



METROPOLITAN
C O U N C I L



VOLUME 12

SYSTEMS

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

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

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

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

60% SUBMISSION
DATE : 09/28/15

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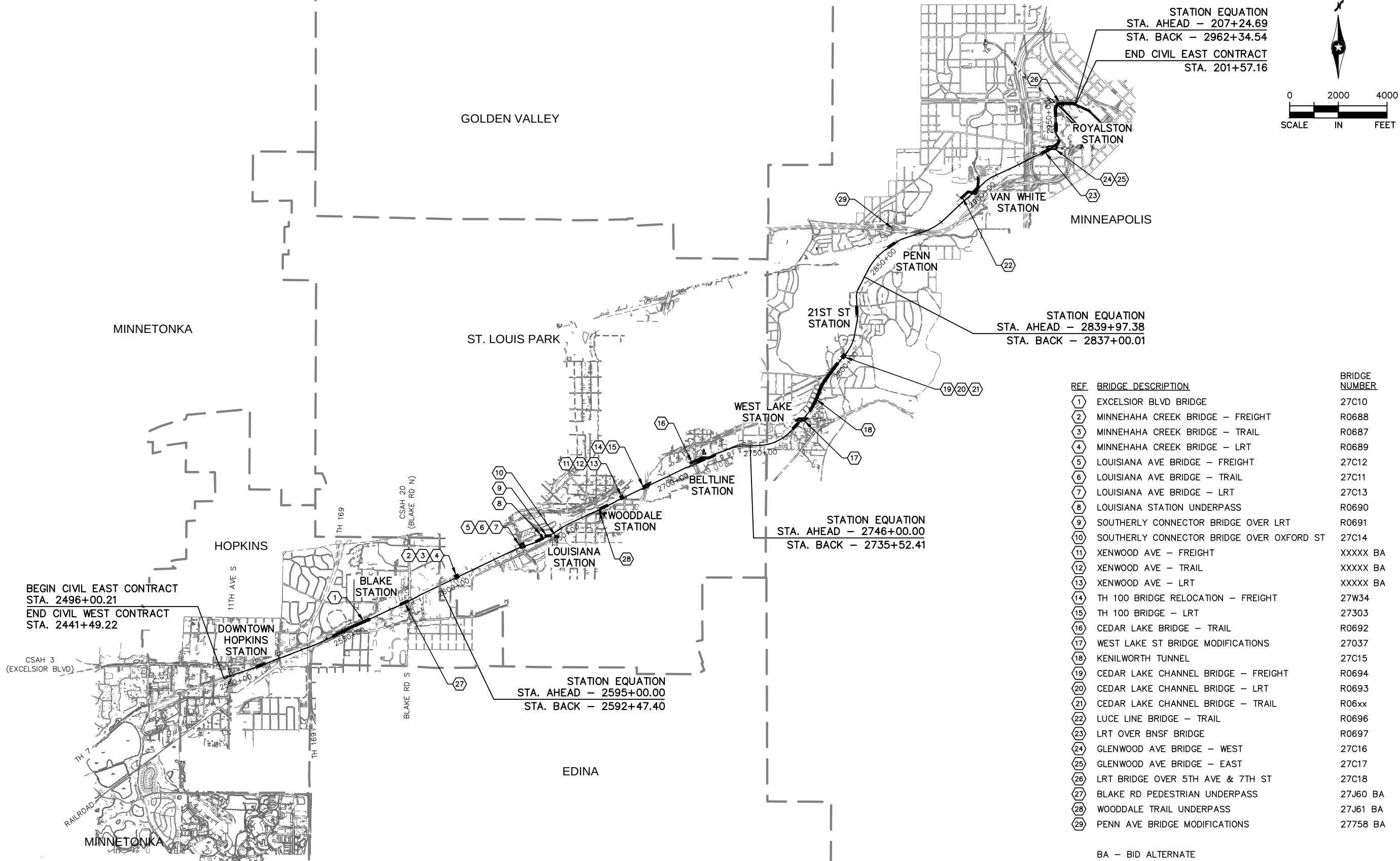
Sep. 25 2015 09:09 am V:\3400_ADC\CAD\CAD MANAGEMENT\DRAWING_LIST\E1-GEN-IDX.dwg By: V-KriwomR

CIVIL EAST						CIVIL EAST						CIVIL EAST					
SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV	SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV	SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
VOLUME 12 - SYSTEMS																	
1	E0-SYS-CVR-001	COVER SHEET				64	E2-SYS-SWE-SCH-009	SYSTEMWIDE ELECTRICAL SCHEDULE	2649+50	2655+00		137	E4-SYS-SWE-PRF-010	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2897+00	2904+00	
2	E0-SYS-SWE-IDX-001	VOLUME INDEX OF PLAN SHEETS SHEET 1				65	E2-SYS-SWE-PRF-010	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2655+00	2660+50		138	E4-SYS-SWE-SCH-010	SYSTEMWIDE ELECTRICAL SCHEDULE	2897+00	2904+00	
3	E0-SYS-SWE-IDX-002	VOLUME INDEX OF PLAN SHEETS SHEET 2				66	E2-SYS-SWE-SCH-010	SYSTEMWIDE ELECTRICAL SCHEDULE	2655+00	2660+50		139	E4-SYS-SWE-PRF-011	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2904+00	2911+00	
4	E0-GEN-KEY-001	GENERAL KEY MAP				67	E2-SYS-SWE-PRF-011	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2660+50	2666+00		140	E4-SYS-SWE-SCH-011	SYSTEMWIDE ELECTRICAL SCHEDULE	2904+00	2911+00	
5	E0-GEN-NTS-001	GENERAL LEGEND AND ABBREVIATIONS SHEET 1				68	E2-SYS-SWE-SCH-011	SYSTEMWIDE ELECTRICAL SCHEDULE	2660+50	2666+00		141	E4-SYS-SWE-PRF-012	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2911+00	2918+00	
6	E0-GEN-NTS-002	GENERAL LEGEND AND ABBREVIATIONS SHEET 2				69	E2-SYS-SWE-PRF-012	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2666+00	2673+00		142	E4-SYS-SWE-SCH-012	SYSTEMWIDE ELECTRICAL SCHEDULE	2911+00	2918+00	
7	E0-SYS-SWE-LAY-001	SYSTEMWIDE ELECTRICAL PLAN SHEET LAYOUT SHEET 1				70	E2-SYS-SWE-SCH-012	SYSTEMWIDE ELECTRICAL SCHEDULE	2666+00	2673+00		143	E4-SYS-SWE-PRF-013	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2918+00	2925+00	
						71	E2-SYS-SWE-PRF-013	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2673+00	2680+00		144	E4-SYS-SWE-SCH-013	SYSTEMWIDE ELECTRICAL SCHEDULE	2918+00	2925+00	
8	E0-SYS-SWE-LAY-002	SYSTEMWIDE ELECTRICAL PLAN SHEET LAYOUT SHEET 2				72	E2-SYS-SWE-SCH-013	SYSTEMWIDE ELECTRICAL SCHEDULE	2673+00	2680+00		145	E4-SYS-SWE-PRF-014	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2925+00	2932+00	
						73	E2-SYS-SWE-PRF-014	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2680+00	2687+00		146	E4-SYS-SWE-SCH-014	SYSTEMWIDE ELECTRICAL SCHEDULE	2925+00	2932+00	
9	E0-SYS-SWE-LAY-003	SYSTEMWIDE ELECTRICAL PLAN SHEET LAYOUT SHEET 3				74	E2-SYS-SWE-SCH-014	SYSTEMWIDE ELECTRICAL SCHEDULE	2680+00	2687+00		147	E4-SYS-SWE-PRF-015	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2932+00	2937+00	
						75	E2-SYS-SWE-PRF-015	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2687+00	2694+00		148	E4-SYS-SWE-SCH-015	SYSTEMWIDE ELECTRICAL SCHEDULE	2932+00	2937+00	
10	E0-SYS-SWE-LAY-004	SYSTEMWIDE ELECTRICAL PLAN SHEET LAYOUT SHEET 4				76	E2-SYS-SWE-SCH-015	SYSTEMWIDE ELECTRICAL SCHEDULE	2687+00	2694+00		149	E4-SYS-SWE-PRF-016	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2937+00	2943+50	
						77	E2-SYS-SWE-PRF-016	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2694+00	2699+00		150	E4-SYS-SWE-SCH-016	SYSTEMWIDE ELECTRICAL SCHEDULE	2937+00	2943+50	
11	E0-SYS-SWE-LAY-005	SYSTEMWIDE ELECTRICAL PLAN SHEET LAYOUT SHEET 5				78	E2-SYS-SWE-SCH-016	SYSTEMWIDE ELECTRICAL SCHEDULE	2694+00	2699+00		151	E4-SYS-SWE-PRF-017	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2943+50	2950+00	
						79	E2-SYS-SWE-PRF-017	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2699+00	2704+00		152	E4-SYS-SWE-SCH-017	SYSTEMWIDE ELECTRICAL SCHEDULE	2943+50	2950+00	
12	E0-SYS-SWE-LAY-006	SYSTEMWIDE ELECTRICAL PLAN SHEET LAYOUT SHEET 6				80	E2-SYS-SWE-SCH-017	SYSTEMWIDE ELECTRICAL SCHEDULE	2699+00	2704+00		153	E4-SYS-SWE-PRF-018	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2950+00	2955+50	
						81	E2-SYS-SWE-PRF-018	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2704+00	2710+00		154	E4-SYS-SWE-SCH-018	SYSTEMWIDE ELECTRICAL SCHEDULE	2950+00	2955+50	
13	E0-SYS-SWE-LGD-001	SYSTEMWIDE ELECTRICAL SYMBOLS AND GENERAL NOTES				82	E2-SYS-SWE-SCH-018	SYSTEMWIDE ELECTRICAL SCHEDULE	2704+00	2710+00		155	E4-SYS-SWE-PRF-019	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2955+50	2962+34.33	
						83	E2-SYS-SWE-PRF-019	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2710+00	2717+00		156	E4-SYS-SWE-SCH-019	SYSTEMWIDE ELECTRICAL SCHEDULE	2955+50	2962+34.33	
14	E0-SYS-SWE-LGD-002	SYSTEMWIDE ELECTRICAL ABBREVIATIONS				84	E2-SYS-SWE-SCH-019	SYSTEMWIDE ELECTRICAL SCHEDULE	2710+00	2717+00		157	E4-SYS-SWE-PRF-020	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE - TARGET FIELD STATION			
15	E1-SYS-SWE-PRF-001	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2496+00.21	2502+50		85	E2-SYS-SWE-PRF-020	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2717+00	2724+00							
16	E1-SYS-SWE-SCH-001	SYSTEMWIDE ELECTRICAL SCHEDULE	2496+00.21	2502+50		86	E2-SYS-SWE-SCH-020	SYSTEMWIDE ELECTRICAL SCHEDULE	2717+00	2724+00		158	E4-SYS-SWE-SCH-020	SYSTEMWIDE ELECTRICAL SCHEDULE - TARGET FIELD STATION			
17	E1-SYS-SWE-PRF-002	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2502+50	2509+50		87	E2-SYS-SWE-PRF-021	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2724+00	2731+00							
18	E1-SYS-SWE-SCH-002	SYSTEMWIDE ELECTRICAL SCHEDULE	2502+50	2509+50		88	E2-SYS-SWE-SCH-021	SYSTEMWIDE ELECTRICAL SCHEDULE	2724+00	2731+00		159	E0-SYS-STU-DTL-001	SYSTEMWIDE ELECTRICAL DETAILS - DUCTBANK SECTIONS			
19	E1-SYS-SWE-PRF-003	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2509+50	2516+50		89	E2-SYS-SWE-PRF-022	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2731+00	2747+00							
20	E1-SYS-SWE-SCH-003	SYSTEMWIDE ELECTRICAL SCHEDULE	2509+50	2516+50		90	E2-SYS-SWE-SCH-022	SYSTEMWIDE ELECTRICAL SCHEDULE	2731+00	2747+00		160	E0-SYS-SWE-DTL-002	SYSTEMWIDE ELECTRICAL DETAILS - TE MANHOLE			
21	E1-SYS-SWE-PRF-004	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2516+50	2523+50		91	E3-SYS-SWE-PRF-001	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2747+00	2751+00		161	E0-SYS-SWE-DTL-003	SYSTEMWIDE ELECTRICAL DETAILS - SC MANHOLE			
22	E1-SYS-SWE-SCH-004	SYSTEMWIDE ELECTRICAL SCHEDULE	2516+50	2523+50		92	E3-SYS-SWE-SCH-001	SYSTEMWIDE ELECTRICAL SCHEDULE	2747+00	2751+00		162	E0-SYS-SWE-DTL-004	SYSTEMWIDE ELECTRICAL DETAILS - TE HANDHOLE			
23	E1-SYS-SWE-PRF-016	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE - 5TH AVE S & CP BASS LAKE SPUR				93	E3-SYS-SWE-PRF-002	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2751+00	2758+00		163	E0-SYS-SWE-DTL-005	SYSTEMWIDE ELECTRICAL DETAILS - SC HANDHOLE			
						94	E3-SYS-SWE-SCH-002	SYSTEMWIDE ELECTRICAL SCHEDULE	2751+00	2758+00							
24	E1-SYS-SWE-SCH-016	SYSTEMWIDE ELECTRICAL SCHEDULE - 5TH AVE S & CP BASS LAKE SPUR				95	E3-SYS-SWE-PRF-003	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2758+00	2765+00		164	E0-SYS-SWE-DTL-006	SYSTEMWIDE ELECTRICAL DETAILS - CONDUIT STUB-OUT AND STUB-UP			
						96	E3-SYS-SWE-SCH-003	SYSTEMWIDE ELECTRICAL SCHEDULE	2758+00	2765+00							
25	E1-SYS-SWE-PRF-005	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2523+50	2529+50		97	E3-SYS-SWE-PRF-004	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2765+00	2771+00		165	E0-SYS-SWE-DTL-007	SYSTEMWIDE ELECTRICAL DETAILS - EXPRESS TROUGH INSTALLATION SHEET 1			
26	E1-SYS-SWE-SCH-005	SYSTEMWIDE ELECTRICAL SCHEDULE	2523+50	2529+50		98	E3-SYS-SWE-SCH-004	SYSTEMWIDE ELECTRICAL SCHEDULE	2765+00	2771+00							
27	E1-SYS-SWE-PRF-006	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2529+50	2536+00		99	E3-SYS-SWE-PRF-005	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2771+00	2778+00		166	E0-SYS-SWE-DTL-008	SYSTEMWIDE ELECTRICAL DETAILS - EXPRESS TROUGH INSTALLATION SHEET 2			
28	E1-SYS-SWE-SCH-006	SYSTEMWIDE ELECTRICAL SCHEDULE	2529+50	2536+00		100	E3-SYS-SWE-SCH-005	SYSTEMWIDE ELECTRICAL SCHEDULE	2771+00	2778+00							
29	E1-SYS-SWE-PRF-007	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2536+00	2542+00		101	E3-SYS-SWE-PRF-006	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2778+00	2785+00		167	E0-SYS-SWE-DTL-009	LRV TRAFFIC DETECTION LOOP - EMBEDDED TRACK INSTALLATION			
30	E1-SYS-SWE-SCH-007	SYSTEMWIDE ELECTRICAL SCHEDULE	2536+00	2542+00		102	E3-SYS-SWE-SCH-006	SYSTEMWIDE ELECTRICAL SCHEDULE	2778+00	2785+00							
31	E1-SYS-SWE-PRF-008	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2542+00	2546+50		103	E3-SYS-SWE-PRF-007	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2785+00	2791+50		168	E0-SYS-SWE-DTL-010	LRV TRAFFIC DETECTION LOOP - BALLASTED TRACK INSTALLATION			
32	E1-SYS-SWE-SCH-008	SYSTEMWIDE ELECTRICAL SCHEDULE	2542+00	2546+50		104	E3-SYS-SWE-SCH-007	SYSTEMWIDE ELECTRICAL SCHEDULE	2785+00	2791+50							
33	E1-SYS-SWE-PRF-009	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2546+50	2553+00		105	E3-SYS-SWE-PRF-008	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2791+50	2798+00		169	E0-SYS-SWE-DTL-011	TWC ANTENNA - EMEBDDDED TRACK INSTALLATION			
34	E1-SYS-SWE-SCH-009	SYSTEMWIDE ELECTRICAL SCHEDULE	2546+50	2553+00		106	E3-SYS-SWE-SCH-008	SYSTEMWIDE ELECTRICAL SCHEDULE	2791+50	2798+00							
35	E1-SYS-SWE-PRF-010	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2553+00	2559+50		107	E3-SYS-SWE-PRF-009	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2798+00	2805+00		170	E0-SYS-SWE-DTL-012	TWC ANTENNA - DIRECT FIXATION TRACK INSTALLATION			
36	E1-SYS-SWE-SCH-010	SYSTEMWIDE ELECTRICAL SCHEDULE	2553+00	2559+50		108	E3-SYS-SWE-SCH-009	SYSTEMWIDE ELECTRICAL SCHEDULE	2798+00	2805+00							
37	E1-SYS-SWE-PRF-011	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2559+50	2566+50		109	E3-SYS-SWE-PRF-010	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2805+00	2812+00		171	E0-SYS-SWE-DTL-013	TWC ANTENNA - BALLASTED TRACK INSTALLATION			
38	E1-SYS-SWE-SCH-011	SYSTEMWIDE ELECTRICAL SCHEDULE	2559+50	2566+50		110	E3-SYS-SWE-SCH-010	SYSTEMWIDE ELECTRICAL SCHEDULE	2805+00	2812+00							
39	E1-SYS-SWE-PRF-012	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2566+50	2573+50		111	E3-SYS-SWE-PRF-011	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2812+00	2819+00		172	E0-SYS-SWE-DTL-014	WAYSIDE SIGNAL MAST - TYPICAL FOUNDATIONS INSTALLATION			
40	E1-SYS-SWE-SCH-012	SYSTEMWIDE ELECTRICAL SCHEDULE	2566+50	2573+50		112	E3-SYS-SWE-SCH-011	SYSTEMWIDE ELECTRICAL SCHEDULE	2812+00	2819+00							
41	E1-SYS-SWE-PRF-013	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2573+50	2580+50		113	E3-SYS-SWE-PRF-012	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2819+00	2826+00		173	E0-SYS-SWE-DTL-015	GRADE CROSSING MAST - TYPICAL FOUNDATION INSTALLATION			
42	E1-SYS-SWE-SCH-013	SYSTEMWIDE ELECTRICAL SCHEDULE	2573+50	2580+50		114	E3-SYS-SWE-SCH-012	SYSTEMWIDE ELECTRICAL SCHEDULE	2819+00	2826+00							
43	E1-SYS-SWE-PRF-014	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2580+50	2587+50		115	E3-SYS-SWE-PRF-013	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2826+00	2833+00		174	E0-SYS-SWE-DTL-016	WHEEL SENSOR - DF & BALLASTED TRACK INSTALLATION			
44	E1-SYS-SWE-SCH-014	SYSTEMWIDE ELECTRICAL SCHEDULE	2580+50	2587+50		116	E3-SYS-SWE-SCH-013	SYSTEMWIDE ELECTRICAL SCHEDULE	2826+00	2833+00							
45	E1-SYS-SWE-PRF-015	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2587+50	2596+50		117	E3-SYS-SWE-PRF-014	SYSTEMWIDE ELECTRICAL PLAN AND PROFILE	2833+00	2842+00		175	E0-SYS-SWE-DTL-017	PEDESTRIAN CROSSING CASE - TYPICAL FOUNDATION INSTALLATION			
46	E1-SYS-SWE-SCH-015	SYSTEMWIDE ELECTRICAL SCHEDULE	2587+50	2596+50		118</											

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CIVIL EAST						CIVIL EAST						CIVIL EAST													
SHT #	SHEET NAME		SHEET DESCRIPTION		STATION	STATION	REV	SHT #	SHEET NAME		SHEET DESCRIPTION		STATION	STATION	REV	SHT #	SHEET NAME		SHEET DESCRIPTION		STATION	STATION	REV		
VOLUME 12 - SYSTEMS (cont'd)																									
186	E0-SYS-SWE-DTL-028		IMPEDANCE BOND ISOLATION - EMBEDDED TRACK INSTALLATION																						
187	E0-SYS-SWE-DTL-029		IMPEDANCE BOND - EMBEDDED TRACK PLINTH AND CONDUIT INSTALLATION																						
188	E0-SYS-SWE-DTL-030		TYPICAL WAYSIDE SIGNAL DETAILS - RAIL ACCESS BOX																						
189	E0-SYS-SWE-DTL-031		BOOTLEG JUNCTION BOX INSTALLATION																						
190	E0-SYS-SWE-DTL-032		FREIGHT INTRUSION DETECTION SYSTEM DETAIL SHEET 1																						
191	E0-SYS-SWE-DTL-033		FREIGHT INTRUSION DETECTION SYSTEM DETAIL SHEET 2																						
192	E0-SYS-SWE-DTL-034		FREIGHT SIGNAL HOUSE DETAILS-TYPICAL 6'X8' CROSSING HOUSE																						
193	E0-SYS-SWE-COM-001		INTRUSION DETECTION CABINET - TYPICAL FOUNDATION INSTALLATION																						
194	E0-SYS-OCS-PFS-001		OCS POLE FOUNDATION SCHEDULE - SHEET 1 OF 12																						
195	E0-SYS-OCS-PFS-002		OCS POLE FOUNDATION SCHEDULE - SHEET 2 OF 12																						
196	E0-SYS-OCS-PFS-003		OCS POLE FOUNDATION SCHEDULE - SHEET 3 OF 12																						
197	E0-SYS-OCS-PFS-004		OCS POLE FOUNDATION SCHEDULE - SHEET 4 OF 12																						
198	E0-SYS-OCS-PFS-005		OCS POLE FOUNDATION SCHEDULE - SHEET 5 OF 12																						
199	E0-SYS-OCS-PFS-006		OCS POLE FOUNDATION SCHEDULE - SHEET 6 OF 12																						
200	E0-SYS-OCS-PFS-007		OCS POLE FOUNDATION SCHEDULE - SHEET 7 OF 12																						
201	E0-SYS-OCS-PFS-008		OCS POLE FOUNDATION SCHEDULE - SHEET 8 OF 12																						
202	E0-SYS-OCS-PFS-009		OCS POLE FOUNDATION SCHEDULE - SHEET 9 OF 12																						
203	E0-SYS-OCS-PFS-010		OCS POLE FOUNDATION SCHEDULE - SHEET 10 OF 12																						
204	E0-SYS-OCS-PFS-011		OCS POLE FOUNDATION SCHEDULE - SHEET 11 OF 12																						
205	E0-SYS-OCS-PFS-012		OCS POLE FOUNDATION SCHEDULE - SHEET 12 OF 12																						
206	E0-SYS-OCS-FND-001		OCS POLE FOUNDATION ASSEMBLY - BALLASTED TRACK																						
207	E0-SYS-OCS-FND-002		OCS POLE FOUNDATION ASSEMBLY - MEDIAN OR NEUTRAL AREA																						
208	E0-SYS-OCS-FND-003		OCS GUY FOUNDATION ASSEMBLY																						
209	E0-SYS-OCS-FND-004		OCS POLE FOUNDATION ASSEMBLY - MSE RETAINED FILL AT BRIDGE APPROACH																						
210	E0-SYS-CORR-DTL-001		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 1																						
211	E0-SYS-CORR-DTL-002		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 2																						
212	E0-SYS-CORR-DTL-003		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 3																						
213	E0-SYS-CORR-DTL-004		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 4																						
214	E0-SYS-CORR-DTL-005		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 5																						
215	E0-SYS-CORR-DTL-006		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 6																						
216	E0-SYS-CORR-DTL-007		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 7																						
217	E0-SYS-CORR-DTL-008		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 8																						
218	E0-SYS-CORR-DTL-009		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 9																						
219	E0-SYS-CORR-DTL-010		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 10																						
220	E0-SYS-CORR-DTL-011		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 11																						
221	E0-SYS-CORR-DTL-012		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 12																						
222	E0-SYS-CORR-DTL-013		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 13																						
223	E0-SYS-CORR-DTL-014		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 14																						
224	E0-SYS-CORR-DTL-015		SYSTEMWIDE CORROSION CONTROL STRAY CURRENT CONTROL DETAIL 15																						

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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL



60% SUBMISSION - 09/28/15



CIVIL EAST - VOLUME 12
GENERAL
KEY MAP

DISCIPLINE: GENERAL
SHEET NAME: E0-GEN-KEY - 001

SHEET
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OF
224

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TRACK 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 INTRUSION DETECTION

CIVIL LINETYPES

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

TRACK SYMBOLS

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

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

CIVIL SYMBOLS

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

SURVEY NOTES

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

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL



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CIVIL EAST - VOLUME 12
GENERAL
LEGEND AND ABBREVIATIONS
SHEET 1

DISCIPLINE: GENERAL

SHEET NAME: E0-GEN-NTS - 001

Sep. 21 2015 06:42 am V: \\3400_ADC\CAD\CAD MANAGEMENT\DRAWING LIST\E0-GEN-NTS.dwg By: V-KriedwMR

ABBREVIATIONS

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

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	KENILWORTH TRAIL (SECONDARY)/WEST OF PENN STATION
TRAIL G	CEDAR LAKE TRAIL (SECONDARY)/EAST OF PENN STATION
TRAIL H	10' CONNECTOR TRAIL/EAST OF PENN STATION TO KENWOOD PKWY
TRAIL I	NOT USED
CEDAR LAKE TRAIL	CEDAR LAKE TRAIL (MAIN)/AT-GRADE CROSSING AT PENN STATION
TRAIL J	CEDAR LAKE TRAIL (SECONDARY)/NORTHWEST OF PENN STATION
TRAIL K	CEDAR LAKE TRAIL (SECONDARY)/NORTHWEST OF PENN STATION
TRAIL L	CEDAR LAKE TRAIL (SECONDARY)/EAST OF PENN STATION
TRAIL M	NOT USED
TRAIL N	8' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO EDGEBROOK DRIVE
TRAIL O	8' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO W LAKE STREET
TRAIL P	8' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO LOUISIANA AVE
TRAIL Q	10' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO TH 7 SERVICE ROAD
TRAIL R	20' CONNECTOR TRAIL FROM VAN WHITE STATION TO CEDAR LAKE TRAIL
TRAIL S	NOT USED
TRAIL T	8' CONNECTOR TRAIL FROM VAN WHITE STATION TO VAN WHITE MEMORIAL BLVD
TRAIL U	10' TRAIL PARALLEL TO CEDAR LAKE PKWY
LUCE LINE TRAIL	LUCE LINE REGIONAL TRAIL/ON BRIDGE OVER LIGHT RAIL
TRAIL V	CONNECTOR TRAIL TO LUCE LINE REGIONAL TRAIL WEST OF LIGHT RAIL
TRAIL W	CONNECTOR TRAIL TO LUCE LINE REGIONAL TRAIL WEST OF LIGHT RAIL

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL



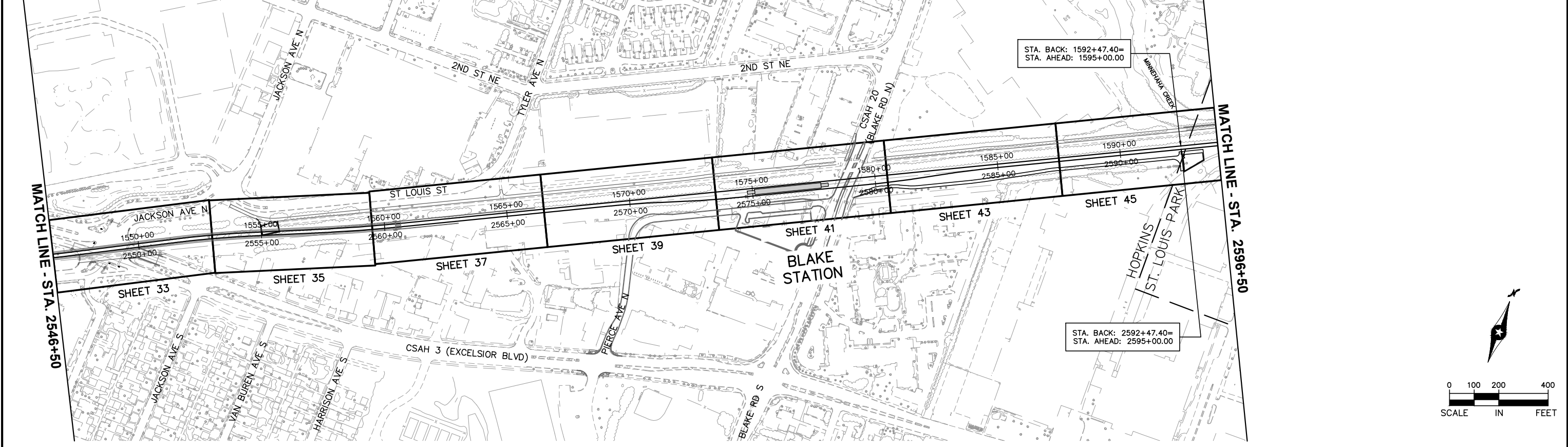
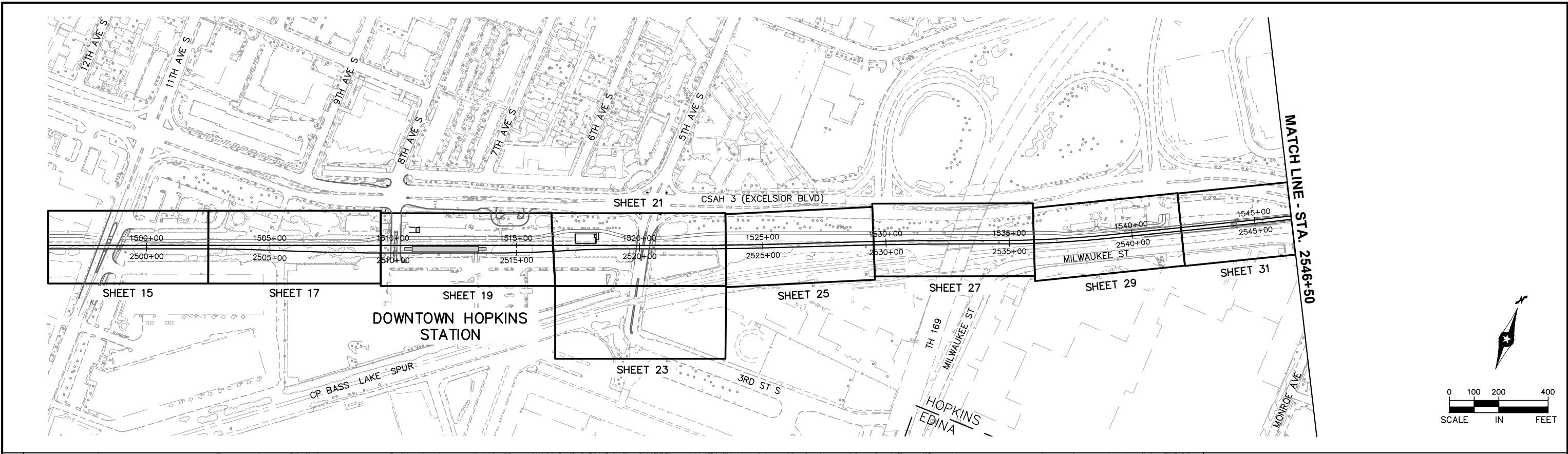
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CIVIL EAST - VOLUME 12
GENERAL
LEGEND AND ABBREVIATIONS
SHEET 2

DISCIPLINE: GENERAL

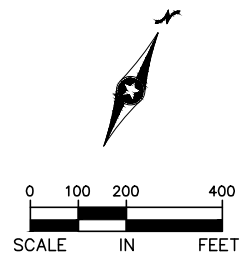
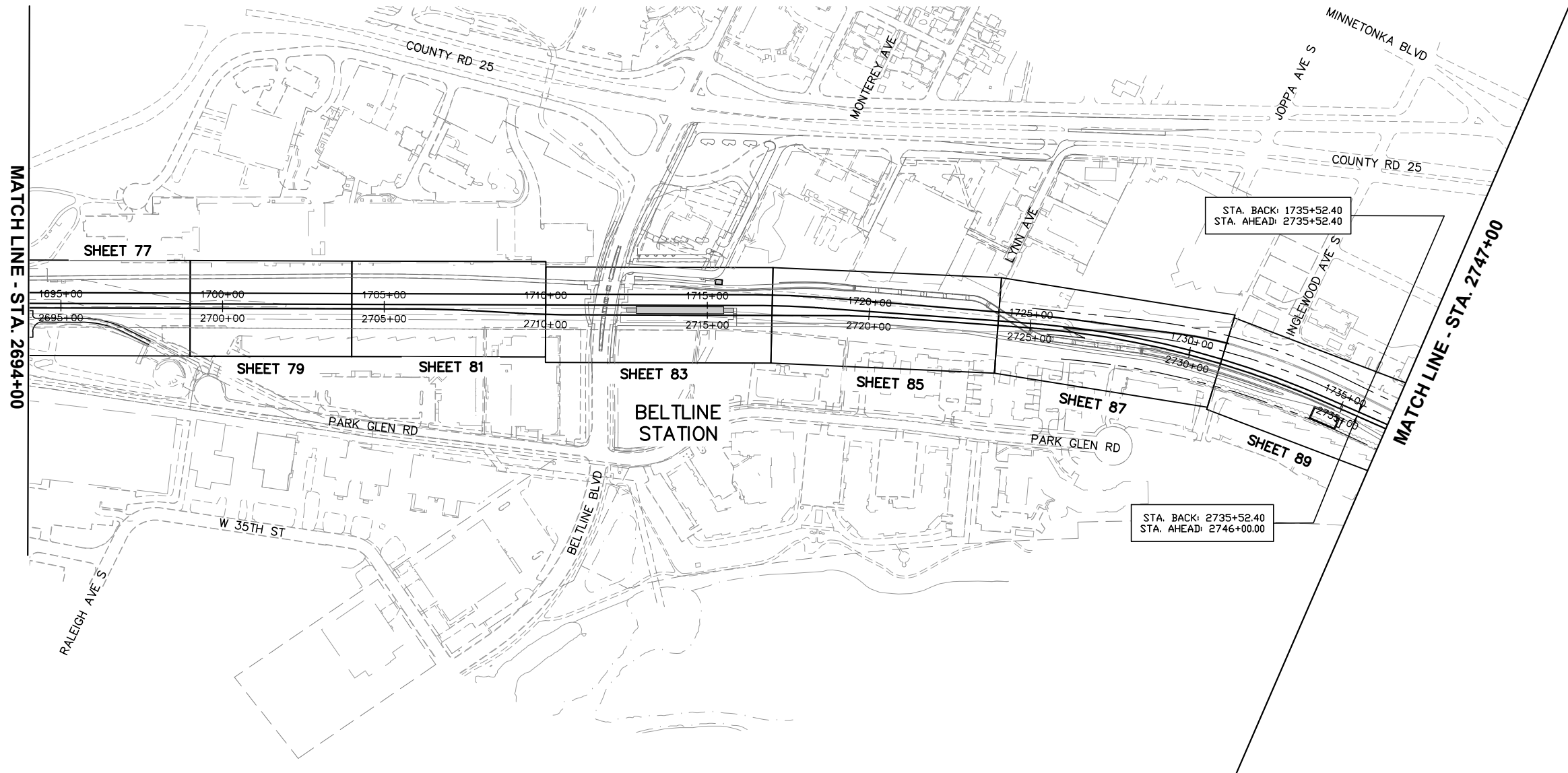
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						60% SUBMISSION - 9/28/15				DISCIPLINE: SYSTEMS		SHEET NAME: E0-SYS-SWE-LAY-001

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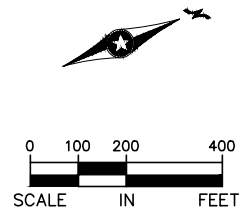
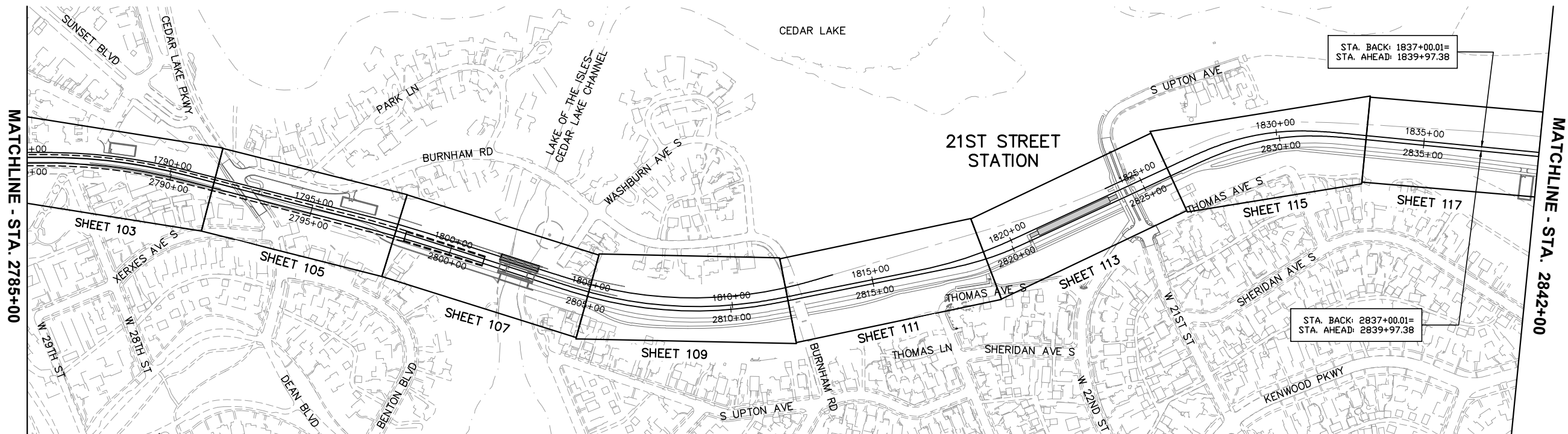
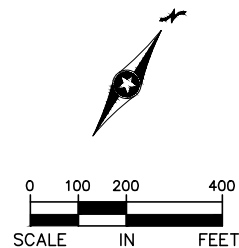
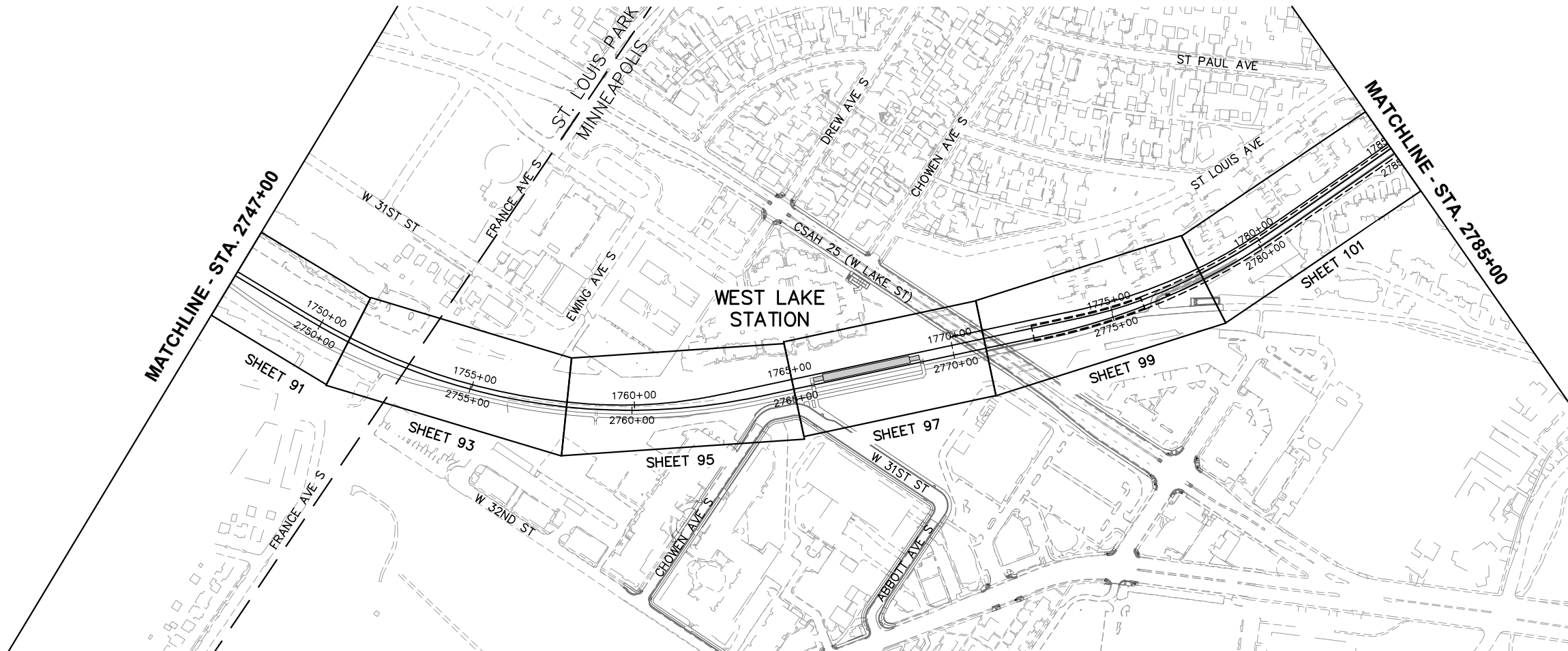
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SYSTEMWIDE ELECTRICAL
PLAN SHEET LAYOUT
SHEET 3

DISCIPLINE: SYSTEMS

SHEET NAME: E0-SYS-SWE-LAY-003

SHEET
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OF
224

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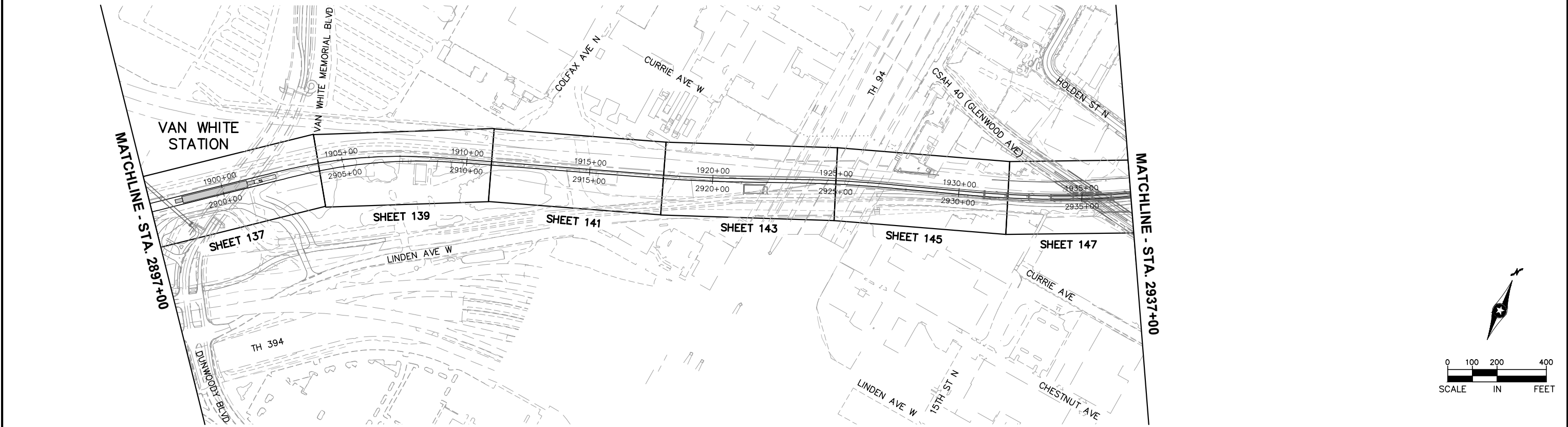
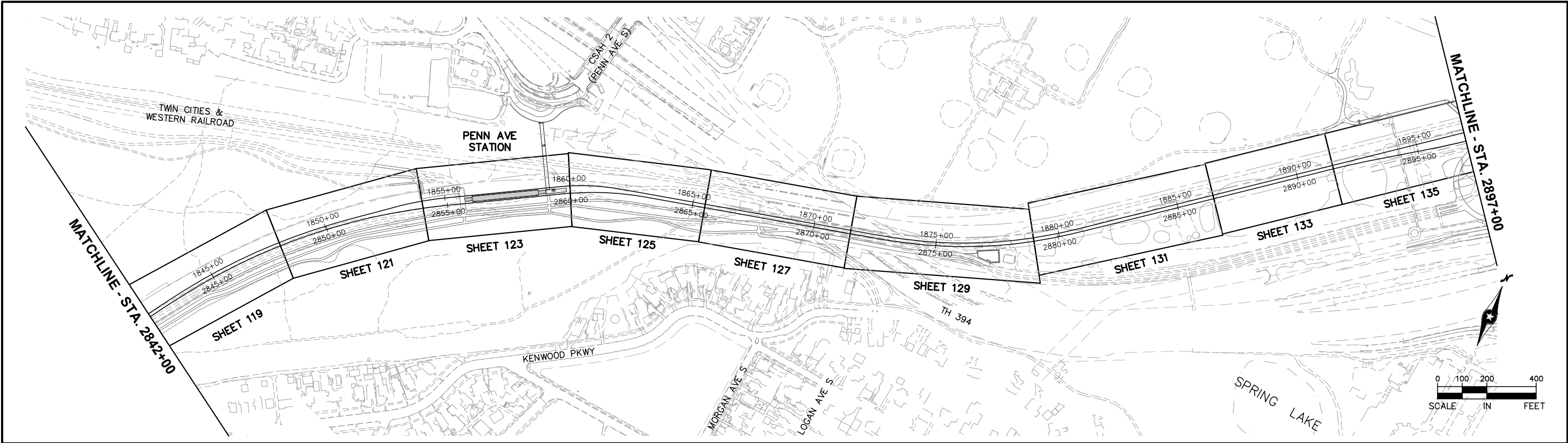


CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
PLAN SHEET LAYOUT
SHEET 4

DISCIPLINE: SYSTEMS
SHEET NAME: E0-SYS-SWE-LAY-004

SHEET
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OF
224

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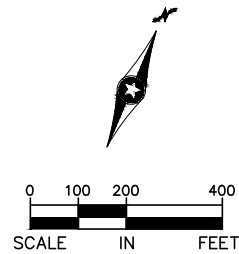
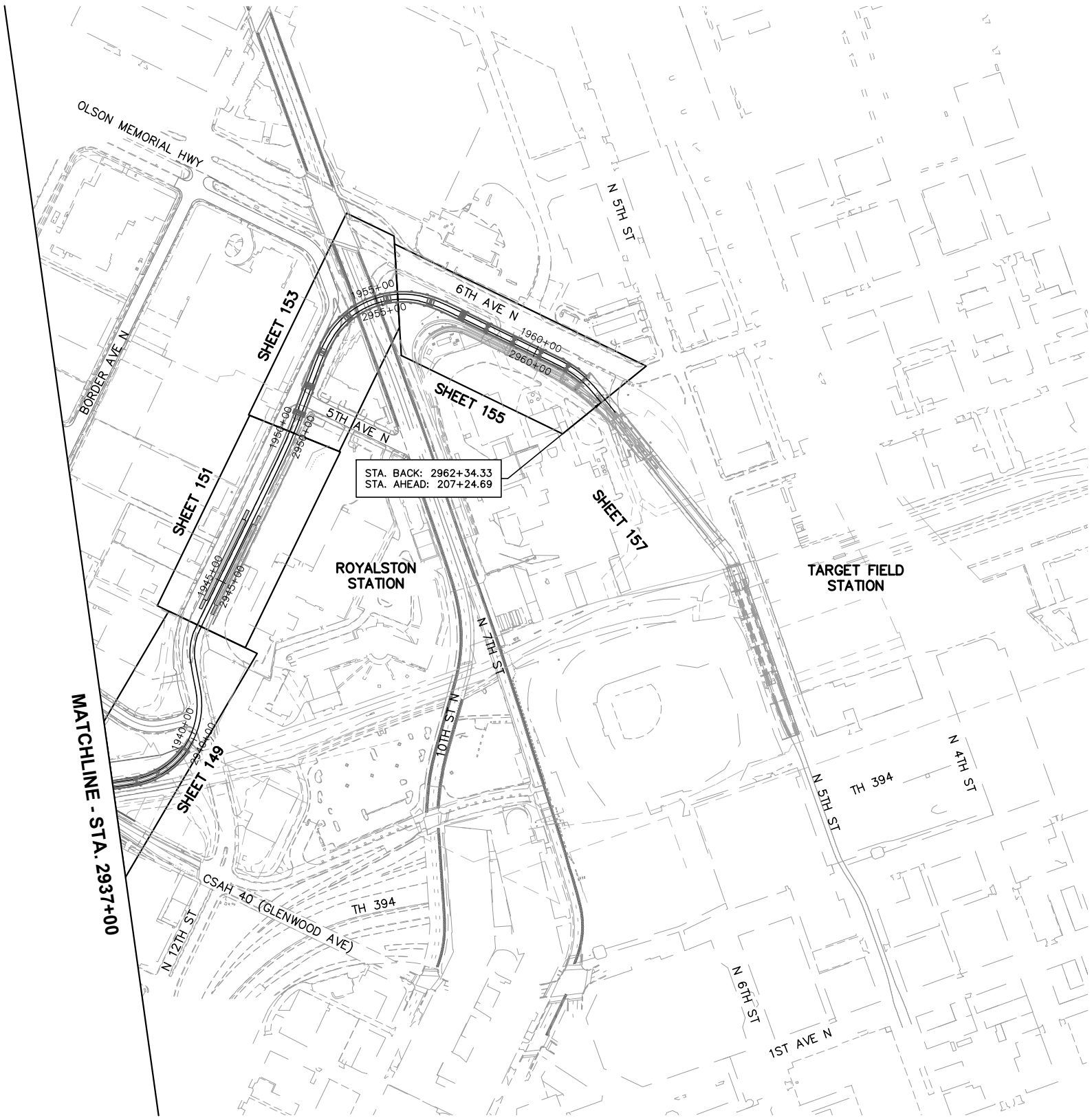
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SYSTEMWIDE ELECTRICAL
PLAN SHEET LAYOUT
SHEET 5

DISCIPLINE: SYSTEMS

SHEET NAME: E0-SYS-SWE-LAY-005

SHEET 11 OF 224

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CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
PLAN SHEET LAYOUT
SHEET 6

DISCIPLINE:	SYSTEMS
SHEET NAME:	E0-SYS-SWE-LAY-006

SHEET
12
OF
224

SYSTEMWIDE ELECTRICAL SYMBOLS & GENERAL NOTES

SYMBOLS:

SC-MH-XXXX

SC MANHOLE XXXX ID

TE-MH-XXXX

TE MANHOLE XXXX ID

SC-HH-XXXX

SC HANDHOLE XXXX ID

ET-TBX-XXXX

ET TRANSITION BOX XXXX ID

ID-XXXX

INTRUSION DETECTION XXXX ID

MC-XXXX

MC DUCTBANK XXXX ID

ET-XXXX

MAINLINE EXPRESS TROUGH XXXX ID

SC-XXXX

MAINLINE SC DUCTBANK XXXX ID

TE-XXXX

MAINLINE TE DUCTBANK XXXX ID

SC-XXXX

SC CONDUIT/DUCTBANK XXXX ID

TE-XXXX

TE CONDUIT/DUCTBANK XXXX ID

LV-XXXX

LV CONDUIT/DUCTBANK XXXX ID

BURIED CONDUIT CONTINUED IN ANOTHER DESIGN PACKAGE AS SPECIFIED

CONCEALED CONDUIT OR DUCTBANK

CONDUIT STUBBED OUT HORIZONTALLY AND CAPPED

CSO-XXXX

CONDUIT, TURNED AWAY FROM OBSERVER

CONDUIT, TURNED TOWARDS OBSERVER (STUB-UP)

CSU-XXXX

EXPOSED CONDUIT

TPSS BUILDING (NIC)

LRT SIGNAL/COMM HOUSE (NIC)

FREIGHT SIGNAL HOUSE

IMPEDANCE BOND PLINTH MOUNTED ARRANGEMENT

ZBF-XXXX

WAYSIDE SIGNAL POLE FOUNDATION AND STUB-UP

SF-XXXX

IMPEDANCE BOND RAIL ACCESS

ZB-XXXX

SWITCH MACHINE (NIC)

TWC ANTENNA-BALASTED AND DF TRACK, JUNCTION BOX ONLY

JB-XXXX

TWC ANTENNA-EMBEDDED TRACK

TWC-XXXX

TYPICAL OCS POLE FOUNDATION

CONDUIT STUB-UP

CSU-XXXX

JUNCTION BOX

JB-XXXX

FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX

IDF-XXXX

FOUNDATION

FDN-XXXX

LRT CROSSING GATE FOUNDATION & STUB UP ONLY

GF-XXXX

FREIGHT CROSSING GATE

CG-XXXX

FREIGHT PEDESTRIAN FLASHER

PF-XXXX

LRT PEDESTRIAN FLASHER FOUNDATION & STUB UP ONLY

PF-XXXX

GENERAL NOTES:

1.

ITEMS SHOWN SCREENED ARE EITHER NOT-IN-CONTRACT (NIC) OR ARE PART OF ANOTHER DESIGN PACKAGE.
2.

DEPTH OF CONDUITS MAY VARY SLIGHTLY IN ORDER TO ACHIEVE ADEQUATE DRAINAGE INTO MANHOLES, HANDHOLES AND PULLBOXES. SEE SPECIFICATIONS.
3.

ALL HANDHOLES AND MANHOLES SHALL BE LOCATED WITH LONG SIDE PARALLEL TO TRACKS UNLESS OTHERWISE NOTED
4.

COORDINATE INSTALLATION OF DUCTBANKS AT TRACK DRAINS AND BELOW TRACK SLABS.
5.

LOCATION OF KNOWN EXISTING UNDERGROUND UTILITIES IS INDICATED ON UTILITY DRAWINGS. FIELD VERIFY LOCATIONS OF EXISTING UTILITIES PRIOR TO BEGINNING INSTALLATION OF THIS WORK.
6.

PROVIDE CORROSION PROTECTION FOR ALL DIRECT-BURIED OR ENCASED GRS PER SPECIFICATIONS
7.

FOR OCS FOUNDATION DETAILS SEE SHEETS E0-SYS-OCS-FDN-001 TO E0-SYS-OCS-FDN-004
8.

SEE VOLUME 3 FOR TRACKWORK DESIGN
9.

SEE VOLUME 8 FOR DRAINAGE DESIGN
10.

SEE VOLUME 10 FOR TRAFFIC SIGNAL DESIGN
11.

SEE VOLUME 11 FOR STATION ELECTRICAL DESIGN
12.

SEE SYSTEMS & TUNNEL FACILITIES CONTRACT FOR SYSTEMS DESIGN.

A

SECTION

SCALE: NTS

SECTION A

1

XXXX

←

←

DETAIL No. 1 ON
XXXX = SHEET NO.

1

DETAIL

SCALE: NTS

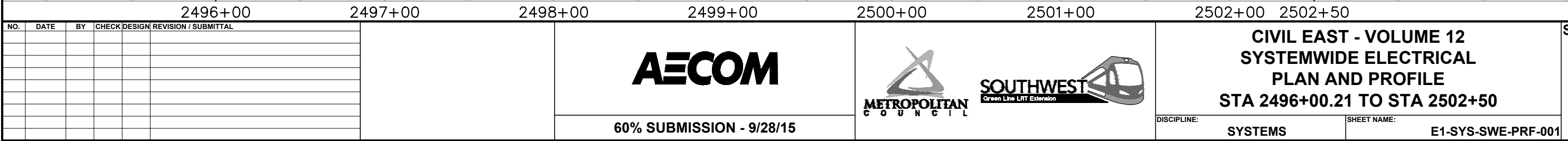
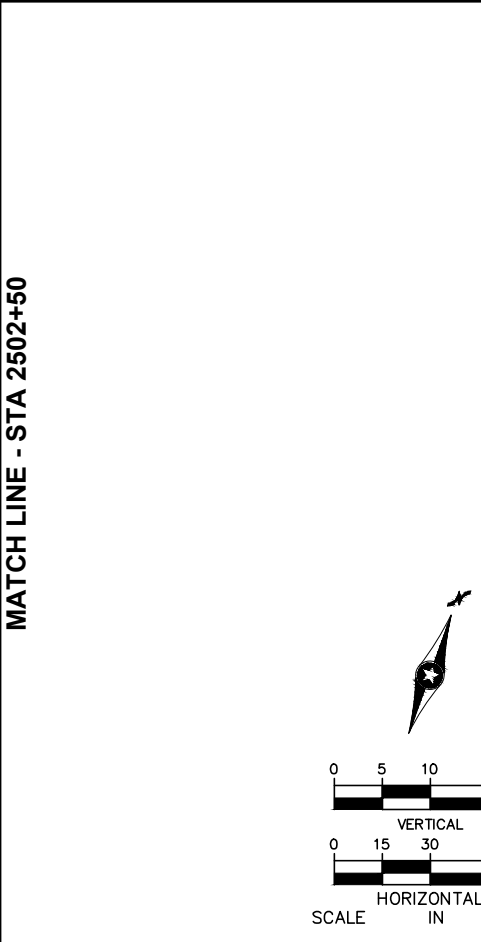
DETAIL No. 1
(WHERE INDICATED OR SHOWN)

A

SECTION CROSS SECTION

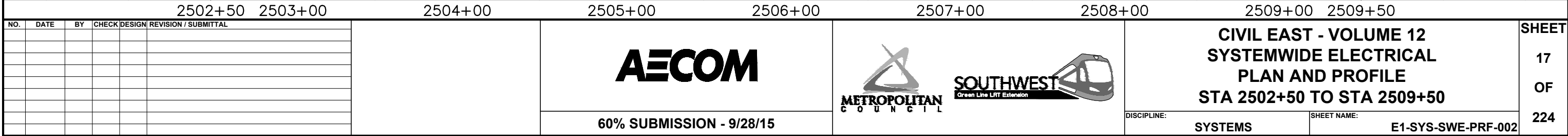
A	ABD	ABANDON, ABANDONED	CONT	CONTINUATION, CONTINUOUS	HDPE	HIGH DENSITY POLYETHYLENE	NIC	NOT IN CONTRACT	SI	SECTION INSULATOR	X	
	ABUT	ABUTMENT	CR	CONDUIT RISER	HEX	HEXAGONAL	No	NUMBER	SIG	SIGNAL	XB	CROSS BOND
	ABV	ABOVE	CSAH	COUNTY-STATE-AID HIGHWAY	HH	HANDHOLE	NOM	NOMINAL	SOP	SET OUT POINT	XFMR	TRANSFORMER
	AC	ALTERNATING CURRENT	CSO	CONDUIT STUB OUT	HORIZ	HORIZONTAL	NR	NOT REGISTERED/	SP	SURGE PROTECTION	X-ING	CROSSING
	ACSR	ALUMINUM CONDUCTOR	CSU	CONDUIT STUB UP	HRL	HIGH RAIL LEVEL		NEGATIVE RETURN	SPEC	SPECIFICATION	XOVER	CROSSOVER
		STEEL REINFORCED	CTR	CENTER	H-SPAN	HEAD SPAN	NS	NEAR SIDE/	SQ	SQUARE	XPASS	CROSS PASSAGE
	ADJ	ADJACENT	CU	COPPER	HT	HEIGHT		NOT SUPPORTED	SQ FT	SQUARE FEET	X-SECT	CROSS SECTION
	A/G	AT GRADE	C/W	CONTACT WIRE	HV	HIGH VOLTAGE	NSR	NOT SUPPORTED OR	SQ IN	SQUARE INCHES	Z	
	AH	AHEAD	CWA	COUNTER WEIGHT ASSEMBLY	HWY	HIGHWAY	NTS	NOT TO SCALE	S-SPAN	STEADY SPAN	Z	IMPEDANCE
	AISC	AMERICAN INSTITUTE OF STEEL	CY	CUBIC YARD	I		O		STA	STATION, STATIONING	ZB	IMPEDANCE BOND
		CONSTRUCTION	D		IC	INSTRUMENT CASE	OC	ON CENTER	STD	STANDARD	ZBF	IMPEDANCE BOND
	AL	ALUMINUM	D	DEPTH	ID	INSIDE DIAMETER/ INTRUSION	OCS	OVERHEAD CONTACT SYSTEM	STRUCT	STRUCTURE		FOUNDATION
	AP	APPROACH	DB	DIRECT BURIAL		DETECTION	OD	OUTSIDE DIAMETER	SU	STUB-UP		
	APPROX	APPROXIMATE	DC	DIRECT CURRENT	IDF	INTRUSION DETECTION	OH	OVERHEAD	SUSP	SUSPENDED		
	APT	AUXILIARY POWER	DEG	DEGREE	IEEE	FUNDATION	OHB	OVERHEAD BRIDGE	SW	SWITCH		
		TRANSFORMER	DF	DIRECT FIXATION		INSTITUTE OF ELECTRICAL AND	O/L	OVERLAP	SWA	SINGLE WIRE ANCHOR		
	AREMA	AMERICAN RAILWAY	DGA	DOWN GUY ANCHOR		ELECTRONICS ENGINEERS	OMF	OPERATIONS & MAINTENANCE	SWH	SWITCH HEATER		
		ENGINEERING & MAINTENANCE	DIA	DIAMETER	IJ	INSULATED JOINT		FACILITY	SWHC	SWITCH HEATER CABINET		
		OF WAY ASSOCIATION	DIM	DIMENSION	IN	INCH, INCHES	O/R	OUT OF RUNNING (NON-RIDING	SWLRT	SOUTHWEST LIGHT RAIL		
	ASSY	ASSEMBLY	DISC	DISCONNECT	INC	INCOMING		CONTACT WIRE)		TRANSIT		
	ASTM	AMERICAN SOCIETY OF TESTING	DISC SW	DISCONNECT SWITCH	INCL	INCLUDE, INCLUDING	P		T			
		& MATERIAL	DIST	DISTRIBUTION	INSUL	INSULATION	PAN	PANTOGRAPH	T	TIE SWITCH		
	ATM	ALONG TRACK MOVEMENT	DR	DRIVE	IPT	INTERFACE PHASE	PB	PULLBOX	TB	TAP BOX, TERMINAL BLOCK		
	ATR	ABOVE TOP OF RAIL	DTL	DETAIL	J		PED	PEDESTRIAN	TBD	TO BE DETERMINED		
	AVG	AVERAGE	DWG	DRAWING	J	JUMPER	PF	PEDESTRIAN FLASHER	TBR	TO BE REMOVED		
	AXC	AXLE COUNTER	E		JB	JUNCTION BOX	PGRS	PVC COATED GRSC	TBX	TRANSITION BOX		
	B		E	EAST	JCT	JUNCTION	PH	PHASE	TE	TRACTION ELECTRIFICATION		
	BARR	BARRIER	EA	EACH	K		PI	POINT OF INTERSECTION	TEMP	TEMPERATURE OR TEMPORARY		
	B/B	BACK TO BACK	EB	EASTBOUND	kV	KILOVOLT	PITO	POINT OF INTERSECTION OF	TERM	TERMINAL, TERMINATION		
	BC	BOLT CIRCLE/BATTERY CHARGER	ELEC	ELECTRICAL	kVA	KILOVOLT AMPERE		TURNOUT	TH	TRUNK HIGHWAY		
	BFA	BY-PASS FEEDER ANCHOR	ELEV	ELEVATION	kW	KILOWATT	PL	PLATE	THK	THICK		
	BIL	BASIC INSULATION LEVEL	EPR	ETHYLENE PROPYLENE RUBBER	L		PLAT	PLATFORM	T/F	TOP OF FOUNDATION		
	BK	BACK	EQ	EQUAL	LA	LIGHTING ARRESTER	POS	POSITIVE	T/G	TOP OF GROUND LINE		
	BLDG	BUILDING	EQN	EQUATION	LB	POUND, POUNDS	PRE-C	PRE-CAST CONCRETE	TL	TENSION LENGTH OR TRACK		
	BL	BASELINE/ BLUE LINE	EQPT	EQUIPMENT	LB /FT	POUND PER FOOT	PROP	PROPOSED		LIGHTING		
	BM	BEAM	ET	EXPRESS TROUGH	LC	LINE CURRENT	PSF	POUNDS PER SQUARE FEET	TOLR	TOP OF LOW RAIL		
	BOBP	BOTTOM OF BASE PLATE	ETS	EMERGENCY TRIP STATION	LF	LINEAR FEET	PSI	POUNDS PER SQUARE INCH	TO	TURNOUT		
	BOS	BOTTOM OF STEEL	EX	EXISTING	LG	LONG, LENGTH	P/T	POCKET TRACK	TOC	TOP OF CONCRETE		
	BR	BRIDGE	EXT	EXTERNAL	LGTS	LIGHTS	PUC	PUBLIC UTILITY COMMISSION	TOR	TOP OF RAIL		
	BRKT	BRACKET	F		LOC	LOCATION	PVC	POLYVINYL CHLORIDE CONDUIT	TORW	TOP OF RETAINING WALL		
	BSF	BAR SIGNAL FOUNDATION	FA	FIXED ANCHOR	LTG	LIGHTING	PWR	POWER	TPSS	TRACTION POWER SUBSTATION		
	B-SPAN	BODY SPAN	FAC	FACULTY	LPT	LOW POINT	PX	PEDESTRIAN CROSSING	TP	TRACTION POWER		
	BTM	BOTTOM	FDN	FOUNDATION	LRT	LIGHT RAIL TRANSIT	Q		TRANSF	TRANSFORMER		
	BTWN	BETWEEN	FDR	FEEDER	LS	LUMP SUMLINE SECTION/ LINE	QTY	QUANTITY	TRK	TRACK		
	B/W	BALANCE WEIGHT	FJ	FEEDER JUMPER		SEGMENT	R		TS	TANGENT TO SPIRAL		
	BWA	BALANCE WEIGHT ANCHOR	FM	FRICTION MODIFIER	LV	LOW VOLTAGE	RAB	RAIL ACCESS BOX	TSH	TUNNEL SYSTEM HOUSE		
	BZ	BRONZE	FOP	FACE OF POLE	M		RCC	RAIL CONTROL CENTER	TTC	TELEPHONE TERMINAL CABINET		
	C		FOS	FACTOR OF SAFETY	M	METER	RD	ROAD	TVM	TICKET VENDING MACHINE		
	C	CELSIUS, SIGNAL	FP	FEEDER POLE	MAX	MAXIMUM	RE	RUNNING EDGE OF RAIL	TWA	TIE WIRE ANCHOR		
	CAB	CABINET	FREQ	FREQUENCY	MC	MOTOR CONTROL	REF	REFERENCE	TWC	TRAIN-TO-WAYSIDE		
	CANT	CANTILEVER	FS	FAR SIDE	MH	MANHOLE	REV	REVISE/REVISION		COMMUNICATIONS		
	CB	CIRCUIT BREAKER	FT	FEET, FOOT	MIN	MINIMUM	REQD	REQUIRED	TYP	TYPICAL		
	CF	CUBIC FEET	F/T	FIXED TERMINATION	MISC	MISCELLANEOUS	ROW	RIGHT OF WAY	U			
	CG	CROSSING GATE	FTG	FOOTING	M/L	MAIN LINE	RT	RIGHT	UG	UNDERGROUND		
	CHAM	CHAMFER	G		MnDOT	MINNESOTA DEPARTMENT OF	RTU	REMOTE TERMINAL UNIT	UGB	UNDERGRADE BRIDGE		
	CHGR	CHARGER	GALV	GALVANIZED		TRANSPORTATION	RR	RAILROAD	U/S	UNDERSIDE		
	CIP	CAST-IN-PLACE	GB	GROUND BUS	MOP	MOTOR OPERATED	RRX	RAILROAD GRADE CROSSING	UTIL	UTILITY		
	CISP	CAST IRON SEWER PIPE	GF	GATE FOUNDATION	MP	MILE POST	RW	RETAINING WALL	V			
	CKT	CIRCUIT	G/L	GROUND LINE	MPA	MID POINT ANCHOR	S		V	VOLT		
	CL TO CL	CENTERLINE TO CENTERLINE	GLY	GREEN LINE YARD	MPH	MILES PER HOUR	S	SOUTH	VA	VOLT AMPS		
	CLR	CLEARANCE, CLEAR	GND	GROUND	MTG	MOUNTING	SA	SURGE ARRESTOR	VERT	VERTICAL		
	CND	CONDUIT	GRS	GALVANIZED RIGID STEEL	MT	METRO TRANSIT	SB	SOUTHBOUND OR SPLICE BOX	W			
	COMM	COMMUNICATIONS	GRSC	GALVANIZED RIGID	M/W	MESSANGER WIRE	SC	SIGNAL/COMMUNICATION	W	WATT, WIDTH OR WIRE		
	COMPT	COMPARTMENT		STEEL CONDUIT	N		SCADA	SUPERVISORY CONTROL AND	W/	WITH		
	CONC	CONCRETE	GRX	GRADE CROSSING	N	NORTH, NEUTRAL		DATA ACQUISITION	WB	WESTBOUND		
	COND	CONDUCTOR	H		NEC	NATIONAL ELECTRICAL CODE	SECT	SECTION	WF	WIDE FLANGE		
			HDG	HOT DIPPED GALVANIZED	NEG	NEGATIVE	SEG	SEGMENT	W/O	WITHOUT		

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL							



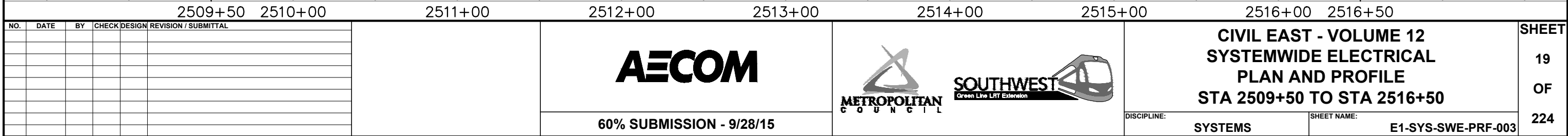
[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2496+00.21 TO STA 2502+50		SHEET 16 OF 224	
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E1-SYS-SWE-SCH-001		



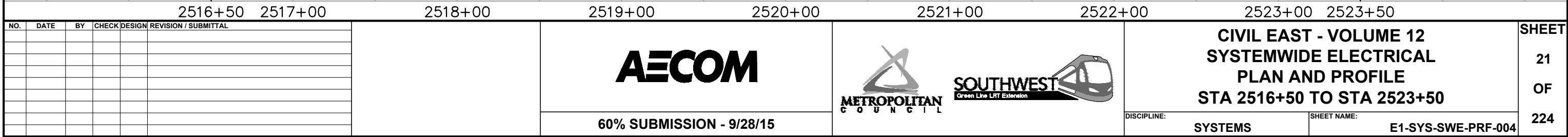
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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	  	CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2502+50 TO STA 2509+50		SHEET 18 OF 224
							DISCIPLINE:	SHEET NAME:	
							SYSTEMS	E1-SYS-SWE-SCH-002	



[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL					 		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2509+50 TO STA 2516+50		SHEET 20 OF 224
						60% SUBMISSION - 9/28/15				DISCIPLINE: SYSTEMS		SHEET NAME: E1-SYS-SWE-SCH-003		

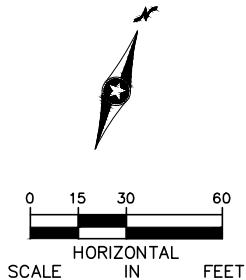
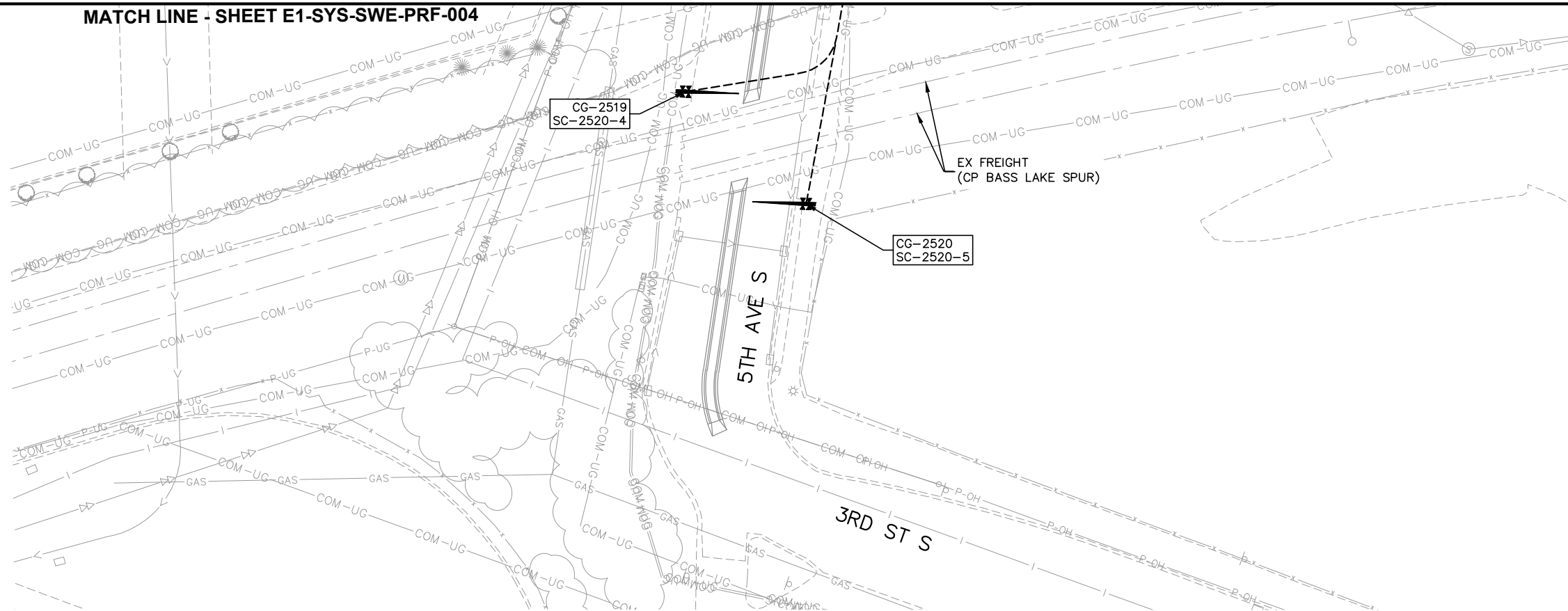


[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2516+50 TO STA 2523+50		SHEET 22 OF 224
								DISCIPLINE: SYSTEMS	SHEET NAME: E1-SYS-SWE-SCH-004	

Sep. 21 2015 09:42 am V:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E1-SYS-SWE-PRF.dwg By: V-MccallAE

MATCH LINE - SHEET E1-SYS-SWE-PRF-004

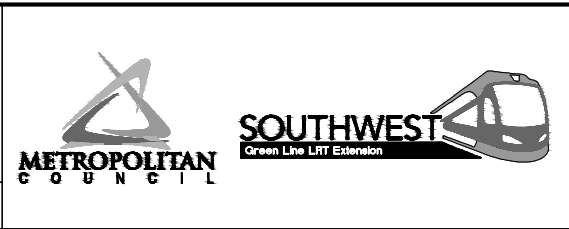


NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL



AECOM

60% SUBMISSION - 9/28/15



CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
PLAN AND PROFILE
5TH AVE S & CP BASS LAKE SPUR

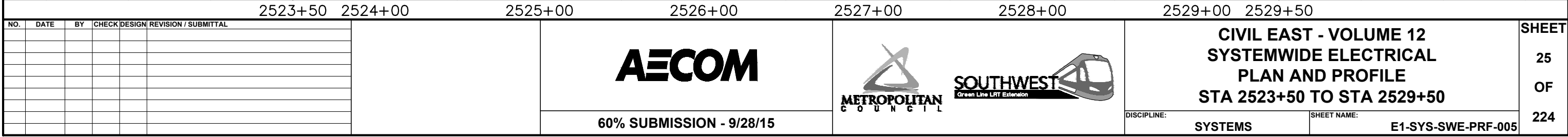
DISCIPLINE: **SYSTEMS**

SHEET NAME: **E1-SYS-SWE-PRF-016**

SHEET
23
OF
224

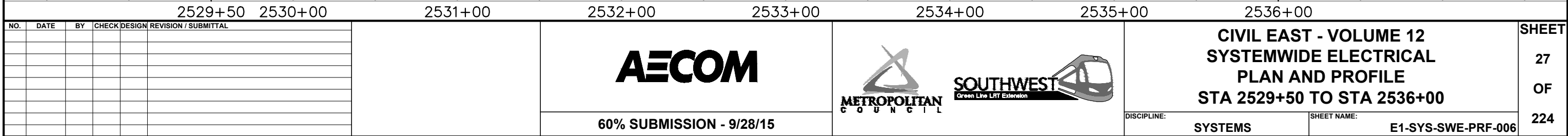
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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15				CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE 5TH AVE S & CP BASS LAKE SPUR DISCIPLINE: SYSTEMS SHEET NAME: E1-SYS-SWE-SCH-016		SHEET 24 OF 224



[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2523+50 TO STA 2329+50		SHEET 26 OF 224
							DISCIPLINE: SYSTEMS	SHEET NAME: E1-SYS-SWE-SCH-005		



[illegible][illegible]**AECOM**

60% SUBMISSION - 9/28/15

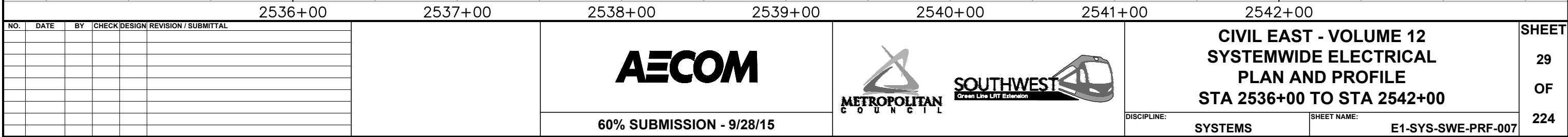


**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2529+50 TO STA 2536+00**

DISCIPLINE: **SYSTEMS**

SHEET NAME: E1-SYS-SWE-SCH-006

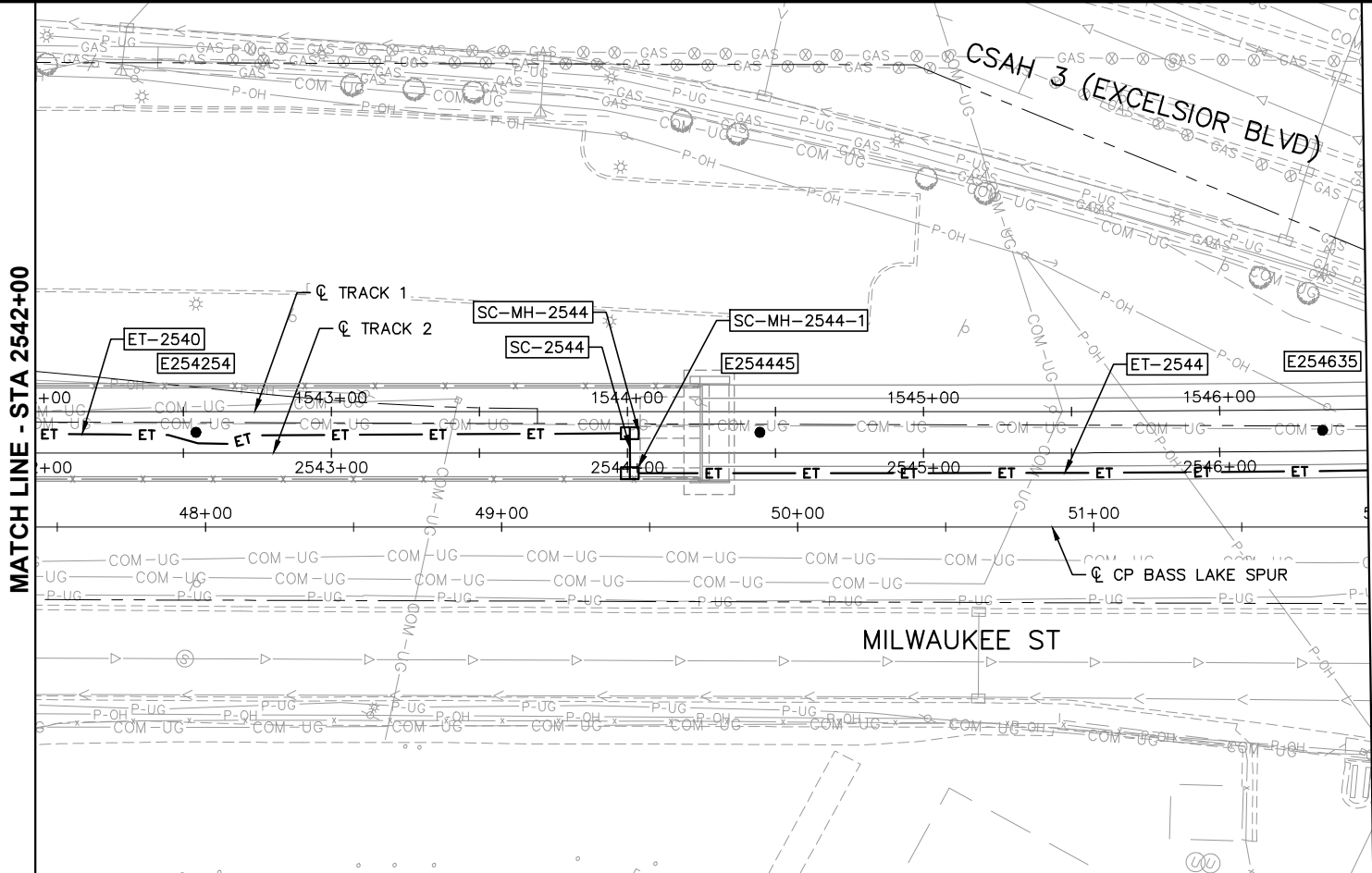
SHEET
28
OF
224



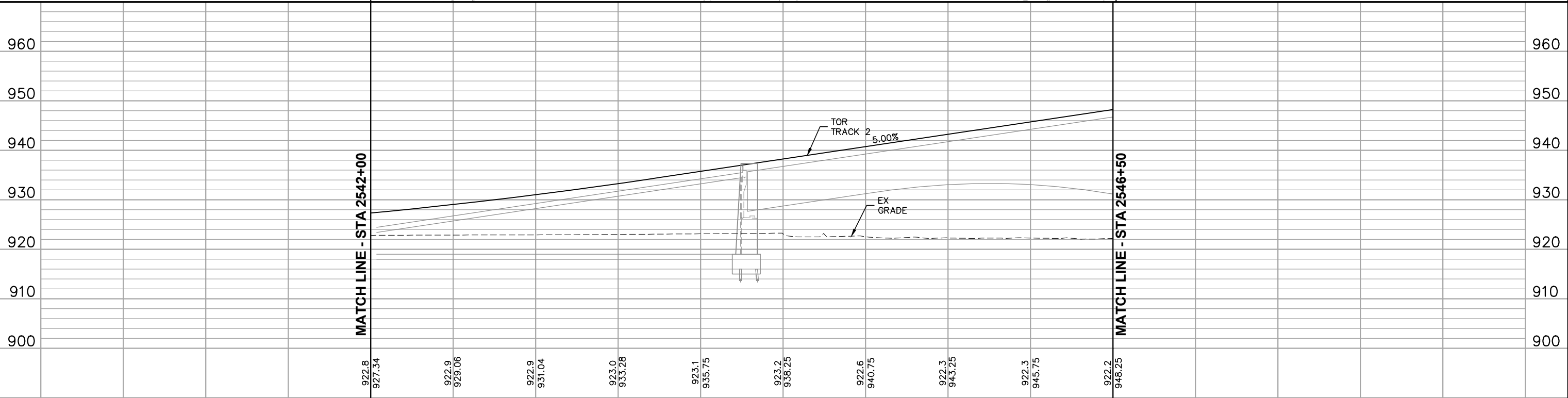
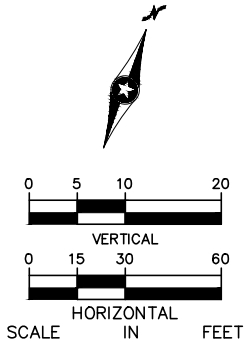
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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2536+00 TO STA 2542+00		SHEET 30 OF 224	
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E1-SYS-SWE-SCH-007		

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MATCH LINE - STA 2546+50



MATCH LINE - STA 2542+00

MATCH LINE - STA 2546+50

2542+00 2543+00 2544+00 2545+00 2546+00 2546+50

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL



60% SUBMISSION - 9/28/15



CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
PLAN AND PROFILE
STA 2542+00 TO STA 2546+50

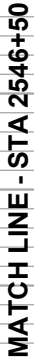
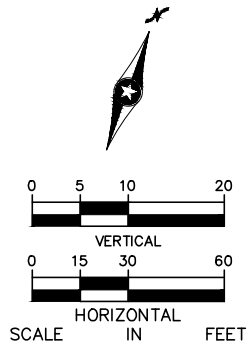
DISCIPLINE: **SYSTEMS**

SHEET NAME: **E1-SYS-SWE-PRF-008**

SHEET
31
OF
224

[illegible][illegible]

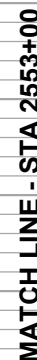
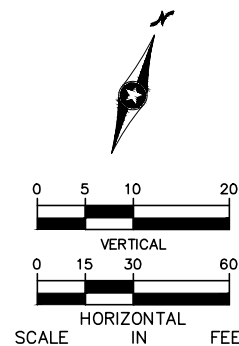
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2542+00 TO STA 2546+50		SHEET 32 OF 224	
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E1-SYS-SWE-SCH-008		



SHEET
33
OF
224

[illegible][illegible]

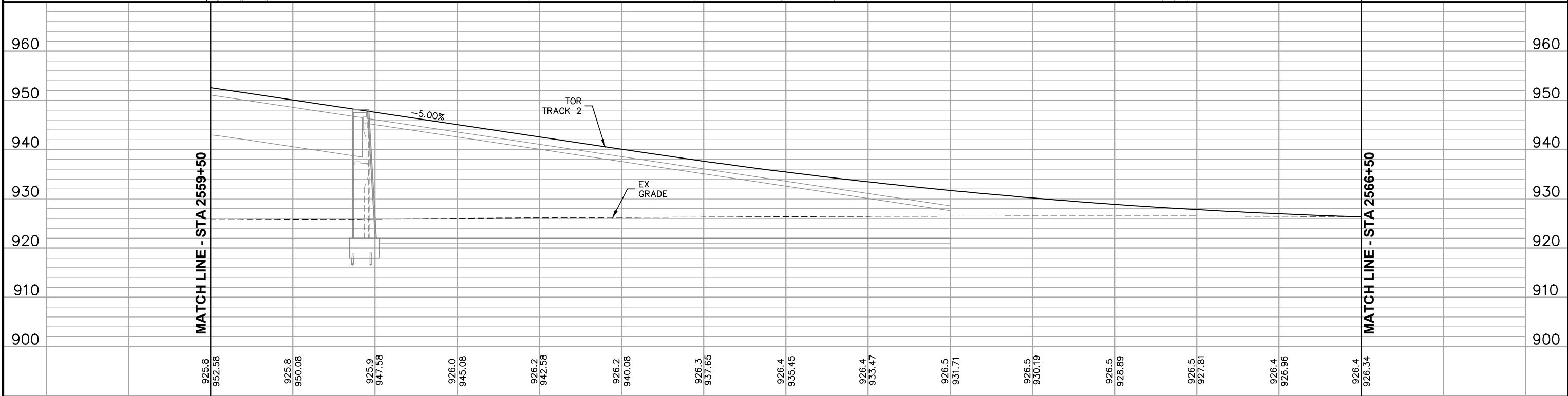
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2546+50 TO STA 2553+00		SHEET 34 OF 224
								DISCIPLINE: SYSTEMS	SHEET NAME: E1-SYS-SWE-SCH-009	



SHEET
35
OF
224

[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2553+00 TO STA 2559+50		SHEET 36 OF 224
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E1-SYS-SWE-SCH-010	

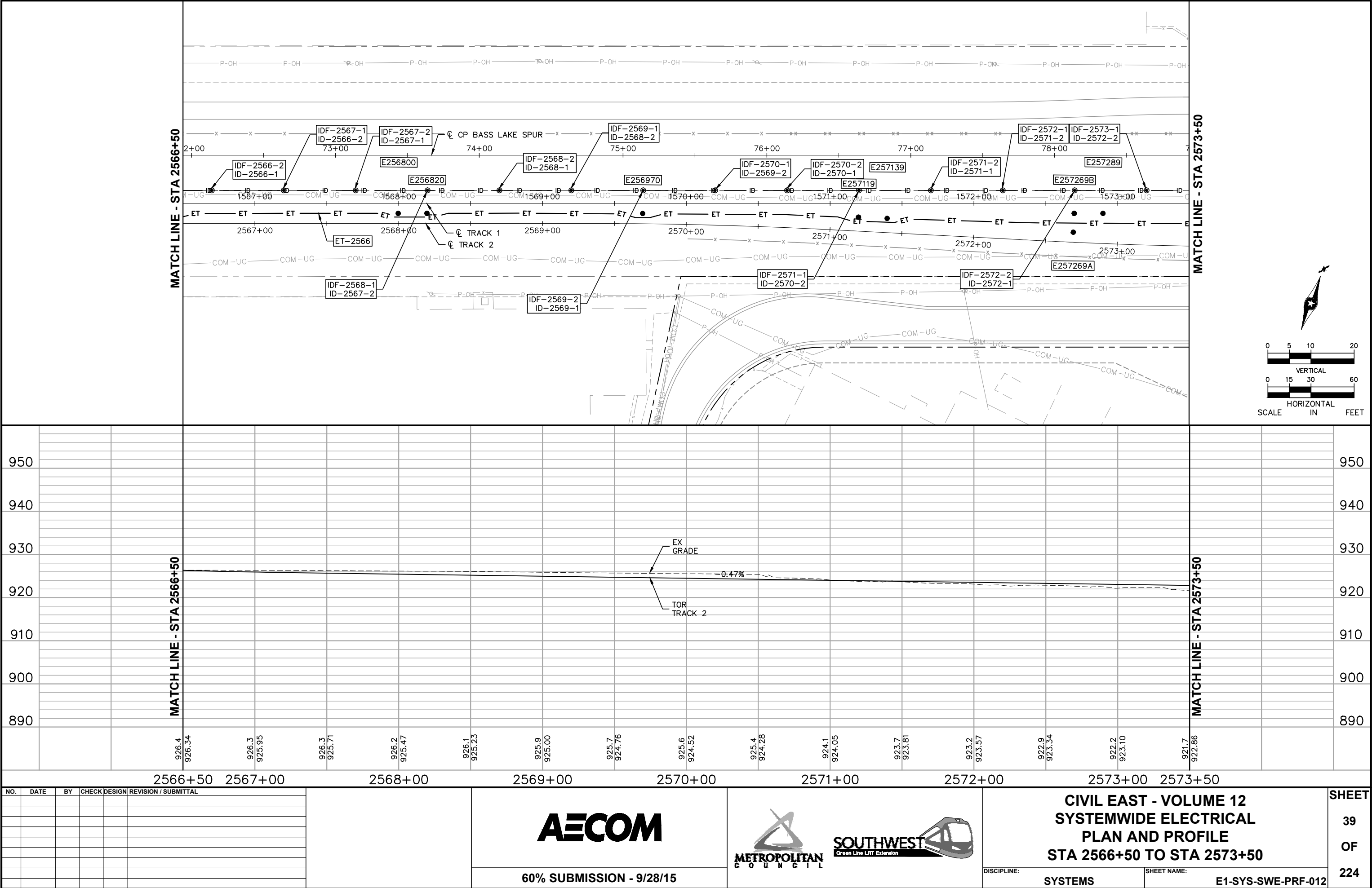


2559+50						2560+00						2561+00						2562+00						2563+00						2564+00						2565+00						2566+00						2566+50					
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15																								CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2559+50 TO STA 2566+50 DISCIPLINE: SYSTEMS SHEET NAME: E1-SYS-SWE-PRF-011												SHEET											
																														37												OF											
																																										224											

[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15				CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2559+50 TO STA 2566+50 DISCIPLINE: SYSTEMS SHEET NAME: E1-SYS-SWE-SCH-011		SHEET 38 OF 224

Sep. 21 2015 09:57 am v:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E1-SYS-SWE-PRF.dwg By: V-MccallAE



[illegible][illegible]**AECOM**

60% SUBMISSION - 9/28/15



**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2566+50 TO STA 2573+50**

DISCIPLINE:

SYSTEMS

SHEET NAME:

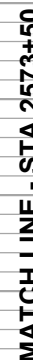
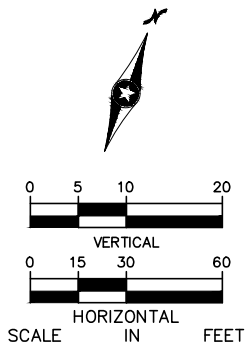
E1-SYS-SWE-SCH-012

SHEET

40

OF

224



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2573+50 TO STA 2580+50		SHEET 41 OF 224	
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E1-SYS-SWE-PRF-013		

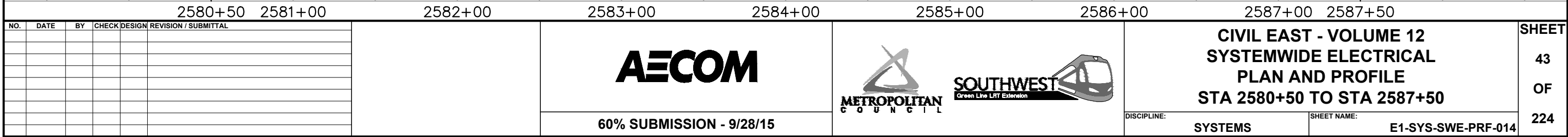
[illegible][illegible]**AECOM****60% SUBMISSION - 9/28/15**

**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2573+50 TO STA 2580+5**

DISCIPLINE: **SYSTEMS**

SHEET NAME: **E1-SYS-SWE-SCH-01**

SHEET
42
OF
224



[illegible][illegible]**AECOM**

60% SUBMISSION - 9/28/15



**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2580+50 TO STA 2587+50**

DISCIPLINE:

SYSTEMS

SHEET NAME:

E1-SYS-SWE-SCH-014

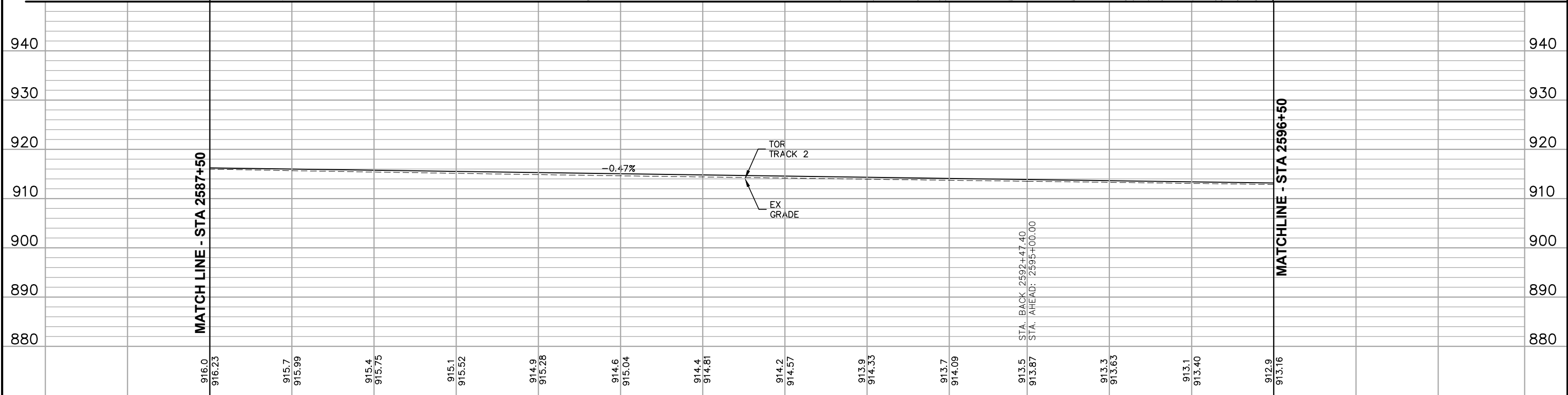
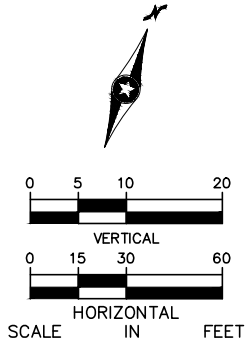
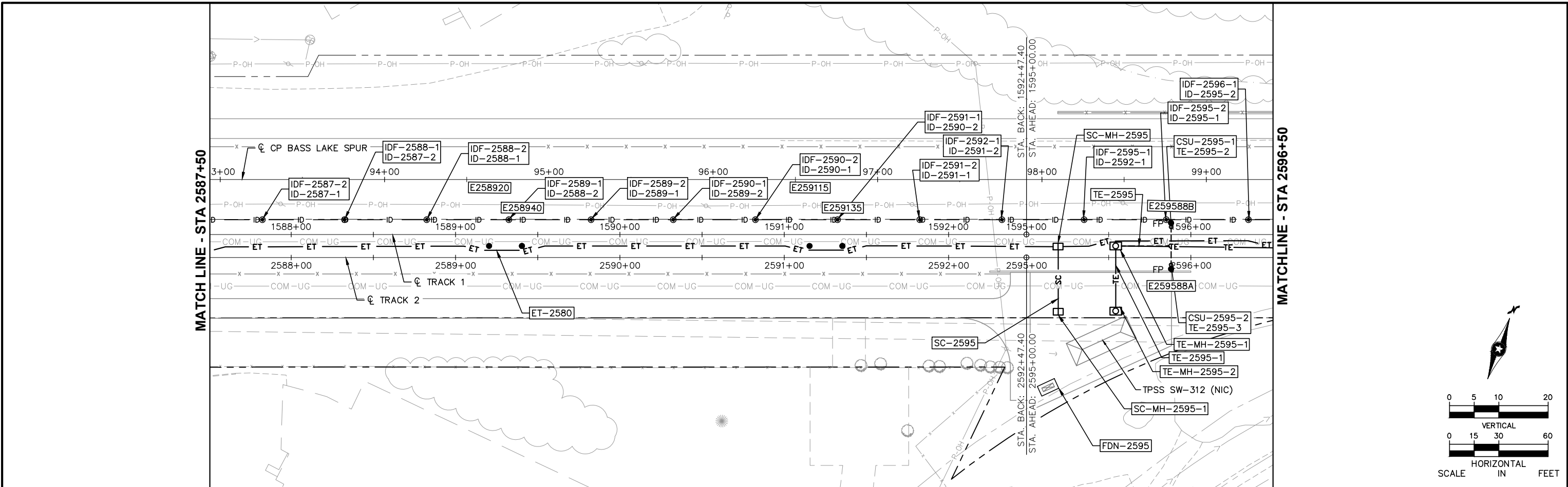
SHEET

