METROPOLITAN COUNCIL

SOUTHWEST
Green Line LRT Extension

CIVIL CONSTRUCTION

VOLUME 3C
TRACKWORK DETAILS

90% SUBMISSION
DATE : 01/22/16

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

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

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

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

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

AECOM

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
		VOLUME 3C - TRACKWORK DETAILS			
1	00-GEN-CVR-001	COVER SHEET			
2	00-GEN-IDX-001	VOLUME INDEX OF PLAN SHEETS			
3	W0-GEN-KEY-001	GENERAL KEY MAP SHEET 1			
4	E0-GEN-KEY-002	GENERAL KEY MAP SHEET 2			
5	00-GEN-NTS-001	GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS SHEET 1			
6	00-GEN-NTS-002	GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS SHEET 2			
7	00-TRK-DTL-001	TRACK DETAILS TYPICAL SECTIONS INSETS SHEET 1			
8	00-TRK-DTL-002	TRACK DETAILS TYPICAL SECTIONS INSETS SHEET 2			
9	00-TRK-DTL-003	TRACK DETAILS TYPICAL SECTIONS INSETS SHEET 3			
10	00-TRK-DTL-010	TRACK DETAILS SIMPLE CURVE DIAGRAM			
11	00-TRK-DTL-011	TRACK DETAILS SPIRAL CURVE DIAGRAMS			
12	00-TRK-DTL-012	TRACK DETAILS COMPOUND CURVE WITH SPIRALS			
13	00-TRK-DTL-013	TRACK DETAILS VERTICAL CURVE GEOMETRY			
14	00-TRK-DTL-014	TRACK DETAILS BASSETT CREEK TUNNEL BURIED DISTRIBUTION SLAB SHEET 1 OF 2			
15	00-TRK-DTL-015	TRACK DETAILS BASSETT CREEK TUNNEL BURIED DISTRIBUTION SLAB SHEET 2 OF 2			
16	00-TRK-DTL-016	TRACK DETAILS LINDEN YARDS TUNNEL BURIED DISTRIBUTION SLAB SHEET 1 OF 2			
17	00-TRK-DTL-017	TRACK DETAILS LINDEN YARDS TUNNEL BURIED DISTRIBUTION SLAB SHEET 2 OF 2			
18	00-TRK-DTL-020	TRACK DETAILS DETAIL A MISCELLANEOUS DETAILS			
19	00-TRK-DTL-201	TRACK DETAILS TIE AND BALLAST TRACK - TIE & BALLAST CURB DETAILS			
20	00-TRK-DTL-202	TRACK DETAILS TIE AND BALLAST TRACK - SINGLE RESTRAINING RAIL			
21	00-TRK-DTL-203	TRACK DETAILS TIE AND BALLAST TRACK - SINGLE EMERGENCY GUARD RAIL			
22	00-TRK-DTL-204	TRACK DETAILS TIE AND BALLAST TRACK - GUARD RAIL LAYOUT FOR TIMBER TIES SHEET 1 OF 2			
23	00-TRK-DTL-205	TRACK DETAILS TIE AND BALLAST TRACK - GUARD RAIL LAYOUT FOR TIMBER TIES SHEET 2 OF 2			
24	00-TRK-DTL-206	TRACK DETAILS TIE AND BALLAST TRACK - PLATFORM AT-GRADE CROSSING SHEET 1 OF 2			
25	00-TRK-DTL-207	TRACK DETAILS TIE AND BALLAST TRACK - PLATFORM AT-GRADE CROSSING SHEET 2 OF 2			
26	00-TRK-DTL-208	TRACK DETAILS TIE AND BALLAST TRACK - PANEL AT-GRADE CROSSING SHEET 1 OF 3			
27	00-TRK-DTL-209	TRACK DETAILS TIE AND BALLAST TRACK - PANEL AT-GRADE CROSSING SHEET 2 OF 3			
28	00-TRK-DTL-210	TRACK DETAILS TIE AND BALLAST TRACK - PANEL AT-GRADE CROSSING SHEET 3 OF 3			
29	00-TRK-DTL-211	TRACK DETAILS TIE AND BALLAST TRACK - FRICTION MODIFIER SHEET 1 OF 3			
30	00-TRK-DTL-212	TRACK DETAILS TIE AND BALLAST TRACK - FRICTION MODIFIER SHEET 2 OF 3			
31	00-TRK-DTL-213	TRACK DETAILS TIE AND BALLAST TRACK - FRICTION MODIFIER SHEET 3 OF 3			
32	00-TRK-DTL-214	TRACK DETAILS TIE AND BALLAST TRACK - TIE PLATE AND PAD FOR RESILITENT FASTENER			
33	00-TRK-DTL-215	TRACK DETAILS TIE AND BALLAST TRACK - SPIKING PATTERN			
34	00-TRK-DTL-216	TRACK DETAILS DRAINTILE AND BALLAST CURB AT OCS FOUNDATION SHEET 1 OF 3			
35	00-TRK-DTL-217	TRACK DETAILS DRAINTILE AND BALLAST CURB AT OCS FOUNDATION SHEET 2 OF 3			
36	00-TRK-DTL-218	TRACK DETAILS DRAINTILE AND BALLAST CURB AT OCS FOUNDATION SHEET 3 OF 3			
37	00-TRK-DTL-219	TRACK DETAILS TIE AND BALLAST TRACK - ANCHOR PATTERN			
38	00-TRK-DTL-220	TRACK DETAILS TIE AND BALLAST TRACK - RAIL EXPANSION JOINT W/EGR SHEET 1 OF 2			
39	00-TRK-DTL-221	TRACK DETAILS TIE AND BALLAST TRACK - RAIL EXPANSION JOINT W/EGR SHEET 2 OF 2			
40	00-TRK-DTL-222	TRACK DETAILS BALLASTED FREIGHT TRACK SHIFT SCHEMATIC			
41	00-TRK-DTL-223	TRACK DETAILS TIE AND BALLAST TRACK - SUBGRADE TRANSITION AT MSE WALL SHEET 1 OF 2			
42	00-TRK-DTL-224	TRACK DETAILS TIE AND BALLAST TRACK - SUBGRADE TRANSITION AT MSE WALL SHEET 2 OF 2			

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
43	00-TRK-DTL-225	TRACK DETAILS BALLAST TRACK WIDENING SHEET 1 OF 2			
44	00-TRK-DTL-226	TRACK DETAILS BALLAST TRACK WIDENING SHEET 2 OF 2			
45	00-TRK-DTL-301	TRACK DETAILS EMBEDDED TRACK REINFORCING STEEL SHEET 1 OF 2			
46	00-TRK-DTL-302	TRACK DETAILS EMBEDDED TRACK REINFORCING STEEL SHEET 2 OF 2			
47	00-TRK-DTL-303	TRACK DETAILS EMBEDDED TRACK SLAB WIDENING @ STATION PLATFORM SHEET 1 OF 2			
48	00-TRK-DTL-304	TRACK DETAILS EMBEDDED TRACK SLAB WIDENING @ STATION PLATFORM SHEET 2 OF 2			
49	00-TRK-DTL-305	TRACK DETAILS EMBEDDED TRACK @ ROADWAY CROSSINGS			
50	00-TRK-DTL-306	TRACK DETAILS EMBEDDED TRACK @ GAGE TIES			
51	00-TRK-DTL-307	TRACK DETAILS EMBEDDED TRACK W/RESTRAINING RAIL SHEET 1 OF 2			
52	00-TRK-DTL-308	TRACK DETAILS EMBEDDED TRACK W/RESTRAINING RAIL SHEET 2 OF 2			
53	00-TRK-DTL-309	TRACK DETAILS EMBEDDED TRACK RESTRAINING RAIL BOOT TERMINUS SHEET 1 OF 2			
54	00-TRK-DTL-310	TRACK DETAILS EMBEDDED TRACK RESTRAINING RAIL BOOT TERMINUS SHEET 2 OF 2			
55	00-TRK-DTL-311	TRACK DETAILS EMBEDDED TRACK TRANSVERSE EXPANSION JOINT SHEET 1 OF 2			
56	00-TRK-DTL-312	TRACK DETAILS EMBEDDED TRACK TRANSVERSE EXPANSION JOINT SHEET 2 OF 2			
57	00-TRK-DTL-313	TRACK DETAILS EMBEDDED TRACK TRANSVERSE CONTRACTION JOINT			
58	00-TRK-DTL-314	TRACK DETAILS EMBEDDED TRACK RAIL ACCESS BOX SHEET 1 OF 4			
59	00-TRK-DTL-315	TRACK DETAILS EMBEDDED TRACK RAIL ACCESS BOX SHEET 2 OF 4			
60	00-TRK-DTL-316	TRACK DETAILS EMBEDDED TRACK RAIL ACCESS BOX SHEET 3 OF 4			
61	00-TRK-DTL-317	TRACK DETAILS EMBEDDED TRACK RAIL ACCESS BOX SHEET 4 OF 4			
62	00-TRK-DTL-318	TRACK DETAILS FRICTION MODIFIER SHEET 1 OF 3			
63	00-TRK-DTL-319	TRACK DETAILS FRICTION MODIFIER SHEET 2 OF 3			
64	00-TRK-DTL-320	TRACK DETAILS FRICTION MODIFIER SHEET 3 OF 3			
65	00-TRK-DTL-321	TRACK DETAILS EMBEDDED TRACK @ TRACK DRAIN SHEET 1 OF 5			
66	00-TRK-DTL-322	TRACK DETAILS EMBEDDED TRACK @ TRACK DRAIN SHEET 2 OF 5			
67	00-TRK-DTL-323	TRACK DETAILS EMBEDDED TRACK @ TRACK DRAIN SHEET 3 OF 5			
68	00-TRK-DTL-324	TRACK DETAILS EMBEDDED TRACK @ TRACK DRAIN SHEET 4 OF 5			
69	00-TRK-DTL-325	TRACK DETAILS EMBEDDED TRACK @ TRACK DRAIN SHEET 5 OF 5			
70	00-TRK-DTL-326	TRACK DETAILS INSULATED JOINT IN EMBEDDED TRACK GROUT SHEET 1 OF 2			
71	00-TRK-DTL-327	TRACK DETAILS INSULATED JOINT IN EMBEDDED TRACK GROUT SHEET 2 OF 2			
72	00-TRK-DTL-328	TRACK DETAILS LRV TRAFFIC DETECTION LOOP EMBEDDED TRACK INSTALLATION			
73	00-TRK-DTL-401	TRACK DETAILS DIRECT FIXATION (DF) TRACK SHEET 1 OF 9			
74	00-TRK-DTL-402	TRACK DETAILS DIRECT FIXATION (DF) TRACK SHEET 2 OF 9			
75	00-TRK-DTL-403	TRACK DETAILS DIRECT FIXATION (DF) TRACK SHEET 3 OF 9			
76	00-TRK-DTL-404	TRACK DETAILS DIRECT FIXATION (DF) TRACK SHEET 4 OF 9			
77	00-TRK-DTL-405	TRACK DETAILS DIRECT FIXATION (DF) TRACK SHEET 5 OF 9			
78	00-TRK-DTL-406	TRACK DETAILS DIRECT FIXATION (DF) TRACK SHEET 6 OF 9			
79	00-TRK-DTL-407	TRACK DETAILS DIRECT FIXATION (DF) TRACK SHEET 7 OF 9			
80	00-TRK-DTL-408	TRACK DETAILS DIRECT FIXATION (DF) TRACK SHEET 8 OF 9			

CIVIL CONSTRUCTION

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
81	00-TRK-DTL-409	TRACK DETAILS DIRECT FIXATION (DF) TRACK SHEET 9 OF 9			
82	00-TRK-DTL-410	TRACK DETAILS DIRECT FIXATION (DF) TRACK PRECAST CONCRETE INFILL PANELS SHEET 1 OF 2			
83	00-TRK-DTL-411	TRACK DETAILS DIRECT FIXATION (DF) TRACK PRECAST CONCRETE INFILL PANELS SHEET 2 OF 2			
84	00-TRK-DTL-412	TRACK DETAILS DIRECT FIXATION TRACK - INSULATED FIXED RAIL ANCHOR (IFRA) DETAIL SHEET 1 OF 3			
85	00-TRK-DTL-413	TRACK DETAILS DIRECT FIXATION TRACK - INSULATED FIXED RAIL ANCHOR (IFRA) DETAIL SHEET 2 OF 3			
86	00-TRK-DTL-414	TRACK DETAILS DIRECT FIXATION TRACK - INSULATED FIXED RAIL ANCHOR (IFRA) DETAIL SHEET 3 OF 3			
87	00-TRK-DTL-415	TRACK DETAILS DIRECT FIXATION (DF) TRACK-FRICTION MODIFIER SHEET 1 OF 3			
88	00-TRK-DTL-416	TRACK DETAILS DIRECT FIXATION (DF) TRACK-FRICTION MODIFIER SHEET 2 OF 3			
89	00-TRK-DTL-417	TRACK DETAILS DIRECT FIXATION (DF) TRACK-FRICTION MODIFIER SHEET 3 OF 3			
90	00-TRK-DTL-501	TRACK DETAILS NO 8 X-OVER AND DOUBLE X-OVER GEOMETRY DETAIL			
91	00-TRK-DTL-502	TRACK DETAILS NO 8 DOUBLE X-OVER GEOMETRY DETAIL			
92	00-TRK-DTL-503	TRACK DETAILS NO 6 TURNOUT GEOMETRY DETAIL			
93	00-TRK-DTL-504	TRACK DETAILS NO 11 AND 15 FREIGHT TURNOUT GEOMETRY DETAIL			
94	00-TRK-DTL-505	TRACK DETAILS NO 8 DOUBLE X-OVER ON DF TRACK GEOMETRY DETAIL SHEET 1 OF 2			
95	00-TRK-DTL-506	TRACK DETAILS NO 8 DOUBLE X-OVER ON DF TRACK GEOMETRY DETAIL SHEET 2 OF 2			
96	00-TRK-DTL-601	TRACK DETAIL TRACK TRANSITION DETAILS - INDEX			
97	00-TRK-DTL-602	TRACK DETAIL TRACK TRANSITION DETAILS - TYPE A			
98	00-TRK-DTL-603	TRACK DETAIL TRACK TRANSITION DETAILS - TYPE B			
99	00-TRK-DTL-604	TRACK DETAIL TRACK TRANSITION DETAILS - TYPE C			
100	00-TRK-DTL-605	TRACK DETAIL TRACK TRANSITION DETAILS - TYPE D			
101	00-TRK-DTL-606	TRACK DETAIL TRACK TRANSITION DETAILS - TYPE E			
102	00-TRK-DTL-607	TRACK DETAIL TRACK TRANSITION DETAILS - TYPE F			
103	00-TRK-DTL-608	TRACK DETAIL TRACK TRANSITION DETAILS - TYPE G			
104	00-TRK-DTL-609	TRACK DETAIL TRACK TRANSITION DETAILS - TYPE H			
105	00-TRK-DTL-610	TRACK DETAIL TRACK TRANSITION DETAILS - TYPE J			
106	00-TRK-DTL-611	TRACK DETAIL TRACK TRANSITION DETAILS - TYPE K			
107	00-TRK-DTL-612	TRACK DETAIL TRACK TRANSITION DETAILS - TYPE L			
108	00-TRK-DTL-613	TRACK DETAIL TRACK TRANSITION DETAILS - TYPE M			
109	00-TRK-DTL-614	TRACK DETAIL TRACK TRANSITION DETAILS - TYPE N			
110	00-TRK-DTL-620	TRACK DETAILS BRIDGE R0697 TRACK LAYOUT SHEET 1 OF 5			
111	00-TRK-DTL-621	TRACK DETAILS BRIDGE R0697 TRACK LAYOUT SHEET 2 OF 5			
112	00-TRK-DTL-622	TRACK DETAILS BRIDGE R0697 TRACK LAYOUT SHEET 3 OF 5			
113	00-TRK-DTL-623	TRACK DETAILS BRIDGE R0697 TRACK LAYOUT SHEET 4 OF 5			
114	00-TRK-DTL-624	TRACK DETAILS BRIDGE R0697 TRACK LAYOUT SHEET 5 OF 5			

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

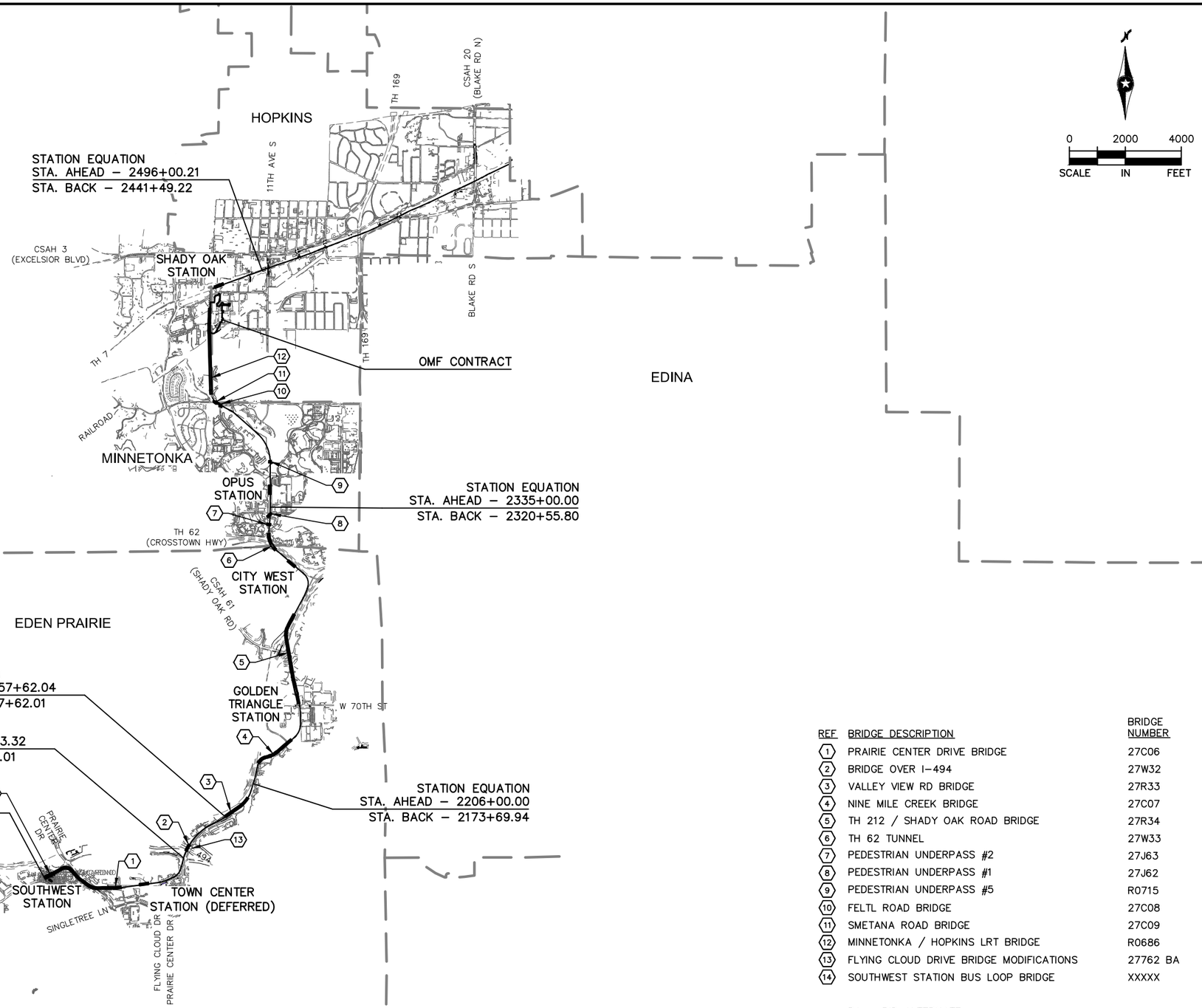
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
GENERAL
VOLUME INDEX OF PLAN SHEETS

DISCIPLINE: GENERAL

SHEET NAME: 00-GEN-IDX-001

SHEET 2 OF 114



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

BA – BID ALTERNATE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

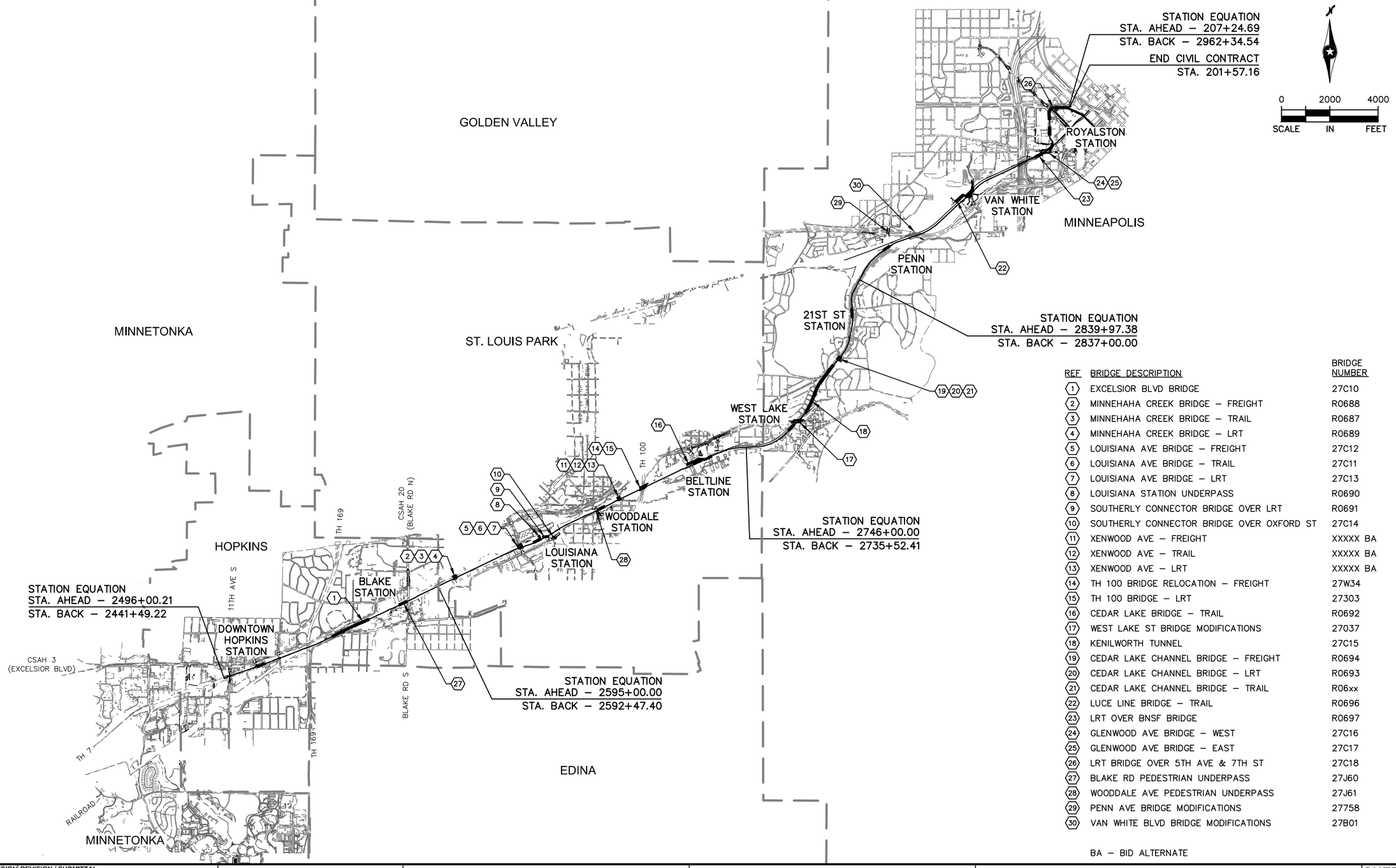
CIVIL - VOLUME 3C
GENERAL
KEY MAP
SHEET 1

DISCIPLINE: GENERAL

SHEET NAME: W0-GEN-KEY-001

SHEET 3 OF 114

Jan, 16 2016 03:29 pm V:\3400_ADC\CAD\CAD MANAGEMENT\DRAWING LIST\COVER SHEETS 90%\W0-GEN-KEY.dwg By: V-KriewaMR



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

BA – BID ALTERNATE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
GENERAL
KEY MAP
SHEET 2

DISCIPLINE: GENERAL

SHEET NAME: E0-GEN-KEY-002

SHEET 4 OF 114

Jan, 16 2016 03:30 pm V:\3400_ADC\CAD\CAD MANAGEMENT\DRAWING LIST\COVER SHEETS 90%\E0-GEN-KEY.dwg By: V-KriewaMR

SYMBOLS

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

LINETYPES

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

CONSTRUCTION PACKAGE NOTE

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

Jan, 18 2016 07:43 am V:\3400_ADC\CAD\CAD MANAGEMENT\DRAWING LIST\COVER SHEETS 90%\CIV-GEN-NTS.dwg By: V-KriewaMR

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
GENERAL
NOTES, ABBREVIATIONS, AND SYMBOLS
SHEET 1

DISCIPLINE: GENERAL

SHEET NAME: 00-GEN-NTS-001

SHEET 5 OF 114

ABBREVIATIONS

3-2 (EG)	SIGNAL HEAD NUMBER (PHASE 3, NO. 2)
AD	ALGEBRAIC DIFFERENCE
AVE	AVENUE
AWF	ADVANCE WARNING FLASHER
BA	BID ALTERNATE
BGN	BEGIN
BP	BEGINNING POINT
BVCE	BEGINNING VERTICAL CURVE ELEVATION
BVCS	BEGINNING VERTICAL CURVE STATION
BLVD	BOULEVARD
BMP	BEST MANAGEMENT PRACTICE
BNSF	BURLINGTON NORTHERN SANTA FE RAILWAY
C&G	CURB AND GUTTER
℄	CENTERLINE
CB	CATCH BASIN
CE	CLEARANCE ENVELOPE
CIR	CIRCLE
CO	DRAINTILE CLEANOUT STRUCTURE
CP	CANADIAN PACIFIC
CPRAIL	CANADIAN PACIFIC RAILWAY
CS	CURVE TO SPIRAL
CSAH	COUNTY STATE AID HIGHWAY
D&U	DRAINAGE AND UTILITY
DF	DIRECT FIXATION
DR	DRIVE
DT	DRAINTILE
DTL	DETAIL
DWY	DRIVEWAY
E	EAST
Ea	ACTUAL SUPERELEVATION (INCHES)
EB	EAST BOUND
EL or ELEV	ELEVATION
EP	ENDING POINT
ESMT	EASEMENT
Eu	UNBALANCED SUPERELEVATION (INCHES)
EVCE	ENDING VERTICAL CURVE ELEVATION
EVCS	ENDING VERTICAL CURVE STATION
EVP	EMERGENCY VEHICLE PRE-EMPTION
EX	EXISTING
FES	FLARED END SECTION
FYA	FLASHING YELLOW ARROW
GR RD	GROUND ROD
GRN	GREEN INDICATION
HCRRA	HENNEPIN COUNTY REGIONAL RAILROAD AUTHORITY
INL	BRIDGE DRAIN INLET
INS GR	INSULATED GROUND
IP	INPLACE
LED	LIGHT EMITTING DIODE
LH	LEFT HAND
LN	LANE
LRCI	LOCALLY REQUESTED CAPITAL INVESTMENT
LRT	LIGHT RAIL TRANSIT
LRV	LIGHT RAIL VEHICLE
LT	LEFT
LUM	LUMINAIRE
L_c	CURVE LENGTH (FEET)
L_s	SPIRAL LENGTH (FEET)
MIN	MINIMUM
MPH	MILES PER HOUR
MPLS	CITY OF MINNEAPOLIS
MPRB	MINNEAPOLIS PARK AND RECREATION BOARD
N	NORTH
NB	NORTH BOUND
NIC	NOT IN CONTRACT
NO	NUMBER
NWL	NORMAL WATER LINE
OCS	OUTLET CONTROL SYSTEM
OCS	OVERHEAD CONTACT SYSTEM
OMF	OPERATIONS AND MAINTENANCE FACILITY
OH	OVERHEAD
P1-1 (EG)	PEDESTRIAN HEAD (PHASE 1, NO. 1)
PB2-1 (EG)	PUSHBUTTON (PHASE 2, NO. 1)
PC	POINT OF CURVE
PE	PERMANENT EASEMENT
PED	PEDESTRIAN
PITO	POINT OF INTERSECTION OF TURNOUT
PKWY	PARKWAY
POB	POINT OF BEGINNING
POE	POINT OF ENDING
POT	POINT ON TANGENT
PROP	PROPOSED
PS	POINT OF SWITCH
PT	POINT OF TANGENT
PVI	POINT OF VERTICAL INTERSECTION
R	RADIUS (FEET)
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RL	RAIL LUBRICATOR
r	RATE OF CHANGE VERTICAL CURVE
RH	RIGHT HAND
ROW	RIGHT OF WAY
RT	RIGHT
S	SOUTH
SB	SOUTH BOUND
SC	SPIRAL TO CURVE
SIG-COMM	SIGNAL COMMUNICATION
SOP	SOURCE OF POWER
ST	STREET
ST	SPIRAL TO TANGENT
ST	STORM MANHOLE STRUCTURE
STA	STATION
TCE	TEMPORARY CONSTRUCTION EASEMENT
TH	TRUNK HIGHWAY
THRU	THROUGH
TOR	TOP OF RAIL
TPSS	TRACTION POWER SUBSTATION
TRK	TRACK
TS	TANGENT TO SPIRAL
TYP	TYPICAL
UG	UNDERGROUND
V	DESIGN VELOCITY (MPH)
VC	VERTICAL CURVE
VDE	VEHICLE DYNAMIC ENVELOPE
W	WEST
WB	WEST BOUND
WLK	WALK INDICATION

TRAIL INDEX

ABBREVIATED NAME	FULL NAME / LOCATION
TRAIL 1	UNDER RED CIRCLE DR, LRT, AND YELLOW CIRCLE DR
TRAIL 2	FROM TRAIL 1 TO GREEN CIRCLE DR
TRAIL 3	OPUS STATION ACCESS FROM BREN RD E
TRAIL 4	FROM BREN RD W TO TRAIL 5
TRAIL 5	FROM OPUS STATION TO GREEN CIRCLE DR
TRAIL 6	FROM TRAIL 5 TO SMETANA RD
CEDAR LAKE TRAIL	CEDAR LAKE LRT REGIONAL TRAIL/FROM SHADY OAK STATION TO 11TH AVE
CEDAR LAKE TRAIL	CEDAR LAKE LRT REGIONAL TRAIL/WEST OF EXCELSIOR
CEDAR LAKE TRAIL	CEDAR LAKE LRT REGIONAL LRT TRAIL/BETWEEN EXCELSIOR AND KENILWORTH TRAIL CONNECTION
MIDTOWN GREENWAY	MIDTOWN GREENWAY/EAST OF KENILWORTH TRAIL CONNECTION
TRAIL A	KENILWORTH TRAIL (SECONDARY)/BETWEEN CEDAR-ISLES CHANNEL AND 21ST STREET STATION
TRAIL B	KENILWORTH TRAIL (SECONDARY)/BETWEEN 21ST STREET STATION AND PENN STATION
TRAIL B	CEDAR LAKE TRAIL (SECONDARY)/EAST OF PENN STATION
TRAIL C	10' CONNECTOR TRAIL FROM CEDAR LAKE LRT REGIONAL TRAIL TO TYLER AVE.
TRAIL D	10' CONNECTOR TRAIL/BELTLINE STATION TO CEDAR LAKE LRT REGIONAL TRAIL
KENILWORTH TRAIL	KENILWORTH TRAIL (MAIN)/W LAKE ST TO PENN STATION
CEDAR LAKE TRAIL	CEDAR LAKE TRAIL (MAIN)/PENN STATION TO TH 394
TRAIL E	KENILWORTH TRAIL (SECONDARY)/EAST OF W LAKE ST
TRAIL F	KENILWORTH TRAIL (SECONDARY)/WEST OF CEDAR LAKE PKWY
TRAIL G	NOT USED
TRAIL H	10' CONNECTOR TRAIL/EAST OF PENN STATION TO KENWOOD PKWY
TRAIL I	10' CONNECTOR TRAIL FROM CEDAR LAKE REGIONAL TRAIL TO CSAH 20 (BLAKE RD)
CEDAR LAKE TRAIL	CEDAR LAKE TRAIL (MAIN)/AT-GRADE CROSSING AT PENN STATION
TRAIL J	CEDAR LAKE TRAIL (SECONDARY)/NORTHWEST OF PENN STATION
TRAIL K	CEDAR LAKE TRAIL (SECONDARY)/NORTHWEST OF PENN STATION
TRAIL L	CEDAR LAKE TRAIL (SECONDARY)/EAST OF PENN STATION
TRAIL M	10' CONNECTOR TRAIL FROM CEDAR LAKE REGIONAL TRAIL TO CSAH 20 (BLAKE RD)
TRAIL N	8' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO EDGEBROOOK DRIVE
TRAIL O	8' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO W LAKE STREET
TRAIL P	8' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO LOUISIANA AVE
TRAIL Q	10' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO TH 7 SERVICE ROAD
TRAIL R	20' CONNECTOR TRAIL FROM VAN WHITE STATION TO CEDAR LAKE TRAIL
TRAIL S	10' CONNECTOR TRAIL FROM CEDAR LAKE REGIONAL TRAIL TO BELTLINE BLVD
TRAIL T	8' CONNECTOR TRAIL FROM VAN WHITE STATION TO VAN WHITE MEMORIAL BLVD
TRAIL U	10' TRAIL PARALLEL TO CEDAR LAKE PKWY
LUCE LINE TRAIL	LUCE LINE REGIONAL TRAIL/ON BRIDGE OVER LIGHT RAIL
TRAIL V	CONNECTOR TRAIL TO LUCE LINE REGIONAL TRAIL WEST OF LIGHT RAIL
TRAIL W	CONNECTOR TRAIL TO LUCE LINE REGIONAL TRAIL WEST OF LIGHT RAIL
TRAIL X	NOT USED
TRAIL Y	12' CONNECTOR TRAIL FROM CEDAR LAKE REGIONAL TRAIL TO WOODDALE AVE S
TRAIL Z	12' CONNECTOR TRAIL FROM CEDAR LAKE REGIONAL TRAIL TO WOODDALE AVE S
TRAIL AA	8' PEDESTRIAN CONNECTOR TRAIL FROM TRAIL B TO PENN STATION
TRAIL BB	8' PEDESTRIAN CONNECTOR TRAIL FROM TRAIL B TO PENN STATION
TRAIL CC	10' CONNECTOR TRAIL FROM KENILWORTH TRAIL (MAIN) TO PENN STATION

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

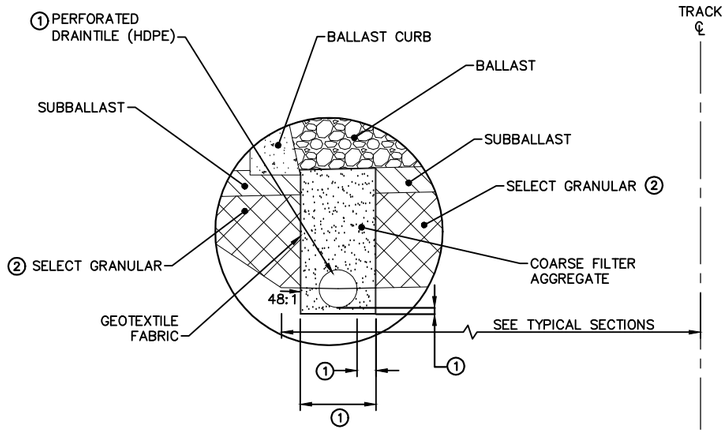
CIVIL - VOLUME 3C
GENERAL
NOTES, ABBREVIATIONS, AND SYMBOLS
SHEET 2

DISCIPLINE: GENERAL

SHEET NAME: 00-GEN-NTS-002

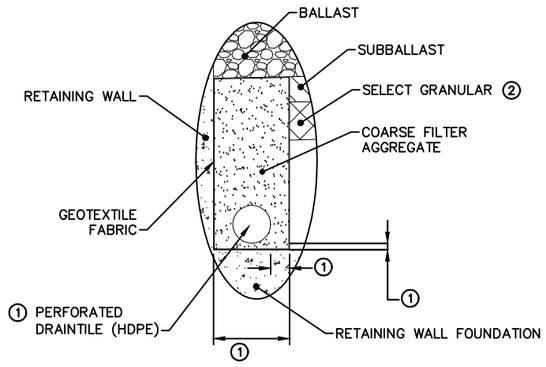
SHEET 6 OF 114

Jan, 16 2016 03:31 pm v:\3400_ADC\CAD\CAD MANAGEMENT\DRAWING LIST\COVER SHEETS 90%\CIV-GEN-NTS.dwg By: V-KriewaMR



INSET A – BALLAST CURB INTERFACE – LRT

NOTE: LEFT SIDE DRAINAGE TRENCH ILLUSTRATED.
FOR RIGHT SIDE, MIRROR SECTION.



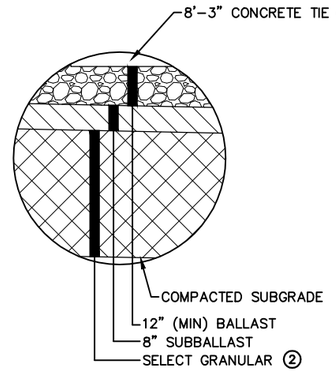
INSET B – CIP RETAINING WALL INTERFACE – A

NOTE: LEFT SIDE DRAINAGE TRENCH ILLUSTRATED.
FOR RIGHT SIDE, MIRROR SECTION.

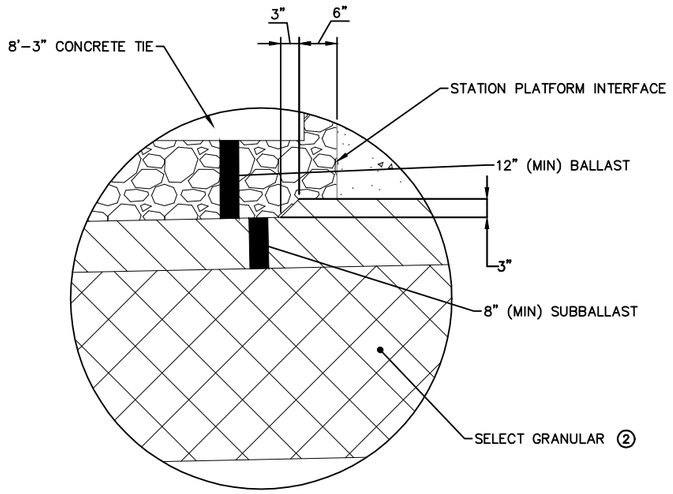
NOTES:

① FOR SUBDRAIN INSETS AND DETAILS, SEE DRAINAGE PLANS.

② FOR SELECT GRANULAR DEPTH, SEE TYPICAL SECTIONS.

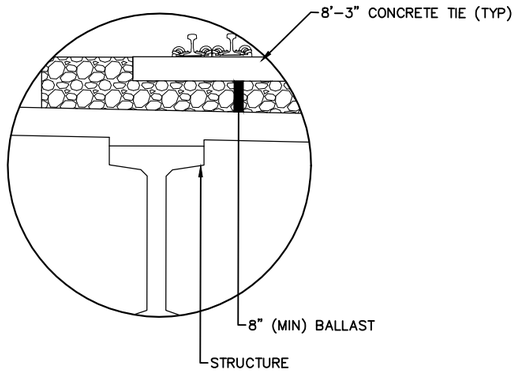


INSET C – TYPICAL BALLASTED LRT TRACK

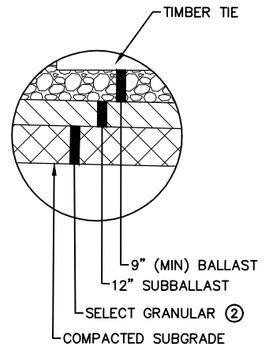


INSET D – STATION PLATFORM INTERFACE

NOTE: LEFT SIDE INTERFACE ILLUSTRATED.
FOR RIGHT SIDE, MIRROR SECTION.



INSET E – BALLASTED LRT TRACK ON STRUCTURE



INSET F – TYPICAL BALLASTED FREIGHT TRACK – A

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TYPICAL SECTIONS INSETS
SHEET 1

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-001

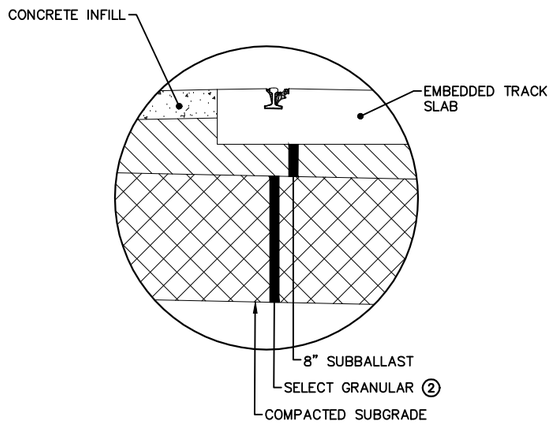
SHEET 7 OF 114

Jan, 18 2016 08:37 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-INS.dwg By: V-BurrellM

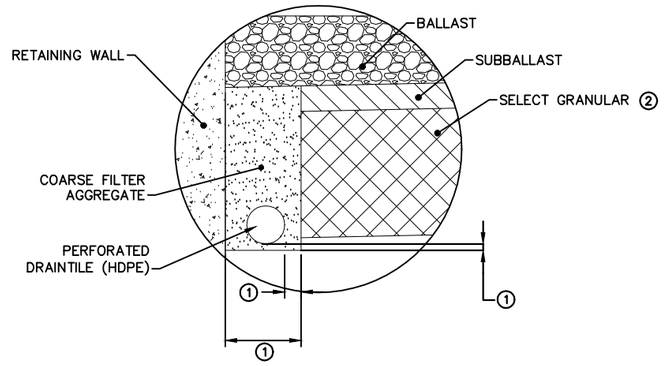
NOTES:

① FOR SUBDRAIN INSETS AND DETAILS, SEE DRAINAGE PLANS.

② FOR SELECT GRANULAR DEPTH, SEE TYPICAL SECTIONS.

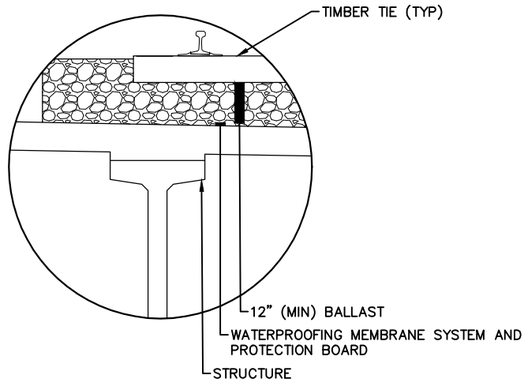


INSET G – TYPICAL EMBEDDED TRACK

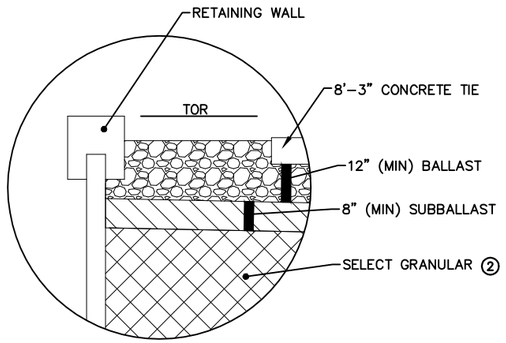


INSET H – SOLDIER PILE RETAINING WALL INTERFACE

NOTE: LEFT SIDE DRAINAGE TRENCH ILLUSTRATED.
FOR RIGHT SIDE, MIRROR SECTION.

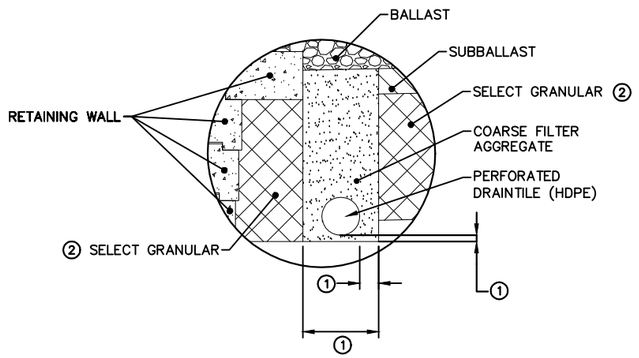


INSET I – BALLASTED FREIGHT TRACK ON STRUCTURE



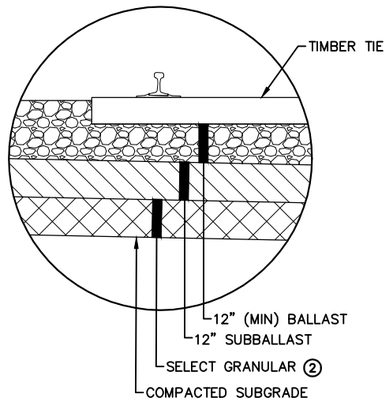
INSET J – MSE RETAINING WALL INTERFACE

NOTE: LEFT SIDE DRAINAGE TRENCH ILLUSTRATED.
FOR RIGHT SIDE, MIRROR SECTION.



INSET K – PMBW RETAINING WALL INTERFACE

NOTE: LEFT SIDE DRAINAGE TRENCH ILLUSTRATED.
FOR RIGHT SIDE, MIRROR SECTION.



INSET L – TYPICAL BALLASTED FREIGHT TRACK – B

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TYPICAL SECTIONS INSETS
SHEET 2

DISCIPLINE: TRACK

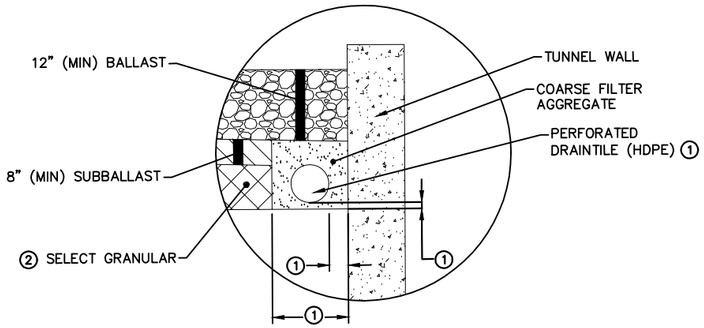
SHEET NAME: 00-TRK-DTL-002

SHEET 8 OF 114

Jan. 18 2016 08:38 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-INS.dwg By: V-BurrellM

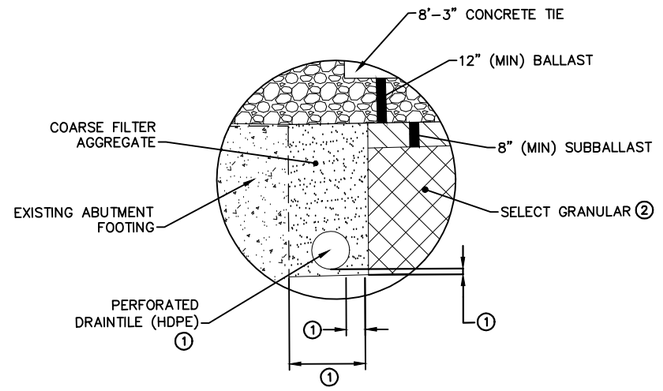
NOTES:

1. FOR SUBDRAIN INSETS AND DETAILS, SEE DRAINAGE PLANS.
2. FOR SELECT GRANULAR DEPTH, SEE TYPICAL SECTIONS.



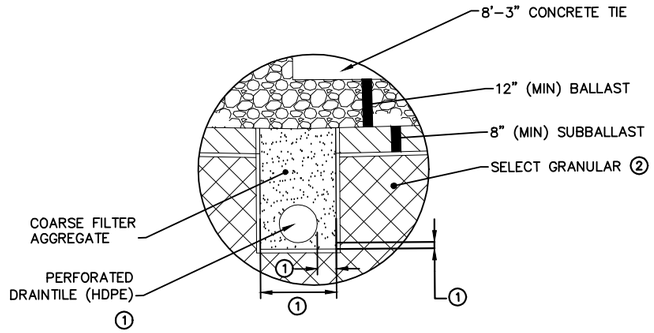
INSET M – PEDESTRIAN TUNNEL WALL INTERFACE

NOTE: RIGHT SIDE DRAINAGE TRENCH ILLUSTRATED.
FOR LEFT SIDE, MIRROR SECTION.



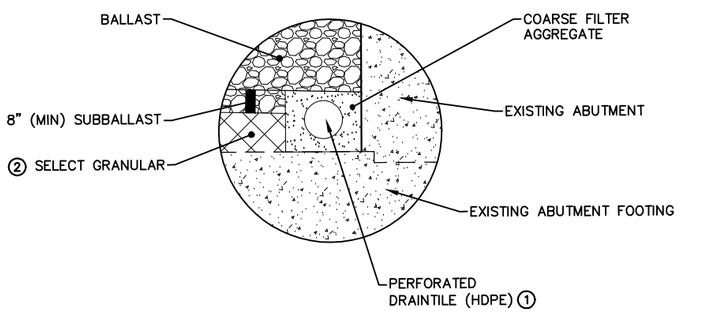
INSET N – EXISTING ABUTMENT INTERFACE – A

NOTE: LEFT SIDE DRAINAGE TRENCH ILLUSTRATED.
FOR RIGHT SIDE, MIRROR SECTION.



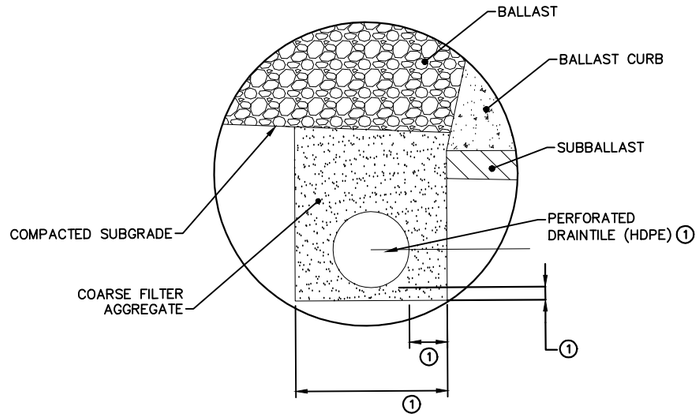
INSET O – DRAINAGE TRENCH FOR MSE RETAINING WALL

NOTE: RIGHT SIDE DRAINAGE TRENCH ILLUSTRATED.
FOR LEFT SIDE, MIRROR SECTION.



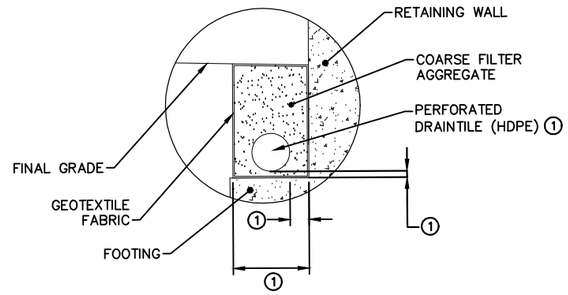
INSET P – EXISTING ABUTMENT INTERFACE – B

NOTE: RIGHT SIDE DRAINAGE TRENCH ILLUSTRATED.
FOR LEFT SIDE, MIRROR SECTION.



INSET Q – BALLAST CURB INTERFACE – FREIGHT

NOTE: RIGHT SIDE DRAINAGE TRENCH ILLUSTRATED.
FOR LEFT SIDE, MIRROR SECTION.



INSET R – CIP RETAINING WALL INTERFACE – B

NOTE: RIGHT SIDE DRAINAGE TRENCH ILLUSTRATED.
FOR LEFT SIDE, MIRROR SECTION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

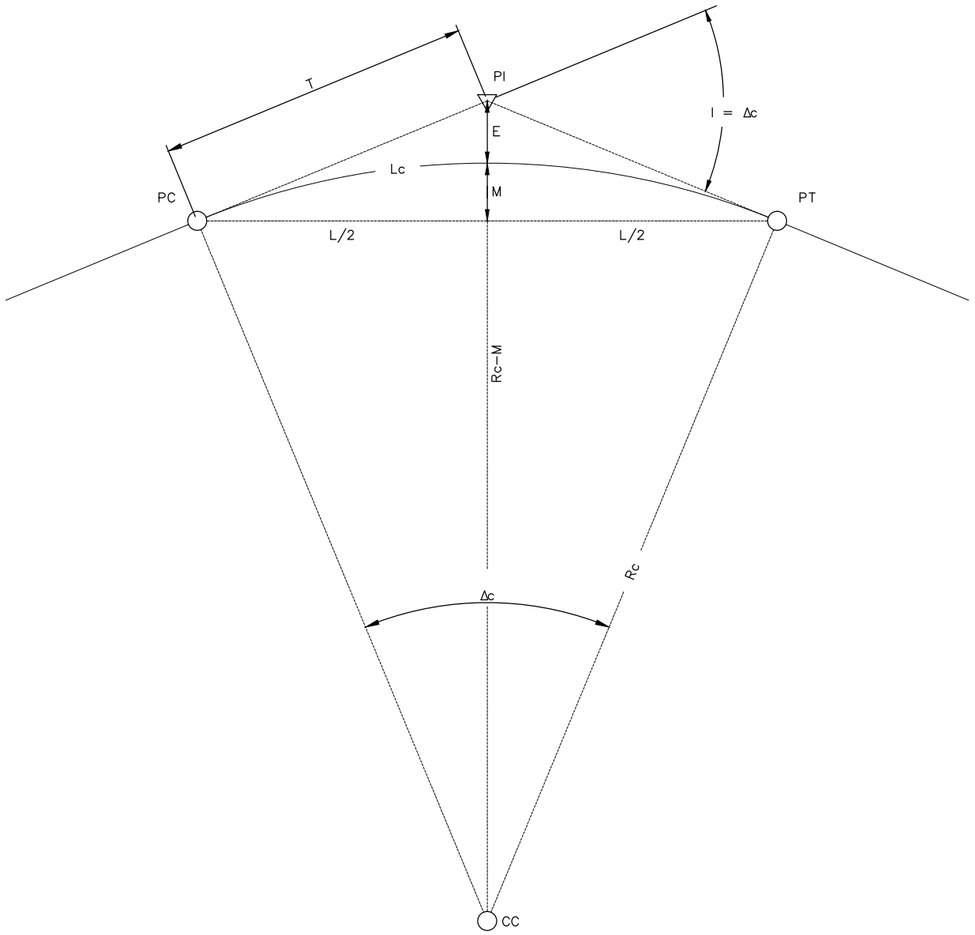
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TYPICAL SECTIONS INSETS
SHEET 3

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-003

SHEET 9 OF 114



SIMPLE CURVE DIAGRAM
N.T.S.

NOTES :

1. THIS DRAWING IS APPLICABLE TO SIMPLE CURVES WITHOUT TRANSITION SPIRALS AND SHALL ONLY BE USED ON NON–REVENUE TRACK.
2. ALL HORIZONTAL DISTANCES ARE IN FEET AND/OR DECIMALS OF A FOOT EXCEPT AS NOTED OTHERWISE ON PLANS.
3. LIGHT RAIL TRACK ALIGNMENT USES ARC DEFINITION. FREIGHT RAIL TRACK ALIGNMENT USES CHORD DEFINITION.

DEFINITIONS :

Dc = DEGREE OF CURVE IN ARC DEFINITION (DECIMAL DEGREES)
Rc = RADIUS OF CURVE
Lc = LENGTH OF CURVE ALONG THE ARC
Δc = CENTRAL ANGLE OF CURVE (DECIMAL DEGREES)
E = EXTERNAL DISTANCE
T = TANGENT DISTANCE
M = MIDDLE ORDINATE
L = CHORD LENGTH
I = DEFLECTION ANGLE (DECIMAL DEGREES)
PC = POINT OF CURVE
PT = POINT OF TANGENT
PI = POINT OF INTERSECTION
CC = CENTER OF CURVE

SIMPLE CURVE FORMULAS ③

FOR ARC DEFINITION:

$Dc = \frac{5729.58'}{Rc}$

$Lc = \frac{\pi Rc \Delta c}{180}$

$T = Rc \text{ TAN } \frac{1}{2} \Delta c$

$E = T \text{ TAN } \frac{1}{4} \Delta c$

$M = Rc (1 - \text{COS} \frac{1}{2} \Delta c)$

$L = 2 Rc \text{ SIN} \frac{1}{2} \Delta c$

SIMPLE CURVE FORMULAS ③

FOR CHORD DEFINITION:

$Dc = 2 [\text{ARC SIN } (50/R)$

$Lc = 100(\Delta c / Dc)$

$T = Rc \text{ TAN } \frac{1}{2} \Delta c$

$E = T \text{ TAN } \frac{1}{4} \Delta c$

$M = Rc (1 - \text{COS} \frac{1}{2} \Delta c)$

$L = 2 Rc \text{ SIN} \frac{1}{2} \Delta c$

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

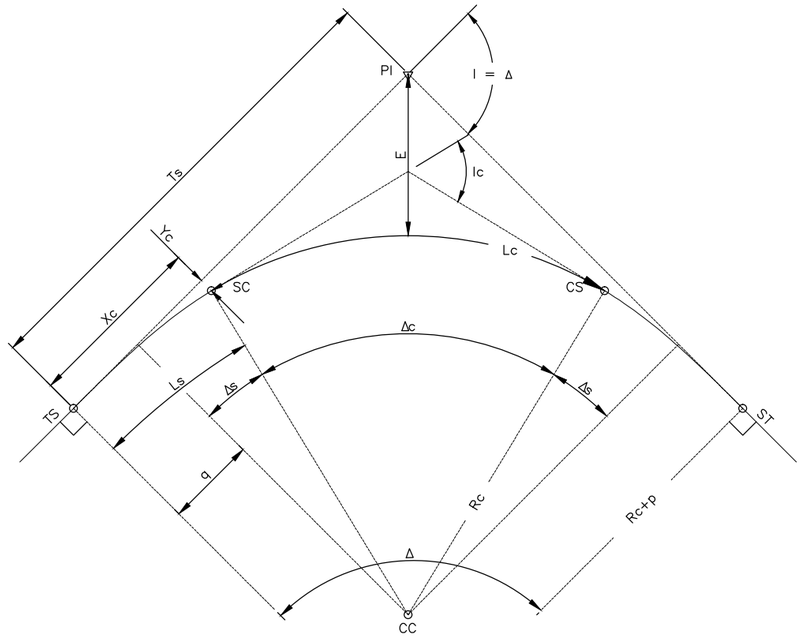
CIVIL - VOLUME 3C
TRACK DETAILS
SIMPLE CURVE DIAGRAM

DISCIPLINE: TRACK

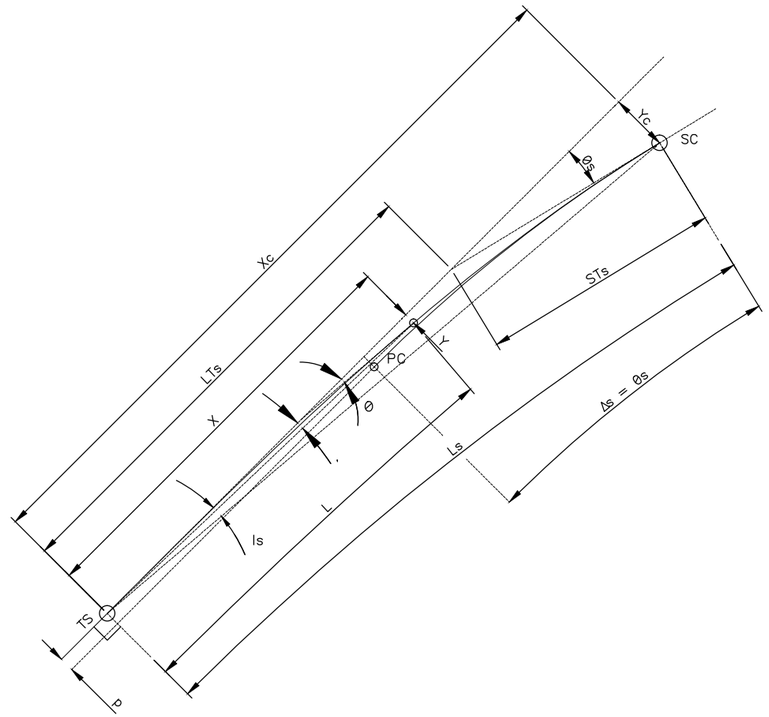
SHEET NAME: 00-TRK-DTL-010

SHEET 10 OF 114

Jan, 18 2016 09:45 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-000.dwg By: V-BurrellM



SPIRAL CURVE DIAGRAM
N.T.S.



SPIRAL DIAGRAM
N.T.S.

NOTES :

1. SPIRALS ARE TALBOT (CLOTHOID) SPIRALS.
2. ALL HORIZONTAL DISTANCES ARE IN FEET AND/OR DECIMALS OF A FOOT EXCEPT AS NOTED OTHERWISE ON PLANS.
3. SEE DTL–010.

DEFINITIONS :

Dc = DEGREE OF SIMPLE CURVE IN ARC DEFINITION (DEGREES)
Rc = RADIUS OF CURVE
Δ = TOTAL CENTRAL ANGLE OF CURVE (DEGREES)
Δc = CENTRAL ANGLE OF SIMPLE CURVE (DEGREES)
Δs = CENTRAL ANGLE OF SPIRAL (RADIANS)
E = EXTERNAL DISTANCE OF THE SIMPLE CURVE
Ts = TOTAL TANGENT DISTANCE
Ls = LENGTH OF SPIRAL
Lc = LENGTH OF THE SIMPLE CURVE ARC
L = LENGTH FROM TS TO ANY POINT ALONG THE SPIRAL
I = TOTAL DEFLECTION ANGLE (DEGREES)
Ic = DEFLECTION ANGLE OF THE SIMPLE CURVE (DEGREES)
Is = DEFLECTION ANGLE OF THE SPIRAL (DEGREES)
i = DEFLECTION ANGLE FROM TS TO ANY POINT ON THE SPIRAL
p = LENGTH OF THROW, OFFSET DISTANCE FROM TANGENT TO PC/PT
q = DISTANCE FROM TS/ST TO THE OFFSET TC/CT
Xc = DISTANCE ALONG TANGENT FROM TS/ST TO THE SC/CS
Yc = OFFSET DISTANCE FROM TANGENT TO SC/CS
X = DISTANCE ALONG TANGENT FROM TS/ST TO ANY POINT ON THE SPIRAL
Y = OFFSET DISTANCE FROM TANGENT TO ANY POINT ON THE SPIRAL
θs = SPIRAL ANGLE FROM TANGENT TO SC
θ = SPIRAL ANGLE FROM TANGENT TO ANY POINT ON THE SPIRAL
LTs = LONG TANGENT OF SPIRAL
STs = SHORT TANGENT OF SPIRAL
TS = POINT OF TANGENT TO SPIRAL CURVE
SC = POINT OF SPIRAL CURVE TO SIMPLE CURVE
CS = POINT OF SIMPLE CURVE TO SPIRAL CURVE
ST = POINT OF SPIRAL CURVE TO TANGENT
PC = POINT OF CURVE
PT = POINT OF TANGENT
PI = POINT OF INTERSECTION
CC = CENTER OF CURVE

SPIRAL CURVE FORMULAS :

$\Delta = \Delta c + 2\Delta s$

$\Delta s = \frac{Ls}{2Rc}$

$i = \frac{\theta}{3}$

$X = L - \frac{L^5}{40Rc^2\ Ls^2}$

$Xc = Ls - \frac{Ls^3}{40Rc^2}$

$Y = \frac{L^3}{6RcLs}$

$Yc = \frac{Ls^2}{6Rc}$

$q = Xc - Rc\ SIN\Delta s$

$p = \frac{1}{4}Yc = \frac{Ls^2}{24Rc}$

$Ts = (Rc + p)\ TAN\frac{\Delta}{2} + q$

$E = \frac{Rc + p}{COS\frac{\Delta}{2}} - Rc$

$LTs = Xc - \frac{Yc}{TAN\Delta s}$

$STs = \frac{Yc}{SIN\Delta s}$

$Dc = ③$

$Lc = ③$

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

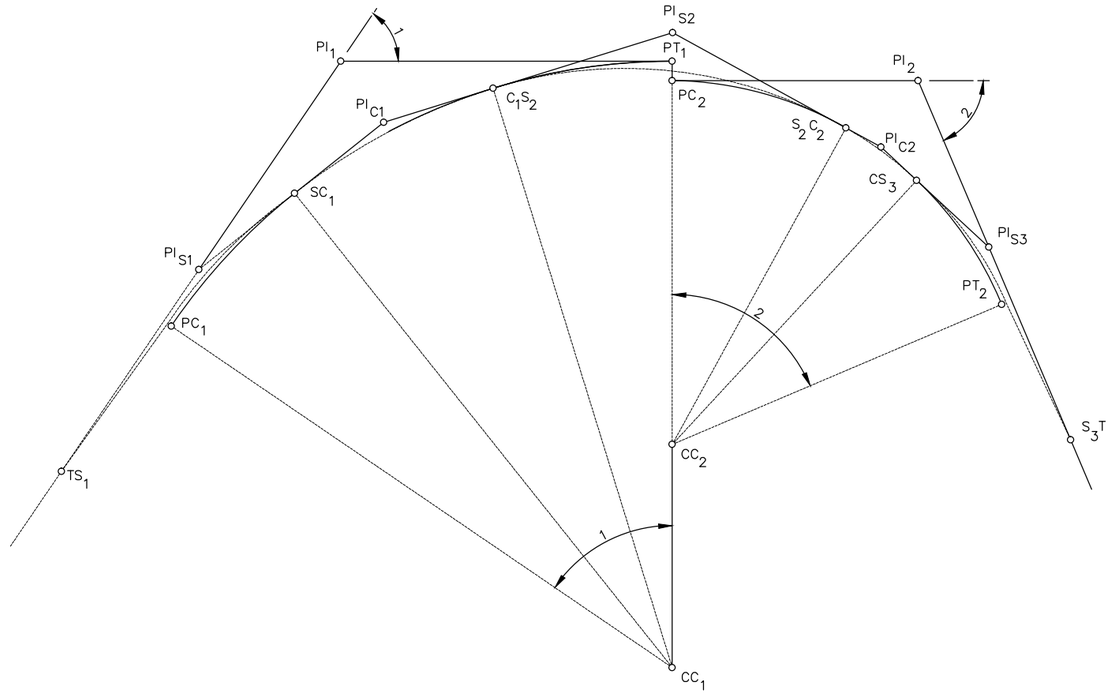
CIVIL - VOLUME 3C
TRACK DETAILS
SPIRAL CURVE DIAGRAMS

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-011

SHEET 11 OF 114

Jan, 18 2016 09:46 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-000.dwg By: V-BurrellM



TWO CENTERED COMPOUND CURVES WITH SPIRALS
N.T.S.

NOTES :

1. SPIRALS ARE TALBOT (CLOTHOID) SPIRALS.
2. ALL HORIZONTAL DISTANCES ARE IN FEET AND/OR DECIMALS OF A FOOT EXCEPT AS NOTED OTHERWISE ON PLANS.

DEFINITIONS :

TS = POINT OF TANGENT TO SPIRAL CURVE
SC = POINT OF SPIRAL CURVE TO SIMPLE CURVE
CS = POINT OF SIMPLE CURVE TO SPIRAL CURVE
ST = POINT OF SPIRAL CURVE TO TANGENT
PC = POINT OF CURVE
PT = POINT OF TANGENT
PI = POINT OF INTERSECTION
CC = CENTER OF CURVE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

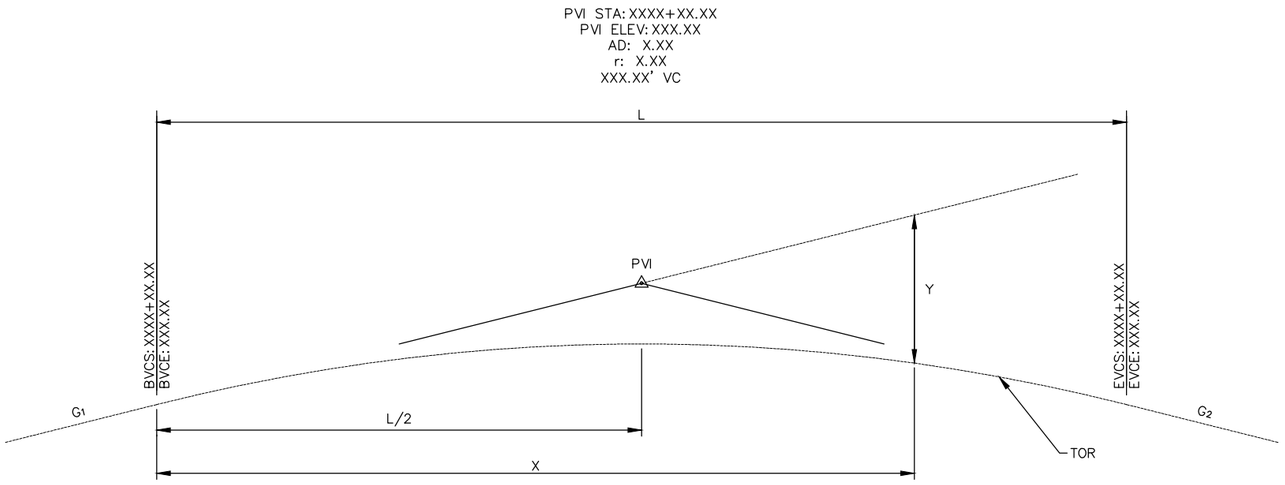
CIVIL - VOLUME 3C
TRACK DETAILS
COMPOUND CURVE WITH SPIRALS

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-012

SHEET 12 OF 114

Jan, 18 2016 09:47 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-000.dwg By: V-BurrellM



STANDARD VERTICAL CURVE
N.T.S.

NOTES :

① ALL HORIZONTAL DISTANCES ARE IN FEET AND/OR DECIMALS OF A FOOT EXCEPT AS NOTED OTHERWISE ON PLANS.

