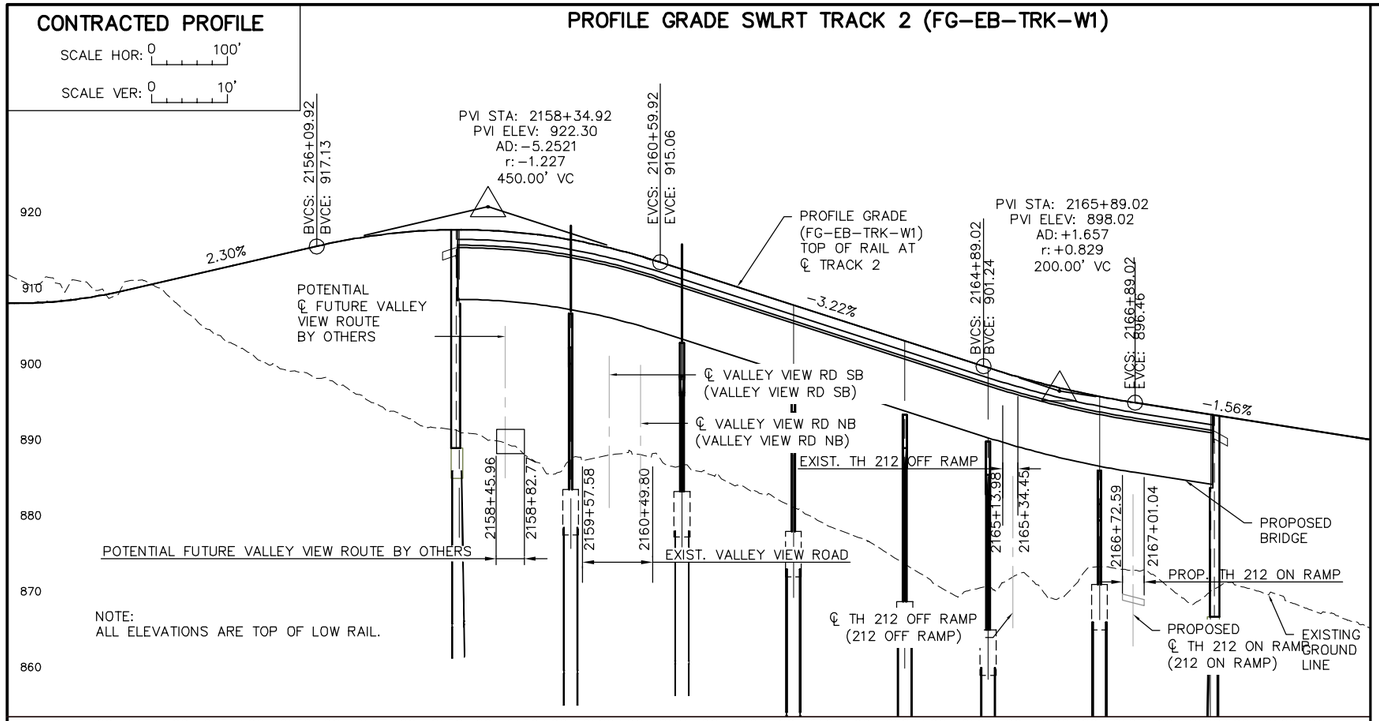
TITLE:	DES: APV	DR: KHN	APPROVED:	BRIDGE NO.
AS–BUILT BRIDGE DATA	CHK: ECM	CHK: ECM		27R33
	SHEET NO. 107 OF 116 SHEETS			

CONTRACTED PROFILE

SCALE HOR: 0 100'

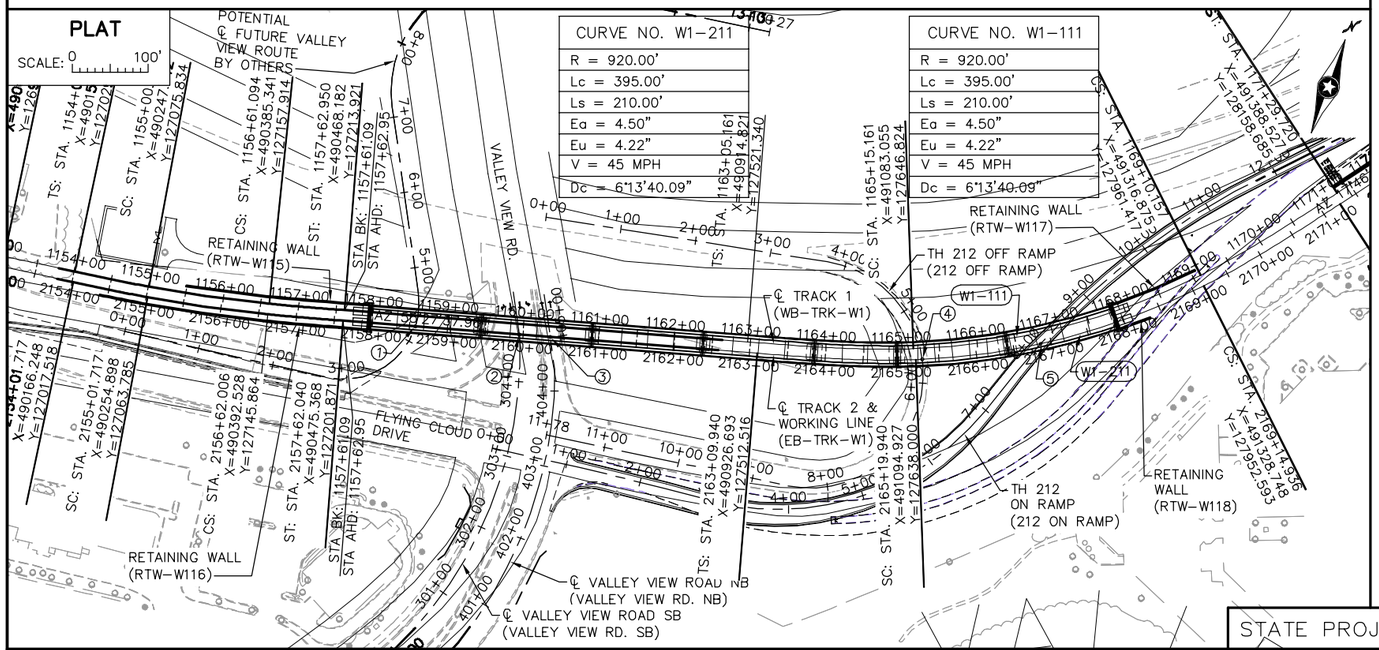
SCALE VER: 0 10'

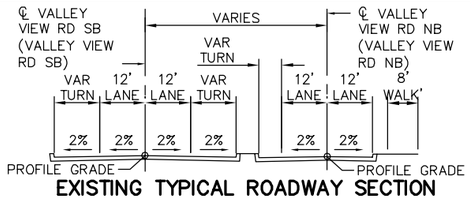
PROFILE GRADE SWLRT TRACK 2 (FG-EB-TRK-W1)



PLAT

SCALE: 0 100'





EXISTING TYPICAL ROADWAY SECTION VALLEY VIEW ROAD

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
℄ TRACK 2 (EB-TRK-W1) P.O.T. STA. 2158+57.62
℄ POTENTIAL FUTURE VALLEY VIEW ROUTE BY OTHERS P.O.C. STA. 4+21.53
X = 490554.098
Y = 127256.060
ANGLE: 76°55'12.7" TTC

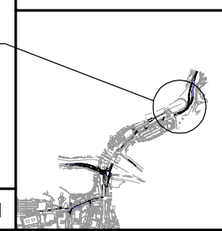
(2) CONTROL POINT
℄ TRACK 2 (EB-TRK-W1) P.O.T. STA. 2159+95.05
℄ SB VALLEY VIEW ROAD P.O.C. STA. 304+61.93
X = 490667.310
Y = 127333.984
ANGLE: 82°54'13.0" TTC

(3) CONTROL POINT
℄ TRACK 2 (EB-TRK-W1) P.O.T. STA.2160+36.00
℄ NB VALLEY VIEW ROAD (VALLEY VIEW RD NB) P.O.C. STA. 404+71.82
X = 490701.037
Y = 127357.198
ANGLE: 12°19'35.8" TTC

(4) CONTROL POINT
℄ TRACK 2 (EB-TRK-W1) P.O.T. 2165+28.30
℄ TH 212 OFF RAMP (212 OFF RAMP) P.O.C. STA. 5+68.382
X = 491101.207
Y = 127643.525
ANGLE: 94°54'51.8" TTC

(5) CONTROL POINT
℄ TRACK 2 (EB-TRK-W1) P.O.T. 2166+86.12
℄ TH 212 ON RAMP (212 ON RAMP) P.O.C. STA. 8+13.89
X = 491209.679
Y = 127757.886
ANGLE: 35°28'36.5" TTC

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 (PARTICULARLY STRUCTURES WHICH CARRY HIGH WATER WITHOUT OVERFLOW OF ROADWAY) : GIVEN LOCATION,TYPE, LENGTH, HEIGHT ABOVE HIGH WATER, CROSS-SECTIONAL AREA ETC.
3. APPARENT HIGHWATER ELEVATION _____ OBTAINED FROM:
4. OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY.

HYDRAULIC ENGINEERS RECOMMENDATION

DATE: XX-XX-XXXX

STREAM OR DITCH DESIGNATION: XXX

DRAINAGE AREA: XXX SQ. MI.

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

MAXIMUM OBSERVED HIGHWATER ELEVATION: XXX.X FT.

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

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

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

FLOWLINE ELEVATION: XXX FT. SKEW ANGLE: XX

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

SCOUR CONFIRMATION RECOMMENDATION

DATE: XX-XX-XXXX

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

BRIDGE SURVEY = SHEETS MADE FROM 20XX XXXXXI SURVEYS

1ST BENCH MARK
MnDOT NAME: 2763 A 1
APPROX. NORTHING (HEN. COUNTY COORDINATES): 127407.646
APPROX. EASTING (HEN. COUNTY COORDINATES): 490672.548
BENCHMARK ELEVATION (NAVD88): 888.994

2ND BENCH MARK
MnDOT NAME: 2763 A 2
APPROX. NORTHING (HEN. COUNTY COORDINATES): 127559.699
APPROX. EASTING (HEN. COUNTY COORDINATES): 490380.189
BENCHMARK ELEVATION (NAVD88): 882.531

INDEX MAP

BRIDGE SURVEY

0.1 MI. WEST OF FLYING CLOUD DRIVE AND VALLEY VIEW ROAD IN EDEN PRAIRIE

SOUTHWEST LRT OVER VALLEY VIEW ROAD

SEC 11 & 12 T 116 N R 22 W

CITY OF EDEN PRAIRIE HENNEPIN COUNTY

BRIDGE 27R33

STATE PROJECT NO. 9909-01

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AECOM PARSONS BRINCKERHOFF

DESIGNED BY: APV CHECKED BY: ECM
DRAWN BY: RCK CHECKED BY: ECM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE SURVEY 1

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-SUR1

SHEET 108 OF 116

Jan, 18 2016 12:31 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUR1.dwg By: nicolay

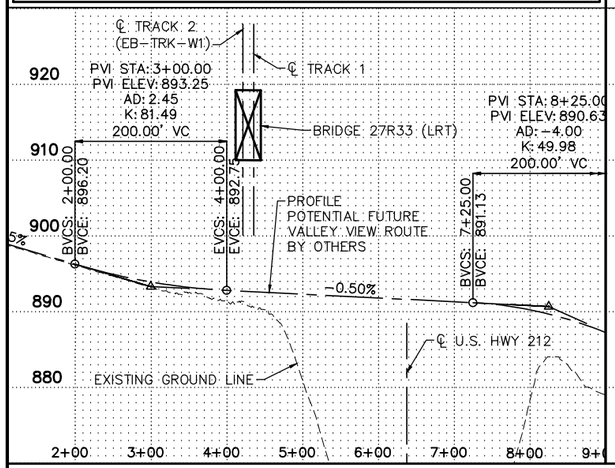
PROFILES

CONTRACTED PROFILE

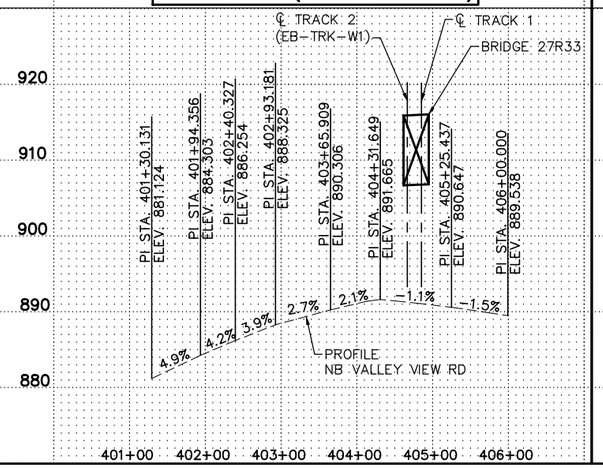
SCALE HOR: 0 100'

SCALE VER: 0 10'

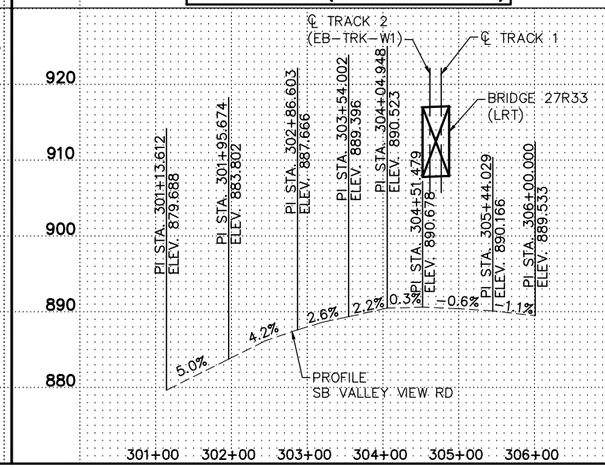
PROFILE GRADE (POTENTIAL FUTURE VALLEY VIEW ROUTE BY OTHERS)



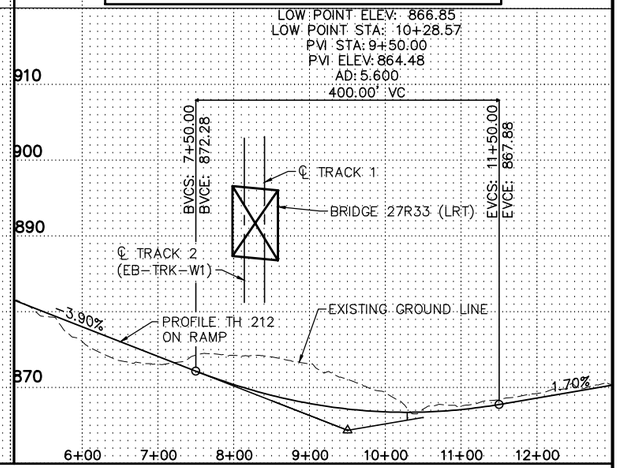
PROFILE GRADE (VALLEY VIEW RD NB)



PROFILE GRADE (VALLEY VIEW RD SB)



PROFILE GRADE (TH 212 ON RAMP)



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DESIGNED BY: APV CHECKED BY: ECM

DRAWN BY: RCK CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

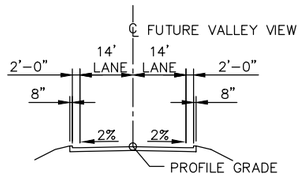
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE SURVEY 2

DISCIPLINE: STRUCTURES

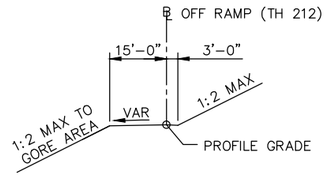
SHEET NAME: W1-STU-BRG-FCVV-SUR2

SHEET 109 OF 116

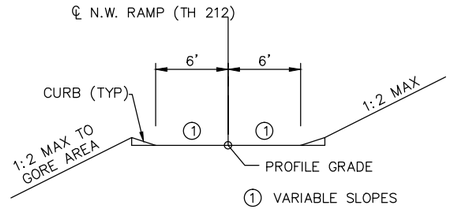
Jan, 18 2016 12:34 pm v:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUR2.dwg By: kucera



POTENTIAL FUTURE VALLEY VIEW
ROUTE BY OTHERS



EXISTING TH212 OFF RAMP



PROPOSED TYPICAL ROADWAY
SECTION ON RAMP (T.H. 212)

Jan, 18 2016 12:35 pm v:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUR6.dwg By: kucera

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DESIGNED BY: APV | CHECKED BY: ECM
DRAWN BY: RCK | CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

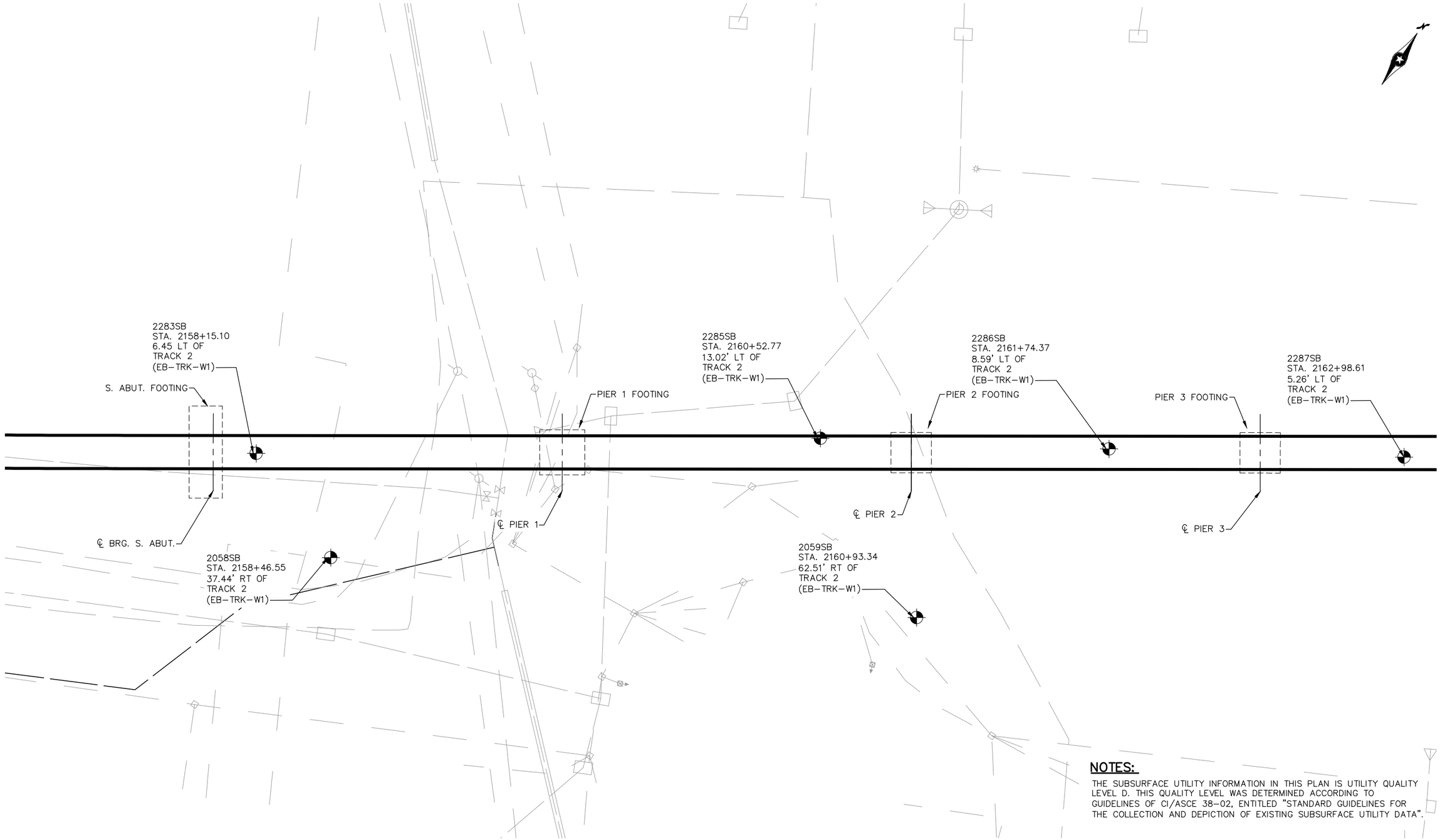
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE SURVEY 3

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-SUR6

SHEET 110 OF 116



NOTES:

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

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DESIGNED BY: APV | CHECKED BY: ECM
DRAWN BY: KHN | CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

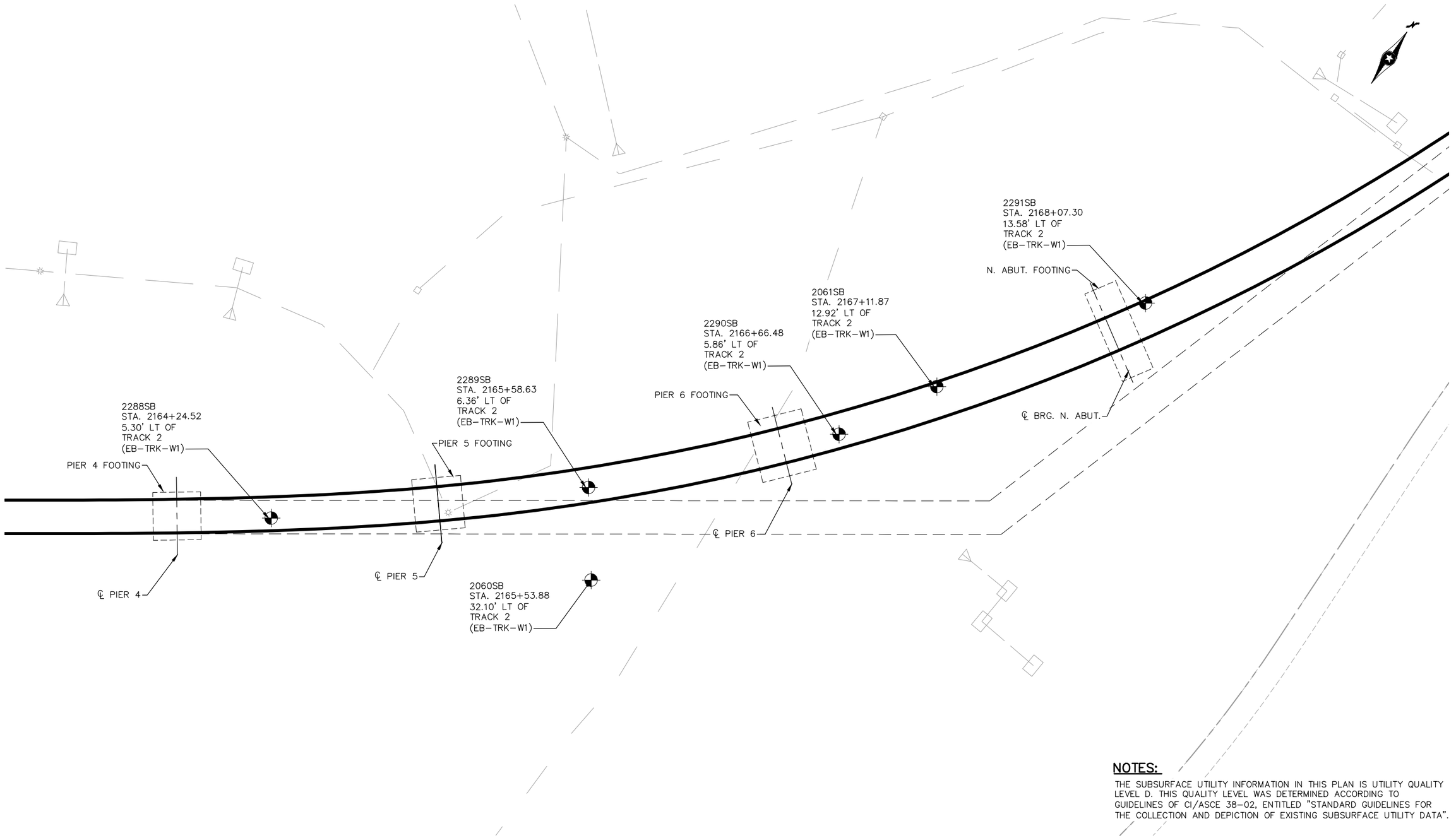
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE SURVEY PLAN 1

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-SUR4-1

SHEET 111 OF 116

Jan, 18 2016 12:41 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUR4.dwg By: kucera



NOTES:

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DESIGNED BY: APV | CHECKED BY: ECM
DRAWN BY: KHN | CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

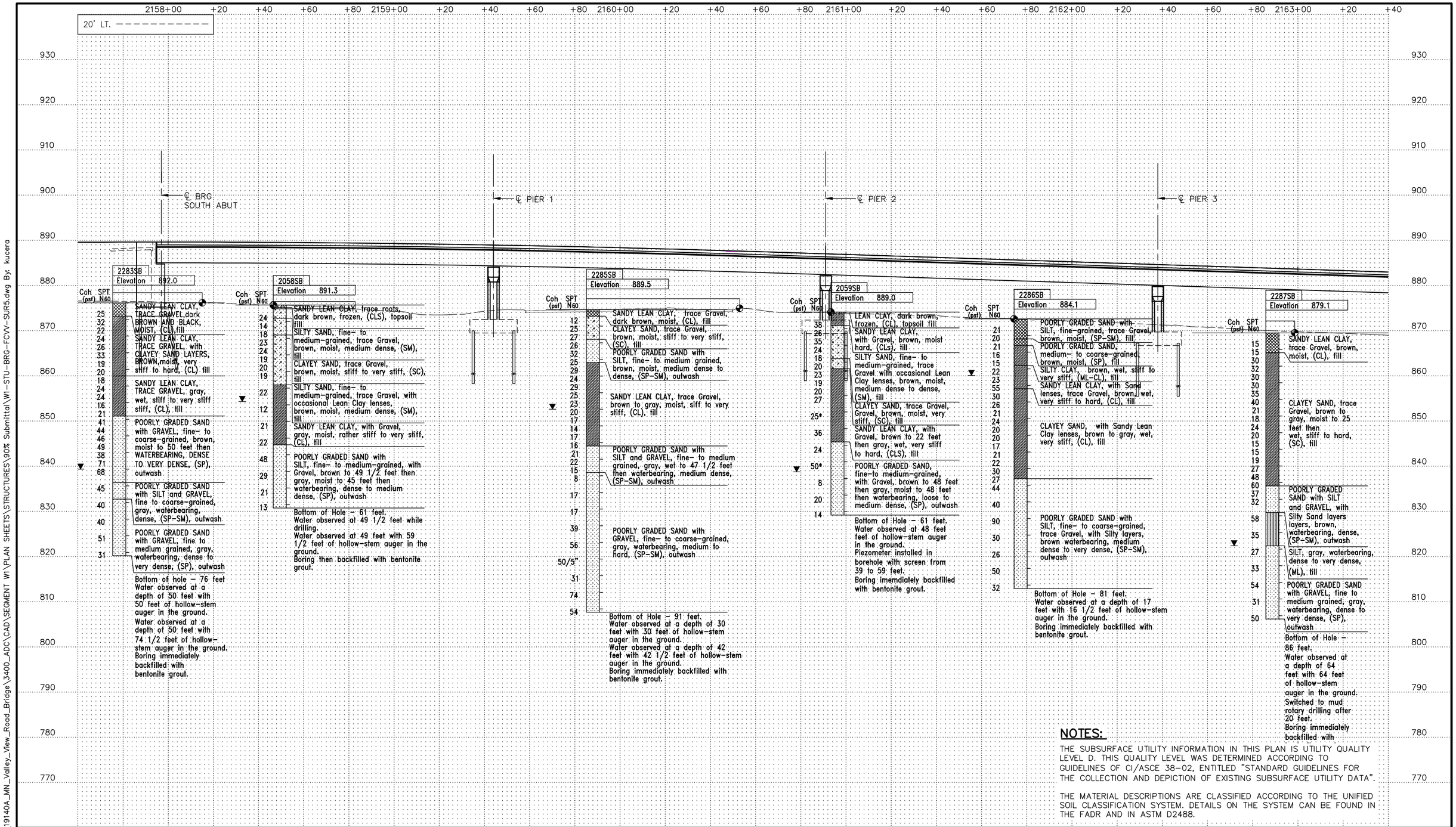
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE SURVEY PLAN 2

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-SUR4-2

SHEET 112 OF 116

Jan, 18 2016 12:46 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUR4.dwg By: kucera



NOTES:

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

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

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DESIGNED BY: APV CHECKED BY: ECM
DRAWN BY: KHN CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

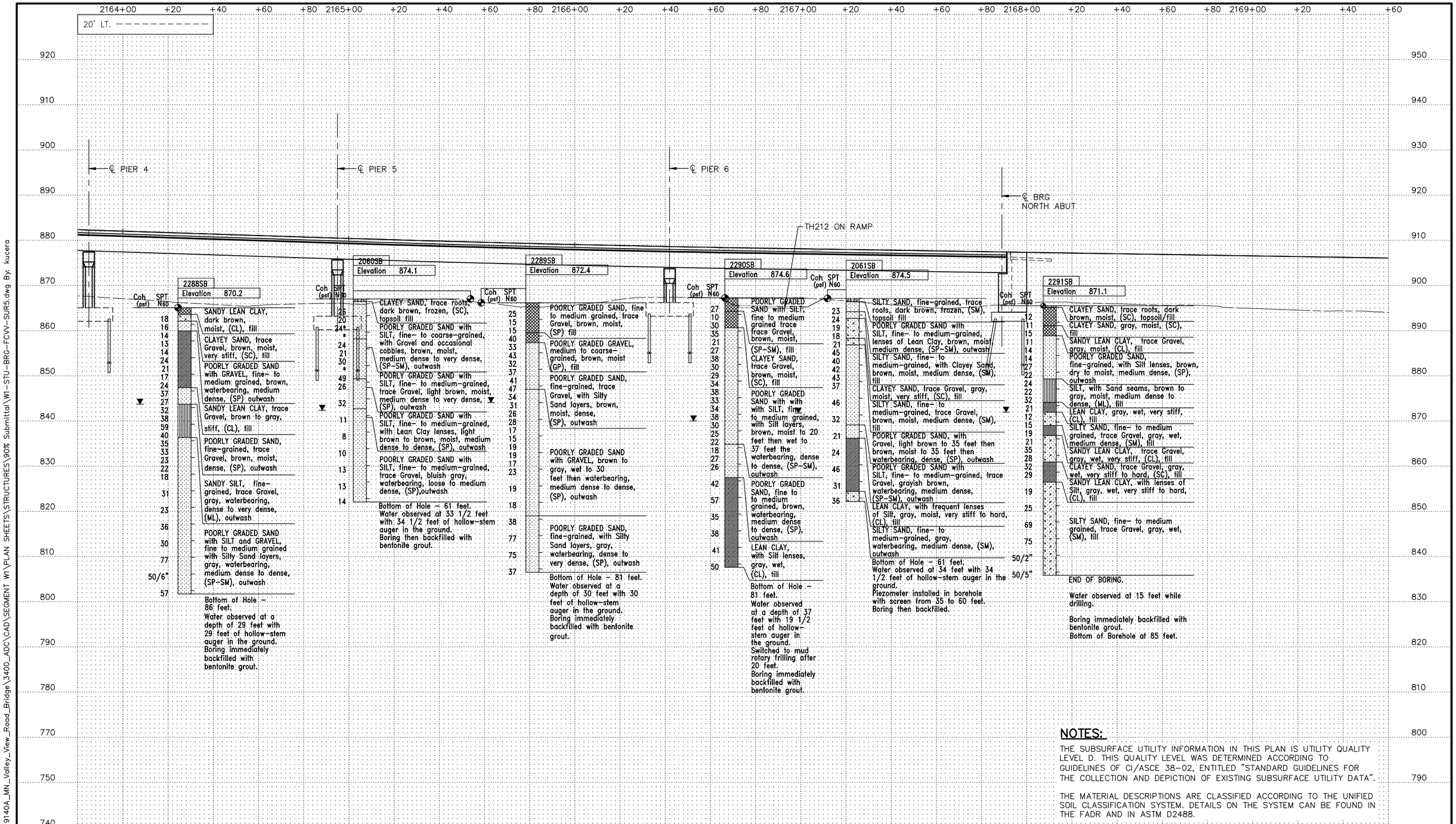
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE SURVEY PROFILE 1

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUR5-1

SHEET 113 OF 116

Jan, 18 2016 12:47 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUR5.dwg By: kucera



NOTES:

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

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DESIGNED BY: APV CHECKED BY: ECM
DRAWN BY: KHN CHECKED BY: ECM

AECOM PARSONS BRINCKERHOFF

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

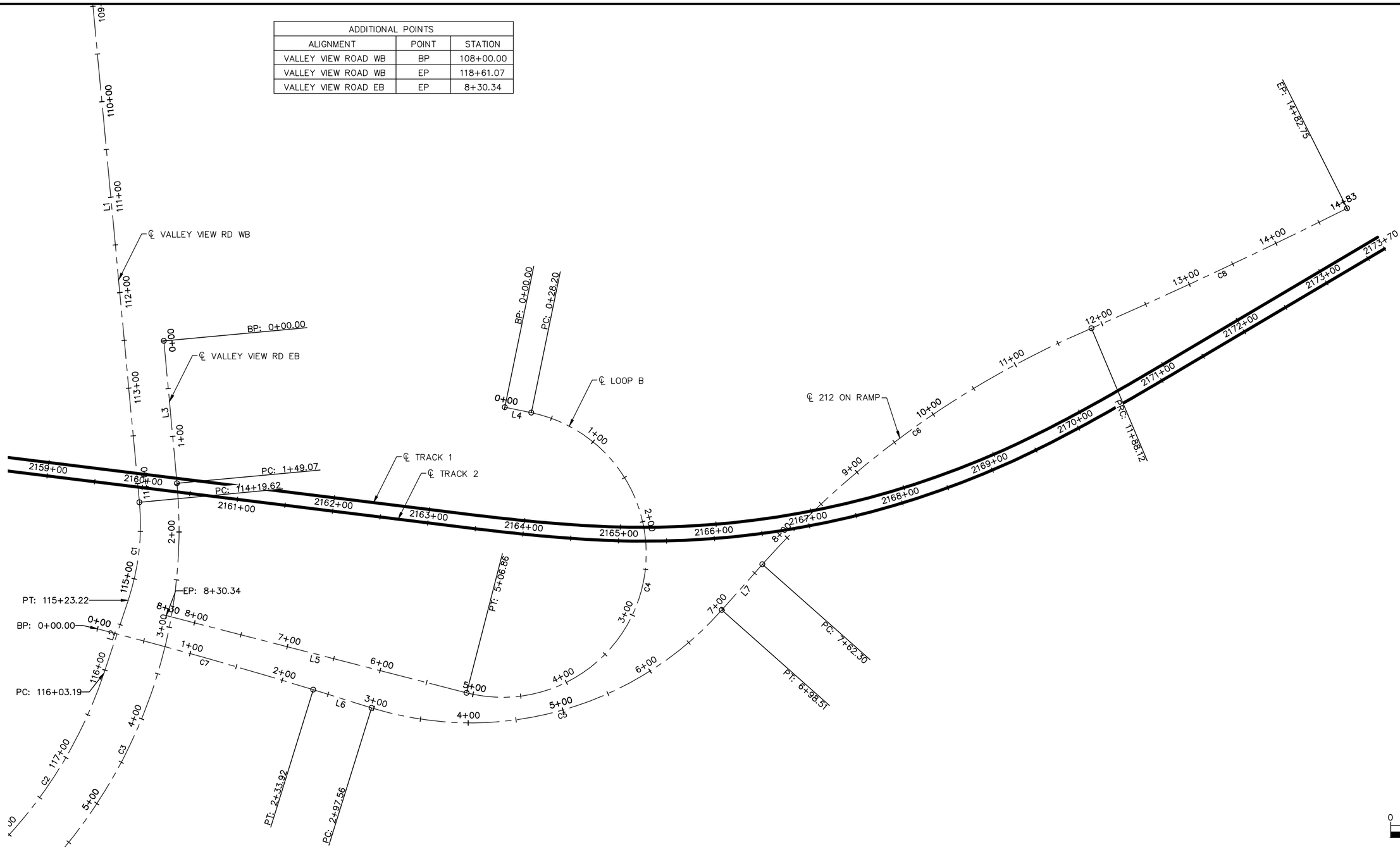
CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE SURVEY PROFILE 2

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUR5-2

SHEET 114 OF 116

Jan, 18 2016 12:47 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\90% Submittal\W1-STU-BRG-FCVV-SUR5.dwg By: kucera

ADDITIONAL POINTS		
ALIGNMENT	POINT	STATION
VALLEY VIEW ROAD WB	BP	108+00.00
VALLEY VIEW ROAD WB	EP	118+61.07
VALLEY VIEW ROAD EB	EP	8+30.34



0 25 50 100
HORIZONTAL SCALE IN FEET

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM SRF Consulting Group, Inc.

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

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

DISCIPLINE: CIVIL

SHEET NAME: W2-STU-BRID-FCVV-ALG-1

SHEET 115 OF 116

Jan, 21 2016 02:28 pm V:\3400_ADC\CAD\SEGMENT W1\EXHIBITS\CIVIL\EXHB-W1-CIV-ROAD-ALGN-MNDOT.dwg By: dkruger

ALIGNMENT DATA
VALLEY VIEW RD WB

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
L1	108+00.00	114+19.62							619.62	127746.44	490226.58	127323.36	490679.28	133°03'50"
C1	114+19.62	115+23.22	114+72.17		23°44'31"	22°55'05.92"	250.00	52.55	103.59	127323.36	490679.28	127239.17	490738.37	133°03'50" 156°48'20"
L2	115+23.22	116+03.19							79.97	127239.17	490738.37	127165.66	490769.86	156°48'20"
C2	116+03.19	118+61.07	117+35.46		31°26'13"	12°11'26.13"	470.00	132.28	257.88	127165.66	490769.86	126913.17	490803.00	156°48'20" 188°14'34"

ALIGNMENT DATA
VALLEY VIEW RD EB

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
L3	0+00.00	1+49.07							149.07	127466.15	490586.65	127364.19	490695.39	133°09'14"
C3	1+49.07	7+26.40	4+71.41		63°29'26"	10°59'50.17"	521.00	322.34	577.33	127364.19	490695.39	126834.88	490838.22	133°09'14" 196°38'40"

ALIGNMENT DATA
LOOP B

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
L4	0+00.00	0+28.20							28.20	127650.50	490898.56	127664.60	490922.98	60°00'05"
C4	0+28.20	5+06.86	−60+34.35		182°50'05"	38°11'49.87"	150.00	6062.55	478.66	127664.60	490922.98	127401.24	491066.46	60°00'05" 242°50'10"
L5	5+06.86	8+30.34							323.48	127401.24	491066.46	127253.56	490778.66	242°50'10"

ALIGNMENT DATA
212 ON RAMP

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
C7	0+00.00	2+33.92	1+16.98		2°55'25"	1°14'59.67"	4584.00	116.98	233.92	127195.55	490734.17	127297.44	490944.70	62°42'42" 65°38'07"
L6	2+33.92	2+97.56							63.65	127297.44	490944.70	127323.70	491002.68	65°38'07"
C5	2+97.56	6+98.51	5+23.27		65°38'07"	16°22'12.80"	350.00	225.71	400.94	127323.70	491002.68	127642.53	491208.29	65°38'07" 0°00'00"
L7	6+98.51	7+62.30							63.80	127642.53	491208.29	127706.32	491208.29	0°00'00"
C6	7+62.30	11+88.12	9+78.81		25°32'55"	5°59'59.99"	954.93	216.50	425.81	127706.32	491208.29	128118.16	491301.66	0°00'00" 25°32'55"
C8	11+88.12	14+82.75	13+35.47		2°59'13"	1°00'49.75"	5651.47	147.35	294.63	128118.16	491301.66	128388.82	491418.00	24°45'16" 21°46'02"

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM SRF Consulting Group, Inc.

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
ALIGNMENT TABULATION

DISCIPLINE: CIVIL

SHEET NAME: W2-STU-BRID-FCVV-TAB-1

SHEET 116 OF 116

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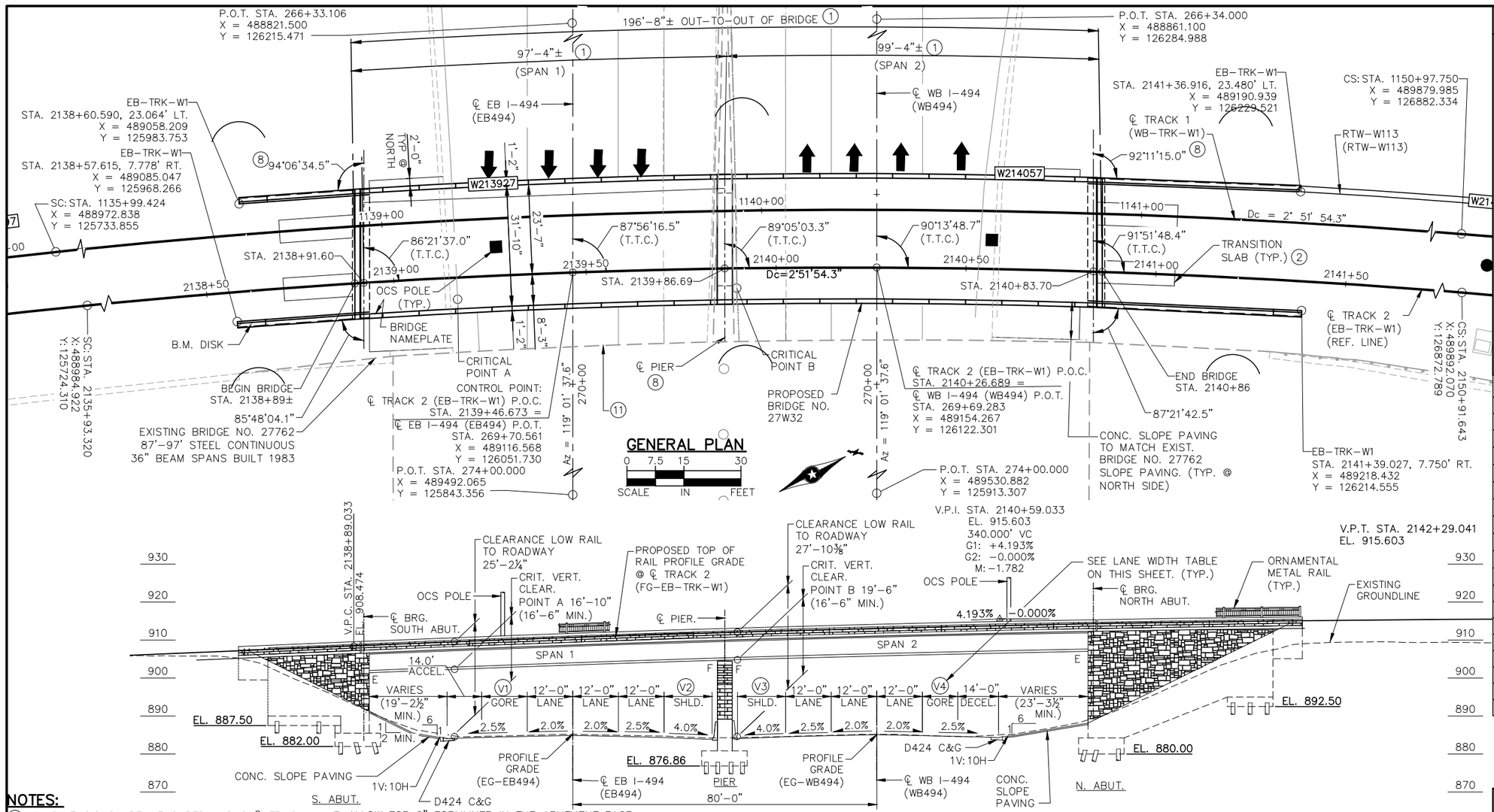

DESIGN DATA

SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0)

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

LOAD AND RESISTANCE FACTOR DESIGN METHOD

LIVE LOADS:

TRACK – LRV & MV DIAGRAM SHOWN ON SHEET GPE-003.

DEAD LOAD INCLUDES 70 PSF ALLOWANCE FOR FUTURE BALLAST INCREASE

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

PRESTRESSED CONCRETE:
f'c = 9.0 ksi n = 1
fpu = 270 ksi 0.6" DIA. LOW RELAXATION STRANDS
0.75 fpu FOR INITIAL PRESTRESS

DESIGN SPEED: OVER = 50 MPH (LRT)
UNDER = 70 MPH

APPROXIMATE DECK AREA: 6,660 SQ. FT.

LIST OF SHEETS

NOTES:

(1) ALL DIMENSIONS ARE MEASURED ALONG ℄ TRACK (EB-TRK-W1).

(2) SEE TRACK PLANS FOR TRANSITION SLAB DETAILS.

3. UTILITIES ARE NOT SHOWN FOR CLARITY. SEE SHEET BOR-001 FOR IN PLACE UTILITIES.

4. VIBRATION MONITORING TO BE PROVIDED DURING PILE DRIVING (SEE SPECIAL PROVISIONS).

5. SEE SHEET ACSD FOR SUPPORT OF EXCAVATION (S.O.E.). REQUIRED PER CONTRACTOR DESIGN.

6. NORTH ABUTMENT TO USE CELLULAR CONCRETE BACKFILL. SEE DETAIL ON SHEET ACSD.

7. ALLOW FOR 2" FORMLINER IN THE ABUTMENT FACE AND WINGWALLS.

(8) SUBSTRUCTURES SET PARALLEL AT 299°01'37.6".

9. FOR STRAY CURRENT PROTECTION SYSTEM INFORMATION AND DETAILS, SEE SHEET WO-SYS-CORR-DTL-001 TO 015 AND NOTES ON SHEET GPE-003.

10. WHEN A SHEET NAME IS BEING REFERRED TO IN THE PLANS, AN ABBREVIATED ANNOTATION WILL BE USED. EXAMPLE, IF THE SHEET NAME IS "CBR27W32-BRG-SUP-003", THE SHEET NAME WILL BE NOTED AS "SUP-003".

(11) MOVE SIGN FROM EXSITING BRIDGE TO BR27W32.