44

OF

224

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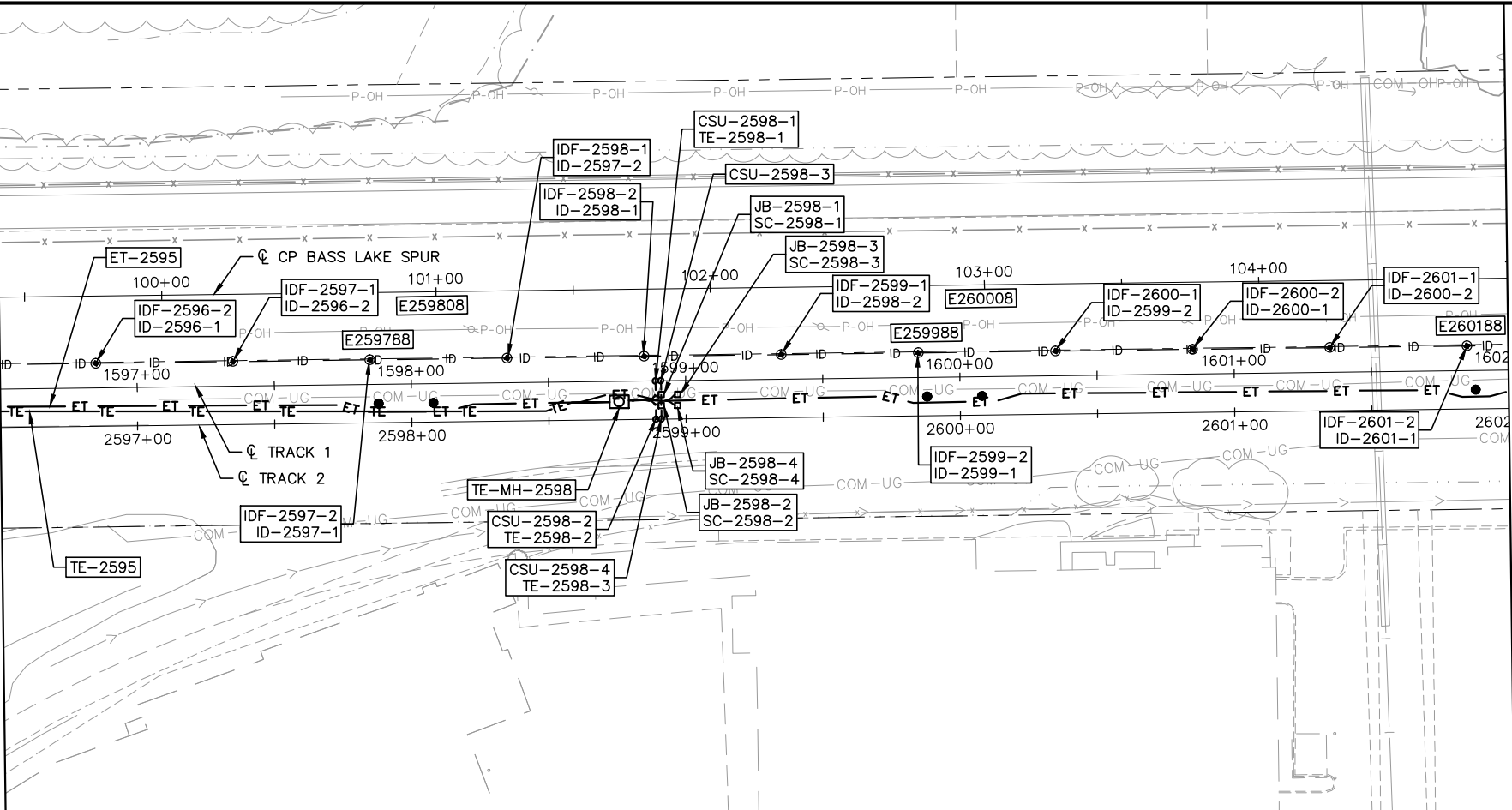
2587+50						2588+00						2589+00						2590+00						2591+00						2592+00						2595+00						2596+00						2596+50					
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM										 METROPOLITAN COUNCIL  SOUTHWEST Green Line LRT Extension												CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2587+50 TO STA 2596+50 <td colspan="2">SHEET</td>												SHEET													
																												45												OF													
																																								224													
																60% SUBMISSION - 9/28/15																																					
																														DISCIPLINE: SYSTEMS												SHEET NAME: E1-SYS-SWE-PRF-015											

SYSTEMS DEVICE SCHEDULE					DUCTBANKS/ EXPRESS TROUGH/ CONDUITS						
DEVICE ID	TRACK 2 CL STATIONING	TRACK 2 CL OFFSET	DEVICE DETAIL# / REFERENCE DRAWING	SPECIAL NOTES	DUCTBANK, EXPRESS TROUGH OR CONDUIT ID	FROM	TO	CONDUIT QTY-SIZE	DUCTBANK DETAIL #/ REFERENCE DRAWING	NOTES	
SC-MH-2595			SWE-DTL-003	SC MANHOLE	ET-2580	SC-MH-2580	SC-MH-2595	TYPE 1	SWE-DTL-008	EXPRESS TROUGH	
SC-MH-2595-1			SWE-DTL-003	SC MANHOLE	ET-2595	SC-MH-2595	SC-HH-2602	TYPE 1	SWE-DTL-008	EXPRESS TROUGH	
IDF-2587-2			SWE-DTL-032 & 033	FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX	SC-2595	SC-MH-2595	SC-MH-2595-1	2-4	STU-DTL-001	SC DUCTBANK	
IDF-2588-1			SWE-DTL-032 & 033	FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX							
IDF-2588-2			SWE-DTL-032 & 033	FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX	TE-2595-1	TE-MH-2595-1	TE-MH-2595-2	10-5	STU-DTL-001	TE DUCKBANK	
IDF-2589-1			SWE-DTL-032 & 033	FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX	TE-2595	TE-MH-2595-1	TE-MH-2598	2-5	STU-DTL-001	TE DUCKBANK	
IDF-2589-2			SWE-DTL-032 & 033	FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX							
IDF-2590-1			SWE-DTL-032 & 033	FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX	TE-2595-2	TE-MH-2595-1	CSU-2595-1	2-4		TE CONDUIT	
IDF-2590-2			SWE-DTL-032 & 033	FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX	TE-2595-3	TE-MH-2595-1	CSU-2595-2	2-4		TE CONDUIT	
IDF-2591-1			SWE-DTL-032 & 033	FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX							
IDF-2591-2			SWE-DTL-032 & 033	FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX	ID-2587-1	IDF-2587-1	IDF-2587-2	1-2		ID CONDUIT	
IDF-2592-1			SWE-DTL-032 & 033	FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX	ID-2587-2	IDF-2587-2	IDF-2588-1	1-2		ID CONDUIT	
IDF-2595-1			SWE-DTL-032 & 033	FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX	ID-2588-1	IDF-2588-1	IDF-2588-2	1-2		ID CONDUIT	
IDF-2595-2			SWE-DTL-032 & 033	FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX	ID-2588-2	IDF-2588-2	IDF-2589-1	1-2		ID CONDUIT	
IDF-2596-1			SWE-DTL-032 & 033	FREIGHT INTRUSION DETECTION FOUNDATION AND JUNCTION BOX	ID-2589-1	IDF-2589-1	IDF-2589-2	1-2		ID CONDUIT	
					ID-2589-2	IDF-2589-2	IDF-2590-1	1-2		ID CONDUIT	
FDN-2595			SWE-DTL-018	CUT SECTION CASE FOUNDATION AND STUB UP	ID-2590-1	IDF-2590-1	IDF-2590-2	1-2		ID CONDUIT	
					ID-2590-2	IDF-2590-2	IDF-2591-1	1-2		ID CONDUIT	
CSU-2595-1				FEEDER POLE CONDUIT STUB UP	ID-2591-1	IDF-2591-1	IDF-2591-2	1-2		ID CONDUIT	
CSU-2595-2				FEEDER POLE CONDUIT STUB UP	ID-2591-2	IDF-2591-2	IDF-2592-1	1-2		ID CONDUIT	
					ID-2592-1	IDF-2592-1	IDF-2595-1	1-2		ID CONDUIT	
TE-MH-2595-1			SWE-DTL-002	TE MANHOLE	ID-2595-1	IDF-2595-1	IDF-2595-2	1-2		ID CONDUIT	
TE-MH-2595-2			SWE-DTL-002	TE MANHOLE	ID-2595-2	IDF-2595-2	IDF-2596-1	1-2		ID CONDUIT	

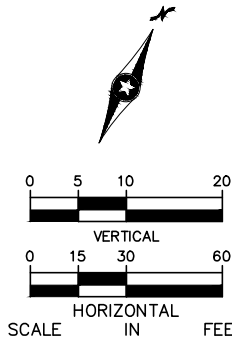
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	  	CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2587+50 TO STA 2596+50		SHEET 46 OF 224
							60% SUBMISSION - 9/28/15		
							DISCIPLINE: SYSTEMS		
							SHEET NAME: E1-SYS-SWE-SCH-015		

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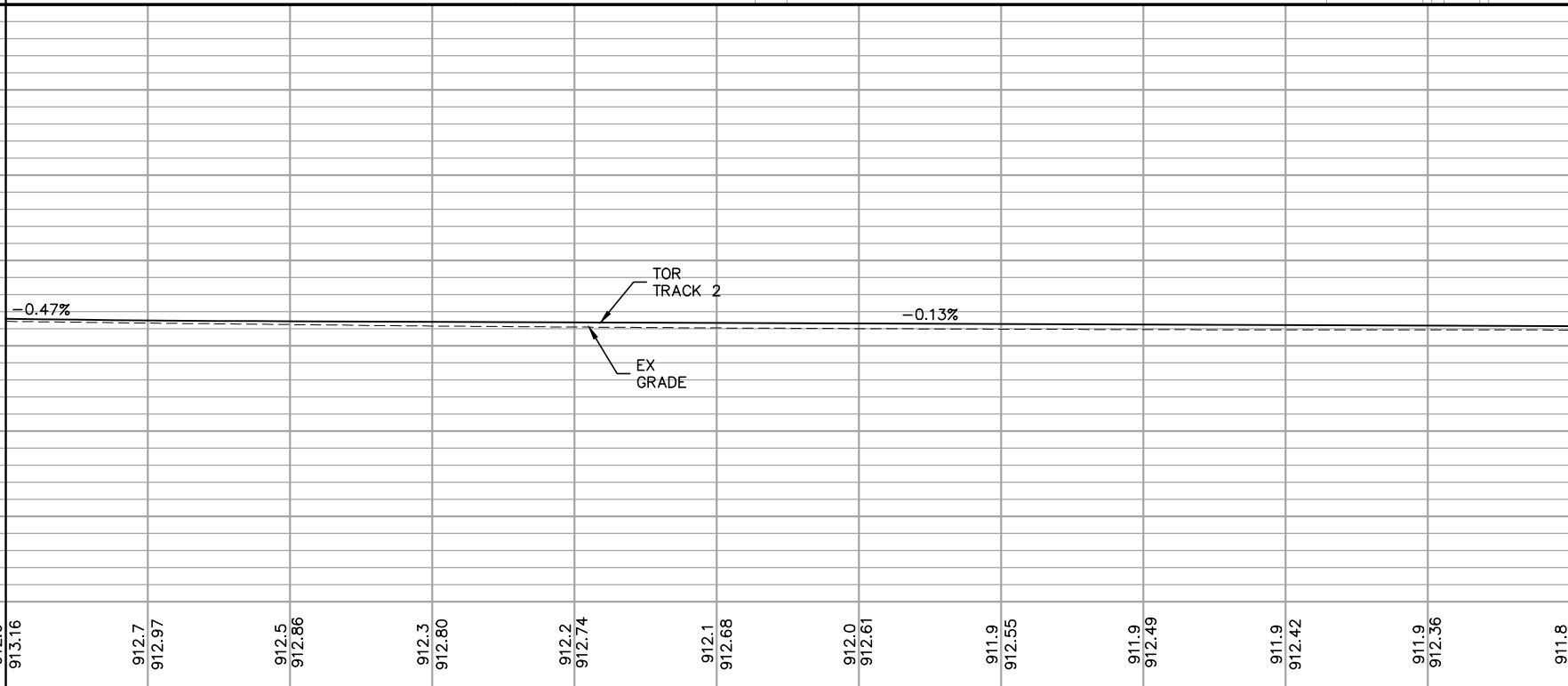
MATCHLINE - STA 2596+50



MATCH LINE - STA 2602+00



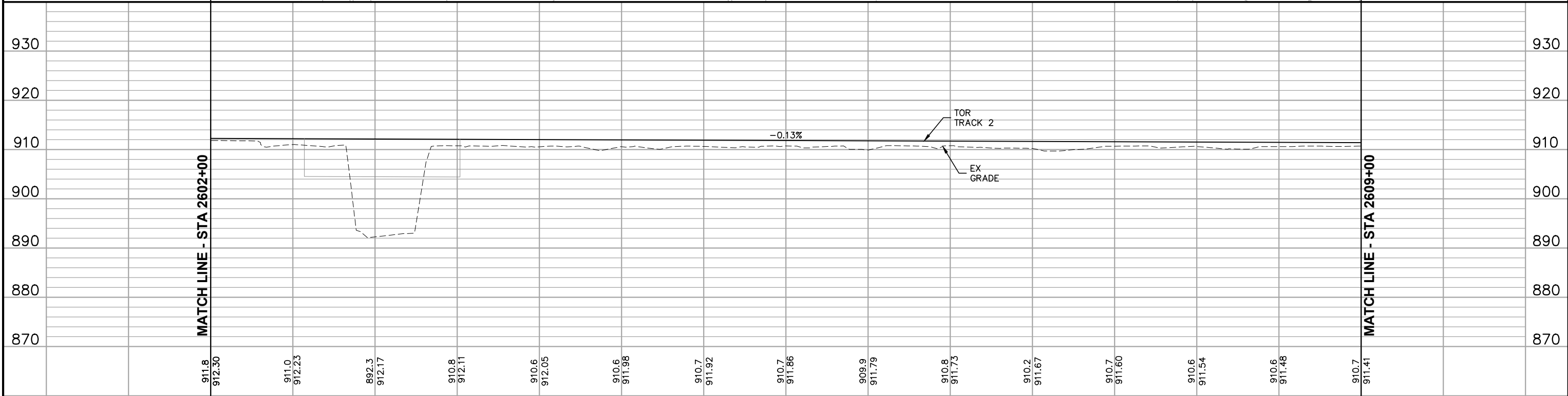
MATCHLINE - STA 2596+50



MATCH LINE - STA 2602+00

NO.						2596+50		2597+00		2598+00		2599+00		2600+00		2601+00		2602+00		SHEET	
DATE																				47	
BY																				OF	
CHECK/DESIGN																				224	
REVISION / SUBMITTAL																					

[illegible][illegible][illegible]

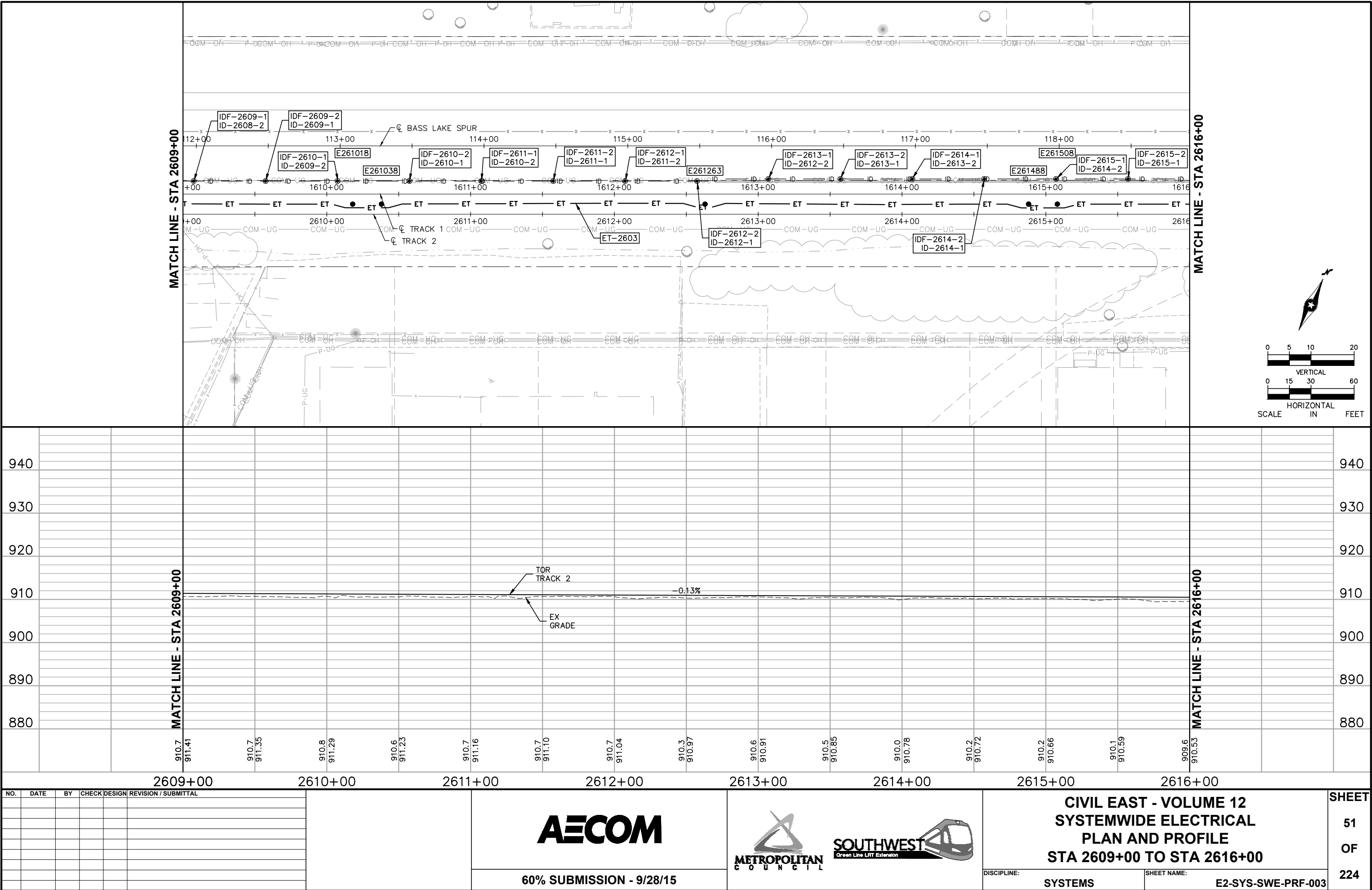


2602+00						2603+00						2604+00						2605+00						2606+00						2607+00						2608+00						2609+00						SHEET	
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM						 						CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2602+00 TO STA 2609+00												49																			
																														OF																			
																														224																			
						60% SUBMISSION - 9/28/15						DISCIPLINE: SYSTEMS						SHEET NAME: E2-SYS-SWE-PRF-002																															

[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL		 	CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2602+00 TO STA 2609+00		SHEET 50 OF 224	
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E2-SYS-SWE-SCH-002		

Sep. 21 2015 09:30 am v:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E2-SYS-SWE-PRF.dwg By: V-MccallAE



2609+00						2610+00						2611+00						2612+00						2613+00						2614+00						2615+00						2616+00													
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL																																					CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2609+00 TO STA 2616+00												SHEET	
																		60% SUBMISSION - 9/28/15																								DISCIPLINE: SYSTEMS						SHEET NAME: E2-SYS-SWE-PRF-003						51	
																																																						OF	
																																																						224	

[illegible][illegible]**AECOM**

60% SUBMISSION - 9/28/15

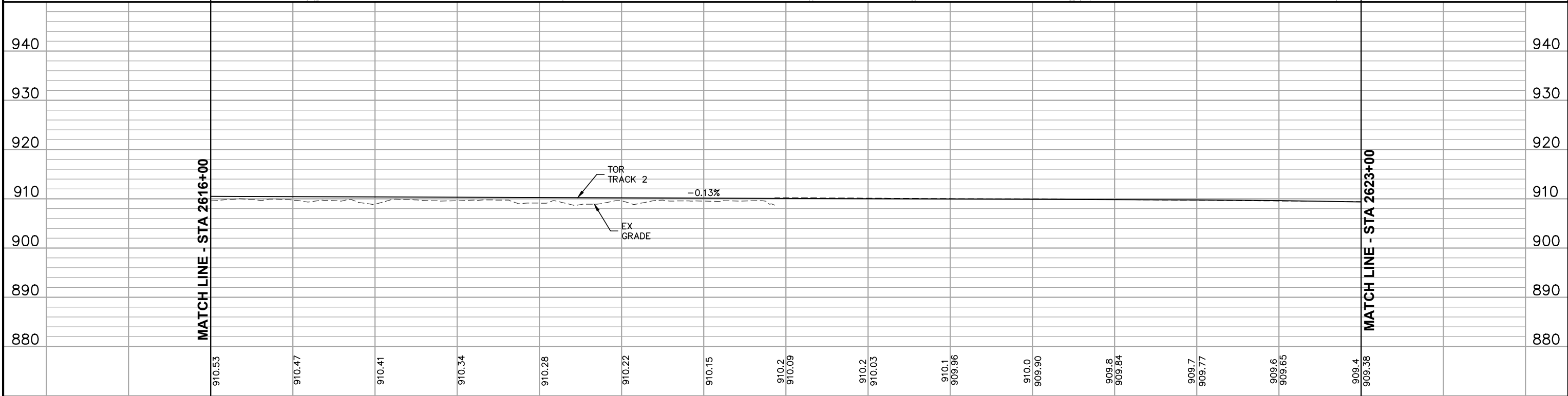


**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2609+00 TO STA 2616+00**

SYSTEMS

SHEET NAME: E2-SYS-SWE-SCH-003

SHEET
52
OF
224

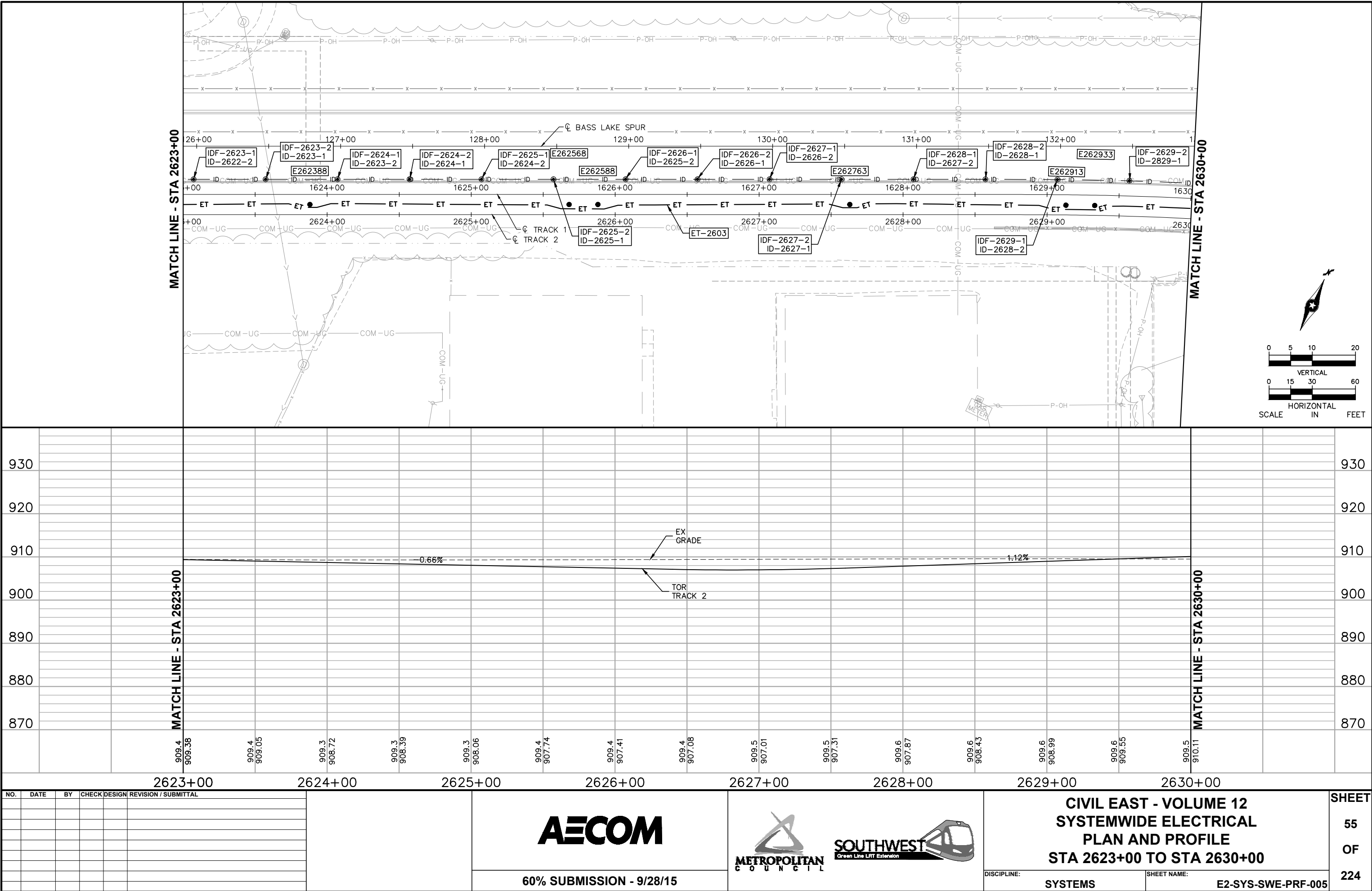


2616+00						2617+00						2618+00						2619+00						2620+00						2621+00						2622+00						2623+00						SHEET 53 OF 224	
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL							 60% SUBMISSION - 9/28/15												CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2616+00 TO STA 2623+00 DISCIPLINE: SYSTEMS SHEET NAME: E2-SYS-SWE-PRF-004																									

[illegible][illegible]

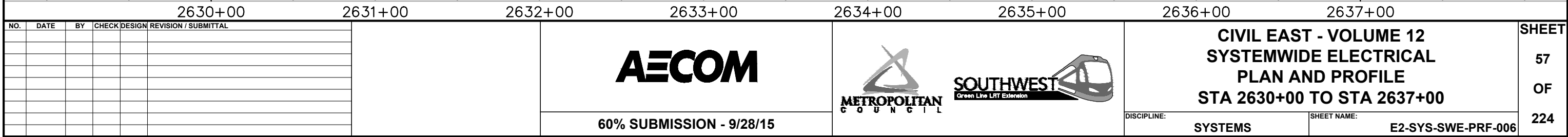
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM	 METROPOLITAN COUNCIL  SOUTHWEST Green Line LRT Extension	CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2616+00 TO STA 2623+00		SHEET 54 OF 224	
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E2-SYS-SWE-SCH-004		

Sep. 21 2015 09:33 am V:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E2-SYS-SWE-PRF.dwg By: V-MccallAE



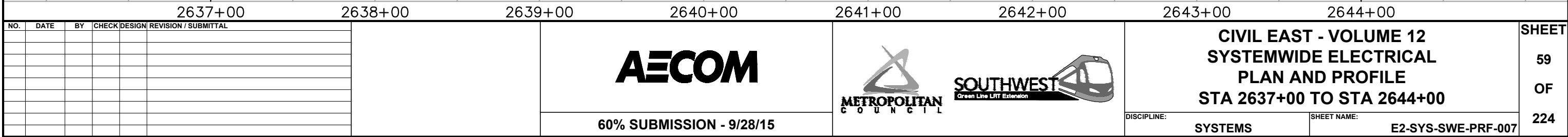
[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2623+00 TO STA 2630+00		SHEET 56 OF 224
								60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS	



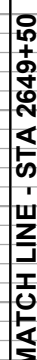
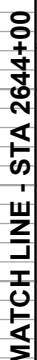
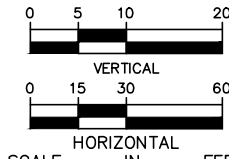
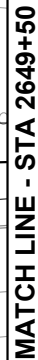
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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2630+00 TO STA 2637+00		SHEET 58 OF 224
								DISCIPLINE: SYSTEMS	SHEET NAME: E2-SYS-SWE-SCH-006	



[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2637+00 TO STA 2644+00		SHEET 60 OF 224
								DISCIPLINE: SYSTEMS	SHEET NAME: E2-SYS-SWE-SCH-007	

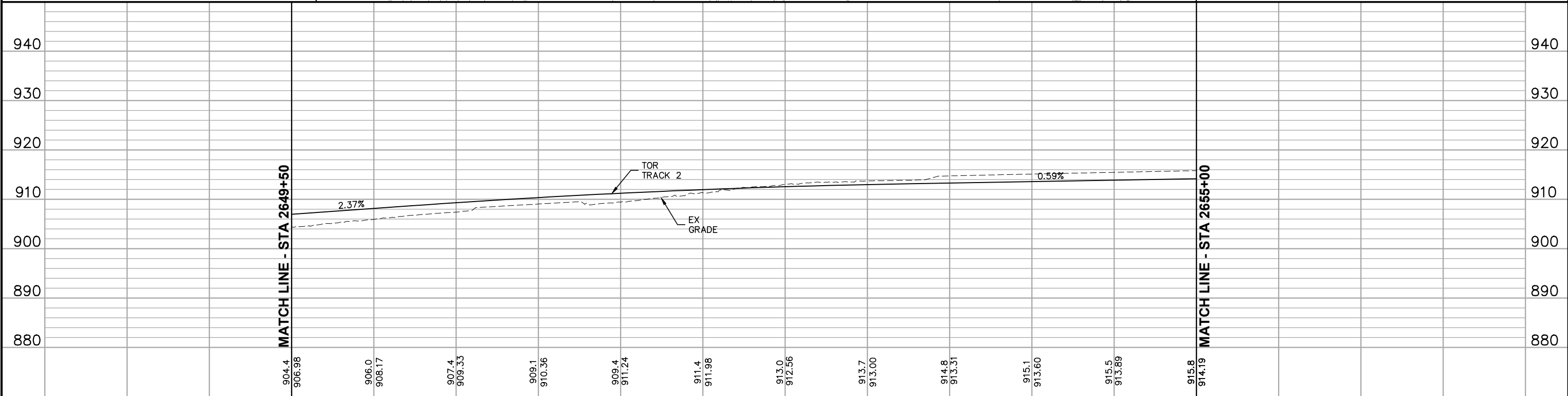
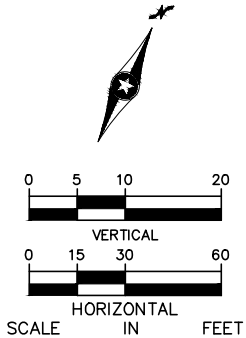
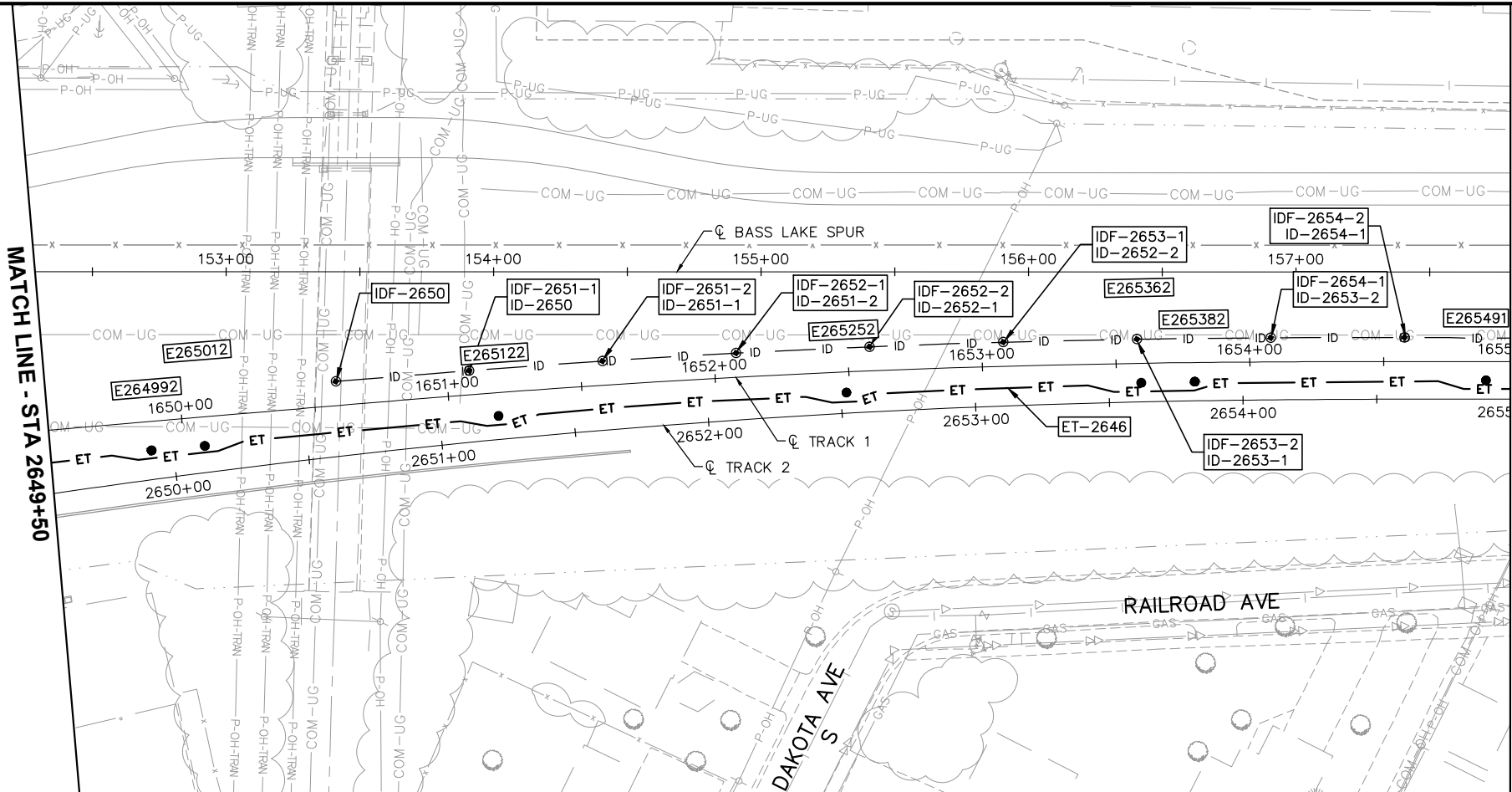


SHEET
61
OF
224

[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2644+00 TO STA 2649+50		SHEET 62 OF 224
							DISCIPLINE: SYSTEMS	SHEET NAME: E2-SYS-SWE-SCH-008		

Sep. 21 2015 09:38 am v:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E2-SYS-SWE-PRF.dwg By: V-MccallAE

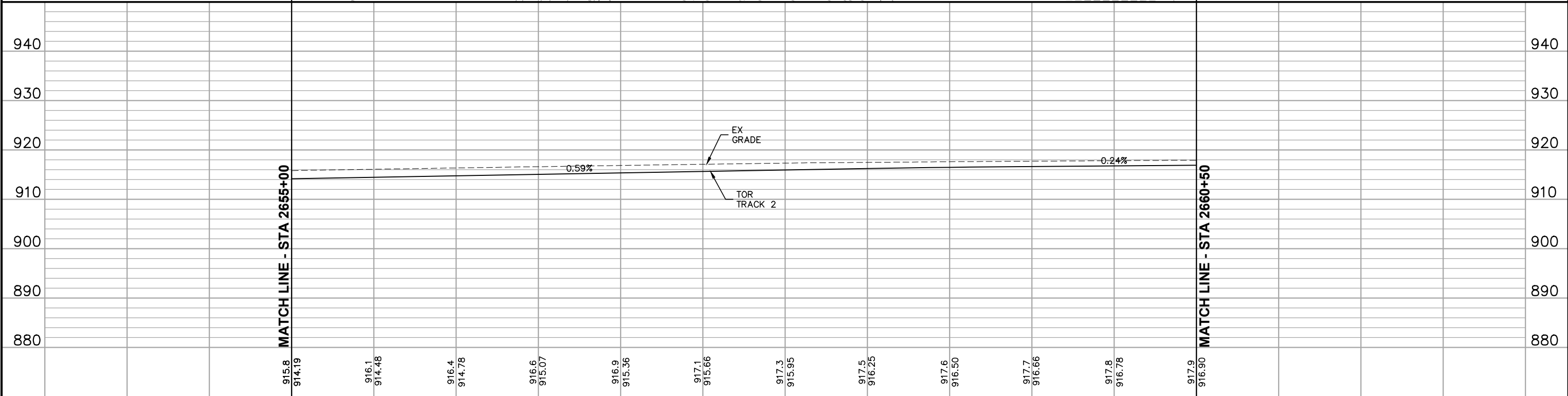
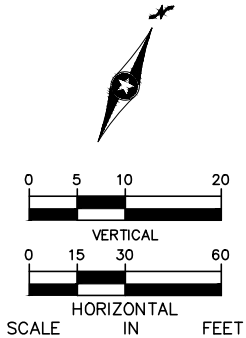
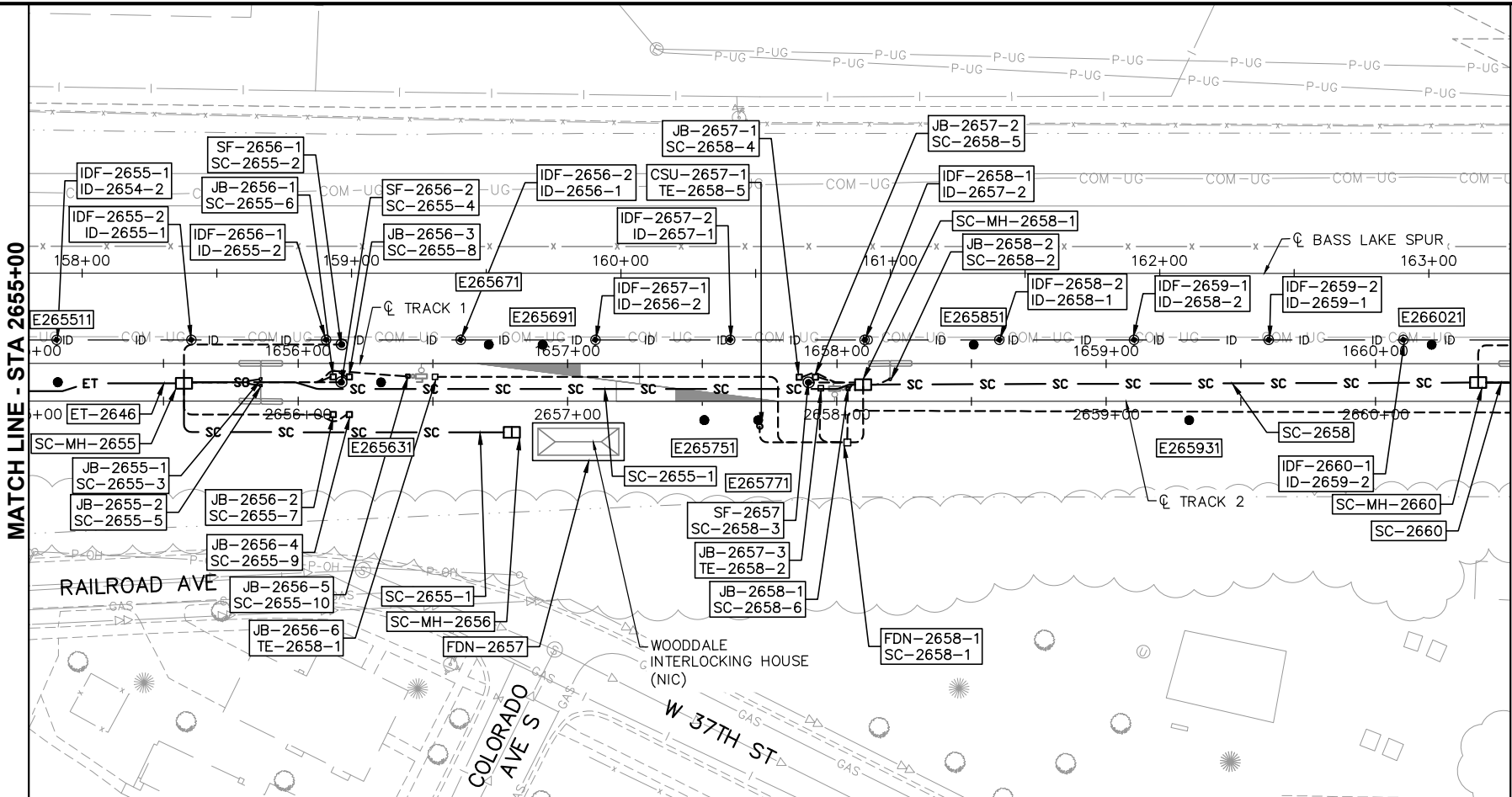


2649+50						2650+00						2651+00						2652+00						2653+00						2654+00						2655+00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL							AECOM						METROPOLITAN C O U N C I L SOUTHWEST Green Line LRT Extension						CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2649+50 TO STA 2655+00												SHEET																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2649+50 TO STA 2655+00		SHEET 64 OF 224
					DISCIPLINE:					
					SYSTEMS			E2-SYS-SWE-SCH-009		

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2655+00						2656+00						2657+00						2658+00						2659+00						2660+00						2660+50						SHEET 65 OF 224	
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM 60% SUBMISSION - 9/28/15												METROPOLITAN C O U N C I L SOUTHWEST Green Line LRT Extension												CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2655+00 TO STA 2660+50													
																														DISCIPLINE: SYSTEMS												SHEET NAME: E2-SYS-SWE-PRF-010	

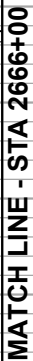
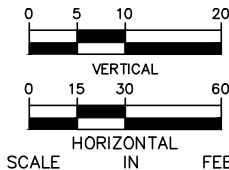
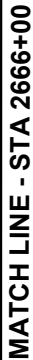
[illegible][illegible]**AECOM****60% SUBMISSION - 9/28/15**

**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2655+00 TO STA 2660+50**

DISCIPLINE: **SYSTEMS**

SHEET NAME: **E2-SYS-SWE-SCH-010**

SHEET
66
OF
224



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM	 METROPOLITAN COUNCIL  SOUTHWEST Green Line LRT Extension	CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2660+50 TO STA 2666+00		SHEET 67 OF 224	
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E2-SYS-SWE-PRF-011		

[illegible][illegible]**AECOM**

60% SUBMISSION - 9/28/15



**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2660+50 TO STA 2666+00**

DISCIPLINE: **SYSTEMS**

SHEET NAME: **E2-SYS-SWE-SCH-011**

SHEET
68
OF
224

[illegible][illegible]

60% SUBMISSION - 9/28/15



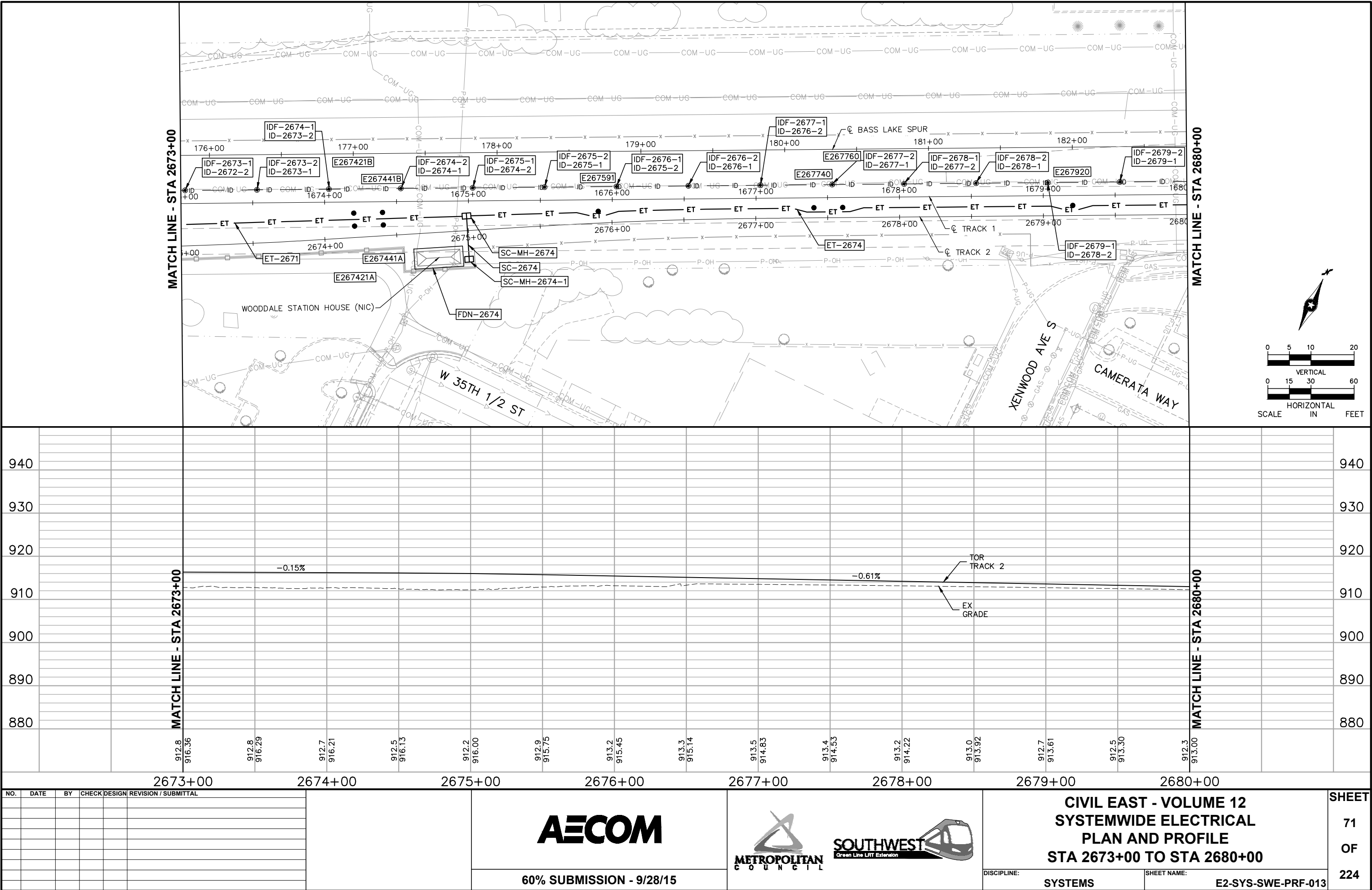
**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2666+00 TO STA 2673+00**

DISCIPLINE: **SYSTEMS**

SHEET NAME: **E2-SYS-SWE-SCH-012**

SHEET
70
OF
224

Sep. 21 2015 09:43 am V:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E2-SYS-SWE-PRF.dwg By: V-MccallAE



[illegible][illegible]

60% SUBMISSION - 9/28/15



**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2673+00 TO STA 2680+00**

DISCIPLINE

SYSTEMS

SHEET NAME

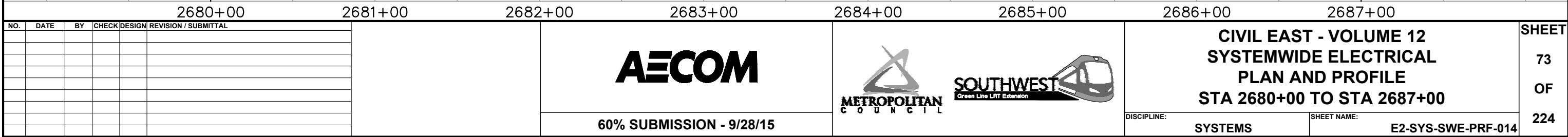
E2-SYS-SWE-SCH-013

SHEET

72

OF

224



[illegible][illegible]**AECOM**

60% SUBMISSION - 9/28/15



**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2680+00 TO STA 2687+00**

DISCIPLINE:

SYSTEMS

SHEET NAME:

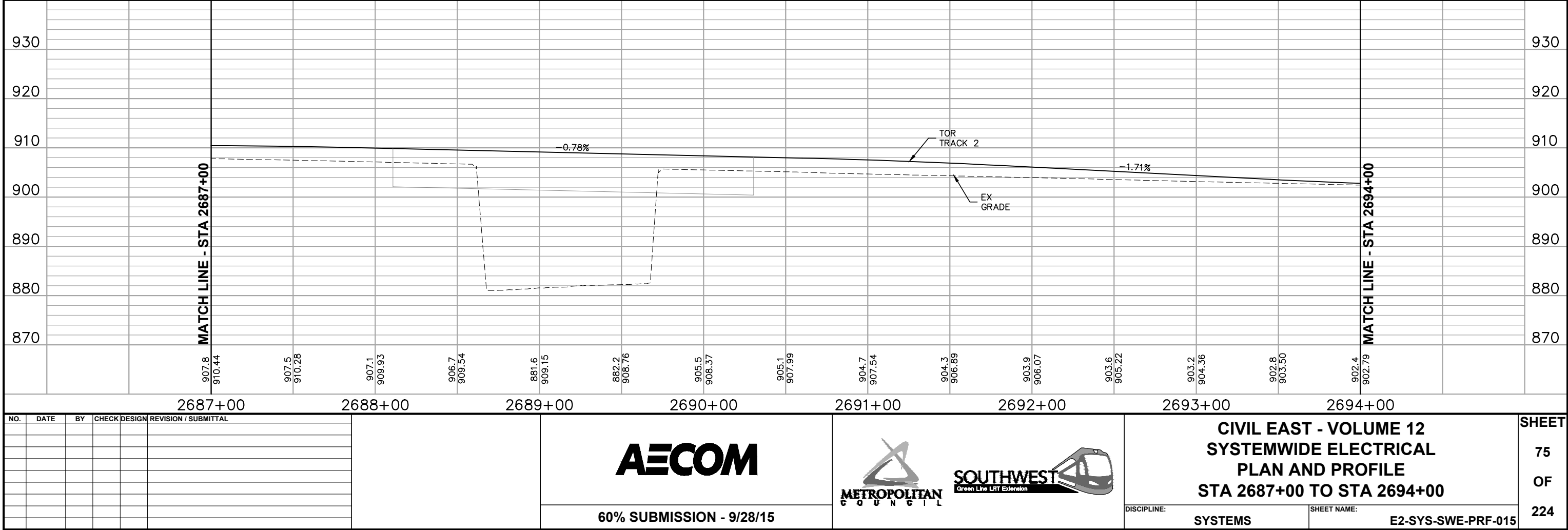
E2-SYS-SWE-SCH-014

SHEET

74

OF

224



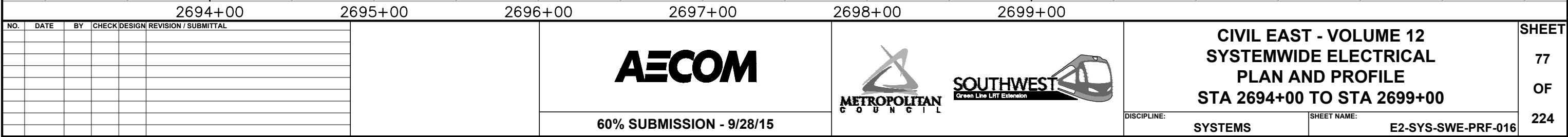
[illegible][illegible]**AECOM****60% SUBMISSION - 9/28/15**

CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2687+00 TO STA 2694+00

DISCIPLINE: **SYSTEMS**

SHEET NAME: **E2-SYS-SWE-SCH-015**

SHEET
76
OF
224



[illegible][illegible]

60% SUBMISSION - 9/28/15



**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2694+00 TO STA 2699+00**

DISCIPLINE:

SYSTEMS

SHEET NAME:

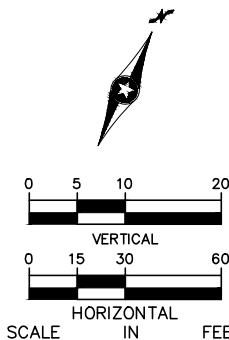
E2-SYS-SWE-SCH-016

SHEET

78

OF

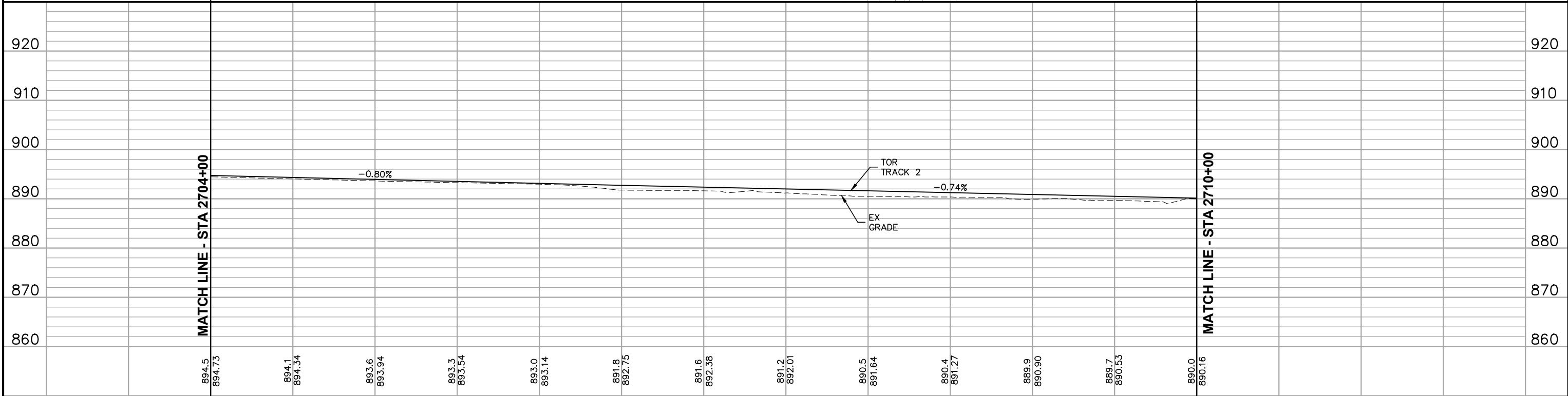
224



2699+00						2700+00						2701+00						2702+00						2703+00						2704+00						2705+00					
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL													 						CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2699+00 TO STA 2704+00						SHEET 79 OF 224											
						60% SUBMISSION - 9/28/15												DISCIPLINE: SYSTEMS						SHEET NAME: E2-SYS-SWE-PRF-017																	

[illegible][illegible]

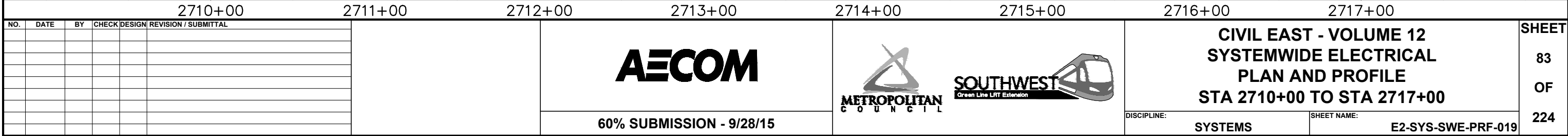
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL		AECOM	METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension	CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2699+00 TO STA 2704+00		SHEET 80 OF 224
									DISCIPLINE: SYSTEMS	SHEET NAME: E2-SYS-SWE-SCH-017	
							60% SUBMISSION - 9/28/15				



2704+00						2705+00						2706+00						2707+00						2708+00						2709+00						2710+00							
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL							 60% SUBMISSION - 9/28/15												CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2704+00 TO STA 2710+00						SHEET 81 OF 224													
												DISCIPLINE: SYSTEMS						SHEET NAME: E2-SYS-SWE-PRF-018																									

[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2704+00 TO STA 2710+00		SHEET 82 OF 224
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS SHEET NAME: E2-SYS-SWE-SCH-018			



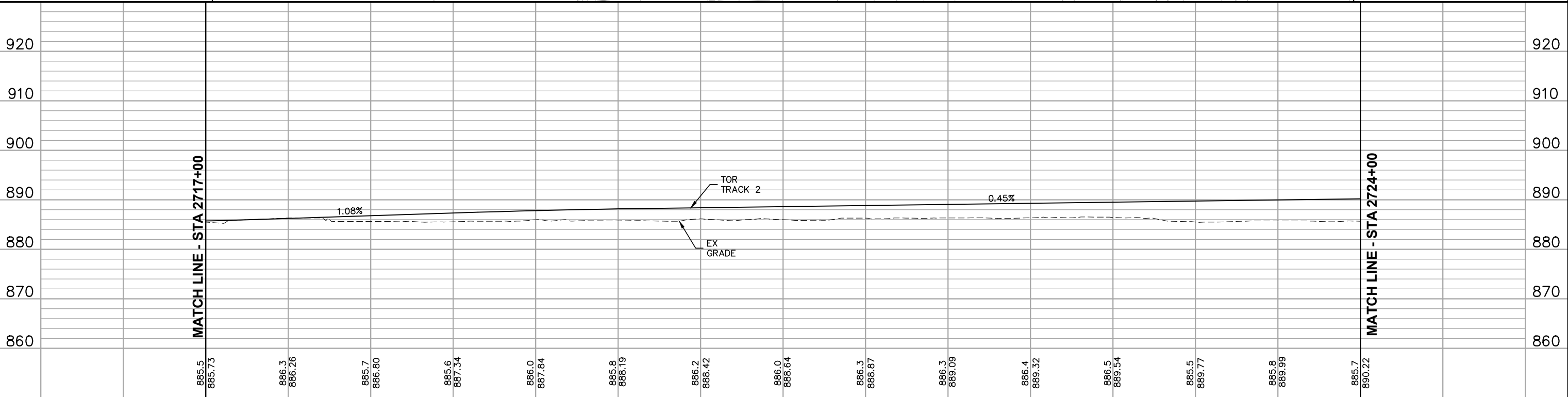
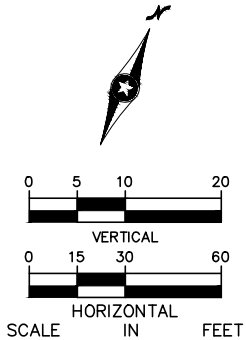
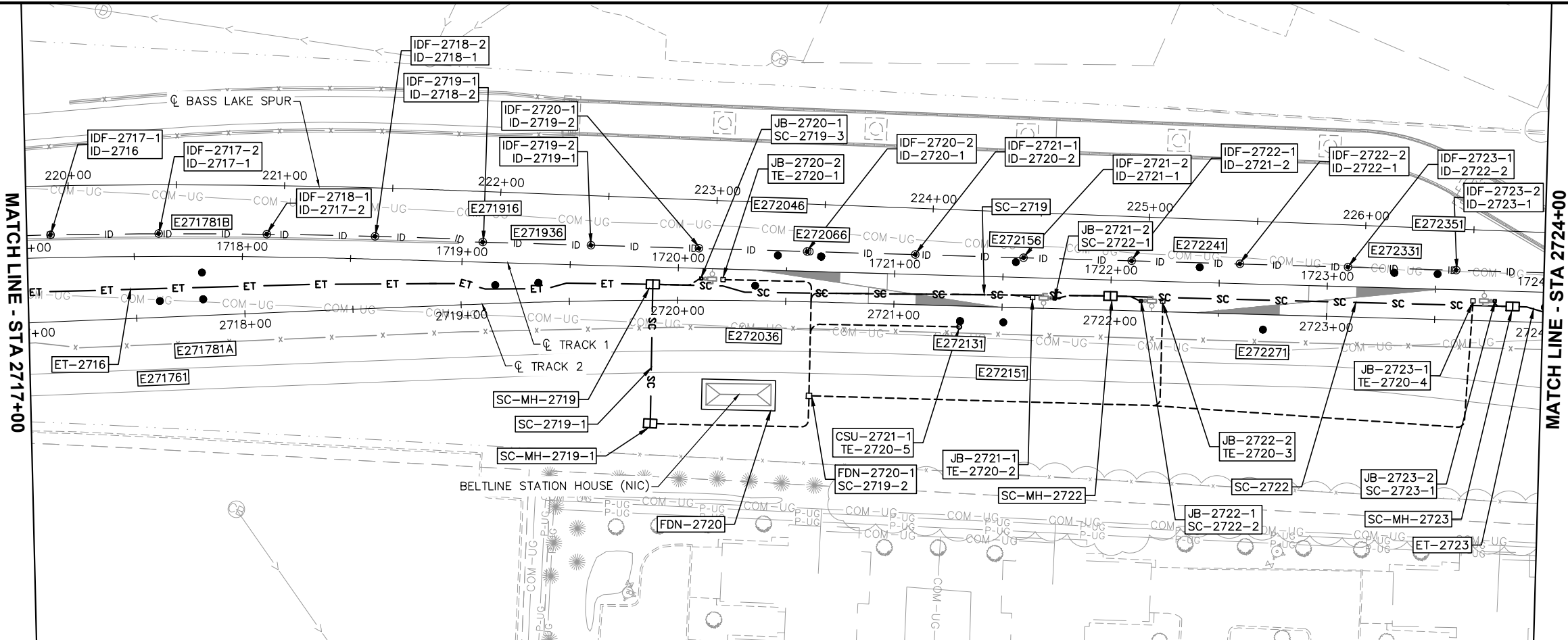
[illegible]

60% SUBMISSION - 9/28/15



5	 	CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2710+00 TO STA 2717+00		SHEET 84 OF 224
		DISCIPLINE: SYSTEMS	SHEET NAME: E2-SYS-SWE-SCH-019	

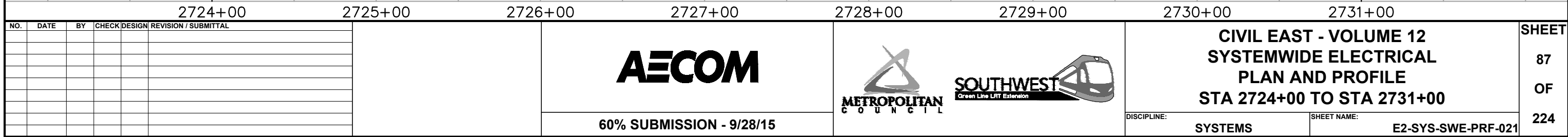
Sep. 21 2015 09:51 am V:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E2-SYS-SWE-PRF.dwg By: V-MccallAE



2717+00						2718+00						2719+00						2720+00						2721+00						2722+00						2723+00						2724+00						SHEET 85 OF 224	
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL							 						CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2717+00 TO STA 2724+00																															
																								60% SUBMISSION - 9/28/15						DISCIPLINE: SYSTEMS						SHEET NAME: E2-SYS-SWE-PRF-020													

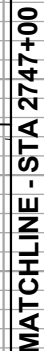
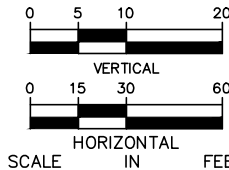
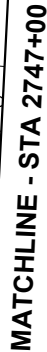
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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			 		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2717+00 TO STA 2724+00		SHEET 86 OF 224
						60% SUBMISSION - 9/28/15		DISCIPLINE: SYSTEMS		SHEET NAME: E2-SYS-SWE-SCH-020		



[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15				CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2724+00 TO STA 2731+00 DISCIPLINE: SYSTEMS SHEET NAME: E2-SYS-SWE-SCH-021		SHEET 88 OF 224

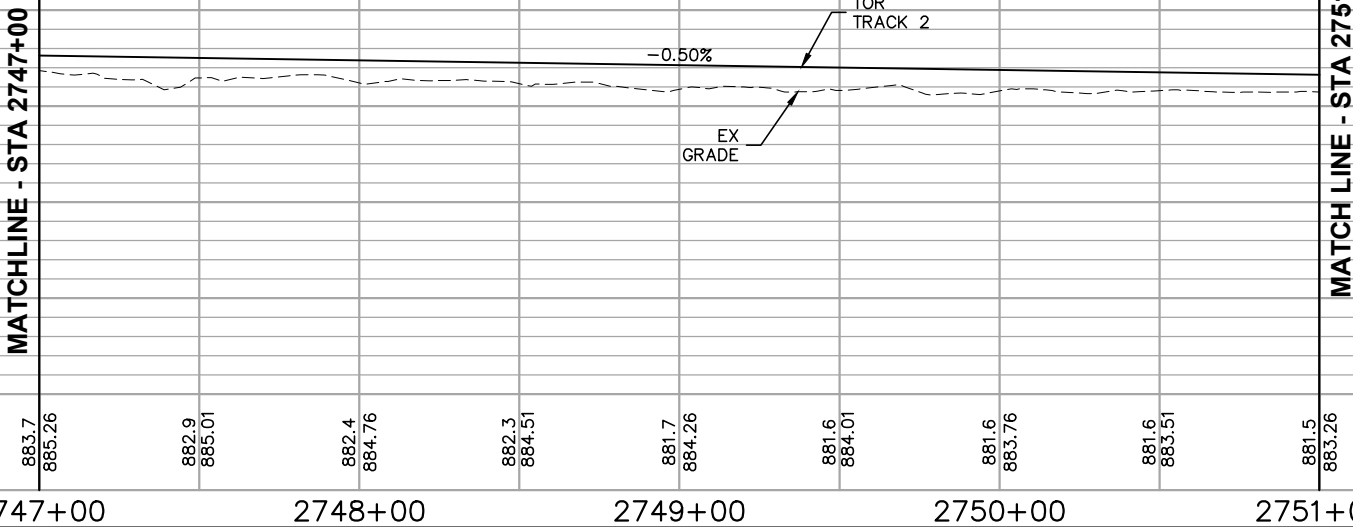
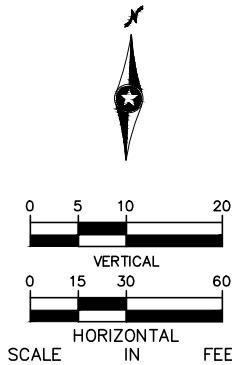
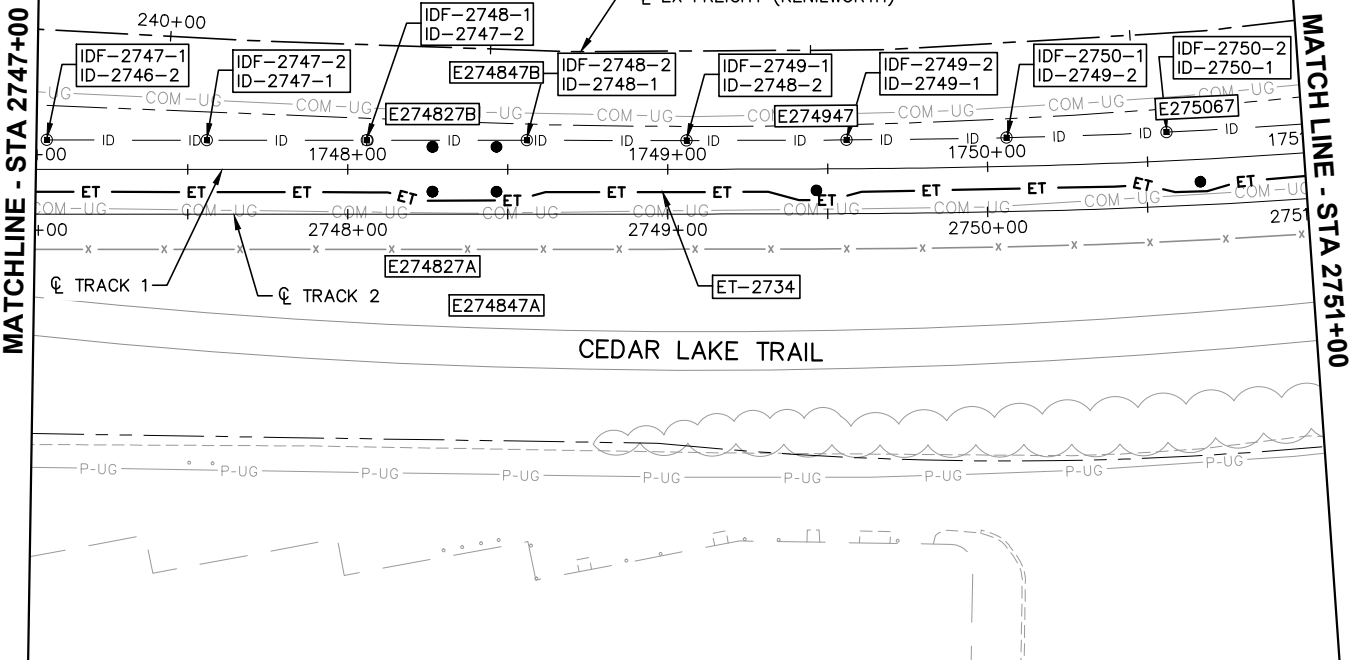


NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2731+00 TO STA 2747+00		SHEET 89 OF 224
						60% SUBMISSION - 9/28/15		DISCIPLINE: SYSTEMS	SHEET NAME: E2-SYS-SWE-PRF-022	

[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2131+00 TO STA 2747+00		SHEET 90 OF 224
					DISCIPLINE:					
					SYSTEMS			E2-SYS-SWE-SCH-022		

Sep. 21 2015 07:40 am V:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E3-SYS-SWE-PRF.dwg By: V-CameroAD



2747+00 2748+00 2749+00 2750+00 2751+00

AECOM



**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
PLAN AND PROFILE
STA 2747+00 TO STA 2751+00**

DISCIPLINE:

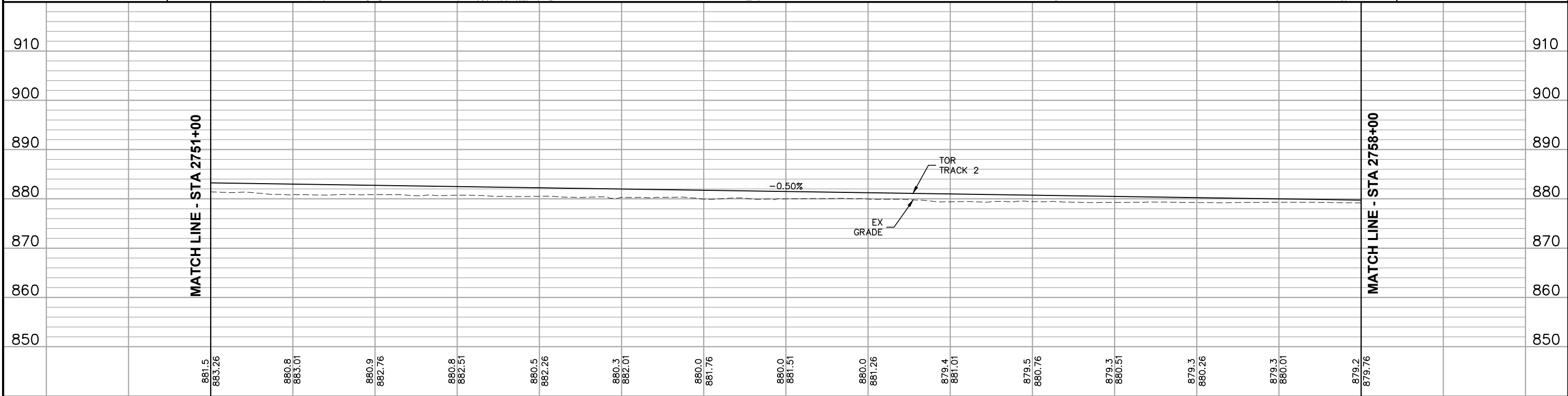
SYSTEMS

SHEET NAME:

E3-SYS-SWE-PRF-001

**SHEET
91
OF
224**

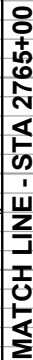
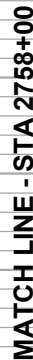
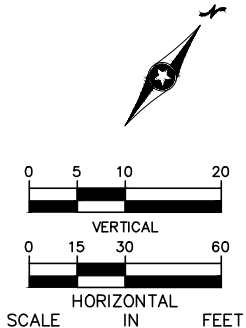
60% SUBMISSION - 9/28/15



2751+00						2752+00						2753+00						2754+00						2755+00						2756+00						2757+00						2758+00						SHEET	
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL													CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2751+00 TO STA 2758+00												93																			
																														60% SUBMISSION - 9/28/15						DISCIPLINE: SYSTEMS						SHEET NAME: E3-SYS-SWE-PRF-002						224	

[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2751+00 TO STA 2758+00		SHEET 94 OF 224	
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E3-SYS-SWE-SCH-002		

**AECOM**

**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
PLAN AND PROFILE
STA 2758+00 TO STA 2765+00**

DISCIPLINE: **SYSTEMS**

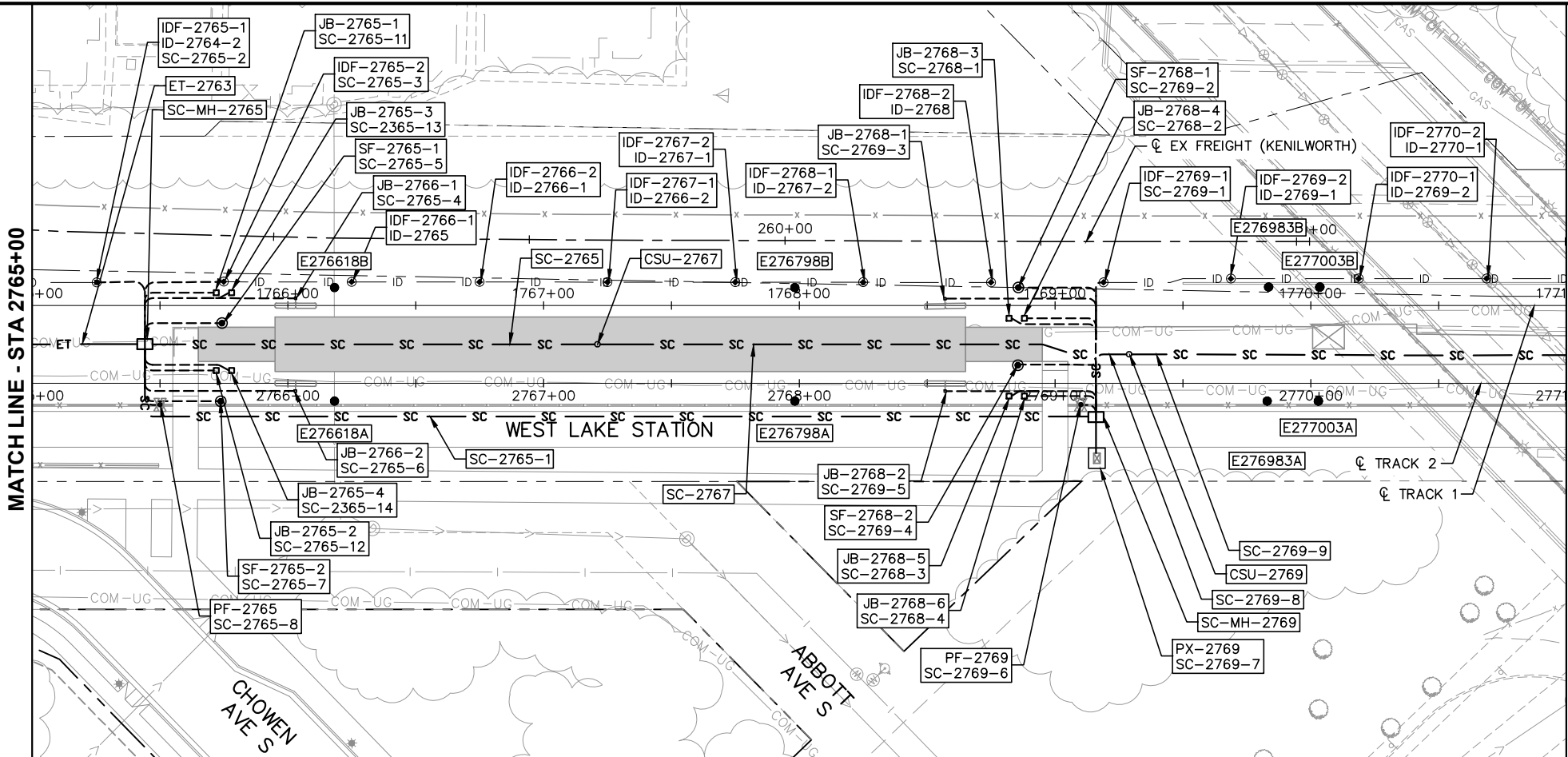
SHEET NAME: **E3-SYS-SWE-PRF-003**

SHEET
95
OF
224

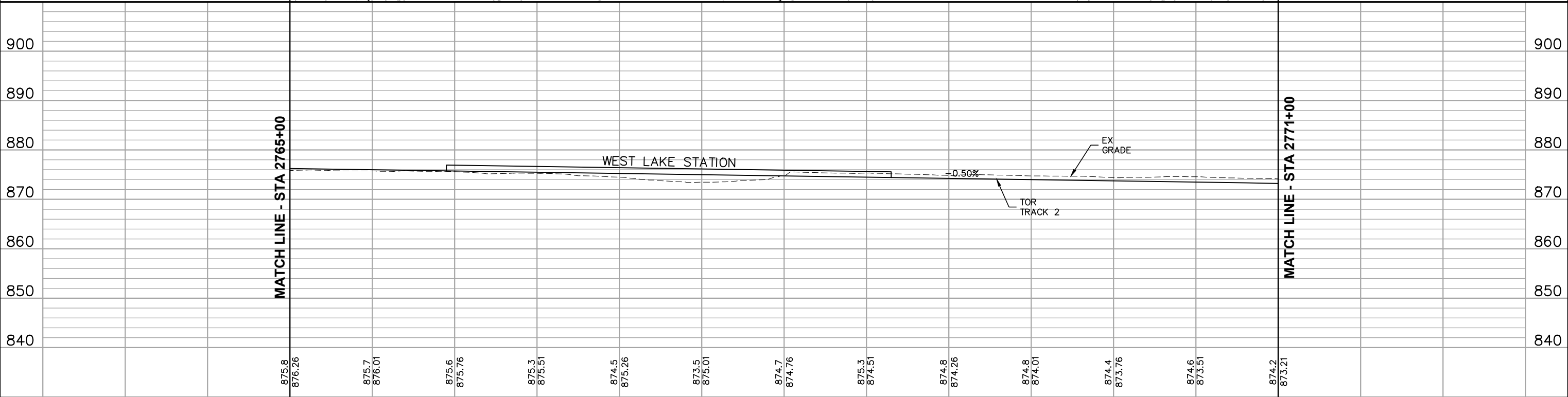
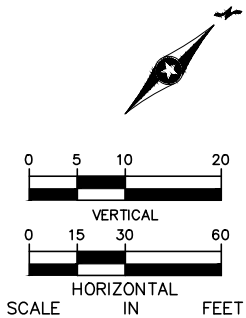
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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2758+00 TO STA 2765+00		SHEET 96 OF 224
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS SHEET NAME: E3-SYS-SWE-SCH-003			

Sep. 21 2015 07:42 am v: \\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E3-SYS-SWE-PRF.dwg By: V-CameroAD



MATCH LINE - STA 2771+00



MATCH LINE - STA 2771+00

2765+00						2766+00						2767+00						2768+00						2769+00						2770+00						2771+00						SHEET	
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM						METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension						CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2765+00 TO STA 2771+00						DISCIPLINE:						SHEET NAME:													
																								SYSTEMS						E3-SYS-SWE-PRF-004													
																								60% SUBMISSION - 9/28/15																			

[illegible]

60% SUBMISSION - 9/28/15

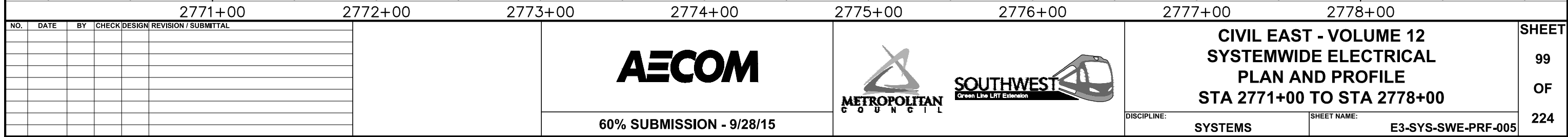


SYSTEMS

SHEET NAME:

E3-SYS-SWE-SCH-004

224



[illegible][illegible]

60% SUBMISSION - 9/28/15



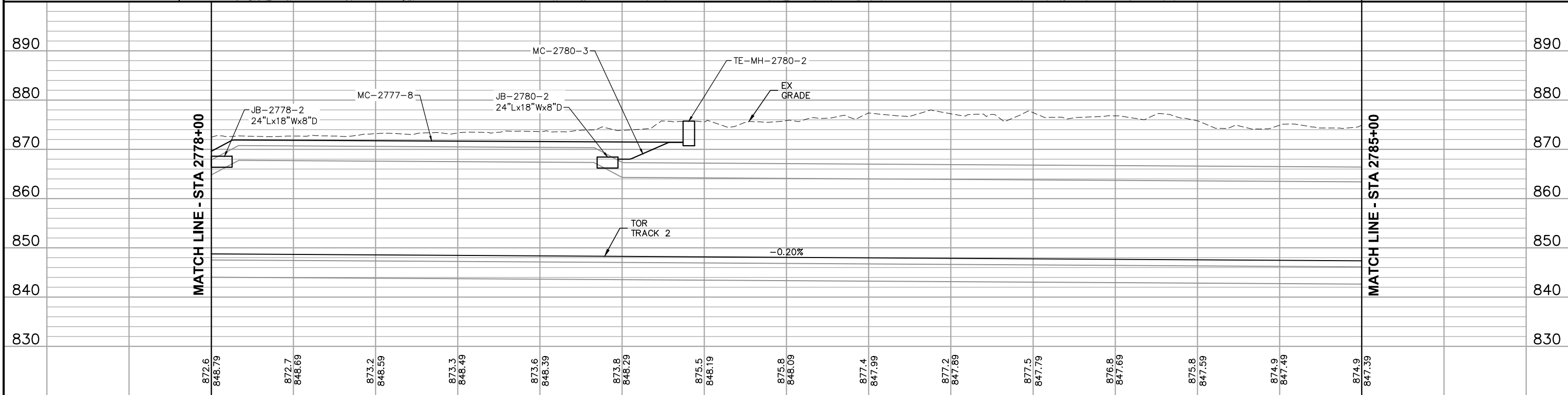
**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2771+00 TO STA 2778+00**

DISCIPLINE: **SYSTEMS**

SHEET NAME:	E3-SYS-SWE-SCH-005
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SHEET
100
OF
224

[illegible]

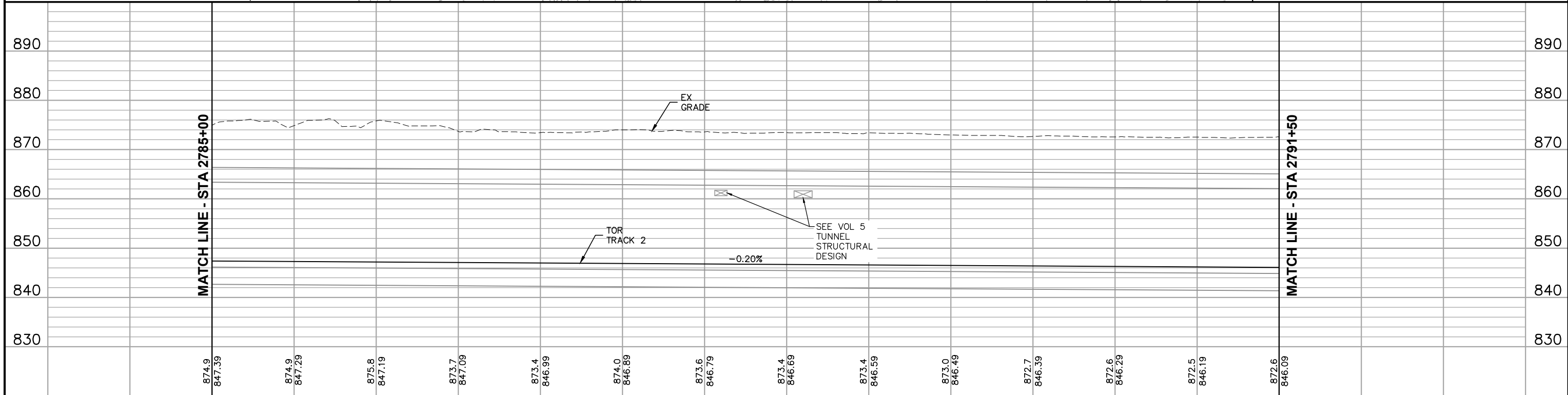
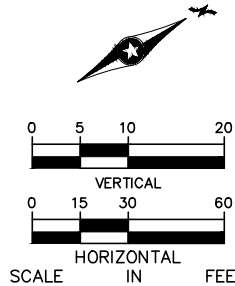
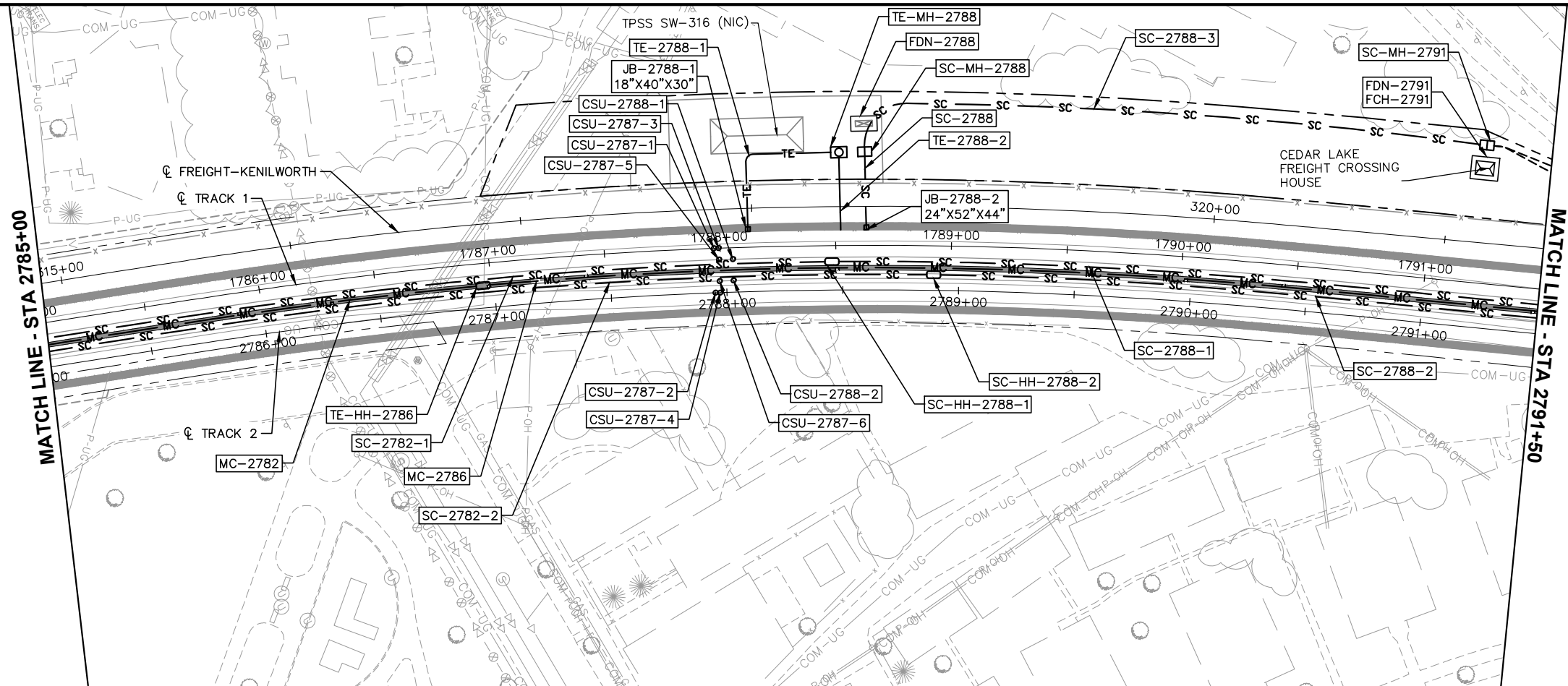


2778+00						2779+00						2780+00						2781+00						2782+00						2783+00						2784+00						2785+00						SHEET 101 OF 224	
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM						 						CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2778+00 TO STA 2785+00																															
						60% SUBMISSION - 9/28/15						DISCIPLINE: SYSTEMS						SHEET NAME: E3-SYS-SWE-PRF-006																															

[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2778+00 TO STA 2785+00		SHEET 102 OF 224	
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E3-SYS-SWE-SCH-006		

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2785+00 2786+00 2787+00 2788+00 2789+00 2790+00 2791+00 2791+50

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL



60% SUBMISSION - 9/28/15



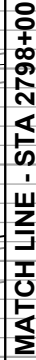
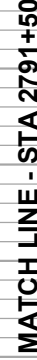
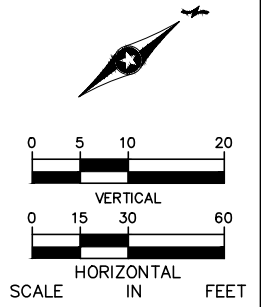
CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
PLAN AND PROFILE
STA 2785+00 TO STA 2791+50

DISCIPLINE: **SYSTEMS** SHEET NAME: **E3-SYS-SWE-PRF-007**

SHEET
103
OF
224

[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM 60% SUBMISSION - 9/28/15	 	CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2785+00 TO STA 2791+50		SHEET 104 OF 224
DISCIPLINE: SYSTEMS										
					SHEET NAME: E3-SYS-SWE-SCH-007					

[illegible]

60% SUBMISSION - 9/28/15



SYSTEMS

E3-SYS-SWE-PRF-008

SHEET
105
OF
224

[illegible][illegible]**AECOM**

60% SUBMISSION - 9/28/15



**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2791+50 TO STA 2798+00**

DISCIPLINE:

SYSTEMS

SHEET NAME:	
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E3-SYS-SWE-SCH-008

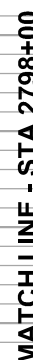
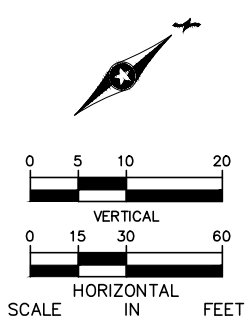
SHEET

106

OF

224

[illegible]



	SHEET
	107
	OF
000	224

[illegible][illegible]**AECOM**

60% SUBMISSION - 9/28/15



CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2798+00 TO STA 2805+00

DISCIPLINE

SYSTEMS

SHEET NAME

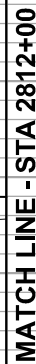
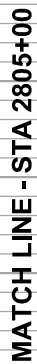
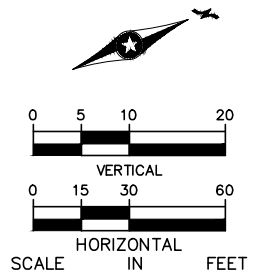
E3-SYS-SWE-SCH-009

SHEET

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224

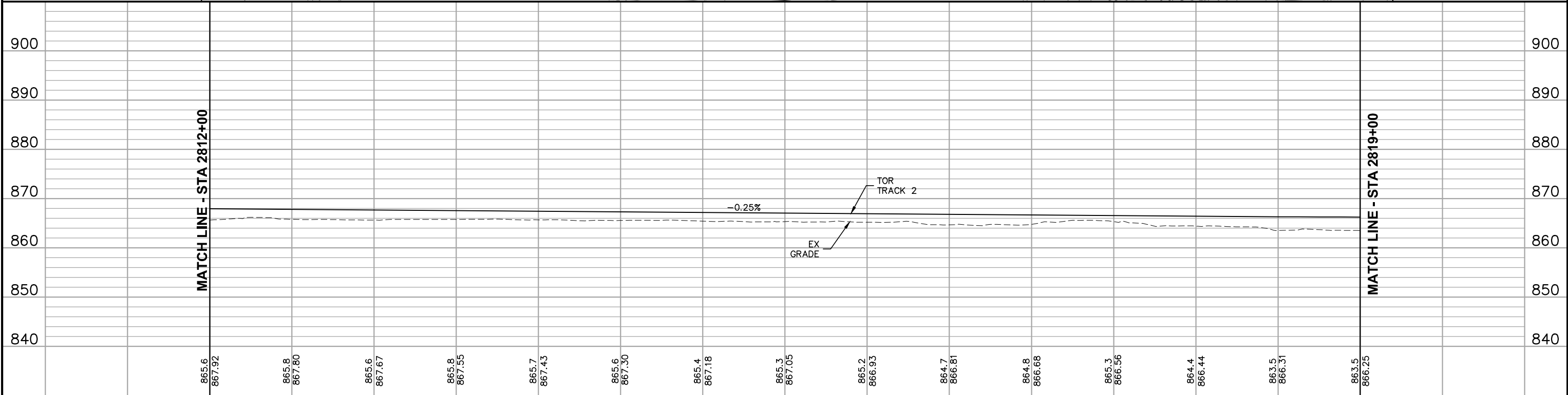
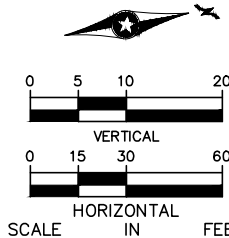
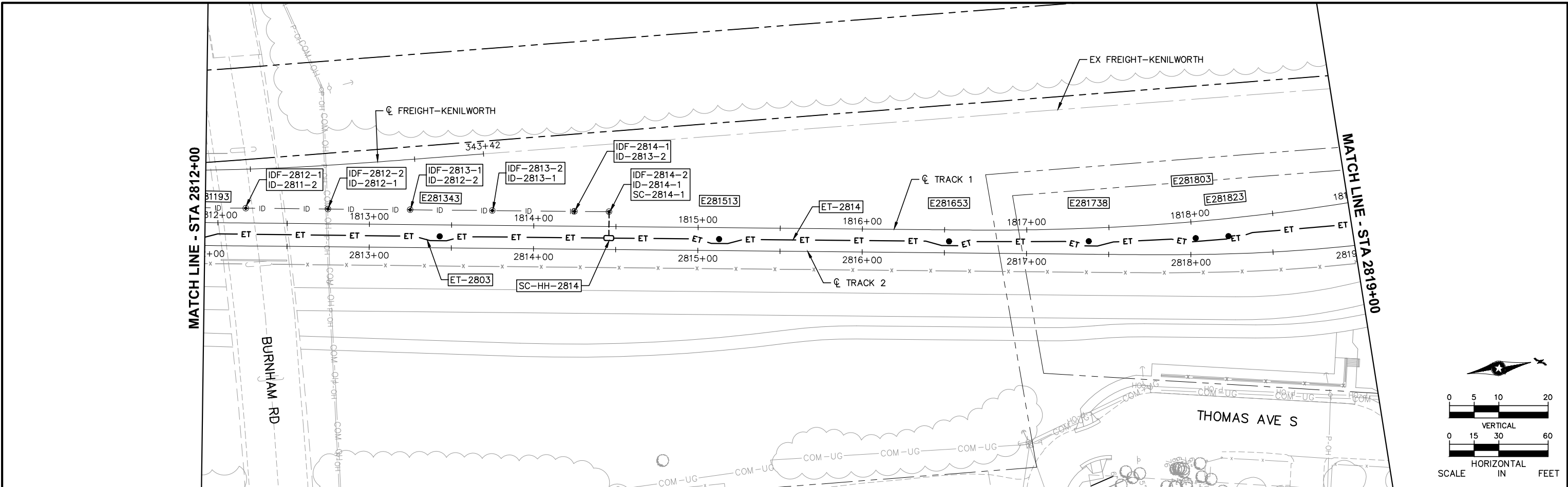


2805+00						2806+00						2807+00						2808+00						2809+00						2810+00						2811+00						2812+00						SHEET 109 OF 224	
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM						METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension						CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2805+00 TO STA 2812+00																															
																								DISCIPLINE: SYSTEMS						SHEET NAME: E3-SYS-SWE-PRF-010																			
						60% SUBMISSION - 9/28/15																																											

[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2805+00 TO STA 2812+00		SHEET 110 OF 224
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E3-SYS-SWE-SCH-010	

Sep. 24 2015 04:20 pm V:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E3-SYS-SWE-PRF.dwg By: V-MccallAE



2812+00						2813+00						2814+00						2815+00						2816+00						2817+00						2818+00						2819+00						SHEET 111 OF 224	
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM						 						CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2812+00 TO STA 2819+00																															
																								60% SUBMISSION - 9/28/15						DISCIPLINE: SYSTEMS						SHEET NAME: E3-SYS-SWE-PRF-011													

[illegible][illegible]

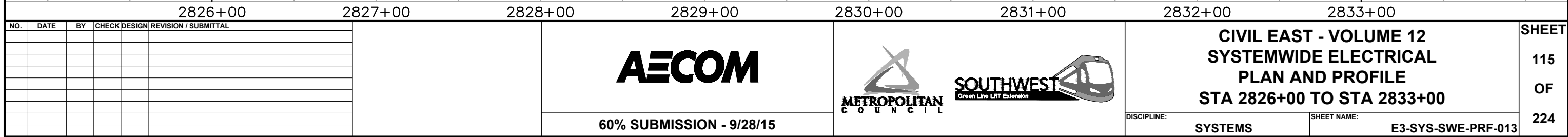
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2812+00 TO STA 2819+00		SHEET 112 OF 224
					DISCIPLINE:					
					SYSTEMS			E3-SYS-SWE-SCH-011		



2819+00						2820+00						2821+00						2822+00						2823+00						2824+00						2825+00						2826+00						SHEET 113 OF 224	
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM 60% SUBMISSION - 9/28/15												METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension												CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2819+00 TO STA 2826+00																			
																																										DISCIPLINE: SYSTEMS							