DEFINITIONS :

G1 = ENTRY GRADE %
G2 = DEPARTING GRADE %
PVI = POINT OF VERTICAL INTERSECTION
AD = ALGEBRAIC DIFFERENCE (IN DECIMALS)
r = RATE OF CHANGE OF GRADE
L = LENGTH OF VERTICAL CURVE
BVCS = BEGIN VERTICAL CURVE STATION
BVCE = BEGIN VERTICAL CURVE ELEVATION
EVCS = END VERTICAL CURVE STATION
EVCE = END VERTICAL CURVE ELEVATION
X = HORIZONTAL DISTANCE FROM BVC
Y = ELEVATION OF PARABOLA BELOW G1
Rv = EQUIVALENT RADIUS OF VERTICAL CURVE

VERTICAL CURVE FORMULAS :

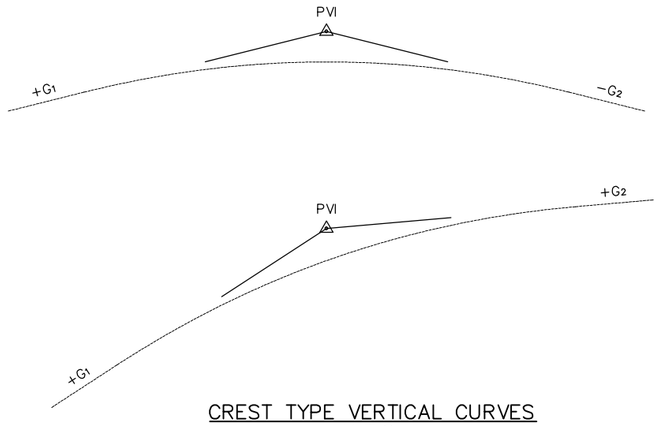
$a = \frac{G_2 - G_1}{2L}$

$Y = BVCE + GX + ax^2$

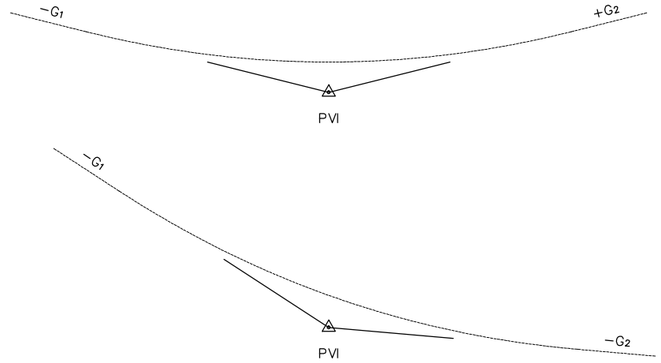
$AD = G_2 - G_1$

$r = \frac{100\ AD}{L}$

$Rv = \frac{L}{0.01\ AD}$



CREST TYPE VERTICAL CURVES
N.T.S.



SAG TYPE VERTICAL CURVES
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

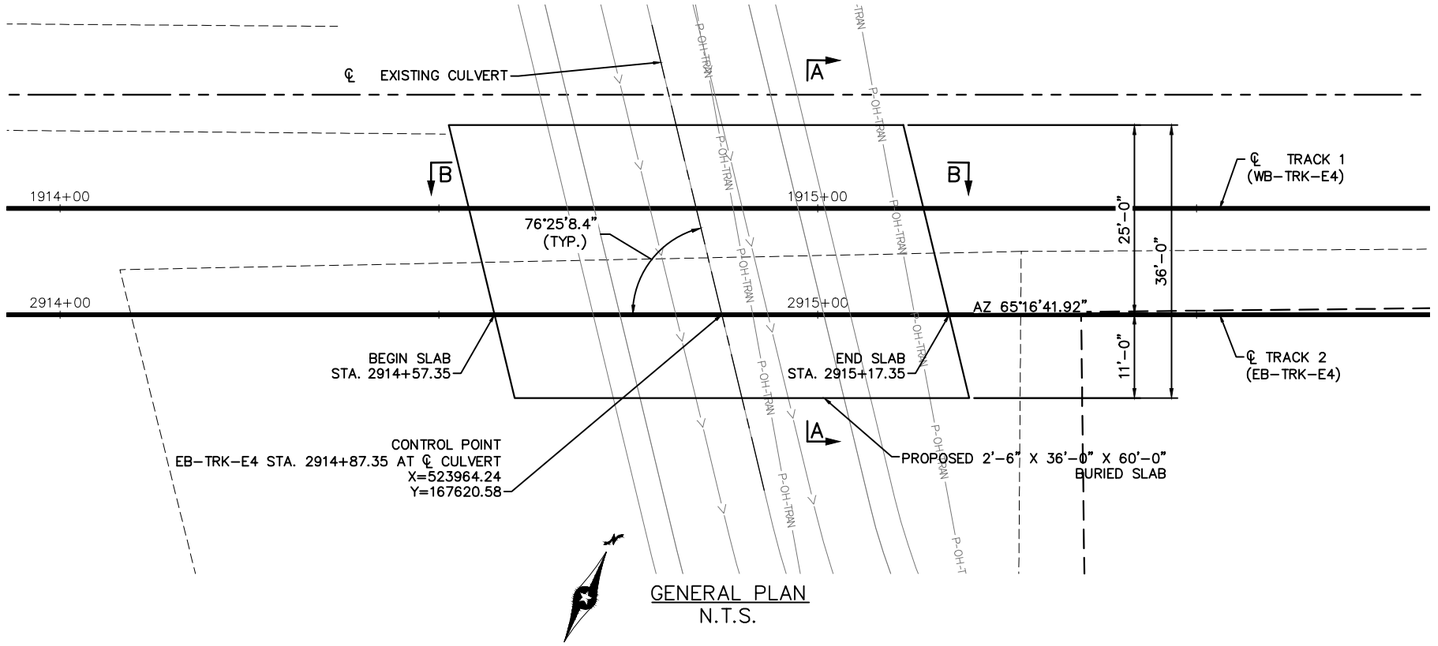
CIVIL - VOLUME 3C
TRACK DETAILS
VERTICAL CURVE GEOMETRY

DISCIPLINE: TRACK

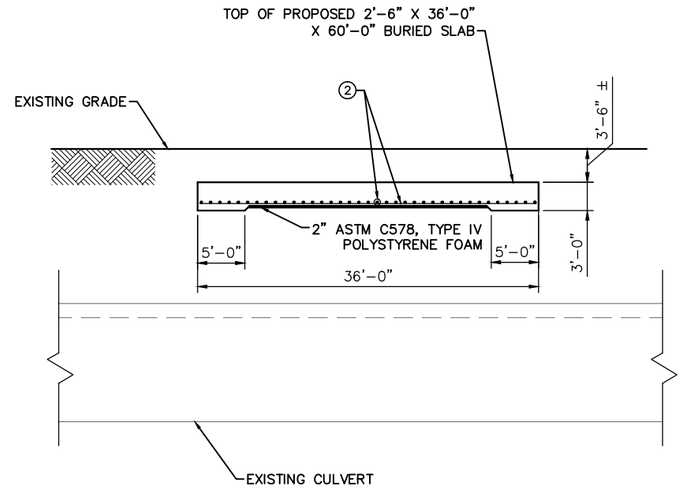
SHEET NAME: 00-TRK-DTL-013

SHEET 13 OF 114

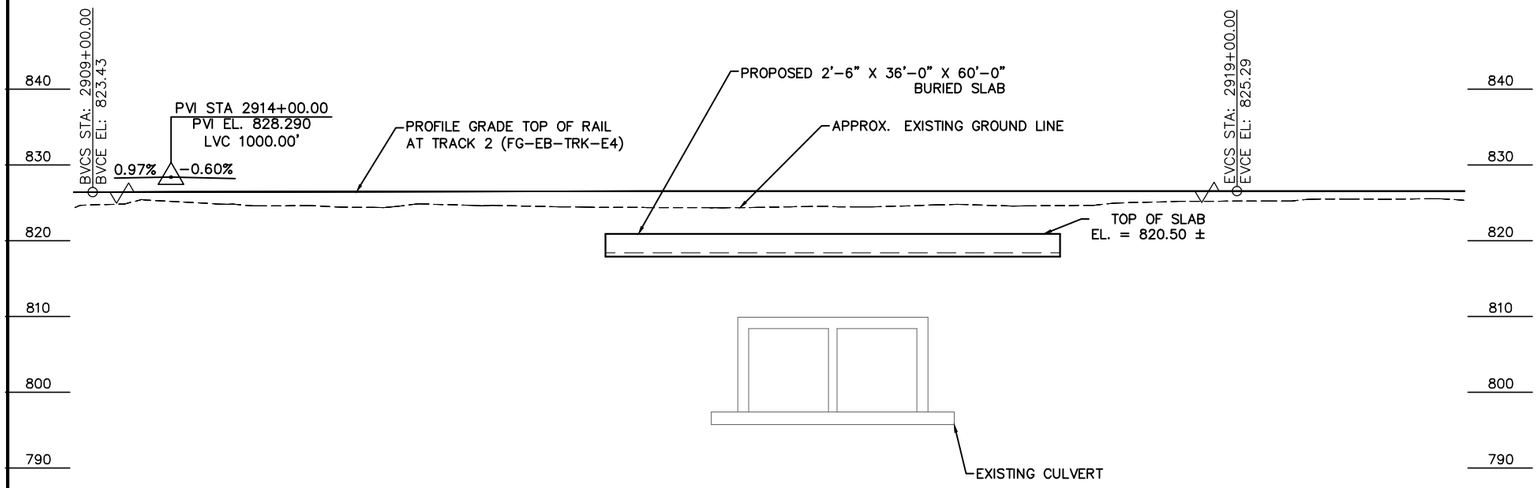
Jan, 18 2016 09:48 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-000.dwg By: V-BurrellM



GENERAL PLAN
N.T.S.



SECTION THRU BURIED SLAB
N.T.S



GENERAL ELEVATION
N.T.S.

NOTES:

① FOR SECTION A–A AND B–B, SEE SHEET DTL–015.

② FOR REINFORCING DETAILS, SEE SHEET DTL–015.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

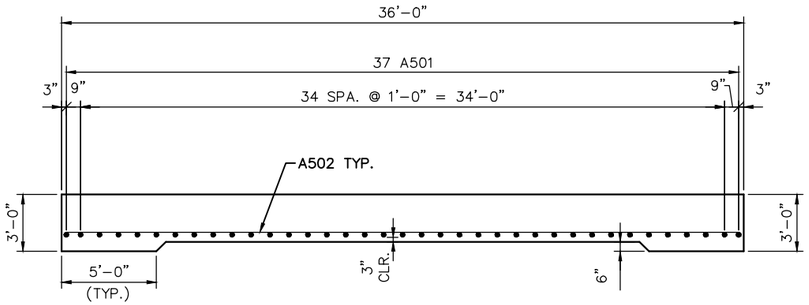
CIVIL - VOLUME 3C
TRACK DETAILS
BASSETT CREEK TUNNEL
BURIED DISTRIBUTION SLAB SHEET 1 OF 2

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-014

SHEET 14 OF 114

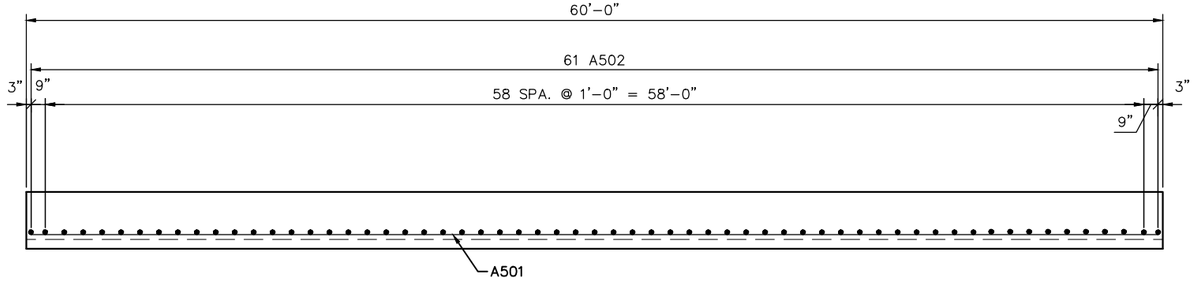
Jan, 18 2016 09:50 am V:\3400_ADC\CAD\OVERALL\XREF\BASSETT CREEK TUNNEL SLAB.dwg By: V-BurrellM



SECTION A–A
N.T.S

BILL OF REINFORCEMENT ①②				
BAR	NO.	LENGTH	SHAPE	LOCATION
A501	37	59'-6"	STR.	LONGITUDINAL BOTTOM
A502	61	35'-6"	STR.	TRANSVERSE TOP

SCHEDULE OF QUANTITIES			
ITEM NO.	ITEM	UNIT	QUANTITY
2401	STRUCTURAL CONCRETE (1A43)	CU. YD.	212
2401	REINFORCMENT BARS	POUND	4,600
2504	2" POLYSTYRENE INSULATION	SQ. YD.	175



SECTION B–B
N.T.S

NOTES:

① THE BAR SIZES SHOWN IN THIS PLAN ARE U.S. CUSTOMARY DESIGNATIONS.

② THE FIRST DIGIT OR FIRST 2 DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

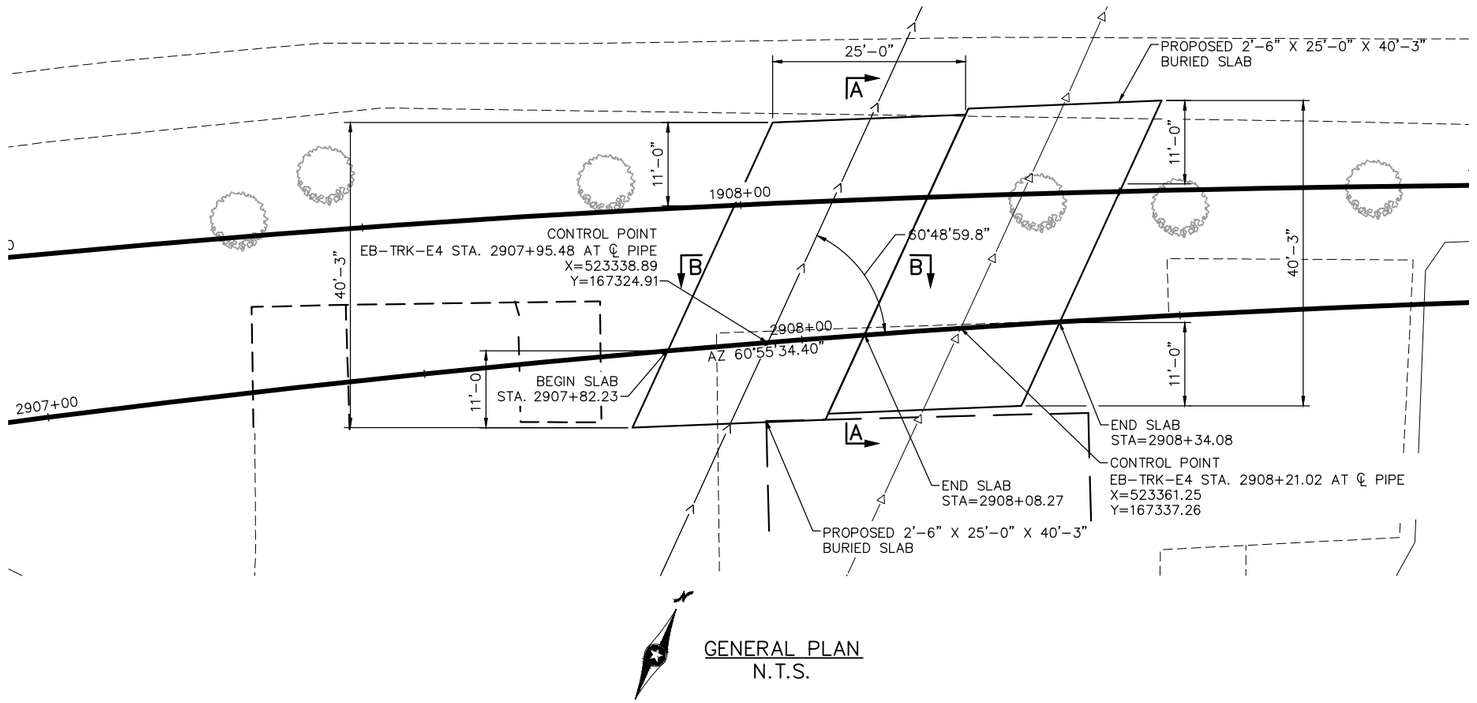
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
BASSETT CREEK TUNNEL
BURIED DISTRIBUTION SLAB SHEET 2 OF 2

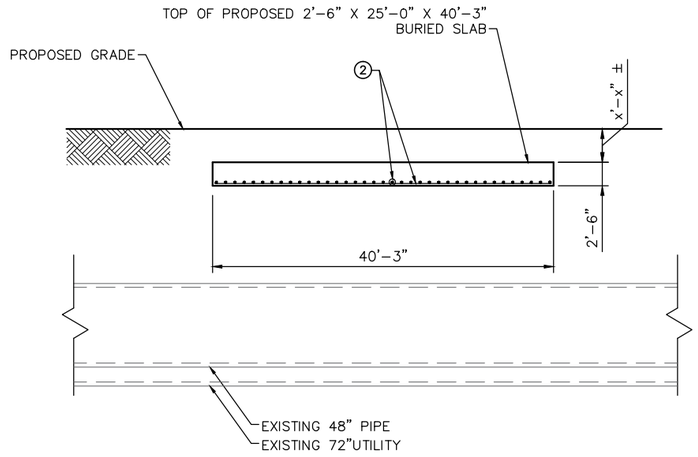
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-015

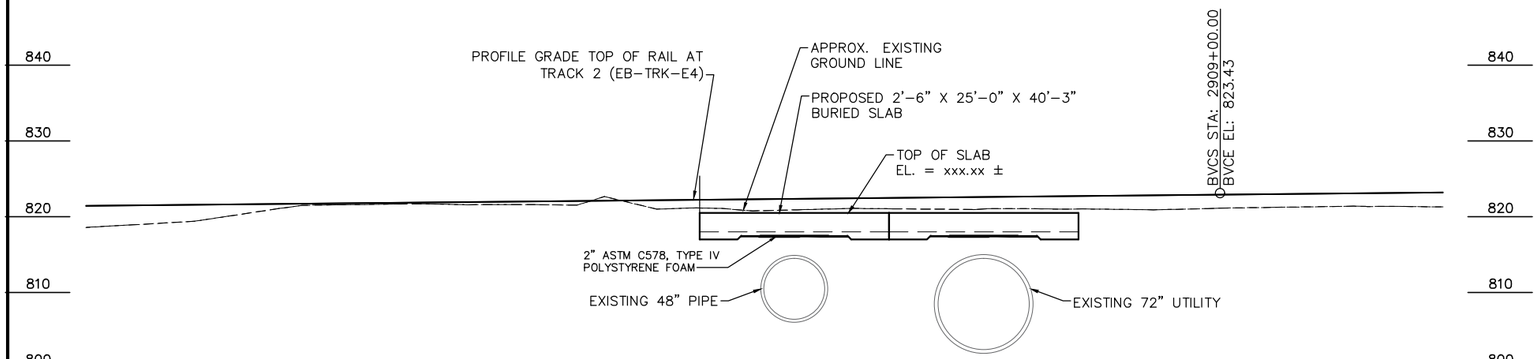
SHEET 15 OF 114



GENERAL PLAN
N.T.S.



SECTION THRU BURIED SLAB
N.T.S



GENERAL ELEVATION
N.T.S.

NOTES:

① FOR SECTION A-A AND B-B, SEE SHEET DTL-017.

② FOR REINFORCING DETAILS, SEE SHEET DTL-017.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

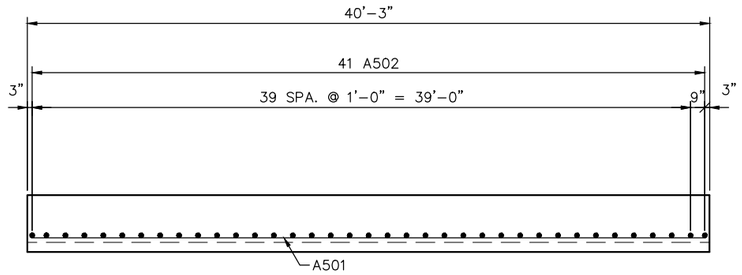
CIVIL - VOLUME 3C
TRACK DETAILS
LINDEN YARDS TUNNEL BURIED DISTRIBUTION SLAB SHEET 1 OF 2

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-016

SHEET 16 OF 114

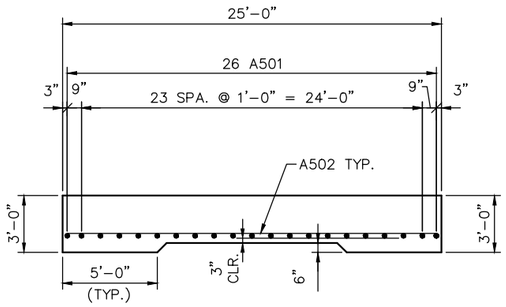
Jan, 18 2016 09:52 am V:\3400_ADC\CAD\OVERALL\XREF\LINDEN YARDS TUNNEL SLAB.dwg By: V-BurrellM



SECTION A–A
N.T.S

BILL OF REINFORCEMENT ① ②				
BAR	NO.	LENGTH	SHAPE	LOCATION
A501	26	45'-9"	STR.	LONGITUDINAL BOTTOM
A502	41	24'-8"	STR.	TRANSVERSE BOTTOM

SCHEDULE OF QUANTITIES			
ITEM NO.	ITEM	UNIT	QUANTITY
2401	STRUCTURAL CONCRETE (1A43)	CU. YD.	101
2401	REINFORCMENT BARS	POUND	2,300
2504	2" POLYSTYRENE INSULATION	SQ. YD.	65



SECTION B–B
N.T.S

NOTES:

① THE BAR SIZES SHOWN IN THIS PLAN ARE U.S. CUSTOMARY DESIGNATIONS.

② THE FIRST DIGIT OR FIRST 2 DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

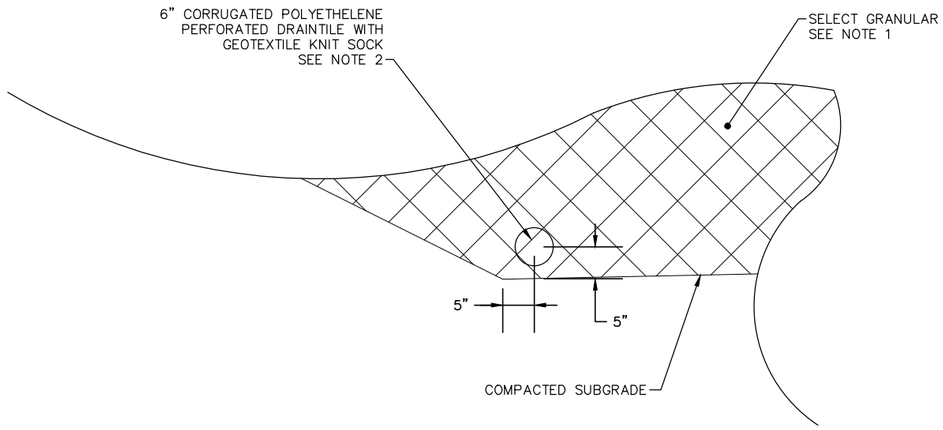
CIVIL - VOLUME 3C
TRACK DETAILS
LINDEN YARDS TUNNEL BURIED DISTRIBUTION SLAB SHEET 2 OF 2

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-017

SHEET 17 OF 114

Jan. 18 2016 09:53 am V:\3400_ADC\CAD\OVERALL\XREF\LINDEN YARDS TUNNEL SLAB.dwg By: V-BurrellM



DETAIL A
PERFORATED DRAINTILE IN SELECT GRANULAR
N.T.S.

NOTES:

1. FOR SELECT GRANULAR DEPTH, SEE TYPICAL SECTIONS.
2. CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

XXX XXX
XXX XX/XX/XX

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

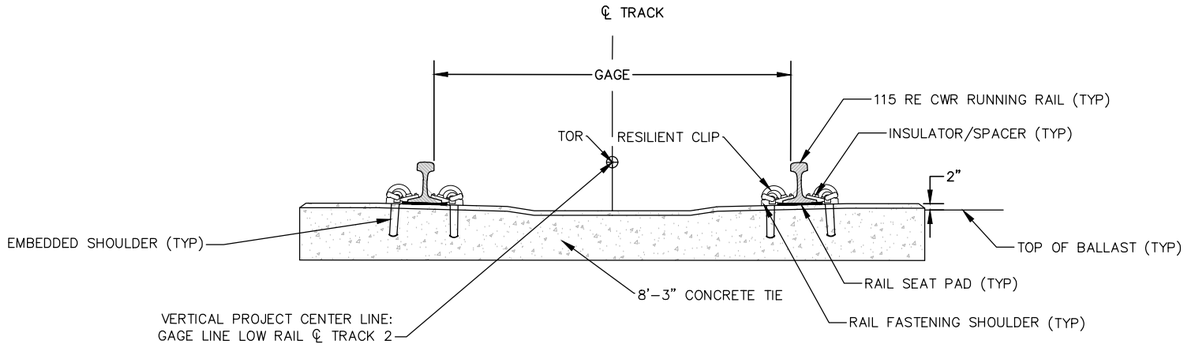
CIVIL - VOLUME 3C
TRACK DETAILS
DETAIL A
MISCELLANEOUS DETAILS

DISCIPLINE: TRACK

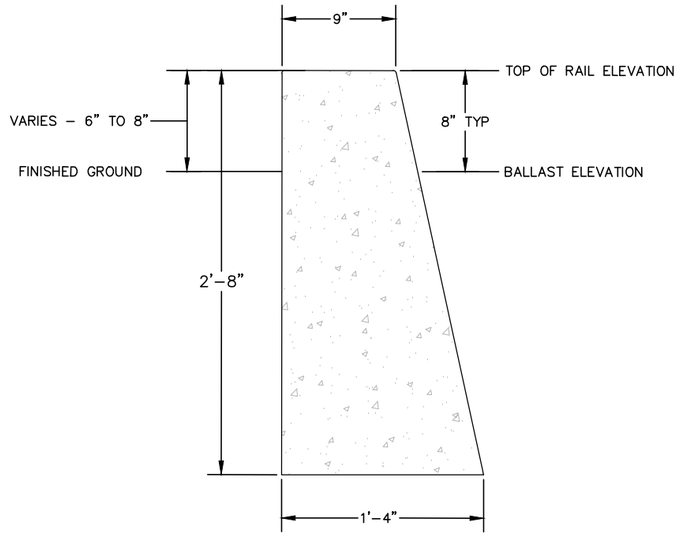
SHEET NAME: 00-TRK-DTL-020

SHEET 18 OF 114

Jan, 18 2016 09:54 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-000.dwg By: V-BurrellM



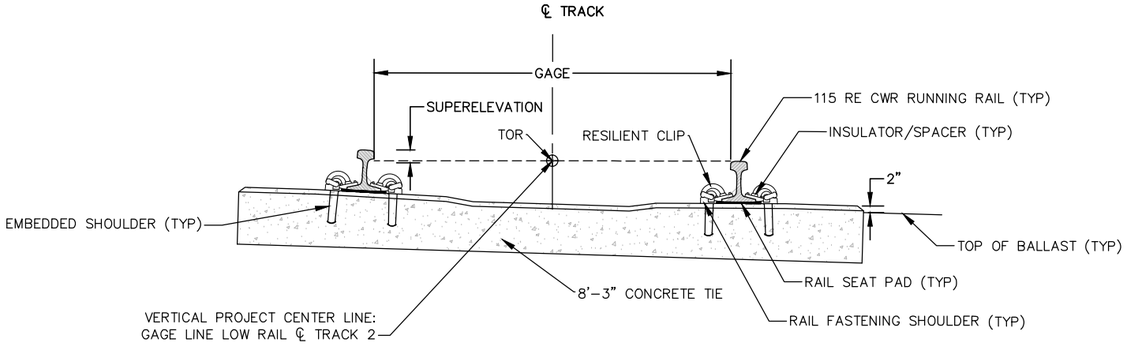
BALLAST TRACK CONCRETE TIE
TANGENT TRACK
N.T.S.



BALLAST CURB
N.T.S.

NOTES:

1. CONCRETE MIX FOR BALLAST CURB TO BE MnDOT 3Y46 CONCRETE MIX DESIGN FOR CAST-IN-PLACE FIXED-FORM CONSTRUCTION.
2. BALLAST CURB SHALL HAVE A BROOMED FINISH.
3. PROVIDE CONTRACTION JOINTS, SAW CUT AT 15' INTERVALS.
4. PROVIDE EXPANSION JOINTS, WITH ½" THICK CONSTRUCTION FELT OR EQUAL, AT 90' INTERVALS.
5. REINFORCING STEEL NOT REQUIRED FOR BALLAST CURB.



BALLAST TRACK CONCRETE TIE
SUPERELEVATED TRACK WITHOUT RESTRAINING RAIL
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

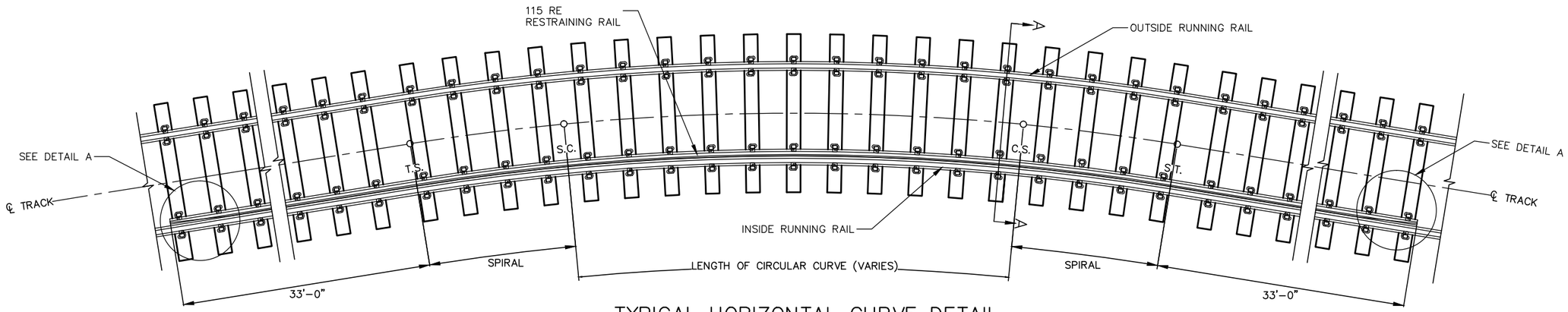
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - TIE & BALLAST CURB DETAILS

DISCIPLINE: TRACK

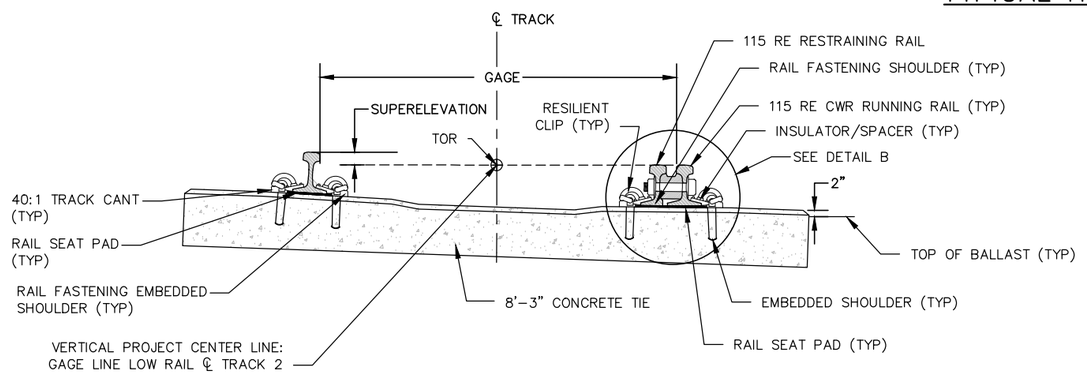
SHEET NAME: 00-TRK-DTL-201

SHEET 19 OF 114



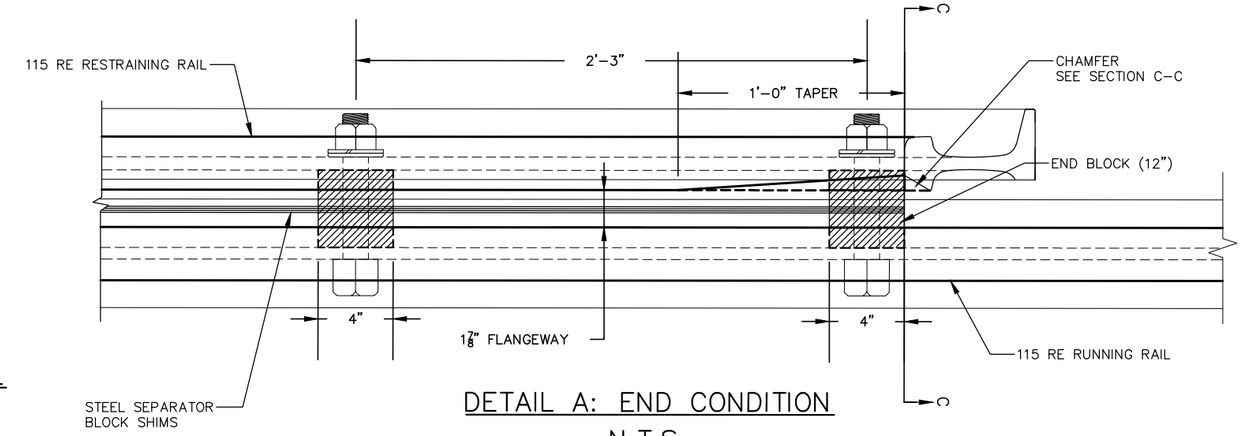
TYPICAL HORIZONTAL CURVE DETAIL

N.T.S.



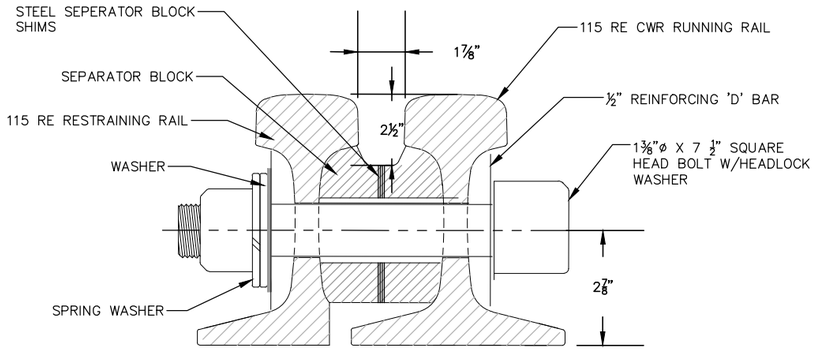
BALLASTED TRACK WITH CONCRETE TIE WITH SINGLE RESTRAINING RAIL SECTION A–A

N.T.S



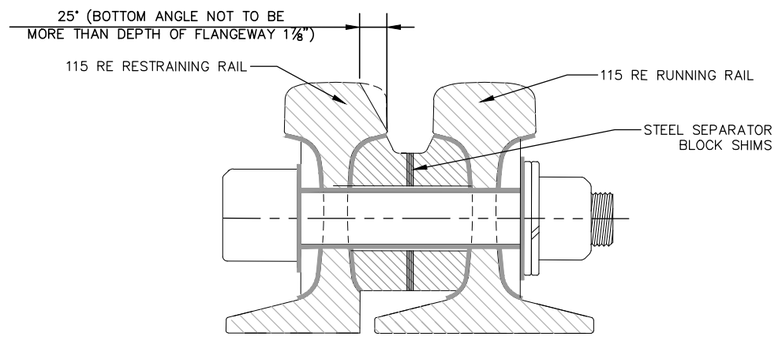
DETAIL A: END CONDITION

N.T.S.



DETAIL B: RESTRAINING RAIL

N.T.S.



SECTION C–C: CHAMFER AT END OF TAPER

N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

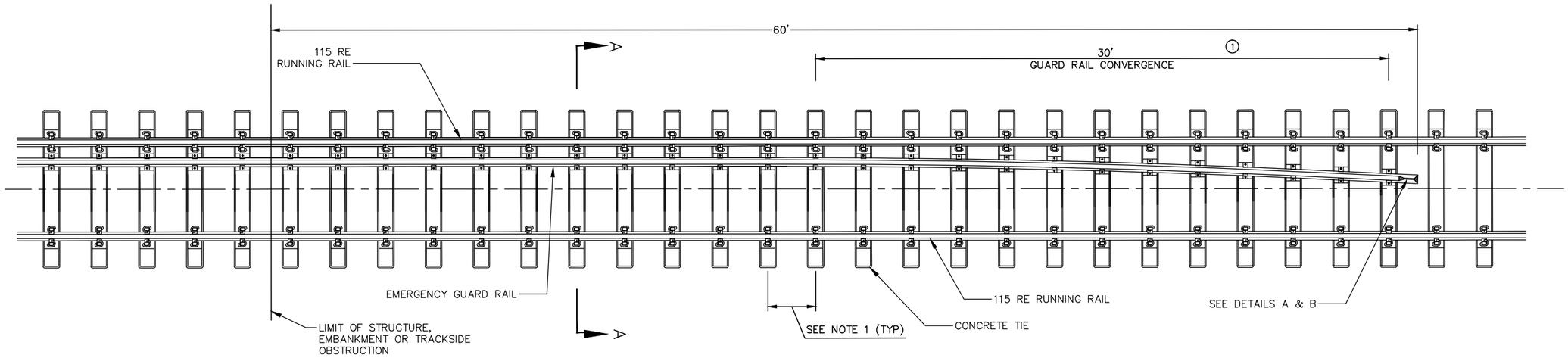
CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - SINGLE RESTRAINING RAIL

DISCIPLINE: TRACK

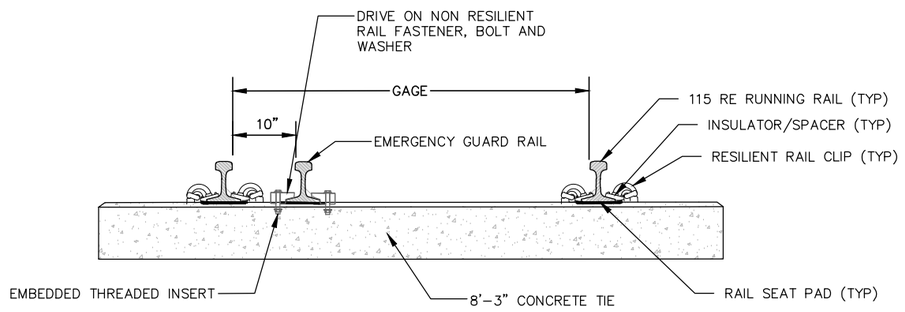
SHEET NAME: 00-TRK-DTL-202

SHEET 20 OF 114

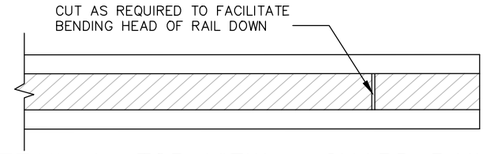
Jan, 18 2016 08:51 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM



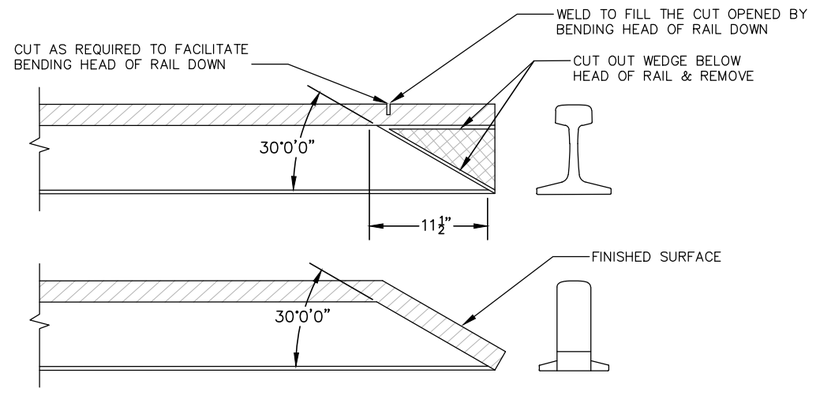
SINGLE EMERGENCY GUARD RAIL ON BALLASTED TRACK WITH CONCRETE TIES
PLAN VIEW
N.T.S.



BALLASTED TRACK WITH CONCRETE TIE WITH SINGLE EMERGENCY GUARD RAIL SECTION A–A
N.T.S.



DETAIL A: TOP VIEW – GUARD RAIL END
N.T.S.



DETAIL B: SIDE VIEW – GUARD RAIL END
N.T.S.

NOTES:

① TIE SPACING AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

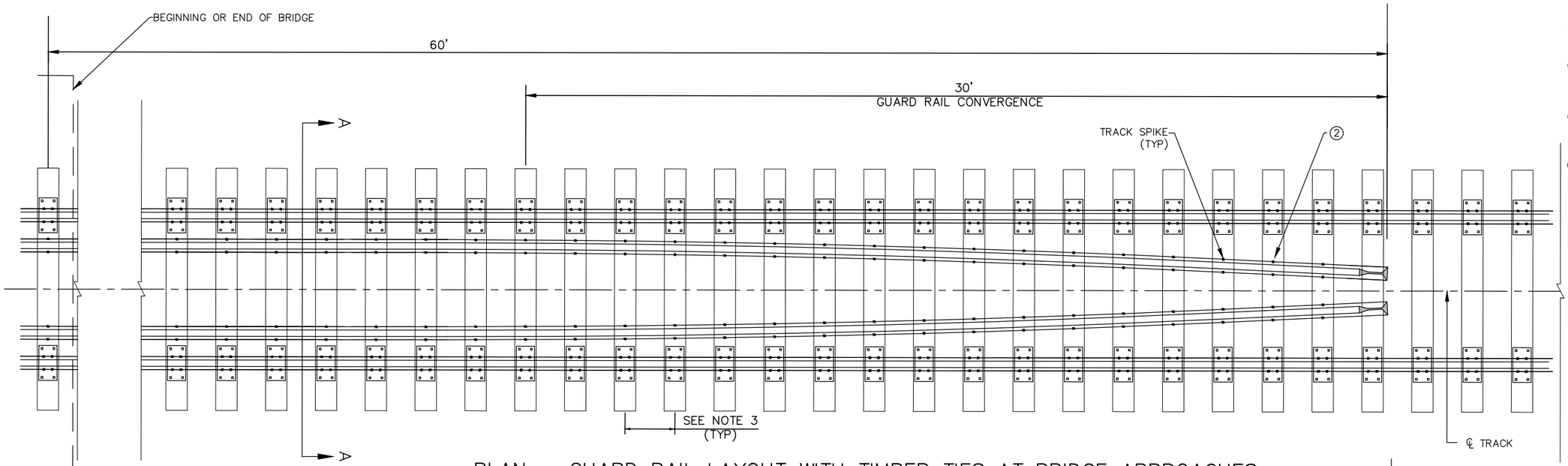
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK -
SINGLE EMERGENCY GUARD RAIL

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-203

SHEET 21 OF 114



PLAN – GUARD RAIL LAYOUT WITH TIMBER TIES AT BRIDGE APPROACHES

N.T.S.

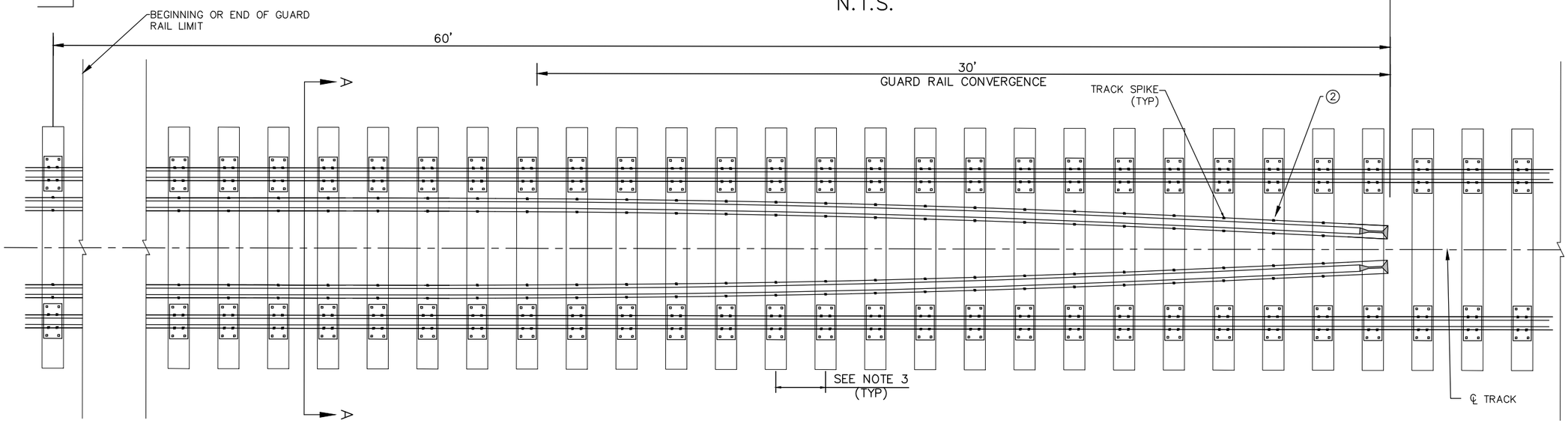
NOTES:

① RAIL BASES AT POINT TO BE FROM 0" TO 3" APART.

② TIE PLATES WILL BE USED ONLY UNDER RUNNING RAILS, NOT UNDER GUARD RAILS.

③ TIE SPACING AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.

④ SEE DTL–205 FOR SECTION A–A AND GUARD RAIL CUT DETAILS.



PLAN – GUARD RAIL LAYOUT WITH TIMBER TIES

N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

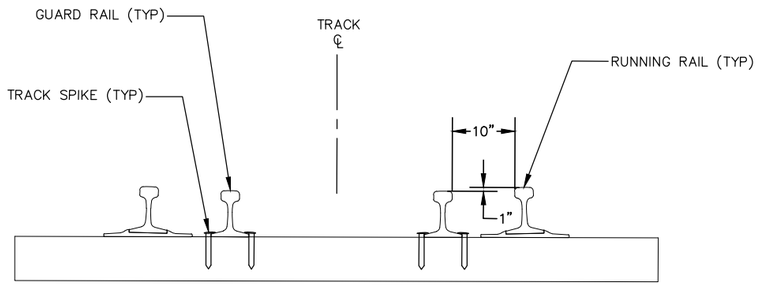
CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - GUARD RAIL LAYOUT FOR TIMBER TIES SHEET 1 OF 2

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-204

SHEET 22 OF 114

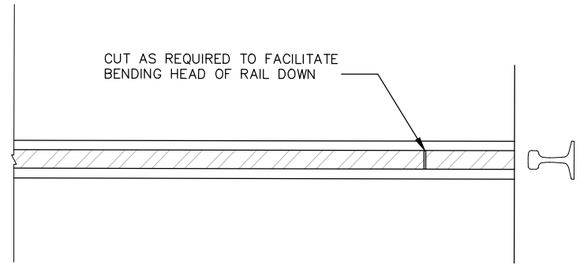
Jan, 18 2016 08:53 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM



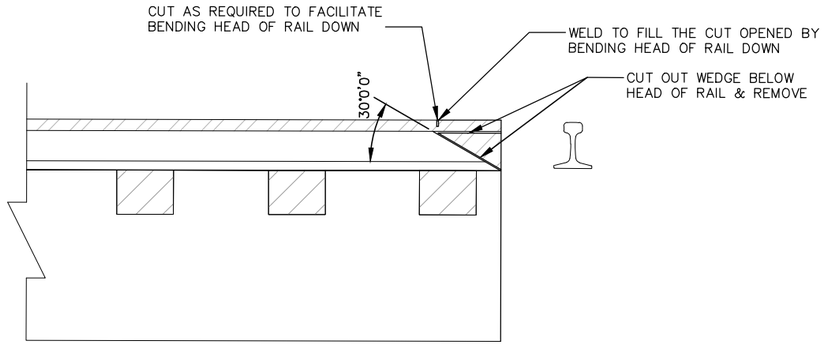
SECTION A–A
N.T.S.

NOTES:

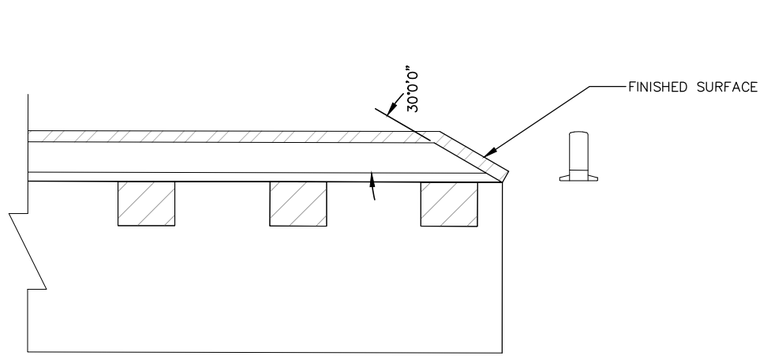
① DETAILS IN THIS SHEET APPLY TO GUARD RAIL ON TIMBER TIES.



DETAIL A: TOP VIEW – GUARD RAIL END
N.T.S.



DETAIL B: SIDE VIEW – GUARD RAIL END (BEFORE CUTTING)
N.T.S.



DETAIL C: SIDE VIEW – GUARD RAIL END (FINISHED)
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

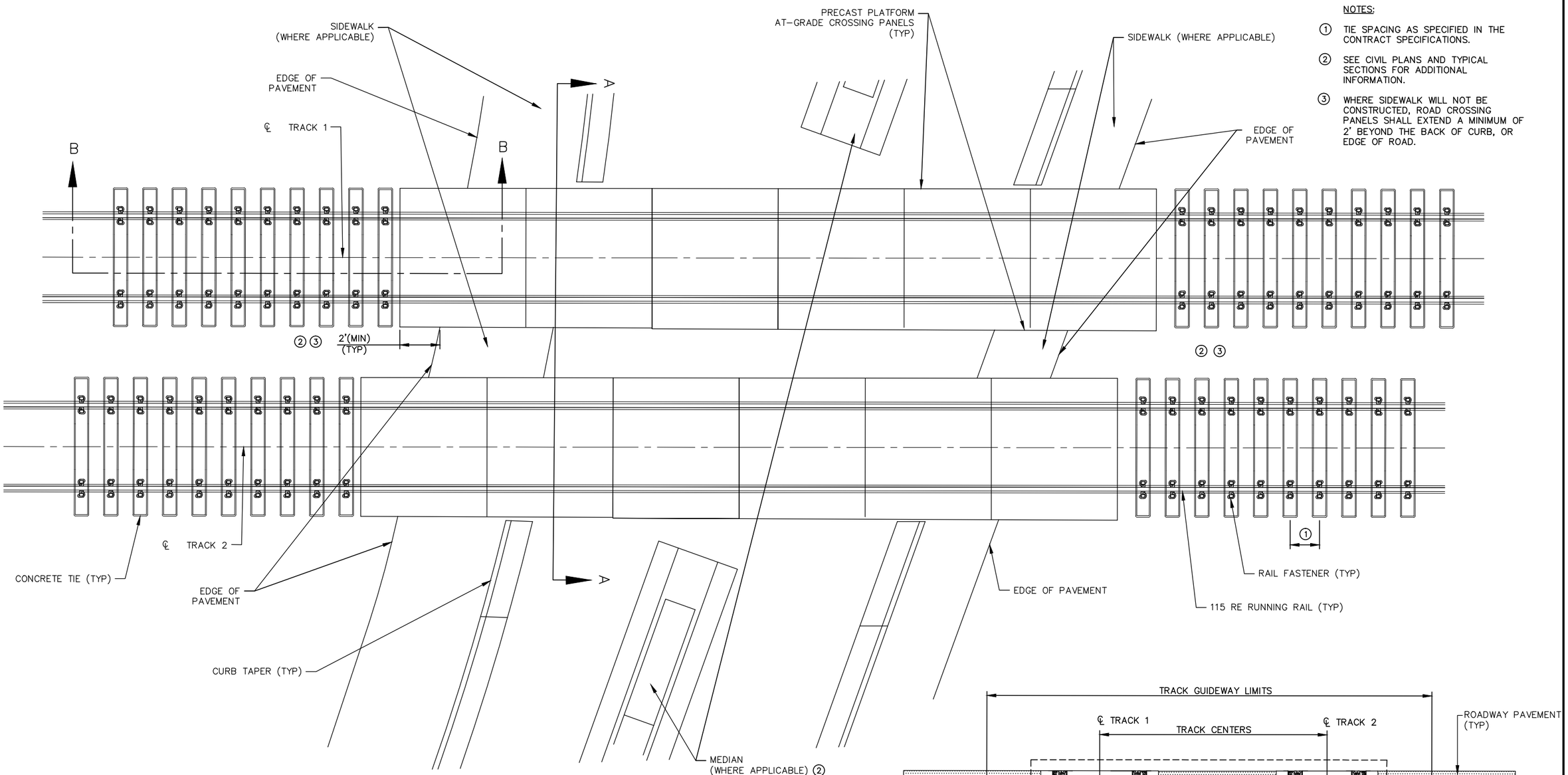
CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - GUARD RAIL
LAYOUT FOR TIMBER TIES SHEET 2 OF 2

DISCIPLINE: TRACK

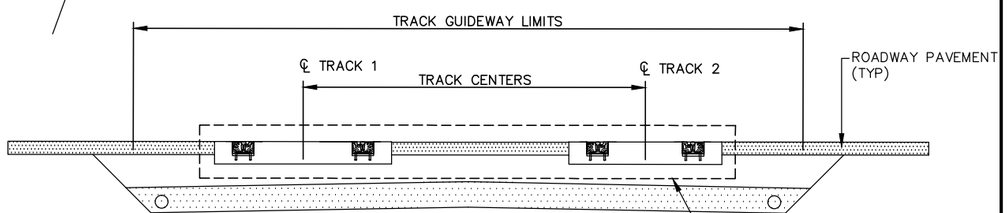
SHEET NAME: 00-TRK-DTL-205

SHEET 23 OF 114

Jan, 18 2016 08:53 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM



PLATFORM AT-GRADE CROSSING – PLAN VIEW
N.T.S.



SECTION A–A
N.T.S.

NOTES:

① TIE SPACING AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.

② SEE CIVIL PLANS AND TYPICAL SECTIONS FOR ADDITIONAL INFORMATION.

③ WHERE SIDEWALK WILL NOT BE CONSTRUCTED, ROAD CROSSING PANELS SHALL EXTEND A MINIMUM OF 2' BEYOND THE BACK OF CURB, OR EDGE OF ROAD.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

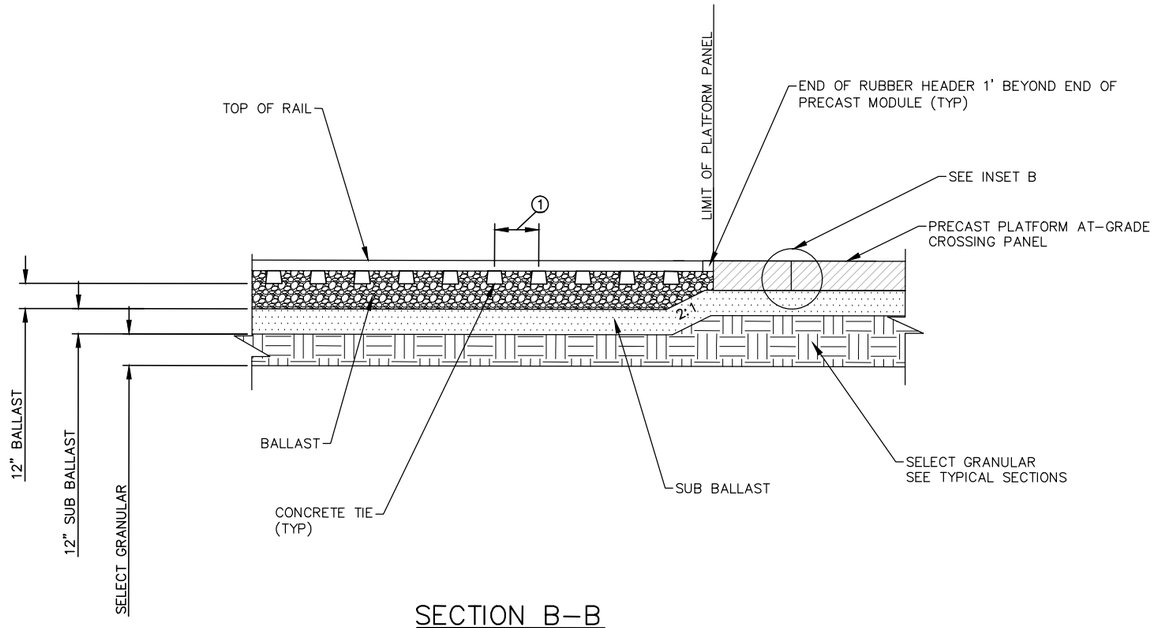
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - PLATFORM AT-GRADE CROSSING SHEET 1 OF 2

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-206

SHEET 24 OF 114

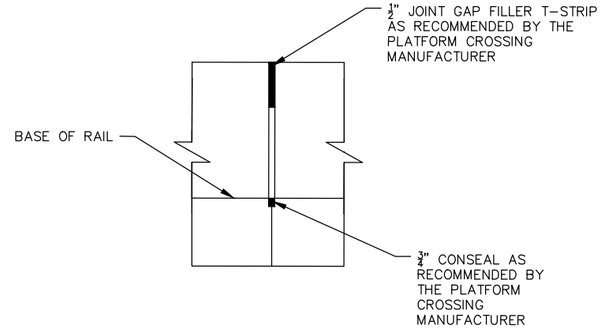


SECTION B–B
N.T.S.

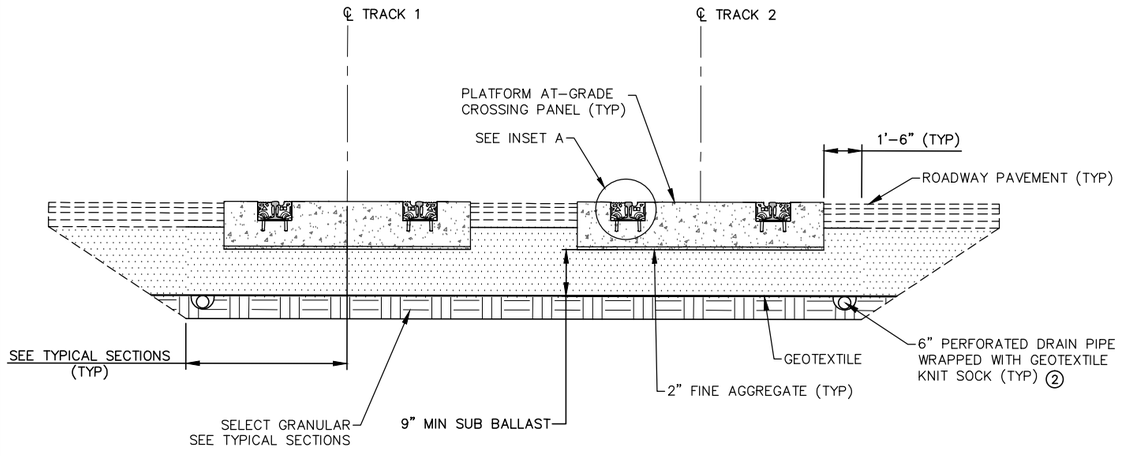
NOTES:

① TIE SPACING AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.

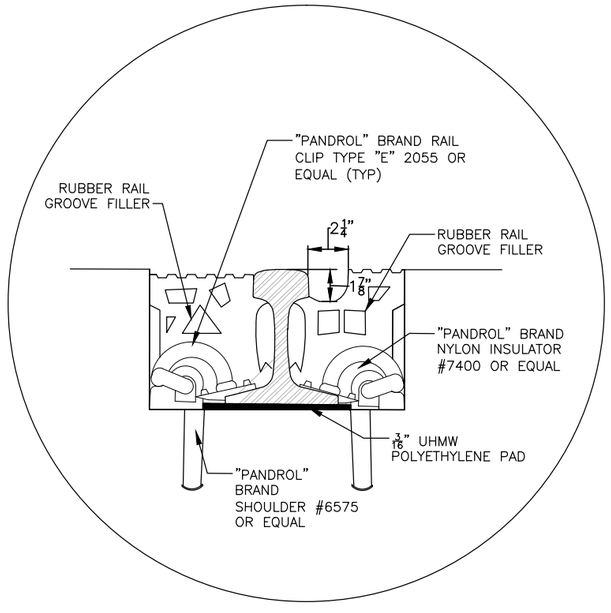
② CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS. PROVIDE SUFFICIENT LENGTH OF PIPE TO MAKE CONNECTION.



INSET B
N.T.S.



DETAIL A
N.T.S.



INSET A
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

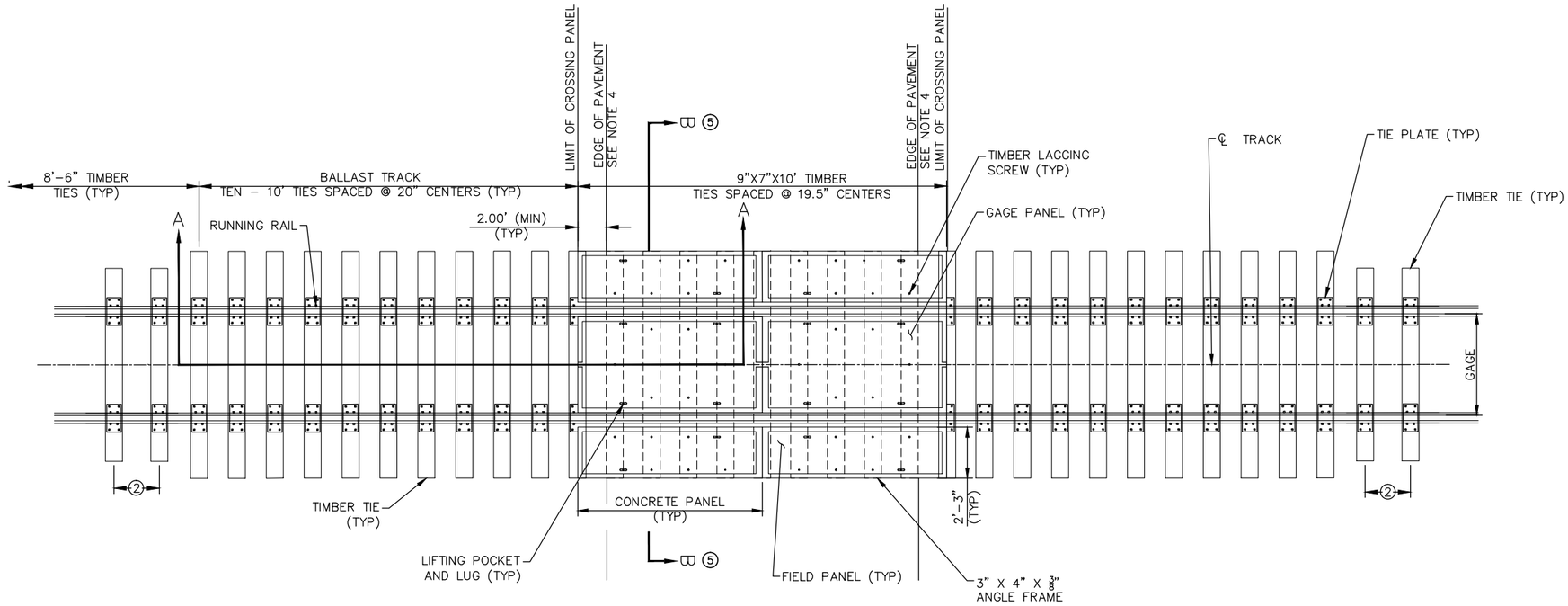
CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - PLATFORM AT-GRADE CROSSING SHEET 2 OF 2

DISCIPLINE: TRACK

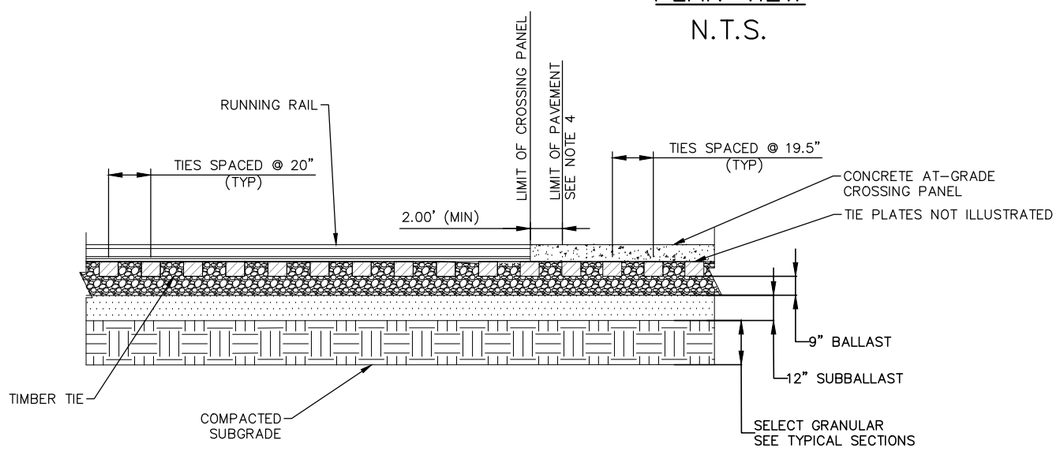
SHEET NAME: 00-TRK-DTL-207

SHEET 25 OF 114

Jan, 18 2016 08:55 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM



PANEL AT-GRADE CROSSING
PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

NOTES:

1. DRAIN TILE NOT SHOWN FOR CLARITY.
2. TIE SPACING AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.
3. FOR ANCHORING PATTERN, SEE SHEET DTL-219.
4. EDGE OF PAVEMENT EXTENDS TO THE OUTSIDE LIMIT OF SIDEWALK. SIDEWALKS ARE INCLUDED IN LIMITS OF AT-GRADE CROSSING. FOR ROAD AND SIDEWALK LIMITS, SEE CIVIL PLANS.
5. SEE SHEET DTL-210 FOR SECTION B-B.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

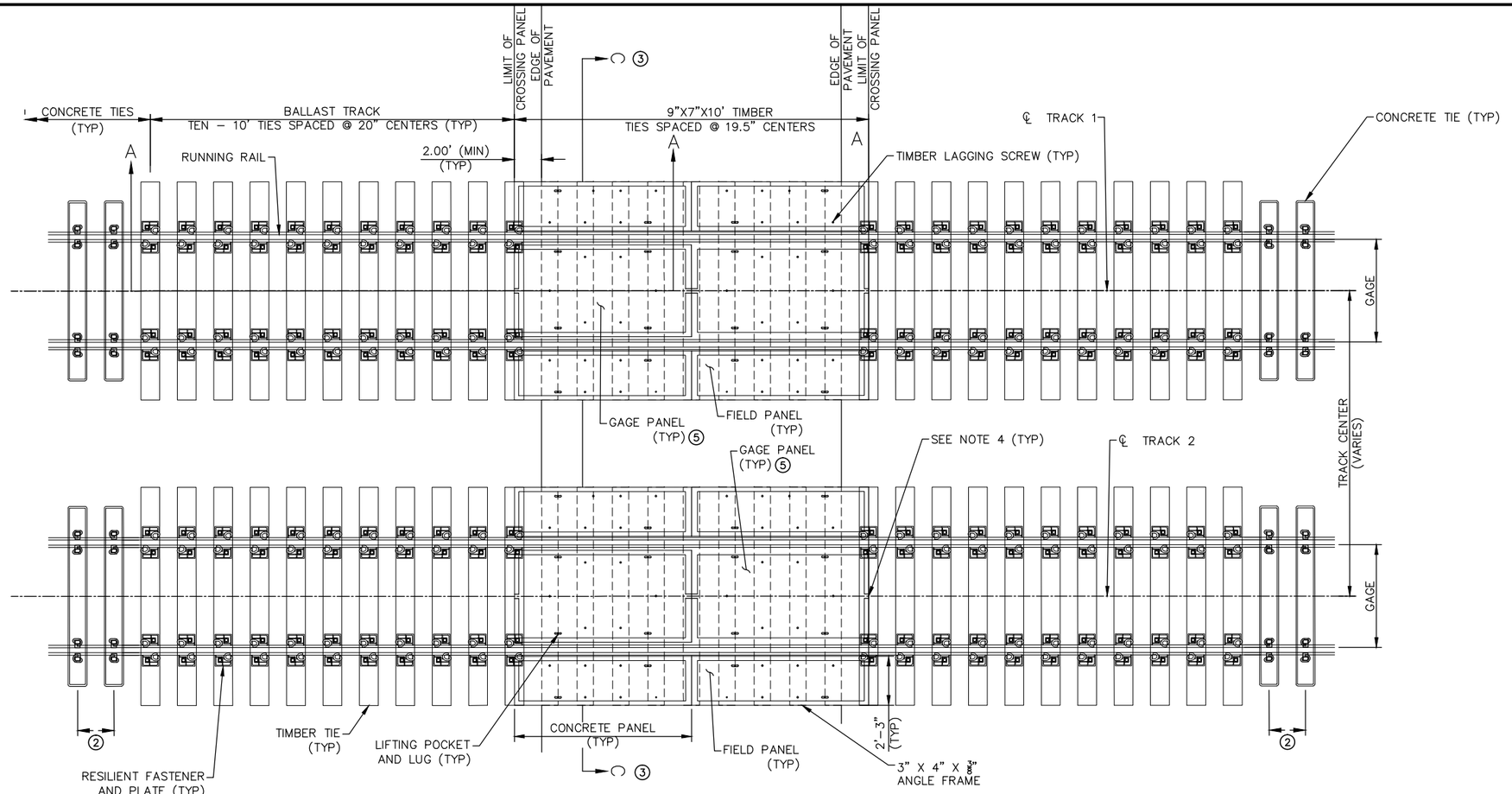
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - PANEL AT-GRADE CROSSING SHEET 1 OF 3

DISCIPLINE: TRACK

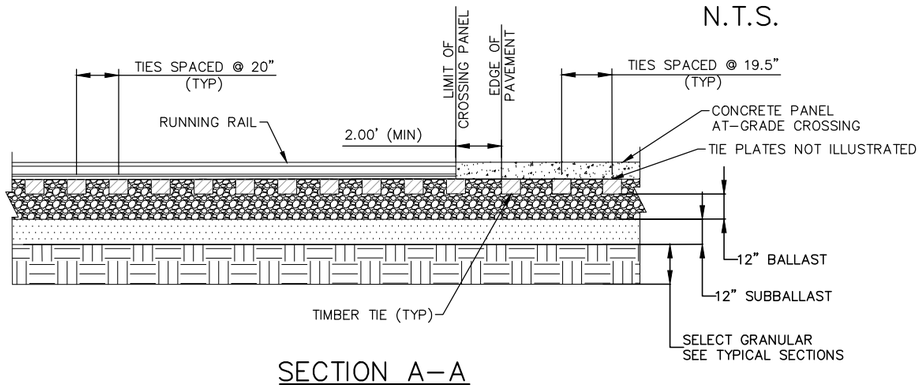
SHEET NAME: 00-TRK-DTL-208

SHEET 26 OF 114



PANEL AT–GRADE CROSSING PLAN VIEW (LRT TRACK)

N.T.S.