GENERAL ELEVATION
0 7.5 15 30
SCALE IN FEET

LANE WIDTH TABLE

LOCATION	LANE WIDTH AT W. EDGE OF DECK	LANE WIDTH AT E. EDGE OF DECK
(V1)	8'-4"	6'-6"
(V2)	13'-5"	12'-6"
(V3)	13'-3"	12'-9"
(V4)	6'-0"	3'-7"

ROAD DESIGN UNIT:
VICTOR VASAS 651-234-7671

BRIDGE DESIGN UNIT:
JESSICA DUNCAN 651-366-4487

2040 PROJECTED TRAFFIC VOLUMES

ROADWAY OVER		ROADWAY UNDER
N/A	AADT	118,000
N/A	DHV	9700
N/A	ADTT	7400

BRIDGE NO. 27W32

SOUTHWEST LRT OVER I-494
0.2 MI. E OF JCT. I-494/T.H. 212 IN EDEN PRAIRIE

95'-0" – 97'-0" PRESTRESSED CONCRETE BEAM SPANS
RAILWAY 34'-2"
SKEW VARIES

BRIDGE I.D. NO. 501

GENERAL PLAN AND ELEVATION

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

APPROVED: _____
STATE BRIDGE ENGINEER DATE

JOB NO. T9N635 STATE PROJECT NO. 9909-01 MNDOT REVIEW: DAN PRATHER

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METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
GENERAL PLAN & ELEVATION

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-GPE-001

SHEET 1 OF 54

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SCHEDULE OF QUANTITIES

SPEC. SECTION	ITEM	UNIT	QUANTITY
–	CONSTRUCT BRIDGE 27W32	LUMP SUM	1

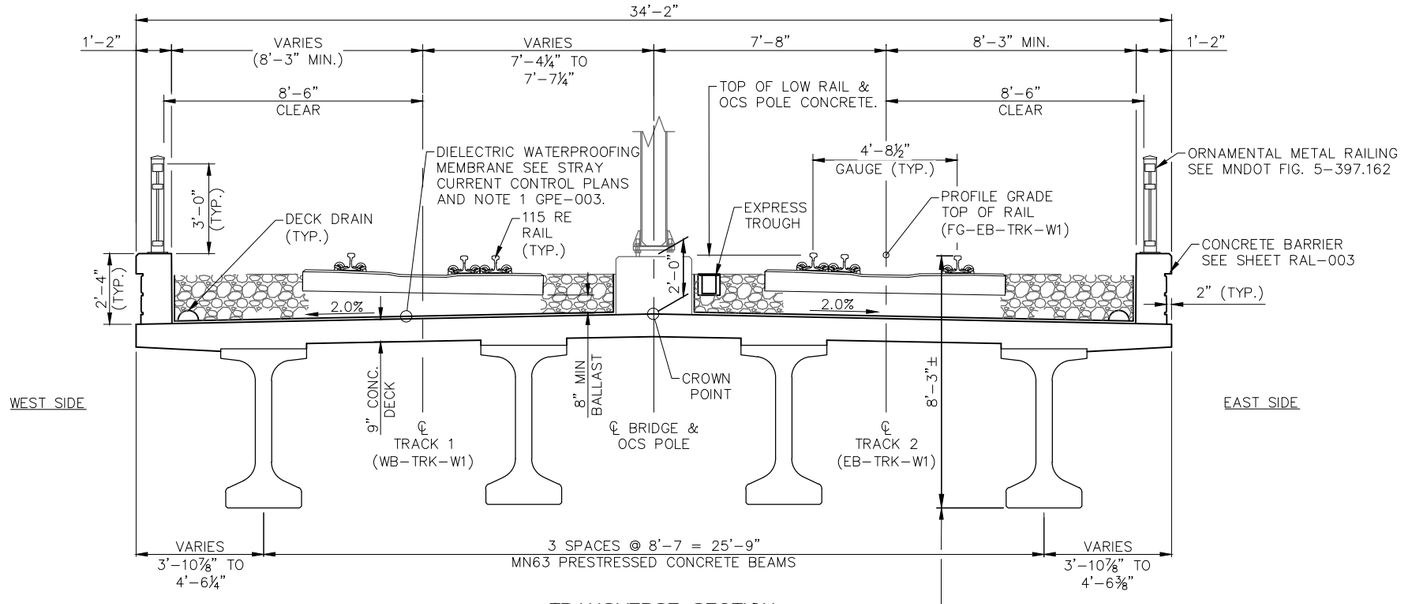
COMPONENT ITEM SUMMARY (BRIDGE 27W32)

	SPEC. SECTION (3)	ITEM	UNIT (2)	QUANTITY (2)
	2301	BRIDGE APPROACH PANEL	EACH	4
	2401	STRUCTURAL CONCRETE (3B52)	CU YD	285
	2401	STRUCTURAL CONCRETE (1G52)	CU YD	274
	2401	STRUCTURAL CONCRETE (3Y42)	CU YD	228
	2401	TYPE MOD P-1 (TL-2) RAILING CONCRETE 3S52	LIN FT	559
	2401	REINFORCEMENT BARS	POUND	165,200
	2402	BEARING ASSEMBLY	EACH	16
	2402	ORNAMENTAL METAL RAILING T-4	LIN FT	559
(1)	2402	EXPANSION JOINT DEVICE	LIN FT	72
	2405	PRESTRESSED CONCRETE BEAMS MN63	LIN FT	773
	2405	DIAPHRAGMS FOR TYPE MN63 PRESTRESSED BEAMS	LIN FT	155
	2451	AGGREGATE BACKFILL	CU YD	1,100
	2452	C-I-P CONCRETE PILING DELIVERED 12"	LIN FT	2,620
	2452	C-I-P CONCRETE PILING DRIVEN 12"	LIN FT	2,620
	2452	C-I-P CONCRETE TEST PILE 40 FT LONG 12"	EACH	2
	2452	C-I-P CONCRETE TEST PILE 45 FT LONG 12"	EACH	4
	2514	CONCRETE SLOPE PAVING	SQ YD	220
	–	CELLULAR CONCRETE BACKFILL	CU YD	910

(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 27W32 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 27W32. REFER TO MNDOT STANDARD SPECIFICATION OR SPECIAL PROVISION FOR TECHNICAL SPECIFICATION REQUIREMENTS FOR ALL PROVISION OTHER THAN MEASUREMENT AND PAYMENT REQUIREMENTS.



TRANSVERSE SECTION

0 1.25 2.5 5

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
TRANSVERSE SECTION

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27W32-BRG-GPE-002

SHEET 2 OF 54

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STRAY CURRENT CONTROL NOTES:

1. INSTALL ELECTRICALLY CONTINUOUS STRAY CURRENT COLLECTION MAT WITH TEST STATIONS AS SHOWN ON SHEETS EO-SYS-CORR-DTL-004 TO 007 ABOVE DIELECTRIC WATERPROOFING MEMBRANE.

2. NO SPECIAL STRAY CURRENT MEASURES REQUIRED IN LRT BRIDGE DECK, BEAMS, ABUTMENT WALL AND WINGWALLS AND PIER COLUMNS OR FOOTINGS. ALL EPOXY COATED REBAR IN THE DECK, BEAMS, ABUTMENT WALL AND WINGWALLS AND PIER COLUMNS 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 STEEL SHELLS OF THE CIP PILES.

3. BLACK REBAR IN ABUTMENT FOOTINGS SHALL BE MADE ELECTRICALLY CONTINUOUS WITHIN FOOTINGS. SEE SHEET EO-SYS-CORR-DTL-001 AND DETAIL 2 ON EO-SYS-CORR-DTL-013.

4. STEEL SHELLS OF CIP PILES IN ABUTMENT FOOTINGS SHALL BE MADE ELECTRICALLY CONTINUOUS WITH WELDED REBAR IN FOOTINGS. SEE DETAILS ON SHEET EO-SYS-CORR-DTL-008 AND DETAIL 2 ON SHEET EO-SYS-CORR-DTL-013.

5. LONGITUDINAL REBAR IN TRANSITION SLAB SHALL BE MADE ELECTRICALLY CONTINUOUS WITHIN SLAB. 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. SEE DETAIL 2 ON SHEET EO-SYS-CORR-DTL-001. #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 4 ON SHEET EO-SYS-CORR-DTL-012 AND DETAIL 2 ON SHEET EO-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.

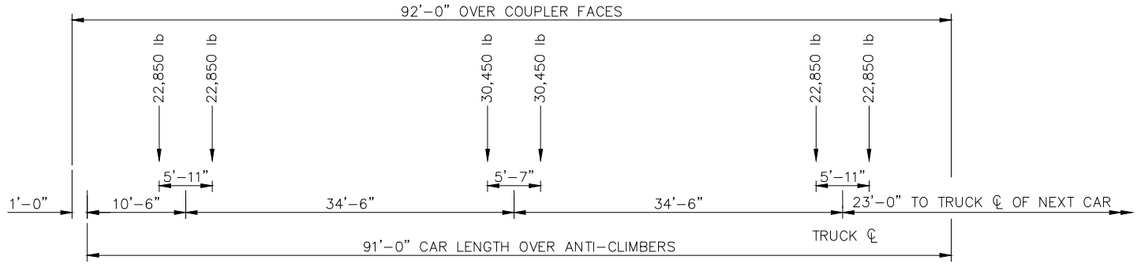
6. INSTALL STRAY CURRENT TEST STATION ALONG BRIDGE HOUSING TEO #1/0 AWG CABLES FROM STRAY CURRENT COLLECTION MAT, TEO #1/0 AWG CABLES FROM WELDED REBAR IN TRANSITION SLAB, ONE 250 MCM CABLE FROM ADJACENT STRAY CURRENT TEST STATION AND ONE 250 MCM CABLE FROM GROUND ROD ARRAY AT BASE OF ABUTMENT. SEE SHEETS EO-SYS-CORR-DTL-004 TO 007 AND DETAILS 2 TO 4 ON SHEET EO-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 ON NORTH AND SOUTH SIDES OF EACH ABUTMENT HOUSING TEO 1/0 AWG CABLES FROM ELECTRICALLY CONTINUOUS REBAR AND STEEL SHELLS OF CIP PILES IN 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 4 ON SHEET EO-SYS-CORR-DTL-003 AND DETAIL 2 ON SHEET EO-SYS-CORR-DTL-013.

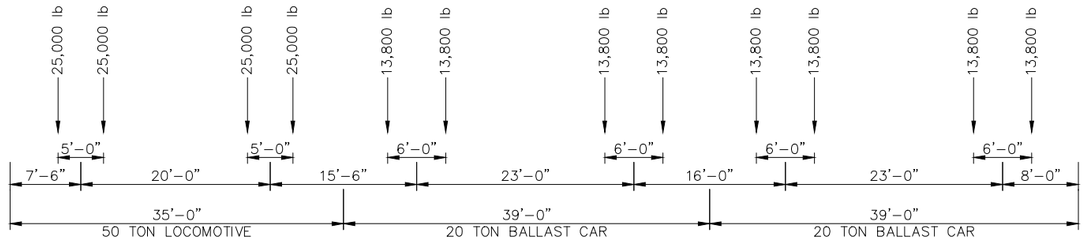
8. INSTALL STRAY CURRENT GROUND ROD ARRAY NEAR BASE OF ABUTMENT. GROUND ROD ARRAY SHOULD EXHIBIT A MAXIMUM RESISTANCE TO EARTH OF 25 OHMS. USE 250 MCM THWN CABLE TO INTERCONNECT GROUND RODS AND AS GROUND CABLE TO STRAY CURRENT COLLECTION MAT TEST STATIONS AT END OF BRIDGE STRUCTURE. 250 MCM CABLE SHALL RUN INSIDE 2" SCH 80 PVC CONDUIT THAT IS EMBEDDED WITHIN ABUTMENT. SEE DETAILS 2 TO 4 ON SHEET EO-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. NO SPECIAL STRAY CURRENT CORROSION CONTROL MEASURES REQUIRED IN REGARD TO MSE WALL RTW W113.



LIGHT RAIL VEHICLE LOADING DIAGRAM



MAINTENANCE TRAIN LOADING DIAGRAM

NOTES:

1. THE LRV TRAIN SHALL CONSIST OF EITHER ONE, TWO OR THREE CARS, WHICHEVER PRODUCES THE MAXIMUM LOAD FOR THE ELEMENT UNDER CONSIDERATION.
2. AXLE LOAD IN POUNDS.
3. LOADING DIAGRAM REPRESENTS MAXIMUM LOAD AT EACH TRUCK IN ACCORDANCE WITH SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0) FIGURE 8-2.

NOTES:

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

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
LOADING DIAGRAM

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27W32-BRG-GPE-003

SHEET 3 OF 54

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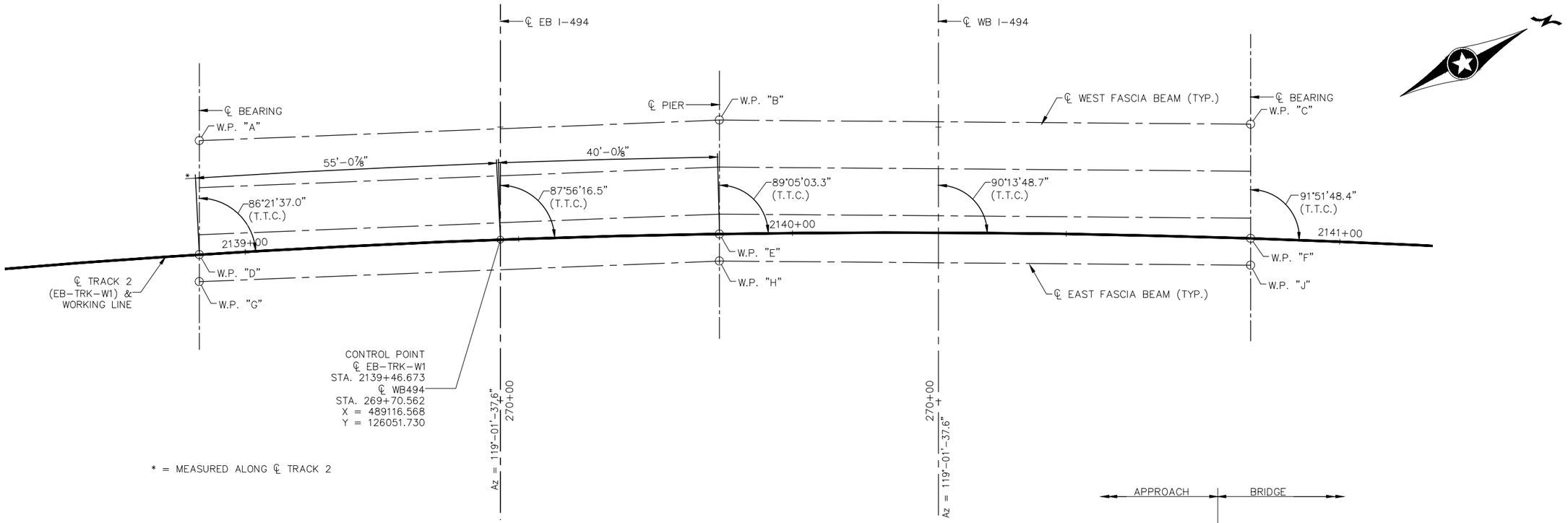
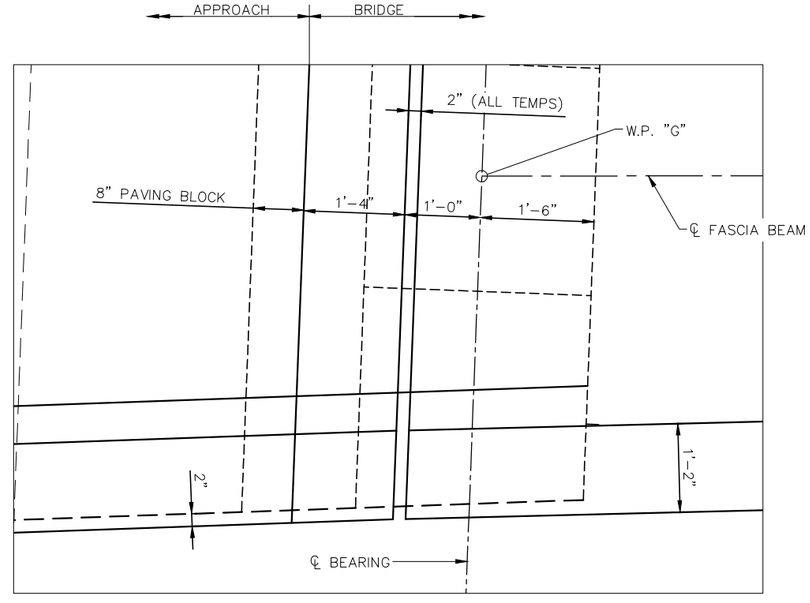


WORKING POINT LAYOUT

	DIMENSIONS BETWEEN WORKING POINTS												ELEVATIONS			
POINT	STATION	X-COORDINATE	Y-COORDINATE	A	B	C	D	E	F	G	H	J	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	POINT
A	2138+92.92	489074.072	126012.411		95.07	192.02	20.82	96.52	192.83		97.52	193.34	906.38	6.72	899.66	A
B	2139+87.02	489116.876	126097.305			97.00	98.13	20.80	99.38	99.48		100.56	909.73	6.60	903.13	B
C	2140+83.03	489164.600	126181.756				193.47	99.05	20.86	194.14	100.17		911.99	6.72	905.27	C
D	2138+91.61	489092.276	126002.309					95.07	192.02	4.93	95.01	192.01				D
E	2139+86.69	489135.068	126087.210						97.00	95.40	4.95	97.17				E
F	2140+83.70	489182.836	126171.636							192.16	97.09	4.89				F
G	2138+91.24	489096.588	125999.916								95.07	192.02	906.32	6.72	899.60	G
H	2139+86.64	489139.392	126084.810									97.00	909.73	6.60	903.13	H
J	2140+83.86	489187.115	126169.262										912.01	6.72	905.29	J

TOP OF DECK TO BRIDGE SEAT						
	DECK THICKNESS	STOOL HEIGHT	BEAM HEIGHT	BEARING HEIGHT	TOTAL INCHES	TOTAL FEET
S. ABUT.	9"	4"	63"	4 5/8"	80 5/8"	6.72'
PIER	9"	4"	63"	3 1/4"	79 1/4"	6.60'
N. ABUT.	9"	4"	63"	4 5/8"	80 5/8"	6.72'



CORNER DETAIL

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BRIDGE LAYOUT

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-SUP-001

SHEET 4 OF 54

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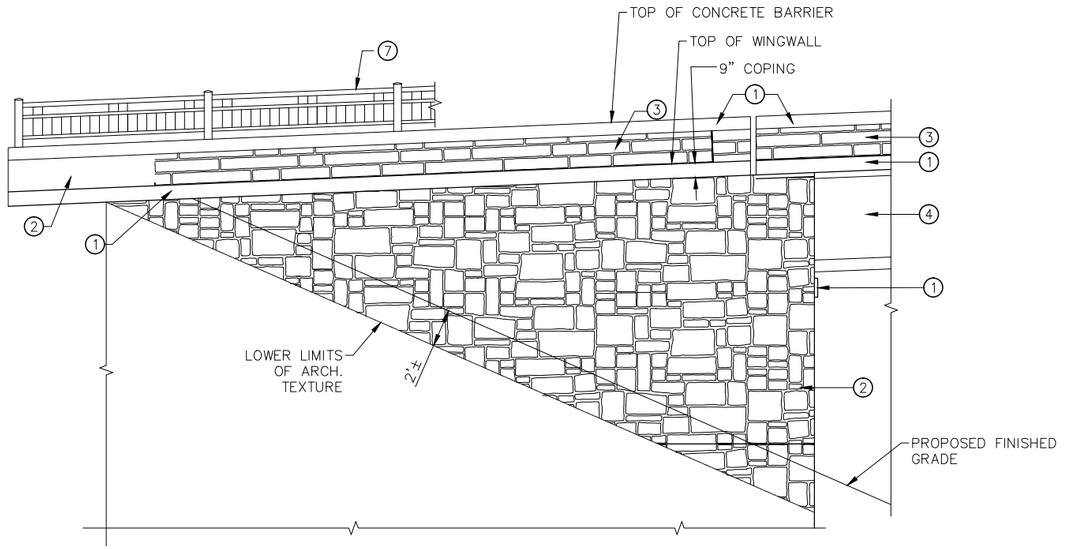
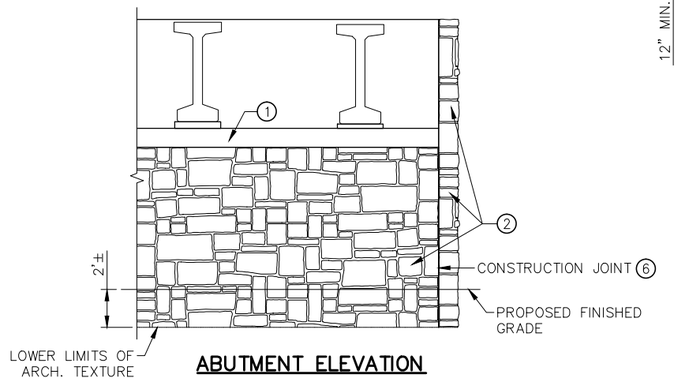
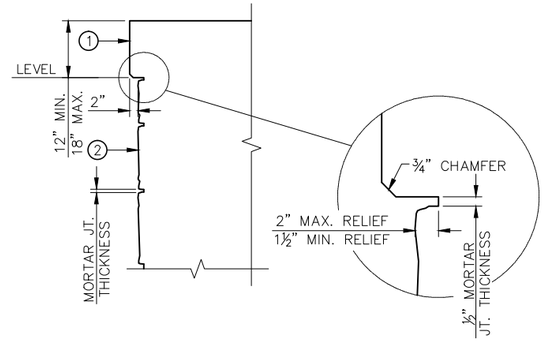


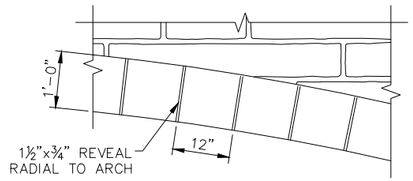
WINGWALL ELEVATION



ABUTMENT ELEVATION

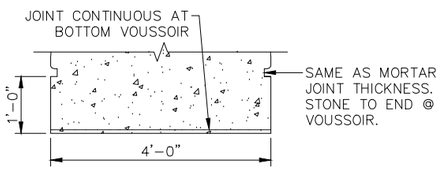


ABUTMENT SECTION

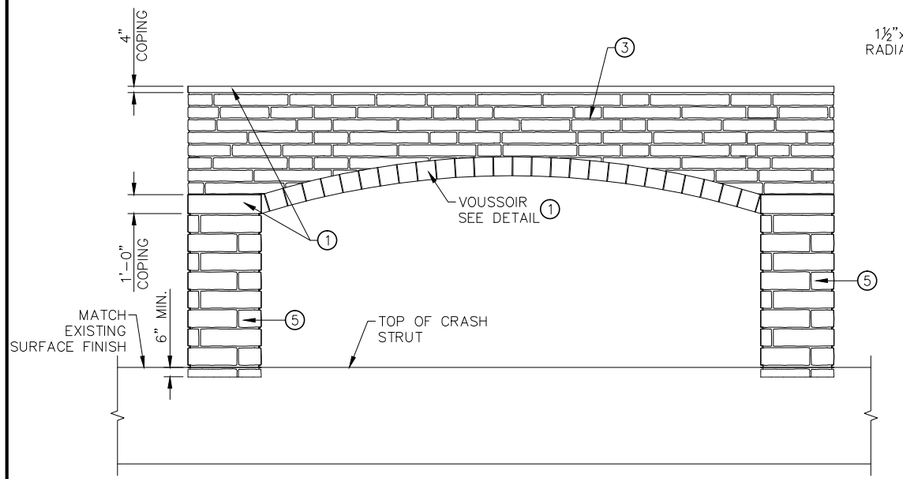


VOUSSOIR DETAIL

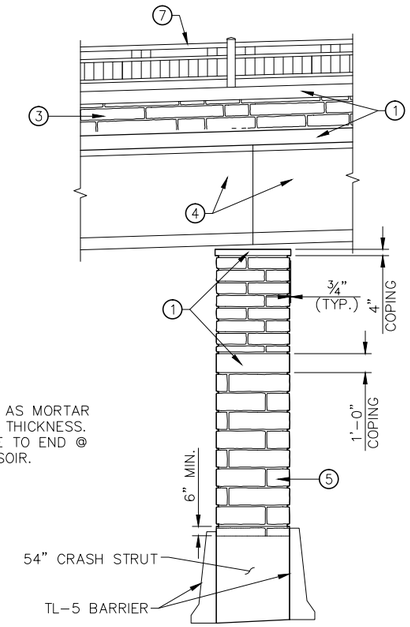
ARCH WITH SIMULATED VOUSSOIR
(SPECIAL SURFACE FINISH TREATMENT)



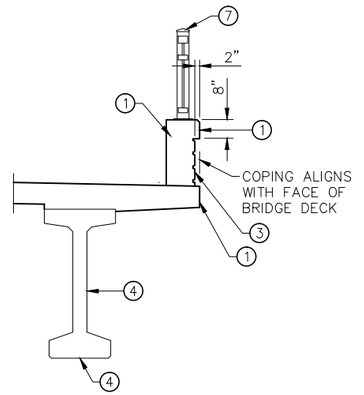
VOUSSOIR SECTION



PIER ELEVATION



PIER COLUMN ELEVATION



PARAPET DETAIL AT BRIDGE

NOTES:

1. SPECIAL SURFACE FINISH SHALL BE PER SB 2401, EXCEPT MNDOT GRAY MODIFIED COLOR SHALL BE USED.
2. ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE), ARCHITECTURAL SURFACE FINISH (MULTI-COLOR) AND ANTI-GRAFFITI COATING.
3. ARCHITECTURAL CONCRETE TEXTURE (CUT STONE) (SMALL), ARCHITECTURAL SURFACE FINISH (MULTI-COLOR) AND ANTI-GRAFFITI COATING.
4. SPECIAL SURFACE FINISH SHALL BE APPLIED TO OUTSIDE FACE OF FASCIA GIRDERS AND THE BOTTOM FLANGE OF ALL GIRDERS. COLOR SHALL BE FEDERAL STD. COLOR 595C, COLOR 33522 (BEIGE). SEE SPEC. SB 2401.
5. ARCHITECTURAL CONCRETE TEXTURE (CUT STONE) (LARGE), ARCHITECTURAL SURFACE FINISH (MULTI-COLOR) AND ANTI-GRAFFITI COATING.
6. MATCH ALL ARCH. CONC. TEXTURE PATTERN ACROSS JOINTS AND AROUND CORNERS.
7. ORNAMENTAL METAL RAILING (MNDOT FIG. 5-397-162). PAINT TO A COLOR MATCHING FEDERAL STANDARD 595C COLOR NO. 10075 (BROWN) WITH GLOSS FINISH. PAINTING SHALL CONFORM TO SB-2478 (SHOP OR FIELD APPLIED ZINC-RICH PAINT SYSTEM) OF THE SPECIAL PROVISIONS, EXCEPT THAT THE BROWN COLOR SHALL BE USED.

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AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

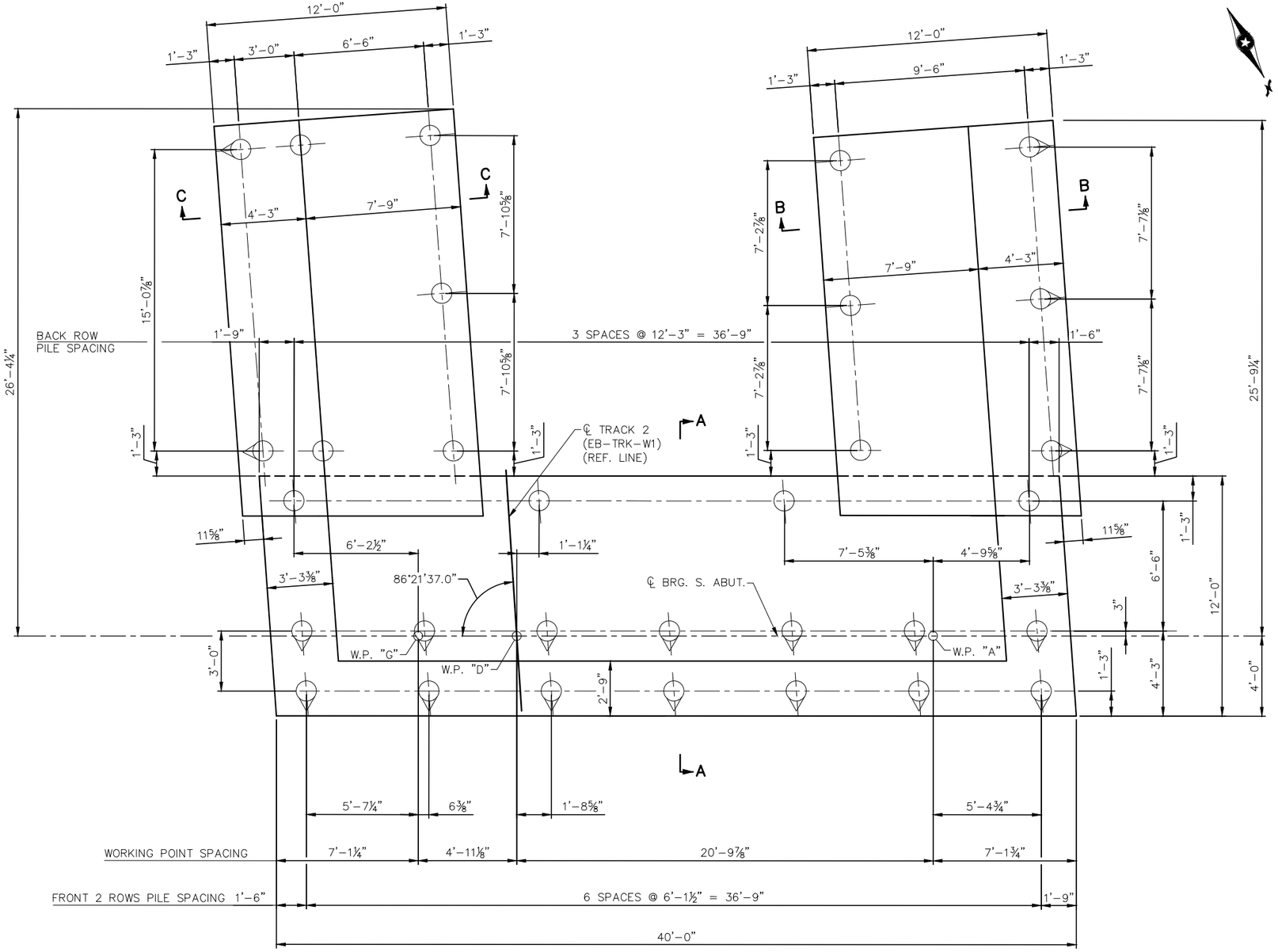
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
AESTHETICS

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ARCH

SHEET 5 OF 54

Jan, 06 2016 12:45 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ARCH.dwg By: knieriemm



FOOTING PLAN

NOTES

FOR SECTIONS A–A, B–B AND C–C SEE SHEET ABUT–004.

PILE NOTES

2 CAST–IN–PLACE CONC. TEST PILE 40 FT. LONG
29 CAST–IN–PLACE CONC. PILES EST. LENGTH 30 FT.
31 CAST–IN–PLACE CONC. PILES REQ'D FOR SOUTH ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES MARKED THUS ◯> TO BE BATTERED 2" PER FOOT IN DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 12" AND WALL THICKNESS OF 0.375 INCHES.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

SOUTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*\ R_n$
PDA	0.65	209

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

SOUTH ABUTMENT COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	123.9
FACTORED LIVE LOAD	11.9
* FACTORED TOTAL LOAD	135.8

* BASED ON STRENGTH I LOAD COMBINATION

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METROPOLITAN COUNCIL

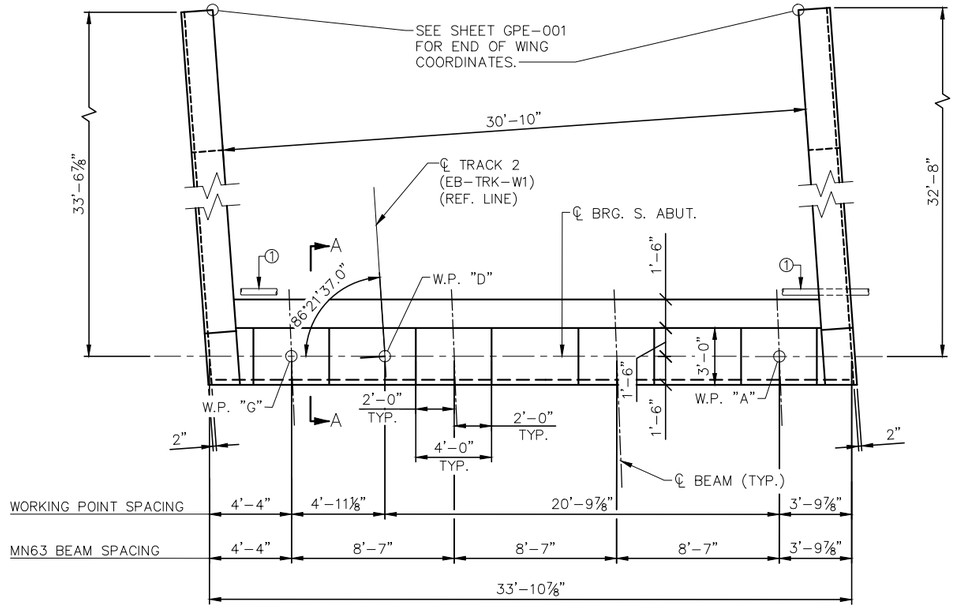
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SOUTH ABUTMENT DETAILS 1

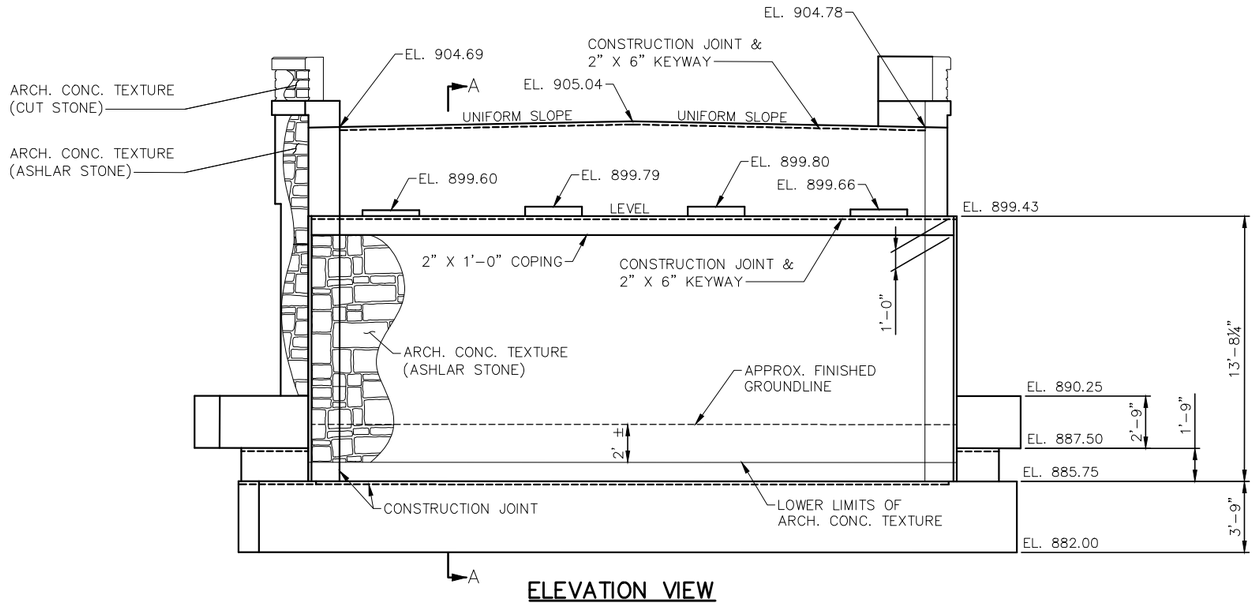
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-001

SHEET 6 OF 54

Jan. 06 2016 12:46 pm v:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-001.dwg By: knieriemm



PLAN VIEW



ELEVATION VIEW

NOTES

FOR SECTION A-A SEE SHEET ABUT-004.

① SEE SHEET DRN-001 FOR SOUTH ABUTMENT DRAINAGE DETAILS.

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METROPOLITAN COUNCIL

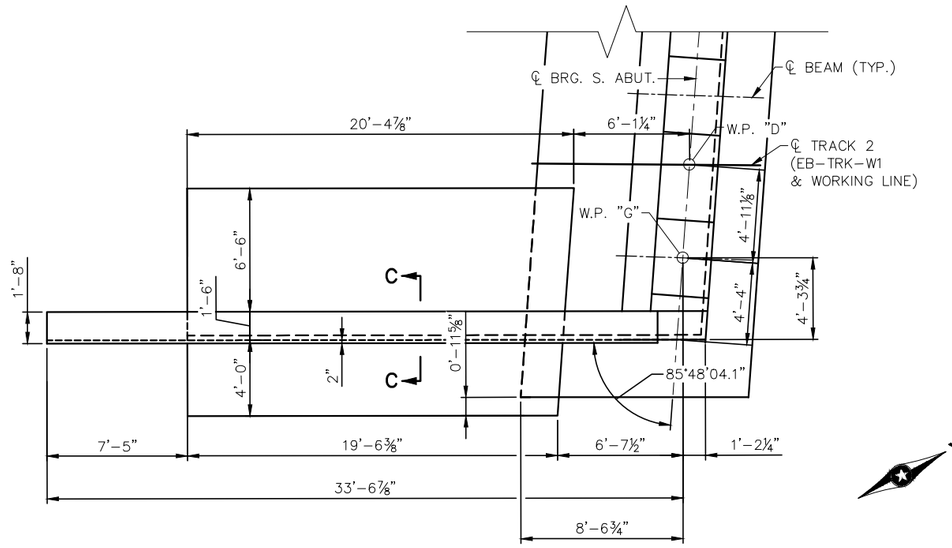
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SOUTH ABUTMENT DETAILS 2

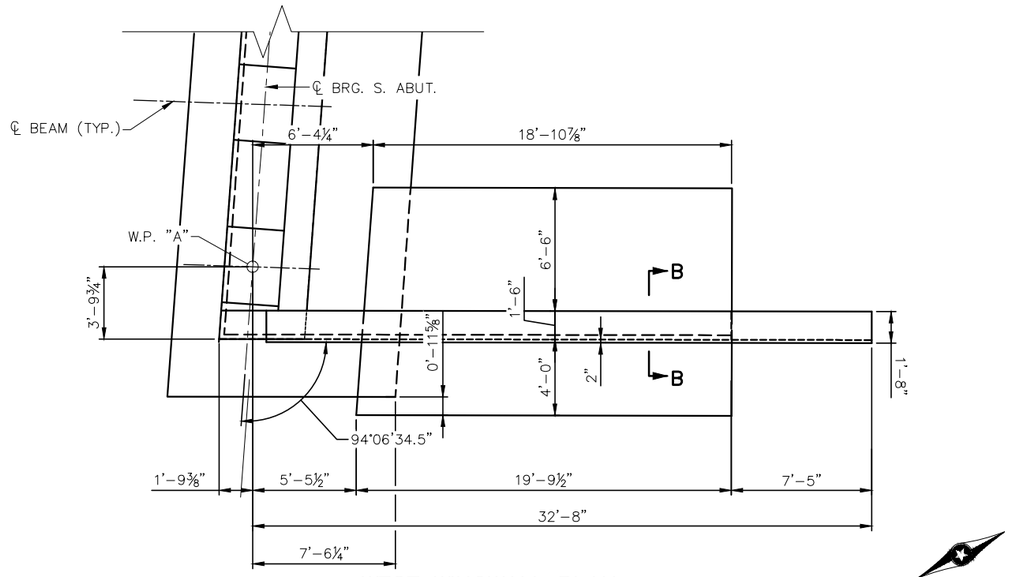
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-002

SHEET 7 OF 54

Jan, 06 2016 12:47 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-002.dwg By: knierlemm



EAST WINGWALL PLAN



WEST WINGWALL PLAN

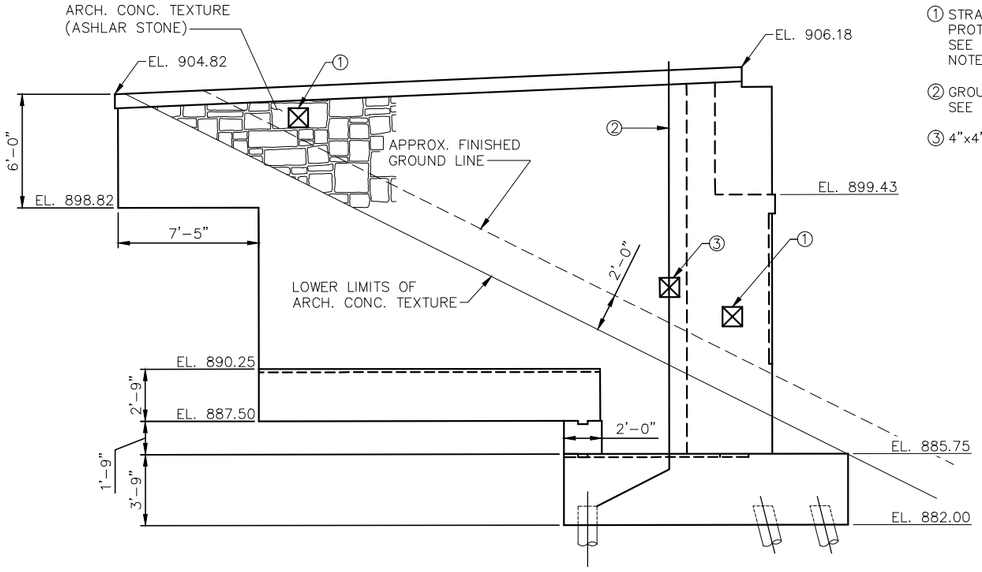
NOTES

FOR SECTION B-B AND C-C SEE SHEET ABUT-004.

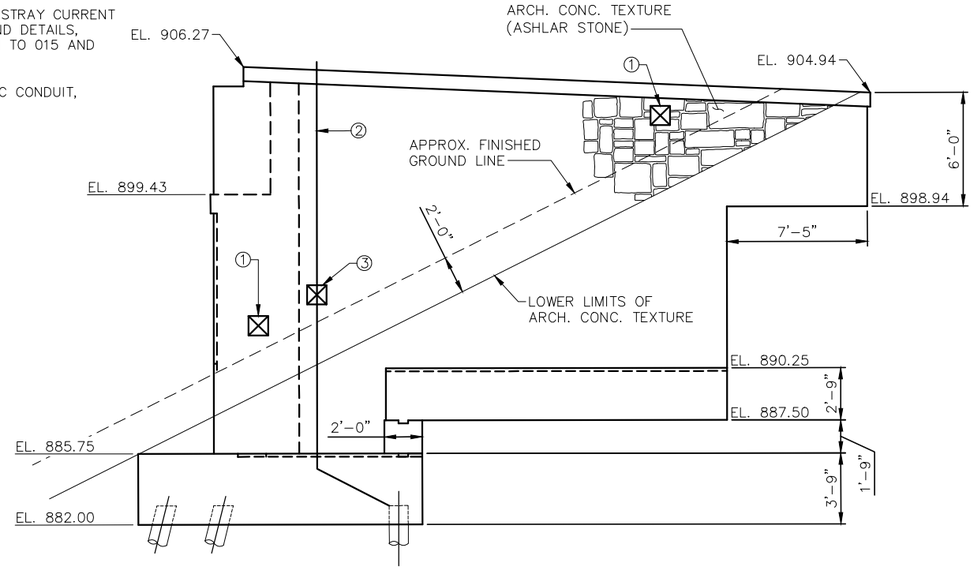
① STRAY CURRENT TEST STATION. FOR STRAY CURRENT PROTECTION SYSTEM INFORMATION AND DETAILS, SEE SHEETS EO-SYS-CORR-DTL-001 TO 015 AND NOTES ON SHEET GPE-003.

② GROUND WIRE PLACED INSIDE 1½" PVC CONDUIT, SEE GROUNDING PLANS.

③ 4"x4"x4" GROUNDING TEST BOX.