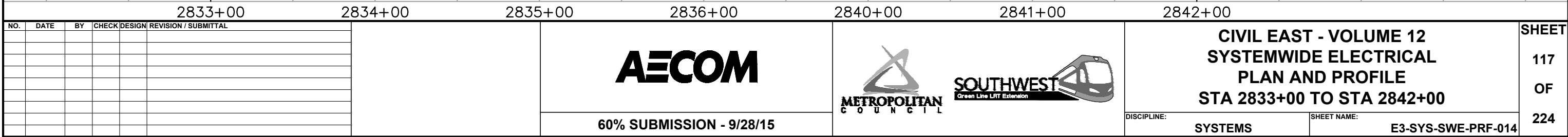
[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL							CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2819+00 TO STA 2826+00		SHEET
						AECOM		 METROPOLITAN COUNCIL		 SOUTHWEST Green Line LRT Extension		DISCIPLINE: SYSTEMS SHEET NAME: E3-SYS-SWE-SCH-012		114
						60% SUBMISSION - 9/28/15								OF
														224



[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2826+00 TO STA 2833+00		SHEET 116 OF 224	
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E3-SYS-SWE-SCH-013		



[illegible][illegible]**AECOM**

60% SUBMISSION - 9/28/15



**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2833+00 TO STA 2842+00**

DISCIPLINE:

SYSTEMS

SHEET NAME:

E3-SYS-SWE-SCH-014

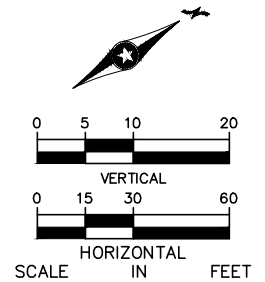
SHEET

118

OF

224

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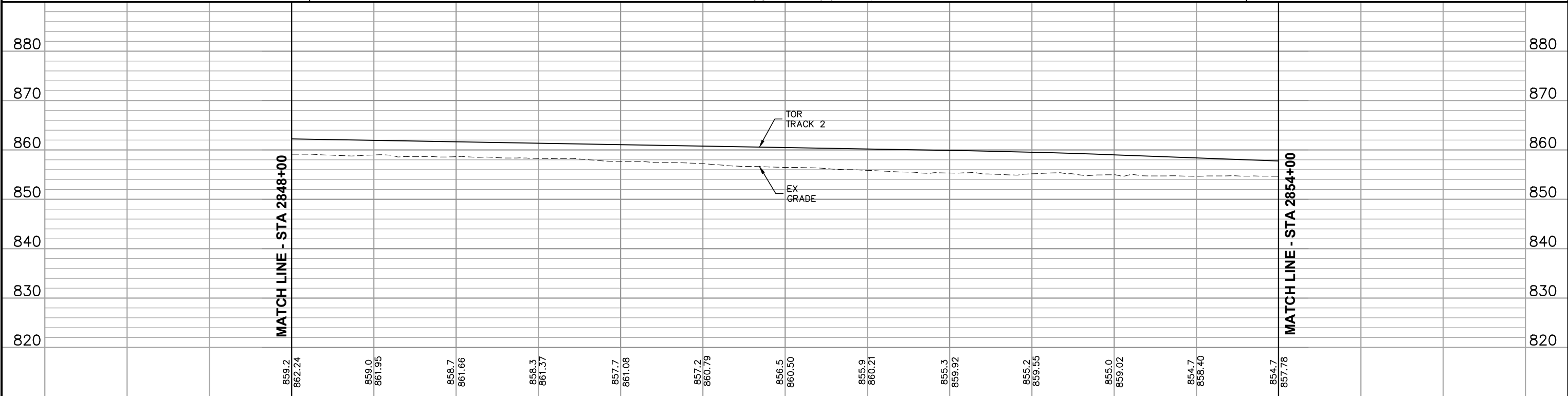
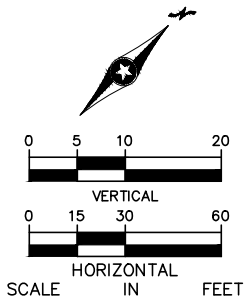
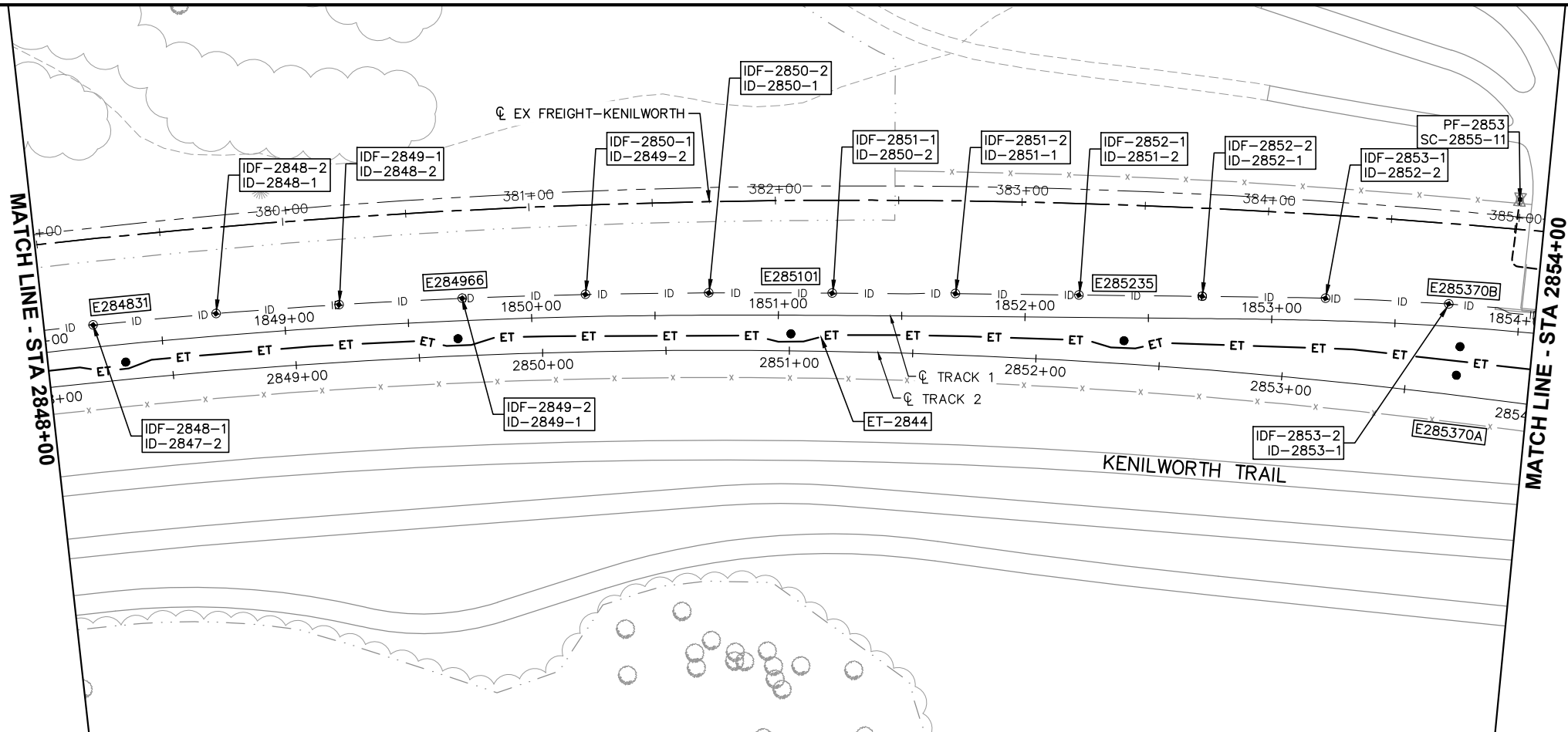


SHEET
119
OF
224

[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2842+00 TO STA 2848+00		SHEET 120 OF 224
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E4-SYS-SWE-SCH-001	

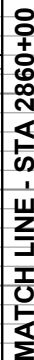
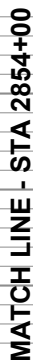
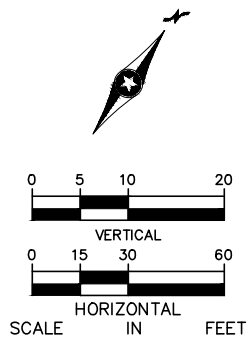
Sep. 21 2015 08:48 am v:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E4--SYS--SWE--PRF.dwg By: V-CameroAD



2848+00						2849+00						2850+00						2851+00						2852+00						2853+00						2854+00					
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM						METROPOLITAN C O U N C I L SOUTHWEST Green Line LRT Extension						CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2848+00 TO STA 2854+00						SHEET 121 OF 224																	
												60% SUBMISSION - 9/28/15						DISCIPLINE: SYSTEMS						SHEET NAME: E4-SYS-SWE-PRF-002																	

[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2848+00 TO STA 2854+00		SHEET 122 OF 224
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E4-SYS-SWE-SCH-002	

**AECOM**

METROPOLITAN
COUNCIL

SOUTHWEST

Green Line LRT Extension



**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
PLAN AND PROFILE
STA 2854+00 TO STA 2860+00**

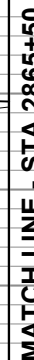
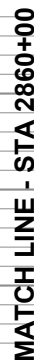
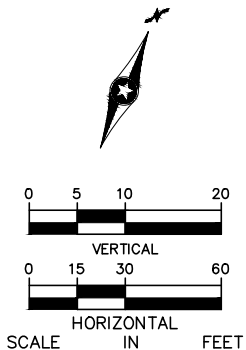
DISCIPLINE: **SYSTEMS**

SHEET NAME: **E4-SYS-SWE-PRF-003**

SHEET
123
OF
224

[illegible][illegible]

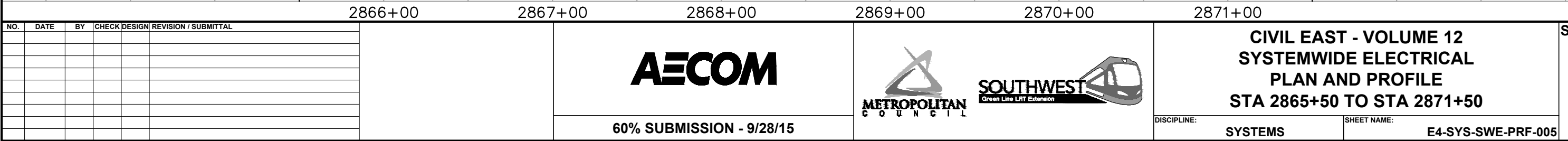
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2854+00 TO STA 2860+00		SHEET 124 OF 224
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E4-SYS-SWE-SCH-003	



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OF
224

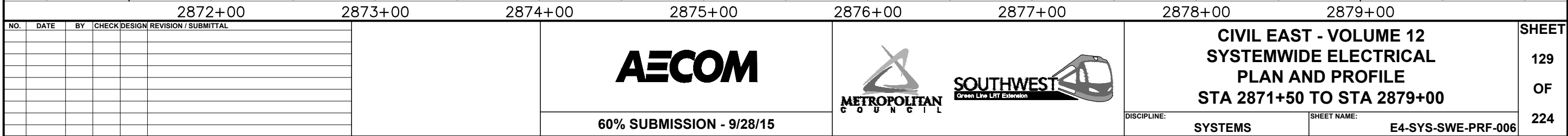
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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2860+00 TO STA 2865+50		SHEET 126 OF 224
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E4-SYS-SWE-SCH-004	



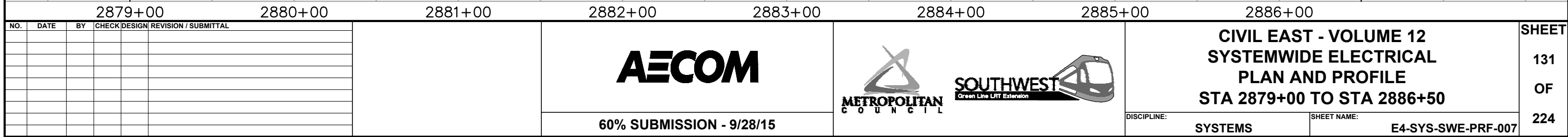
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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2865+50 TO STA 2871+50		SHEET 128 OF 224
60% SUBMISSION - 9/28/15								DISCIPLINE: SYSTEMS	SHEET NAME: E4-SYS-SWE-SCH-005	



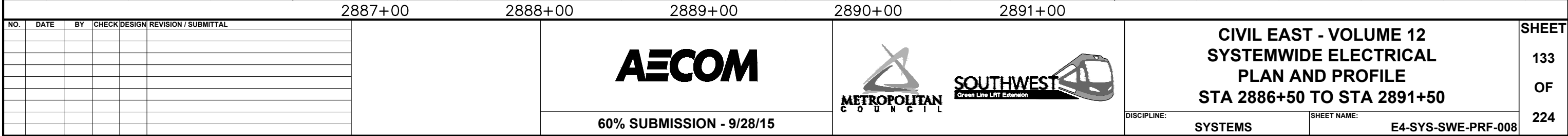
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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12		SHEET 130 OF 224
								SYSTEMWIDE ELECTRICAL		
								SCHEDULE		
								STA 2871+50 TO STA 2879+00		
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E4-SYS-SWE-SCH-006	



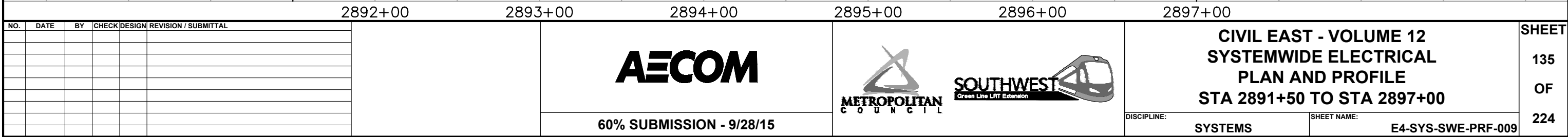
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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2879+00 TO STA 2886+50		SHEET 132 OF 224	
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E4-SYS-SWE-SCH-007		



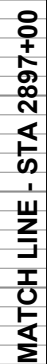
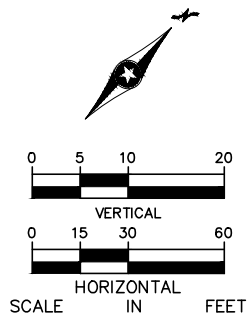
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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2886+50 TO STA 2891+50		SHEET 134 OF 224	
						DISCIPLINE: SYSTEMS	SHEET NAME: E4-SYS-SWE-SCH-008				



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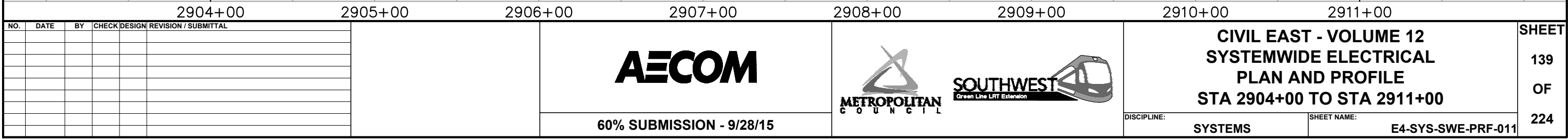
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2891+50 TO STA 2897+00		SHEET 136 OF 224
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E4-SYS-SWE-SCH-009	



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137
OF
224

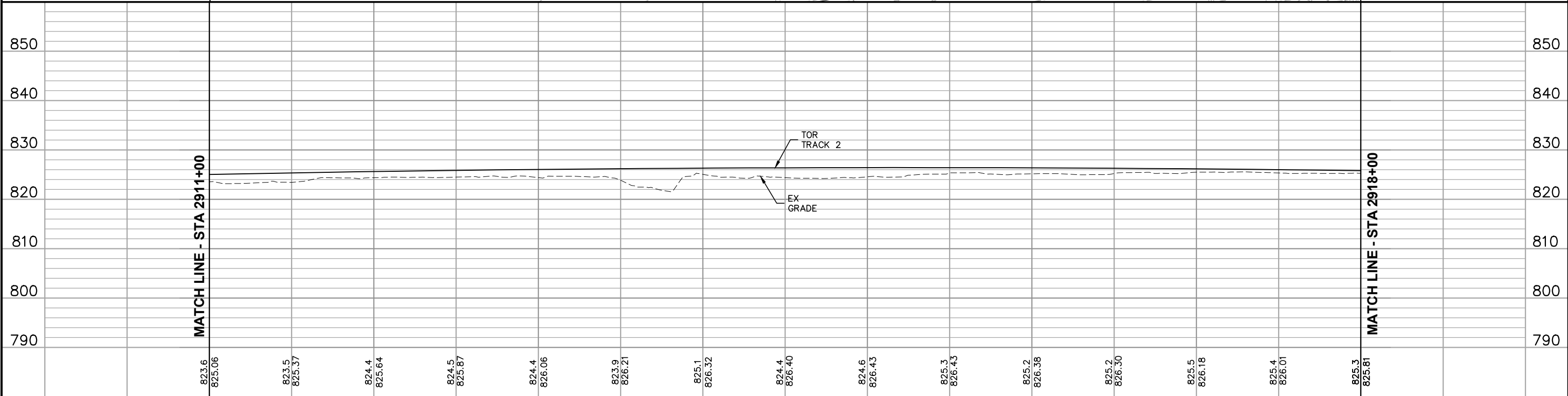
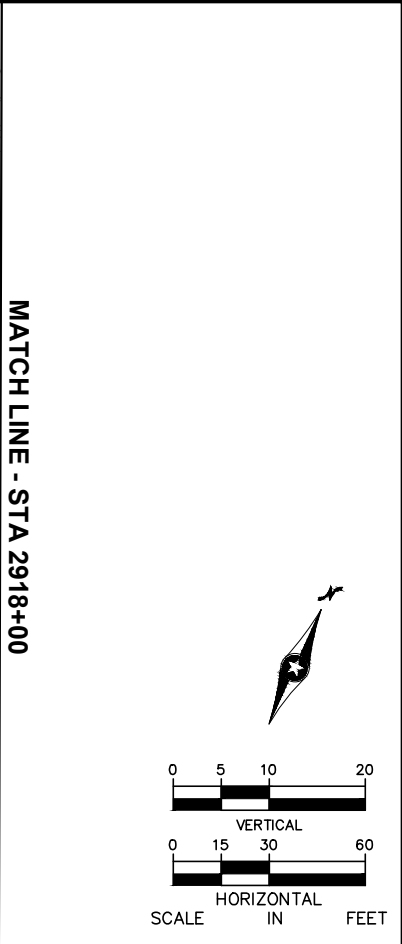
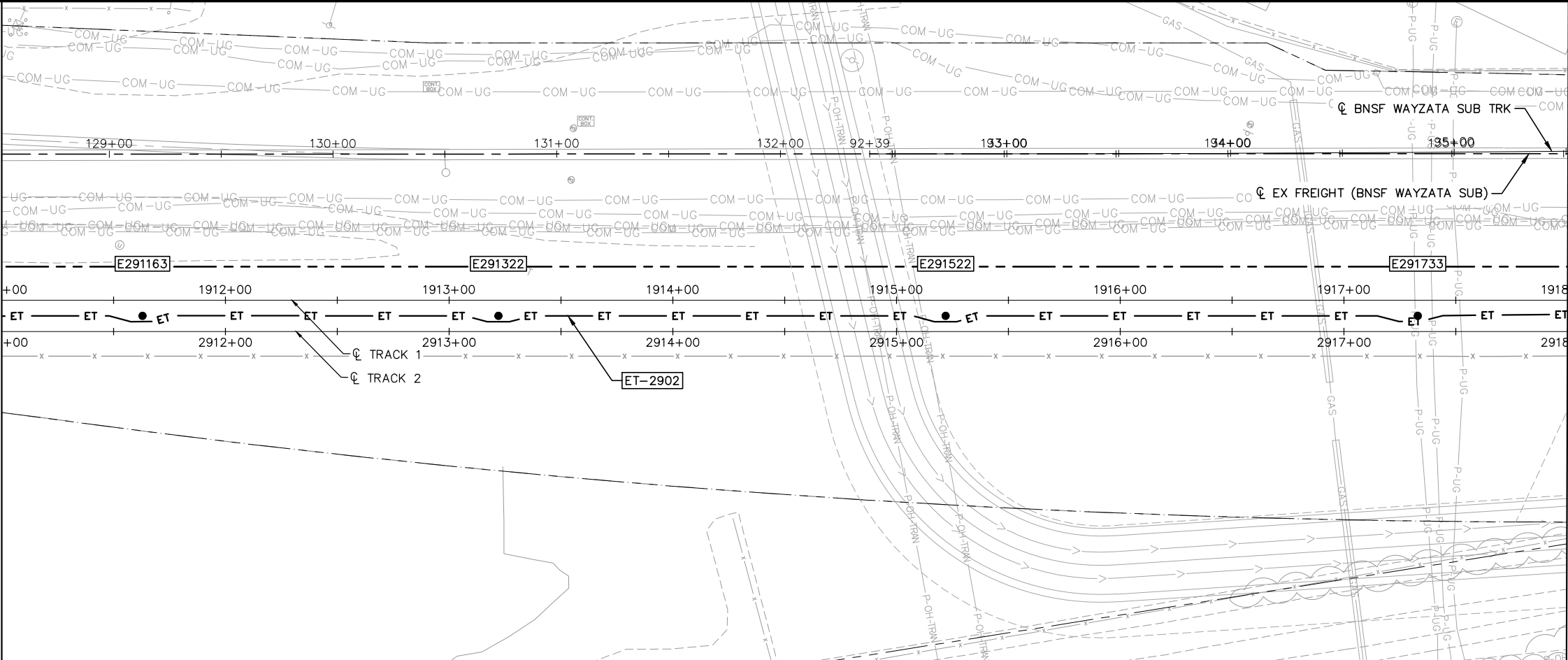
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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL					 		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2897+00 TO STA 2904+00		SHEET 138 OF 224
												DISCIPLINE: SYSTEMS SHEET NAME: E4-SYS-SWE-SCH-010		
						60% SUBMISSION - 9/28/15								



[illegible][illegible]

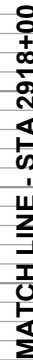
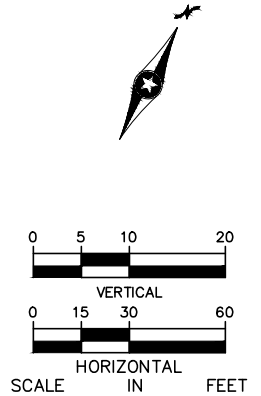
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2904+00 TO STA 2911+00		SHEET 140 OF 224
								DISCIPLINE: SYSTEMS	SHEET NAME: E4-SYS-SWE-SCH-011	



2911+00						2912+00						2913+00						2914+00						2915+00						2916+00						2917+00						2918+00											
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL													 						CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2911+00 TO STA 2918+00												SHEET 141 OF 224																	
DISCIPLINE:																								SYSTEMS												SHEET NAME: E4-SYS-SWE-PRF-012																	

[illegible][illegible]

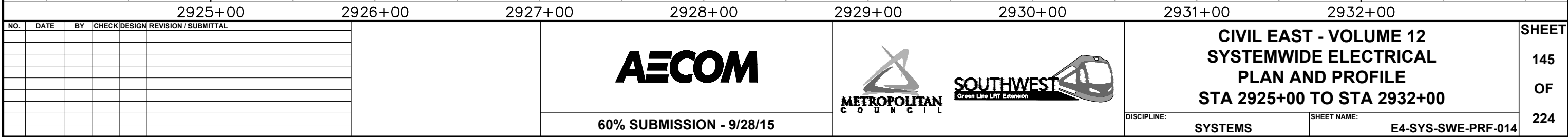
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2911+00 TO STA 2918+00		SHEET 142 OF 224
60% SUBMISSION - 9/28/15						DISCIPLINE: SYSTEMS		SHEET NAME: E4-SYS-SWE-SCH-012		



2918+00						2919+00						2920+00						2921+00						2922+00						2923+00						2924+00						2925+00						SHEET	
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL							AECOM						 						CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2918+00 TO STA 2925+00						143																			
																														OF																			
																																224																	

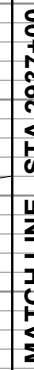
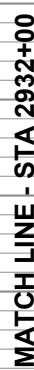
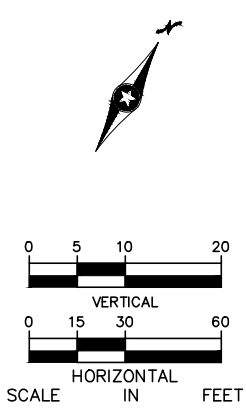
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5	 	CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2918+00 TO STA 2925+00		SHEET 144 OF 224
		DISCIPLINE: SYSTEMS	SHEET NAME: E4-SYS-SWE-SCH-013	



[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2925+00 TO STA 2932+00		SHEET 146 OF 224
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E4-SYS-SWE-SCH-014	



AECOM

METROPOLITAN
COUNCIL



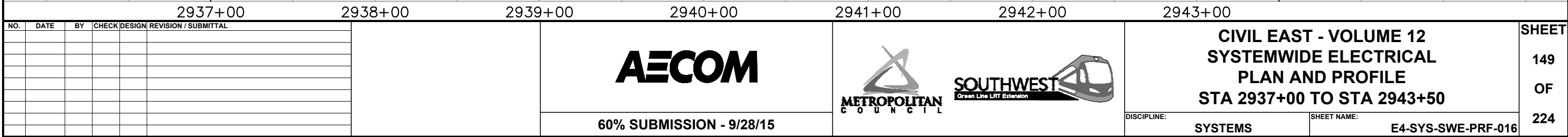
SOUTHWEST
Green Line LRT Extension

**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
PLAN AND PROFILE
STA 2932+00 TO STA 2937+00**

	SHEET
	147
	OF
F	224

[illegible]

5	 	CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2932+00 TO STA 2937+00		SHEET 148 OF 224
		DISCIPLINE: SYSTEMS	SHEET NAME: E4-SYS-SWE-SCH-015	



[illegible][illegible]**AECOM****60% SUBMISSION - 9/28/15**

**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SCHEDULE
STA 2937+00 TO STA 2943+50**

DISCIPLINE:

SYSTEMS

SHEET NAME:

E4-SYS-SWE-SCH-016

SHEET

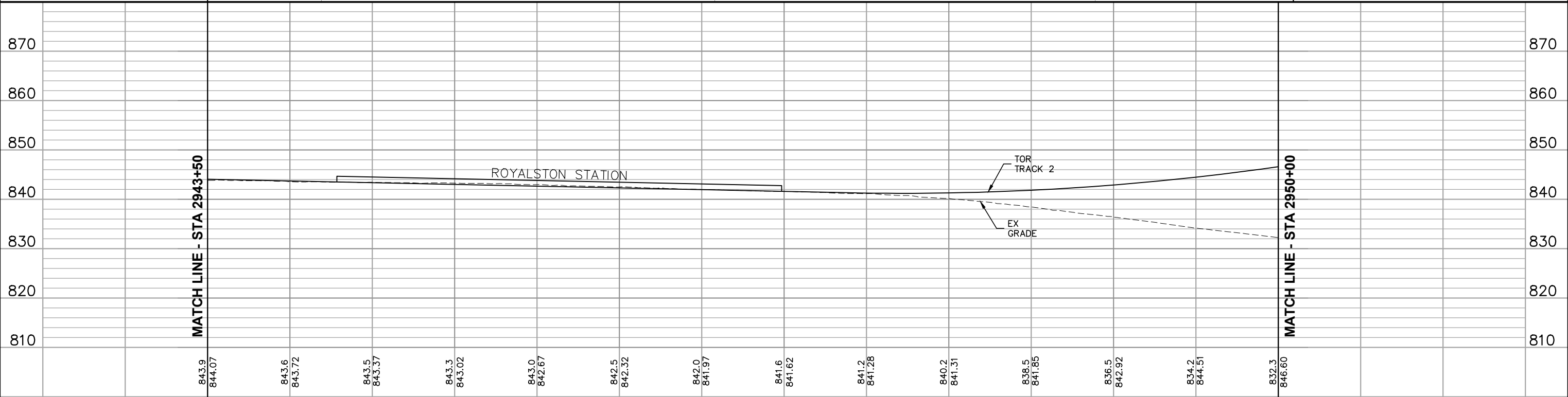
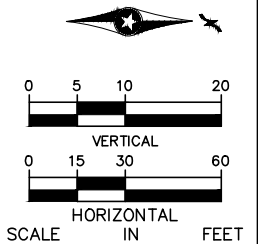
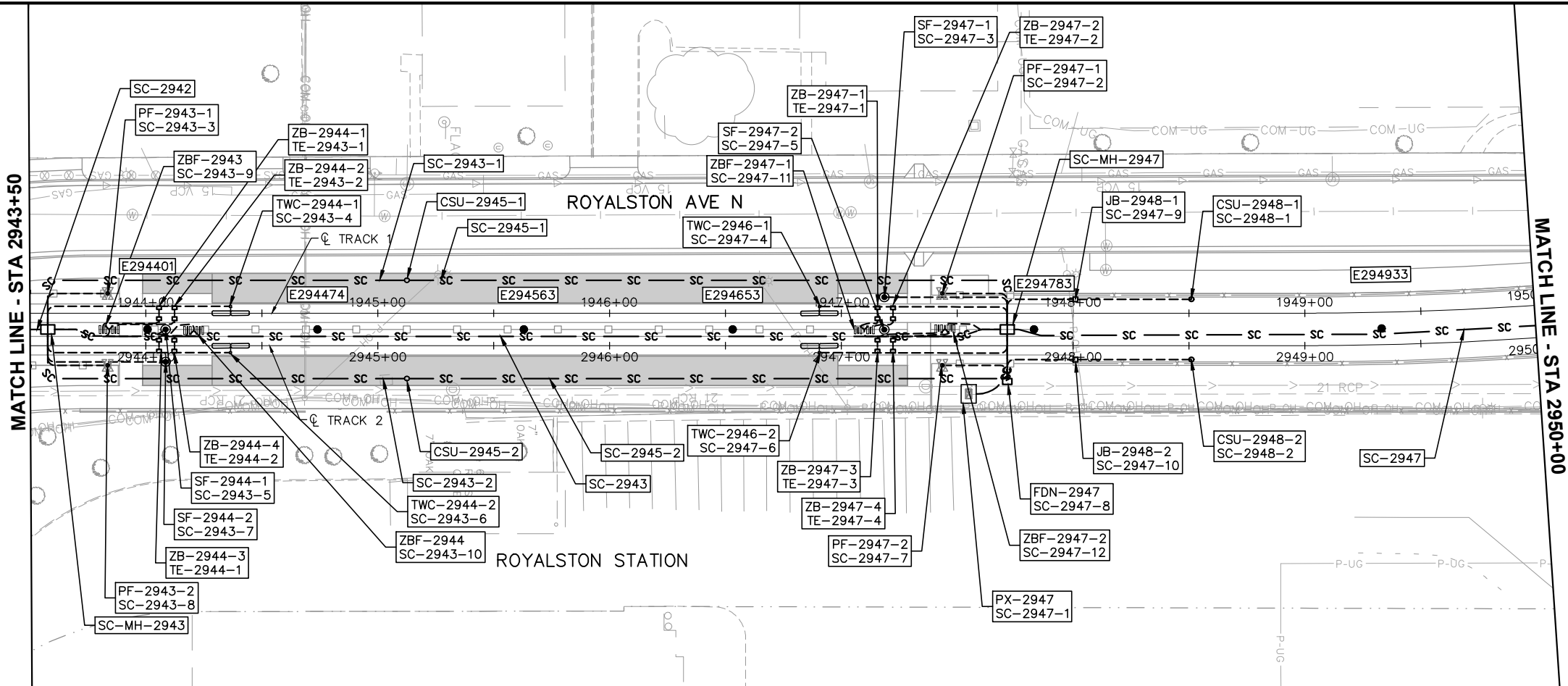
150 |

OF

224

[illegible]

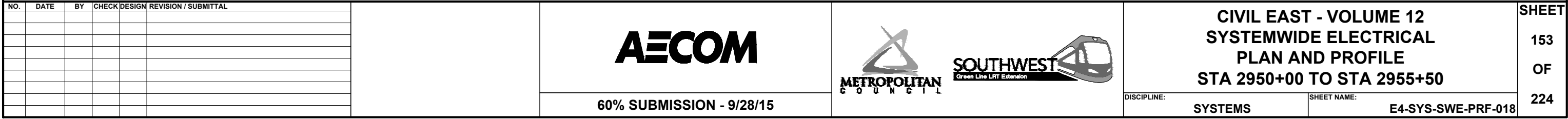
Sep. 21 2015 08:24 am v:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E4-SYS-SWE-PRF.dwg By: V-CameroAD



2944+00						2945+00						2946+00						2947+00						2948+00						2949+00						2950+00						SHEET 151 OF 224	
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM						 						CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL PLAN AND PROFILE STA 2943+50 TO STA 2950+00																									
																														DISCIPLINE: SYSTEMS						SHEET NAME: E4-SYS-SWE-PRF-017							
						60% SUBMISSION - 9/28/15																																					

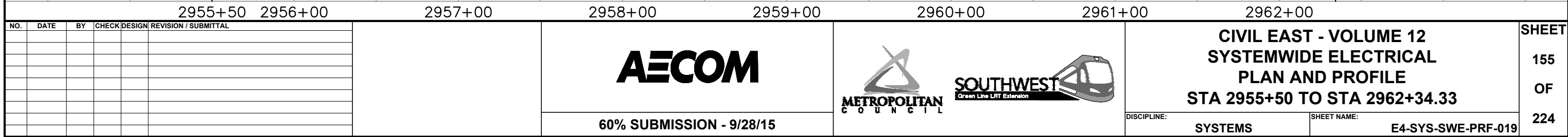
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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2943+50 TO STA 2950+00		SHEET 152 OF 224
								DISCIPLINE: SYSTEMS	SHEET NAME: E4-SYS-SWE-SCH-017	



[illegible][illegible]

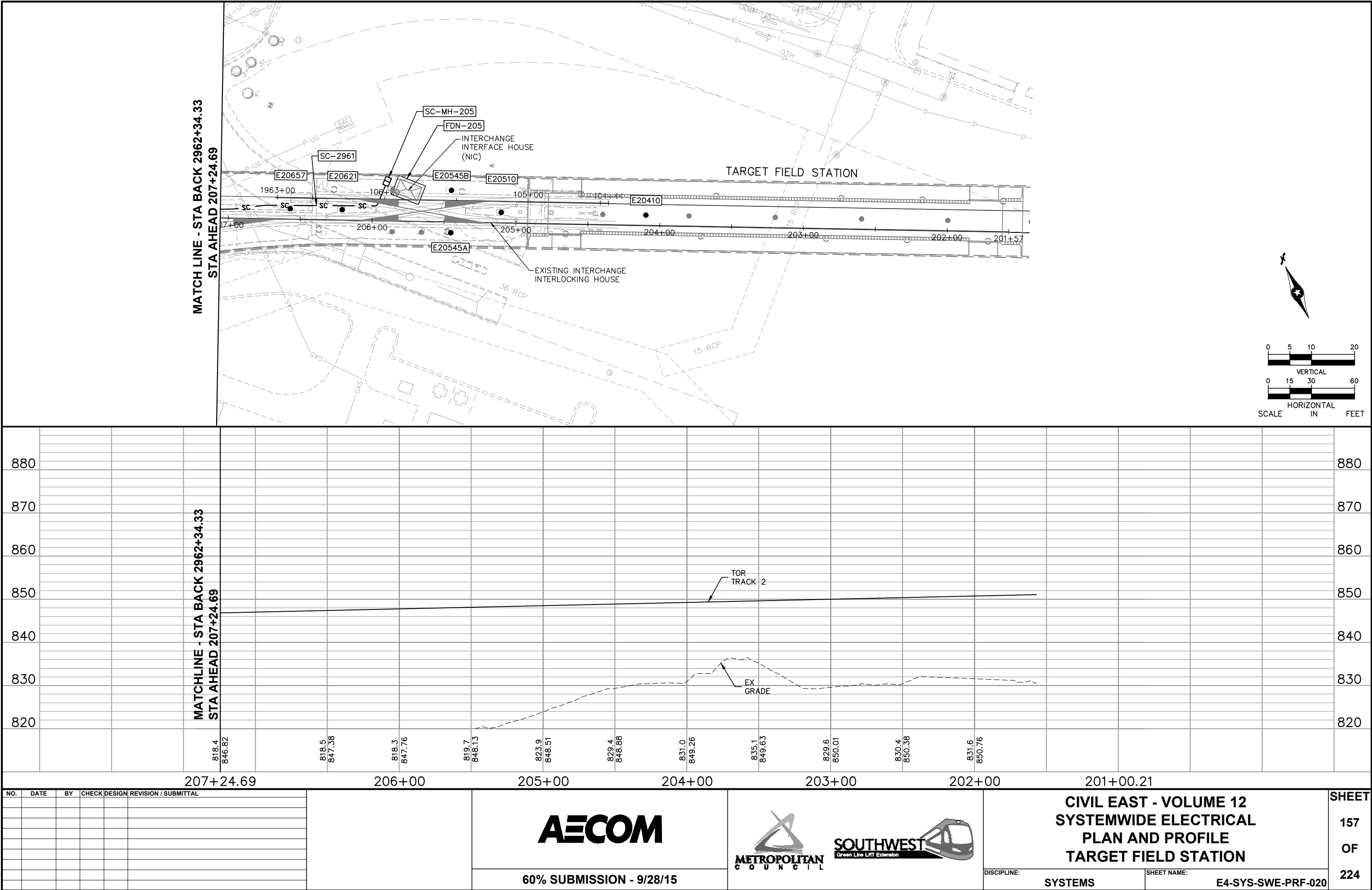
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2950+00 TO STA 2955+50		SHEET 154 OF 224
60% SUBMISSION - 9/28/15								DISCIPLINE: SYSTEMS	SHEET NAME: E4-SYS-SWE-SCH-018	



[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE STA 2955+50 TO STA 2962+34.33		SHEET 156 OF 224	
						60% SUBMISSION - 9/28/15	DISCIPLINE: SYSTEMS		SHEET NAME: E4-SYS-SWE-SCH-019		

Sep. 21 2015 08:28 am V:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E4-SYS-SWE-PRF.dwg By: V-CameroAD



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL



60% SUBMISSION - 9/28/15



CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
PLAN AND PROFILE
TARGET FIELD STATION

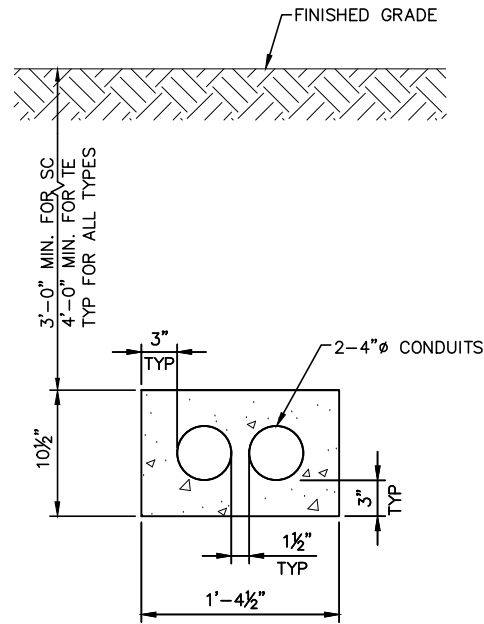
DISCIPLINE: SYSTEMS
SHEET NAME: E4-SYS-SWE-PRF-020

SHEET
157
OF
224

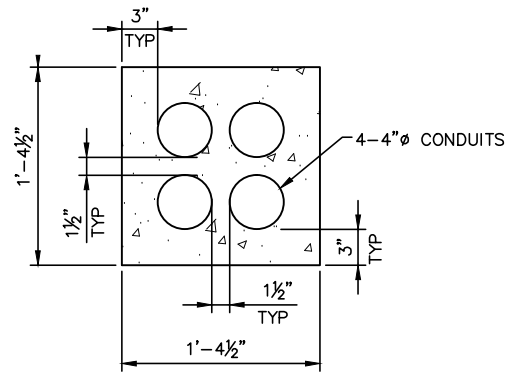
[illegible][illegible]

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	 60% SUBMISSION - 9/28/15		CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL SCHEDULE TARGET FIELD STATION		SHEET 158 OF 224
								DISCIPLINE: SYSTEMS	SHEET NAME: E4-SYS-SWE-SCH-020	

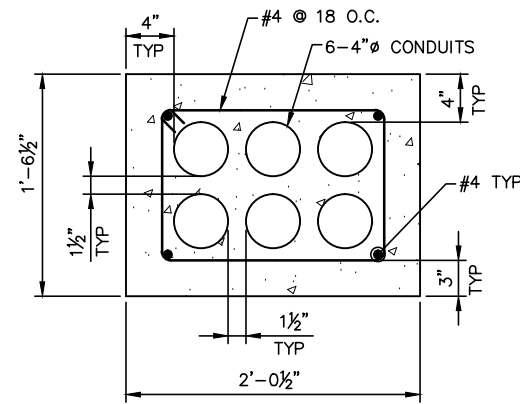
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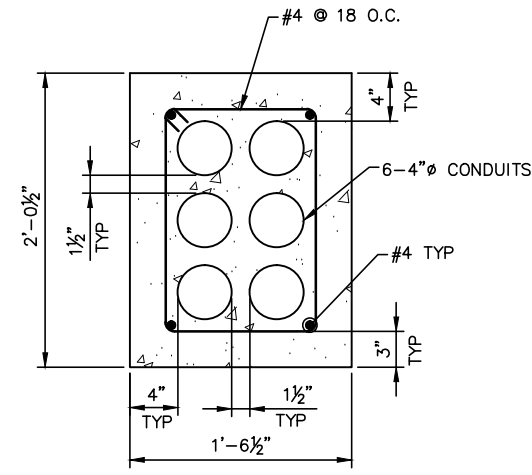
2 TYPE 2
SCALE: 1 1/2"=1'-0"



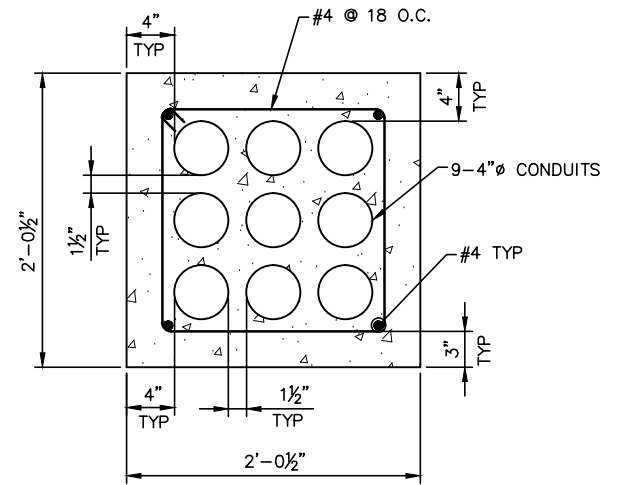
4 TYPE 4
SCALE: 1 1/2"=1'-0"



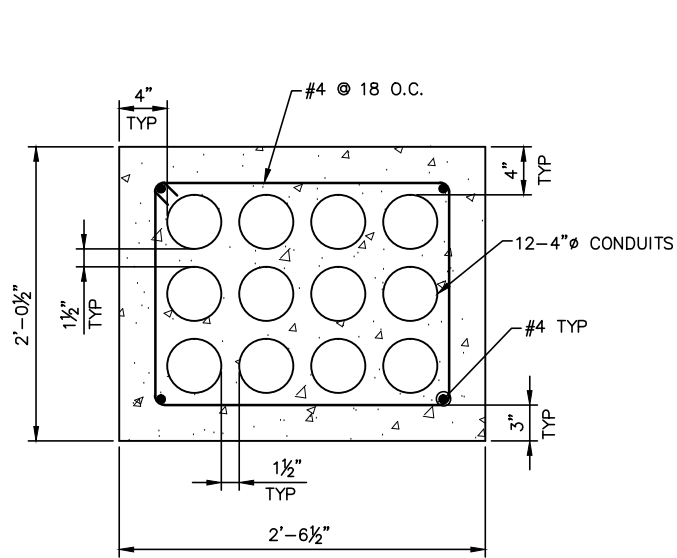
6 TYPE 6
SCALE: 1 1/2"=1'-0"



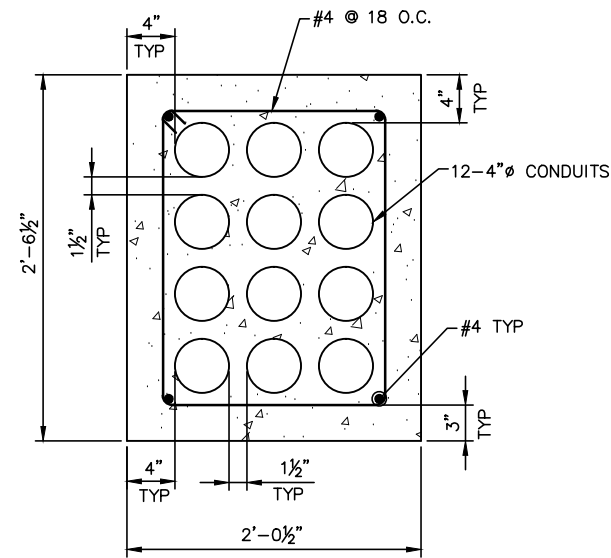
6V TYPE 6V
SCALE: 1 1/2"=1'-0"



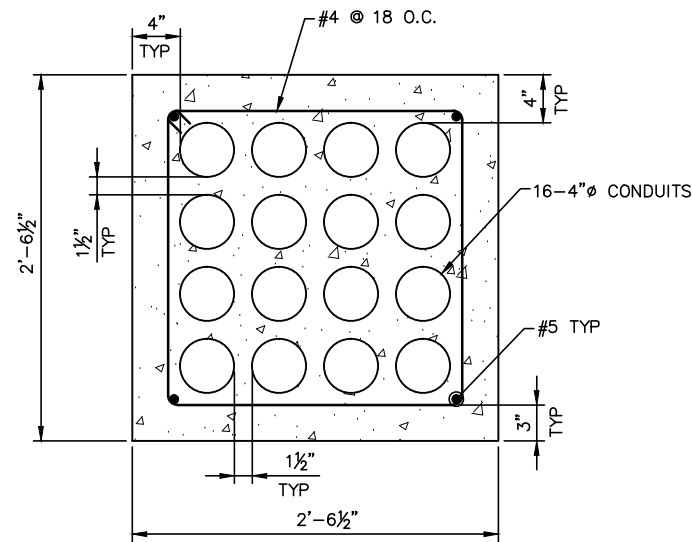
9 TYPE 9
SCALE: 1 1/2"=1'-0"



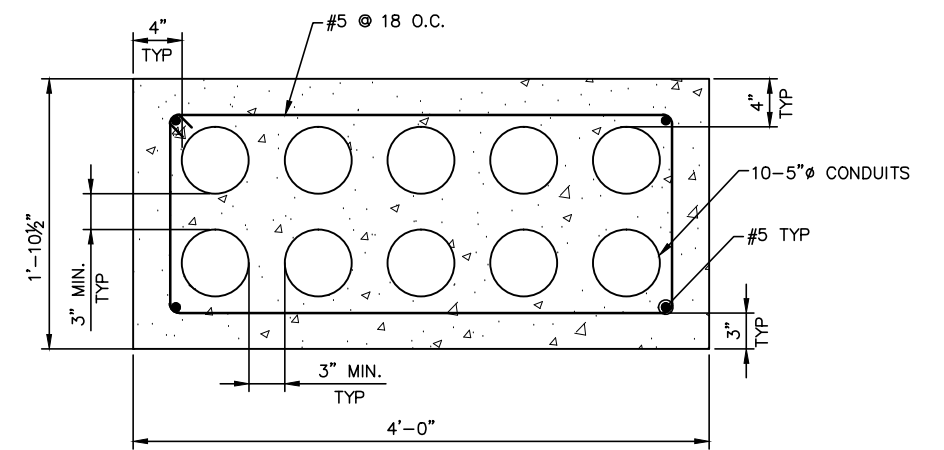
12 TYPE 12
SCALE: 1 1/2"=1'-0"



12V TYPE 12V
SCALE: 1 1/2"=1'-0"



16 TYPE 16
SCALE: 1 1/2"=1'-0"



10 TYPE 10
SCALE: 1 1/2"=1'-0"

NOTES:

1. TOP OF DUCTBANK IS 3'-0" MIN. BELOW FINISHED GRADE FOR SC AND 4'-0" MIN. BELOW FINISHED GRADE FOR TE
2. MINIMUM 3000 PSI CONCRETE COMPRESSIVE STRENGTH WITH ASTM A-615 GRADE 60 REINFORCING BARS
3. LAP SPLICE LENGTH PER ACI 318-11 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
4. SEE SPECIFICATIONS FOR MORE DETAILED CONCRETE REQUIREMENTS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

60% SUBMISSION - 09/28/15



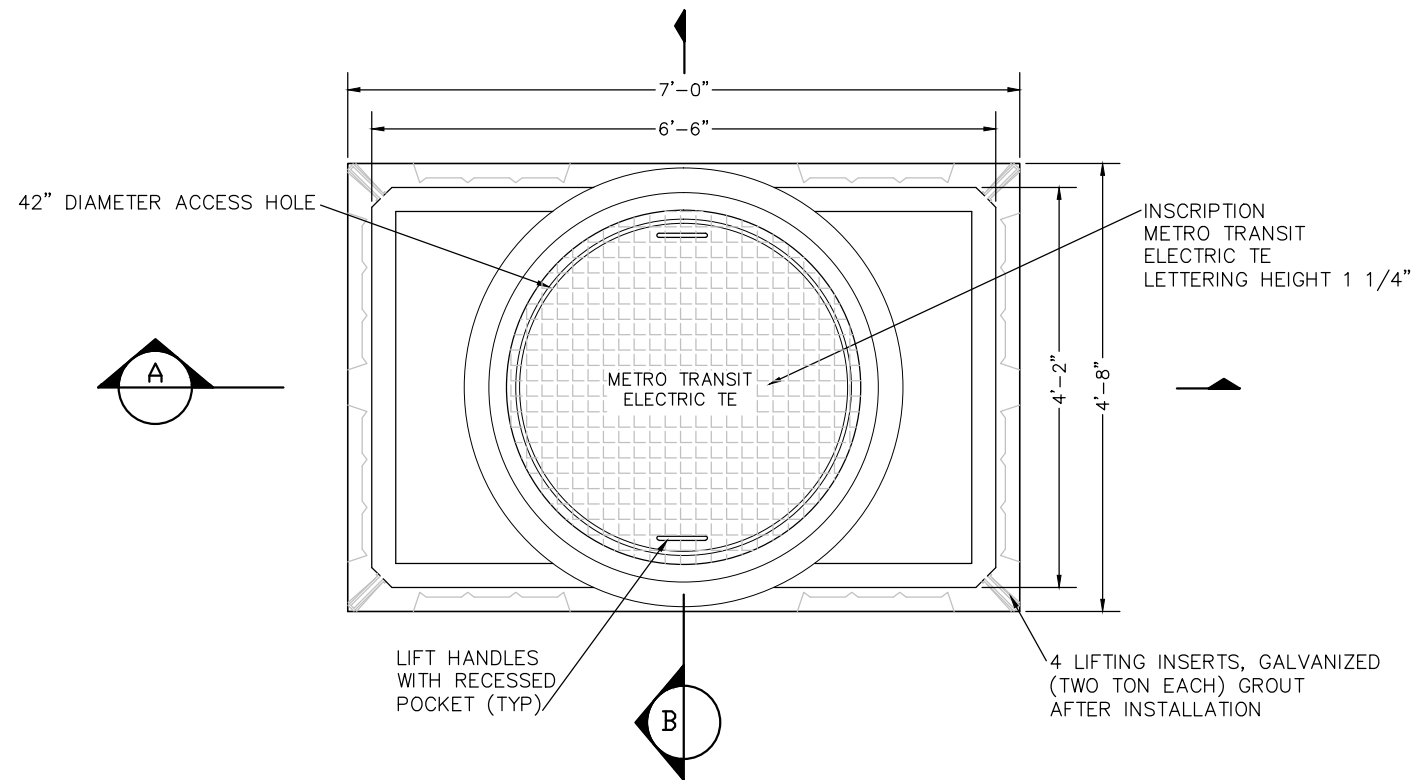
CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
DETAILS
DUCTBANK SECTIONS

DISCIPLINE: STRUCTURAL

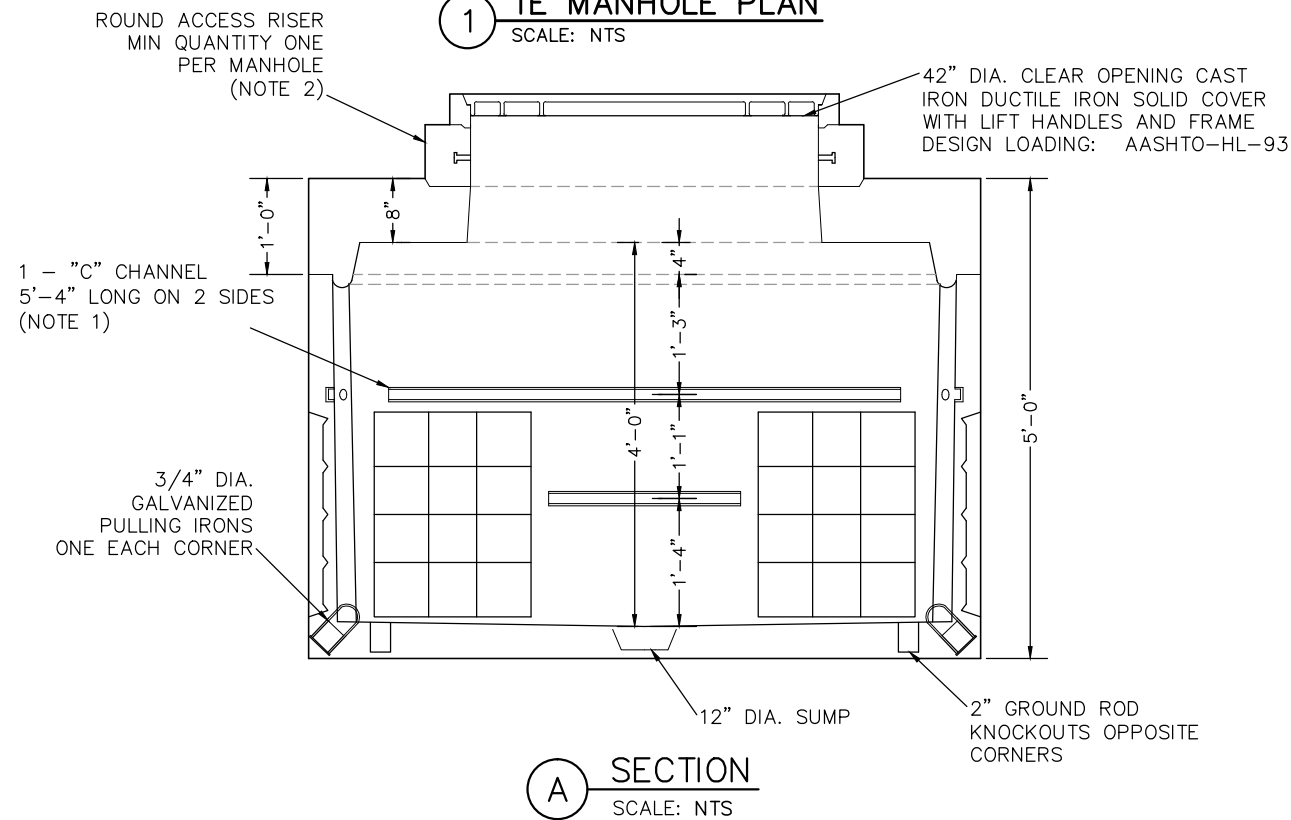
SHEET NAME: E0-SYS-STU-DTL-001

SHEET
159
OF
224

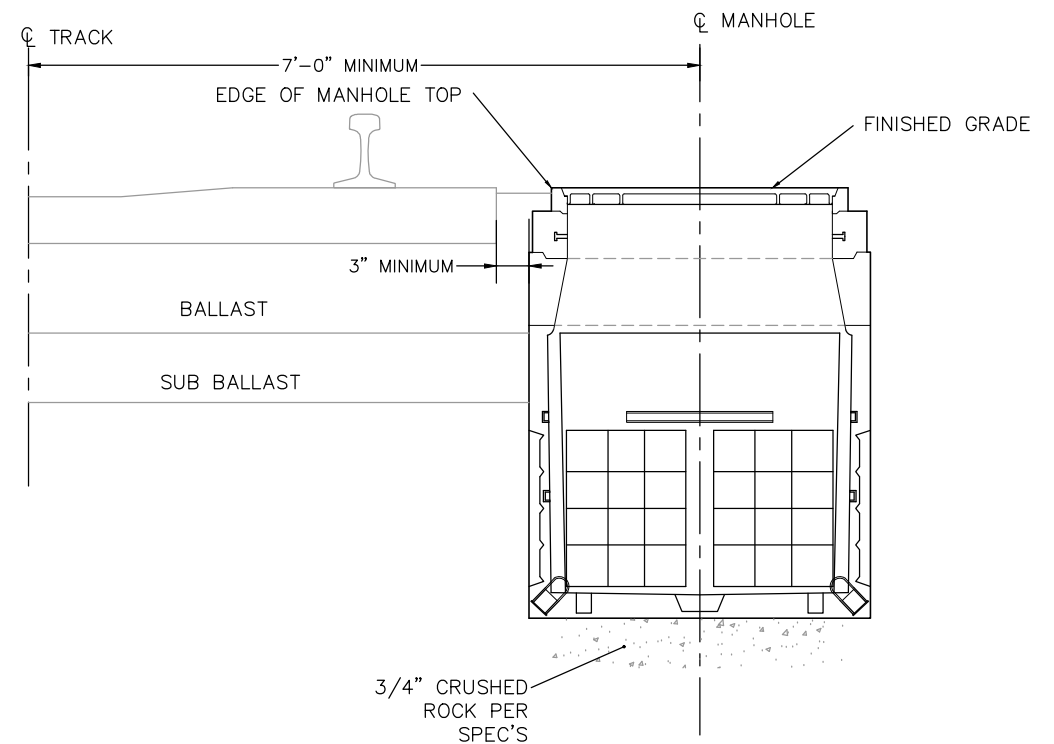
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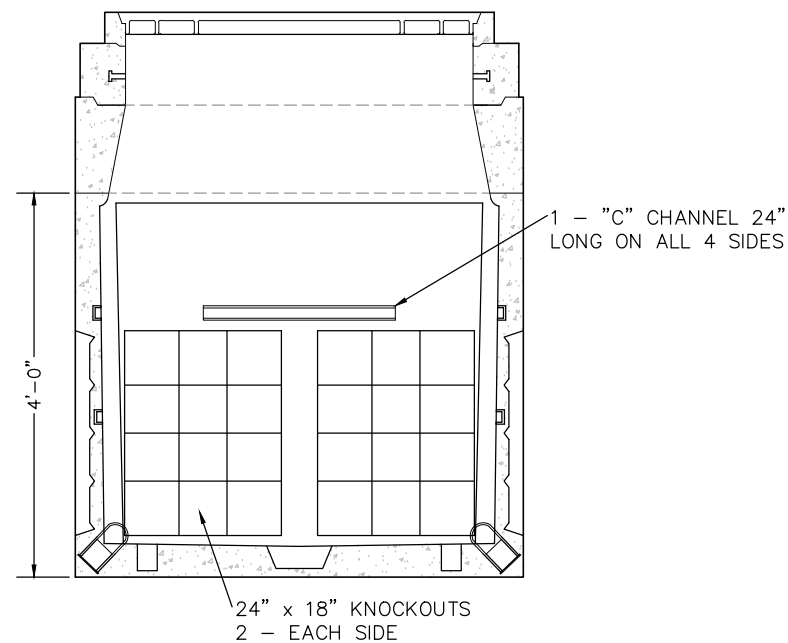
1 TE MANHOLE PLAN
SCALE: NTS



A SECTION
SCALE: NTS



2 TE MANHOLE TYPICAL INSTALLATION
SCALE: NTS



B SECTION
SCALE: NTS

- NOTE:
1. INSTALL SIX CABLE RACKS WITH TWELVE INSULATORS PER MANHOLE.
 2. USE ROUND ACCESS RISERS (30" MAX) TO ACHIEVE FINAL ELEVATION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

60% SUBMISSION - 9/28/15



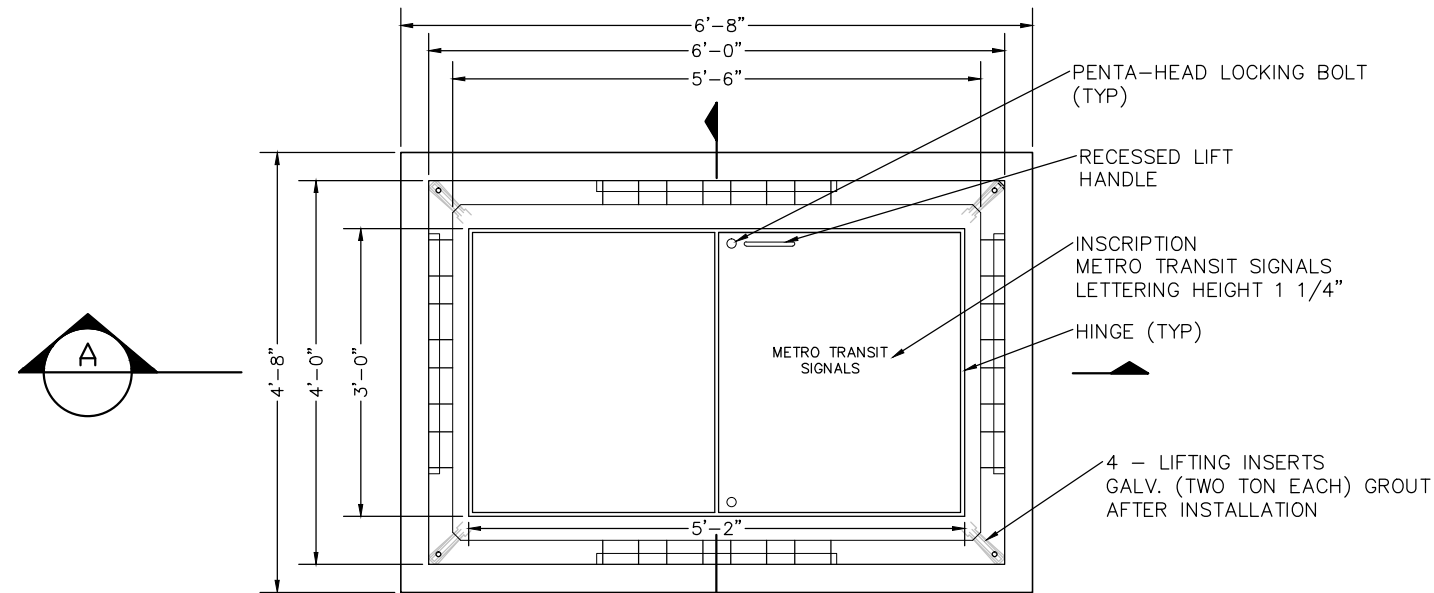
CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
DETAILS
TE MANHOLE

DISCIPLINE:
SYSTEMS

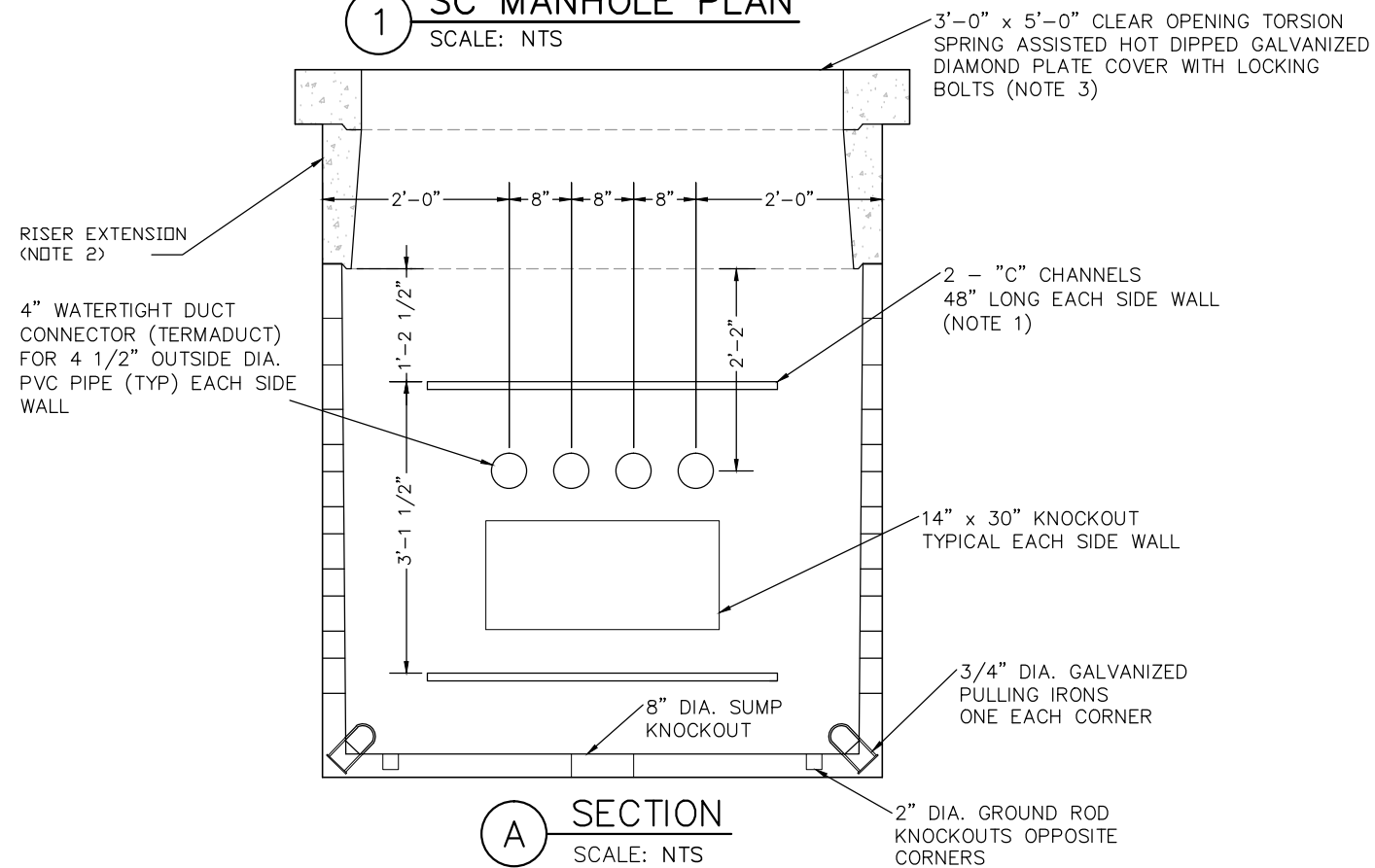
SHEET NAME:
E0-SYS-SWE-DTL-002

SHEET
160
OF
224

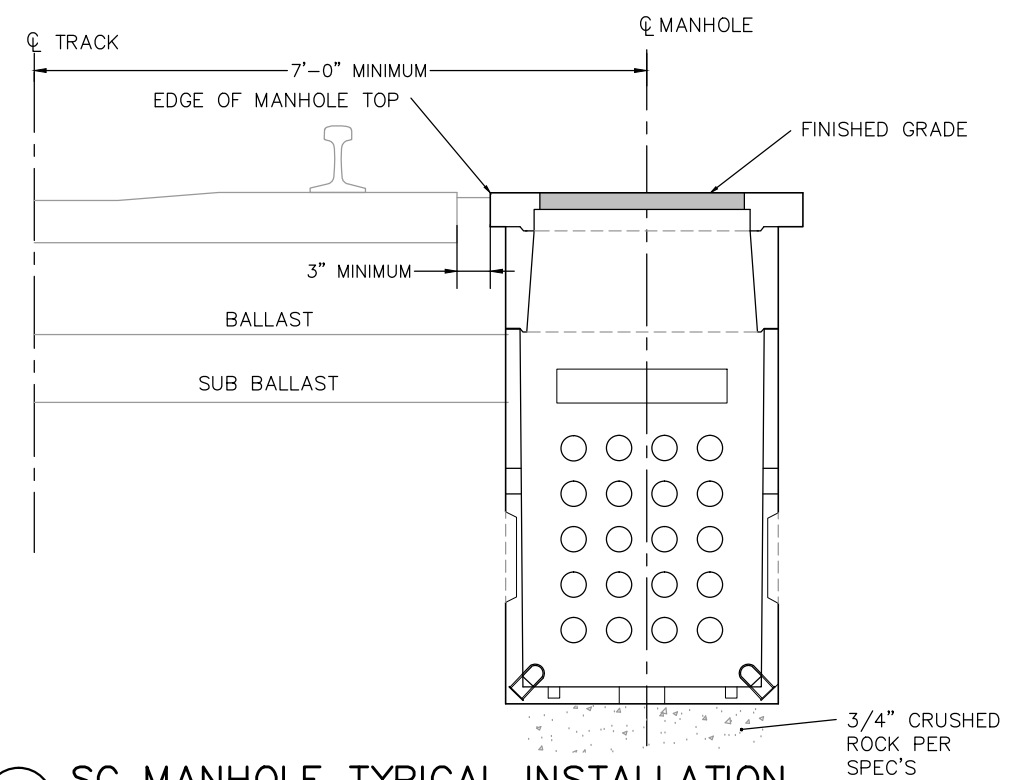
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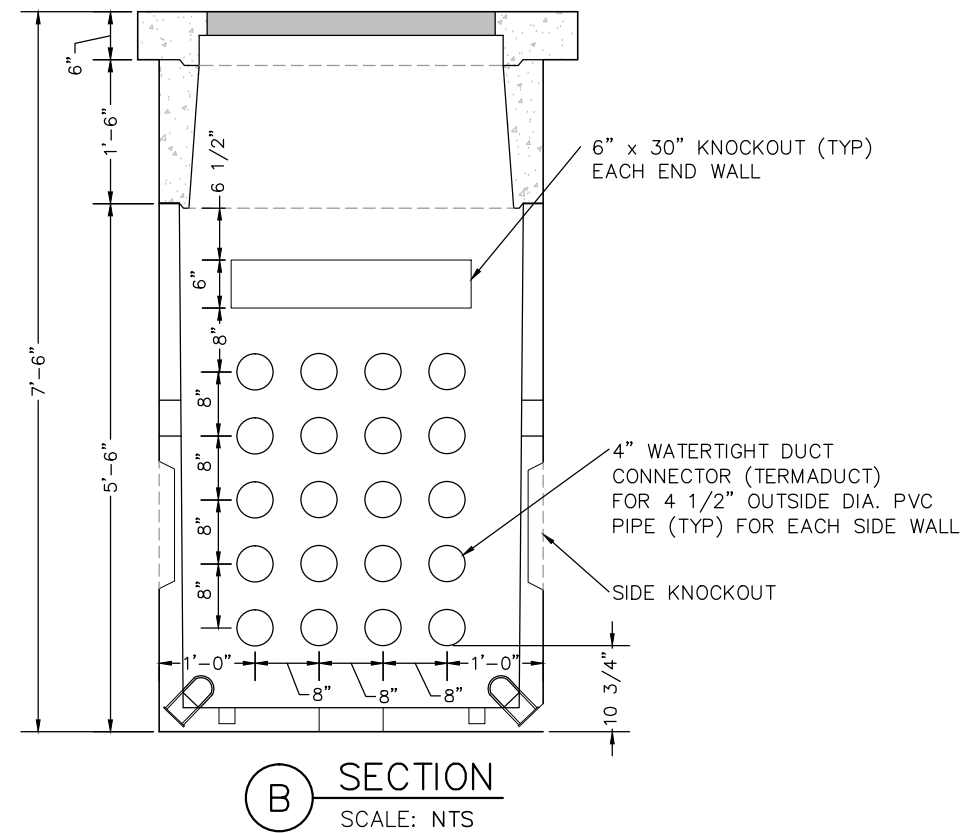
1 SC MANHOLE PLAN
SCALE: NTS



A SECTION
SCALE: NTS



2 SC MANHOLE TYPICAL INSTALLATION
SCALE: NTS



B SECTION
SCALE: NTS

- NOTE:
1. INSTALL EIGHT CABLE RACKS WITH SIXTEEN INSULATORS PER MANHOLE.
 2. USE RISER EXTENSIONS TO ACHIEVE FINAL ELEVATION.
 3. COVERS SHALL BE DESIGNED TO WITHSTAND AASHTO HL-93 WHEEL LOADINGS. SUITABLE FOR USE IN OFF STREET LOCATIONS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

60% SUBMISSION - 9/28/15



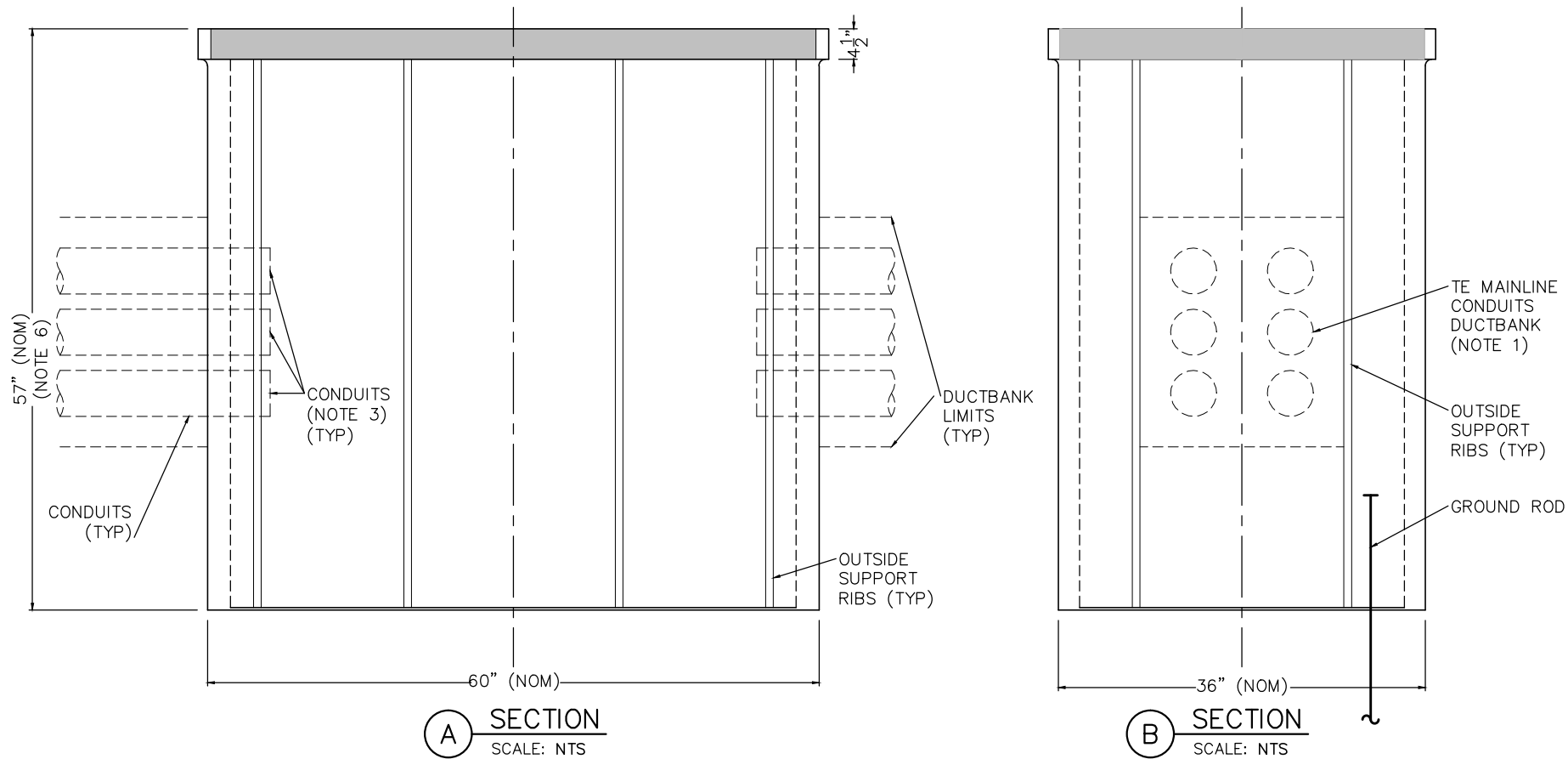
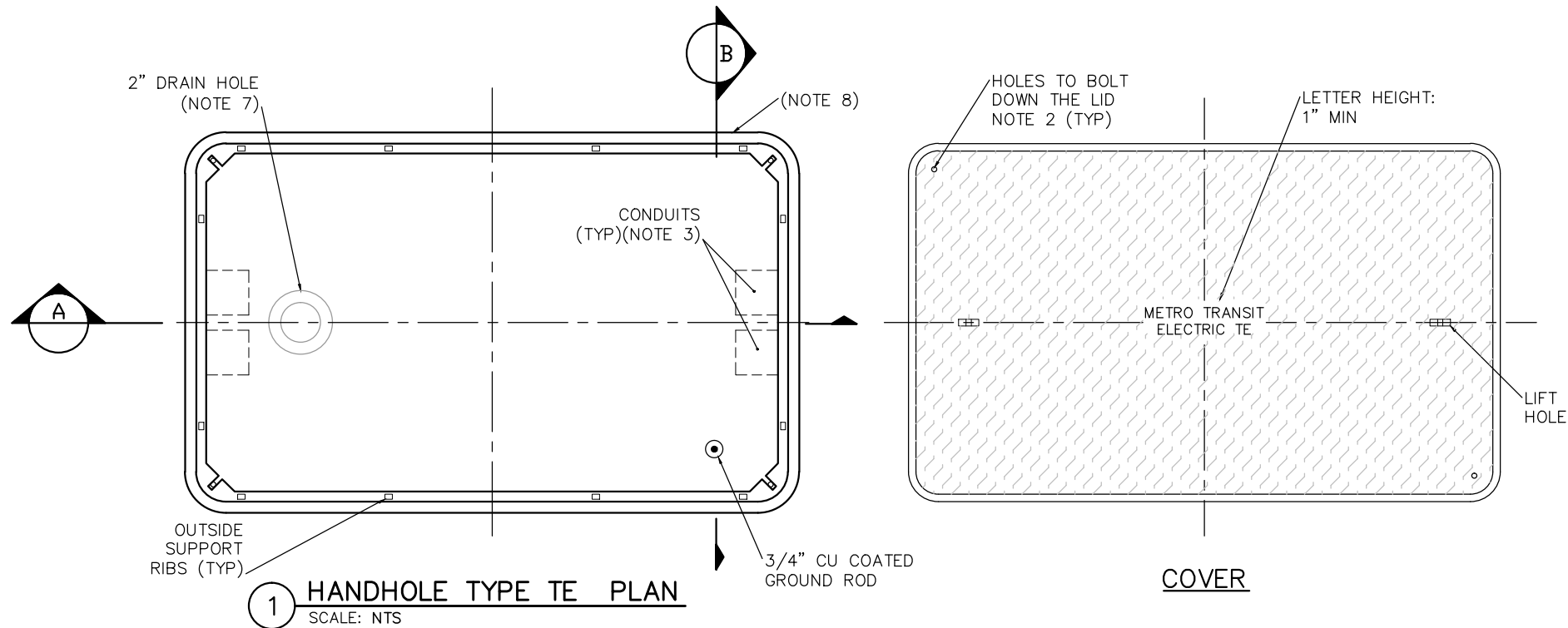
CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
DETAILS
SC MANHOLE

DISCIPLINE:
SYSTEMS

SHEET NAME:
E0-SYS-SWE-DTL-003

SHEET
161
OF
224

Sep. 17 2015 01:35 pm V:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\EO-SYS-SWE-DTL.dwg By: V-CameroAD



NOTES:

1. CONDUITS SHOWN ARE FOR EXAMPLE ONLY. ADDITIONAL CONDUITS MAY BE REQUIRED AS SHOWN ON THE PLAN SHEETS.
2. SEE SPECIFICATIONS REGARDING HOLD-DOWN BOLTS FOR COVERS.
3. CONDUITS SHALL EXTEND INTO THE HANDHOLE A MAXIMUM OF 1" FROM THE INSIDE WALL AND TERMINATE WITH BELL END FITTINGS.
4. INSTALL GROUND ROD CAUTIOUSLY TO AVOID DAMAGE TO POSSIBLE UTILITY INSTALLATIONS.
5. ADJUST CONDUIT ENTRY INTO THE HANDHOLE TO CREATE POSITIVE CONDUIT DRAINAGE AND TO ENTER CENTER OF HANDHOLE.
6. ADJUST DEPTH OF HANDHOLE TO ASSURE THAT COVER IS FLUSH WITH FINISHED GRADE. FOR LOCATIONS ON BRIDGES AND LAND BRIDGES TOP OF HANDHOLE IS TO BE AT THE SAME ELEVATION AS TOP OF RAIL.
7. LOCATE DRAIN HOLE ON LOWER END OF HANDHOLE AND PROVIDE STAINLESS STEEL SNAP-IN TYPE GRATE.
8. HANDHOLE MANUFACTURER IS SYNERTECH, MODEL NO. S3660C60FA OR APPROVED EQUAL.
9. SPECIAL HANDHOLE TYPES MAY BE REQUIRED AT SOME LOCATIONS.
10. HANDHOLE OFFSET DIMENSION IS VARIABLE. FINAL PLACEMENT OF HANDHOLE SHALL ASSURE THAT HANDHOLE TOP DOES NOT CONFLICT WITH TRACK CONSTRUCTION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

60% SUBMISSION - 9/28/15



SOUTHWEST
Green Line Light Extension



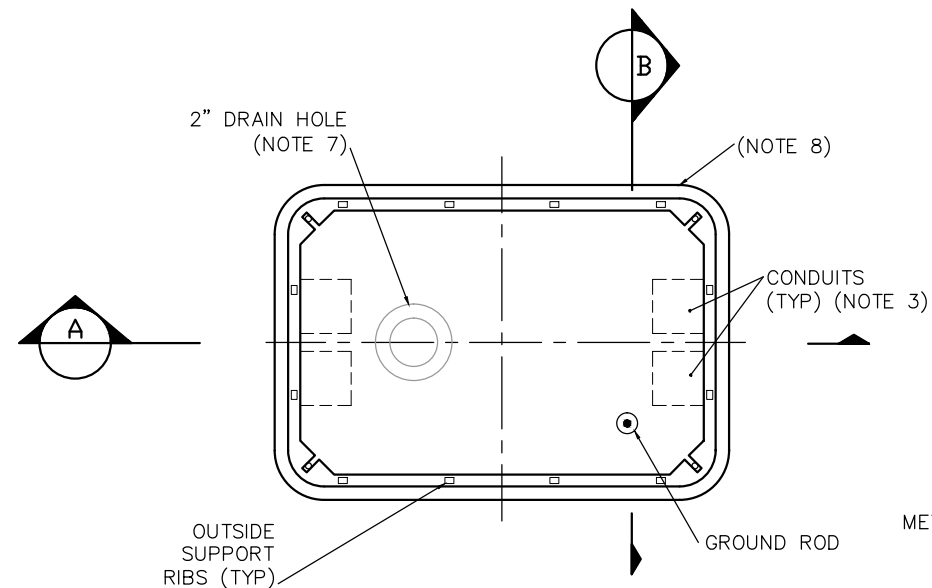
CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
DETAILS
TE HANDHOLE

DISCIPLINE: **SYSTEMS**

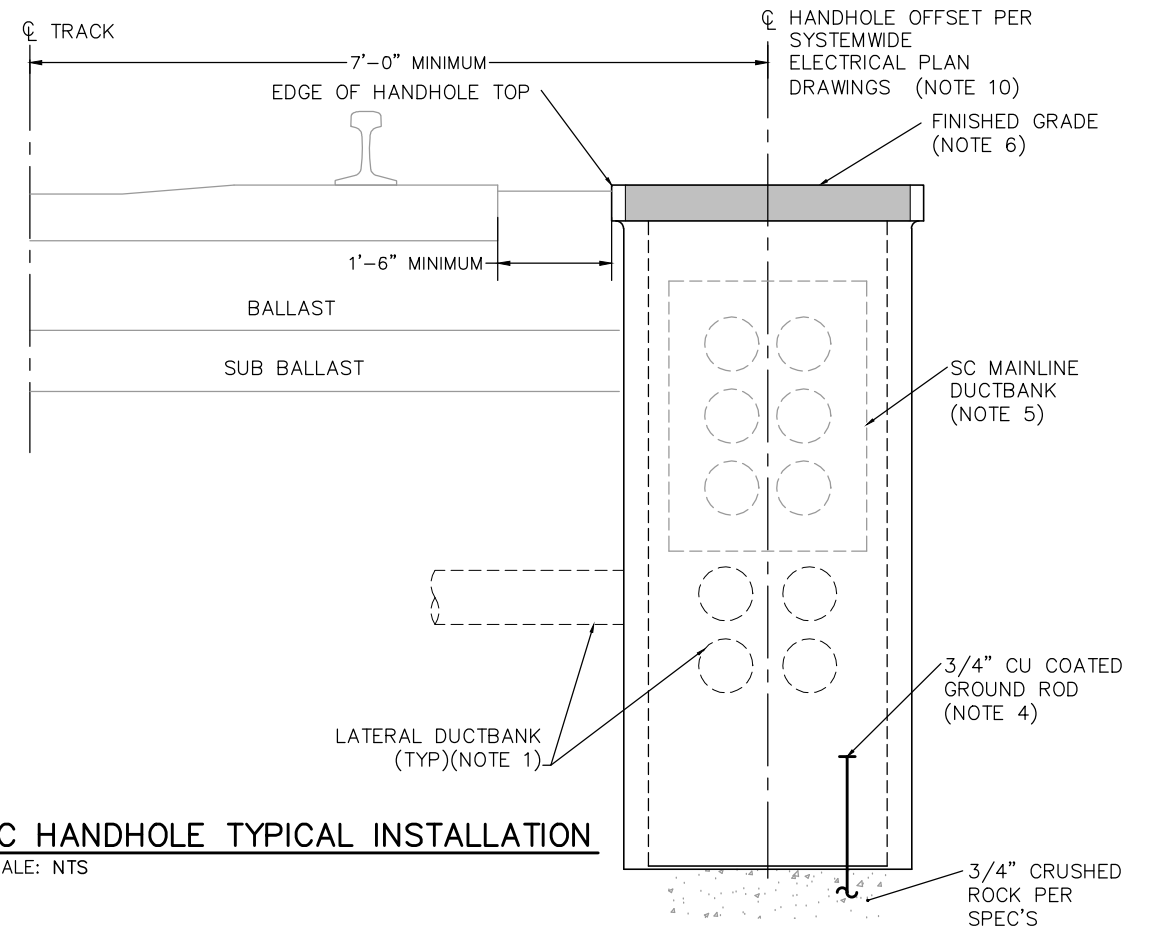
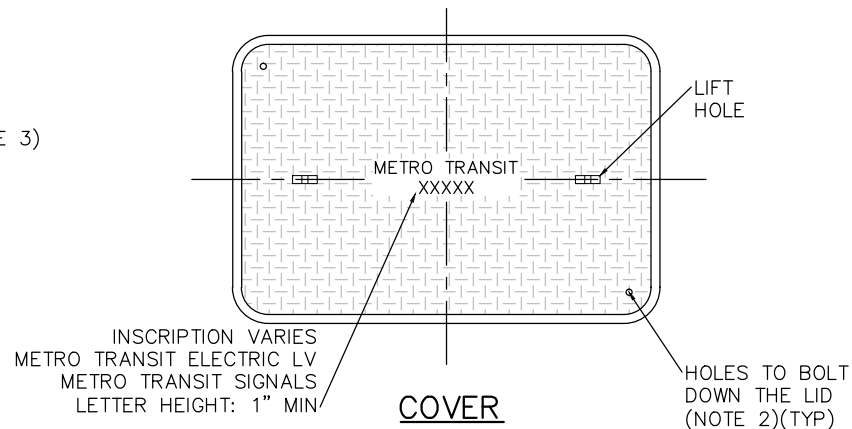
SHEET NAME: **E0-SYS-SWE-DTL-004**

SHEET
162
OF
224

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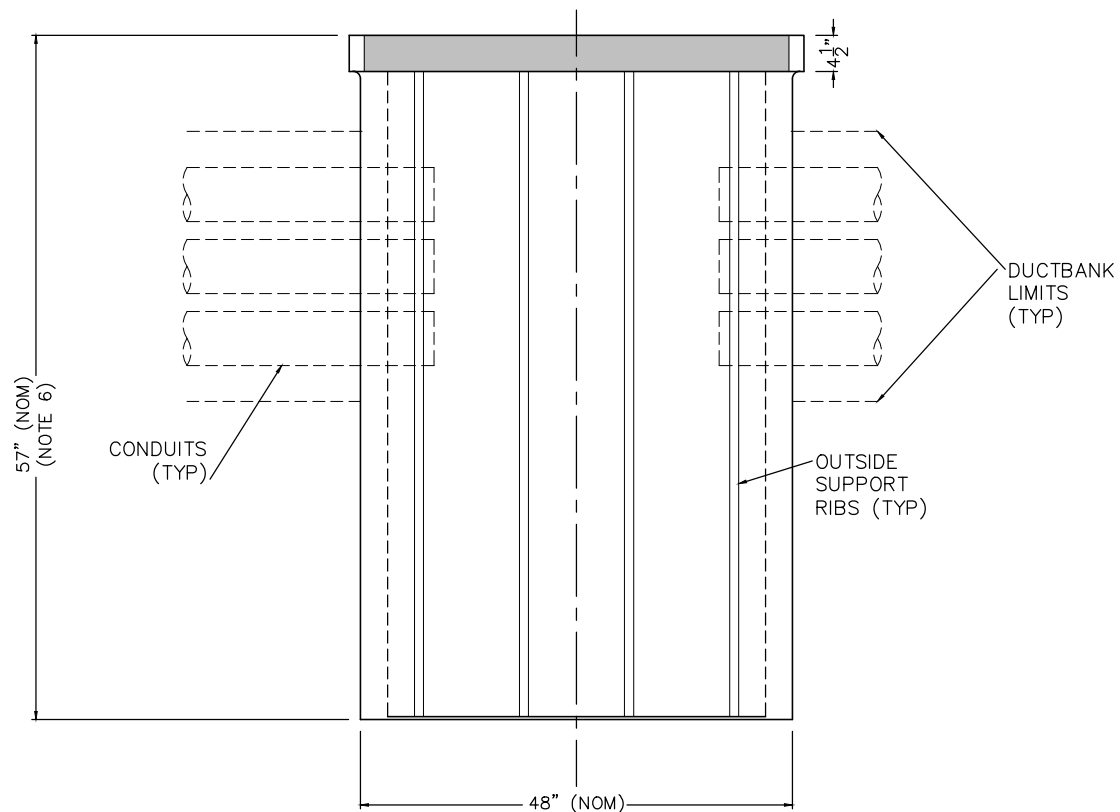
1 HANDHOLE TYPE SC PLAN
SCALE: NTS



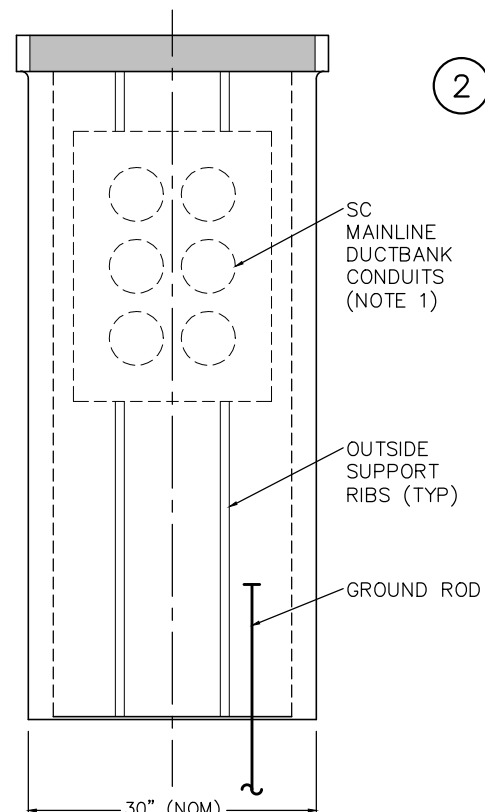
2 SC HANDHOLE TYPICAL INSTALLATION
SCALE: NTS

NOTES:

1. CONDUITS SHOWN ARE FOR EXAMPLE ONLY. ADDITIONAL CONDUITS MAY BE REQUIRED AS SHOWN ON THE PLAN SHEETS.
2. SEE SPECIFICATIONS REGARDING HOLD-DOWN BOLTS FOR COVERS.
3. CONDUITS SHALL EXTEND INTO THE HANDHOLE A MAXIMUM OF 1" FROM THE INSIDE WALL AND TERMINATE WITH BELL END FITTINGS.
4. INSTALL GROUND ROD CAUTIOUSLY TO AVOID DAMAGE TO POSSIBLE UTILITY INSTALLATIONS.
5. ADJUST CONDUIT ENTRY INTO THE HANDHOLE TO CREATE POSITIVE CONDUIT DRAINAGE AND TO ENTER CENTER OF HANDHOLE.
6. ADJUST DEPTH OF HANDHOLE TO ASSURE THAT COVER IS FLUSH WITH FINISHED GRADE. FOR LOCATIONS ON BRIDGES AND LAND BRIDGES TOP OF HANDHOLE IS TO BE AT THE SAME ELEVATION AS TOP OF RAIL.
7. LOCATE DRAIN HOLE ON LOWER END OF HANDHOLE AND PROVIDE STAINLESS STEEL SNAP-IN TYPE GRATE.
8. HANDHOLE MANUFACTURER IS SYNERTECH, MODEL NO. S3048C60FA OR APPROVED EQUAL.
9. SPECIAL HANDHOLE TYPES MAY BE REQUIRED FOR SOME LAYOUTS.
10. HANDHOLE OFFSET DIMENSION IS VARIABLE. FINAL PLACEMENT OF HANDHOLE SHALL ASSURE THAT HANDHOLE TOP DOES NOT CONFLICT WITH TRACK CONSTRUCTION.