SECTION A–A

N.T.S.

NOTES:

1. DRAIN TILE NOT SHOWN FOR CLARITY.
2. TIE SPACING AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.
3. SEE SHEET DTL–210 FOR SECTION C–C.
4. PROVIDE A 3 INCH NOMINAL GAP IN THE ANGLE FRAME AT ABOUT THE CENTER OF GAGE PANEL.
5. GAGE PANEL SHALL BE DESIGNED WITH SHUNT RESISTANT FEATURES.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

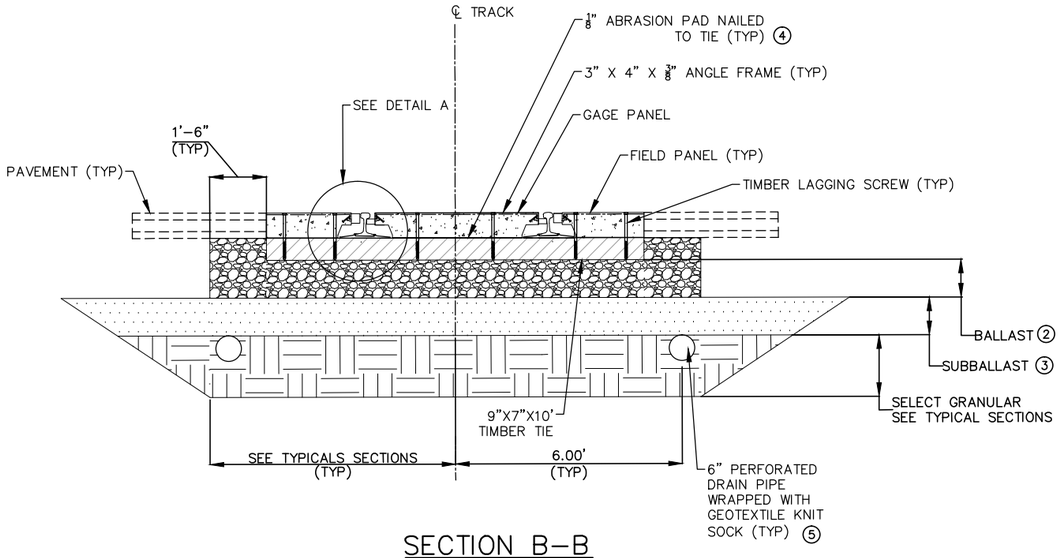
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - PANEL AT-GRADE CROSSING SHEET 2 OF 3

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-209

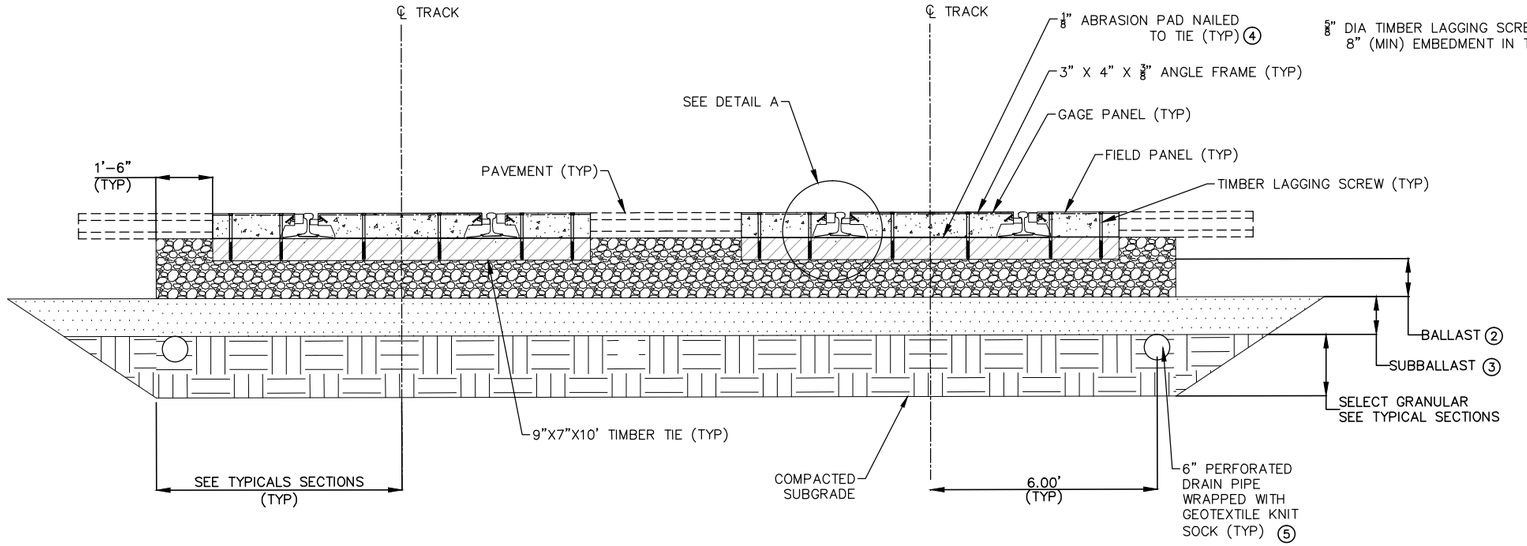
SHEET 27 OF 114



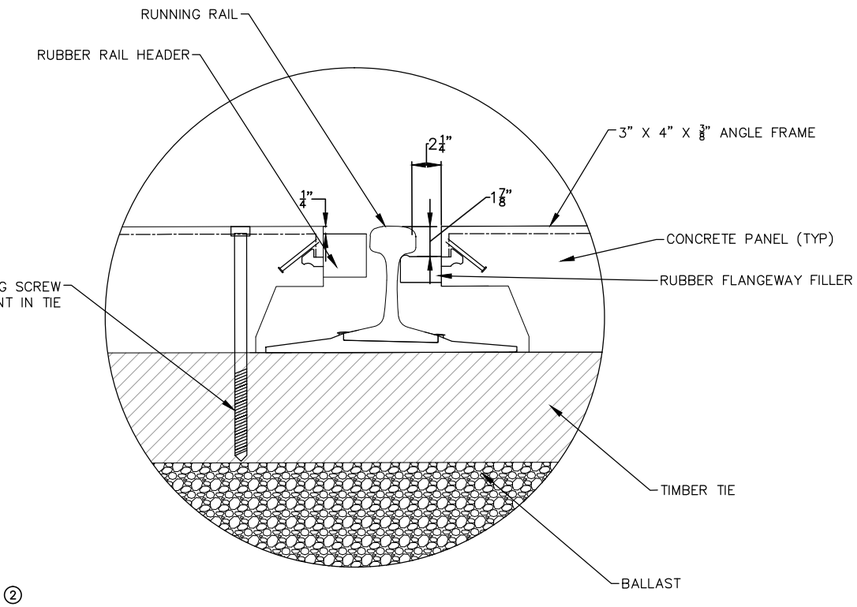
SECTION B–B
N.T.S.

NOTES:

1. ① DRAIN TILE NOT SHOWN FOR CLARITY.
2. ② BALLAST DEPTH 12" FOR LRT AND 9" FOR FREIGHT.
3. ③ SUBBALLAST DEPTH 12" FOR LRT AND 8" FOR FREIGHT.
4. ④ 1/8" ABRASION PAD RECOMMENDED BY CROSSING PANEL FABRICATOR.
5. ⑤ CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS. PROVIDE SUFFICIENT LENGTH OF PIPE TO MAKE CONNECTION.



SECTION C–C
N.T.S.



DETAIL A
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

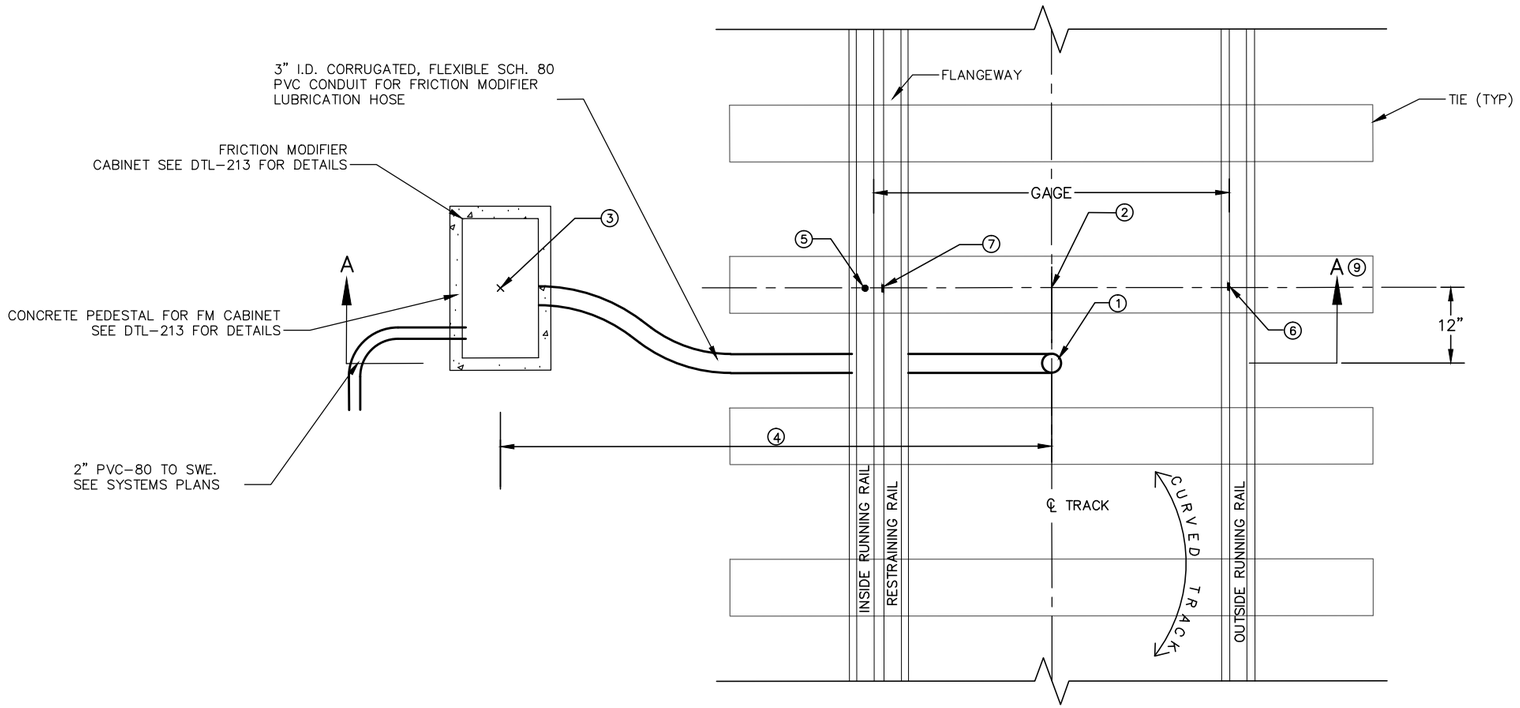
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - PANEL AT-GRADE CROSSING SHEET 3 OF 3

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-210

SHEET 28 OF 114



FRICTION MODIFIER
BALLAST TRACK W/RESTRAINING RAIL
PLAN VIEW
N.T.S.

NOTES:

1. CONDUIT TEE/RISER : PROVIDE 3-EQUAL LENGTH LUBRICATION HOSES FROM CONDUIT TEE/RISER TO EACH OF THE 3 RAILS. LAY LUBRICATION HOSE AT TOP OF BALLAST ELEVATION. PROVIDE 1" DIA. PROTECTIVE HOSE FOR EACH LUBRICATION HOSE BETWEEN CONDUIT TEE AND RAILS, IN ACCORDANCE WITH FRICTION MODIFIER RECOMMENDATIONS.
2. FRICTION MODIFIER RAIL MOUNTED LUBRICATION EQUIPMENT
3. FRICTION MODIFIER CABINET LOCATION
4. FRICTION MODIFIER CABINET OFFSET FROM TRK ℄
5. APPLICATION POINT AT TOP SIDE OF LOW/INSIDE RAIL
6. APPLICATION POINT AT GAGE SIDE OF HIGH/OUTSIDE RAIL
7. APPLICATION POINT AT GAGE SIDE OF RESTRAINING RAIL
8. FRICTION MODIFIER CABINET LOCATION STATIONING DENOTES CENTER OF CABINET.
9. SEE DTL-212 FOR SECTION A-A.
10. FM W3-107 EQUIPMENT CABINET LOCATES APPROX. 5.00' FROM APPLICATION LOCATION.

FRICTION MODIFIER DATA – SUMMARY TABLE

③④ CABINET LOCATION AND OFFSET

TRACK 1			TRACK 2		
STATION	FRICTION MODIFIER NAME	OFFSET	STATION	FRICTION MODIFIER NAME	OFFSET
			2211+81.69	FM W2-201	8.50'
1191+49.86	FM W2-108B	8.50'	2285+71.79	FM W2-208B	8.50'
1423+33.72 ⑩	FM W3-107	8.50'	2421+10.82	FM W3-207	8.50'

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK -
FRICTION MODIFIER SHEET 1 OF 3

DISCIPLINE: TRACK

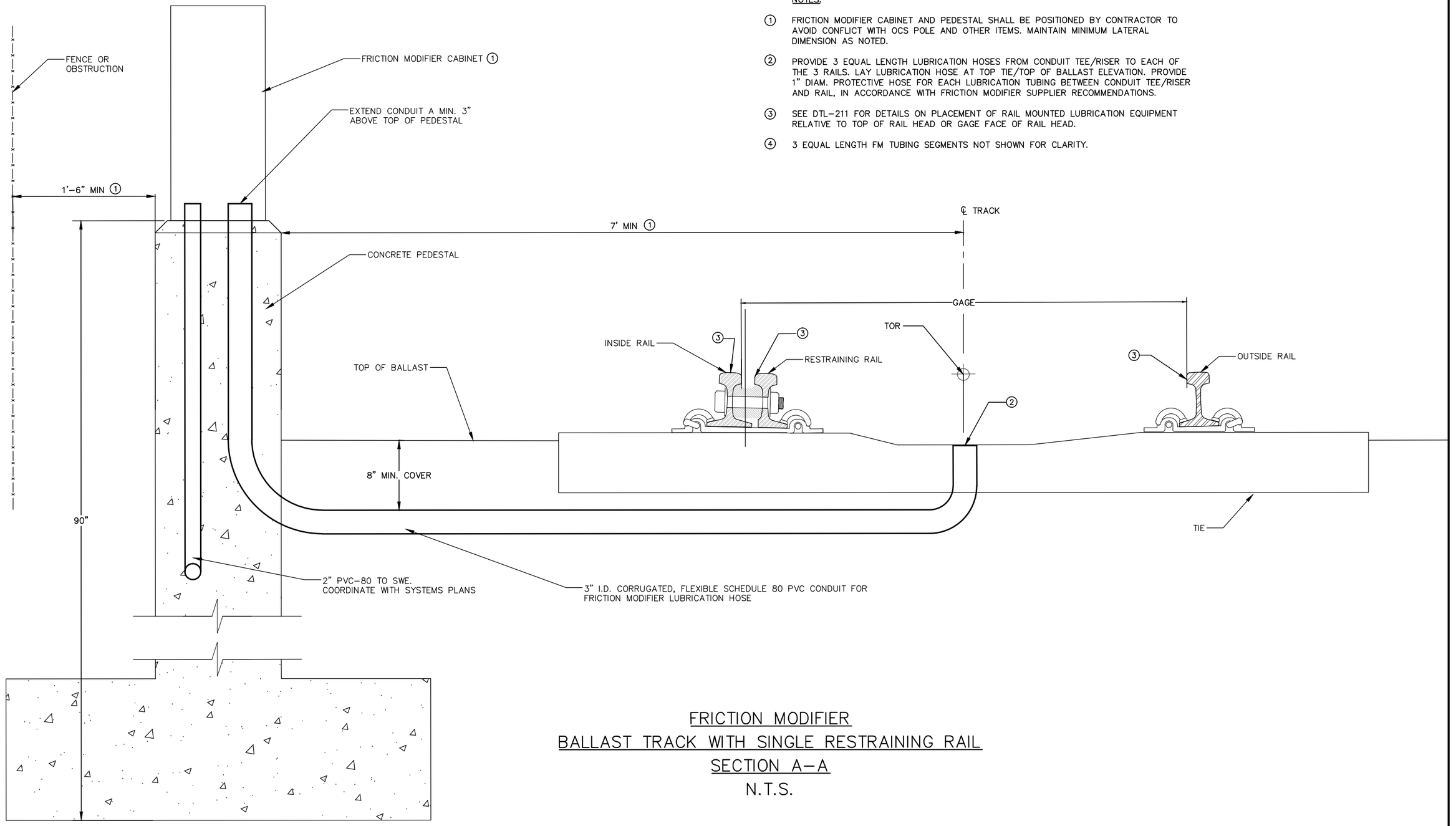
SHEET NAME: 00-TRK-DTL-211

SHEET 29 OF 114

Jan, 18 2016 08:59 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM

NOTES:

1. FRICTION MODIFIER CABINET AND PEDESTAL SHALL BE POSITIONED BY CONTRACTOR TO AVOID CONFLICT WITH OCS POLE AND OTHER ITEMS. MAINTAIN MINIMUM LATERAL DIMENSION AS NOTED.
2. PROVIDE 3 EQUAL LENGTH LUBRICATION HOSES FROM CONDUIT TEE/RISER TO EACH OF THE 3 RAILS. LAY LUBRICATION HOSE AT TOP TIE/TOP OF BALLAST ELEVATION. PROVIDE 1" DIAM. PROTECTIVE HOSE FOR EACH LUBRICATION TUBING BETWEEN CONDUIT TEE/RISER AND RAIL, IN ACCORDANCE WITH FRICTION MODIFIER SUPPLIER RECOMMENDATIONS.
3. SEE DTL-211 FOR DETAILS ON PLACEMENT OF RAIL MOUNTED LUBRICATION EQUIPMENT RELATIVE TO TOP OF RAIL HEAD OR GAGE FACE OF RAIL HEAD.
4. 3 EQUAL LENGTH FM TUBING SEGMENTS NOT SHOWN FOR CLARITY.



FRICTION MODIFIER
BALLAST TRACK WITH SINGLE RESTRAINING RAIL
SECTION A-A
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

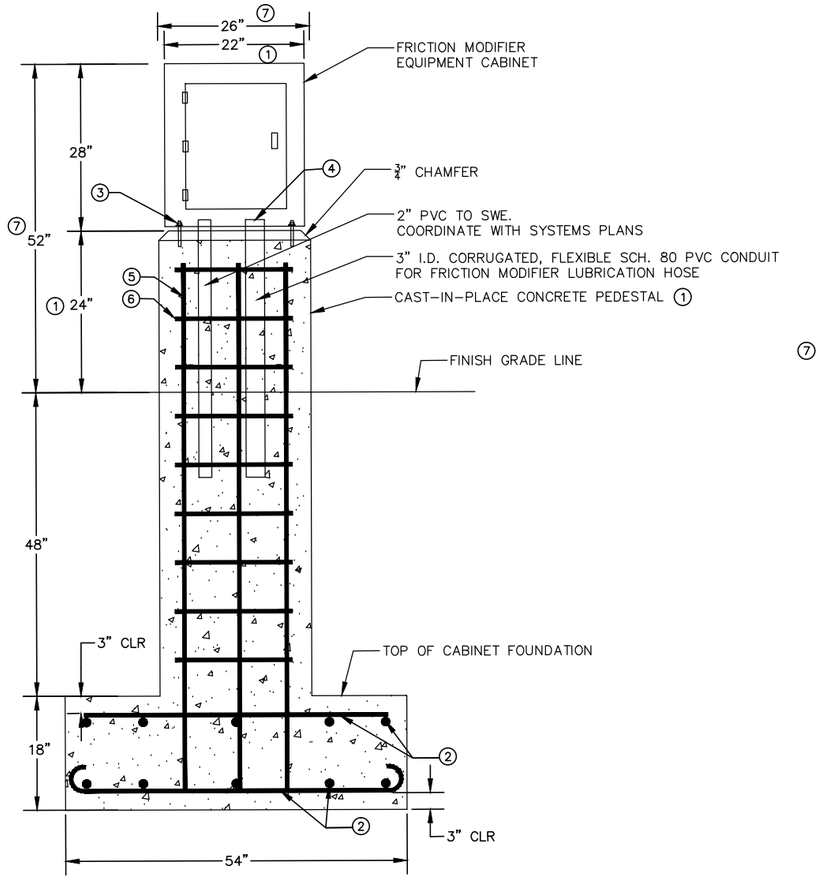
CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK -
FRICTION MODIFIER SHEET 2 OF 3

DISCIPLINE: TRACK

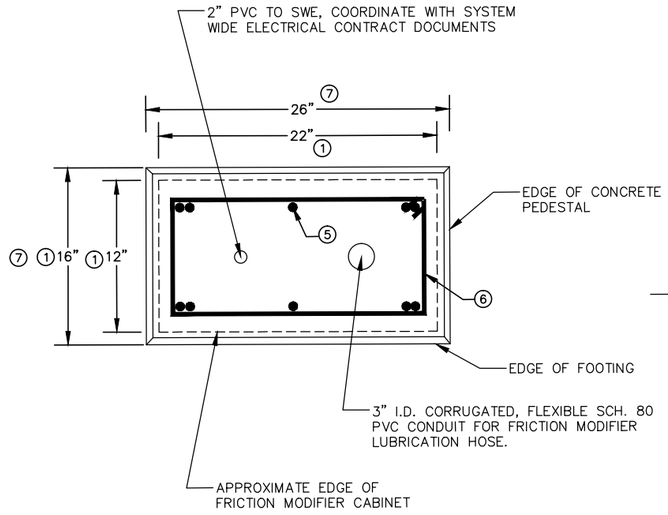
SHEET NAME: 00-TRK-DTL-212

SHEET 30 OF 114

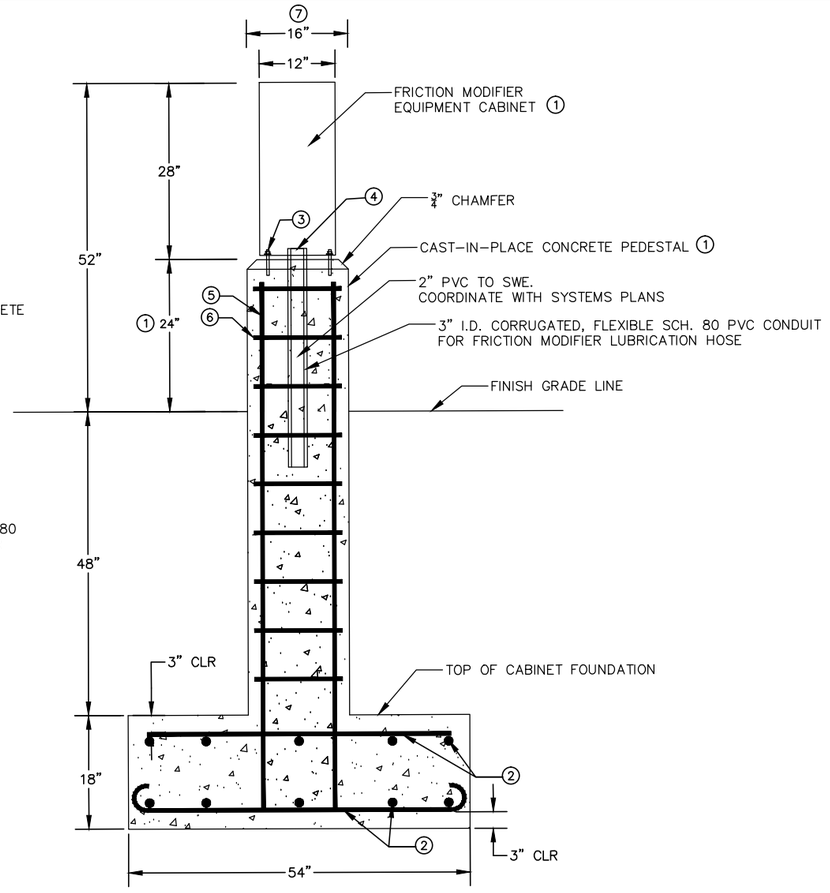
Jan, 18 2016 08:59 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM



FRICTION MODIFIER CABINET AND PEDESTAL
FRONT ELEVATION
N.T.S.



FRICTION MODIFIER CABINET
AND CONCRETE PEDESTAL
PLAN VIEW
N.T.S.



FRICTION MODIFIER CABINET AND PEDESTAL
SIDE ELEVATION
N.T.S.

NOTES:

1. CONCRETE PEDESTAL SHOWN IN THESE PLANS WAS DESIGNED BASED ON FRICTION MODIFIER CABINET BEING 12" W X 22" L X 28" T. PEDESTAL SHALL BE SIZED BY CONTRACTOR TO PROVIDE 1" MINIMUM REVEAL AROUND ALL EDGES OF FRICTION MODIFIER CABINET. CONTRACTOR SHALL VERIFY PEDESTAL SIZE DURING CONSTRUCTION.
2. LONGITUDINAL AND TRANSVERSE REINFORCING FOR PEDESTAL FOOTING TO BE #4 BARS @ 12" SPACING.
3. CONTRACTOR SHALL VERIFY PLACEMENT OF ANCHOR BOLTS DURING CONSTRUCTION.
4. EXTEND CONDUIT A MINIMUM 3" ABOVE TOP OF PEDESTAL.
5. LONGITUDINAL REINFORCING #4 @ 10" O.C. EPOXY COATED.
6. TRANSVERSE REINFORCING #4 @ 10" O.C. TIE WITH 135° HOOKS ON BOTH ENDS, EPOXY COATED.
7. OVERALL DIMENSIONS FOR CONCRETE PEDESTAL AND CABINET SHALL NOT INCREASE WITHOUT APPROVAL FROM THE CAR.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

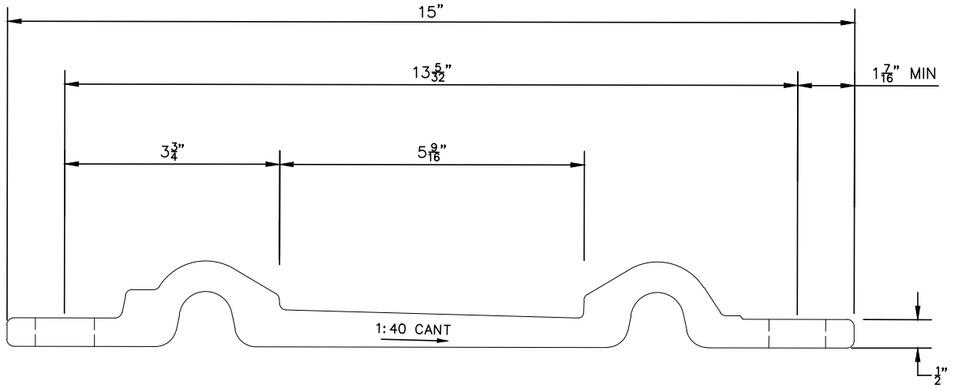
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK -
FRICTION MODIFIER SHEET 3 OF 3

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-213

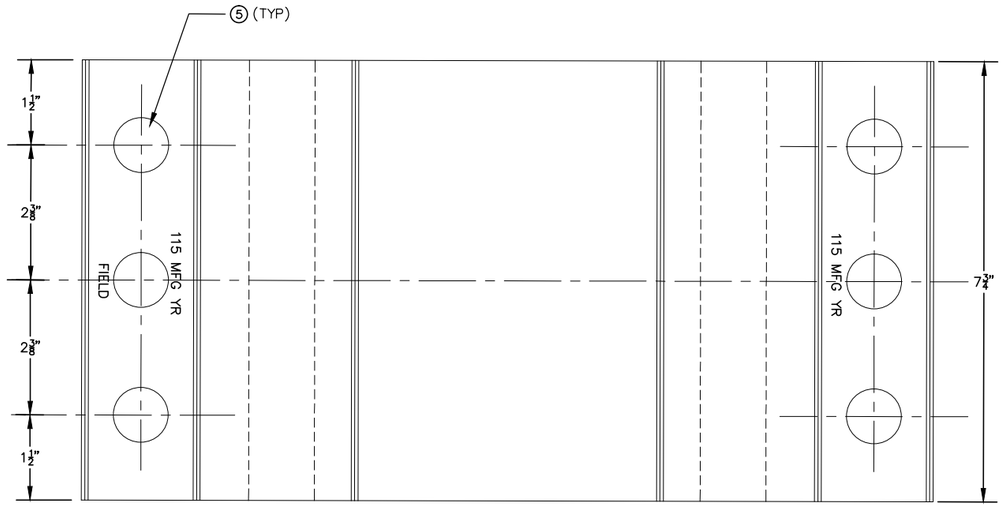
SHEET 31 OF 114



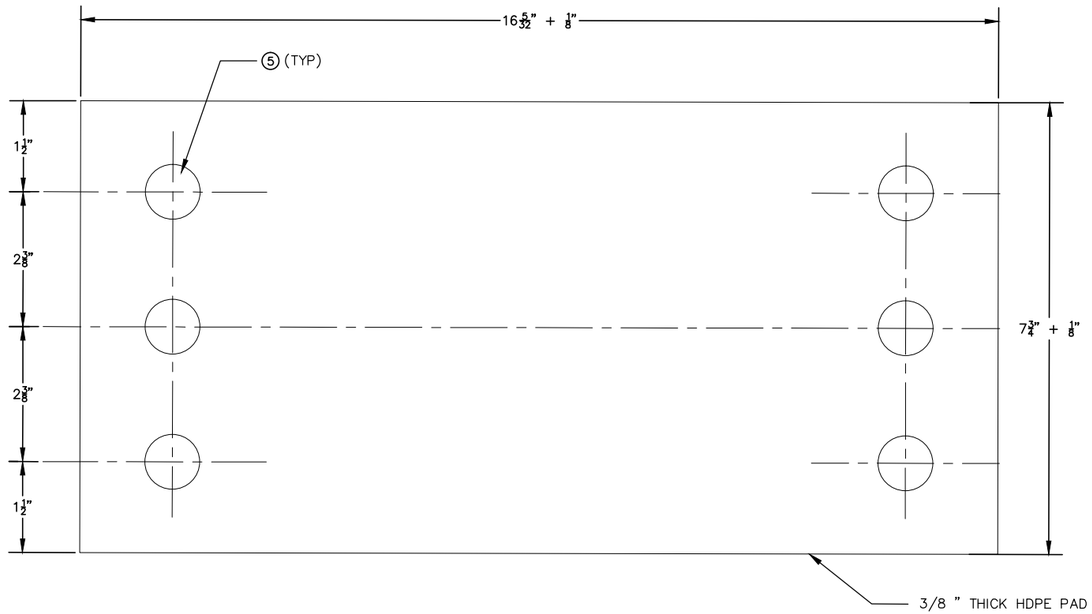
RESILIENT FASTENER TIE PLATE – ELEVATION VIEW
N.T.S.

NOTES:

1. THE PLATES SHALL CONFORM TO CURRENT AREMA SPECIFICATIONS FOR LOW CARBON STEEL TIE PLATES.
2. TIE PLATES SHALL BE BRANDED 115 TO DESIGNATE THE SECTION. THREE LETTERS OR A TRADEMARK TO INDICATE THE PRODUCER AND TWO FIGURES BEING THE LAST TWO DIGITS OF THE YEAR ROLLED.
3. TIE PLATES SHALL ALSO BE BRANDED WITH THE WORD "FIELD" INDICATING FIELD SIDE APPLICATION.
4. APPROXIMATE WEIGHT OF PUNCHED PLATE: FOR 115 LB RE – 23.40 LB.
5. SIZED TO ACCOMMODATE STANDARD SCREW SPIKE AND INSULATED BUSHING.



RESILIENT FASTENER TIE PLATE – PLAN VIEW
N.T.S.



HDPE PAD FOR RESILIENT FASTENER PLATE
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

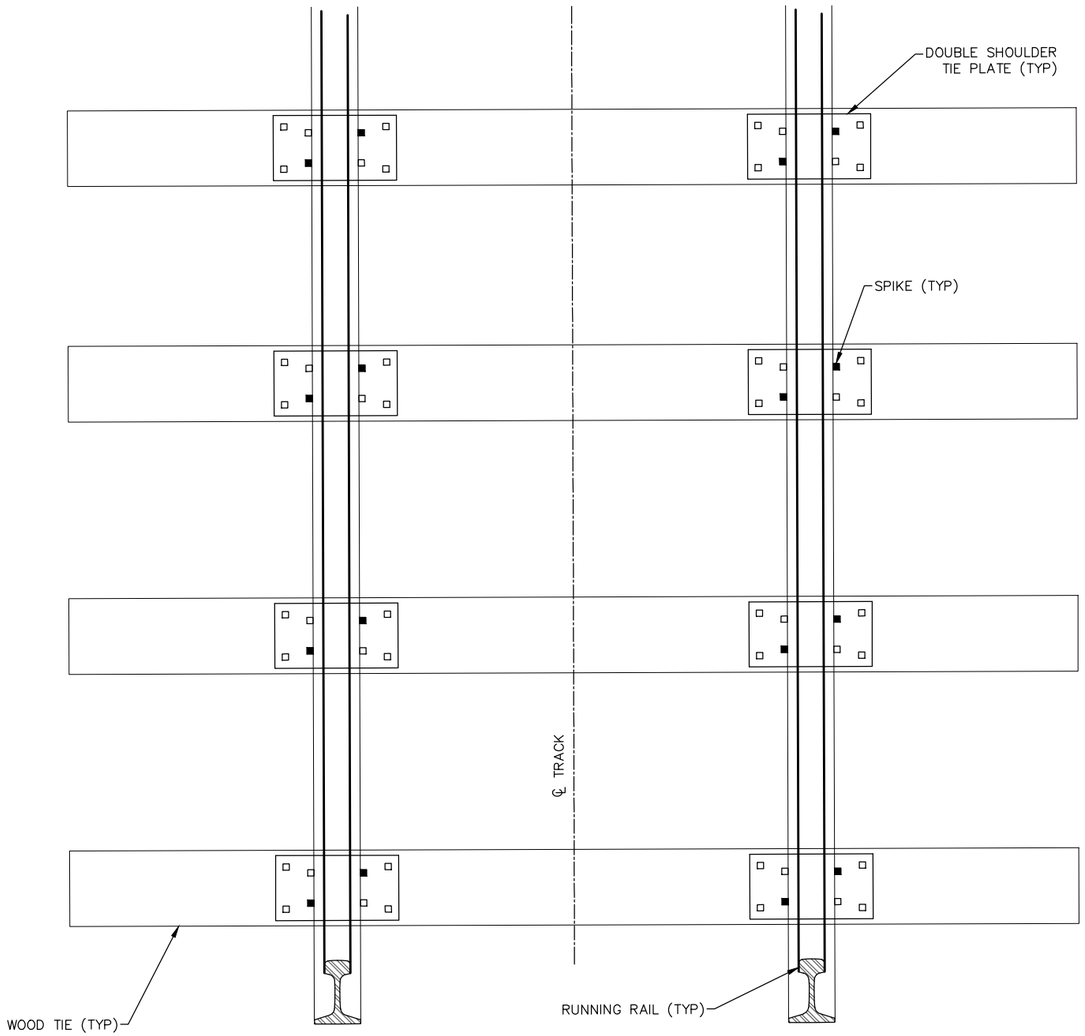
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - TIE PLATE AND PAD FOR RESILITENT FASTENER

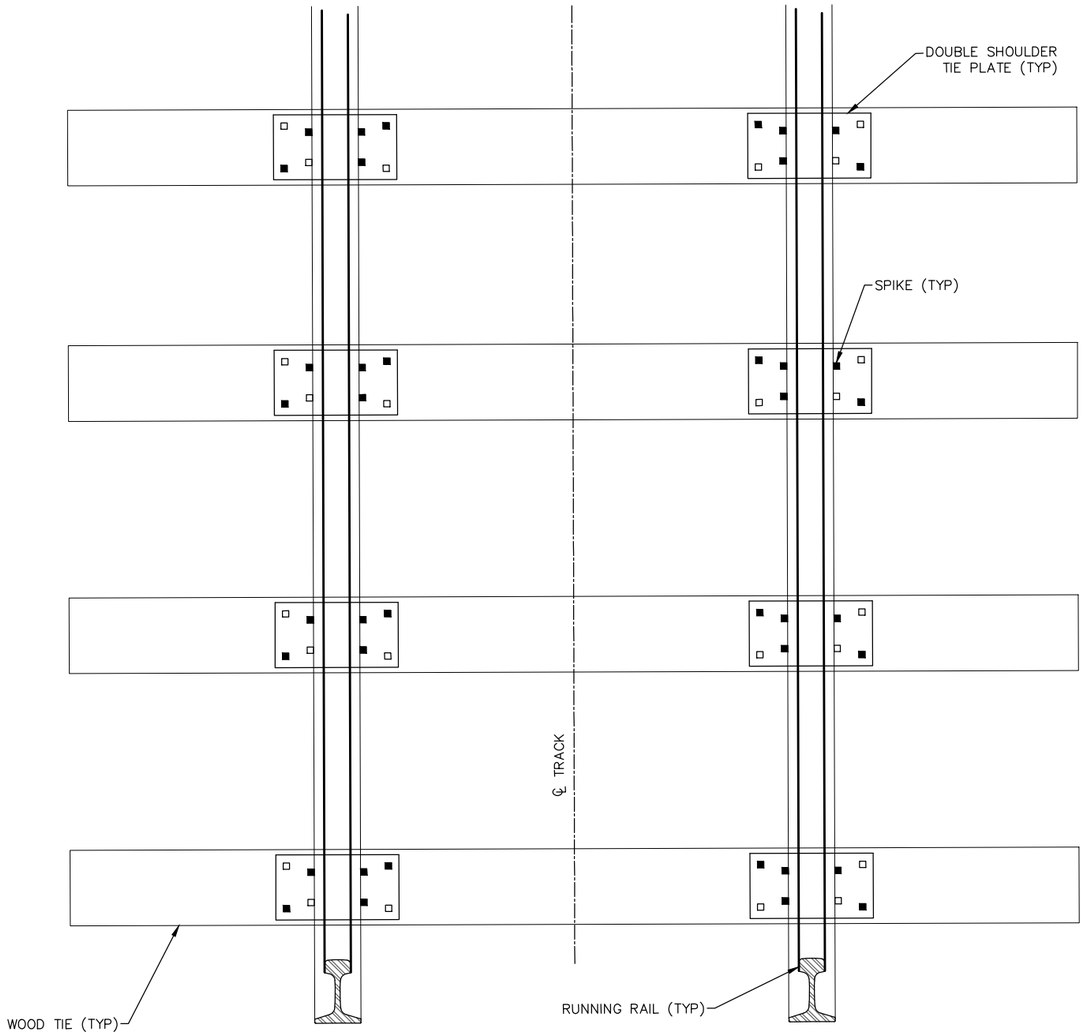
DISCIPLINE: TRACK
SHEET NAME: 00-TRK-DTL-214

SHEET 32 OF 114

Jan, 18 2016 09:01 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM



SPIKING PATTERN (TANGENT TRACK)
N.T.S.



SPIKING PATTERN (CURVED TRACK)
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

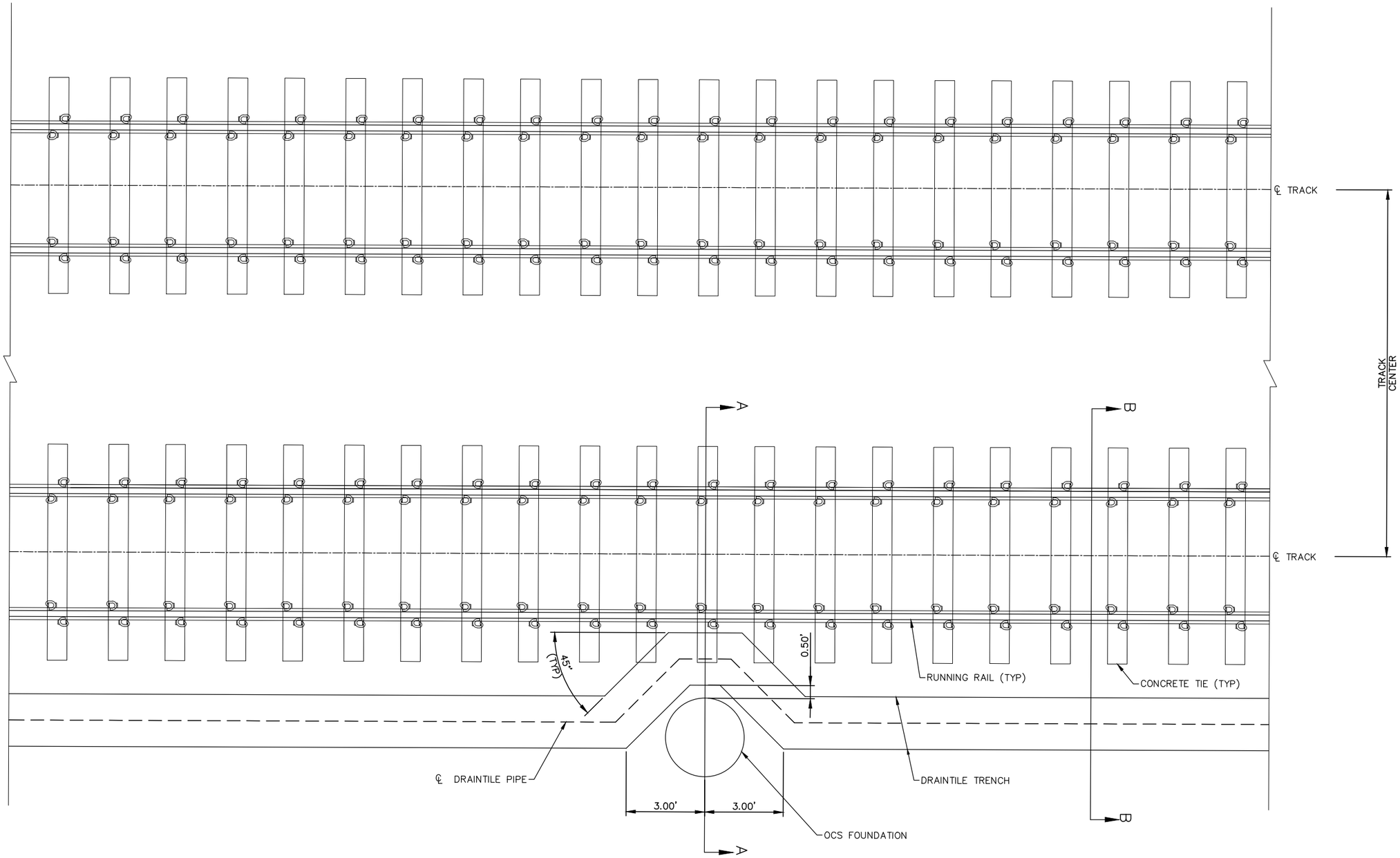
CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - SPIKING PATTERN

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-215

SHEET 33 OF 114

Jan. 18 2016 09:02 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM



PLAN: PERFORATED DRAINTILE AT OCS FOUNDATION

N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

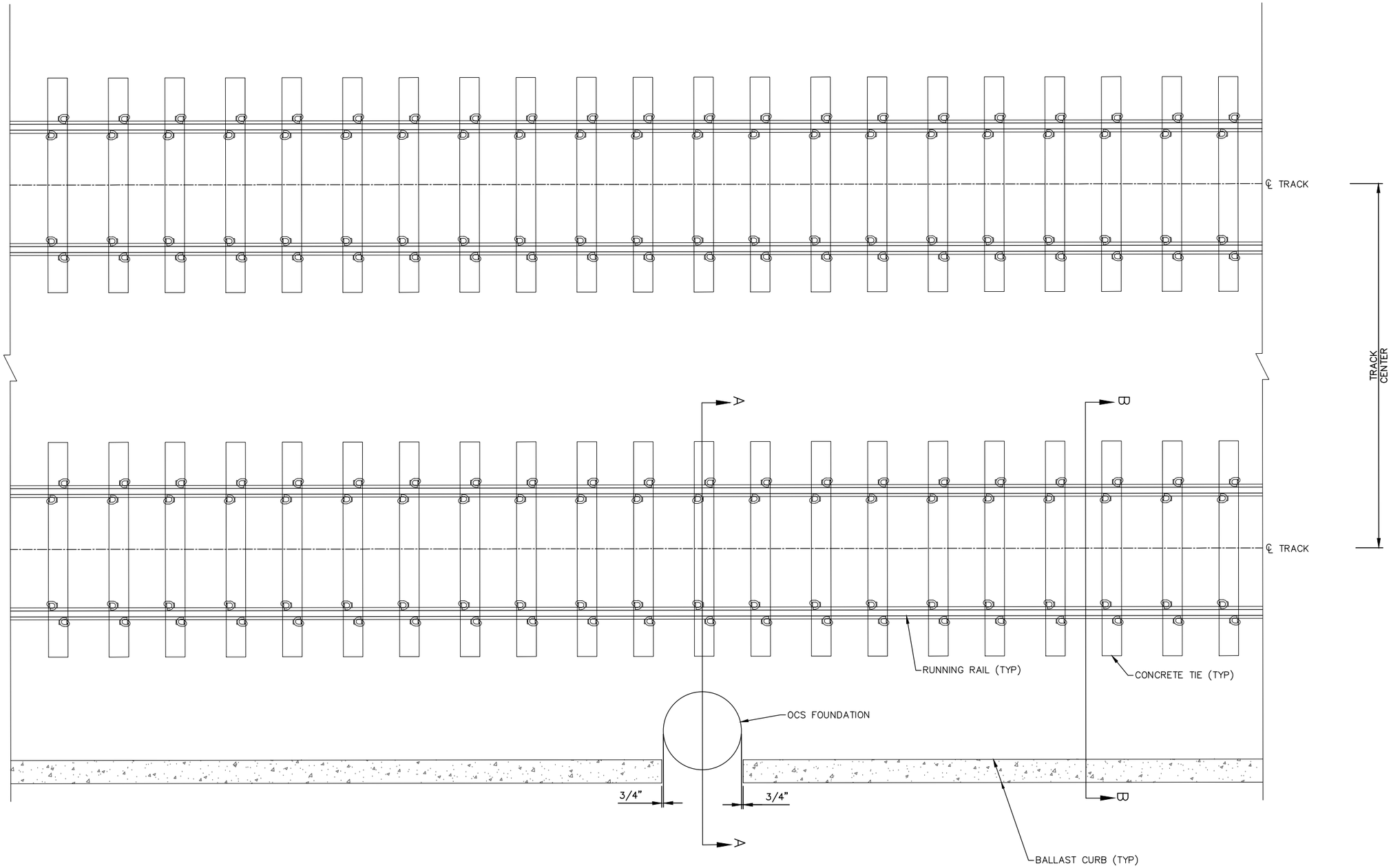
CIVIL - VOLUME 3C
TRACK DETAILS
DRAINTILE AND BALLAST CURB AT OCS FOUNDATION SHEET 1 OF 3

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-216

SHEET 34 OF 114

Jan, 18 2016 09:03 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM



PLAN: BALLAST CURB AT OCS FOUNDATION

N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

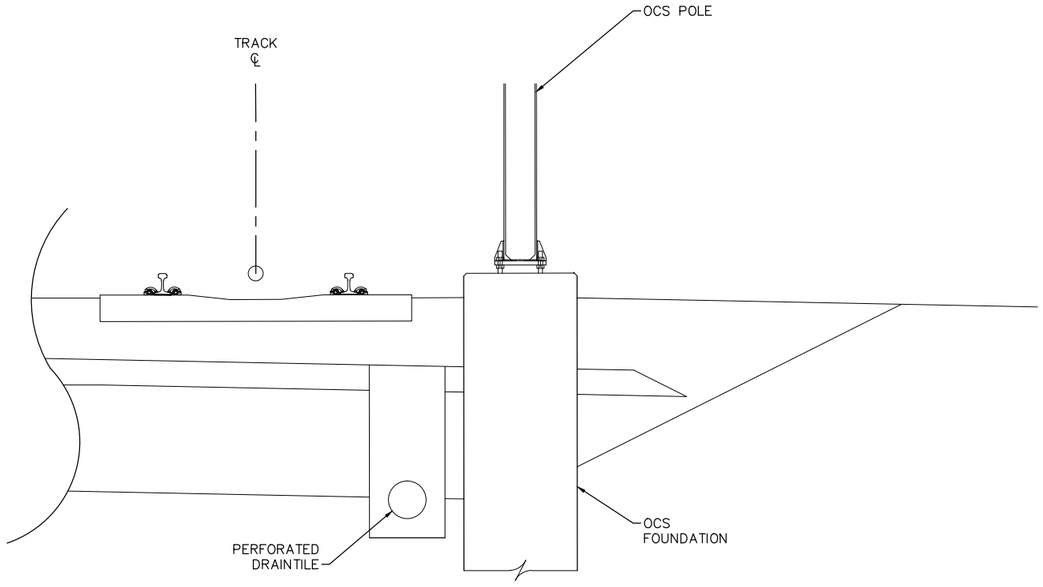
CIVIL - VOLUME 3C
TRACK DETAILS
DRAINTILE AND BALLAST CURB AT OCS FOUNDATION SHEET 2 OF 3

DISCIPLINE: TRACK

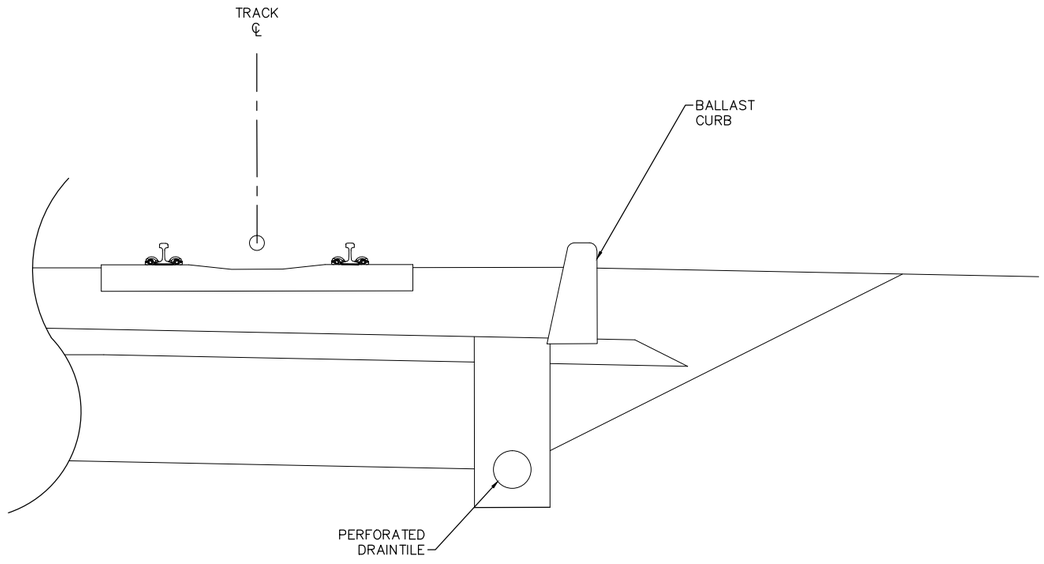
SHEET NAME: 00-TRK-DTL-217

SHEET 35 OF 114

Jan, 18 2016 09:04 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM



SECTION A–A
N.T.S.



SECTION B–B
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST
Green Line LRT Extension

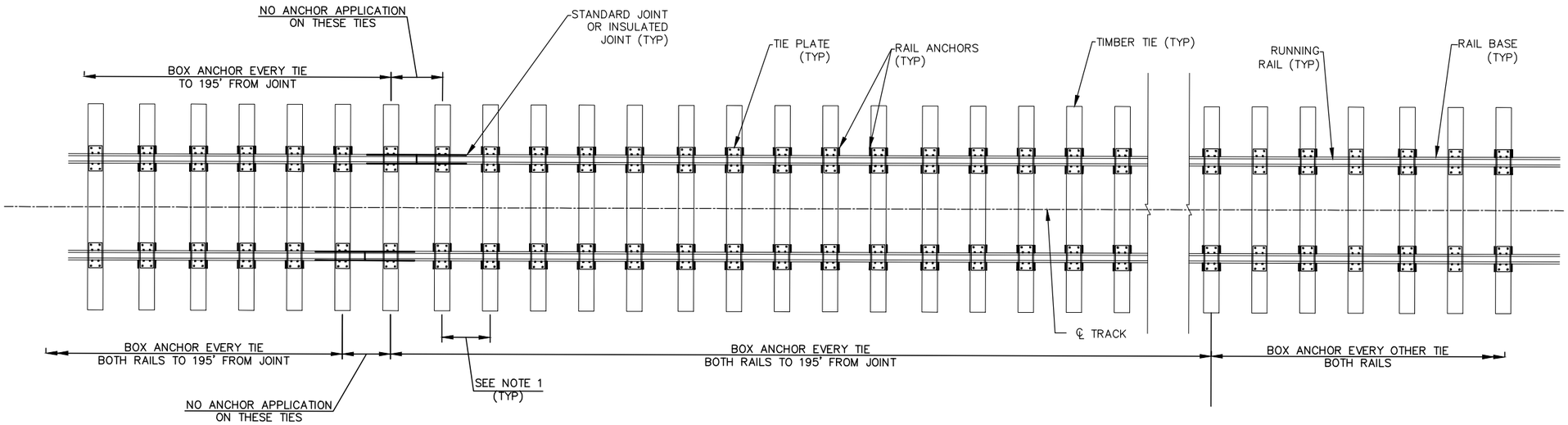
CIVIL - VOLUME 3C
TRACK DETAILS
DRAINTILE AND BALLAST CURB AT OCS FOUNDATION SHEET 3 OF 3

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-218

SHEET 36 OF 114

Jan, 18 2016 09:05 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM

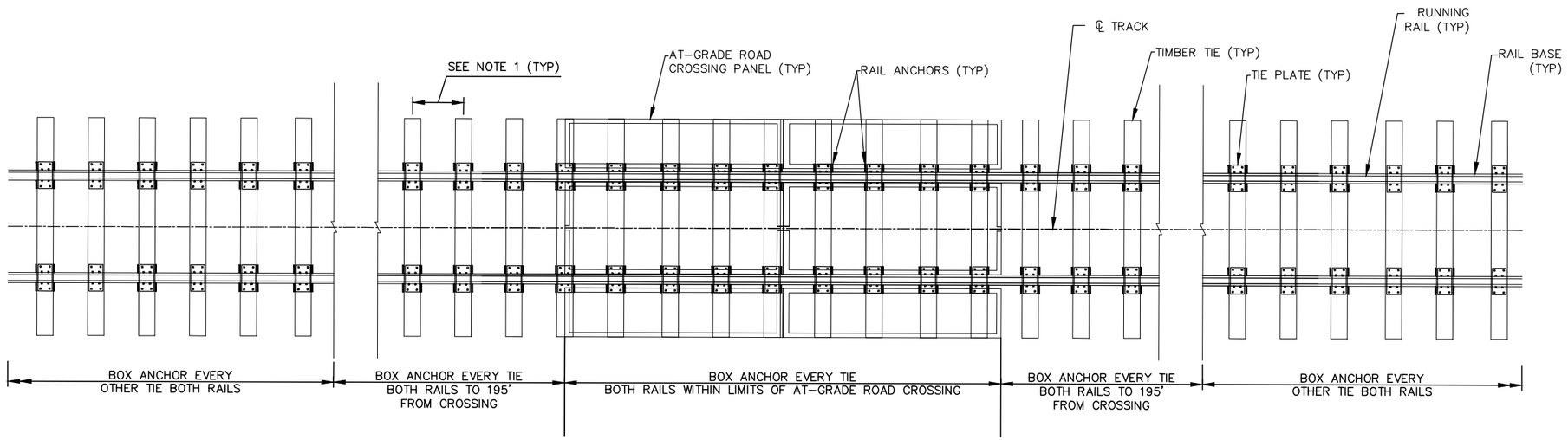


ANCHOR PATTERN (TANGENT TRACK)

N.T.S.

NOTES:

1. TIE SPACING AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.



ANCHOR PATTERN (PANEL AT-GRADE CROSSING)

N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - ANCHOR PATTERN

DISCIPLINE: TRACK

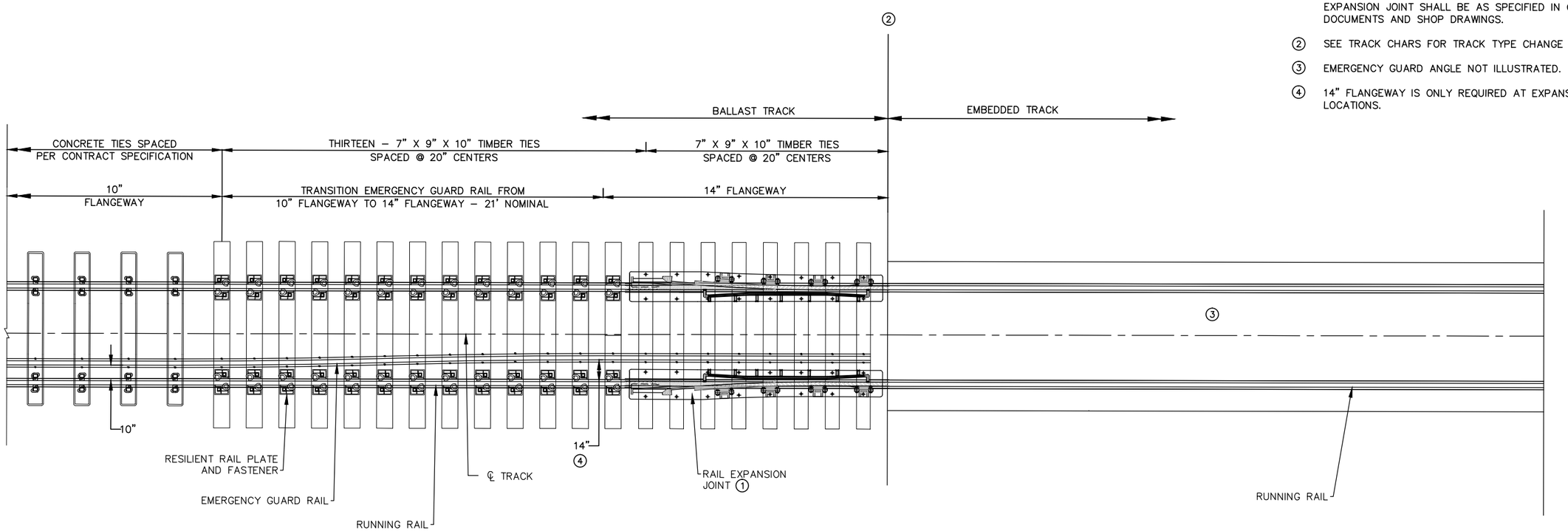
SHEET NAME: 00-TRK-DTL-219

SHEET 37 OF 114

Jan, 18 2016 09:06 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM

NOTES:

1. CONLEY TYPE RAIL EXPANSION JOINT SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. FINAL CONFIGURATION OF RAIL EXPANSION JOINT SHALL BE AS SPECIFIED IN CONTRACT DOCUMENTS AND SHOP DRAWINGS.
2. SEE TRACK CHARS FOR TRACK TYPE CHANGE LOCATIONS.
3. EMERGENCY GUARD ANGLE NOT ILLUSTRATED.
4. 14" FLANGEWAY IS ONLY REQUIRED AT EXPANSION JOINT LOCATIONS.



EMERGENCY GUARD RAIL TRANSITION AT RAIL EXPANSION JOINT

N.T.S

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

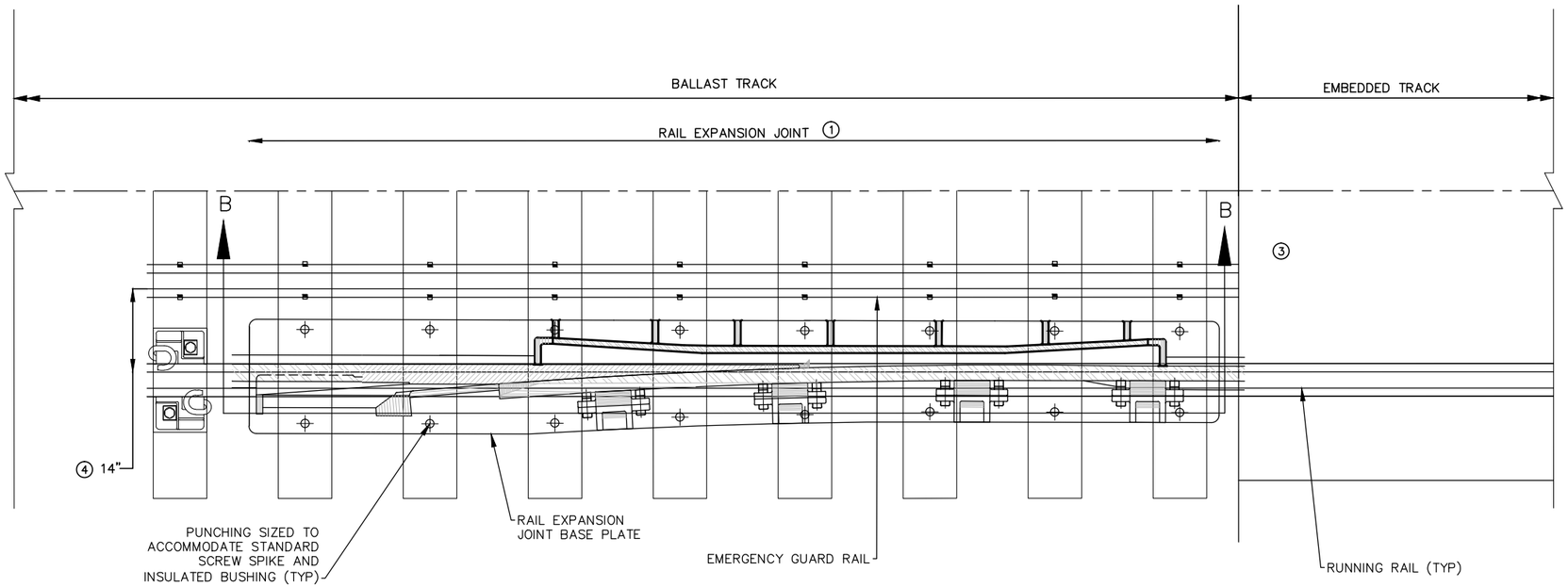
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - RAIL EXPANSION JOINT W/EGR SHEET 1 OF 2

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-220

SHEET 38 OF 114



EMERGENCY GUARD RAIL TRANSITION AT RAIL EXPANSION JOINT
N.T.S

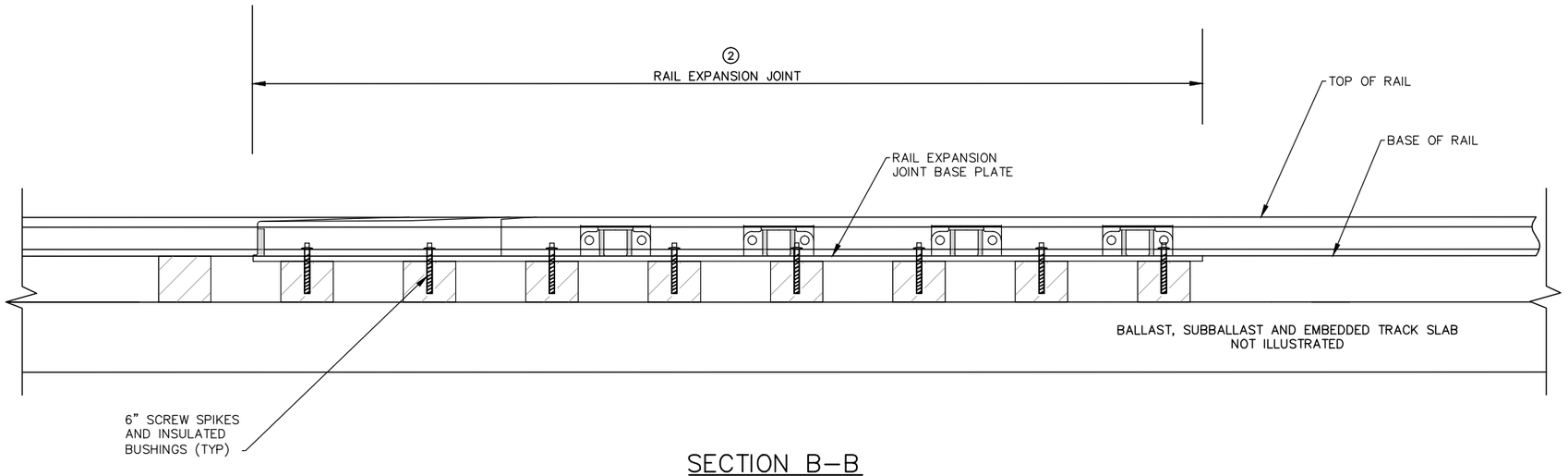
NOTES:

① RIGHT HAND JOINT SHOWN. MIRROR FOR LEFT HAND JOINT.

② CONLEY TYPE RAIL EXPANSION JOINT SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. FINAL CONFIGURATION OF RAIL EXPANSION JOINT SHALL BE AS PER CONTRACT SPECIFICATIONS AND PROVIDED SHOP DRAWINGS.

③ EMERGENCY GUARD ANGLE NOT ILLUSTRATED.

④ 14" FLANGEWAY IS ONLY REQUIRED AT EXPANSION JOINT LOCATIONS.



SECTION B–B
N.T.S

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - RAIL EXPANSION JOINT W/EGR SHEET 2 OF 2

DISCIPLINE: TRACK

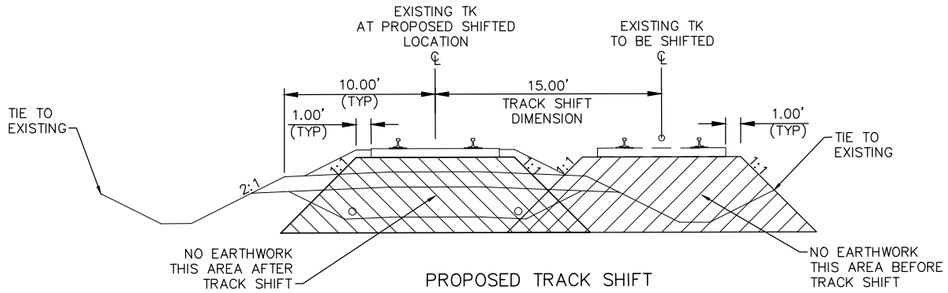
SHEET NAME: 00-TRK-DTL-221

SHEET 39 OF 114

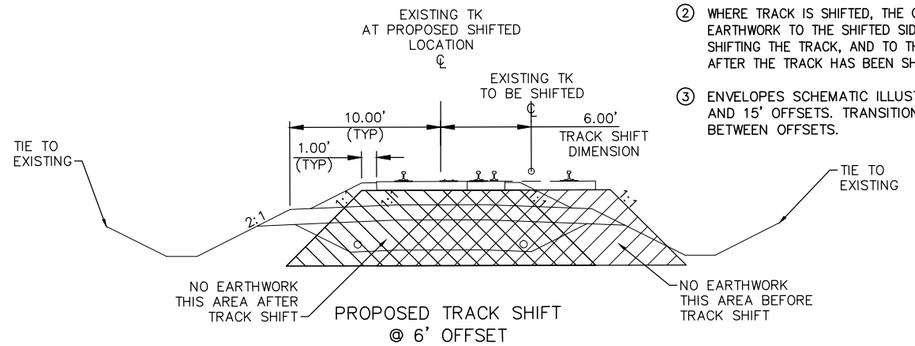
Jan. 18 2016 09:07 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM

NOTES:

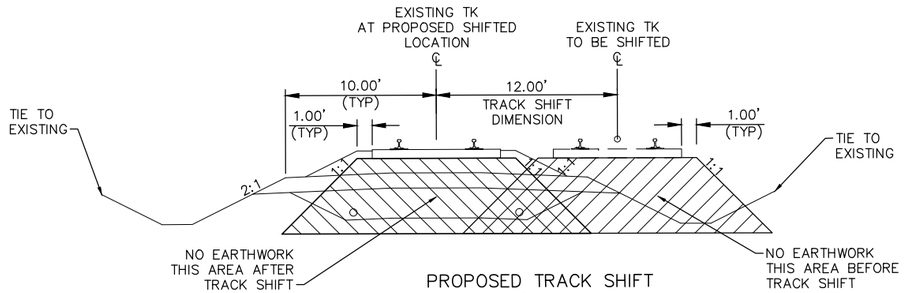
1. THIS SHEET IDENTIFIES RESTRICTIONS FOR PERFORMING EARTHWORK AT LOCATIONS WHERE THE PROPOSED ALIGNMENT IS OFFSET FROM 0' TO 15' FROM THE EXISTING TRACK.
2. WHERE TRACK IS SHIFTED, THE CONTRACTOR WILL PERFORM ALL EARTHWORK TO THE SHIFTED SIDE OF THE TRACK PRIOR TO SHIFTING THE TRACK, AND TO THE EXISTING SIDE OF THE TRACK AFTER THE TRACK HAS BEEN SHIFTED.
3. ENVELOPES SCHEMATIC ILLUSTRATES FOR 0', 3', 6', 9', 12' AND 15' OFFSETS. TRANSITION THE ENVELOPE LINEARLY BETWEEN OFFSETS.