EAST WINGWALL ELEVATION



WEST WINGWALL ELEVATION

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SOUTH ABUTMENT DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-003

SHEET 8 OF 54

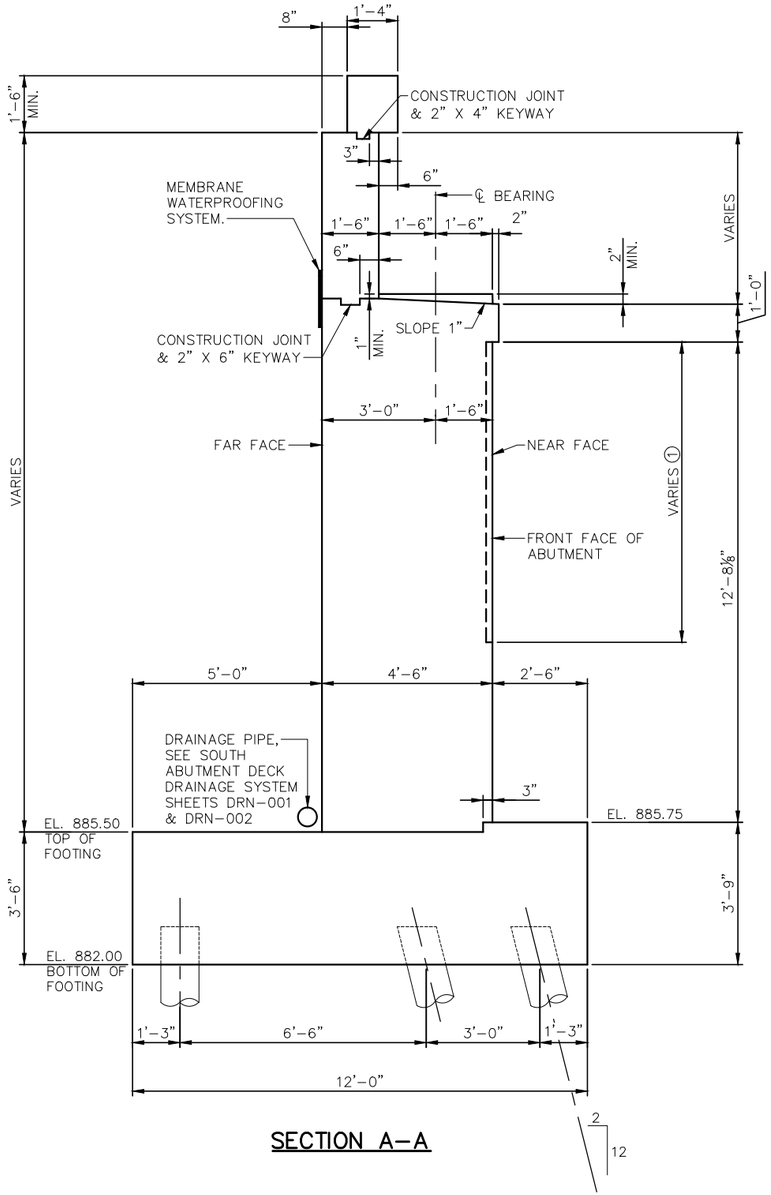
Jan. 06 2016 12:48 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-003.dwg By: knierlemm

NOTES:

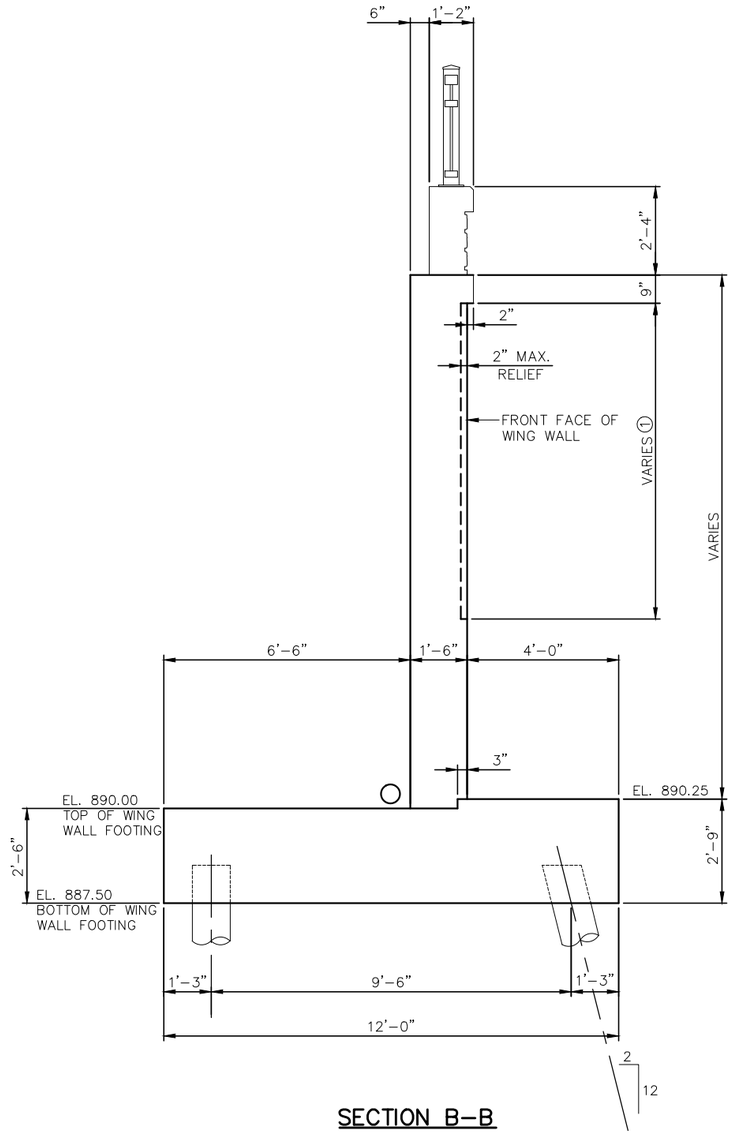
① ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)

FOR ARCHITECTURAL DETAILS, SEE SHEET BRG–ARCH

FOR PILE LOADS, SEE SHEET ABUT–001



SECTION A–A



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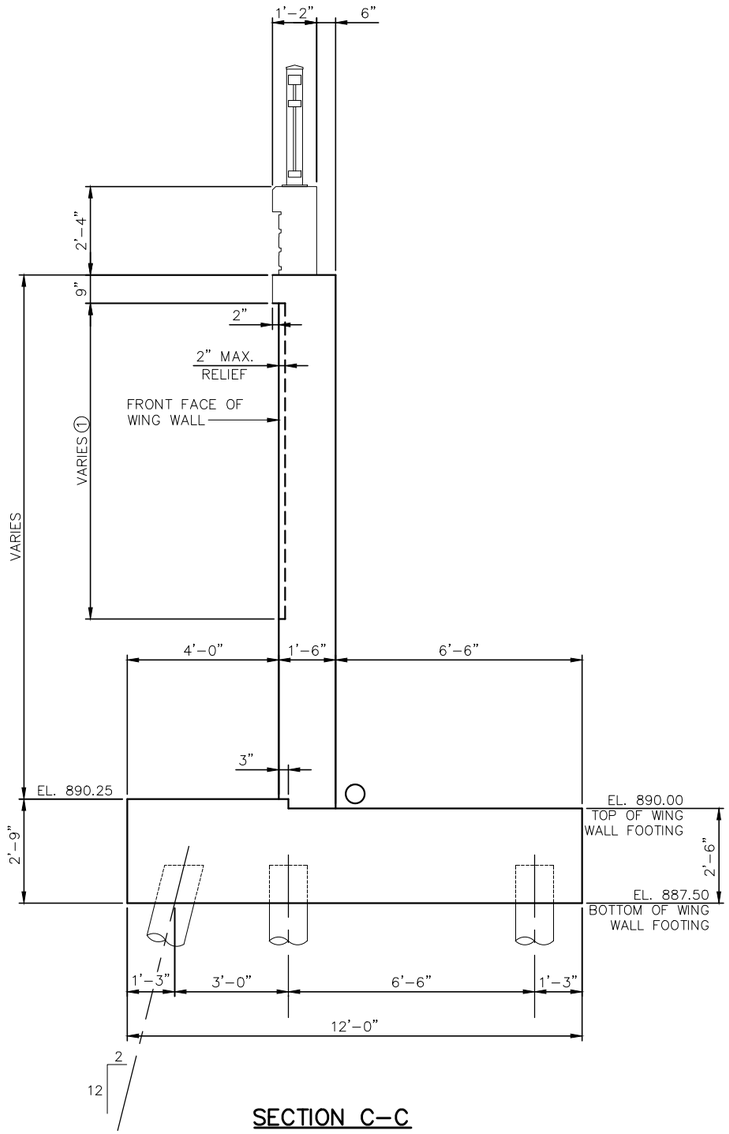

SECTION C–C

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

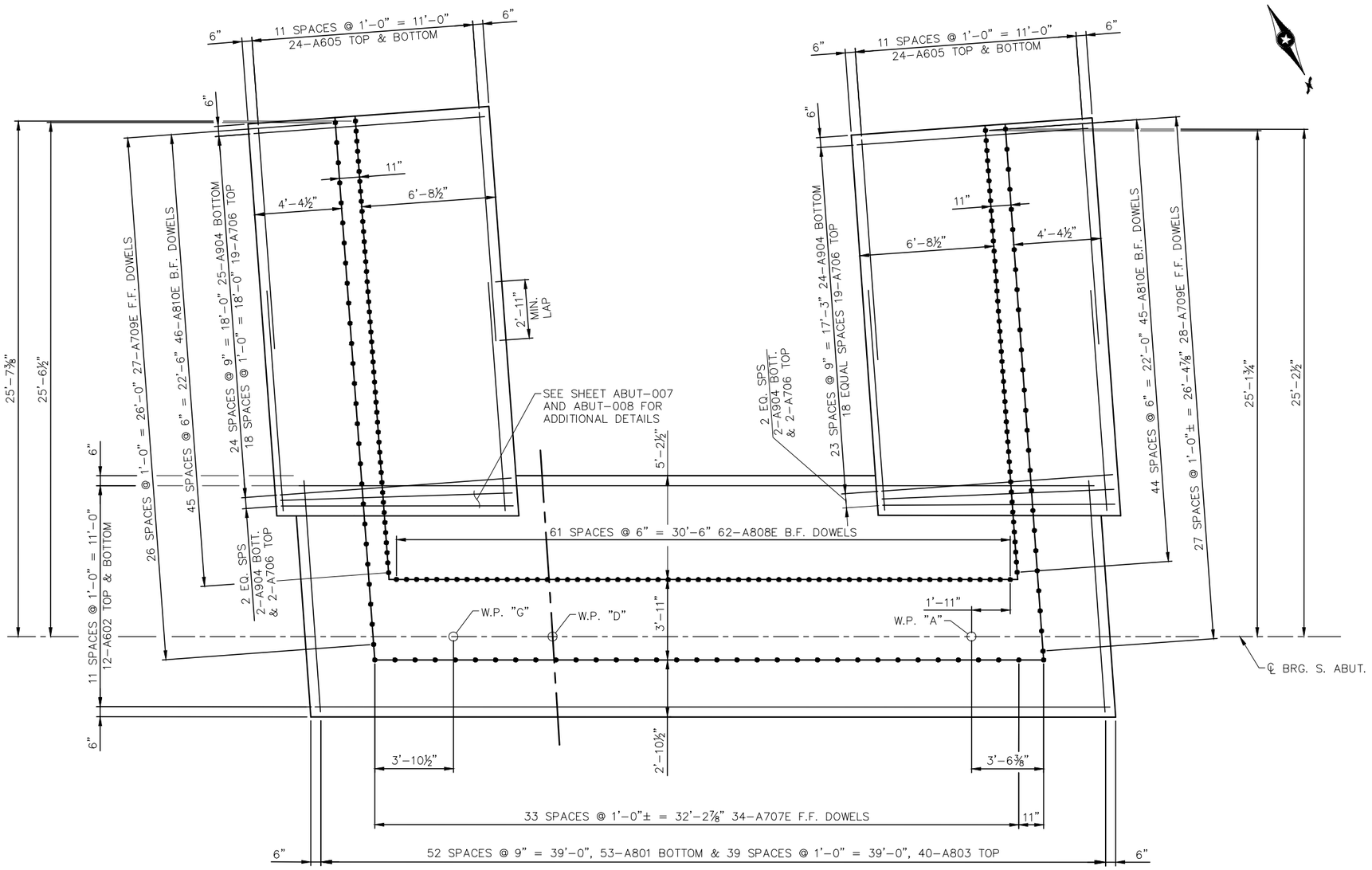
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SOUTH ABUTMENT DETAILS 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27W32-BRG-ABUT-004

SHEET 9 OF 54

Jan, 06 2016 12:48 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-004.dwg By: knierlemm



FOOTING REINFORCEMENT

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SOUTH ABUTMENT DETAILS 5

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-005

SHEET 10 OF 54

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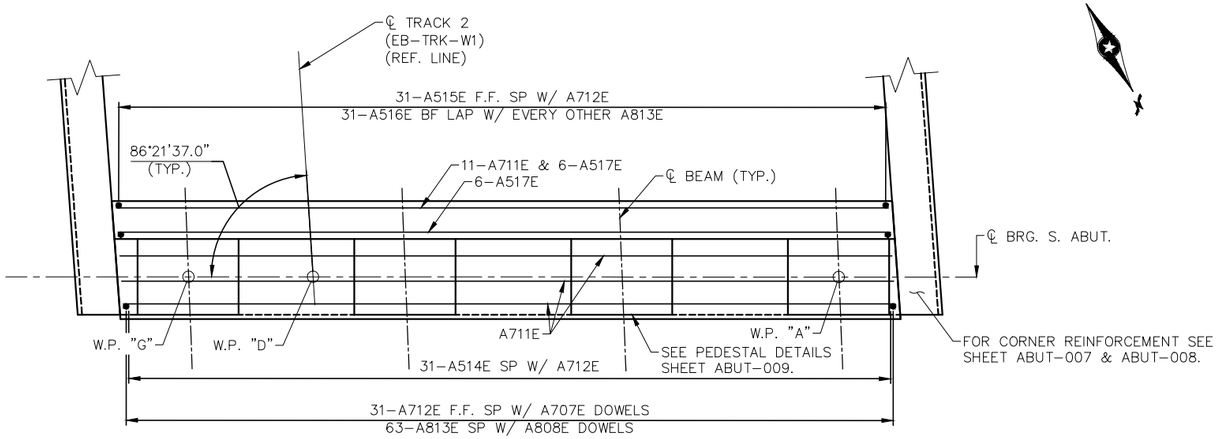
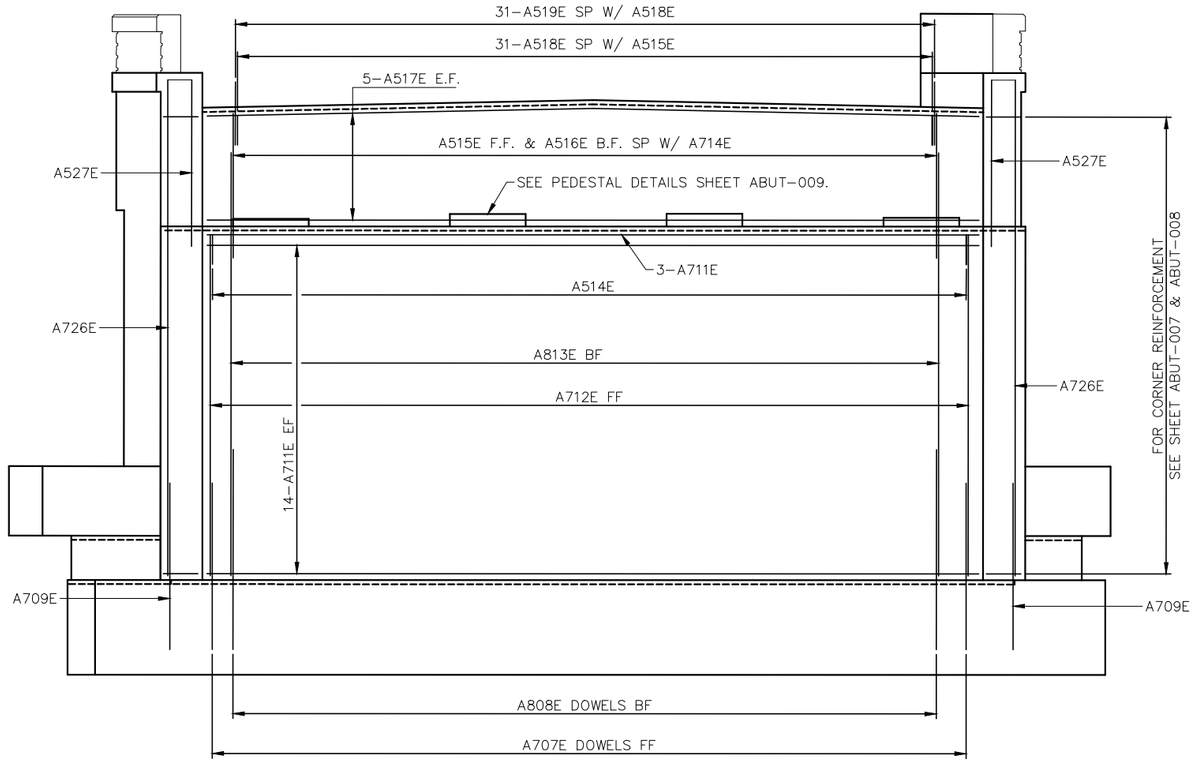
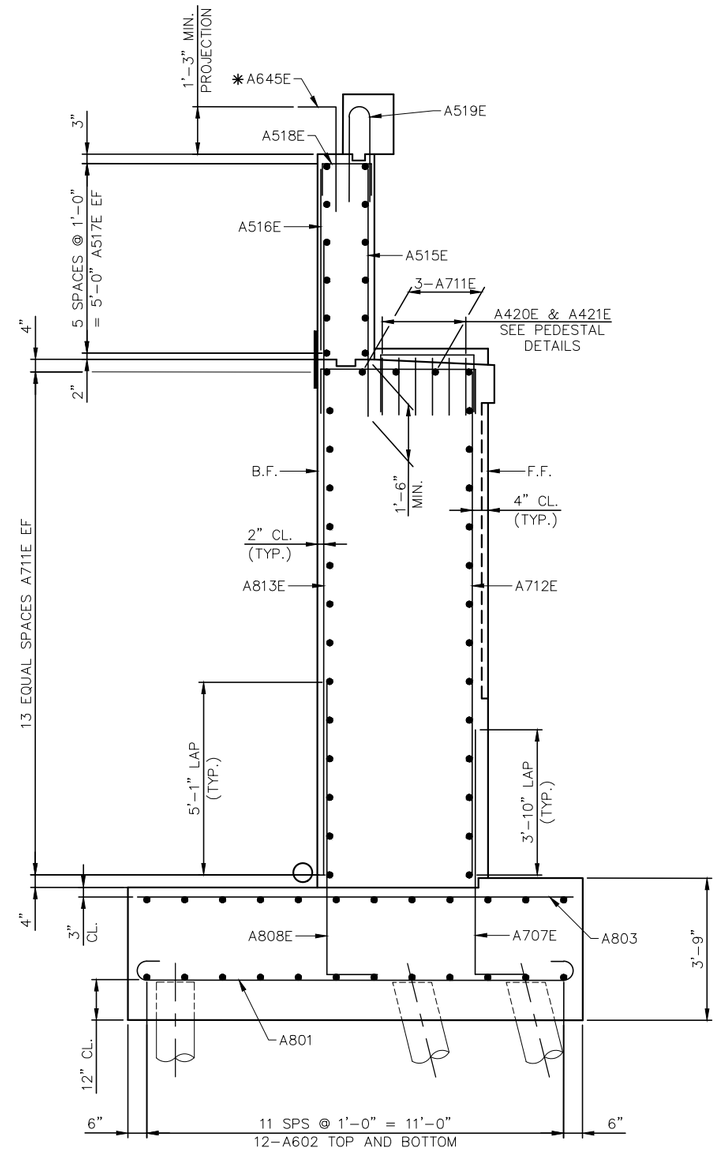


ABUTMENT PLAN REINFORCEMENT



ABUTMENT ELEVATION REINFORCEMENT



ABUTMENT SECTION

✱ 10–A645E AT EACH TRANSITION SLAB WITH A MAX SPACING OF 1'–0".

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

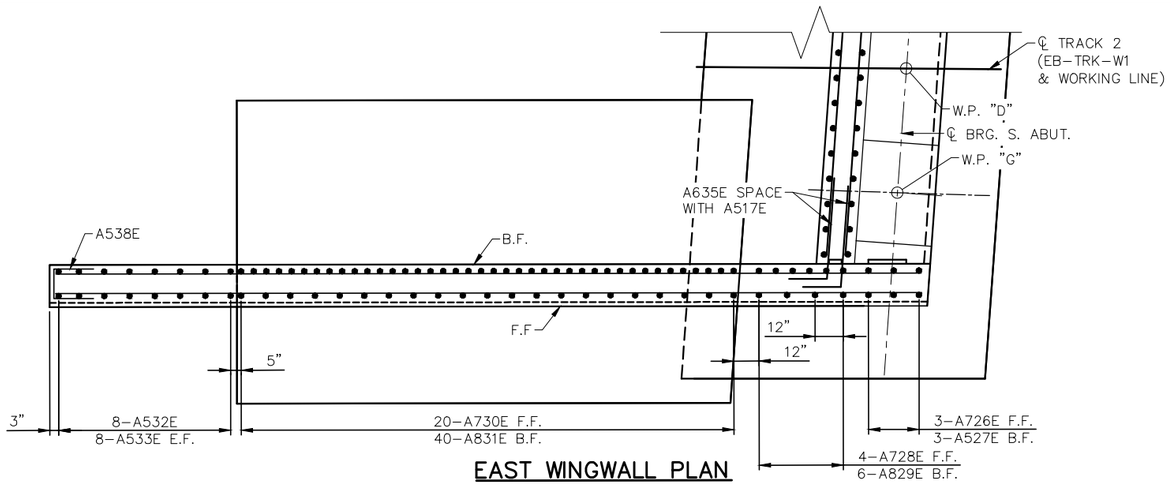
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SOUTH ABUTMENT DETAILS 6

DISCIPLINE: STRUCTURES

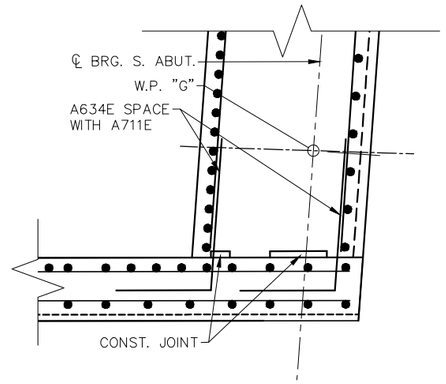
SHEET NAME: CBR27W32-BRG-ABUT-006

SHEET 11 OF 54

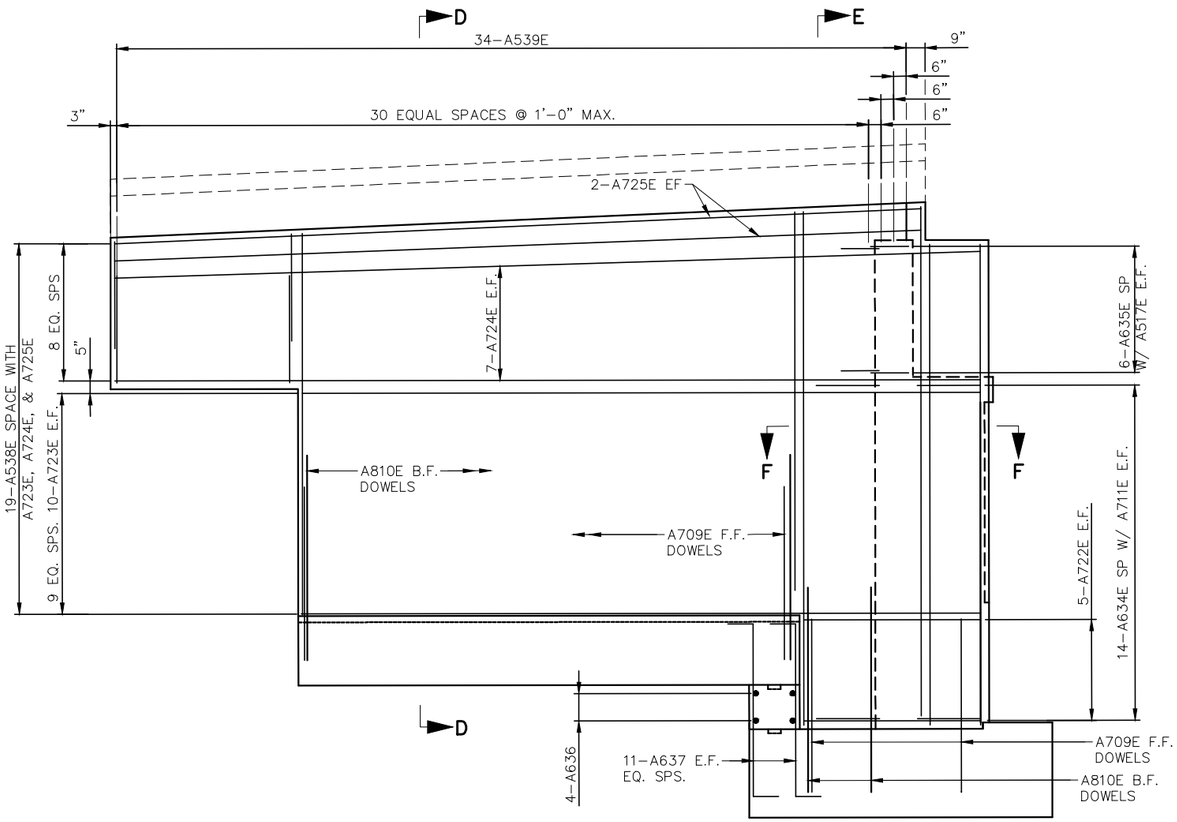
Jan. 06 2016 12:50 pm v:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-006.dwg By: knierlemm



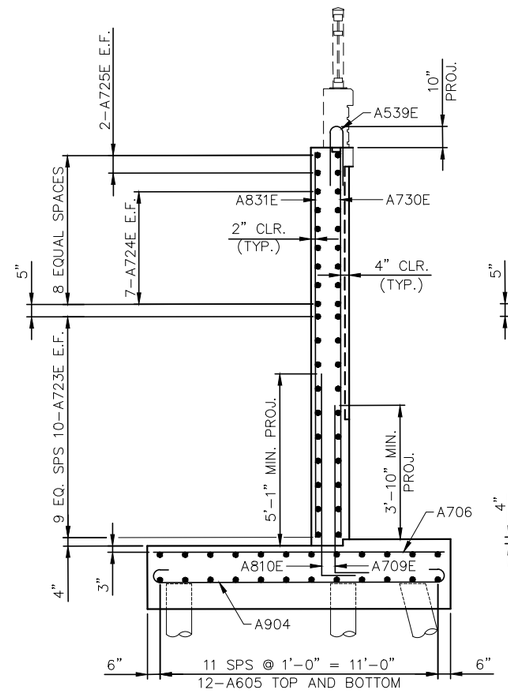
EAST WINGWALL PLAN



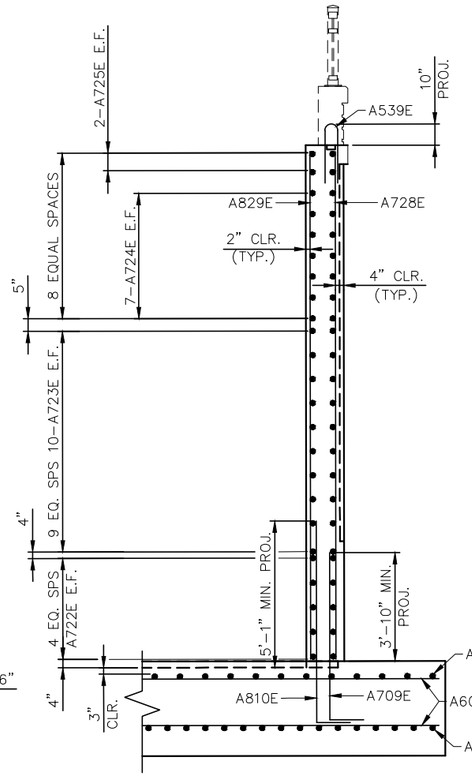
SECTION F–F



EAST WINGWALL ELEVATION



SECTION D–D



SECTION E–E

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METROPOLITAN COUNCIL

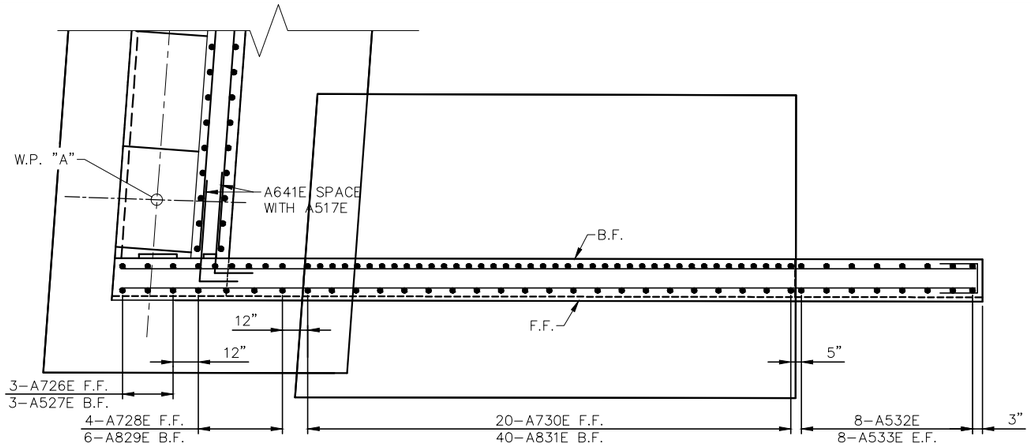
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SOUTH ABUTMENT DETAILS 7

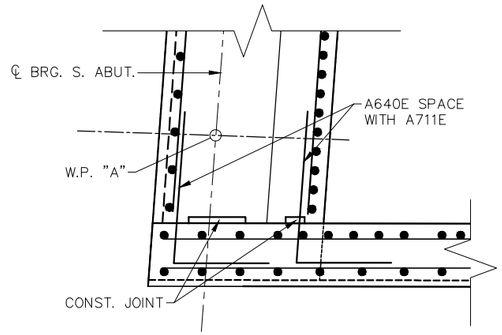
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-007

SHEET 12 OF 54

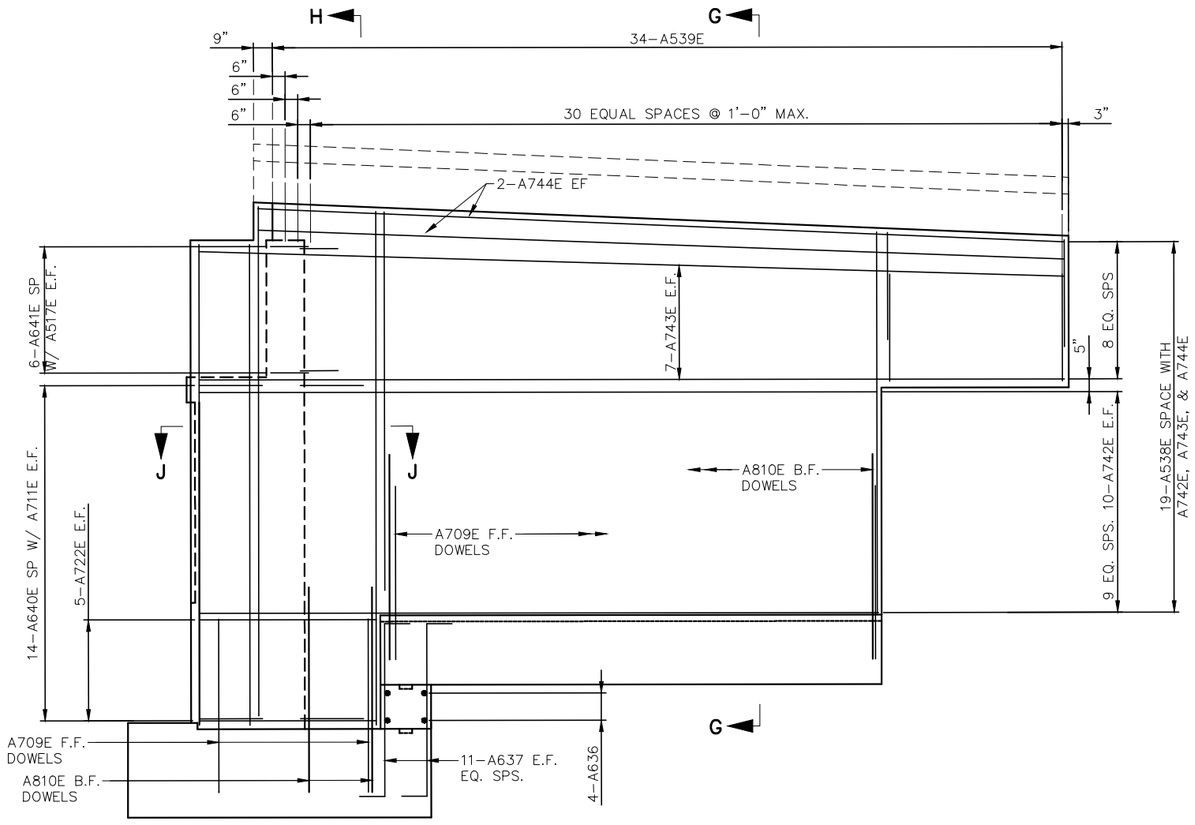
Jan, 06 2016 12:51 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-007.dwg By: knieriemm



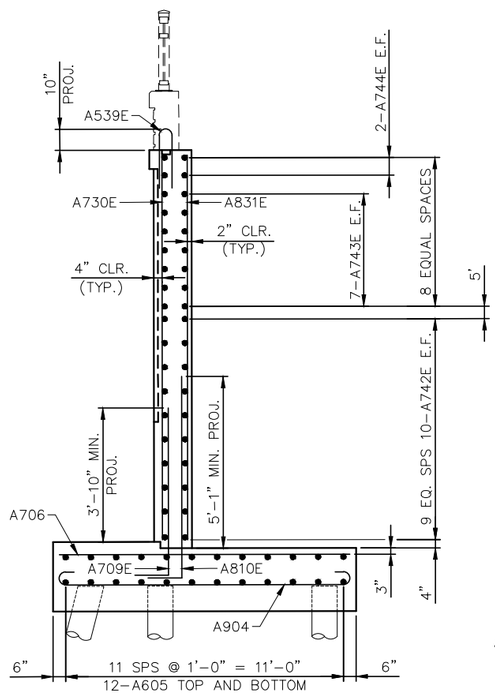
WEST WINGWALL PLAN



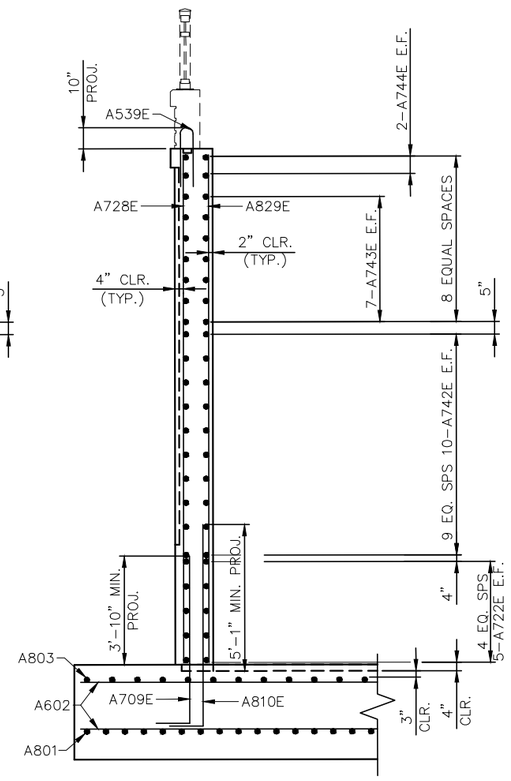
SECTION J–J



WEST WINGWALL ELEVATION



SECTION G–G



SECTION H–H

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DRAWN BY: MJK CHECKED BY: TR

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

90% SUBMISSION - 01/22/16

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SOUTH ABUTMENT DETAILS 8

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-008

SHEET 13 OF 54

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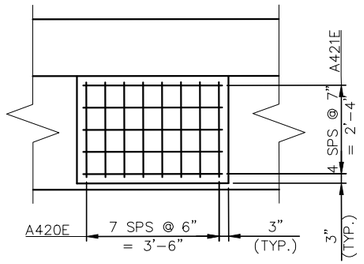

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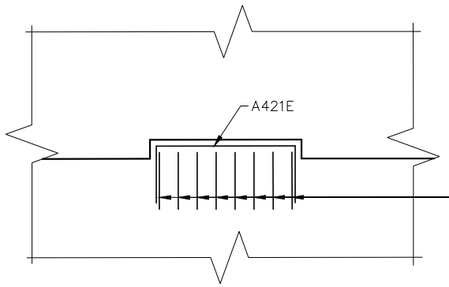

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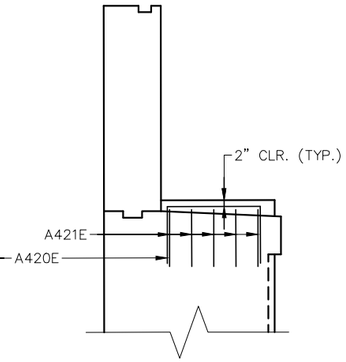

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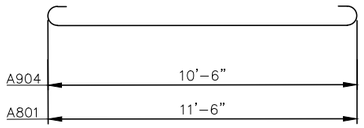
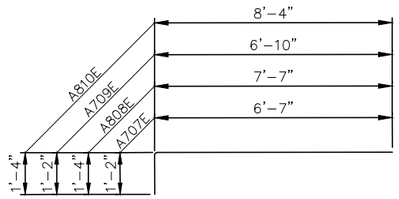
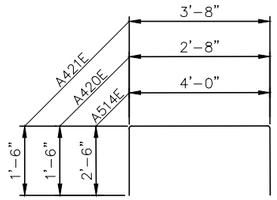
PEDESTAL DETAIL



A801 & A904



A707E, A808E A709E, & A810E



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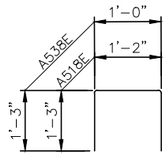

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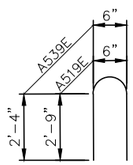

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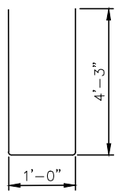

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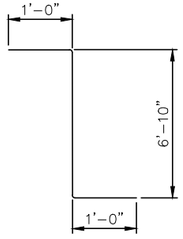

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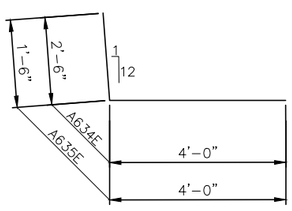

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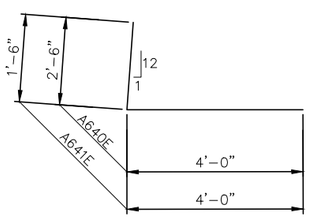
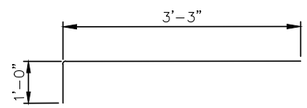


A640E & A641E

BILL OF REINFORCEMENT – SOUTH ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
A801	53	13'–4"		ABUTMENT FOOTING – TRANSVERSE
A602	24	39'–6"		ABUTMENT FOOTING – LONGITUDINAL
A803	40	11'–6"		ABUTMENT FOOTING – TRANSVERSE
A904	49	13'–0"		WINGWALL FOOTING – TRANSVERSE
A605	96	11'–6"		WINGWALL FOOTING – LONGITUDINAL
A706	42	11'–6"		WINGWALL FOOTING – TRANSVERSE
A707E	34	7'–9"		FOOTING DOWELS FF – VERTICAL
A808E	62	8'–11"		FOOTING DOWELS BF – VERTICAL
A709E	55	8'–0"		FOOTING DOWELS FF – VERTICAL
A810E	91	9'–5"		FOOTING DOWELS BF – VERTICAL
A711E	31	30'–6"		ABUTMENT BODY EF – HORIZONTAL
A712E	31	13'–5"		ABUTMENT BODY FF – VERTICAL
A813E	62	16'–3"		ABUTMENT BODY BF – VERTICAL
A514E	31	9'–0"		ABUTMENT BODY TOP – VERTICAL
A515E	31	7'–2"		ABUTMENT BACKWALL FF – VERTICAL
A516E	31	5'–1"		ABUTMENT BACKWALL BF – VERTICAL
A517E	12	30'–6"		ABUTMENT BACKWALL EF – HORIZONTAL
A518E	31	3'–8"		ABUTMENT BACKWALL TOP – VERTICAL
A519E	31	6'–1"		ABUTMENT PAVING BLOCK – VERTICAL
A420E	20	5'–8"		ABUTMENT PEDESTALS – VERTICAL
A421E	32	6'–8"		ABUTMENT PEDESTALS – VERTICAL
A722E	20	7'–0"		EAST & WEST WINGWALL EF – HORIZONTAL
A723E	20	26'–10"		EAST WINGWALL EF – HORIZONTAL
A724E	14	34'–3"		EAST WINGWALL EF – HORIZONTAL
A725E	4	31'–11"		EAST WINGWALL EF – HORIZONTAL
A726E	6	19'–0"		EAST & WEST WINGWALL FF – VERTICAL
A527E	6	6'–7"		EAST & WEST WINGWALL BF – VERTICAL
A728E	8	20'–1"		EAST & WEST WINGWALL FF – VERTICAL
A829E	12	20'–4"		EAST & WEST WINGWALL BF – VERTICAL
A730E	40	14'–9"		EAST & WEST WINGWALL FF – VERTICAL
A831E	80	15'–0"		EAST & WEST WINGWALL BF – VERTICAL
A532E	16	9'–6"		EAST & WEST WINGWALL – VERTICAL
A533E	32	4'–3"		EAST & WEST WINGWALL EF – VERTICAL
A634E	28	6'–6"		EAST WINGWALL EF – HORIZONTAL
A635E	12	5'–6"		EAST WINGWALL EF – HORIZONTAL
A636	8	10'–6"		WINGWALL FOOTING – HORIZONTAL
A637	44	8'–10"		WINGWALL FOOTING EF – VERTICAL
A538E	38	3'–6"		EAST & WEST WINGWALL TIES – HORIZONTAL
A539E	68	4'–8"		RAILING DOWEL
A640E	28	6'–6"		WEST WINGWALL EF – HORIZONTAL
A641E	12	5'–6"		WEST WINGWALL EF – HORIZONTAL
A742E	20	26'–5"		WEST WINGWALL EF – HORIZONTAL
A743E	14	33'–10"		WEST WINGWALL EF – HORIZONTAL
A744E	4	31'–6"		WEST WINGWALL EF – HORIZONTAL
* A645E	20	4'–3"		TIE BAR AT TRANSITION SLABS – VERTICAL

* 10–A645E AT EACH TRANSITION SLAB WITH A MAX SPACING OF 1'–0".



A645E

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

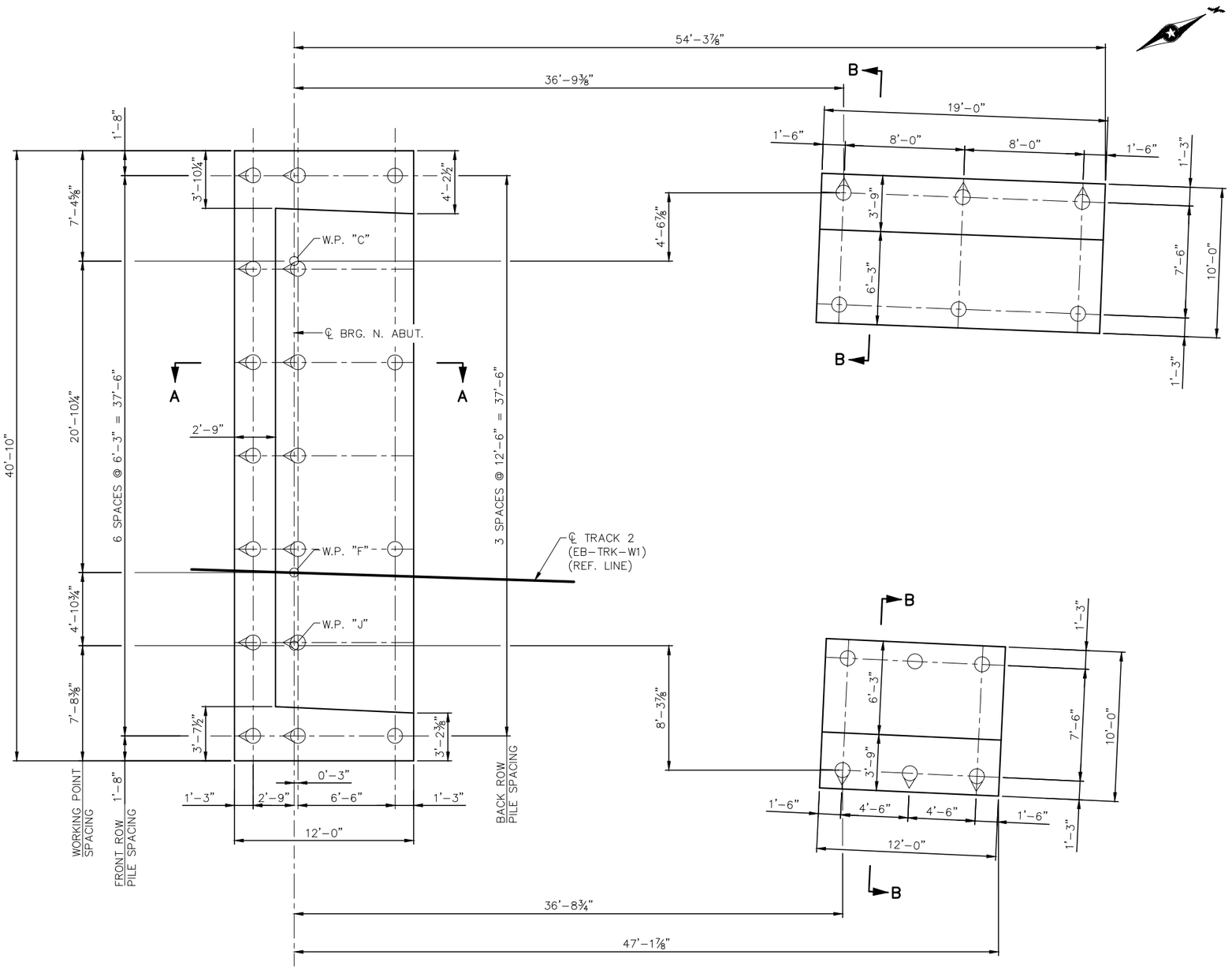
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SOUTH ABUTMENT DETAILS 9

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-009

SHEET 14 OF 54

Jan, 06 2016 12:52 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-009.dwg By: knierlemm



FOOTING PLAN

NOTES

FOR SECTIONS A–A AND B–B SEE SHEET ABUT–014.

PILE NOTES

2 CAST–IN–PLACE CONC. TEST PILE 45 FT. LONG
28 CAST–IN–PLACE CONC. PILES EST. LENGTH 35 FT.
30 CAST–IN–PLACE CONC. PILES REQ'D FOR NORTH ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES MARKED THUS ○> TO BE BATTERED 2" PER FOOT IN DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 12" AND WALL THICKNESS OF 0.375 INCHES.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NORTH ABUTMENT
REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$* R_n$
PDA	0.65	215

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

NORTH ABUTMENT
COMPUTED PILE LOAD – TONS/PILE

△ FACTORED DEAD LOAD + EARTH PRESSURE	123.8
FACTORED LIVE LOAD	12.0
FACTORED TOTAL LOAD	135.8

△ BASED ON STRENGTH I LOAD COMBINATION.

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
NORTH ABUTMENT DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-010

SHEET 15 OF 54

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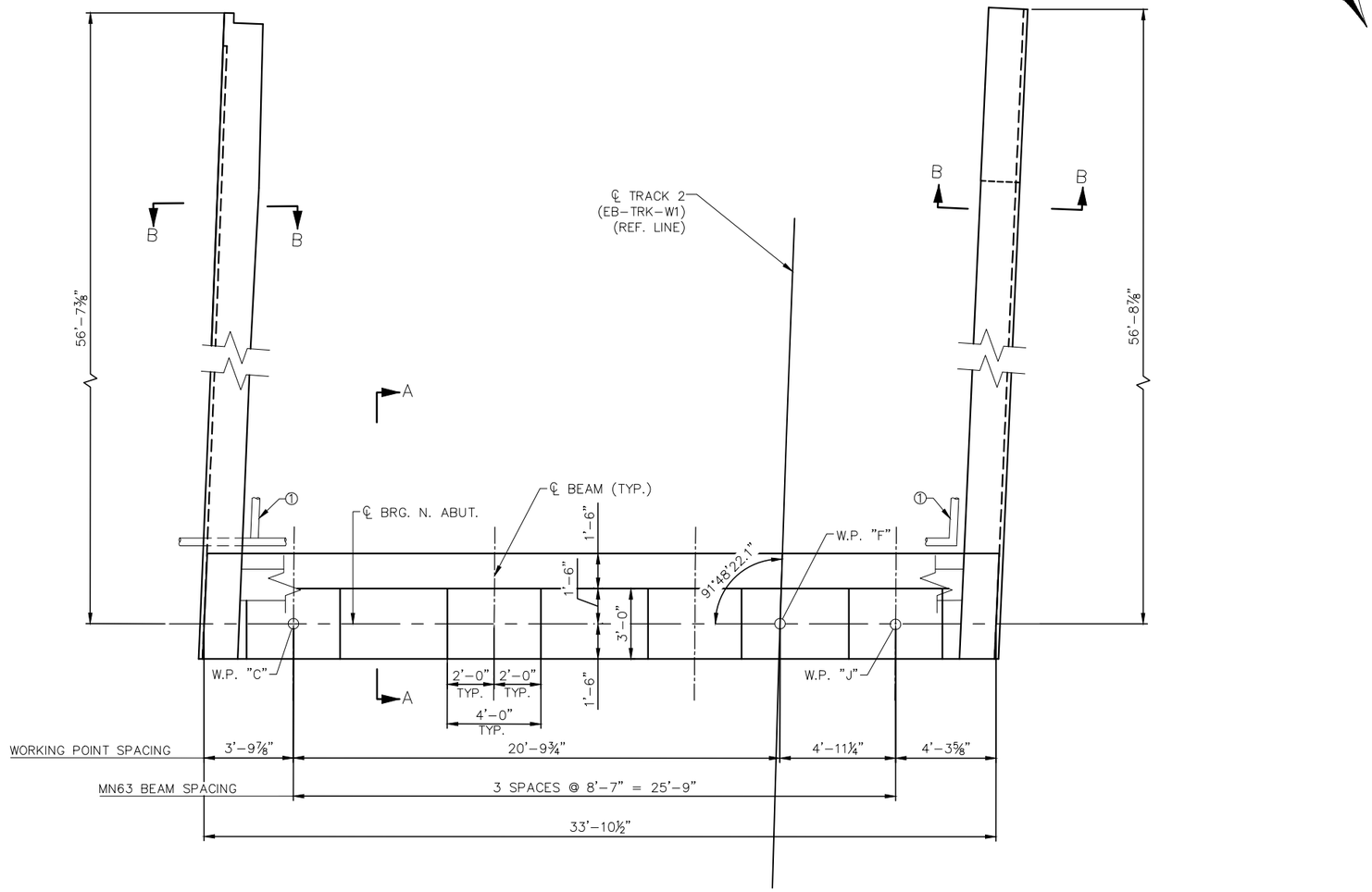

PLAN VIEW

NOTES

FOR SECTIONS A–A AND B–B SEE SHEET ABUT–014.

① 4" DIA. PERFORATED PIPE. SEE DETAIL B910 FOR DRAINAGE DETAILS.