A SECTION
SCALE: NTS



B SECTION
SCALE: NTS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

60% SUBMISSION - 9/28/15



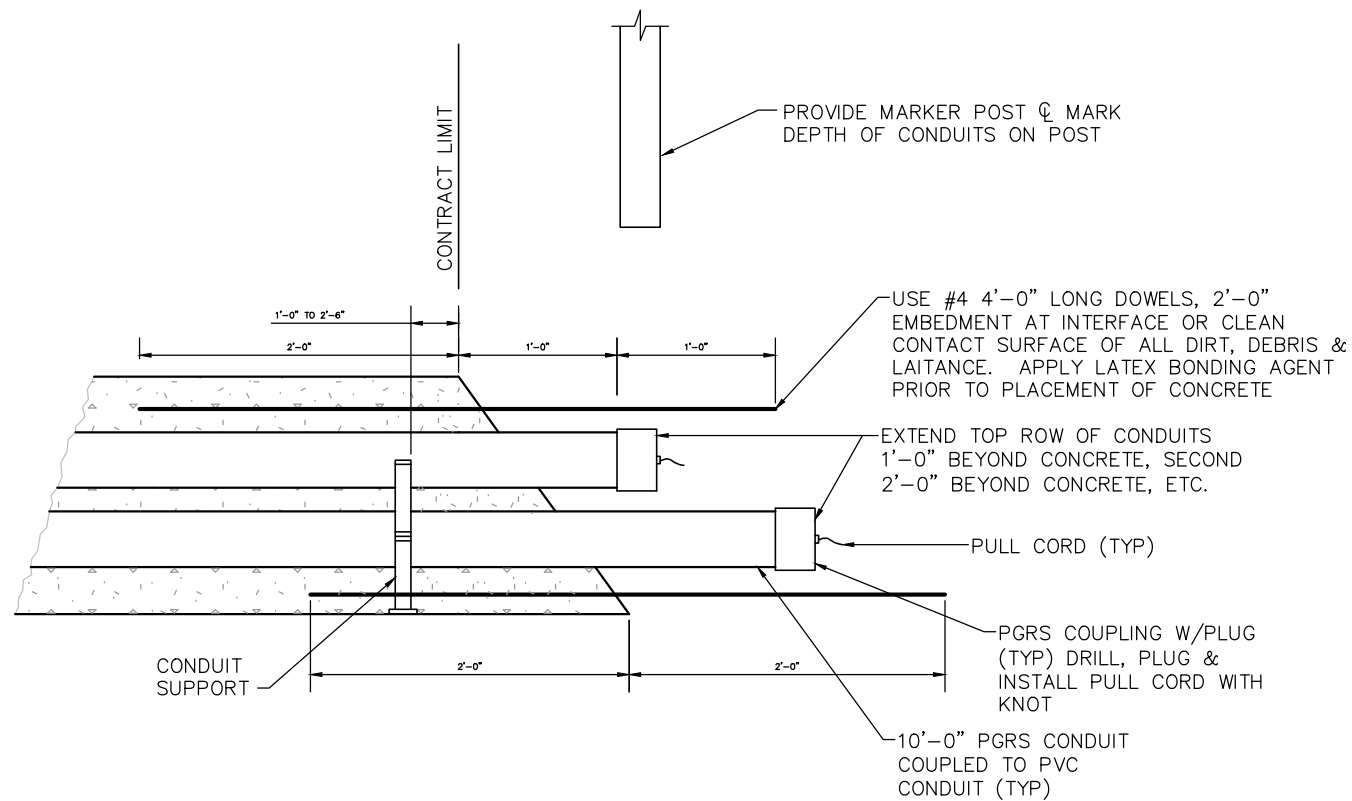
CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
DETAILS
SC HANDHOLE

DISCIPLINE:
SYSTEMS

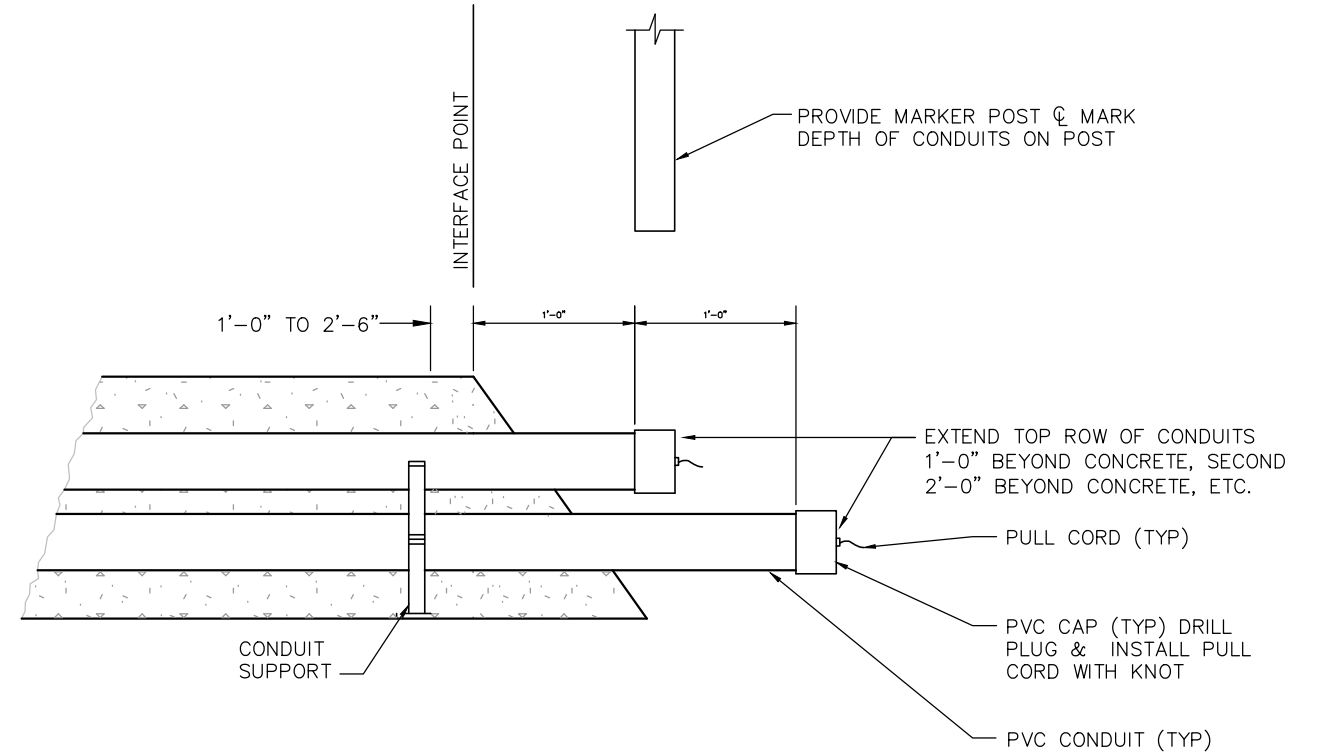
SHEET NAME:
E0-SYS-SWE-DTL-005

SHEET
163
OF
224

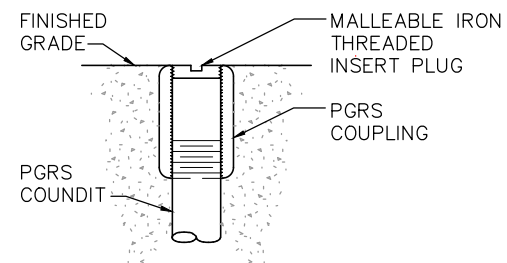
Sep. 17 2015 01:35 pm V:\3400_ADC\CAD\CAD\SYSTEMS\PLAN SHEETS\SYSTEM WIDE ELECTRICAL\E0-SYS-SWE-DTL.dwg By: V-CameroAD



1 TYPICAL DUCTBANK CONDUIT STUB-OUT AT CONTRACT LIMIT
SCALE: NTS



2 CONDUIT STUB-OUT AT INTERFACE
SCALE: NTS



3 FLUSH CONDUIT STUB-UP
SCALE: NTS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

60% SUBMISSION - 9/28/15

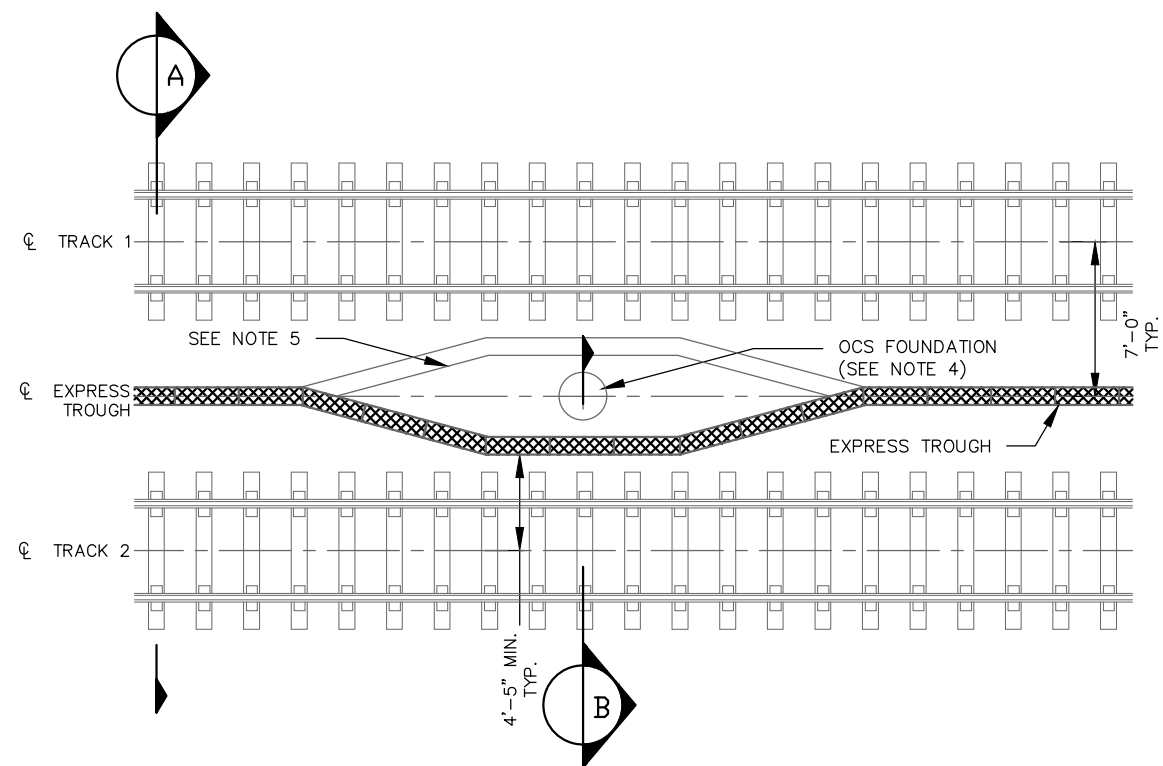


**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
DETAILS
CONDUIT STUB-OUT AND STUB-UP**

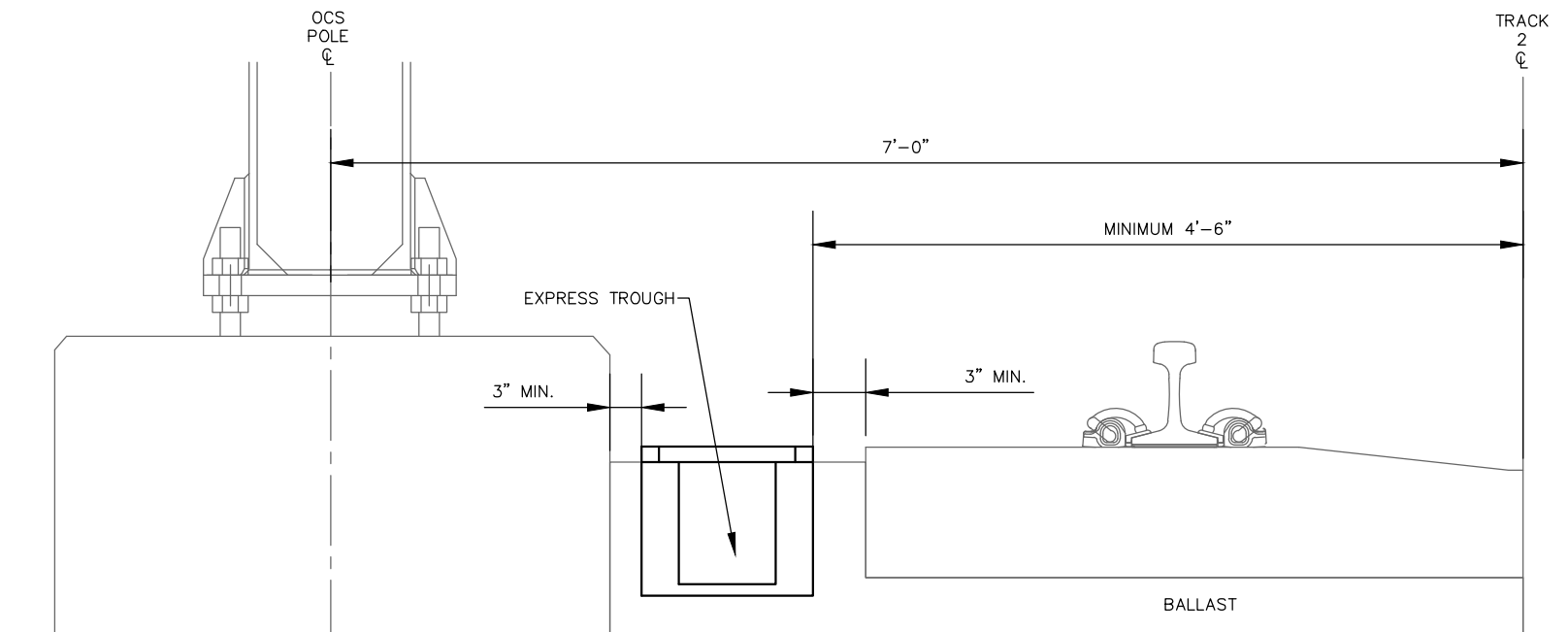
DISCIPLINE:
SYSTEMS

SHEET NAME:
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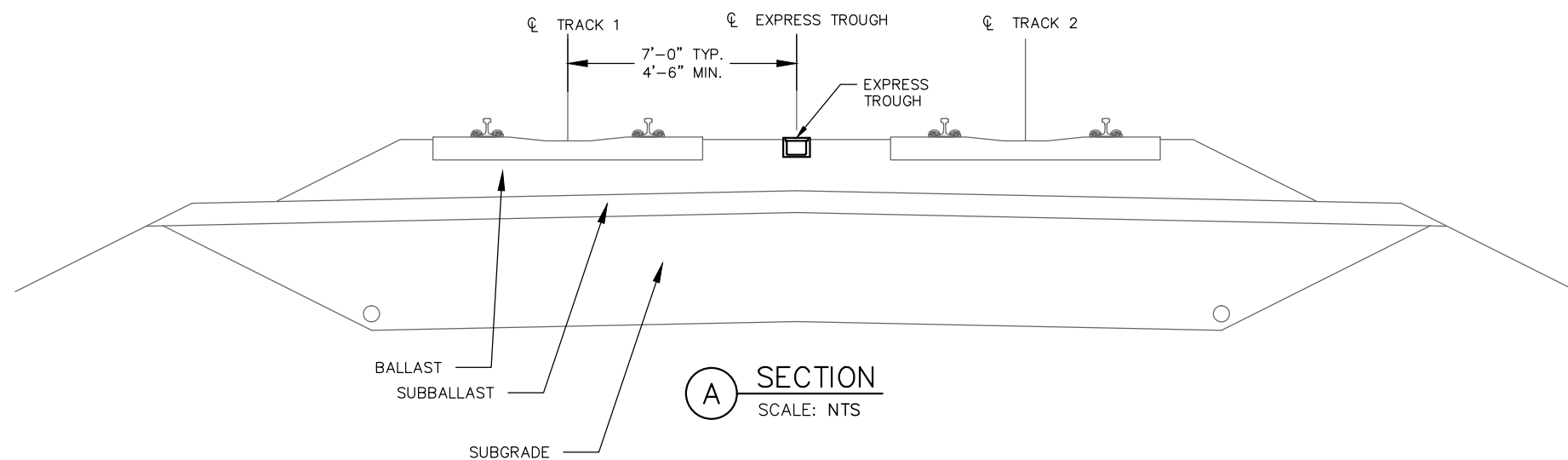
**SHEET
164
OF
224**



1 TYPICAL EXPRESS TROUGH LAYOUT



(B) TYPICAL EXPRESS TROUGH LAYOUT INSTALLATION



A SECTION
SCALE: NTS

- NOTES:
1. THE CONTRACTOR SHALL SECURE THE TROUGH IN-PLACE, SO THERE IS NO MOVEMENT WHILE THE BALLAST IS BEING LAYED AROUND THE TROUGH.
 2. THE EXPRESS TROUGH SHALL BE INSTALLED 7 FEET OFF THE CENTERLINE OF THE TROUGH UNLESS NOTED OTHERWISE. AT OCS AND SIGNAL FOUNDATIONS OR OTHER STRUCTURE, THE CONTRACTOR SHALL OFFSET THE TROUGH SECTIONS IN EQUAL INCREMENTS TOWARD THE TRACK SO THAT THE TROUGH WILL PASS THE OCS FOUNDATION AT 4'-5" FROM THE CENTERLINE OF THE TRACK TO THE CLOSEST EDGE OF THE TROUGH. (SEE TYPICAL EXPRESS TROUGH LAYOUT INSTALLATION DETAIL 1).
 3. THE CONTRACTOR SHALL INSTALL THE TROUGH TO INTERSECT THE MANHOLE AT A 90° ANGLE.
 4. THE DISTANCE BETWEEN THE EDGE OF THE TIE AND THE OCS FOUNDATION WILL VARY DUE TO THE SIZING AND OFFSET OF THE FOUNDATION FOR THE OCS POLES.
 5. BASED ON VERIFIED FIELD CONDITIONS, THE CONTRACTOR SHALL DETERMINE ON WHICH SIDE OF THE OCS FOUNDATION TO INSTALL EXPRESS TROUGH.

[illegible]**AECOM**

60% SUBMISSION - 9/28/15



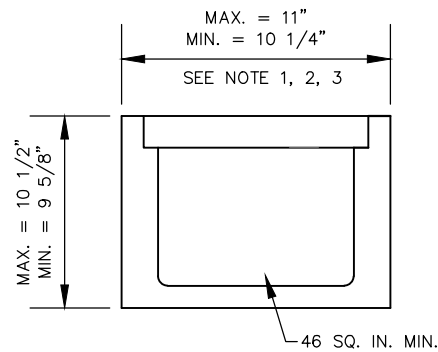
**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
DETAILS
EXPRESS TROUGH INSTALLATION SHEET 1**

DISCIPLINE: **SYSTEMS**

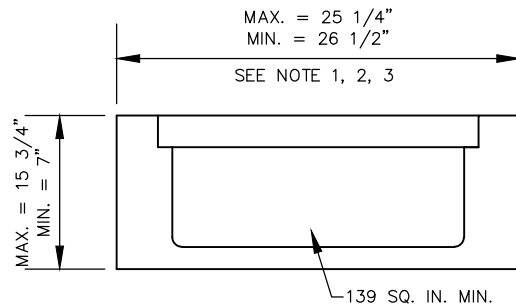
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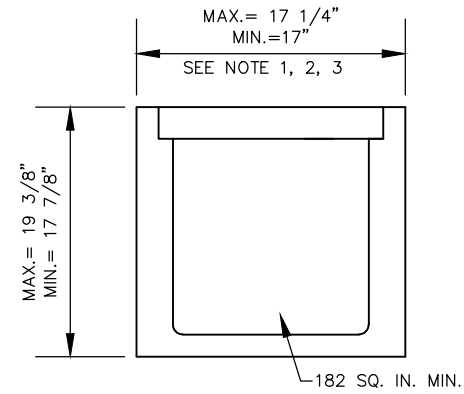
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1 TYPE I EXPRESS TROUGH
SCALE: NTS



2 TYPE II EXPRESS TROUGH
SCALE: NTS



3 TYPE III EXPRESS TROUGH
SCALE: NTS

- NOTES:
1. THE CONTRACTOR SHALL SECURE THE TROUGH IN-PLACE, SO THERE IS NO MOVEMENT WHILE THE BALLAST IS BEING LAYED AROUND THE TROUGH.
 2. THE EXPRESS TROUGH SHALL BE INSTALLED 7 FEET OFF THE CENTERLINE OF THE TROUGH UNLESS NOTED OTHERWISE. AT OCS AND SIGNAL FOUNDATIONS OR OTHER STRUCTURE, THE CONTRACTOR SHALL OFFSET THE TROUGH SECTIONS IN EQUAL INCREMENTS TOWARD THE TRACK SO THAT THE TROUGH WILL PASS THE OCS FOUNDATION AT 4'-5" FROM THE CENTERLINE OF THE TRACK TO THE CLOSEST EDGE OF THE TROUGH. (SEE TYPICAL EXPRESS TROUGH LAYOUT INSTALLATION DETAIL 1).
 3. THE CONTRACTOR SHALL INSTALL THE TROUGH TO INTERSECT THE MANHOLE AT A 90° ANGLE.
 4. THE DISTANCE BETWEEN THE EDGE OF THE TIE AND THE OCS FOUNDATION WILL VARY DUE TO THE SIZING AND OFFSET OF THE FOUNDATION FOR THE OCS POLES.
 5. BASED ON VERIFIED FIELD CONDITIONS, THE CONTRACTOR SHALL DETERMINE ON WHICH SIDE OF THE OCS FOUNDATION TO INSTALL EXPRESS TROUGH.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

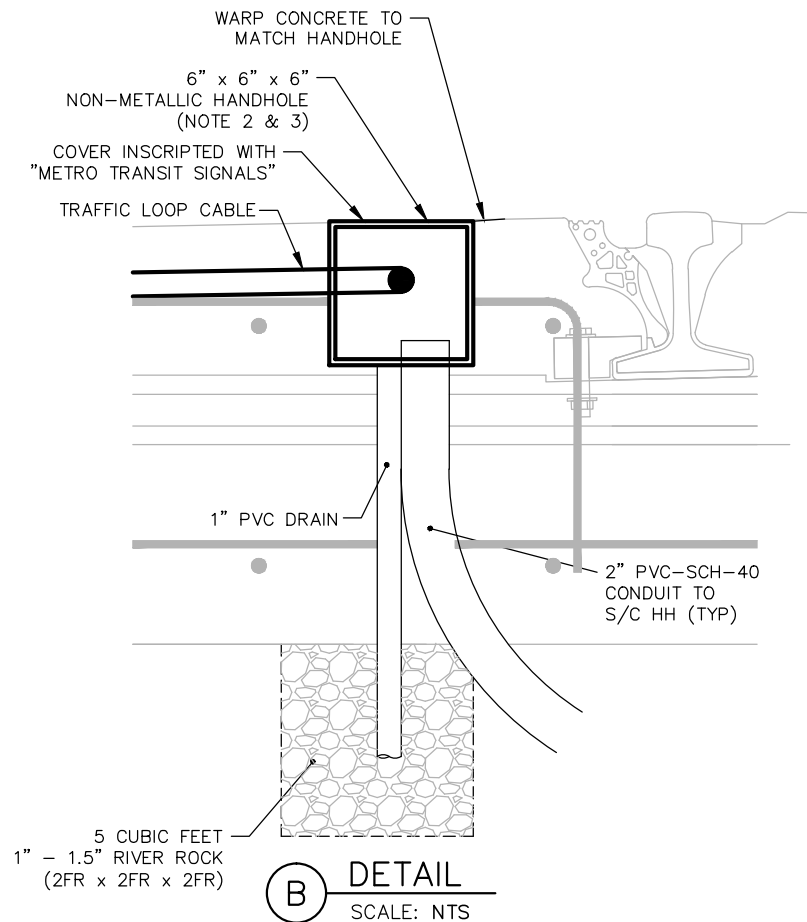


60% SUBMISSION - 9/28/15

CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
DETAILS
EXPRESS TROUGH INSTALLATION SHEET 2

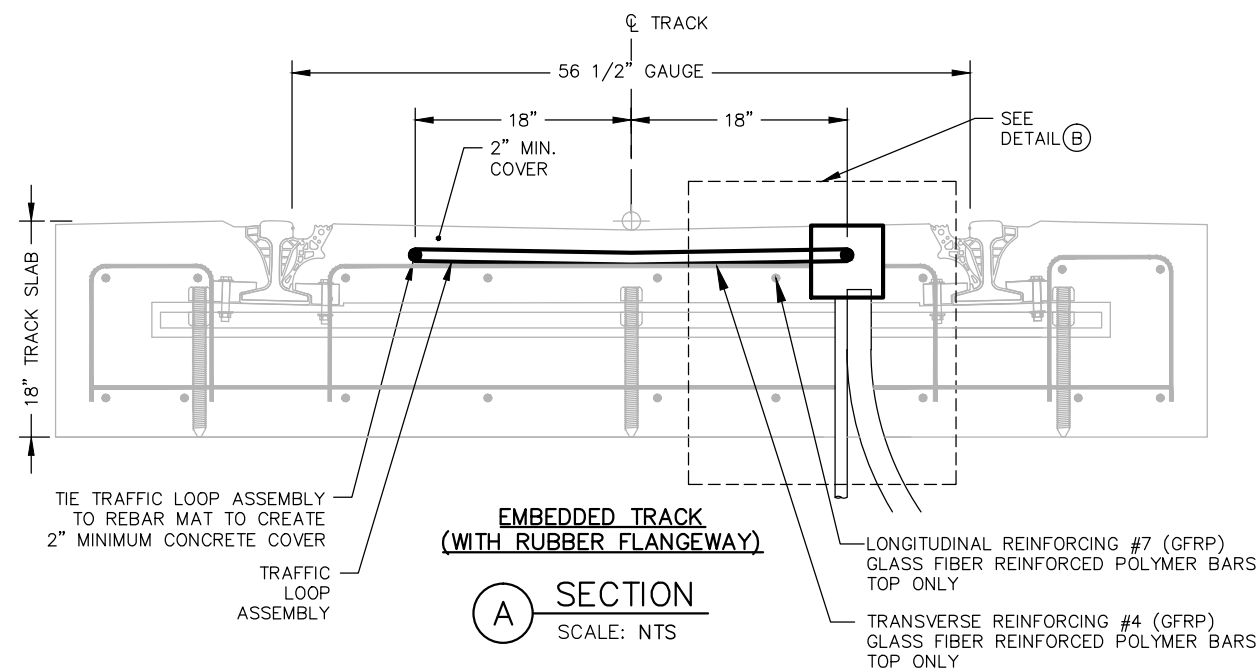
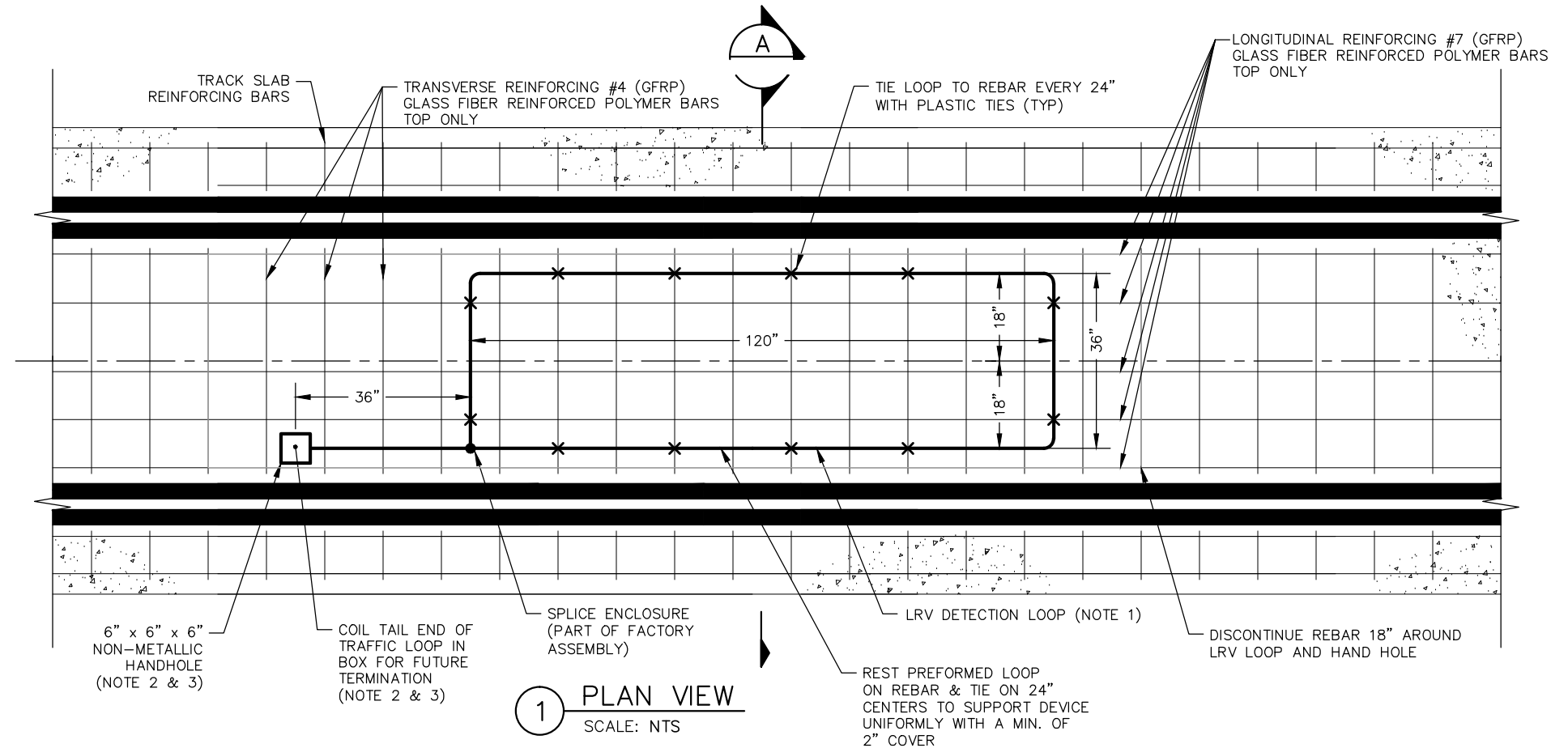
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NOTES:

1. LRV DETECTION LOOP IS MADE BY RENO TRAFFIC CORP. THE DEVICE IS A FACTORY MADE LOOP #RR-418. NO LIKE, EQUIVALENT OR "OR-EQUAL" ITEM IS PERMITTED
2. PLACE HANDHOLE ON THE SIDE OF TRACK SLAB FOR COORDINATION WITH THE NEAREST SWE HH LOCATION
3. NO GROUNDING OR TERMINALS REQUIRED



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

**PARSONS
BRINCKERHOFF**

**METROPOLITAN
TRANSIT AUTHORITY**

**SOUTHWEST
Green Line LRT Extension**

**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
LRV TRAFFIC DETECTION LOOP
EMBEDDED TRACK INSTALLATION**

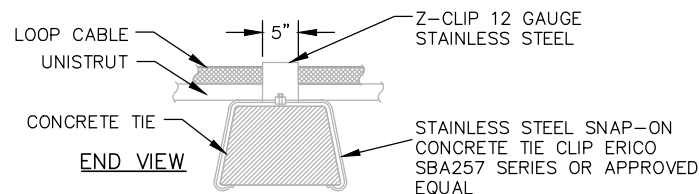
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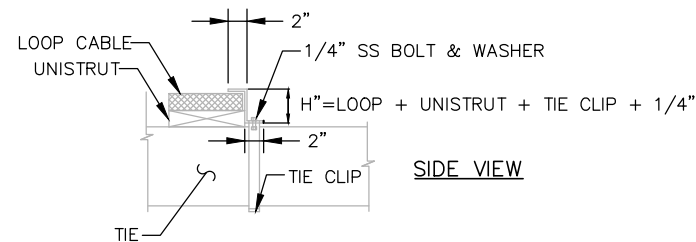
**SHEET
167
OF
224**

60% SUBMISSION - 09/28/2015

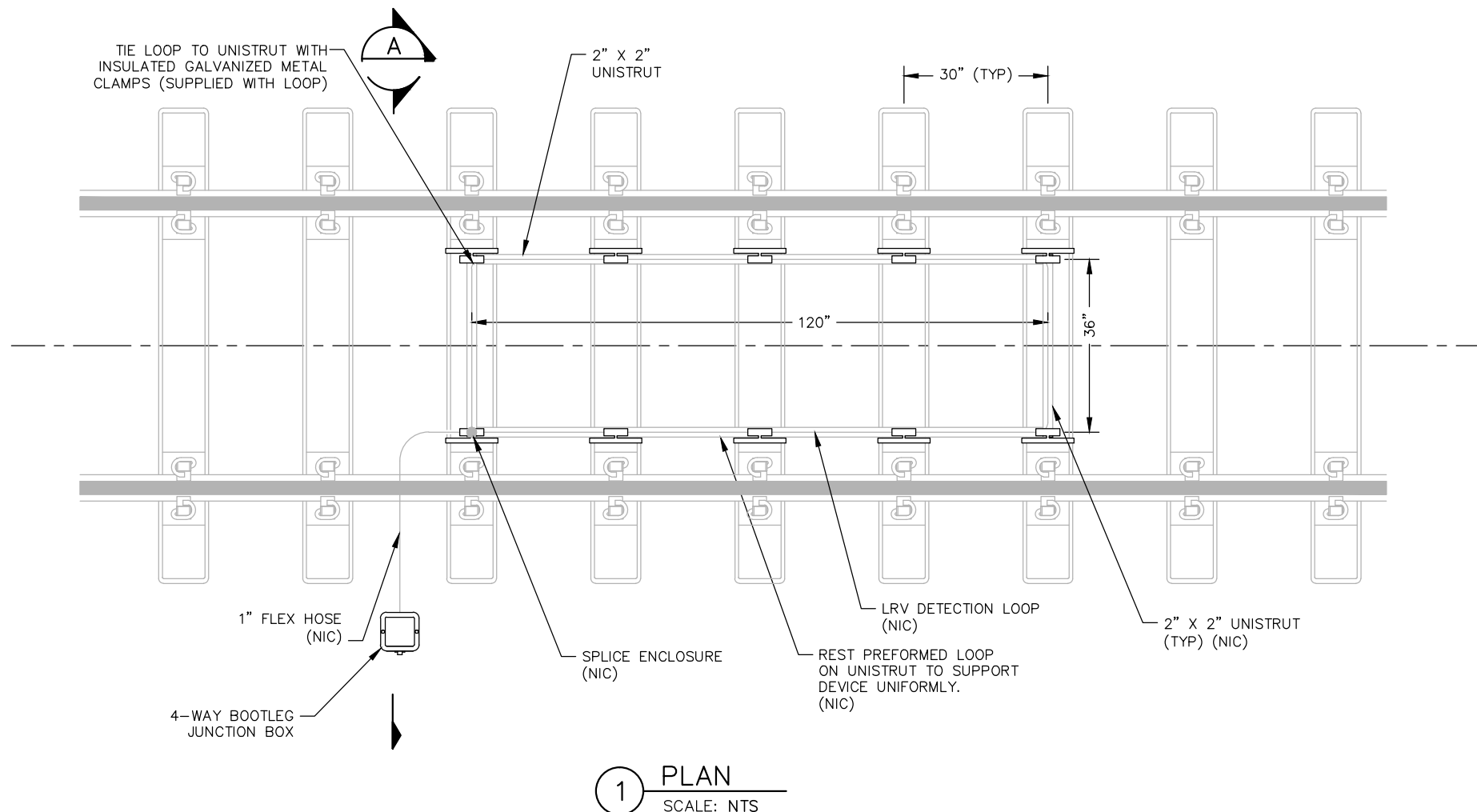
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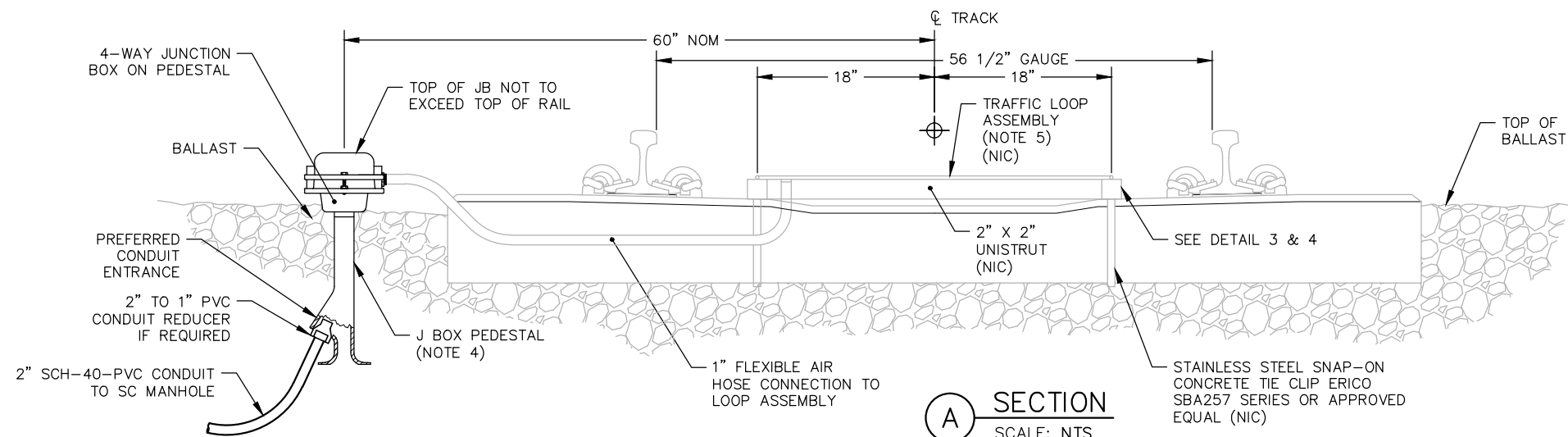
2 LOOP SUPPORT AT TIE (NIC)
SCALE: NTS



3 LOOP SUPPORT AT TIE (NIC)
SCALE: NTS



1 PLAN
SCALE: NTS



A SECTION
SCALE: NTS

NOTES:

1. FOR BALLASTED TRACK, ALL TRAFFIC LOOP DEVICES ARE SHOWN FOR REFERENCE ONLY. ONLY CONDUIT AND JUNCTION BOX ARE INCLUDED IN THIS CONTRACT.
2. PLACE JUNCTION BOX ON THE FIELD SIDE OF TRACK FOR COORDINATION WITH THE NEAREST SWE HH LOCATION
3. JUNCTION BOX IS LOCATED AS A PULL BOX AND A LOCATION FOR LOOP SPLICING
4. JUNCTION BOX MUST BE SUBMITTED FOR APPROVAL AND BE APPROVED EQUAL
5. LRV DETECTION LOOP IS MADE BY RENO TRAFFIC CORP. THE DEVICE IS A FACTORY MADE LOOP #RR-418. NO LIKE. EQUIVALENT OR 'OR-EQUAL' ITEM IS PERMITTED
6. USE UNISTRUT MADE FROM A DURABLE, UV RESISTANT, NON-CONDUCTIVE MATERIAL. CONTRACTOR SHALL SUBMIT THE MATERIAL TO THE CAR FOR APPROVAL

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

**PARSONS
BRINCKERHOFF**

**METROPOLITAN
TRANSIT**

SOUTHWEST
Green Line LRT Extension

60% SUBMISSION - 09/28/2015

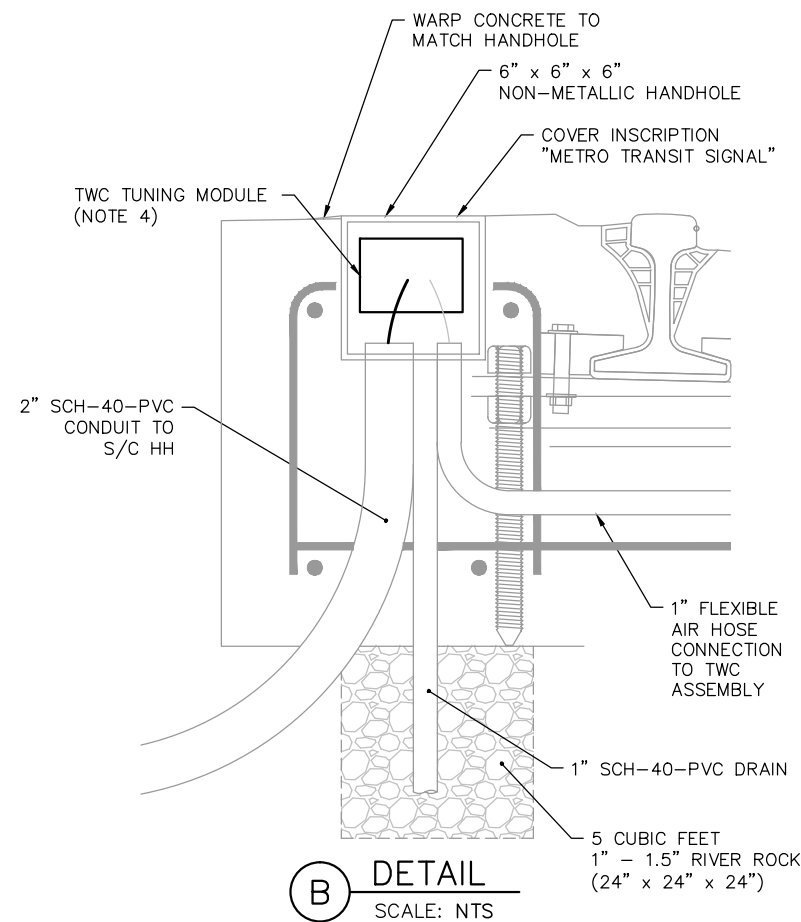
**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
LRV TRAFFIC DETECTION LOOP
BALLASTED TRACK INSTALLATION**

DISCIPLINE: **SYSTEMS**

SHEET NAME: **E0-SYS-SWE-DTL-010**

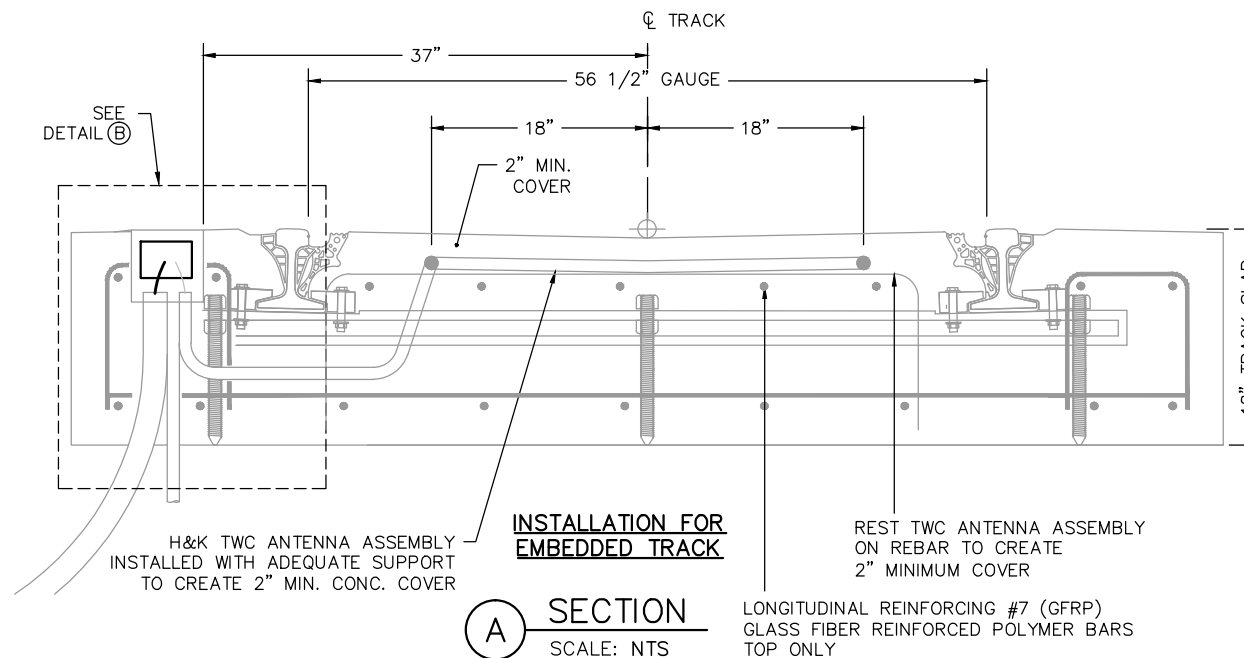
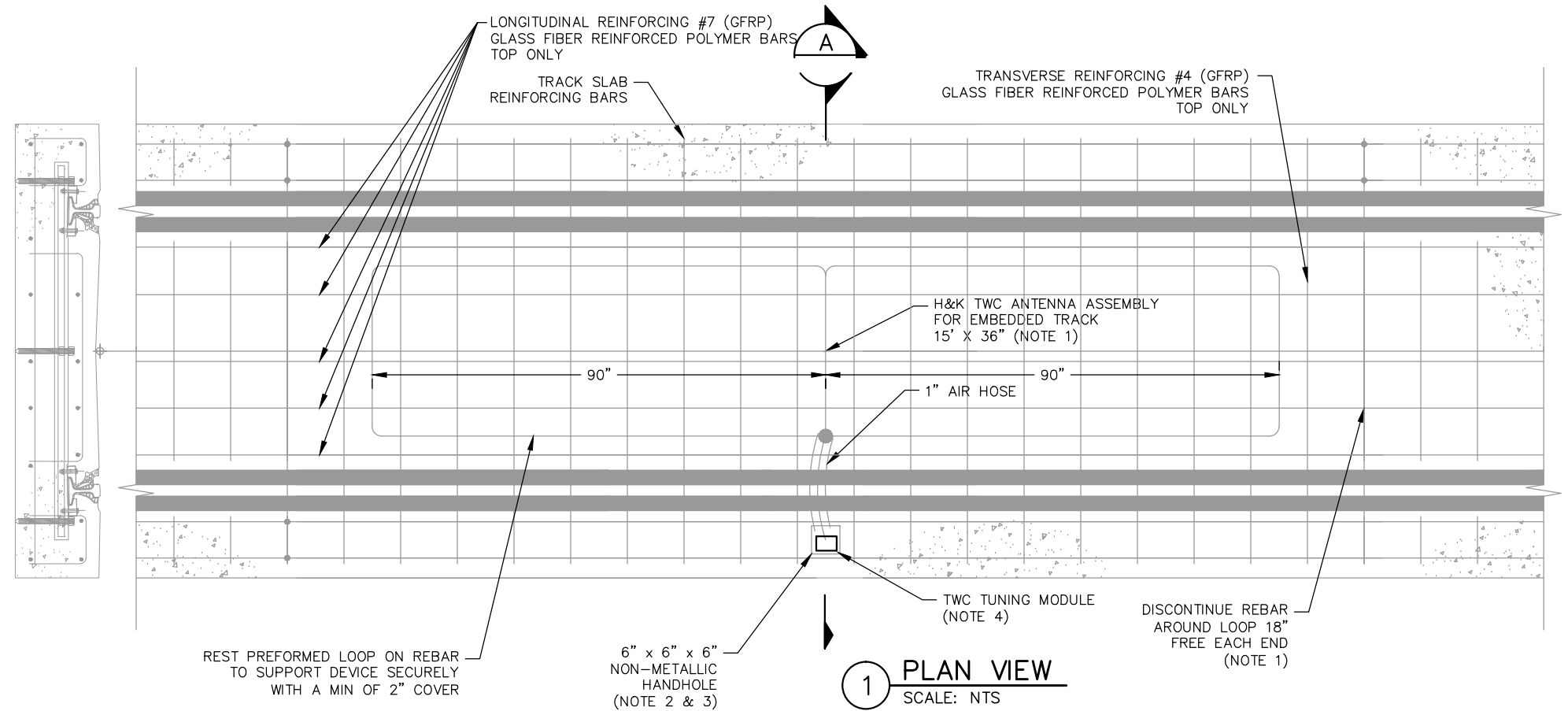
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224**

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NOTES:

1. FACTORY MADE LOOP IS AN H & K P/N 4.930.013. THIS DEVICE MAY REQUIRE ADDITIONAL SUPPORT TO HOLD SHAPE AND POSITION DURING CONCRETE INSTALLATION
2. PLACE HANDHOLE PULL BOX ON THE FIELD SIDE OF TRACK SLAB FOR COORDINATION WITH THE NEAREST SWE HH LOCATION
3. HANDHOLE IS LOCATED AS A PULL BOX AND A LOCATION FOR TWC TUNING MODULE. NO GROUNDING OR TERMINALS ARE REQUIRED



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

**PARSONS
BRINCKERHOFF**

**METROPOLITAN
TRANSIT**

SOUTHWEST
Green Line LRT Extension

60% SUBMISSION - 09/28/2015

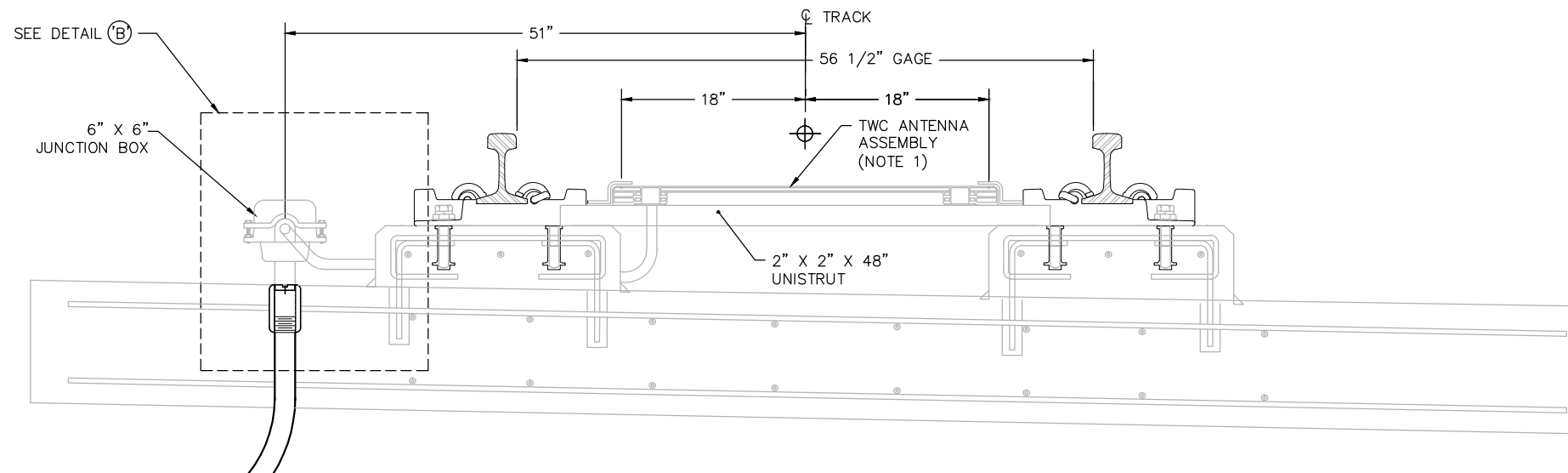
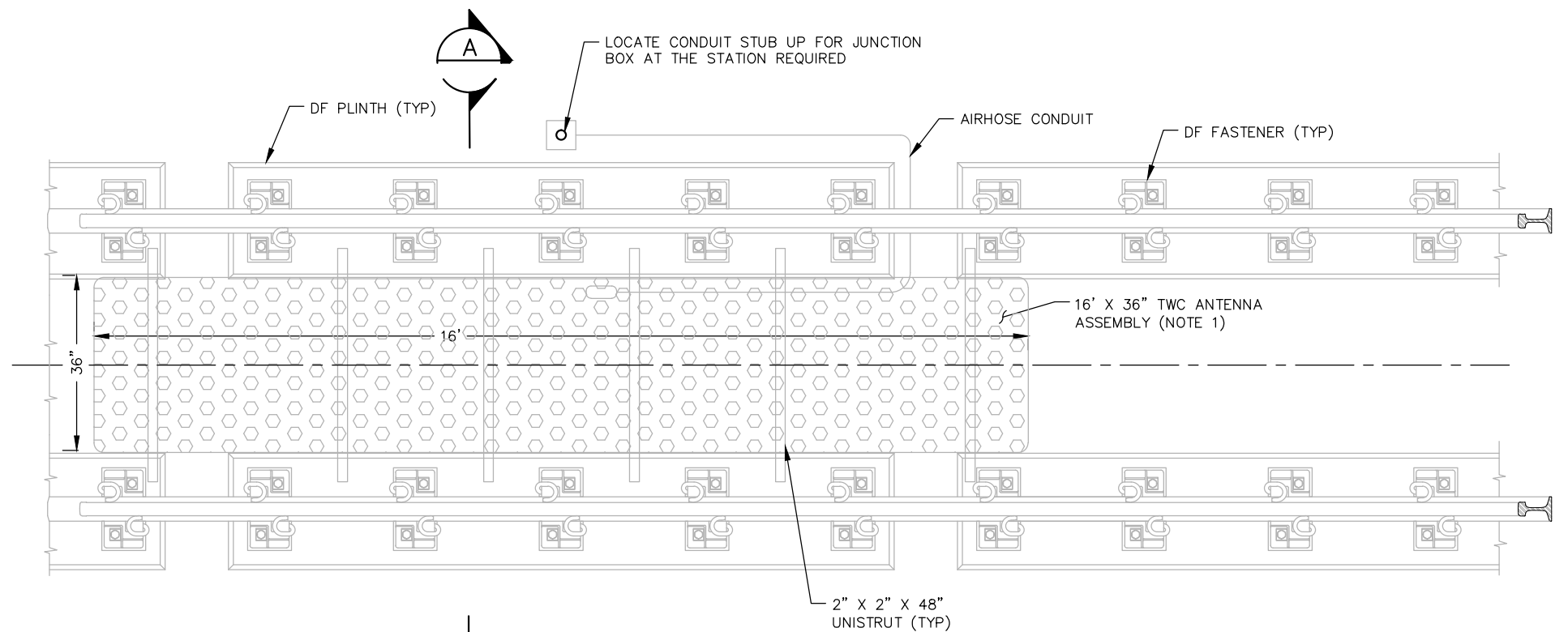
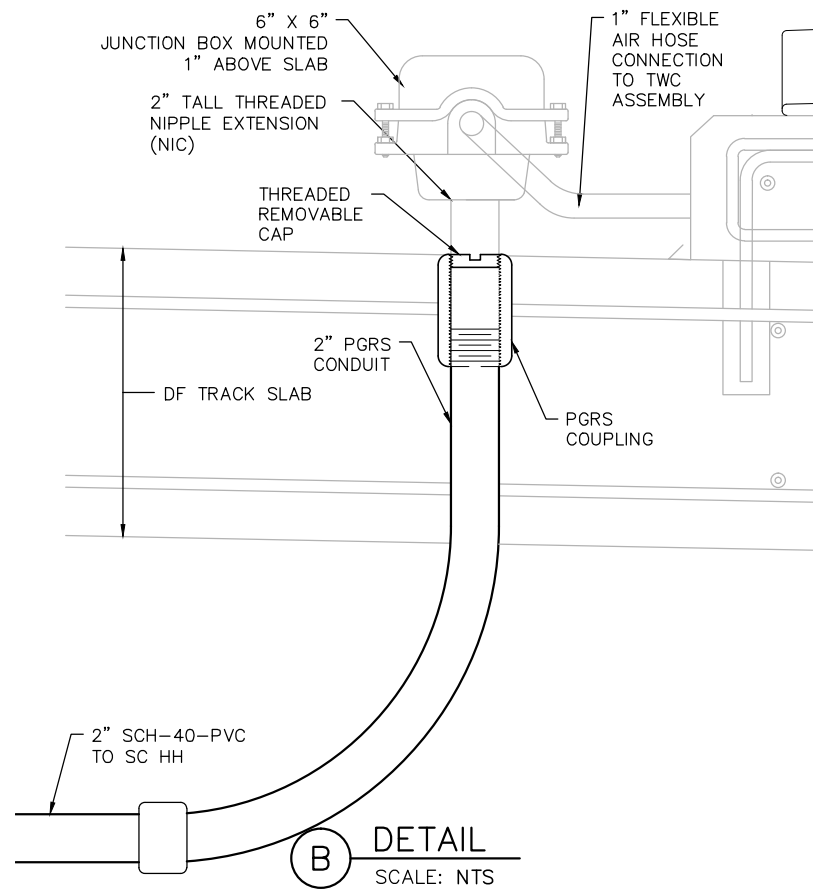
**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
TWC ANTENNA
EMBEDDED TRACK INSTALLATION**

DISCIPLINE:
SYSTEMS

SHEET NAME:
E0-SYS-SWE-DTL-011

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NOTES:

1. FOR DIRECT FIXATION TRACK, TWC DEVICES ARE SHOWN FOR REFERENCE ONLY. ONLY TWC CONDUIT STUB UP IS INCLUDED IN THIS CONTRACT.
2. PLACE TWC STUB-UP ON THE FIELD SIDE OF TRACK FOR COORDINATION WITH THE NEAREST SWE HH LOCATION
3. JUNCTION BOX IS LOCATED AS A PULL BOX AND A LOCATION FOR TWC TUNING MODULE. NO GROUNDING OR TERMINALS ARE REQUIRED

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
TWC ANTENNA
DIRECT FIXATION TRACK INSTALLATION**

DISCIPLINE:

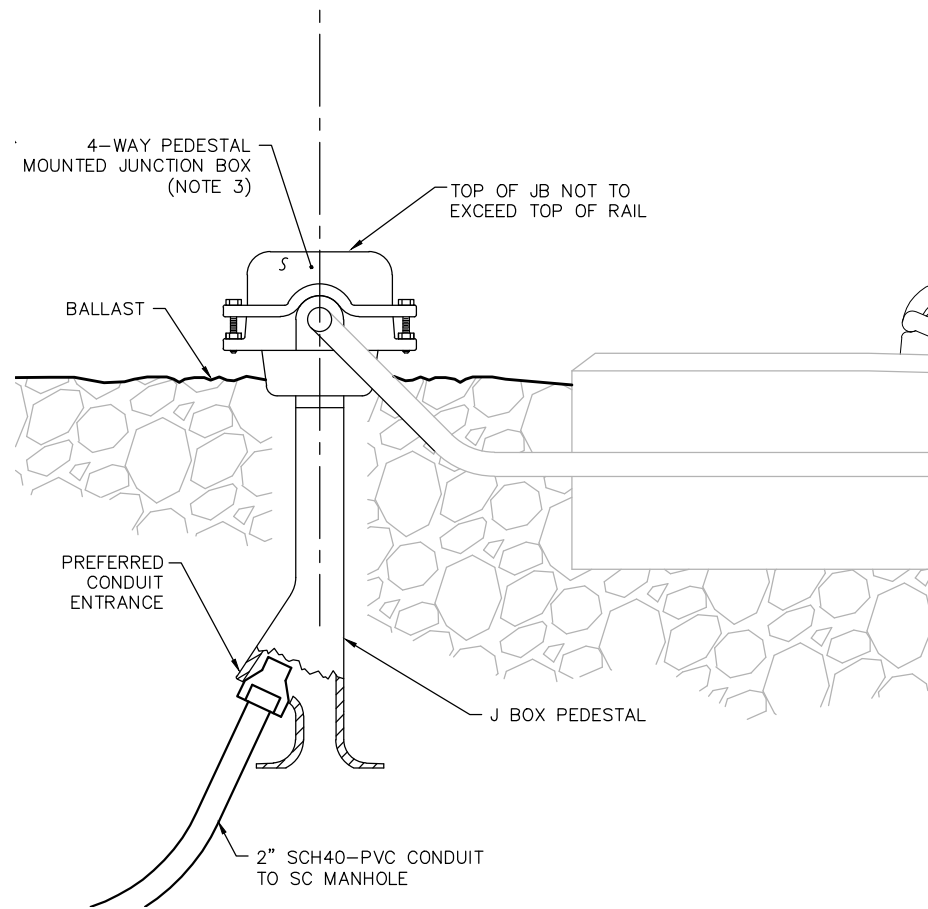
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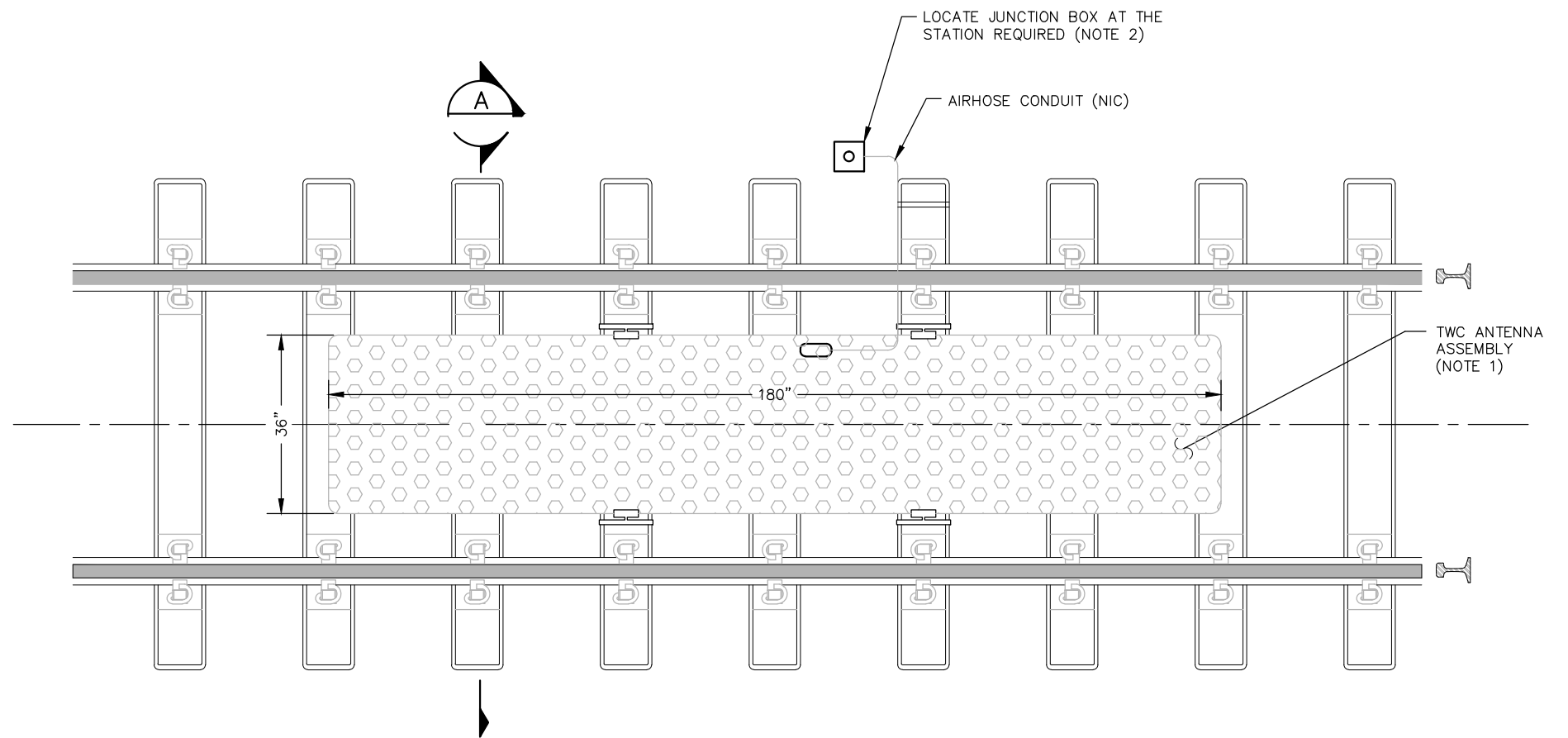
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OF
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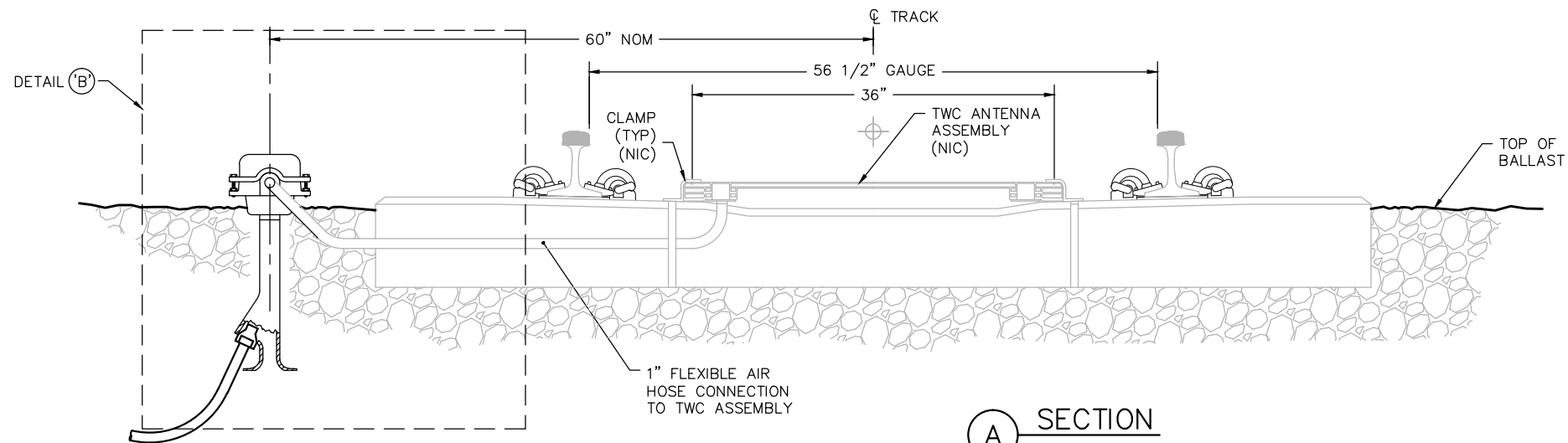
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B DETAIL
SCALE: NTS



1 PLAN
SCALE: NTS



A SECTION
SCALE: NTS

NOTES:

1. FOR BALLASTED TRACK, ALL TWC DEVICES ARE SHOWN FOR REFERENCE ONLY. ONLY CONDUIT & JUNCTION BOX ARE INCLUDED IN THIS CONTRACT
2. PLACE JUNCTION BOX ON THE FIELD SIDE OF TRACK FOR COORDINATION WITH THE NEAREST SC HH LOCATION
3. JUNCTION BOX IS LOCATED AS A PULL BOX AND A LOCATION FOR TWC TUNING MODULE. NO GROUNDING OR TERMINALS ARE REQUIRED

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

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**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
TWC ANTENNA
BALLASTED TRACK INSTALLATION**

DISCIPLINE:

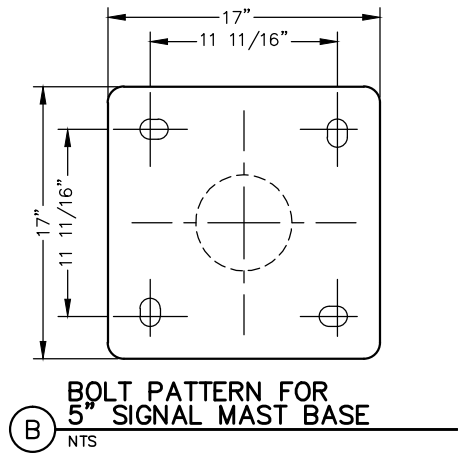
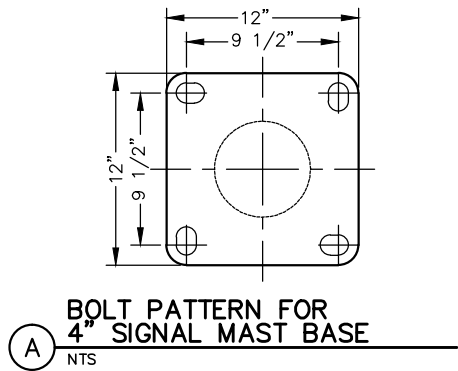
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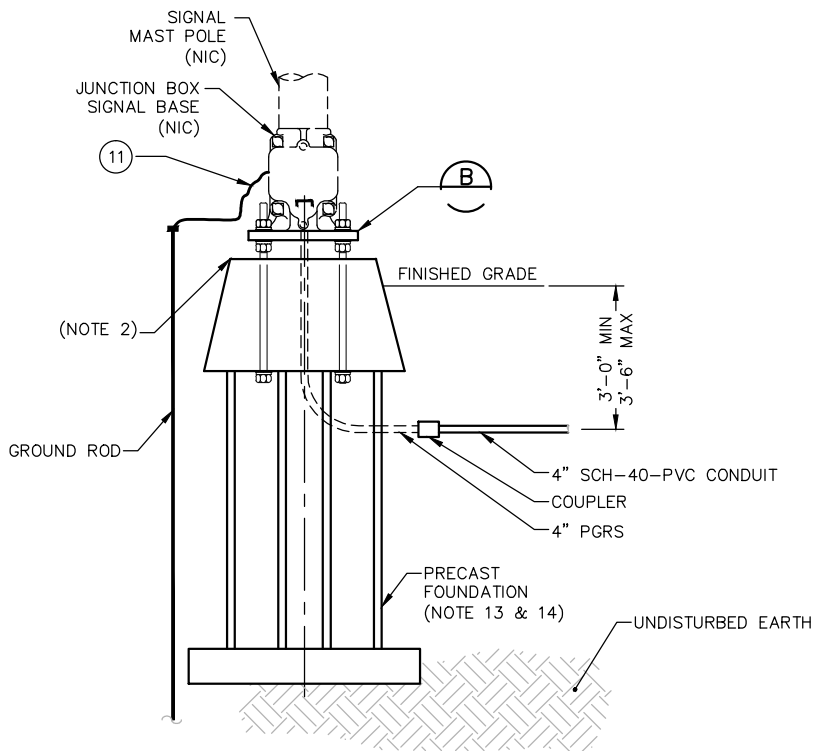
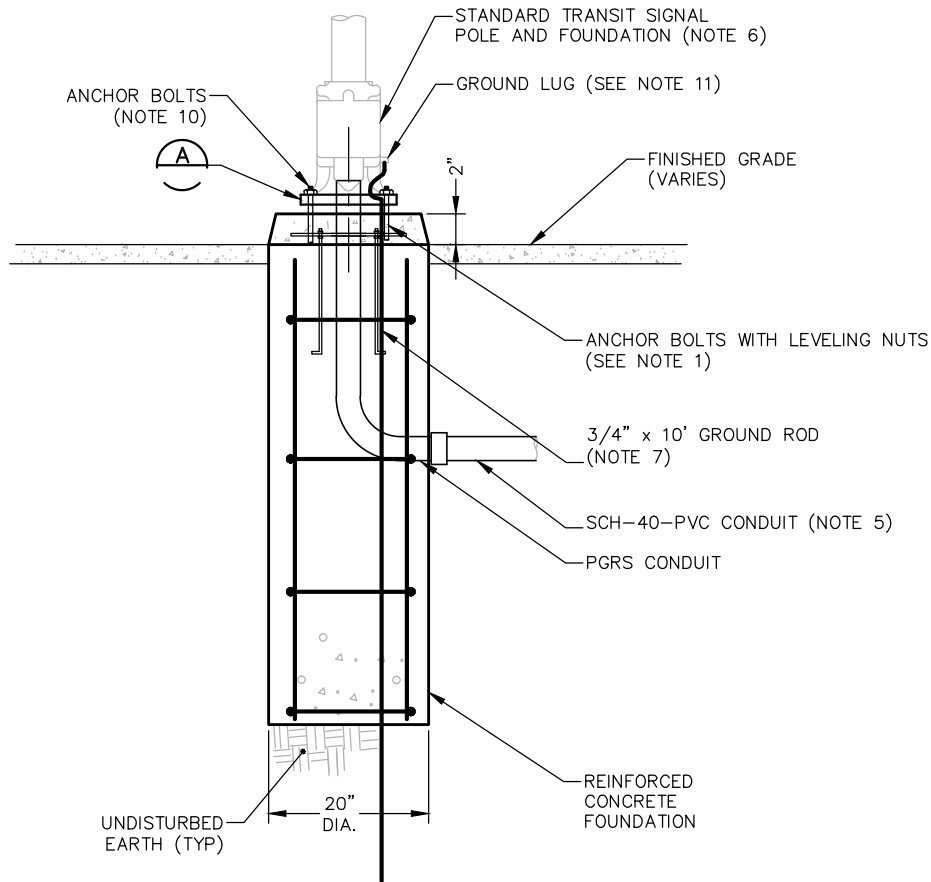
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- NOTES:
1. THE ANCHOR BOLTS, PLATE ASSEMBLIES, NUTS AND WASHERS REQUIRED FOR INSTALLATION OF THE DEVICE SHALL BE PROVIDED.
 2. ASSURE THAT REINFORCING STEEL IS ALL INTERCONNECTED VIA TIE WRAPPING OR OTHER SUITABLE MEANS AND CONNECTED TO THE ANCHOR BOLTS.
 3. THE UPPER PART OF THE FOUNDATION SHALL BE BEVELED OR CHAMFERED IN A NEAT MANNER.
 4. THE TOP OF THE CONDUITS SHALL BE CAPPED AFTER INSTALLATION (UNTIL CABLES ARE INSTALLED).
 5. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE CONCRETE AND SHALL BE LOCATED INSIDE THE FOUNDATION WHERE DIRECTED BY APPROVED DRAWINGS, AND SHALL NOT INTERFERE WITH THE JUNCTION BOX, CABLE PULLING OR OTHER DEVICE FUNCTIONS.
 6. STANDARD 4" TRANSIT SIGNAL POLE, JUNCTION BOX BASE WITH INTERNAL GROUNDING STUD AND TWELVE-WAY TERMINAL STRIP (NIC).
 7. POSITION GROUND ROD WITHIN FOUNDATION TO AVOID CONFLICT WITH STANDARD SIGNAL BASE.
 8. TRANSIT SIGNALS TO BE MIN. 76" FROM ϕ OF TANGENT TRACK, UNLESS NOTED OTHERWISE.
 9. CONTRACTOR SHALL PROVIDE DETAILED FOUNDATION DESIGN BY A MN LICENSED ENGINEER BASED ON LOAD AND SOIL CONDITIONS. DESIGN AND CALCULATIONS TO BE SUBMITTED FOR APPROVAL.
 10. ANCHOR BOLTS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHALL NOT INTERFERE WITH THE SIGNAL FUNCTIONS (SUPPORTING MEMBERS, ETC.)
 11. ATTACH TO GROUND ROD TO INTERNAL GROUND LUG WITH #2/0 GROUNDING CONDUCTOR FOR FOUNDATIONS LESS THAN 15' FROM ϕ OF TRACK. USE #6 BARE COPPER GROUNDING CONDUCTOR FOR FOUNDATIONS BEYOND 15' FROM ϕ OF TRACK. (NIC)
 12. SEE PLANS AND SCHEDULES FOR CONDUIT SIZES.
 13. CONTRACTOR SHALL DEMONSTRATE THAT THE CROSSING FOUNDATION WILL BE COMPLIANT WITH AREMA & WILL BE STRUCTURALLY ADEQUATE FOR EACH INSTALLATION
 14. CONTRACTORS GEOTECHNICAL CONSULTANT SHALL VERIFY THAT SOIL CONDITIONS ARE ADEQUATE FOR THE SIGNAL FOUNDATION DESIGN



1
NTS

TYPICAL "CAST IN PLACE" SIGNAL FOUNDATION
4" MASTS FOR TRANSIT STYLE SIGNALS

2
NTS

SIGNAL MAST POLE INSTALLATION
ON PRECAST FOUNDATION

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

**PARSONS
BRINCKERHOFF**

**METROPOLITAN
TRANSIT**

SOUTHWEST
Green Line LRT Extension

60% SUBMISSION - 09/28/2015

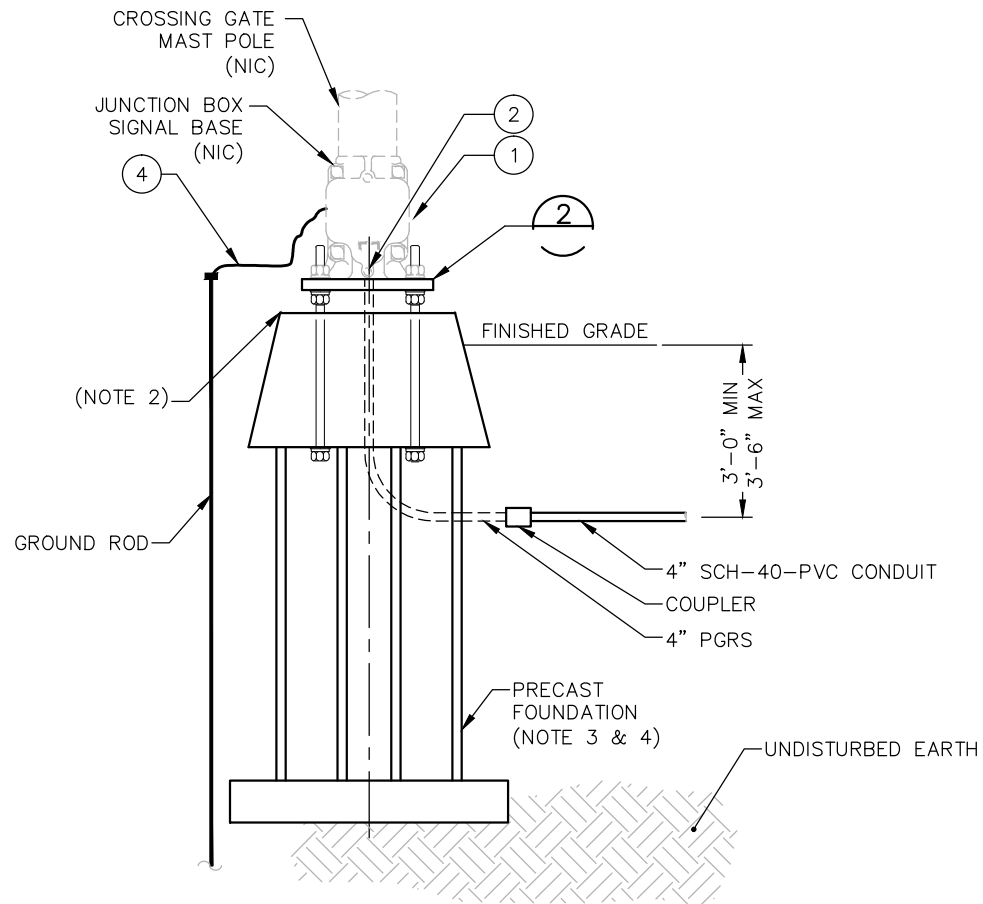
**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
WAYSIDE SIGNAL MAST
TYPICAL FOUNDATION INSTALLATION**

DISCIPLINE:
SYSTEMS

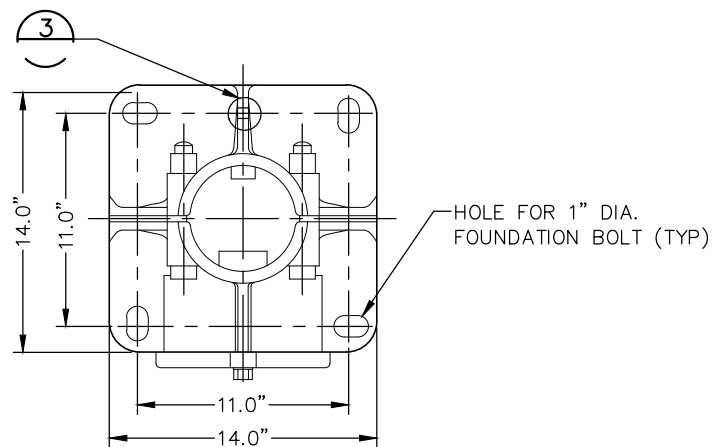
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1 CROSSING MAST POLE INSTALLATION ON PRECAST FOUNDATION
SCALE: NTS

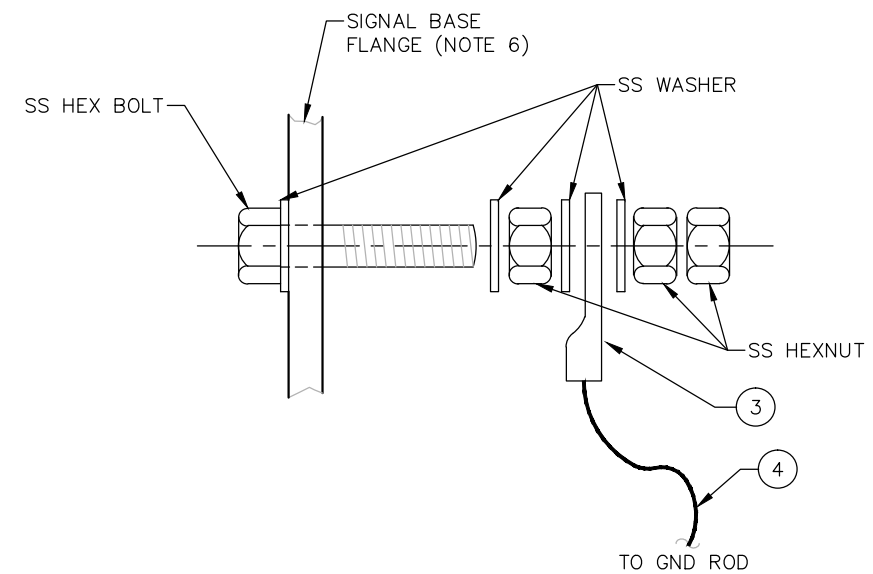


2 CROSSING MAST BASE PLATE DETAIL
SCALE: NTS

BILL OF MATERIALS		
ITEM	QTY.	DESCRIPTION
①	1	CROSSING MAST W/ JUNCTION BOX BASE (NIC)
②	AS REQ'D	DUCT SEAL (NIC)
③	1	GROUND LUG AMP#33467 (NIC)
④	AS REQ'D	#6 BARE STRANDED COPPER WIRE (NIC)

NOTE:

1. PROVIDE FOUNDATION, ANCHOR BOLTS, GROUND ROD, CONDUIT, BASE PLATES, NUTS AND WASHERS REQUIRED FOR INSTALLATION OF THE DEVICE
2. TOP OF FOUNDATION TO BE 2" ABOVE TOP OF PAVEMENT OR 6" ABOVE TOP OF GRADE IN NON-PAVEMENT AREAS
3. CONTRACTOR SHALL DEMONSTRATE THAT THE CROSSING FOUNDATION WILL BE COMPLIANT WITH AREMA & WILL BE STRUCTURALLY ADEQUATE FOR EACH INSTALLATION
4. CONTRACTORS GEOTECHNICAL CONSULTANT SHALL VERIFY THAT SOIL CONDITIONS ARE ADEQUATE FOR THE SIGNAL FOUNDATION DESIGN
5. CONTRACTOR WILL FURNISH FOUNDATION WITH CONDUIT, ANCHOR BOLTS AND GROUND ROD
6. CONTRACTOR SHALL FURNISH DRILL FLANGE FOR CONNECTION OF GROUND STUD TO BASE
7. ATTACH TO GROUND ROD TO INTERNAL GROUND LUG WITH #2/0 GROUNDING CONDUCTOR FOR FOUNDATIONS LESS THAN 15' FROM $\mathcal{C}$ OF TRACK. USE #6 BARE COPPER GROUNDING CONDUCTOR FOR FOUNDATIONS BEYOND 15' FROM $\mathcal{C}$ OF TRACK



3 POLE GROUNDING DETAIL (NIC)
SCALE: NTS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

**PARSONS
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**METROPOLITAN
TRANSIT**

SOUTHWEST
Green Line LRT Extension

**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
GRADE CROSSING MAST
TYPICAL FOUNDATION INSTALLATION**

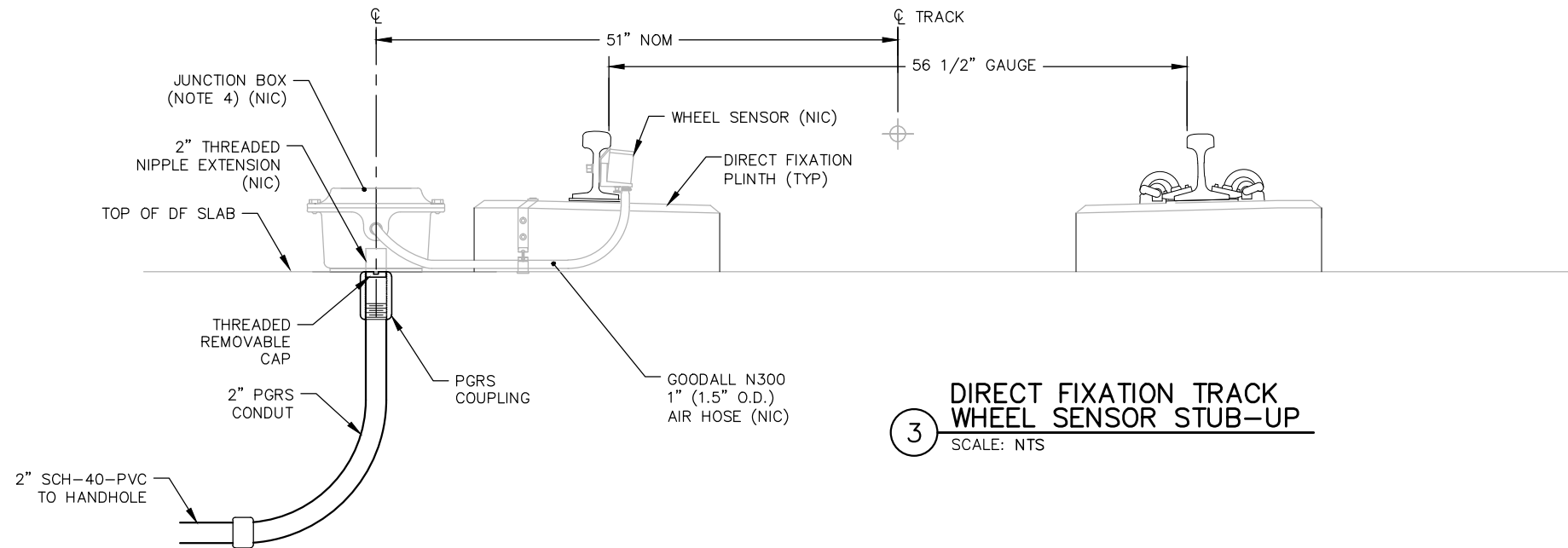
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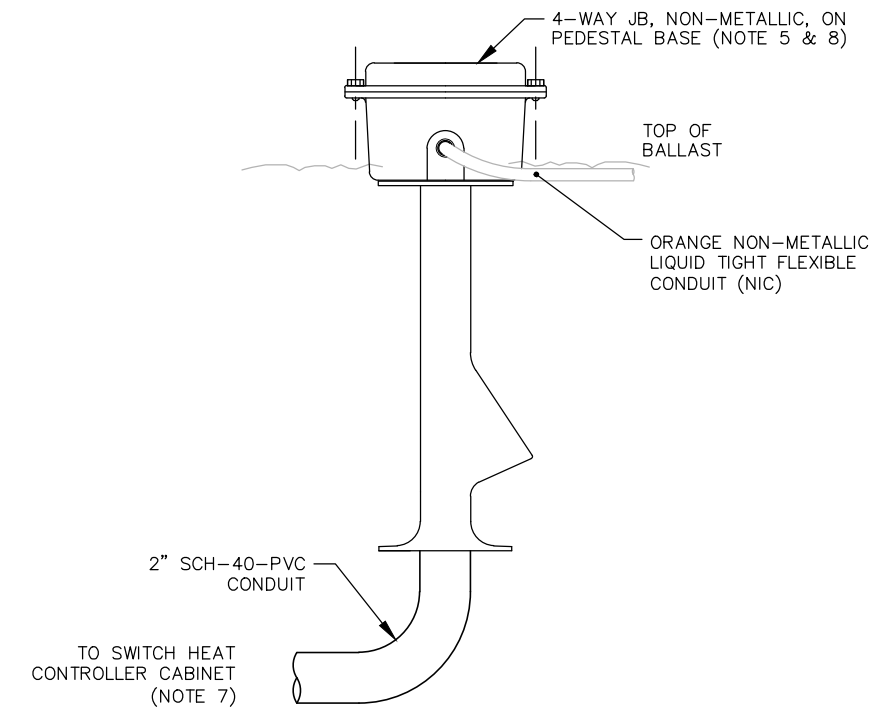
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OF
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60% SUBMISSION - 09/28/2015

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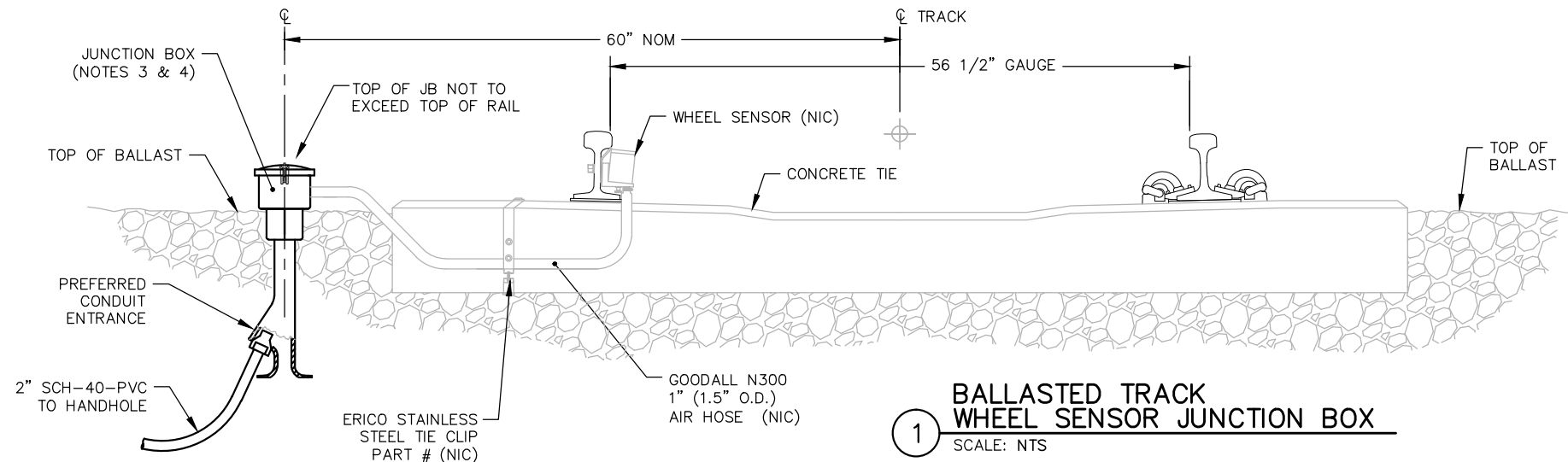
3 **DIRECT FIXATION TRACK
WHEEL SENSOR STUB-UP**
SCALE: NTS



2 **BALLASTED TRACK
SWITCH HEATER JUNCTION BOX**
SCALE: NTS

NOTES:

1. WHEEL SENSORS ARE SHOWN FOR REFERENCE ONLY.
2. REFER TO THE SPECIFICATION AND WHEEL SENSOR MANUFACTURERS INSTALLATION REQUIREMENTS FOR RAIL DRILLING REQUIREMENTS, MOUNTING INSTRUCTIONS AND SPECIFIC INSTALLATION REQUIREMENTS.
3. FOR BALLASTED TRACK, PLACE PEDESTAL MOUNTED JUNCTION BOX ON THE FIELD SIDE OF RAILS FOR COORDINATION WITH THE NEAREST HANDHOLE LOCATION. JUNCTION BOX SHALL BE WESTERN CULLEN HAYES 1155 OR APPROVED EQUAL.
4. NO GROUNDING CONNECTION REQUIRED FOR AXLE COUNTER INSTALLATION.
5. THIS DRAWING INCLUDES THE MAJOR ITEMS AND DOES NOT INCLUDE ALL REQUIRED COMPONENTS REQUIRED FOR A COMPLETE INSTALLATION.
6. MANUFACTURER SHALL BE SUBMITTED FOR APPROVAL.
7. SWITCH HEATER CABLES SHALL BE ROUTED IN 2" CONDUITS AND ARE ROUTED DIRECTLY TO SWITCH HEATER CONTROL EQUIPMENT.
8. FOR ADDITIONAL INSTALLATION DETAILS FOR SWITCH POINT HEATERS, SEE DRAWING SYS-SIG-DTL-024.