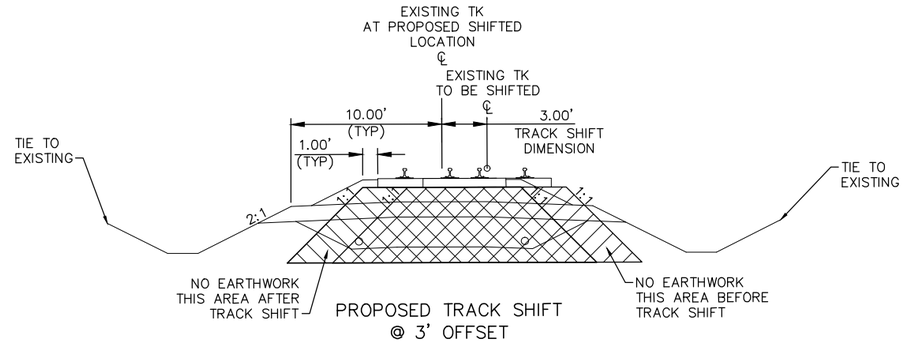
PROPOSED TRACK SHIFT
@ 15' OFFSET



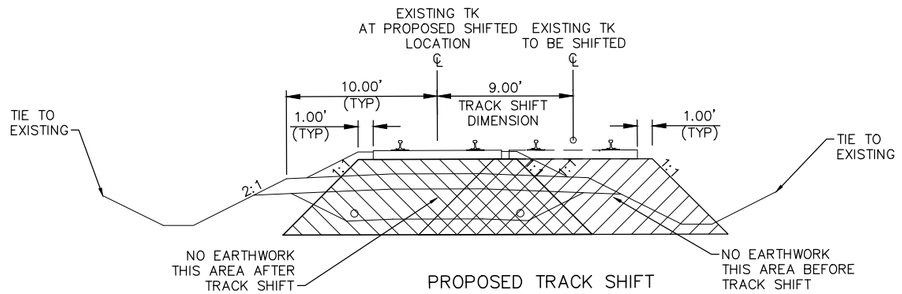
PROPOSED TRACK SHIFT
@ 6' OFFSET



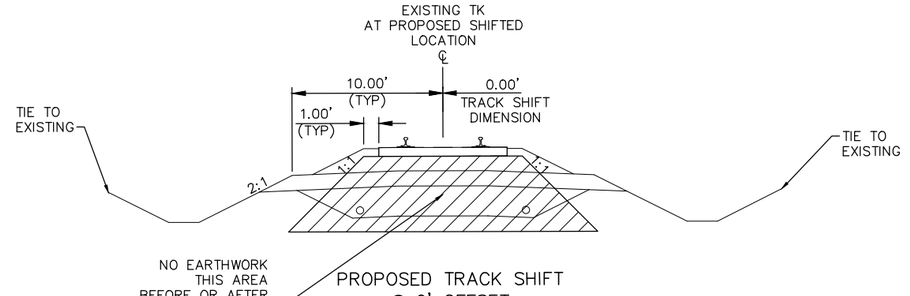
PROPOSED TRACK SHIFT
@ 12' OFFSET



PROPOSED TRACK SHIFT
@ 3' OFFSET



PROPOSED TRACK SHIFT
@ 9' OFFSET



PROPOSED TRACK SHIFT
@ 0' OFFSET

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST
Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
BALLASTED FREIGHT TRACK SHIFT SCHEMATIC

DISCIPLINE: TRACK

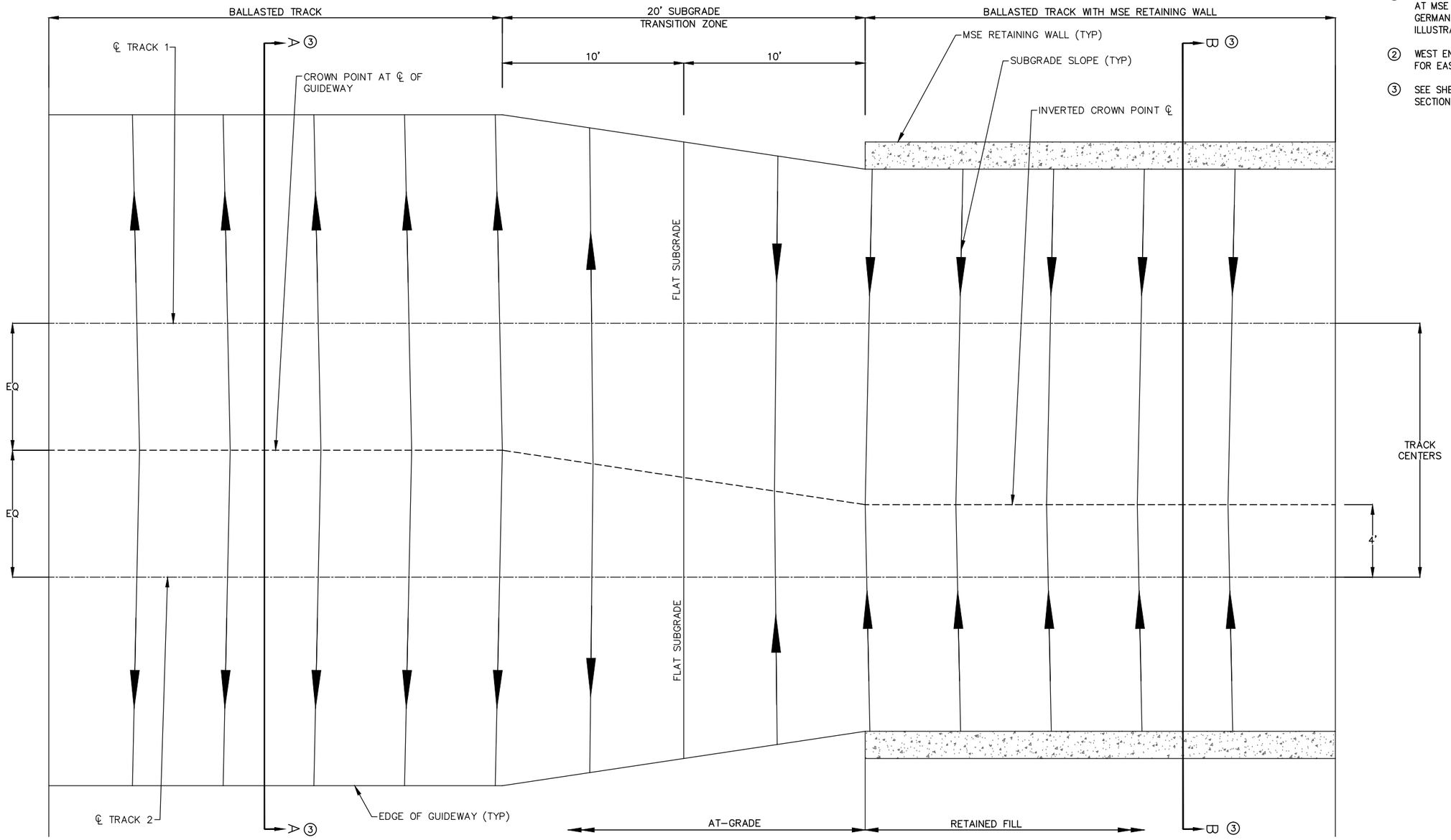
SHEET NAME: 00-TRK-DTL-222

SHEET 40 OF 114

Jan, 18 2016 09:08 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM

NOTES;

1. THIS DETAIL ILLUSTRATES SUBGRADE TRANSITION AT MSE RETAINING WALLS. VARIOUS DETAILS NOT GERMANE TO SUBGRADE TRANSITION NOT ILLUSTRATED.
2. WEST END MSE WALL TRANSITION ILLUSTRATED. FOR EAST END, MIRROR ABOUT THE Y AXIS.
3. SEE SHEET DTL-224 FOR SECTION A-A AND SECTION B-B.



SUBGRADE TRANSITION AT MSE RETAINING WALL – PLAN

N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

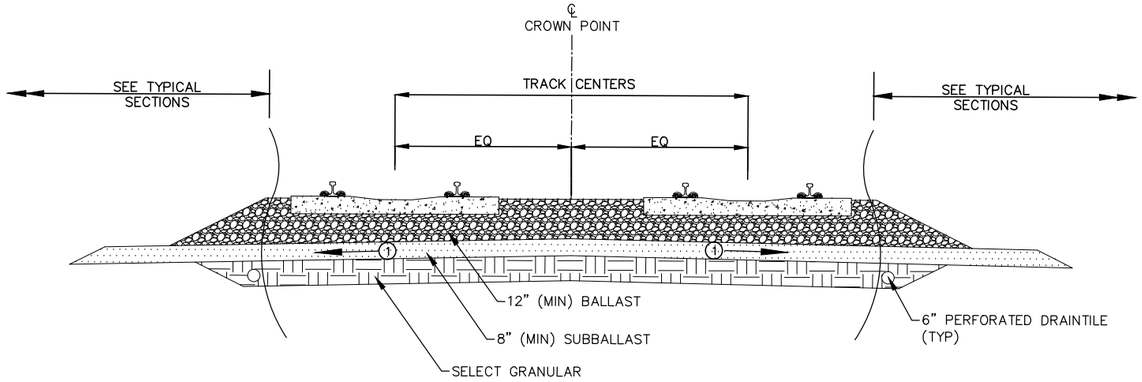
CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - SUBGRADE TRANSITION AT MSE WALL SHEET 1 OF 2

DISCIPLINE: TRACK

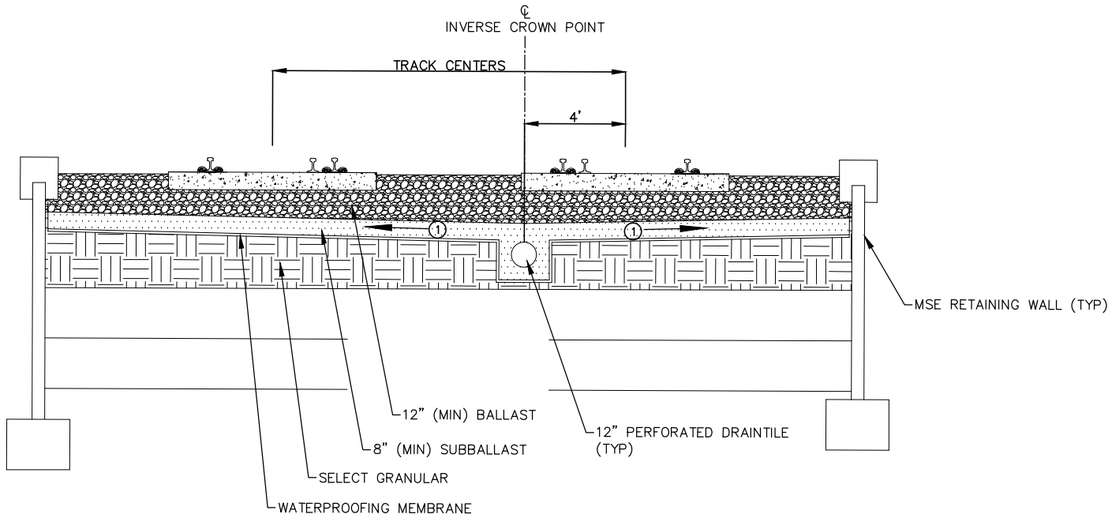
SHEET NAME: 00-TRK-DTL-223

SHEET 41 OF 114

Jan, 18 2016 09:09 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM



SECTION A–A
N.T.S.



SECTION B–B
N.T.S.

NOTES:

1. SEE TYPICAL SECTIONS FOR CROSS SLOPE.

Jan, 18 2016 09:10 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TIE AND BALLAST TRACK - SUBGRADE TRANSITION AT MSE WALL SHEET 2 OF 2

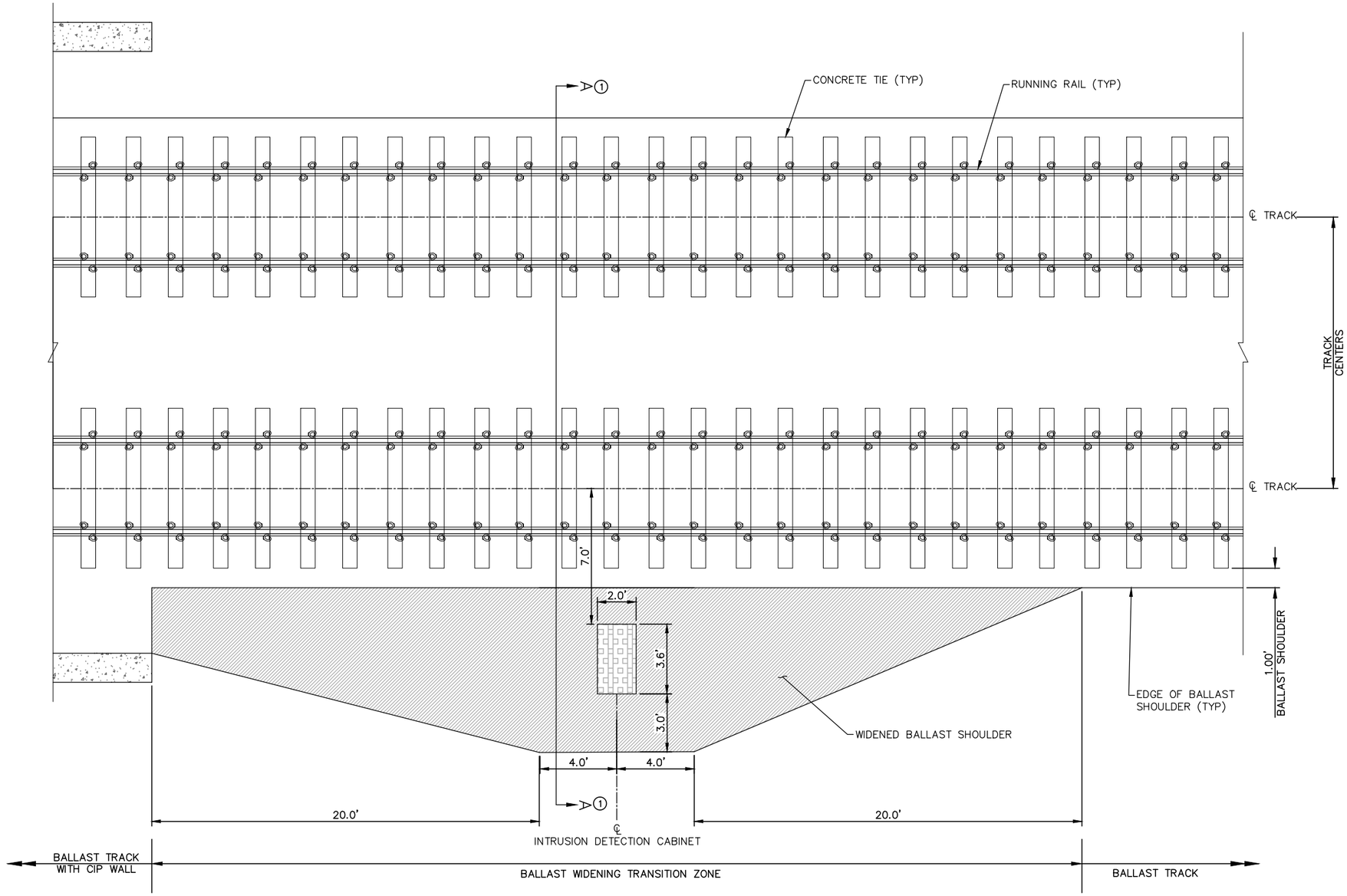
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-224

SHEET 42 OF 114

NOTES:

1. SEE DTL-217 FOR SECTION A-A.



BALLAST WIDENING AT INTRUSION DETECTION CABINET – PLAN

N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
BALLAST TRACK WIDENING
SHEET 1 OF 2

DISCIPLINE: TRACK

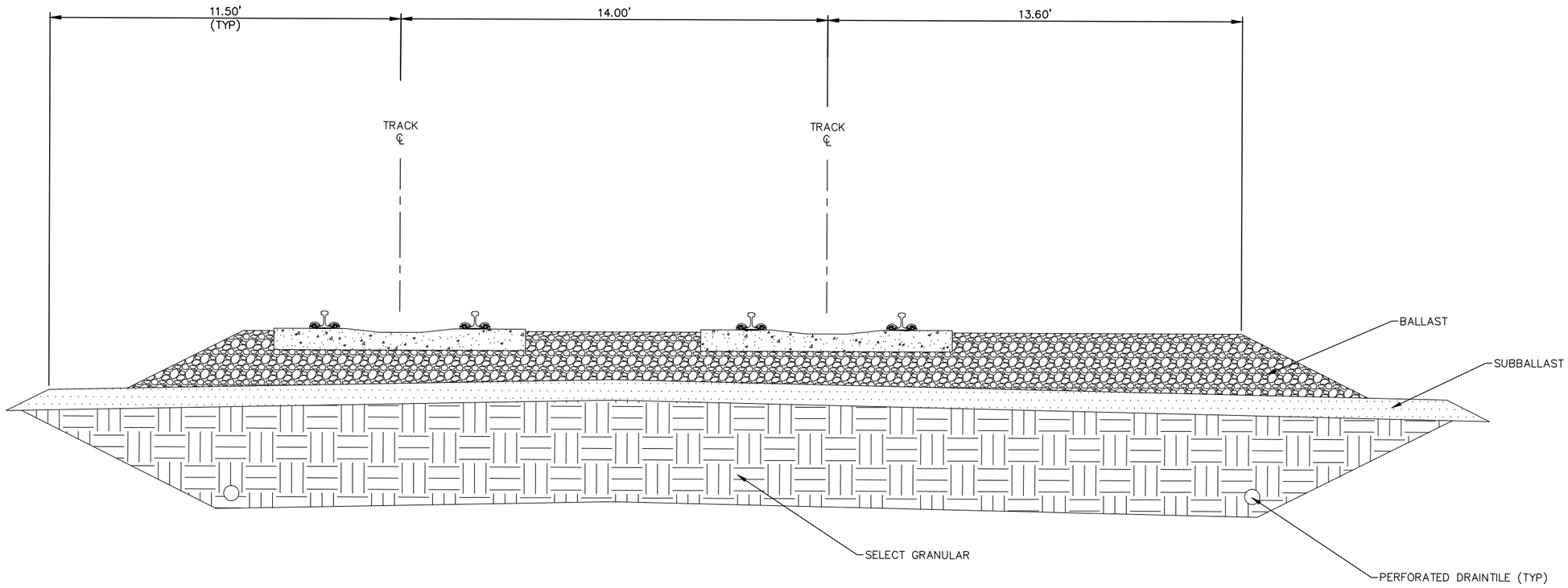
SHEET NAME: 00-TRK-DTL-225

SHEET 43 OF 114

Jan, 18 2016 09:11 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM

NOTES:

1. SEE TYPICAL SECTIONS FOR CROSS SLOPE AND SAND LAYER DEPTH.



SECTION A–A
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

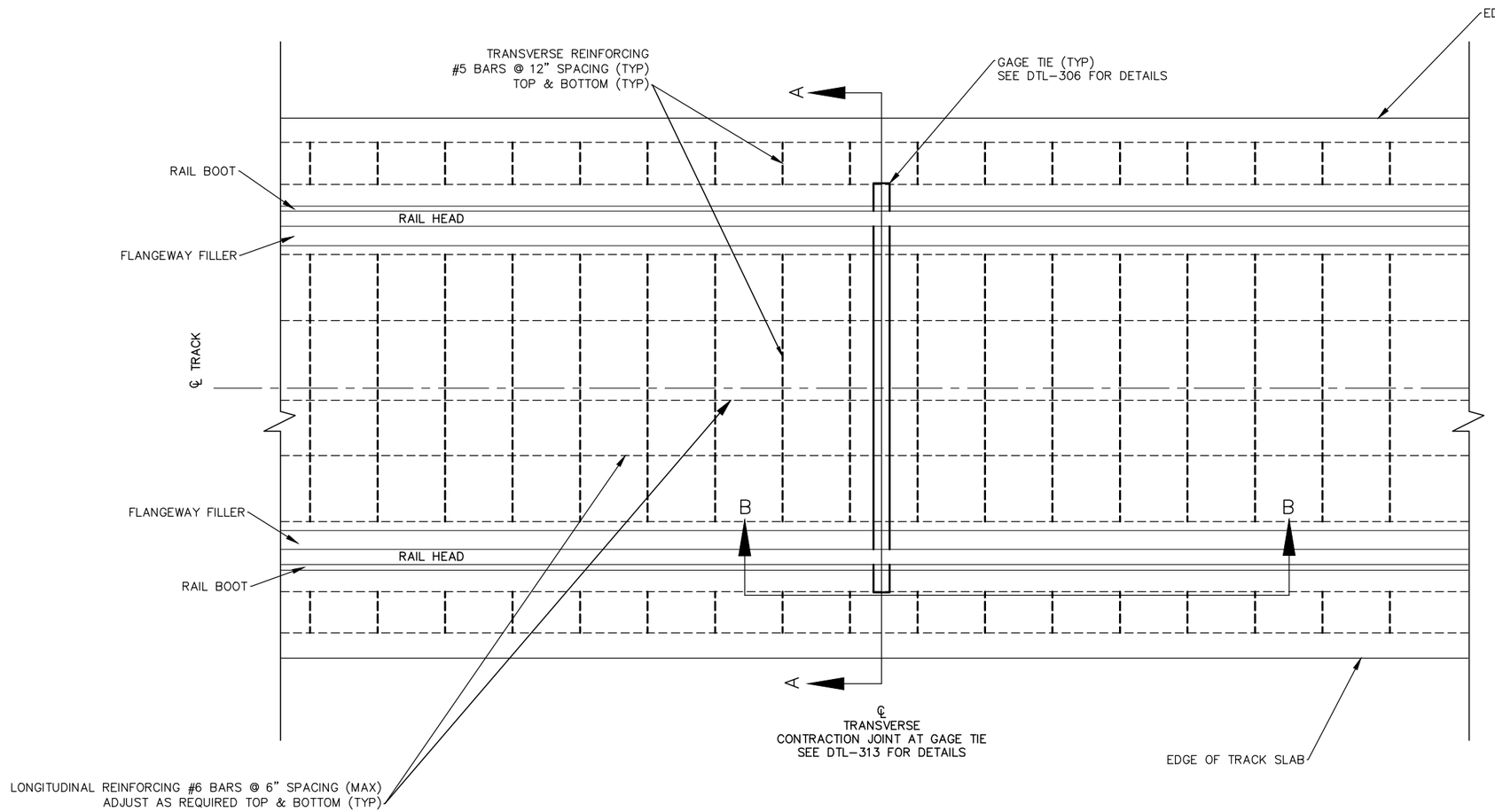
CIVIL - VOLUME 3C
TRACK DETAILS
BALLAST TRACK WIDENING
SHEET 2 OF 2

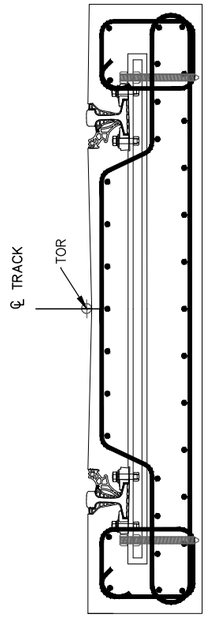
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-226

SHEET 44 OF 114

Jan. 18 2016 09:12 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-200.dwg By: V-BurrellM





EMBEDDED TRACK
SECTION A-A
N.T.S.

EMBEDDED TRACK REINFORCING STEEL
PLAN VIEW
N.T.S.

NOTES:

1. ADJUST TRANSVERSE REINFORCING STEEL SPACING TO AVOID CONFLICT WITH GAGE TIE. MAXIMUM SPACING SHALL NOT BE EXCEEDED.
2. FOR EMBEDDED TRACK SLAB, TOP AND BOTTOM MAT OF REBAR SHALL BE MADE ELECTRICALLY CONTINUOUS. SEE DTL-311 AND DTL-312 FOR DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

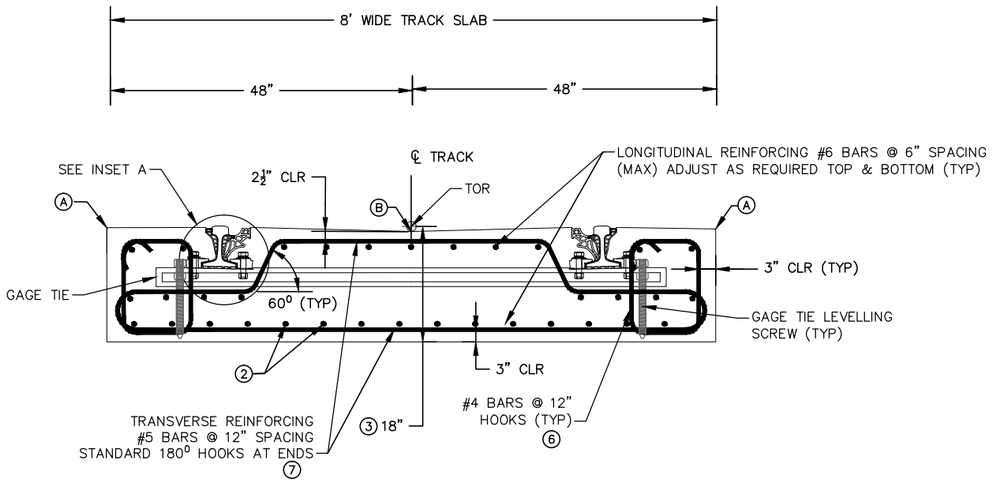
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK REINFORCING STEEL
SHEET 1 OF 2

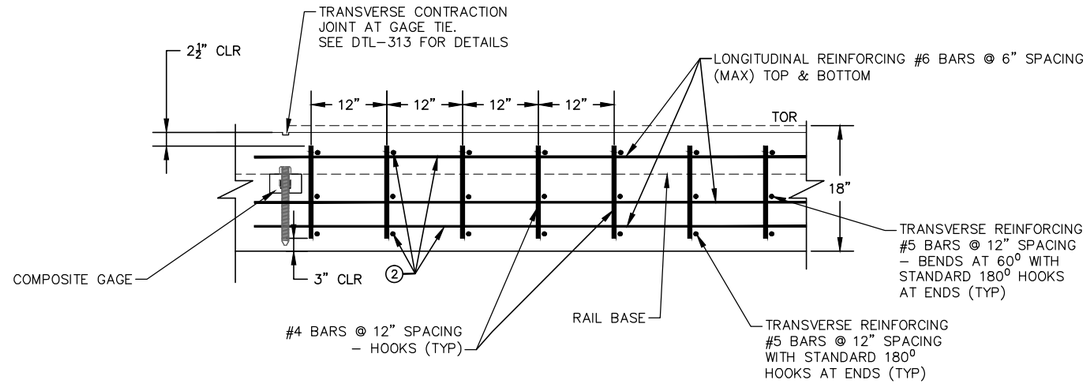
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-301

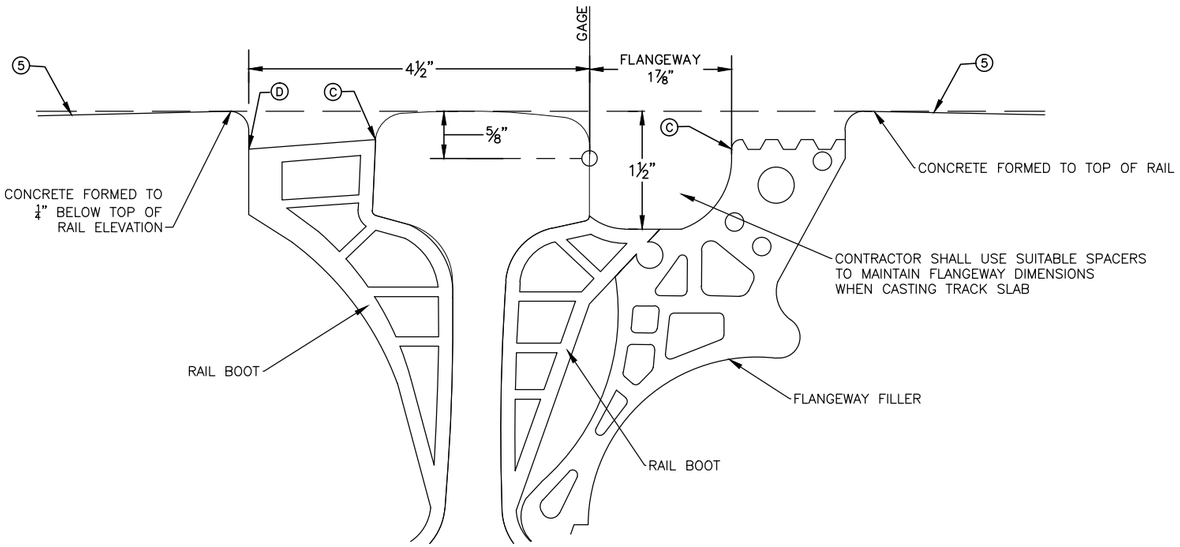
SHEET 45 OF 114



EMBEDDED TRACK REINFORCING STEEL
SECTION A–A
N.T.S.



EMBEDDED TRACK REINFORCING STEEL
LONGITUDINAL SECTION B–B
N.T.S.



INSET A
EMBEDDED TRACK RAIL BOOT & FLANGEWAY FILLER
N.T.S.

NOTES

1. ALL REINFORCING STEEL SHALL BE NON COATED (BLACK).
2. FOR EMBEDDED TRACK SLAB, TOP AND BOTTOM MAT OF REBAR SHALL BE MADE ELECTRICALLY CONTINUOUS. SEE DTL–311 & DTL–312 FOR DETAILS.
3. TRACK SLAB SHALL BE CONSTRUCTED IN ONE MONOLITHIC POUR
4. TRACK SLAB WIDTH VARIES AT STATION PLATFORMS. SEE DTL–303 & DTL–304 FOR DETAILS ON VARYING TRACK SLAB WIDTHS.
5. SEE SECTION A–A FOR TRACK INFILL SLOPE CONCRETE DETAILS.
6. CLEAR DISTANCE BETWEEN #4 HOOKS AND EDGE OF RAIL SHALL BE 2".
7. TOP TRANSVERSE BARS SHALL HAVE A MAX 9" CLEAR FROM TOR IN AREAS BELOW GAGE TIE.

A. POINT A IS ¾" BELOW TOR
B. POINT B IS 1" BELOW TOR
C. POINT C IS ⅜" BELOW TOR
D. POINT D IS ½" BELOW TOR

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

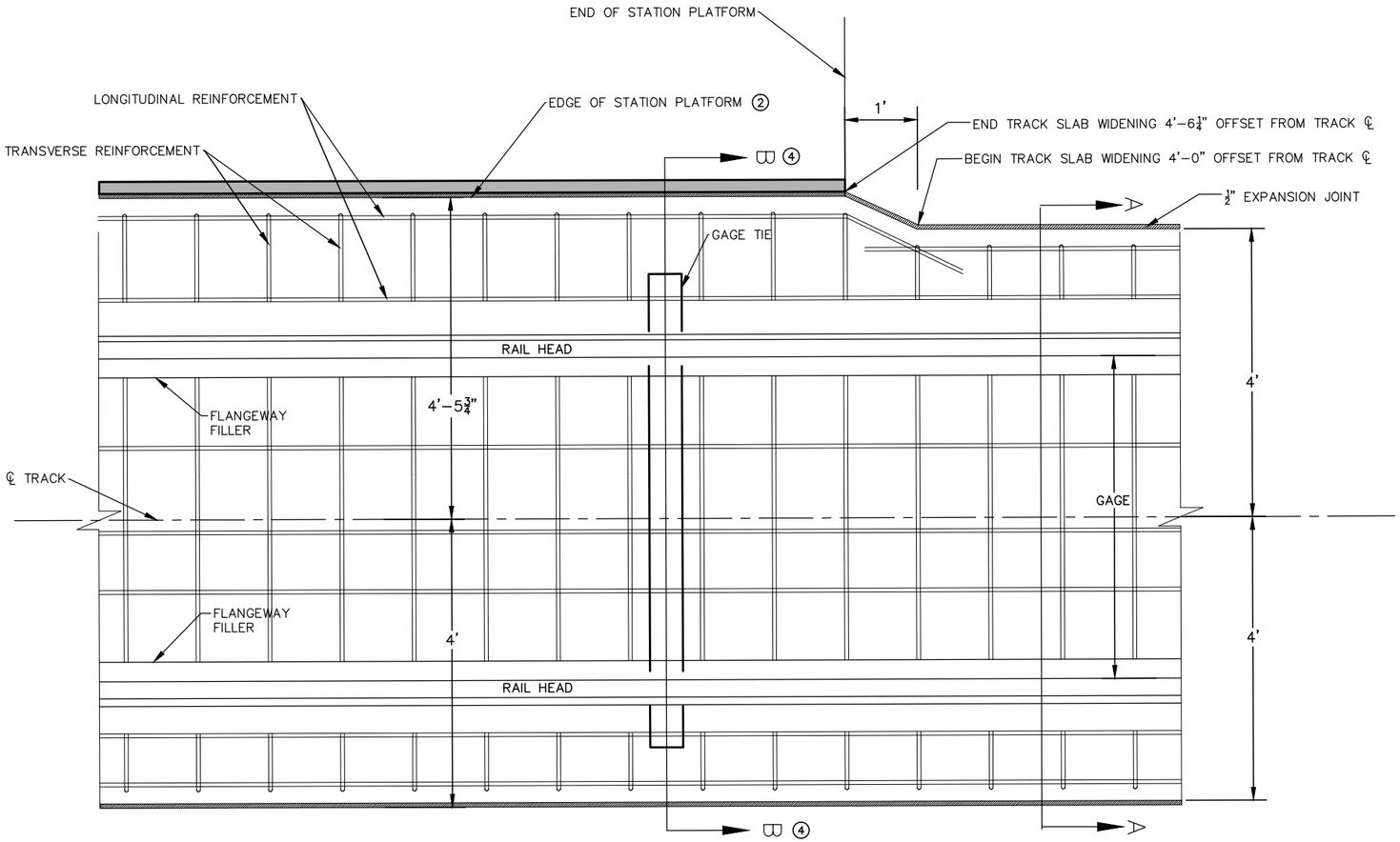
CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK REINFORCING STEEL
SHEET 2 OF 2

DISCIPLINE: TRACK

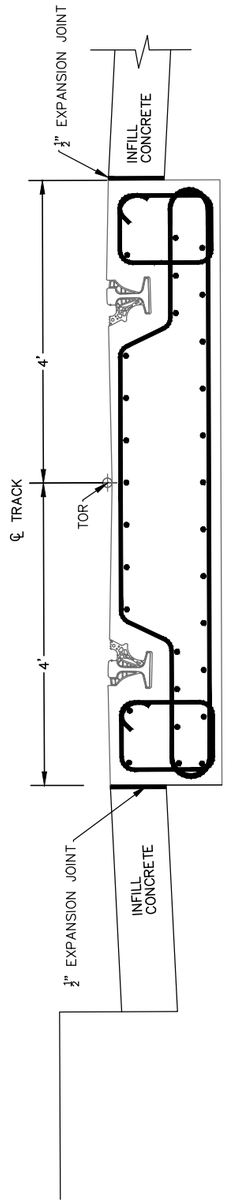
SHEET NAME: 00-TRK-DTL-302

SHEET 46 OF 114

Jan, 18 2016 08:58 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



TRACK SLAB WIDENING @ STATION PLATFORM
PLAN VIEW
N.T.S.



EMBEDDED TRACK SLAB
SECTION A–A ③
N.T.S.

NOTES:

① SEE DTL–303 FOR ADDITIONAL DETAILS ON TRACK SLAB AT STATION PLATFORM.

② SEE STATION PLANS FOR DETAILS ON TRACK SLAB INTERFACE AT STATION PLATFORM.

③ SEE DTL–302 FOR DETAIL OF SECTION A–A.

④ SEE DTL–304 FOR SECTION B–B.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK SLAB WIDENING @ STATION PLATFORM SHEET 1 OF 2

DISCIPLINE: TRACK

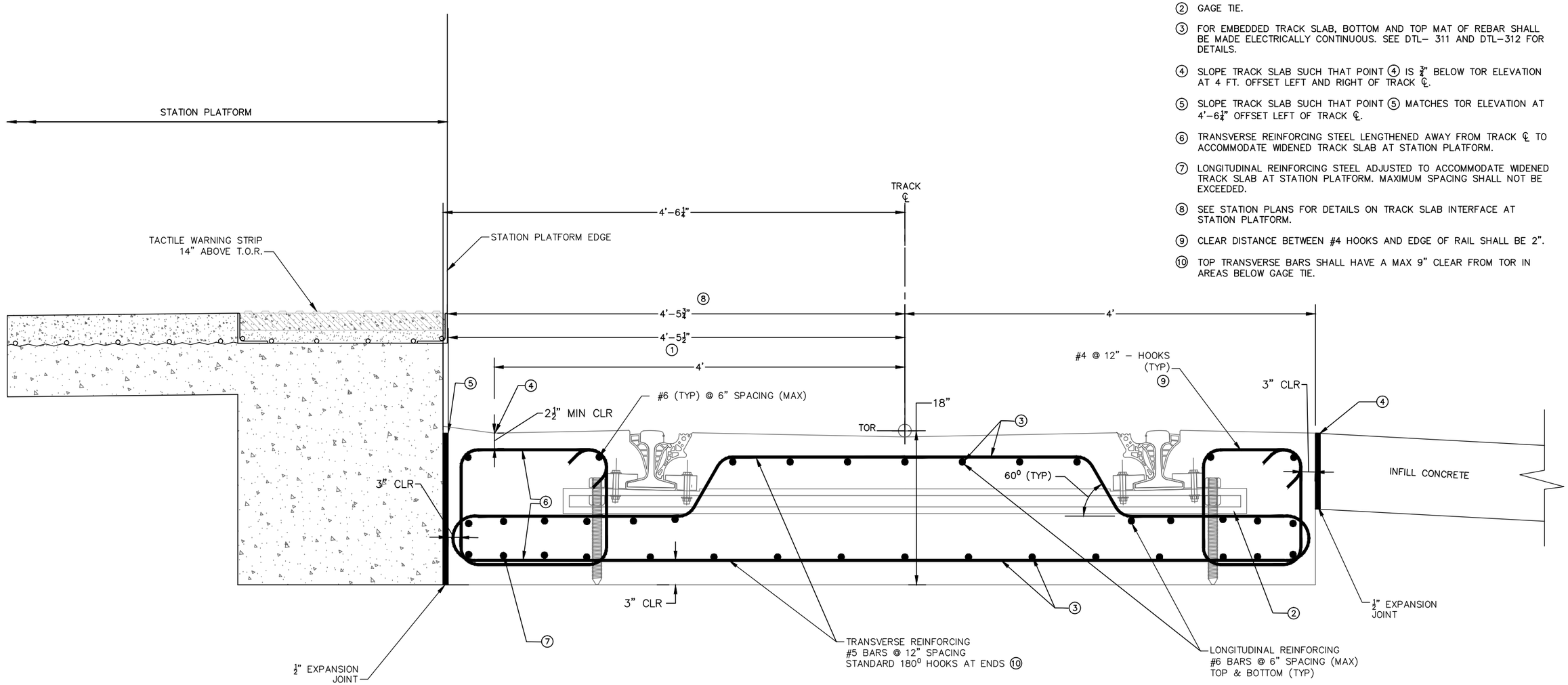
SHEET NAME: 00-TRK-DTL-303

SHEET 47 OF 114

Jan, 18 2016 08:59 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM

NOTES:

1. TRACK SLAB SHALL BE WIDENED FROM 8'–0" NOM. WIDTH TO 8'–5½" WIDTH AT STATION PLATFORMS. SEE TRACK DTL–303 FOR DETAILS ON LONGITUDINAL LIMITS FOR TRACK SLAB WIDENING.
2. GAGE TIE.
3. FOR EMBEDDED TRACK SLAB, BOTTOM AND TOP MAT OF REBAR SHALL BE MADE ELECTRICALLY CONTINUOUS. SEE DTL– 311 AND DTL–312 FOR DETAILS.
4. SLOPE TRACK SLAB SUCH THAT POINT ④ IS ¾" BELOW TOR ELEVATION AT 4 FT. OFFSET LEFT AND RIGHT OF TRACK ℄.
5. SLOPE TRACK SLAB SUCH THAT POINT ⑤ MATCHES TOR ELEVATION AT 4'–6¼" OFFSET LEFT OF TRACK ℄.
6. TRANSVERSE REINFORCING STEEL LENGTHENED AWAY FROM TRACK ℄ TO ACCOMMODATE WIDENED TRACK SLAB AT STATION PLATFORM.
7. LONGITUDINAL REINFORCING STEEL ADJUSTED TO ACCOMMODATE WIDENED TRACK SLAB AT STATION PLATFORM. MAXIMUM SPACING SHALL NOT BE EXCEEDED.
8. SEE STATION PLANS FOR DETAILS ON TRACK SLAB INTERFACE AT STATION PLATFORM.
9. CLEAR DISTANCE BETWEEN #4 HOOKS AND EDGE OF RAIL SHALL BE 2".
10. TOP TRANSVERSE BARS SHALL HAVE A MAX 9" CLEAR FROM TOR IN AREAS BELOW GAGE TIE.



TRACK SLAB WIDENING AT STATION PLATFORM
SECTION B–B
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

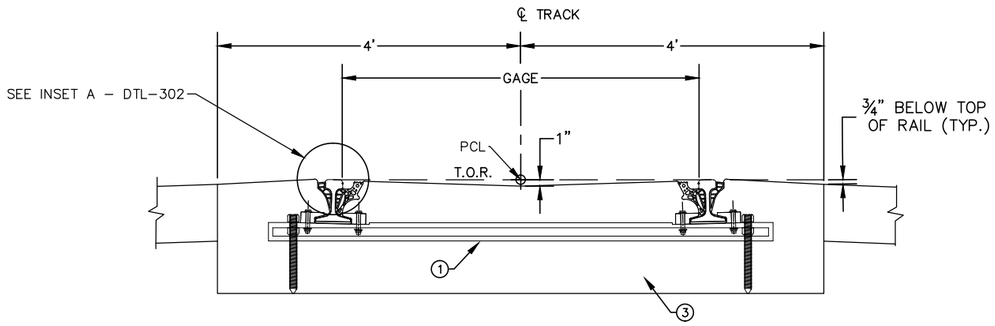
CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK SLAB WIDENING @ STATION PLATFORM SHEET 2 OF 2

DISCIPLINE: TRACK

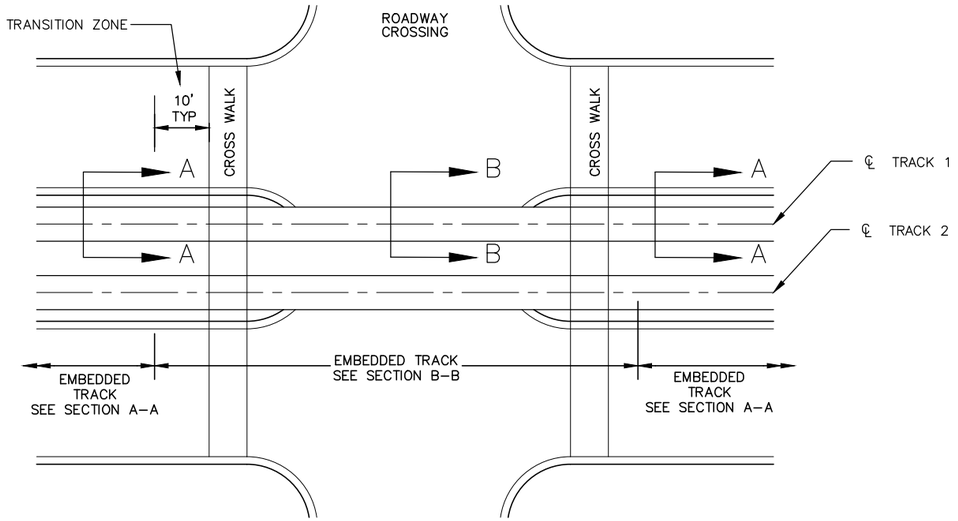
SHEET NAME: 00-TRK-DTL-304

SHEET 48 OF 114

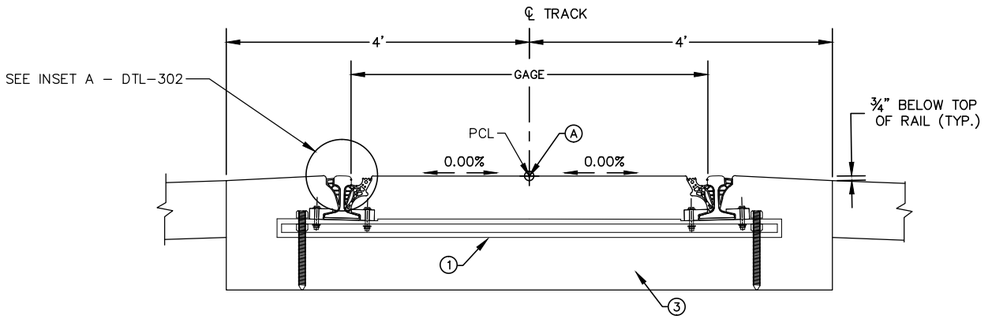
Jan, 18 2016 09:00 am v:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



EMBEDDED TRACK
SECTION A–A
N.T.S



EMBEDDED TRACK THROUGH ROADWAY CROSSING
PLAN VIEW
N.T.S.



EMBEDDED TRACK
SECTION B–B
N.T.S

NOTES:

1. GAGE TIE
2. RESTRAINING RAIL NOT ILLUSTRATED. SEE DTL–306 – DTL–308 FOR RESTRAINING RAIL DETAIL.
3. REINFORCING STEEL NOT ILLUSTRATED FOR CLARITY. SEE DTL–301 AND DTL–302 FOR REINFORCING STEEL DETAILS. SEE DTL–307 AND DTL–308 FOR REINFORCING STEEL DETAILS WITH RESTRAINING RAIL.

(A) POINT (A) IS AT TOR

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

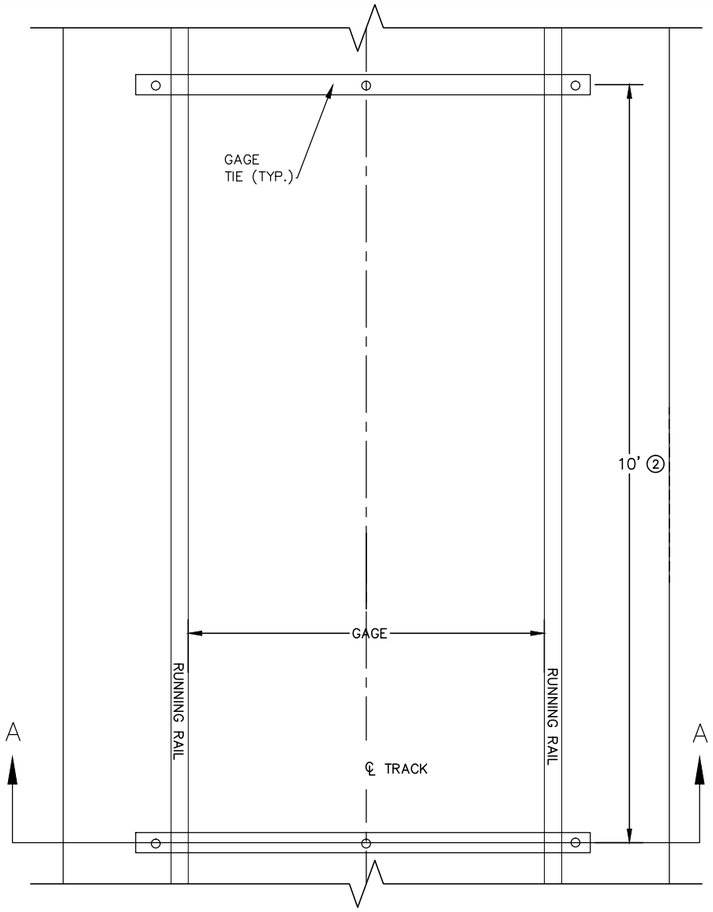
CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK @ ROADWAY CROSSINGS

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-305

SHEET 49 OF 114

Jan. 18 2016 09:01 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



EMBEDDED TRACK PLAN VIEW

N.T.S.

NOTES:

① GAGE TIE SHALL BE FABRICATED FOR 115 RAIL AT 1:40 CANT, AND SHALL HAVE PROVISIONS FOR THREE ADJUSTING LEGS AND HARDWARE.

② GAGE TIE SPACING SHALL BE 10' INTERVALS FOR HORIZONTAL TANGENTS AND 5' INTERVALS FOR CURVED TRACK WITH R<500'. GAGE TIE SPACING SHALL BE 10' INTERVALS FOR VERTICAL TANGENT, 5' INTERVALS FOR SAG PARABOLIC VERTICAL CURVES WITH EQUIV. RADIUS R<984', AND 5' INTERVALS FOR CREST PARABOLIC CURVES WITH EQUIV.. RADIUS R<984'.

③ GAGE TIES FOR CURVED TRACK WITH RESTRAINING RAIL SHALL HAVE PROVISIONS FOR RESTRAINING RAIL.

④ GAGE TIE LOCATION MAY BE ADJUSTED LONGITUDINALLY TO ACCOMMODATE REBAR AND/OR SLAB JOINTS, BUT IN NO INSTANCE SHALL MAXIMUM SPACING EXCEED 10'-0" FOR TANGENT TRACK OR 5' FOR CURVED TRACK. GAGE TIE SPACING SHALL BE REDUCED AS REQUIRED TO MAINTAIN LINE & SURFACE AND GAGE.

⑤ FOR SUPERELEVATED TRACK DETAILS SEE DTL-307.

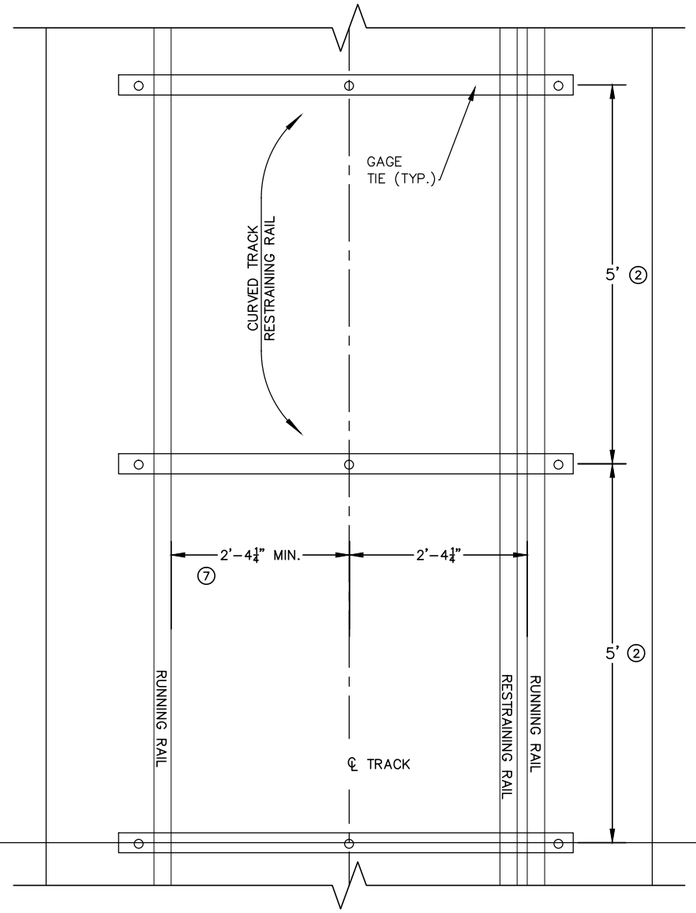
⑥ RESTRAINING RAIL SHALL BE PROVIDED FOR CURVED TRACK AS DEFINED BY THE CONTRACT SPECIFICATIONS.

⑦ GAGE WIDENING SHALL BE APPLIED AS INDICATED IN THE CONTRACT SPECIFICATIONS. GAGE WIDENING SHALL BE ACHIEVED BY WIDENING THE HIGH RAIL RELATIVE TO THE CENTERLINE OF TRACK. GAGE WIDENING SHALL OCCUR UNIFORMLY WITHIN THE LIMITS OF TRANSITION SPIRAL.

⑧ BOTTOM OF BASE SLAB SHALL BE CONSTRUCTED LEVEL. SUPERELEVATION SHALL BE PROVIDED USING LEVELING SCREWS.

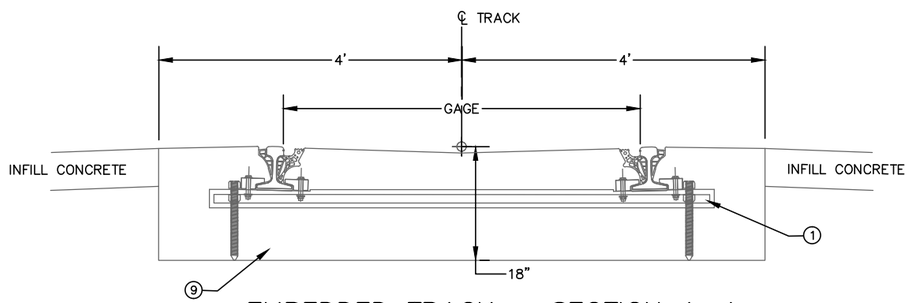
⑨ REINFORCING STEEL NOT ILLUSTRATED FOR CLARITY. SEE DTL-301 AND DTL-302 FOR REINFORCING STEEL DETAILS.

⑩ REINFORCING STEEL NOT ILLUSTRATED FOR CLARITY. SEE DTL-307 AND DTL-308 FOR REINFORCING STEEL DETAILS.



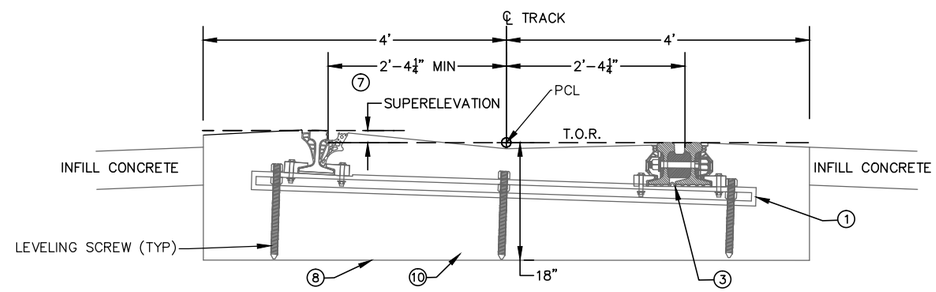
EMBEDDED TRACK WITH SINGLE RESTRAINING RAIL – PLAN VIEW

N.T.S.



EMBEDDED TRACK – SECTION A-A

N.T.S.



EMBEDDED TRACK WITH SINGLE RESTRAINING RAIL – SECTION B-B

N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

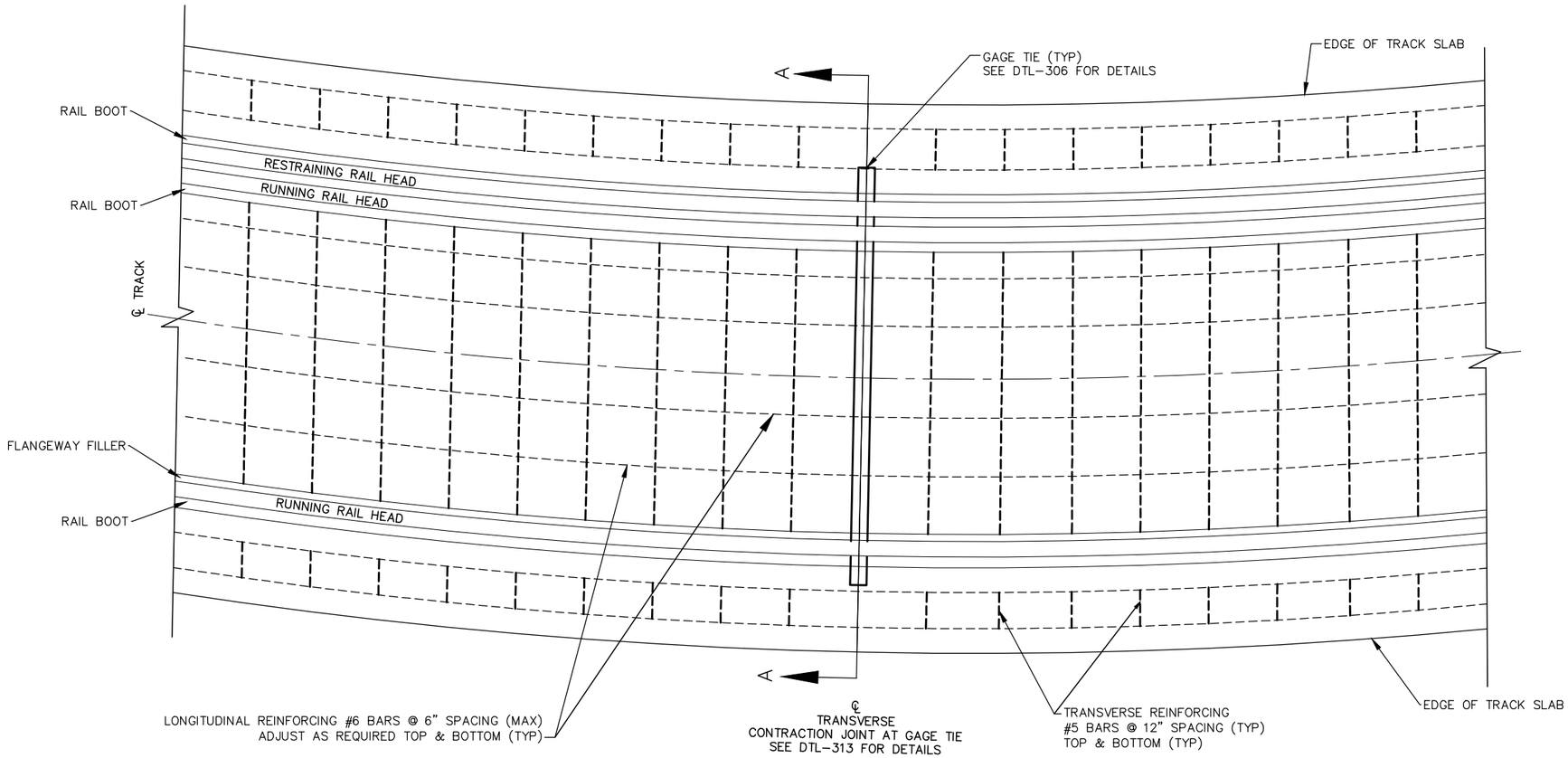
CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK @ GAGE TIES

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-306

SHEET 50 OF 114

Jan, 18 2016 09:02 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



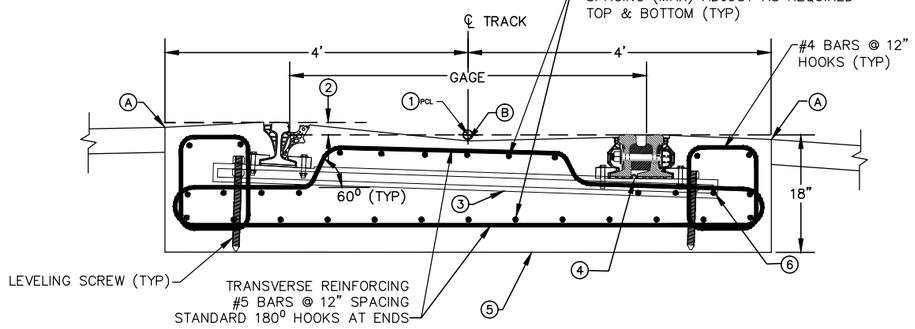
EMBEDDED TRACK
SINGLE RESTRAINING RAIL DETAIL – PLAN
N.T.S.

NOTES:

1. PROJECT CONTROL LINE = ℄ TRACK 2 TOP OF LOW RAIL.
2. SUPERELEVATION.
3. GAGE TIE.
4. GAGE TIE FOR CURVED TRACK WITH RESTRAINING RAIL SHALL HAVE PROVISIONS FOR RESTRAINING RAIL.
5. BOTTOM OF BASE SLAB SHALL BE CONSTRUCTED LEVEL. SUPER–ELEVATION SHALL BE PROVIDED USING LEVELING SCREWS.
6. ADJUST REINFORCING STEEL SPACING TO AVOID CONFLICT WITH THE GAGE TIE. MAXIMUM SPACING SHALL NOT BE EXCEEDED.
7. FOR EMBEDDED TRACK SLAB, BOTTOM MAT OF REBAR SHALL BE MADE ELECTRICALLY CONTINUOUS. SEE DTL–311 AND DTL–312 FOR DETAILS.

(A) POINT (A) IS TYPICALLY ¼" BELOW TOR FOR NEAREST RUNNING RAIL. HOWEVER, FIELD SIDE CONCRETE SLOPES VARY IN INTERSECTIONS. SEE CIVIL PLANS AND DTL–305 FOR DETAILED CROSS SLOPE INFORMATION.

(B) POINT (B) IS TYPICALLY 1" BELOW TOR FOR LOW RUNNING RAIL. HOWEVER, GAGE SIDE CONCRETE SLOPES MAY VARY IN INTERSECTIONS. SEE ROADWAY INTERSECTION PLANS FOR DETAILED CROSS SLOPE INFORMATION.



EMBEDDED TRACK
RESTRAINING RAIL DETAIL
SUPERELEVATED SECTION A–A
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

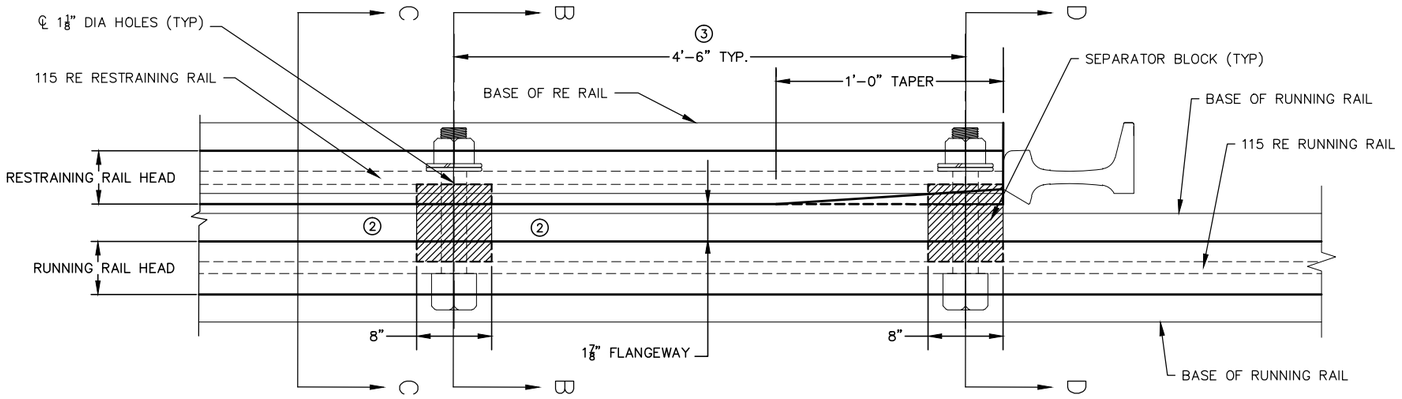
CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK W/RESTRAINING RAIL
SHEET 1 OF 2

DISCIPLINE: TRACK

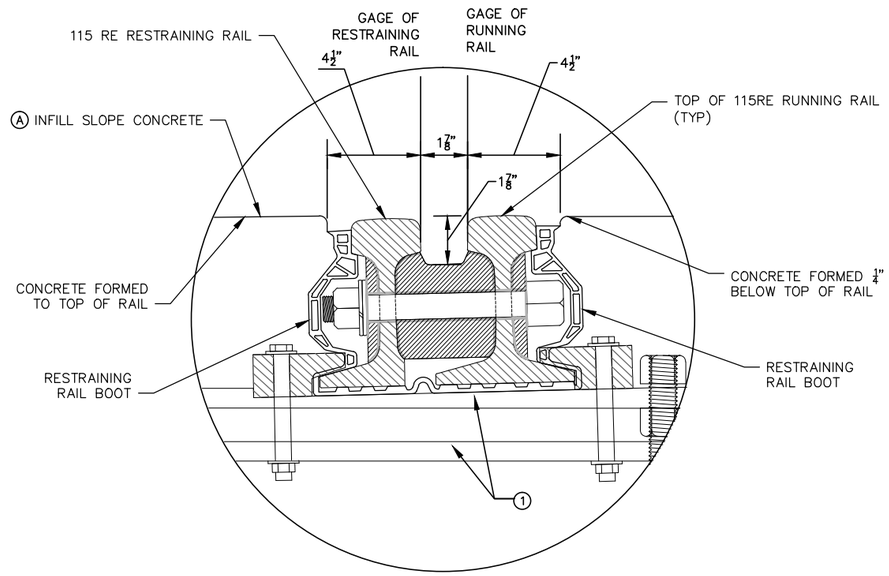
SHEET NAME: 00-TRK-DTL-307

SHEET 51 OF 114

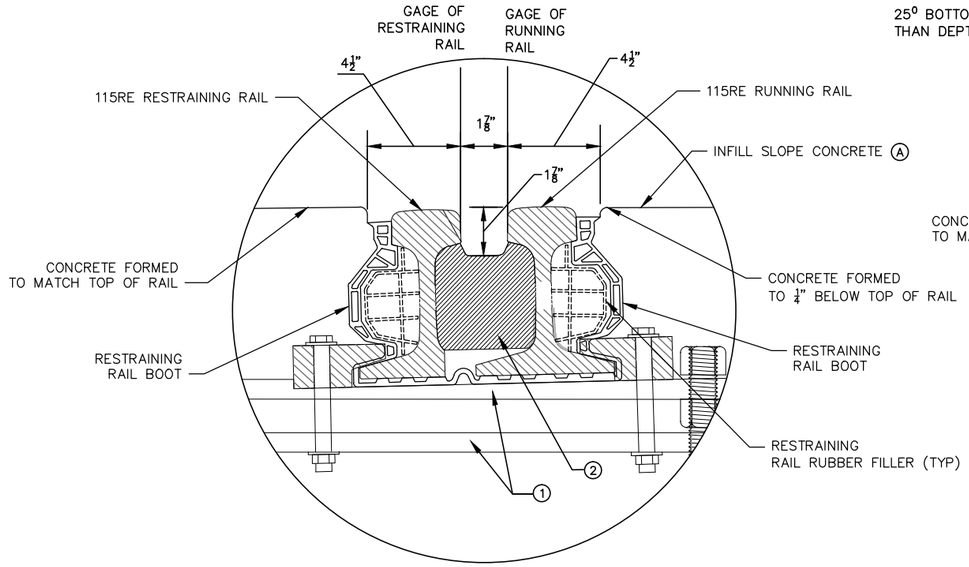
Jan. 18 2016 09:02 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



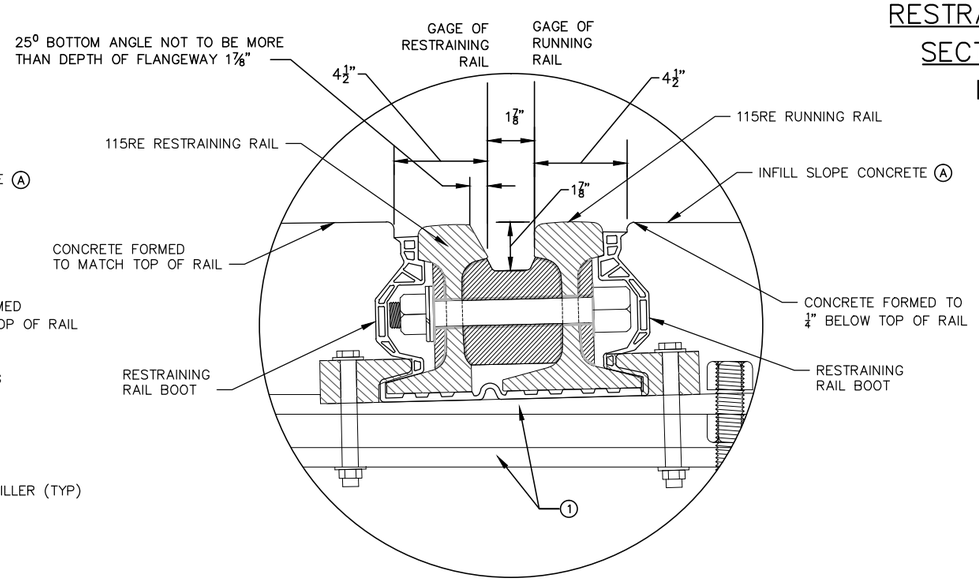
RESTRAINING RAIL END DETAIL – PLAN
N.T.S.



RESTRAINING RAIL SECTION B–B
N.T.S.



RESTRAINING RAIL SECTION C–C
N.T.S



RESTRAINING RAIL CHAMFER AT END OF TAPER SECTION D–D
N.T.S

NOTES:

① GAGE TIE.

② FILL FLANGEWAY BETWEEN BLOCKS WITH ELASTOMERIC GROUT. PROVIDE CLEAR FLANGEWAY DIMENSIONS AS INDICATED IN SECTION A–A.

③ SEE DTL–309 AND DTL–310 FOR RESTRAINING RAIL BOOT TERMINUS DETAILS.