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METROPOLITAN COUNCIL

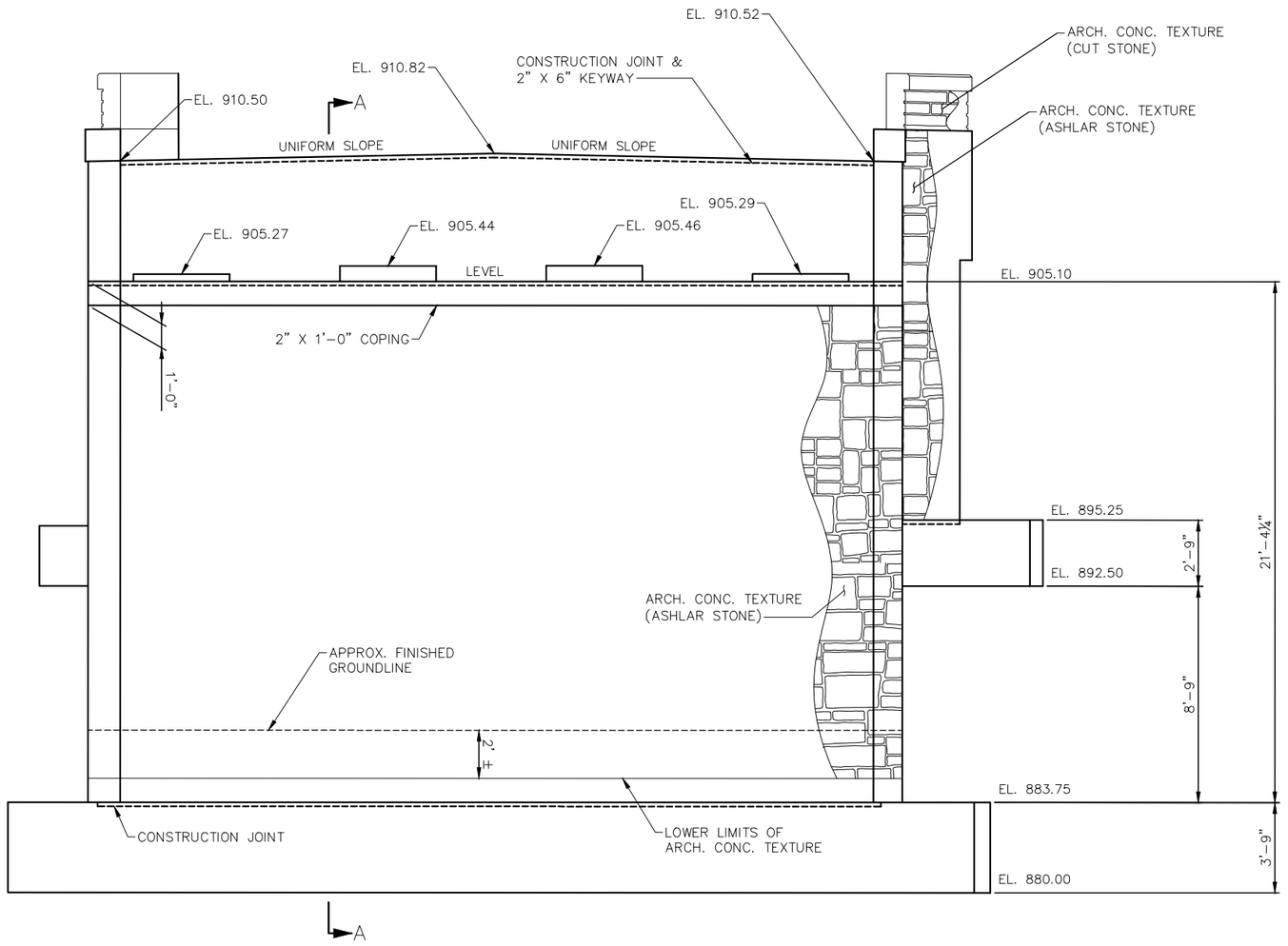
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
NORTH ABUTMENT DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-011

SHEET 16 OF 54

Jan, 06 2016 12:54 pm v:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-011.dwg By: knierlemm



ELEVATION VIEW

NOTES

FOR SECTION A–A SEE SHEET ABUT–014.

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
NORTH ABUTMENT DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-012

SHEET 17 OF 54

Jan. 06 2016 12:56 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-012.dwg By: knieriemm

NOTES

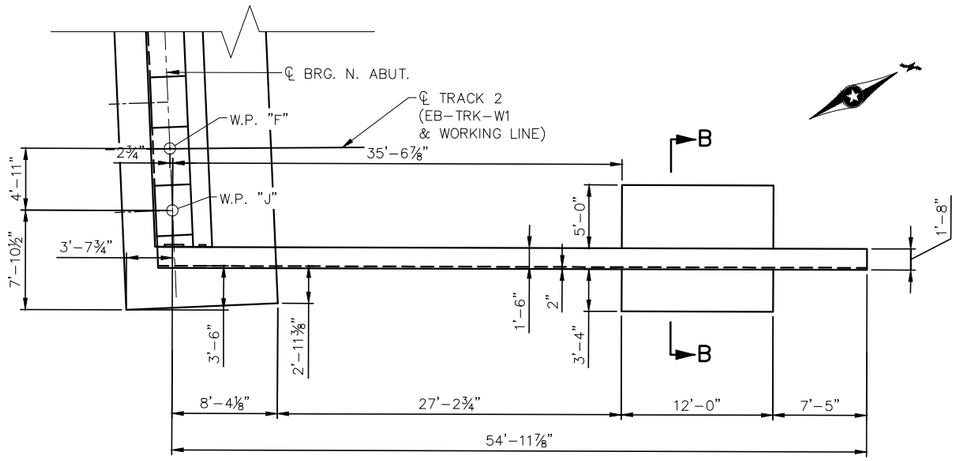
FOR SECTION B–B SEE SHEET ABUT–014.

① STRAY CURRENT TEST STATION. FOR STRAY CURRENT PROTECTION SYSTEM INFORMATION AND DETAILS, SEE SHEETS EO–SYS–CORR–DTL–001 TO 015 AND NOTES ON SHEET GPE–003.

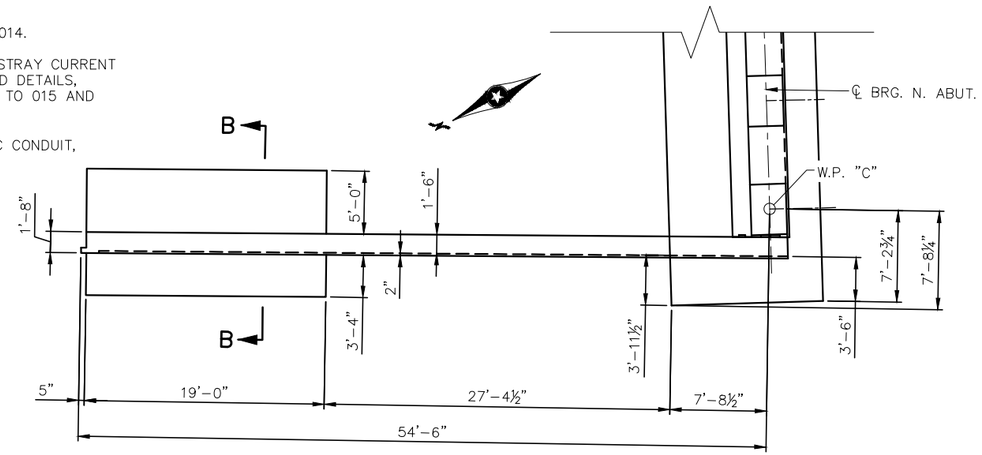
② GROUND WIRE PLACED INSIDE 1½" PVC CONDUIT, SEE GROUNDING PLANS.

③ 4"x4"x4" GROUNDING TEST BOX.

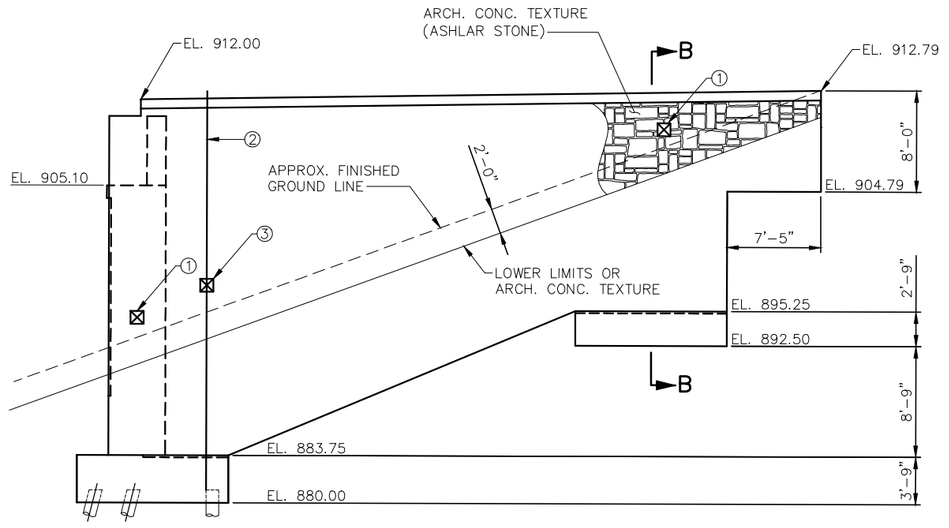
④ 1½" WIDE x ¾" DEEP REVEAL.



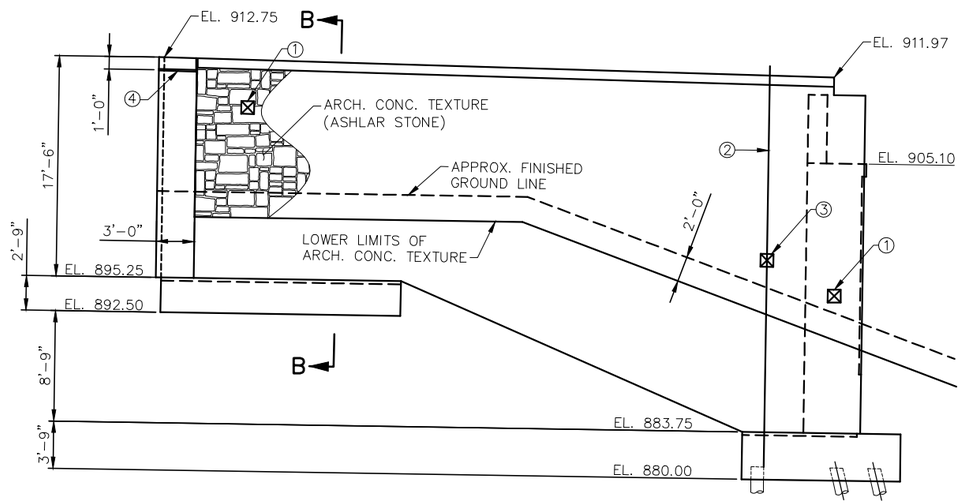
EAST WINGWALL PLAN



WEST WINGWALL PLAN



EAST WINGWALL ELEVATION



WEST WINGWALL ELEVATION

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METROPOLITAN COUNCIL

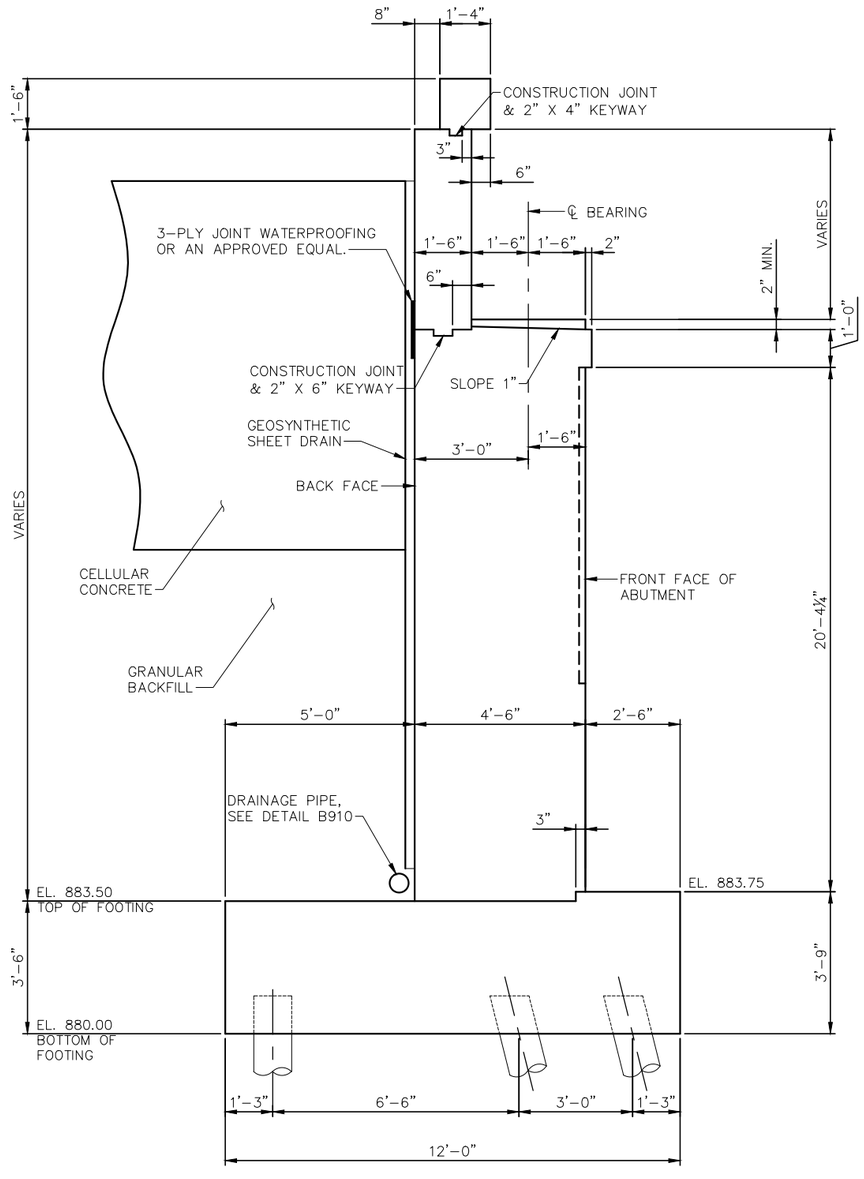
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
NORTH ABUTMENT DETAILS 4

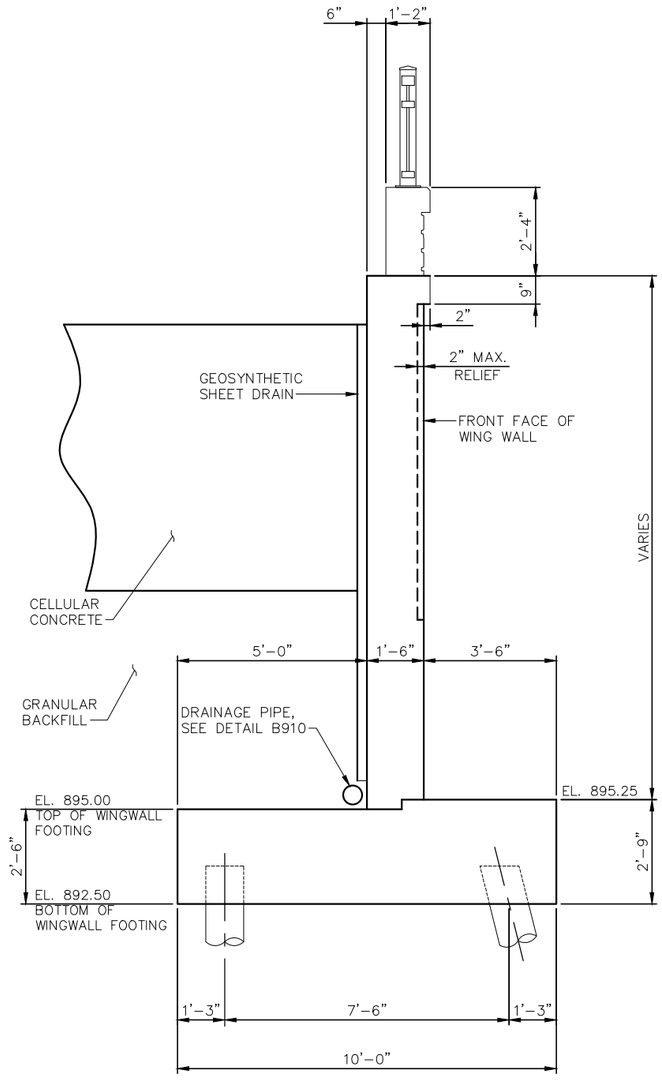
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-013

SHEET 18 OF 54

Jan. 06 2016 12:57 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-013.dwg By: knierlemm



SECTION A-A



SECTION B-B

NOTES:

FOR ARCHITECTURAL DETAILS, SEE SHEET ARCH.

FOR PILE LOADS, SEE SHEET ABUT-010.

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

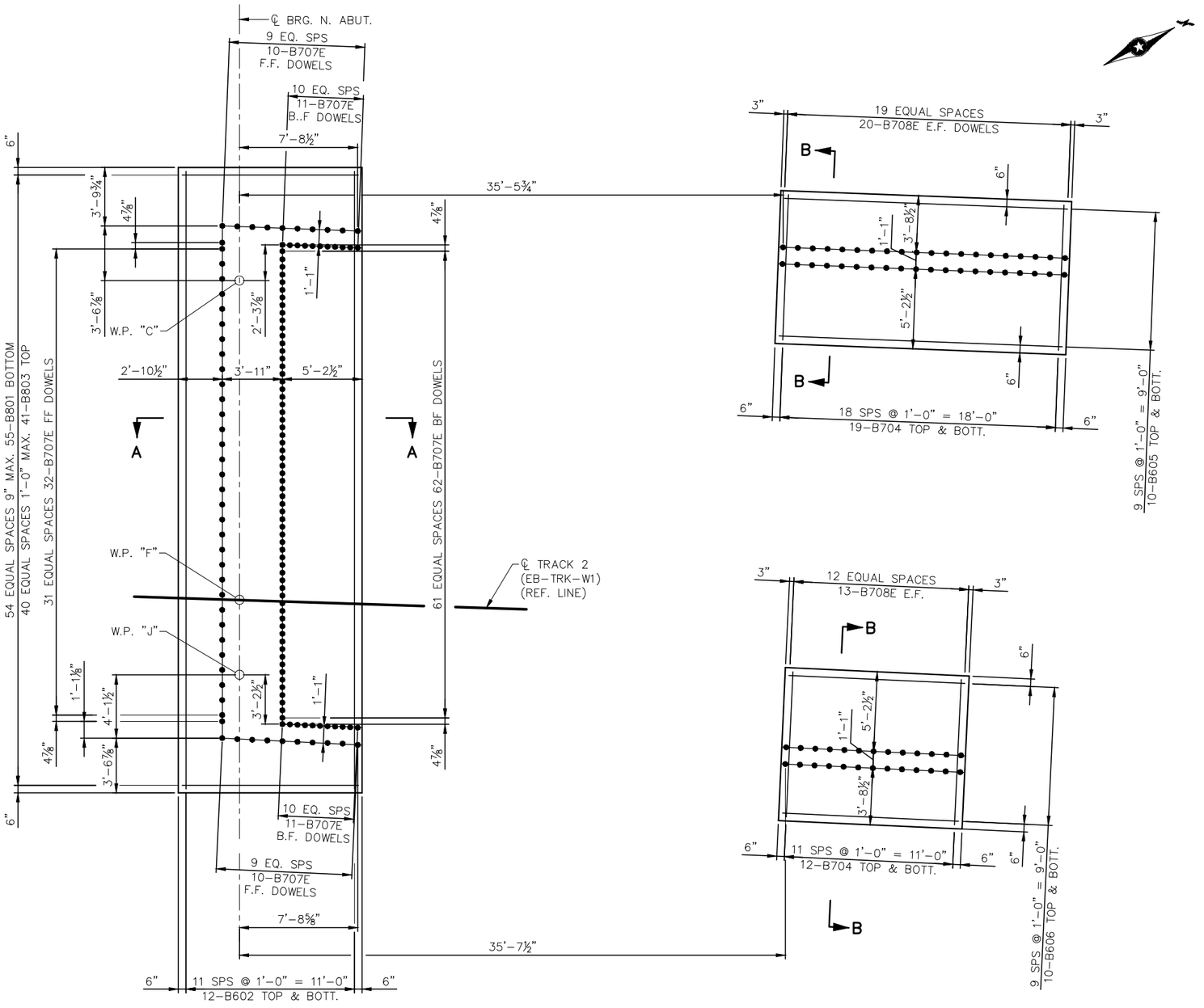
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
NORTH ABUTMENT DETAILS 5

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27W32-BRG-ABUT-014

SHEET 19 OF 54

Jan. 06 2016 12:58 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-014.dwg By: knierlemm



FOOTING REINFORCEMENT

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DESIGNED BY: AK/IGG CHECKED BY: TR
DRAWN BY: MJK CHECKED BY: TR

AECOM

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METROPOLITAN COUNCIL

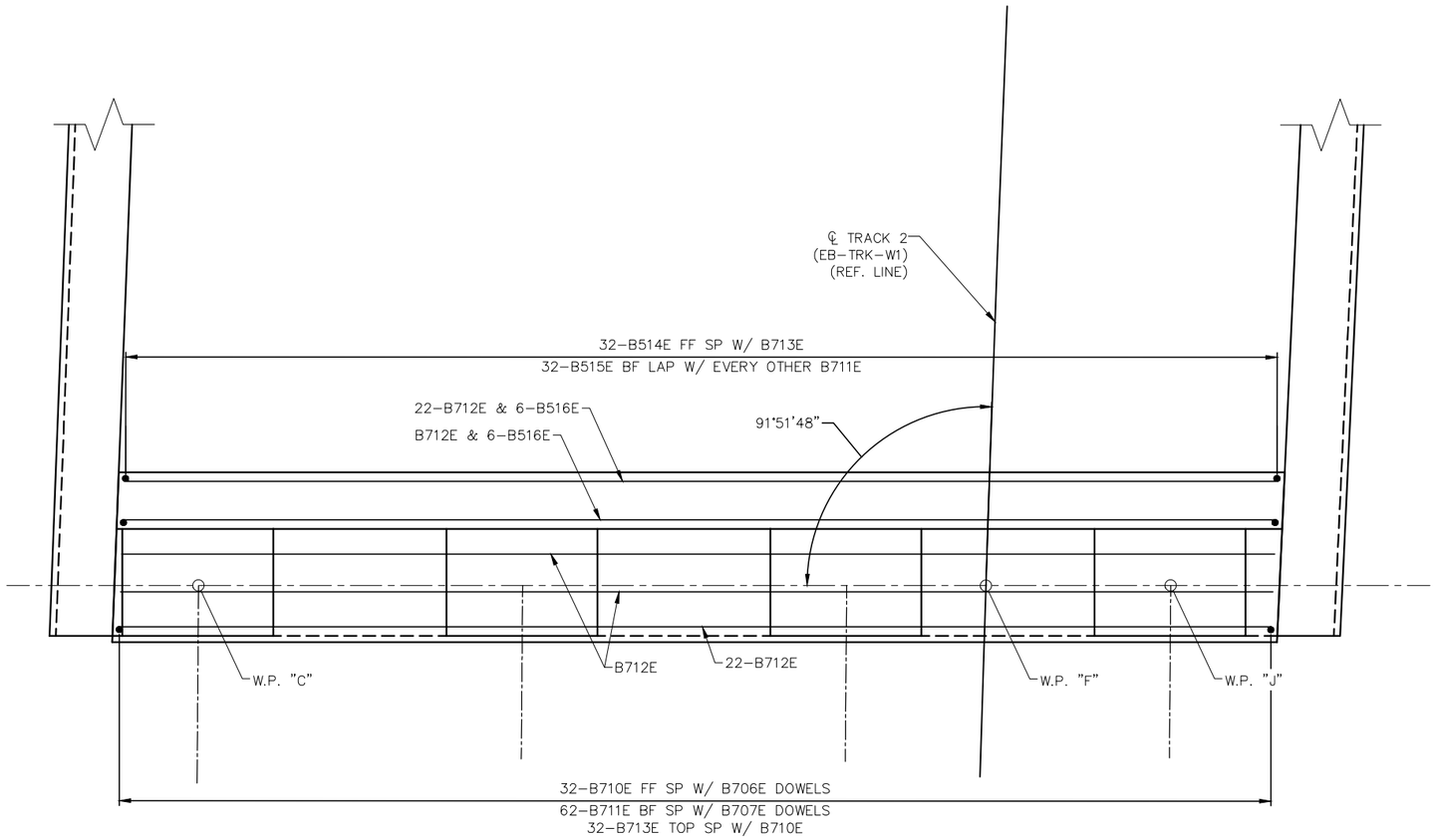
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
NORTH ABUTMENT DETAILS 6

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-015

SHEET 20 OF 54

Jan, 06 2016 12:59 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-015.dwg By: knieriemm



ABUTMENT PLAN REINFORCEMENT

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METROPOLITAN COUNCIL

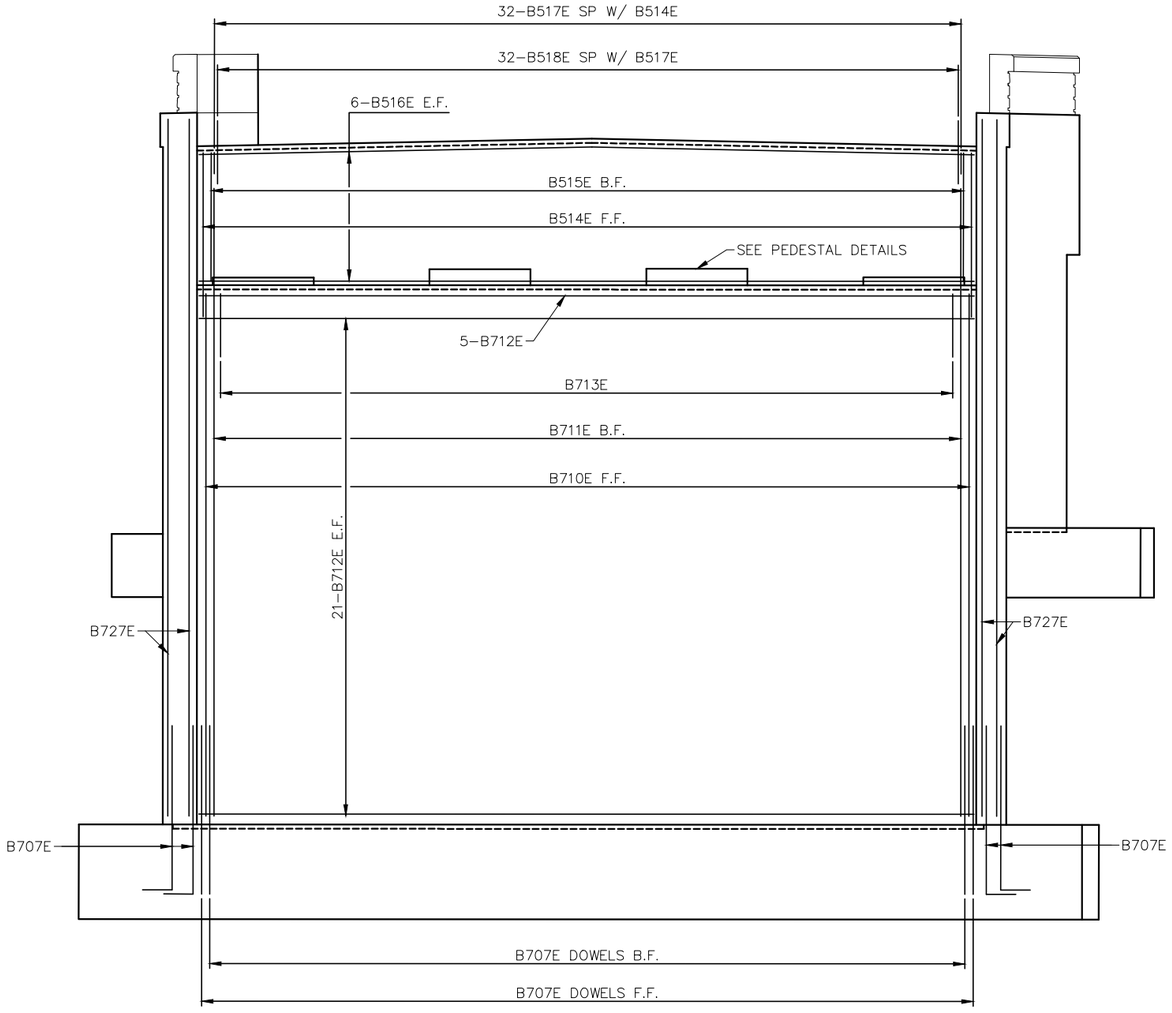
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
NORTH ABUTMENT DETAILS 7

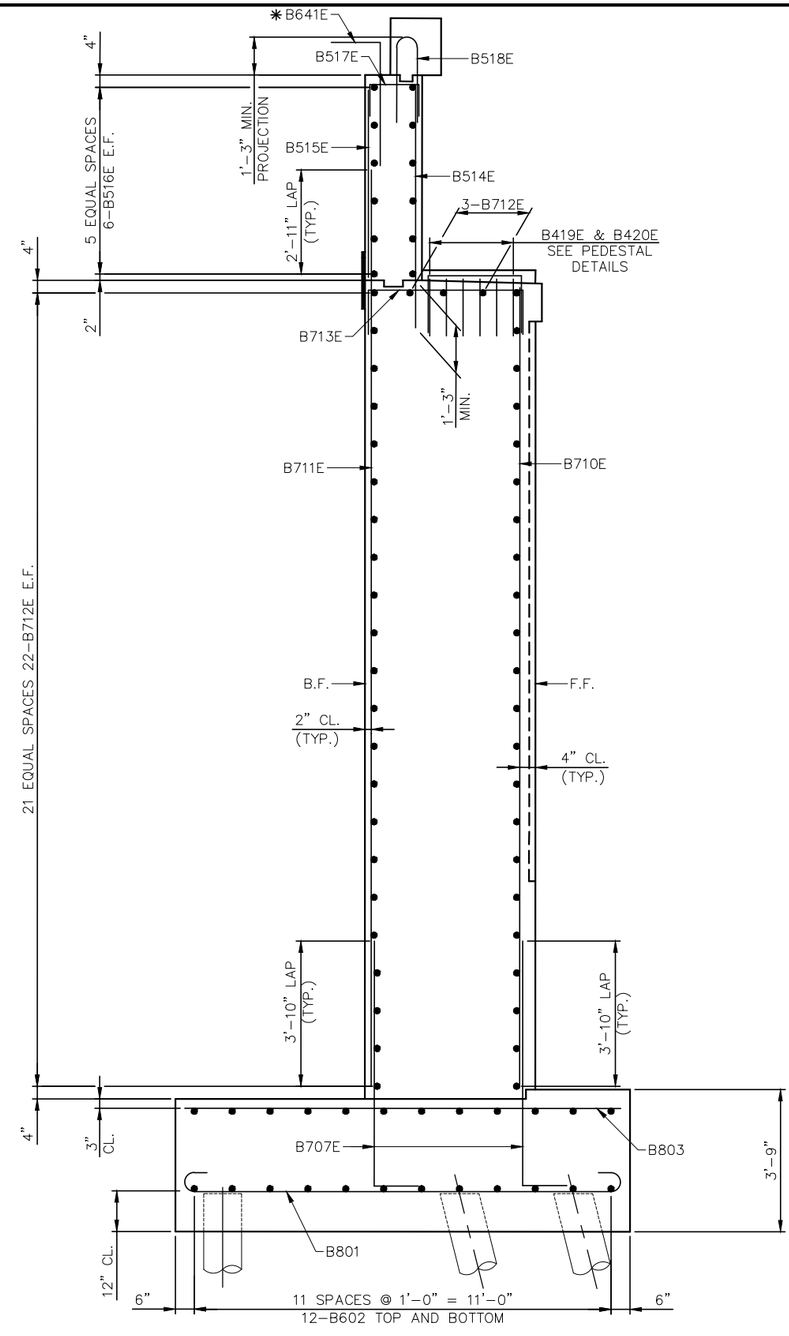
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-016

SHEET 21 OF 54

Jan, 06 2016 01:00 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-016.dwg By: knieriemm



ABUTMENT ELEVATION REINFORCEMENT



ABUTMENT SECTION

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METROPOLITAN COUNCIL

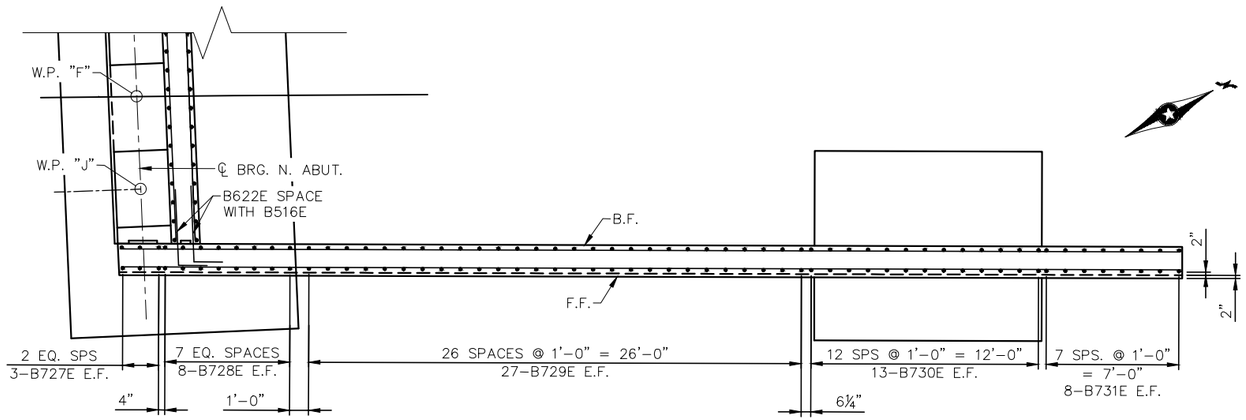
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
NORTH ABUTMENT DETAILS 8

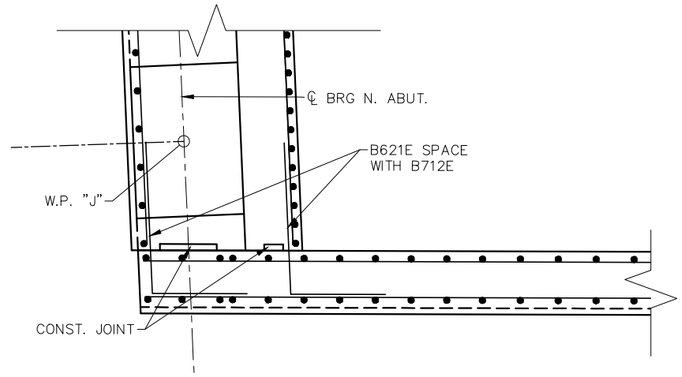
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-017

SHEET 22 OF 54

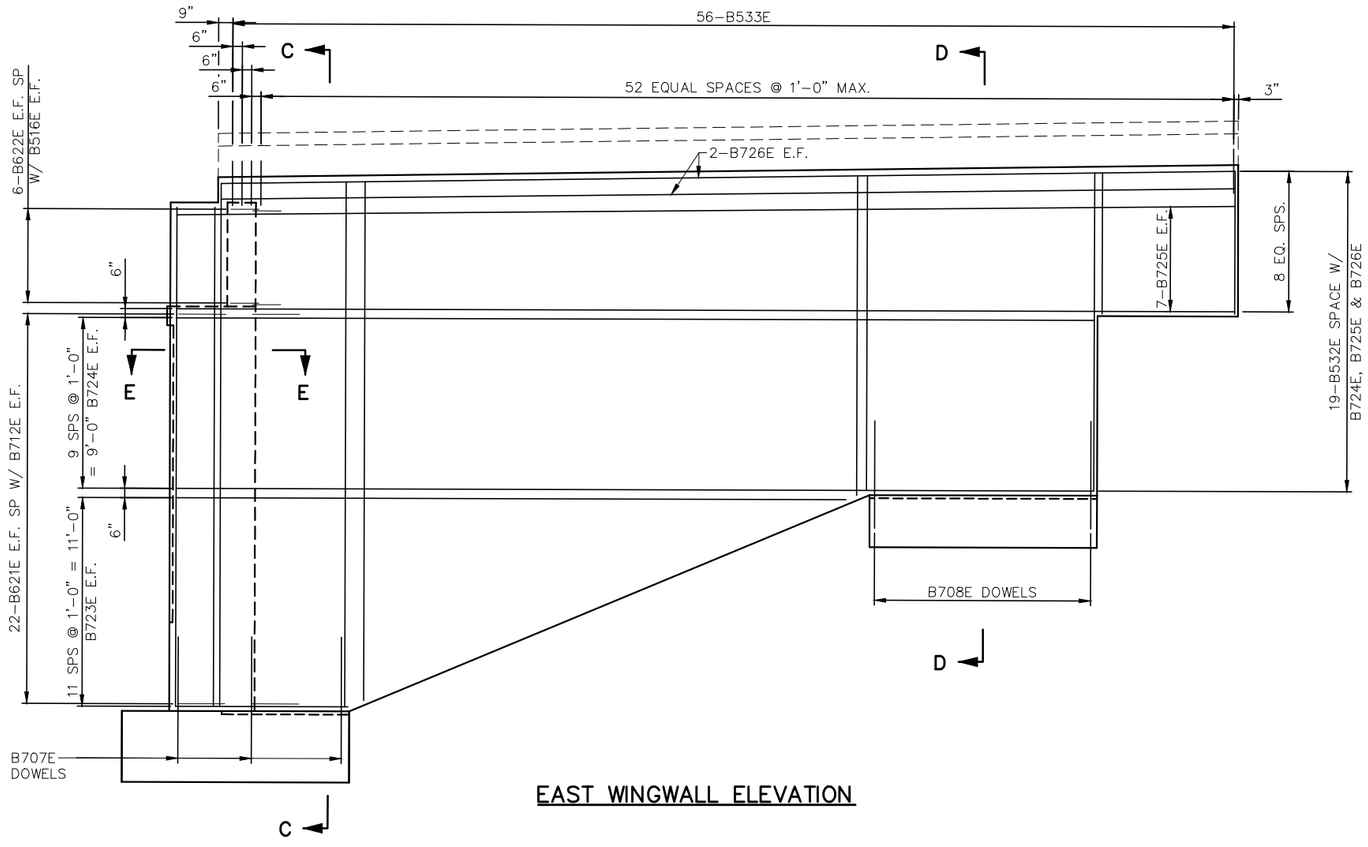
Jan, 06 2016 01:01 pm v:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-017.dwg By: knierlemm



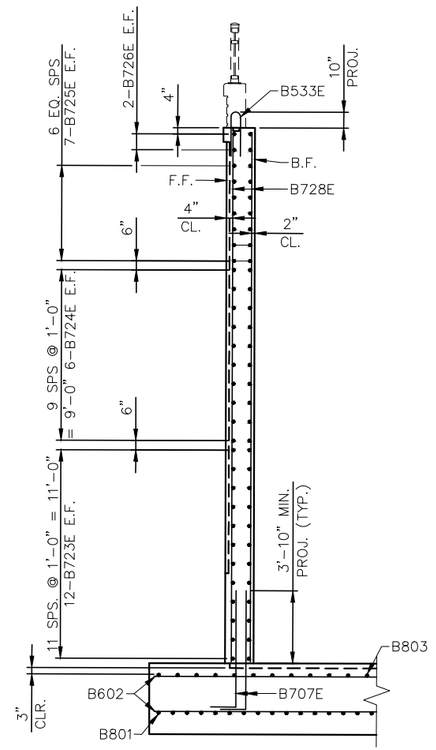
EAST WINGWALL PLAN



SECTION E–E



EAST WINGWALL ELEVATION



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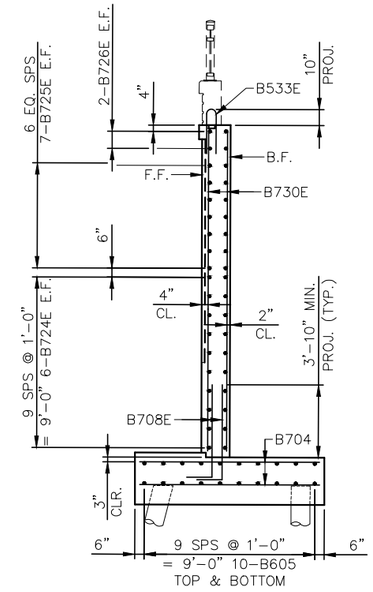

SECTION D–D

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DRAWN BY: MJK | CHECKED BY: TR

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METROPOLITAN COUNCIL

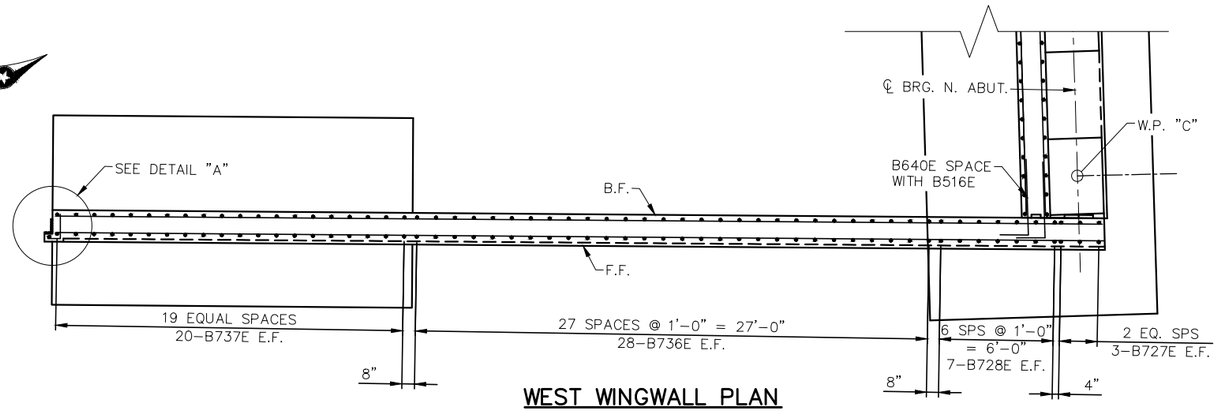
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
NORTH ABUTMENT DETAILS 9

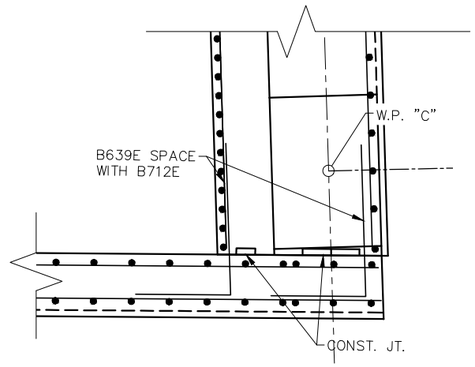
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-018

SHEET 23 OF 54

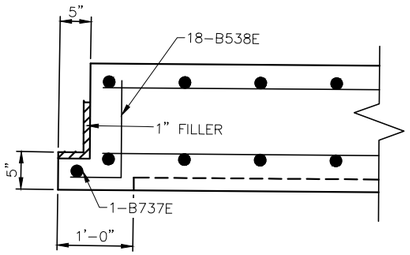
Jan, 06 2016 01:03 pm v:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-018.dwg By: knieriemm



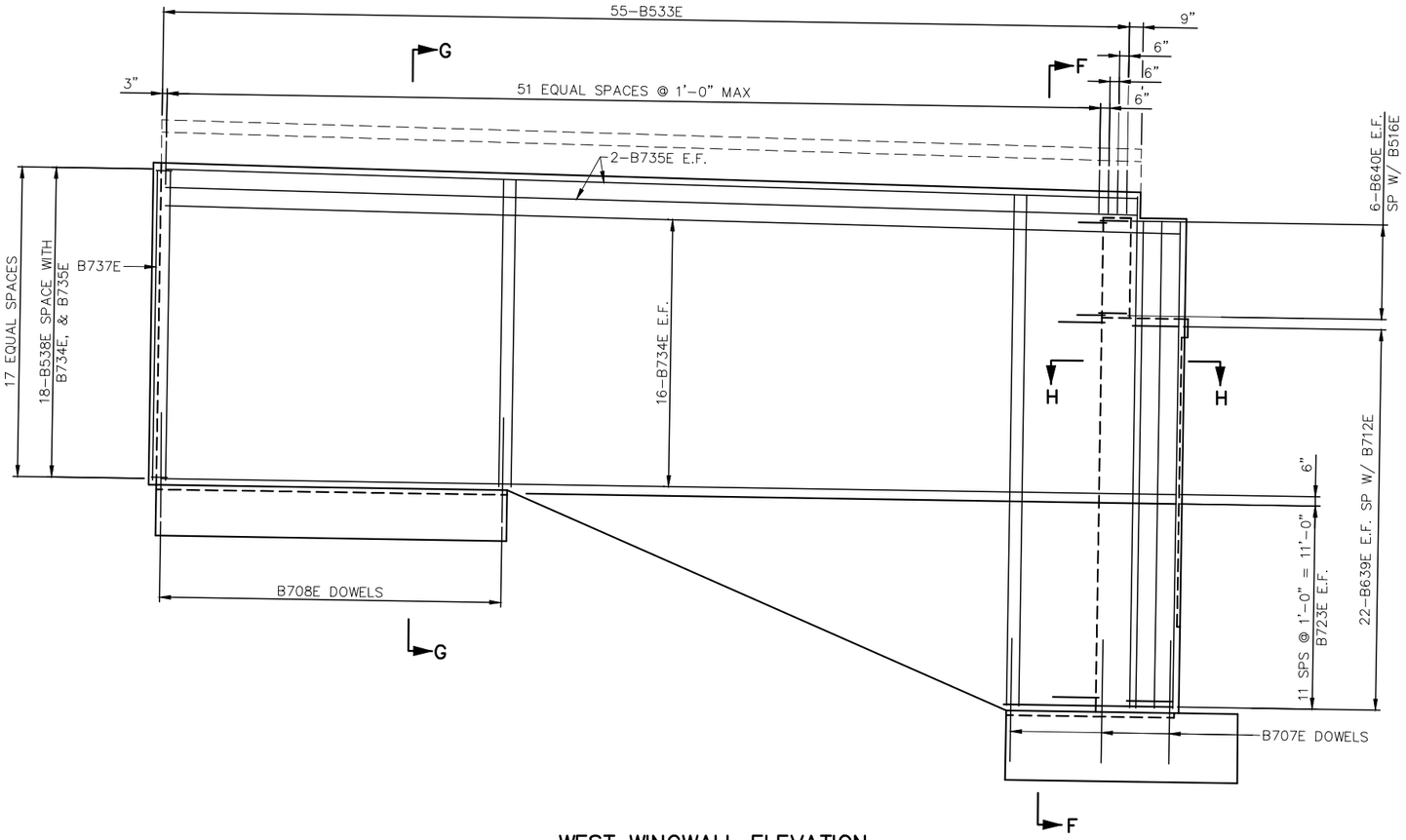
WEST WINGWALL PLAN



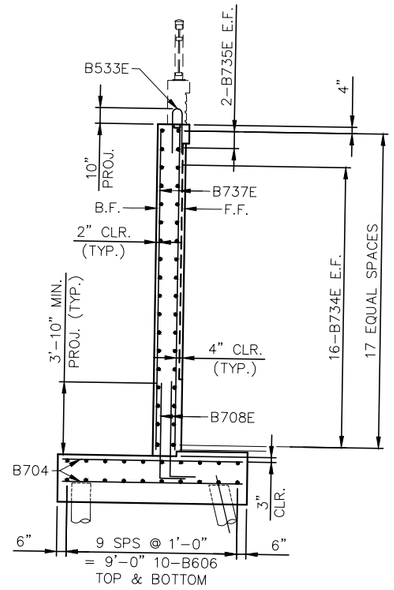
SECTION H–H



DETAIL "A"



WEST WINGWALL ELEVATION



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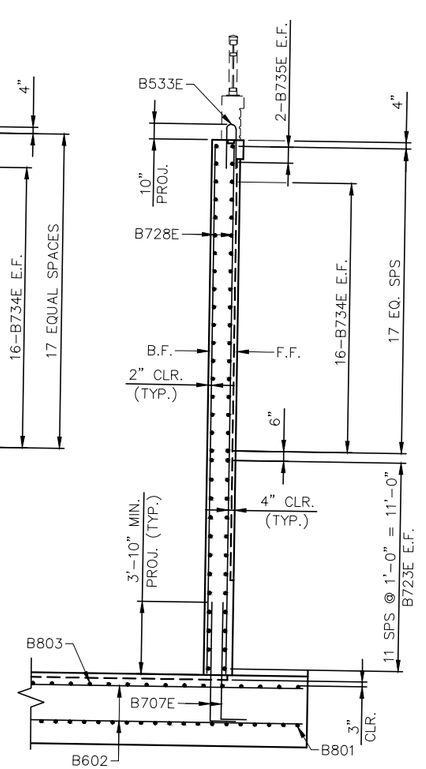

SECTION F–F

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METROPOLITAN COUNCIL

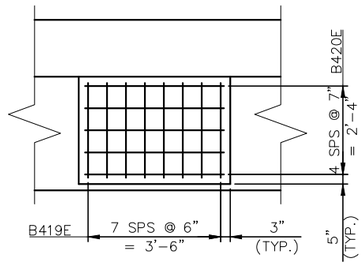
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
NORTH ABUTMENT DETAILS 10

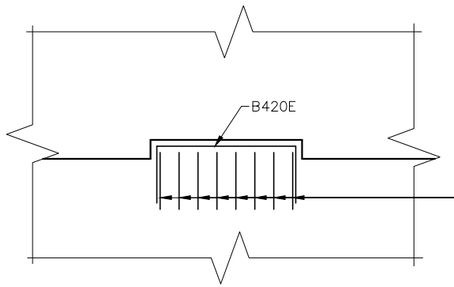
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-019

SHEET 24 OF 54

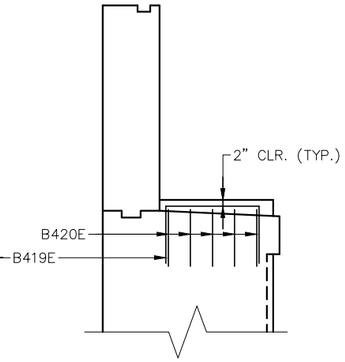
Jan, 06 2016 01:04 pm v:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-019.dwg By: knieriemm



PLAN



FRONT ELEVATION



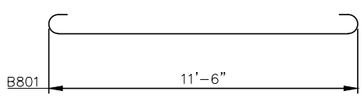
SECTION

PEDESTAL DETAIL

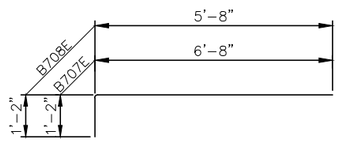
BILL OF REINFORCEMENT – NORTH ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
B801	55	13'–4"		ABUTMENT FOOTING – HORIZONTAL
B602	24	40'–4"		ABUTMENT FOOTING – HORIZONTAL
B803	41	11'–6"		ABUTMENT FOOTING – HORIZONTAL
B704	62	9'–6"		WINGWALL FOOTING – HORIZONTAL
B605	20	18'–6"		WINGWALL FOOTING – HORIZONTAL
B606	20	11'–6"		WINGWALL FOOTING – HORIZONTAL
B707E	138	7'–10"		ABUTMENT FOOTING DOWELS VERTICAL
B708E	66	6'–10"		WINGWALL FOOTING DOWELS– VERTICAL
B710E	32	21'–0"		ABUTMENT BODY FF – VERTICAL
B711E	62	24'–4"		ABUTMENT BODY BF – VERTICAL
B712E	47	30'–6"		ABUTMENT BODY EF – HORIZONTAL
B713E	32	9'–0"		ABUTMENT BODY TOP – VERTICAL
B514E	32	6'–5"		ABUTMENT BACKWALL FF – VERTICAL
B515E	32	5'–0"		ABUTMENT BACKWALL BF – VERTICAL
B516E	12	30'–6"		ABUTMENT BACKWALL EF – HORIZONTAL
B517E	32	3'–6"		ABUTMENT BACKWALL TOP – VERTICAL
B518E	32	6'–1"		ABUTMENT PAVING BLOCK – VERTICAL
B419E	32	5'–8"		ABUTMENT PEDESTALS – VERTICAL
B420E	20	6'–8"		ABUTMENT PEDESTALS – VERTICAL
B621E	44	6'–6"		EAST WINGWALL TIE – HORIZONTAL
B622E	12	5'–6"		EAST WINGWALL TIE – HORIZONTAL
B723E	4 SER. OF 12	9'–1" TO 35'–3"		EAST & WEST WINGWALL EF – HORIZONTAL
B724E	20	48'–5"		EAST WINGWALL EF – HORIZONTAL
B725E	14	55'–10"		EAST WINGWALL EF – HORIZONTAL
B726E	4	53'–7"		EAST WINGWALL EF TOP – HORIZONTAL
B727E	12	26'–9"		EAST & WEST WINGWALL EF – VERTICAL
B728E	30	28'–0"		EAST & WEST WINGWALL EF – VERTICAL
B729E	2 SER. OF 27	17'–0" TO 27'–8"		EAST WINGWALL EF – VERTICAL
B730E	26	16'–10"		EAST WINGWALL EF – VERTICAL
B731E	16	7'–5"		EAST WINGWALL EF – VERTICAL
B532E	19	3'–4"		EAST WINGWALL TIES – HORIZONTAL
B533E	111	4'–8"		RAILING DOWEL
B734E	32	54'–11"		WEST WINGWALL EF – HORIZONTAL
B735E	4	52'–8"		WEST WINGWALL EF TOP – HORIZONTAL
B736E	2 SER. OF 28	16'–10" TO 27'–8"		WEST WINGWALL EF – VERTICAL
B737E	41	16'–8"		WEST WINGWALL EF – VERTICAL
B538E	18	1'–11"		WEST WINGWALL END TIES – HORIZONTAL
B639E	44	6'–6"		WEST WINGWALL TIE – HORIZONTAL
B640E	14	5'–6"		WEST WINGWALL TIE – HORIZONTAL
* B641E	20	4'–3"		TIE BAR AT TRANSITION SLABS – VERTICAL

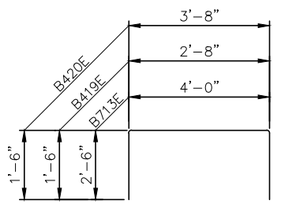
* 10–B641E AT EACH TRANSITION SLAB WITH A MAX SPACING OF 1'–0".