1 **BALLASTED TRACK
WHEEL SENSOR JUNCTION BOX**
SCALE: NTS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

**PARSONS
BRINCKERHOFF**



SOUTHWEST
Green Line LRT Extension



60% SUBMISSION - 09/28/2015

**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
WHEEL SENSOR - DF &
BALLASTED TRACK INSTALLATION**

DISCIPLINE:
SYSTEMS

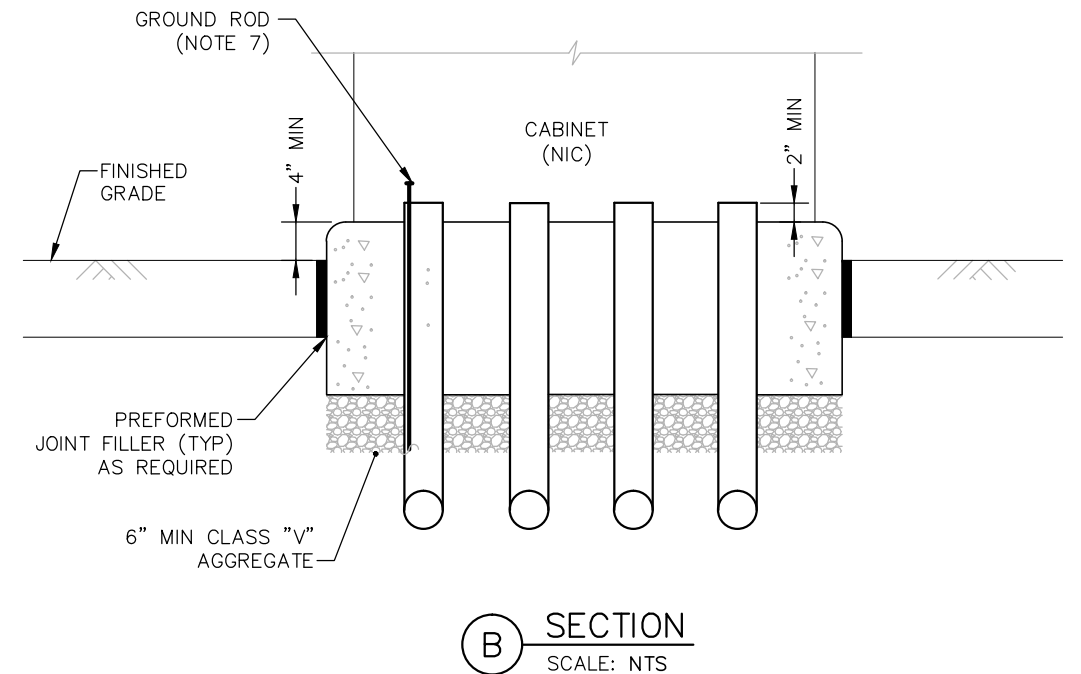
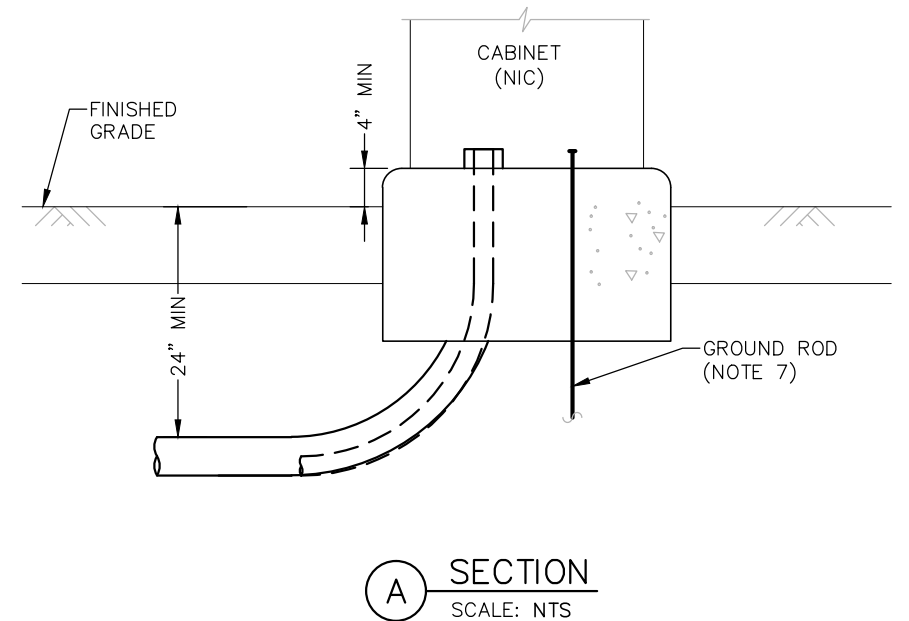
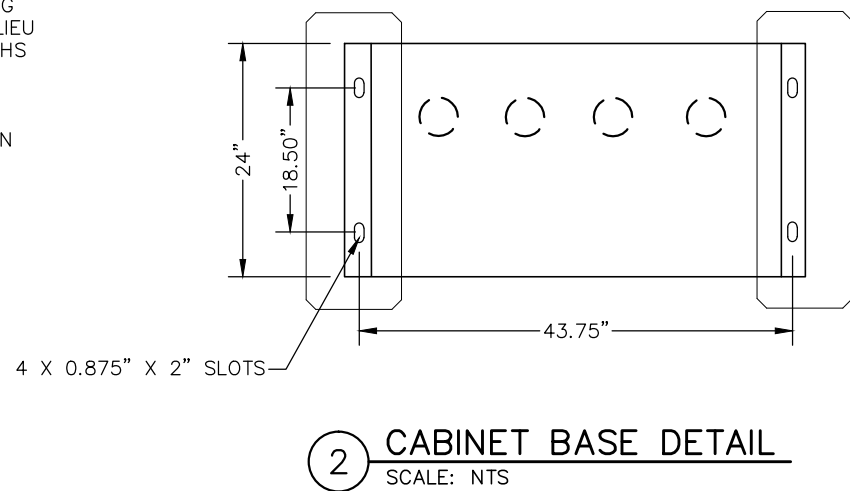
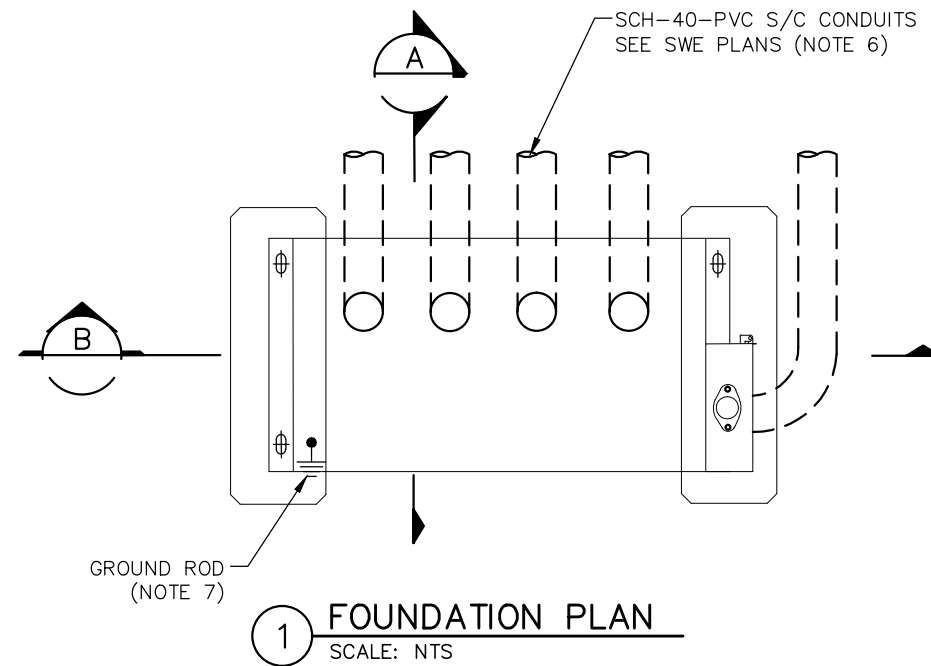
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**SHEET
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224**

Sep. 15 2015 05:09 pm V:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SIGNAL\TYPICALS\SWE TYPICALS\E0-SYS-SWE-DTL-017.dwg By: V-WoodsAJ

NOTES:

1. THE ANCHOR BOLTS, NUTS AND WASHERS FOR THE CONTROLLER CABINET SHALL BE FURNISHED ACCORDING TO THE CABINET MFGR SPECIFICATIONS. ANCHOR BOLTS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.) (NIC).
2. THE UPPER PART OF THE EQUIPMENT PLINTHS SHALL BE BEVELED OR CHAMFERED IN A NEAT MANNER.
3. THE TOP OF THE CONDUITS SHALL BE CAPPED AFTER INSTALLATION.
4. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE CONCRETE AND SHALL BE LOCATED INSIDE THE CABINET AS NECESSARY AND SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.) OR WITH THE BASE DIMENSIONS OF THE CABINET.
5. CONCRETE MIX 3A32 OR EQUAL SHALL BE USED FOR THE EQUIPMENT PLINTHS IN ACCORDANCE WITH Mn/DOT STANDARD CONCRETE DESIGNS.
6. THE EXACT LOCATION AND NUMBER OF CONDUITS SHALL BE DETERMINED BY THE CASE MFG SPECIFICATIONS. CONTRACTOR TO PROVIDE KNOCK-OUT SPACE IN FINISHED GRADE FOR ACCESS TO CONDUIT ENTRANCE.
7. ATTACH TO GROUND ROD TO INTERNAL GROUND LUG WITH #2/0 GROUNDING CONDUCTOR FOR FOUNDATIONS LESS THAN 15' FROM $\varnothing$ TRACK. USE #6 BARE COPPER GROUNDING CONDUCTOR FOR FOUNDATIONS BEYOND 15' FROM $\varnothing$ TRACK. (NIC)
8. USE AN ADEQUATE POST-INSTALLED CHEMICAL SET ANCHOR BOLT OF A DESIGN SUBMITTED FOR APPROVAL. (NIC)
9. CONCRETE PLINTHS SHALL BE POURED BASED ON CABINET MFG SPECIFICATIONS. PRE-CAST PLINTHS/PIERS MAY BE USED IN LIEU OF POURED PLINTHS. EXACT SIZE AND DEPTH OF PIERS/PLINTHS TO BE DETERMINED BY MFG SPECIFICATIONS AND CASE LOAD. FOUNDATION DESIGN MUST BE SUBMITTED FOR APPROVAL.
10. PRECAST OR POURED PLINTHS SHALL BE BASED ON PTMW P/N 41040J CASE OR APPROVED EQUAL. (NIC)



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

**PARSONS
BRINCKERHOFF**

**METROPOLITAN
TRANSIT
AUTHORITY**

SOUTHWEST
Green Line LRT Extension

**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
PEDESTRIAN CROSSING CASE
TYPICAL FOUNDATION INSTALLATION**

DISCIPLINE:
SYSTEMS

SHEET NAME:
E0-SYS-SWE-DTL-017

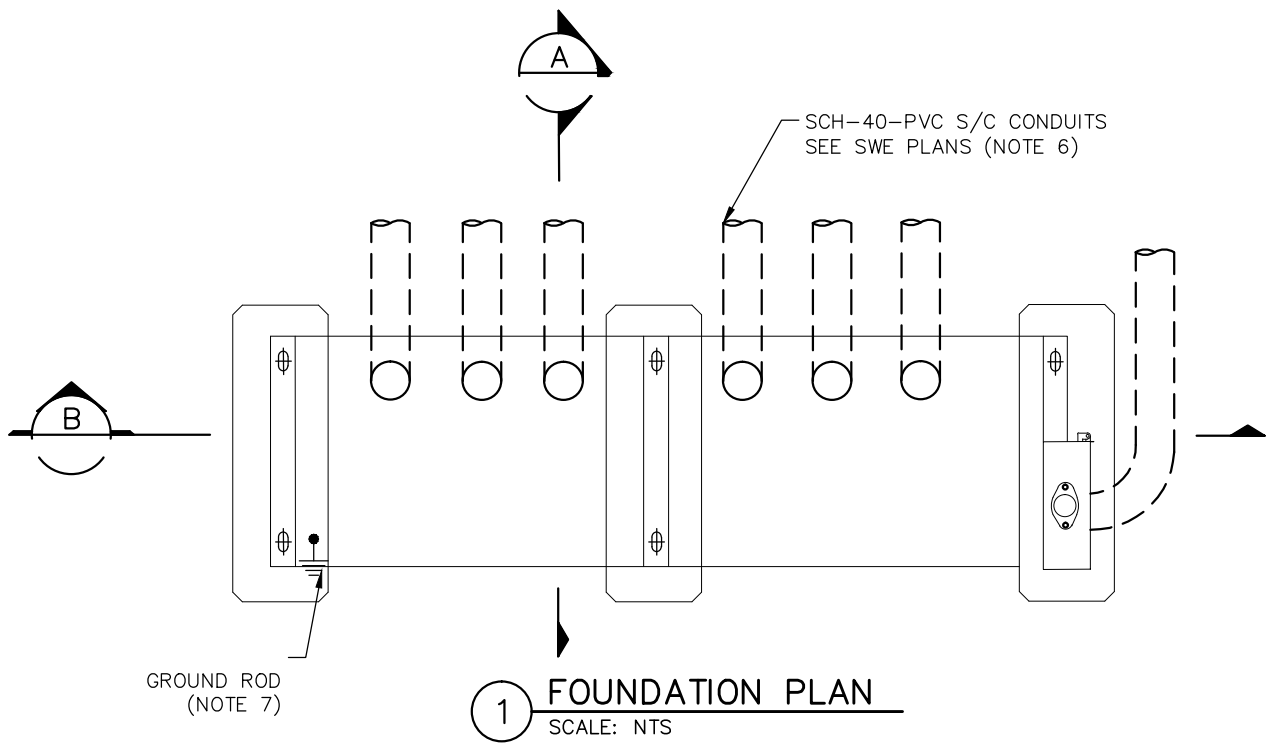
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175
OF
224**

60% SUBMISSION - 09/28/2015

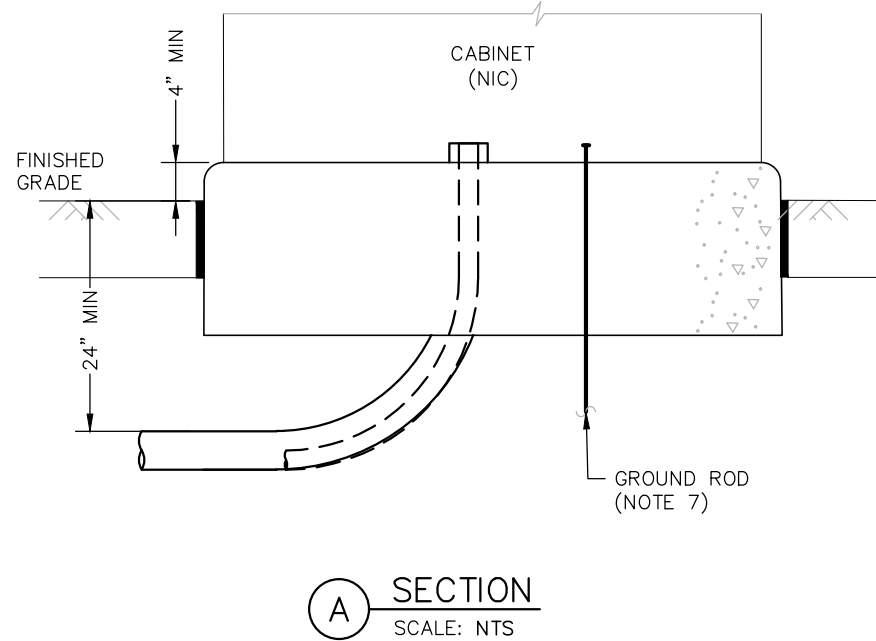
Sep. 15 2015 05:09 pm V:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\SIGNAL\TYPICALS\SWE TYPICALS\E0-SYS-SWE-DTL-018.dwg By: V-WoodsAJ

NOTES:

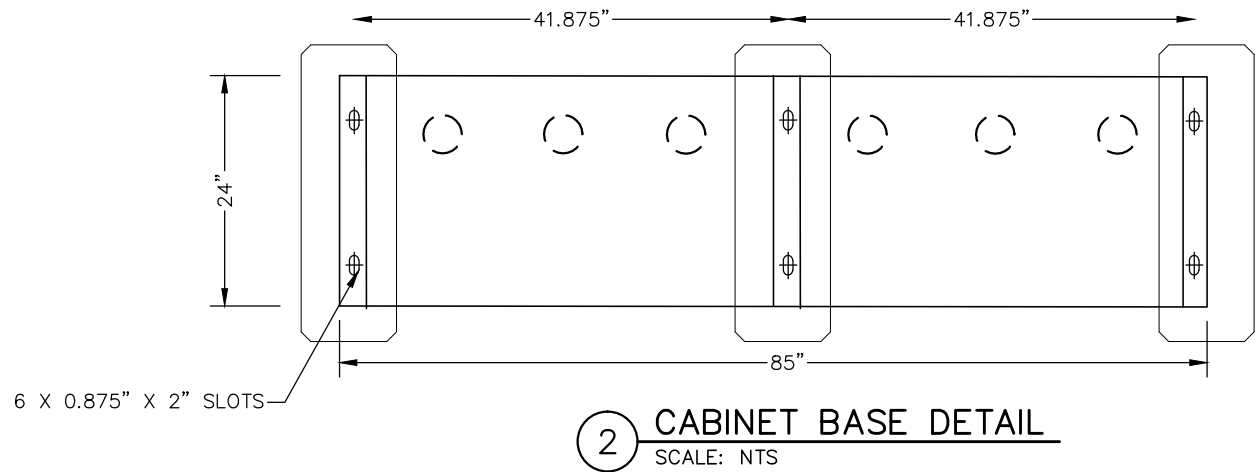
- 1. THE ANCHOR BOLTS, NUTS AND WASHERS FOR THE CONTROLLER CABINET SHALL BE FURNISHED ACCORDING TO THE CABINET MFGR SPECIFICATIONS. ANCHOR BOLTS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.) (NIC).
- 2. THE UPPER PART OF THE EQUIPMENT PAD SHALL BE BEVELED OR CHAMFERED IN A NEAT MANNER.
- 3. THE TOP OF THE CONDUITS SHALL BE CAPPED AFTER INSTALLATION.
- 4. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE CONCRETE AND SHALL BE LOCATED INSIDE THE CABINET AS NECESSARY AND SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.) OR WITH THE BASE DIMENSIONS OF THE CABINET.
- 5. CONCRETE MIX 3A32 OR EQUAL SHALL BE USED FOR THE EQUIPMENT PLINTHS IN ACCORDANCE WITH Mn/DOT STANDARD CONCRETE DESIGNS.
- 6. THE EXACT LOCATION AND NUMBER OF CONDUITS SHALL BE DETERMINED BY THE CASE MFG SPECIFICATIONS. CONTRACTOR TO PROVIDE KNOCK-OUT SPACE IN FINISHED GRADE FOR ACCESS TO CONDUIT ENTRANCE.
- 7. ATTACH TO GROUND ROD TO INTERNAL GROUND LUG WITH #2/0 GROUNDING CONDUCTOR FOR FOUNDATIONS LESS THAN 15' FROM C TRACK. USE #6 BARE COPPER GROUNDING CONDUCTOR FOR FOUNDATIONS BEYOND 15' FROM C TRACK. (NIC)
- 8. USE AN ADEQUATE POST-INSTALLED CHEMICAL SET ANCHOR BOLT OF A DESIGN SUBMITTED FOR APPROVAL. (NIC)
- 9. CONCRETE PLINTHS SHALL BE POURED BASED ON CABINET MFG SPECIFICATIONS. PRE-CAST PLINTHS/PIERS MAY BE USED IN LIEU OF POURED PLINTHS. EXACT SIZE AND DEPTH OF PIERS/PLINTHS TO BE DETERMINED BY MFG SPECIFICATIONS AND CASE LOAD. FOUNDATION DESIGN MUST BE SUBMITTED FOR APPROVAL.
- 10. PRECAST OR POURED PLINTHS SHALL BE BASED ON PTMW P/N 41055E CASE OR APPROVED EQUAL.(NIC)



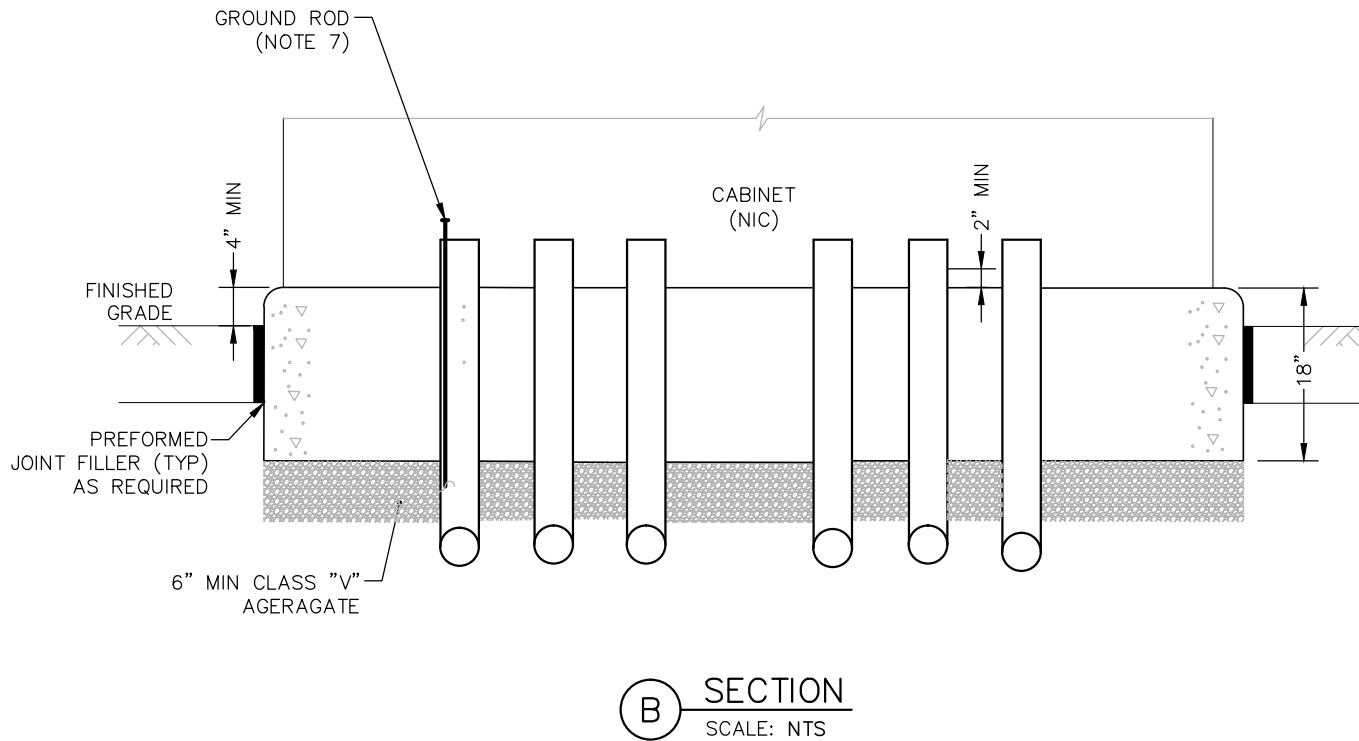
1 FOUNDATION PLAN
SCALE: NTS



A SECTION
SCALE: NTS



2 CABINET BASE DETAIL
SCALE: NTS



B SECTION
SCALE: NTS

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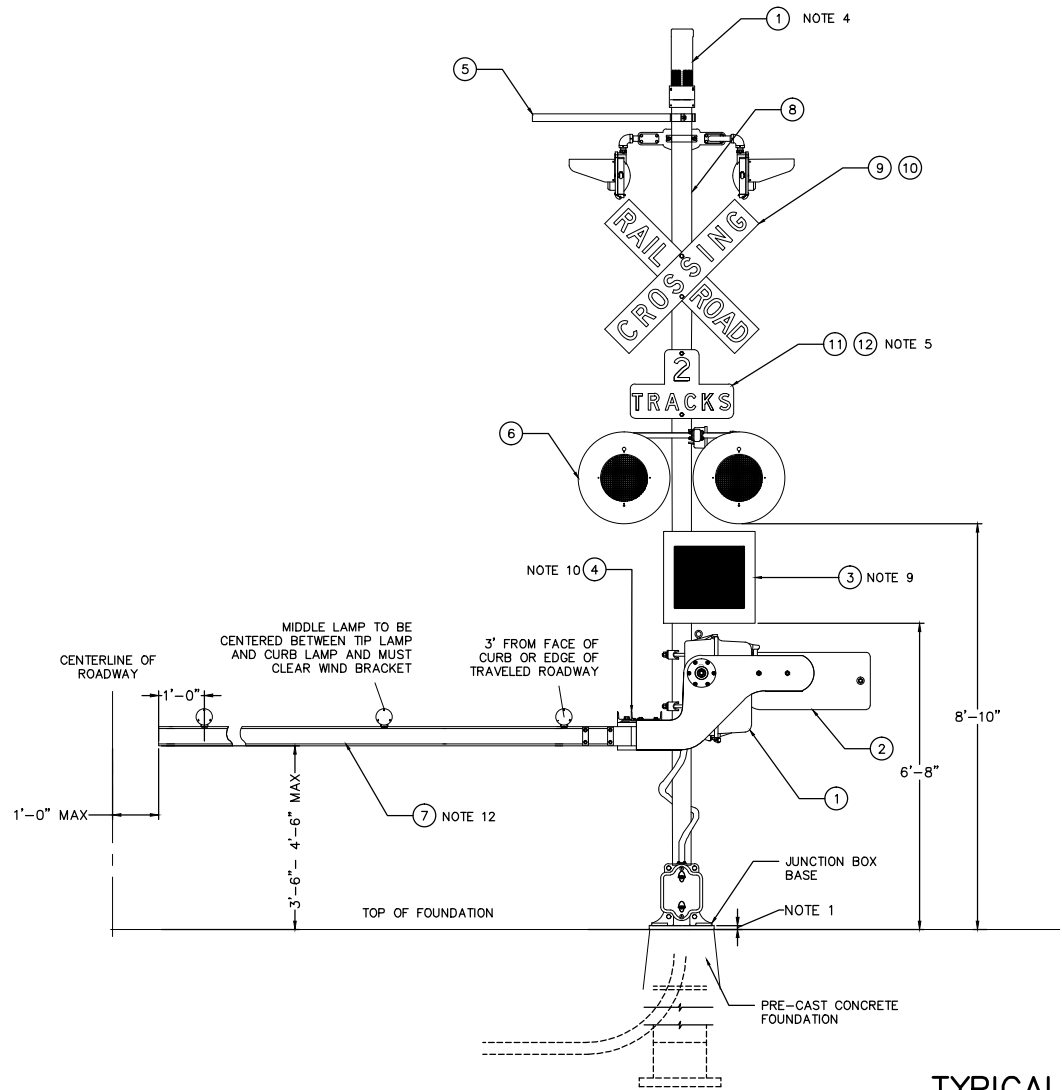
CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
CUT SECTION CASE
TYPICAL FOUNDATION INSTALLATION

DISCIPLINE: **SYSTEMS**

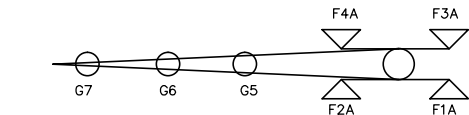
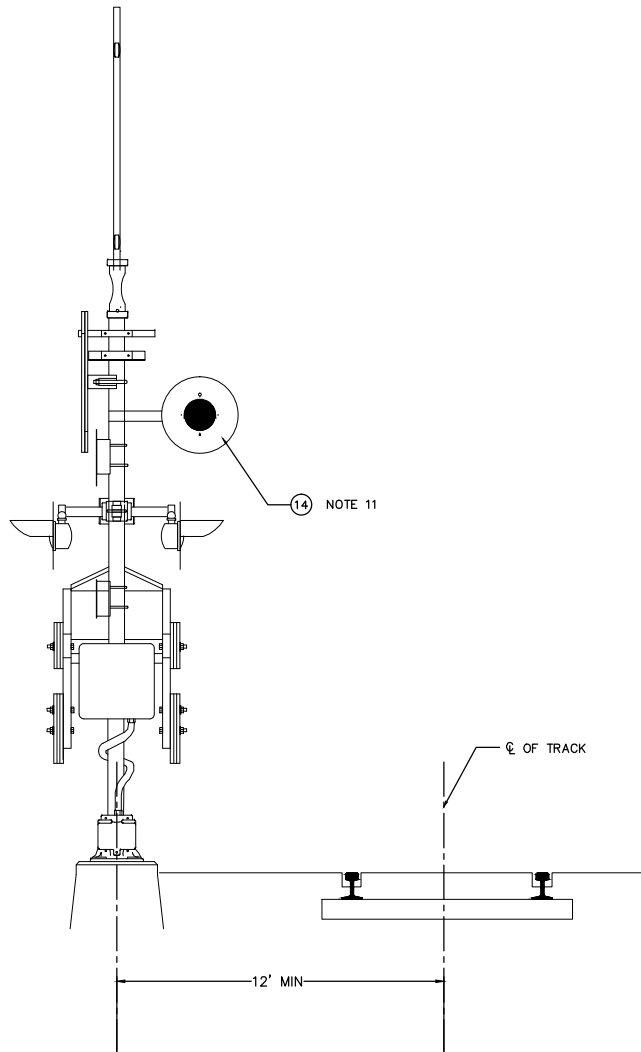
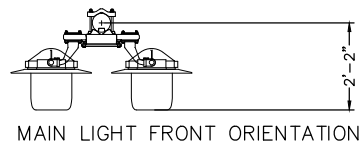
SHEET NAME: **E0-SYS-SWE-DTL-018**

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1 TYPICAL CROSSING GATE
INSTALLATION DETAIL
SCALE: NTS



2 XING LIGHTING FLASHER NAMES
SCALE: NTS

NOTES:

1. TOP OF FOUNDATION TO BE NO HIGHER THAN 4" ABOVE GROUND LEVEL ADJACENT TO FOUNDATION.
2. PROVIDE CABLE ENTRANCES TO FOUNDATIONS AS REQUIRED.
3. PRE-CAST FOUNDATIONS ARE PREFERRED WHERE POSSIBLE.
4. WESTERN CULLEN HAYES MODEL WCH0777 ELECTRONIC BELL.
5. "2 TRACK" SIGN REQUIRED FOR ALL CROSSINGS. (IF MORE THAN 2 TRACKS STATE # OF TRACKS).
6. SEE DETAIL 2 FOR FLASHING LIGHT NUMBERING.
7. INSTALL GROUND ROD ADJACENT TO FOUNDATION AND CONNECT GROUND WIRE TO GROUND STUD ON SIGNAL BASE. ATTACH GROUND ROD TO INTERNAL GROUND LUG WITH #2/0 GROUNDING CONDUCTOR FOR FOUNDATIONS LESS THAN 15' FROM CL OF TRACK. USE #6 BARE COPPER GROUNDING CONDUCTOR FOR FOUNDATIONS BEYOND 15' FROM CL OF TRACK.
8. SEE INDIVIDUAL CROSSING DRAWINGS FOR UNIQUE SITE INFORMATION.
9. 24"x24"x9" DEEP "SECOND TRAIN" SIGN ON GATE MAST SHALL BE INSTALLED AND MUST FACE TRACK FOR ALL CROSSINGS WHERE PEDESTRIANS ARE PRESENT.
10. GENERAL SIGNALS MODEL SK-1000-KW BI-DIRECTIONAL GATE KEEPER REQUIRED FOR EACH GATE.
11. LUNAR GATE DOWN INDICATION LIGHT OPERATION: SOLID LUNAR DISPLAYED WHEN CROSSING ACTIVATED AND FLASHING LUNAR DISPLAYED WHEN CROSSING ACTIVATED AND GATES DOWN.
12. GATE LENGTH TO BE DETERMINED BY ROAD WIDTH.

BILL OF MATERIALS		
ITEM	QTY	DESCRIPTION
1	1	WESTERN CULLEN HAYES MODEL WCH0777 ELECTRONIC BELL
2	1	GATE COUNTER WEIGHT
3	AS REQ'D	24" x 24" x 9" 2ND TRAIN SIGN
4	1	GATE KEEPER BRACKET
5	1	WIND SUPPORT BRACE
6	4	12" LED LENSES WITH 24" BACKGROUND - FLASHING LIGHTS
7	1	GATE (LENGTH NOT TO EXCEED 30' TYP.)
8	1	5" DIA x 16' MAST (TYP.)
9	1	SINGLE SIDED X-BUCK SIGN
10	AS REQ'D	DOUBLE SIDED X-BUCK SIGN
11	1	SINGLE SIDED 2-TRACK SIGN
12	AS REQ'D	DOUBLE SIDED 2-TRACK SIGN
13	1	ELECTRONIC RAILROAD BELL
14	2	8" LED LENSES WITH 20" BACKGROUND - GATE DOWN INDICATION LIGHTS

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COUNCIL**

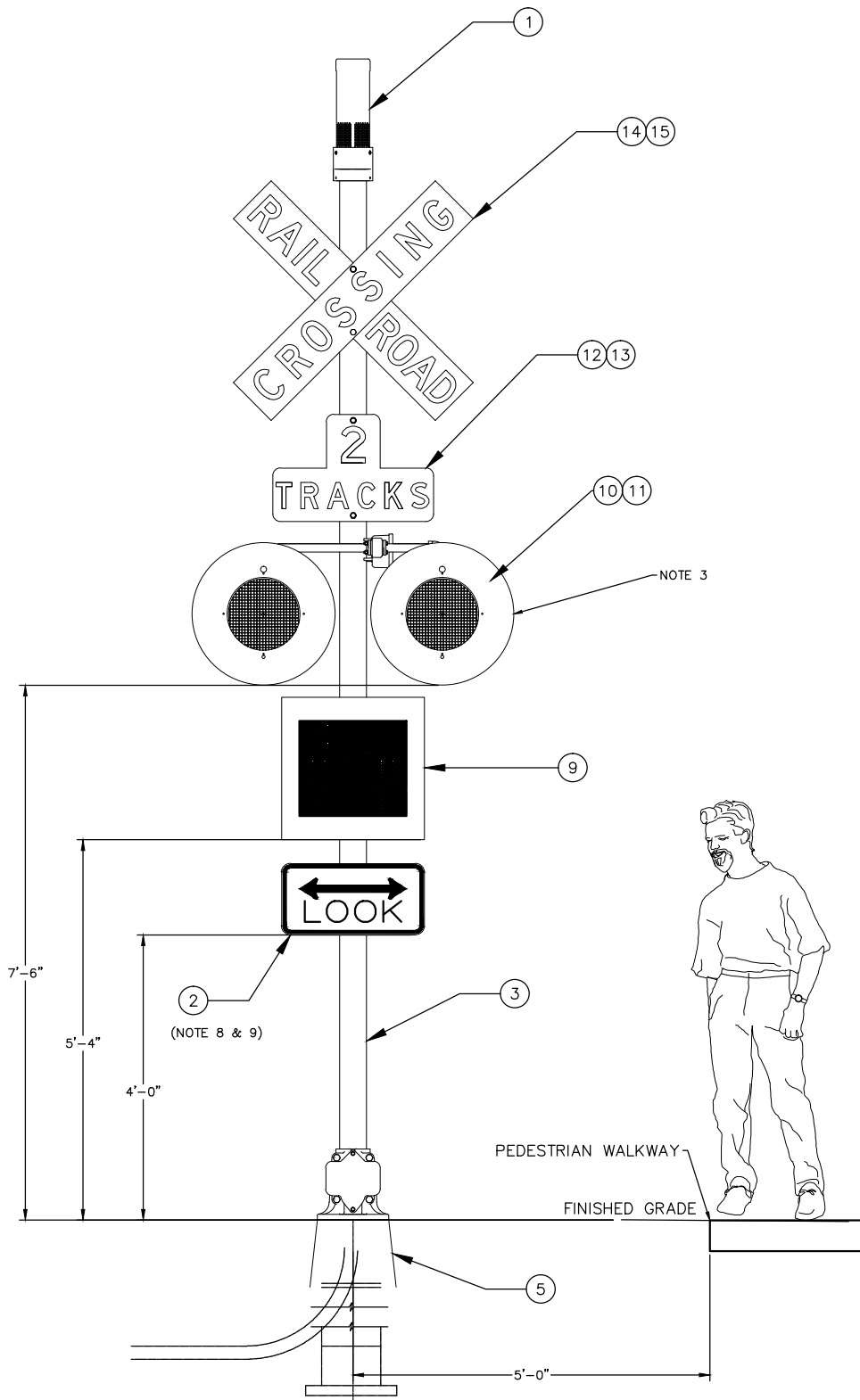
SOUTHWEST
Green Line LRT Extension



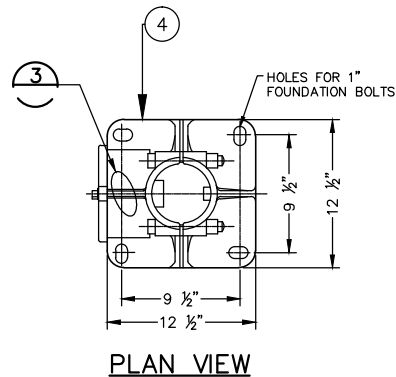
CIVIL EAST - VOLUME 12 SYSTEMWIDE ELECTRICAL FREIGHT GRADE CROSSING EQUIPMENT ARRANGEMENT AND INSTALLATION DETAILS		SHEET 177 OF 224
DISCIPLINE: SYSTEMS	SHEET NAME: E0-SYS-SWE-DTL-019	

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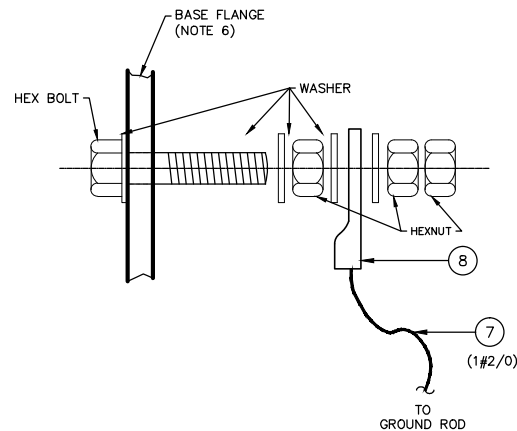
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1 PEDESTRIAN FLASHER DETAIL
SCALE: NTS



2 PEDESTRIAN FLASHER BASE PLATE DETAIL
SCALE: NTS



3 PEDESTRIAN FLASHER POLE GROUNDING DETAIL
SCALE: NTS

NOTES:

1. THE MATERIALS TABLE ONLY INCLUDES THE MAJOR ITEMS AND DOES NOT INCLUDE ALL REQUIRED ITEMS FOR A COMPLETE INSTALLATION.
2. THIS CROSSING WARNING SIGNAL ASSEMBLY SHALL BE DOUBLE-SIDED, WITH EACH ACTIVE AND PASSIVE SIGNAL VIEWABLE FOR EACH DIRECTION.
3. EACH FLASHING UNIT SHALL INCLUDE A "MOTORMANS" SIDELIGHT BUILT INTO THE SIGNAL HOUSING UNIT. THE "MOTORMAN" SIDELIGHTS SHALL BE LOCATED TO PROVIDE A VISUAL INDICATION TO THE LRV OPERATOR THAT THE CROSSING WARNING DEVICE IS ACTIVE.
4. THE 2-SIDED LED SECOND TRAIN SIGN SHALL BE MANUFACTURED IN ACCORDANCE WITH ALL APPLICABLE SYSTEMS SPECIFICATIONS.
5. THE 2-SIDED LED SECOND TRAIN SIGN SHALL BE CONFIGURED SO THAT EACH LED PANEL CAN BE REPLACED WITHOUT REPLACING THE ENTIRE DEVICE, USING A DISCRETE POWER SUPPLY AND CABLING TO ENSURE THAT A SINGLE FAILURE WILL NOT DISABLE BOTH SIDES OF THE ACTIVE WARNING SIGN.
6. DRILL FLANGE FOR CONNECTION OF GROUND STUD TO BASE.
7. MANUFACTURERS SHALL BE SUBMITTED FOR APPROVAL BY THE CAR.
8. THE SIZE FOR THE STANDARD R15-8 SHALL BE REDUCED TO 12" X 24", SCALED FOR THE PEDESTRIAN SPECIFIC CROSSING DEVICE.
9. THE SIGN SHALL BE CONSTRUCTED TO MEET THE REQUIREMENTS OF MNDOT SPECIFICATIONS FOR MATERIALS AND REFLECTIVITY.

BILL OF MATERIALS		
ITEM	QTY	DESCRIPTION
1	1	WESTERN CULLEN HAYES MODEL WCH0777 ELECTRONIC BELL
2	2	12" X 24" "LOOK" STATIC REFLECTIVE SIGN, MUTCD R15-8
3	1	SIGNAL MAST, ALUMINUM, 4"
4	1	SPLIT JUNCTION BOX BASE
5	1	PRE-CAST CONCRETE FOUNDATION (TYP.)
6	1	10' COPPER CLAD GROUND ROD
7	AS REQ'D	#2/0 BARE STRANDED COPPER WIRE
8	1	GROUND LUG AMP #33467
9	1	24" X 24" x 9" LED 2nd TRAIN APPROACHING SIGN- 2 SIDED
10	2	16" ALUMINUM BACKGROUND, FLAT BLACK, WITH 9" VISOR
11	2	8" LED SIGNAL ROUNDEL, RAIL OR TRANSIT APPLICATION
12	AS REQ'D	SINGLE SIDED 2-TRACK SIGN
13	AS REQ'D	DOUBLE SIDED 2-TRACK SIGN
14	AS REQ'D	SINGLE SIDED X-BUCK SIGN
15	AS REQ'D	DOUBLE SIDED X-BUCK SIGN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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Green Line LRT Extension

CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
FREIGHT GRADE CROSSING EQUIPMENT
PEDESTRIAN CROSSING BELL & FLASHER

DISCIPLINE:
SYSTEMS

SHEET NAME:
E0-SYS-SWE-DTL-020

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SIG/COMM HOUSE FOOTPRINT

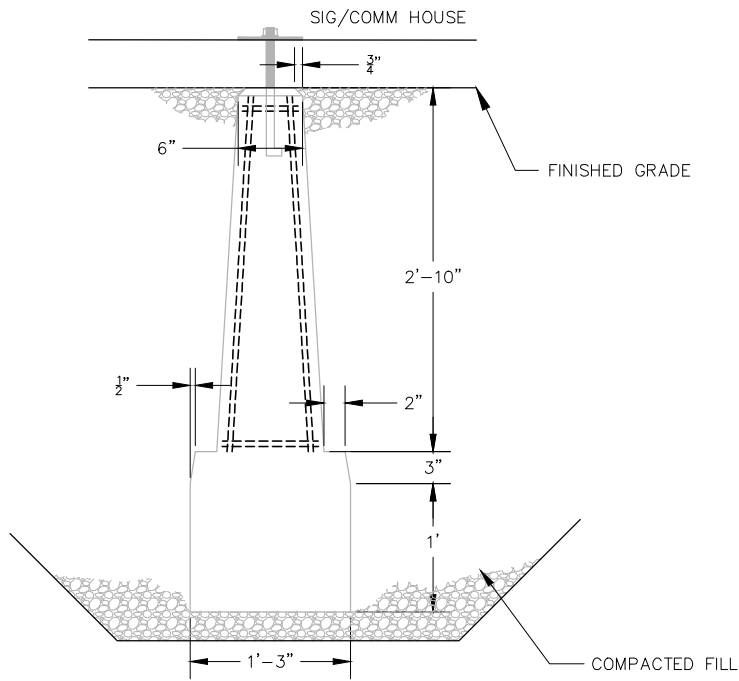
1'-3" x 1'-3" FOOTING

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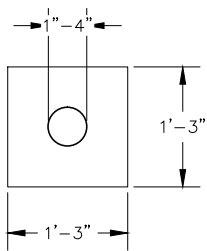
**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SIGNAL HOUSE TYPICAL FOUNDATION
INSTALLATION PAGE 1 OF 2**

SHEET NAME:	E0-SYS-SWE-DTL-021
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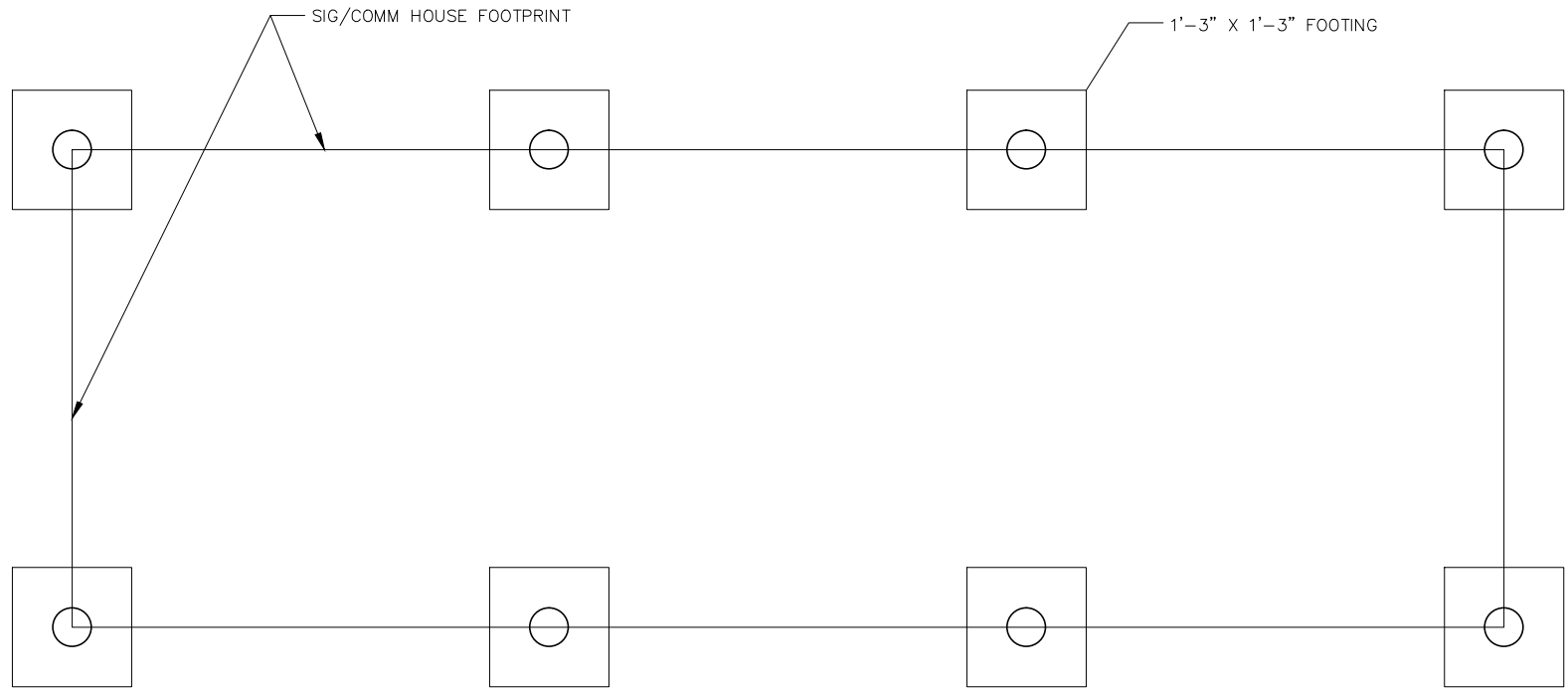
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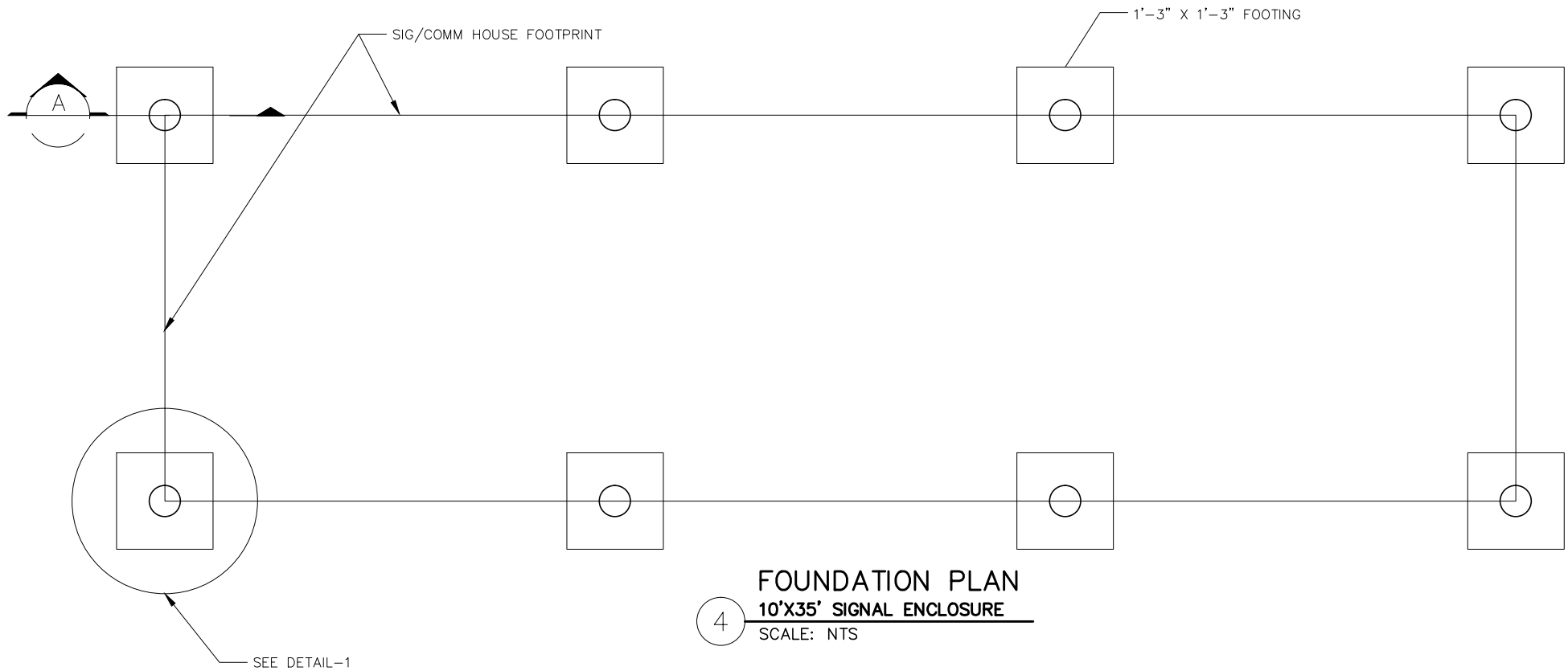
1 SECTION A-A
SCALE: NTS



3 DETAIL-1
SCALE: NTS



2 FOUNDATION PLAN
10'X30' SIGNAL ENCLOSURE
SCALE: NTS



4 FOUNDATION PLAN
10'X35' SIGNAL ENCLOSURE
SCALE: NTS

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BRINCKERHOFF**

**METROPOLITAN
COUNCIL**

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Green Line LRT Extension

**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SIGNAL HOUSE TYPICAL FOUNDATION
INSTALLATION PAGE 2 OF 2**

DISCIPLINE:
SYSTEMS

SHEET NAME:
E0-SYS-SWE-DTL-022

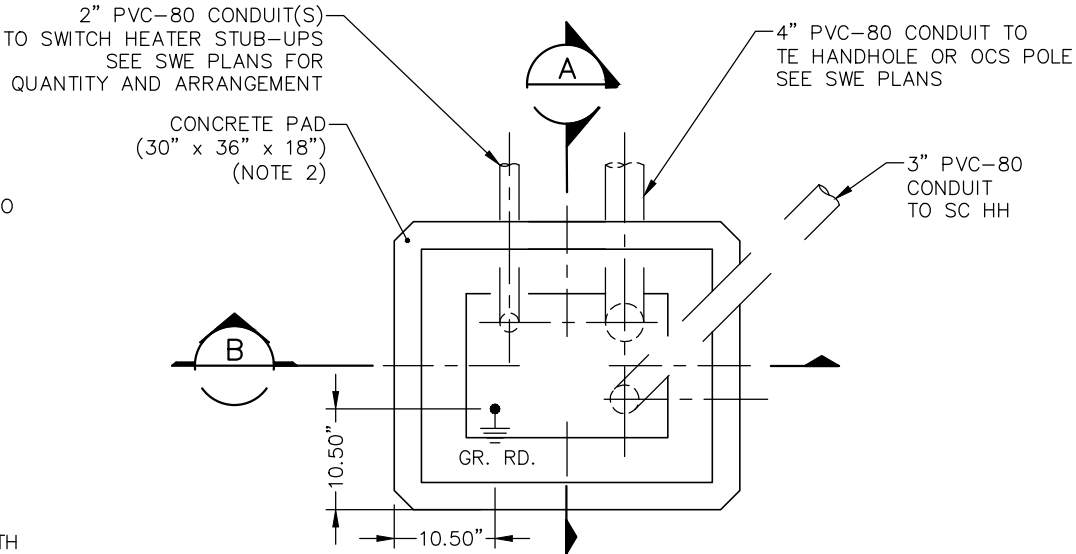
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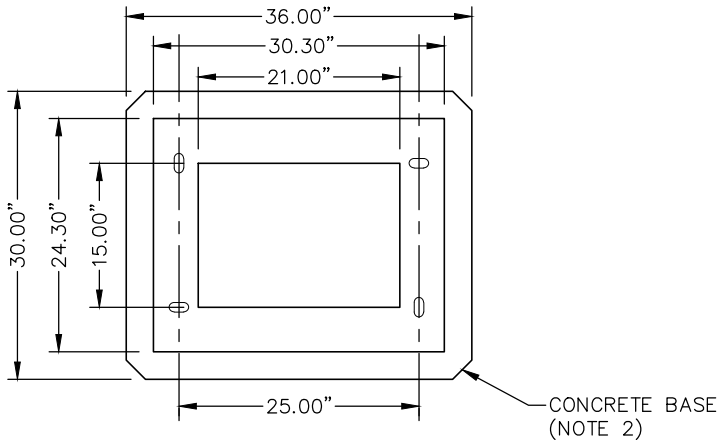
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NOTES:

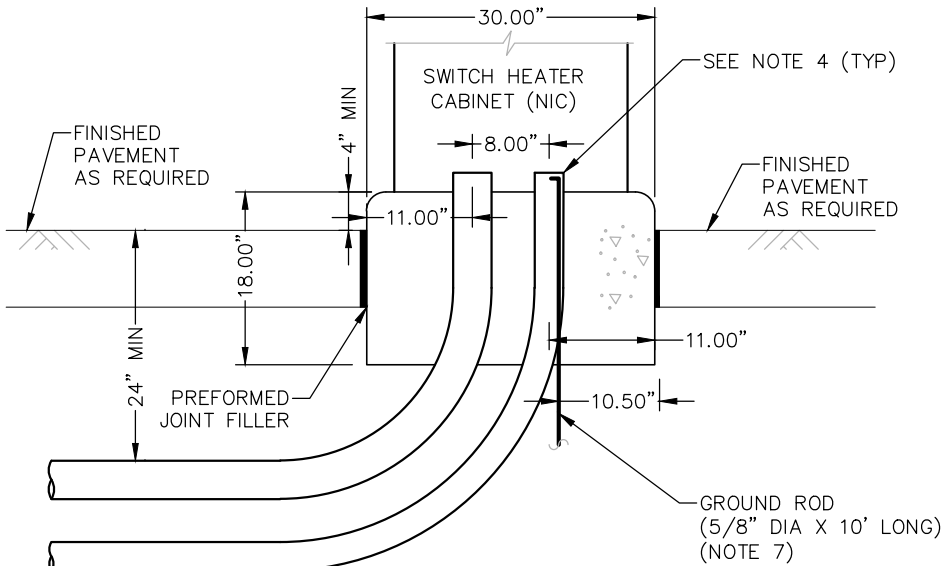
1. THE ANCHOR BOLTS, NUTS AND WASHERS FOR THE CONTROLLER CABINET SHALL BE FURNISHED ACCORDING TO THE CABINET MFR SPECIFICATIONS. ANCHOR BOLTS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.) (NIC)
2. THE UPPER PART OF THE EQUIPMENT PAD SHALL BE BEVELED OR CHAMFERED IN A NEAT MANNER
3. THE TOP OF THE CONDUITS SHALL BE CAPPED AFTER INSTALLATION.
4. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE CONCRETE AND SHALL BE LOCATED INSIDE THE CABINET AS NECESSARY AND SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.) OR WITH THE BASE DIMENSIONS OF THE CABINET.
5. CONCRETE MIX 3A32 OR EQUAL SHALL BE USED FOR THE EQUIPMENT PAD IN ACCORDANCE WITH Mn/DOT STANDARD CONCRETE DESIGNS.
6. THE EXACT LOCATION OF CONDUITS WITHIN THE PAD SHALL BE DETERMINED IN THE FIELD, AND WILL PROJECT ENTIRELY WITHIN THE BASE OPENING OF THE CABINET.
7. ATTACH TO GROUND ROD TO INTERNAL GROUND LUG WITH #2/0 GROUNDING CONDUCTOR FOR FOUNDATIONS LESS THAN 15' FROM $\varnothing$ TRACK. USE #6 BARE COPPER GROUNDING CONDUCTOR FOR FOUNDATIONS BEYOND 15' FROM $\varnothing$ TRACK. (NIC)
8. USE AN ADEQUATE POST-INSTALLED CHEMICAL SET ANCHOR BOLT OF A DESIGN SUBMITTED FOR APPROVAL. (NIC)



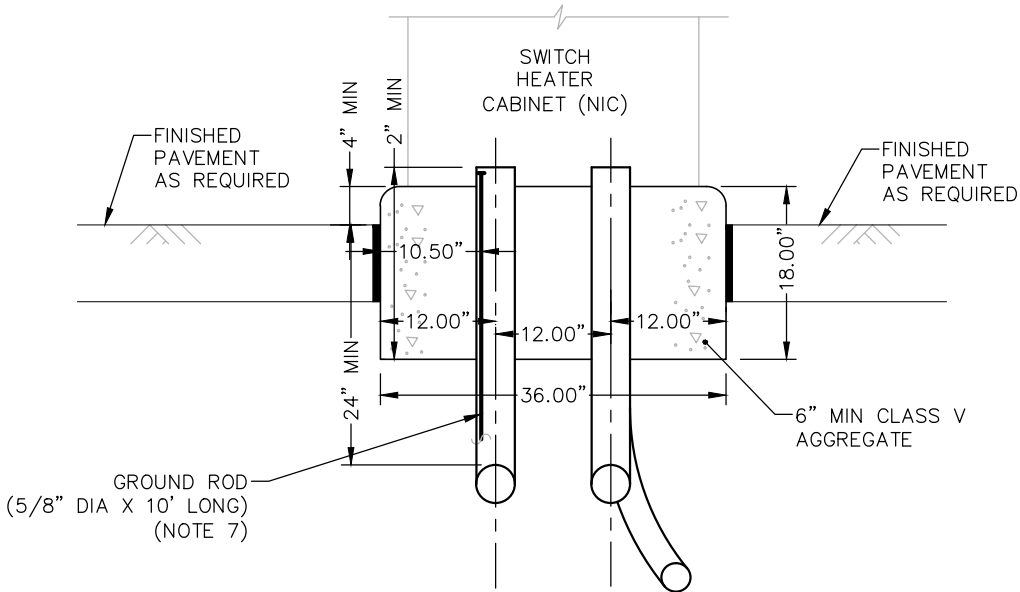
1 FOUNDATION PLAN
SCALE: NTS



2 SWITCH HEATER CONTROLLER CABINET BASE DETAIL
SCALE: NTS



A SECTION
SCALE: NTS



B SECTION
SCALE: NTS

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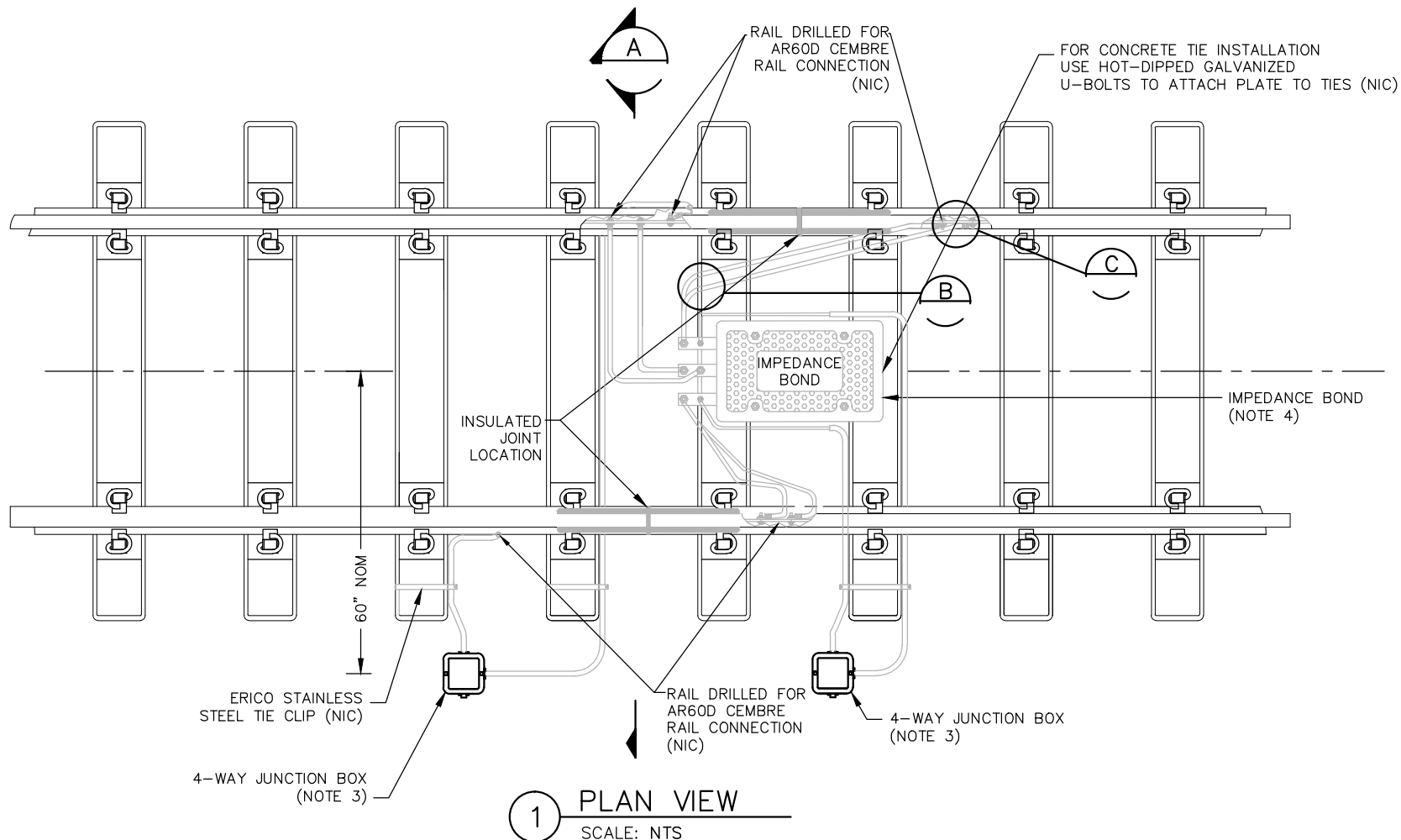
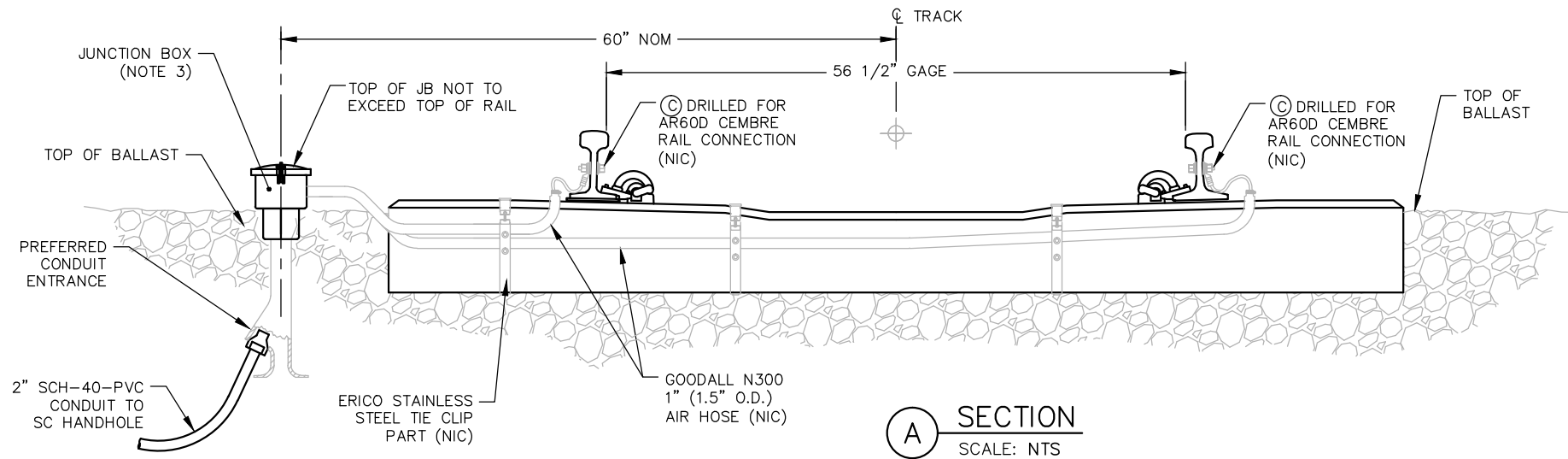
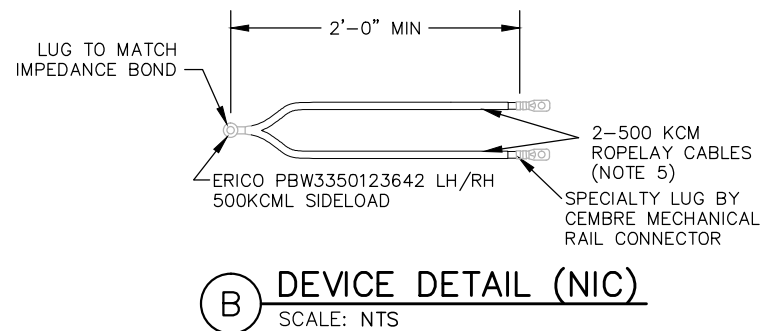
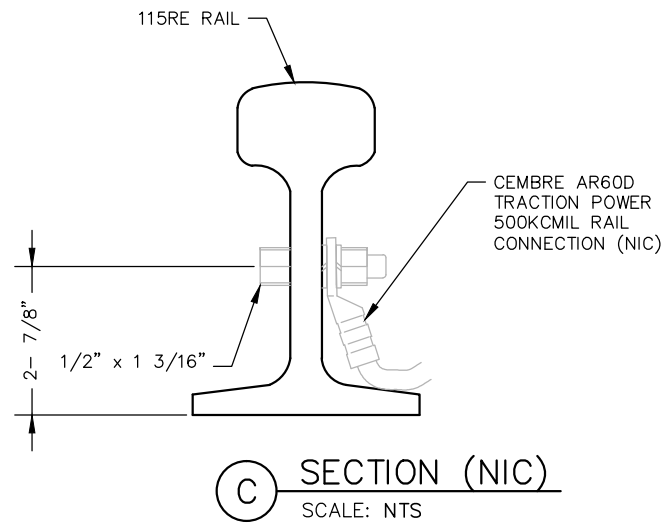
CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SWITCH HEATER CASE
TYPICAL FOUNDATION INSTALLATION

DISCIPLINE:
SYSTEMS

SHEET NAME:
E0-SYS-SWE-DTL-023

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NOTES:

1. USE THIS DETAIL FOR BALLASTED TRACK BOND INSTALLATIONS WHERE DOUBLE RAIL TRACK CIRCUITS ARE ADJACENT TO SINGLE RAIL AC TRACK CIRCUITS.
2. PLACE PEDESTAL MOUNTED JUNCTION BOX ON THE FIELD SIDE OF TRACK FOR COORDINATION WITH DUCT BANK OR THE NEAREST HANDHOLE LOCATION.
3. PEDESTAL MOUNTED JUNCTION BOX SHALL BE WESTERN CULLEN HAYES 1155 OR APPROVED EQUAL.
4. NUTS, BOLTS AND WASHERS USED FOR CONNECTIONS TO THE IMPEDANCE BOND LUGS SHALL BE BRASS. (NIC)
5. CABLES SHALL BE ALL "ROPE LAY". TRACTION POWER CABLES SHALL BE INSULATED WITH RATING OF 2KV. (NIC)
6. PLACEMENT OF 500 KCML CABLES SHALL NOT INTERFERE WITH NORMAL TRACK TAMPING OPERATION.
7. SUFFICIENT SLACK SHALL BE PROVIDED IN CROSS BONDING CABLES TO PREVENT STRESS AT CONNECTIONS AND "BIRD CAGING", TWISTING OR OTHERWISE DAMAGING THE CABLES.
8. LOCAL CONDUIT SHALL BE NON-METALLIC, U.V. RESISTANT, LIQUID-TIGHT CONDUIT, BLACK OR GRAY PVC JACKET (UV RESISTANT) WITH REINFORCED NYLON BRAID WITH STRAIN RELIEF FITTING WHERE POSSIBLE OR AIR HOSE WITH NIPPLE CONNECTION TO JUNCTION BOX. (NIC)

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BRINCKERHOFF**



SOUTHWEST
Green Line LRT Extension



**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
SINGLE IMPEDANCE BOND
BALLASTED TRACK INSTALLATION**

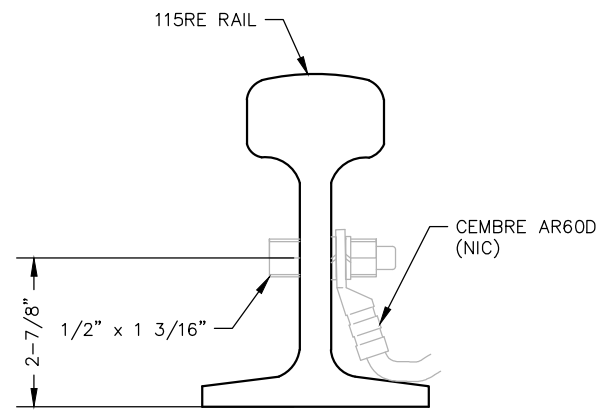
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SHEET NAME:
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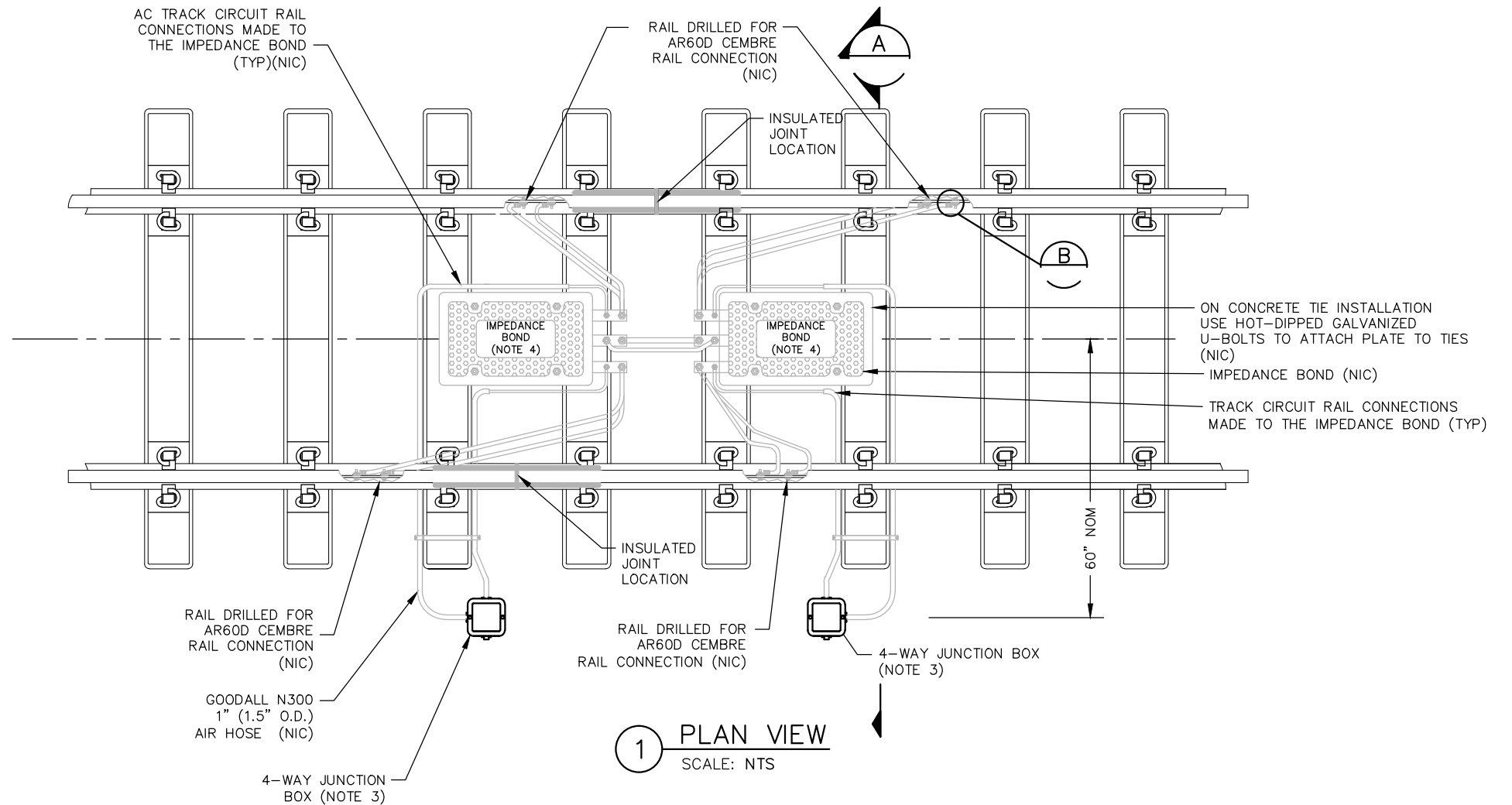
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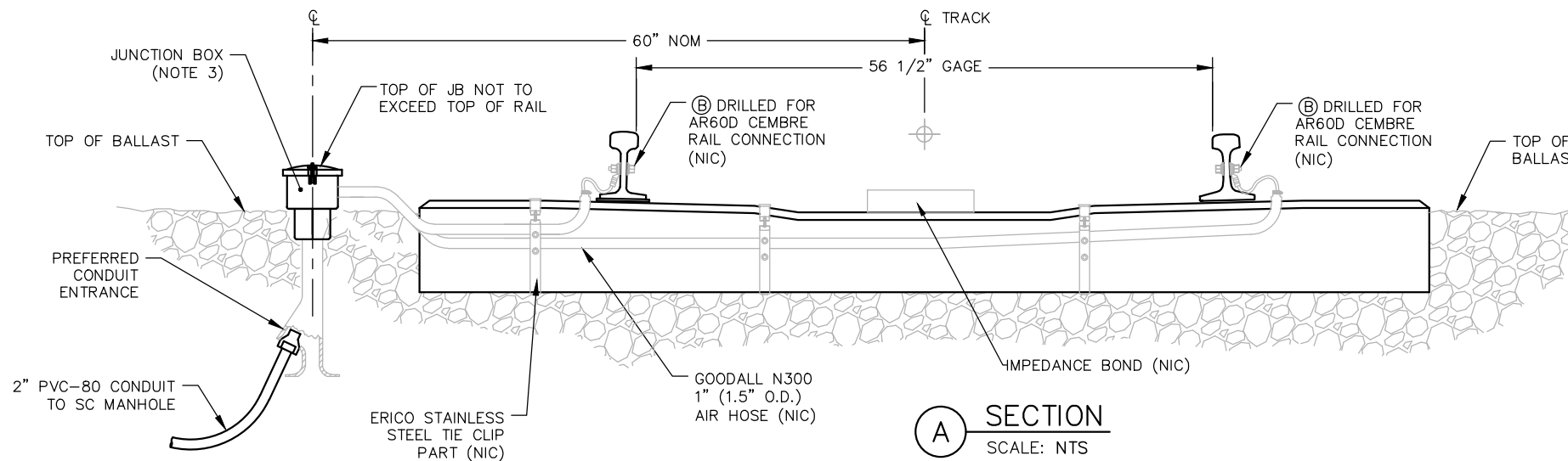
B SECTION (NIC)
SCALE: NTS



1 PLAN VIEW
SCALE: NTS

NOTES:

1. USE THIS DETAIL FOR BALLASTED TRACK BOND INSTALLATIONS WHERE DOUBLE RAIL TRACK CIRCUITS ARE ADJACENT TO DOUBLE RAIL TRACK CIRCUITS SEPARATED BY DOUBLE, STAGGERED INSULATED JOINTS.
2. PLACE PEDESTAL MOUNTED JUNCTION BOXES ON THE FIELD SIDE OF TRACK FOR COORDINATION WITH DUCT BANK OR THE NEAREST SWE HH LOCATION.
3. PEDESTAL MOUNTED JUNCTION BOX SHALL BE WESTERN CULLEN HAYES 1155 OR APPROVED EQUAL.
4. NUTS, BOLTS AND WASHERS USED FOR CONNECTIONS TO THE IMPEDANCE BOND LUGS SHALL BE BRASS. (NIC)
5. CABLES SHALL BE ALL "ROPE LAY". TRACTION POWER CABLES SHALL BE INSULATED WITH RATING OF 2KV. (NIC)
6. PLACEMENT OF 500 KCMIL CABLES SHALL NOT INTERFERE WITH NORMAL TRACK TAMPING OPERATION.
7. SUFFICIENT SLACK SHALL BE PROVIDED IN CROSS BONDING CABLES TO PREVENT STRESS AT CONNECTIONS AND "BIRD CAGING", TWISTING OR OTHERWISE DAMAGING THE CABLES.
8. LOCAL CONDUIT SHALL BE NON-METALLIC, U.V. RESISTANT, LIQUID-TIGHT CONDUIT, BLACK OR GRAY PVC JACKET (UV RESISTANT) WITH REINFORCED NYLON BRAID WITH STRAIN RELIEF FITTING WHERE POSSIBLE. (NIC)



A SECTION
SCALE: NTS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

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BRINCKERHOFF**

**METROPOLITAN
COUNCIL**

SOUTHWEST
Green Line LRT Extension



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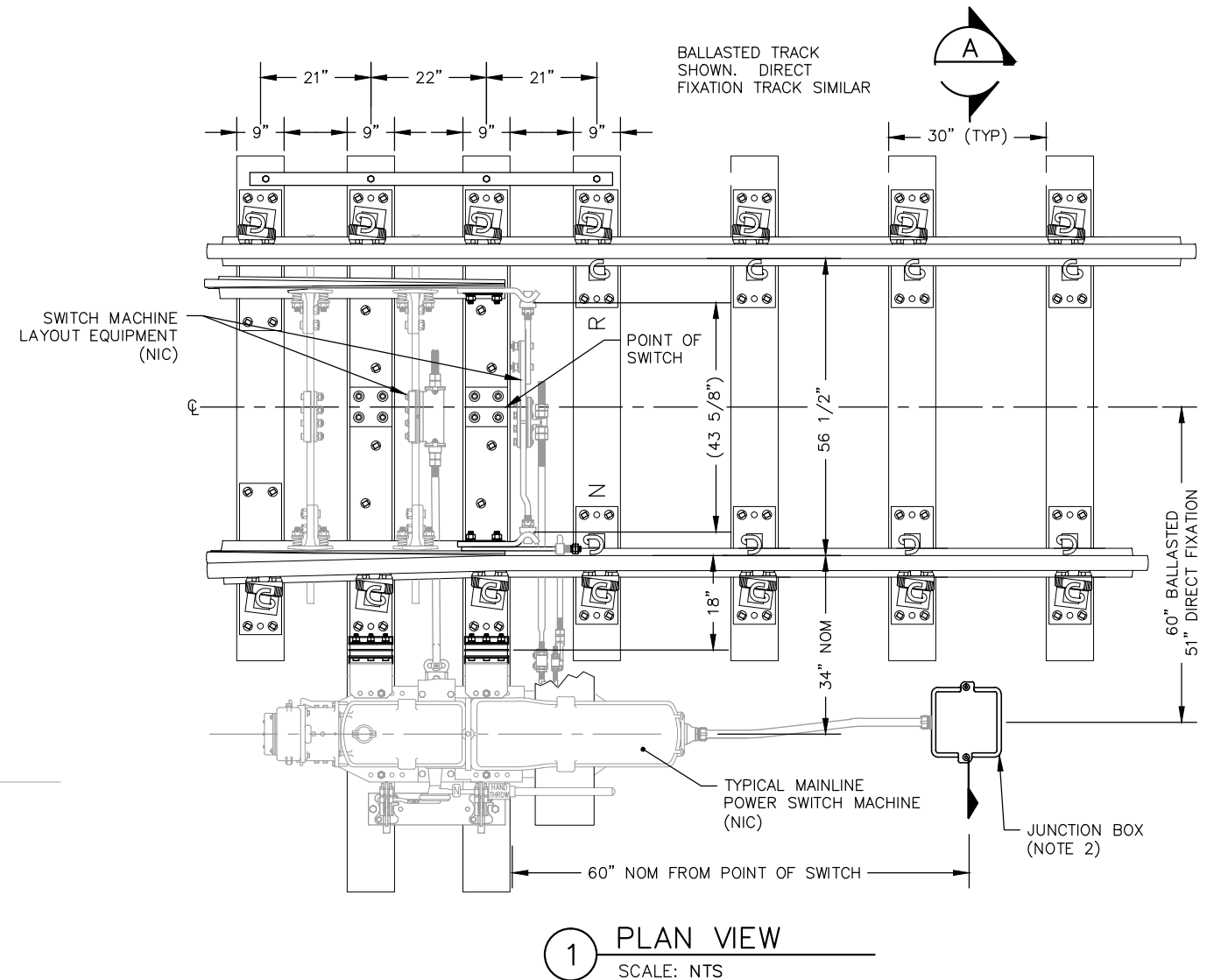
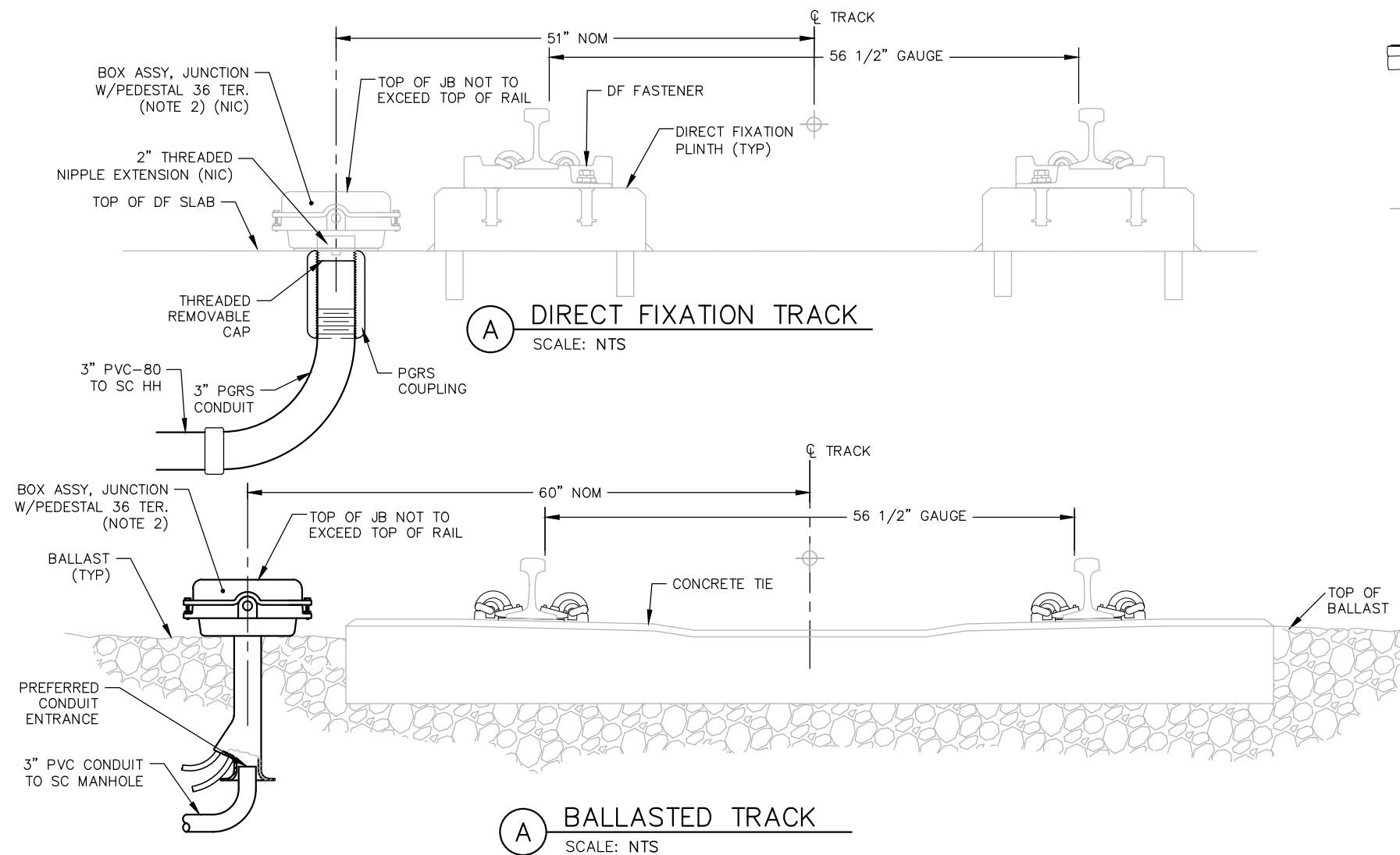
**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
DOUBLE IMPEDANCE BOND
BALLASTED TRACK INSTALLATION**

DISCIPLINE:
SYSTEMS

SHEET NAME:
E0-SYS-SWE-DTL-025

**SHEET
183
OF
224**

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NOTES:

1. SWITCH MACHINE SHOWN FOR REFERENCE ONLY. FOR BALLASTED TRACK ONLY PEDESTAL JUNCTION BOX AND RELATED CONDUIT EQUIPMENT IS INCLUDED IN THIS CONTRACT. FOR DF TRACK ONLY CONDUIT STUB-UP IS INCLUDED IN THIS CONTRACT.
2. PLACE PEDESTAL JUNCTION BOX OR STUB-UP ON THE SWITCH MACHINE SIDE OF THE RAILS FOR COORDINATION WITH THE SWITCH MACHINE AND RELATED EQUIPMENT.
3. PEDESTAL JUNCTION BOX MUST BE SUBMITTED FOR APPROVAL

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**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
MAINLINE SWITCH MACHINE - DIRECT
FIXATION&BALLASTED TRACK INSTALLATION**

DISCIPLINE: **SYSTEMS** SHEET NAME: **E0-SYS-SWE-DTL-026**

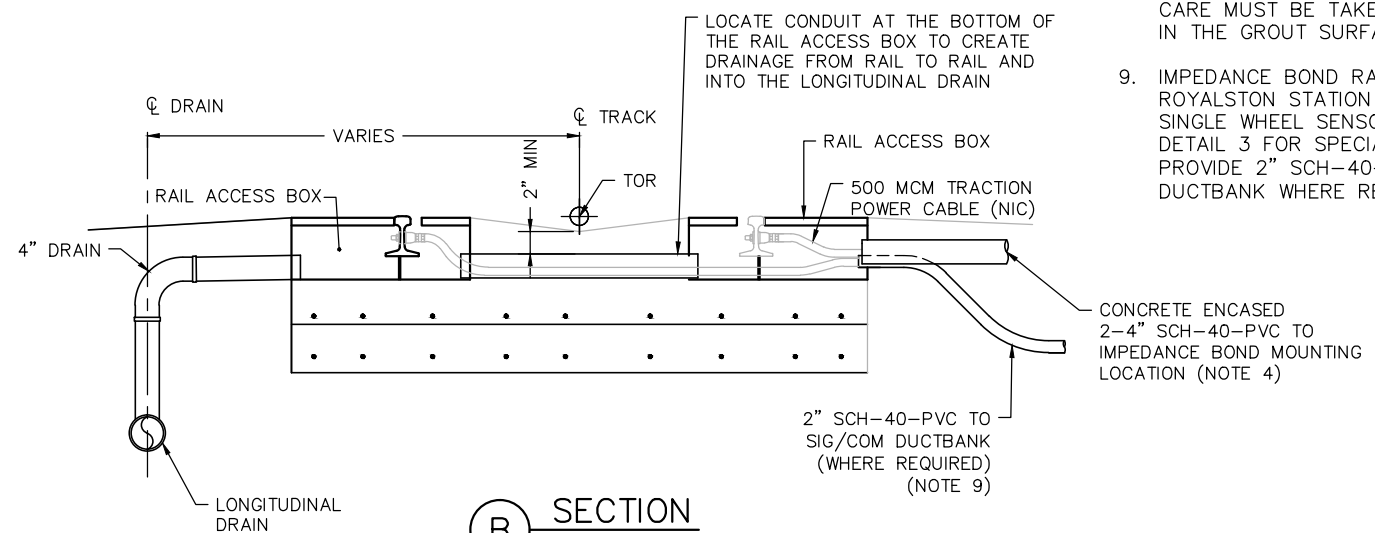
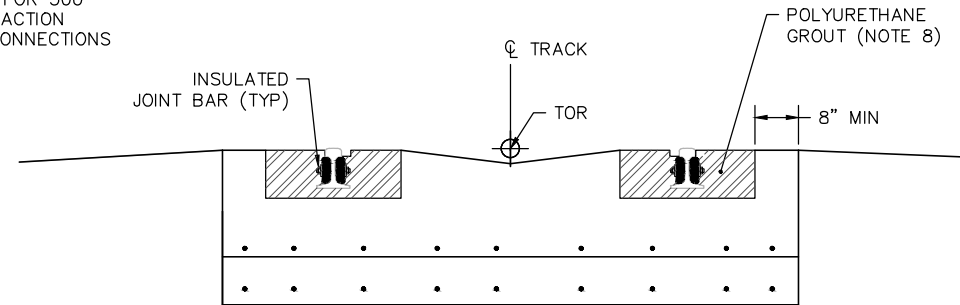
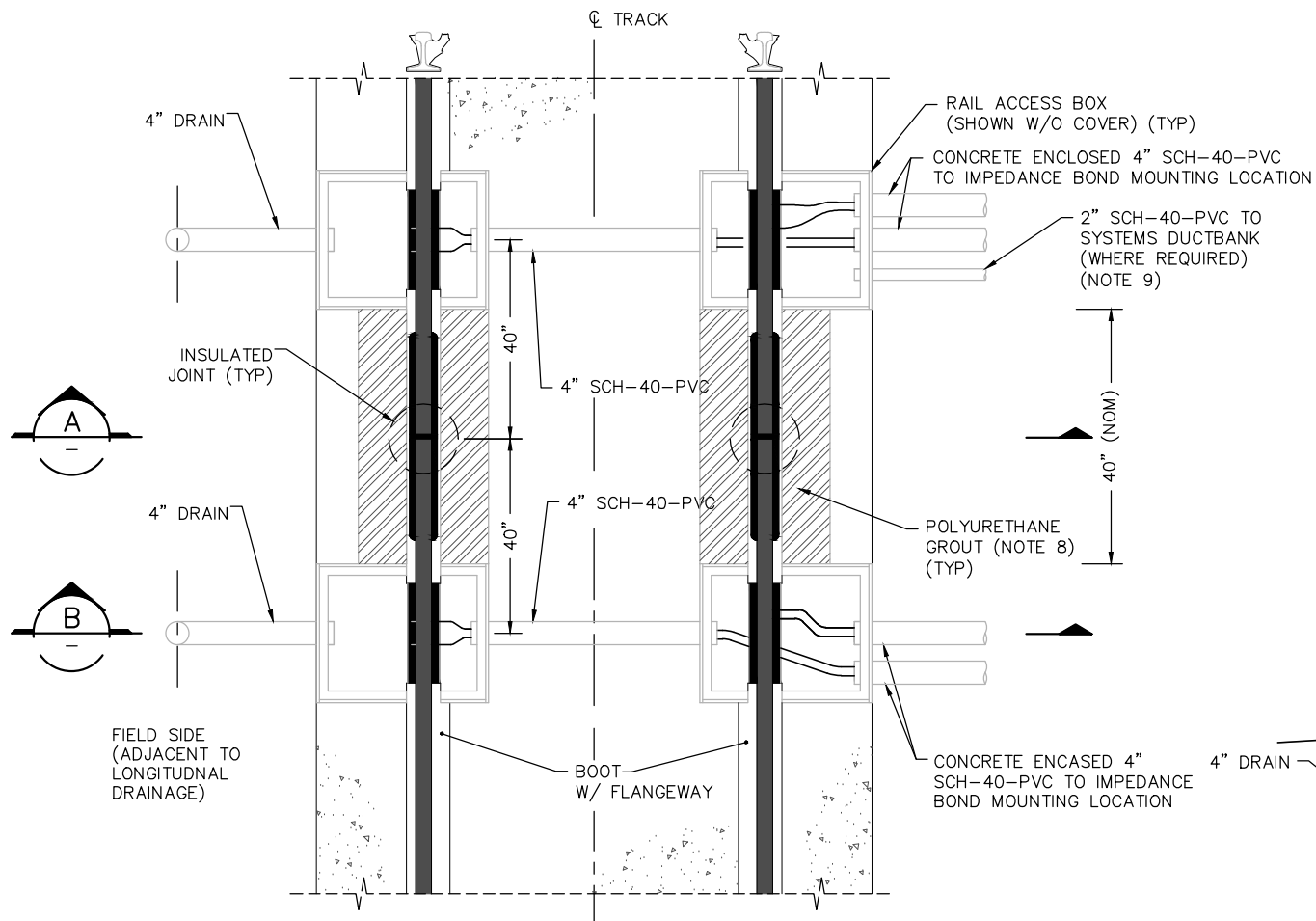
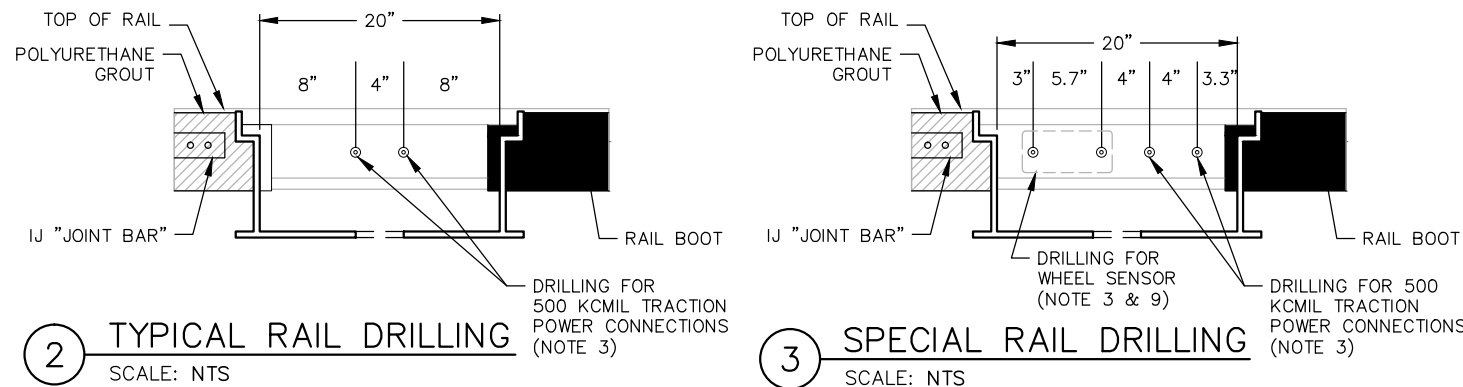
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NOTES:

1. FOR RAIL ACCESS BOX SEE SHEET E0-SYS-SWE-DTL-SIG-022.
2. RAB AND DEVICES ARRANGED TO PROVIDE A 36" INSULATED JOINT BAR 2 INCHES OF ROOM FROM END OF BAR TO THE EDGE OF THE BOX. THE POLYURETHANE GROUT EXTENDS TO THE INSIDE EDGE OF THE RAB. INSTALL CONCRETE ON THE OUTSIDE WITH A MINIMUM CONCRETE WIDTH OF 8 INCHES.
3. ALL NECESSARY DRILLING OF THE RAIL WEB MUST BE PERFORMED PRIOR TO RAIL ACCESS BOX INSTALLATION. DRILL THE RAIL USING THE DRILLING TEMPLATE DESIGNATED BY THE EQUIPMENT MANUFACTURER, AT THE LOCATIONS INDICATED.
4. CONDUITS WILL EXTEND TO THE IMPEDANCE BOND MOUNTING ASSEMBLY DETAILED ON DRAWING SWE-DTL-SIG-020.
5. TAPER CONCRETE FROM THE EDGE OF THE RAIL ACCESS BOX TO CREATE SURFACE DRAINAGE AWAY FROM THE BOX, TO PROTECT THE EDGES OF THE BOX AND TO PRESERVE THE DRAINAGE INVERT BETWEEN THE RAILS.
6. CABLES FOR TRACTION POWER AND SIGNAL CONNECTIONS WILL BE INSTALLED BY SYSTEMS CONTRACTOR.
7. ADJUST THE CONDUITS INSTALLED FOR THIS INSTALLATION TO COORDINATE WITH THE IMPEDANCE BOND MOUNTING LOCATION AS REQUIRED.
8. FILL THE CHANNEL BETWEEN THE RAIL ACCESS BOXES WITH POLYURETHANE GROUT OF A TYPE APPROVED FOR THIS PURPOSE BY THE CAR. CARE SHALL BE TAKEN TO SEAL THE RAB AGAINST GROUT RUNNING INTO THE BOX, AND CARE MUST BE TAKEN TO FORM A FLANGWAY IN THE GROUT SURFACE.
9. IMPEDANCE BOND RAIL ACCESS BOXES AT ROYALSTON STATION REQUIRE PROVISIONS FOR SINGLE WHEEL SENSOR INSTALLATION. SEE DETAIL 3 FOR SPECIAL RAIL RAIL DRILLING. PROVIDE 2" SCH-40-PVC TO SIG/COM DUCTBANK WHERE REQUIRED.

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**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
IMPEDANCE BOND ISOLATION
EMBEDDED TRACK INSTALLATION**

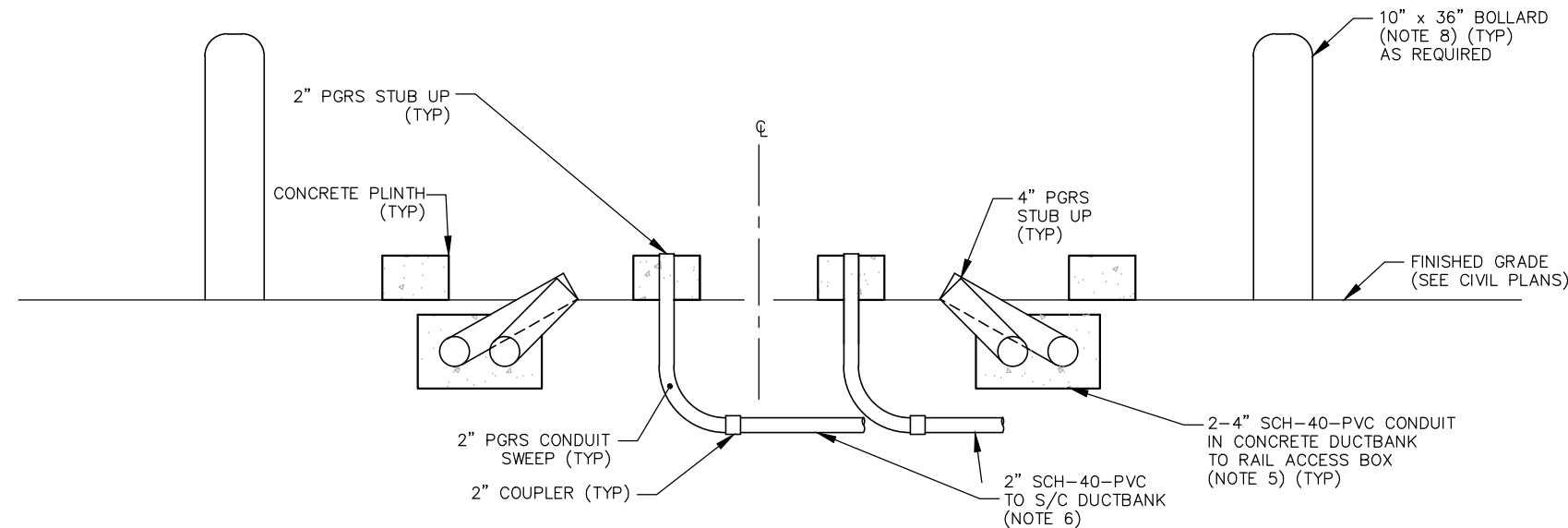
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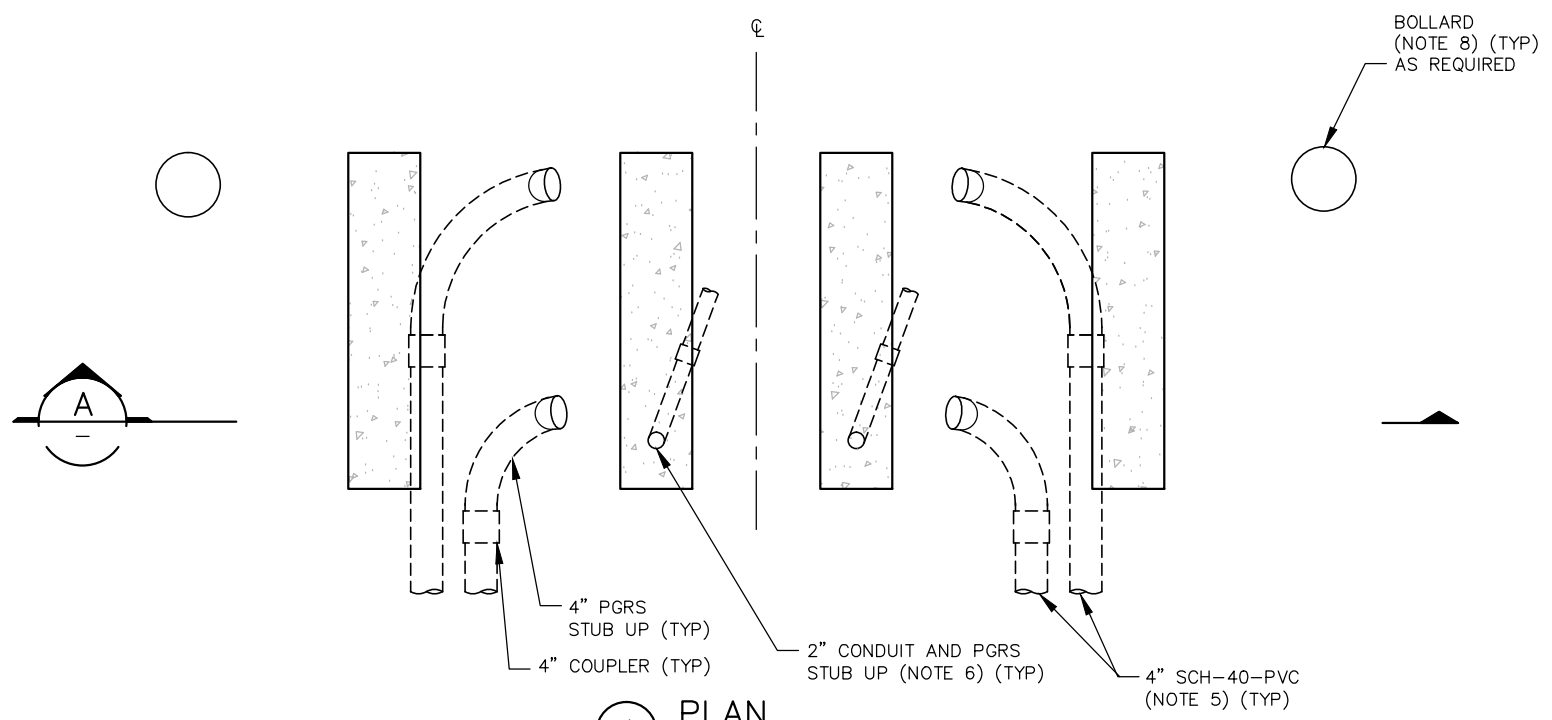
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186
OF
224**

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A SECTION
SCALE: NTS



1 PLAN
SCALE: NTS

NOTES:

1. CONCRETE PLINTHS ARE ARRANGED TO ALLOW THE MOUNTING OF STANDARD RAIL IMPEDANCE BONDS SIMILAR TO STANDARD TIE MOUNTED INSTALLATIONS.
2. THE 6" PLINTH HEIGHT ACCOMODATES A TYPICAL IMPEDANCE BOND DEPTH AND AN ADDITIONAL 2" OF CLEARANCE BELOW.
3. CONSTRUCTION TOLERANCES FOR CONCRETE PLINTH AND PGRS STUB UP DIMENSIONS ARE +/- 1/4".
4. SUBMIT INSTALLATION DETAILS AND PROCEDURES, INCLUDING REINFORCING, ATTACHMENT OF THE PLINTHS TO THE CONCRETE PAVEMENT, AND FINISHING OF THE PLINTH CONCRETE.
5. CONCRETE ENCASED 4" CONDUIT AND PGRS STUB UP FOR NEGATIVE RAIL CONNECTION FROM THE RAIL ACCESS BOX TO THE IMPEDANCE BOND MOUNTED ON THE PLINTHS.
6. 2" PGRS CONDUIT STUB UP FOR TRACK CIRCUIT JUNCTION BOX. CONTINUE 2" CONDUIT TO S/C DUCTBANK AS SHOWN ON THE SWE PLANS.
7. BOLLARD QUANTITY AND PLACEMENT MAY BE ADJUSTED BASED UPON SITE CONDITIONS. SUBMIT SPECIFIC LAYOUT PLANS FOR EACH INSTALLATION.
8. ADJUST THE CONDUITS TO SWEEP AT AN ANGLE THAT PROVIDES A LARGE RADIUS SWEEP, PROVIDES EASY CABLE INTERFACE WITH THE BOND CONNECTIONS AND PROVIDES POSITIVE DRAINAGE BACK TO THE RAIL ACCESS BOX OR HANDHOLE.
9. ALL CONDUIT STUB UPS SHALL TERMINATE WITH THREADED PGRS COUPLERS AND THREADED REMOVABLE CAPS.