Ⓐ POINT Ⓐ IS TYPICALLY ¼" BELOW TOR FOR NEAREST RUNNING RAIL. HOWEVER, FIELD SIDE CONCRETE SLOPES VARY IN INTERSECTIONS. SEE CIVIL PLANS AND DTL–305 FOR DETAILED CROSS SLOPE INFORMATION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

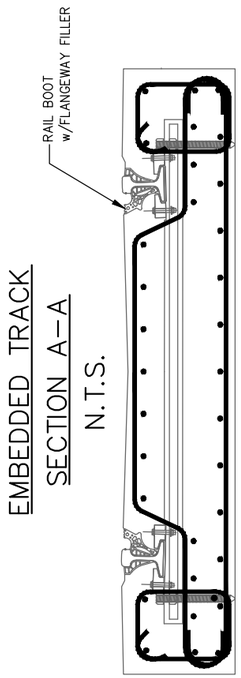
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK W/RESTRAINING RAIL
SHEET 2 OF 2

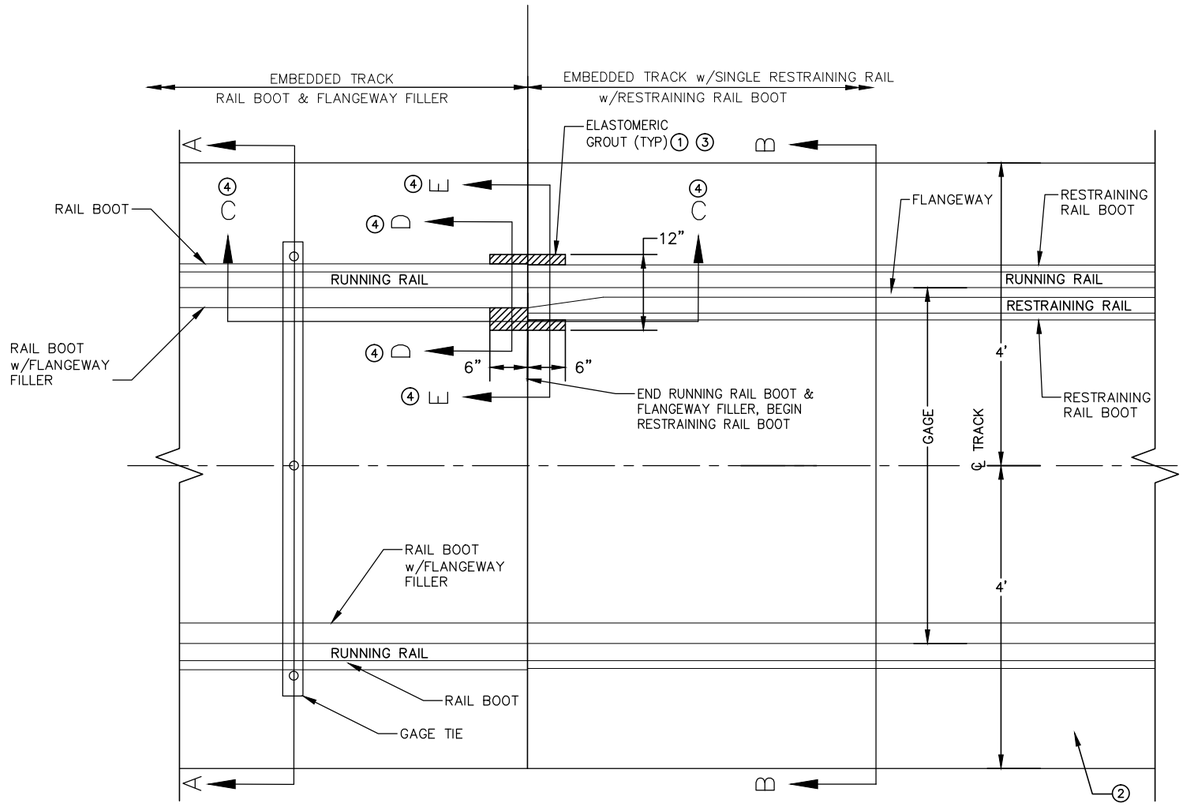
DISCIPLINE: TRACK

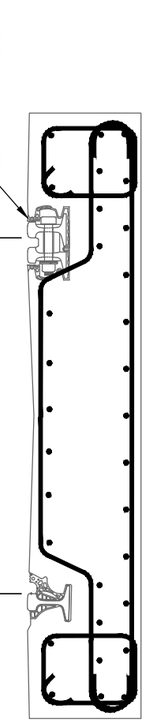
SHEET NAME: 00-TRK-DTL-308

SHEET 52 OF 114



EMBEDDED TRACK
SECTION A–A
N.T.S.





EMBEDDED TRACK SINGLE RESTRAINING RAIL
SECTION B–B
N.T.S.

ELASTOMERIC GROUT AT RESTRAINING RAIL BOOT TERMINUS
PLAN VIEW
N.T.S.

NOTES:

① ELASTOMERIC GROUT SHALL BE PLACED AND CURED BEFORE CONCRETE IS PLACED.

② REINFORCING STEEL NOT ILLUSTRATED FOR CLARITY. SEE DTL–301, DTL–302, DTL–307 AND DTL–308 FOR REINFORCING STEEL DETAILS.

③ ELASTOMERIC GROUT : AS SPECIFIED IN CONTRACT SPECIFICATION 34 11 29 EMBEDDED TRACK CONSTRUCTION.

④ SEE DTL–310 FOR SECTION C–C, SECTION D–D AND SECTION E–E.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

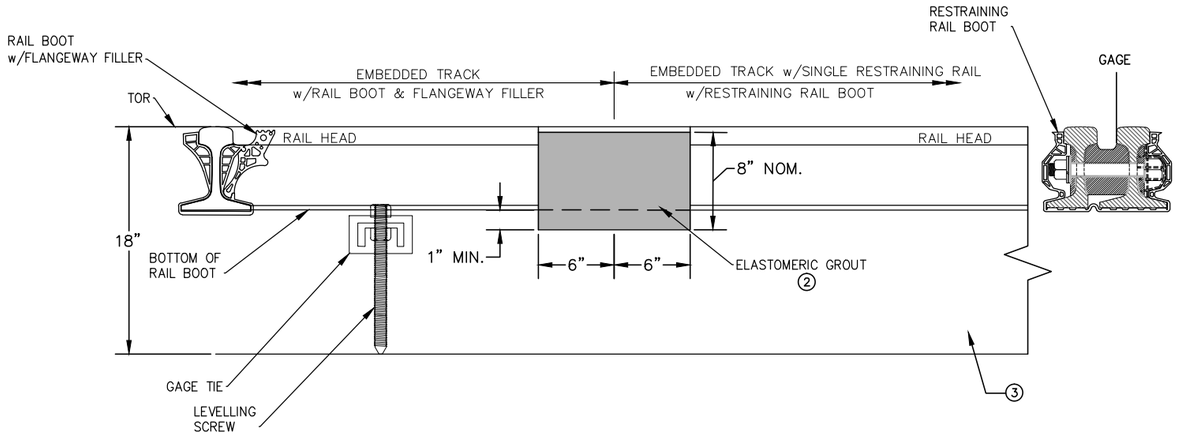
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK RESTRAINING RAIL BOOT TERMINUS SHEET 1 OF 2

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-309

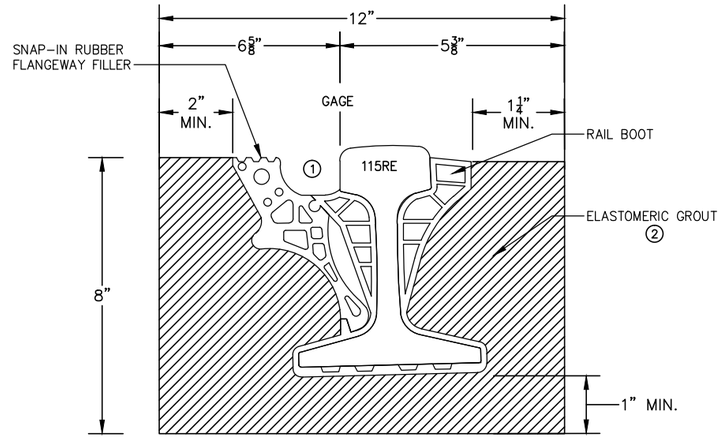
SHEET 53 OF 114



ELASTOMERIC GROUT LONGITUDINAL SECTION

SECTION C–C

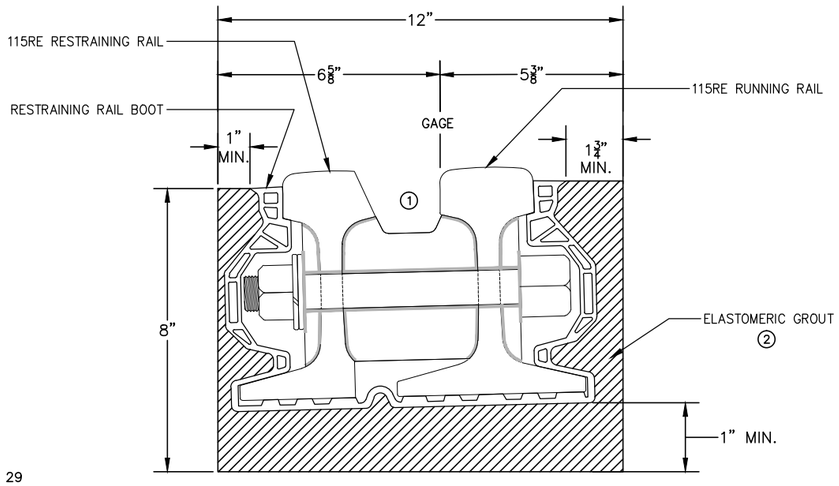
N.T.S.



ELASTOMERIC GROUT AT LOW RUNNING RAIL

SECTION D–D

N.T.S.



ELASTOMERIC GROUT AT RESTRAINING RAIL

SECTION E–E

N.T.S.

NOTES:

① SEE SHEET DTL–302 AND DTL–307 FOR FLANGEWAY DIMENSIONS WITH RESTRAINING RAIL.

② ELASTOMERIC GROUT: AS SPECIFIED IN CONTRACT SPECIFICATION 34 11 29 EMBEDDED TRACK CONSTRUCTION..

③ REINFORCING STEEL NOT ILLUSTRATED FOR CLARITY. SEE DTL–301, DTL–302, DTL–307 AND DTL–308 FOR REINFORCING STEEL DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

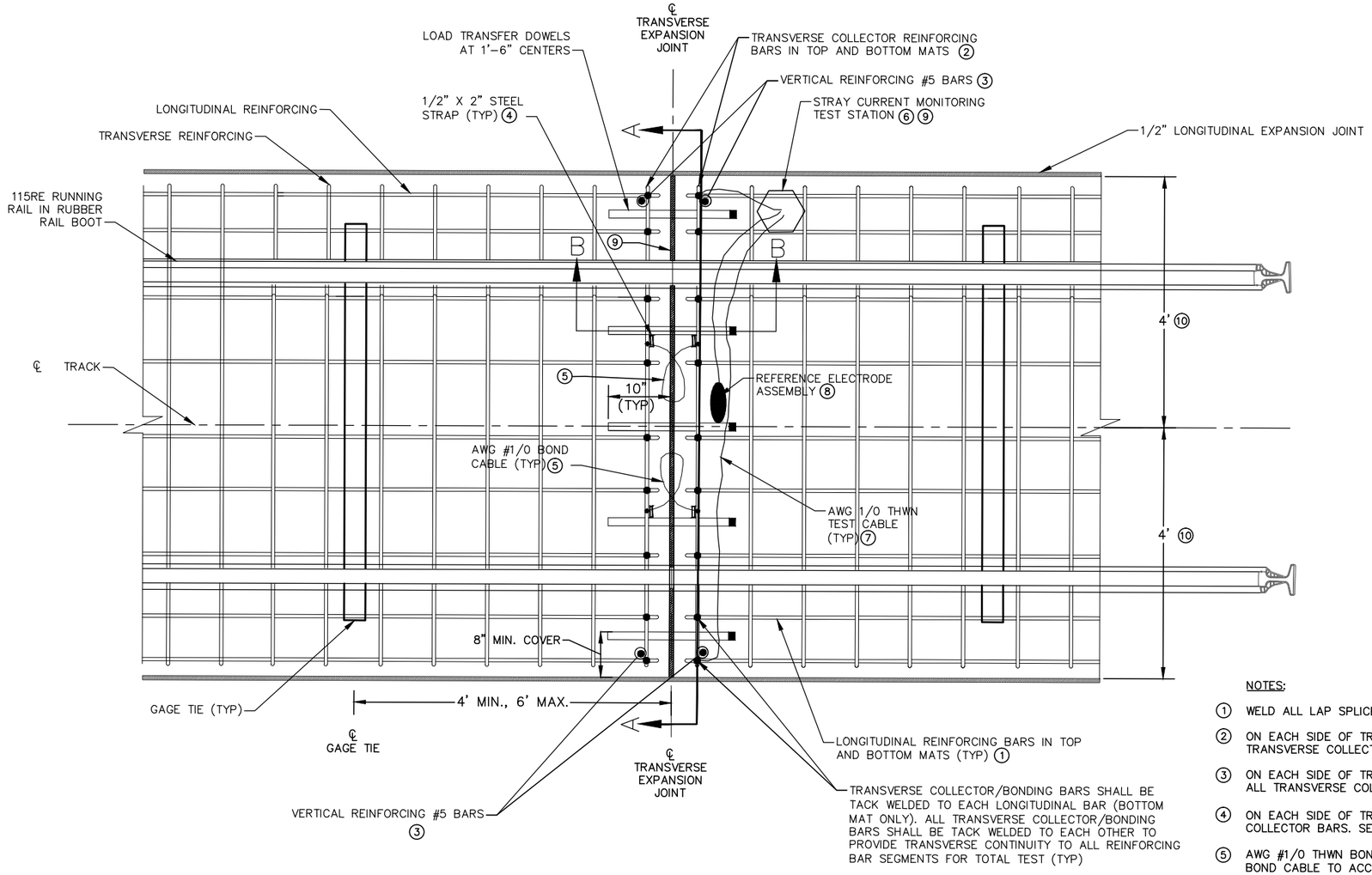
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK RESTRAINING RAIL BOOT TERMINUS SHEET 2 OF 2

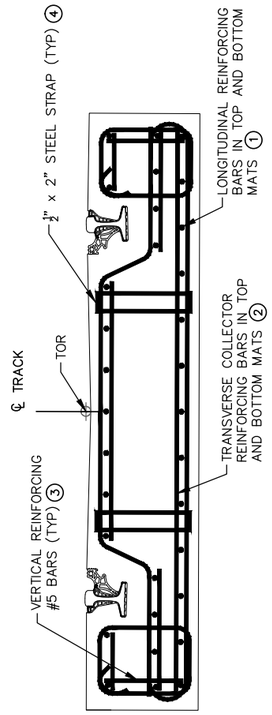
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-310

SHEET 54 OF 114



TRANSVERSE EXPANSION JOINT @ STRUCTURAL STEEL CONTINUITY TEST STATION
EMBEDDED TRACK
PLAN VIEW
N.T.S.



EMBEDDED TRACK SLAB
SECTION A-A
N.T.S.

NOTES:

1. WELD ALL LAP SPLICES IN ALL LONGITUDINAL BARS IN TOP AND BOTTOM REBAR MATS
2. ON EACH SIDE OF TRANSVERSE EXPANSION JOINTS WELD END TRANSVERSE COLLECTOR BARS OR WELD ADDITIONAL TRANSVERSE COLLECTOR BARS TO ALL LONGITUDINAL BARS IN TOP AND BOTTOM REBAR MATS.
3. ON EACH SIDE OF TRANSVERSE EXPANSION JOINTS AND ON EACH SIDE OF SLAB WELD ADDITIONAL VERTICAL #5 REBARS TO ALL TRANSVERSE COLLECTOR BARS.
4. ON EACH SIDE OF TRANSVERSE EXPANSION JOINTS WELD ½" X 2" STEEL STRAPS BETWEEN TOP AND BOTTOM TRANSVERSE COLLECTOR BARS. SEE SYSTEMS PLANS.
5. AWG #1/0 THWN BOND CABLE THERMITE WELDED TO EACH STEEL STRAP. SUFFICIENT SLACK SHALL BE PROVIDED IN EACH BOND CABLE TO ACCOUNT FOR JOINT MOVEMENT.
6. INSTALL STRAY CURRENT MONITORING TEST STATION AT THE BEGINNING AND END OF EACH SLAB AND AT APPROXIMATE 500' INTERVALS ALONG EACH SLAB. BROOKS PRODUCTS 1RT OR EQUAL. TERMINATE TWO 1/0 CABLES FROM TRANSVERSE COLLECTOR BAR AND TEST LEADS FROM REFERENCE ELECTRODE ASSEMBLY ON TEMRINAL BOARD INSIDE ROADWAY BOX.
7. AWG #1/0 THWN TEST CABLE THERMITE WELDED TO BOTTOM TRANSVERSE COLLECTOR BAR. TERMINATE CABLE IN STRAY CURRENT MONITORING TEST STATION.
8. INSTALL REFERENCE ELECTRODE ASSEMBLY MIDWAY BETWEEN EACH RAIL. SEE SYSTEMS PLANS.
9. AT SELECTED EXPANSION JOINT LOCATIONS AS SHOWN ON THE DRAWINGS BOND CABLES SHALL NOT BE INSTALLED ACROSS THE EXPANSION JOINT AND AWG #1/0 TEST CABLES SHALL BE THERMITE WELDED ONTO THE BOTTOM TRANSVERSE COLLECTOR BARS ON BOTH SIDES OF THE EXPANSION JOINT AND THE FOUR AWG #1/0 TEST CABLES AND REFERENCE ELECTRODE TEST WIRES SHALL BE TERMINATED IN THE SAME STRAY CURRENT BOND/MONITORING TEST STATION.
10. FOR DETAILED REINFORCING SCHEDULE, SEE DTL-301, DTL-302, DTL-307 AND DTL-308.
11. TRANSVERSE EXPANSION JOINT DETAILS FOR EMBEDDED TRACK DOES NOT APPLY TO STRUCTURAL SLABS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

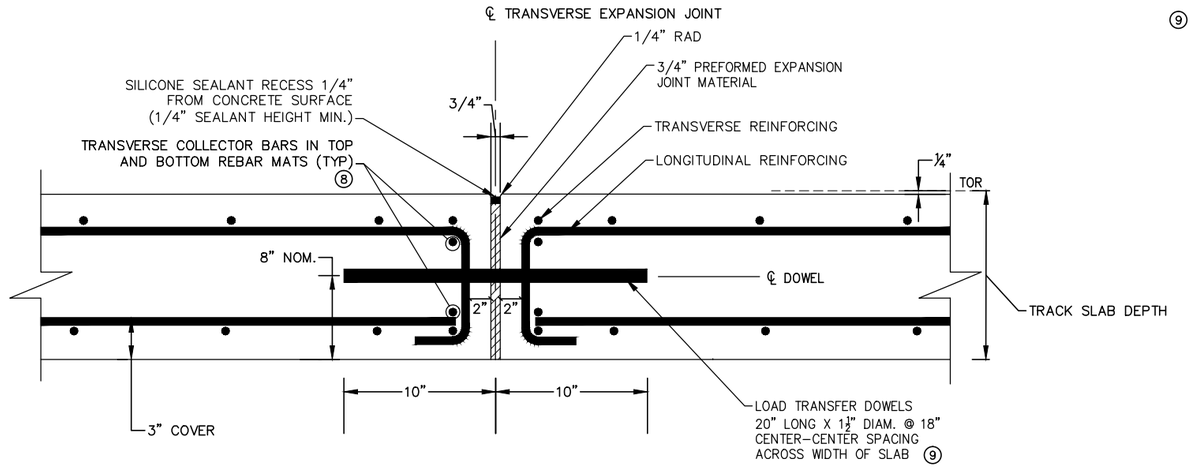
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK TRANSVERSE EXPANSION JOINT SHEET 1 OF 2

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-311

SHEET 55 OF 114



TRANSVERSE EXPANSION JOINT
EMBEDDED TRACK
SECTION B–B
N.T.S.

NOTES:

① TRANSVERSE EXPANSION JOINTS SHALL NOT BE LOCATED WITHIN 15 FT. OF MAJOR UTILITY CROSSINGS. ADJUST FINAL TRANSVERSE JOINT LOCATION TO SUIT ACTUAL UTILITY LOCATIONS.

② LOAD TRANSFER DOWELS SHALL BE CAST INTO THE TRACK SLAB, NOT DRILLED AND GROUTED

③ TRANSVERSE EXPANSION JOINT SHALL NOT BE LOCATED WITHIN 5' OF DRAINAGE INLET OR SYSTEMS RAIL ACCESS BOXES. ADJUST FINAL TRANSVERSE EXPANSION JOINT LOCATIONS TO SUIT DRAINAGE INLET OR RAIL ACCESS BOX LOCATION.

④ TRANSVERSE EXPANSION JOINT SHALL NOT BE LOCATED IN ROADWAY CROSSINGS.

⑤ TRANSVERSE EXPANSION JOINT FOR TRACK 1 SHALL BE LOCATED ADJACENT TO CORRESPONDING TRANSVERSE EXPANSION JOINT FOR TRACK 2

⑥ TRANSVERSE EXPANSION JOINT SHALL NOT BE LOCATED ON BRIDGE DECKS.

⑦ FOR DETAILED REINFORCING SCHEDULE, SEE DTL–301, DTL–302, DTL–307 AND DTL–308.

⑧ ON EACH SIDE OF TRANSVERSE EXPANSION JOINTS WELD END TRANSVERSE COLLECTOR BARS OR WELD ADDITIONAL TRANSVERSE COLLECTOR BARS TO ALL LONGITUDINAL BARS IN TOP AND BOTTOM REBAR MATS.

⑨ DOWELS SHALL BE PLACED SO AS TO AVOID CONFLICT WITH TOP TRANSVERSE REINFORCEMENT.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

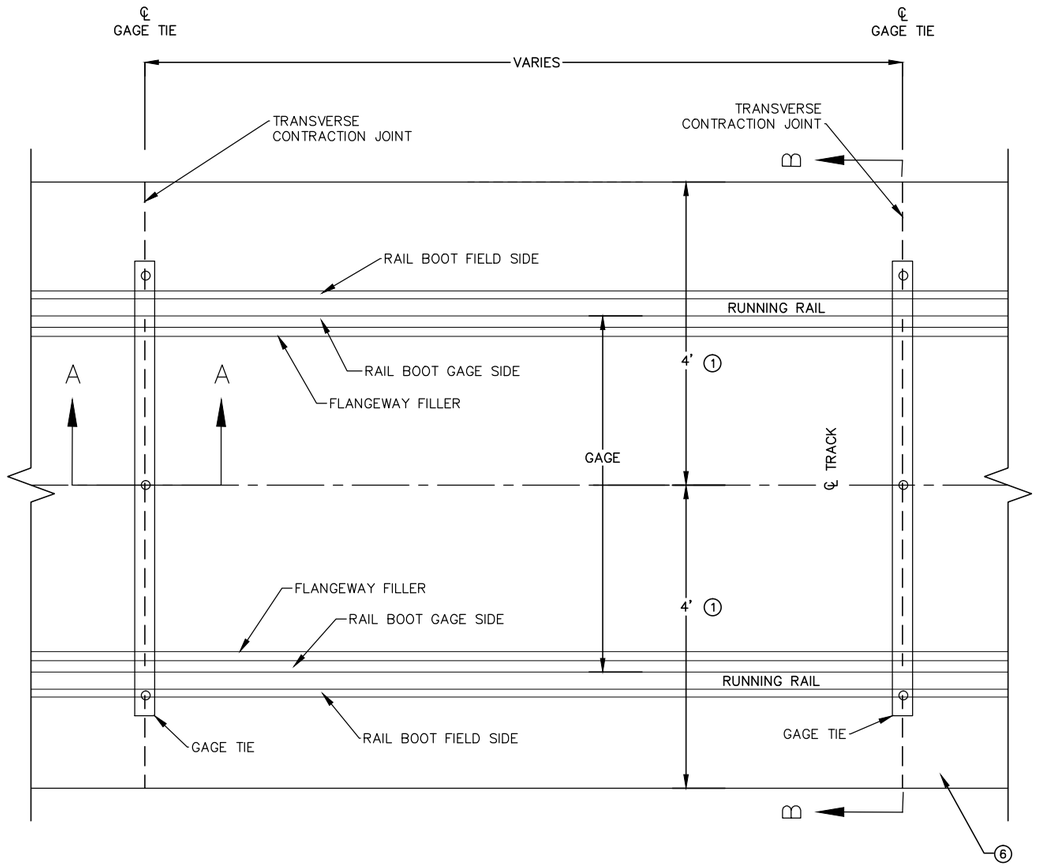
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK TRANSVERSE EXPANSION JOINT SHEET 2 OF 2

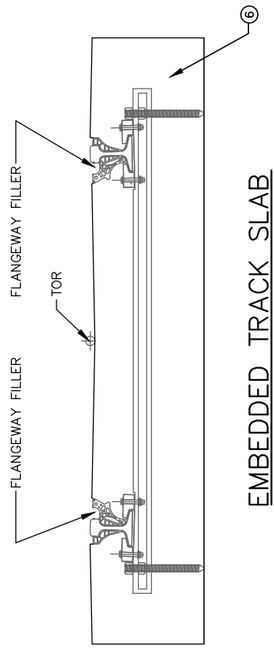
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-312

SHEET 56 OF 114



EMBEDDED TRACK TRANSVERSE CONTRACTION JOINT
PLAN VIEW
N.T.S.



EMBEDDED TRACK SLAB
SECTION B–B
N.T.S.

NOTES:

① TRACK SLAB WIDTH VARIES AT STATION PLATFORMS. SEE DTL–303 AND DTL–304 FOR VARYING TRACK SLAB WIDTHS AT STATION PLATFORMS.

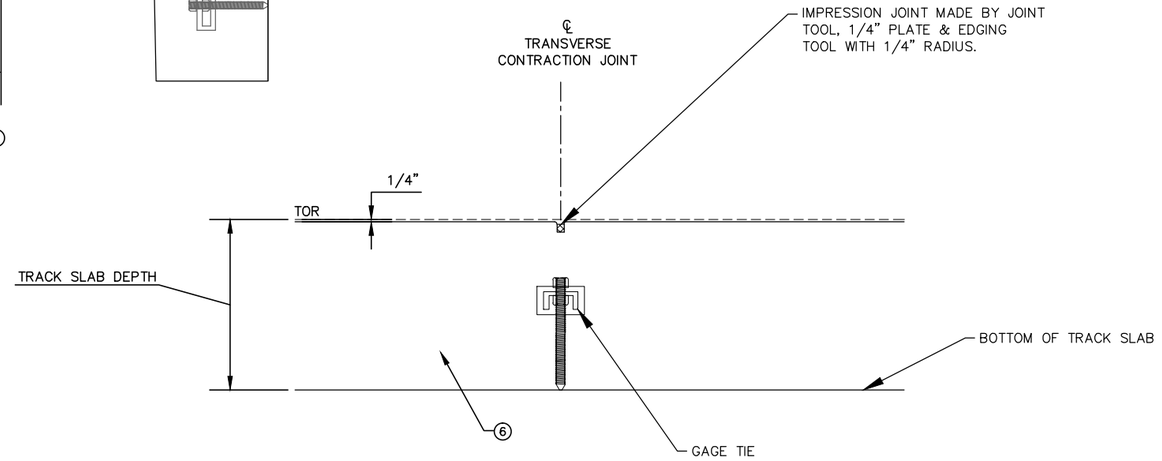
② TRANSVERSE CONTRACTION JOINT SHALL BE 1/2" NOMINAL DEPTH AND SHALL NOT EXCEED 3/4" DEPTH.

③ TRANSVERSE CONTRACTION JOINT SHALL BE FILLED WITH ELASTOMERIC JOINT SEALANT.

④ SECTION ILLUSTRATES TRACK SECTION WITHOUT RESTRAINING RAIL. TRANSVERSE CONTRACTION JOINT DETAILS SIMILAR FOR TRACK WITH RESTRAINING RAIL.

⑤ CONTRACTOR SHALL MARK RAIL WITH NON–DAMAGING MARKER BEFORE PLACING INFILL CONCRETE TO FACILITATE PLACEMENT OF CONTRACTION JOINT (OVER GAGE TIE) AFTER CONCRETE IS PLACED.

⑥ REINFORCING STEEL NOT ILLUSTRATED FOR CLARITY. SEE DTL–301 AND DTL–302 FOR REINFORCING STEEL DETAILS. SEE DTL–307 AND DTL–308 FOR REINFORCING STEEL WITH RESTRAINING RAIL.



SECTION A–A
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

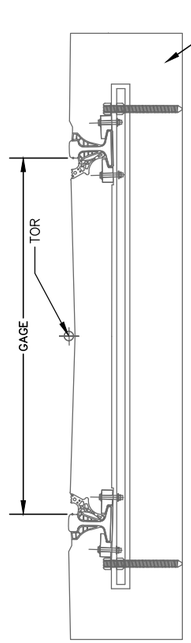
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK TRANSVERSE CONTRACTION JOINT

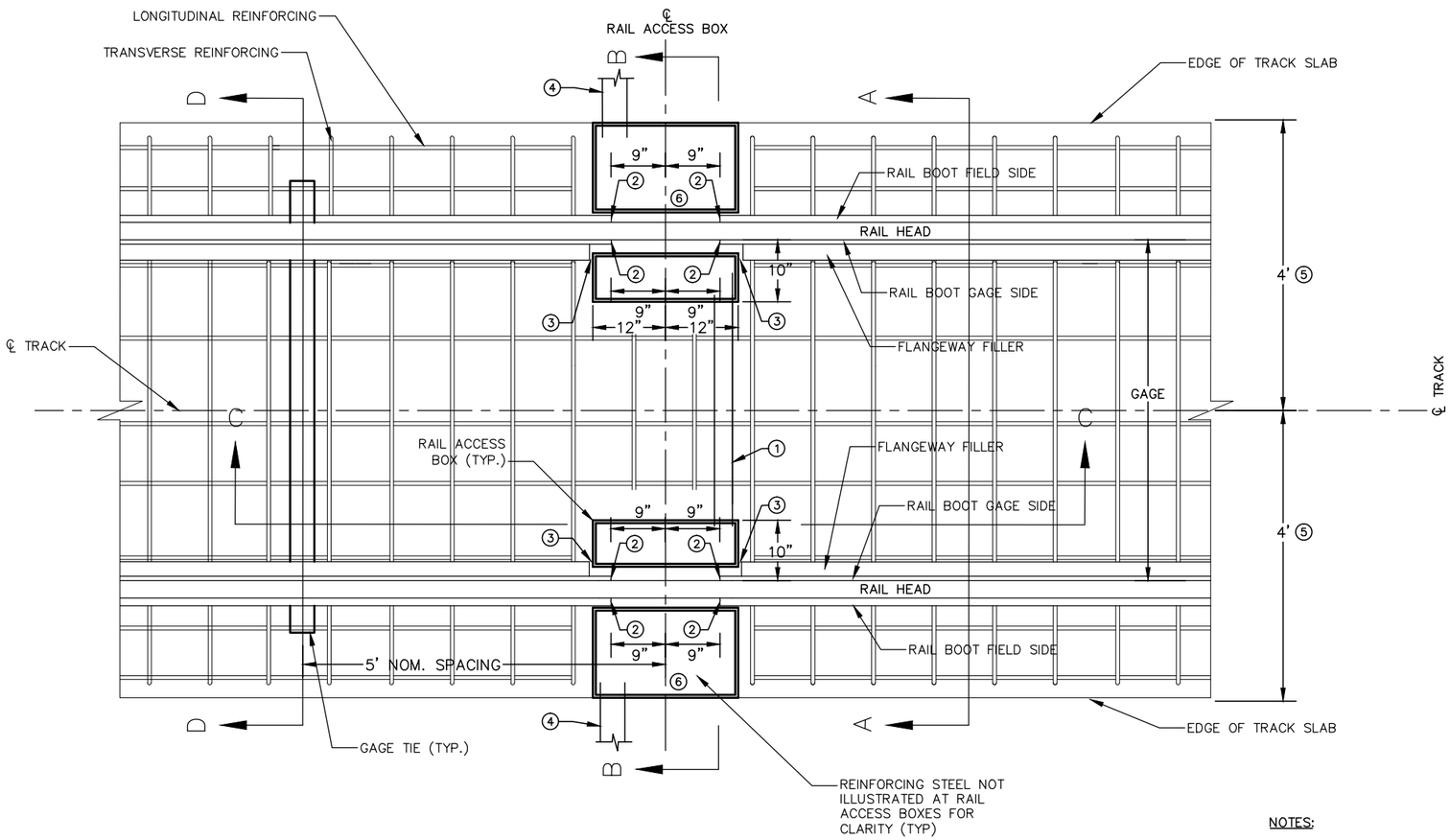
DISCIPLINE: TRACK
SHEET NAME: 00-TRK-DTL-313

SHEET 57 OF 114

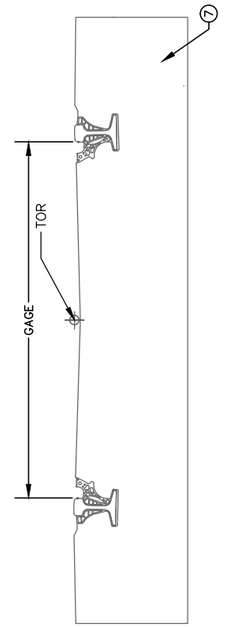
Jan, 18 2016 09:08 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



EMBEDDED TRACK SLAB AT GAGE TIE
SECTION D–D
N.T.S.



RAIL ACCESS BOX – EMBEDDED TRACK
PLAN VIEW
N.T.S.



EMBEDDED TRACK SLAB
SECTION A–A
N.T.S.

NOTES:

① 4" PVC 80, DRAIN PIPE. SEE SWE–E–DTL–TPS–001 TO 004 FOR DETAILS.

② EXTEND GAGE SIDE & FIELD SIDE OF RAIL BOOT 1" MIN. INSIDE THE RAIL ACCESS BOX, AS SHOWN.

③ INTERRUPT FLANGEWAY FILLER AT OUTER EDGES OF RAIL ACCESS BOX. CONTINUE RAIL BOOT INSIDE RAIL ACCESS BOX.

④ CONNECT 4" PVC–80 DRAIN PIPE TO DRAINTILE CLEANOUT OR RAIL ACCESS BOX IN ADJACENT TRACK SLAB. SEE STORM SEWER PLANS FOR DETAILS.

⑤ TRACK SLAB WIDTH VARIES AT STATION PLATFORMS. SEE DTL–303 AND DTL–304 FOR VARYING TRACK SLAB WIDTHS AT STATION PLATFORMS.

⑥ SEE SYSTEMS PLANS FOR RAIL ACCESS BOX DETAILS.

⑦ REINFORCING STEEL NOT ILLUSTRATED FOR CLARITY. SEE DTL–301 AND DTL–302 FOR REINFORCING STEEL DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

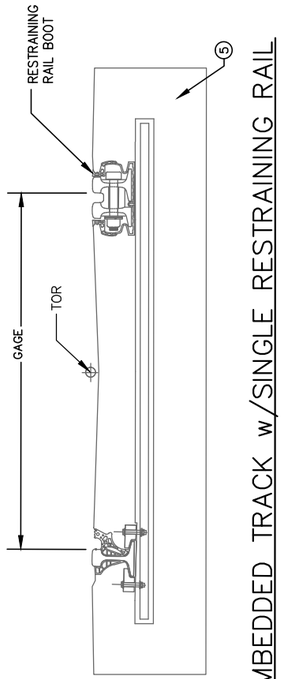
CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK RAIL ACCESS BOX
SHEET 1 OF 4

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-314

SHEET 58 OF 114

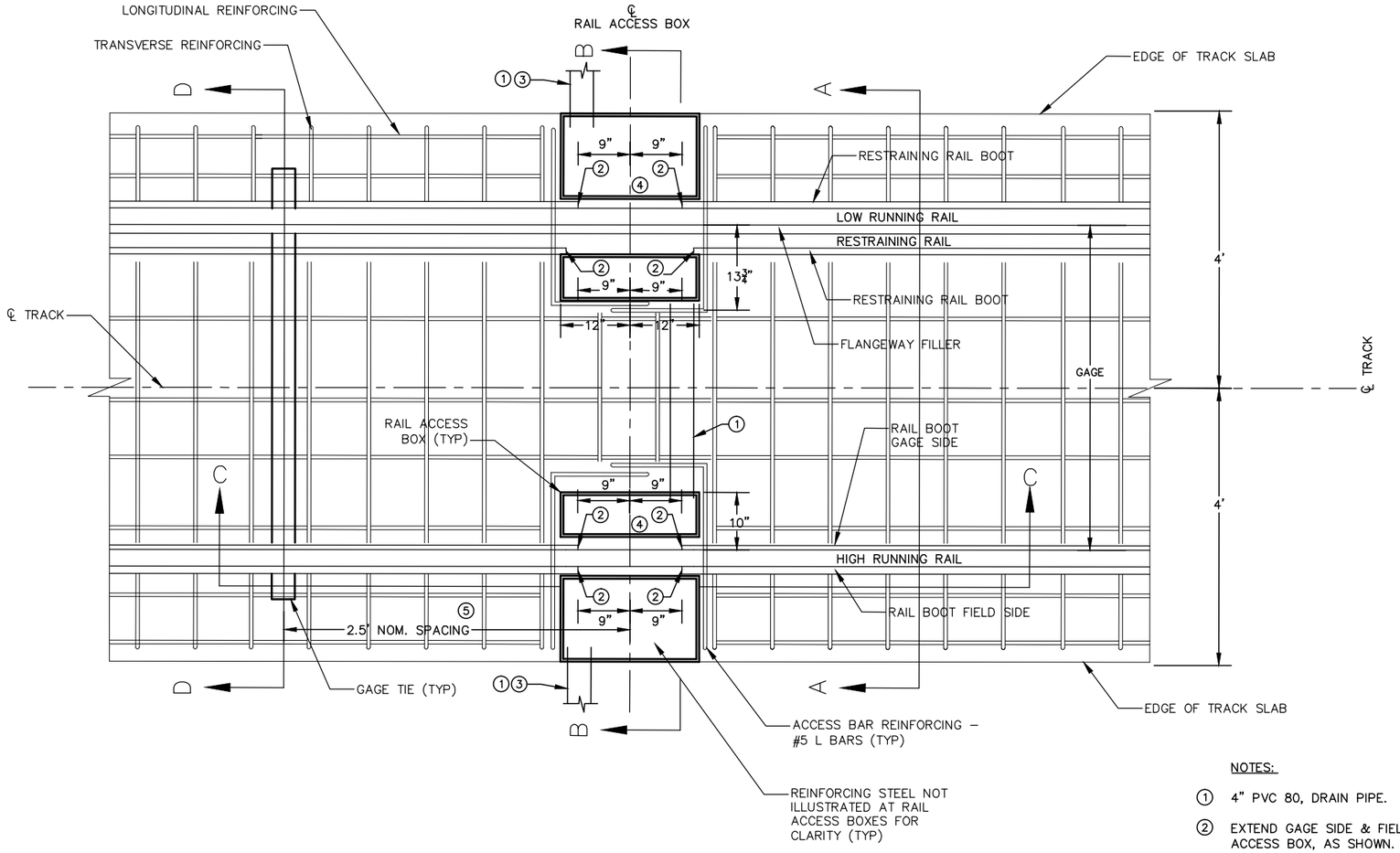
Jan, 18 2016 09:09 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM

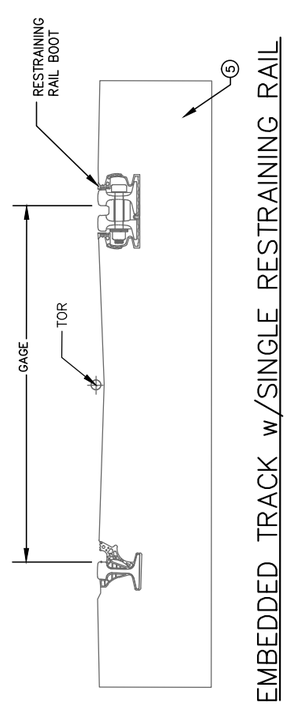


EMBEDDED TRACK w/SINGLE RESTRAINING RAIL

SECTION D–D

N.T.S.





EMBEDDED TRACK w/SINGLE RESTRAINING RAIL

SECTION A–A

N.T.S.

RAIL ACCESS BOX – EMBEDDED TRACK W/SINGLE RESTRAINING RAIL PLAN VIEW

N.T.S.

NOTES:

① 4" PVC 80, DRAIN PIPE.

② EXTEND GAGE SIDE & FIELD SIDE OF RAIL BOOT 1" MIN. INSIDE THE RAIL ACCESS BOX, AS SHOWN.

③ CONNECT 4" PVC–80 DRAIN PIPE TO DRAINTILE CLEANOUT OR RAIL ACCESS BOX IN ADJACENT TRACK SLAB. SEE DRAINAGE PLANS.

④ SEE SYSTEMS PLANS FOR RAIL ACCESS BOX DETAILS.

⑤ REINFORCING STEEL NOT ILLUSTRATED FOR CLARITY. SEE DTL–307 AND DTL–308 FOR REINFORCING STEEL DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

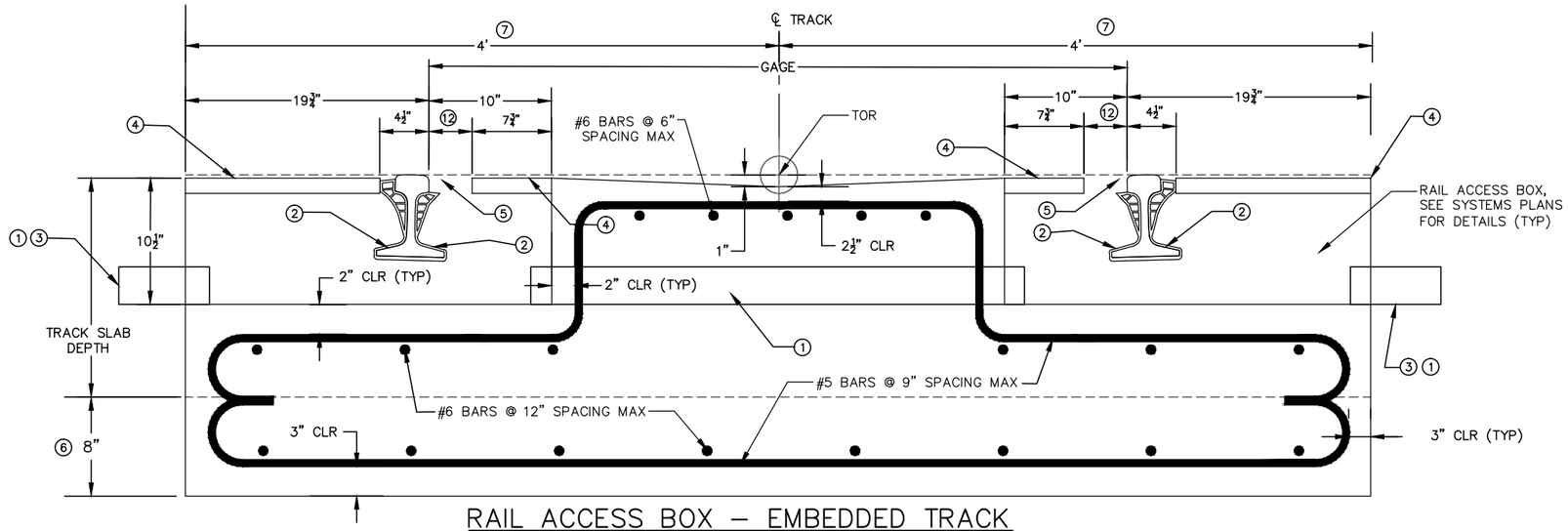
CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK RAIL ACCESS BOX
SHEET 2 OF 4

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-315

SHEET 59 OF 114

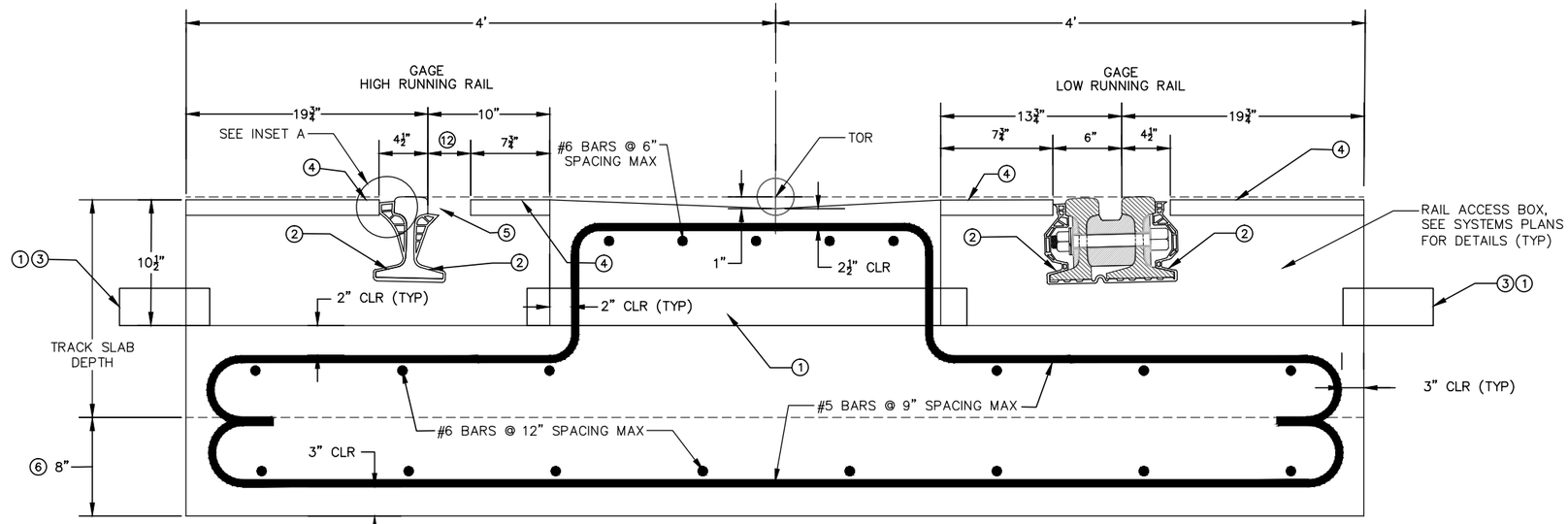
Jan, 18 2016 09:10 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



RAIL ACCESS BOX – EMBEDDED TRACK

SECTION B–B

N.T.S.



RAIL ACCESS BOX – EMBEDDED TRACK w/SINGLE RESTRAINING RAIL

SECTION B–B

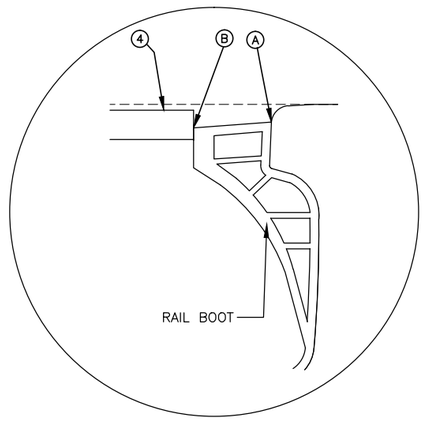
N.T.S.

NOTES:

1. 4" PVC–80, DRAIN PIPE. SEE DRAINAGE PLANS FOR DETAILS.
2. EXTEND GAGE SIDE & FIELD SIDE OF RAIL BOOT 1" MIN. INSIDE THE RAIL ACCESS BOX, APPROX. 9" LEFT & RIGHT OF ℄ RAIL ACCESS BOX. SEE DRAINAGE PLANS FOR DETAILS.
3. CONNECT TO STORM SEWER. SEE DRAINAGE PLANS FOR DETAILS.
4. RAIL ACCESS BOX COVER IS ¼" BELOW TOR ON GAGE SIDE AND FIELD SIDE OF RAIL. TRANSITION CONCRETE UNIFORMLY 5 FT ON EITHER SIDE OF BOX.
5. INTERRUPT FLANGEWAY FILLER AT OUTER EDGES OF RAIL ACCESS BOX. CONTINUE RAIL BOOT INSIDE RAIL ACCESS BOX.
6. TRACK SLAB THICKNESS INCREASES BY 8" AT RAIL ACCESS BOX. SEE DTL–317 FOR CONCRETE AND STEEL REINFORCING DETAILS.
7. TRACK SLAB WIDTH VARIES AT STATION PLATFORMS. SEE DTL–303 AND DTL–304 FOR VARYING TRACK SLAB WIDTHS AT STATION PLATFORMS.
8. TRANSITION CONCRETE TO MATCH TOP OF RAIL ACCESS BOX AT FIELD SIDE OF RAIL. ON FIELD SIDE OF RAIL, RAIL ACCESS BOX COVER IS ¼" BELOW TOR.
9. FOR EMBEDDED TRACK SLAB, TOP AND BOTTOM MAT OF REBAR SHALL BE MADE ELECTRICALLY CONTINUOUS. SEE DTL–311 AND DTL–312 FOR DETAILS.
10. ALL REINFORCING STEEL SHALL BE ASTM 615, GR 60.
11. TRACK SLAB SHALL BE CONSTRUCTED IN ONE MONOLITHIC POUR
12. FOR STANDARD GAGE TRACK : 2–¼"
    FOR GAGE WIDENED TRACK : 2–¼" PLUS GAGE WIDENING.

(A) POINT (A) IS ⅜" BELOW TOR

(B) POINT (B) IS ½" BELOW TOR



INSET A

N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

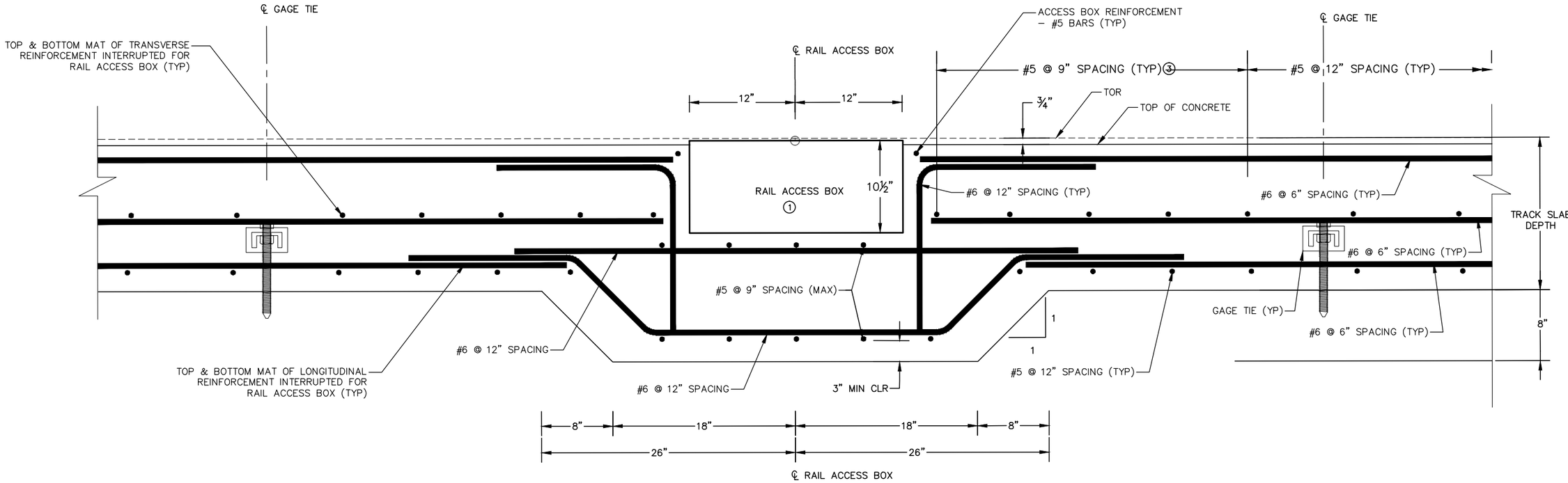
CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK RAIL ACCESS BOX
SHEET 3 OF 4

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-316

SHEET 60 OF 114

Jan, 18 2016 09:11 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



RAIL ACCESS BOX – TRACK SLAB SUPP. REINF.
LONGITUDINAL SECTION C–C
N.T.S.

NOTES:

① SEE SYSTEMS PLANS FOR RAIL ACCESS BOX DETAILS.

② #4 BAR HOOKS NOT ILLUSTRATED FOR CLARITY.

③ TOP TRANSVERSE REINFORCEMENT SHALL BE #5 BARS @ 9" SPACING OVER A LENGTH OF 3'–0" ON EACH SIDE OF RAIL ACCESS OPENING.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

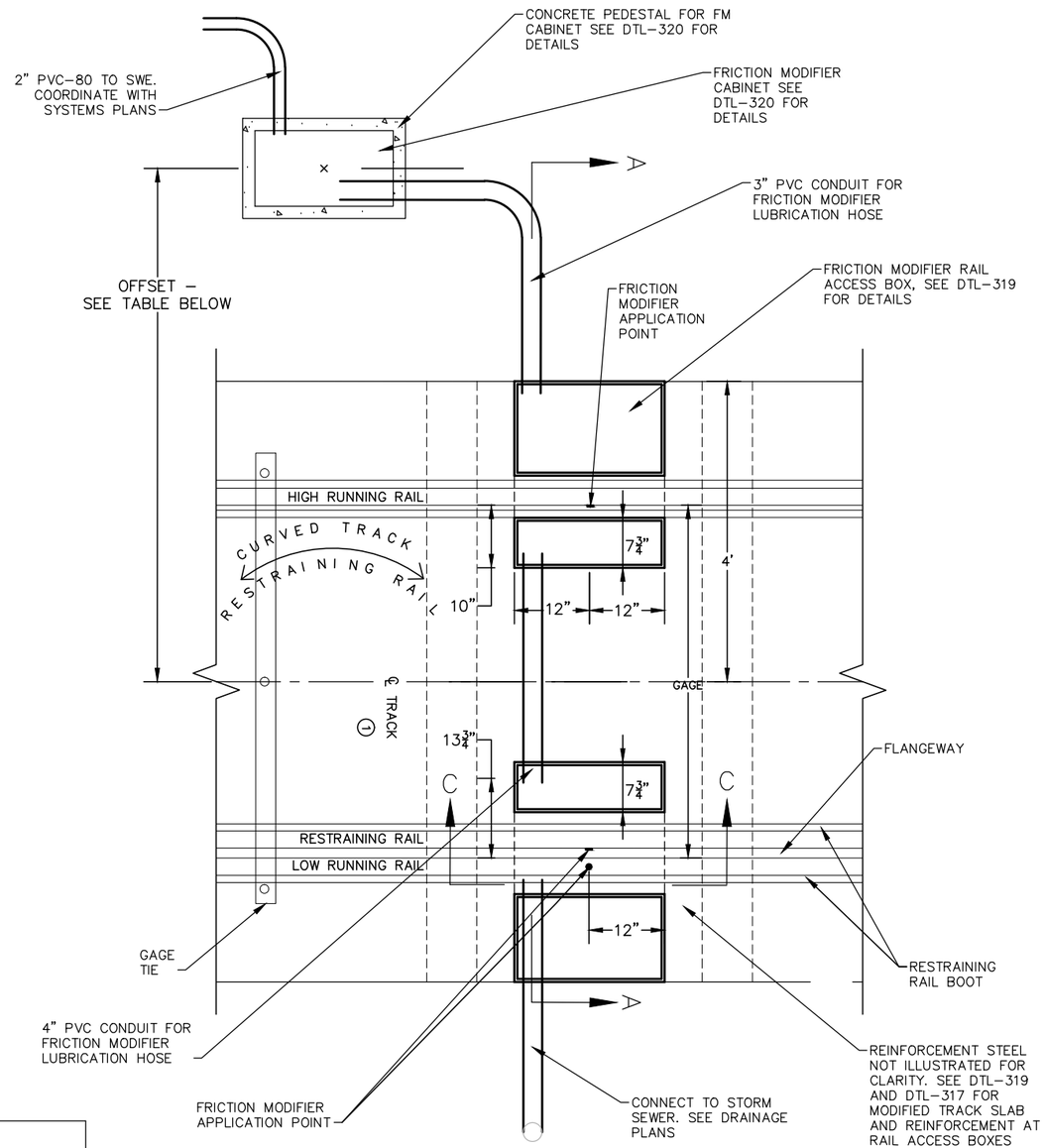
CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK RAIL ACCESS BOX
SHEET 4 OF 4

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-317

SHEET 61 OF 114

Jan, 18 2016 09:12 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



NOTE;

① FM E4 209B LOCATES ON MnDOT BRIDGE R0697. SEE BRIDGE PLANS FOR DETAILS.

FRICTION MODIFIER DATA – SUMMARY TABLE					
CABINET LOCATION AND OFFSET					
TRACK 1			TRACK 2		
STATION	FRICTION MODIFIER NAME	OFFSET	STATION	FRICTION MODIFIER NAME	OFFSET
1941+34.06	FM E4 109B	8.50'	① 2937+58.57	FM E4 209B	①
1943+56.52	FM E4 110	8.50'	2942+29.56	FM E4 210	8.50'

FRICTION MODIFIER RAIL ACCESS BOX
EMBEDDED TRACK W/SINGLE RESTRAINING RAIL
PLAN VIEW
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
FRICTION MODIFIER
SHEET 1 OF 3

DISCIPLINE: TRACK

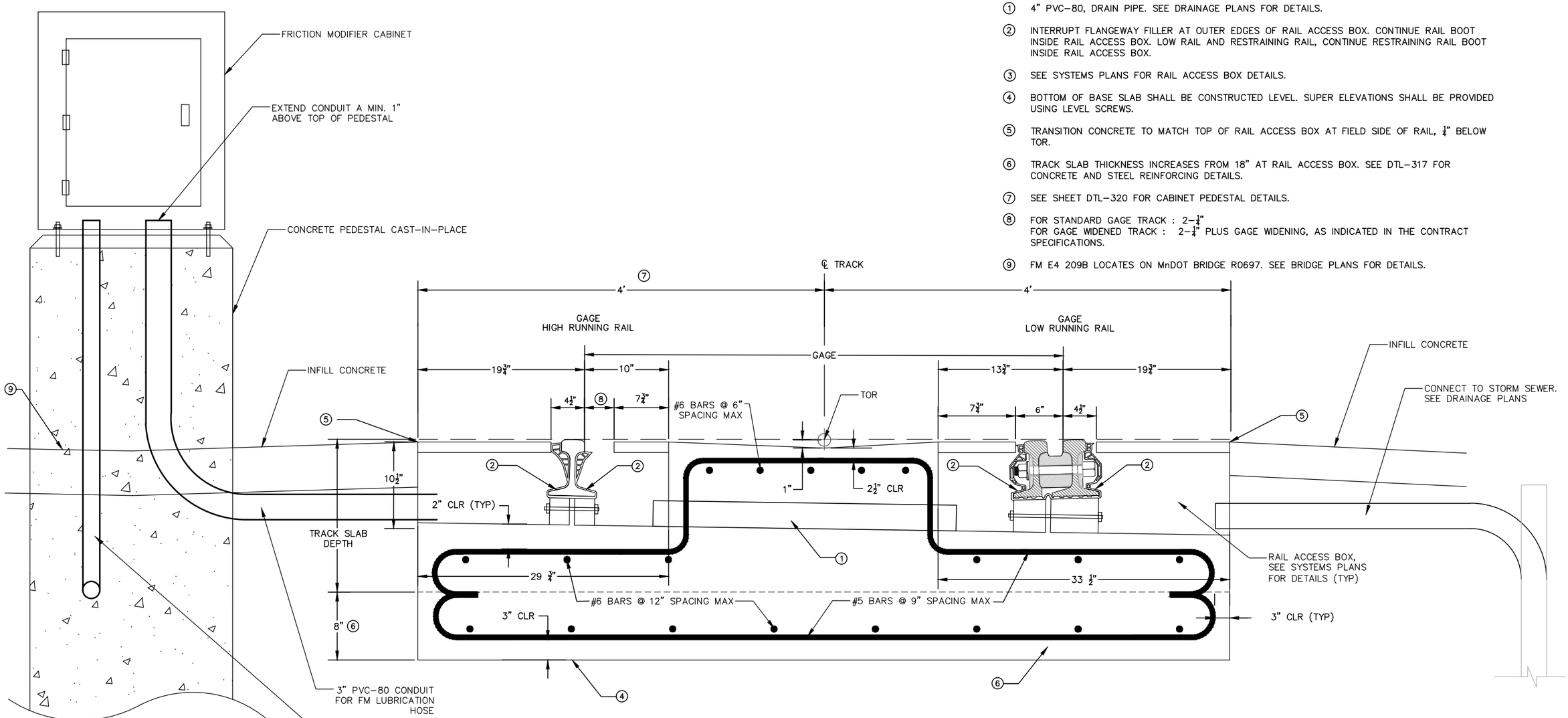
SHEET NAME: 00-TRK-DTL-318

SHEET 62 OF 114

Jan, 18 2016 09:12 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM

NOTES:

1. 4" PVC–80, DRAIN PIPE. SEE DRAINAGE PLANS FOR DETAILS.
2. INTERRUPT FLANGEWAY FILLER AT OUTER EDGES OF RAIL ACCESS BOX. CONTINUE RAIL BOOT INSIDE RAIL ACCESS BOX. LOW RAIL AND RESTRAINING RAIL, CONTINUE RESTRAINING RAIL BOOT INSIDE RAIL ACCESS BOX.
3. SEE SYSTEMS PLANS FOR RAIL ACCESS BOX DETAILS.
4. BOTTOM OF BASE SLAB SHALL BE CONSTRUCTED LEVEL. SUPER ELEVATIONS SHALL BE PROVIDED USING LEVEL SCREWS.
5. TRANSITION CONCRETE TO MATCH TOP OF RAIL ACCESS BOX AT FIELD SIDE OF RAIL, $\frac{1}{4}$" BELOW TOR.
6. TRACK SLAB THICKNESS INCREASES FROM 18" AT RAIL ACCESS BOX. SEE DTL–317 FOR CONCRETE AND STEEL REINFORCING DETAILS.
7. SEE SHEET DTL–320 FOR CABINET PEDESTAL DETAILS.
8. FOR STANDARD GAGE TRACK : 2–$\frac{1}{4}$"
   FOR GAGE WIDENED TRACK : 2–$\frac{1}{4}$" PLUS GAGE WIDENING, AS INDICATED IN THE CONTRACT SPECIFICATIONS.
9. FM E4 209B LOCATES ON MnDOT BRIDGE R0697. SEE BRIDGE PLANS FOR DETAILS.



FRICTION MODIFIER RAIL ACCESS BOX
EMBEDDED TRACK WITH SINGLE RESTRAINING RAIL
SECTION A–A
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

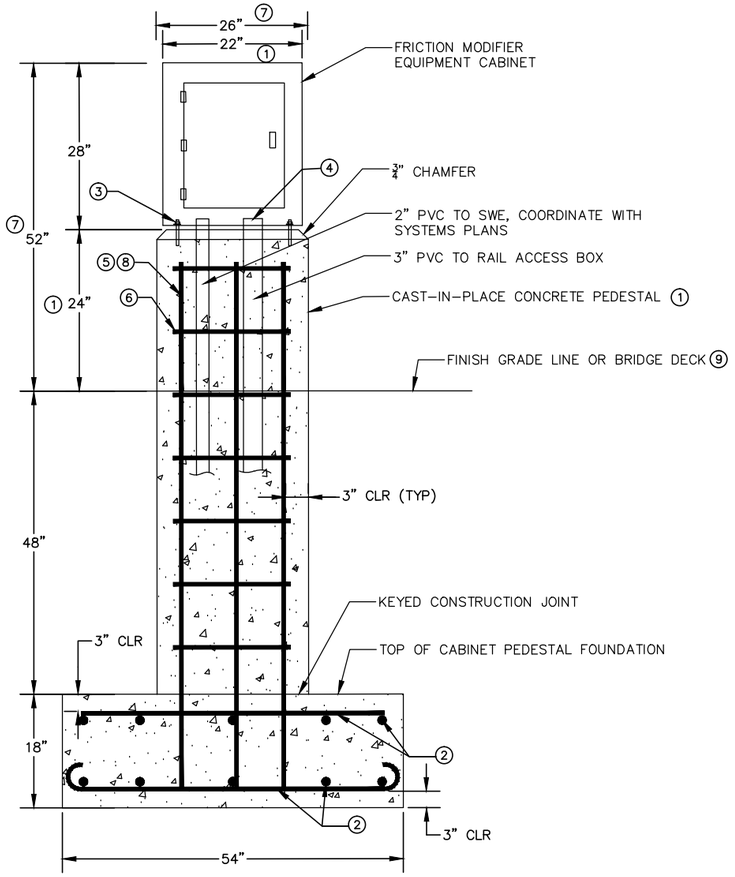
CIVIL - VOLUME 3C
TRACK DETAILS
FRICTION MODIFIER
SHEET 2 OF 3

DISCIPLINE: TRACK

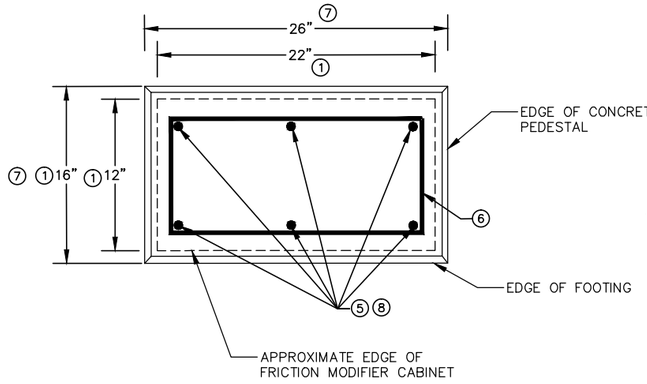
SHEET NAME: 00-TRK-DTL-319

SHEET 63 OF 114

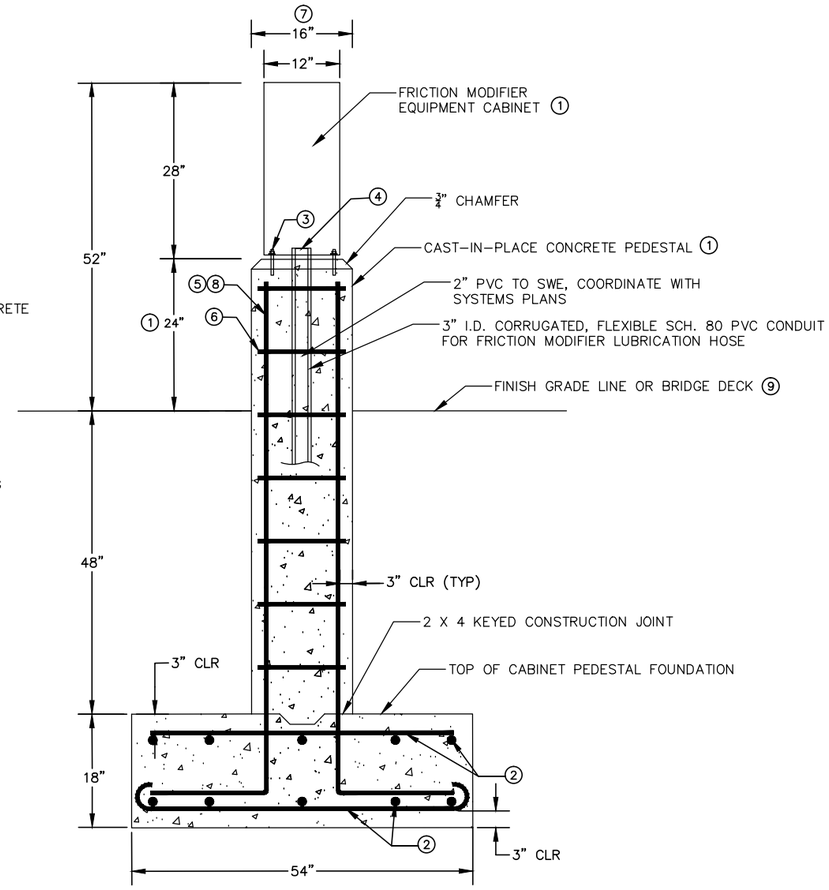
Jan, 18 2016 09:13 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



FRICTION MODIFIER CABINET AND PEDESTAL
FRONT ELEVATION
N.T.S.



FRICTION MODIFIER CABINET
AND CONCRETE PEDESTAL
PLAN VIEW
N.T.S.



FRICTION MODIFIER CABINET AND PEDESTAL
SIDE ELEVATION
N.T.S.

NOTES:

① CONCRETE PEDESTAL SHOWN IN THESE PLANS WAS DESIGNED BASED ON FRICTION MODIFIER CABINET BEING 12" W X 22" L X 28" T. PEDESTAL SHALL BE SIZED BY CONTRACTOR TO PROVIDE 1" MINIMUM REVEAL AROUND ALL EDGES OF FRICTION MODIFIER CABINET. CONTRACTOR SHALL VERIFY PEDESTAL SIZE DURING CONSTRUCTION.

② LONGITUDINAL AND TRANSVERSE REINFORCING FOR PEDESTAL FOOTING TO BE #4 BARS @ 12" SPACING.

③ CONTRACTOR SHALL VERIFY PLACEMENT OF ANCHOR BOLTS DURING CONSTRUCTION.

④ EXTEND CONDUIT A MINIMUM 3" ABOVE TOP OF PEDESTAL.

⑤ FOR AT-GRADE ONLY: LONGITUDINAL REINFORCING #4 @ 10" O.C. EPOXY COATED WITH STANDARD 90° HOOK.

⑥ TRANSVERSE REINFORCING #4 @ 10" O.C. TIE WITH 135° HOOKS ON BOTH ENDS, EPOXY COATED WITH STANDARD 90° HOOK.

⑦ OVERALL DIMENSIONS FOR CONCRETE PEDESTAL AND CABINET SHALL NOT INCREASE WITHOUT APPROVAL FROM THE CAR.

⑧ FOR CONNECTIONS TO BRIDGE DECK ONLY: #6 DOWELS TO BE PLACED DURING BRIDGE DECK CONSTRUCTION.

⑨ FM E4 209B LOCATES ON MnDOT BRIDGE R0697. SEE BRIDGE PLANS FOR DETAILS.