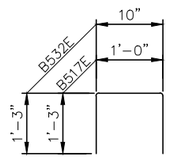
B801



B707E & B708E



B713E, B419E, & B420E



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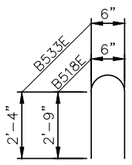

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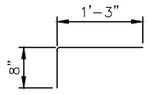

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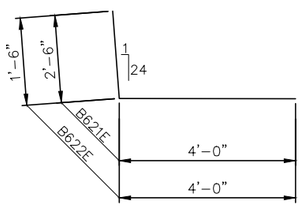
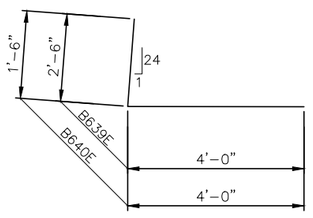


B621E & B622E



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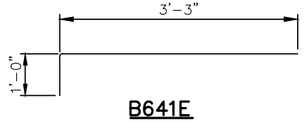

B641E

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DESIGNED BY: AK/IGG CHECKED BY: TR
DRAWN BY: MJK CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

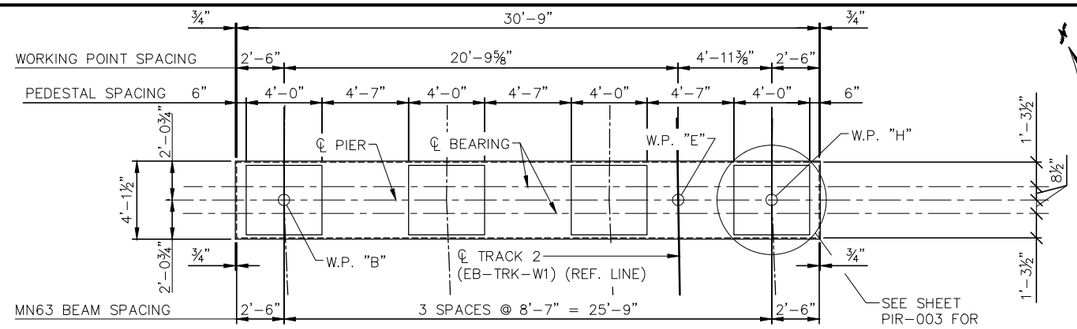
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
NORTH ABUTMENT DETAILS 11

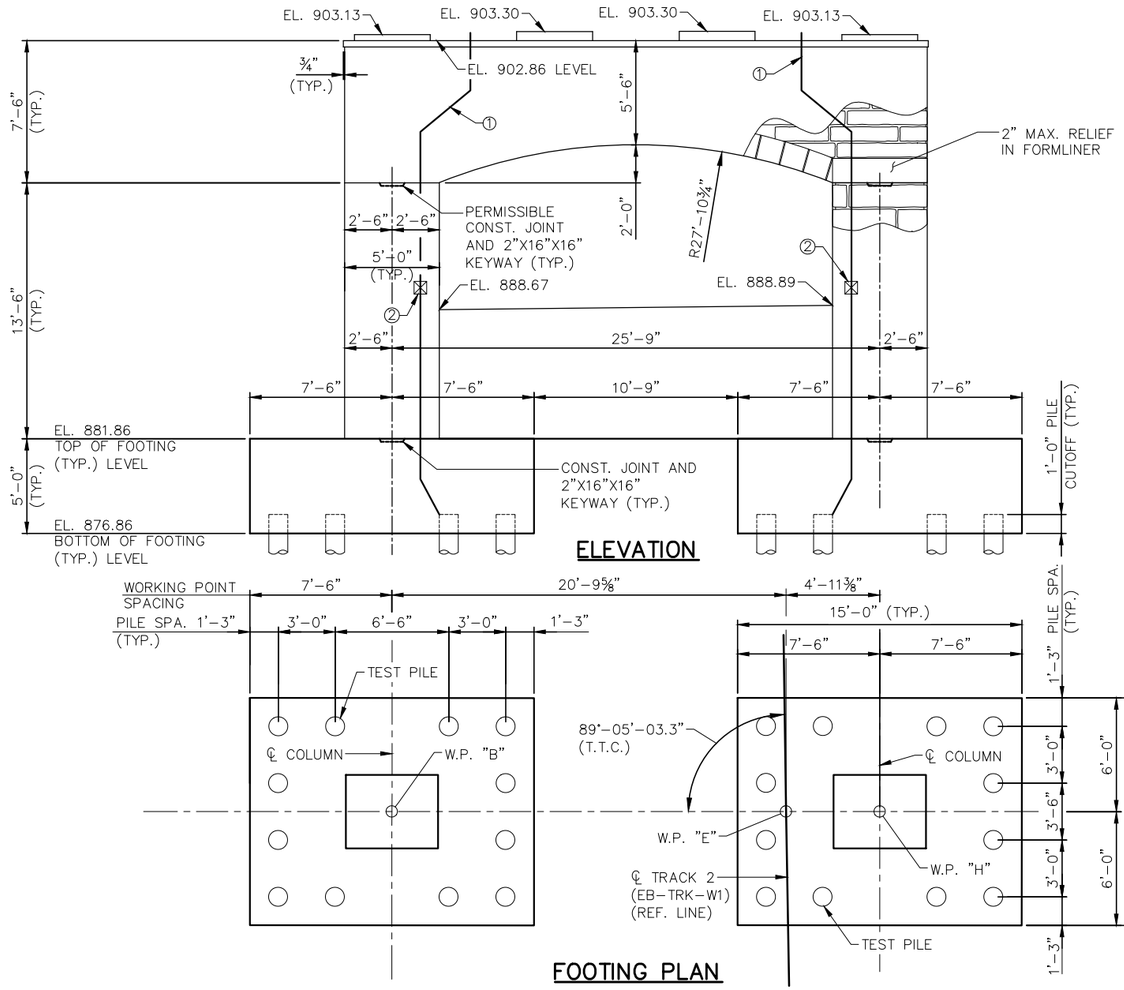
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ABUT-020

SHEET 25 OF 54

Jan, 06 2016 01:05 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ABUT-020.dwg By: knierlemm

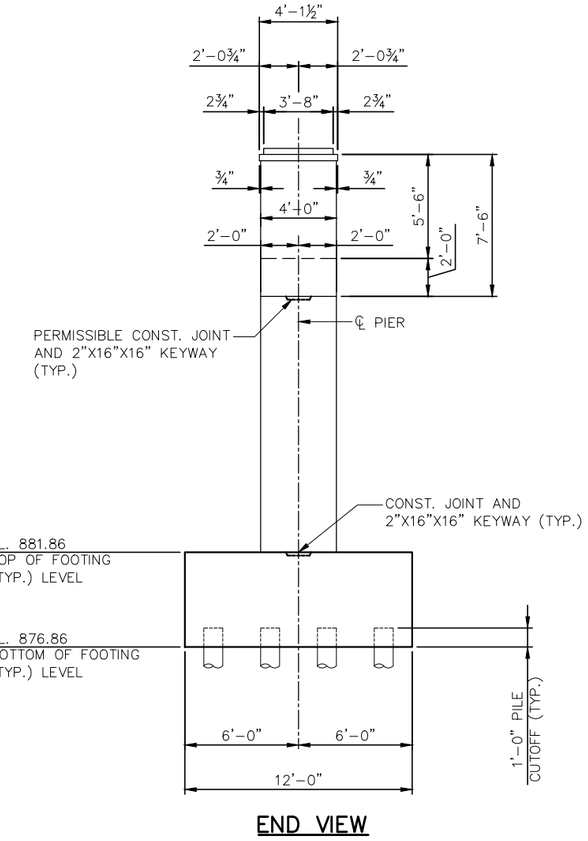


PIER CAP PLAN



ELEVATION

FOOTING PLAN



END VIEW

PIER
REQUIRED NOMINAL PILE BEARING RESISTANCE R_n – TONS/PILE

FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT NOMINAL RESISTANCE FORMULA	0.40	280.0
PDA	0.65	172.3

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

PIER
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD + EARTH PRESSURE	64.5
FACTORED LIVE LOAD	11.7
FACTORED OVERTURNING LOAD	35.8
* FACTORED TOTAL LOAD	112.0

*BASED ON STRENGTH V LOAD COMBINATION.

PILE NOTES

2 CAST–IN–PLACE CONC. TEST PILE 45 FT. LONG
22 CAST–IN–PLACE CONC. PILES EST. LENGTH 35 FT.
24 CAST–IN–PLACE CONC. PILES REQ'D FOR PIER

PILES TO HAVE A NOMINAL DIAMETER OF 12" AND WALL THICKNESS OF 0.375 INCHES.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES

FOR ARCHITECTURAL DETAILS, SEE SHEET ARCH.

①GROUND WIRE PLACED INSIDE 1½" PVC CONDUIT, SEE GROUNDING PLANS.

②4"x4"x4" GROUNDING TEST BOX.

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DESIGNED BY: AK/IGG | CHECKED BY: TR
DRAWN BY: MJK | CHECKED BY: TR

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METROPOLITAN COUNCIL

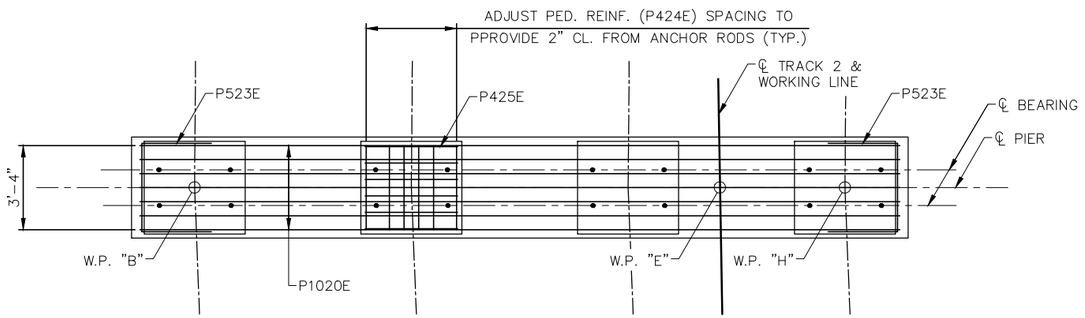
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
PIER DETAILS 1

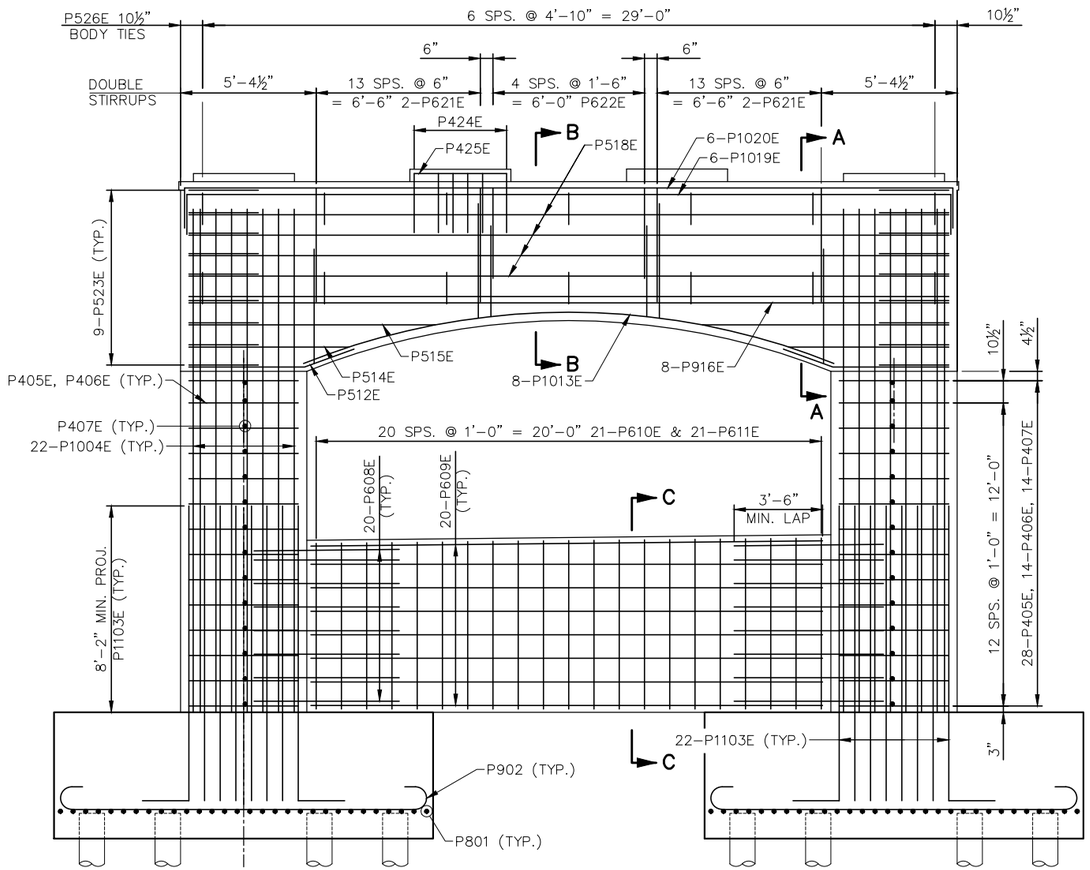
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-PIR-001

SHEET 26 OF 54

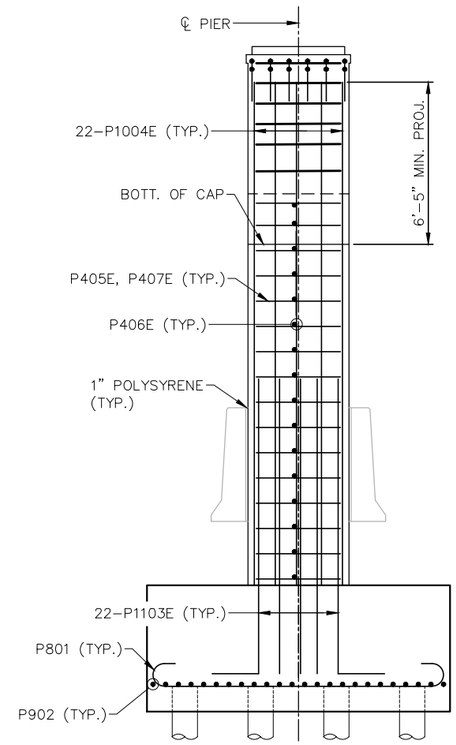
Jan. 06 2016 01:56 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-PIR-001.dwg By: knierlemm



PIER CAP PLAN



ELEVATION



END VIEW

NOTES:

FOR ARCHITECTURAL DETAILS, SEE SHEET ARCH.

FOR SECTIONS A–A AND B–B, SEE SHEET PIR–004.

FOR BILL OF REINFORCEMENT, SEE SHEET PIR–004.

FOR SECTION C–C, SEE SHEET PIR–003.

FOR PEDESTAL PLAN, SEE SHEET PIR–003.

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DRAWN BY: MJK CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
PIER DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-PIR-002

SHEET 27 OF 54

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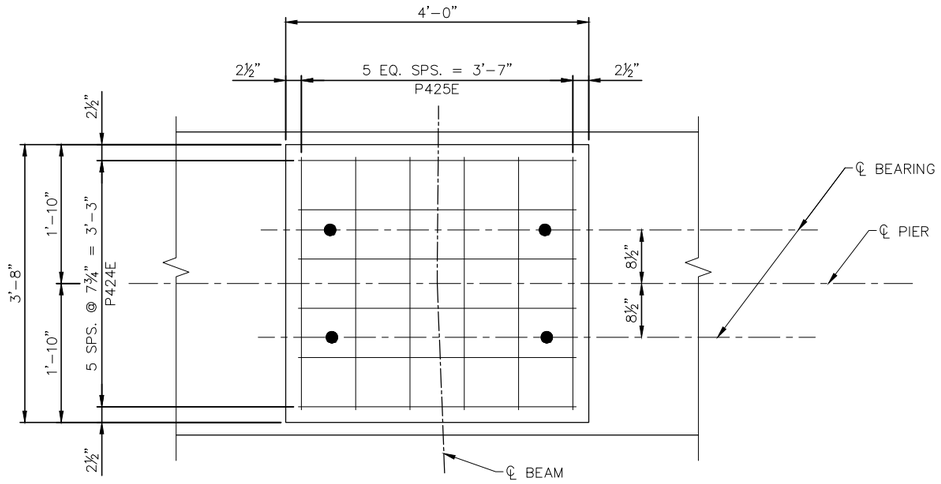
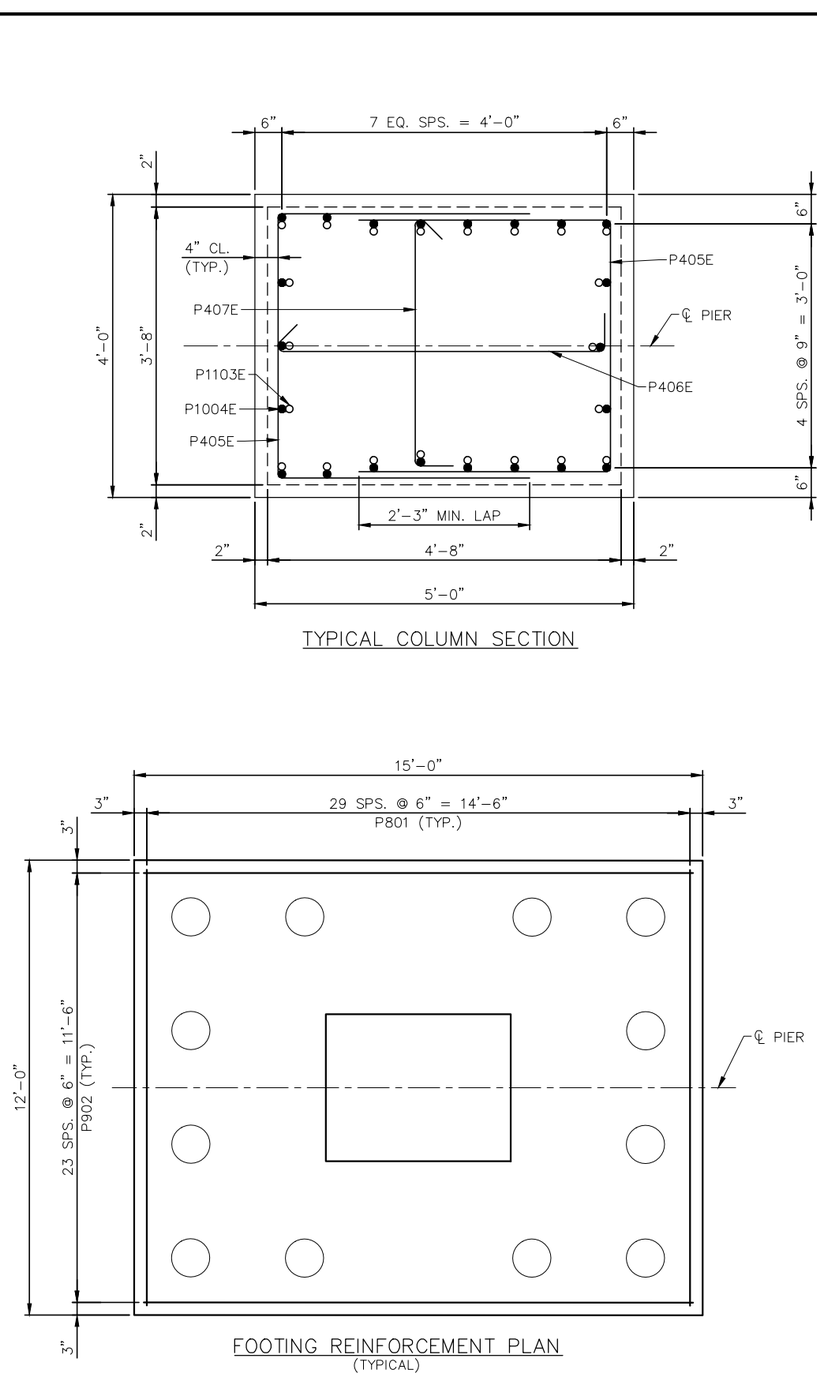
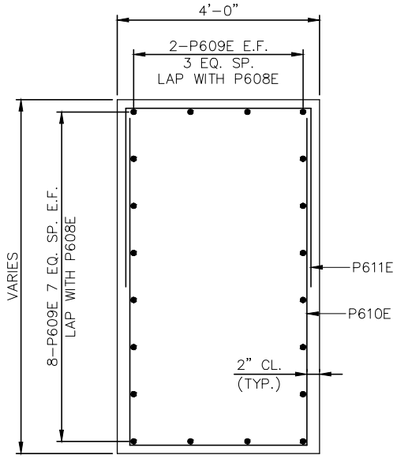
TYPICAL COLUMN SECTION



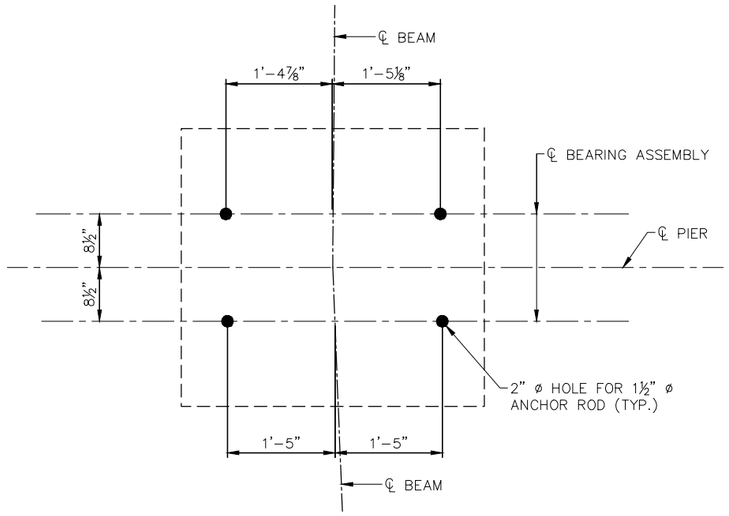
TYPICAL PEDESTAL PLAN



FOOTING REINFORCEMENT PLAN
(TYPICAL)



SECTION C-C
(SECTION THRU SHEAR WALL)



ANCHOR ROD LAYOUT
(TYPICAL FOR BEARING F1)

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METROPOLITAN COUNCIL

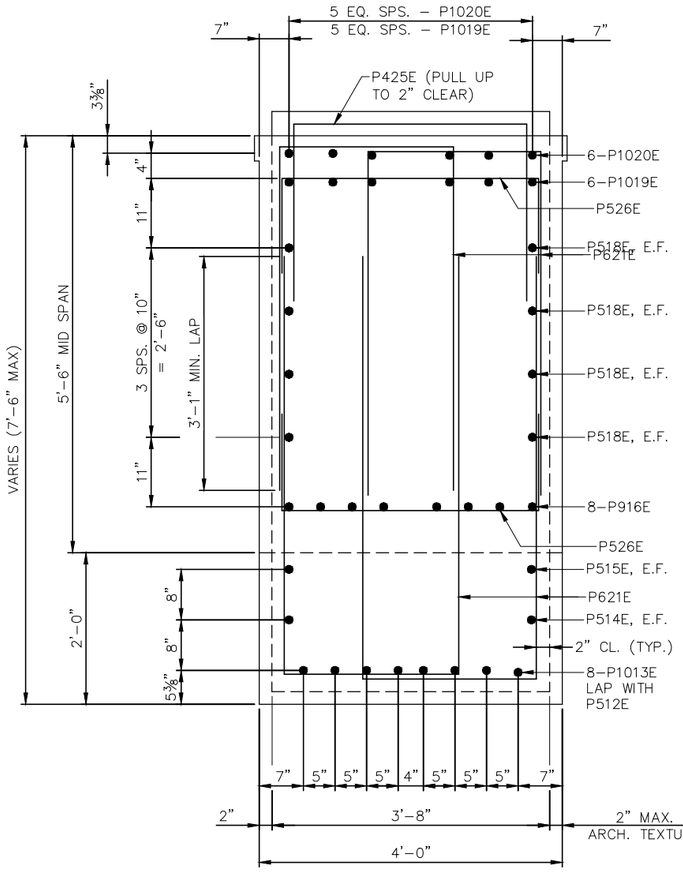
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
PIER DETAILS 3

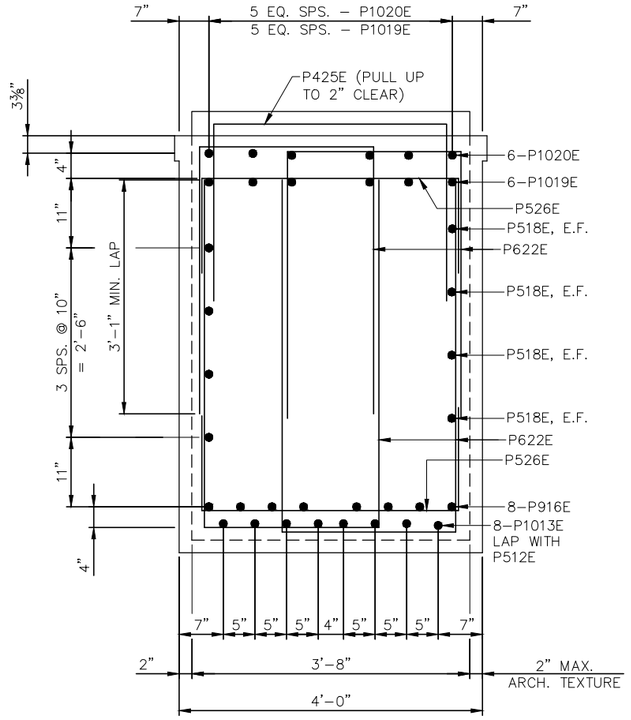
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-PIR-003

SHEET 28 OF 54

Jan. 06 2016 01:07 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-PIR-003.dwg By: knieriemm



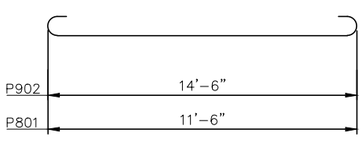
SECTION A–A



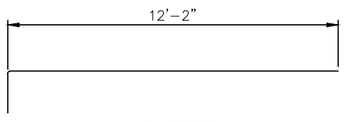
SECTION B–B

BILL OF REINFORCEMENT – PIER

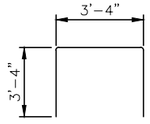
BAR	NO.	LENGTH	SHAPE	LOCATION
P801	60	13'–4"		FOOTING – HORIZONTAL
P902	48	17'–0"		FOOTING – HORIZONTAL
P1103E	44	14'–2"		FOOTING DOWEL – VERTICAL
P1004E	44	20'–6"		COLUMN – VERTICAL
P405E	56	10'–0"		COLUMN TIES – HORIZONTAL
P406E	28	5'–1"		COLUMN TIES – HORIZONTAL
P407E	28	4'–1"		COLUMN TIES – HORIZONTAL
P608E	40	5'–9"		SHEAR WALL DOWEL – HORIZONTAL
P609E	20	20'–5"		SHEAR WALL – LONGITUDINAL
P610E	21	18'–0"		SHEAR WALL STIRRUPS – VERTICAL
P611E	21	11'–0"		SHEAR WALL STIRRUPS – VERTICAL
P512E	12	6'–7"		CAP BOTTOM – LONGITUDINAL
P1013E	8	21'–6"		CAP BOTTOM – LONGITUDINAL
P514E	4	6'–4"		CAP SIDE – LONGITUDINAL
P515E	4	9'–9"		CAP SIDE – LONGITUDINAL
P916E	8	30'–1"		CAP BOTTOM – LONGITUDINAL
P518E	8	30'–1"		CAP SIDE – LONGITUDINAL
P1019E	6	33'–5"		CAP TOP – LONGITUDINAL
P1020E	6	33'–9"		CAP TOP – LONGITUDINAL
P621E	112	12'–4"		CAP STIRRUPS – VERTICAL
P622E	20	10'–10"		CAP STIRRUPS – VERTICAL
P523E	18	9'–2"		CAP END TIES – HORIZONTAL
P424E	24	9'–6"		CAP TIES PEDESTALS – VERTICAL
P425E	24	9'–2"		CAP TIES PEDESTALS – VERTICAL
P526E	14	5'–10"		CAP BODY TIES – VERTICAL



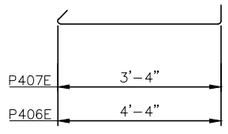
P801 & P902



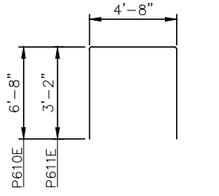
P1103E



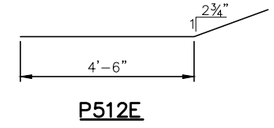
P405E



P406E & P407E



P610E & P611E



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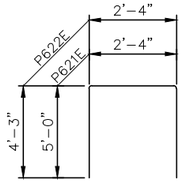
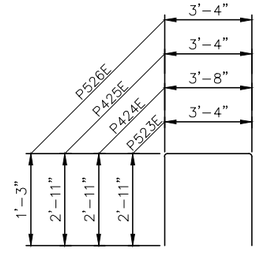
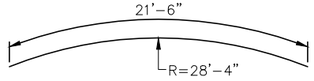


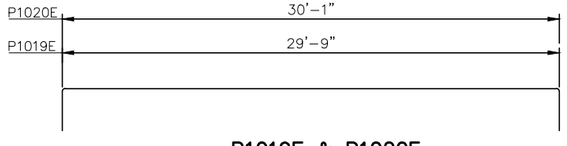
P621E & P622E



P523E, P424E, P425E & P526E



P1013E



P1019E & P1020E

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DRAWN BY: MJK CHECKED BY: TR

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90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
PIER DETAILS 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-PIR-004

SHEET 29 OF 54

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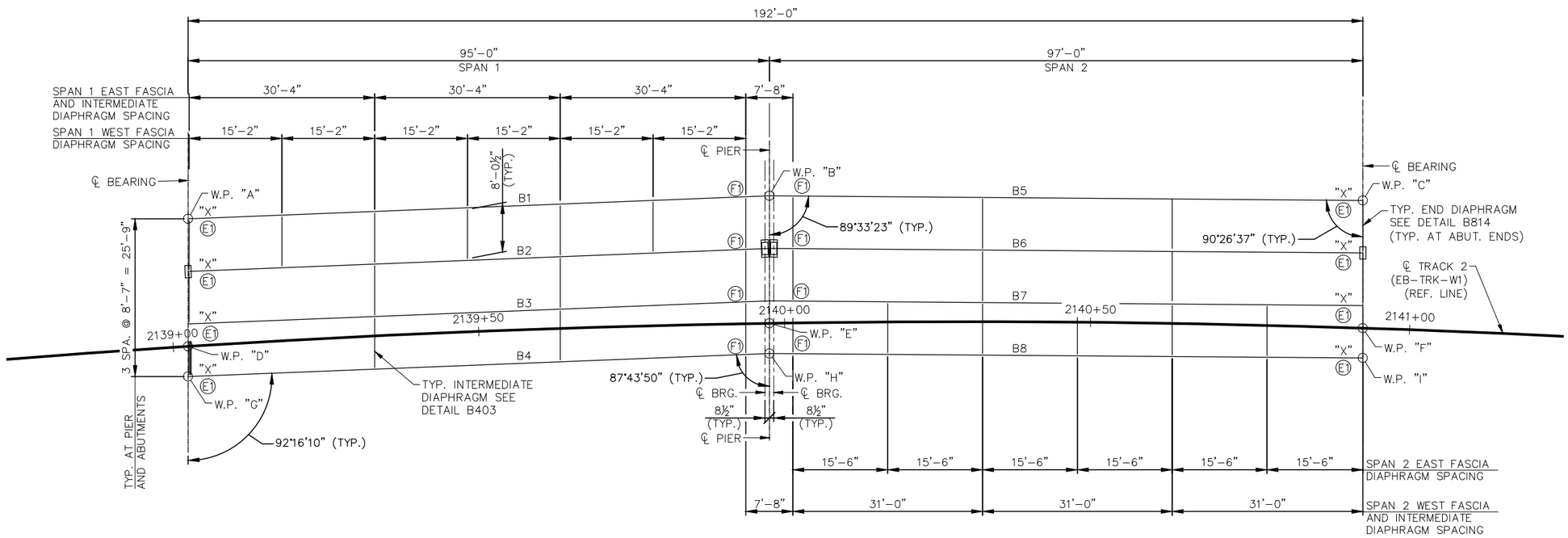

FRAMING PLAN

NOTES:

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

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

"X" DENOTES X END OF BEAM.

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
FRAMING PLAN

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-SUP-002

SHEET 30 OF 54

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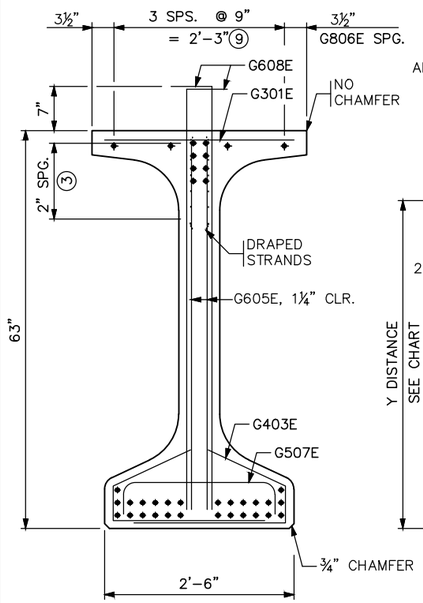
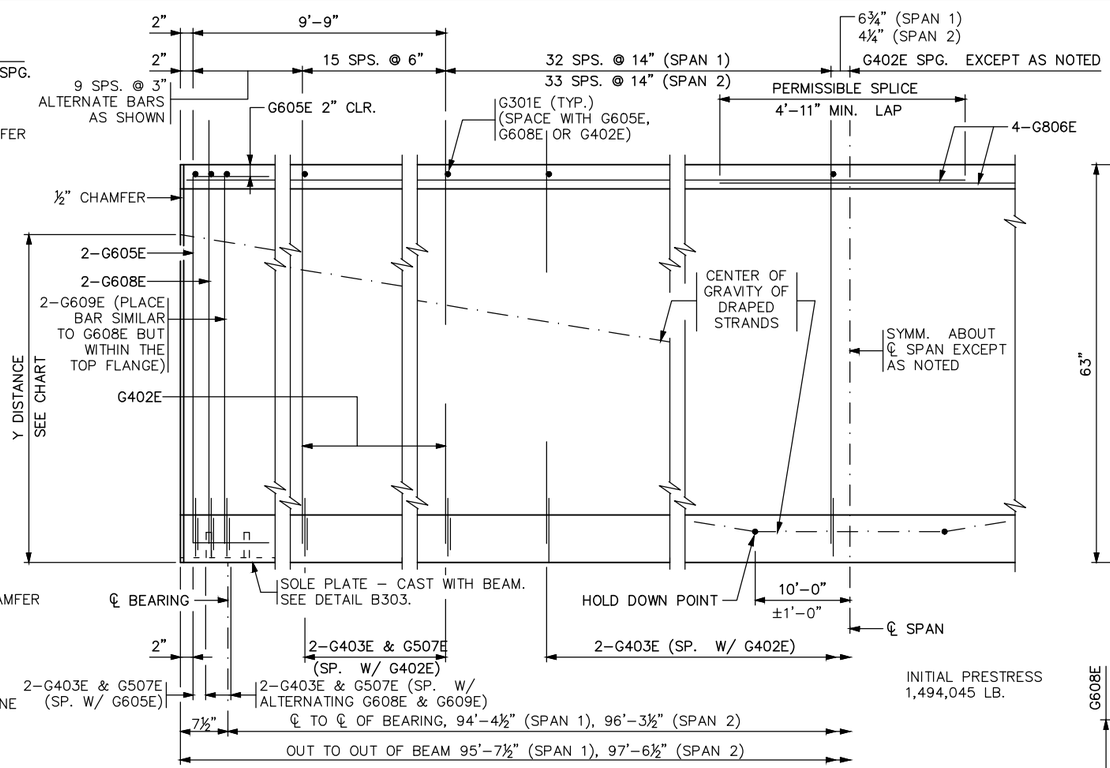


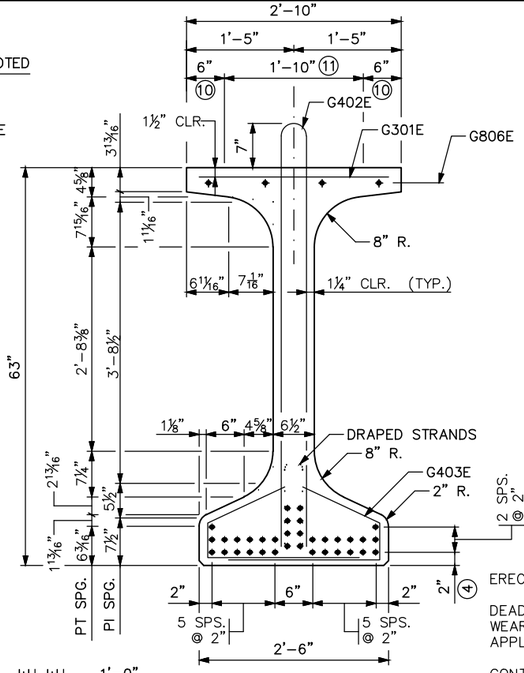
END VIEW

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



BEAM ELEVATION

INITIAL PRESTRESS
1,494,045 LB.

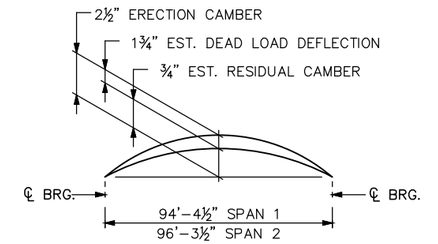


SECTION AT ℄ SPAN

Y DISTANCES (INCHES)			
	NO.	℄ SPAN	END
STRAIGHT STRANDS	26	3.23	☒
DRAPED STRANDS	8	6	57 ▫
TOTAL STRANDS	34	3.88	☒

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.

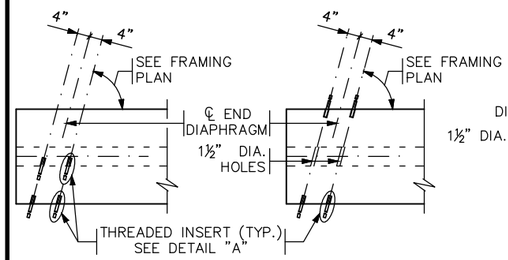
DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB, WEARING COURSE, BARRIER, SIDEWALK AND MEDIAN WHERE APPLICABLE.

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		
	SPAN 1	SPAN 2
ELASTIC SHORTENING LOSS	19.35 KSI	19.18 KSI
LONG TERM LOSSES	20.90 KSI	20.90 KSI
TOTAL LOSSES	40.25 KSI	40.08 KSI

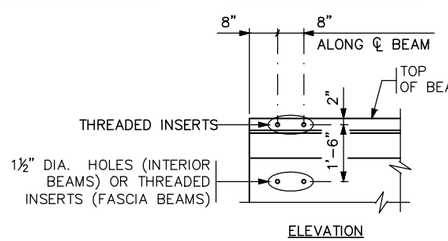
MINIMUM CONCRETE STRENGTH – K.S.I.	
① f'ci	② f'c
7 KSI	9 KSI

PRESTRESSING STRAND DIAMETER	
⑤	½" ☐
⑤	0.60" ☒



PLAN AT FASCIA BEAMS

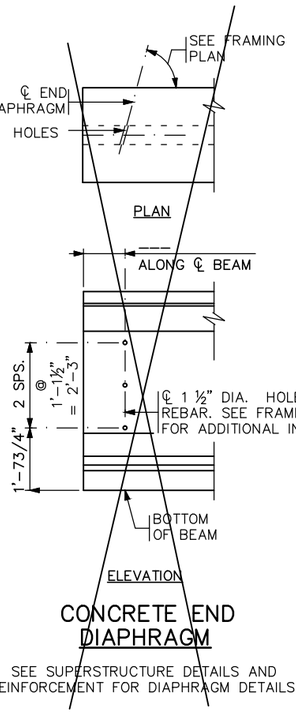
PLAN AT INTERIOR BEAMS



ELEVATION

CONCRETE END DIAPHRAGM

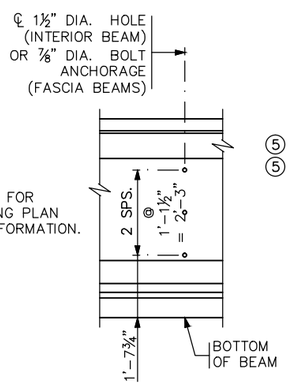
PARAPET ABUTMENT
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)



ELEVATION

CONCRETE END DIAPHRAGM

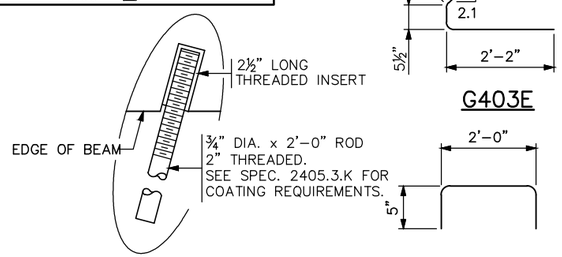
SEE SUPERSTRUCTURE DETAILS AND REINFORCEMENT FOR DIAPHRAGM DETAILS.