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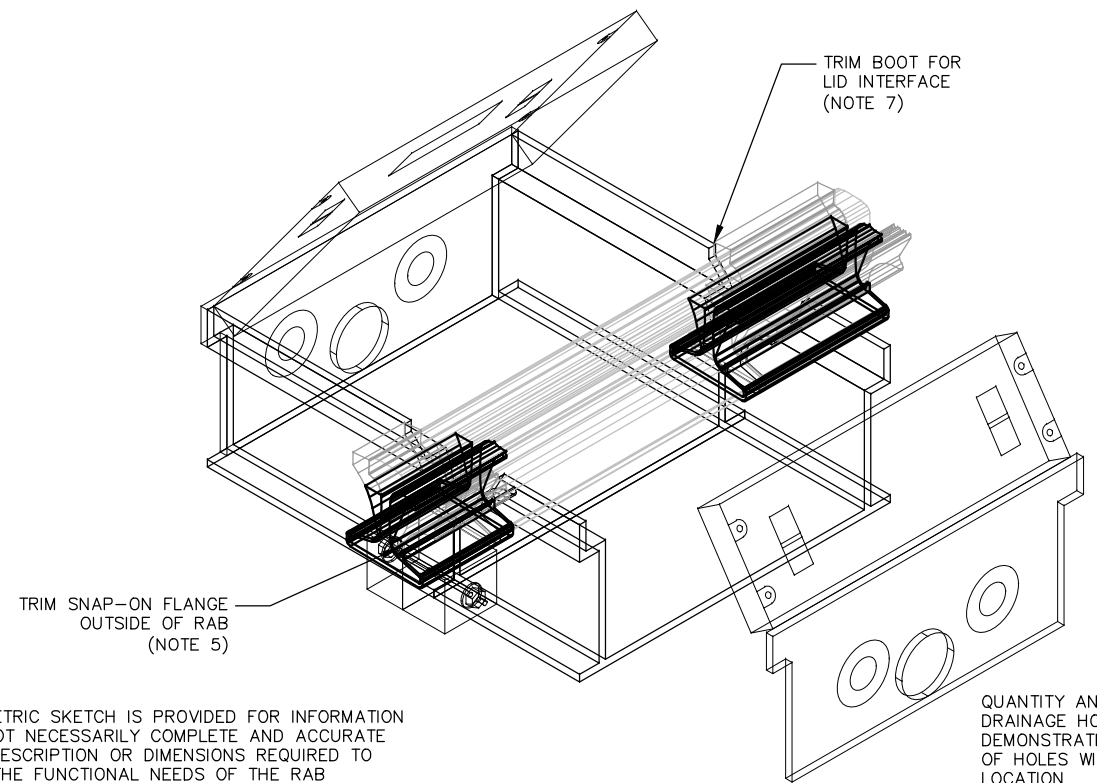
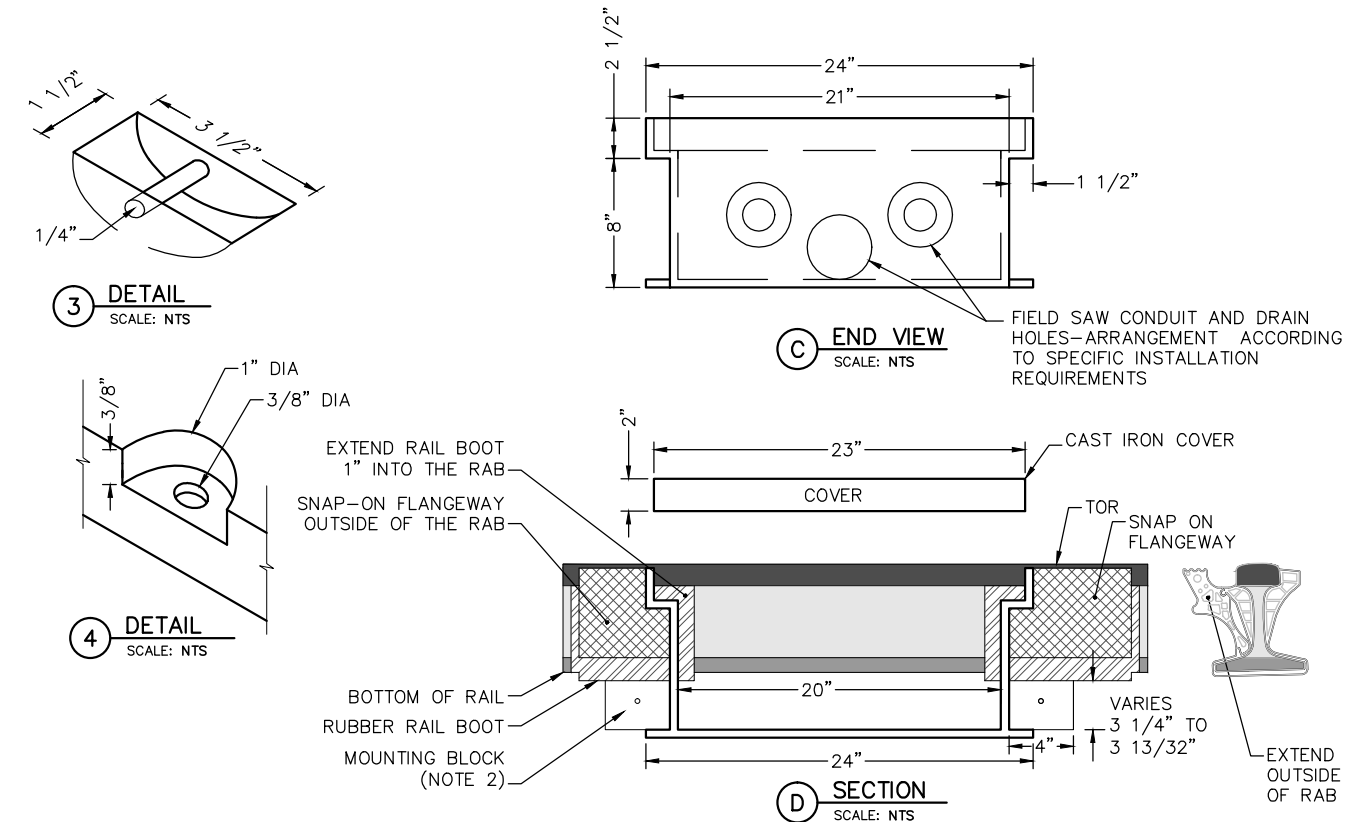
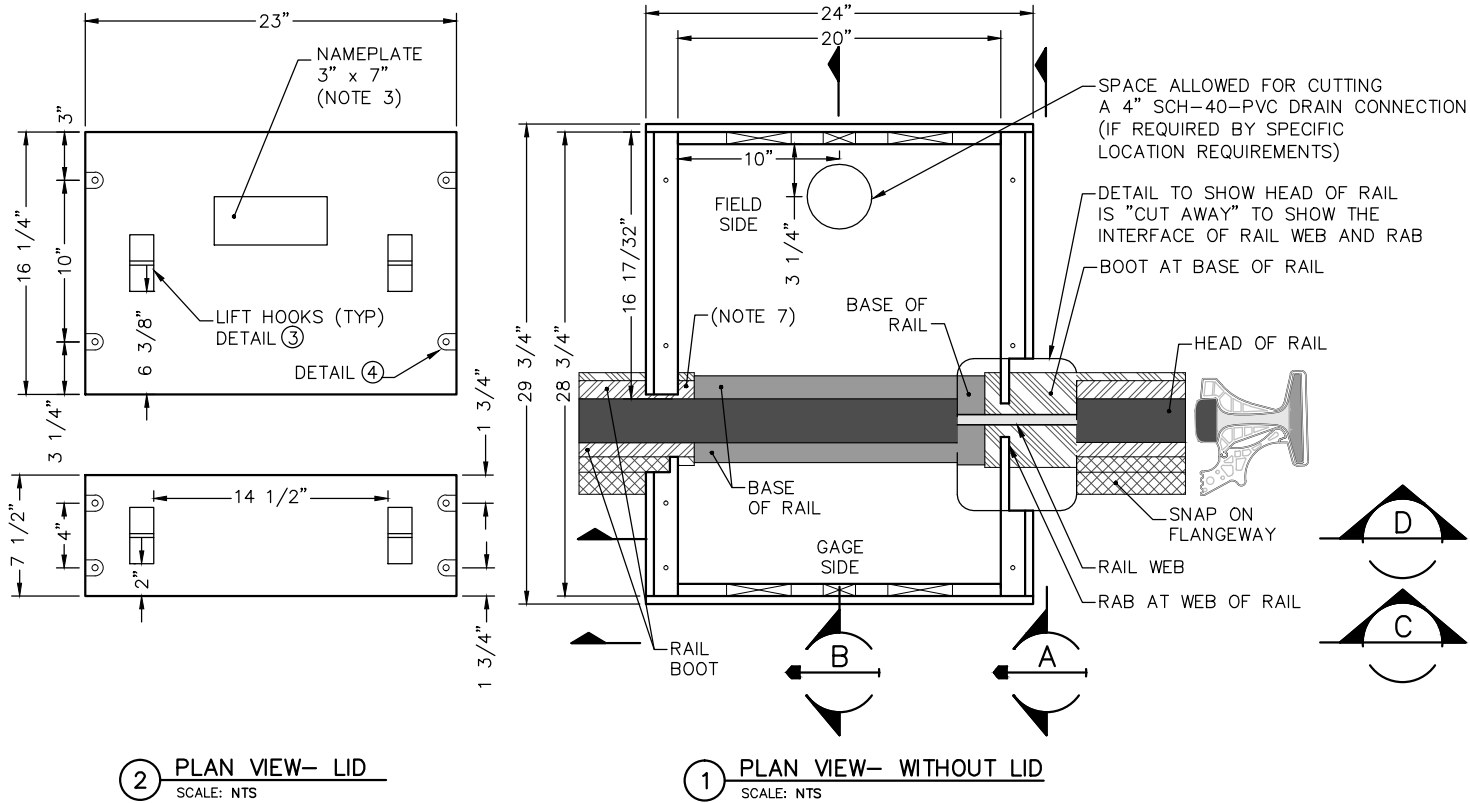
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CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
IMPEDANCE BOND - EMBEDDED TRACK
PLINTH AND CONDUIT INSTALLATION

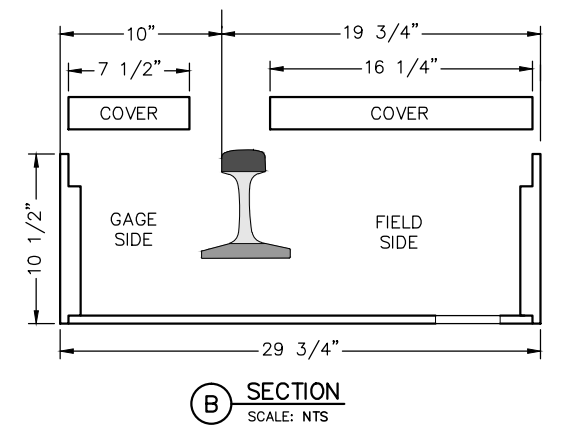
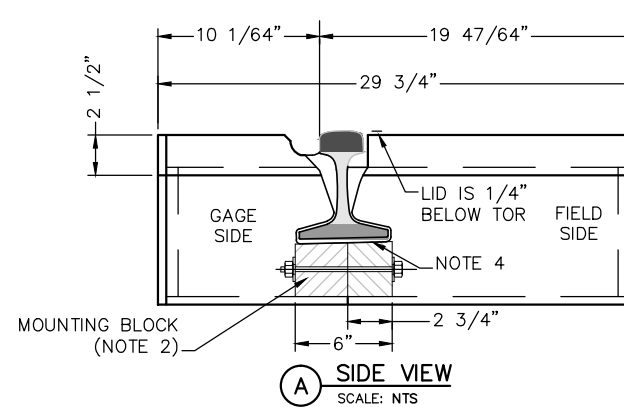
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SHEET NAME: E0-SYS-SWE-DTL-029

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NOTES:

- USE THIS RAIL ACCESS BOX (RAB) FOR ALL EMBEDDED RAIL CONNECTIONS IN EMBEDDED TRACK.
- ADD MOUNTING BLOCK TO RAB TO ACCEPT CARRIAGE BOLT, ALLOWING PERMANENT, SNUG FIT FOR BOX TO THE BOOTED RAIL WITHOUT THE FLANGE PIECE
- RAIL ACCESS BOXES SHALL BE ENGRAVED AS FOLLOWS:
SIGNAL AND WHEEL SENSOR BOXES SHALL READ: "METRO TRANSIT" "S/C"
NEGATIVE RETURN AND RAIL CROSS BOND BOXES SHALL READ: "METRO TRANSIT" "TE"
NEGATIVE RETURN COMBINED WITH WHEEL SENSOR BOXES SHALL READ: "METRO TRANSIT" "S/C"
RAIL LUBRICATOR BOXES SHALL READ: "METRO TRANSIT" "S/C"
- MATCH BOX PROFILE TO 1/40 RAIL CANT FOR 115# RAIL.
- TERMINATE THE SNAP-ON FLANGE AT EXTERIOR SURFACE OF BOX, AND CONTINUE THE BOOT TO EXTEND 1" INTO THE RAIL ACCESS BOX. SEAL BOOT TO THE RAB WITH NON-SHRINKING POLYETHYLENE SEALANT.
- BOX WILL BE CONSTRUCTED FROM NON-CONDUCTIVE, NON-CORROSIVE MATERIAL & WILL BE SAWED & DRILLED IN THE FIELD OR FACTORY AS NECESSARY
- TRIM RAIL BOOT NEAR THE HEAD OF THE RAIL TO ALLOW RAB LID TO FIT INTO THE BOX AND TO CLOSE THE GAP BETWEEN LID AND RAIL- FIELD ADJUSTMENT MAY BE REQUIRED FOR THE TRIMMING OF THE BOOT.



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Green Line LRT Extension

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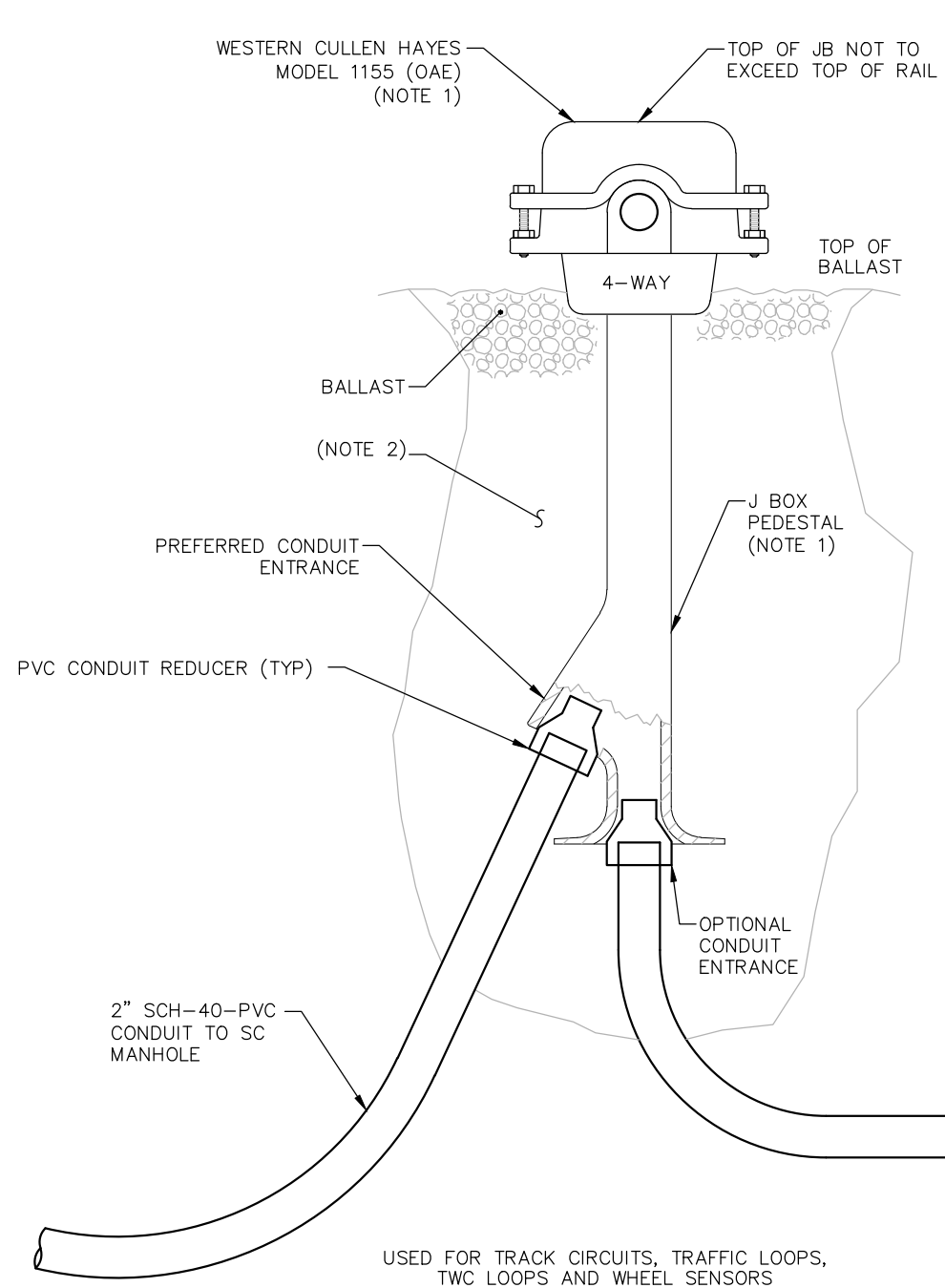
CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
TYPICAL WAYSIDE SIGNAL DETAILS
RAIL ACCESS BOX

DISCIPLINE:
SYSTEMS

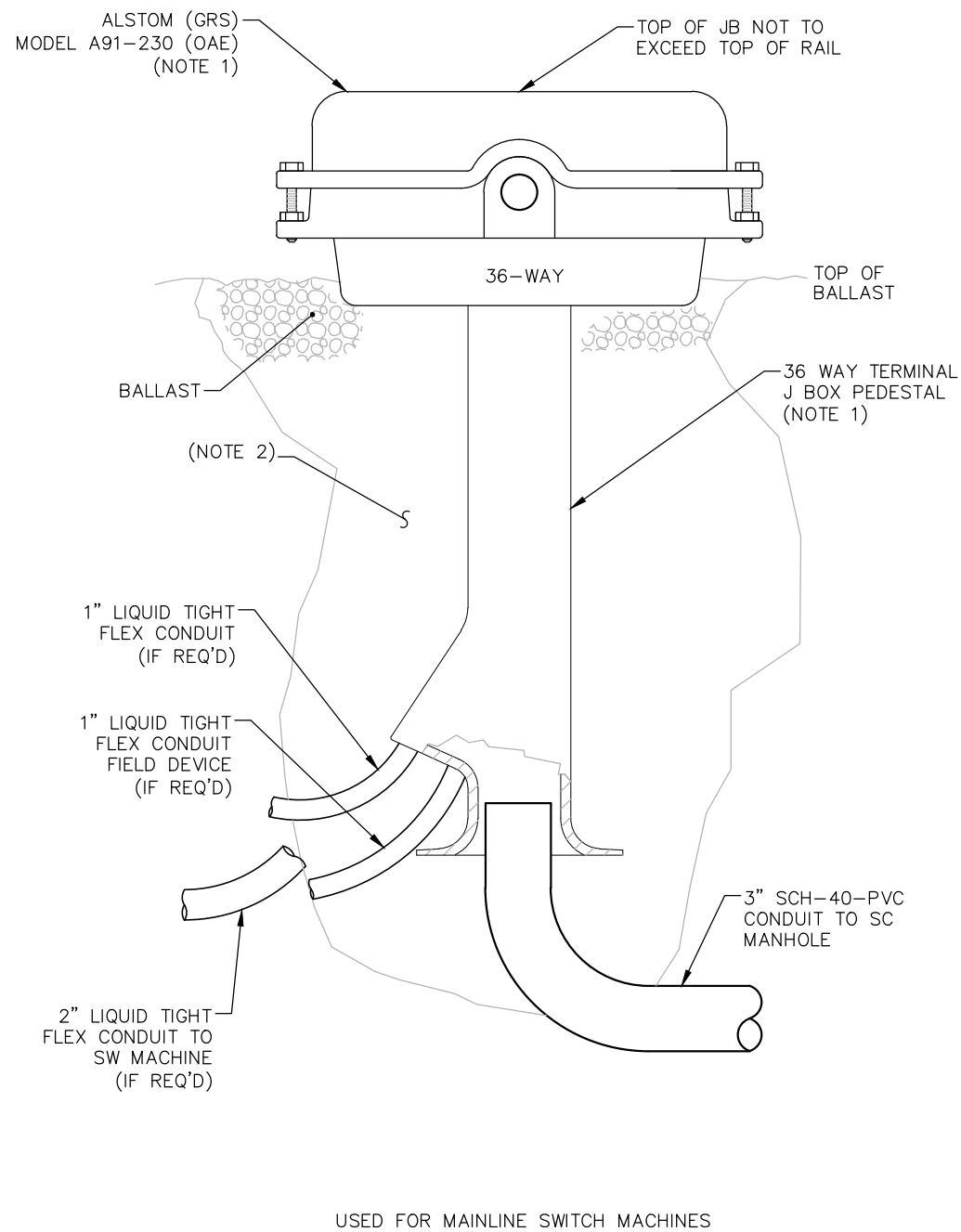
SHEET NAME:
E0-SYS-SWE-DTL-030

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1 4-WAY BOOTLEG JUNCTION BOX DETAIL
SCALE: NTS



2 36-WAY BOOTLEG JUNCTION BOX DETAIL
SCALE: NTS

NOTES:

1. EQUIPMENT DETAILS SHALL BE SUBMITTED FOR APPROVAL
2. EXCAVATION FOR BOOTLEG AND JUNCTION BOX INSTALLATION WILL REQUIRE REMOVAL OF BALLAST, SUB-BALLAST AND NATIVE SOIL OR BACKFILL MATERIALS. THESE MATERIALS MUST BE KEPT SEPARATED AND NOT MIXED TOGETHER WHEN BACKFILLING
3. THE CONTRACTOR SHALL EQUIP EACH JUNCTION BOX PROVIDED WITH A COMPLETE SET OF GOLD NUT TEST LINKS AND APPROPRIATE STRAPS FOR ALL TERMINALS.

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Green Line LRT Extension



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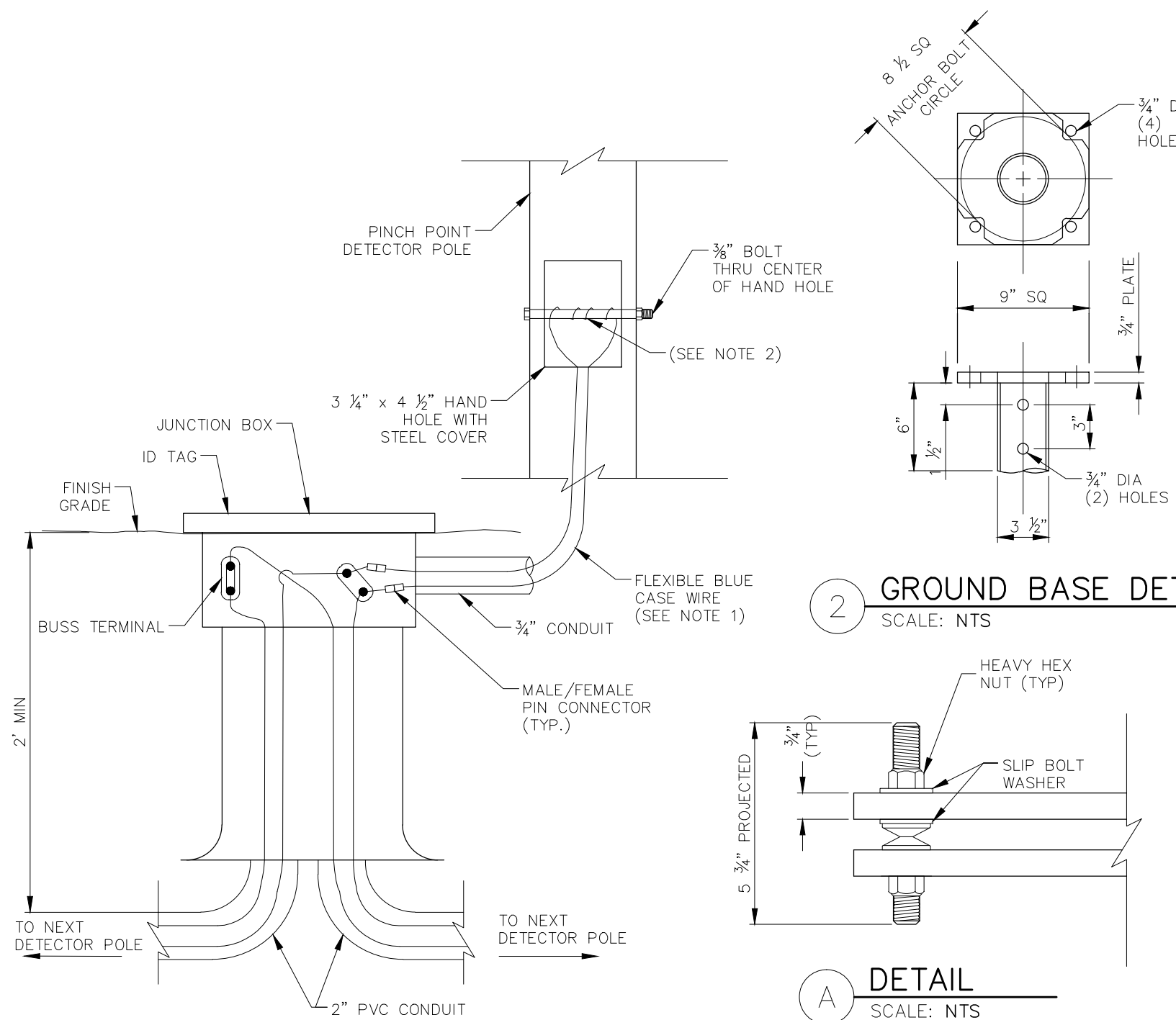
**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
BOOTLEG JUNCTION BOX INSTALLATION**

DISCIPLINE: **SYSTEMS**

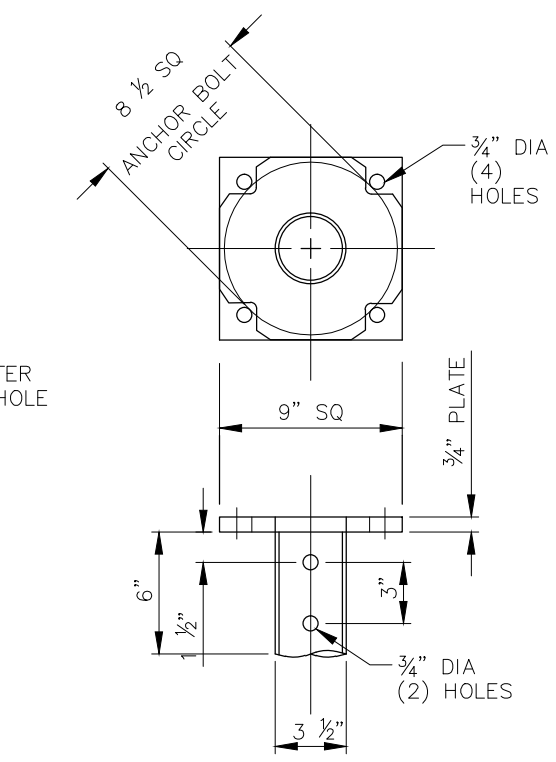
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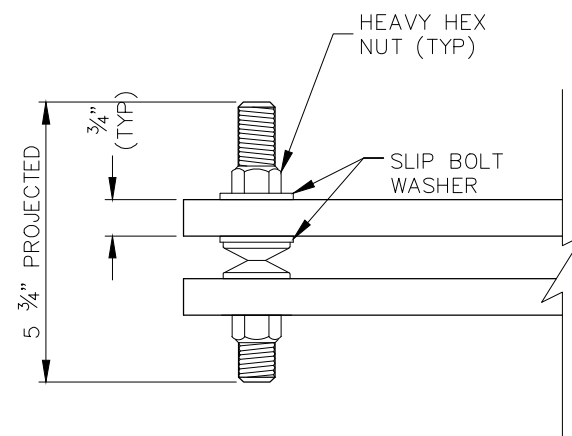
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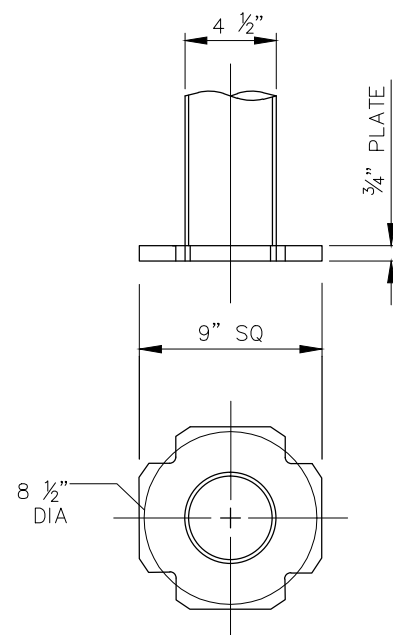
1 JUNCTION BOX AND DETECTOR POLE CONNECTION
SCALE: NTS (1 REQUIRED PER DETECTOR POLE)



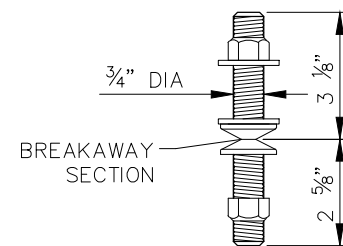
2 GROUND BASE DETAIL
SCALE: NTS



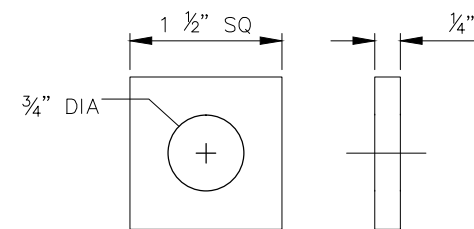
A DETAIL
SCALE: NTS



3 POLE BASE DETAIL
SCALE: NTS



4 BREAKAWAY BOLT DETAIL
SCALE: NTS (4 REQUIRED PER DETECTOR POLE)



5 SLIP BOLT WASHER
SCALE: NTS (2 REQUIRED EACH BOLT)

NOTES:

1. USE #14 FLEX BLUE CASE WIRE TO CONNECT JUNCTION BOX TO DETECTOR POLE.
2. CONNECT MALE/FEMALE PIN CONNECTORS TO RING EYELET WITH A SHORT PIECE OF #14 CASE WIRE. CONNECT TO EACH END OF #14 FLEX WIRE TO DETECTOR POLE, MAKING HALF INCH MIN AROUND 3/8\"/>
3. USE POSITIVE AND NEGATIVE BATTERY AT EVERY OTHER DETECTOR POLE.
4. MALE AND FEMALE PIN CONNECTORS SHALL BE INSULATED.
5. ALL STEEL MATERIAL SHALL BE HOT-DIPPED GALVANIZED. AVOID DAMAGING THE GALVANIZED FINISH OF MATERIALS DURING TRANSPORT AND PLACEMENT.

PINCH POINT DETECTOR – PARTS LIST				
PART NO.	DESCRIPTION	MANUFACTURER	SIZE	NOTES
C2788007	MULTI-HELIX SCREW IN FOUNDATION	HUBBLE POWER SYSTEMS	60 (IN)	POLE & FOUNDATION MOUNTING PLATE SHOWN ON THE DETAILED DRAWINGS ARE CUSTOM MADE.
TYPE 1182	JUNCTION BOX	WESTERN CULLEN HAYES	8x6x3 1/2 (IN)	
152-11-3025	TOWER & CASE WIRE	OKONITE	#14 AWG	
---	MALE/FEMALE PIN CONNECTOR	S & H TERMINAL	#14 AWG	INSULATED CONNECTORS
6882	BREAKAWAY BOLT	DENT BREAKAWAY INDUSTRIES	3/4 (IN)	

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**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
FREIGHT INTRUSION DETECTION SYSTEM
DETAIL SHEET 1**

DISCIPLINE:
SYSTEMS

SHEET NAME:
E0-SYS-SWE-DTL-032

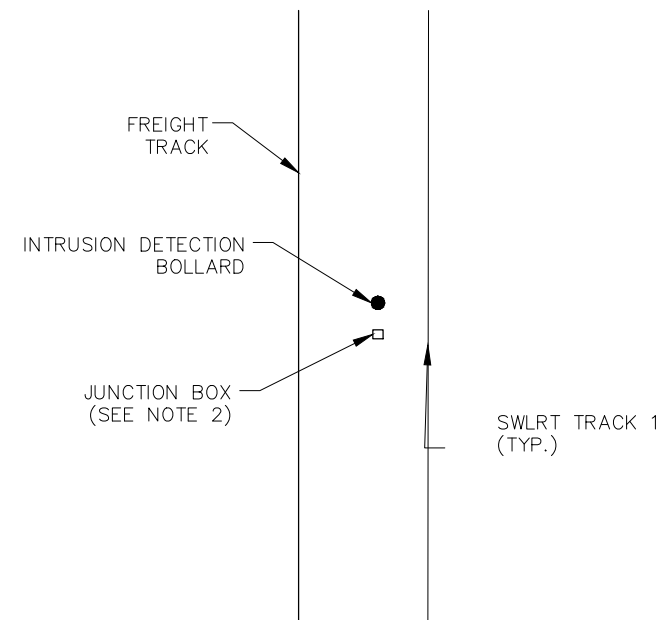
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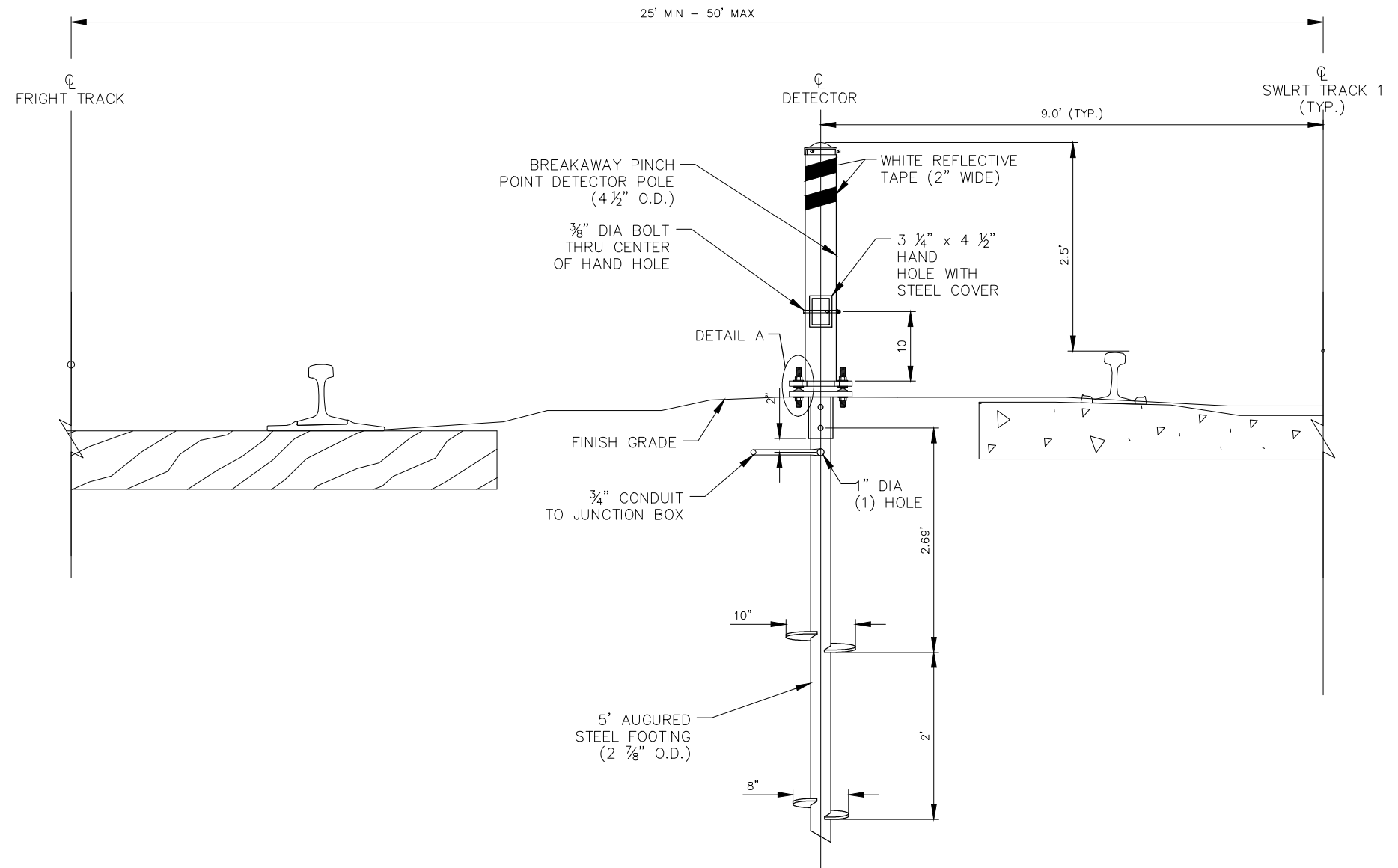
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NOTES:

1. ALL INTRUSION DETECTION EQUIPMENT TO BE INSTALLED WITHIN SWLRT ROW.
2. LOCATE JUNCTION BOX IN LINE WITH DETECTOR POLE (2' MIN CLEAR). CONNECT TO POLE WITH FLEXIBLE CONDUIT.
3. SEE SWE SHEETS FOR LOCATION AND LOCAL CONDUIT SCHEDULE.



1 TYPICAL INTRUSION DETECTION BOLLARD LAYOUT
SCALE: NTS



2 TYPICAL INTRUSION DETECTION BOLLARD SECTION
SCALE: NTS

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Green Line Light Extension

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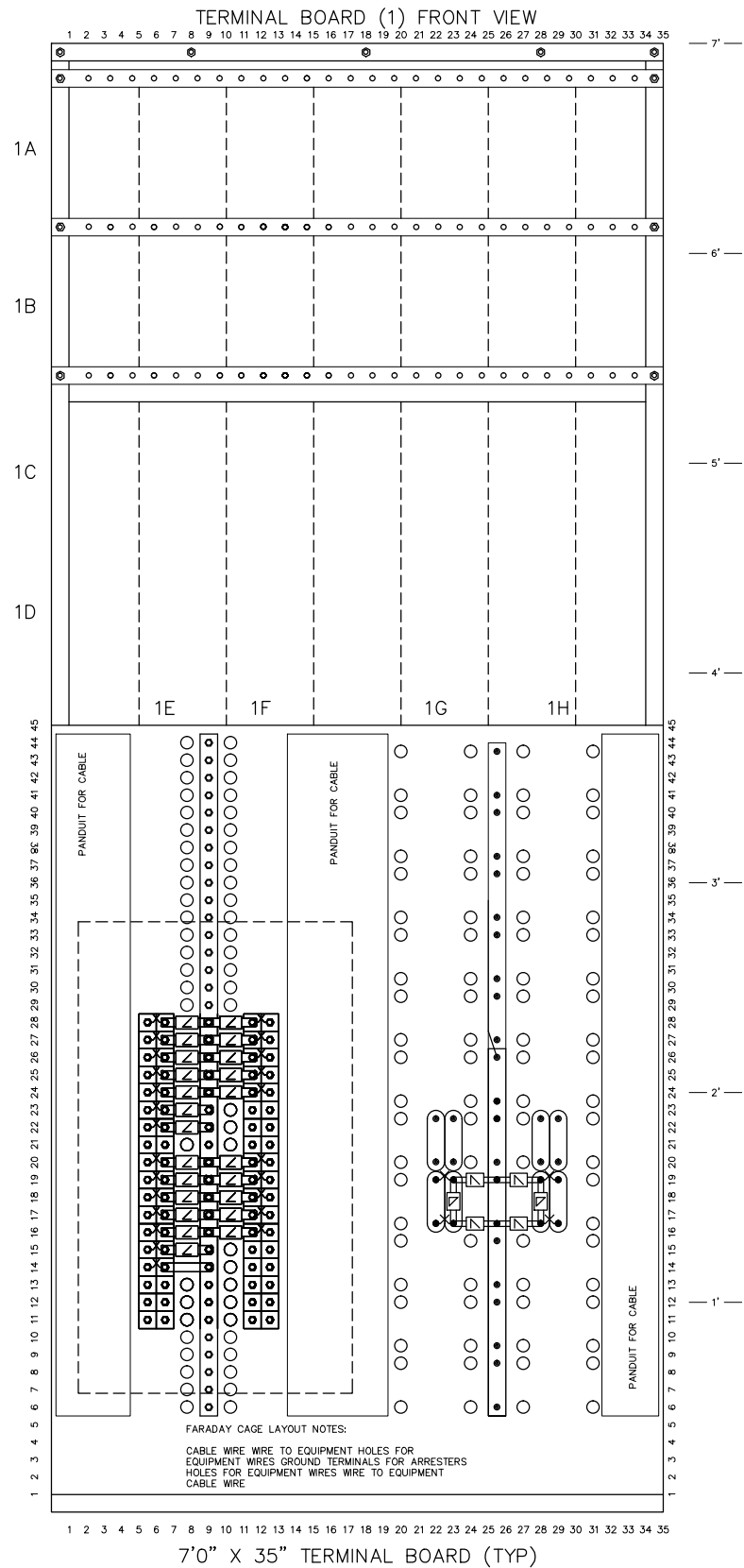
**CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
FREIGHT INTRUSION DETECTION SYSTEM
DETAIL SHEET 2**

DISCIPLINE:
SYSTEMS

SHEET NAME:
E0-SYS-SWE-DTL-033

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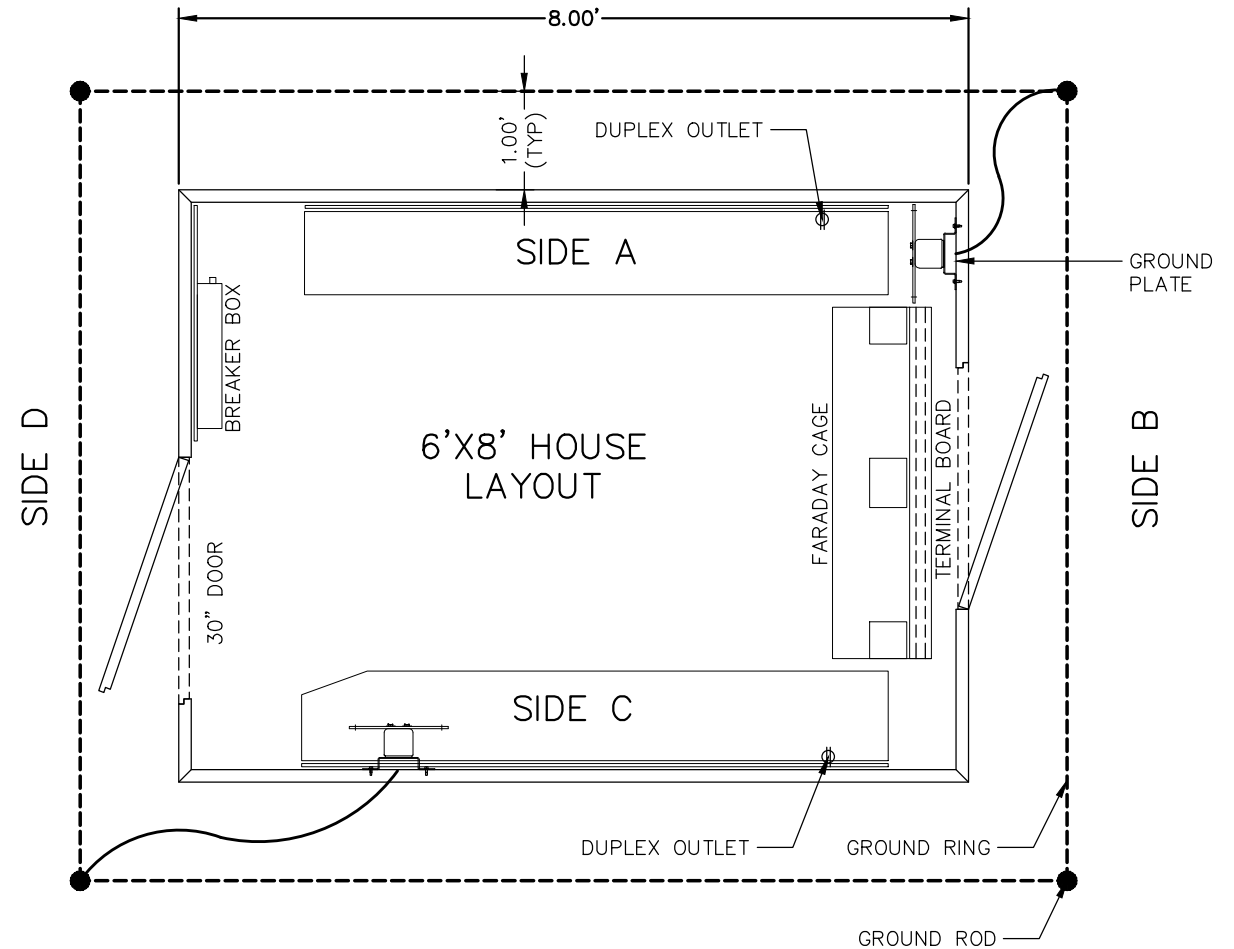


FARADAY CAGE LAYOUT NOTES:
CABLE WIRE WIRE TO EQUIPMENT HOLES FOR
EQUIPMENT WIRES GROUND TERMINALS FOR ARRESTERS
HOLES FOR EQUIPMENT WIRES WIRE TO EQUIPMENT
CABLE WIRE

CABLE SHIELDS ARE TO BE WIRED TO GROUND
SPARE CABLE CONDUCTORS ARE TO BE
CONNECTED TO GROUND

NOTES:

1. AN IP MAINTENANCE PHONE WILL BE MOUNTED ON SIDE "A". THIS PHONE WILL BE COMPLIANT WITH THE COMMUNICATION SYSTEM USED BY THE RCC FOR METRO TRANSIT MAINTENANCE.
2. THE ENTRANCE RACK SHALL BE CONFIGURED IN A FARADAY CAGE DESIGN TO PROVIDE LIGHTNING PROTECTION. THE DESIGN FOR THIS FARADAY CAGE WILL BE SUBMITTED TO THE CAR FOR APPROVAL PRIOR TO PROCUREMENT OR INSTALLATION.
3. THE CONTRACTOR SHALL PROVIDE A VENTILATION FAN AND RESISTIVE HEATER SIZED SPECIFICALLY FOR THE NEEDS OF THIS EQUIPMENT HOUSING AND FOR THIS CLIMATE. THE CLIMATE CONTROL SYSTEM WILL BE OPERATED BY A SINGLE THERMOSTAT. "OVERTEMP" AND "UNDERTEMP" ALARMS WILL BE GENERATED AND TRANSMITTED TO THE RCC VIA SCADA.



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CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
FREIGHT SIGNAL HOUSE DETAILS
TYPICAL 6'X8' GRADE CROSSING HOUSE

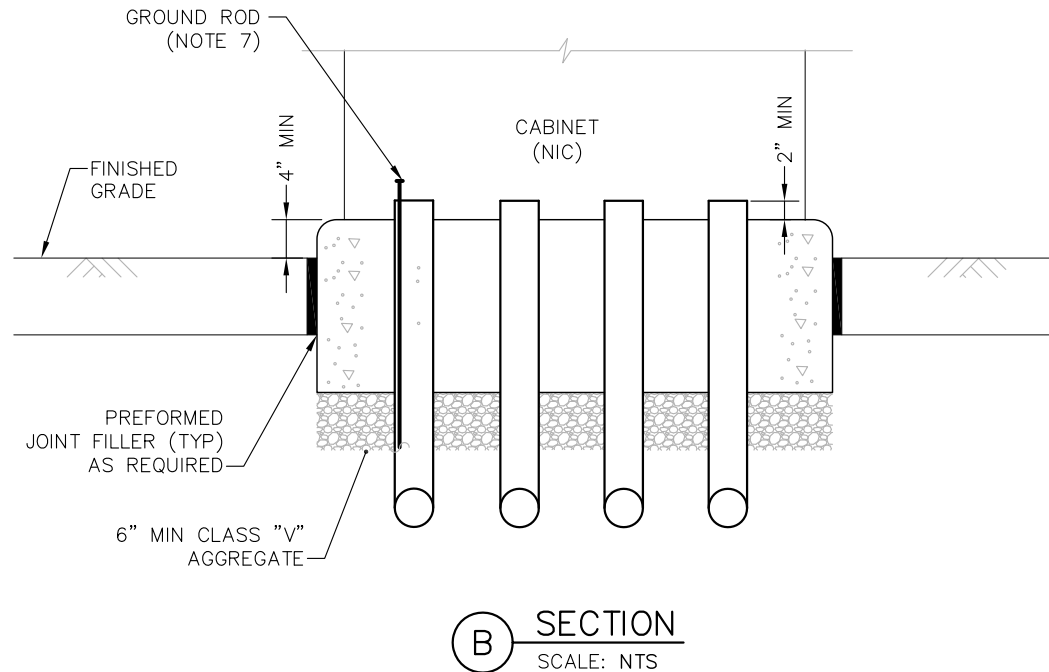
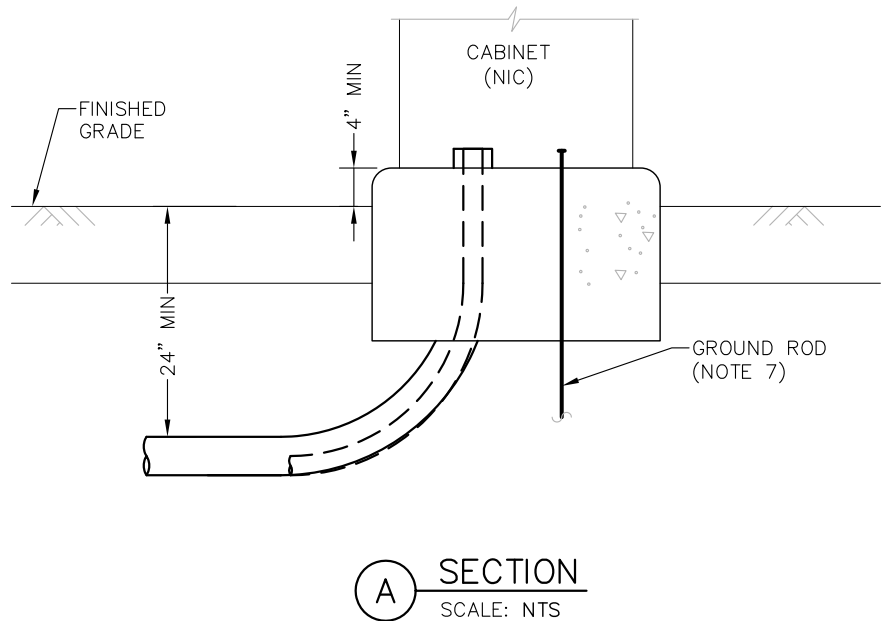
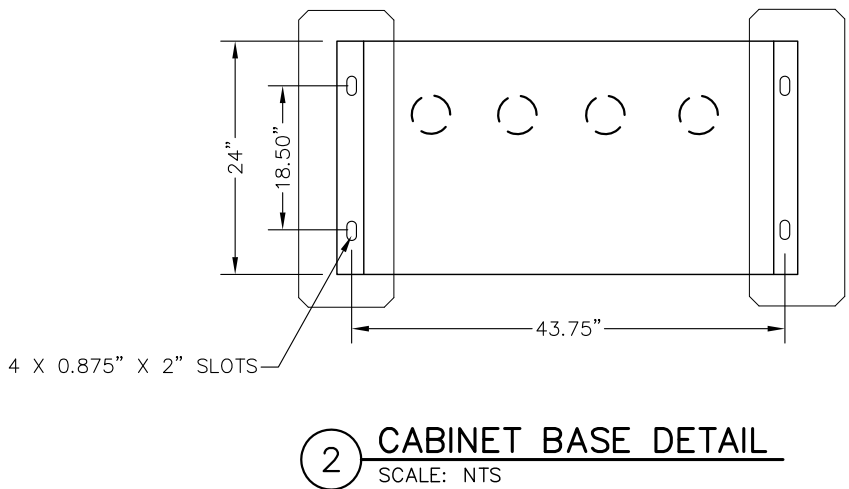
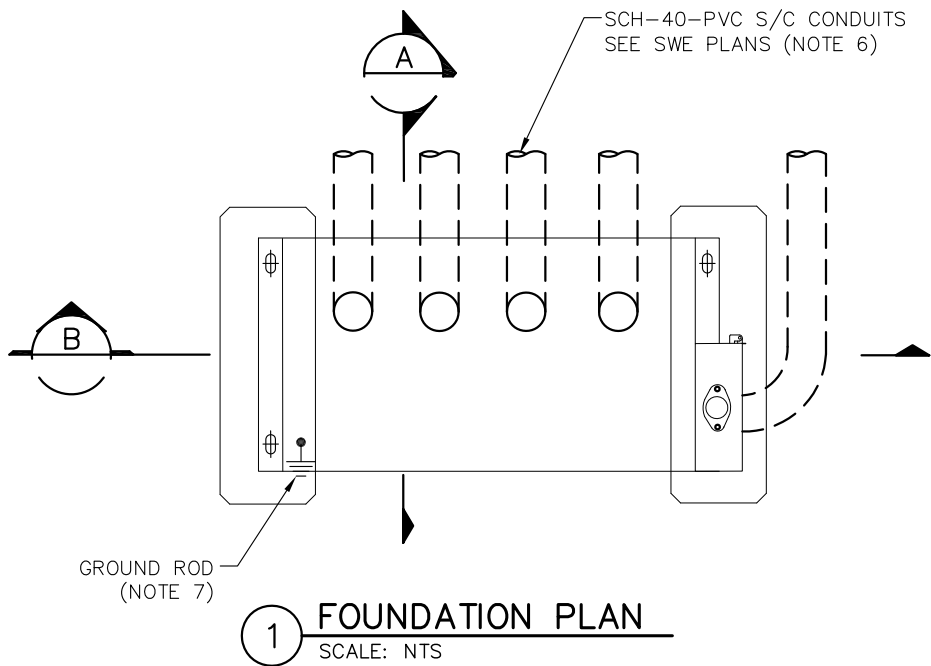
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NOTES:

1. THE ANCHOR BOLTS, NUTS AND WASHERS FOR THE CONTROLLER CABINET SHALL BE FURNISHED ACCORDING TO THE CABINET MFGR SPECIFICATIONS. ANCHOR BOLTS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.) (NIC).
2. THE UPPER PART OF THE EQUIPMENT PLINTHS SHALL BE BEVELED OR CHAMFERED IN A NEAT MANNER.
3. THE TOP OF THE CONDUITS SHALL BE CAPPED AFTER INSTALLATION.
4. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE CONCRETE AND SHALL BE LOCATED INSIDE THE CABINET AS NECESSARY AND SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.) OR WITH THE BASE DIMENSIONS OF THE CABINET.
5. CONCRETE MIX 3A32 OR EQUAL SHALL BE USED FOR THE EQUIPMENT PLINTHS IN ACCORDANCE WITH Mn/DOT STANDARD CONCRETE DESIGNS.
6. THE EXACT LOCATION AND NUMBER OF CONDUITS SHALL BE DETERMINED BY THE CONTRACT DRAWINGS. CONTRACTOR TO PROVIDE KNOCK-OUT SPACE IN FINISHED GRADE FOR ACCESS TO CONDUIT ENTRANCE.
7. ATTACH TO GROUND ROD TO INTERNAL GROUND LUG WITH #2/0 GROUNDING CONDUCTOR FOR FOUNDATIONS LESS THAN 15' FROM ϕ TRACK. USE #6 BARE COPPER GROUNDING CONDUCTOR FOR FOUNDATIONS BEYOND 15' FROM ϕ TRACK. (NIC)
8. USE AN ADEQUATE POST-INSTALLED CHEMICAL SET ANCHOR BOLT OF A DESIGN SUBMITTED FOR APPROVAL. (NIC)
9. CONCRETE PLINTHS SHALL BE POURED BASED ON CABINET MFG SPECIFICATIONS. PRE-CAST PLINTHS/PIERS MAY BE USED IN LIEU OF POURED PLINTHS. EXACT SIZE AND DEPTH OF PIERS/PLINTHS TO BE DETERMINED BY MFG SPECIFICATIONS AND CASE LOAD. FOUNDATION DESIGN MUST BE SUBMITTED FOR APPROVAL.
10. PRECAST OR POURED PLINTHS SHALL BE BASED ON PTMW P/N 41040J CASE OR APPROVED EQUAL. SEE DRAWING SYS-SIG-DTL-016 FOR ADDITIONAL DETAILS OF CASE. (NIC)



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM *MP Consultants*
CONSULTING ENGINEERING
MINNEAPOLIS MINNESOTA

60% SUBMISSION - 09/28/15

METROPOLITAN
C O U N C I L

SOUTHWEST
Green Line LRT Extension



CIVIL EAST - VOLUME 12
SYSTEMWIDE ELECTRICAL
INTRUSION DETECTION CABINET
TYPICAL FOUNDATION INSTALLATION

DISCIPLINE:

SYSTEMS

SHEET NAME:

E0-SYS-SWE-DTL-COM-001

SHEET

193

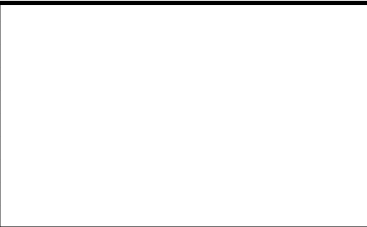
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STRUCTURE NUMBER	STATION	OFFSET (FT)	DIRECTION	REFERENCE TRACK	NORTHING	EASTING	FND TYPE	REFERENCE TOP OF FOUNDATION	MSE PROJECTION (FT)	EMBEDMENT DEPTH (FT)	FOUNDATION DRAWING NUMBER	CONDUIT NUMBER-SIZE	COMMENTS
E249755A	2497+55	6.99	L	2	146782.9526	491928.3701	FD1B	TOR	—	—	FND—001	—	—
E249755B	2497+55	21.99	L	2	146797.0539	491923.2562	FD1A	TOR	—	—	FND—001	—	—
E249775B	2497+75	22.00	L	2	146803.8830	491942.0542	FA1	TOR	—	—	FND—003	—	—
E249775A	2497+75	6.99	L	2	146789.7764	491947.1700	FA1	TOR	—	—	FND—003	—	—
E249930	2499+30	7.00	L	2	146842.6255	492092.8819	FD1A	TOR	—	—	FND—001	—	—
E250105	2501+05	7.00	L	2	146902.2879	492257.3974	FD1A	TOR	—	—	FND—001	—	—
E250260	2502+60	7.19	L	2	146955.2254	492403.0839	FA1	TOR	—	—	FND—003	—	—
E250280	2502+80	7.11	L	2	146961.8562	492421.9470	FD1B	TOR	—	—	FND—001	—	—
E250455	2504+55	9.04	L	2	147019.6908	492587.0835	FD1A	TOR	—	—	FND—001	—	—
E250605B	2506+05	16.30	L	2	147072.7891	492727.5444	FD1A	TOR	—	—	FND—001	—	—
E250605A	2506+05	7.00	L	2	147063.9447	492730.4068	FD1A	TOR	—	—	FND—001	—	—
E250625A	2506+25	7.21	L	2	147070.2999	492749.3702	FA1	TOR	—	—	FND—003	—	—
E250625B	2506+25	16.34	L	2	147078.9870	492746.5598	FA1	TOR	—	—	FND—003	—	—
E250755B	2507+55	21.28	L	2	147123.9332	492868.5712	FD1A	TOR	—	—	FND—001	—	—
E250755A	2507+55	7.00	L	2	147110.3849	492873.0853	FD1A	TOR	—	—	FND—001	—	—
E250906B	2509+06	23.34	L	2	147175.0220	493009.4460	FD1A	TOR	—	—	FND—001	—	—
E250906A	2509+06	7.00	L	2	147159.6516	493014.9856	FD1A	TOR	—	—	FND—001	—	—
E251084B	2510+84	37.38	L	2	147249.0656	493172.5518	FD1A	TOR	—	—	FND—001	—	—
E251084A	2510+84	7.00	R	2	147207.3491	493187.6805	FD1A	TOR	—	—	FND—001	—	—
E251279B	2512+79	37.38	L	2	147315.5466	493355.8692	FD1A	TOR	—	—	FND—001	—	—
E251279A	2512+79	7.00	R	2	147273.8302	493370.9979	FD1A	TOR	—	—	FND—001	—	—
E251429B	2514+29	22.32	L	2	147352.5322	493502.0215	FA1	TOR	—	—	FND—003	—	—
E251429A	2514+29	7.16	L	2	147338.2850	493507.2012	FA1	TOR	—	—	FND—003	—	—
E251449B	2514+49	23.35	L	2	147360.3356	493520.4363	FD1A	TOR	—	—	FND—001	—	—
E251449A	2514+49	7.00	L	2	147344.9757	493526.0489	FD1A	TOR	—	—	FND—001	—	—
E251594B	2515+94	19.76	L	2	147409.4490	493655.8638	FD1B	TOR	—	—	FND—001	—	—
E251594A	2515+94	7.00	L	2	147397.6736	493660.7894	FD1B	TOR	—	—	FND—001	—	—
E251739B	2517+39	12.22	L	2	147458.9246	493792.2897	FD1B	TOR	—	—	FND—001	—	—
E251739A	2517+39	7.00	L	2	147454.1194	493794.3209	FD1B	TOR	—	—	FND—001	—	—
E251899A	2518+99	7.00	R	2	147500.4337	493948.0695	FD1A	TOR	—	—	FND—001	—	—
E251899B	2518+99	21.09	L	2	147526.7944	493938.3723	FD1A	TOR	—	—	FND—001	—	—
E251919B	2519+19	21.01	L	2	147533.6129	493957.1741	FA1	TOR	—	—	FND—003	—	—
E251919A	2519+19	7.07	R	2	147507.2523	493966.8712	FA1	TOR	—	—	FND—003	—	—
E252079	2520+79	7.00	L	2	147575.0297	494112.4424	FD1A	TOR	—	—	FND—001	—	—
E252259	2522+59	7.00	L	2	147636.4584	494281.6146	FD1A	TOR	—	—	FND—001	—	—
E252439	2524+39	7.00	L	2	147699.8581	494449.9356	FD1A	TOR	—	—	FND—001	—	—
E252619	2526+19	7.00	L	2	147765.5730	494617.4772	FD1A	TOR	—	—	FND—001	—	—
E252819	2528+19	7.00	L	2	147838.7497	494803.6093	FD1A	TOR	—	—	FND—001	—	—
E253009	2530+09	7.00	L	2	147908.1708	494980.5043	FD1A	TOR	—	—	FND—001	—	—
E253179	2531+79	6.56	L	2	147967.7534	495139.8709	FA1	TOR	—	—	FND—003	—	—
E253199	2531+99	7.00	L	2	147975.0429	495158.4952	FD1B	TOR	—	—	FND—001	—	—
E253389	2533+89	7.00	L	2	148040.2265	495336.9674	FD1A	TOR	—	—	FND—001	—	—
E253554	2535+54	7.30	L	2	148097.8300	495491.4564	FD1B	TOR	—	—	FND—001	—	—
E253574	2535+74	7.30	L	2	148105.0502	495510.1076	FA1	TOR	—	—	FND—003	—	—
E253719	2537+19	7.30	L	2	148160.0531	495643.9503	FD1A	TOR	—	—	FND—001	—	—
E253884	2538+84	7.22	L	2	148228.3437	495793.8629	FD1A	TOR	—	—	FND—001	—	—
E254064	2540+64	7.00	L	2	148306.2794	495956.0734	FD3A	TOR	3	—	FND—004	—	—
E254254	2542+54	7.00	L	2	148388.9131	496127.1631	FD3A	TOR	8	—	FND—004	—	—
E254445	2544+45	7.00	L	2	148471.7356	496298.6455	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E254635	2546+35	6.99	L	2	148554.9987	496469.4272	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS

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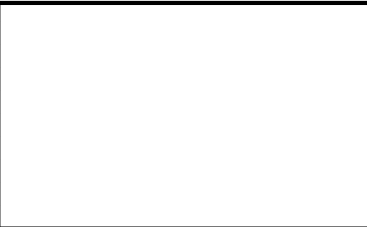
CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION SCHEDULE
SHEET 1 OF 12

DISCIPLINE: OCS SHEET NAME: E0-SYS-OCS-PFS-001

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STRUCTURE NUMBER	STATION	OFFSET (FT)	DIRECTION	REFERENCE TRACK	NORTHING	EASTING	FND TYPE	REFERENCE TOP OF FOUNDATION	MSE PROJECTION (FT)	EMBEDMENT DEPTH (FT)	FOUNDATION DRAWING NUMBER	CONDUIT NUMBER-SIZE	COMMENTS
E254815	2548+15	7.00	L	2	148636.4183	496629.9665	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E254995	2549+95	7.00	L	2	148718.4177	496790.2069	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E255135	2551+35	6.85	L	2	148782.0343	496914.9251	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E255155	2551+55	7.00	L	2	148791.2140	496932.6895	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E255295	2552+95	6.94	L	2	148852.4784	497058.5888	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E255315	2553+15	7.00	L	2	148860.9365	497076.7080	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E255469	2554+69	7.00	L	2	148923.0829	497218.7038	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E255614	2556+14	7.00	L	2	148978.8547	497352.5489	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E255634	2556+34	7.02	L	2	148986.5501	497371.0049	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E255759	2557+59	7.00	L	2	149034.6569	497486.3813	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E255779	2557+79	7.00	L	2	149042.4378	497504.8014	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E255915	2559+15	7.00	L	2	149096.5426	497628.4910	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E256070	2560+70	7.08	L	2	149162.0855	497768.9512	FD3A	TOR	23	—	FND-004	—	—
E256245	2562+45	7.00	L	2	149237.6206	497926.8040	FD3A	TOR	14	—	FND-004	—	—
E256445	2564+45	7.00	L	2	149324.0100	498107.1127	FD3A	TOR	6	—	FND-004	—	—
E256625	2566+25	7.00	L	2	149401.7855	498269.4425	FA1	TOR	—	—	FND-003	—	—
E256645	2566+45	7.00	L	2	149410.4272	498287.4792	FD1B	TOR	—	—	FND-001	—	—
E256800	2568+00	7.00	L	2	149477.4005	498427.2632	FA1	TOR	—	—	FND-003	—	—
E256820	2568+20	7.00	L	2	149486.0422	498445.2999	FD1B	TOR	—	—	FND-001	—	—
E256970	2569+70	7.10	L	2	149550.7692	498580.6159	FD1B	TOR	—	—	FND-001	—	—
E257119	2571+19	9.69	L	2	149613.2781	498716.9947	FD1B	TOR	—	—	FND-001	—	—
E257139	2571+39	9.90	L	2	149621.1551	498735.3781	FA1	TOR	—	—	FND-003	—	—
E257269B	2572+69	20.10	L	2	149680.4808	498851.1245	FD1A	TOR	—	—	FND-001	—	—
E257269A	2572+69	7.00	L	2	149668.4140	498856.2318	FD1A	TOR	—	—	FND-001	—	—
E257289	2572+89	20.97	L	2	149689.1225	498869.1612	FA1	TOR	—	—	FND-003	—	—
E257444A	2574+44	7.00	L	2	149740.9119	499015.1514	FD1A	TOR	—	—	FND-001	—	—
E257444B	2574+44	23.38	L	2	149755.6794	499008.0760	FD1A	TOR	—	—	FND-001	—	—
E257620A	2576+20	7.00	R	2	149804.3176	499179.8905	FD1A	TOR	—	—	FND-001	—	—
E257620B	2576+20	37.38	L	2	149844.3365	499160.7167	FD1A	TOR	—	—	FND-001	—	—
E257795A	2577+95	7.00	R	2	149879.9326	499337.7112	FD1A	TOR	—	—	FND-001	—	—
E257795B	2577+95	37.38	L	2	149919.9515	499318.5374	FD1A	TOR	—	—	FND-001	—	—
E257970A	2579+70	7.50	L	2	149968.6242	499489.2666	FD1A	TOR	—	—	FND-001	—	—
E257970B	2579+70	22.88	L	2	149982.4899	499482.6233	FD1A	TOR	—	—	FND-001	—	—
E258101B	2581+01	21.12	L	2	150038.6610	499599.8615	FA1	TOR	—	—	FND-003	—	—
E258101A	2581+01	7.50	L	2	150026.6263	499606.2464	FA1	TOR	—	—	FND-003	—	—
E258121B	2581+21	20.38	L	2	150047.3028	499617.8982	FD1A	TOR	—	—	FND-001	—	—
E258121A	2581+21	7.50	L	2	150035.9351	499623.9480	FD1A	TOR	—	—	FND-001	—	—
E258271	2582+71	10.13	L	2	150109.7336	499754.3150	FD1B	TOR	—	—	FND-001	—	—
E258421	2584+21	7.21	L	2	150177.1893	499888.3236	FD1B	TOR	—	—	FND-001	—	—
E258440	2584+40	7.05	L	2	150185.9134	499906.3206	FA1	TOR	—	—	FND-003	—	—
E258570	2585+70	7.00	L	2	150242.1925	500023.5073	FD1A	TOR	—	—	FND-001	—	—
E258745	2587+45	7.00	L	2	150317.8075	500181.3280	FD1A	TOR	—	—	FND-001	—	—
E258920	2589+20	7.00	L	2	150393.4225	500339.1487	FA1	TOR	—	—	FND-003	—	—
E258940	2589+40	7.00	L	2	150402.0642	500357.1854	FD1B	TOR	—	—	FND-001	—	—
E259115	2591+15	7.00	L	2	150477.6792	500515.0060	FA1	TOR	—	—	FND-003	—	—
E259135	2591+35	7.00	L	2	150486.3210	500533.0427	FD1B	TOR	—	—	FND-001	—	—
E259588B	2595+88	21.00	L	2	150585.3638	500707.3600	FD1B	TOR	—	—	FND-001	—	—
E259588A	2595+88	7.00	R	2	150560.1125	500719.4584	FD1B	TOR	—	—	FND-001	—	—
E259788	2597+88	7.00	L	2	150659.1553	500893.7757	FD1B	TOR	—	—	FND-001	—	—
E259808	2598+08	7.00	L	2	150667.7970	500911.8124	FA1	TOR	—	—	FND-003	—	—

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL





60% SUBMISSION - 09/28/15



CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION SCHEDULE
SHEET 2 OF 12

DISCIPLINE: OCS
SHEET NAME: E0-SYS-OCS-PFS-002

[illegible]

METROPOLITAN
COUNCIL



**CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION SCHEDULE
SHEET 3 OF 12**

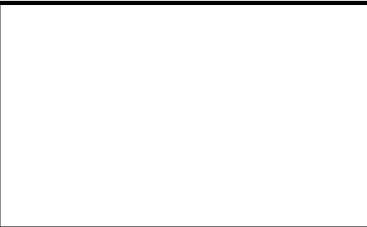
DISCIPLINE: **OCS**

SHEET NAME:	E0-SYS-OCS-PFS-003
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STRUCTURE NUMBER	STATION	OFFSET (FT)	DIRECTION	REFERENCE TRACK	NORTHING	EASTING	FND TYPE	REFERENCE TOP OF FOUNDATION	MSE PROJECTION (FT)	EMBEDMENT DEPTH (FT)	FOUNDATION DRAWING NUMBER	CONDUIT NUMBER-SIZE	COMMENTS
E264872	2648+72	20.85	L	2	152820.5150	505483.3357	FA1	TOR	—	—	FND—003	—	—
E264992	2649+92	10.83	L	2	152879.4422	505588.8068	FD1B	TOR	—	—	FND—001	—	—
E265012	2650+12	9.89	L	2	152889.5816	505606.0461	FA1	TOR	—	—	FND—003	—	—
E265122	2651+22	8.74	L	2	152947.1459	505700.2560	FD1A	TOR	—	—	FND—001	—	—
E265252	2652+52	7.72	L	2	153011.2689	505813.7210	FD1A	TOR	—	—	FND—001	—	—
E265362	2653+62	7.09	L	2	153062.1872	505911.5579	FA1	TOR	—	—	FND—003	—	—
E265382	2653+82	7.16	L	2	153071.2273	505929.3982	FD1B	TOR	—	—	FND—001	—	—
E265491	2654+91	7.00	L	2	153118.7385	506027.3219	FA1	TOR	—	—	FND—003	—	—
E265511	2655+11	7.00	L	2	153127.3802	506045.3586	FD1B	TOR	—	—	FND—001	—	—
E265631	2656+31	7.00	L	2	153179.2305	506153.5785	FD1B	TOR	—	—	FND—001	—	—
E265671	2656+71	21.00	L	2	153209.1396	506183.6026	FA1	TOR	—	—	FND—003	—	—
E265691	2656+91	21.00	L	2	153217.7813	506201.6392	FD1B	TOR	—	—	FND—001	—	—
E265751	2657+51	7.00	R	2	153218.4551	506267.8476	FD1B	TOR	—	—	FND—001	—	—
E265771	2657+71	7.00	R	2	153227.0968	506285.8842	FA1	TOR	—	—	FND—003	—	—
E265851	2658+51	21.00	L	2	153286.9150	506345.9324	FD1B	TOR	—	—	FND—001	—	—
E265931	2659+31	7.00	R	2	153296.2306	506430.1774	FD1B	TOR	—	—	FND—001	—	—
E266021	2660+21	21.00	L	2	153360.3696	506499.2440	FD1B	TOR	—	—	FND—001	—	—
E266091	2660+91	7.00	R	2	153365.3643	506574.4706	FA1	TOR	—	—	FND—003	—	—
E266111	2661+11	7.00	R	2	153374.0060	506592.5073	FD1B	TOR	—	—	FND—001	—	—
E266181	2661+81	21.00	L	2	153429.5033	506643.5372	FD1B	TOR	—	—	FND—001	—	—
E266201	2662+01	21.00	L	2	153438.1450	506661.5738	FA1	TOR	—	—	FND—003	—	—
E266261	2662+61	7.27	L	2	153451.3139	506721.8706	FD1B	TOR	—	—	FND—001	—	—
E266281	2662+81	7.67	L	2	153459.9556	506739.9072	FA1	TOR	—	—	FND—003	—	—
E266361	2663+61	9.37	L	2	153493.5222	506812.8155	FD1B	TOR	—	—	FND—001	—	—
E266471	2664+71	7.50	L	2	153534.1287	506915.1434	FD1A	TOR	—	—	FND—001	—	—
E266491	2664+91	7.50	L	2	153541.8146	506933.6076	FA1	TOR	—	—	FND—003	—	—
E266530	2665+30	19.08	L	2	153567.5424	506965.2050	FD1A	TOR	—	—	FND—001	—	—
E266591	2665+91	7.50	L	2	153580.9279	507025.5324	FD1A	TOR	—	—	FND—001	—	—
E266700A	2667+00	7.50	L	2	153626.9435	507124.7676	FD1A	TOR	—	—	FND—001	—	—
E266700B	2667+00	22.88	L	2	153640.8090	507118.1243	FD1A	TOR	—	—	FND—001	—	—
E266885B	2668+85	37.38	L	2	153733.8221	507278.6994	FD1A	TOR	—	—	FND—001	—	—
E266885A	2668+85	7.00	R	2	153693.8033	507297.8732	FD1A	TOR	—	—	FND—001	—	—
E267100B	2671+00	37.38	L	2	153826.7205	507472.5934	FD1A	TOR	—	—	FND—001	—	—
E267100A	2671+00	7.00	R	2	153786.7017	507491.7672	FD1A	TOR	—	—	FND—001	—	—
E267291B	2672+91	22.34	L	2	153895.6777	507650.0764	FD1A	TOR	—	—	FND—001	—	—
E267291A	2672+91	7.50	L	2	153882.4171	507656.7413	FD1A	TOR	—	—	FND—001	—	—
E267421B	2674+21	16.98	L	2	153951.4978	507767.3284	FA1	TOR	—	—	FND—003	—	—
E267421A	2674+21	7.96	L	2	153943.5793	507771.6664	FA1	TOR	—	—	FND—003	—	—
E267441B	2674+41	16.26	L	2	153960.4293	507785.2233	FD1A	TOR	—	—	FND—001	—	—
E267441A	2674+41	7.50	L	2	153952.7513	507789.4393	FD1A	TOR	—	—	FND—001	—	—
E267591	2675+91	8.12	L	2	154024.6796	507920.7677	FD1A	TOR	—	—	FND—001	—	—
E267740	2677+40	7.00	L	2	154090.5059	508055.5570	FD1B	TOR	—	—	FND—001	—	—
E267760	2677+60	7.00	L	2	154099.1476	508073.5937	FA1	TOR	—	—	FND—003	—	—
E267920	2679+20	7.00	L	2	154168.2814	508217.8869	FD1A	TOR	—	—	FND—001	—	—
E268092	2680+92	7.00	L	2	154242.6000	508373.0021	FD1A	TOR	—	—	FND—001	—	—
E268264	2682+64	7.00	L	2	154316.9189	508528.1173	FD1A	TOR	—	—	FND—001	—	—
E268436	2684+36	7.00	L	2	154391.2376	508683.2325	FD1A	TOR	—	—	FND—001	—	—
E268608	2686+08	7.00	L	2	154465.5564	508838.3477	FD1A	TOR	—	—	FND—001	—	—
E268780	2687+80	7.00	L	2	154539.8751	508993.4628	FD1A	TOR	—	—	FND—001	—	—
E268917	2689+17	7.54	R	2	154585.8715	509123.1129	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL





60% SUBMISSION - 09/28/15



CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION SCHEDULE
SHEET 4 OF 12

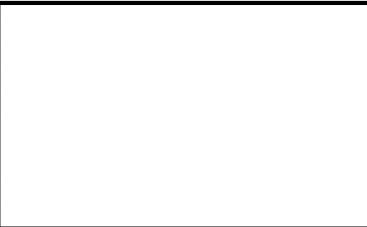
DISCIPLINE: OCS

SHEET NAME: E0-SYS-OCS-PFS-004

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STRUCTURE NUMBER	STATION	OFFSET (FT)	DIRECTION	REFERENCE TRACK	NORTHING	EASTING	FND TYPE	REFERENCE TOP OF FOUNDATION	MSE PROJECTION (FT)	EMBEDMENT DEPTH (FT)	FOUNDATION DRAWING NUMBER	CONDUIT NUMBER-SIZE	COMMENTS
E268935	2689+35	21.89	L	2	154620.0891	509126.4230	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E269066	2690+66	6.97	L	2	154663.0820	509250.6801	FA1	TOR	—	—	FND—003	—	—
E269086	2690+86	6.97	L	2	154671.7237	509268.7168	FD1B	TOR	—	—	FND—001	—	—
E269226	2692+26	7.00	L	2	154732.2428	509394.9651	FA1	TOR	—	—	FND—003	—	—
E269246	2692+46	7.00	L	2	154740.8833	509412.9993	FD1B	TOR	—	—	FND—001	—	—
E269446B	2694+46	21.00	L	2	154839.9783	509587.4256	FD1B	TOR	—	—	FND—001	—	—
E269446A	2694+46	7.00	R	2	154814.7270	509599.5240	FD1B	TOR	—	—	FND—001	—	—
E269646	2696+46	7.00	L	2	154913.7168	509773.7309	FD1B	TOR	—	—	FND—001	—	—
E269666	2696+66	7.00	L	2	154922.3585	509791.7675	FA1	TOR	—	—	FND—003	—	—
E269846	2698+46	7.00	L	2	155000.1340	509954.0973	FD1B	TOR	—	—	FND—001	—	—
E269866	2698+66	7.00	L	2	155008.7758	509972.1340	FA1	TOR	—	—	FND—003	—	—
E270046	2700+46	7.00	L	2	155086.5512	510134.4639	FD1A	TOR	—	—	FND—001	—	—
E270246	2702+46	7.00	L	2	155172.9683	510314.8304	FD1A	TOR	—	—	FND—001	—	—
E270426	2704+26	7.00	L	2	155250.7438	510477.1602	FA1	TOR	—	—	FND—003	—	—
E270446	2704+46	7.00	L	2	155259.3855	510495.1969	FD1B	TOR	—	—	FND—001	—	—
E270626	2706+26	7.04	L	2	155337.2001	510657.6903	FD1A	TOR	—	—	FND—001	—	—
E270775	2707+75	9.26	L	2	155399.9308	510793.7621	FD1B	TOR	—	—	FND—001	—	—
E270795	2707+95	10.30	L	2	155408.5725	510811.7988	FA1	TOR	—	—	FND—003	—	—
E270925B	2709+25	18.82	L	2	155466.1726	510927.9521	FD1A	TOR	—	—	FND—001	—	—
E270925A	2709+25	7.50	L	2	155455.9622	510932.8718	FD1A	TOR	—	—	FND—001	—	—
E271075	2710+75	7.50	L	2	155516.9838	511069.5136	FD1A	TOR	—	—	FND—001	—	—
E271076	2710+76	22.85	L	2	155530.9855	511063.2270	FD1A	TOR	—	—	FND—001	—	—
E271256B	2712+56	37.38	L	2	155621.9674	511219.5627	FD1A	TOR	—	—	FND—001	—	—
E271256A	2712+56	7.00	R	2	155581.9486	511238.7365	FD1A	TOR	—	—	FND—001	—	—
E271456B	2714+56	37.38	L	2	155708.3845	511399.9292	FD1A	TOR	—	—	FND—001	—	—
E271456A	2714+56	7.00	R	2	155668.3657	511419.1030	FD1A	TOR	—	—	FND—001	—	—
E271631B	2716+31	22.87	L	2	155770.9223	511564.0153	FD1A	TOR	—	—	FND—001	—	—
E271631A	2716+31	7.50	L	2	155757.0573	511570.6585	FD1A	TOR	—	—	FND—001	—	—
E271761	2717+61	7.50	L	2	155813.2285	511687.8967	FA1	TOR	—	—	FND—003	—	—
E271781B	2717+81	19.86	L	2	155833.0062	511700.5731	FD1A	TOR	—	—	FND—001	—	—
E271781A	2717+81	7.50	L	2	155821.8702	511705.9333	FD1A	TOR	—	—	FND—001	—	—
E271916	2719+16	8.51	L	2	155881.0859	511827.3853	FA1	TOR	—	—	FND—003	—	—
E271936	2719+36	8.88	L	2	155889.8970	511845.3398	FD1B	TOR	—	—	FND—001	—	—
E272036	2720+36	6.96	L	2	155928.2065	511937.8752	FD1B	TOR	—	—	FND—001	—	—
E272046	2720+46	21.15	L	2	155945.2189	511942.0013	FA1	TOR	—	—	FND—003	—	—
E272066	2720+66	21.04	L	2	155952.5789	511960.5978	FD1B	TOR	—	—	FND—001	—	—
E272131	2721+31	7.00	R	2	155950.4638	512031.3405	FD1B	TOR	—	—	FND—001	—	—
E272151	2721+51	7.00	R	2	155957.8238	512049.9370	FA1	TOR	—	—	FND—003	—	—
E272156	2721+56	21.00	L	2	155985.6989	512044.2821	FD1B	TOR	—	—	FND—001	—	—
E272241	2722+41	21.00	L	2	156016.9789	512123.3173	FD1B	TOR	—	—	FND—001	—	—
E272271	2722+71	7.00	R	2	156001.9838	512161.5161	FD1B	TOR	—	—	FND—001	—	—
E272331	2723+31	21.00	L	2	156050.0989	512207.0016	FD1B	TOR	—	—	FND—001	—	—
E272351	2723+51	21.00	L	2	156057.4589	512225.5982	FA1	TOR	—	—	FND—003	—	—
E272401	2724+01	7.00	L	2	156062.8413	512277.2414	FA1	TOR	—	—	FND—003	—	—
E272421	2724+21	7.00	L	2	156070.2013	512295.8380	FD1B	TOR	—	—	FND—001	—	—
E272441	2724+41	7.01	L	2	156077.5613	512314.4345	FA1	TOR	—	—	FND—003	—	—
E272546	2725+46	6.73	L	2	156115.1242	512412.6462	FD1B	TOR	—	—	FND—001	—	—
E272671	2726+71	6.77	L	2	156156.1060	512531.0556	FD1B	TOR	—	—	FND—001	—	—
E272796	2727+96	6.80	L	2	156191.7022	512651.0079	FD1B	TOR	—	—	FND—001	—	—
E272816	2728+16	6.80	L	2	156196.8932	512670.3225	FA1	TOR	—	—	FND—003	—	—

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL



60% SUBMISSION - 09/28/15

CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION SCHEDULE
SHEET 5 OF 12

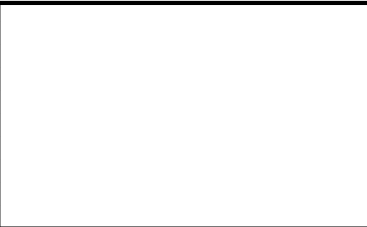
DISCIPLINE: OCS

SHEET NAME: E0-SYS-OCS-PFS-005

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STRUCTURE NUMBER	STATION	OFFSET (FT)	DIRECTION	REFERENCE TRACK	NORTHING	EASTING	FND TYPE	REFERENCE TOP OF FOUNDATION	MSE PROJECTION (FT)	EMBEDMENT DEPTH (FT)	FOUNDATION DRAWING NUMBER	CONDUIT NUMBER-SIZE	COMMENTS
E272921	2729+21	6.81	L	2	156221.9828	512772.7839	FD1A	TOR	—	—	FND—001	—	—
E273051	2730+51	6.81	L	2	156247.6209	512900.5544	FD1A	TOR	—	—	FND—001	—	—
E273181	2731+81	6.79	L	2	156267.2852	513029.3768	FD1A	TOR	—	—	FND—001	—	—
E273309A	2733+09	6.76	L	2	156280.8013	513157.3630	FA1	TOR	—	—	FND—003	—	—
E273309B	2733+09	21.39	L	2	156295.3964	513156.2615	FA1	TOR	—	—	FND—003	—	—
E273329B	2733+29	21.08	L	2	156296.6633	513176.2174	FD1A	TOR	—	—	FND—001	—	—
E273329A	2733+29	6.75	L	2	156282.3725	513177.2972	FD1B	TOR	—	—	FND—001	—	—
E273479B	2734+79	21.00	L	2	156304.4757	513326.5626	FD1B	TOR	—	—	FND—001	—	—
E273479A	2734+79	6.58	L	2	156290.0624	513327.0990	FD1B	TOR	—	—	FND—001	—	—
E274677	2746+77	7.00	L	2	156295.9093	513476.9851	FD1B	TOR	—	—	FND—001	—	—
E274827B	2748+27	21.00	L	2	156315.3157	513626.3819	FD1A	TOR	—	—	FND—001	—	—
E274827A	2748+27	7.00	L	2	156301.3248	513626.8873	FD1B	TOR	—	—	FND—001	—	—
E274847B	2748+47	21.00	L	2	156316.0376	513646.3649	FA1	TOR	—	—	FND—003	—	—
E274847A	2748+47	7.00	L	2	156302.0467	513646.8704	FA1	TOR	—	—	FND—003	—	—
E274947	2749+47	7.29	L	2	156306.0142	513746.7959	FD1A	TOR	—	—	FND—001	—	—
E275067	2750+67	7.25	L	2	156313.0618	513866.5961	FD1A	TOR	—	—	FND—001	—	—
E275187	2751+87	7.50	L	2	156327.4386	513985.7369	FD1A	TOR	—	—	FND—001	—	—
E275308	2753+08	7.50	L	2	156349.1710	514103.7550	FD1A	TOR	—	—	FND—001	—	—
E275428	2754+28	7.50	L	2	156378.4195	514220.1431	FD1A	TOR	—	—	FND—001	—	—
E275549	2755+49	7.50	L	2	156415.0718	514334.4424	FD1A	TOR	—	—	FND—001	—	—
E275669	2756+69	7.75	L	2	156459.1984	514446.0525	FD1A	TOR	—	—	FND—001	—	—
E275790	2757+90	7.75	L	2	156510.1532	514554.7014	FD1A	TOR	—	—	FND—001	—	—
E275880	2758+80	7.68	L	2	156552.8071	514633.9397	FA1	TOR	—	—	FND—003	—	—
E275900	2759+00	7.75	L	2	156562.8764	514651.2201	FD1B	TOR	—	—	FND—001	—	—
E276011	2760+11	8.25	L	2	156621.6007	514744.2123	FD1A	TOR	—	—	FND—001	—	—
E276121	2761+21	9.76	L	2	156686.5210	514833.0344	FD1B	TOR	—	—	FND—001	—	—
E276142	2761+42	9.96	L	2	156698.8219	514848.8042	FA1	TOR	—	—	FND—003	—	—
E276232B	2762+32	16.79	L	2	156760.6119	514914.1208	FD1A	TOR	—	—	FND—001	—	—
E276232A	2762+32	8.00	L	2	156754.0747	514920.0048	FD1A	TOR	—	—	FND—001	—	—
E276343B	2763+43	21.66	L	2	156837.7976	514992.2305	FD1A	TOR	—	—	FND—001	—	—
E276343A	2763+43	8.00	L	2	156828.0750	515001.8299	FD1A	TOR	—	—	FND—001	—	—
E276468B	2764+68	22.38	L	2	156926.5366	515080.2634	FD1A	TOR	—	—	FND—001	—	—
E276468A	2764+68	8.00	L	2	156916.4127	515090.4686	FD1A	TOR	—	—	FND—001	—	—
E276618B	2766+18	37.38	L	2	157043.5897	515175.2559	FD1A	TOR	—	—	FND—001	—	—
E276618A	2766+18	7.00	R	2	157012.3374	515206.7589	FD1A	TOR	—	—	FND—001	—	—
E276798B	2767+98	37.38	L	2	157171.3763	515302.0257	FD1A	TOR	—	—	FND—001	—	—
E276798A	2767+98	7.00	R	2	157140.1241	515333.5286	FD1A	TOR	—	—	FND—001	—	—
E276983A	2769+83	7.00	R	2	157271.2499	515463.6106	FA1	TOR	—	—	FND—003	—	—
E276983B	2769+83	37.57	L	2	157303.0077	515432.3397	FA1	TOR	—	—	FND—003	—	—
E277003A	2770+03	7.00	R	2	157285.4485	515477.6961	FD1A	TOR	—	—	FND—001	—	—
E277003B	2770+03	37.57	L	2	157317.2062	515446.4252	FD1A	TOR	—	—	FND—001	—	—
E277181B	2771+81	37.38	L	2	157443.0303	515571.5178	FD1B	TOR	—	—	FND—001	—	—
E277181A	2771+81	7.00	R	2	157411.7780	515603.0208	FD1B	TOR	—	—	FND—001	—	—
E277319A	2773+19	10.11	L	2	157522.0751	515687.5940	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E277319B	2773+19	19.94	L	2	157528.9969	515680.6167	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E277450B	2774+50	14.75	L	2	157622.0175	515771.2123	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E277450A	2774+50	9.91	L	2	157618.9277	515774.9340	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E277470	2774+70	12.34	L	2	157635.7476	515785.7549	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E277560	2775+60	10.52	L	2	157705.0173	515842.4782	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E280010A	2800+10	24.02	L	2	159803.7945	517081.7186	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL





60% SUBMISSION - 09/28/15



CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION SCHEDULE
SHEET 6 OF 12

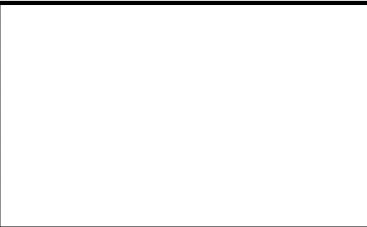
DISCIPLINE: OCS

SHEET NAME: E0-SYS-OCS-PFS-006

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STRUCTURE NUMBER	STATION	OFFSET (FT)	DIRECTION	REFERENCE TRACK	NORTHING	EASTING	FND TYPE	REFERENCE TOP OF FOUNDATION	MSE PROJECTION (FT)	EMBEDMENT DEPTH (FT)	FOUNDATION DRAWING NUMBER	CONDUIT NUMBER-SIZE	COMMENTS
E280010A	2800+10	8.24	R	2	159783.4977	517106.8001	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E280155B	2801+55	24.00	L	2	159915.3011	517174.4077	FD1A	TOR	—	—	FND—001	—	—
E280155A	2801+55	8.68	R	2	159894.4102	517199.5365	FD1A	TOR	—	—	FND—001	—	—
E280335	2803+35	8.00	L	2	160043.4870	517301.7827	FD1A	TOR	—	—	FND—001	—	—
E280445	2804+45	8.18	L	2	160128.6072	517371.7589	FA1	TOR	—	—	FND—003	—	—
E280465	2804+65	8.19	L	2	160144.2400	517384.2335	FD1B	TOR	—	—	FND—001	—	—
E280566	2805+66	8.27	L	2	160225.1181	517444.1073	FA1	TOR	—	—	FND—003	—	—
E280587	2805+87	8.26	L	2	160241.6722	517455.3460	FD1B	TOR	—	—	FND—001	—	—
E280708	2807+08	8.16	L	2	160344.7502	517518.0561	FD1B	TOR	—	—	FND—001	—	—
E280829	2808+29	8.01	L	2	160452.8030	517571.7173	FD1B	TOR	—	—	FND—001	—	—
E280849	2808+49	7.98	L	2	160471.1369	517579.7089	FA1	TOR	—	—	FND—003	—	—
E280951	2809+51	7.80	L	2	160565.0330	517615.9376	FD1B	TOR	—	—	FND—001	—	—
E280971	2809+71	7.76	L	2	160583.9831	517622.3325	FA1	TOR	—	—	FND—003	—	—
E281072	2810+72	7.53	L	2	160680.5795	517650.3877	FD1A	TOR	—	—	FND—001	—	—
E281193	2811+93	6.68	L	2	160798.1777	517676.3869	FD1A	TOR	—	—	FND—001	—	—
E281343	2813+43	7.00	L	2	160945.7141	517703.6091	FD1A	TOR	—	—	FND—001	—	—
E281513	2815+13	7.00	L	2	161112.8362	517734.7572	FD1A	TOR	—	—	FND—001	—	—
E281653	2816+53	7.00	L	2	161250.3747	517760.3870	FD1A	TOR	—	—	FND—001	—	—
E281738	2817+38	7.91	L	2	161334.1228	517775.0772	FD1A	TOR	—	—	FND—001	—	—
E281803	2818+03	9.91	L	2	161398.5152	517784.5502	FA1	TOR	—	—	FND—003	—	—
E281823	2818+23	10.78	L	2	161418.3874	517786.7726	FD1B	TOR	—	—	FND—001	—	—
E281909B	2819+09	18.80	L	2	161503.4859	517787.5816	FD1A	TOR	—	—	FND—001	—	—
E281909A	2819+09	8.00	L	2	161502.8427	517798.3613	FD1A	TOR	—	—	FND—001	—	—
E281995B	2819+95	21.80	L	2	161588.0401	517785.9597	FD1A	TOR	—	—	FND—001	—	—
E281995A	2819+95	8.00	L	2	161588.3789	517799.7530	FD1A	TOR	—	—	FND—001	—	—
E282016A	2820+16	9.10	L	2	161608.3042	517798.0252	FA1	TOR	—	—	FND—003	—	—
E282016B	2820+16	19.83	L	2	161607.9951	517787.2994	FA1	TOR	—	—	FND—003	—	—
E282081A	2820+81	8.00	R	2	161674.3237	517811.9805	FD1A	TOR	—	—	FND—001	—	—
E282081B	2820+81	38.38	L	2	161671.9559	517765.6660	FD1A	TOR	—	—	FND—001	—	—
E282201A	2822+01	8.00	R	2	161794.1624	517805.7596	FD1A	TOR	—	—	FND—001	—	—
E282201B	2822+01	38.38	L	2	161791.7945	517759.4451	FD1A	TOR	—	—	FND—001	—	—
E282381B	2823+81	38.38	L	2	161971.5224	517750.1154	FD1A	TOR	—	—	FND—001	—	—
E282381A	2823+81	8.07	R	2	161973.9302	517796.4977	FD1A	TOR	—	—	FND—001	—	—
E282561B	2825+61	22.38	L	2	162152.1099	517756.7626	FD1A	TOR	—	—	FND—001	—	—
E282561A	2825+61	8.00	L	2	162152.8551	517771.1182	FD1A	TOR	—	—	FND—001	—	—
E282681B	2826+81	22.26	L	2	162271.9696	517750.6714	FD1A	TOR	—	—	FND—001	—	—
E282681A	2826+81	8.00	L	2	162272.6802	517764.9144	FD1A	TOR	—	—	FND—001	—	—
E282760B	2827+60	21.23	L	2	162352.2029	517748.8168	FD1A	TOR	—	—	FND—001	—	—
E282760A	2827+60	8.00	L	2	162352.4018	517762.0404	FD1A	TOR	—	—	FND—001	—	—
E282839B	2828+39	19.01	L	2	162432.6300	517752.6468	FD1A	TOR	—	—	FND—001	—	—
E282839A	2828+39	8.00	L	2	162431.9501	517763.6386	FD1A	TOR	—	—	FND—001	—	—
E282918B	2829+18	16.31	L	2	162512.3663	517763.9777	FD1A	TOR	—	—	FND—001	—	—
E282918A	2829+18	8.00	L	2	162511.0952	517772.1919	FD1A	TOR	—	—	FND—001	—	—
E282997	2829+97	10.70	L	2	162589.8972	517785.3673	FD1A	TOR	—	—	FND—001	—	—
E283076	2830+76	9.16	L	2	162666.0892	517809.8351	FD1A	TOR	—	—	FND—001	—	—
E283156	2831+56	7.75	L	2	162739.8055	517840.9982	FD1A	TOR	—	—	FND—001	—	—
E283275	2832+75	7.00	L	2	162847.0300	517894.8988	FD1A	TOR	—	—	FND—001	—	—
E283415	2834+15	7.00	L	2	162971.2440	517959.4847	FA1	TOR	—	—	FND—003	—	—
E283435	2834+35	7.00	L	2	162988.9886	517968.7112	FD1B	TOR	—	—	FND—001	—	—
E283590	2835+90	7.00	L	2	163126.5094	518040.2166	FA1	TOR	—	—	FND—003	—	—

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL





60% SUBMISSION - 09/28/15



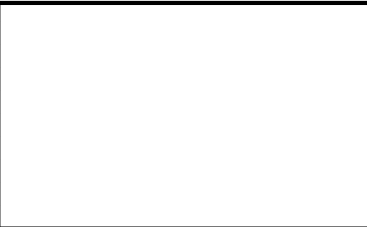
CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION SCHEDULE
SHEET 7 OF 12