⑩ APPLY COATING ON CONSTRUCTION JOINT SURFACE AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

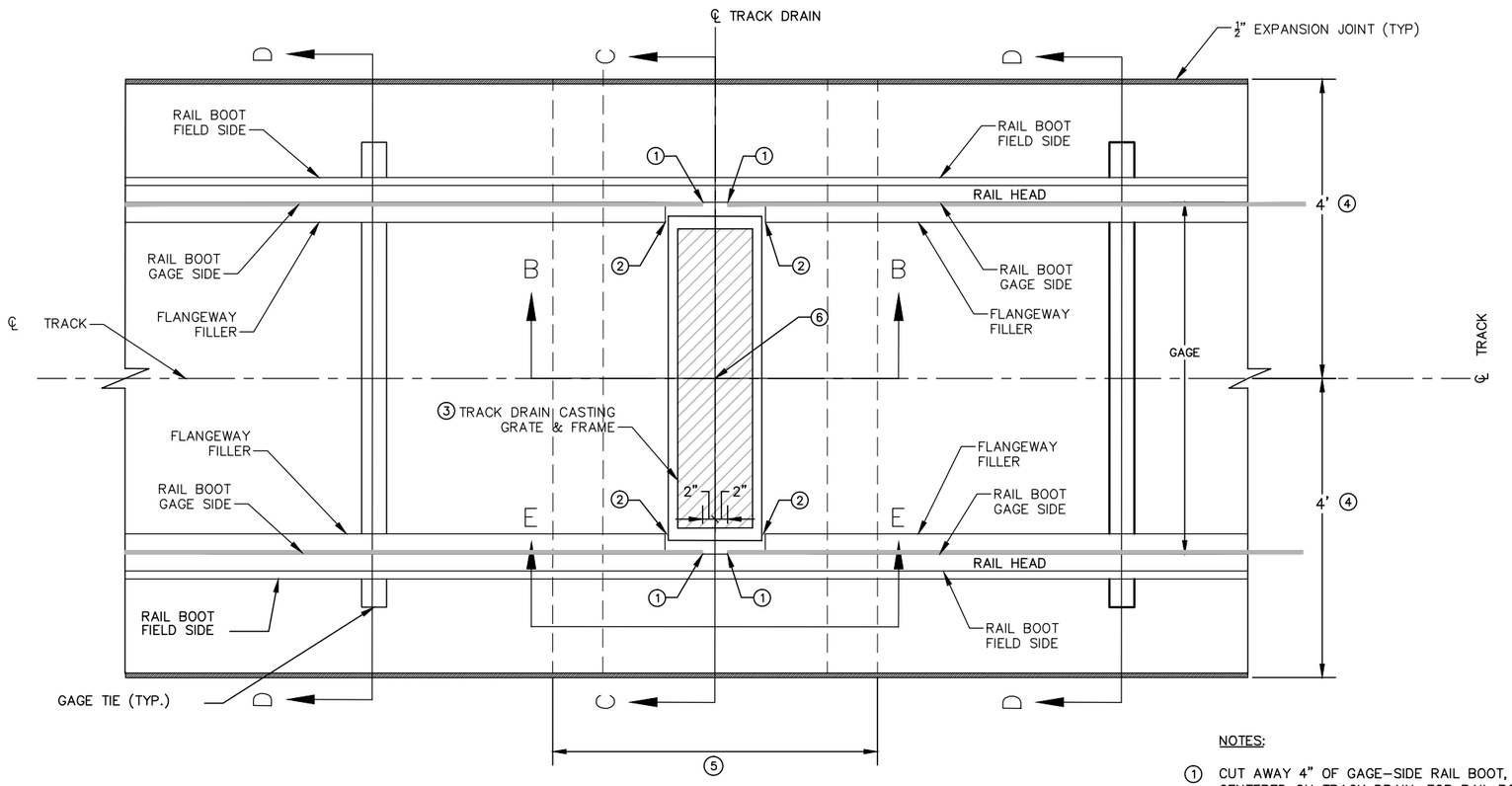
CIVIL - VOLUME 3C
TRACK DETAILS
FRICTION MODIFIER
SHEET 3 OF 3

DISCIPLINE: TRACK

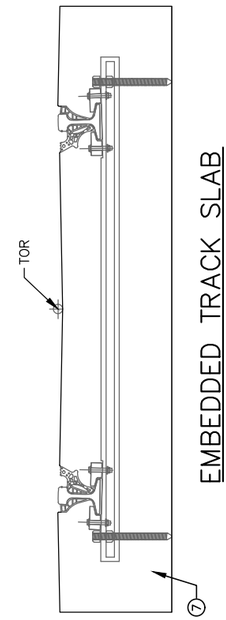
SHEET NAME: 00-TRK-DTL-320

SHEET 64 OF 114

Jan, 18 2016 09:14 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



EMBEDDED TRACK AT TRACK DRAIN
PLAN VIEW
N.T.S.



EMBEDDED TRACK SLAB
SECTION D–D
N.T.S.

NOTES:

① CUT AWAY 4" OF GAGE–SIDE RAIL BOOT, INCLUDING BOOT AT RAIL BASE, CENTERED ON TRACK DRAIN, FOR RAIL BOOT DRAINAGE. DO NOT CUT AWAY FIELD SIDE OF RAIL BOOT.

② CUT AWAY 16" OF FLANGEWAY FILLER, CENTERED ON TRACK DRAIN, TO ACCOMODATE TRACK DRAIN CASTING FRAME.

③ TRACK DRAIN CASTING DIMENSIONS PROVIDED FOR NEENAH 3420.

④ TRACK SLAB WIDTH VARIES AT STATION PLATFORMS. SEE DTL–303 AND DTL–304 FOR DETAILS ON VARYING TRACK SLAB WIDTHS.

⑤ TRACK SLAB THICKNESS INCREASES FROM 18" TO 26" ACROSS ENTIRE WIDTH OF TRACK SLAB AT TRACK DRAINS. SEE DTL–322 AND DTL–325 FOR DETAILS ON CONCRETE AND REINFORCING DETAILS.

⑥ PVC RISER NOT SHOWN FOR CLARITY.

⑦ REINFORCING STEEL NOT ILLUSTRATED FOR CLARITY. SEE DTL–301 AND DTL–302 FOR REINFORCING STEEL DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

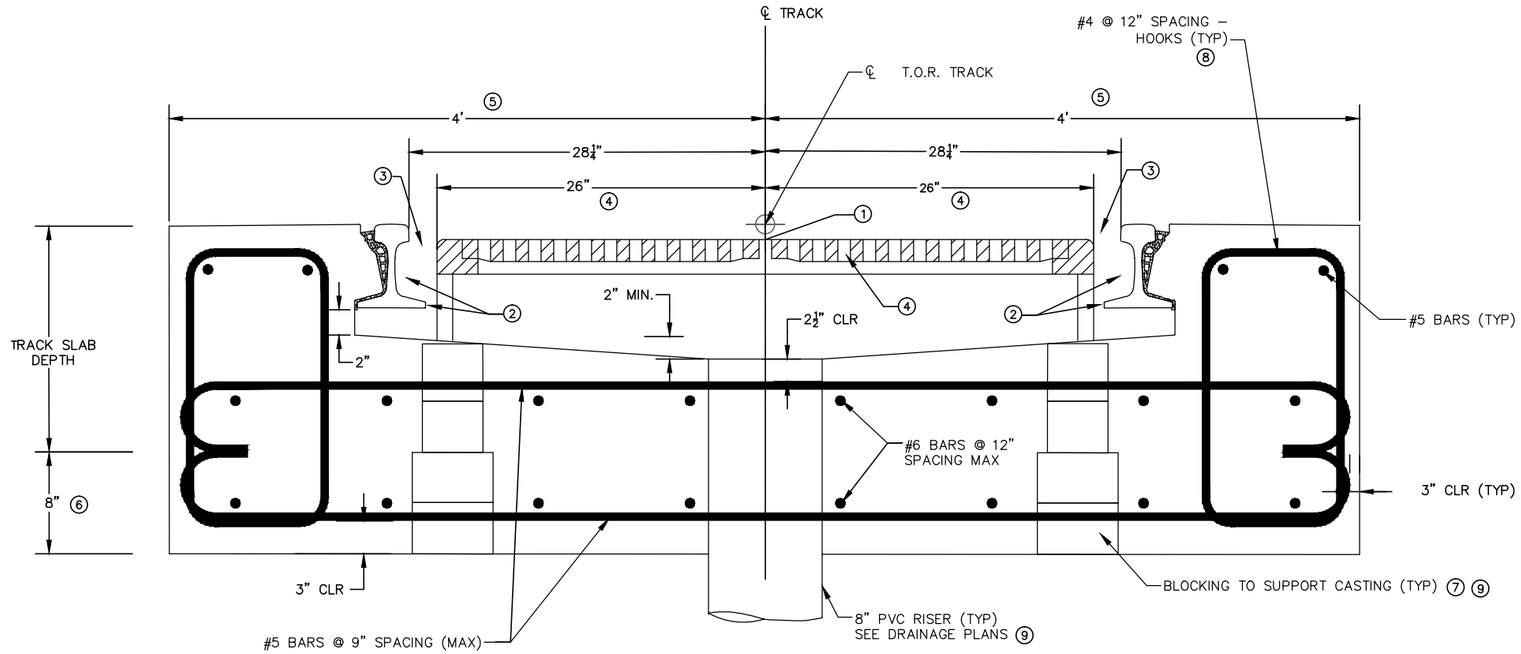
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK @ TRACK DRAIN
SHEET 1 OF 5

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-321

SHEET 65 OF 114



EMBEDDED TRACK– TRACK DRAIN
SECTION C–C
N.T.S.

NOTES:

① TOP OF CASTING SHALL MATCH TOP OF INFILL CONCRETE AT 1" BELOW TOR ELEVATION AT TRACK ℄.

② CUT AWAY 4" OF GAGE–SIDE RAIL BOOT, INCLUDING BOOT AT RAIL BASE, CENTERED ON TRACK DRAIN, FOR RAIL BOOT DRAINAGE. DO NOT CUT AWAY FIELD SIDE OF RAIL BOOT.

③ CUT AWAY 16" OF FLANGEWAY FILLER, CENTERED ON TRACK DRAIN, TO ACCOMODATE TRACK DRAIN CASTING FRAME.

④ TRACK SECTION ILLUSTRATES NEENAH R–3420.

⑤ TRACK SLAB WIDTH VARIES AT STATION PLATFORMS. SEE DTL–303 AND DTL–304 FOR DETAILS ON VARYING TRACK SLAB WIDTHS.

⑥ TRACK SLAB THICKNESS INCREASES ACROSS ENTIRE WIDTH OF TRACK SLAB AT TRACK DRAIN. SEE DTL–325 FOR DETAILS ON CONCRETE AND REINFORCING STEEL.

⑦ BLOCKING WILL BE DETAILED TO FIT WITHIN REINFORCEMENT CAGE.

⑧ CLEAR DISTANCE BETWEEN #4 HOOKS AND EDGE OF RAIL SHALL BE 2".

⑨ CLEAR DISTANCE BETWEEN REINFORCEMENT AND PVC RISER OR BLOCKING SHALL BE 2".

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

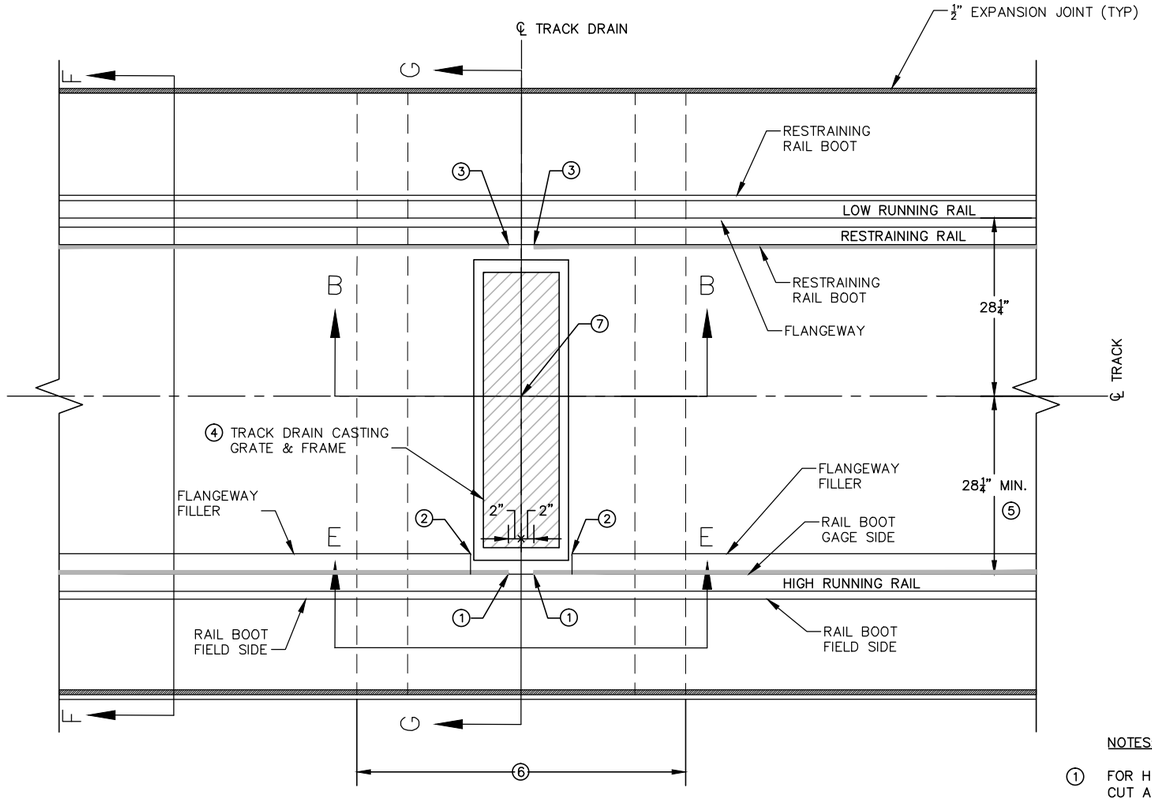
CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK @ TRACK DRAIN
SHEET 2 OF 5

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-322

SHEET 66 OF 114

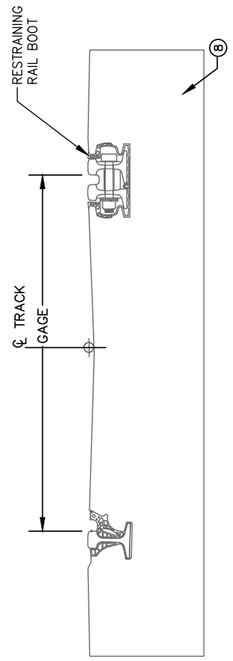
Jan, 18 2016 09:16 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



TRACK DRAIN @ TRACK w/SINGLE RESTRAINING RAIL

PLAN VIEW

N.T.S.



EMBEDDED TRACK SINGLE RESTRAINING RAIL

SECTION F–F

N.T.S.

NOTES:

① FOR HIGH RUNNING RAIL:
CUT AWAY 4" OF GAGE–SIDE RAIL BOOT, INCLUDING BOOT AT RAIL BASE, CENTERED ON TRACK DRAIN, FOR RAIL BOOT DRAINAGE. DO NOT CUT AWAY FIELD SIDE OF RAIL BOOT ON HIGH RUNNING RAIL.

② FOR HIGH RUNNING RAIL:
CUT AWAY 16" OF FLANGEWAY FILLER, CENTERED ON TRACK DRAIN, TO ACCOMMODATE TRACK DRAIN CASTING FRAME.

③ FOR RESTRAINING RAIL:
CUT AWAY 4" OF FIELD SIDE RAIL BOOT, INCLUDING BOOT AT BASE OF RESTRAINING RAIL AND LOW RUNNING RAIL, CENTERED ON TRACK DRAIN, FOR RAIL BOOT DRAINAGE. DO NOT CUT AWAY FIELD SIDE OF RAIL BOOT ON LOW RUNNING RAIL.

④ MODIFY NEENAH R–3420 TRACK DRAIN GRATE AND FRAME TO FIT EMBEDDED TRACK WITH SINGLE RESTRAINING RAIL, SEE DTL–323.

⑤ GAGE WIDENING PROVIDED FOR HORIZONTAL CURVES IN ACCORDANCE WITH DTL–306.

⑥ TRACK THICKNESS INCREASES ACROSS ENTIRE WIDTH OF TRACK SLAB, AT TRACK DRAINS. SEE DRD–30.41 FOR DETAILS ON CONCRETE AND REINFORCING STEEL.

⑦ PVC RISER NOT SHOWN FOR CLARITY.

⑧ REINFORCING STEEL NOT ILLUSTRATED FOR CLARITY. SEE DTL–307 AND DTL–308 FOR REINFORCING STEEL DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

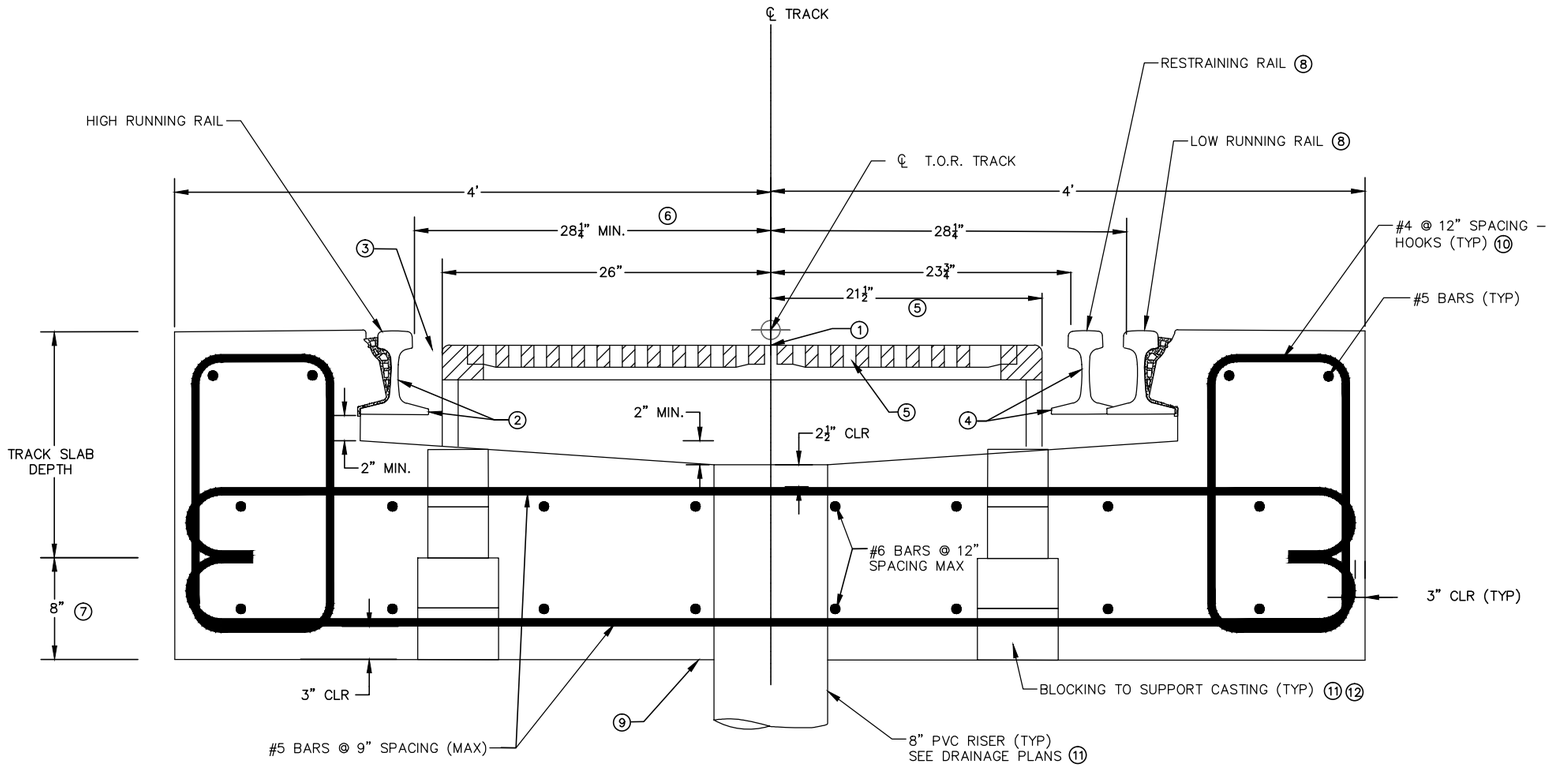
CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK @ TRACK DRAIN
SHEET 3 OF 5

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-323

SHEET 67 OF 114

Jan, 18 2016 09:17 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



EMBEDDED TRACK W/SINGLE RESTRAINING
RAIL @ TRACK DRAIN
SECTION G–G
N.T.S.

NOTES:

① TOP OF CASTING SHALL MATCH TOP OF INFILL CONCRETE AT 1" BELOW TOR ELEVATION AT TRACK ℄

② FOR HIGH RUNNING RAIL:
CUT AWAY 4" OF GAGE–SIDE RAIL BOOT, INCLUDING BOOT AT RAIL BASE, CENTERED ON TRACK DRAIN, FOR RAIL BOOT DRAINAGE. DO NOT CUT AWAY FIELD SIDE OF RAIL BOOT ON HIGH RUNNING RAIL.

③ FOR HIGH RUNNING RAIL:
CUT AWAY 16" OF FLANGEWAY FILLER, CENTERED ON TRACK DRAIN, TO ACCOMODATE TRACK DRAIN CASTING FRAME.

④ FOR RESTRAINING RAIL:
CUT AWAY 4" OF FIELD SIDE RAIL BOOT, INCLUDING BOOT AT BASE OF RESTRAINING RAIL AND LOW RUNNING RAIL, CENTERED ON TRACK DRAIN, FOR RAIL BOOT DRAINAGE. DO NOT CUT AWAY FIELD SIDE OF RAIL BOOT ON LOW RUNNING RAIL.

⑤ MODIFY NEENAH R–3420 TRACK DRAIN GRATE AND FRAME TO FIT EMBEDDED TRACK WITH SINGLE RESTRAINING RAIL.

⑥ GAGE WIDENING PROVIDED FOR HORIZONTAL CURVES IN ACCORDANCE WITH DTL–306.

⑦ TRACK SLAB THICKNESS INCREASES FROM 18" TO 26" ACROSS ENTIRE WIDTH OF TRACK SLAB AT TRACK DRAIN. SEE DTL–323 FOR DETAIL ON CONCRETE AND REINFORCING STEEL.

⑧ SEE DTL–307 AND DTL–308 FOR RESTRAINING RAIL DETAILS.

⑨ BOTTOM OF BASE SLAB SHALL BE CONSTRUCTED LEVEL. SUPERELEVATION SHALL BE PROVIDED USING LEVELING SCREWS.

⑩ CLEAR DISTANCE BETWEEN #4 HOOKS AND EDGE OF RAIL SHALL BE 2".

⑪ CLEAR DISTANCE BETWEEN REINFORCEMENT AND PVC RISER OR BLOCKING SHALL BE 2".

⑫ BLOCKING WILL BE DETAILED TO FIT WITHIN REINFORCEMENT CAGE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

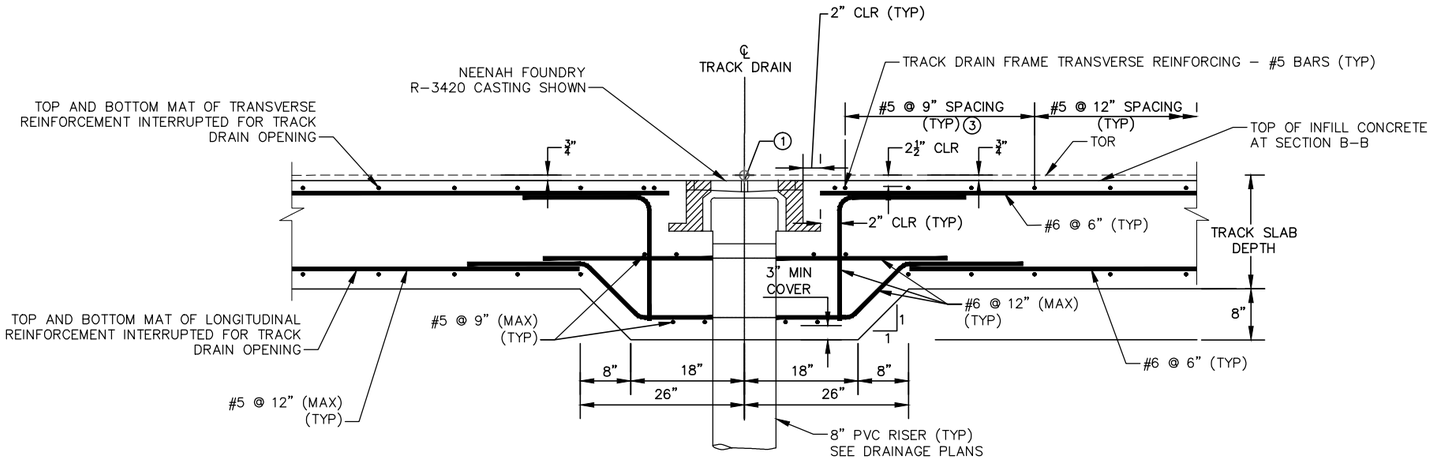
CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK @ TRACK DRAIN
SHEET 4 OF 5

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-324

SHEET 68 OF 114

Jan, 18 2016 09:18 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



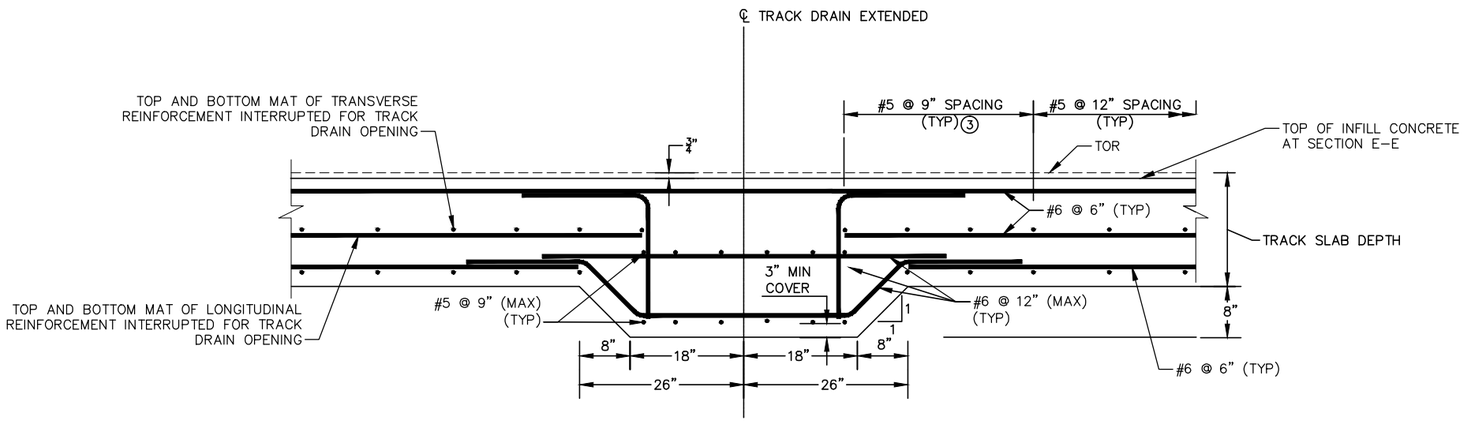
TRACK SLAB REINF. SECTION AT TRACK DRAIN
LONGITUDINAL SECTION B–B
N.T.S.

NOTES:

① TOP OF CASTING SHALL MATCH TOP OF INFILL CONCRETE AT 1" BELOW TOR ELEVATION AT TRACK ℄.

② #4 BAR HOOKS NOT ILLUSTRATED FOR CLARITY.

③ TOP TRANSVERSE REINFORCEMENT SHALL BE #5 BARS @ 9" SPACING OVER A LENGTH OF 3'–0" ON EACH SIDE OF TRACK DRAIN OPENING.



TRACK SLAB REINF. SECTION
LONGITUDINAL SECTION E–E
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

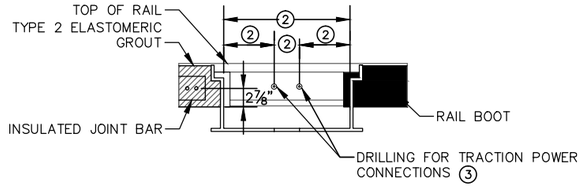
CIVIL - VOLUME 3C
TRACK DETAILS
EMBEDDED TRACK @ TRACK DRAIN
SHEET 5 OF 5

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-325

SHEET 69 OF 114

Jan, 18 2016 09:18 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM

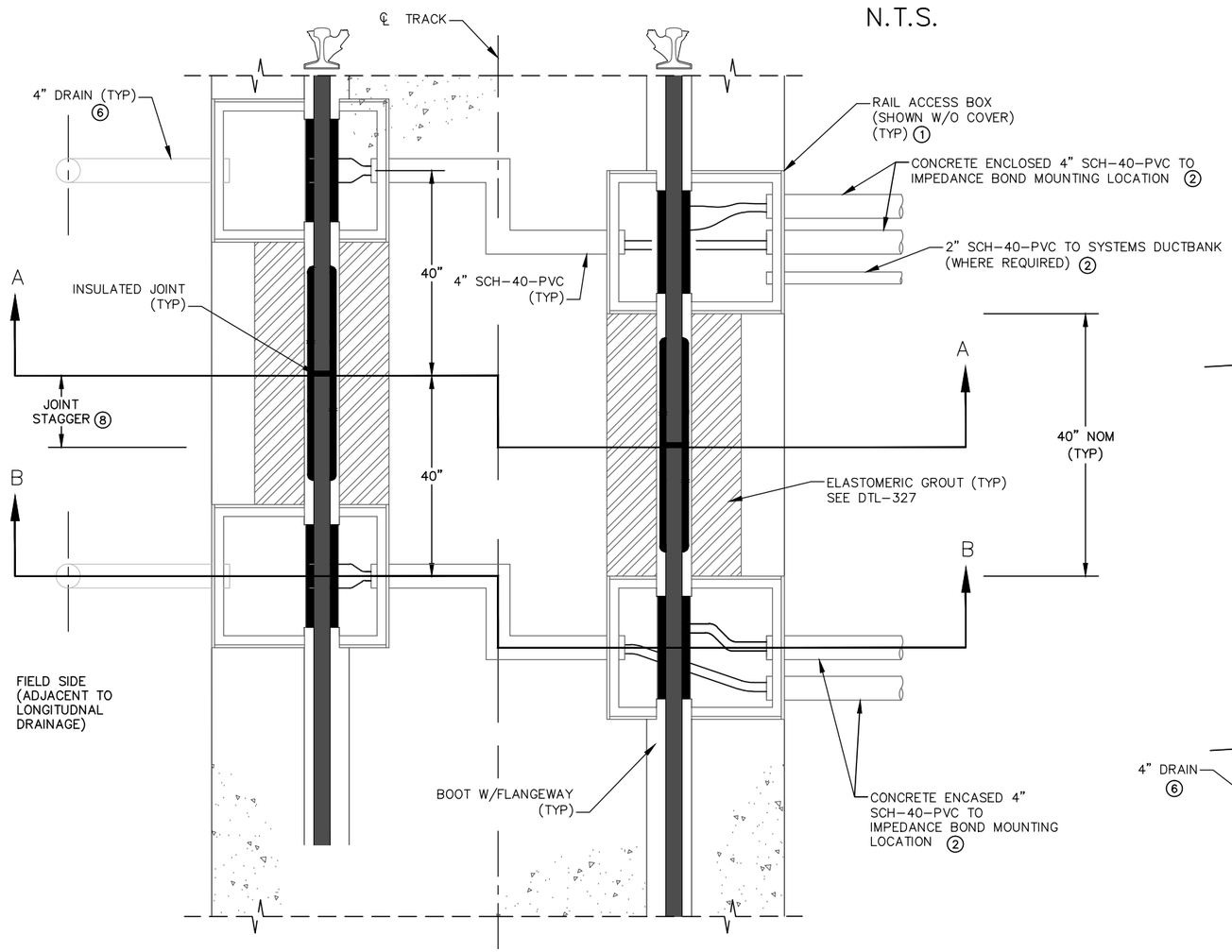


TYPICAL RAIL DRILLING

N.T.S.

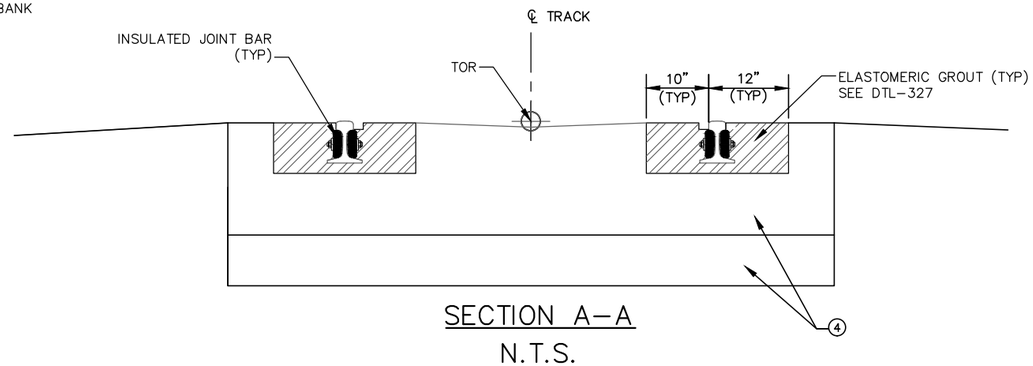
NOTES:

1. FOR RAIL ACCESS BOX SEE SYSTEMS PLANS.
2. SEE SYSTEMS PLANS FOR DETAILS.
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. REINFORCING STEEL NOT ILLUSTRATED FOR CLARITY. SEE DTL-314 TO DTL-317 FOR REINFORCING STEEL DETAILS.
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. CONNECT TO STORM SEWER. SEE DRAINAGE PLANS.
7. INSTALL INSULATED JOINTS AT LOCATIONS IDENTIFIED ON THE SYSTEM PLANS.
8. SEE CONTRACT SPECIFICATIONS FOR STAGGERED DIMENSION.



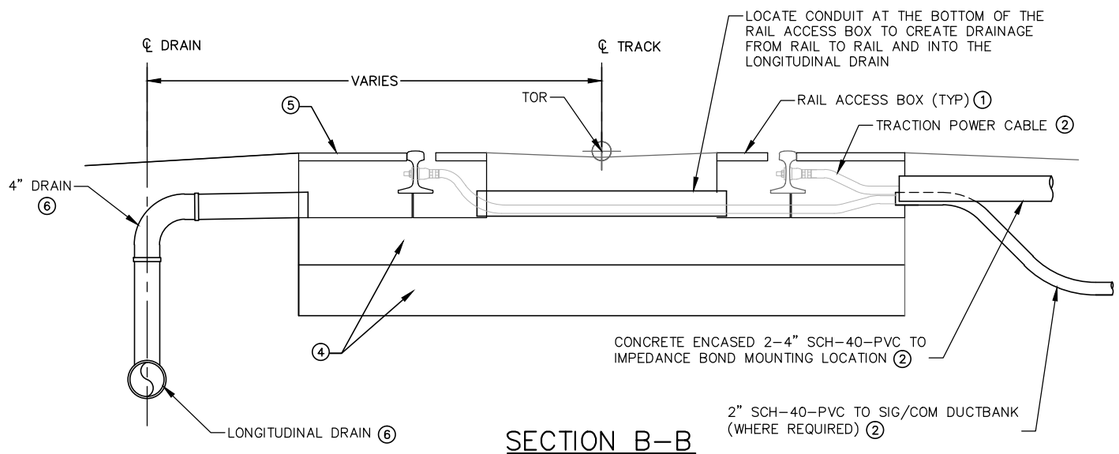
INSUALTED JOINT IN EMBEDDED TRACK

N.T.S.



SECTION A-A

N.T.S.



SECTION B-B

N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

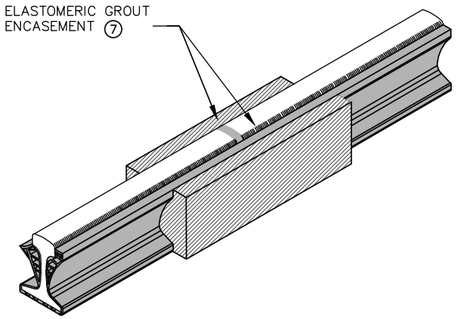
CIVIL - VOLUME 3C
TRACK DETAILS
INSULATED JOINT IN EMBEDDED TRACK
GROUT SHEET 1 OF 2

DISCIPLINE: TRACK

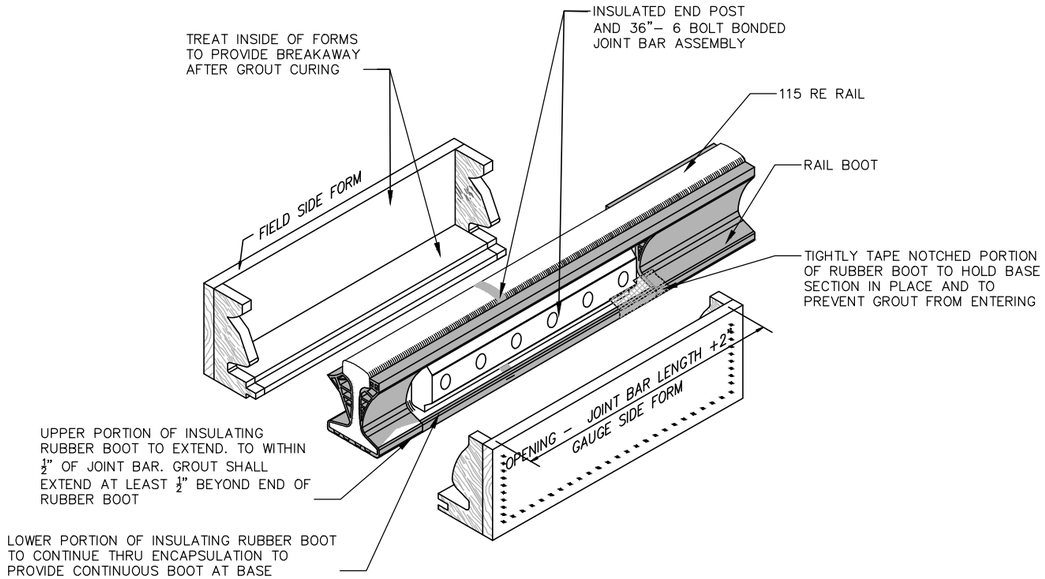
SHEET NAME: 00-TRK-DTL-326

SHEET 70 OF 114

Jan, 18 2016 09:19 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM



ENCASED INSULATED JOINT WITH CONTINUOUS BOOT DRAINAGE FOR EMBEDDED TRACK
N.T.S.



TYPICAL INSTALLATION FORM FOR EMBEDDED TRACK
N.T.S.

NOTES:

1. TAPE ENDS OF FORM AT BOOT SURFACE TO CONTROL LEAKS.
2. APPLY TYPE 2 ELASTOMERIC GROUT ENCAPSULATION TO ALL INSULATED JOINTS.
3. AT CURVED RAIL INSTALLATIONS PROVIDE ADDITIONAL CURVED BAFFLE MATERIAL TO ALLOW POURING AND ENCASEMENT OF GROUT.
4. INSTALL INSULATED JOINTS AT LOCATIONS IDENTIFIED ON THE SYSTEMS PLANS. FOR RESTRAINING RAIL APPLICATIONS, MODIFY ENCASEMENT FORM AS NECESSARY.
5. STAGGER INSULATED JOINTS IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. PROVIDE FLANGEWAY ON GAGE SIDE AS INDICATED ON SHEET DTL–302.
6. FOR RESTRAINING RAIL APPLICATIONS, MODIFY ENCASEMENT FORM TO ACCOMMODATE RESTRAINING RAIL. PROVIDE FLANGEWAY DETAIL AS INDICATED ON DTL–308.
7. ELASTOMERIC GROUT: AS SPECIFIED IN CONTRACT SPECIFICATION 34 11 29 EMBEDDED TRACK CONSTRUCTION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

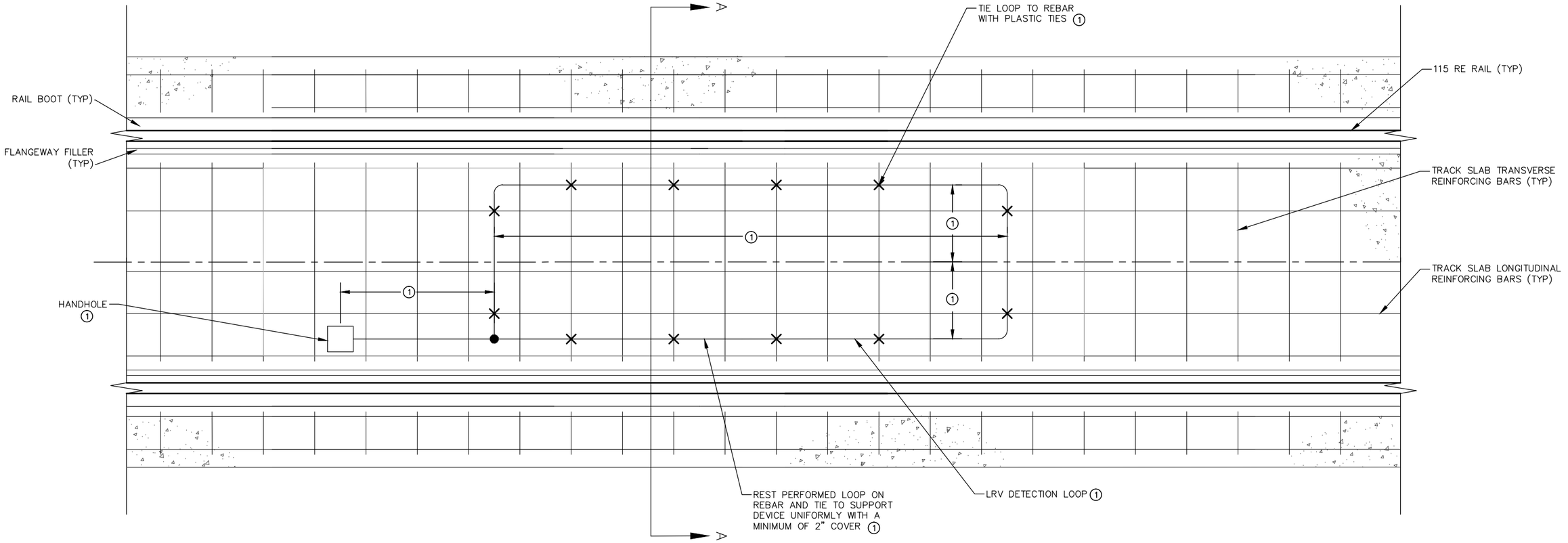
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
INSULATED JOINT IN EMBEDDED TRACK
GROUT SHEET 2 OF 2

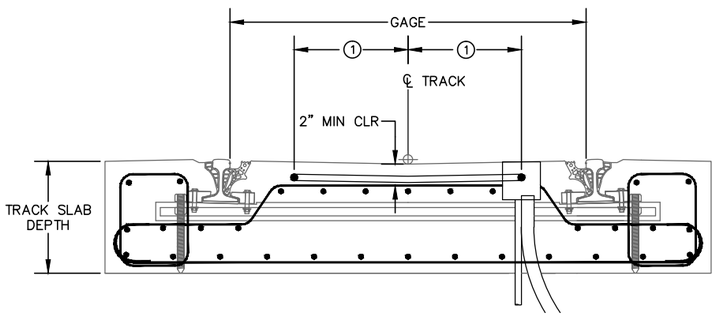
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-327

SHEET 71 OF 114



PLAN VIEW
N.T.S.



SECTION A–A
N.T.S.

NOTES:

(1) SEE SYSTEMS PLANS FOR DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

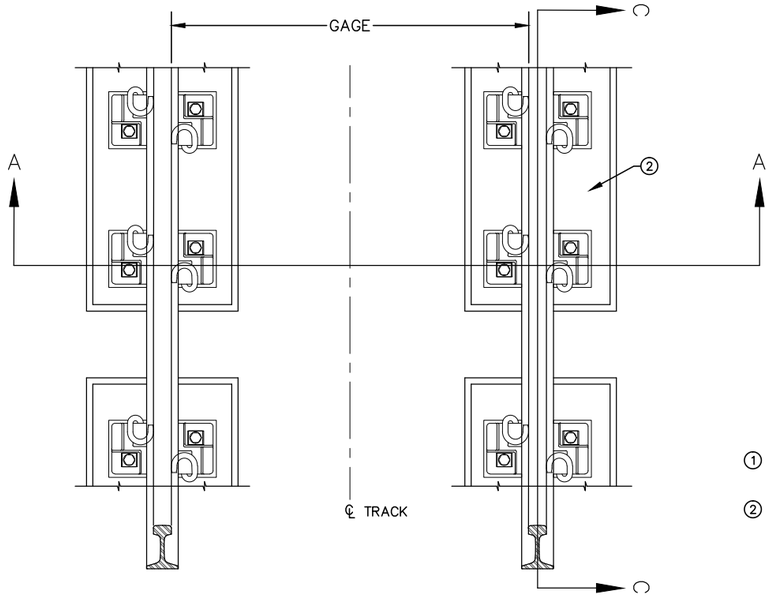
CIVIL - VOLUME 3C
TRACK DETAILS
LRV TRAFFIC DETECTION LOOP EMBEDDED TRACK INSTALLATION

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-328

SHEET 72 OF 114

Jan, 18 2016 09:21 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-300.dwg By: V-BurrellM

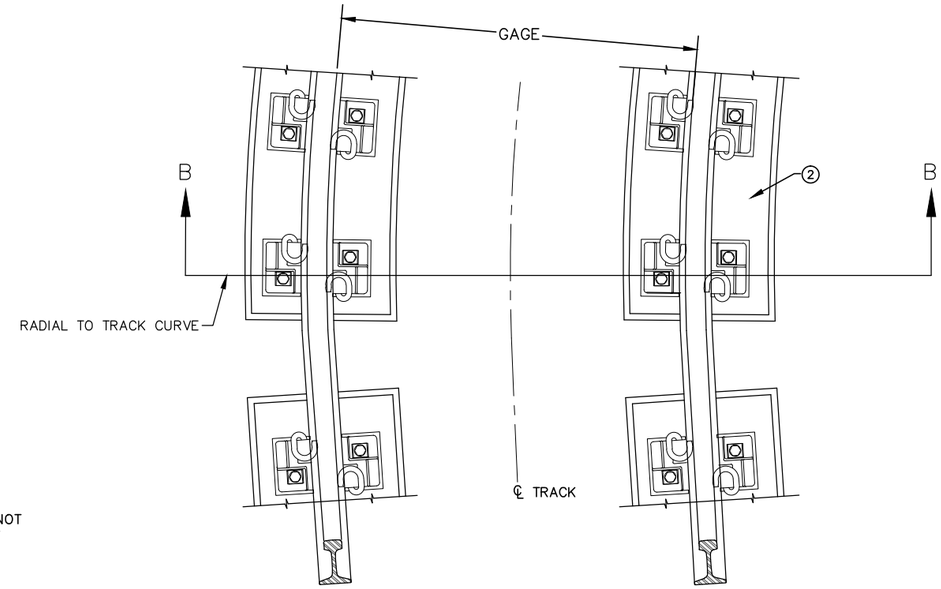


DF TANGENT TRACK – PLAN
N.T.S.

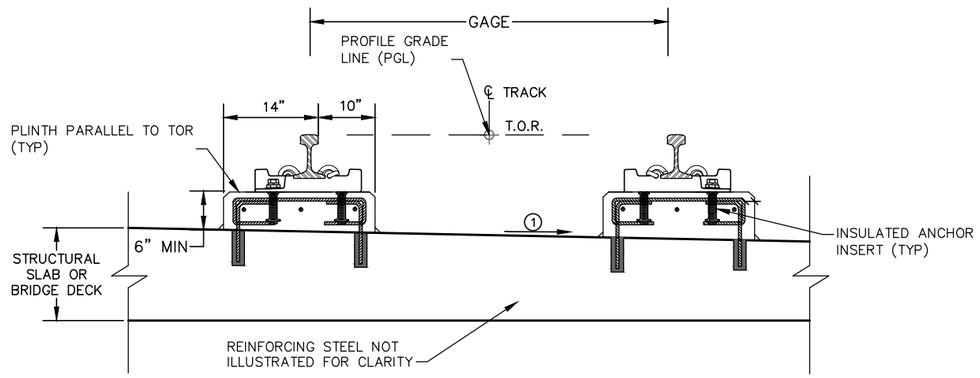
NOTES:

① SEE TYPICAL SECTIONS FOR CROSS SLOPE.

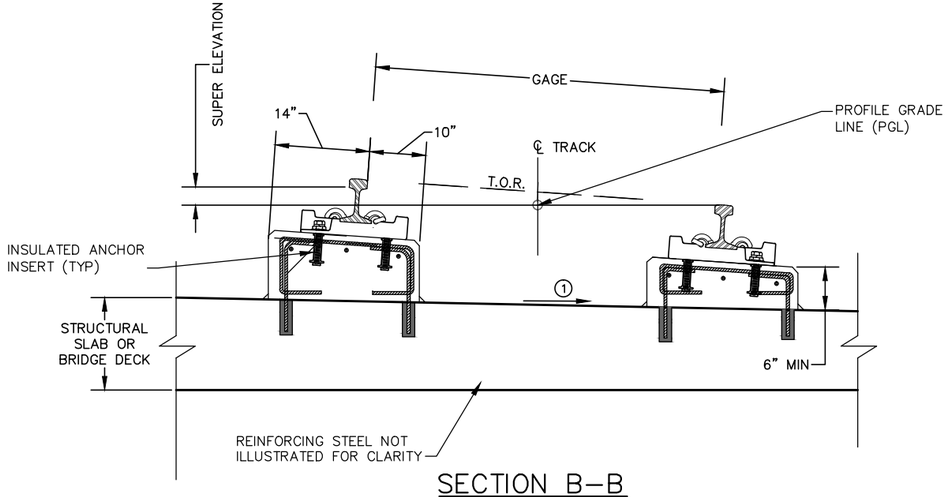
② MAXIMUM PLINTH LENGTH : NOT TO EXCEED 7 FASTENERS AT STANDARD SPACING.



DF CURVED TRACK – PLAN
N.T.S.



SECTION A–A
N.T.S.



SECTION B–B
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

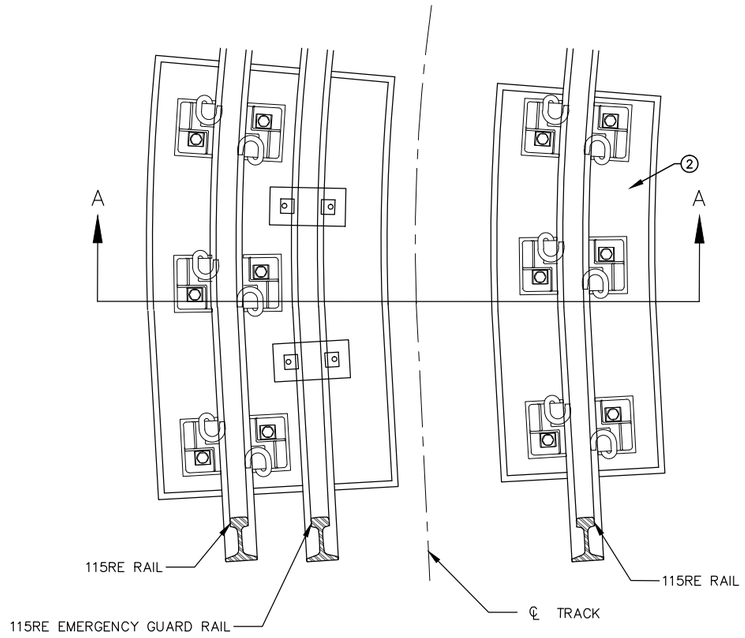
CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK
SHEET 1 OF 9

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-401

SHEET 73 OF 114

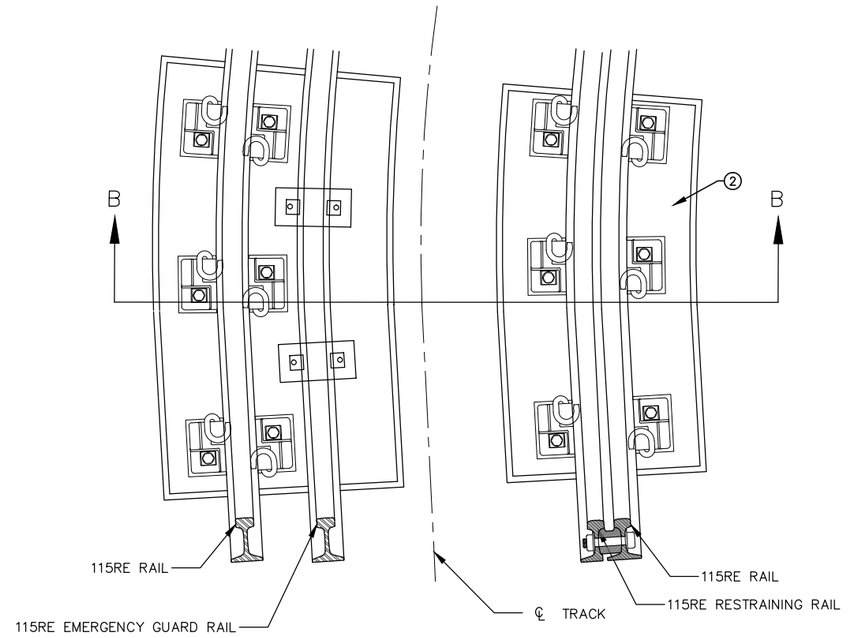
Jan, 18 2016 09:08 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-400.dwg By: V-BurrellM



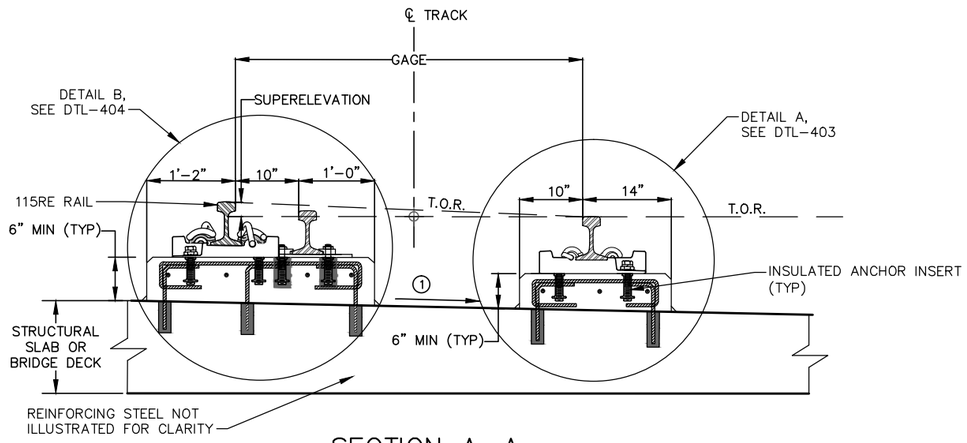
DF CURVED TRACK WITH EMERGENCY GUARD RAIL – PLAN
N.T.S.

NOTES:

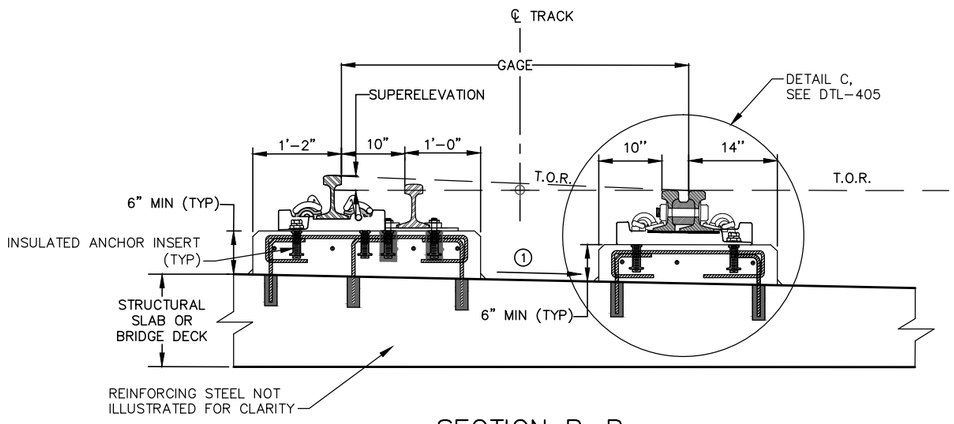
1. SEE TYPICAL SECTIONS FOR CROSS SLOPE.
2. MAXIMUM PLINTH LENGTH : NOT TO EXCEED 7 FASTENERS AT STANDARD SPACING.
3. SEE SHEET DTL–404 FOR EMERGENCY GUARD RAIL DETAILS.



DF CURVED TRACK WITH GUARD RAIL AND RESTRAINING RAIL – PLAN
N.T.S.



SECTION A–A
N.T.S.



SECTION B–B
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

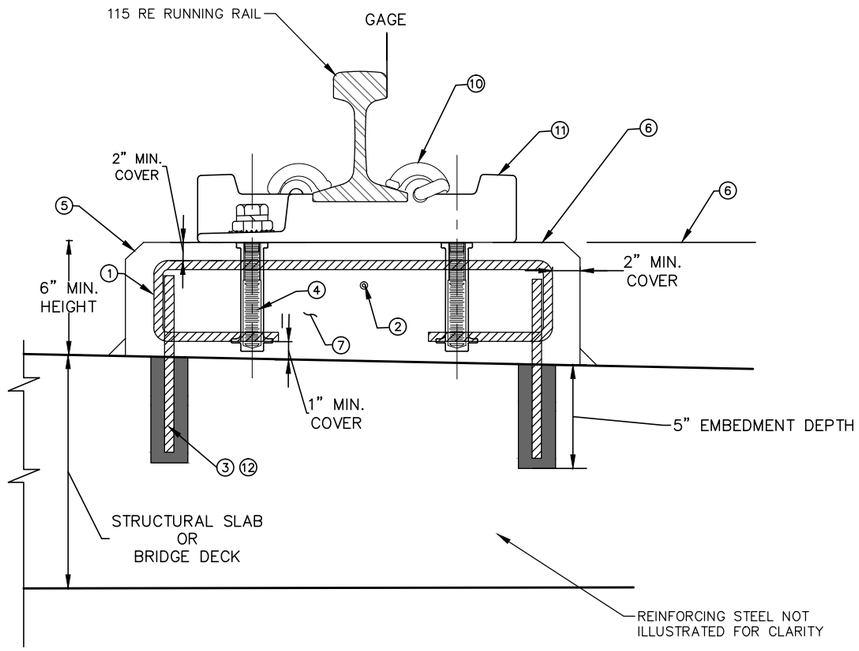
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK
SHEET 2 OF 9

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-402

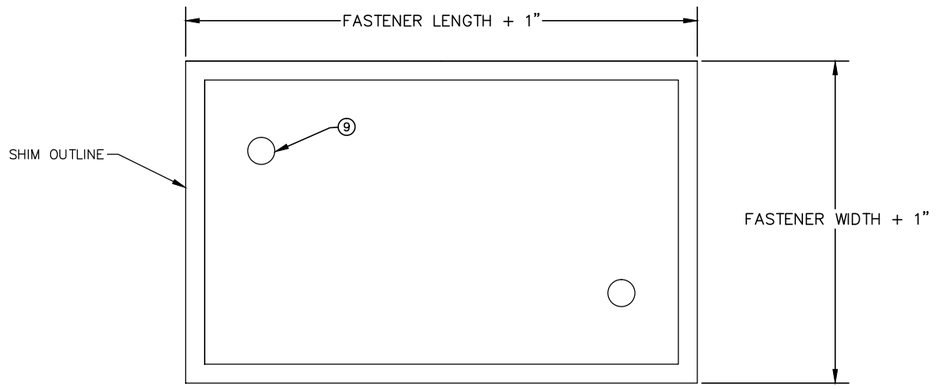
SHEET 74 OF 114



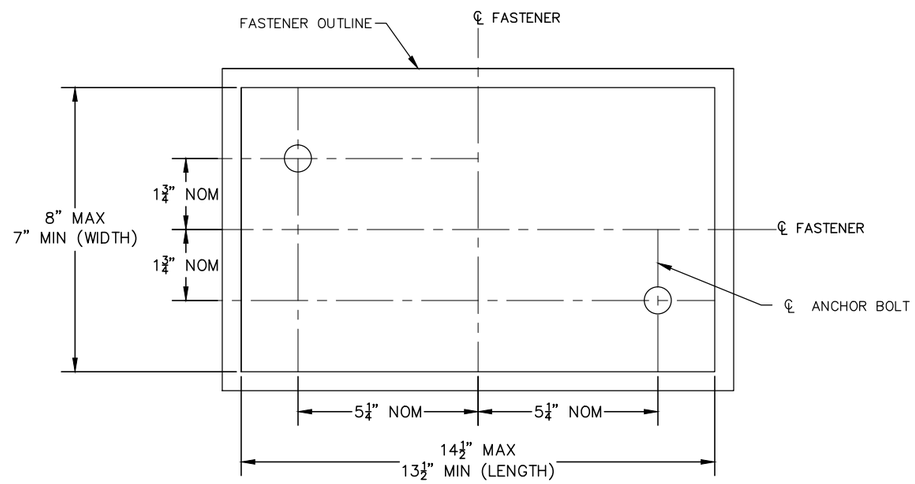
DETAIL A – STANDARD DF FASTENER ON PLINTH
N.T.S.

NOTES:

1. TRANSVERSE REINFORCEMENT IN PLINTH #5 @ 15" SPACING. 3" BAR BEND REQUIRED WHEN PLINTH IS ONLY 6" TALL.
2. LONGITUDINAL REINFORCING IN PLINTH #4 @ 9" SPACING.
3. DOWEL BAR, IN PLINTH #4 @ 15" SPACING WITH 8" END HOOK,CORE DRILL & EPOXY GROUT DOWEL BARS IN PLACE, 5" EMBEDMENT DEPTH.
4. DF PLATE ANCHOR INSERT CAST–IN–PLACE WITH PLINTH POUR.
5. TOOLED EDGE WITH $\frac{3}{4}$" CHAMFER.
6. TOP OF PLINTH SHALL BE CONSTRUCTED LEVEL. 40:1 RAIL CANT PROVIDED BY DF PLATE.
7. CONCRETE : 4500 PSI DESIGN STRENGTH FOR PLINTH.
8. ALL REINFORCING STEEL SHALL BE BLACK AND NOT EPOXY COATED.
9. PUNCHING TO MATCH FASTENER ANCHOR BOLT LOCATION AND SIZE.
10. RESILIENT FASTENER
11. DIRECT FIXATION FASTENER
12. PLINTH DOWELS TO BE PLACED TO MISS IN–PLACE DECK REINFORCEMENT BY LOCATING REBAR WITH NON–DESTRUCTIVE MEANS SUCH AS ELECTRO–MAGNETIC METHODS OR SIMILAR. THE CONTRACTOR SHALL SUBMIT DOWEL PLACEMENT PLAN PRIOR TO BEGINNING WORK.



STANDARD FASTENER SHIM CONFIGURATION
N.T.S.



STANDARD DF FASTENER PLAN
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

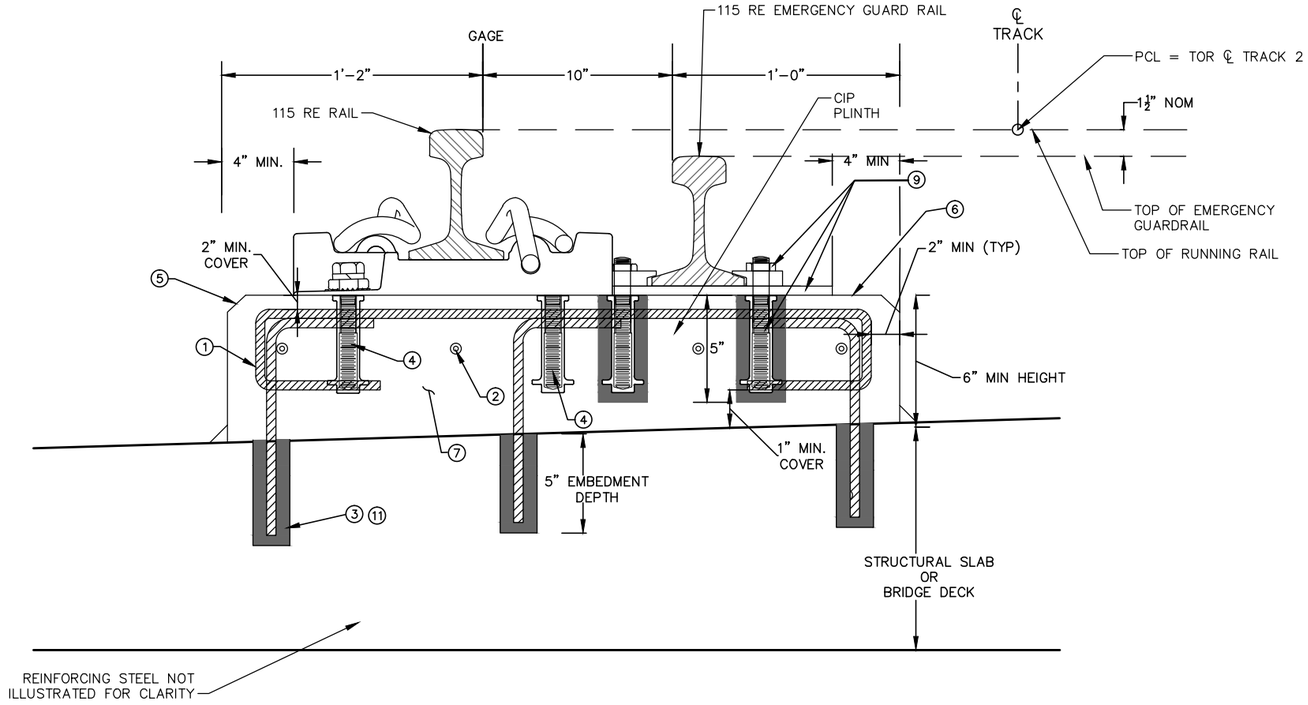
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK
SHEET 3 OF 9

DISCIPLINE: TRACK

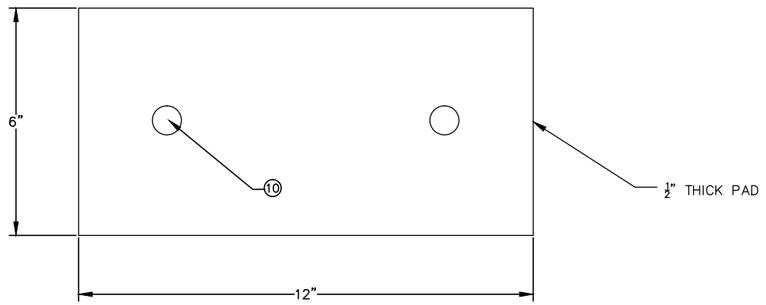
SHEET NAME: 00-TRK-DTL-403

SHEET 75 OF 114



DETAIL B – DF FASTENER AND E.G.R. ON PLINTH

N.T.S.



EMERGENCY GUARD RAIL HDPE PAD – PLAN

N.T.S.

NOTES:

1. TRANSVERSE REINFORCEMENT IN PLINTH #5 @ 15" SPACING. 3" BAR BEND REQUIRED WHEN PLINTH IS ONLY 6" TALL.
2. LONGITUDINAL REINFORCING IN PLINTH #4 BARS.
3. DOWEL BAR, IN PLINTH #4 @ 15" SPACING. CORE DRILL & EPOXY GROUT DOWEL BARS IN PLACE, 5" EMBEDMENT DEPTH.
4. DF PLATE ANCHOR INSERT CAST–IN–PLACE WITH PLINTH POUR.
5. TOOLED EDGE WITH ¾" CHAMFER.
6. TOP OF PLINTH SHALL BE CONSTRUCTED LEVEL. 40:1 RAIL CANT PROVIDED BY DF PLATE.
7. CONCRETE : 4500 PSI DESIGN STRENGTH FOR PLINTH
8. ALL REINFORCING STEEL SHALL BE BLACK AND NOT EPOXY COATED.
9. 115RE EMERGENCY GUARD RAIL, 12"X6"X½" HDPE PAD, RAIL CLIPS, & DRILL/GROUT ANCHOR.
10. PUNCHING TO MATCH EMERGENCY GUARD RAIL FASTENER ANCHOR BOLT LOCATION AND SIZE.
11. PLINTH DOWELS TO BE PLACED TO MISS IN–PLACE DECK REINFORCEMENT BY LOCATING REBAR WITH NON–DESTRUCTIVE MEANS SUCH AS ELECTRO–MAGNETIC METHODS OR SIMILAR. THE CONTRACTOR SHALL SUBMIT DOWEL PLACEMENT PLAN PRIOR TO BEGINNING WORK.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

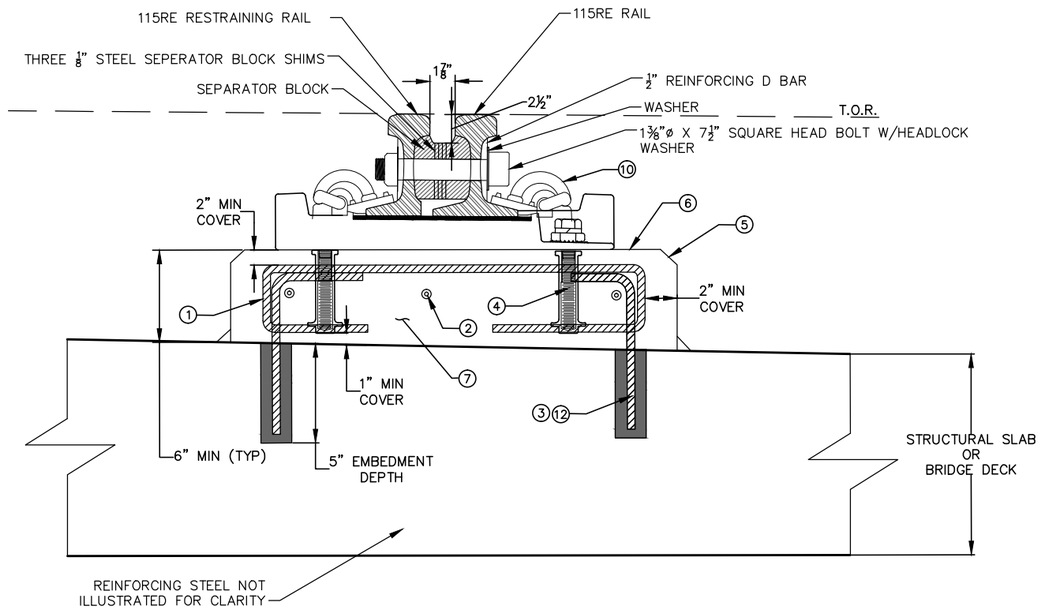
CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK
SHEET 4 OF 9

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-404

SHEET 76 OF 114

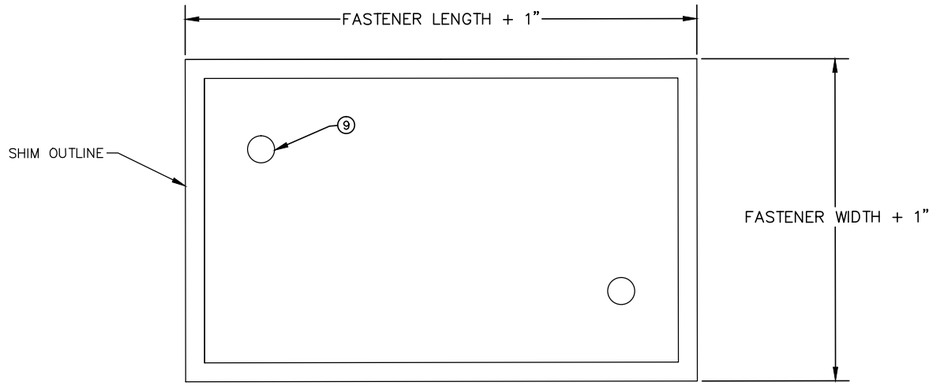
Jan, 18 2016 09:10 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-400.dwg By: V-BurrellM



DETAIL C : RESTRAINING RAIL DF FASTENER ON PLINTH
N.T.S.