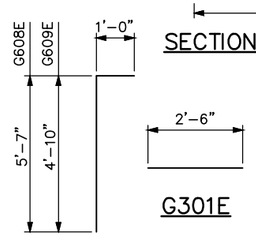
ELEVATION

STEEL INTERMEDIATE DIAPHRAGM

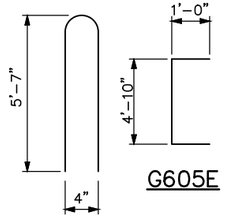
(SEE DETAIL B403 FOR DIAPHRAGM DETAILS)



DETAIL "A"

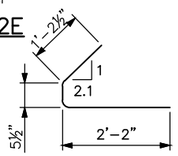


G301E



G608E & G609E

G605E



G402E

G403E

G507E

GENERAL NOTES

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.

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

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

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

APPROXIMATE WEIGHT OF BEAM IS 41.5 TONS FOR SPAN 1 GIRDERS AND 42.3 TONS FOR SPAN 2 GIRDERS.

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 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.

REVISED:

APPROVED: JANUARY 13, 2015
Nancy Daubenberger
STATE BRIDGE ENGINEER

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

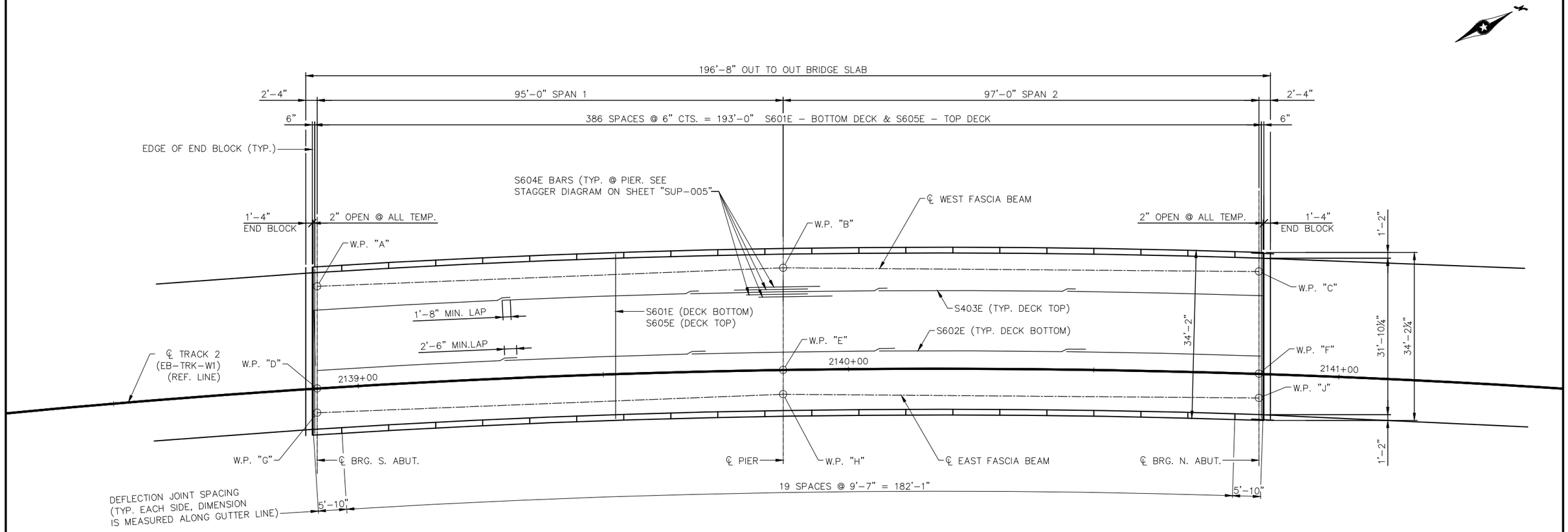
TITLE: MN63" PRESTRESSED CONCRETE BEAM (PRETENSIONED) MN63-97

BEAMS B1-B8

FIG. 5-397.509

DES: AK/IGG	DR: MJK	APPROVED:	BRIDGE NO. 27W32
CHK: TR	CHK: TR		
SHEET NO. 31 OF 54 SHEETS			

CBR27W32-BRG-PCB-001



DECK PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: AK/IGG CHECKED BY: TR
DRAWN BY: MJK CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

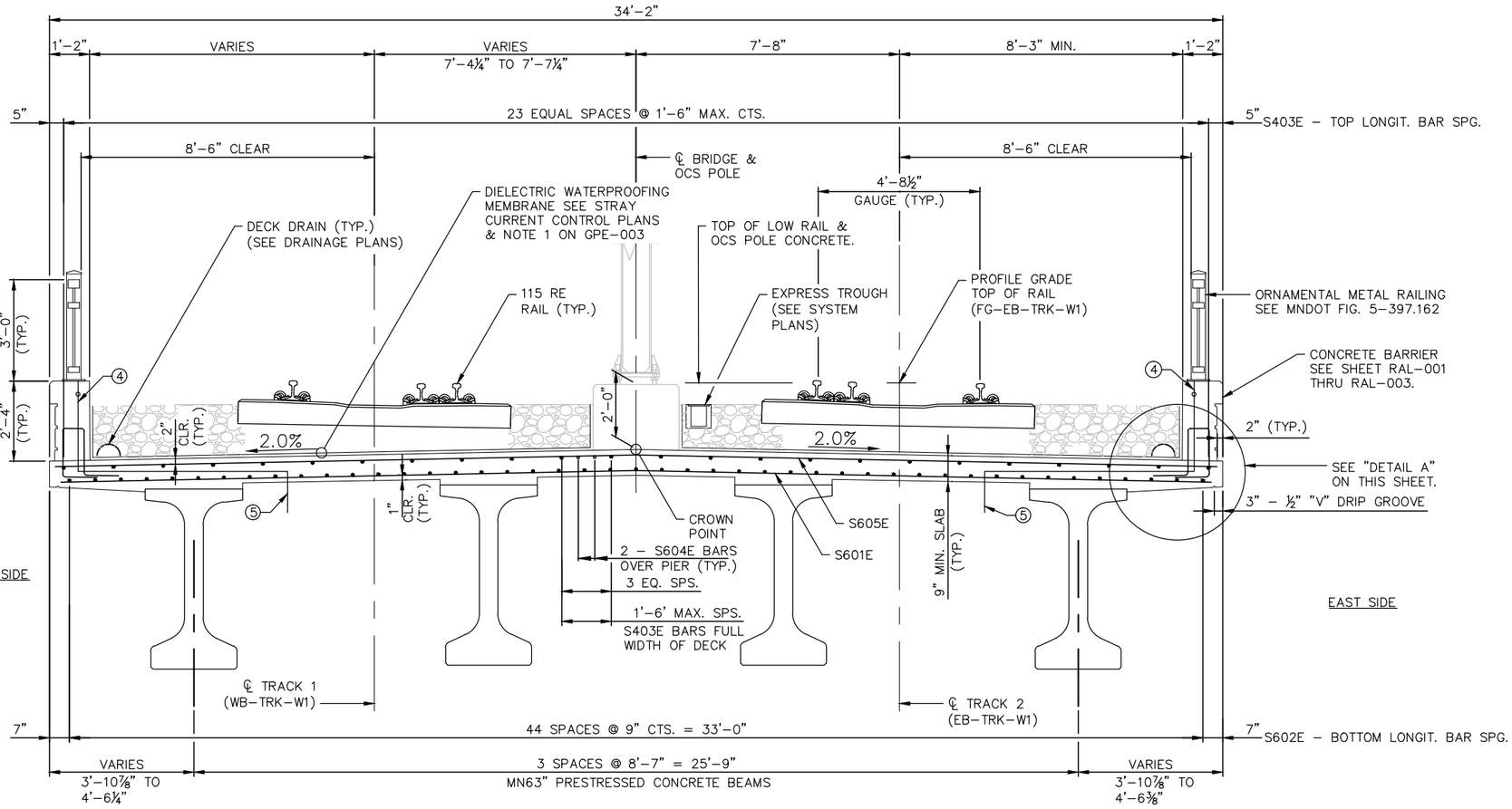
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SUPERSTRUCTURE DETAILS 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27W32-BRG-SUP-003

SHEET 32 OF 54

Jan, 06 2016 01:10 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-SUP-003.dwg By: knierlemm



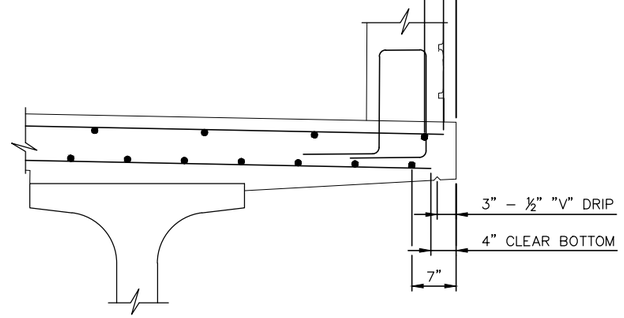
TRANSVERSE SECTION THRU DECK - SPANS 1 & 2

NOTES:

1. LAP NO. 6 LONGITUDINAL BAR STEEL IN DECK 2'-6" MIN.
2. LAP NO. 4 LONGITUDINAL BAR STEEL IN DECK 1'-8" MIN.
3. SEE STAGGER DIAGRAM ON SHEET "SUP-005" FOR S604E BAR LAYOUT DETAILS.

④ GROUND WIRE, SEE GROUNDING PLANS.

⑤ GROUND WIRE PLACED IN 1½" PVC CONDUIT, WITHIN DECK AT PIER. SEE GROUNDING PLANS.



DETAIL A

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SUPERSTRUCTURE DETAILS 2

DISCIPLINE: STRUCTURES

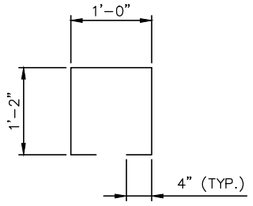
SHEET NAME: CBR27W32-BRG-SUP-004

SHEET 33 OF 54

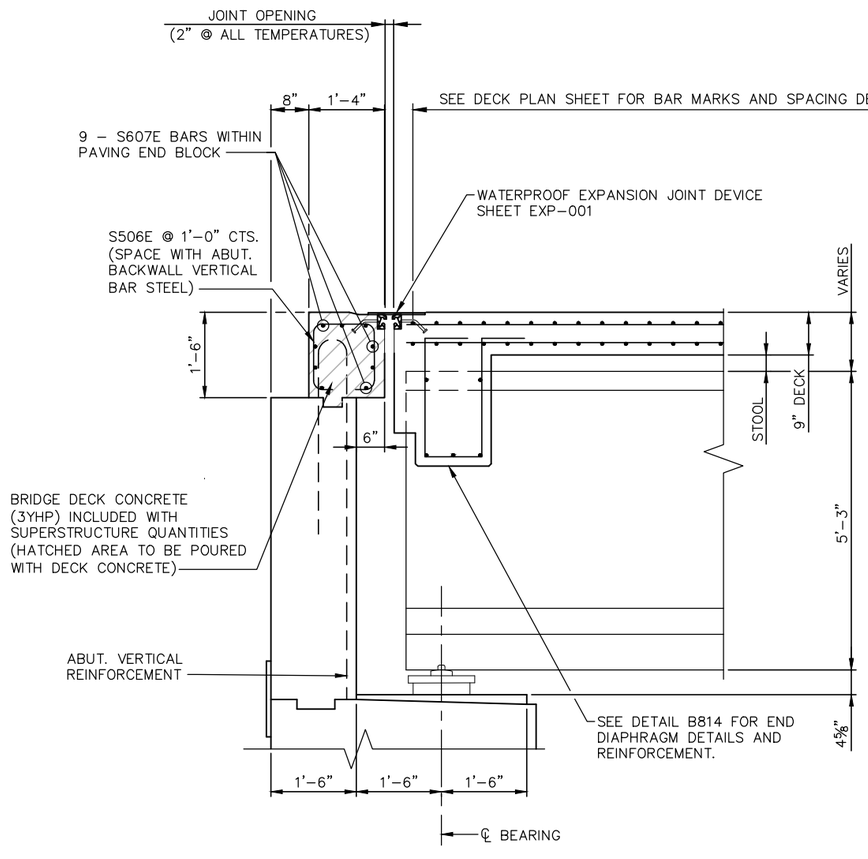
Jan, 06 2016 01:10 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-SUP-004.dwg By: knierlemm

BILL OF REINFORCEMENT – SUPERSTRUCTURE

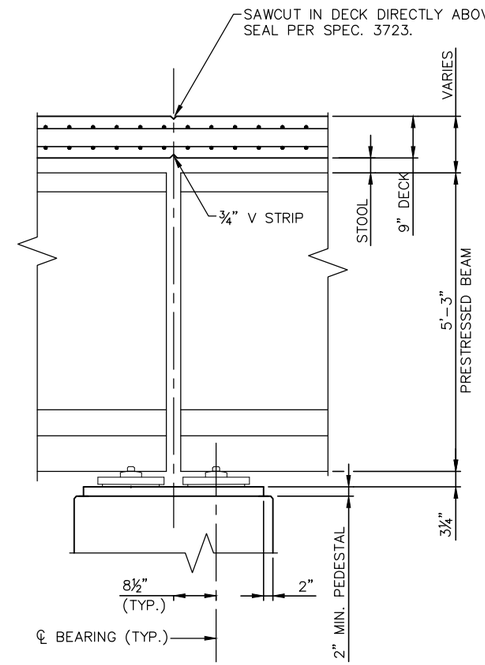
BAR	NO.	LENGTH	SHAPE	LOCATION
S601E	387	33'–6"	———	DECK – TRANSVERSE BOTTOM
S602E	225	40'–9"	———	DECK – LONGITUDINAL BOTTOM
S403E	120	40'–1"	———	DECK – LONGITUDINAL TOP
S604E	46	15'–0"	———	DECK – LONGITUDINAL TOP AT PIER
S605E	387	33'–10"	———	DECK – TRANSVERSE TOP
S506E	62	4'–0"	⌐¬	PAVING BLOCK – VERTICAL – AT ABUTMENTS
S607E	18	30'–2"	———	PAVING BLOCK – TRANSVERSE



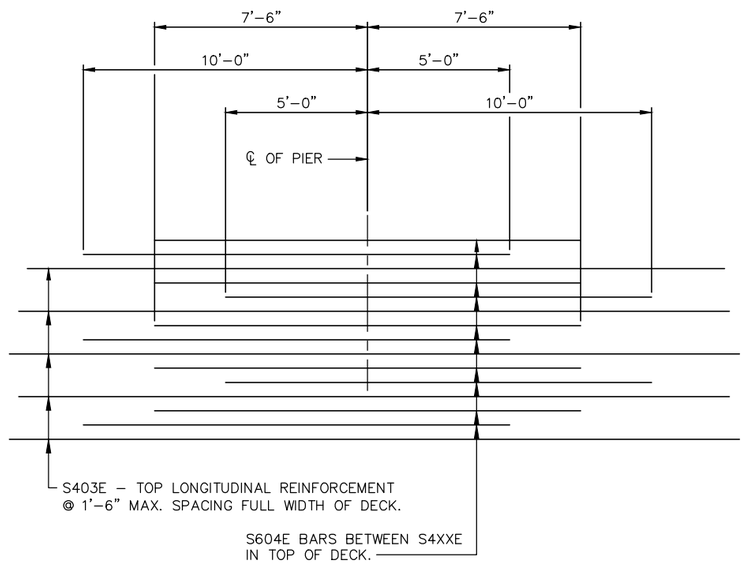
S506E



SECTION THRU SOUTH ABUTMENT
(NORTH ABUTMENT SIMILAR)



SECTION THRU PIER – FIXED



STAGGER DIAGRAM

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG CHECKED BY: TR
DRAWN BY: MJK CHECKED BY: TR

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

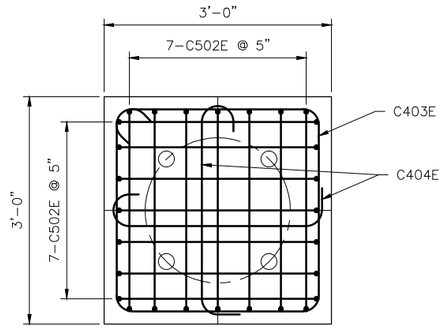
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SUPERSTRUCTURE DETAILS 3

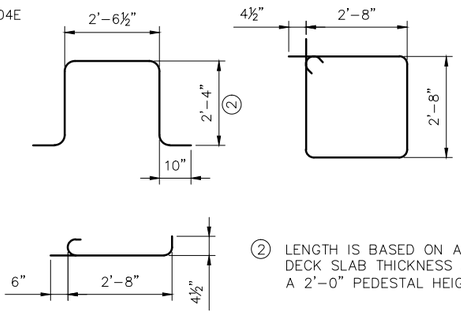
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-SUP-005

SHEET 34 OF 54

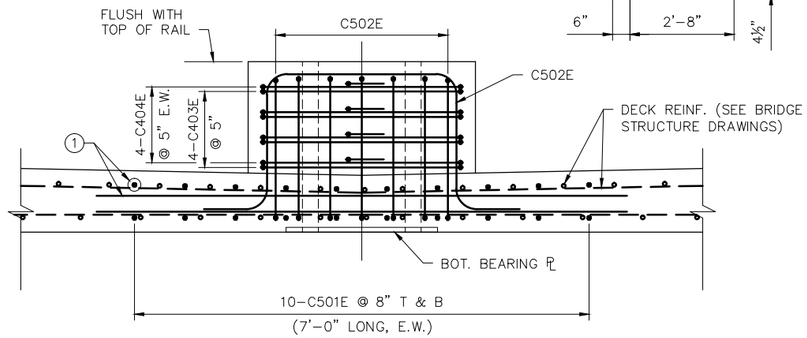
Jan. 06 2016 01:10 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-SUP-005.dwg By: knierlemm

BILL OF REINFORCEMENT - PEDESTAL				
BAR	NO.	LENGTH	SHAPE	LOCATION
C501E	80	7'–0"	——	DECK SLAB
C502E	28	8'–11"		PEDESTAL
C403E	8	11'–5"		PEDESTAL
C404E	16	3'–7"		PEDESTAL

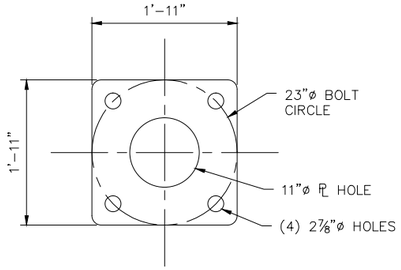


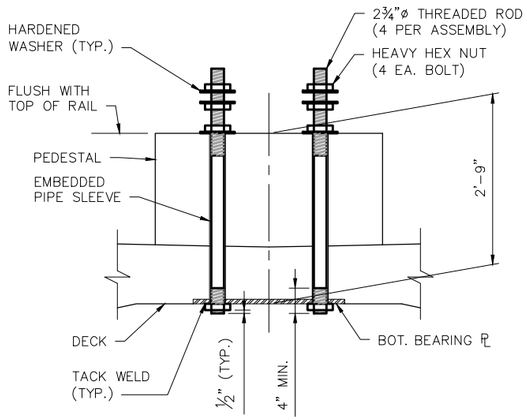


② LENGTH IS BASED ON A 9" DECK SLAB THICKNESS AND A 2'–0" PEDESTAL HEIGHT.



① ADDITIONAL DECK REINF. SHALL BE PLACED IN SAME PLANE AS AND BETWEEN STANDARD DECK REINF. AND IS SYM. ABOUT ℄ POLE.





NOTES:

1. Concrete cover for pedestal shall be 2" unless otherwise noted.
2. Use embedded sleeve through pedestal and deck slab with a bottom bearing plate equal in plan size to the top OCS Pole bearing plate. (See OCS Pole Anchorage Assembly Details and Foundation Schedules in Civil Volume 12 for additional OCS Plate Details)
3. Structural steel elements shall conform to the following ASTM Specifications:
   - Bearing Plates A572 Grade 50
   - Anchor bolts (threaded rods) F1554 Grade 55
   - Hexagonal Nuts A563, and
   - Washers F436
4. All steel shall be hot–dipped galvanized in accordance with ASTM A–123 and A–153.
5. Contractor may provide fully threaded rod if desired.
6. Bars S502E may be adjusted to avoid conflicts with OCS Anchor Rods.
7. Once OCS pole bearing plate and anchor bolts have been installed and tightened, interstitial space between sleeve and bolt is filled with an epoxy grout.
8. Epoxy grout shall have the following properties:
   - Minimum compressive strength of 5000 psi
   - Non–shrink
   - Non–metallic
   - Non–conductive to electricity, and
   - Suitable for adhesion to galvanized anchor bolts.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG CHECKED BY: TR
DRAWN BY: MJK CHECKED BY: TR

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METROPOLITAN COUNCIL

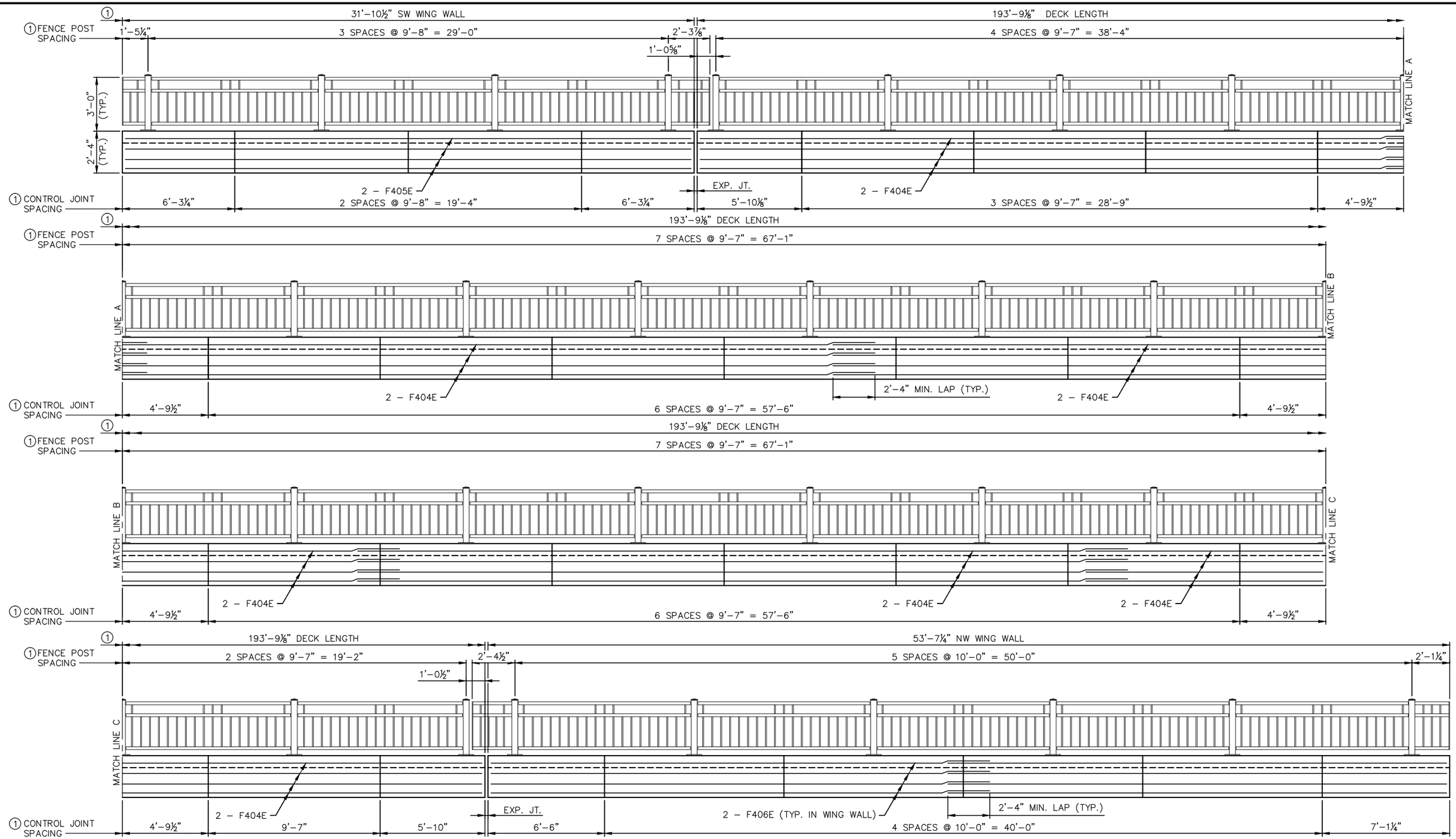
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SUPERSTRUCTURE DETAILS 4

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-SUP-006

SHEET 35 OF 54

Jan. 06 2016 01:11 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-SUP-006.dwg By: knteriemn



NOTE:

1 DIMENSIONS ARE GIVEN ALONG INSIDE FACE OF BARRIER.

INSIDE ELEVATION – WEST CONCRETE BARRIER (LOOKING WEST)

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

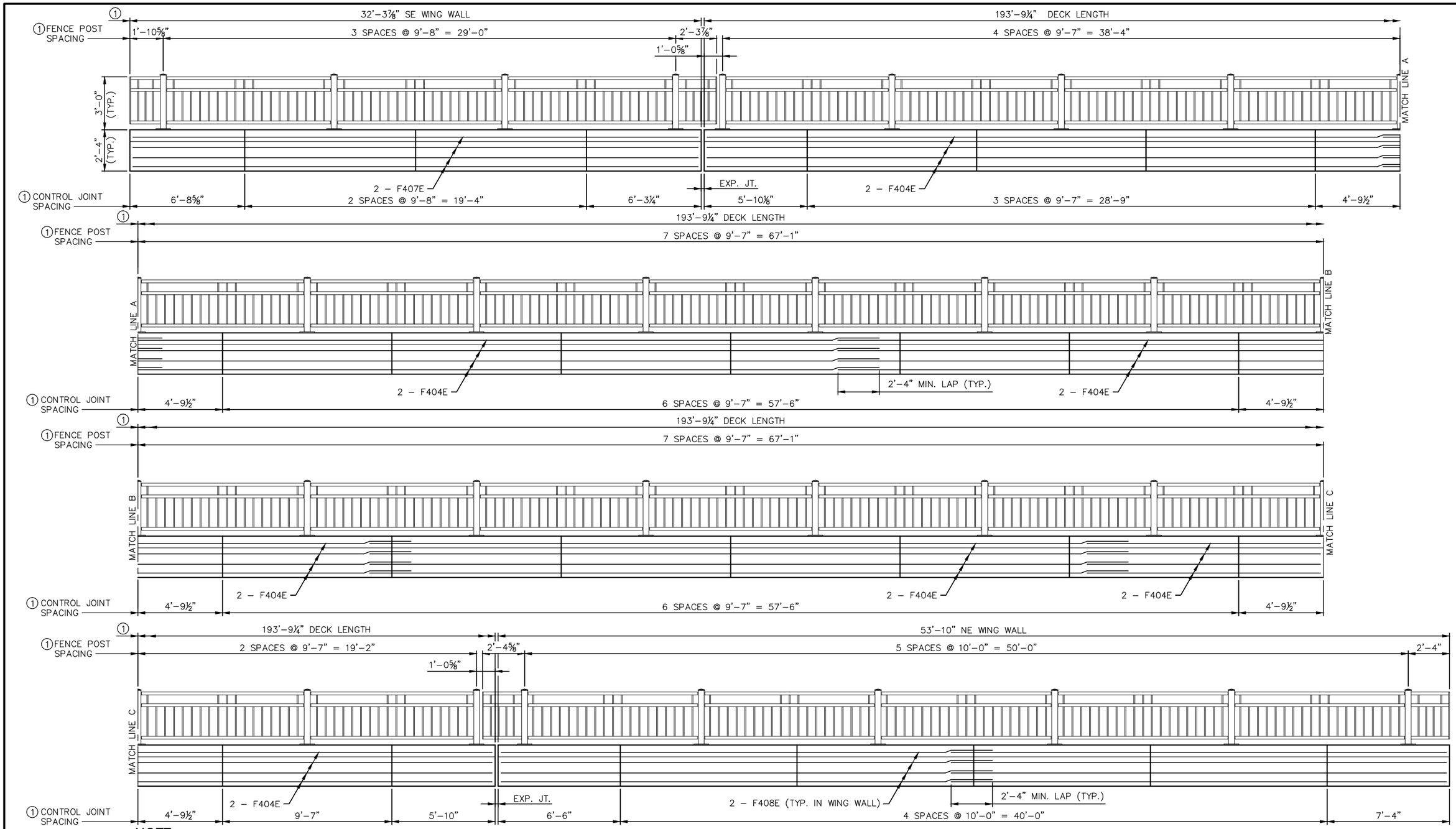
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
CONCRETE BARRIER DETAILS 1

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-RAL-001

SHEET 36 OF 54

Jan. 06 2016 01:11 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-RAL-001.dwg By: knieriemm



NOTE:

① DIMENSIONS ARE GIVEN ALONG INSIDE FACE OF BARRIER.

OUTSIDE ELEVATION – EAST CONCRETE BARRIER (LOOKING WEST)

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

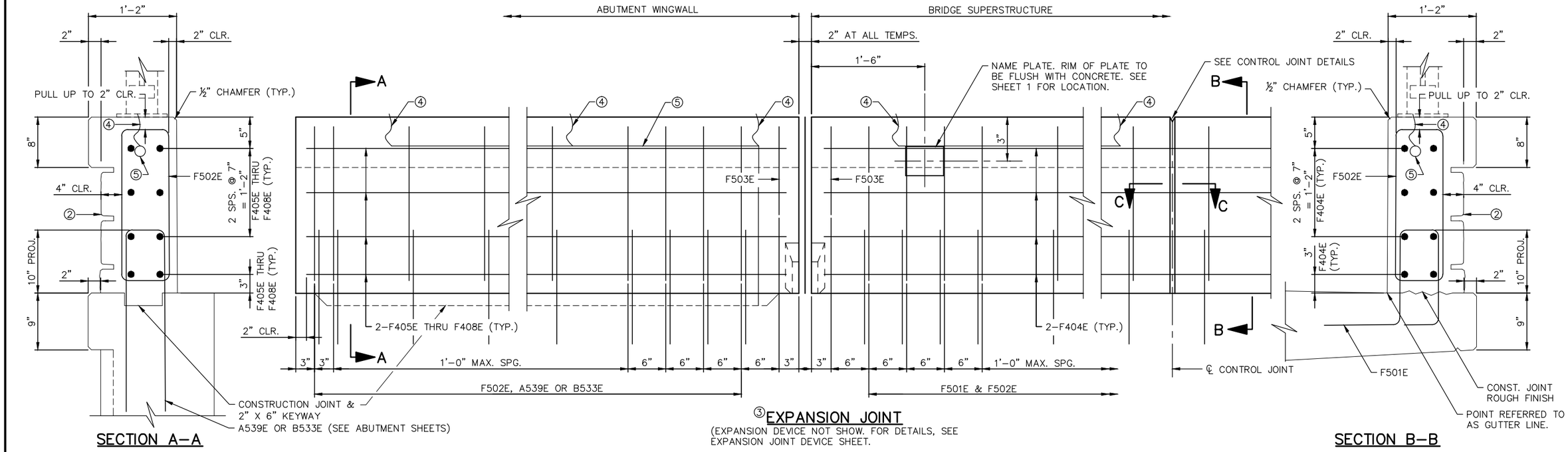
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
CONCRETE BARRIER DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-RAL-002

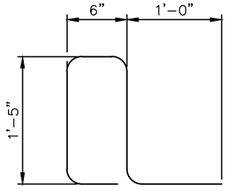
SHEET 37 OF 54

Jan. 06 2016 01:11 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-RAL-002.dwg By: knierlemm

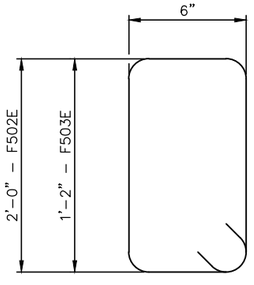


BILL OF REINFORCEMENT FOR CONCRETE BARRIER

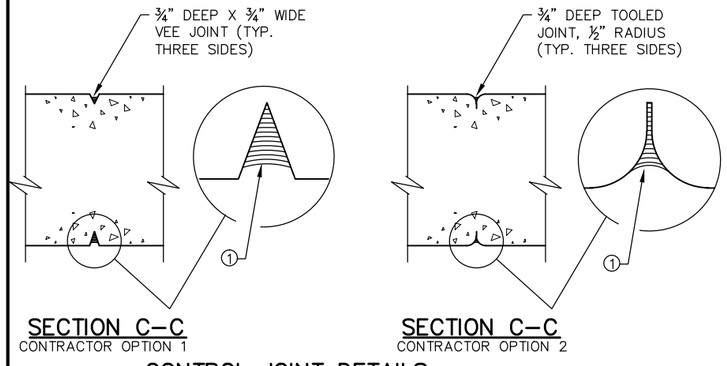
BAR	NO.	LENGTH	SHAPE	LOCATION
F501E	394	4'-10"		BARRIER VERTICAL
F502E	577	5'-8"		BARRIER VERTICAL
F503E	8	4'-0"		BARRIER VERTICAL
F404E	80	40'-7"	——	BARRIER LONGIT.
F405E	8	31'-5"	——	BARRIER LONGIT.
F406E	16	27'-10"	——	BARRIER LONGIT.
F407E	8	32'-0"	——	BARRIER LONGIT.
F408E	16	27'-11"	——	BARRIER LONGIT.



F501E



F502E & F503E



SECTION C-C
CONTRACTOR OPTION 1

SECTION C-C
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)

GENERAL NOTES

CONTINOUSLY GROUND ALL METAL RAILINGS; SEE SPECIAL PROVISIONS. REFER TO THE ELECTRICAL PLANS AND ELECTRICAL SPECIAL PROVISIONS FOR DETAILS REGARDING BONDING MULTIPLE ELECTRICAL GROUNDING SYSTEMS.

CONCRETE BARRIER = 416 LBS./FT. (0.089 CU. YDS/FT.)

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

MAXIMUM SPACING OF CONTROL JOINTS ON SUPERSTRUCTURE AND WINGWALLS SHALL BE 10 FEET. SEE SUPERSTRUCTURE DETAIL SHEETS FOR JOINT SPACING.

① JOINT SEALANT PER MNDOT APPROVED/QUALIFIED PRODUCTS LIST – CRACK AND JOINT MATERIALS – SILICONE JOINT SEALERS.

② FOR ARCHITECTURAL CONCRETE TEXTURE (CUT STONE) (SMALL) DETAILS, SEE AESTHETIC DETAIL SHEET.

③ SEE SHEET "EXP-001" FOR COVER PLATE DETAILS AT EXPANSION JOINT.

④ GROUND WIRE PIGTAIL PLACED WITHIN 6" OF EACH RAIL POST ANCHORAGE. CONTRACTOR SHALL COORDINATE LOCATIONS WITH RAIL SUBCONTRACTOR.

⑤ LONGITUDINAL COLLECTOR GROUND WIRE CONTINUOUS BETWEEN EXPANSION JOINTS.

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METROPOLITAN COUNCIL

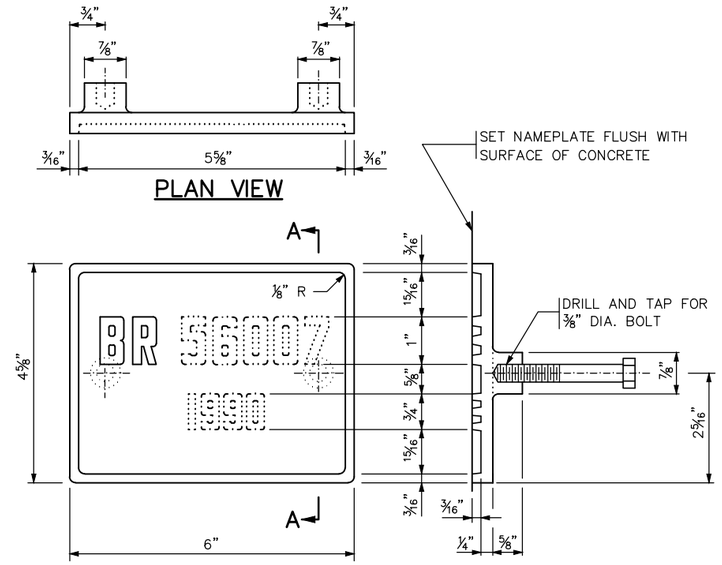
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
CONCRETE BARRIER DETAILS 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-RAL-003

SHEET 38 OF 54

Jan. 06 2016 01:11 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-RAL-003.dwg By: knierlemm



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

BRIDGE 27W32

YEAR 2016

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".

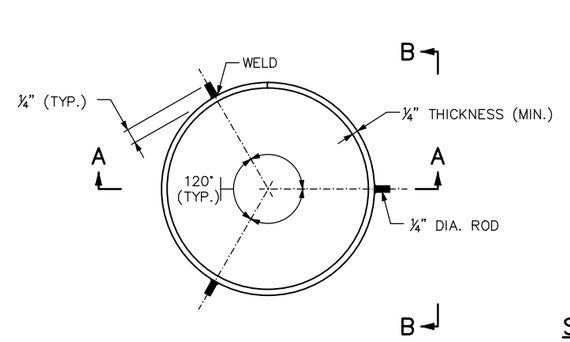
HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.

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

FURNISH 2 STEEL BOLTS ⅜" DIA. x 3" LONG WITH EACH PLATE.

ALL DIMENSIONS FOR ¾" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR 1" HIGH LETTERS AND NUMBERS.

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

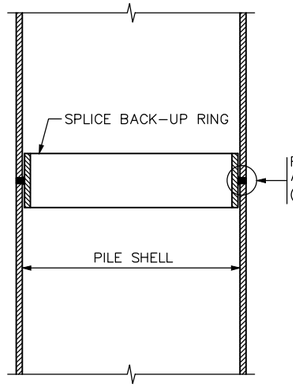


PLAN VIEW – SPLICE BACK–UP RING

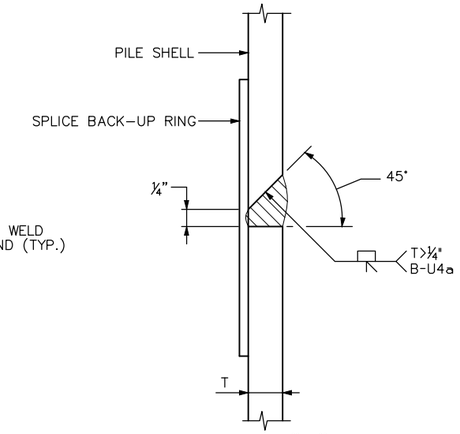
PILE NOT SHOWN

SECTION B–B

PILE NOT SHOWN



SECTION A–A



DETAIL "A"①

NOTES:

APPROVED COMMERCIAL PILE SPLICE BACK–UP RING MAY BE USED IN LIEU OF THE TYPE DETAILED, PROVIDED THAT ¼" ROOT IS MAINTAINED. BACK–UP RING SHALL HAVE A TIGHT FIT.

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

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

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

① FOR PILE SHELL THICKNESSES GREATER THAN ¼", USE A B–U4a WELD CONFIGURATION. SEE DETAIL "A".

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

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

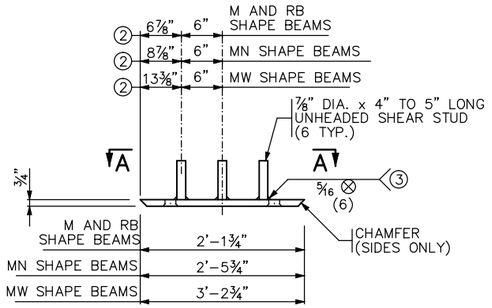
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BRIDGE DETAILS 1

DISCIPLINE: STRUCTURES

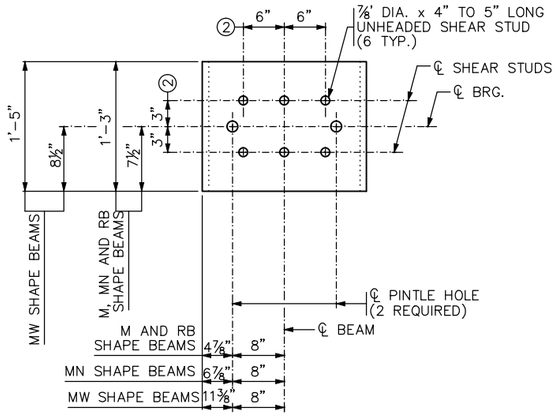
SHEET NAME: CBR27W32-BRG-DTL-001

SHEET 39 OF 54

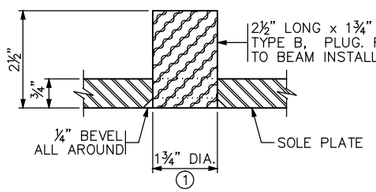
Jan, 06 2016 01:11 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-BDET.dwg By: knierlemm



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.

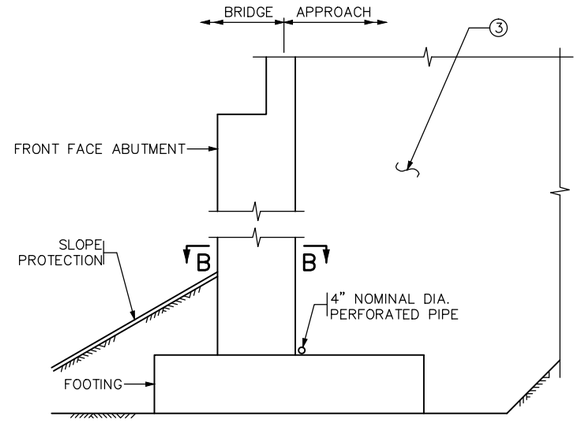
SOLE PLATES ARE INCIDENTAL TO PRESTRESSED CONCRETE BEAMS.

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 OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	SOLE PLATE (PRESTRESSED CONCRETE BEAMS) (FOR BEARINGS WITH PINTLES)		B303



SECTION THROUGH PARAPET AND SEMI–INTEGRAL ABUTMENTS

SUMMARY OF QUANTITIES FOR DRAINAGE SYSTEM

4" DIA. PERFORATED PIPE	130 LIN. FT.
4" DIA. NON–PERFORATED PIPE	20 LIN. FT.
45° ELBOW	1 EACH
90° ELBOW	1 EACH
4" DIA. END CAP	2 EACH
4" DIA. 90° TEE	1 EACH
P/C CONCRETE HEAD WALL	1 EACH

NOTES:

ALL PIPE TO COMPLY WITH SPEC. 3245.

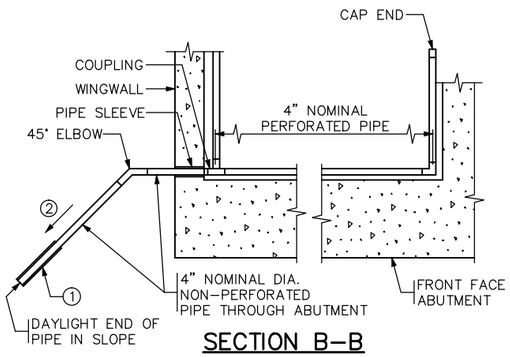
WRAP PERFORATED PIPE WITH GEOTEXTILE PER SPEC. 3733, TYPE 1. ATTACH TO PIPE PER SPEC. 2502.

① AT CONTRACTORS OPTION, MAY TIE APPROACH PANEL DRAINAGE SYSTEM AND ABUTMENT DRAINAGE SYSTEM INTO A SINGLE PRECAST CONCRETE HEADWALL OR INTO A CATCH BASIN AS LONG AS A MINIMUM OF 1% POSITIVE SLOPE CAN BE MAINTAINED.

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

② ⅛" PER FT. MINIMUM SLOPE.

③ REFER TO GRADING PLANS FOR ABUTMENT BACKFILL REQUIREMENTS.



SECTION B–B

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: AK/IGG CHECKED BY: TR
DRAWN BY: MJK CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

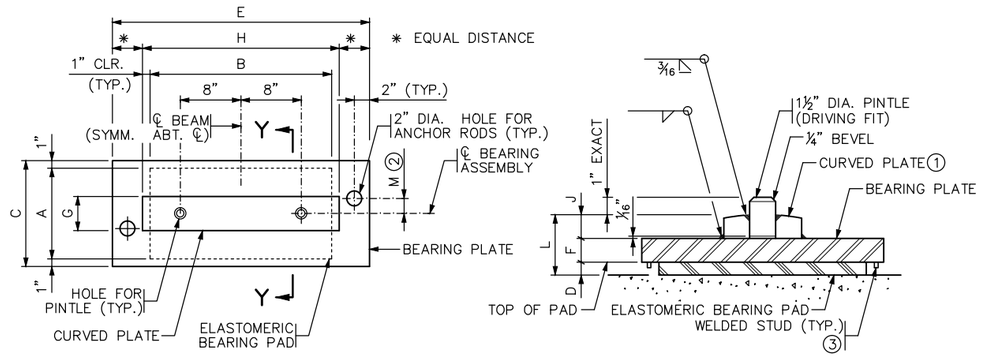
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BRIDGE DETAILS 2

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-DTL-002

SHEET 40 OF 54

Jan. 06 2016 01:11 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-BDET.dwg By: knierlemm



2'–2" BOTTOM FLANGE SHOWN

ANCHOR RODS NOT SHOWN

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	MN63	12"	24"	½"	8.0	14"	38	1½"	4½"	26"	1¼"	___	0	3¼"	24
___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___
___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___

NOTES:

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

ALL STEEL PLATES SHALL COMPLY WITH SPEC. 3306.

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

PINTLES SHALL COMPLY WITH SPEC. 3309.

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

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

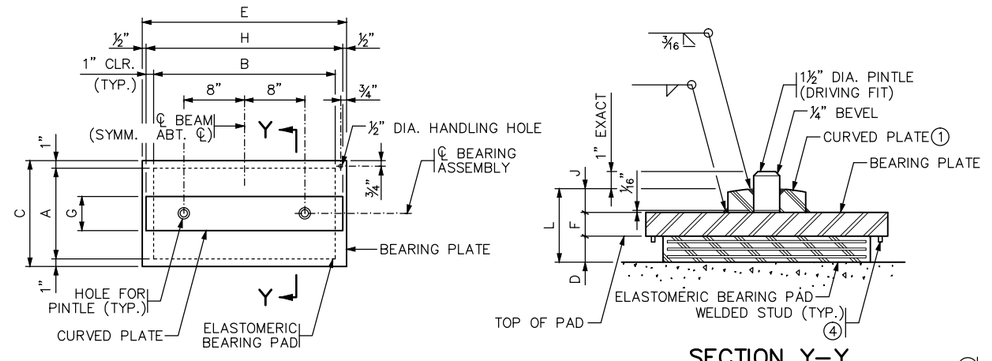
① THE MIN. RADIUS SHALL BE 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS SHALL BE 24". FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.

② "+" DENOTES OFFSET AS SHOWN.
"–" DENOTES OFFSET OPPOSITE OF SHOWN.

③ 5/16" DIA. x 3/8" KNOCK–OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = ½", MAX. STUD SPACING = 4", AND MAX. SPACING TO PAD CORNER = 2".

DESIGN DATA:
MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1½" PINTLES.

APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 11–06–2013	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (FIXED)		B310



TABLE

ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			STEEL PLATES		LAMINATES		SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE			ASSY. HEIGHT	CURVED PLATE
			A	B	D	NO.	THICK.	NO.	THICK.		C	E	F	G	H	J	L	R ①
E1	ABUTS	MN63	12"	24"	1⅞	3	⅛"	2	½"	8.84	14"	27"	1½"	4½"	26"	1¼"	4⅝"	16
___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___
___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___

NOTES:

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

ALL STEEL PLATES SHALL COMPLY WITH MnDOT SPEC. 3306.

PINTLES SHALL COMPLY WITH MnDOT SPEC. 3309.

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

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

① THE MIN. RADIUS SHALL BE 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS SHALL BE 24". FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.

② DO NOT GALVANIZE THESE PLATES.

③ THE TOTAL THICKNESS SHOWN INCLUDES THE STEEL PLATES.