DISCIPLINE: OCS SHEET NAME: E0-SYS-OCS-PFS-007

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STRUCTURE NUMBER	STATION	OFFSET (FT)	DIRECTION	REFERENCE TRACK	NORTHING	EASTING	FND TYPE	REFERENCE TOP OF FOUNDATION	MSE PROJECTION (FT)	EMBEDMENT DEPTH (FT)	FOUNDATION DRAWING NUMBER	CONDUIT NUMBER-SIZE	COMMENTS
E283610	2836+10	7.00	L	2	163144.2540	518049.4431	FD1B	TOR	—	—	FND—001	—	—
E284083B	2840+83	21.50	L	2	163306.2087	518117.3102	FD1B	TOR	—	—	FND—001	—	—
E284083A	2840+83	7.50	R	2	163292.8303	518143.0399	FD1B	TOR	—	—	FND—001	—	—
E284258	2842+58	6.64	L	2	163454.6184	518211.2340	FD1B	TOR	—	—	FND—001	—	—
E284278	2842+78	6.56	L	2	163472.3138	518220.5546	FA1	TOR	—	—	FND—003	—	—
E284418	2844+18	6.83	L	2	163595.5366	518287.6718	FD1B	TOR	—	—	FND—001	—	—
E284438	2844+38	6.85	L	2	163612.7962	518297.7767	FA1	TOR	—	—	FND—003	—	—
E284563	2845+63	7.00	L	2	163719.1338	518364.2692	FD1A	TOR	—	—	FND—001	—	—
E284697	2846+97	7.00	L	2	163828.9914	518441.4842	FD1A	TOR	—	—	FND—001	—	—
E284831	2848+31	7.00	L	2	163935.0421	518525.0262	FD1A	TOR	—	—	FND—001	—	—
E284966	2849+66	7.00	L	2	164036.3662	518614.2465	FD1A	TOR	—	—	FND—001	—	—
E285101	2851+01	6.83	L	2	164132.5325	518708.9866	FD1A	TOR	—	—	FND—001	—	—
E285235	2852+35	9.31	L	2	164225.3196	518807.0588	FD1A	TOR	—	—	FND—001	—	—
E285370A	2853+70	8.00	L	2	164309.9761	518912.8342	FD1A	TOR	—	—	FND—001	—	—
E285370B	2853+70	19.64	L	2	164319.2237	518905.7621	FD1A	TOR	—	—	FND—001	—	—
E285490B	2854+90	22.45	L	2	164393.0491	519001.4667	FD1A	TOR	—	—	FND—001	—	—
E285490A	2854+90	8.00	L	2	164381.2477	519009.7979	FD1A	TOR	—	—	FND—001	—	—
E285640B	2856+40	38.38	L	2	164491.9771	519115.5730	FD1A	TOR	—	—	FND—001	—	—
E285640A	2856+40	8.00	R	2	164453.9009	519142.0464	FD1A	TOR	—	—	FND—001	—	—
E285820B	2858+20	38.38	L	2	164594.7311	519263.3620	FD1A	TOR	—	—	FND—001	—	—
E285820A	2858+20	8.00	R	2	164556.6549	519289.8355	FD1A	TOR	—	—	FND—001	—	—
E285960B	2859+60	38.24	L	2	164674.5862	519378.5115	FD1A	TOR	—	—	FND—001	—	—
E285960A	2859+60	8.00	R	2	164636.5364	519404.7766	FD1A	TOR	—	—	FND—001	—	—
E286050A	2860+50	7.71	L	2	164699.0329	519471.7024	FA1	TOR	—	—	FND—003	—	—
E286050B	2860+50	18.47	L	2	164708.3304	519466.2870	FA1	TOR	—	—	FND—003	—	—
E286070B	2860+70	18.83	L	2	164718.8518	519483.2958	FD1A	TOR	—	—	FND—001	—	—
E286070A	2860+70	8.00	L	2	164709.4955	519488.7475	FD1A	TOR	—	—	FND—001	—	—
E286180	2861+80	10.01	L	2	164762.5779	519586.0688	FD1A	TOR	—	—	FND—001	—	—
E286298	2862+98	7.07	L	2	164804.3953	519696.6591	FD1B	TOR	—	—	FND—001	—	—
E286324	2863+24	6.95	L	2	164813.0869	519721.7333	FA1	TOR	—	—	FND—003	—	—
E286448	2864+48	7.00	L	2	164853.4354	519838.4159	FD1A	TOR	—	—	FND—001	—	—
E286628	2866+28	7.00	L	2	164912.1810	520008.5599	FD1A	TOR	—	—	FND—001	—	—
E286808	2868+08	7.00	L	2	164970.9266	520178.7038	FD1A	TOR	—	—	FND—001	—	—
E286988	2869+88	7.00	L	2	165029.6721	520348.8477	FD1A	TOR	—	—	FND—001	—	—
E287168	2871+68	7.37	L	2	165088.7866	520518.9257	FD1A	TOR	—	—	FND—001	—	—
E287318	2873+18	8.25	L	2	165139.4643	520660.0868	FD1A	TOR	—	—	FND—001	—	—
E287438	2874+38	7.50	L	2	165183.4628	520771.6976	FD1A	TOR	—	—	FND—001	—	—
E287539	2875+39	7.52	L	2	165226.0910	520862.1707	FA1	TOR	—	—	FND—003	—	—
E287559	2875+59	7.50	L	2	165235.1761	520879.9881	FD1B	TOR	—	—	FND—001	—	—
E287659	2876+59	7.54	L	2	165283.6237	520967.4896	FA1	TOR	—	—	FND—003	—	—
E287679	2876+79	7.50	L	2	165293.8323	520984.6880	FD1B	TOR	—	—	FND—001	—	—
E287800A	2878+00	7.14	R	2	165347.1625	521093.7111	FD1B	TOR	—	—	FND—001	—	—
E287800B	2878+00	21.43	L	2	165370.6092	521077.3888	FD1B	TOR	—	—	FND—001	—	—
E287920	2879+20	7.50	L	2	165430.9359	521181.5308	FD1B	TOR	—	—	FND—001	—	—
E287940	2879+40	7.47	L	2	165443.4735	521197.1131	FA1	TOR	—	—	FND—003	—	—
E288041	2880+41	8.30	L	2	165509.2833	521272.4468	FD1B	TOR	—	—	FND—001	—	—
E288061	2880+61	8.42	L	2	165522.7819	521287.2044	FA1	TOR	—	—	FND—003	—	—
E288141	2881+41	7.97	L	2	165576.7614	521346.2186	FA1	TOR	—	—	FND—003	—	—
E288161	2881+61	7.73	L	2	165590.2601	521360.9762	FD1B	TOR	—	—	FND—001	—	—
E288220	2882+20	22.76	L	2	165641.4834	521393.6281	FA1	TOR	—	—	FND—003	—	—

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CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION SCHEDULE
SHEET 8 OF 12

DISCIPLINE: OCS

SHEET NAME: E0-SYS-OCS-PFS-008

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METROPOLITAN
COUNCIL



**CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION SCHEDULE
SHEET 9 OF 12**

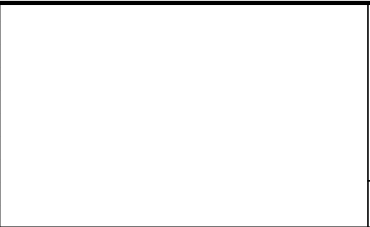
DISCIPLINE: **OCS**

SHEET NAME: **E0-SYS-OCS-PFS-009**

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STRUCTURE NUMBER	STATION	OFFSET (FT)	DIRECTION	REFERENCE TRACK	NORTHING	EASTING	FND TYPE	REFERENCE TOP OF FOUNDATION	MSE PROJECTION (FT)	EMBEDMENT DEPTH (FT)	FOUNDATION DRAWING NUMBER	CONDUIT NUMBER-SIZE	COMMENTS
E291522	2915+22	7.00	L	2	167641.3943	523992.7216	FD1A	TOR	—	—	FND—001	—	—
E291733	2917+33	7.00	L	2	167729.6439	524184.3989	FD1A	TOR	—	—	FND—001	—	—
E291927	2919+27	21.45	L	2	167825.3747	524353.7426	FA1	TOR	—	—	FND—003	—	—
E291928	2919+28	8.08	R	2	167798.9659	524366.9532	FA1	TOR	—	—	FND—003	—	—
E291947B	2919+47	21.01	L	2	167833.8704	524371.8485	FD1A	TOR	—	—	FND—001	—	—
E291947A	2919+47	7.00	R	2	167808.8142	524384.3604	FD1A	TOR	—	—	FND—001	—	—
E292140	2921+40	7.00	L	2	167910.2850	524548.0712	FD1B	TOR	—	—	FND—001	—	—
E292340	2923+40	6.61	L	2	168004.4781	524724.5017	FD1B	TOR	—	—	FND—001	—	—
E292539	2925+39	21.01	L	2	168109.0185	524896.0659	FD1A	TOR	—	—	FND—001	—	—
E292540	2925+40	7.00	R	2	168083.9245	524908.5308	FD1A	TOR	—	—	FND—001	—	—
E292559	2925+59	21.14	L	2	168117.8501	524914.0103	FA1	TOR	—	—	FND—003	—	—
E292560	2925+60	6.88	R	2	168092.7561	524926.4753	FA1	TOR	—	—	FND—003	—	—
E292719	2927+19	7.00	L	2	168172.1912	525065.8006	FD1A	TOR	—	—	FND—001	—	—
E292838	2928+38	7.00	L	2	168220.3905	525174.1872	FD1A	TOR	—	—	FND—001	—	—
E292998	2929+98	7.25	L	2	168285.6322	525320.3059	FD1A	TOR	—	—	FND—001	—	—
E293127	2931+27	22.03	L	2	168352.1851	525431.3235	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293158	2931+58	8.00	R	2	168338.4589	525472.5737	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293268	2932+68	22.10	L	2	168413.8418	525557.0199	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293318	2933+18	7.97	R	2	168410.1919	525615.0520	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293398	2933+98	21.93	L	2	168474.9556	525671.6315	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293457	2934+57	7.25	R	2	168478.6109	525737.1924	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293520	2935+20	23.64	L	2	168536.8283	525775.1891	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293567	2935+67	10.46	R	2	168531.9259	525832.7660	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293610	2936+10	22.25	L	2	168582.5246	525852.0318	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293647	2936+47	8.03	R	2	168577.2587	525900.0082	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293688	2936+88	21.71	L	2	168624.2149	525917.4698	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293730	2937+30	7.55	R	2	168623.5192	525969.0203	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293748	2937+48	22.12	L	2	168657.9604	525966.8926	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293794	2937+94	21.68	L	2	168683.7946	526001.7902	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293795	2937+95	8.49	R	2	168662.0794	526022.7655	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293840	2938+40	8.38	R	2	168696.4287	526054.2137	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293843	2938+43	22.39	L	2	168716.6864	526030.9598	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293886	2938+86	8.39	R	2	168735.8932	526078.9220	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293890	2938+90	21.82	L	2	168753.4758	526053.9075	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293931	2939+31	8.54	R	2	168779.1757	526096.0817	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293938	2939+38	21.82	L	2	168794.3838	526068.7736	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E293976	2939+76	8.53	R	2	168824.9167	526104.8586	FD1A	TOR	—	—	FND—001	—	—
E293981	2939+81	22.53	L	2	168832.7626	526074.3618	FD1A	TOR	—	—	FND—001	—	—
E294009	2940+09	6.98	R	2	168859.8124	526104.2885	FD1A	TOR	—	—	FND—001	—	—
E294028	2940+28	22.01	L	2	168875.5512	526073.9709	FD1A	TOR	—	—	FND—001	—	—
E294055	2940+55	29.21	R	2	168911.0225	526119.7026	FD1C	TOR	—	—	FND—001	—	—
E294074	2940+74	19.81	R	2	168928.4362	526105.2332	FD1C	TOR	—	—	FND—001	—	—
E294096	2940+96	8.50	R	2	168946.9076	526086.4580	FD1A	TOR	—	—	FND—001	—	—
E294110	2941+10	21.52	L	2	168946.7077	526053.6213	FD1A	TOR	—	—	FND—001	—	—
E294141	2941+41	8.84	R	2	168988.3679	526064.7787	FD1A	TOR	—	—	FND—001	—	—
E294151	2941+51	23.02	L	2	168978.3774	526033.0503	FD1A	TOR	—	—	FND—001	—	—
E294193	2941+93	7.00	L	2	169020.8998	526021.8225	FD1A	TOR	—	—	FND—001	—	—
E294244B	2942+44	23.14	L	2	169053.8984	525978.1456	FD1A	TOR	—	—	FND—001	—	—
E294244A	2942+44	8.78	R	2	169071.3534	526004.8609	FD1A	TOR	—	—	FND—001	—	—
E294279A	2942+79	8.78	R	2	169100.8978	525989.5983	FD1A	TOR	—	—	FND—001	—	—

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL





60% SUBMISSION - 09/28/15



CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION SCHEDULE
SHEET 10 OF 12

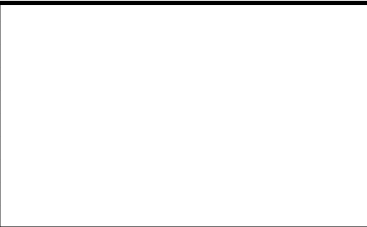
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SHEET
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224

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STRUCTURE NUMBER	STATION	OFFSET (FT)	DIRECTION	REFERENCE TRACK	NORTHING	EASTING	FND TYPE	REFERENCE TOP OF FOUNDATION	MSE PROJECTION (FT)	EMBEDMENT DEPTH (FT)	FOUNDATION DRAWING NUMBER	CONDUIT NUMBER-SIZE	COMMENTS
E294279B	2942+79	23.18	L	2	169089.4012	525959.7854	FD1A	TOR	—	—	FND—001	—	—
E294314A	2943+14	8.77	R	2	169132.8979	525980.7153	FD1A	TOR	—	—	FND—001	—	—
E294314B	2943+14	23.18	L	2	169127.6366	525949.2070	FD1A	TOR	—	—	FND—001	—	—
E294349A	2943+49	8.79	R	2	169166.3671	525978.2954	FD1A	TOR	—	—	FND—001	—	—
E294349B	2943+49	23.16	L	2	169166.1920	525946.3487	FD1A	TOR	—	—	FND—001	—	—
E294401	2944+01	7.03	L	2	169218.0612	525962.5339	FD1A	TOR	—	—	FND—001	—	—
E294474	2944+74	7.00	L	2	169291.4141	525962.6877	FD1A	TOR	—	—	FND—001	—	—
E294563	2945+63	7.00	L	2	169380.4334	525962.8338	FD1A	TOR	—	—	FND—001	—	—
E294653	2946+53	7.00	L	2	169470.5334	525962.9814	FD1A	TOR	—	—	FND—001	—	—
E294783	2947+83	7.00	L	2	169600.5332	525963.1943	FD1A	TOR	—	—	FND—001	—	—
E294933	2949+33	6.98	L	2	169750.5314	525963.0571	FD1A	TOR	—	—	FND—001	—	—
E295034	2950+34	6.97	L	2	169850.3837	525957.6612	FD1A	TOR	—	—	FND—001	—	—
E295134B	2951+34	22.50	L	2	169948.5725	525933.1812	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295134A	2951+34	8.50	R	2	169951.3751	525964.0542	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295224B	2952+24	22.50	L	2	170038.3539	525925.0941	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295224A	2952+24	8.50	R	2	170040.8885	525955.9936	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295283B	2952+83	22.59	L	2	170100.0301	525922.5611	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295283A	2952+83	8.50	R	2	170099.3782	525953.6501	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295327A	2953+27	8.50	R	2	170141.8602	525957.5918	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295327B	2953+27	22.70	L	2	170147.2793	525926.8667	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295371B	2953+71	22.81	L	2	170193.5421	525939.1519	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295371A	2953+71	8.50	R	2	170182.8494	525968.5752	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295415A	2954+15	8.50	R	2	170221.0415	525986.4234	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295415B	2954+15	22.96	L	2	170236.8445	525959.2162	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295459B	2954+59	23.17	L	2	170276.0480	525986.5031	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295459A	2954+59	8.50	R	2	170255.8083	526010.8604	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295503B	2955+03	23.41	L	2	170309.9835	526020.2384	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295503A	2955+03	8.50	R	2	170285.5166	526040.7289	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295546B	2955+46	23.69	L	2	170337.5184	526059.3086	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295546A	2955+46	8.50	R	2	170309.7054	526075.5201	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295590B	2955+90	24.00	L	2	170357.8735	526102.6035	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295590A	2955+90	8.50	R	2	170327.3607	526113.7800	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295634B	2956+34	24.30	L	2	170370.3874	526148.6473	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295634A	2956+34	8.51	R	2	170338.1529	526154.7318	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295692	2956+92	8.50	R	2	170343.3966	526210.8221	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295693	2956+93	24.46	L	2	170376.3757	526210.9676	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295762	2957+62	7.50	R	2	170344.6469	526281.1851	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295763	2957+63	23.50	L	2	170375.6434	526282.1311	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295842	2958+42	7.50	R	2	170344.3334	526360.7211	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295843	2958+43	23.50	L	2	170375.3239	526362.1303	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295943B	2959+43	23.50	L	2	170374.9292	526462.0639	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295943A	2959+43	7.50	R	2	170343.9295	526462.0693	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295963B	2959+63	23.50	L	2	170374.8498	526482.0598	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E295963A	2959+63	7.50	R	2	170343.8501	526482.0652	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E296024	2960+24	8.75	L	2	170359.8574	526543.2080	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E296084	2960+84	8.70	L	2	170359.3802	526603.6696	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E296136	2961+36	8.33	L	2	170353.5137	526656.5680	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E296188	2961+88	7.96	L	2	170339.1699	526707.6055	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E296234	2962+34	7.77	L	2	170320.6356	526750.0347	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS
E20724	207+24	29.24	L	2	170339.5777	526760.2168	PA	—	—	—	SEE STR. PLANS	—	SEE STR. PLANS

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL





60% SUBMISSION - 09/28/15



CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION SCHEDULE
SHEET 11 OF 12

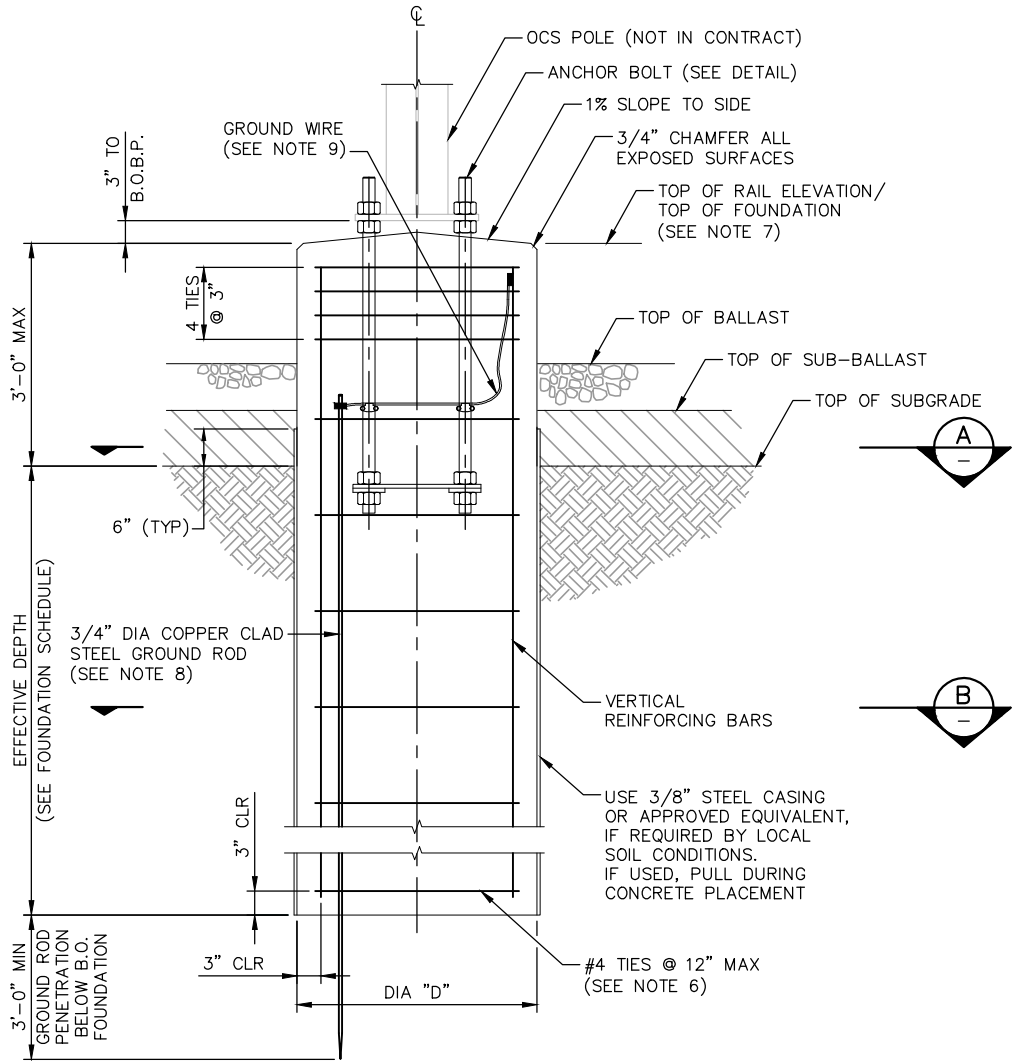
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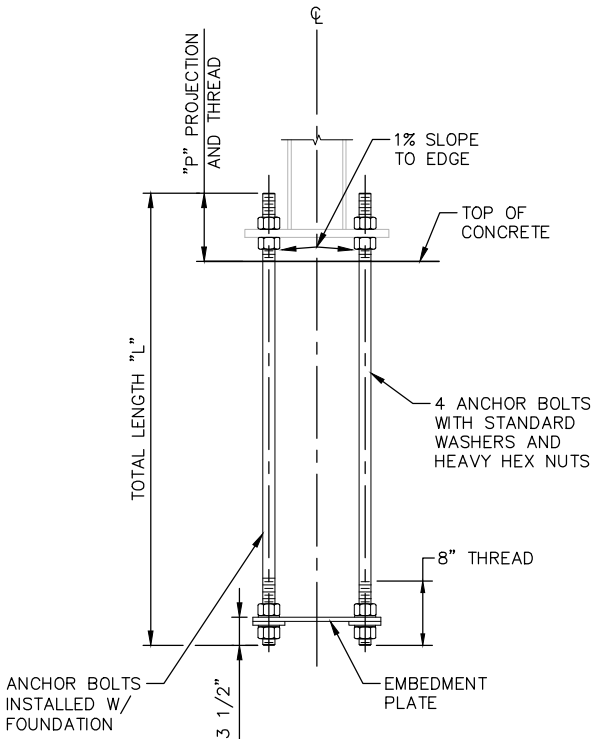
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205
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224

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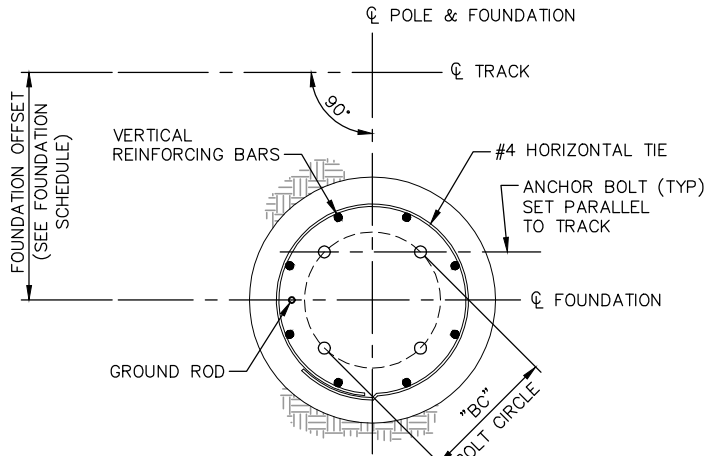
BOLT AND REINFORCING SCHEDULE							
TYPE	D DIA (IN)	REINFORCEMENT		ANCHOR BOLT DIMENSIONS			
		SIZE	QUANTITY	BC (IN)	DIA (IN)	L (IN)	P (IN)
FD1A	30	#8	8	16	1.25	48	10
FD1B	36	#8	8	18	1.50	54	10
FD1C	36	#8	8	22	2.00	60	10
FD1D	30	#8	8	15	1.25	48	10
FD1E	36	#8	8	19	1.50	54	10
FD1F	36	#8	8	23	1.75	60	10



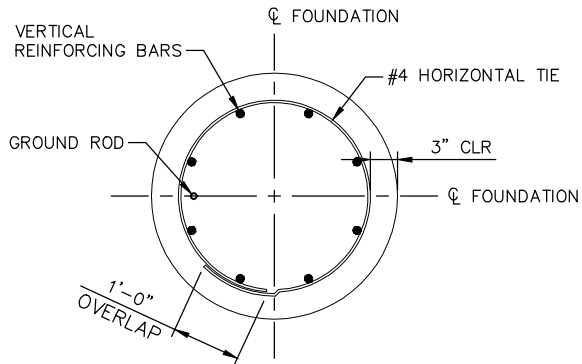
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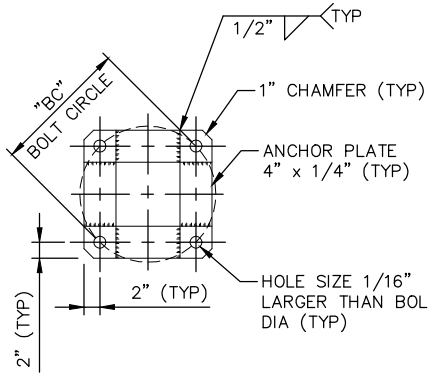
ANCHOR BOLTS
SCALE: NTS



A SECTION
SCALE: NTS



B SECTION
SCALE: NTS



EMBEDMENT PLATE
SCALE: NTS

- NOTES:
1. MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS AND THE SPECIFICATIONS.
 2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 4,000 PSI.
 3. WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1 SPECIFICATIONS, LATEST EDITION.
 4. PROVIDE BOLT PATTERN TEMPLATE FOR ANCHOR BOLT INSTALLATION.
 5. ROTATE REINFORCEMENT CAGE TO AVOID CONFLICT WITH ANCHOR BOLTS AND EMBEDMENT PLATE.
 6. NO. 4 SPIRALS AT 4 INCHES (MAXIMUM) PITCH MAY BE SUBSTITUTED FOR REBAR TIES.
 7. SEE FOUNDATION SCHEDULE FOR REFERENCE TOP OF FOUNDATION, CONDUIT LOCATIONS AND NUMBERS, FOUNDATION TYPES, OFFSETS AND EFFECTIVE DEPTH. CONDUIT LOCATIONS AND NUMBERS MUST BE COORDINATED WITH SYSTEMWIDE ELECTRICAL PLAN AND DETAILS, TRAFFIC AND LRT SIGNALS DRAWINGS.
 8. INSTALL A 3/4" DIA COPPER CLAD STEEL GROUND ROD IN EACH FOUNDATION AS SHOWN, DRIVEN VERTICALLY.
 9. EXOTHERMICALLY WELD 4/0 GROUND WIRE TO REBAR CAGE AND GROUND ROD, AND CLAMP TO ANCHOR BOLTS USING A BURNDY GAR GROUND CONNECTOR, OR APPROVED EQUAL.
 10. POLE TO GROUND RESISTANCE SHALL NOT EXCEED 25 OHMS. USE ADDITIONAL GROUND RODS AS REQUIRED.
 11. REFER TO SYSTEMWIDE ELECTRICAL PLAN AND DETAILS FOR DUCT BANK LAYOUT, CONDUIT LAYOUT AND CONDUIT DETAILS AT OCS FOUNDATIONS.
 12. TACK WELD TOP AND BOTTOM TIES OF REINFORCEMENT CAGE TO VERTICAL REINFORCEMENT.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

60% SUBMISSION - 09/28/15



CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION ASSEMBLY
BALLASTED TRACK

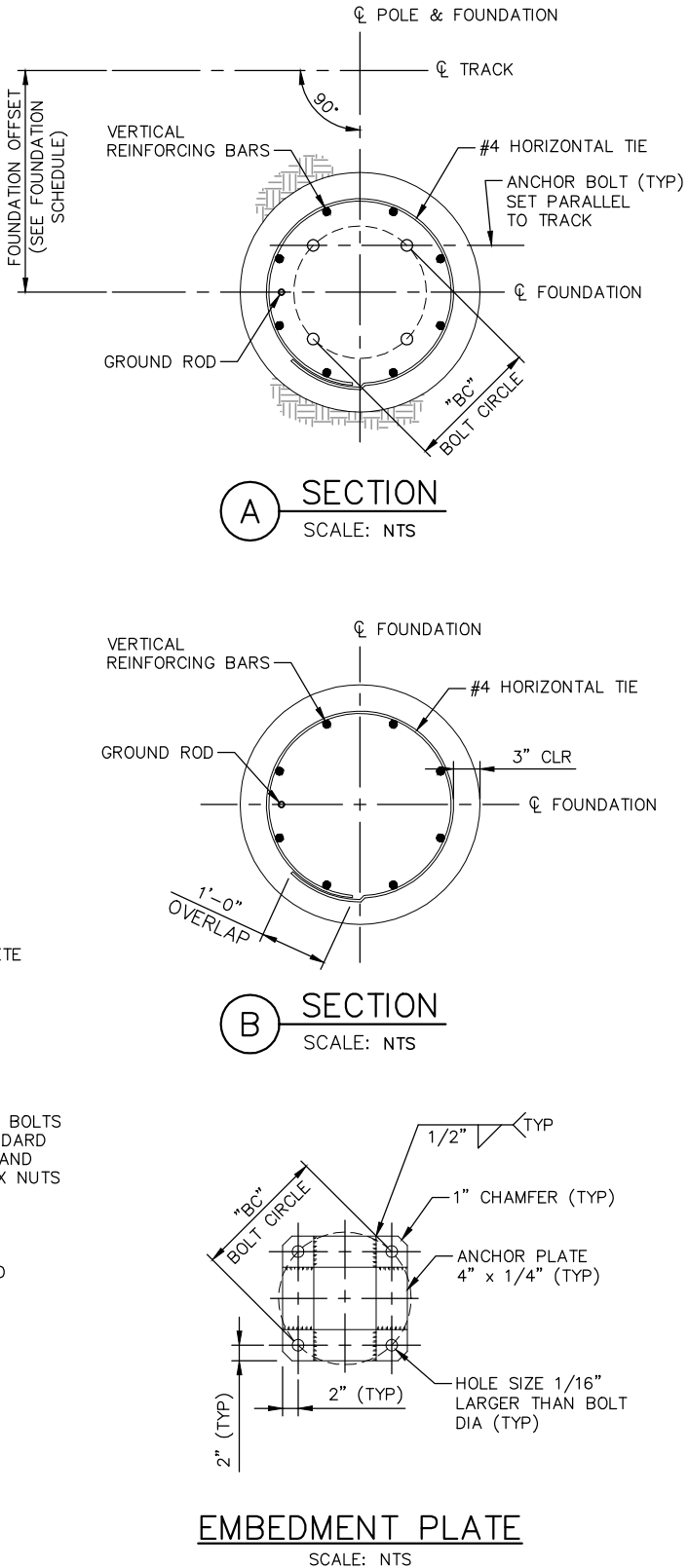
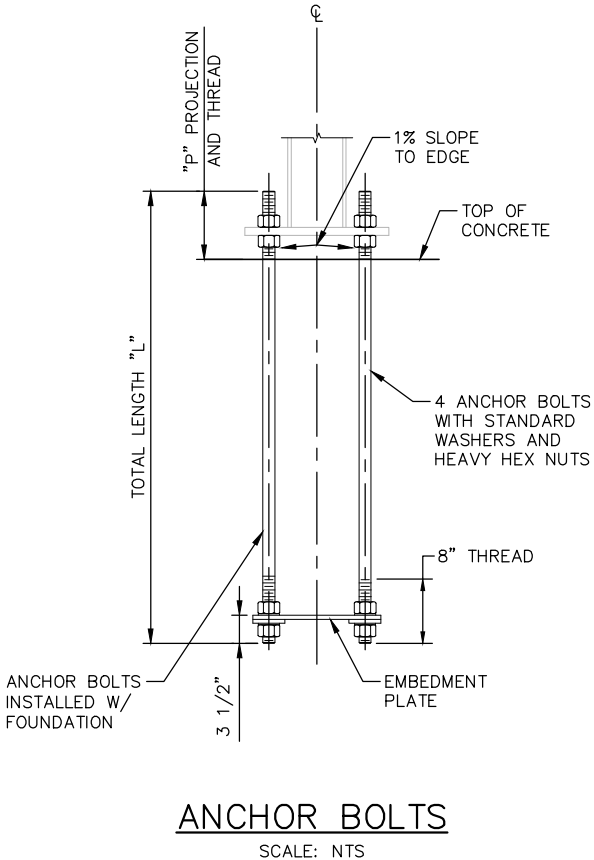
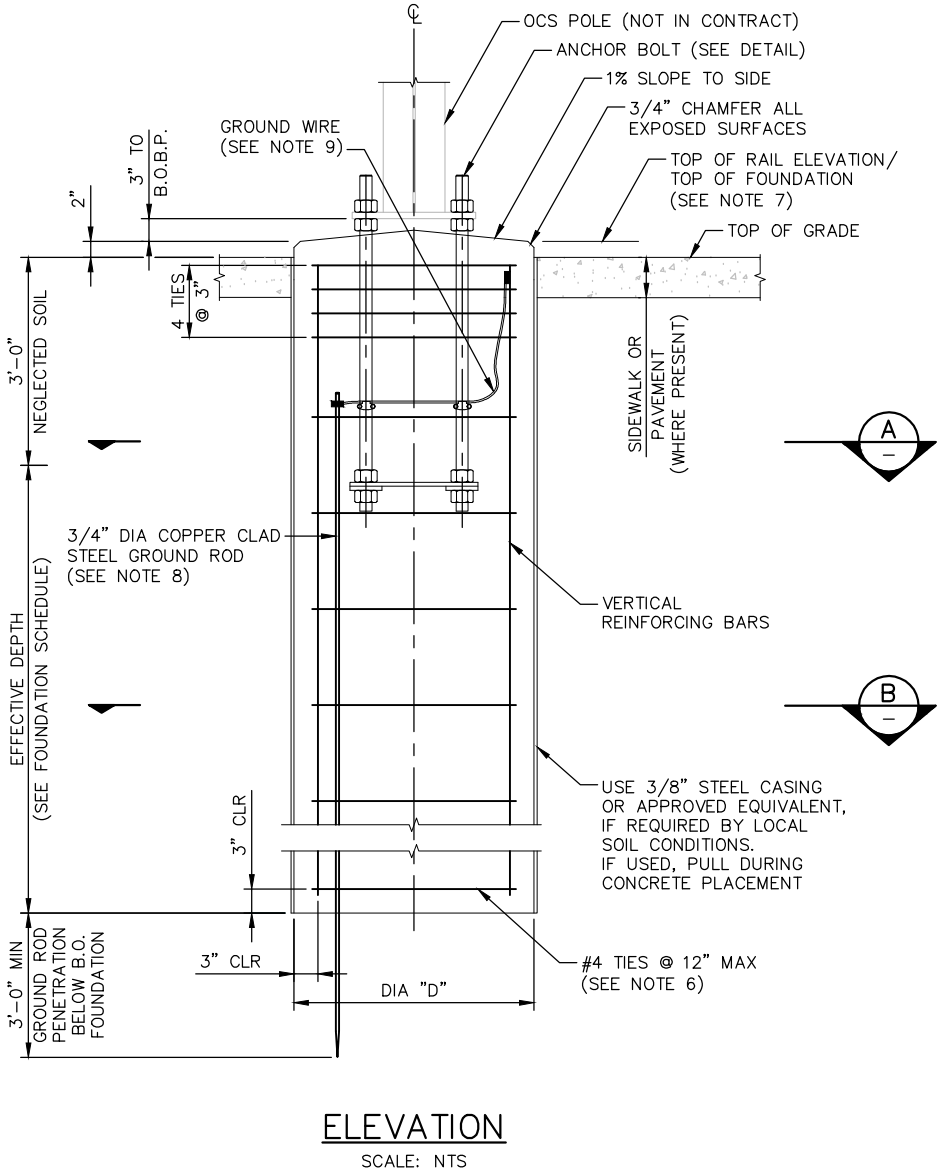
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224

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BOLT AND REINFORCING SCHEDULE							
TYPE	D DIA (IN)	REINFORCEMENT		ANCHOR BOLT DIMENSIONS			
		SIZE	QUANTITY	BC (IN)	DIA (IN)	L (IN)	P (IN)
FD2A	30	#8	8	16	1.25	48	10
FD2B	36	#8	8	18	1.50	54	10
FD2C	36	#8	8	22	2.00	60	10
FD2D	30	#8	8	15	1.25	48	10
FD2E	36	#8	8	19	1.50	54	10
FD2F	36	#8	8	23	1.75	60	10



- NOTES:
1. MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS AND THE SPECIFICATIONS.
 2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 4,000 PSI.
 3. WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1 SPECIFICATIONS, LATEST EDITION.
 4. PROVIDE BOLT PATTERN TEMPLATE FOR ANCHOR BOLT INSTALLATION.
 5. ROTATE REINFORCEMENT CAGE TO AVOID CONFLICT WITH ANCHOR BOLTS AND EMBEDMENT PLATE.
 6. NO. 4 SPIRALS AT 4 INCHES (MAXIMUM) PITCH MAY BE SUBSTITUTED FOR REBAR TIES.
 7. SEE FOUNDATION SCHEDULE FOR REFERENCE TOP OF FOUNDATION, CONDUIT LOCATIONS AND NUMBERS, FOUNDATION TYPES, OFFSETS AND EFFECTIVE DEPTH. CONDUIT LOCATIONS AND NUMBERS MUST BE COORDINATED WITH SYSTEMWIDE ELECTRICAL PLAN AND DETAILS, TRAFFIC AND LRT SIGNALS DRAWINGS.
 8. INSTALL A 3/4" DIA COPPER CLAD STEEL GROUND ROD IN EACH FOUNDATION AS SHOWN, DRIVEN VERTICALLY.
 9. EXOTHERMICALLY WELD 4/0 GROUND WIRE TO REBAR CAGE AND GROUND ROD, AND CLAMP TO ANCHOR BOLTS USING A BURNDY GAR GROUND CONNECTOR, OR APPROVED EQUAL.
 10. POLE TO GROUND RESISTANCE SHALL NOT EXCEED 25 OHMS. USE ADDITIONAL GROUND RODS AS REQUIRED.
 11. REFER TO SYSTEMWIDE ELECTRICAL PLAN AND DETAILS FOR DUCT BANK LAYOUT, CONDUIT LAYOUT AND CONDUIT DETAILS AT OCS FOUNDATIONS.
 12. TACK WELD TOP AND BOTTOM TIES OF REINFORCEMENT CAGE TO VERTICAL REINFORCEMENT.

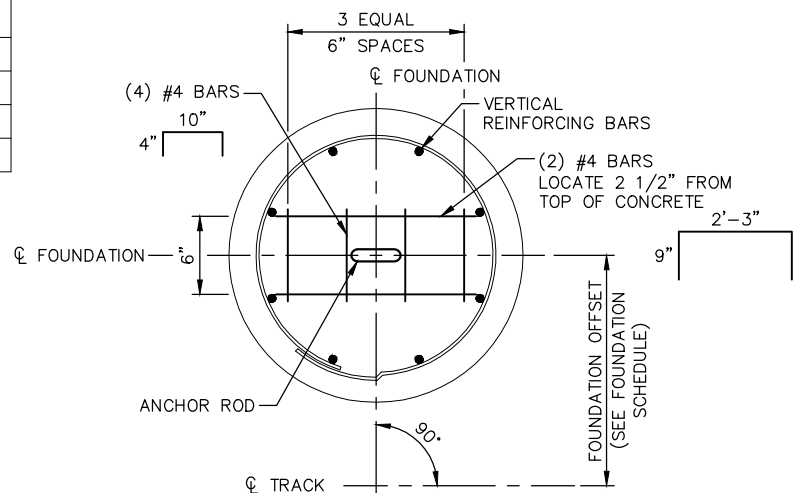
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

60% SUBMISSION - 09/28/15

CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION ASSEMBLY
MEDIAN OR NEUTRAL AREA

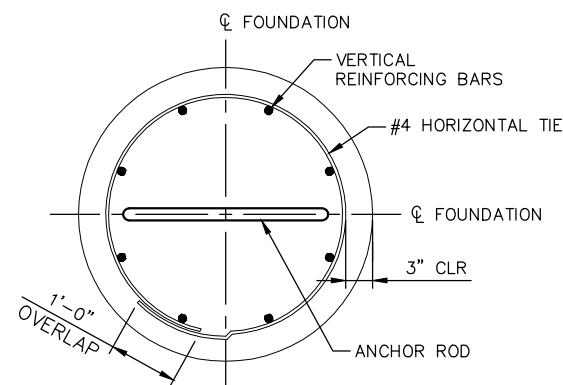
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SHEET NAME: E0-SYS-OCS-FND-002



PLAN - TYP GUY ANCHOR FOUNDATION

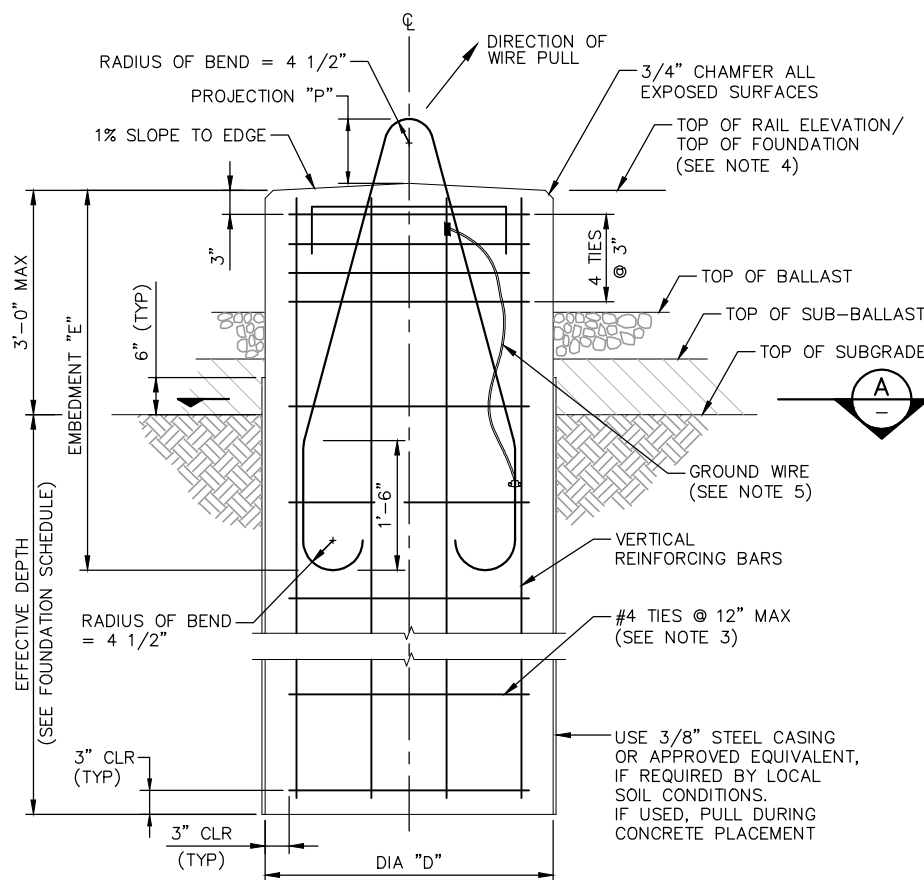
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SECTION
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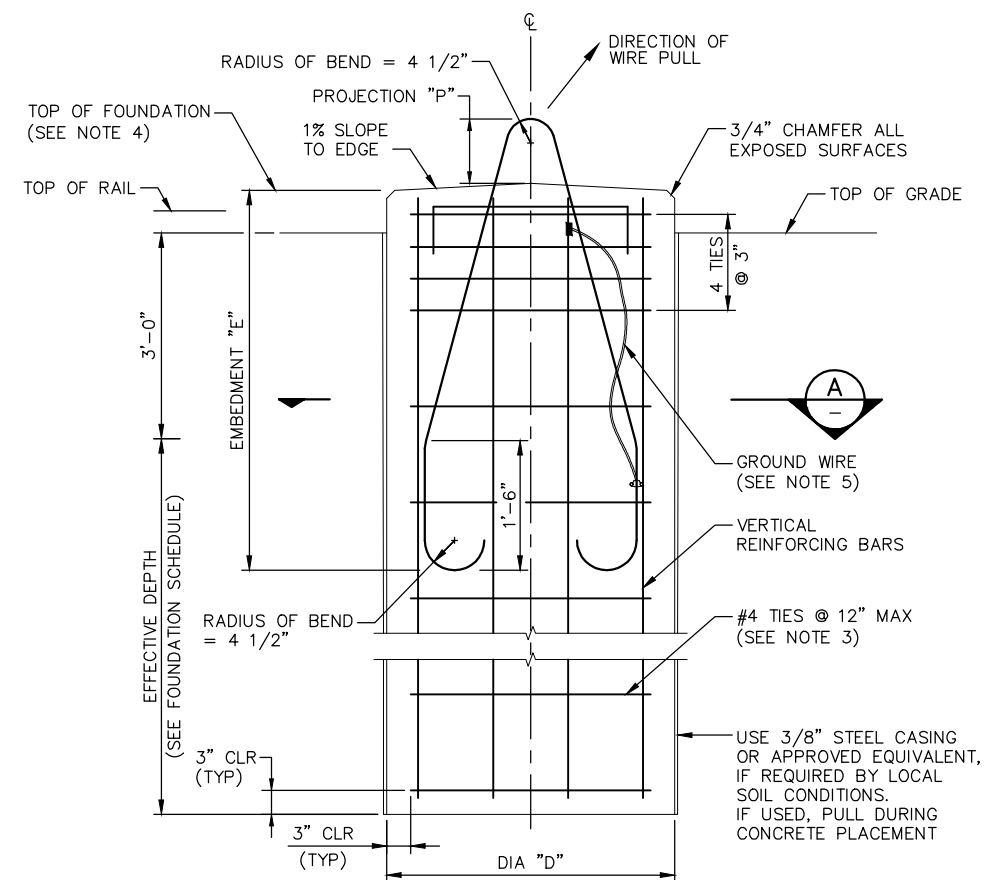
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- NOTES:
1. MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS AND SPECIFICATIONS.
 2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 4,000 PSI.
 3. NO. 4 SPIRALS AT 4 INCHES (MAXIMUM) PITCH MAY BE SUBSTITUTED FOR REBAR TIES.
 4. SEE FOUNDATION SCHEDULE FOR REFERENCE TOP OF FOUNDATION, FOUNDATION TYPES, OFFSET AND EFFECTIVE DEPTH.
 5. EXOTHERMICALLY WELD ANCHOR ROD TO REINFORCEMENT WITH 4/0 COPPER GROUND WIRE. CLAMP WIRE TO ANCHOR ROD WITH A BURNDY GAR GROUND CONNECTOR, OR APPROVED EQUAL, AND WELD WIRE TO TOP OF VERTICAL REINFORCEMENT.



ELEVATION – GUY ANCHOR FOUNDATION
BALLASTED TRACK (FA1)

SCALE: NTS



ELEVATION – GUY ANCHOR FOUNDATION
MEDIAN (FA2)

SCALE: NTS

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60% SUBMISSION - 09/28/15



SOUTHWEST

Green Line LRT Extension



**CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
GUY FOUNDATION ASSEMBLY**

DISCIPLINE:

OCS

SHEET NAME:	
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SHEET

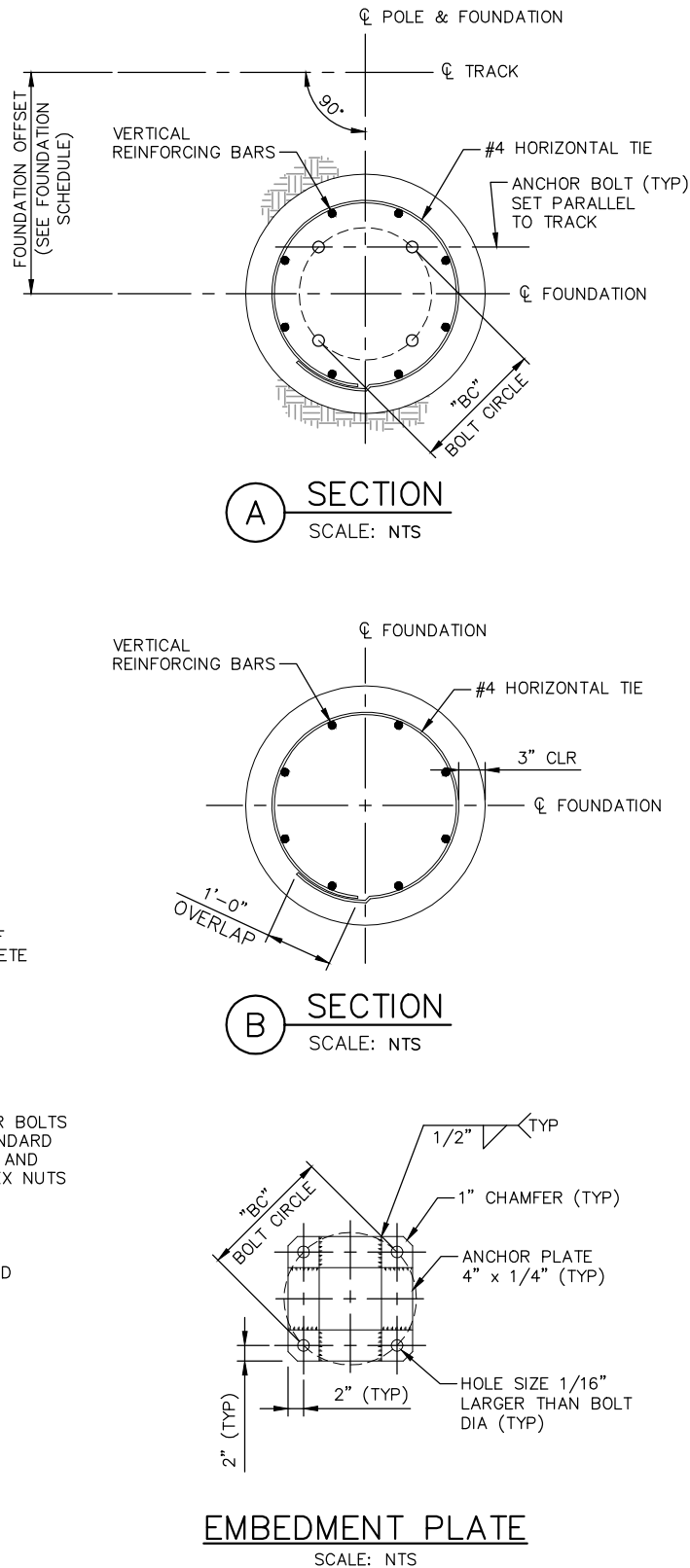
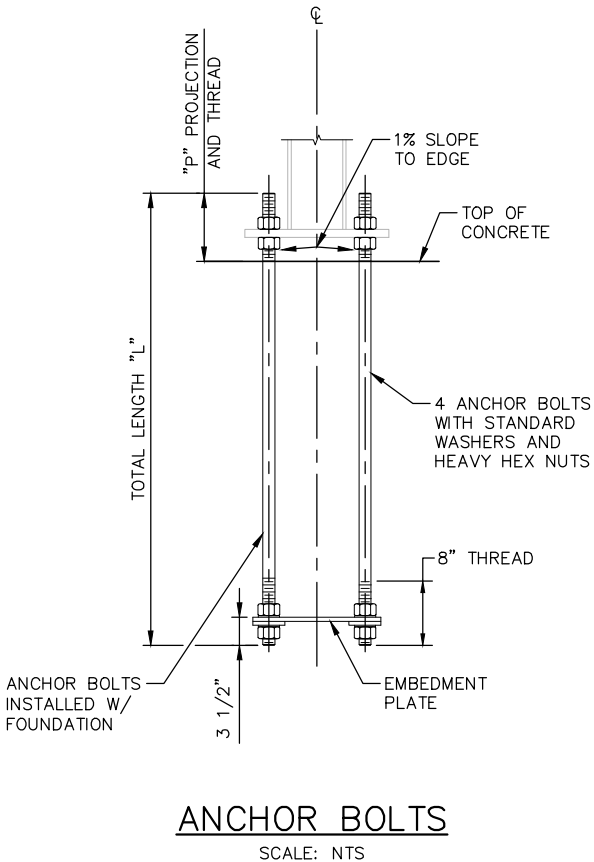
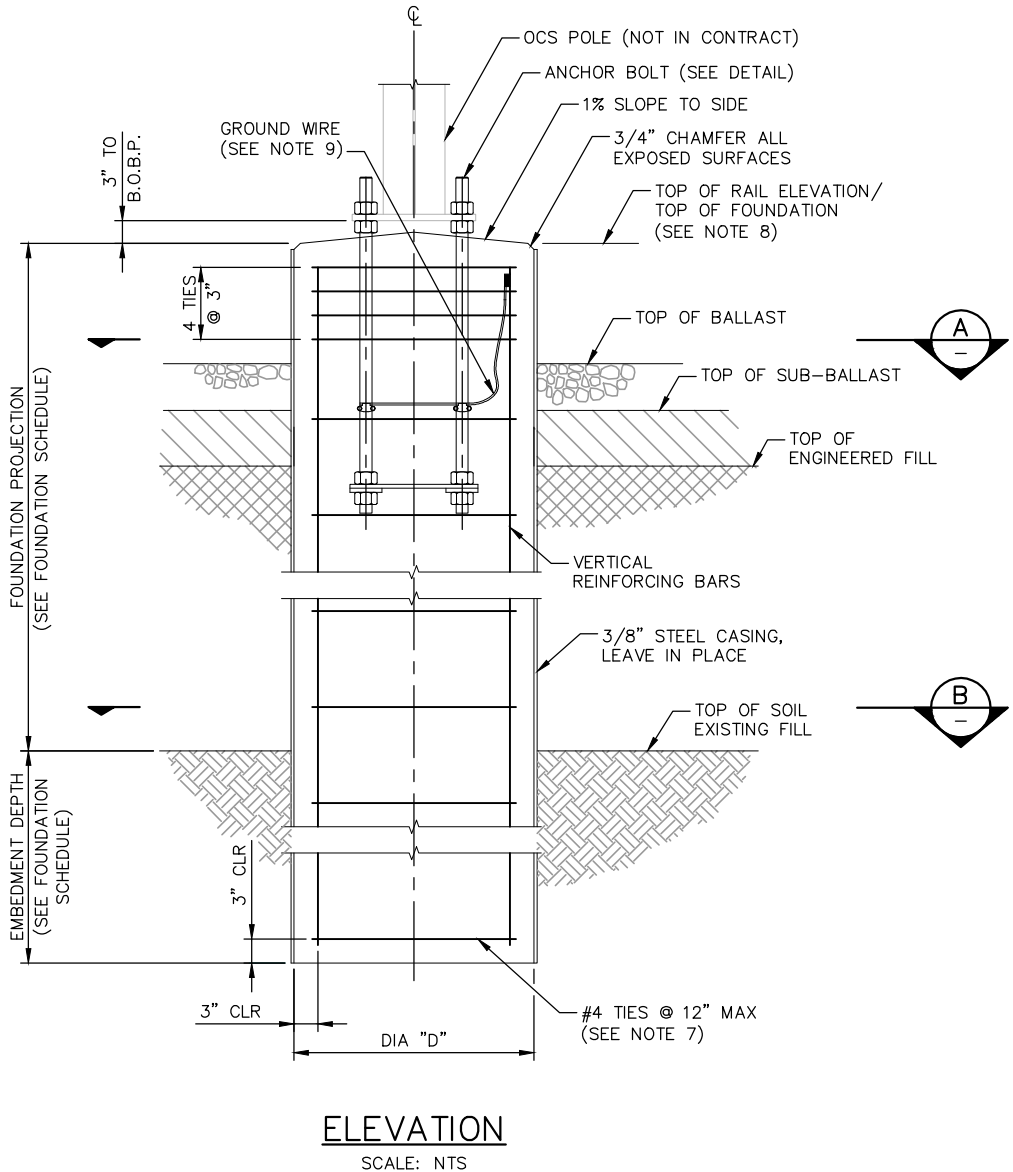
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BOLT AND REINFORCING SCHEDULE							
TYPE	D DIA (IN)	REINFORCEMENT		ANCHOR BOLT DIMENSIONS			
		SIZE	QUANTITY	BC (IN)	DIA (IN)	L (IN)	P (IN)
FD3A	30	#8	8	16	1.25	48	10
FD3B	36	#8	8	18	1.50	54	10
FD3C	36	#8	8	22	2.00	60	10
FD3D	30	#8	8	15	1.25	48	10
FD3E	36	#8	8	19	1.50	54	10
FD3F	36	#8	8	23	1.75	60	10



- NOTES:
1. INSTALL TYPE FD3x FOUNDATIONS PRIOR TO MSE CONSTRUCTION. MONITOR FOUNDATIONS DURING MSE CONSTRUCTION TO ENSURE THAT ALL TOLERANCES ARE MAINTAINED.
 2. MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS AND THE SPECIFICATIONS.
 3. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 4,000 PSI.
 4. WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1 SPECIFICATIONS, LATEST EDITION.
 5. PROVIDE BOLT PATTERN TEMPLATE FOR ANCHOR BOLT INSTALLATION.
 6. ROTATE REINFORCEMENT CAGE TO AVOID CONFLICT WITH ANCHOR BOLTS AND EMBEDMENT PLATE.
 7. NO. 4 SPIRALS AT 4 INCHES (MAXIMUM) PITCH MAY BE SUBSTITUTED FOR REBAR TIES.
 8. SEE FOUNDATION SCHEDULE FOR REFERENCE TOP OF FOUNDATION, FOUNDATION TYPES, OFFSET AND EFFECTIVE DEPTH.
 9. EXOTHERMICALLY WELD 4/0 GROUND WIRE TO REBAR CAGE AND CLAMP TO ANCHOR BOLTS USING A BURNDY GAR GROUND CONNECTOR, OR APPROVED EQUAL.
 10. POLE TO GROUND RESISTANCE SHALL NOT EXCEED 25 OHMS. USE GROUND RODS AS REQUIRED.
 11. REFER TO SYSTEMWIDE ELECTRICAL PLAN AND DETAILS FOR DUCT BANK LAYOUT, CONDUIT LAYOUT AND CONDUIT DETAILS AT OCS FOUNDATIONS.
 12. TACK WELD TOP AND BOTTOM TIES OF REINFORCEMENT CAGE TO VERTICAL REINFORCEMENT.

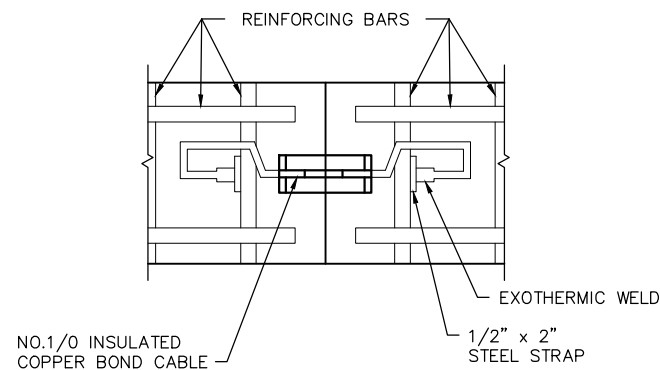
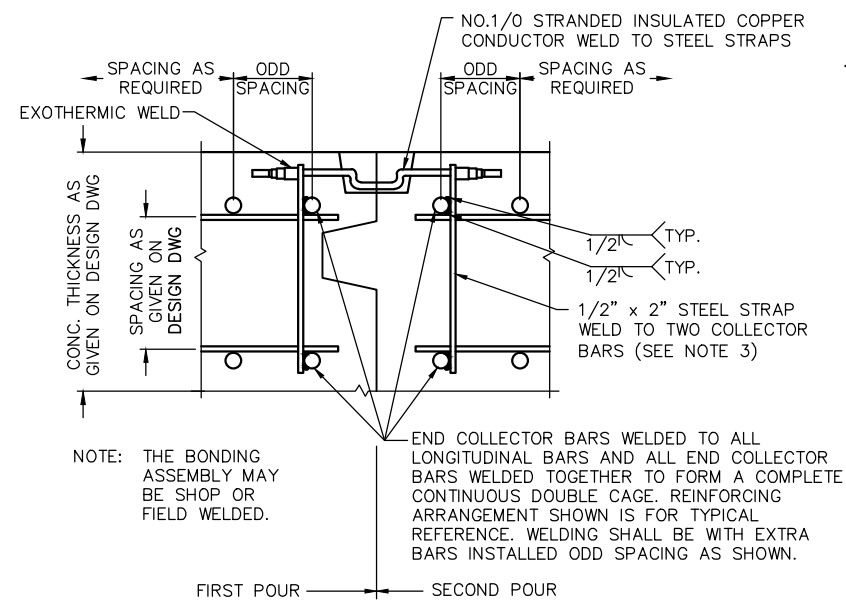
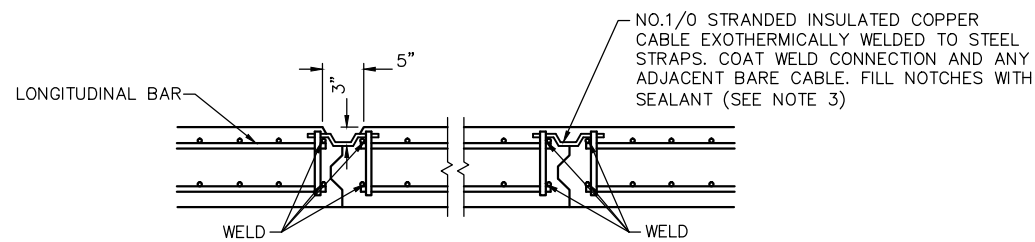
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60% SUBMISSION - 09/28/15

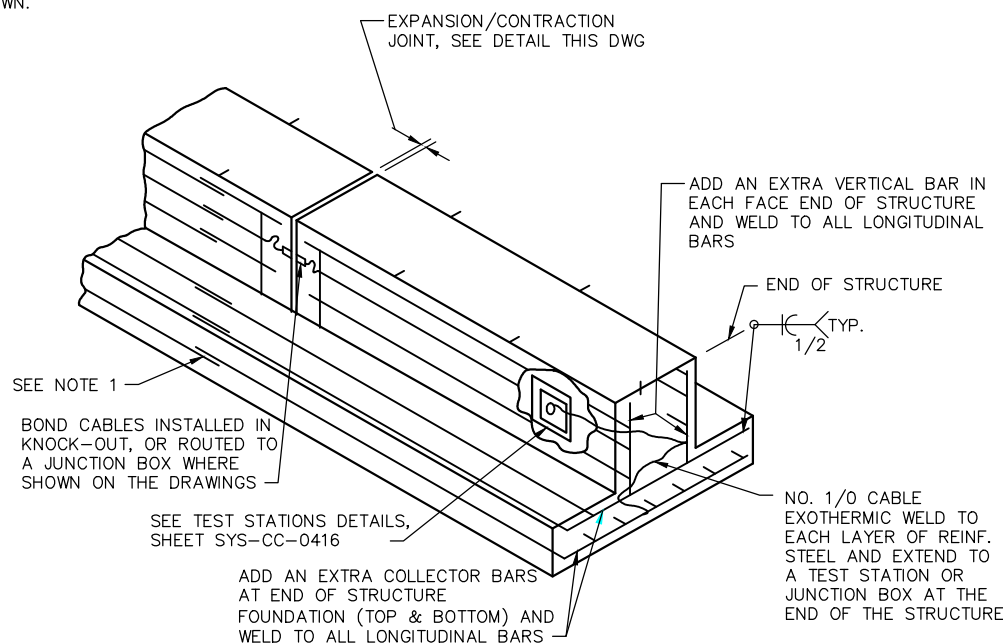
CIVIL EAST - VOLUME 12
OVERHEAD CONTACT SYSTEM
POLE FOUNDATION ASSEMBLY
MSE RETAINED FILL AT BRIDGE APPROACH

DISCIPLINE: OCS
SHEET NAME: E0-SYS-OCS-FND-004

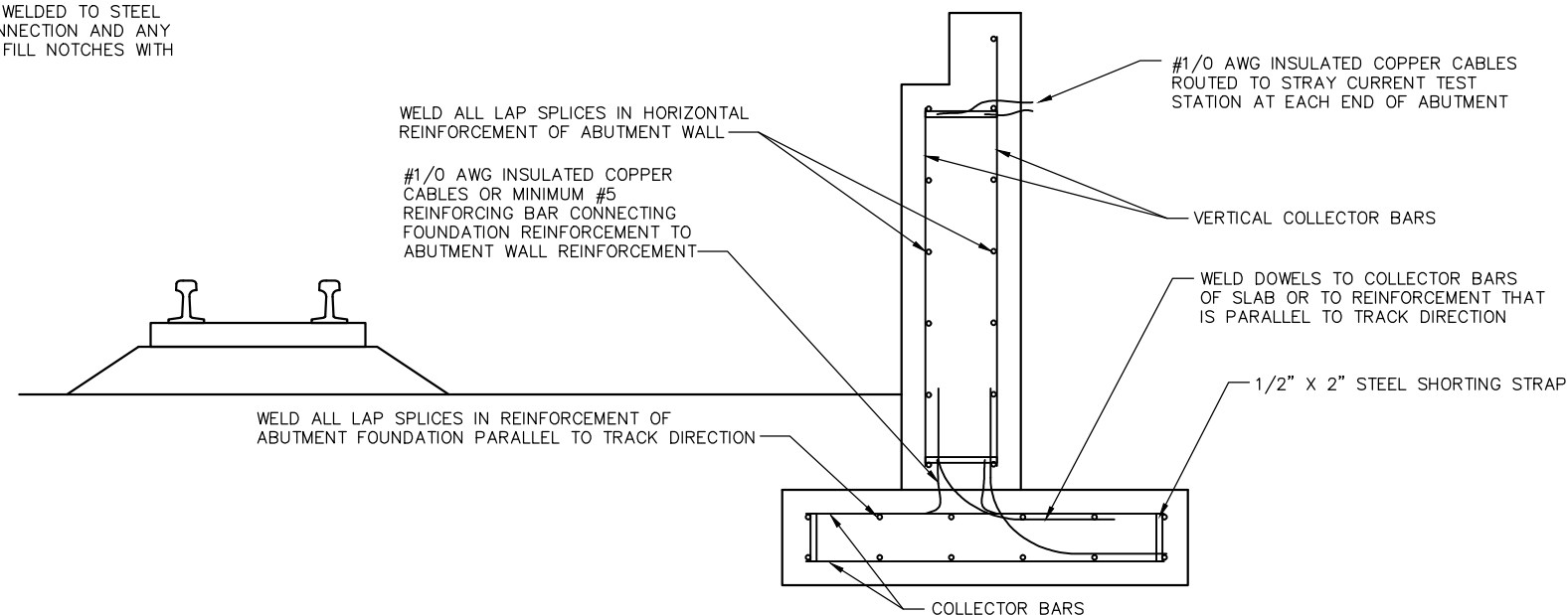
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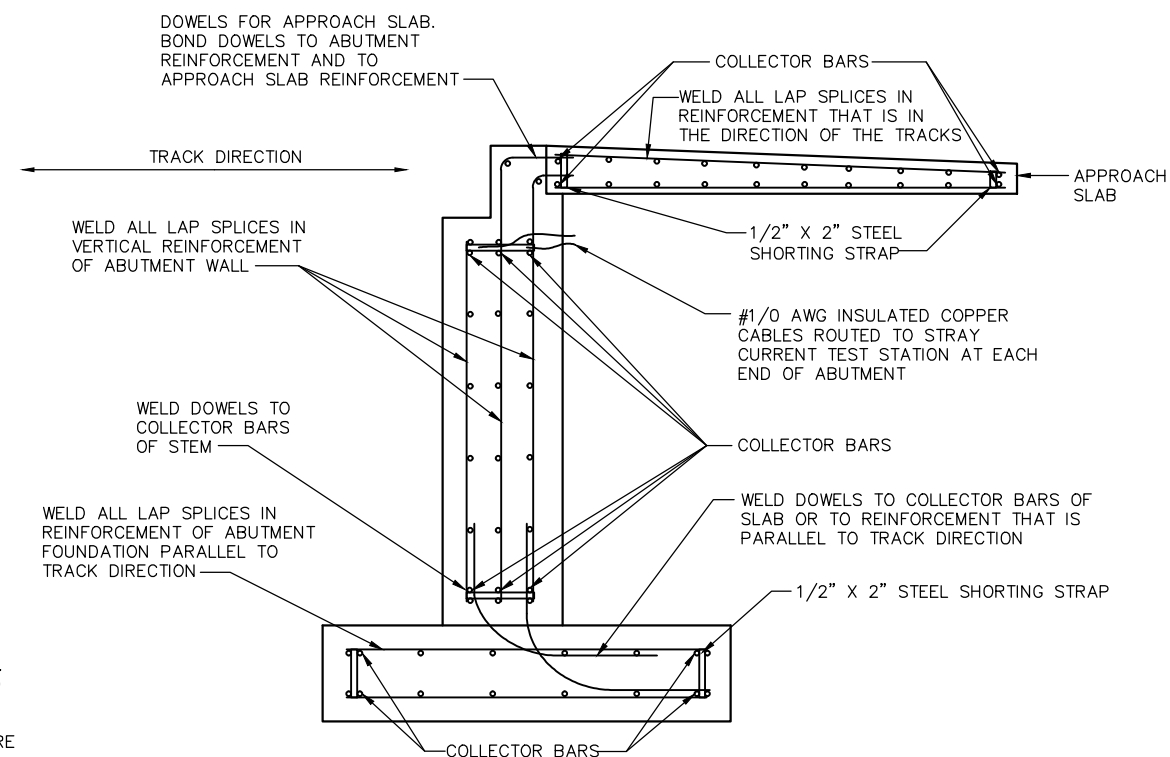
BOND CABLE KNOCK-OUT DETAIL



CAST IN PLACE CONCRETE STRUCTURE BONDING DETAIL



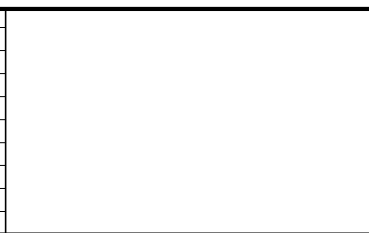
TYPICAL STRAY CURRENT BONDING OF ROADWAY
BRIDGE ABUTMENT AT LIGHT RAIL OVERPASS



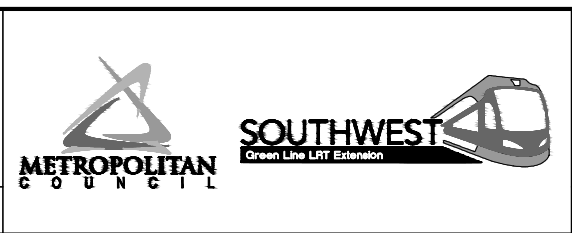
TYPICAL STRAY CURRENT
BONDING OF BRIDGE ABUTMENTS

- NOTES:
1. ALL LONGITUDINAL REINFORCING BARS MUST BE FULLY BONDED. COLLECTOR BARS ARE TO BE BONDED AT THE JOINTS TO ELECTRICALLY TIE LONGITUDINAL BARS TOGETHER.
 2. AT EXPANSION JOINTS, ENDS OF EACH STRUCTURE AND AT INTERVALS NOT EXCEEDING 500 FT. TEST STATIONS SHALL BE INSTALLED WHERE SHOWN ON THE CONTRACT DRAWINGS. SEE SHEET SYS-CC-0416 FOR TEST STATION DETAILS. INSTALL BOX 2' TO 4' ABOVE FINISHED GRADE.
 3. STRAP SHALL BE OF SUFFICIENT LENGTH TO FACILITATE WELDING TO TOP AND BOTTOM OF REBAR CAGE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL



60% SUBMISSION - 09/28/15

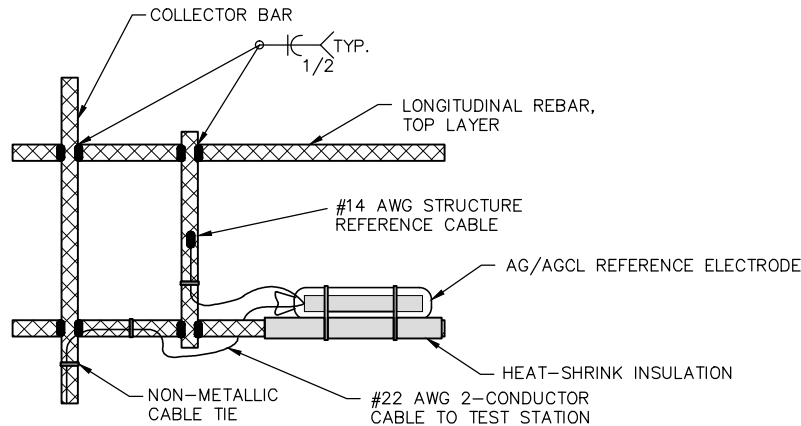


CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 1

DISCIPLINE: CORR
SHEET NAME: E0-SYS-CORR-DTL-001

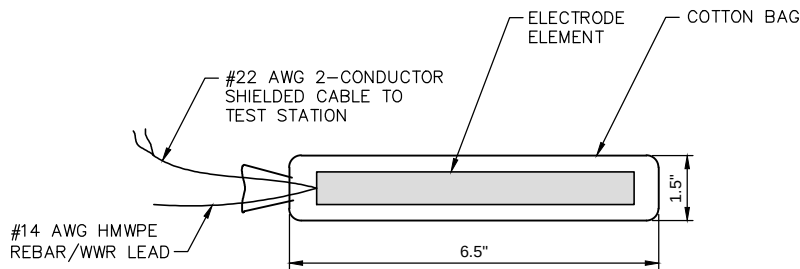
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224

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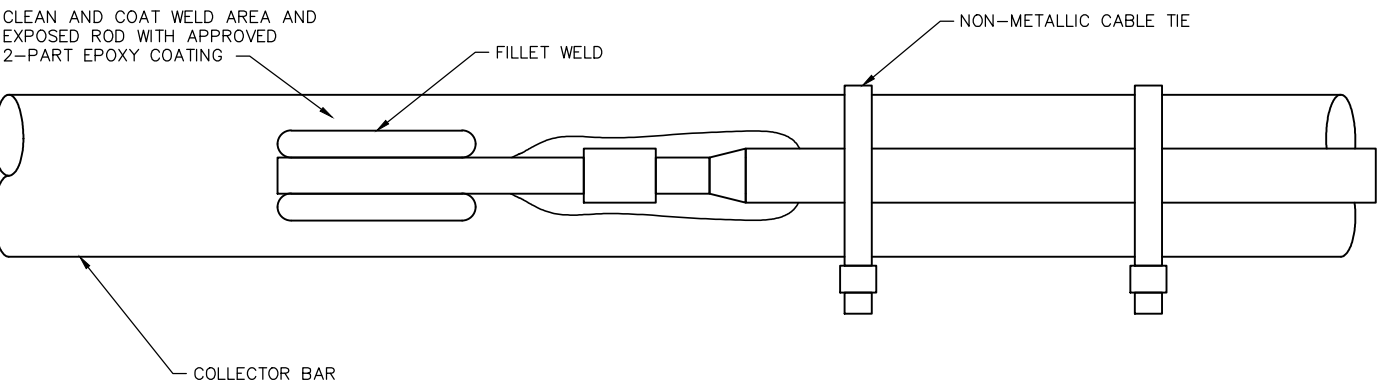
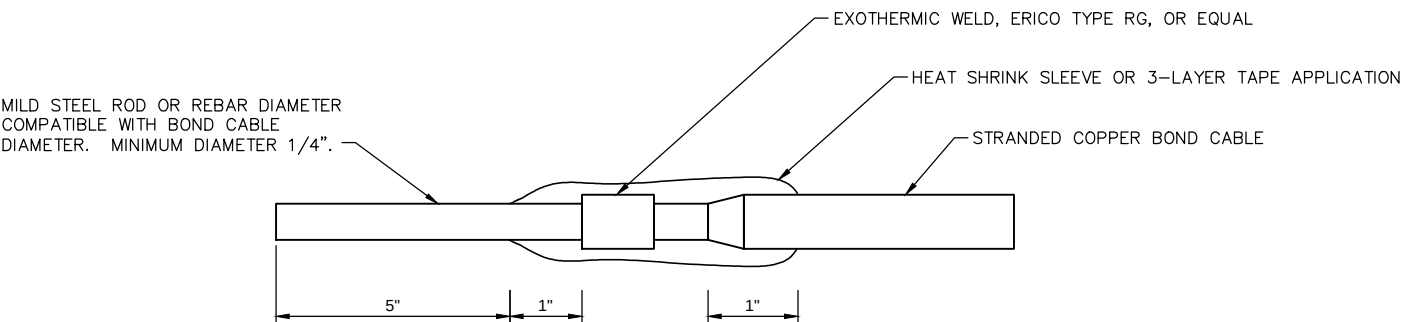


NOTE:
ALL EXOTHERMIC WELDS SHALL BE CLEANED AND COATED
WITH AN APPROVED 2-PART EPOXY COATING.

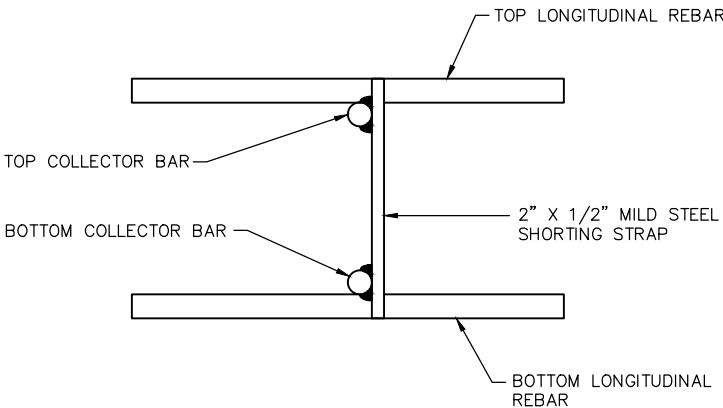
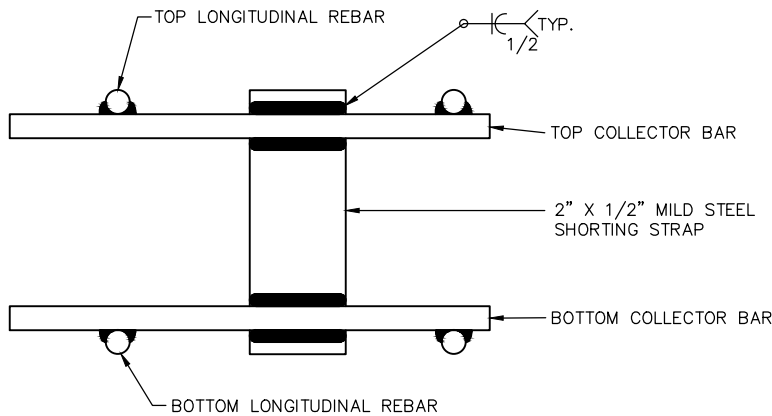
REINFORCED CONCRETE
REFERENCE ELECTRODE MOUNTING DETAIL



AG/AGCL REFERENCE ELECTRODE



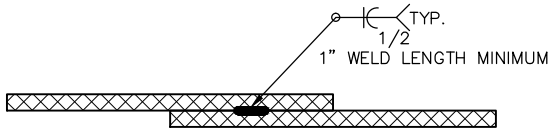
CABLE ATTACHMENT TO REINFORCING



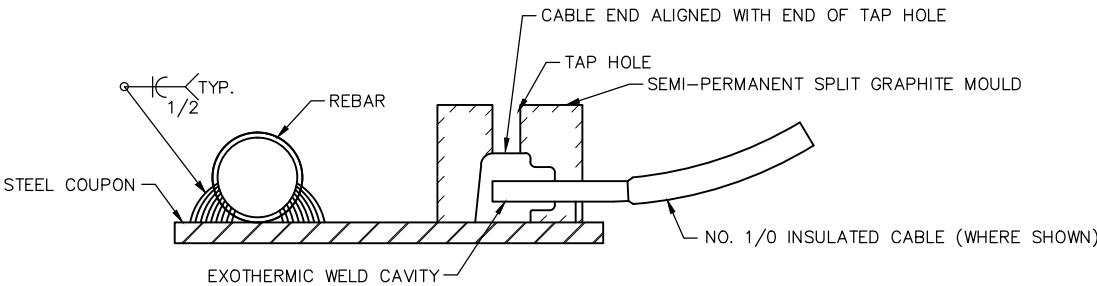
REBAR SHORTING STRAP

NOTES:

1. THE COLLECTOR BAR FOR REINFORCED CONCRETE STRUCTURES SHALL BE THE GREATER OF THE SIZE OF THE LONGITUDINAL REINFORCEMENT OR A #5 REINFORCING BAR. THE COLLECTOR BAR SHALL BE WELDED TO EACH LONGITUDINAL REINFORCEMENT ON EACH SIDE OF THE COLLECTOR BAR. COLLECTOR BARS ARE REQUIRED FOR EACH COURSE OF LONGITUDINAL REINFORCEMENT. ONLY TWO COURSES ARE SHOWN IN DETAILS AS AN EXAMPLE.
2. STEEL SHORTING STRAPS, MINIMUM 2" WIDE AND 1/2" THICK, SHALL BE WELDED BETWEEN THE COLLECTOR BARS TO ENSURE ELECTRICAL CONTINUITY. A MINIMUM OF TWO SHORTING STRAPS ARE REQUIRED, ONE AT EACH END OF THE COLLECTOR BARS.
3. A MINIMUM OF 2 JUMPER CABLES SHALL BE EXOTHERMICALLY WELDED TO COLLECTOR BARS OR SHORTING STRAPS ON EACH SIDE OF ANY PHYSICAL/ELECTRICAL DISCONTINUITY IN THE LONGITUDINAL REINFORCEMENT, SUCH AS AT EXPANSION JOINTS. SUFFICIENT SLACK SHALL BE PROVIDED IN THE JUMPER CABLES TO PREVENT STRESS IN THE CABLE DUE TO JOINT MOVEMENT.
4. ALL EXOTHERMIC WELD CONNECTIONS SHALL BE CLEANED OF ALL SLAG AND WELD RESIDUE WITH A STIFF WIRE BRUSH THEN COATED WITH AN APPROVED EPOXY. ALL WELDING OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH AWS D1.4.

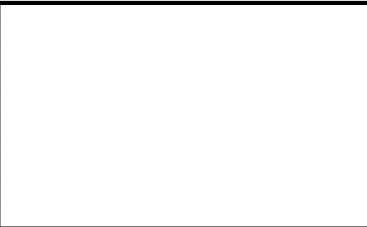


REINFORCED CONCRETE
LONGITUDINAL REBAR LAP SPLICE WELD



STEEL COUPON TO REINFORCING

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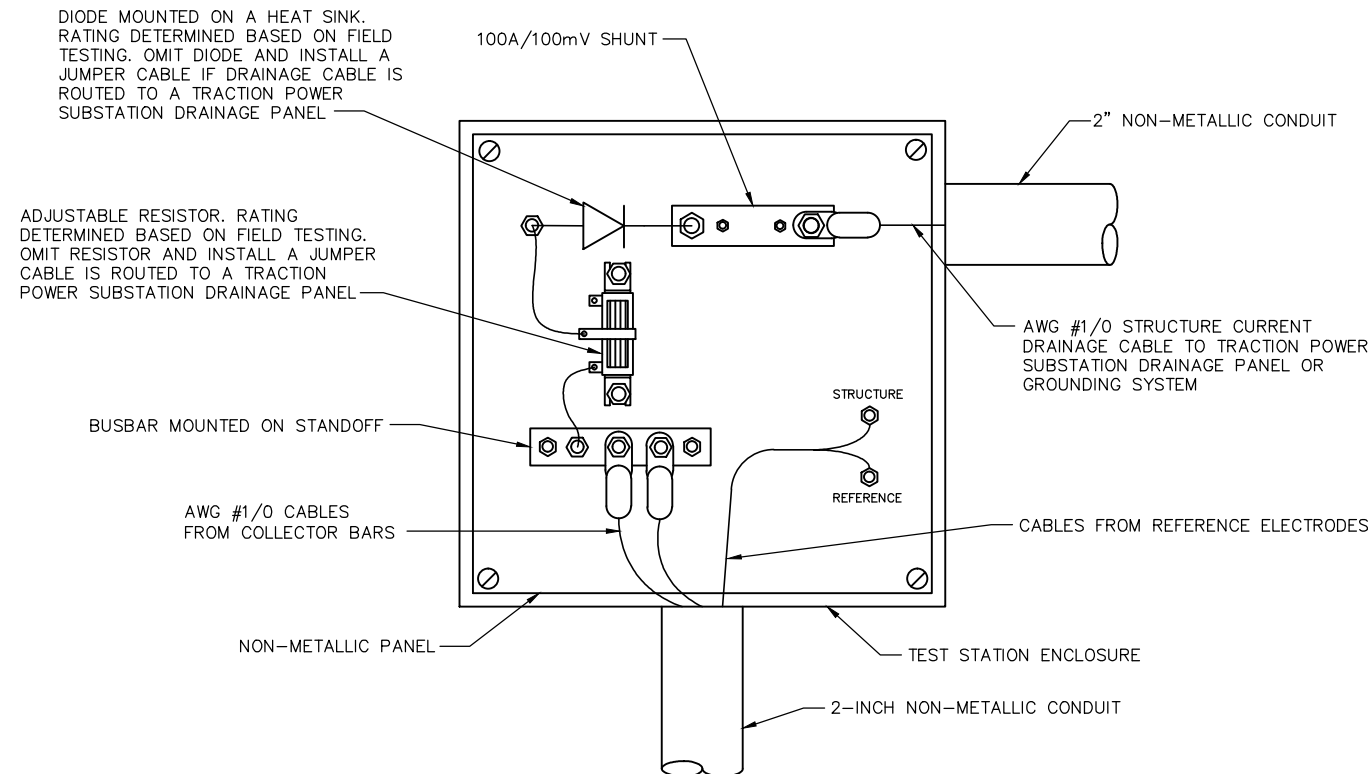


CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 2

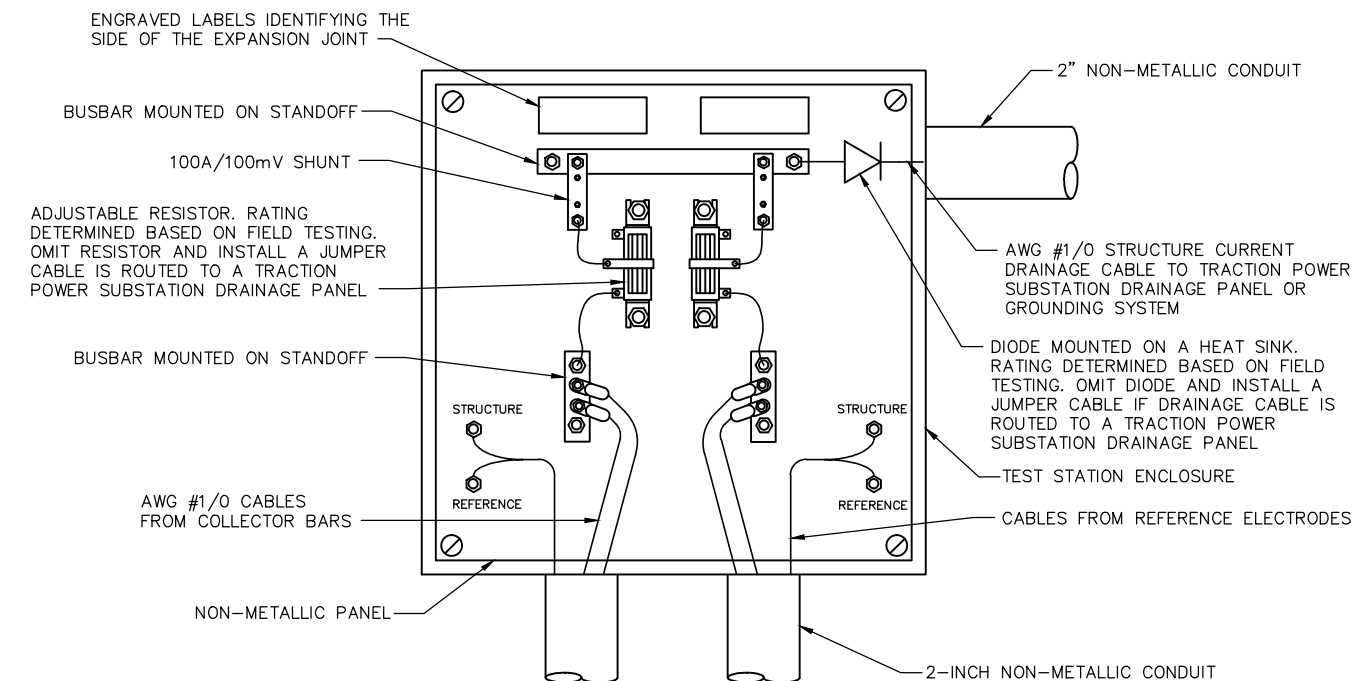
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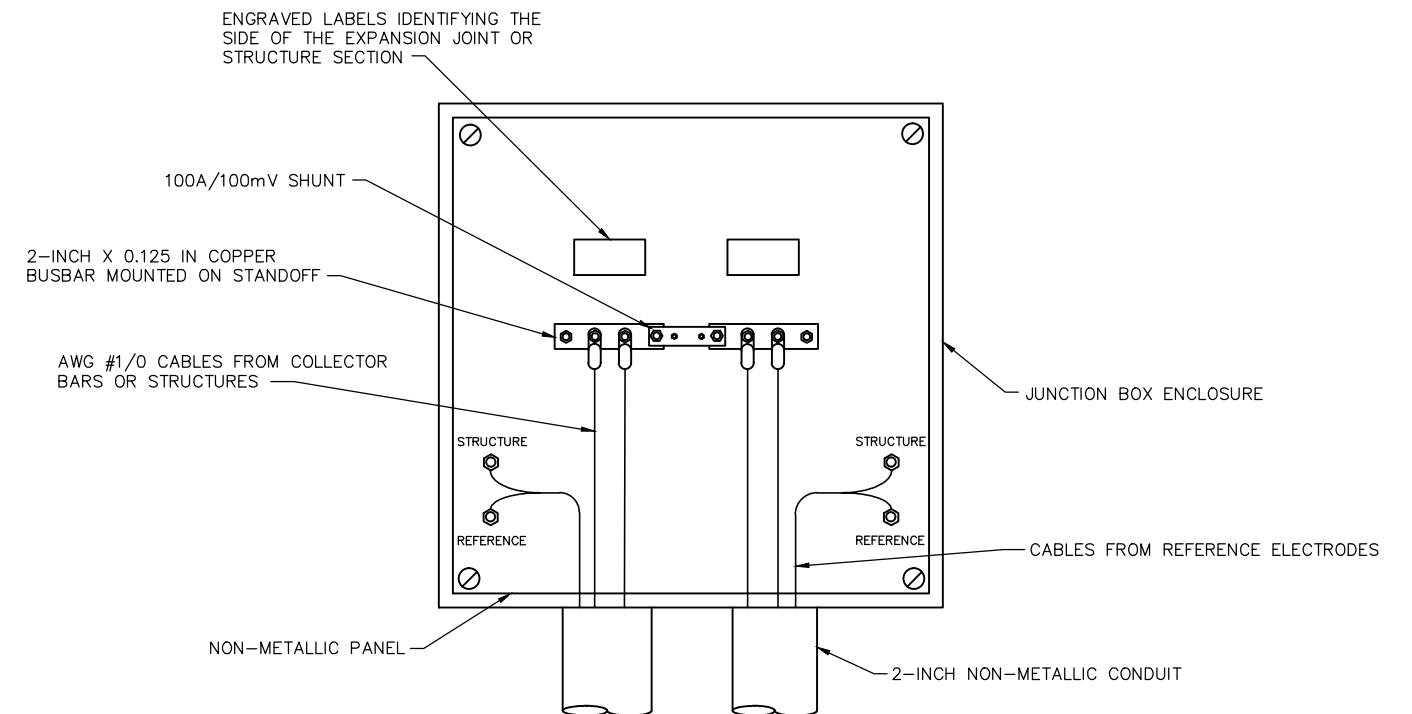
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STRAY CURRENT
TEST STATION WITH DRAINAGE CIRCUIT



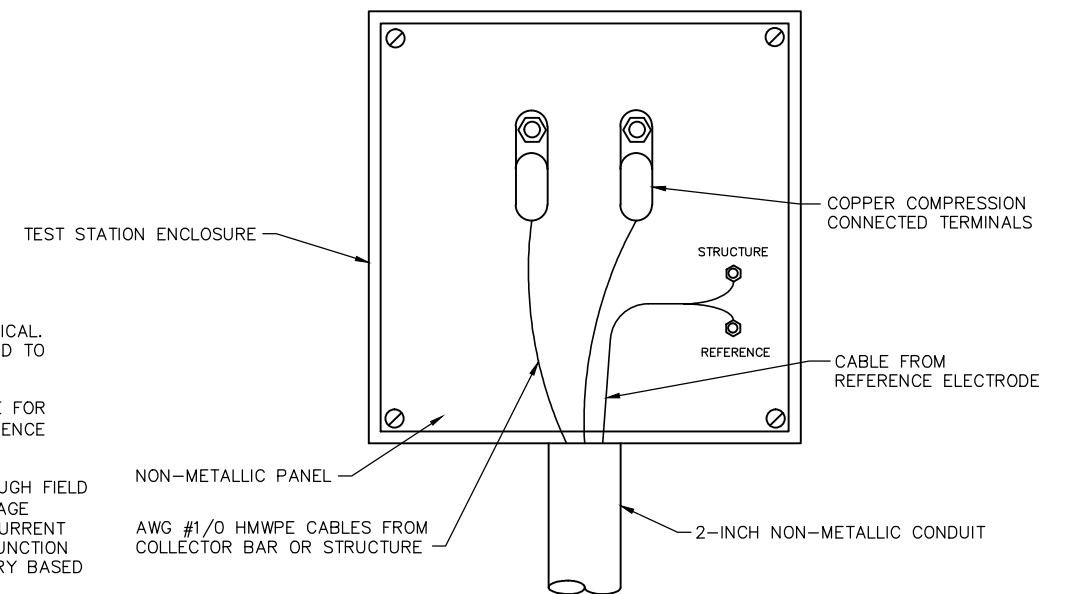
STRAY CURRENT JUNCTION BOX
WITH DRAINAGE CIRCUIT



STRAY CURRENT
JUNCTION BOX

NOTE:

1. CONDUIT ENTRANCE LOCATIONS SHOWN ARE TYPICAL. ACTUAL ENTRANCE LOCATIONS MAY BE ADJUSTED TO SUIT FIELD CONDITIONS.
2. DELETE REFERENCE ELECTRODE STRUCTURE WIRE FOR UNDERGROUND COPPER/COPPER SULFATE REFERENCE ELECTRODE INSTALLATIONS.
3. THE DIODE RATING SHALL BE DETERMINED THROUGH FIELD TESTING AND/OR COMMISSIONING OF THE DRAINAGE CIRCUIT, IF IT IS DEMONSTRATED THAT STRAY CURRENT DRAINAGE IS NECESSARY. A HEAT SINK AND JUNCTION BOX VENTILATION SHALL BE ADDED IF NECESSARY BASED ON THE HEAT DISSIPATION OF THE DIODE.
4. TEST STATIONS WITH DRAINAGE CIRCUITS SHALL BE LOCATED AT THE COLLECTOR BAR NEAREST THE TRACTION POWER SUBSTATION OR GROUNDING SYSTEM IF PRACTICAL.



STRAY CURRENT INTERMEDIATE OR
END OF STRUCTURE TEST STATION

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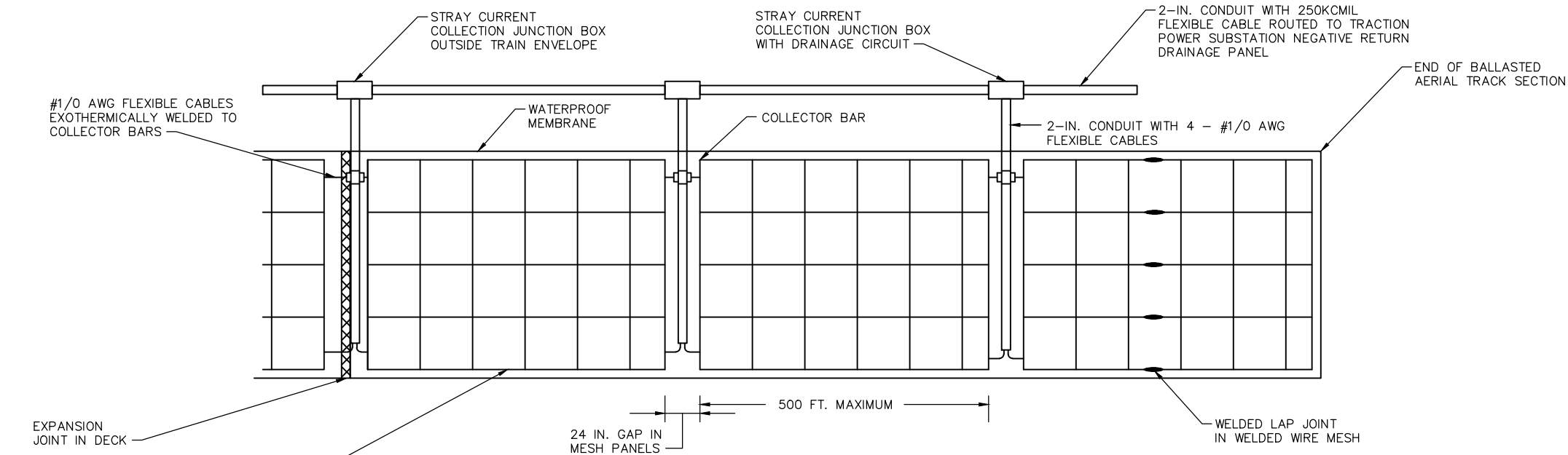
**CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 3**

DISCIPLINE:
CORR

SHEET NAME:
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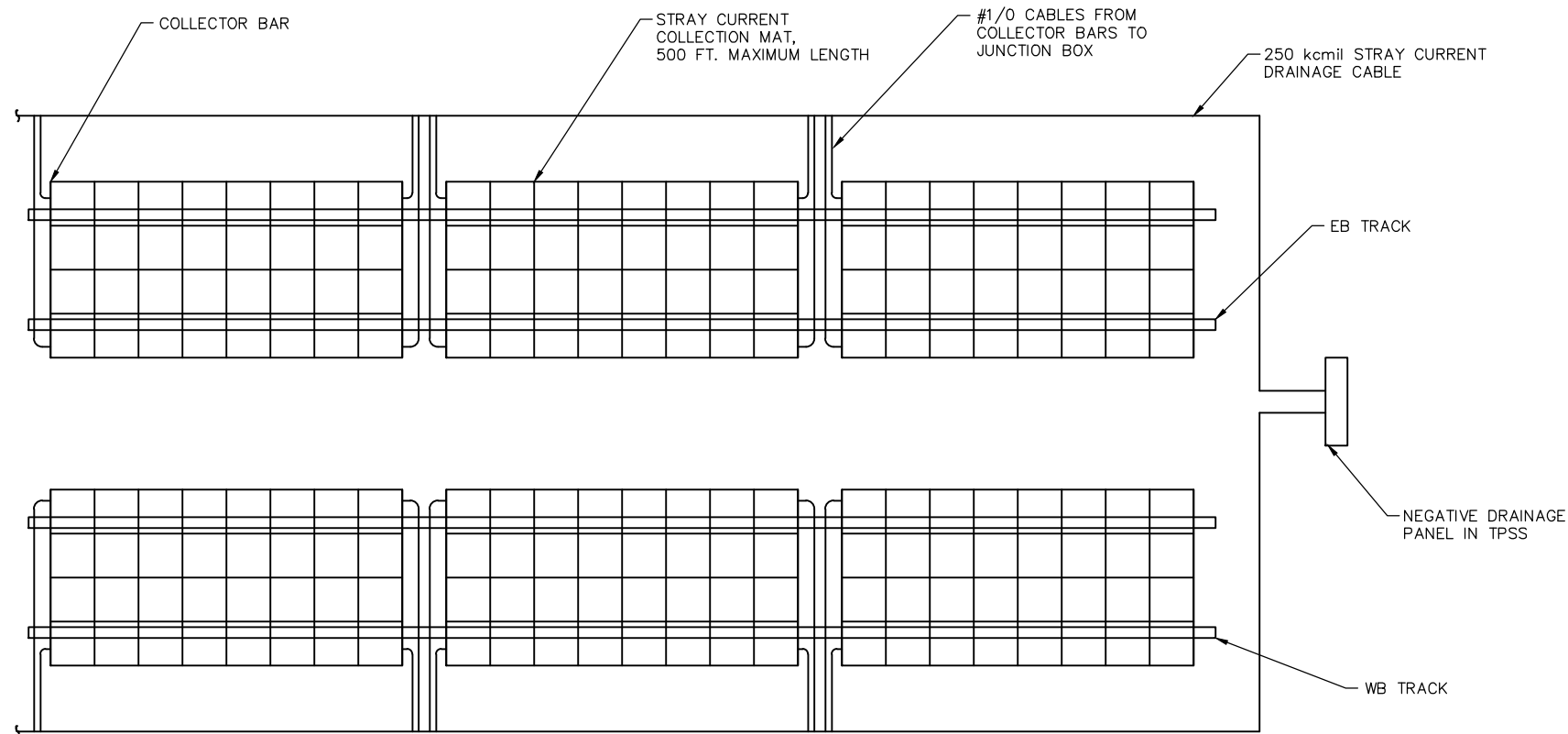
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WELDED WIRE MESH STRAY CURRENT COLLECTION PANEL. 24-IN. X 24-IN. SPACING OF #6 AWG COPPER CLAD STEEL WIRE, 40% CONDUCTIVITY.