NOTES:

1. TRANSVERSE REINFORCEMENT IN PLINTH #5 @ 15" SPACING. 3" BAR BEND REQUIRED WHEN PLINTH IS ONLY 6" TALL.
2. LONGITUDINAL REINFORCING IN PLINTH #4 @ 9" SPACING.
3. DOWEL BAR, IN PLINTH #4 @ 15" SPACING WITH 8" END HOOK,CORE DRILL & EPOXY GROUT DOWEL BARS IN PLACE, 5" EMBEDMENT DEPTH.
4. DF PLATE ANCHOR INSERT CAST-IN-PLACE WITH PLINTH POUR.
5. TOOLED EDGE WITH ¾" CHAMFER.
6. TOP OF PLINTH SHALL BE CONSTRUCTED LEVEL. 40:1 RAIL CANT PROVIDED BY DF PLATE.
7. CONCRETE : 4500 PSI DESIGN STRENGTH FOR PLINTH.
8. ALL REINFORCING STEEL SHALL BE BLACK AND NOT EPOXY COATED.
9. PUNCHING TO MATCH FASTENER ANCHOR BOLT LOCATION AND SIZE.
10. RESILIENT FASTENER
11. FOR RESTRAINING RAIL TERMINATION DETAIL, SEE DTL-202.
12. PLINTH DOWELS TO BE PLACED TO MISS IN-PLACE DECK REINFORCEMENT BY LOCATING REBAR WITH NON-DESTRUCTIVE MEANS SUCH AS ELECTRO-MAGNETIC METHODS OR SIMILAR. THE CONTRACTOR SHALL SUBMIT DOWEL PLACEMENT PLAN PRIOR TO BEGINNING WORK.



RESTRAINING RAIL FASTENER SHIM CONFIGURATION
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

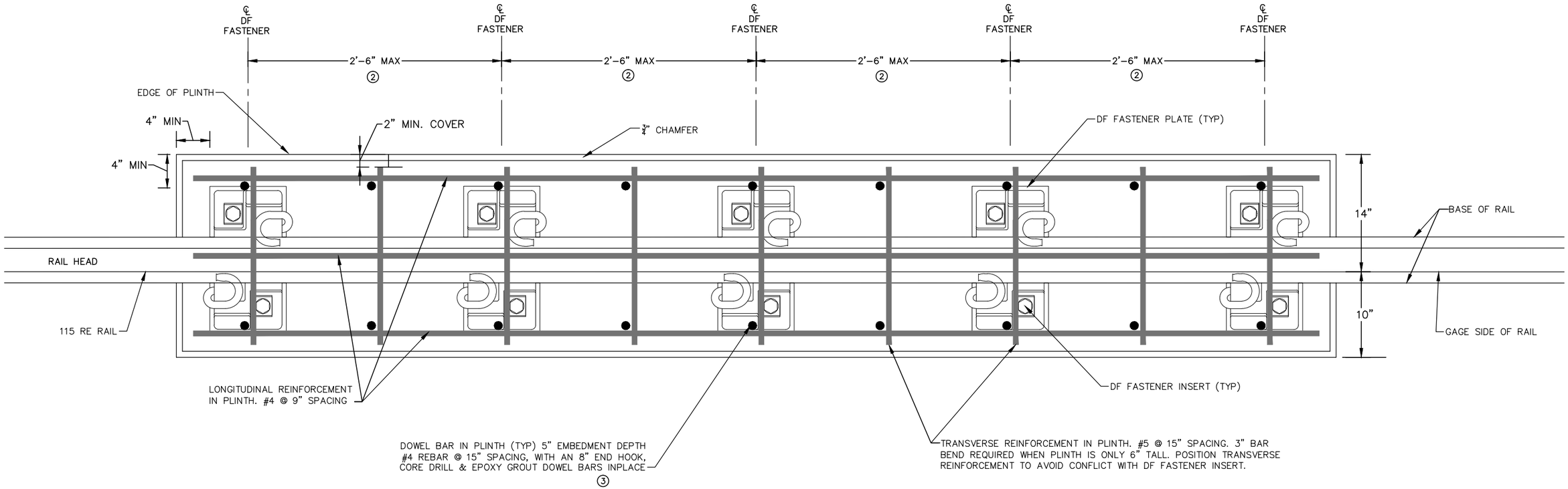
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK
SHEET 5 OF 9

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-405

SHEET 77 OF 114



DIRECT FIXATION TRACK PLINTH REINFORCING DETAIL
PLAN VIEW
N.T.S.

NOTES:

① CONFINEMENT #4 U-BAR (NOT ILLUSTRATED) SHALL BE TIED TO UNDERSIDE OF LONGITUDINAL STEEL AND INSIDE OF DOWEL BARS. SEE DTL-407.

② REFER TO CONTRACT SPECIFICATIONS FOR FASTENER SPACING.

③ PLINTH DOWELS TO BE PLACED TO MISS IN-PLACE DECK REINFORCEMENT BY LOCATING REBAR WITH NON-DESTRUCTIVE MEANS SUCH AS ELECTRO-MAGNETIC METHODS OR SIMILAR. THE CONTRACTOR SHALL SUBMIT DOWEL PLACEMENT PLAN PRIOR TO BEGINNING WORK.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

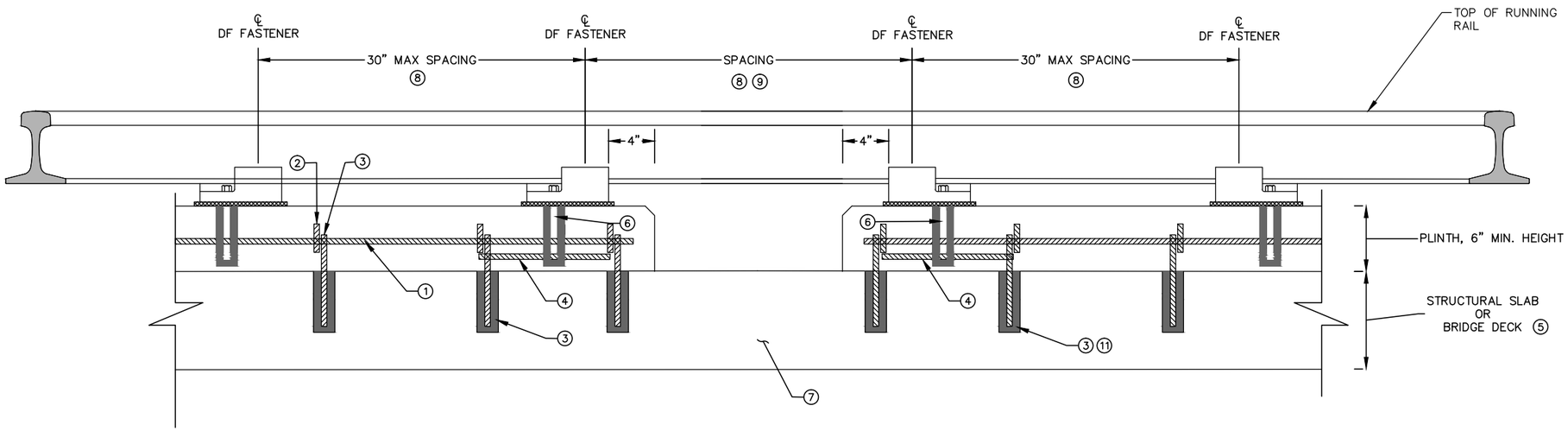
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK
SHEET 6 OF 9

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-406

SHEET 78 OF 114



DF TRACK ON PLINTH LONGITUDINAL SECTION
N.T.S.

NOTES:

1. LONGITUDINAL REINFORCING IN PLINTH, #4 @ 9" SPACING.
2. TRANSVERSE REINFORCING IN PLINTH, #5 @ 15" SPACING.
3. DOWEL BAR IN PLINTH #4 @ 15" SPACING. CORE DRILL & EPOXY GROUT DOWEL BARS IN PLACE, 5" EMBEDMENT DEPTH.
4. CONFINEMENT #4 U-BAR TIED TO UNDERSIDE OF LONGITUDINAL STEEL AND INSIDE OF DOWEL BARS, 12" LONG.
5. SEE BRIDGE PLANS FOR BRIDGE DECK DETAILS.
6. DF PLATE DUCTILE ANCHOR INSERT. CORE DRILL AND EPOXY GROUT.
7. REINFORCING STEEL IN BRIDGE DECK NOT ILLUSTRATED FOR CLARITY.
8. REFER TO CONTRACT SPECIFICATIONS FOR FASTENER SPACING.
9. SPACING MAY INCREASE TO 38" MAX AT BRIDGE EXPANSION JOINTS.
10. EMERGENCY GUARD RAIL NOT ILLUSTRATED.
11. PLINTH DOWELS TO BE PLACED TO MISS IN-PLACE DECK REINFORCEMENT BY LOCATING REBAR WITH NON-DESTRUCTIVE MEANS SUCH AS ELECTRO-MAGNETIC METHODS OR SIMILAR. THE CONTRACTOR SHALL SUBMIT DOWEL PLACEMENT PLAN PRIOR TO BEGINNING WORK.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

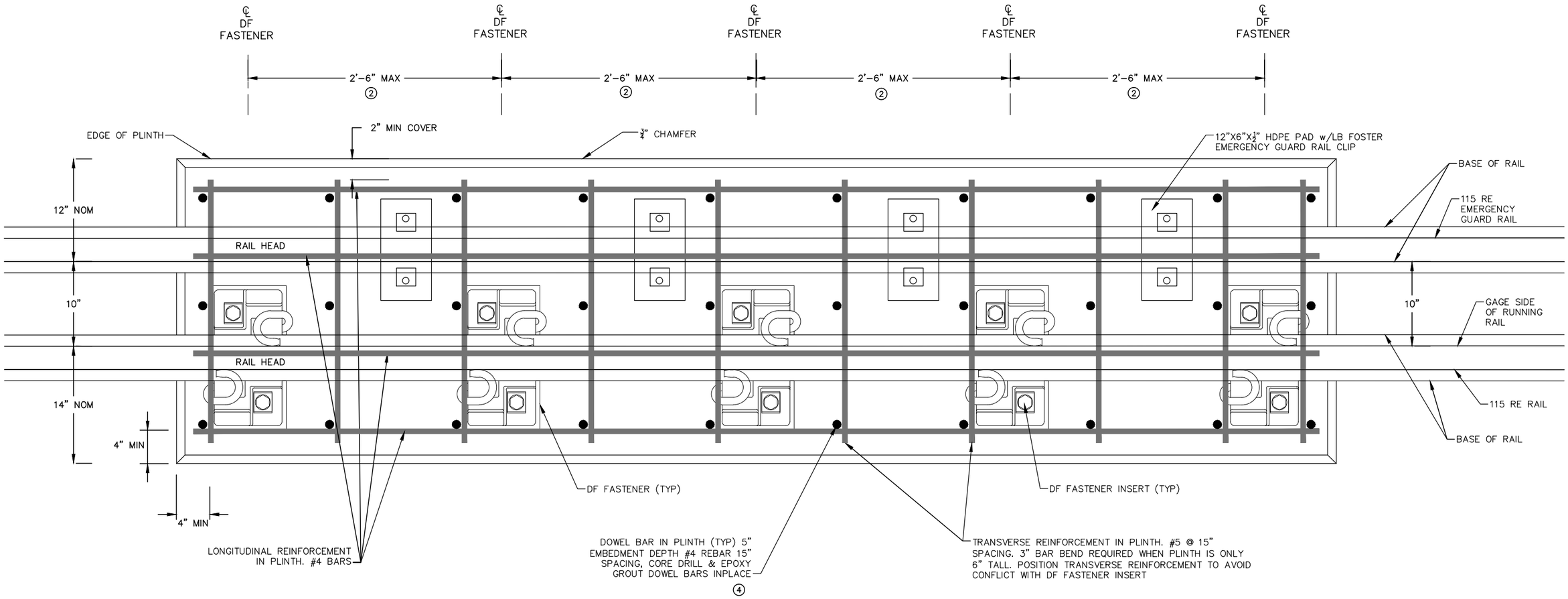
CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK
SHEET 7 OF 9

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-407

SHEET 79 OF 114

Jan. 18 2016 09:13 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-400.dwg By: V-BurrellM



DF TRACK PLINTH WITH GUARD RAIL REINFORCING DETAIL

PLAN VIEW

N.T.S.

NOTES:

① CONFINEMENT #4 U-BAR (NOT ILLUSTRATED) SHALL BE TIED TO UNDERSIDE OF LONGITUDINAL STEEL AND INSIDE OF DOWEL BARS. SEE DTL-409.

② REFER TO CONTRACT SPECIFICATIONS FOR FASTENER SPACING.

③ CONFINEMENT U-BAR NOT SHOWN FOR CLARITY.

④ PLINTH DOWELS TO BE PLACED TO MISS IN-PLACE DECK REINFORCEMENT BY LOCATING REBAR WITH NON-DESTRUCTIVE MEANS SUCH AS ELECTRO-MAGNETIC METHODS OR SIMILAR. THE CONTRACTOR SHALL SUBMIT DOWEL PLACEMENT PLAN PRIOR TO BEGINNING WORK.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

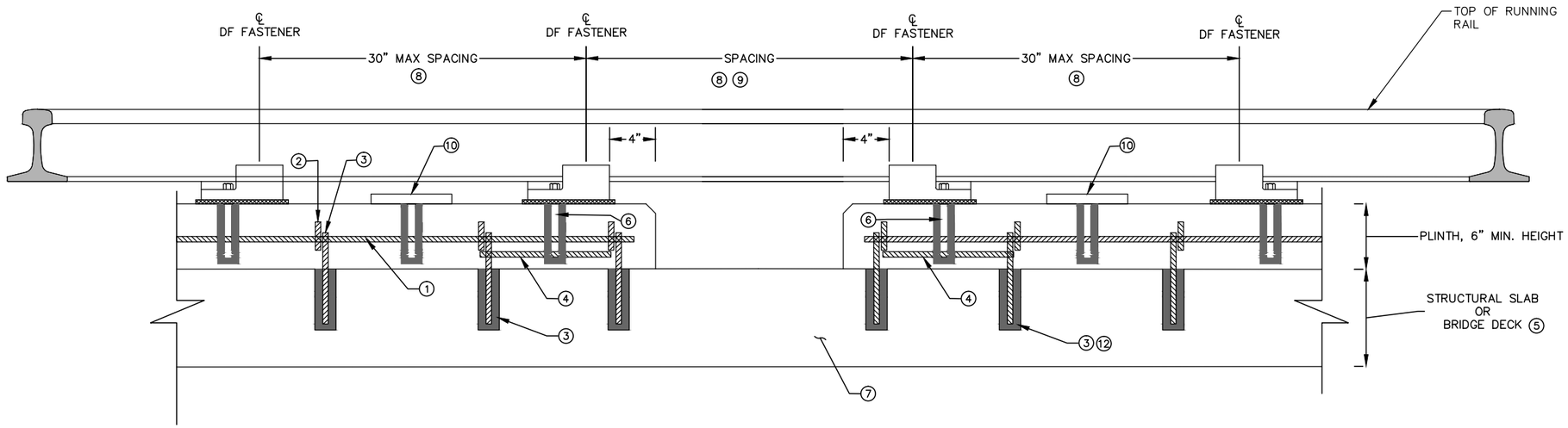
CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK
SHEET 8 OF 9

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-408

SHEET 80 OF 114

Jan, 18 2016 09:14 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-400.dwg By: V-BurrellM



DF TRACK ON PLINTH WITH EMERGENCY GUARD RAIL
LONGITUDINAL SECTION B–B
N.T.S.

NOTES:

① LONGITUDINAL REINFORCING IN PLINTH, #4 @ 9" SPACING.

② TRANSVERSE REINFORCING IN PLINTH, #5 @ 15" SPACING.

③ DOWEL BAR IN PLINTH #4 @ 15" SPACING. CORE DRILL & EPOXY GROUT DOWEL BARS IN PLACE, 5" EMBEDMENT DEPTH.

④ CONFINEMENT #4 U–BAR TIED TO UNDERSIDE OF LONGITUDINAL STEEL AND INSIDE OF DOWEL BARS, 12" LONG.

⑤ SEE BRIDGE PLANS FOR BRIDGE DECK DETAILS.

⑥ DF PLATE DUCTILE ANCHOR INSERT. CORE DRILL AND EPOXY GROUT.

⑦ REINFORCING STEEL IN BRIDGE DECK NOT ILLUSTRATED FOR CLARITY.

⑧ REFER TO CONTRACT SPECIFICATIONS FOR FASTENER SPACING.

⑨ SPACING MAY INCREASE TO 38" MAX AT BRIDGE EXPANSION JOINTS.

⑩ PROJECTIONS OF 6"X12X½" HDPE PAD WITH RAIL CLIP/INSERT FOR 115RE EMERGENCY GUARD RAIL. CORE DRILL AND EPOXY GROUT THREADED INSERTS FOR EMERGENCY GUARD RAIL CLIPS.

⑪ EMERGENCY GUARD RAIL NOT ILLUSTRATED FOR CLARITY.

⑫ PLINTH DOWELS TO BE PLACED TO MISS IN–PLACE DECK REINFORCEMENT BY LOCATING REBAR WITH NON–DESTRUCTIVE MEANS SUCH AS ELECTRO–MAGNETIC METHODS OR SIMILAR. THE CONTRACTOR SHALL SUBMIT DOWEL PLACEMENT PLAN PRIOR TO BEGINNING WORK.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

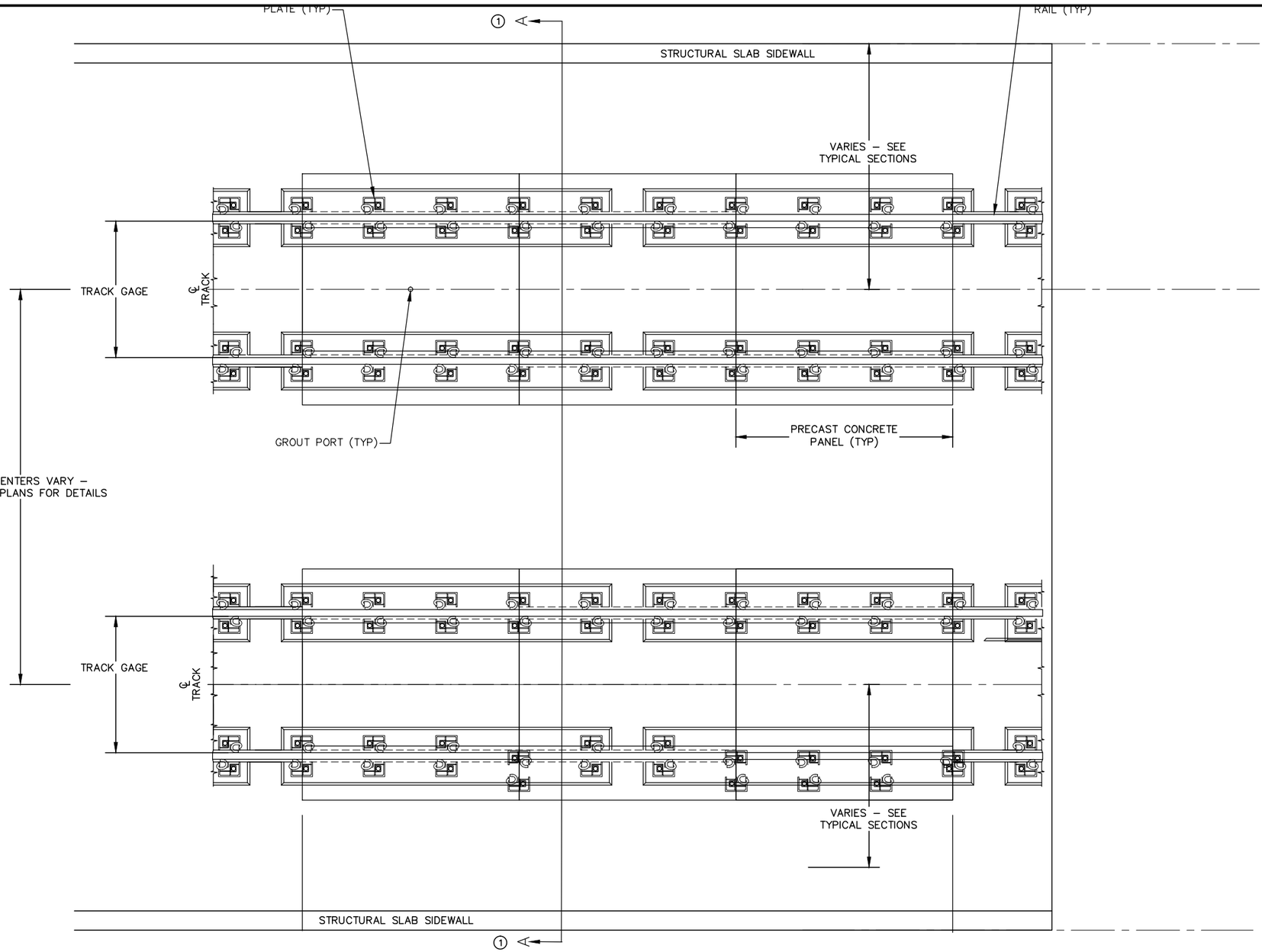
CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK
SHEET 9 OF 9

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-409

SHEET 81 OF 114

Jan, 18 2016 09:15 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-400.dwg By: V-BurrellM



NOTES:

① SEE SHEET DTL–411 FOR SECTION A–A.

DIRECT FIXATION TRACK AT–GRADE – CONCRETE INFILL PANELS
PLAN VIEW
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK PRECAST CONCRETE INFILL PANELS SHEET 1 OF 2

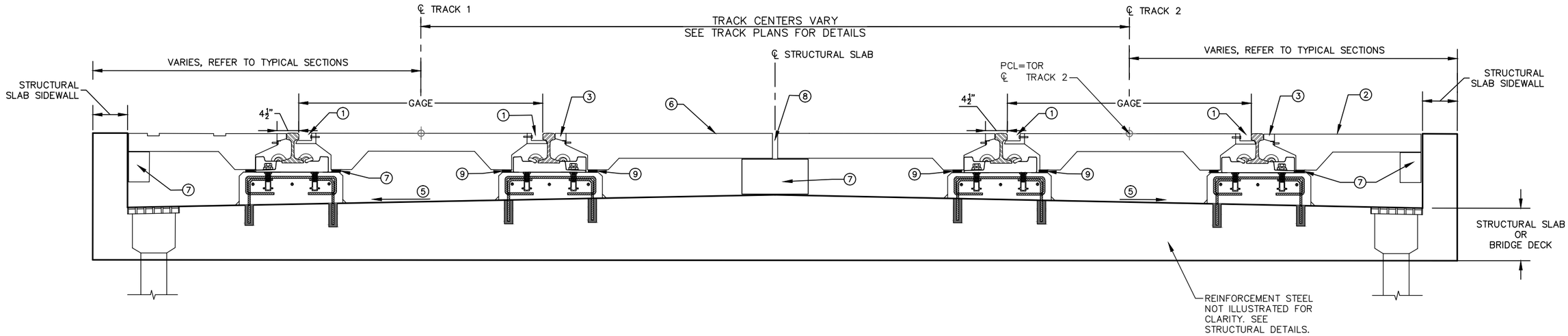
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-410

SHEET 82 OF 114

NOTES:

1. MAINTAIN 2½" FLANGEWAY DIMENSION.
2. PRECAST CONCRETE INFILL PANELS SHALL BE SIZED, SUPPORTED, AND POSITIONED SUCH THAT TOP OF PRECAST PANEL MATCHES TOR ELEVATION.
3. RUBBER SEPARATOR BLOCKS SHALL BE BOLTED/ANCHORED TO PRECAST PANELS. TOP OF RUBBER SEPARATOR BLOCK ELEVATION SHALL BE ¼" BELOW TOP OF RAIL.
4. PANELS SHALL BE SIZED SUCH THAT TOTAL PANEL WEIGHT DOES NOT EXCEED 10,000 POUNDS.
5. SEE TYPICAL SECTIONS FOR CROSS SLOPE.
6. PRECAST CONCRETE INFILL PANEL SYSTEM SHALL BE DESIGNED FOR HL 93 LOADING.
7. THIS DESIGN ASSUMES THAT PRECAST PANELS ARE SUPPORTED ON C.I.P. CONCRETE PLINTHS, OR C.I.P. CONCRETE PADS. ALT. PANEL SUPPORT DESIGN MAY BE SUBMITTED TO C.A.R. FOR CONSIDERATION. PANEL SUPPORT AT SIDEWALLS CANNOT INTERFERE WITH TRACK DRAINS.



DIRECT FIXATION TRACK AT GRADE – PRECAST CONCRETE INFILL PANELS
SECTION A–A
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

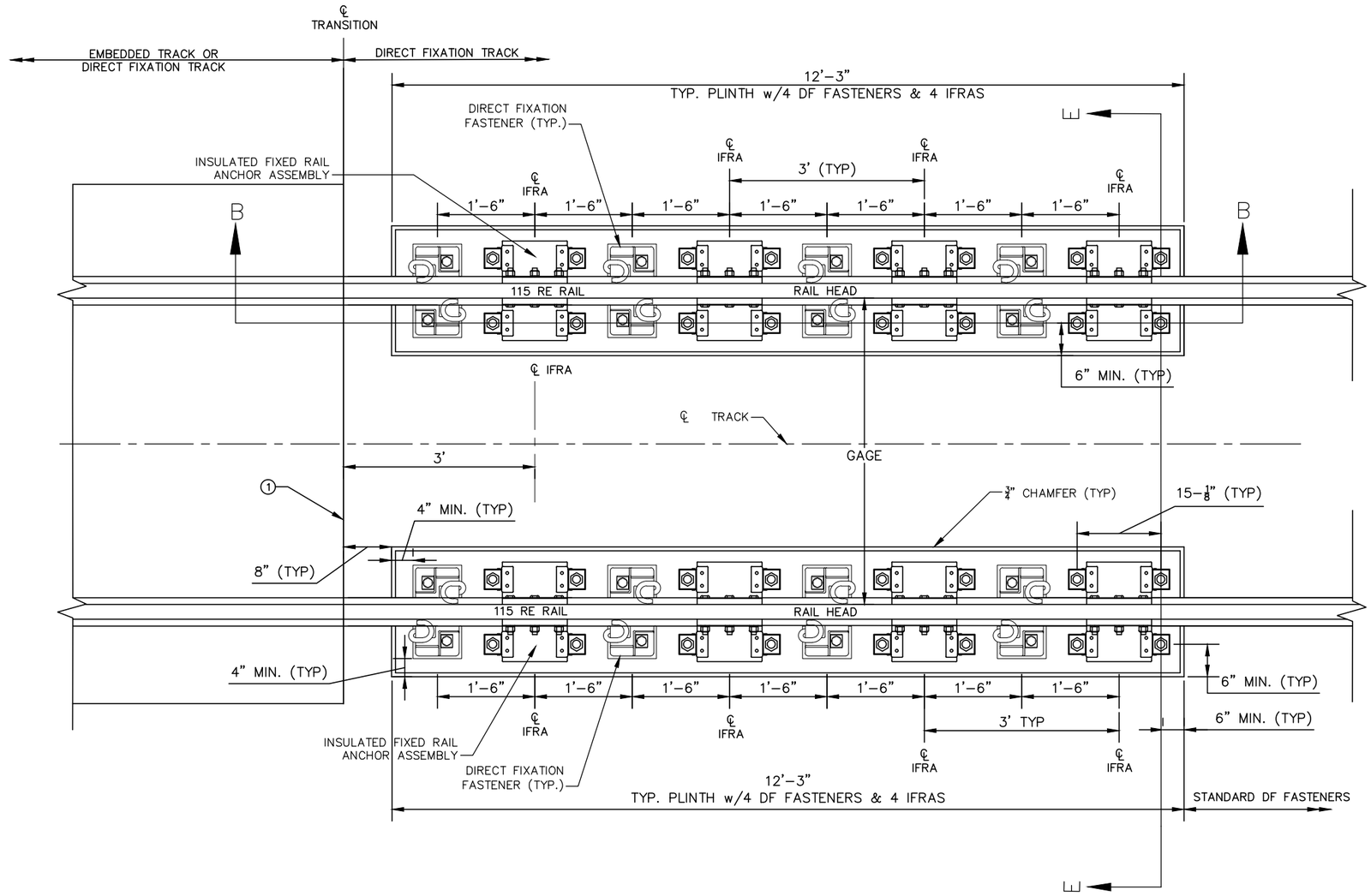
CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK PRECAST CONCRETE INFILL PANELS SHEET 2 OF 2

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-411

SHEET 83 OF 114

Jan, 18 2016 09:16 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-400.dwg By: V-BurrellM



DF TRACK WITH INSULATED FIXED RAIL ANCHOR (IFRA) AT EMBEDDED TO DF TRANSITION PLAN VIEW

N.T.S.

NOTES:

① EXPANSION JOINT BETWEEN STRUCTURAL SLABS OR TRACK TYPE TRANSITIONS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

90% SUBMISSION - 01/22/16

AECOM

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION TRACK - INSULATED FIXED RAIL ANCHOR (IFRA) DETAIL SHEET 1 OF 3

DISCIPLINE: TRACK

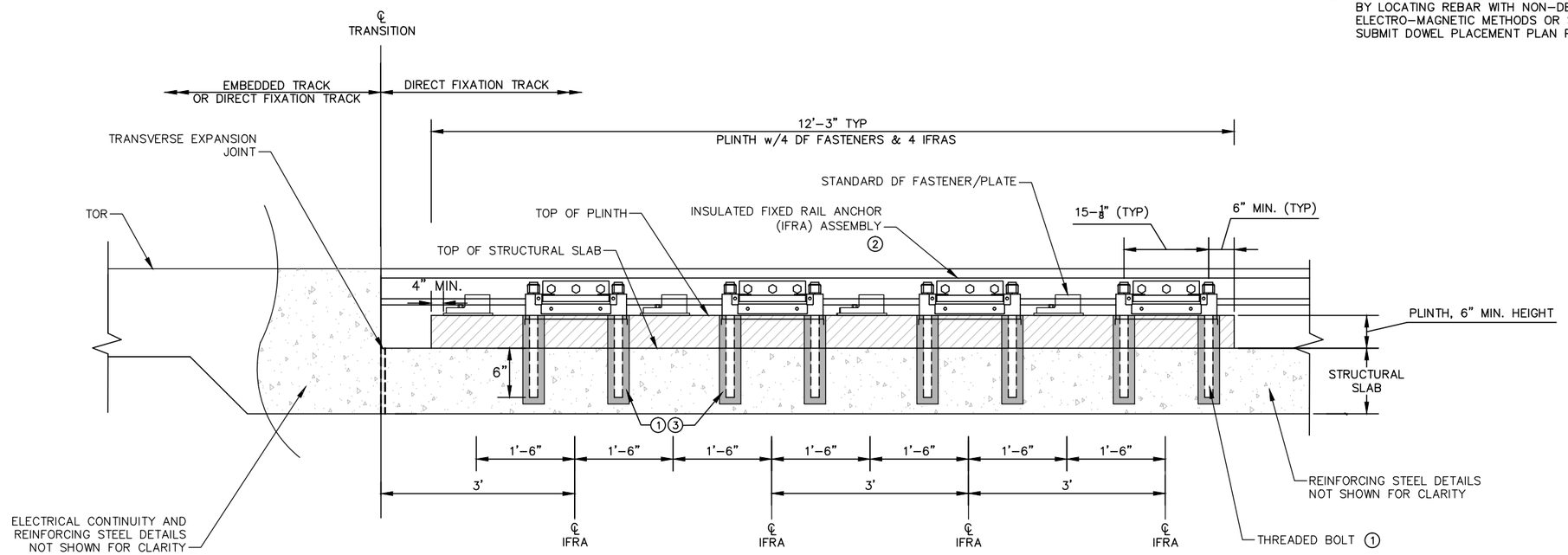
SHEET NAME: 00-TRK-DTL-412

SHEET 84 OF 114

Jan, 18 2016 09:17 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-400.dwg By: V-BurrellM

NOTES:

1. CORE DRILL AND EPOXY GROUT MIN. 9" EMBEDMENT DEPTH (INTO STRUCTURAL SLAB) FOR 1¼" THREADED ANCHOR BOLT FOR IFRA.
2. IFRA SHEAR BLOCK AND SHEAR BLOCK SHIM HEIGHT SHALL BE DESIGNED TO MAINTAIN SAME DIMENSION AS DIRECT FIXATION FASTENER FROM TOP OF PLINTH TO BOTTOM OF RAIL.
3. PLINTH DOWELS TO BE PLACED TO MISS IN-PLACE DECK REINFORCEMENT BY LOCATING REBAR WITH NON-DESTRUCTIVE MEANS SUCH AS ELECTRO-MAGNETIC METHODS OR SIMILAR. THE CONTRACTOR SHALL SUBMIT DOWEL PLACEMENT PLAN PRIOR TO BEGINNING WORK.



DF TRACK WITH IFRA AT EMBEDDED TO DF TRANSITION
LONGITUDINAL SECTION B-B
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

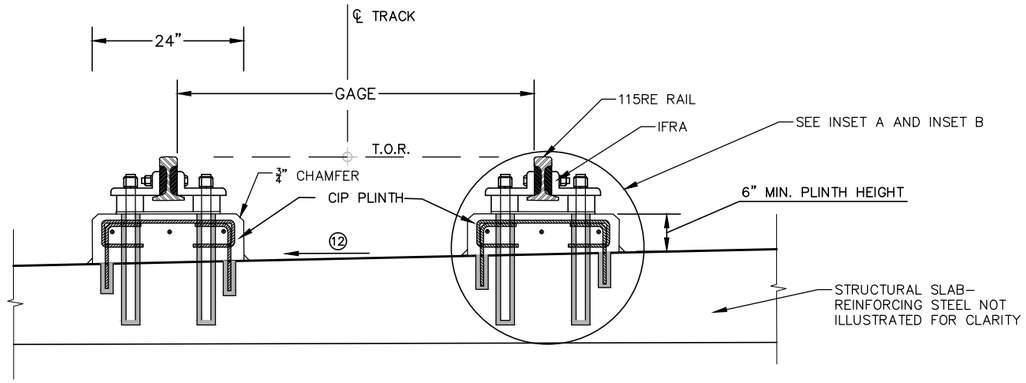
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION TRACK - INSULATED FIXED RAIL ANCHOR (IFRA) DETAIL SHEET 2 OF 3

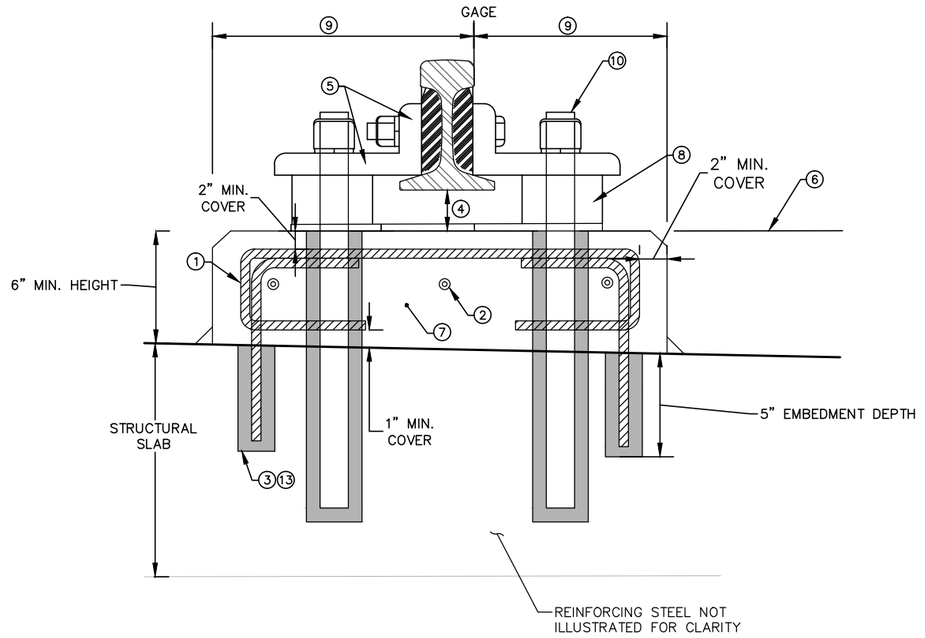
DISCIPLINE: TRACK
SHEET NAME: 00-TRK-DTL-413

SHEET 85 OF 114

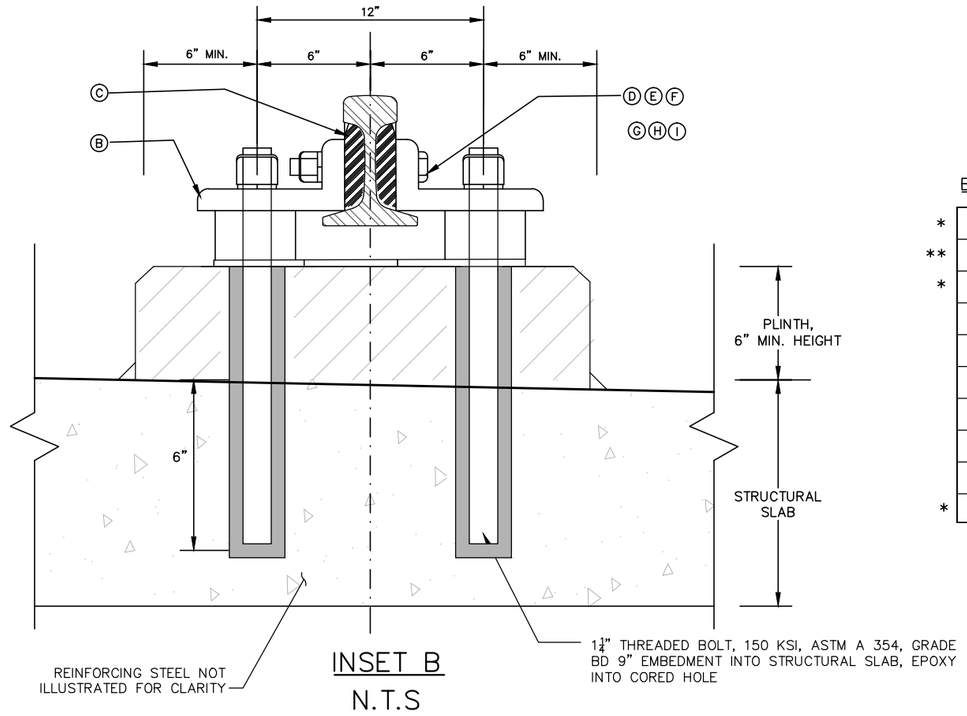
Jan, 18 2016 09:18 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-400.dwg By: V-BurrellM



DIRECT FIXATION TRACK WITH IFRA
SECTION E–E
N.T.S.



INSET A
N.T.S.



INSET B
N.T.S

BILL OF MATERIALS

*	Ⓐ	INSULATED SHEAR BLOCK SUB–ASSEMBLY
**	Ⓑ	INSULATED SHEAR ANGLE SUB–ASSEMBLY
*	Ⓒ	RAIL WEB FILLER BAR
	Ⓓ	7/8 – 8 X 43/4 HEAVY HEX BOLT, ASTM A490
	Ⓔ	7/8 – 8 HEAVY HEX NUT, ASTM 1563 OR A194
	Ⓕ	7/8 HEAVY LOCK WASHER, PLATED
	Ⓖ	ø 1–1/4" – 8 THREADED BOLT, ASTM 1354, GRADE BD, ZINC COATED
	Ⓗ	ø 1–1/4" – 8 HEAVY HEX NUT, ASTM A563 OR A194
	Ⓘ	ø 1–1/4" HEAVY LOCK WASHER, PLATED
*	Ⓙ	SHEAR BLOCK/SHEAR BLOCK SHIM, A36 STEEL

* BY FABRICATOR

** BY FABRICATOR, SIZES PROVIDED FOR ILLUSTRATIVE PURPOSES

NOTES:

① TRANSVERSE REINFORCING IN PLINTH #5 @ 15" SPACING. 3" BAR BEND REQUIRED WHEN PLINTH IS ONLY 6" TALL

② LONGITUDINAL REINFORCING IN PLINTH #4 BARS

③ DOWEL BAR, IN PLINTH #4 @ 15" SPACING CORE DRILL & EPOXY GROUT DOWEL BARS IN PLACE, 5" EMBEDMENT DEPTH

④ DIMENSION FROM BASE OF RAIL TO TOP OF PLINTH IS 1⅞" FOR L.B. FOSTER F23R4 DFF AND IFRA. CONTRACTOR SHALL OORDINATE WITH DFF PLATE MANUFACTURER TO ENSURE SAME/UNIFORM DIMENSION FROM BASE OF RAIL TO TOP OF PLINTH FOR IFRA ASSEMBLY/INSTALLATION

⑤ INSULATED FIXED RAIL ANCHOR

⑥ TOP OF PLINTH IS CONSTRUCTED LEVEL. 40:1 RAIL CANT PROVIDED BY IFRA OR DF PLATE

⑦ 4500 PSI DESIGN STRENGTH FOR PLINTH

⑧ IFRA SHEAR BLOCK AND SHEAR BLOCK SHIM SHALL BE SIZED TO PROVIDE THE SAME DIMENSION FROM BASE OF RAIL TO TOP OF PLINTH AS IS PROVIDED BY DFF

⑨ 10" ON GAGE SIDE, 14" FIELD SIDE FOR IFRA ASSEMBLY AND DF PLATE.

⑩ 1¼" THREADED ANCHOR BOLT

⑪ ALL REBAR SHALL BE BLACK AND NOT EPOXY COATED

⑫ REFER TO TYPICAL SECTION FOR CROSS SLOPE

⑬ FOR DRILL AND GROUT METHOD, CONTRACTOR SHALL LOCATE EXISTING DECK REINFORCEMENT PRIOR TO DETERMINE DRILL AND GROUT ACTIVITIES. PROVIDE 1" CLEAR (MIN) TO DECK REINFORCING BARS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

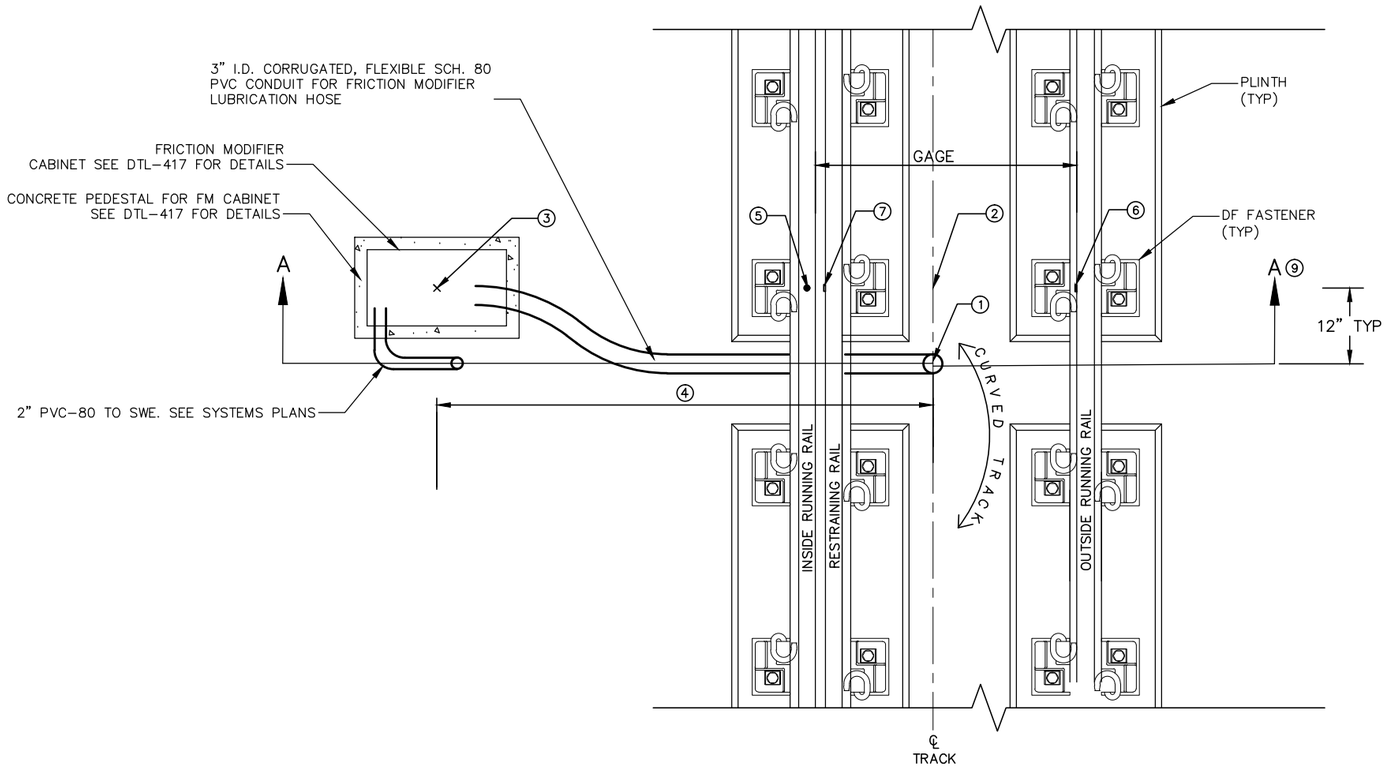
CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION TRACK - INSULATED FIXED RAIL ANCHOR (IFRA) DETAIL SHEET 3 OF 3

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-414

SHEET 86 OF 114

Jan, 18 2016 09:19 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-400.dwg By: V-BurrellM



FRICTION MODIFIER
DIRECT FIXATION TRACK W/RESTRAINING RAIL
PLAN VIEW
N.T.S.

NOTES:

1. CONDUIT TEE/RISER: PROVIDE 3-EQUAL LENGTH LUBRICATION HOSES FROM CONDUIT TEE/RISER TO EACH OF THE 3 RAILS. LAY LUBRICATION HOSE AT TOP OF STRUCTURAL SLAB ELEVATION. PROVIDE 1" DIA. PROTECTIVE HOSE FOR EACH LUBRICATION HOSE BETWEEN CONDUIT TEE AND RAILS, IN ACCORDANCE WITH FRICTION MODIFIER RECOMMENDATIONS.
2. FRICTION MODIFIER RAIL MOUNTED LUBRICATION EQUIPMENT
3. FRICTION MODIFIER CABINET LOCATION
4. FRICTION MODIFIER CABINET OFFSET FROM TRK ℄
5. APPLICATION POINT AT TOP SIDE OF LOW/INSIDE RAIL
6. APPLICATION POINT AT GAGE SIDE OF HIGH/OUTSIDE RAIL
7. APPLICATION POINT AT GAGE SIDE OF RESTRAINING RAIL
8. FRICTION MODIFIER CABINET LOCATION STATIONING DENOTES CENTER OF CABINET.
9. SEE DTL-416 FOR SECTION A-A
10. SEE BRIDGE 27C06 PLANS.
11. SEE BRIDGE 27C07 PLANS.
12. SEE BRIDGE R0692 PLANS.
13. SEE BRIDGE 27C18 PLANS.

FRICTION MODIFIER DATA – SUMMARY TABLE

③④ CABINET LOCATION AND OFFSET

TRACK 1			TRACK 2		
STATION	FRICTION MODIFIER NAME	OFFSET	STATION	FRICTION MODIFIER NAME	OFFSET
1088+98.72	FM W1-100	⑩	2084+54.61	FM W1-200	⑩
1217+37.81	FM W2-101	⑪			
			2937+58.57	FM E4-209B	⑫
1957+53.99	FM E4-112	⑬	2952+11.07	FM E4-212	⑬
1962+29.18	FM E4-113	⑬	2960+41.66	FM E4-213	

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK-
FRICTION MODIFIER SHEET 1 OF 3

DISCIPLINE: TRACK

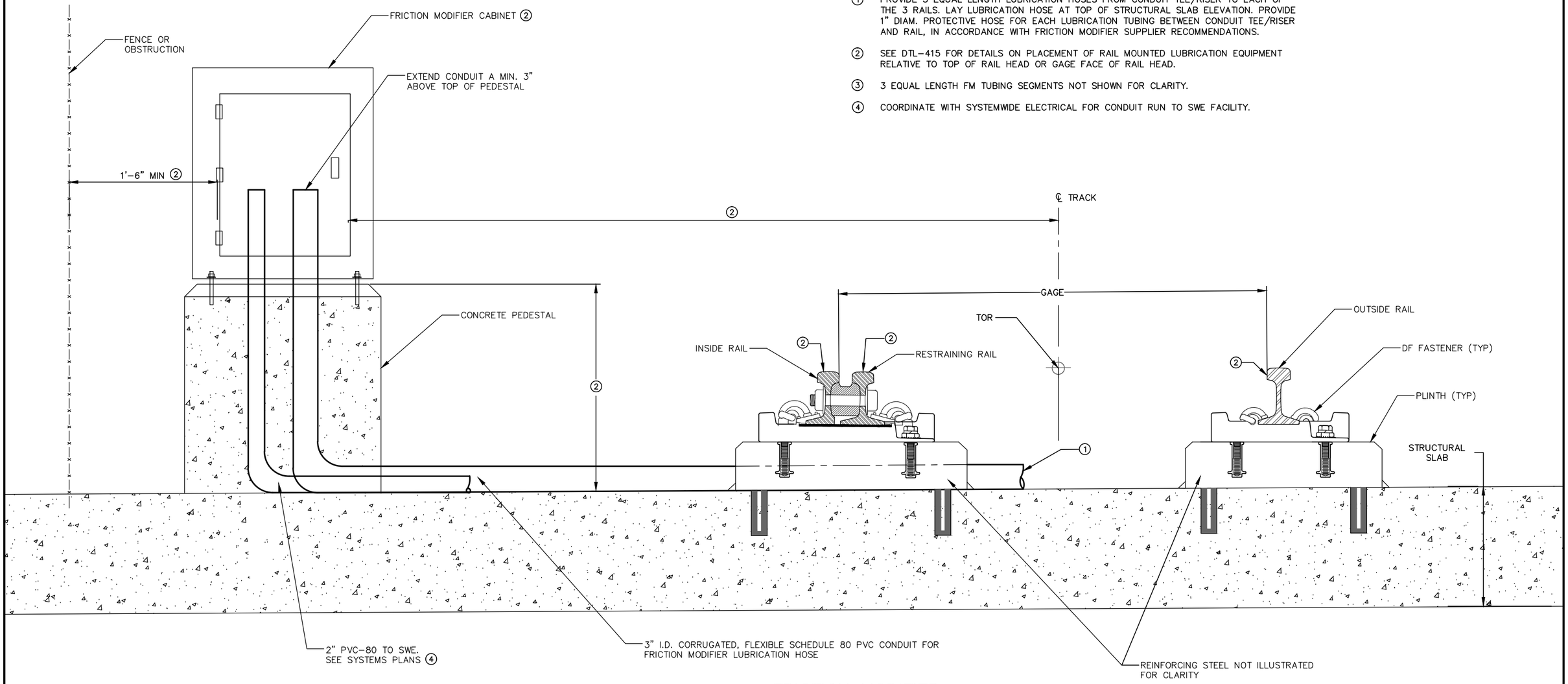
SHEET NAME: 00-TRK-DTL-415

SHEET 87 OF 114

Jan, 18 2016 09:20 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-400.dwg By: V-BurrellM

NOTES:

1. PROVIDE 3 EQUAL LENGTH LUBRICATION HOSES FROM CONDUIT TEE/RISER TO EACH OF THE 3 RAILS. LAY LUBRICATION HOSE AT TOP OF STRUCTURAL SLAB ELEVATION. PROVIDE 1" DIAM. PROTECTIVE HOSE FOR EACH LUBRICATION TUBING BETWEEN CONDUIT TEE/RISER AND RAIL, IN ACCORDANCE WITH FRICTION MODIFIER SUPPLIER RECOMMENDATIONS.
2. SEE DTL-415 FOR DETAILS ON PLACEMENT OF RAIL MOUNTED LUBRICATION EQUIPMENT RELATIVE TO TOP OF RAIL HEAD OR GAGE FACE OF RAIL HEAD.
3. 3 EQUAL LENGTH FM TUBING SEGMENTS NOT SHOWN FOR CLARITY.
4. COORDINATE WITH SYSTEMWIDE ELECTRICAL FOR CONDUIT RUN TO SWE FACILITY.



FRICTION MODIFIER
DIRECT FIXATION TRACK WITH SINGLE RESTRAINING RAIL
SECTION A-A
N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

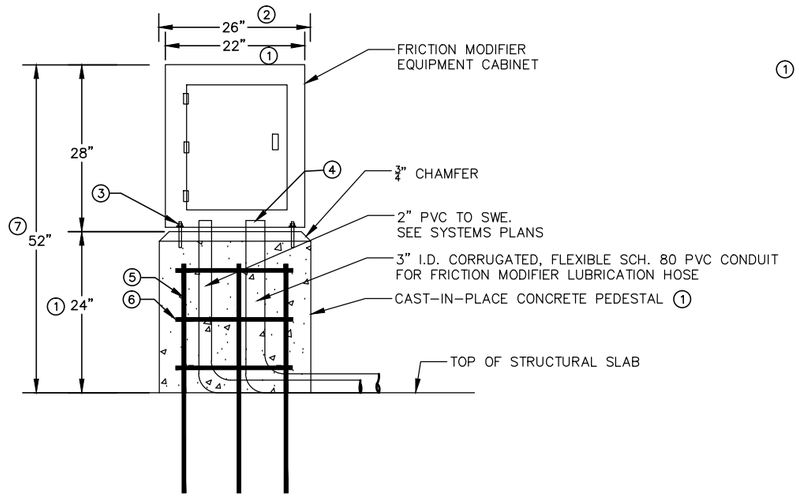
CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK-
FRICTION MODIFIER SHEET 2 OF 3

DISCIPLINE: TRACK

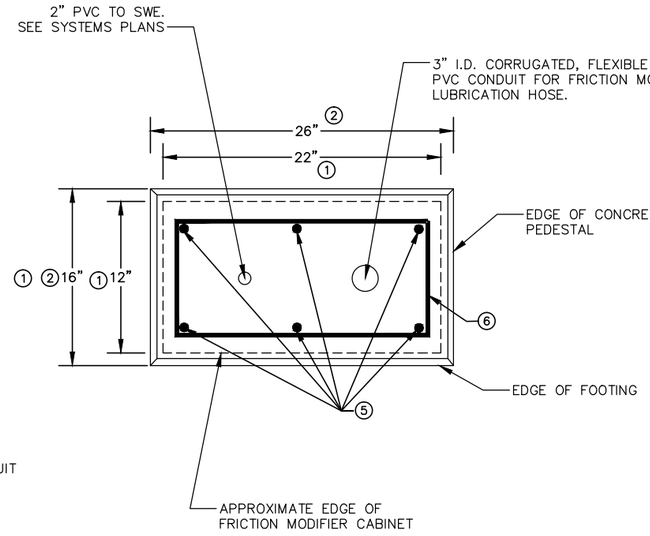
SHEET NAME: 00-TRK-DTL-416

SHEET 88 OF 114

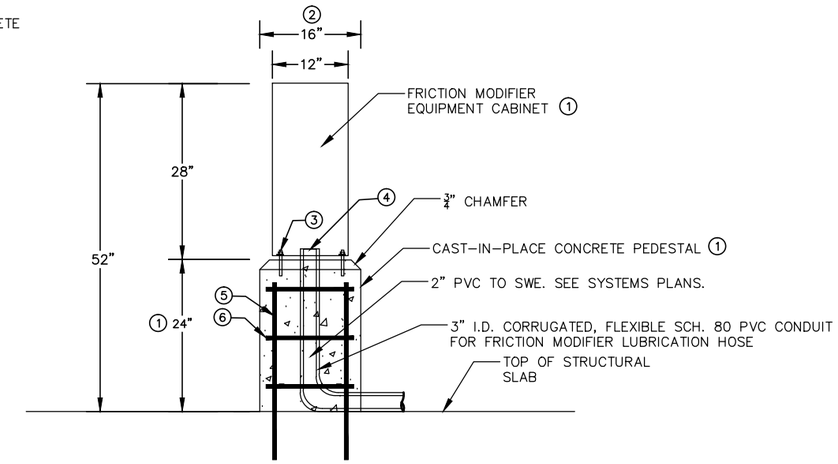
Jan, 18 2016 09:21 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-400.dwg By: V-BurrellM



FRICTION MODIFIER CABINET AND PEDESTAL
FRONT ELEVATION
N.T.S.



FRICTION MODIFIER CABINET
AND CONCRETE PEDESTAL
PLAN VIEW
N.T.S.



FRICTION MODIFIER CABINET AND PEDESTAL
SIDE ELEVATION
N.T.S.

NOTES:

1. CONCRETE PEDESTAL SHOWN IN THESE PLANS WAS DESIGNED BASED ON FRICTION MODIFIER CABINET BEING 12" W X 22" L X 28" T. PEDESTAL SHALL BE SIZED BY CONTRACTOR TO PROVIDE 1" MINIMUM REVEAL AROUND ALL EDGES OF FRICTION MODIFIER CABINET. CONTRACTOR SHALL VERIFY PEDESTAL SIZE DURING CONSTRUCTION.
2. OVERALL DIMENSIONS FOR CONCRETE PEDESTAL AND CABINET SHALL NOT INCREASE WITHOUT APPROVAL FROM THE CAR.
3. CONTRACTOR SHALL VERIFY PLACEMENT OF ANCHOR BOLTS DURING CONSTRUCTION.
4. EXTEND CONDUIT A MINIMUM 3" ABOVE TOP OF PEDESTAL.
5. LONGITUDINAL REINFORCING #6 @ 10" O.C. EPOXY COATED TO BE PLACED DURING BRIDGE DECK CONSTRUCTION.
6. TRANSVERSE REINFORCING #4 @ 10" O.C. TIE WITH 135° HOOKS ON BOTH ENDS, EPOXY COATED.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

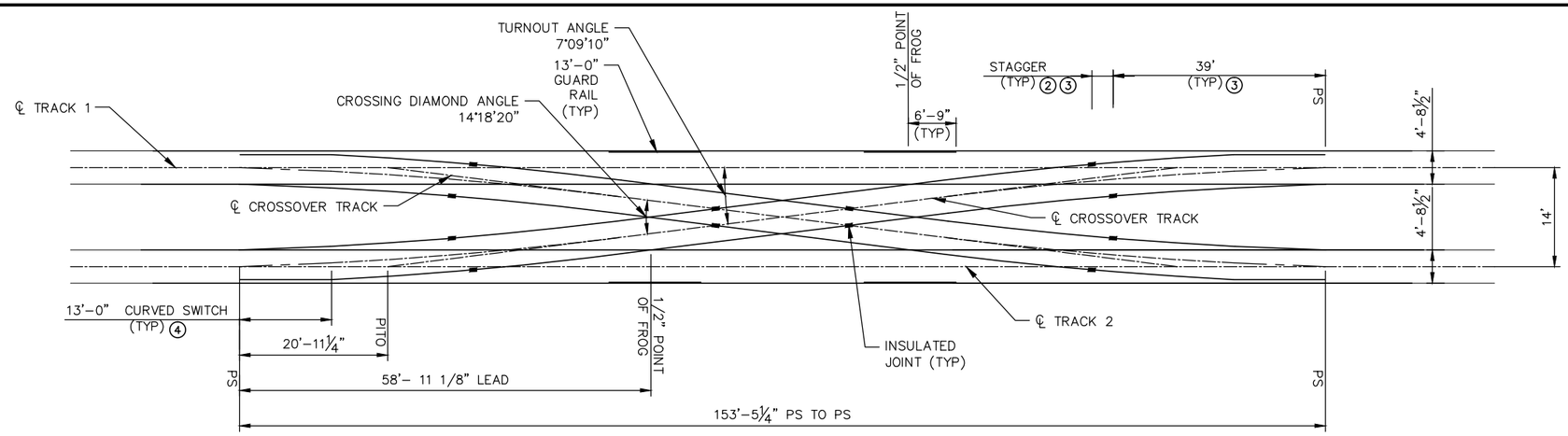
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
DIRECT FIXATION (DF) TRACK-
FRICTION MODIFIER SHEET 3 OF 3

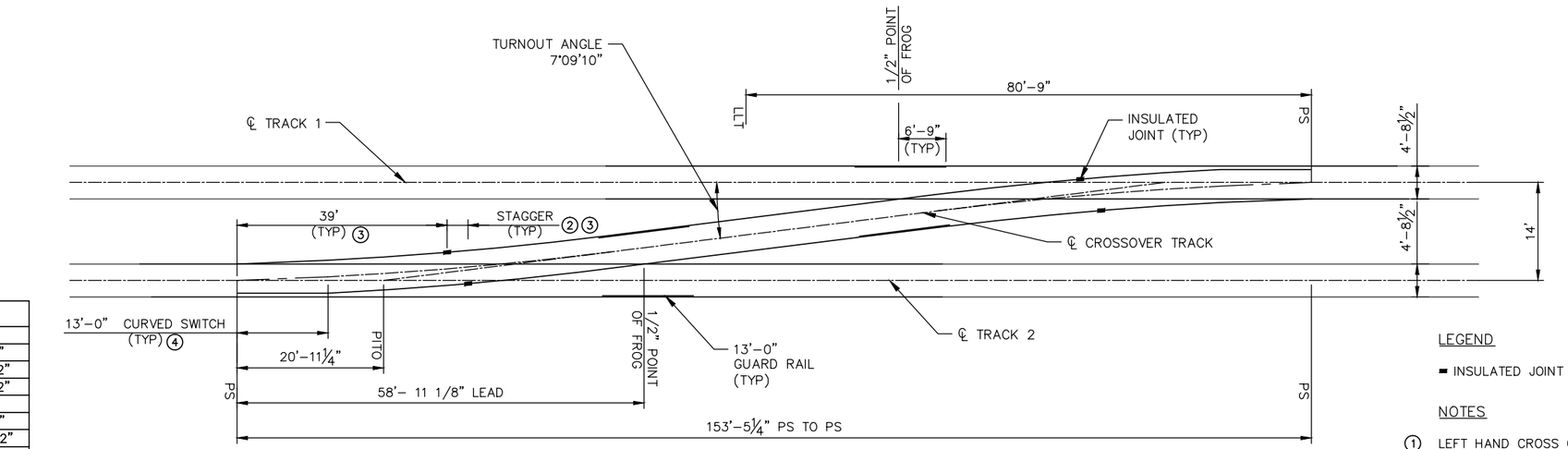
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-417

SHEET 89 OF 114



NO 8 DOUBLE CROSS OVER GEOMETRY DETAIL
(14.0' TRACK CENTERS)
N.T.S.



NO 8 CROSS OVER GEOMETRY DETAIL ①
(14.0' TRACK CENTERS)
N.T.S.

TURNOUT DATA		
FROG	NUMBER	8
	ANGLE	7°09'10"
	TOE LENGTH	5'-4 1/2"
	HEEL LENGTH	9'-3 1/2"
	TOTAL LENGTH	14'-8"
	TOE SPREAD	7 9/16"
	HEEL SPREAD	14 13/32"
SWITCH	LENGTH	13'-0"
	POINT THICKNESS	0"
	POINT ANGLE	1°41'31"
	HEEL ANGLE	2°54'00"
	HEEL SPREAD	6 1/4"
	THROW AT ROD #1	4 3/4"
TURNOUT	LEAD	58'-11 1/8"
	CENTERLINE RADIUS	550.75'
	DEGREE OF CURVE (ARC)	10°24'12"
	PS TO PITO	20'-11 1/4"

LEGEND

▬ INSULATED JOINT

NOTES

① LEFT HAND CROSS OVER ILLUSTRATED. MIRROR FOR RIGHT HAND CROSS OVER.

② STAGGER INSULATED JOINTS AS SPECIFIED BY THE CONTRACT SPECIFICATIONS.

③ INSULATED JOINT WILL BE SUPPORTED BETWEEN THE TIES.

④ SWITCH PLATES FOR #1 AND #2 TIES: INCLUDE BRACKET ON SWITCH MACHINE SIDE OF PLATE TO FASTEN PLATES TO SWITCH MACHINE. SEE DTL-506.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

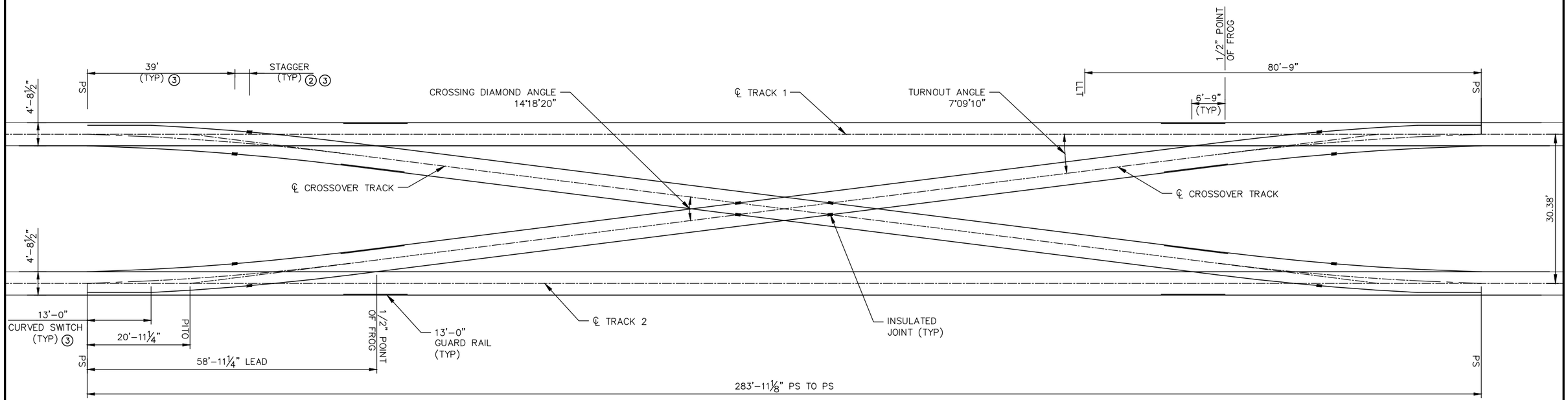
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
NO 8 X-OVER AND DOUBLE X-OVER GEOMETRY DETAIL

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-501

SHEET 90 OF 114



NO 8 DOUBLE CROSS OVER GEOMETRY DETAIL
(30.38' TRACK CENTERS)
N.T.S.

TURNOUT DATA		
FROG	NUMBER	8
	ANGLE	7°09'10"
	TOE LENGTH	5'-4 1/2"
	HEEL LENGTH	9'-3 1/2"
	TOTAL LENGTH	14'-8"
	TOE SPREAD	7 9/16"
	HEEL SPREAD	14 13/32"
SWITCH	LENGTH	13'-0"
	POINT THICKNESS	0"
	POINT ANGLE	1°41'31"
	HEEL ANGLE	2°54'00"
	HEEL SPREAD	6 1/4"
	THROW AT ROD #1	4 3/4"
TURNOUT	LEAD	58'-11 1/8"
	CENTERLINE RADIUS	550.75'
	DEGREE OF CURVE (ARC)	10°24'12"
	PS TO PITO	20'-11 1/4"

LEGEND

▬ INSULATED JOINT

NOTES

① STAGGER INSULATED JOINTS AS SPECIFIED BY THE CONTRACT SPECIFICATIONS.

② INSULATED JOINT WILL BE SUPPORTED BETWEEN THE TIES.