④ 5/16" DIA. x 3/8" KNOCK–OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = ½", MAX. STUD SPACING = 4", AND MAX. SPACING TO PAD CORNER = 2".

DESIGN DATA:
MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1½" PINTLES.

APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (EXPANSION)		B311

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG CHECKED BY: TR
DRAWN BY: MJK CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

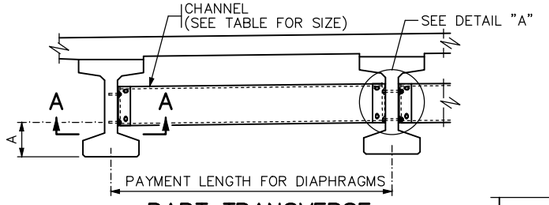
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BRIDGE DETAILS 3

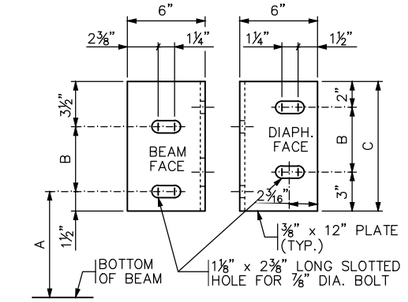
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-DTL-003

SHEET 41 OF 54

Jan. 06 2016 01:11 pm v:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-BDET.dwg By: knierienmm

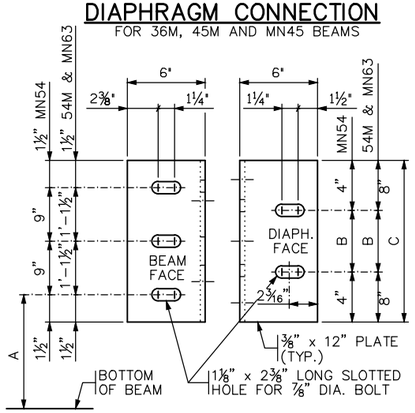


PART TRANSVERSE SECTION AT DIAPHRAGM



DIAPHRAGM CONNECTION

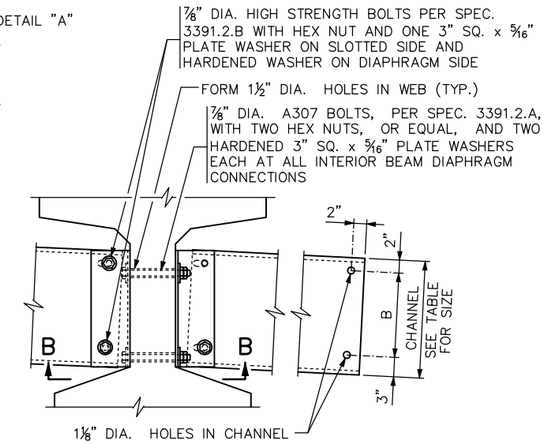
FOR 36M, 45M AND MN45 BEAMS



DIAPHRAGM CONNECTION

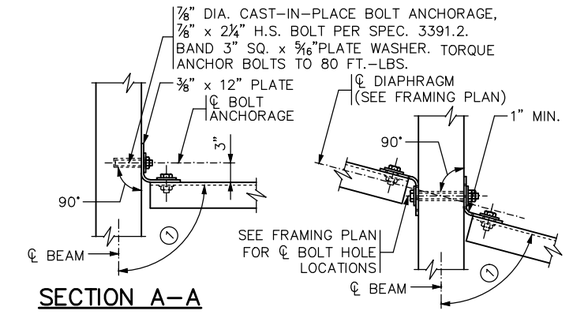
FOR 54M, MN54 AND MN63 BEAMS

TABLE				
BEAM HEIGHT	DISTANCE A	DISTANCE B	DISTANCE C	CHANNEL SIZE
~~36M~~	~~1' 3"~~	~~7"~~	~~1' 0"~~	~~C12x20.7~~
~~45M~~	~~1' 3¾"~~	~~1' 1"~~	~~1' 6"~~	~~MC18x42.7~~
~~54M~~	~~1'-2¼"~~	~~1'-1"~~	~~2'-6"~~	~~MC18x42.7~~
~~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



DETAIL "A"

INTERIOR BEAM WITH CONTINUOUS LINE OF DIAPHRAGMS



SECTION A–A

TYPICAL SECTION AT ALL FASCIA BEAMS

SECTION B–B

TYPICAL SECTION AT INTERIOR BEAM WITH CONTINUOUS OR STAGGERED INTERMEDIATE DIAPHRAGMS

NOTES:

ALL STEEL SHALL CONFORM TO SPEC. 3306.

INSTALLATION SHALL CONFORM TO SPEC. 2405.3.K.

SHOP BEND THE LEG OF THE 12" PLATE TO CONFORM TO THE DIAPHRAGM. A ⅜" x 6" x 6" ANGLE MAY BE USED FOR DIAPHRAGMS PERPENDICULAR TO BEAMS.

INCLUDE ALL STRUCTURAL STEEL SHOWN ON THIS DETAIL, INCLUDING BOLTS AND WASHERS, IN UNIT PRICE BID FOR DIAPHRAGMS FOR PRESTRESSED BEAMS.

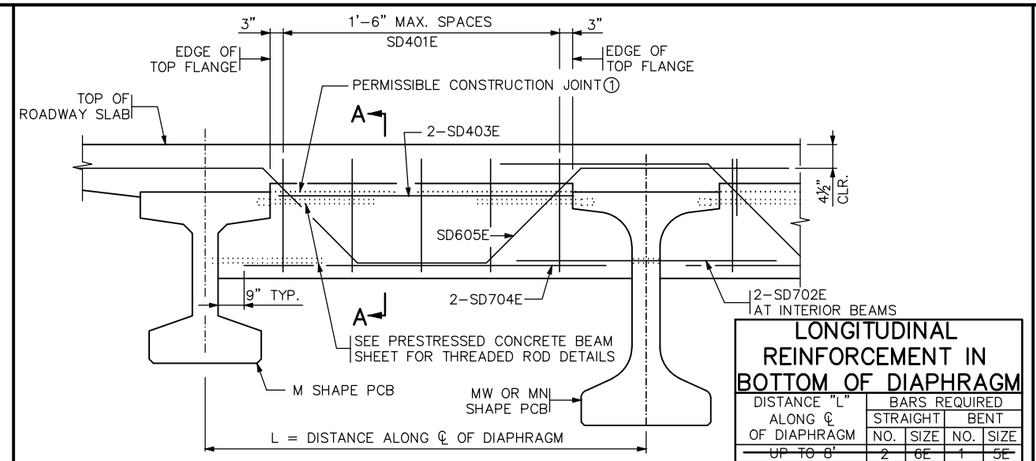
BENT PLATES MAY BE USED IN PLACE OF CHANNELS. THE BENT PLATES MUST BE THE SAME HEIGHT AS THE CHANNELS THEY REPLACE, BE 5⁄16" IN THICKNESS, AND HAVE LEGS 5" LONG.

GALVANIZE STEEL PLATES AND SHAPES IN ACCORDANCE WITH SPEC. 3394.

GALVANIZE BOLTS, NUTS AND WASHERS PER SPEC. 3392.

① FOR SKEW ANGLES UNDER 20°, USE 90° LESS THE SKEW ANGLE. FOR SKEW ANGLES OVER 20°, USE 90°.

APPROVED: OCTOBER 26, 2005	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 06-14-2006 10-22-2009 09-11-2014	DETAIL NO.
Daniel L Morgan STATE BRIDGE ENGINEER	STEEL INTERMEDIATE DIAPHRAGM (FOR 36M – 54M, MN45 – MN63 PRESTRESSED CONCRETE BEAMS)		B403

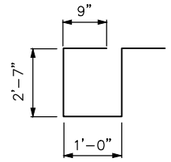


PART TRANSVERSE SECTION

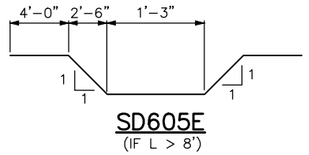
(L > 8' SHOWN)

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~~



SD401E

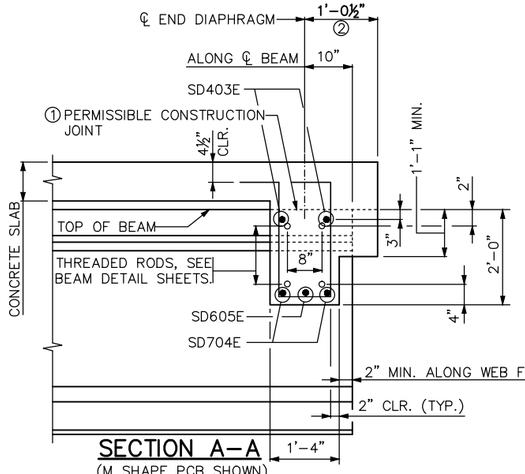


SD605E

(IF L > 8')

BILL OF REINFORCEMENT FOR END DIAPHRAGM

BAR	NO.	LENGTH	SHAPE	LOCATION
SD401E	30	7'-8"		VERTICAL TIE
SD702E	8	5'-0"		LONG. THRU BEAM
SD403E	12	5'-5"		LONG. TOP
SD704E	12	6'-6"		LONG. BOTTOM
SD605E	6	16'-4"		LONGITUDINAL



SECTION A–A

(M SHAPE PCB SHOWN)

NOTES:

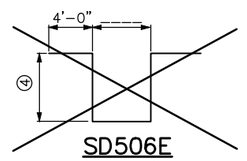
CONCRETE FOR END DIAPHRAGMS SHALL BE THE SAM MIX AS USED IN DECK.

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.



SD506E

(IF L ≤ 8')

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

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG CHECKED BY: TR
DRAWN BY: MJK CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

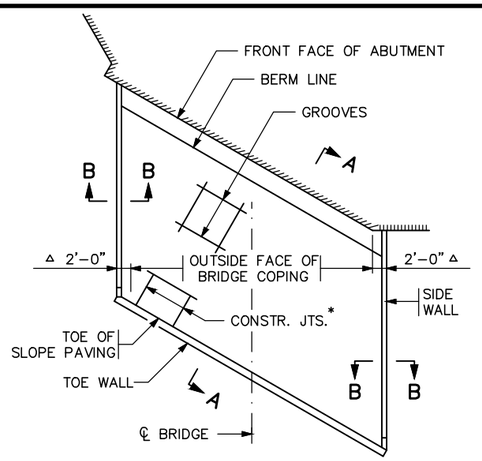
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BRIDGE DETAILS 4

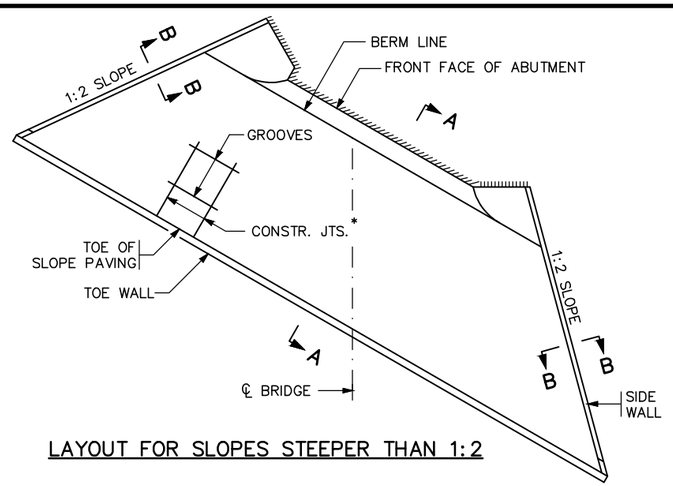
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-DTL-004

SHEET 42 OF 54

Jan. 06 2016 01:12 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-BDET.dwg By: knierlemm



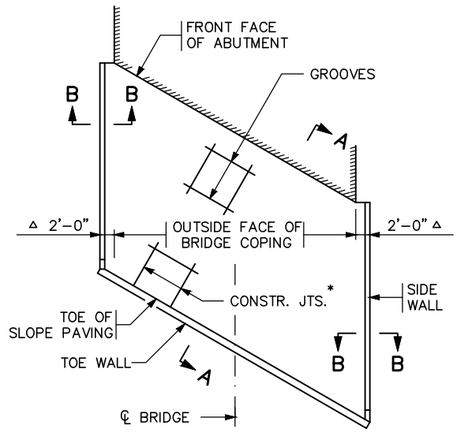
LAYOUT FOR SLOPES
1:2 OR FLATTER



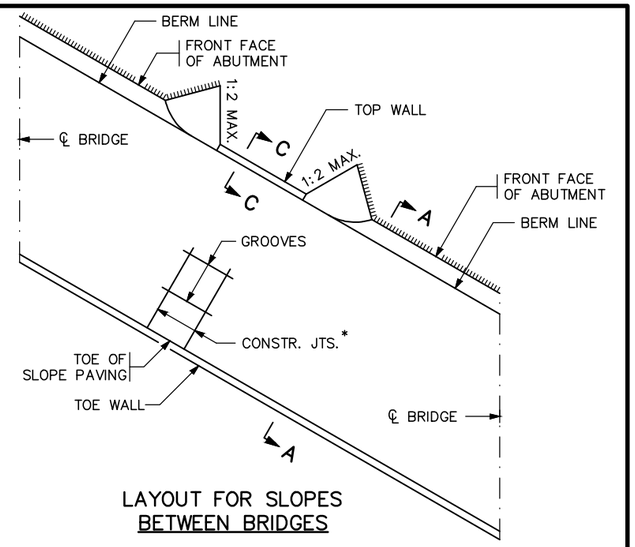
LAYOUT FOR SLOPES STEEPER THAN 1:2

△ 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.

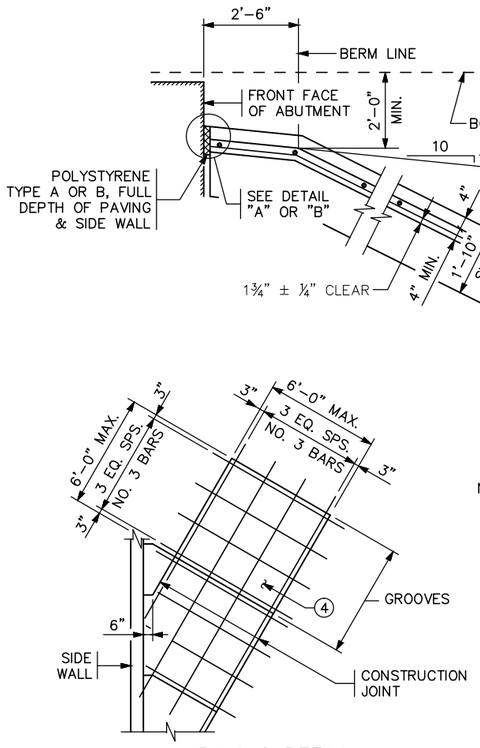


LAYOUT FOR SLOPES AT ABUTMENTS WITH 8' OR GREATER EXPOSURE



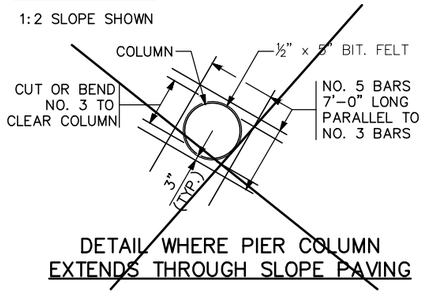
LAYOUT FOR SLOPES
BETWEEN BRIDGES

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



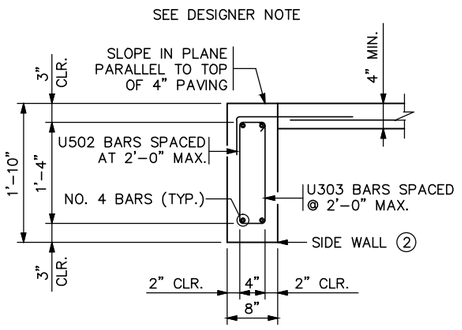
SECTION A–A
1:2 SLOPE SHOWN

PAVING DETAIL

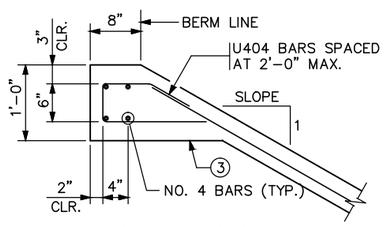


DETAIL WHERE PIER COLUMN EXTENDS THROUGH SLOPE PAVING

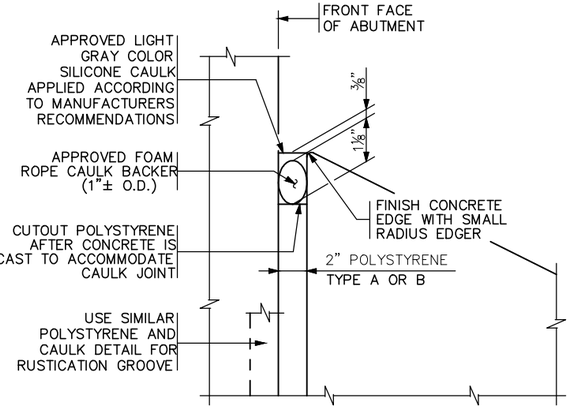
SEE DESIGNER NOTE



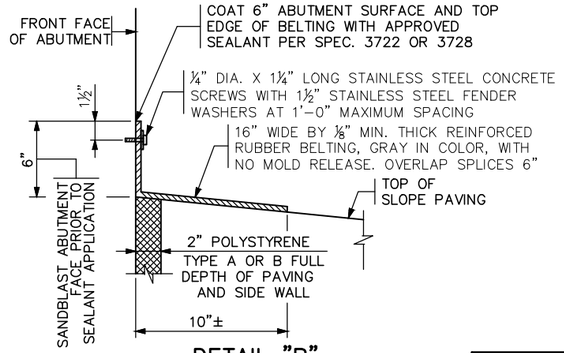
SECTION B–B
NORMAL TO SLOPE



SECTION C–C



DETAIL "A"
ABUTMENTS WITH RUSTICATION



DETAIL "B"
ABUTMENTS WITHOUT RUSTICATION

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.

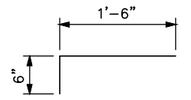
③ 0.058 CU. YD. OF CONCRETE/LIN. FT.
3.70 LBS. OF REINFORCEMENT/LIN FT.
BASED ON A SLOPE OF 1:2.

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

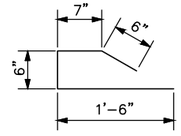
GENERAL NOTE

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

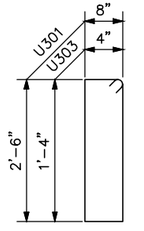
SLOPE PAVING PER SPEC. 2514.



U502



U404



U301 & U303

REVISION: 09–11–2014			
APPROVED: SEPTEMBER 26, 2003			
STATE BRIDGE ENGINEER			
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER _____ DATE	TITLE: CONCRETE SLOPE PAVING UNDER BRIDGES	DES: AK/IGG	DR: MJK
NAME: LIC. NO.		CHK: TR	CHK: TR
		SHEET NO. 43 OF 54 SHEETS	
		APPROVED:	FIG. 5–397.301
			BRIDGE NO. 27W32

CBR27W32-BRG-DTL-005

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TIME : $@TIME@$
PLOTTED : $$$$@DATE@$$$$
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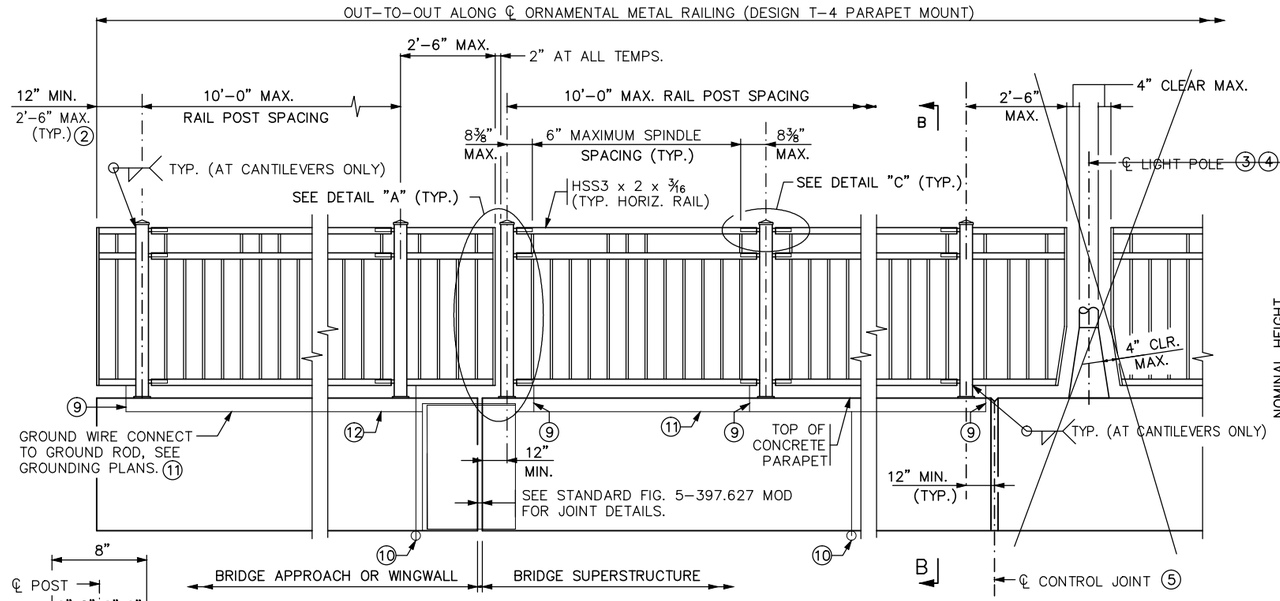
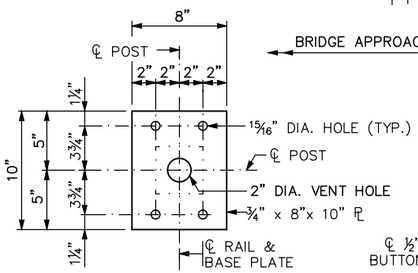
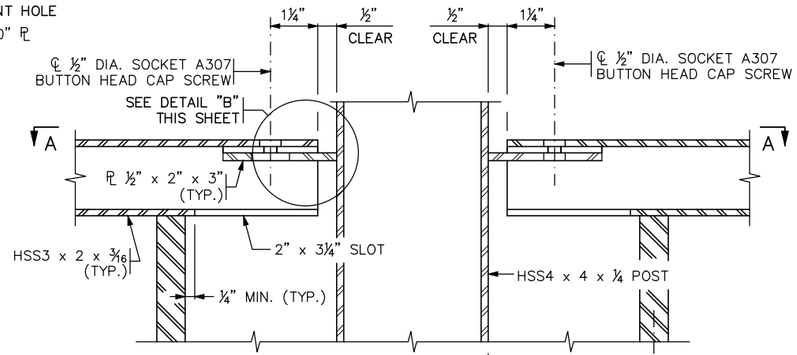


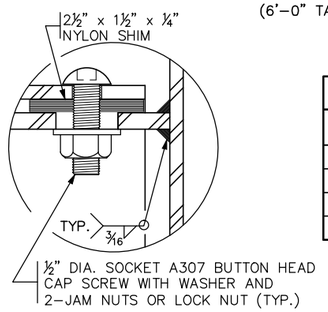
INSIDE ELEVATION OF RAILING



BASE PLATE



DETAIL "C"



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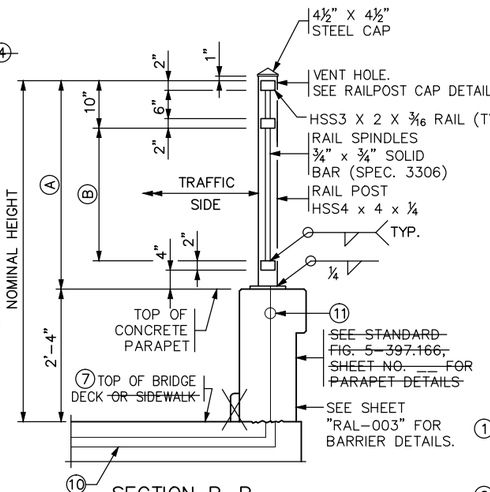
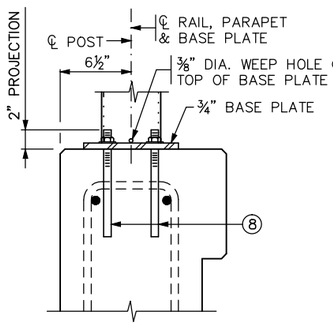


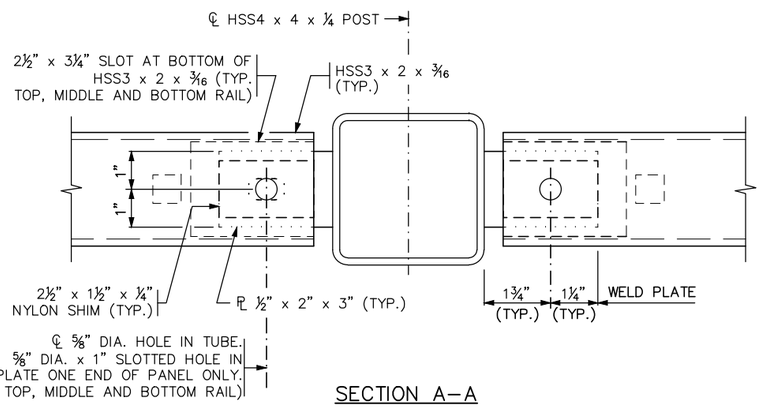
SECTION B–B

(6'–0" TALL OPTION SHOWN)

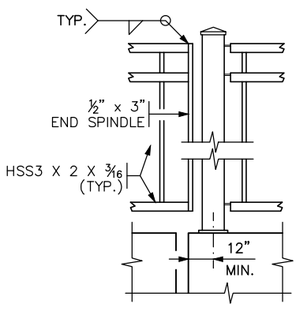
RAILING HEIGHT TABLE		
NOMINAL HEIGHT	(A)	(B)
~~4'–6"~~	~~2'–2"~~	~~10"~~
~~6'–0"~~	~~3'–8"~~	~~2'–4"~~
~~8'–0"~~	~~5'–8"~~	~~4'–4"~~
5'–4"	3'–0"	1'–8"



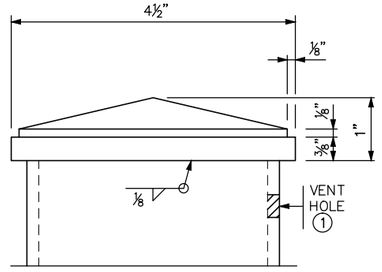
ANCHOR DETAIL



SECTION A–A



DETAIL "A"



RAILPOST CAP DETAIL (6)

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 AS THE OUT TO OUT LENGTH ALONG THE CENTERLINE OF THE RAILING BETWEEN THE OUTSIDE ENDS, WITH DEDUCTIONS FOR THE LENGTH OF CONCRETE POSTS, IF PRESENT.

USE A500, GRADE B STRUCTURAL STEEL TUBING (HSS) IN THE RAIL CONFORMING TO SPEC. 3361. FINIAL CAPS SHALL BE SPEC. 3322. ALL OTHER STEEL SHALL CONFORM TO SPEC. 3306.

GALVANIZE BOLTS, NUTS, WASHERS AND ANCHORS PER SPEC. 3392. GALVANIZE ALL OTHER STRUCTURAL STEEL PER SPEC. 3394, AFTER FABRICATION.

COAT THE GALVANIZED RAILING, BASE PLATES, AND PROTRUDING PORTIONS OF BOLTS, NUTS, ANCHORS, AND WASHERS.

INSTALL RAIL POSTS AND SPINDLES [NORMAL TO GRADE OR PLUMB.]

CURVE HORIZONTAL RAILS WHERE APPLICABLE AND PLACE RAILS PARALLEL TO THE EDGE OF SIDEWALK PROFILE.

SEE SPECIAL PROVISIONS FOR REQUIREMENTS NOT INCLUDED ON THIS SHEET.

DRILL ⅛" DIA. MAX. VENT HOLES ON THE UNDERSIDE OF RAIL TUBES AS NECESSARY TO FACILITATE GALVANIZING.

(1) DRILL VENT HOLE IN THE RAIL POST WITHIN 2" OF THE UNDERSIDE OF THE CAP, ON THE NON–TRAFFIC SIDE OF THE POST AS NECESSARY TO FACILITATE GALVANIZING. MAXIMUM HOLE SIZE IS ½" DIA.

(2) PLACE ℄ OF END POST 12" FROM END OF CONCRETE PARAPET IF GUARDRAIL CONNECTION PLATE IS PRESENT.

~~(3) IF LIGHT POLE IS MOUNTED ON BLISTER, RAILING MAY BE CONTINUOUS IN FRONT OF LIGHT POLE (SEE PARAPET & LIGHT POLE DETAILS).~~

~~(4) CONTRACTOR TO COORDINATE LIGHT POLE DETAILS WITH THE RAILING FABRICATOR TO ENSURE PROPER CLEARANCES AND RAILING CONFIGURATION ADJACENT TO THE POLE.~~

(5) SEE SUPERSTRUCTURE SHEETS ~~AND STANDARD FIGURE 5–397.166~~ FOR CONTROL JOINT SPACING AND DETAILS.

(6) PROVIDE A PYRAMID TOP STYLE STEEL CAP WELDED TO TOP OF POST WITH A SURFACE FINISH OF 1000 MICRO–INCH, OR SMOOTHER, PRIOR TO GALVANIZING.

~~(7) IF TOP OF RAISED SIDEWALK, SEE SECTION D–D ON STANDARD FIGURE 5–397.166.~~

(8) ADHESIVE ANCHORAGE WITH ⅝" DIA. ANCHOR ROD PER SPEC. 3385, TYPE A WITH HEX NUT AND WASHER. PROVIDE AN ADHESIVE WITH A MINIMUM CHARACTERISTIC BOND STRENGTH IN UNCRACKED CONCRETE OF 1.5 KSI. EMBED THE ANCHORAGE NO LESS THAN 5" REGARDLESS OF CHARACTERISTIC BOND STRENGTH. DRILL THROUGH REINFORCEMENT (IF ENCOUNTERED) TO ACHIEVE MINIMUM EMBEDMENT. ENSURE HEX NUT IS IN CONTACT WITH THE ADJACENT SURFACE AND TORQUE TO 60 FT–LBS UNLESS A HIGHER TORQUE IS RECOMMENDED BY THE MANUFACTURER. PROOF LOAD TO 6.9 KIPS. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

(9) GROUND WIRE PIGTAIL PLACED WITHIN 6" OF EACH RAIL POST ANCHORAGE. CONTRACTOR SHALL COORDINATE LOCATIONS WITH RAIL SUB CONTRACTOR. PAINT EXPOSED WIRE TO MATCH RAILING.

(10) GROUND WIRE PLACED IN 1½" PVC CONDUIT AT PIER AND ABUTMENTS AT LOCATIONS SHOWN ON PIER AND ABUTMENTS DETAILS.

(11) LONGITUDINAL COLLECTOR GROUND WIRE CONTINUOUS BETWEEN EXPANSION JOINTS.

(12) GROUND WIRE PIGTAIL CONNECTION TO EXPANSION JOINT DEVICE AND EXPANSION JOINT COVER PLATES.

REVISION: 11–20–2014

APPROVED: NOVEMBER 6, 2013
Nancy Daubenberger
STATE BRIDGE ENGINEER

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

TITLE: ORNAMENTAL METAL RAILING (DESIGN T–4 PARAPET MOUNT)

DES: AK/IGG	DR: MJK	APPROVED:	FIG. 5–397.162
CHK: TR	CHK: TR		BRIDGE NO. 27W32
SHEET NO. 44 OF 54 SHEETS			

CBR27W32-BRG-DTL-006

FILENAME: $$$@FILENAME@$$$
TIME : $@TIME@$
PLOTTED : $$$$@DATE@$$$$
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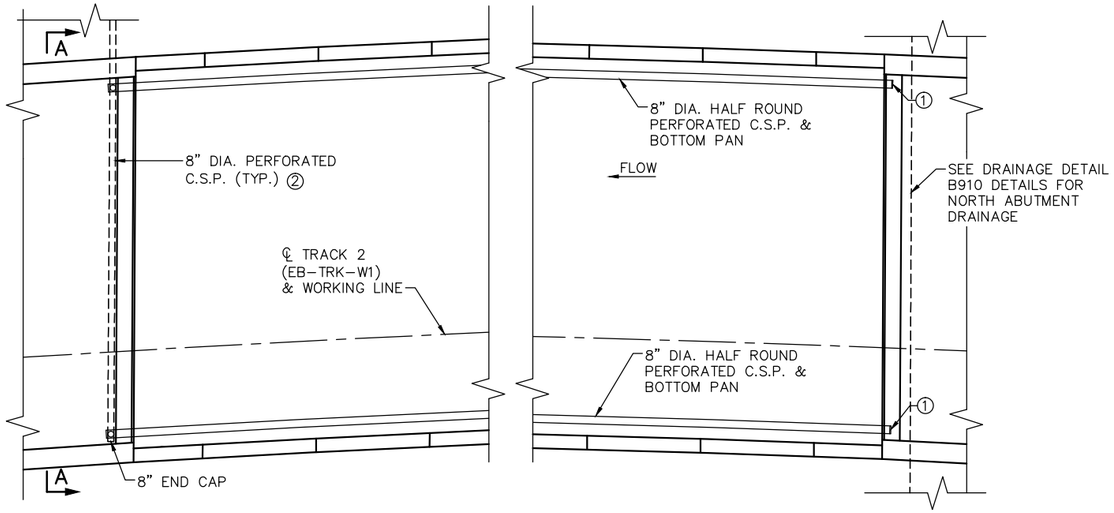


BRIDGE DECK DRAINAGE PLAN

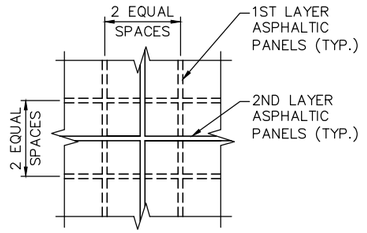
NOTES:

ALL PIPE SHALL COMPLY WITH SPEC. 3326.

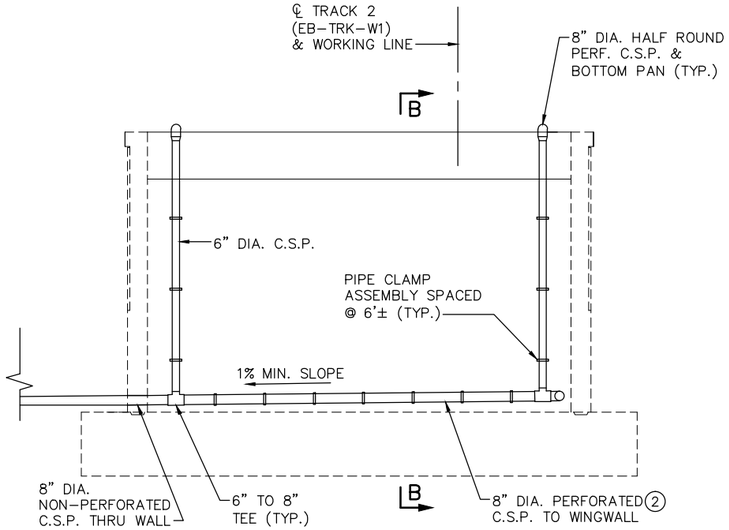
ALL STEEL COMPONENTS OF THE DRAINAGE SYSTEM INCLUDING PIPES, BOTTOM PANS, COVERS, CLAMPS, END PLATES, AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH SPEC. 3392 AND SPEC. 3394.

① TERMINATE DRAIN AT THE BACK OF THE WEST ABUTMENT EXPANSION JOINT BLOCK.

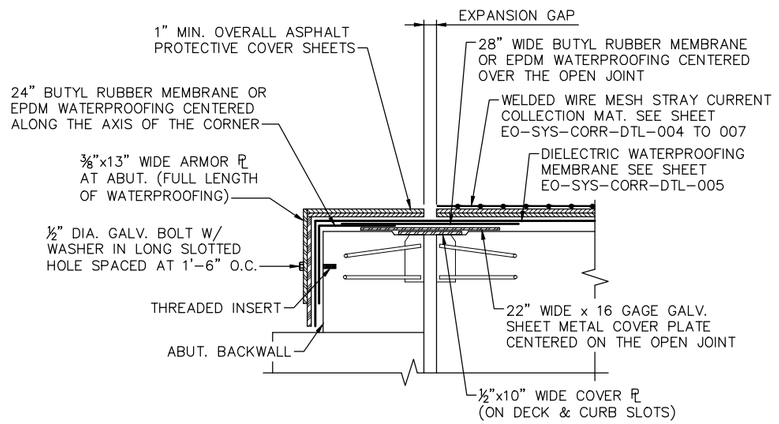
② WRAP WITH GEOTEXTILE PER SPEC. 3733, TYPE 1. ATTACH GEOTEXTILE TO PIPE PER SPEC. 2502.



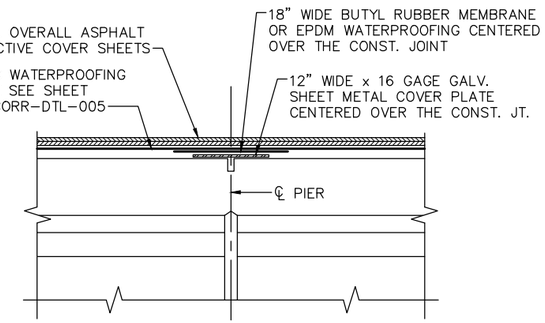
TYPICAL ASPHALT PANEL PLACEMENT



SECTION A–A



WATERPROOFING AT ABUTMENT



WATERPROOFING AT PIER

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG | CHECKED BY: TR
DRAWN BY: MJK | CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

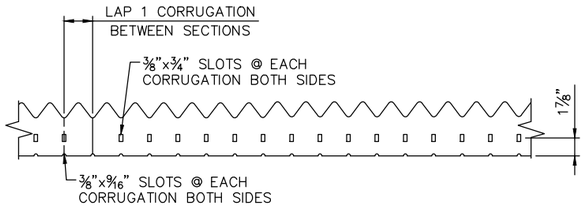
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BRIDGE DETAILS 7

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-DRN-001

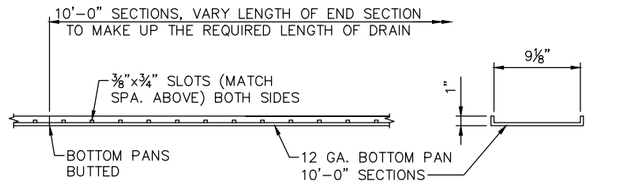
SHEET 45 OF 54

Jan, 06 2016 01:12 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-DRN-001.dwg By: knieriemm



COVER ELEVATION

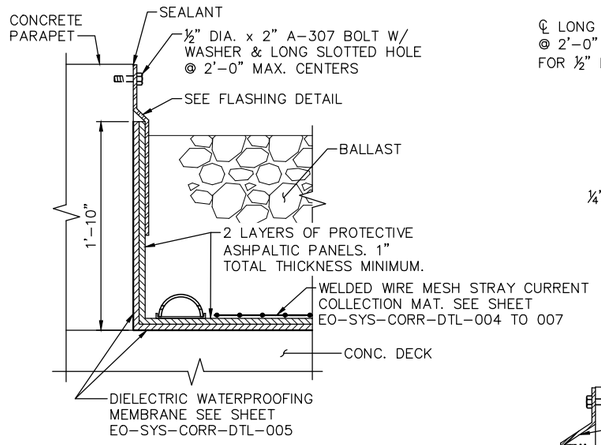
COVER SECTION



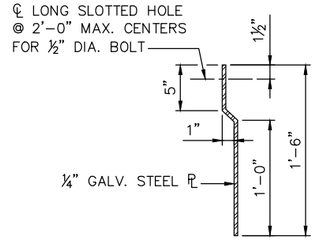
BOTTOM PAN ELEVATION

BOTTOM PAN SECTION

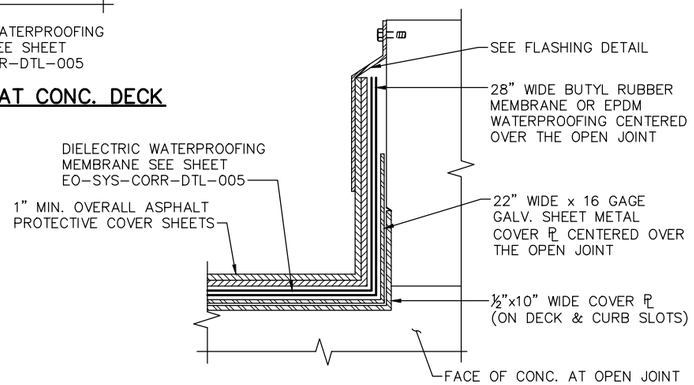
DECK DRAIN DETAILS



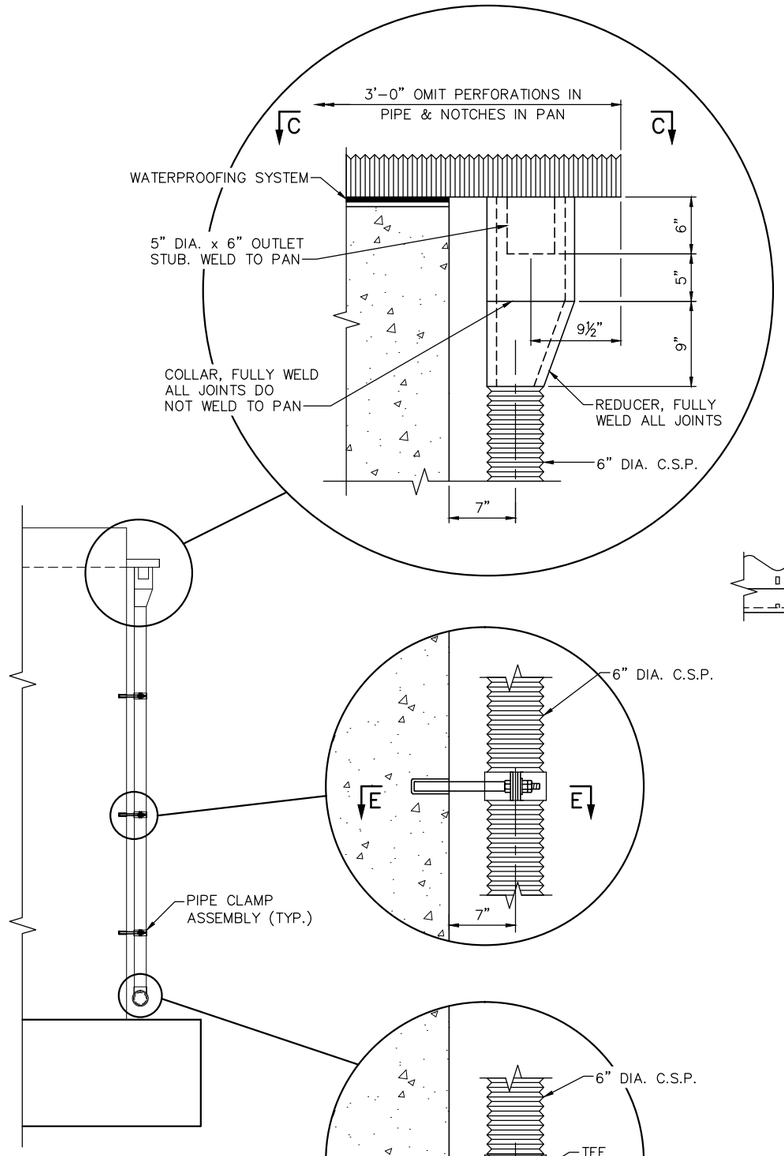
TRANS. SECTION AT CONC. DECK



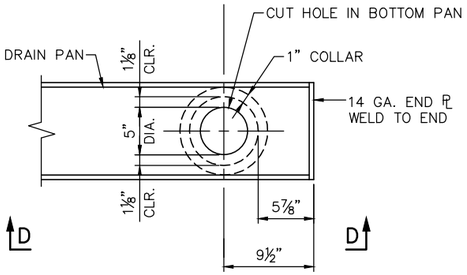
FLASHING DETAIL



TRANS. SECTION AT JOINT

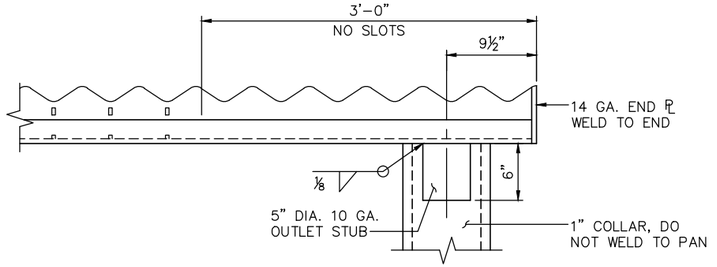


SECTION B-B

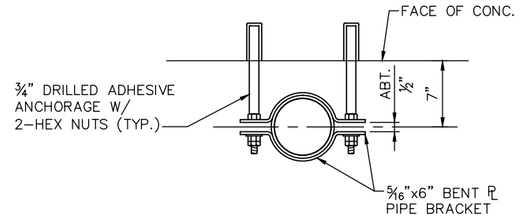


VIEW C-C

(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: AK/IGG CHECKED BY: TR
DRAWN BY: MJK CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

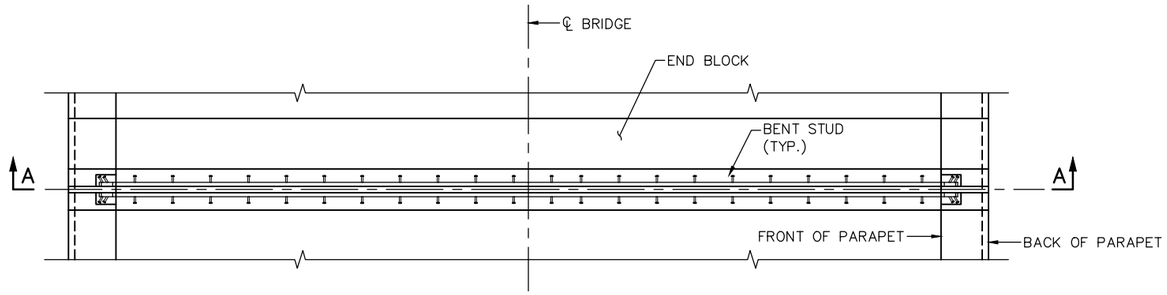
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BRIDGE DETAILS 8

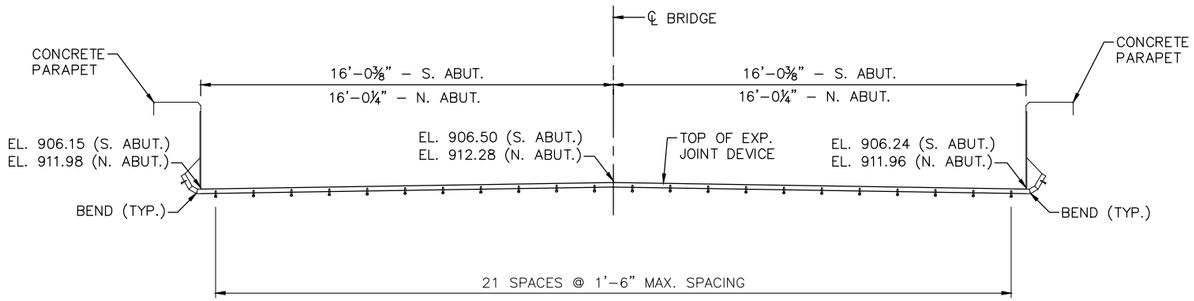
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-DRN-002

SHEET 46 OF 54

Jan, 06 2016 01:12 pm v:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-DRN-001.dwg By: knierienmm

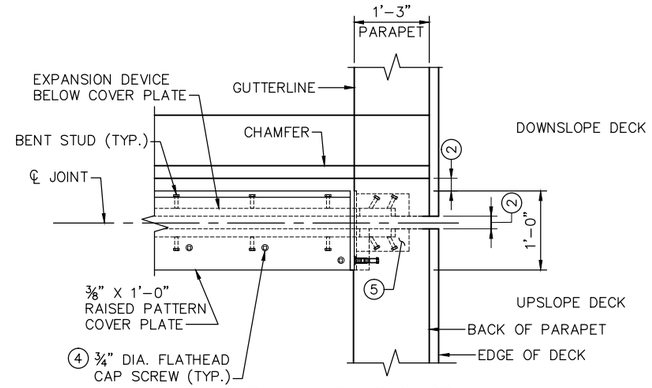


PLAN VIEW @ EXPANSION DEVICE

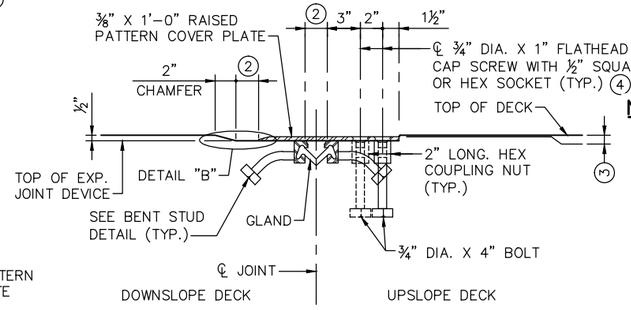


SECTION A–A

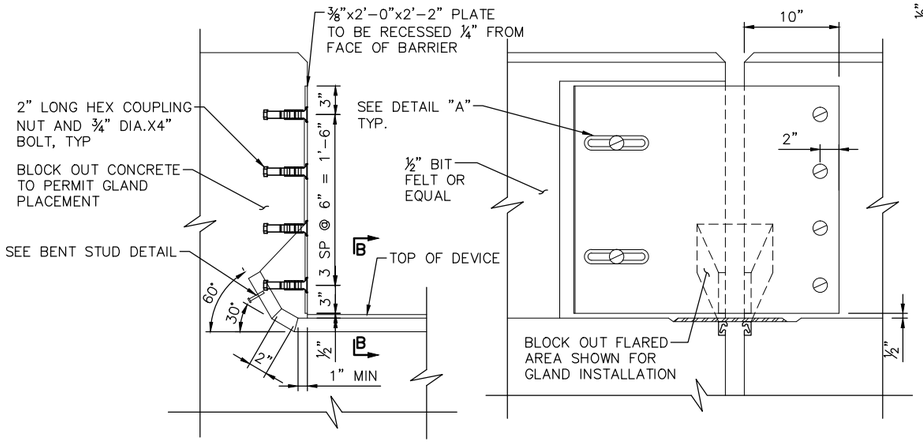
(LOOKING SOUTH AT S. ABUT.)
(LOOKING NORTH AT N. ABUT.)