BALLASTED AERIAL TRACK STRAY CURRENT COLLECTION SYSTEM TYPICAL LAYOUT DETAIL



STRAY CURRENT COLLECTION SYSTEM SCHEMATIC

NOTES:

1. THE COLLECTOR BAR SHALL BE A BARE #1/0 AWG STRANDED COPPER CABLE EXOTHERMICALLY WELDED TO THE MESH. THE COLLECTOR BAR SHALL BE WELDED TO THE MESH AT EACH EDGE OF THE MESH AND AT A MAXIMUM SPACING OF 24 INCHES ALONG THE COLLECTOR BAR.
2. A COLLECTOR BAR SHALL BE EXOTHERMICALLY WELDED TO THE MESH ON EACH SIDE OF ANY PHYSICAL/ELECTRICAL DISCONTINUITY IN THE WELDED WIRE MESH. A MINIMUM OF 2 CABLES SHALL BE ROUTED IN NON-METALLIC CONDUIT TO A STRAY CURRENT COLLECTION JUNCTION BOX FROM EACH COLLECTOR BAR.
3. STRAY CURRENT COLLECTION JUNCTION BOXES SHALL BE LOCATED OUTSIDE OF THE VEHICLE ENVELOPE IN A REASONABLY ACCESSIBLE POSITION. STRAY CURRENT DRAINAGE CABLES SHALL BE ROUTED FROM THE STRAY CURRENT COLLECTION JUNCTION BOX NEAREST THE TRACTION POWER SUBSTATION TO THE DRAINAGE PANEL WITHIN THE TRACTION POWER SUBSTATION.
4. SPLICING OF MESH, IF REQUIRED, SHALL BE COMPLETED USING EXOTHERMIC WELD CONNECTIONS.
5. ALL EXOTHERMIC WELD CONNECTIONS SHALL BE CLEANED OF ALL SLAG AND WELD RESIDUE WITH A STIFF WIRE BRUSH THEN COATED WITH AN APPROVED EPOXY.

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SOUTHWEST
Green Line LRT Extension



**CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 4**

DISCIPLINE:

CORR

SHEET NAME:

E0-SYS-CORR-DTL-004

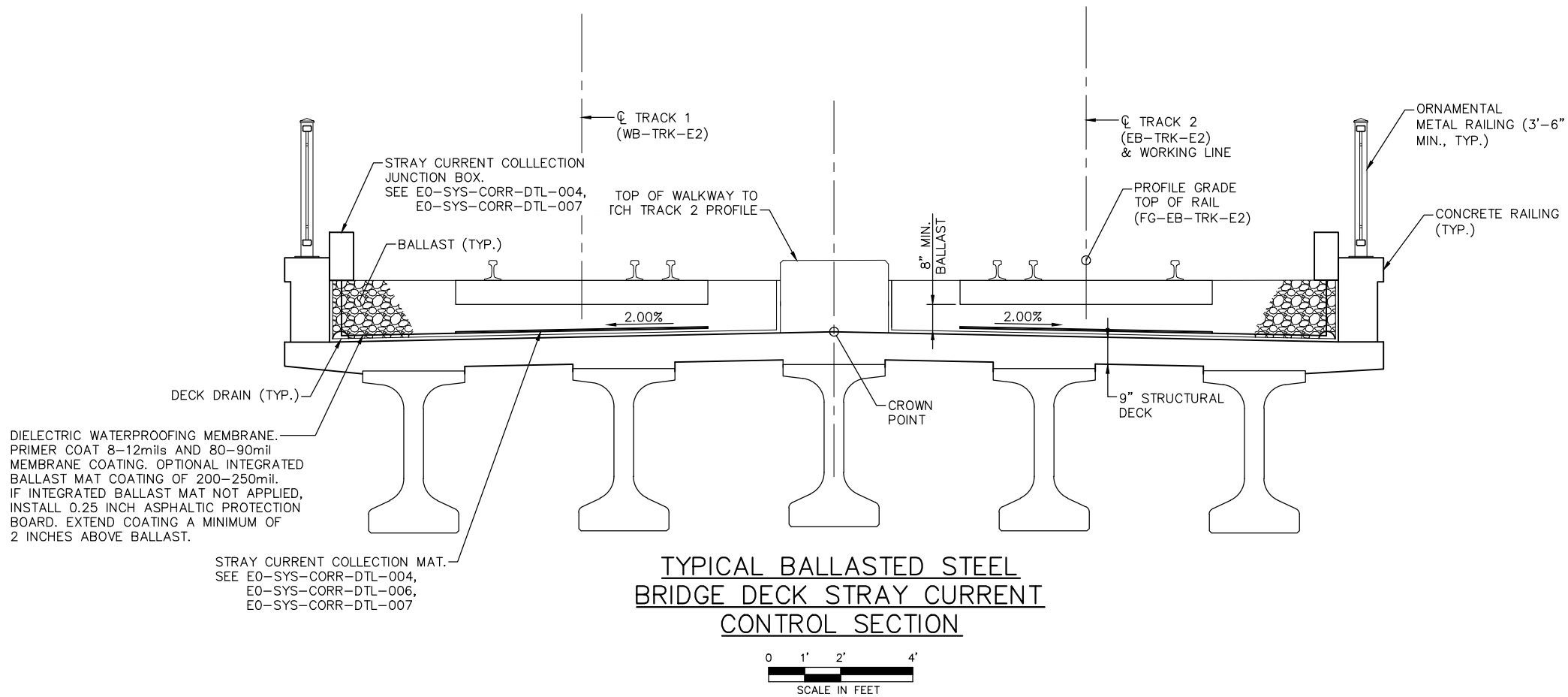
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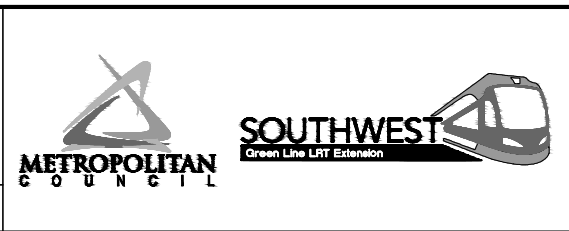


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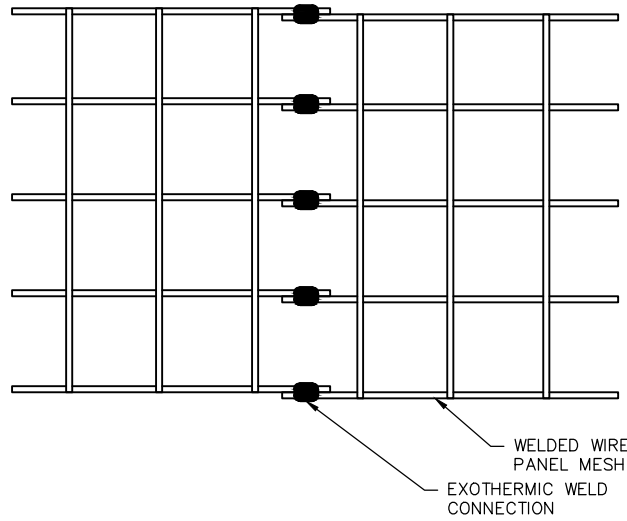


**CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 5**

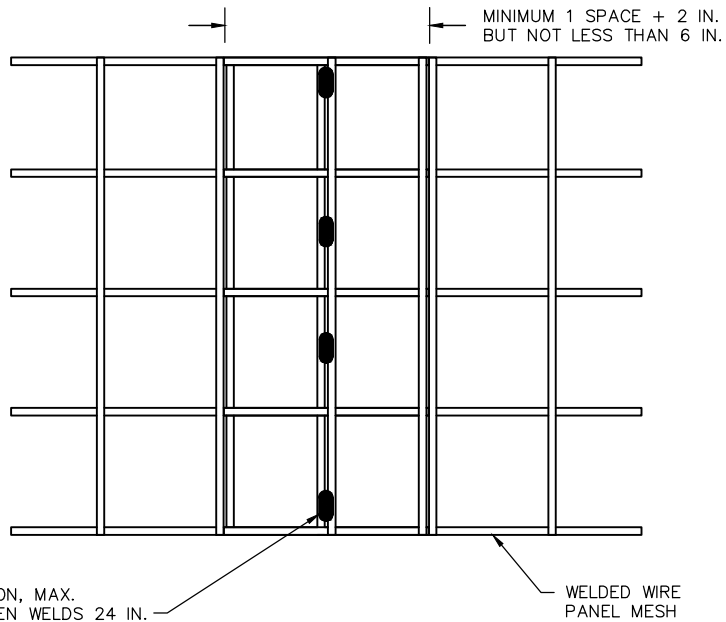
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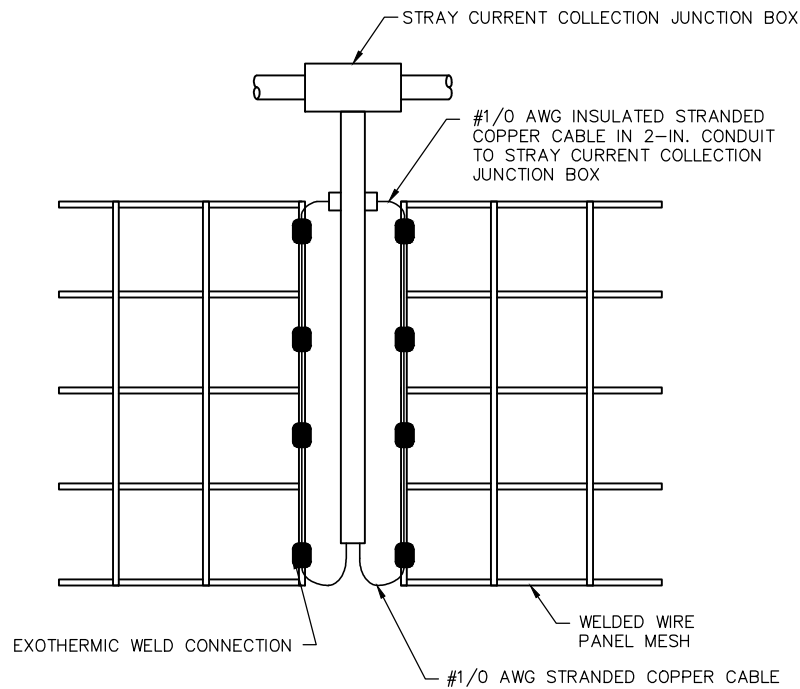
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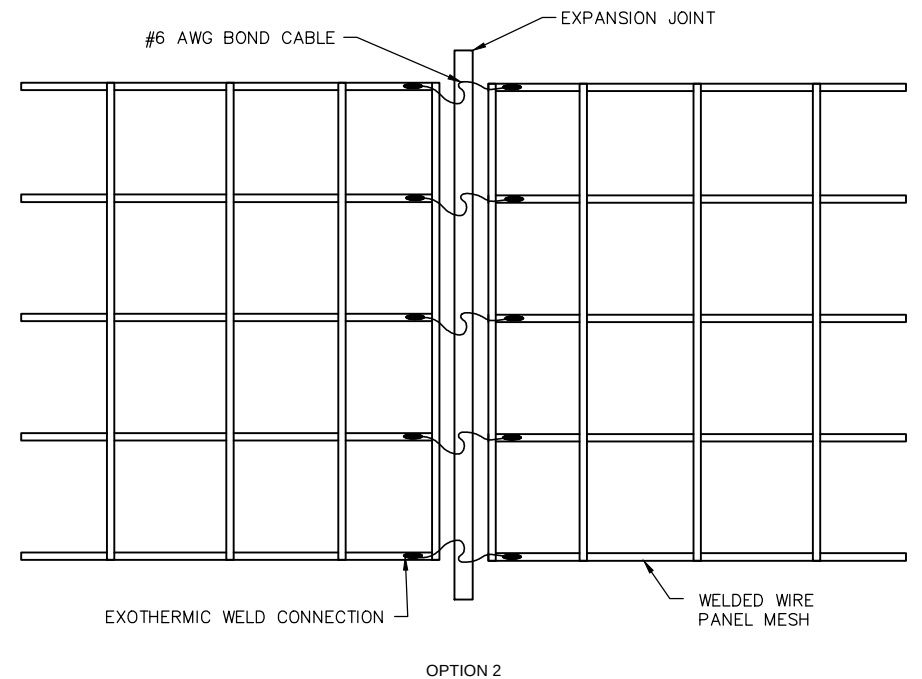
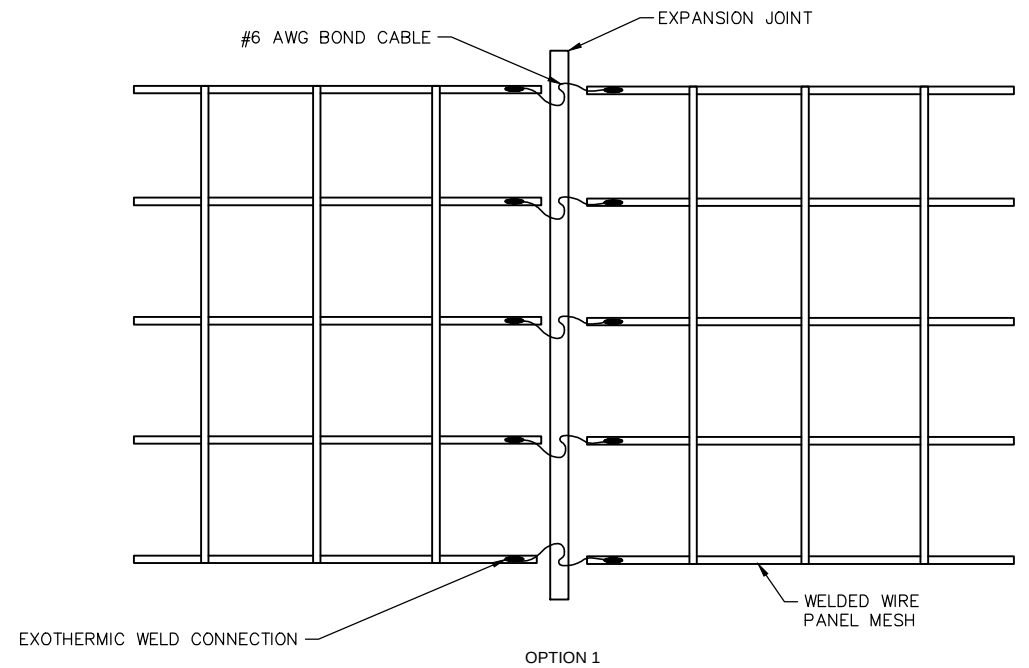
**STRAY CURRENT COLLECTION
MAT SPLICE DETAIL 1**



STRAY CURRENT COLLECTION MAT SPLICE DETAIL 2



**STRAY CURRENT COLLECTION
MAT COLLECTOR BAR DETAIL**



**STRAY CURRENT COLLECTION MAT
SPLICE DETAILS AT EXPANSION JOINT**

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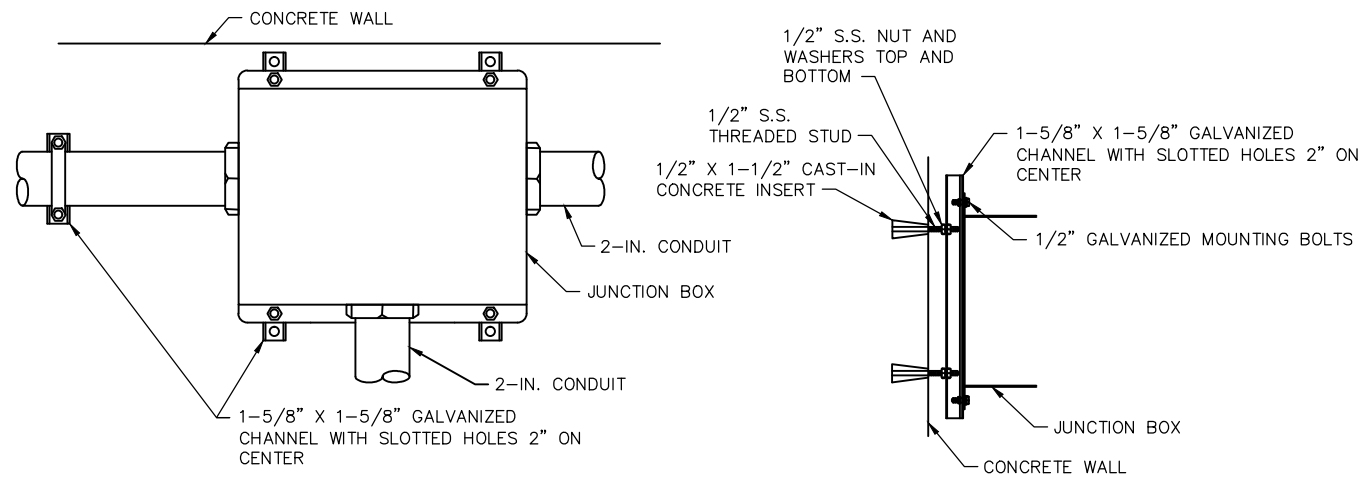
**CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 6**

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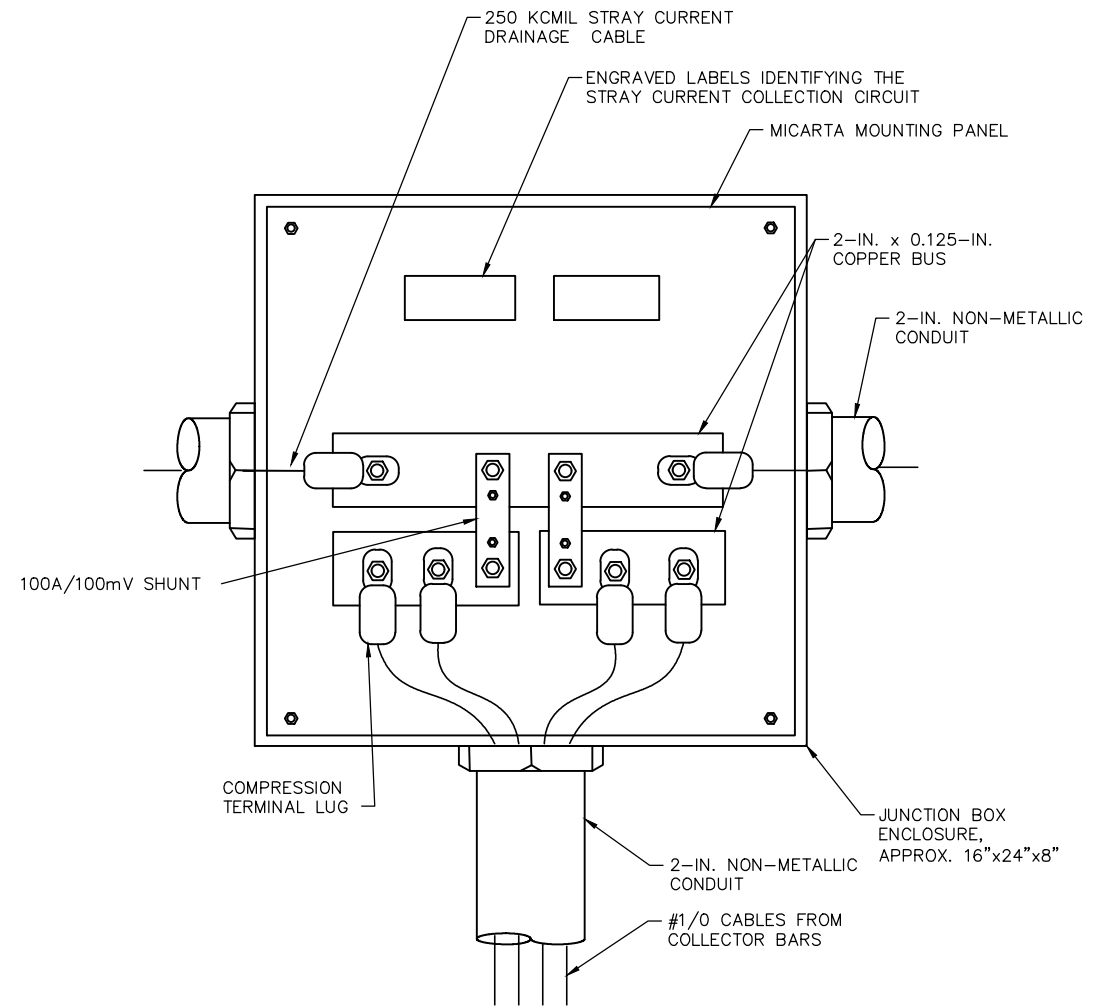
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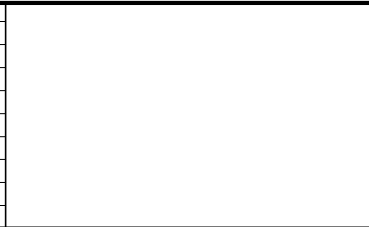


STRAY CURRENT COLLECTION JUNCTION BOX MOUNTING DETAILS



STRAY CURRENT COLLECTION JUNCTION BOX

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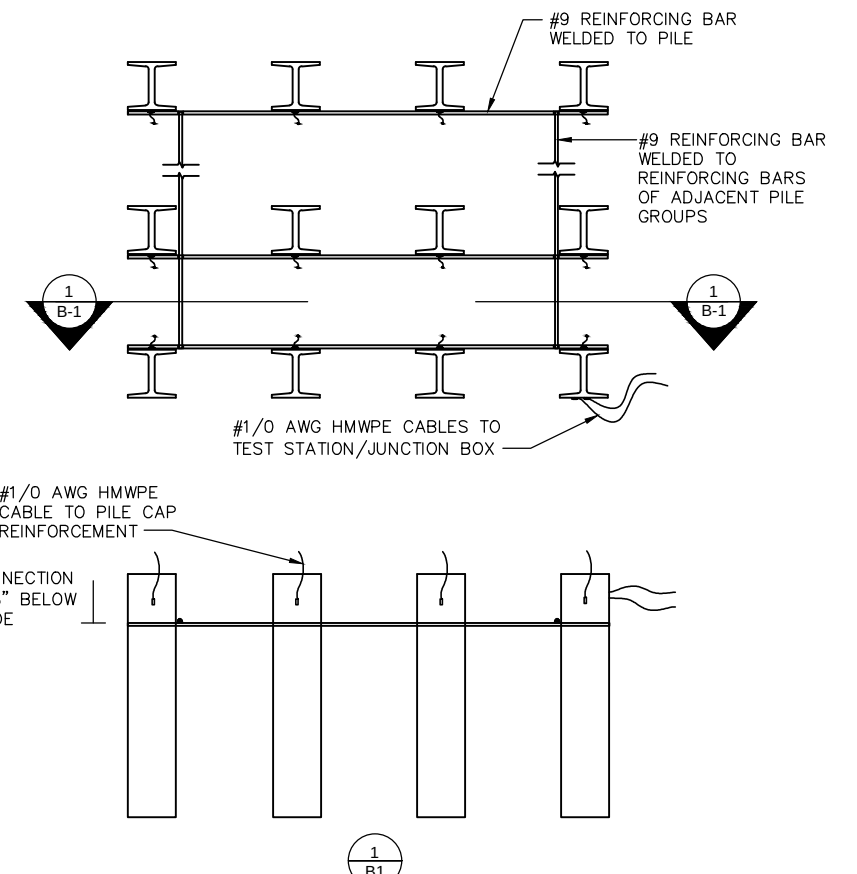
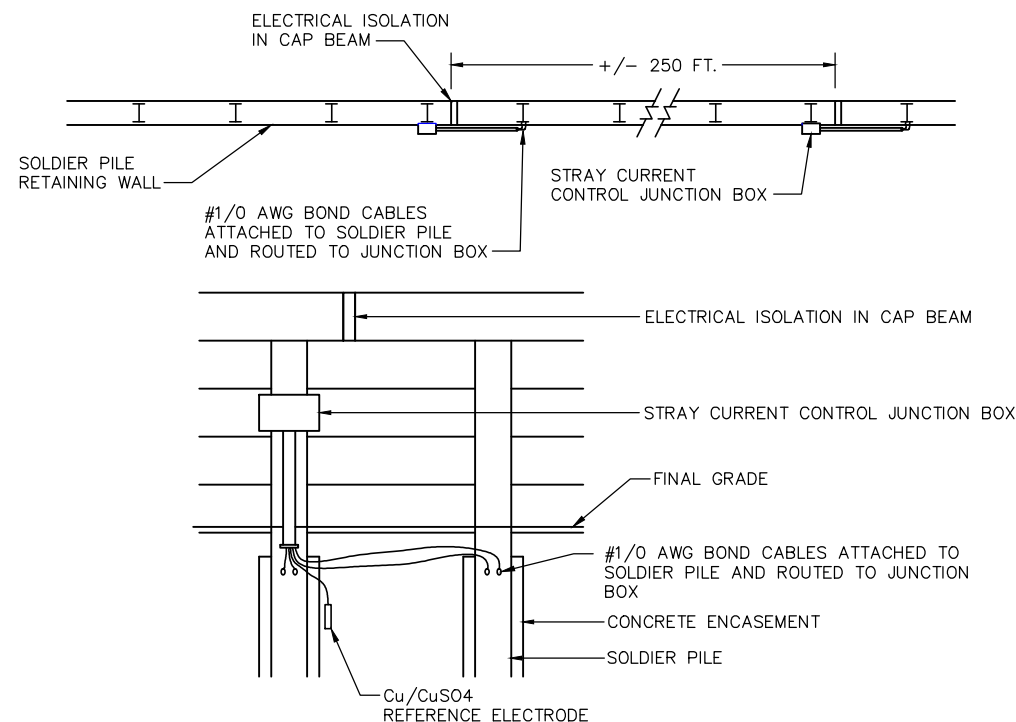
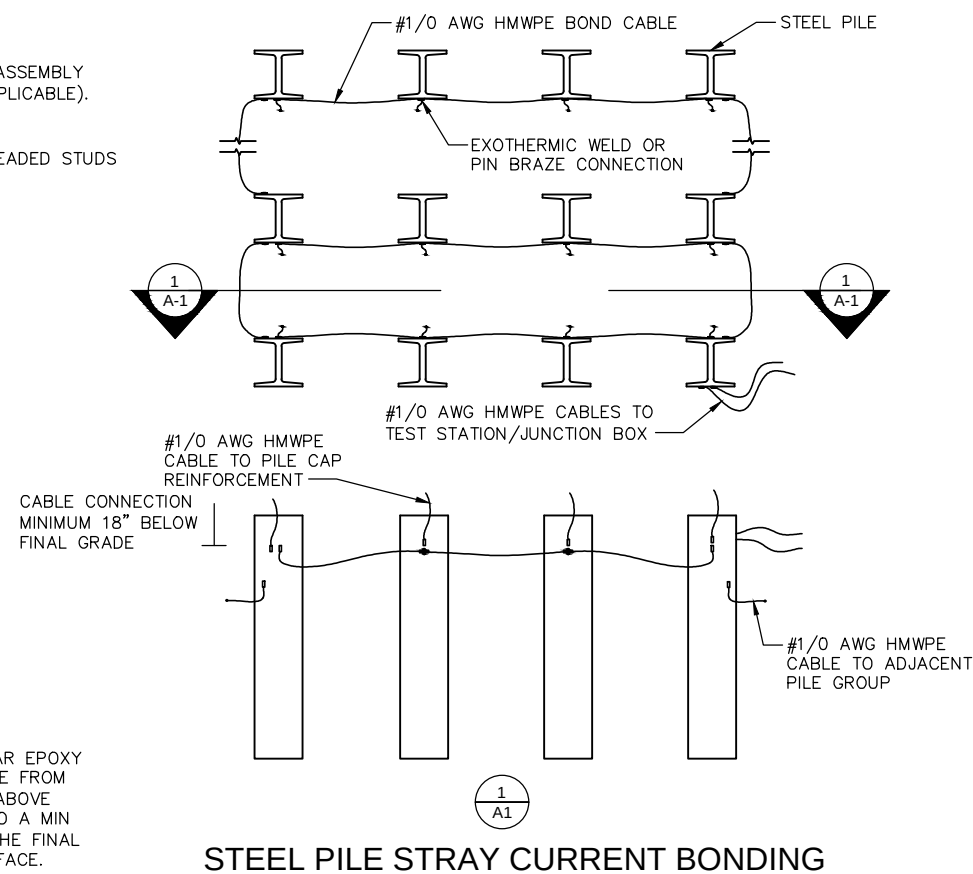
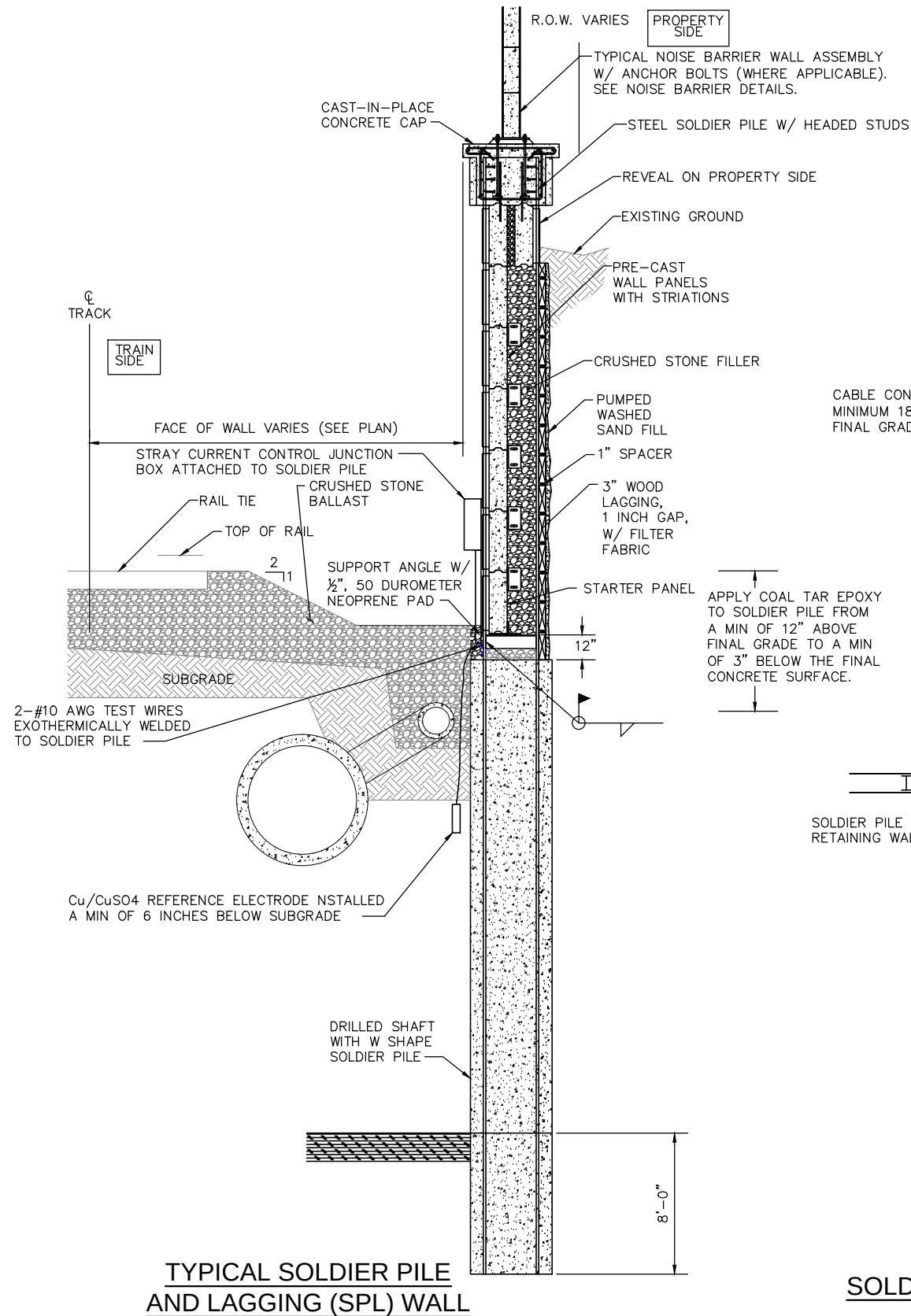
CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 7

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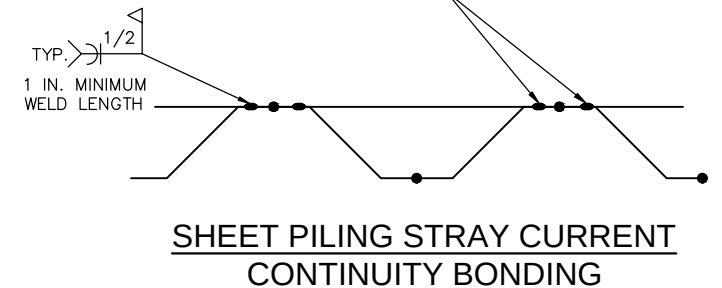
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WELD ONE REINFORCING BAR (#5 MINIMUM) OR A #1/0 AWG HMWPE STRANDED COPPER CABLE ACROSS LENGTH OF SHEET PILE DESIGNATED FOR BONDING. WELD TO EACH SHEET PILING SECTION. LAP SPICE AND WELD REINFORCING BAR AS NECESSARY. UTILIZE GALVANIZED REINFORCING BAR IF SHEET PILING IS GALVANIZED. REMOVE THE MINIMUM AMOUNT OF GALVANIZING FROM THE SHEET PILING AND REINFORCING BAR FOR THE WELDING PROCEDURE. REPAIR THE GALVANIZING ON THE COMPLETED WELD AND ALL BARE STEEL SURFACES IN ACCORDANCE WITH ASTM A780.



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Green Line LRT Extension



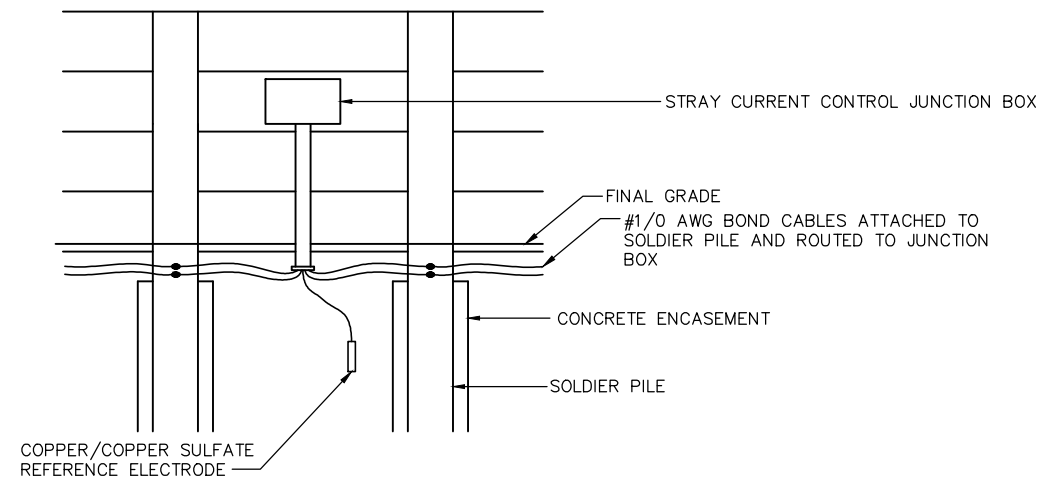
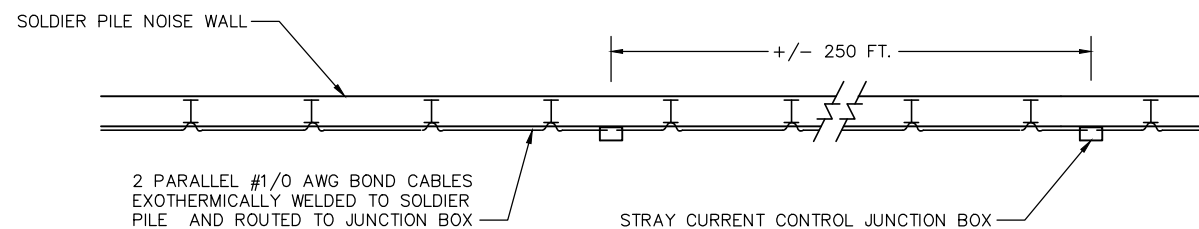
CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 8

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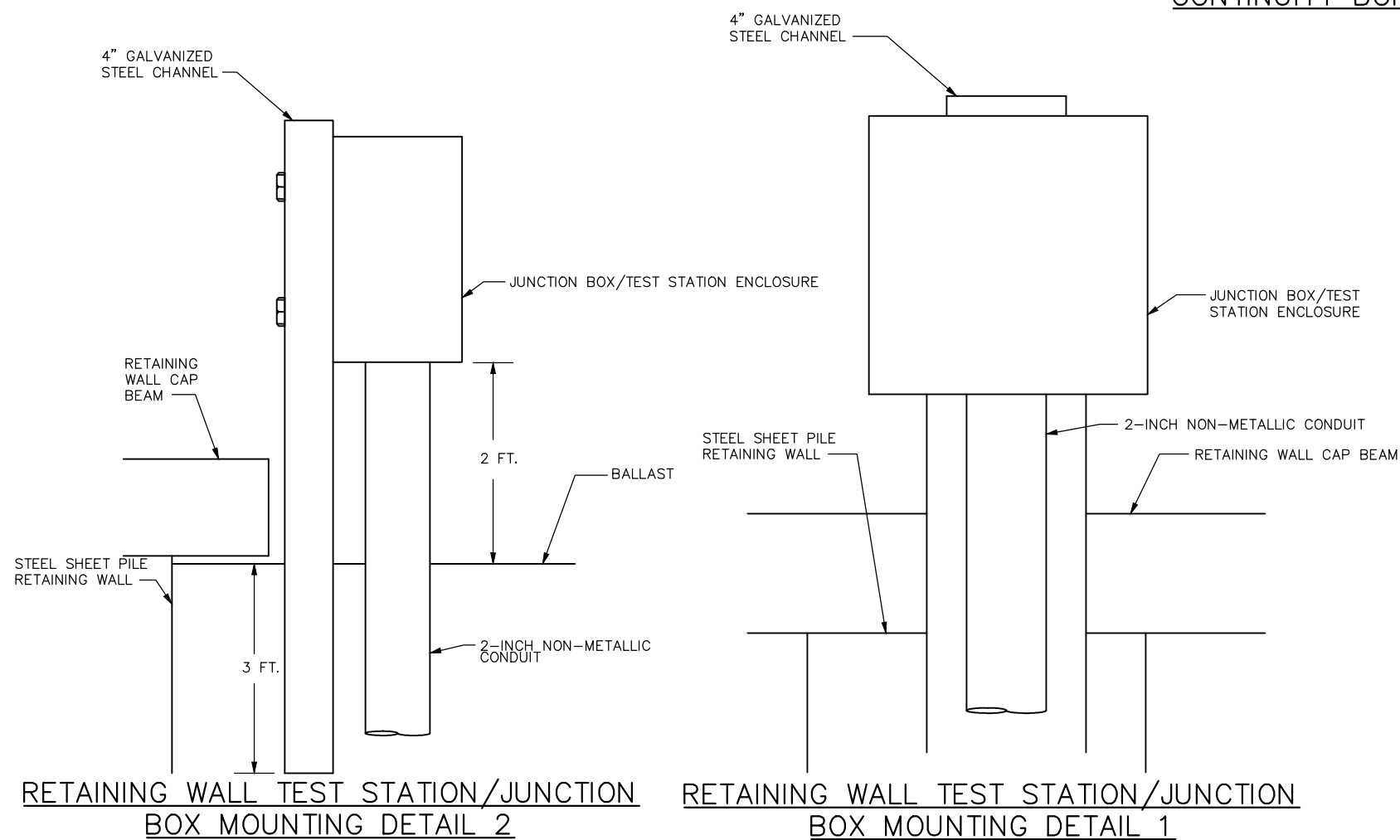
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NOTE:
1. WHERE NFPA 130 EGRESS IS IMPEDED THE TEST STATION SHALL BE MOUNTED ON THE CONCRETE CAP WITH THE CONDUIT CAST INTO THE CONCRETE INFILL.

SOLDIER PILE NOISE WALL STRAY CURRENT CONTINUITY BONDING



TYPICAL GRADE STATION BONDING DETAIL

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**METROPOLITAN COUNCIL**

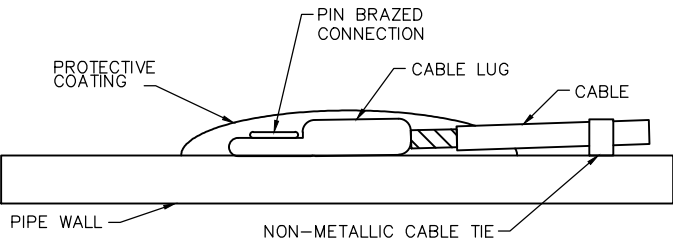
**SOUTHWEST**
Green Line LRT Extension

CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 9

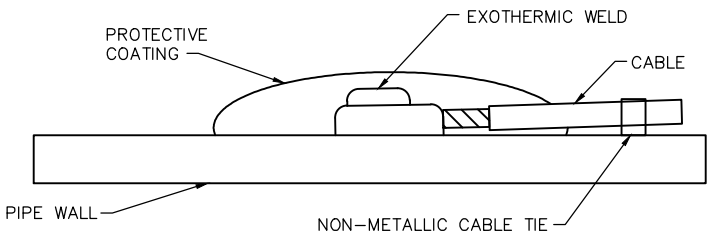
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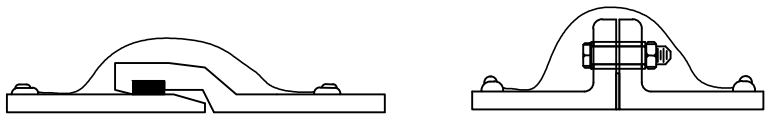
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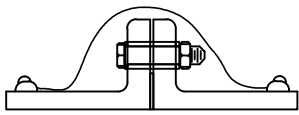
TYPICAL PIN BRAZED CABLE CONNECTION



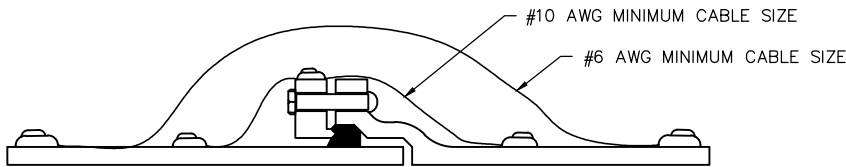
TYPICAL EXOTHERMICALLY WELDED CABLE CONNECTION



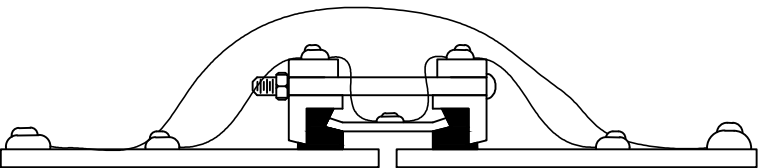
PUSH-ON JOINT



NON-INSULATED FLANGE

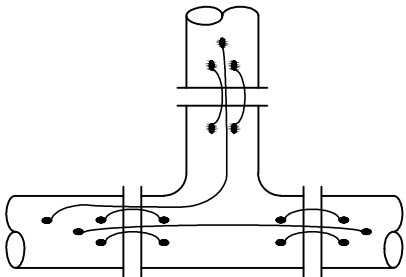


MECHANICAL JOINT

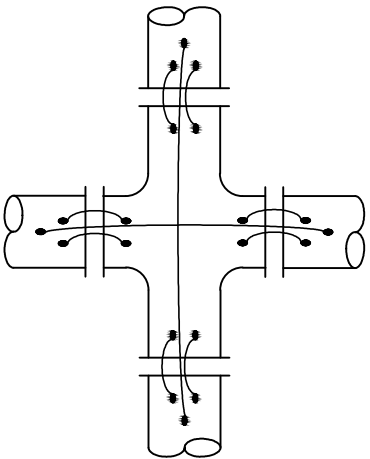


FLEXIBLE SLEEVE COUPLING WITHOUT RESTRAINT

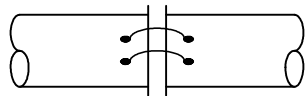
- BONDING NOTES
1. REINFORCED CONCRETE NON-PRESSURE PIPE DOES NOT REQUIRE ELECTRICAL CONTINUITY OF THE REINFORCING STEEL OR BONDING OF THE PIPE JOINTS. REINFORCED CONCRETE NON-PRESSURE PIPE AND ASSOCIATED MANHOLES SHALL BE COATED ON THE EXTERNAL SURFACES WITH AN APPROVED EPOXY.
 2. PRESTRESSED CONCRETE CYLINDER PIPE, IF SPECIFICALLY APPROVED BY THE MBTA, REQUIRES ELECTRICAL CONTINUITY BETWEEN THE STEEL CYLINDER AND PRESTRESSING WIRES. EACH PIPE JOINT SHALL BE PROVIDED WITH ELECTRICAL BONDING PLATES ON EACH END. THE CONTRACTOR SHALL PROVIDE PROPOSED DETAILS FOR THE BONDING PLATES AND THE NUMBER OF PLATES TO BE ATTACHED TO EACH PIPE JOINT.
 3. A MINIMUM OF TWO #6 AWG BOND WIRES PER BONDED JOINT ARE REQUIRED. THE CONTRACTOR SHALL DETERMINE IF ADDITIONAL OR LARGER BOND WIRES ARE NECESSARY TO MINIMIZE CURRENT ATTENUATION AND ACHIEVE THE MAXIMUM ALLOWABLE RESISTANCE CRITERIA.
 4. ALL EXOTHERMIC WELDS SHALL BE CLEANED OF ALL WELD SLAG WITH A STIFF WIRE BRUSH. WELDS FOR PIPE JOINT AND FITTING BONDS SHALL BE COATED WITH AN APPROVED EPOXY OR WITH A PETROLATUM WAX COATING SYSTEM PRIOR TO BACKFILLING.



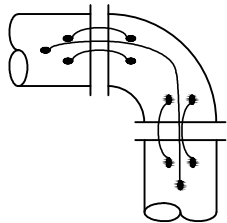
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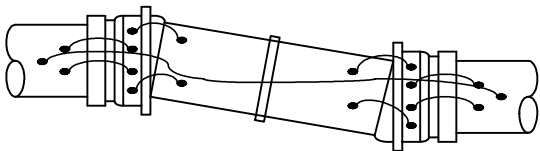
CROSS



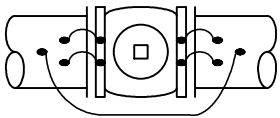
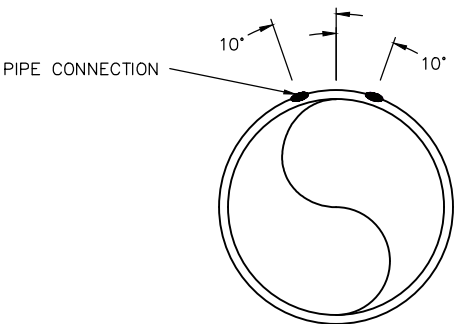
PIPE JOINT



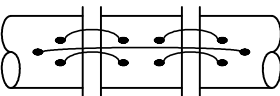
ELBOW



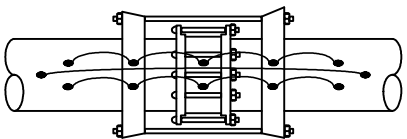
FLEXIBLE JOINT



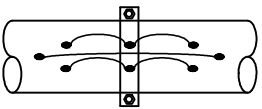
VALVE



ADAPTER



FLEXIBLE COUPLING WITH RESTRAINT



VICTAULIC COUPLING

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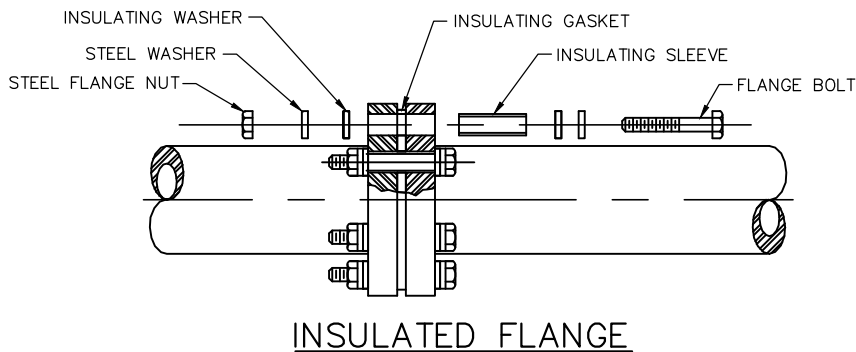
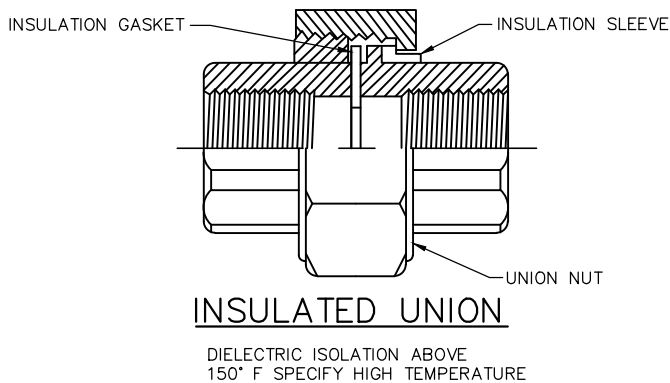
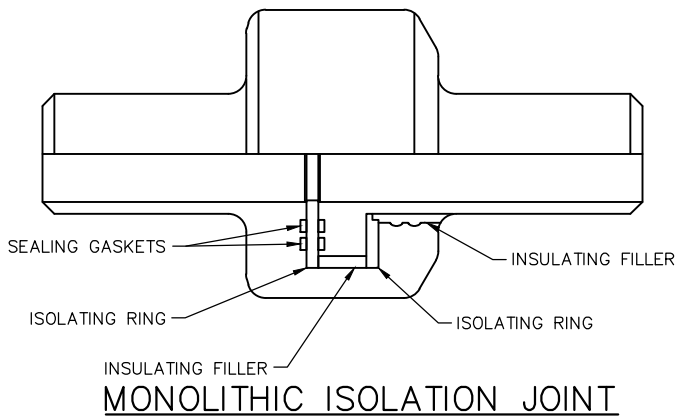
60% SUBMISSION - 09/28/15



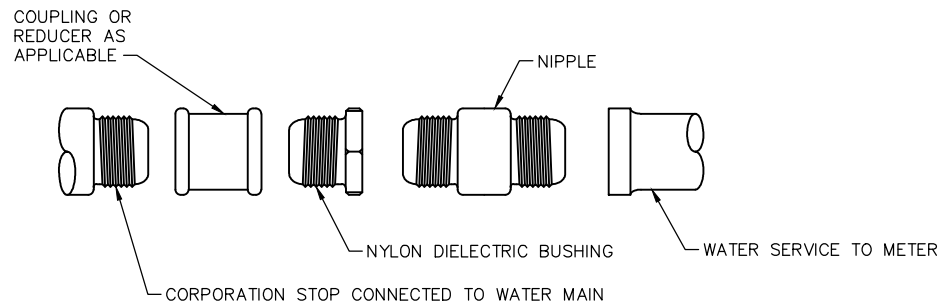
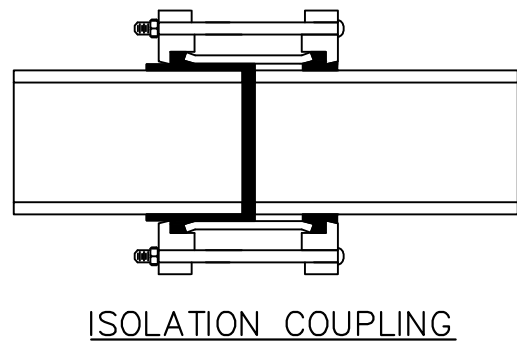
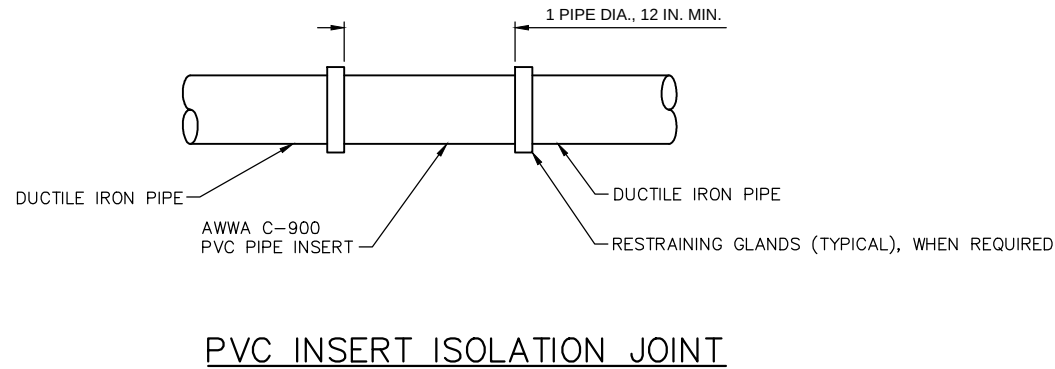
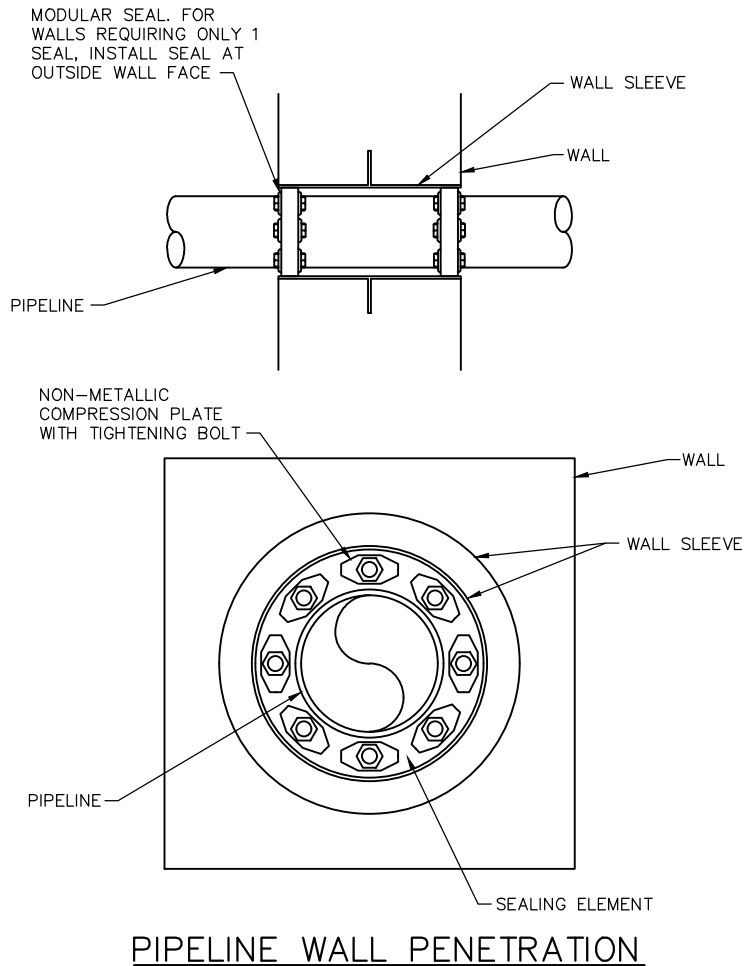
CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 10

DISCIPLINE: CORR
SHEET NAME: E0-SYS-CORR-DTL-010

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- NOTES:
1. FOR FLANGES INSTALLED ABOVE GRADE, INSTALL TWO INSULATING WASHERS AS SHOWN. FOR FLANGES INSTALLED BELOW GRADE IN CONJUNCTION WITH CATHODIC PROTECTION, OMIT THE INSULATING WASHER ON THE CATHODICALLY PROTECTED SIDE OF THE FLANGE.
 2. FOR STEEL PIPELINES MONOLITHIC ISOLATION JOINTS ARE PREFERRED OVER INSULATED FLANGES FOR BELOW GRADE INSTALLATIONS.
 3. IF AN INSULATED FLANGE IS INSTALLED BELOW GRADE, APPLY AN EXTERNAL PROTECTIVE COATING CONSISTING OF PRIMER, FILLER, PETROLATUM IMPREGNATED TAPE, AND OUTER PROTECTIVE WRAP AS MANUFACTURED BY TRENTON CORPORATION, DENSO NORTH AMERICA, OR APPROVED EQUAL. FOR BARE STRUCTURES THE EXTERNAL PROTECTIVE COATING SHALL EXTEND FOR A LENGTH OF A MINIMUM OF 3 PIPE DIAMETERS FROM THE CENTER OF THE FLANGE.
 4. FLANGE BOLTS SHALL EXTEND COMPLETELY THROUGH THE FLANGE NUTS WITH A MINIMUM OF THREE THREADS EXPOSED.
 5. AN INTERNAL POLYAMIDE EPOXY COATING SHALL BE APPLIED ON EACH SIDE OF THE ISOLATION FITTING FOR A MINIMUM DISTANCE OF 2 TIMES THE PIPE DIAMETER. WHERE THE TRANSPORTED FLUID RESISTIVITY IS LESS THAN 2000 OHM-CM THE CONTRACTOR SHALL DETERMINE THE MINIMUM COATING DISTANCE REQUIRED TO ACHIEVE A CURRENT LEAKAGE OF 2% OR LESS ACROSS THE FITTING. INTERNAL COATING FOR PIPELINES TRANSPORTING POTABLE WATER SHALL MEET THE REQUIREMENTS OF NSF-61.



- NOTES:
1. ALL METALLIC VALVES AND FITTINGS IN NON-METALLIC PIPELINE SECTIONS SHALL BE COATED WITH A FUSION BONDED EPOXY COATING SYSTEM IN ACCORDANCE WITH ANSI/AWWA C116.
 2. ALL NUTS AND BOLTS OF MECHANICAL FITTINGS SHALL BE PROTECTED WITH A PETROLATUM WAX COATING.

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CIVIL EAST - VOLUME 12

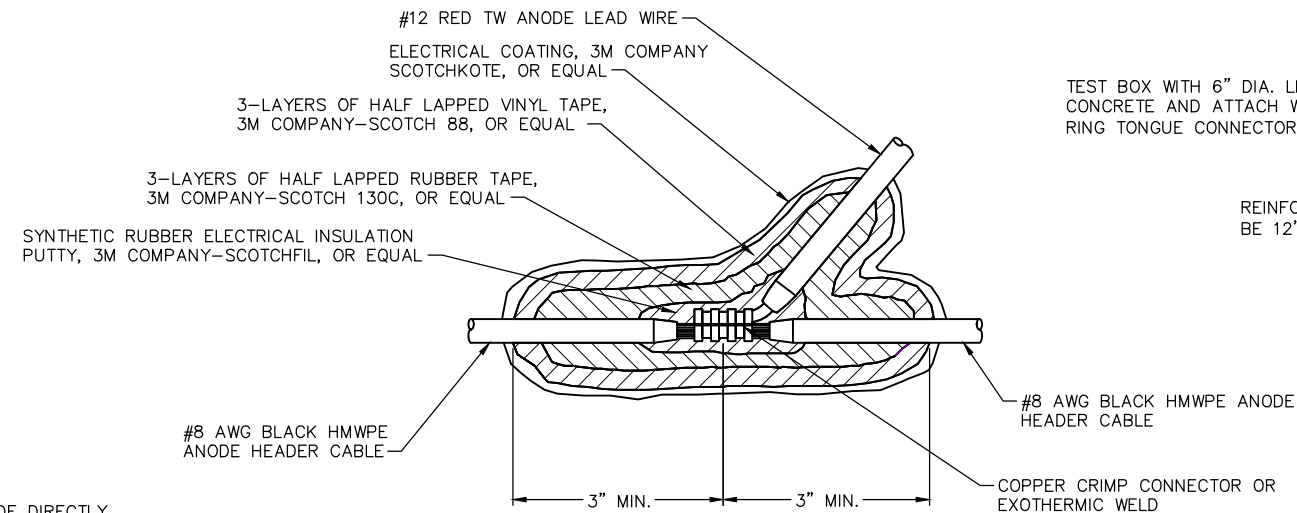
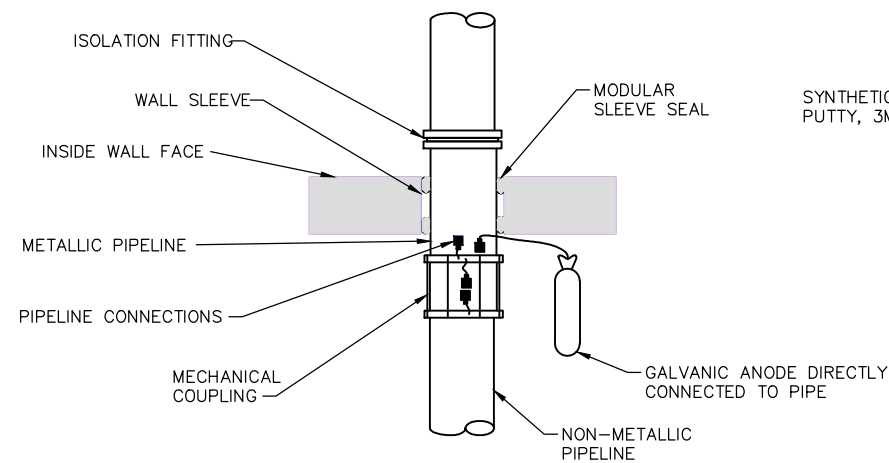
CORROSION CONTROL

STRAY CURRENT CONTROL DETAILS 11

DISCIPLINE: **CORR**

SHEET NAME: **E0-SYS-CORR-DTL-011**

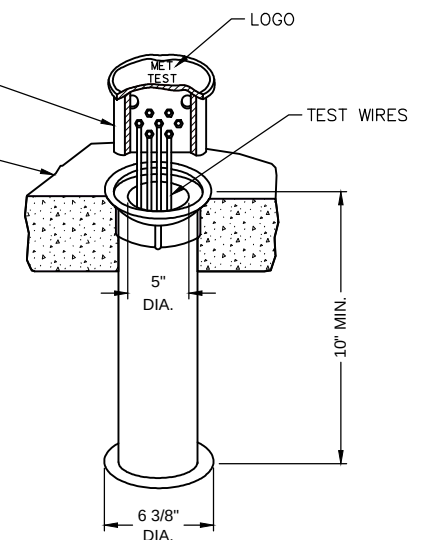
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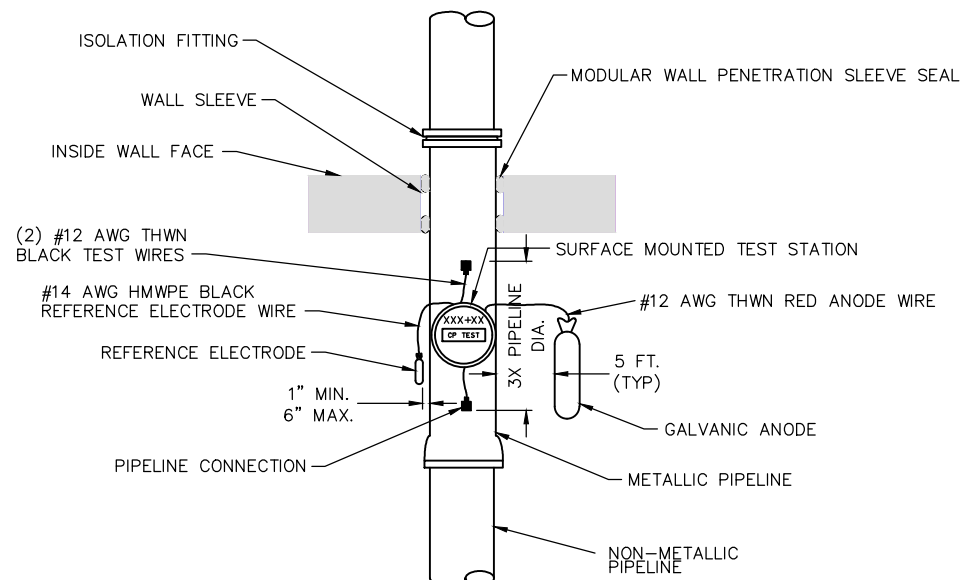
WYE SPLICE INSULATION

TEST BOX WITH 6" DIA. LID, SET BOX IN CONCRETE AND ATTACH WIRES TO TERMINALS WITH RING TONGUE CONNECTOR. LEAVE 18" SLACK

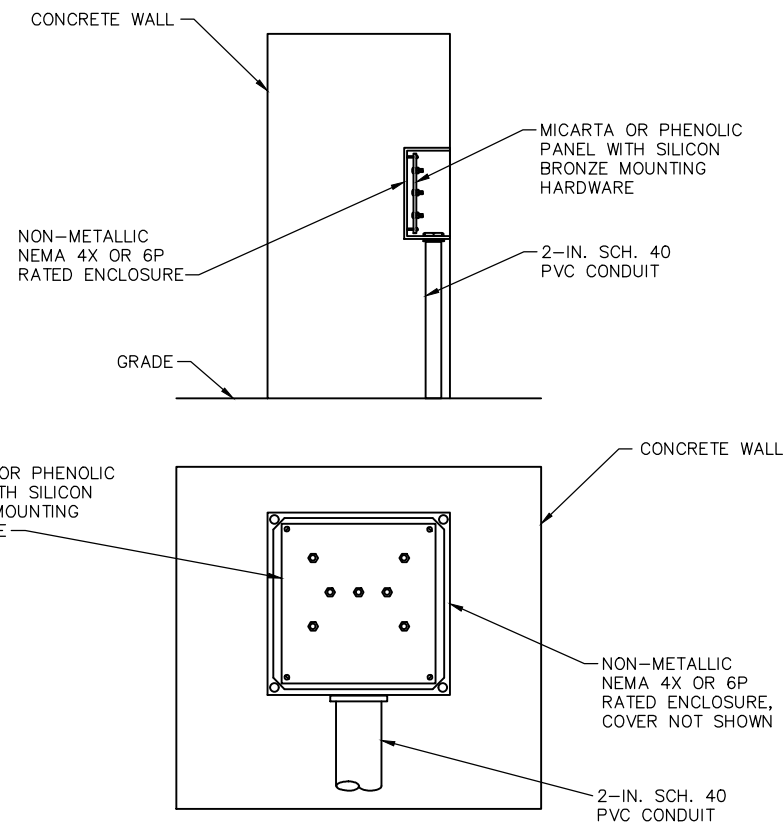
REINFORCED CONCRETE PAD TO BE 12" SQUARE x 4" DEEP MIN.



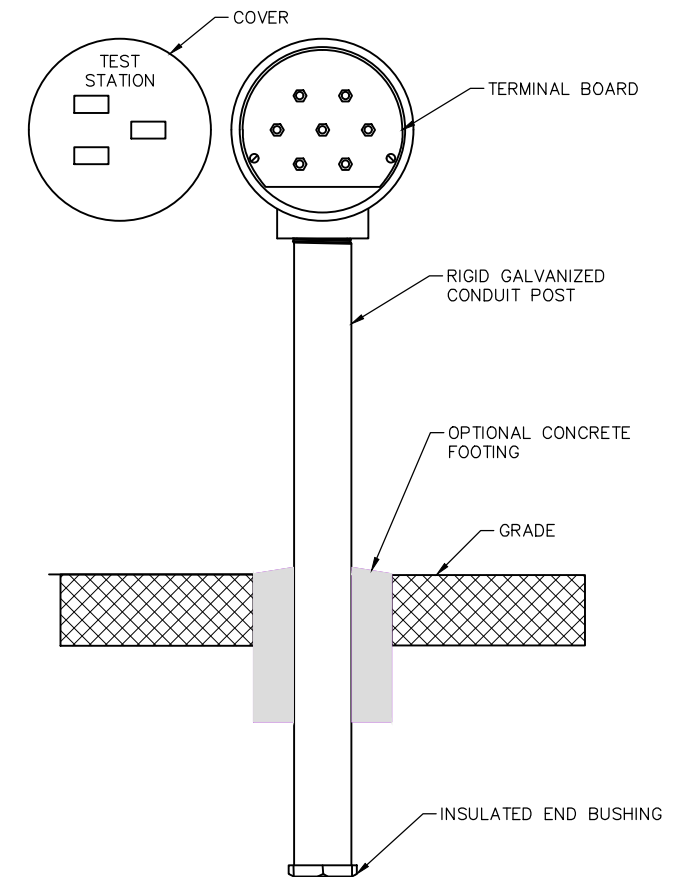
AT-GRADE BOX



METALLIC PIPE STUB-IN CATHODIC PROTECTION



CAST-IN-PLACE FLUSH MOUNT TEST STATION/JUNCTION BOX



POST MOUNTED TEST STATION

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METROPOLITAN
COUNCIL

SOUTHWEST
Green Line LRT Extension

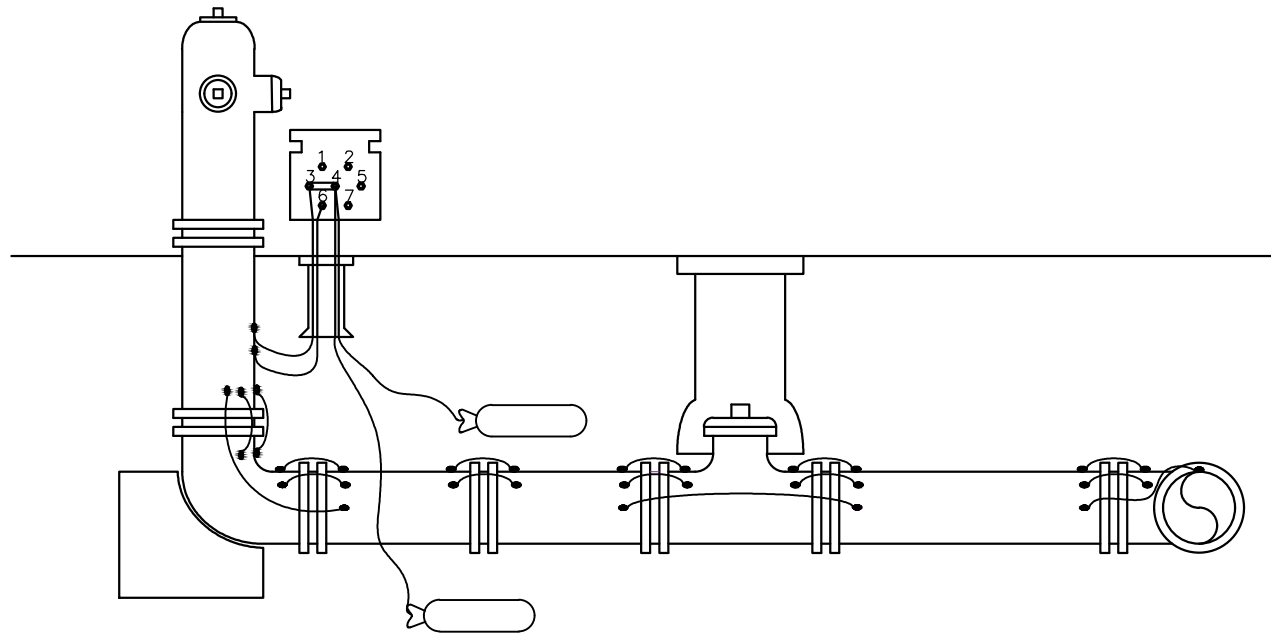
CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 12

DISCIPLINE:
CORR

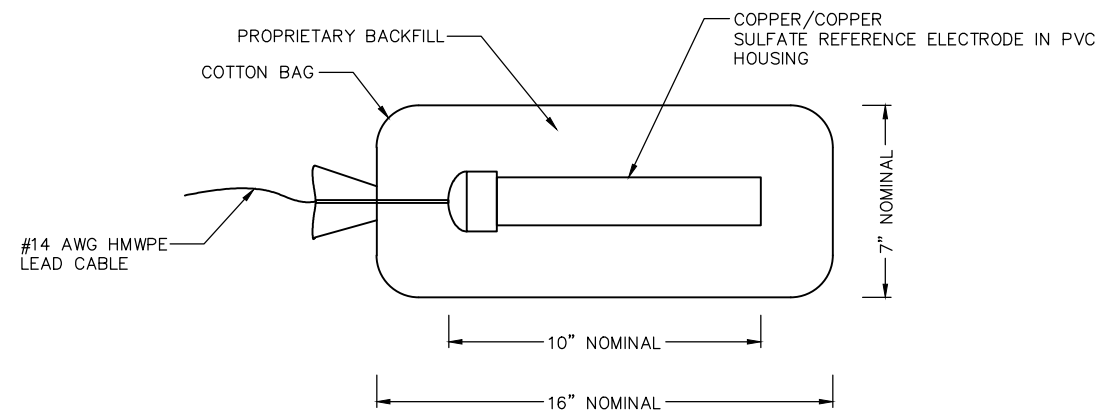
SHEET NAME:
E0-SYS-CORR-DTL-012

SHEET
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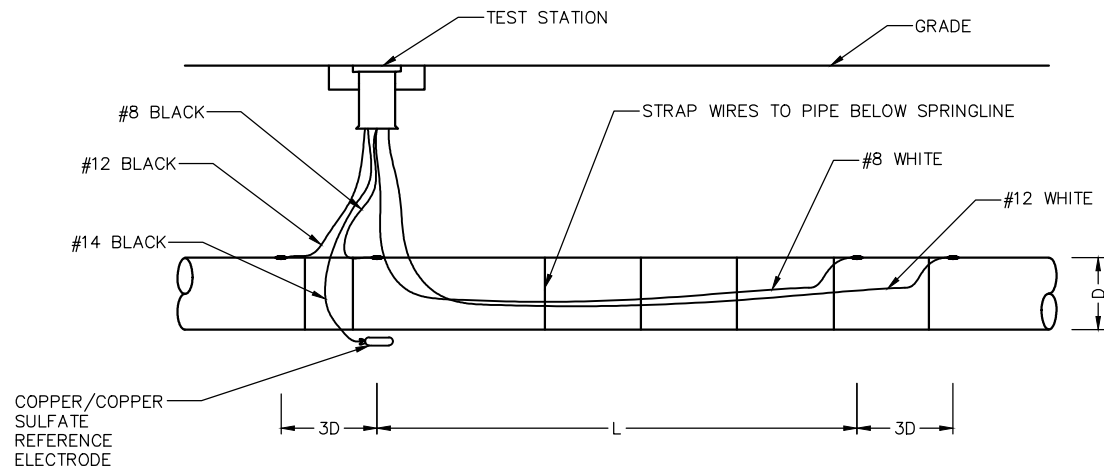
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FIRE HYDRANT STRAY CURRENT AND CATHODIC PROTECTION BONDING

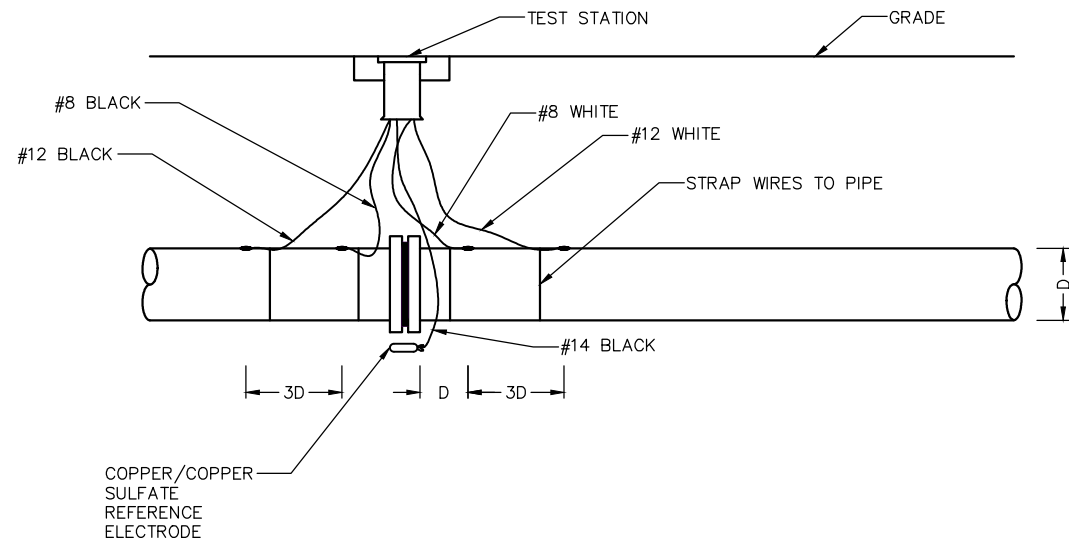


COPPER/COPPER SULFATE REFERENCE ELECTRODE



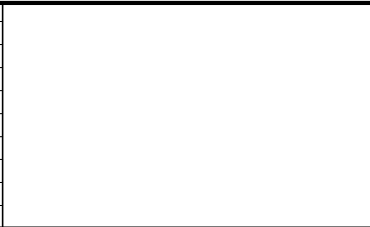
DI PIPE DIAMETER(D) INCHES	LENGTH (L) FEET
4-8	100
20	120
24	150
30-36	200
42-48	240
54-60	300

IR DROP TEST STATION



ISOLATION JOINT TEST STATION

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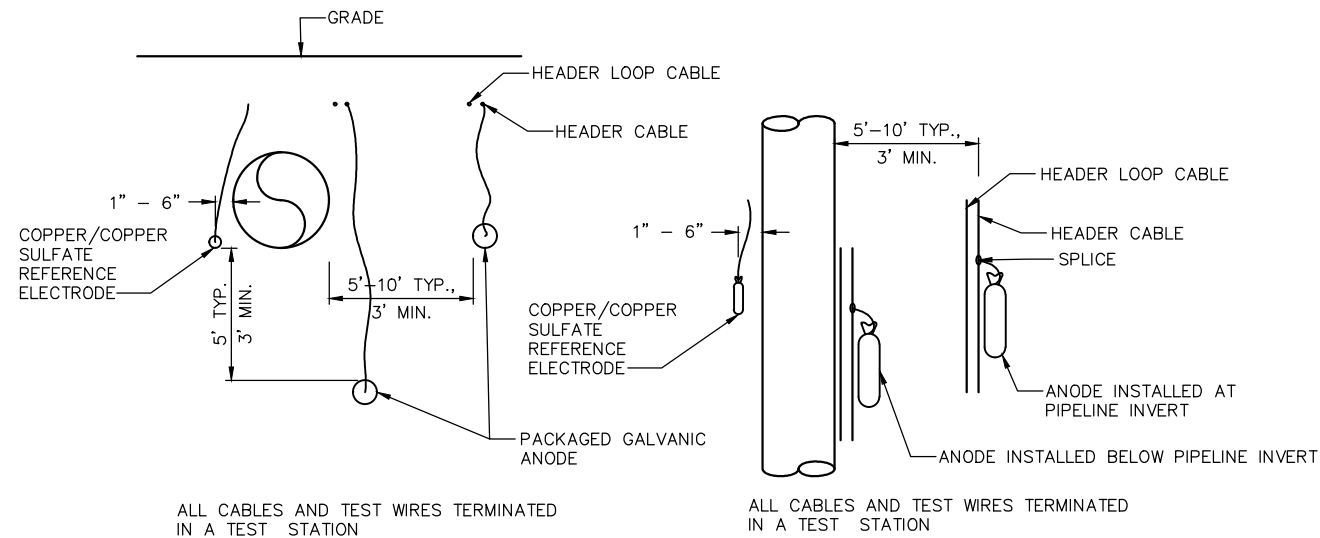


CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 13

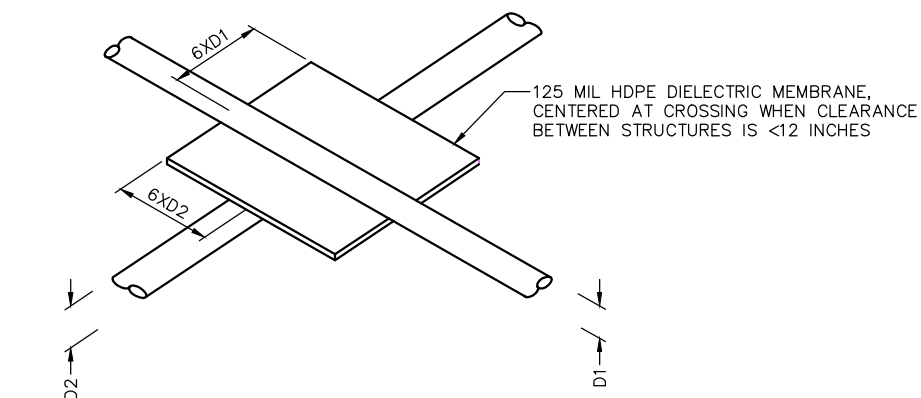
DISCIPLINE: CORR
SHEET NAME: E0-SYS-CORR-DTL-013

SHEET
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OF
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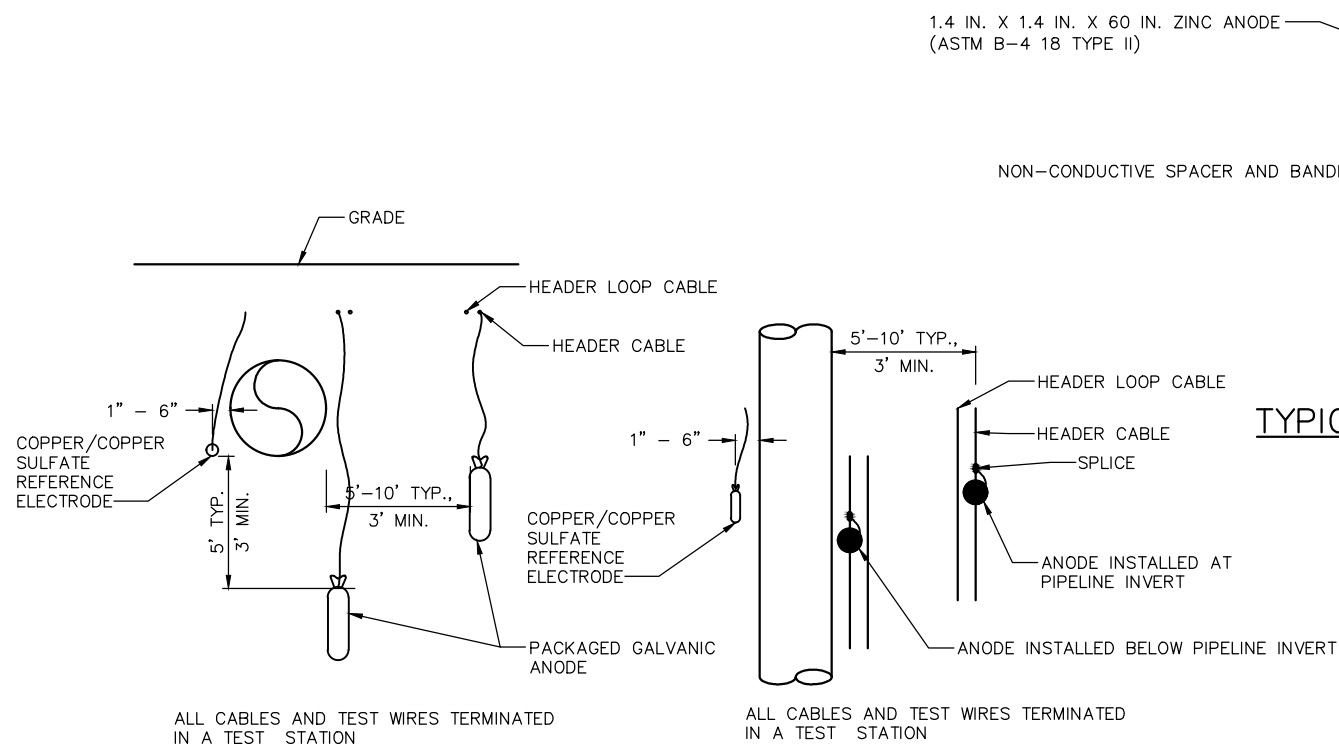
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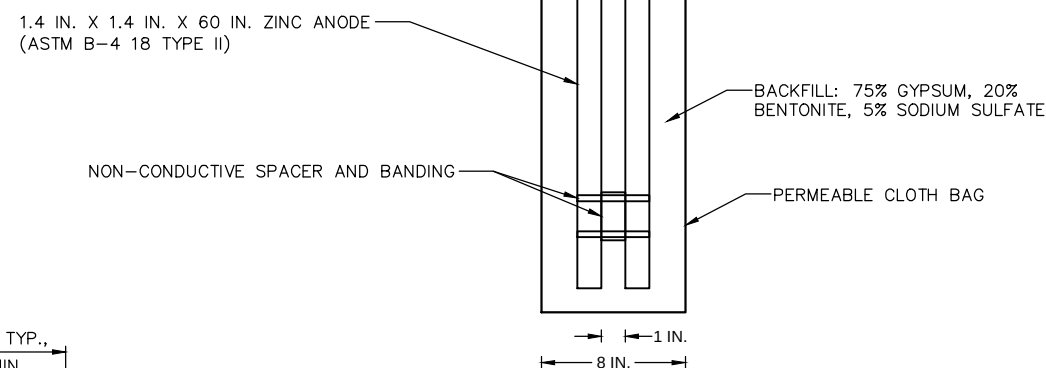
HORIZONTAL GALVANIC ANODE INSTALLATION



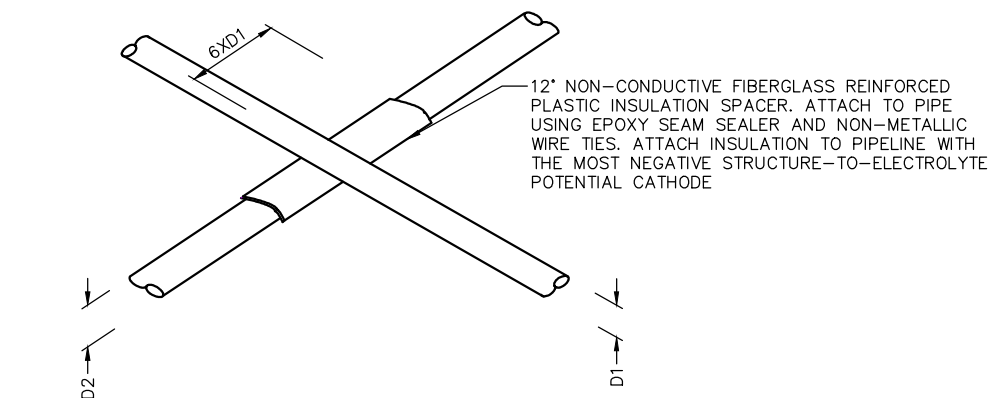
STRUCTURE ISOLATION AT CROSSING WITH MEMBRANE



VERTICAL GALVANIC ANODE INSTALLATION



TYPICAL ZINC GROUNDING CELL



STRUCTURE ISOLATION AT CROSSING WITH SHIELD

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SOUTHWEST
Green Line LRT Extension



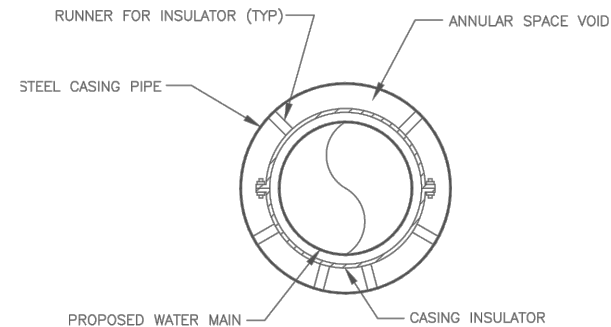
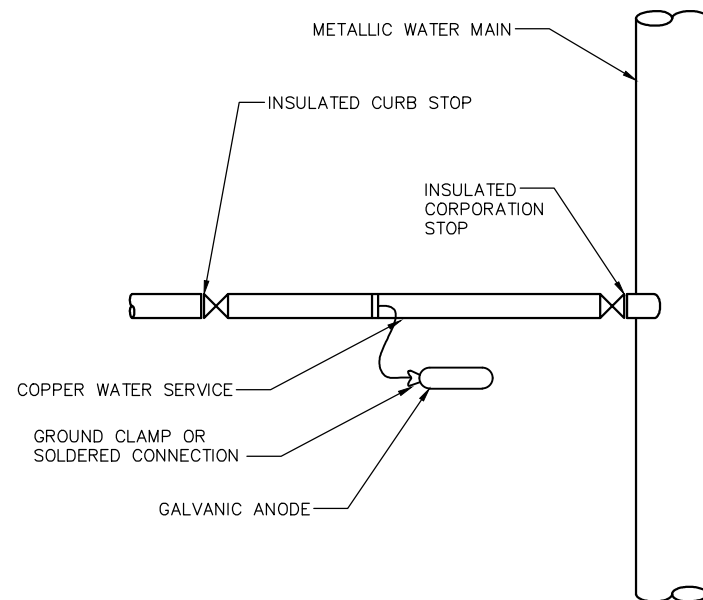
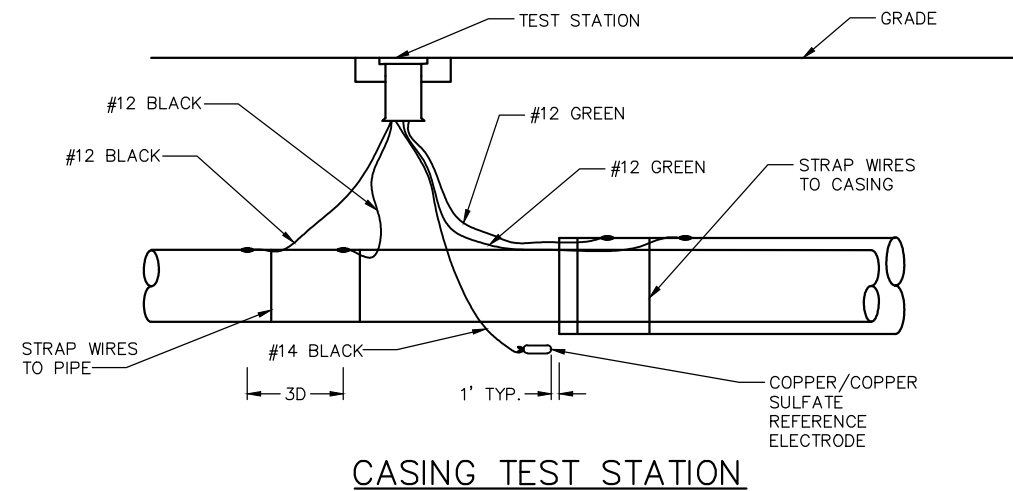
CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 14

DISCIPLINE: **CORR**

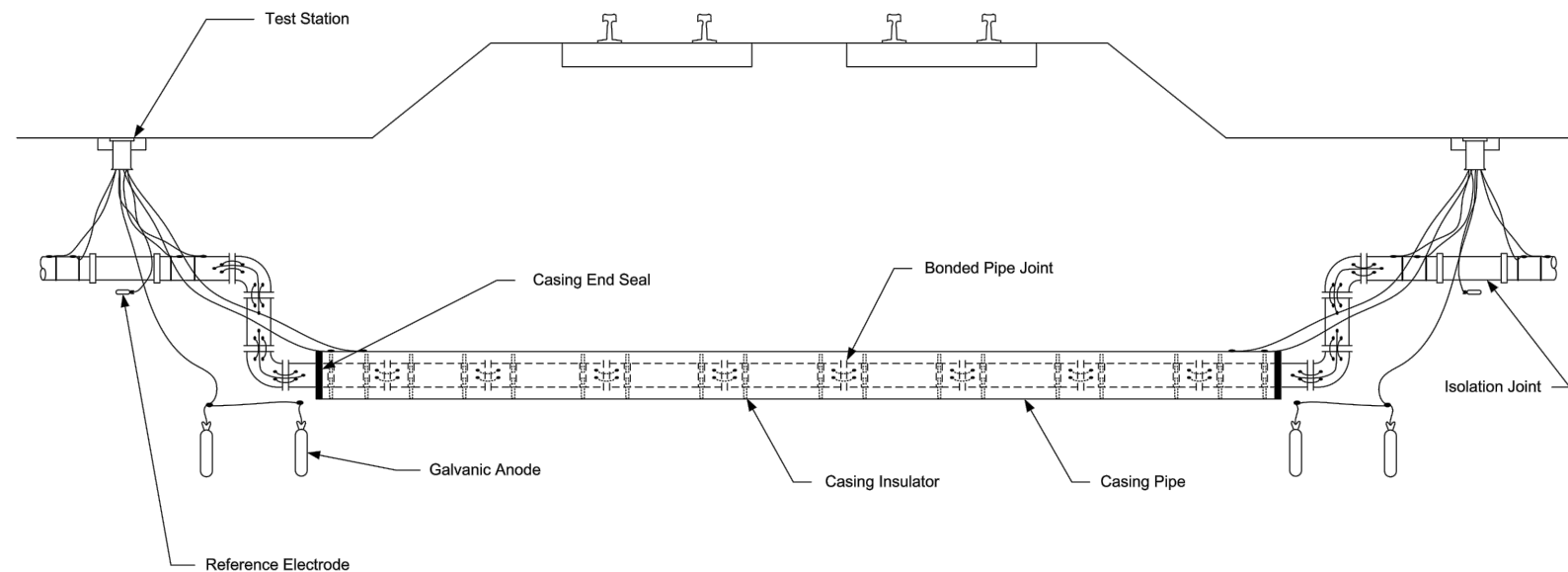
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Sep. 21 2015 03:42 pm V:\3400_ADC\CAD\SYSTEMS\PLAN SHEETS\CORROSION\Civil East - VOLUME 12\EO-SYS-CORR-DTL-015.dwg By: mccoij

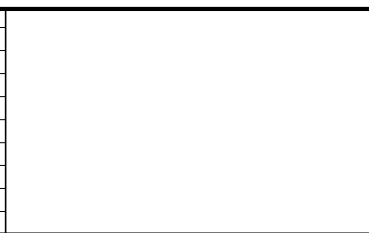


CASING PIPE SIZES		
WATER MAIN PIPE SIZE (INCHES)	CASING PIPE SIZE (INCHES)	CASING THICKNESS (INCHES)
6	16	0.375
8	20	0.375
12	24	0.375
16	30	0.375
20	36	0.375
24	42	0.500
30	48	0.500
36	54	0.500

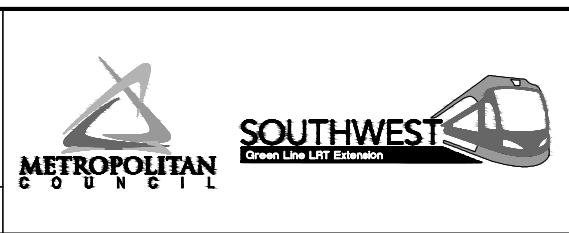


- NOTES:
1. CASING PIPE SIZES SHOWN ARE TYPICAL TO ALLOW CLEARANCE OF BELL AND SPIGOT OR MECHANICAL COUPLINGS. REFER TO UTILITY OWNER'S STANDARDS FOR FINAL SIZING OF CASING PIPE.
 2. THE UTILITY CROSSING SHOWN IS TYPICAL TO DEMONSTRATE THE REQUIRED JOINT BONDING, CASING ISOLATOR INSTALLATIONS, ISOLATION JOINTS AND TEST STATIONS. THE ACTUAL CROSSING LAYOUT WILL BE SHOWN IN THE UTILITY RELOCATION/INSTALLATION DRAWINGS.

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CIVIL EAST - VOLUME 12
CORROSION CONTROL
STRAY CURRENT CONTROL DETAILS 15

DISCIPLINE: CORR SHEET NAME: E0-SYS-CORR-DTL-015

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