PLAN VIEW @ CURB

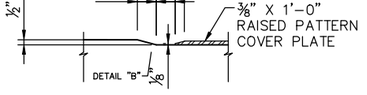


SECTION B–B



SECTION THROUGH PARAPET

PARAPET ELEVATION



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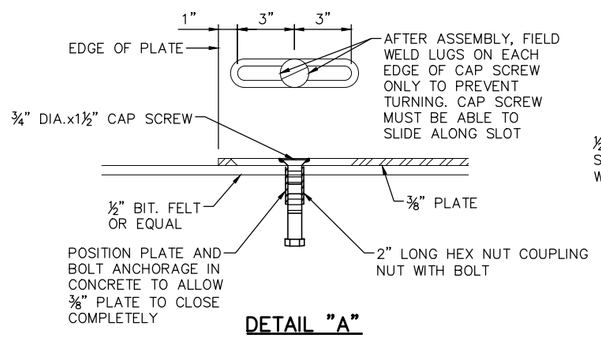

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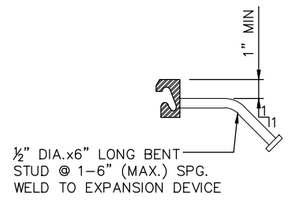


BENT STUD DETAIL

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.

LENGTH OF PAYMENT FOR DEVICE IS FROM OUT TO OUT OF EXTRUSION ALONG CENTERLINE OF JOINT.

THE BID ITEM "EXPANSION JOINT DEVICES TYPE 4" INCLUDES ALL MATERIALS, LABOR, FABRICATION, FORMWORK, AND INSTALLATION REQUIRED FOR THE EXPANSION JOINT DEVICES AND COVER PLATES.

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: AK/IGG | CHECKED BY: TR
DRAWN BY: MJK | CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
WATERPROOF EXPANSION JOINT DEVICE

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-EXP-001

SHEET 47 OF 54

Jan, 06 2016 01:12 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-EXP-001.dwg By: knierienm

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. Hegeman
STATE BRIDGE ENGINEER

AS–BUILT DETAILS
(AS NEEDED)

FIG. 5–397.900

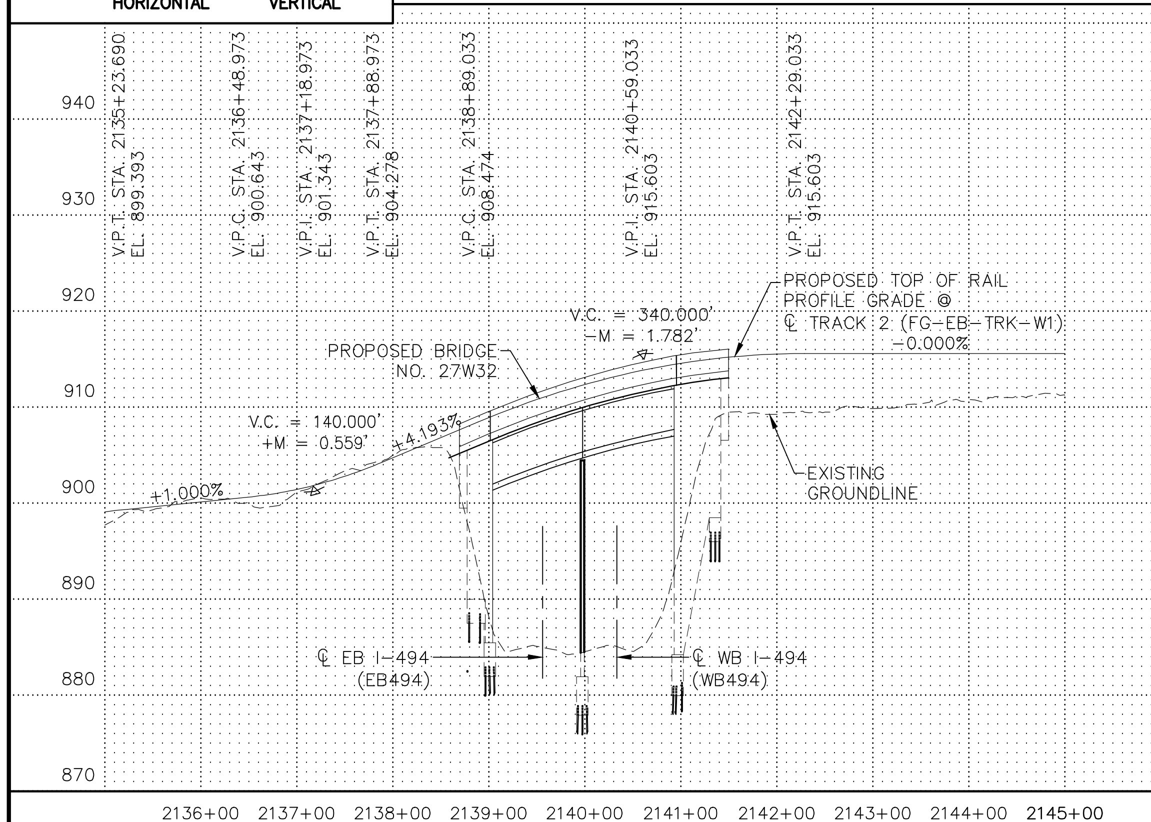
TITLE:	DES:	DR:	APPROVED:	BRIDGE NO.
AS–BUILT BRIDGE DATA	CHK:	CHK:		27W32
	SHEET NO. 48 OF 54 SHEETS			

CBR27W32-BRG-DTL-007

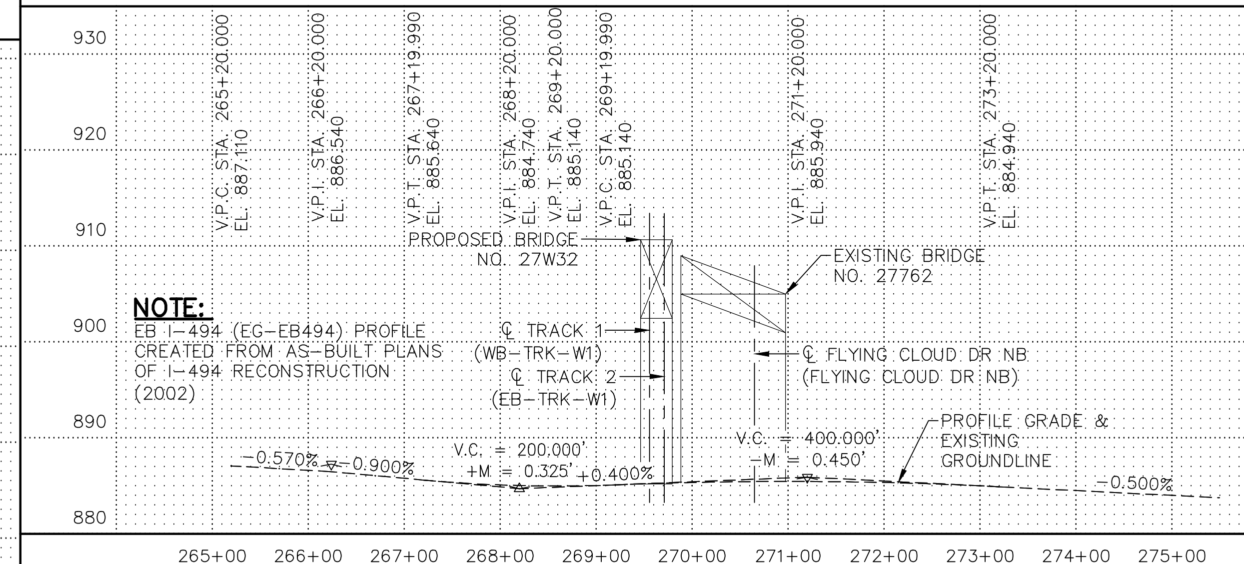
CONTRACTED PROFILE

SCALE : 0 50' 100' HORIZONTAL; 0 5' 10' VERTICAL

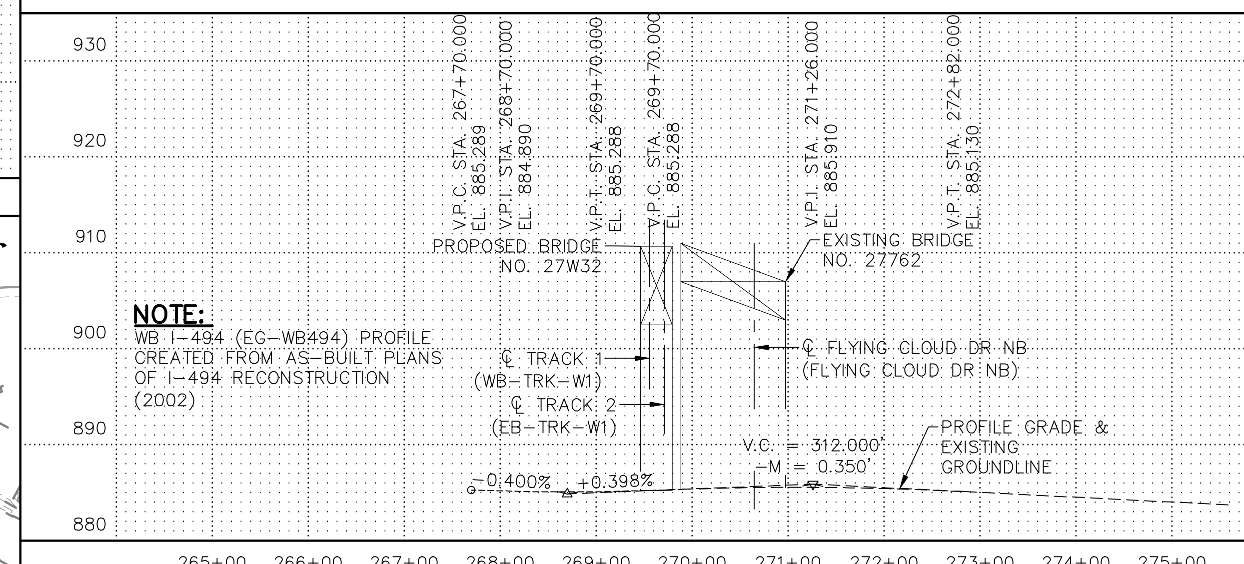
PROFILE GRADE @ ℄ TRACK 2 (FG-EB-TRK-W1)



PROFILE GRADE @ ℄ EB I-494 (EG-EB494)

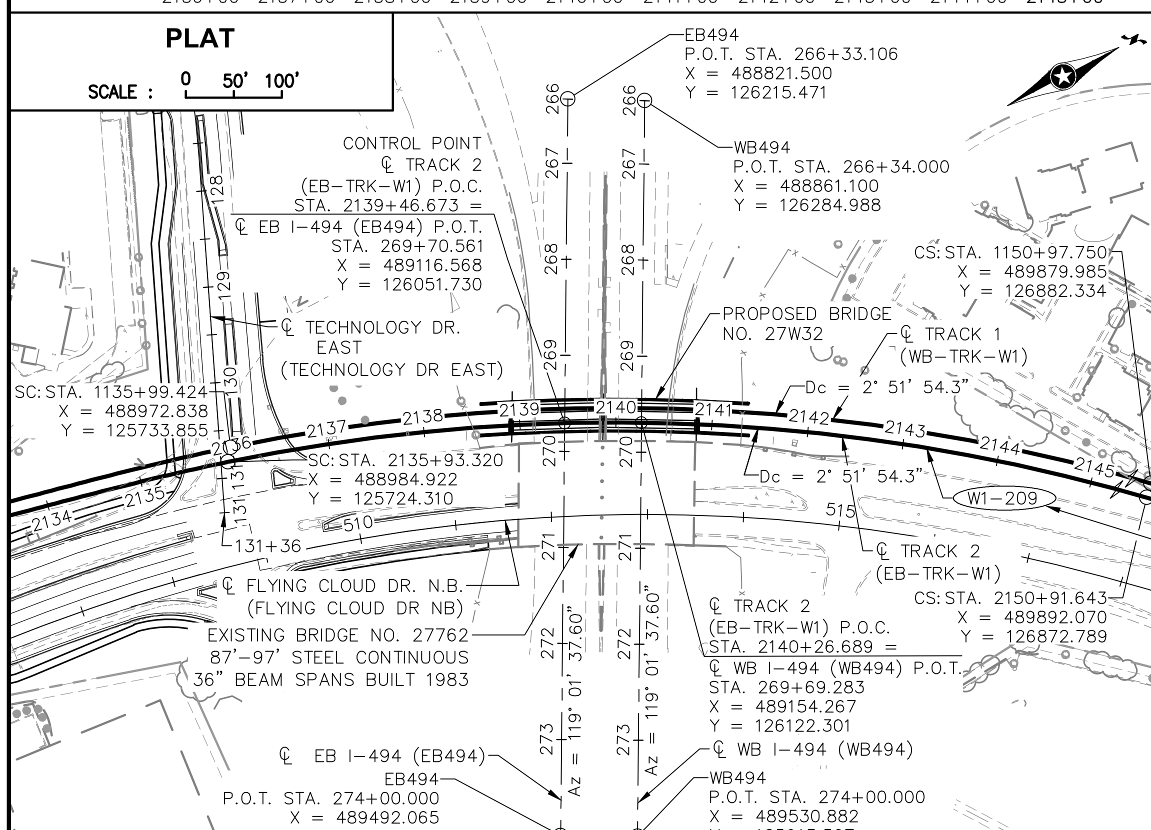


PROFILE GRADE @ ℄ WB I-494 (EG-WB494)



PLAT

SCALE : 0 50' 100'



CURVE NO. W1-209
R = 2000'
Lc = 1498.32'
Ls = 220'
Ea = 1.00"
Eu = 3.95"
V = 50 MPH

PROPOSED BRIDGE NO. 27W32

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE, DEBRIS, SLIDING BANKS, RECREATIONAL BOATING.

OTHER BRIDGES OR CULVERTS OVER THE SAME STREAM (PARTICULARLY STRUCTURES WHICH CARRY HIGH WATER WITHOUT OVERFLOW OF ROADWAY) : GIVEN LOCATION,TYPE, LENGTH, HEIGHT ABOVE HIGH WATER, CROSS-SECTIONAL AREA ETC.

APPARENT HIGHWATER ELEVATION

OBTAINED FROM:

4. OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY.

HYDRAULIC ENGINEERS RECOMMENDATION

DATE -

STREAM OR DITCH DESIGNATION -

DRAINAGE AREA -

MAX. FLOOD ON RECORD -

MAXIMUM OBSERVED HIGHWATER ELEVATION -

DESIGN FLOOD (-YR. FREQ.) - C.F.S.

DESIGN STAGE ELEVATION -

DESIGN MEAN VELOCITY THROUGH STRUCTURE - F.P.S.

TOTAL STAGE INCREASE - F.P.S.

LOW MEMBER AT OR ABOVE ELEVATION -

FLOWLINE ELEVATION - SKEW ANGLE -

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

BASIC FLOOD (100 YR. FREQ.) - C.F.S.

STAGE ELEVATION - FT.

TOTAL STAGE INCREASE - FT.

MEAN VELOCITY THROUGH STRUCTURE - F.P.S.

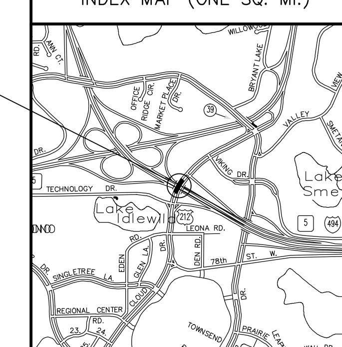
ESTIMATED DEPTH OF PIER SCOUR = - FT.

SCOUR CODE =-

BRIDGE SURVEY SHEETS MADE FROM SURVEY PERFORMED BY RANI ENGINEERING

MNDOT NAME: 2785 BT
NORTHING (HEN. COUNTY COORDINATES): 126797.168
EASTING (HEN. COUNTY COORDINATES): 488167.836
BENCHMARK ELEVATION (NAVD88): 887.534
MONUMENT DESCRIPTION: VERTICAL CONTROL DISK IN BRIDGE NO. 27V10 RAILING
LOCATION: IN EDEN PRAIRIE, 0.3 MILES SOUTHEAST ALONG I-494 FROM JCT. OF I-494 AND VALLEY VIEW ROAD.
MONUMENT NAME: 2785 BS
NORTHING (HEN. COUNTY COORDINATES): 125346.571
EASTING (HEN. COUNTY COORDINATES): 490673.794
BENCHMARK ELEVATION (NAVD88): 882.462
MONUMENT DESCRIPTION: SURVEY DISK IN BRIDGE NO. 27713 RAILING
LOCATION: IN EDEN PRAIRIE, 0.6 MILES EAST ALONG I-494 FROM JCT. OF I-494 AND T.H. 212.

INDEX MAP (ONE SQ. MI.)



T 116 N

R 22 W

BRIDGE SURVEY

0.2 MI EAST OF I-494/T.H. 212 IN EDEN PRAIRIE

SOUTHWEST LIGHT RAIL OVER I-494

SEC 11 T 116 R 22

CITY OF EDEN PRAIRIE HENNEPIN COUNTY

BRIDGE 27W32

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG CHECKED BY: TR
DRAWN BY: MJK CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

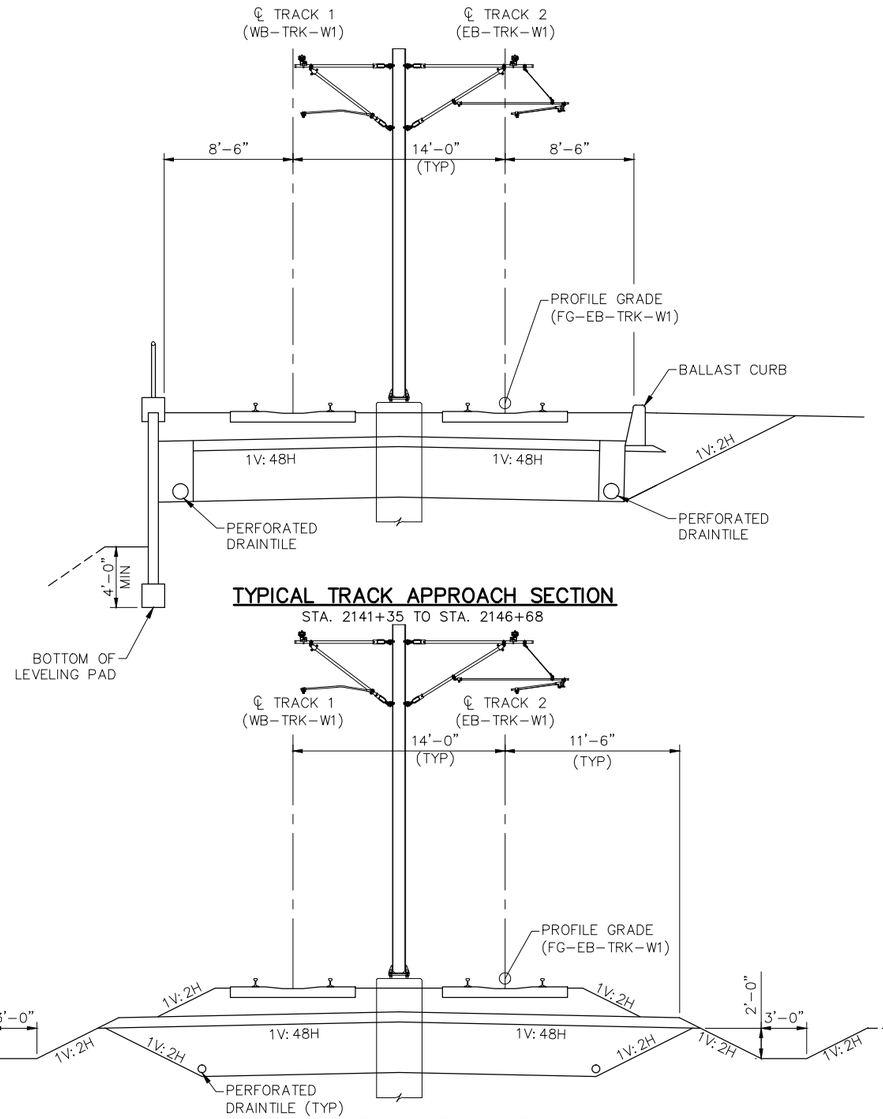
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BRIDGE SURVEY 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27W32-BRG-SUR-001

SHEET 49 OF 54

Jan, 06 2016 01:16 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-SUR.DWG By: knieriemm



TYPICAL TRACK APPROACH SECTION

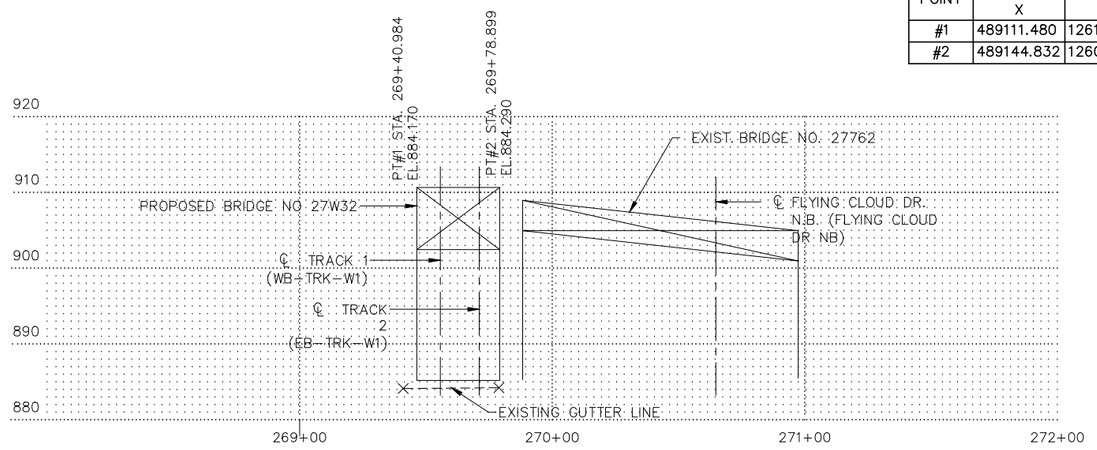
STA. 2141+35 TO STA. 2146+68

TYPICAL TRACK APPROACH SECTION

STA. 2136+70 TO STA. 2138+60

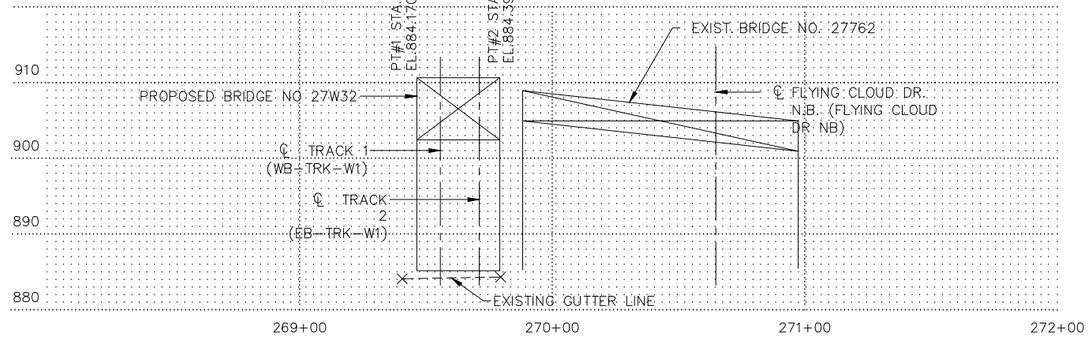
GUTTER LINE @ WB I–494 SHOULDER (WB–T494–CURB)

SURVEY POINTS WB			
POINT	COORDINATES		ELEVATIONS
	X	Y	
#1	489111.480	126103.344	884.170
#2	489144.832	126085.481	884.290



GUTTER LINE @ EB I–494 SHOULDER (EB–T494–CURB)

SURVEY POINTS EB			
POINT	COORDINATES		ELEVATIONS
	X	Y	
#1	489074.809	126038.116	884.170
#2	489109.802	126020.960	884.390



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG CHECKED BY: TR
DRAWN BY: MJK CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

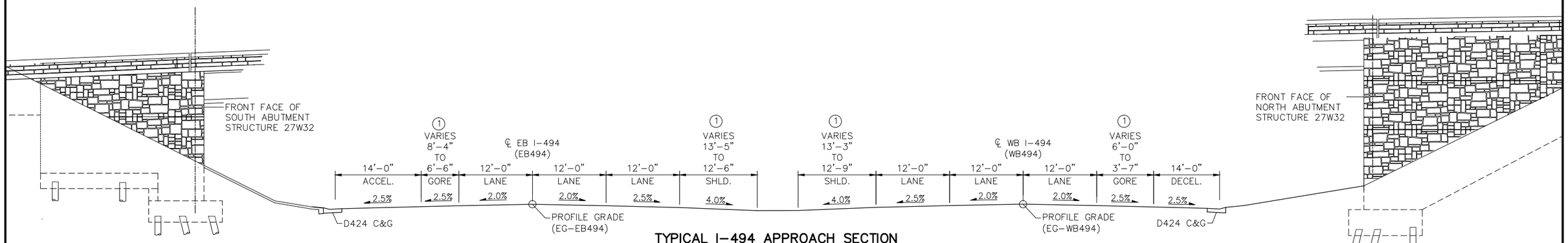
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BRIDGE SURVEY 2

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27W32-BRG-SUR-002

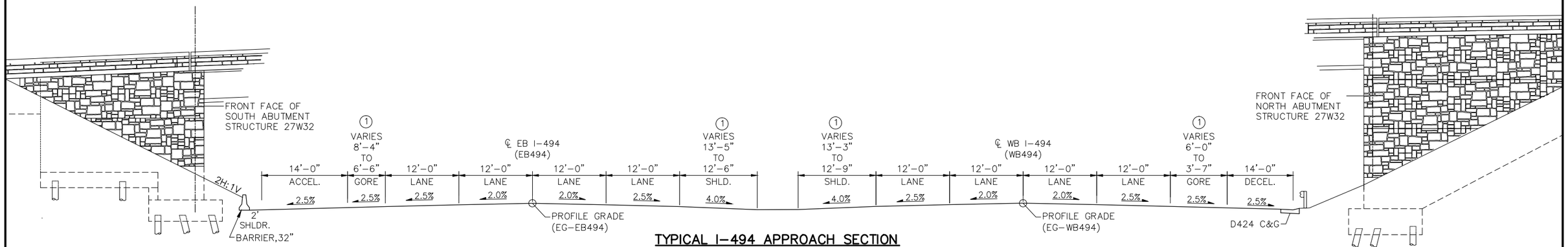
SHEET 50 OF 54

Jan, 06 2016 01:17 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-SUR.DWG By: knierienm



TYPICAL I-494 APPROACH SECTION

STA. 269+46 TO STA. 270+98



TYPICAL I-494 APPROACH SECTION

STA. 269+46 TO STA. 270+98
(POTENTIAL FUTURE WIDENING)

NOTE:

① DIMENSIONS ARE TAKEN ALONG THE WEST AND EAST EDGE OF BRIDGE DECK.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG | CHECKED BY: TR
DRAWN BY: MJK | CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

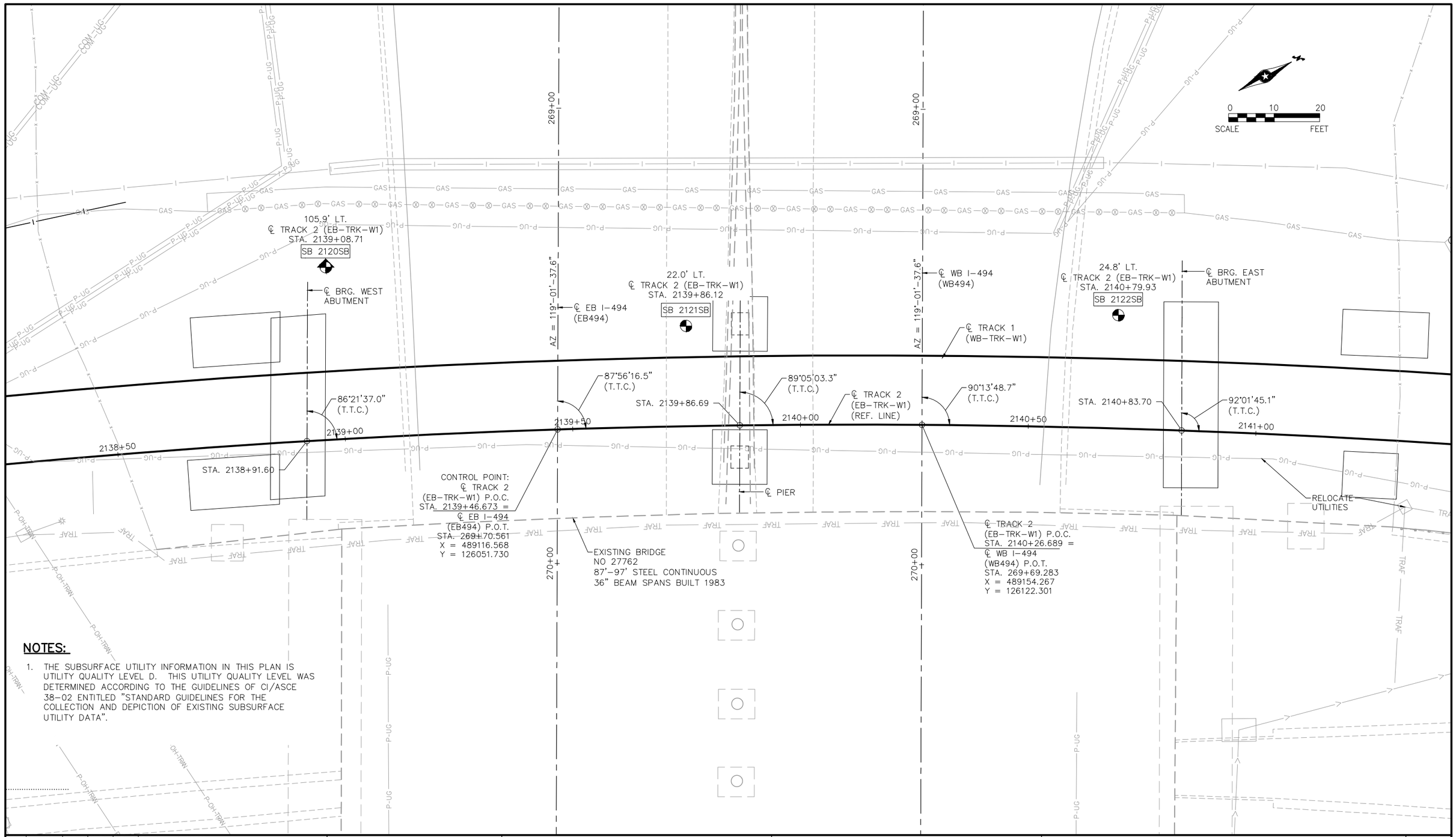
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BRIDGE SURVEY 3

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-SUR-003

SHEET 51 OF 54

Jan. 06 2016 01:17 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-SUR.DWG By: knierlemm



NOTES:

1. 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: AK/IGG | CHECKED BY: TR
DRAWN BY: MJK | CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

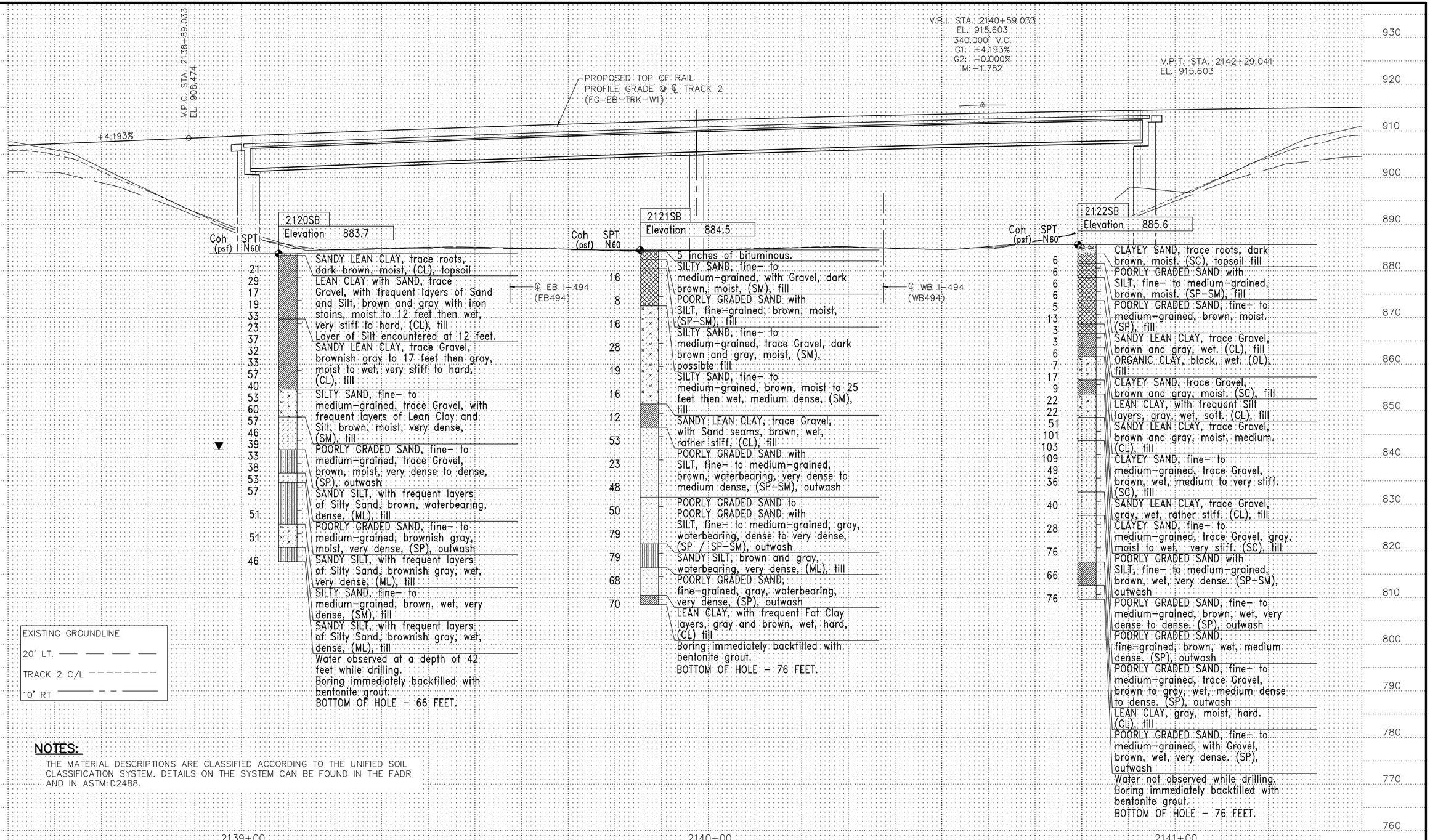
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BORINGS - PLAN

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27W32-BRG-BOR-001

SHEET 52 OF 54

Jan. 06 2016 01:18 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-BOR.dwg By: knierlemm



2120SB
Elevation 883.7

Coh (psf)	SPT N60	
	21	SANDY LEAN CLAY, trace roots, dark brown, moist, (CL), topsoil
	29	LEAN CLAY with SAND, trace Gravel, with frequent layers of Sand and Silt, brown and gray with iron stains, moist to 12 feet then wet, very stiff to hard, (CL), till
	17	
	19	
	33	
	23	
	37	Layer of Silt encountered at 12 feet.
	32	SANDY LEAN CLAY, trace Gravel, brownish gray to 17 feet then gray, moist to wet, very stiff to hard, (CL), till
	33	
	57	
	40	
	53	SILTY SAND, fine- to medium-grained, trace Gravel, with frequent layers of Lean Clay and Silt, brown, moist, very dense, (SM), till
	60	
	57	
	46	
	39	
	33	POORLY GRADED SAND, fine- to medium-grained, trace Gravel, brown, moist, very dense to dense, (SP), outwash
	38	
	53	
	57	
	51	SANDY SILT, with frequent layers of Silty Sand, brown, waterbearing, dense, (ML), till
	51	POORLY GRADED SAND, fine- to medium-grained, brownish gray, moist, very dense, (SP), outwash
	46	SANDY SILT, with frequent layers of Silty Sand, brownish gray, wet, very dense, (ML), till
		SILTY SAND, fine- to medium-grained, brown, wet, very dense, (SM), till
		SANDY SILT, with frequent layers of Silty Sand, brownish gray, wet, dense, (ML), till
		Water observed at a depth of 42 feet while drilling. Boring immediately backfilled with bentonite grout. BOTTOM OF HOLE - 66 FEET.

2121SB
Elevation 884.5

Coh (psf)	SPT N60	
		5 inches of bituminous.
	16	SILTY SAND, fine- to medium-grained, with Gravel, dark brown, moist, (SM), fill
	8	POORLY GRADED SAND with SILT, fine-grained, brown, moist, (SP-SM), fill
	16	SILTY SAND, fine- to medium-grained, trace Gravel, dark brown and gray, moist, (SM), possible fill
	28	
	19	SILTY SAND, fine- to medium-grained, brown, moist to 25 feet then wet, medium dense, (SM), till
	16	
	12	SANDY LEAN CLAY, trace Gravel, with Sand seams, brown, wet, rather stiff, (CL), till
	53	POORLY GRADED SAND with SILT, fine- to medium-grained, brown, waterbearing, very dense to medium dense, (SP-SM), outwash
	23	
	48	
	50	POORLY GRADED SAND to POORLY GRADED SAND with SILT, fine- to medium-grained, gray, waterbearing, dense to very dense, (SP / SP-SM), outwash
	79	
	79	SANDY SILT, brown and gray, waterbearing, very dense, (ML), till
	68	POORLY GRADED SAND, fine-grained, gray, waterbearing, very dense, (SP), outwash
	70	LEAN CLAY, with frequent Fat Clay layers, gray and brown, wet, hard, (CL) till
		Boring immediately backfilled with bentonite grout. BOTTOM OF HOLE - 76 FEET.

2122SB
Elevation 885.6

Coh (psf)	SPT N60	
	6	CLAYEY SAND, trace roots, dark brown, moist. (SC), topsoil fill
	6	POORLY GRADED SAND with SILT, fine- to medium-grained, brown, moist. (SP-SM), fill
	6	
	6	
	5	POORLY GRADED SAND, fine- to medium-grained, brown, moist. (SP), fill
	13	
	3	SANDY LEAN CLAY, trace Gravel, brown and gray, wet. (CL), fill
	3	
	6	ORGANIC CLAY, black, wet. (OL), fill
	7	
	17	CLAYEY SAND, trace Gravel, brown and gray, moist. (SC), fill
	9	
	22	LEAN CLAY, with frequent Silt layers, gray, wet, soft. (CL), till
	22	
	51	SANDY LEAN CLAY, trace Gravel, brown and gray, moist, medium. (CL), till
	101	
	103	
	109	CLAYEY SAND, fine- to medium-grained, trace Gravel, brown, wet, medium to very stiff. (SC), till
	49	
	36	
	40	SANDY LEAN CLAY, trace Gravel, gray, wet, rather stiff. (CL), till
	28	CLAYEY SAND, fine- to medium-grained, trace Gravel, gray, moist to wet, very stiff. (SC), till
	76	POORLY GRADED SAND with SILT, fine- to medium-grained, brown, wet, very dense. (SP-SM), outwash
	66	POORLY GRADED SAND, fine- to medium-grained, brown, wet, very dense to dense. (SP), outwash
	76	POORLY GRADED SAND, fine-grained, brown, wet, medium dense. (SP), outwash
		POORLY GRADED SAND, fine- to medium-grained, trace Gravel, brown to gray, wet, medium dense to dense. (SP), outwash
		LEAN CLAY, gray, moist, hard. (CL), till
		POORLY GRADED SAND, fine- to medium-grained, with Gravel, brown, wet, very dense. (SP), outwash
		Water not observed while drilling. Boring immediately backfilled with bentonite grout. BOTTOM OF HOLE - 76 FEET.

EXISTING GROUNDLINE
20' LT. ——— ——— ——— ———
TRACK 2 C/L ———— ———
10' RT ——— — — ———

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.

2139+00 2140+00 2141+00

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG CHECKED BY: TR
DRAWN BY: MJK CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

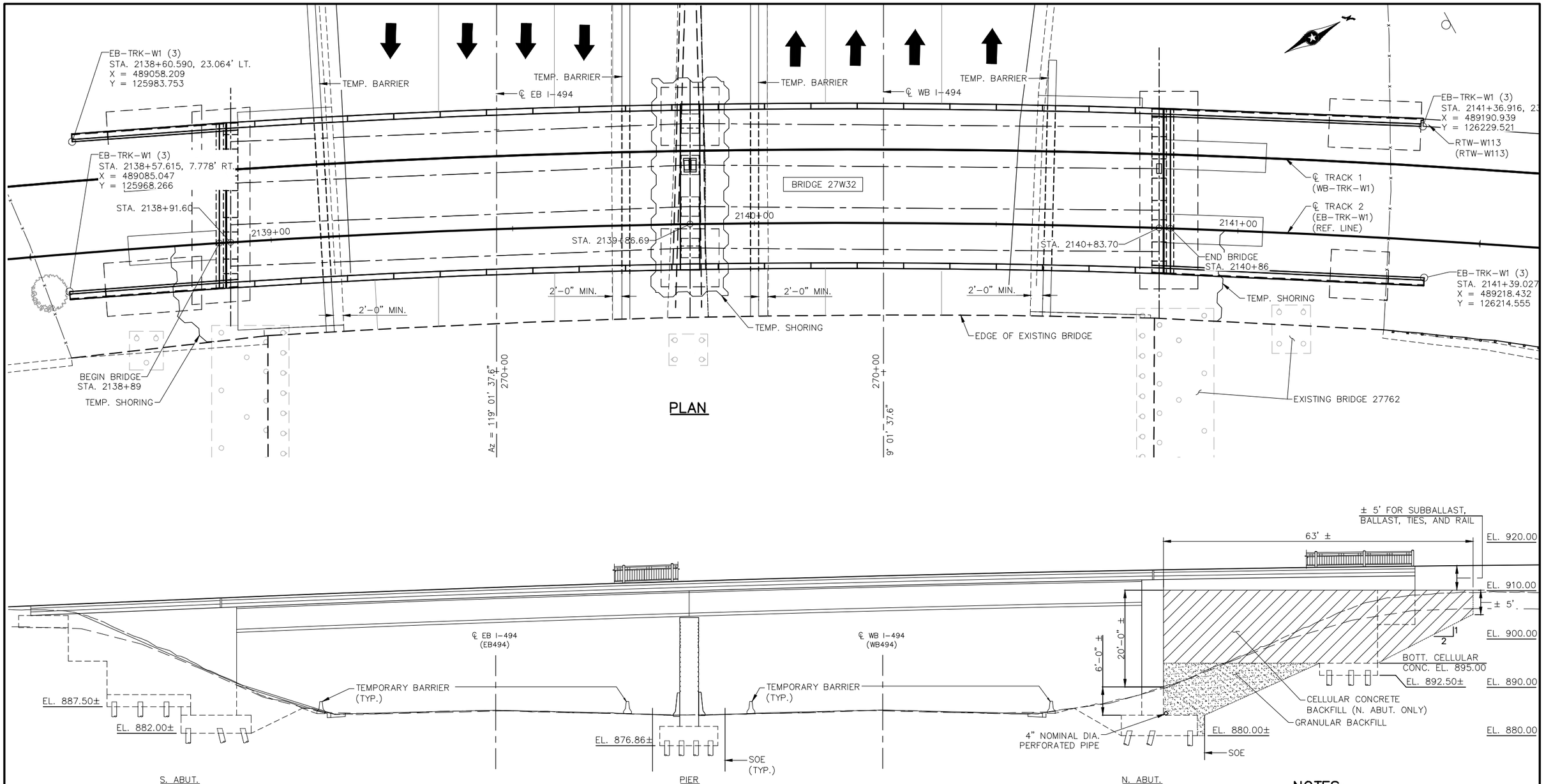
METROPOLITAN COUNCIL
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BORINGS - ELEVATION

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-BOR-002

SHEET 53 OF 54

Jan, 06 2016 01:19 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-BOR.dwg By: knieriemm



NOTES:

SEE TRAFFIC CONTROL PLANS FOR TEMPORARY BARRIER LAYOUT.

SUPPORT OF EXCAVATION (SOE) TO BE DESIGNED BY THE CONTRACTOR. STEEL SHEET PILING SHOWN, OTHER SYSTEMS MAY BE UTILIZED AT THE CONTRACTORS OPTION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG CHECKED BY: TR
DRAWN BY: MJK CHECKED BY: TR

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
CONSTRUCTION DETAILS

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27W32-BRG-ACSD

SHEET 54 OF 54

Jan. 06 2016 01:20 pm V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-ACSD.dwg By: knierlemm