③ SWITCH PLATES FOR #1 AND #2 TIES: INCLUDE BRACKET ON SWITCH MACHINE SIDE OF PLATE TO FASTEN PLATES TO SWITCH MACHINE. SEE DTL-506.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

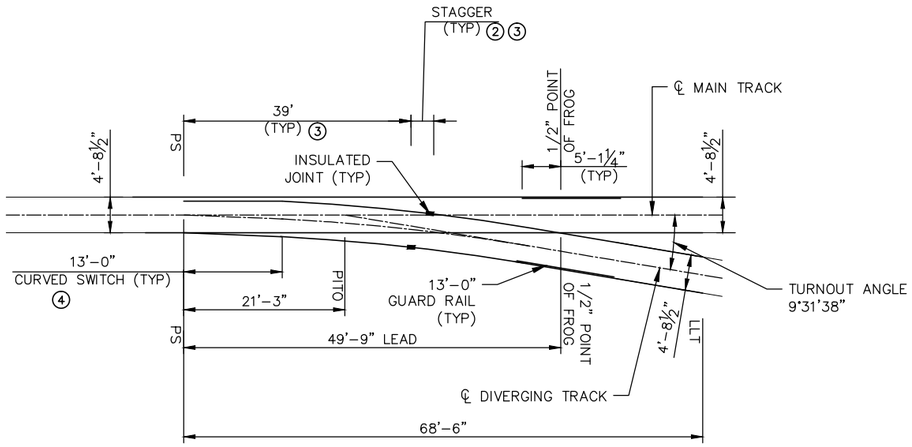
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
NO 8 DOUBLE X-OVER GEOMETRY DETAIL

DISCIPLINE: TRACK

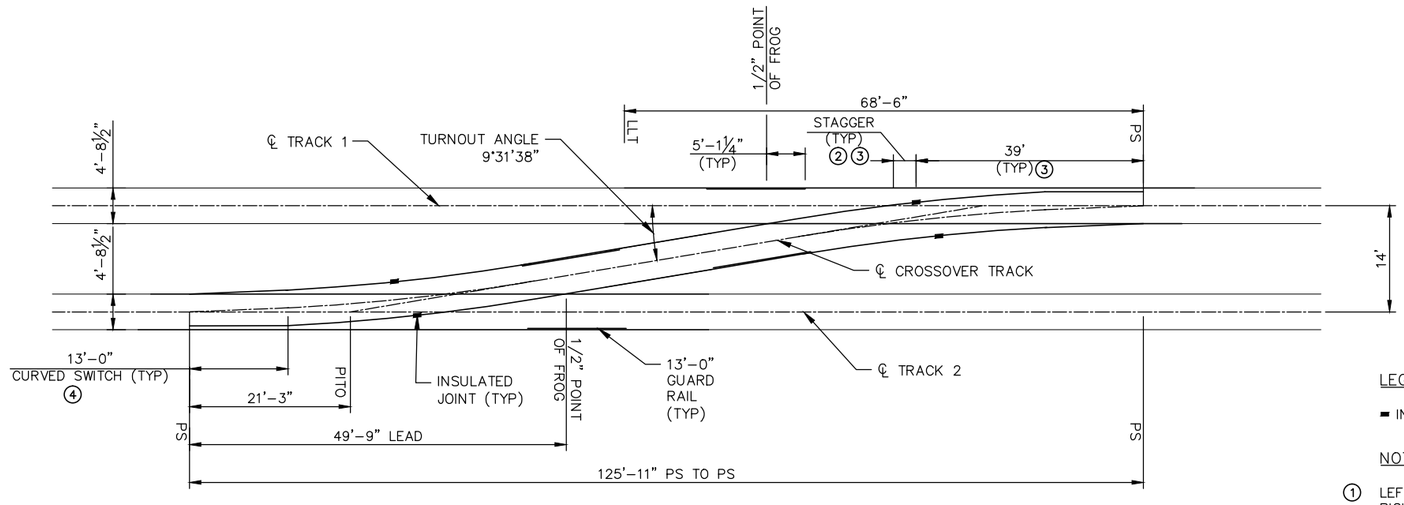
SHEET NAME: 00-TRK-DTL-502

SHEET 91 OF 114



NO 6 TURNOUT GEOMETRY DETAIL ①

N.T.S.



NO 6 CROSS OVER GEOMETRY DETAIL ①

(14.0' TRACK CENTERS)

N.T.S.

TURNOUT DATA		
FROG	NUMBER	6
	ANGLE	9°31'38"
	TOE LENGTH	5'-4 1/2"
	HEEL LENGTH	7'-8"
	TOTAL LENGTH	13'-0 1/2"
	TOE SPREAD	10 1/4"
	HEEL SPREAD	15 27/32"
SWITCH	LENGTH	13'-0"
	POINT THICKNESS	0"
	POINT ANGLE	1°41'31"
	HEEL ANGLE	2°54'00"
	HEEL SPREAD	6 1/4"
	THROW AT ROD #1	4 3/4"
TURNOUT	LEAD	49'-9"
	CENTERLINE RADIUS	283.88'
	DEGREE OF CURVE (ARC)	20°11'00"
	PS TO PITO	21'-3"

LEGEND

▬ INSULATED JOINT

NOTES

① LEFT HAND TURNOUT AND CROSSOVER ILLUSTRATED. MIRROR FOR RIGHT HAND TURNOUT OR CROSSOVER.

② STAGGER INSULATED JOINTS AS SPECIFIED BY THE CONTRACT SPECIFICATIONS.

③ INSULATED JOINT WILL BE SUPPORTED BETWEEN THE TIES.

④ SWITCH PLATES FOR #1 AND #2 TIES: INCLUDE BRACKET ON SWITCH MACHINE SIDE OF PLATE TO FASTEN PLATES TO SWITCH MACHINE. SEE DTL-506.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

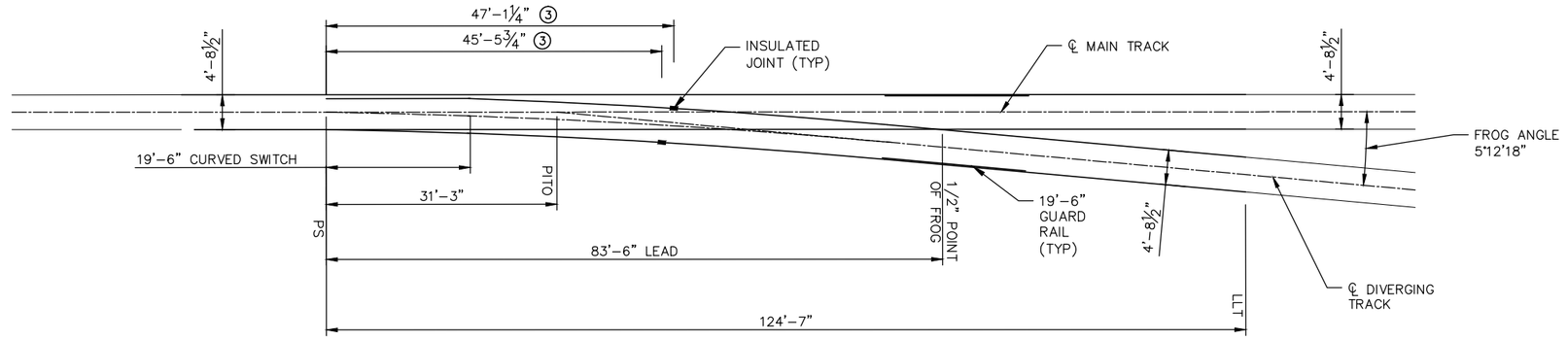
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
NO 6 TURNOUT GEOMETRY DETAIL

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-503

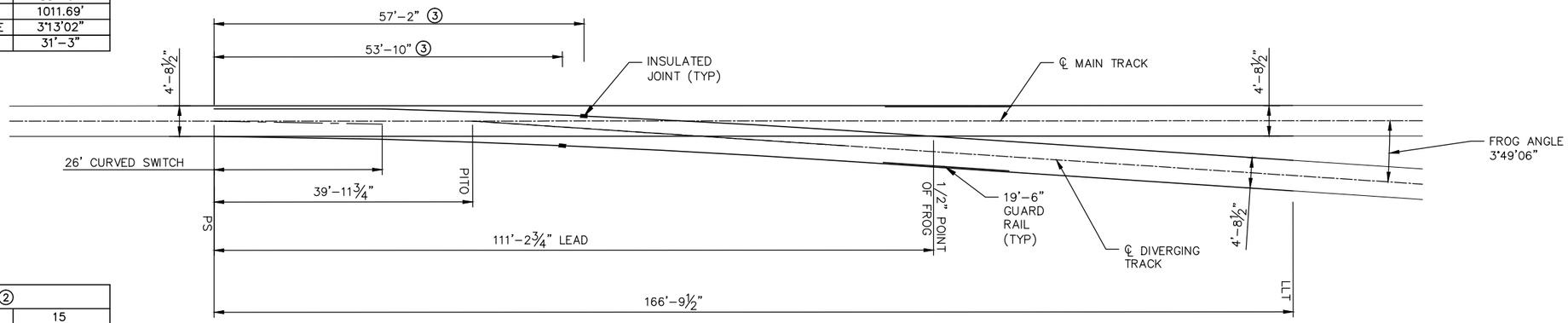
SHEET 92 OF 114



NO 11 TURNOUT GEOMETRY DETAIL ①②

N.T.S.

TURNOUT DATA ②		
FROG	NUMBER	11
	ANGLE	5°12'18"
	TOE LENGTH	8'-7 1/2"
	HEEL LENGTH	12'-6 1/2"
	TOTAL LENGTH	21'-2"
	TOE SPREAD	8 7/8"
	HEEL SPREAD	14 5/32"
SWITCH	LENGTH	19'-6"
	POINT THICKNESS	1/8"
	POINT ANGLE	1°00'40"
	HEEL ANGLE	1°59'16"
	HEEL SPREAD	6 1/4"
	CENTERLINE RADIUS	1143.57'
	CENTRAL ANGLE SWITCH CURVE	0°58'16"
	THROW AT ROD #1	4 3/4"
	VERTEX DISTANCE	7 1/16"
TURNOUT	LEAD	83'-6"
	CENTERLINE RADIUS	1011.69'
	CENTRAL ANGLE CLOSURE CURVE	3°13'02"
	PS TO PITO	31'-3"



NO 15 TURNOUT GEOMETRY DETAIL ①②

N.T.S.

TURNOUT DATA ②		
FROG	NUMBER	15
	ANGLE	3°49'06"
	TOE LENGTH	10'-3"
	HEEL LENGTH	17'-5"
	TOTAL LENGTH	27'-8"
	TOE SPREAD	7 11/16"
	HEEL SPREAD	14 7/16"
SWITCH	LENGTH	26'-0"
	POINT THICKNESS	1/4"
	POINT ANGLE	0°44'47"
	HEEL ANGLE	1°33'02"
	HEEL SPREAD	6 1/4"
	CENTERLINE RADIUS	1853.42'
	VERTEX DISTANCE	0"
	THROW AT ROD #1	4 3/4"
TURNOUT	LEAD	111'-2 3/4"
	CENTERLINE RADIUS	1853.42'
	CENTRAL ANGLE CLOSURE CURVE	3°04'16"
	PS TO PITO	39'-11 3/4"

LEGEND

▬ INSULATED JOINT

NOTES

① RIGHT HAND TURNOUT ILLUSTRATED. MIRROR FOR LEFT HAND TURNOUT.

② SWITCH AND TURNOUT GEOMETRY MATCH BNSF AND UPRR COMMON STANDARDS FOR NO. 11 AND NO. 15 TURNOUTS.

③ INSULATED JOINT WILL BE SUPPORTED BETWEEN THE TIES.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

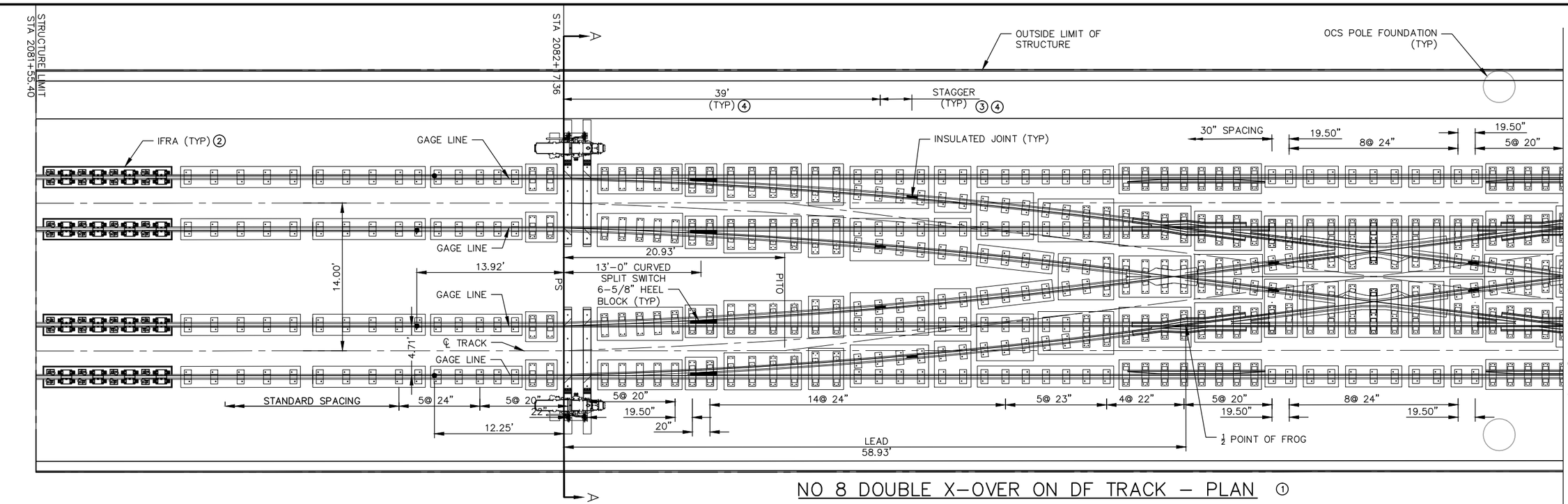
CIVIL - VOLUME 3C
TRACK DETAILS
NO 11 AND 15 FREIGHT TURNOUT GEOMETRY DETAIL

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-504

SHEET 93 OF 114

Jan, 18 2016 09:37 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-500.dwg By: V-BurrellM



NO 8 DOUBLE X-OVER ON DF TRACK – PLAN ①

N.T.S.

TURNOUT DATA		
FROG	NUMBER	8
	ANGLE	7°09'10"
	TOE LENGTH	5'-4 1/2"
	HEEL LENGTH	9'-3 1/2"
	TOTAL LENGTH	14'-8"
	TOE SPREAD	7 9/16"
	HEEL SPREAD	14 13/32"
SWITCH	LENGTH	13'-0"
	POINT THICKNESS	0"
	POINT ANGLE	1°41'31"
	HEEL ANGLE	2°54'00"
	HEEL SPREAD	6 1/4"
	THROW AT ROD #1	4 3/4"
TURNOUT	LEAD	58'-11 1/8"
	CENTERLINE RADIUS	550.75'
	DEGREE OF CURVE (ARC)	10°24'12"
	PS TO PITO	20'-11 1/4"

NOTES

① SEE DTL-506 FOR PLINTH DAPPING DETAIL.

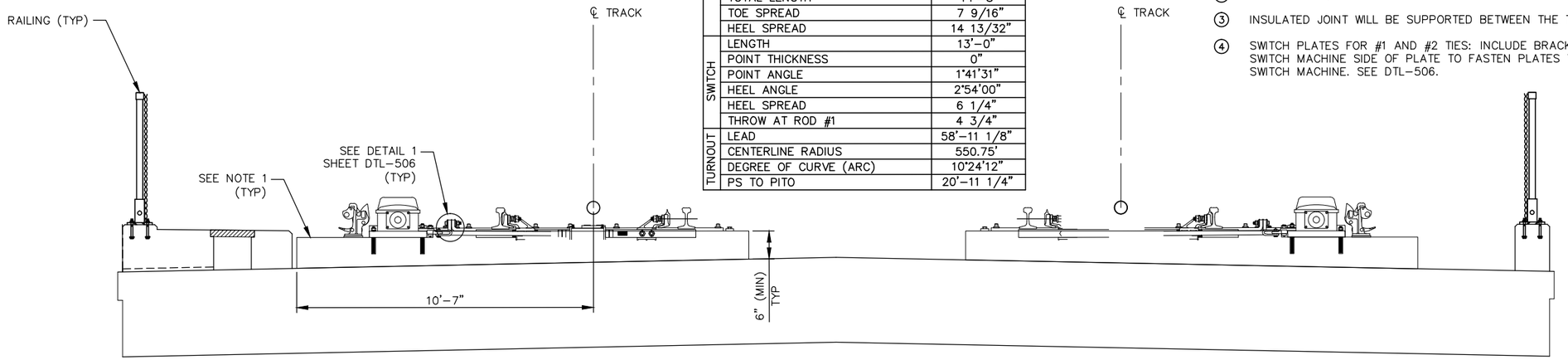
② SEE DTL-412, DTL-413 AND DTL-413 FOR IFRA DETAILS.

③ INSULATED JOINT WILL BE SUPPORTED BETWEEN THE TIES.

④ SWITCH PLATES FOR #1 AND #2 TIES: INCLUDE BRACKET ON SWITCH MACHINE SIDE OF PLATE TO FASTEN PLATES TO SWITCH MACHINE. SEE DTL-506.

LEGEND

- INSULATED JOINT
- RAIL WELD



SECTION A–A

N.T.S.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

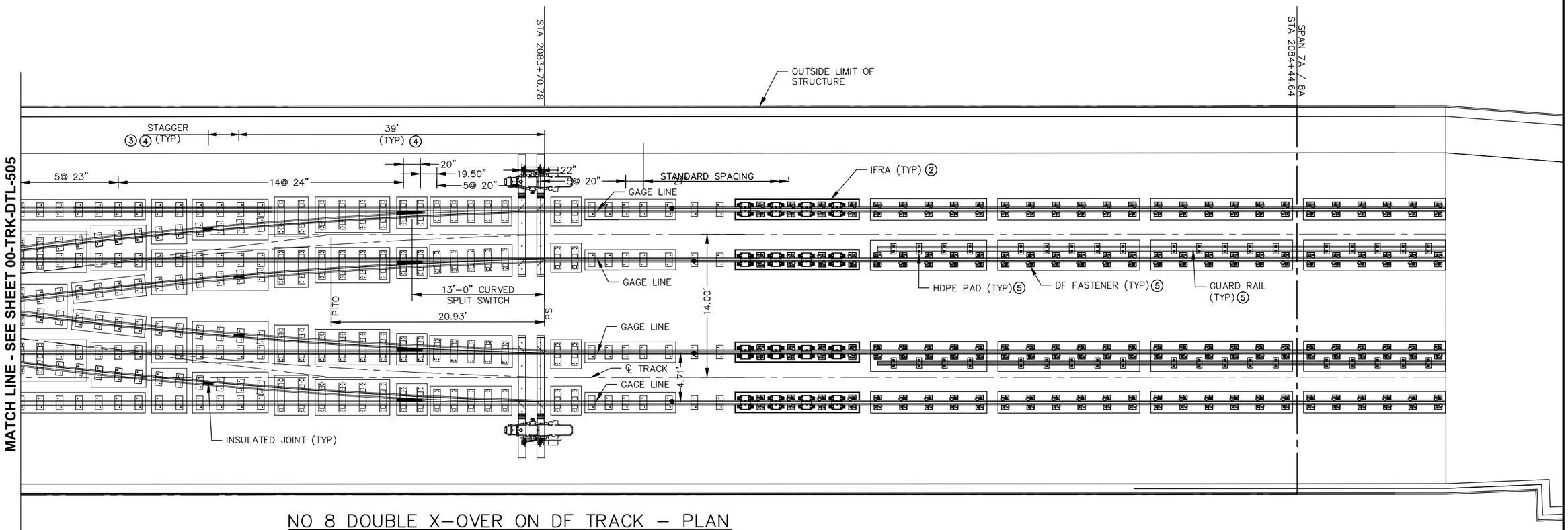
CIVIL - VOLUME 3C
TRACK DETAILS
NO 8 DOUBLE X-OVER ON DF TRACK
GEOMETRY DETAIL SHEET 1 OF 2

DISCIPLINE: TRACK

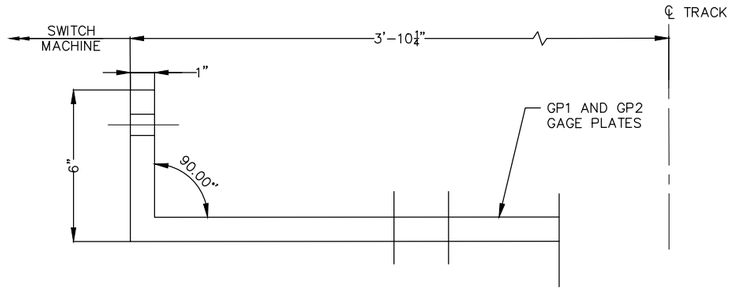
SHEET NAME: 00-TRK-DTL-505

SHEET 94 OF 114

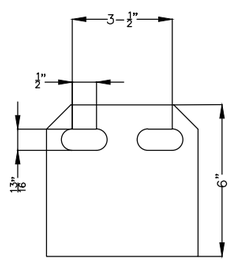
Jan, 18 2016 09:38 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-500.dwg By: V-BurrellM



NO 8 DOUBLE X–OVER ON DF TRACK – PLAN
N.T.S.



DETAIL 1 ①
SWITCH PLATE BRACKET
ELEVATION VIEW
N.T.S.



DETAIL 2 ①
SWITCH MACHINE BRACKET
SECTION VIEW
N.T.S.

PLINTH DAPPING DETAIL
N.T.S.

LEGEND

- INSULATED JOINT
- RAIL WELD

NOTES

① SWITCH PLATE BRACKET ON GAGE PLATES (GP1 AND GP2).

② SEE DTL–412, DTL–413 AND DTL–413 FOR IFRA DETAILS.

③ INSULATED JOINT WILL BE SUPPORTED BETWEEN THE TIES.

④ SWITCH PLATES FOR #1 AND #2 TIES: INCLUDE BRACKET ON SWITCH MACHINE SIDE OF PLATE TO FASTEN PLATES TO SWITCH MACHINE. SEE DTL–506.

⑤ SEE DTL–408 FOR EMERGENCY GUARD RAIL, HDPE PAD AND DF FASTENER DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
NO 8 DOUBLE X-OVER ON DF TRACK
GEOMETRY DETAIL SHEET 2 OF 2

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-506

SHEET 95 OF 114

Jan, 18 2016 09:39 am V:\3400_ADC\CAD\OVERALL\PLAN SHEETS\TRACK\00-TRK-DTL-500.dwg By: V-BurrellM

	WEST TRANSITION					EAST TRANSITION		
	TRACK TYPE	TRANSITION TYPE	TRANSITION STA	STRUCTURE NAME	STRUCTURE TYPE	TRANSITION STA	TRANSITION TYPE	TRACK TYPE
WEST	—			27C06	DF BRIDGE	2108+37.14	C	BALLAST
	BALLAST	L	2138+89.27	27W32	BALLAST BRIDGE	2140+86.00	L	BALLAST
	BALLAST	B	2157+94.68	27R33	DF BRIDGE	2167+97.55	C	BALLAST
	BALLAST	C	2213+92.25	27C07	DF BRIDGE	2227+97.75	B	BALLAST
	BALLAST	A	2242+45.82	—	DF PILE SUPPORTED STRUCTURE	—		
	—			27R34	DF BRIDGE	2275+90.27	B	BALLAST
	BALLAST	_	2295+00.00	27W33	DF TUNNEL	2310+82.00	J	BALLAST
	BALLAST	C	2387+91.86	R0686	DF BRIDGE	2414+97.63	B	BALLAST

	WEST TRANSITION					EAST TRANSITION		
	TRACK TYPE	TRANSITION TYPE	TRANSITION STA	STRUCTURE NAME	STRUCTURE TYPE	TRANSITION STA	TRANSITION TYPE	TRACK TYPE
EAST	BALLAST	B	2544+25.30	27C10	DF BRIDGE	2560+45.37	C	BALLAST
	BALLAST	D	2602+57.06	R0689	BALLAST BRIDGE	2603+51.72	D	BALLAST
	BALLAST	E	2632+05.70	27C13	BALLAST BRIDGE	2633+51.66	D	BALLAST
	BALLAST	D	2685+10.75	27303	BALLAST BRIDGE	2690+30.50	D	BALLAST
	BALLAST	K	2772+50.00	27C15	DF BOAT SECTION	2807+20.00	_	BALLAST
	BALLAST	D	2801+78.25	R0693	BALLAST BRIDGE	2803+03.25	D	BALLAST
	BALLAST	I	2931+01.96	R0697	EMBEDDED BRIDGE	—		
	—			R0697	DF BRIDGE	2939+61.96	G	EMBEDDED
	EMBEDDED	H	2950+62.93	27C18	DF BRIDGE	—		

	WEST TRANSITION					EAST TRANSITION			
	TRACK TYPE	TRANSITION TYPE	TRANSITION STA	STRUCTURE NAME	STRUCTURE TYPE	TRANSITION STA	TRANSITION TYPE	TRACK TYPE	
FREIGHT	BALLAST	V	105+46.51	R0688	BALLAST BRIDGE	106+45.51	M	BALLAST	(1)
	BALLAST	V	134+94.10	27C12	BALLAST BRIDGE	136+41.10	M	BALLAST	(1)
	BALLAST	N	146+10.10	R0691	BALLAST BRIDGE	147+99.20	N	BALLAST	(2)
	BALLAST	N	150+21.02	27C14	BALLAST BRIDGE	151+28.15	N	BALLAST	(2)
	BALLAST	V	191+19.11	27W34	BALLAST BRIDGE	193+40.45	M	BALLAST	(1)
	BALLAST	V	331+66.87	R0694	BALLAST BRIDGE	333+05.12	M	BALLAST	(3)

TYPE	DESCRIPTION	SHEET
ART		
A	BALLAST TO DF PILE SUPPORTED STRUCTURE	DTL-602
B	BALLAST TO DF IN TANGENT	DTL-603
C	BALLAST TO DF IN CURVE	DTL-604
D	BALLAST TO BALLAST IN TANGENT	DTL-605
E	BALLAST TO BALLAST IN CURVE	DTL-606
F	BALLAST TO EMBEDDED IN CURVE	DTL-607
G	EMBEDDED TO DF IN CURVE	DTL-608
H	EMBEDDED TO DF IN TANGENT	DTL-609
J	11162' TUNNEL BALLAST TO DF	DTL-610
K	KW TUNNEL BALLAST TO DF IN CURVE	DTL-611
L	KW TUNNEL BALLAST TO DF	DTL-612
FLIGHT		
M	BALLAST TO BALLAST IN TANGENT	DTL-613
N	BALLAST TO BALLAST IN CURVE	DTL-614

NOTES:

(1) STRUCTURES R0688, 27C12, AND 27W34 LOCATED ON THE BASS LAKE SPUR TRACK.

(2) STRUCTURES R0691 AND 27C14 LOCATED ON THE SOUTHERLY CONNECTOR TRACK.

(3) STRUCTURE R0694 LOCATED ON THE KENILWORTH TRACK.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

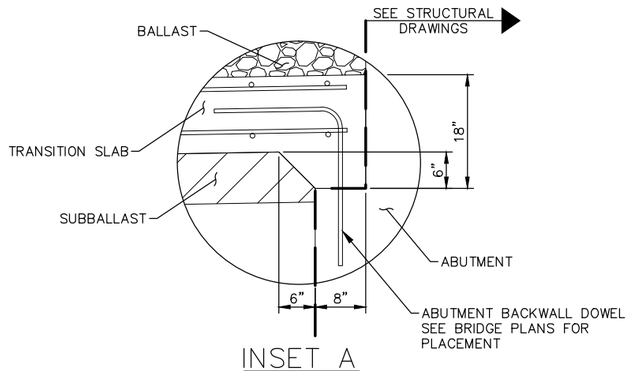
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS
INDEX

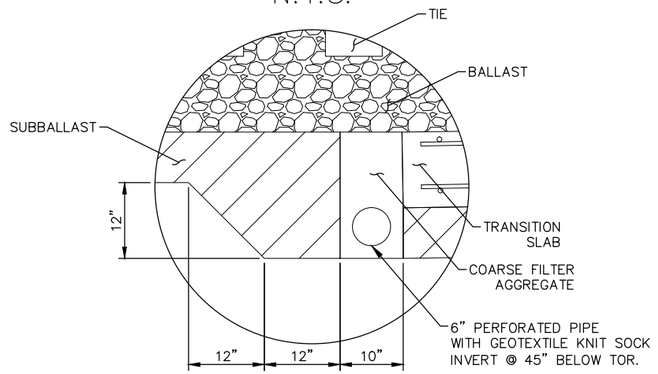
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-601

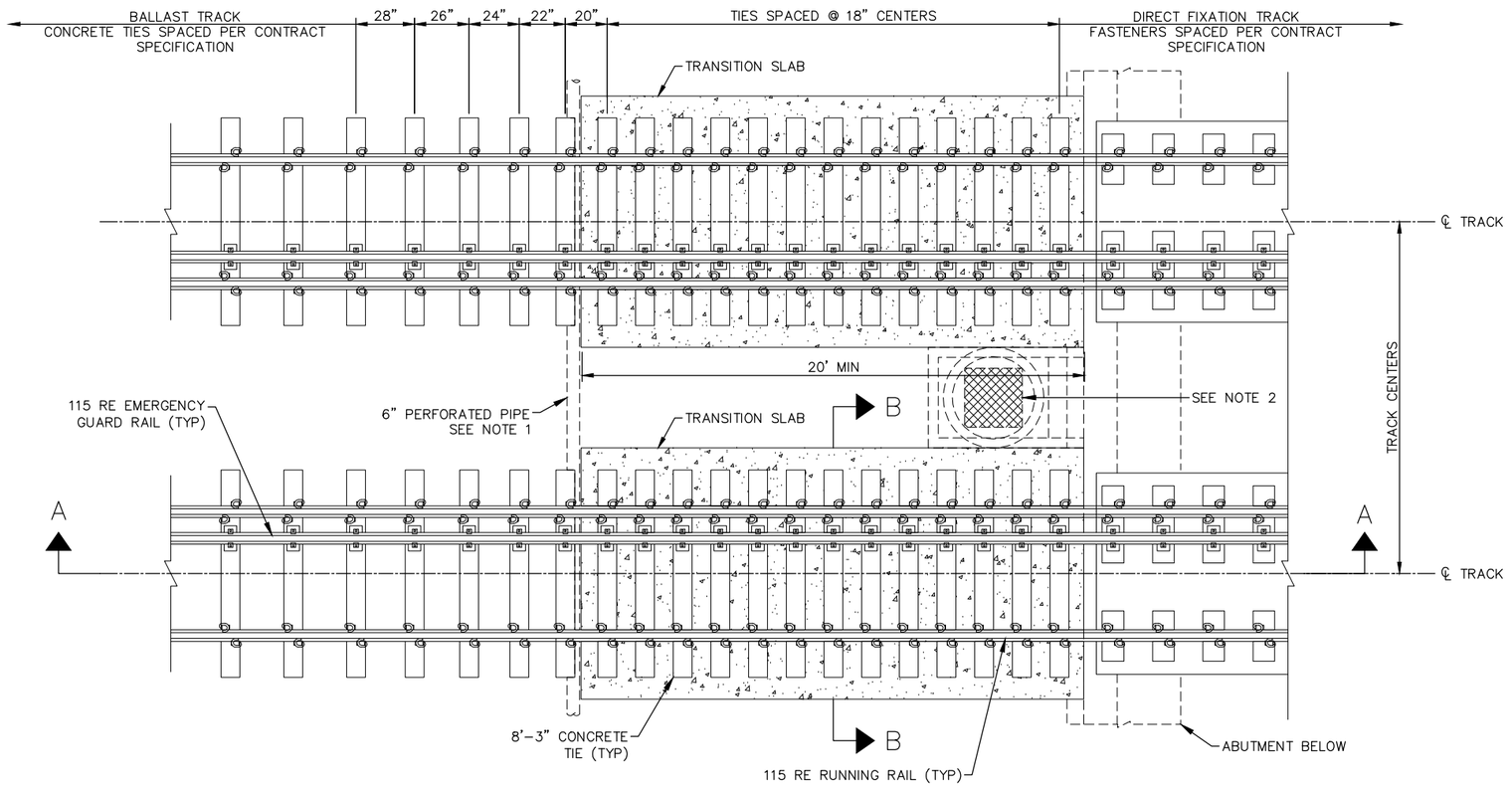
SHEET 96 OF 114



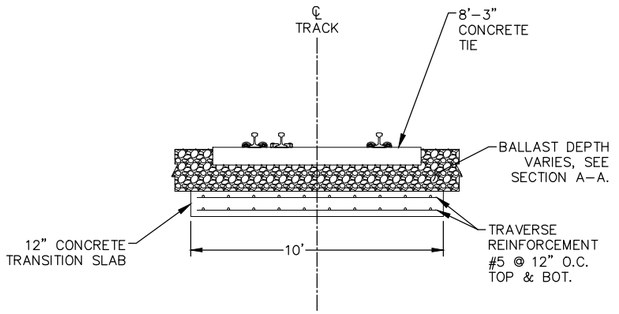
INSET A
N.T.S.



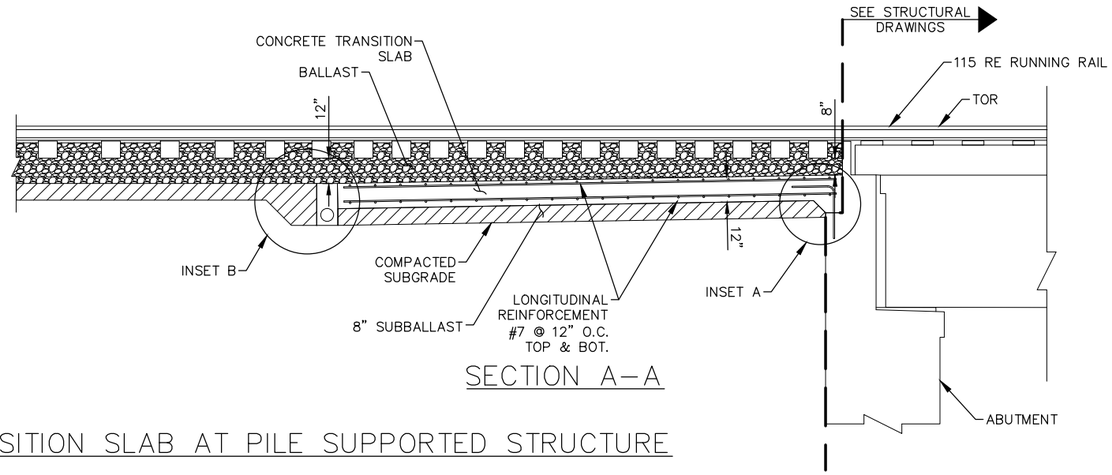
INSET B
N.T.S.



PLAN VIEW
N.T.S.



SECTION B–B



SECTION A–A

NOTE:
1. CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS.
2. SPECIAL DRAINAGE STRUCTURE AT ABUTMENT. SEE DRAINAGE PLANS.

LRT – BALLAST TRACK TRANSITION SLAB AT PILE SUPPORTED STRUCTURE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

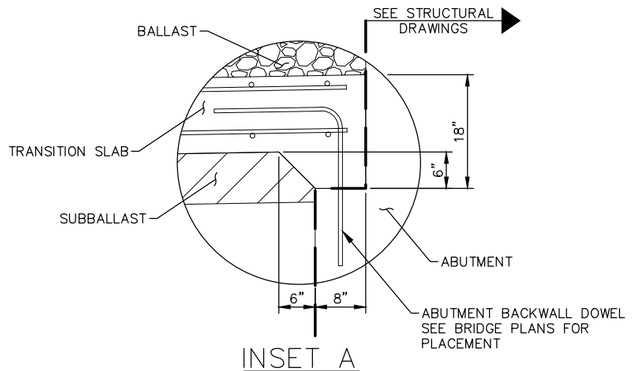
CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS TYPE A

DISCIPLINE: TRACK

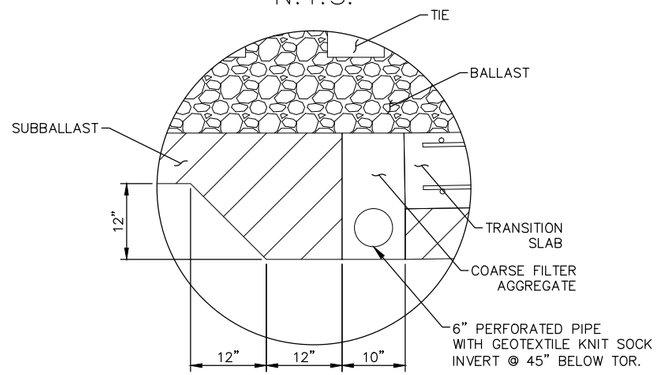
SHEET NAME: 00-TRK-DTL-602

SHEET 97 OF 114

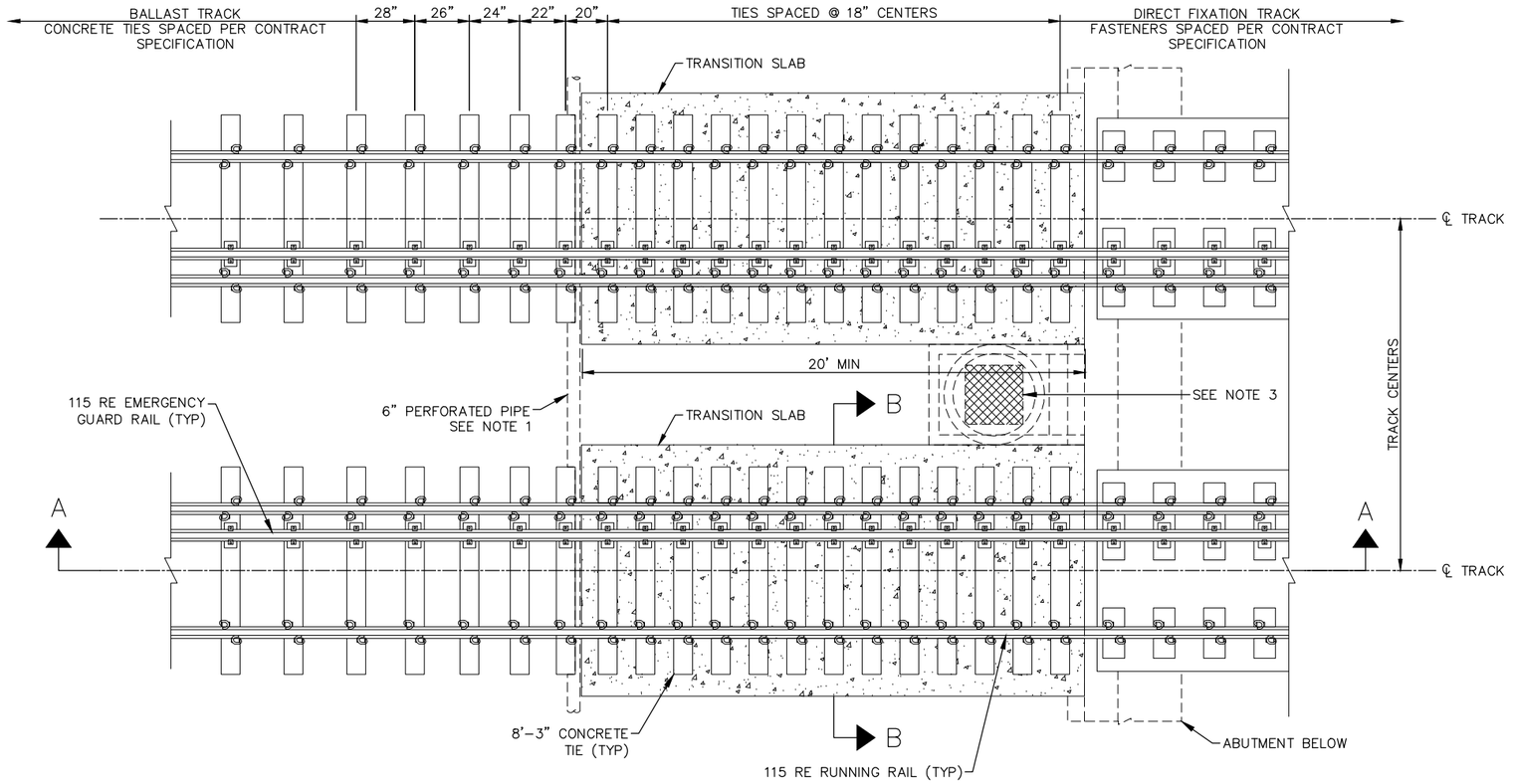
Jan, 18 2016 12:50 pm V:\3400_ADC\CAD\OVERALL\plan sheets\TRACK\00-TRK-DTL-600.dwg By: MaurisBM



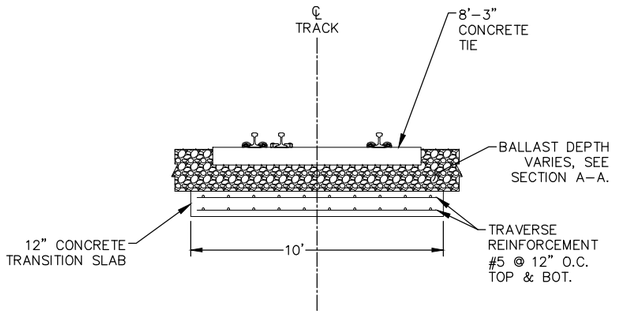
INSET A
N.T.S.



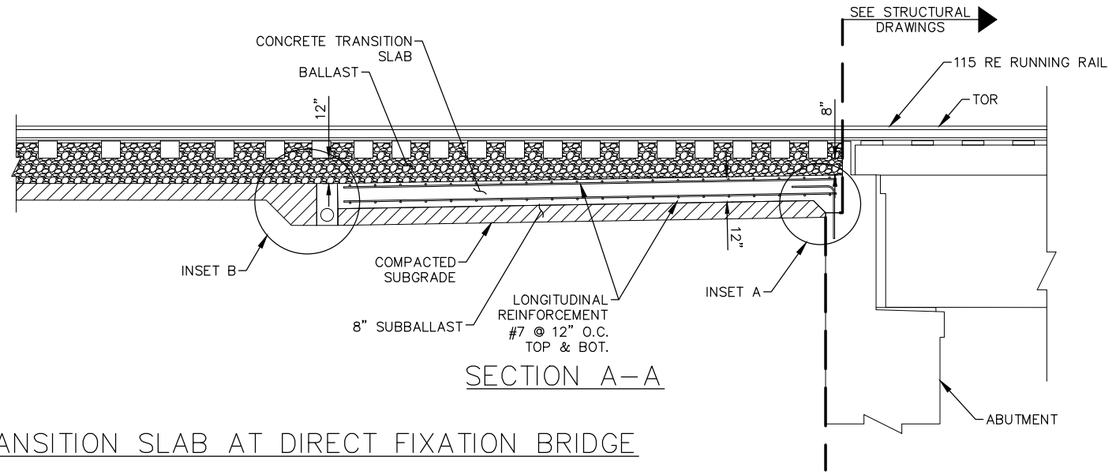
INSET B
N.T.S.



PLAN VIEW
N.T.S.



SECTION B-B



SECTION A-A

NOTE:
1. CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS.
2. WEST TRANSITION ILLUSTRATED. FOR EAST TRANSITION MIRROR PLAN ABOUT VERTICAL AXIS.
3. SPECIAL DRAINAGE STRUCTURE AT ABUTMENT. SEE DRAINAGE PLANS.

LRT – BALLAST TRACK TRANSITION SLAB AT DIRECT FIXATION BRIDGE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

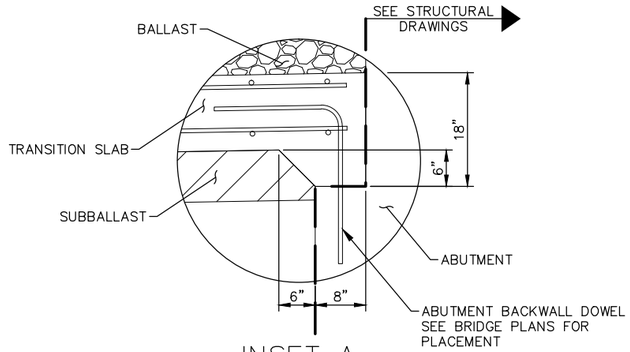
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS TYPE B

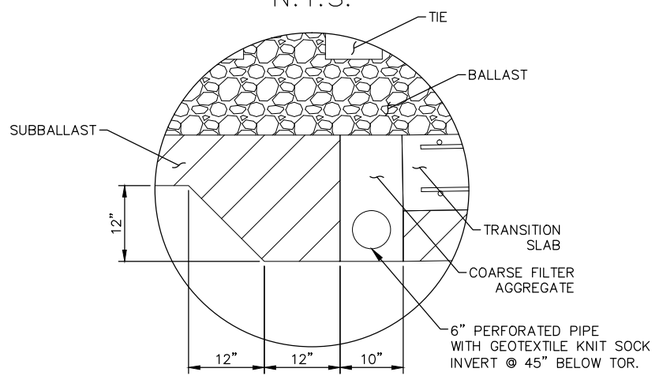
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-603

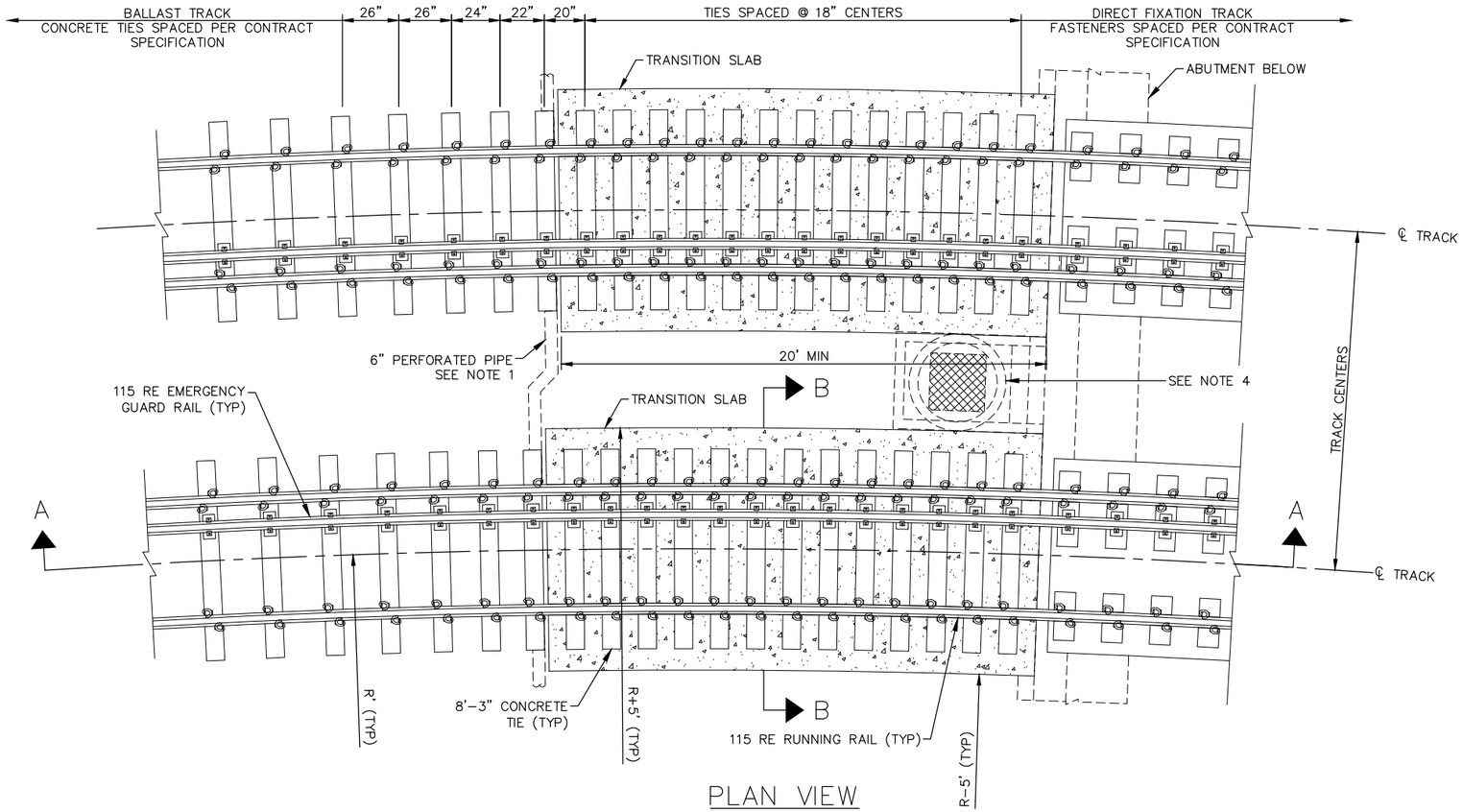
SHEET 98 OF 114



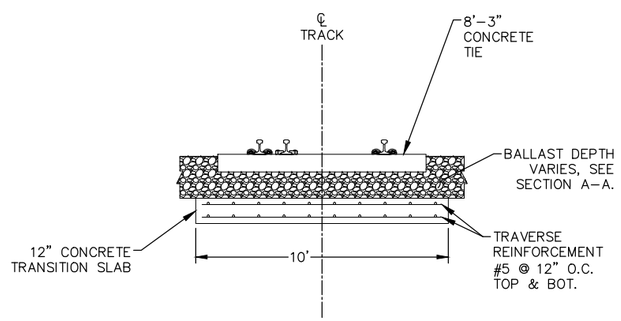
INSET A
N.T.S.



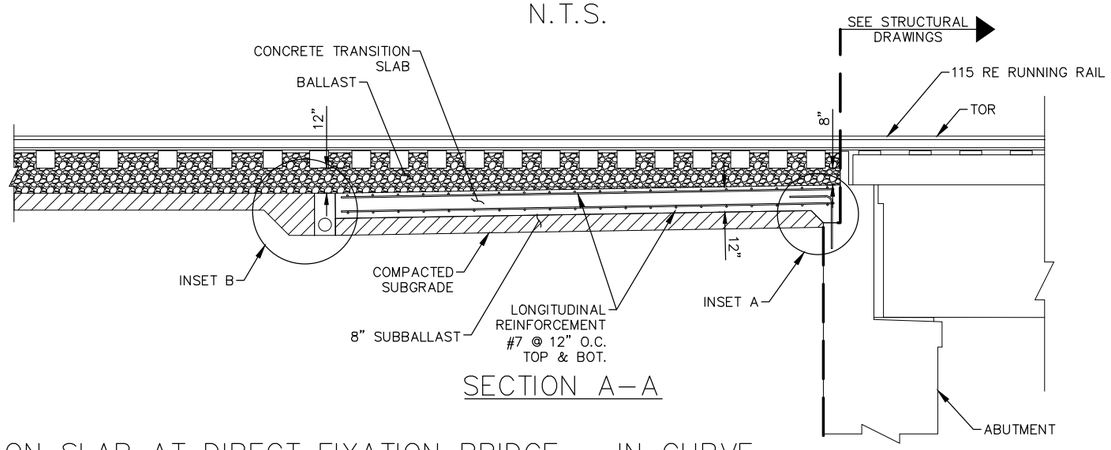
INSET B
N.T.S.



PLAN VIEW
N.T.S.



SECTION B-B



SECTION A-A

NOTE:
1. CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS.
2. RIGHT HAND CURVE ILLUSTRATED. FOR LEFT HAND CURVE MIRROR PLAN ABOUT HORIZONTAL AXIS.
3. WEST TRANSITION ILLUSTRATED. FOR EAST TRANSITION MIRROR PLAN ABOUT VERTICAL AXIS.
4. SPECIAL DRAINAGE STRUCTURE AT ABUTMENT. SEE DRAINAGE PLANS.

LRT – DIRECT FIXATION TRANSITION SLAB AT DIRECT FIXATION BRIDGE – IN CURVE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

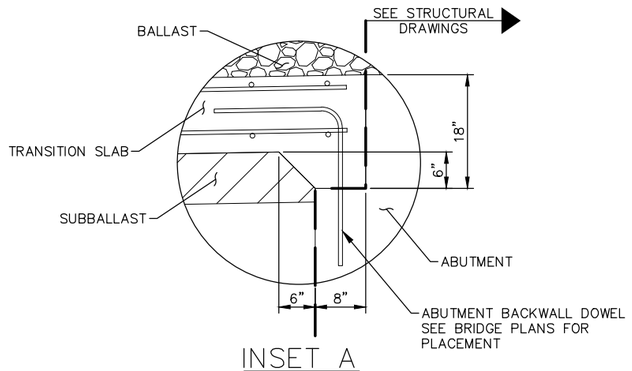
CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS TYPE C

DISCIPLINE: TRACK

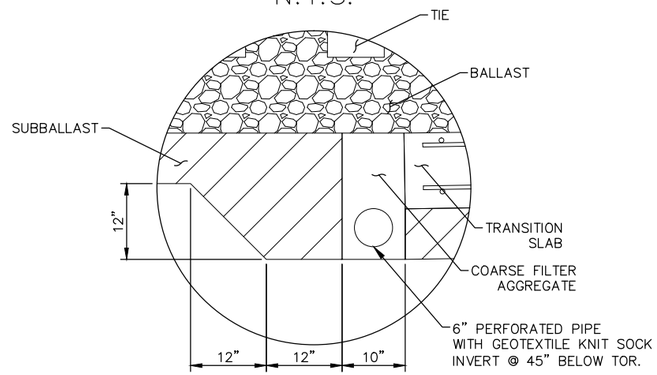
SHEET NAME: 00-TRK-DTL-604

SHEET 99 OF 114

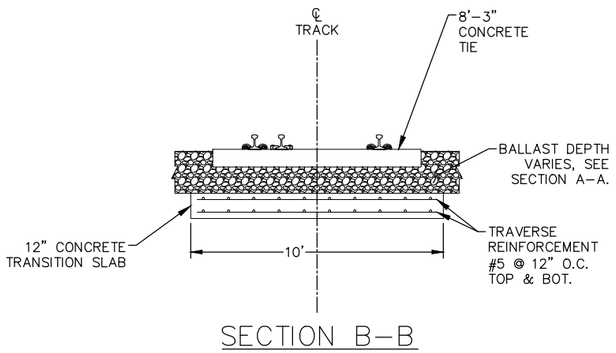
Jan, 18 2016 12:50 pm V:\3400_ADC\CAD\OVERALL\plan sheets\TRACK\00-TRK-DTL-600.dwg By: MaurisBM



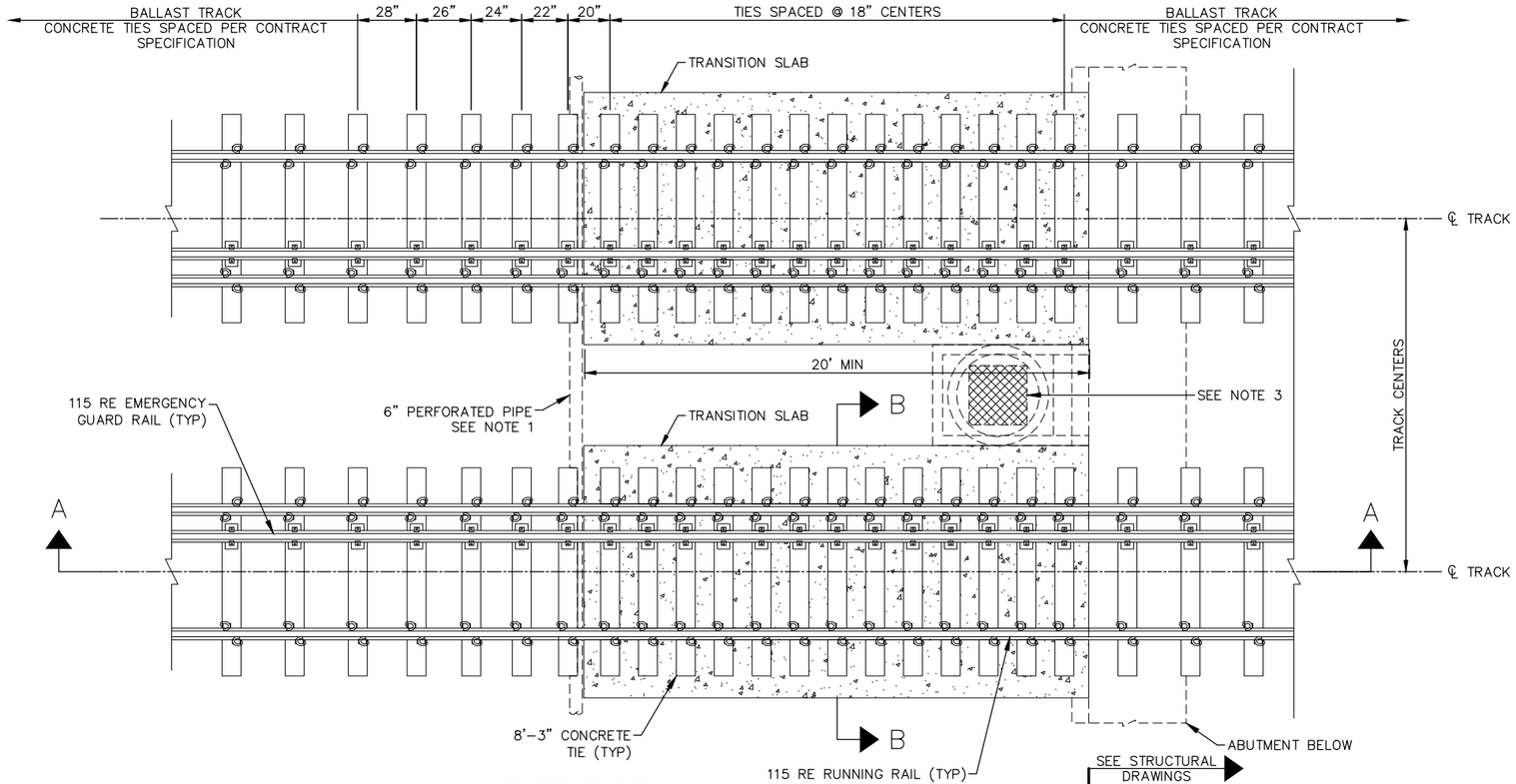
INSET A
N.T.S.



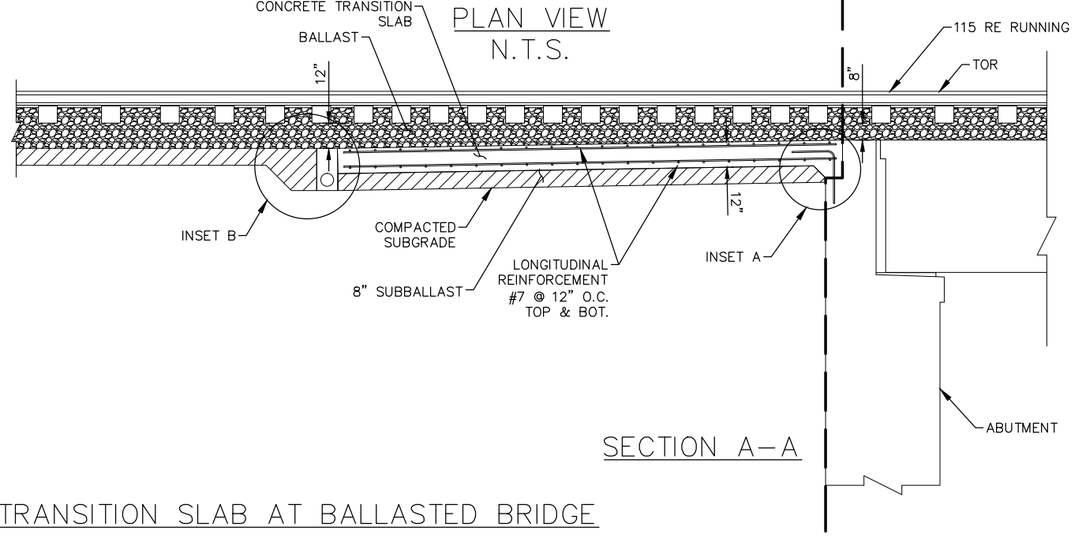
INSET B
N.T.S.



SECTION B-B



PLAN VIEW
N.T.S.



SECTION A-A

NOTE:
1. CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS.
2. WEST TRANSITION ILLUSTRATED. FOR EAST TRANSITION MIRROR PLAN ABOUT VERTICAL AXIS.
3. SPECIAL DRAINAGE STRUCTURE AT ABUTMENT. SEE DRAINAGE PLANS.

LRT – BALLAST TRACK TRANSITION SLAB AT BALLASTED BRIDGE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

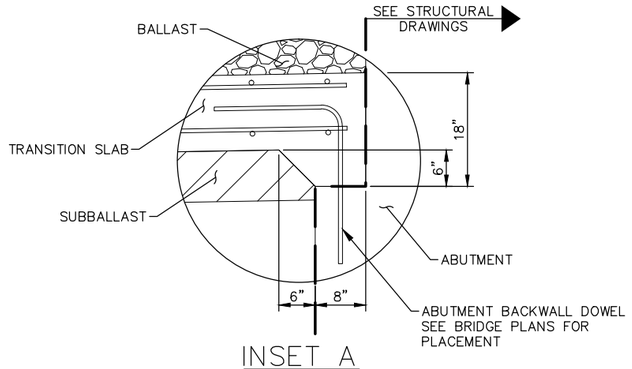
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS TYPE D

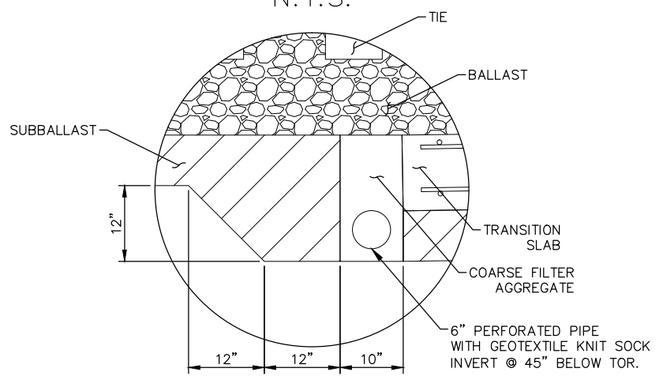
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-605

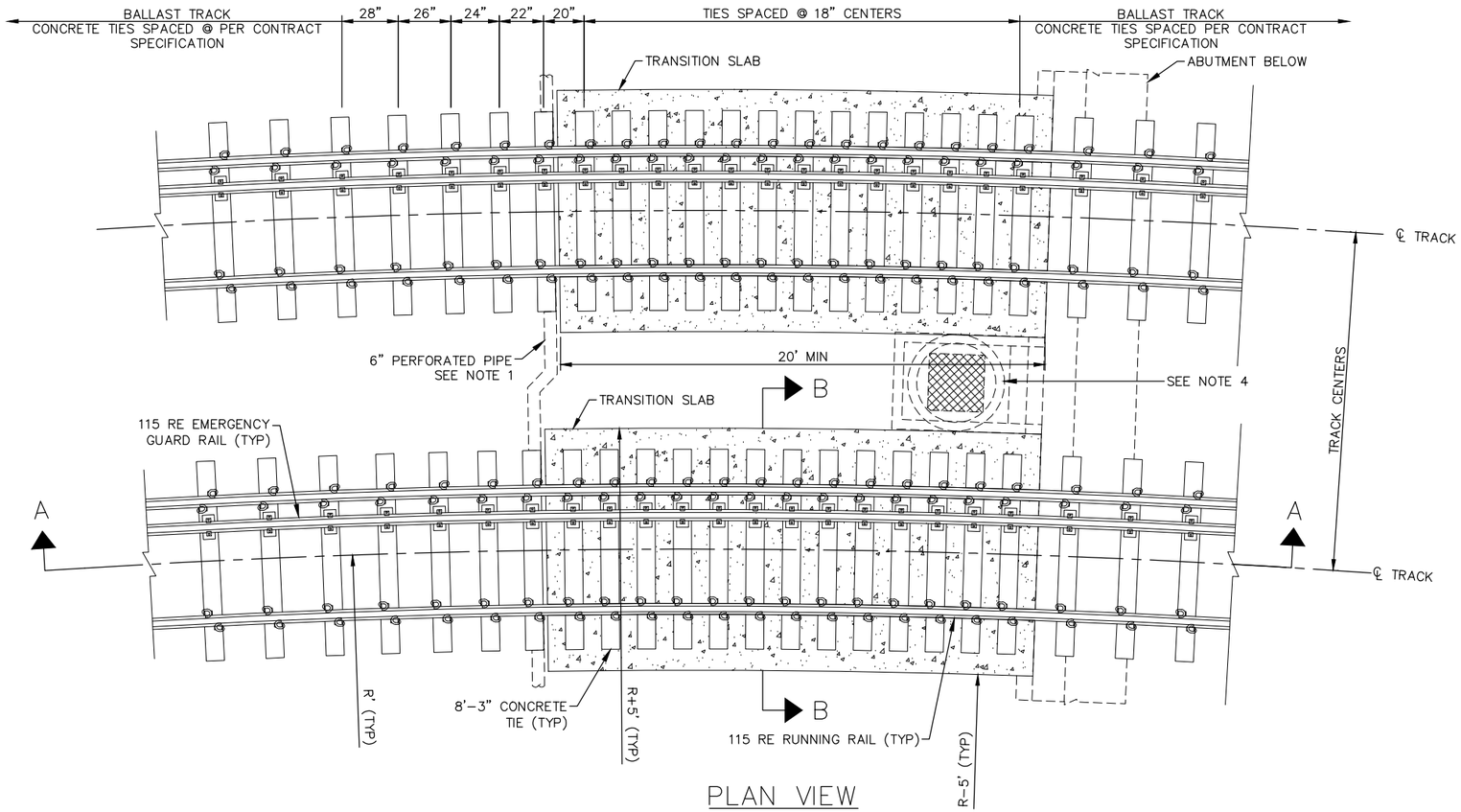
SHEET 100 OF 114



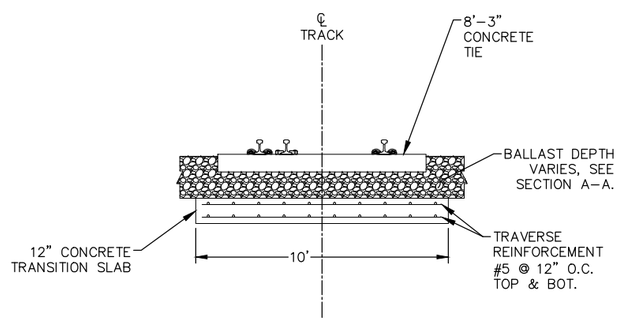
INSET A
N.T.S.



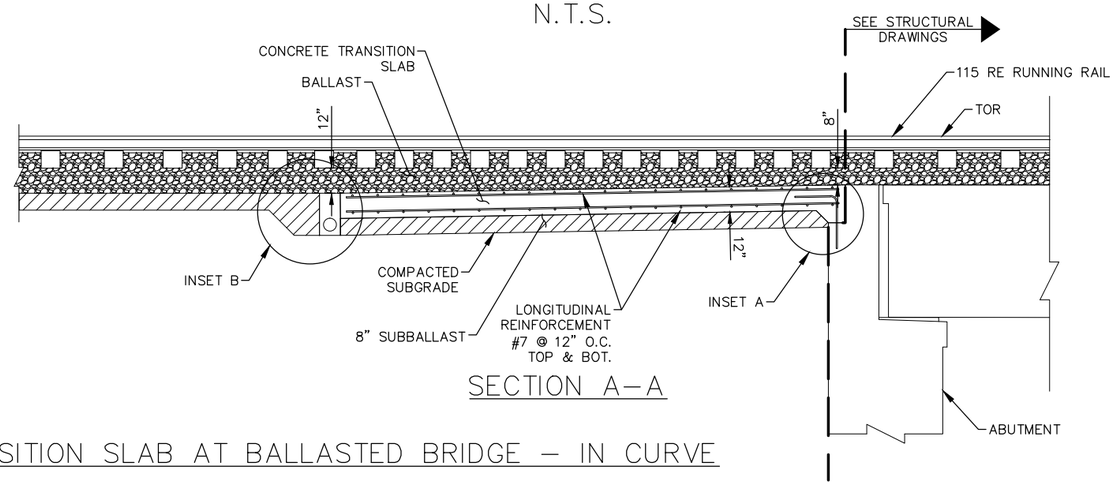
INSET B
N.T.S.



PLAN VIEW
N.T.S.



SECTION B-B



SECTION A-A

NOTE:
1. CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS.
2. RIGHT HAND CURVE ILLUSTRATED. FOR LEFT HAND CURVE MIRROR PLAN ABOUT HORIZONTAL AXIS.
3. WEST TRANSITION ILLUSTRATED. FOR EAST TRANSITION MIRROR PLAN ABOUT VERTICAL AXIS.
4. SPECIAL DRAINAGE STRUCTURE AT ABUTMENT. SEE DRAINAGE PLANS.

LRT – BALLAST TRACK TRANSITION SLAB AT BALLASTED BRIDGE – IN CURVE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

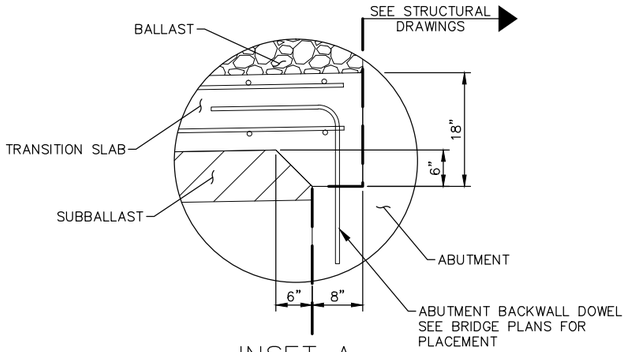
CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS TYPE E

DISCIPLINE: TRACK

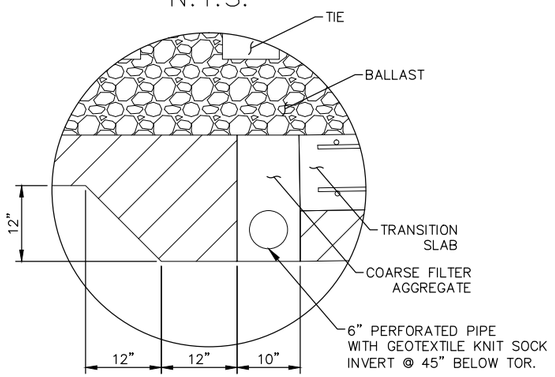
SHEET NAME: 00-TRK-DTL-606

SHEET 101 OF 114

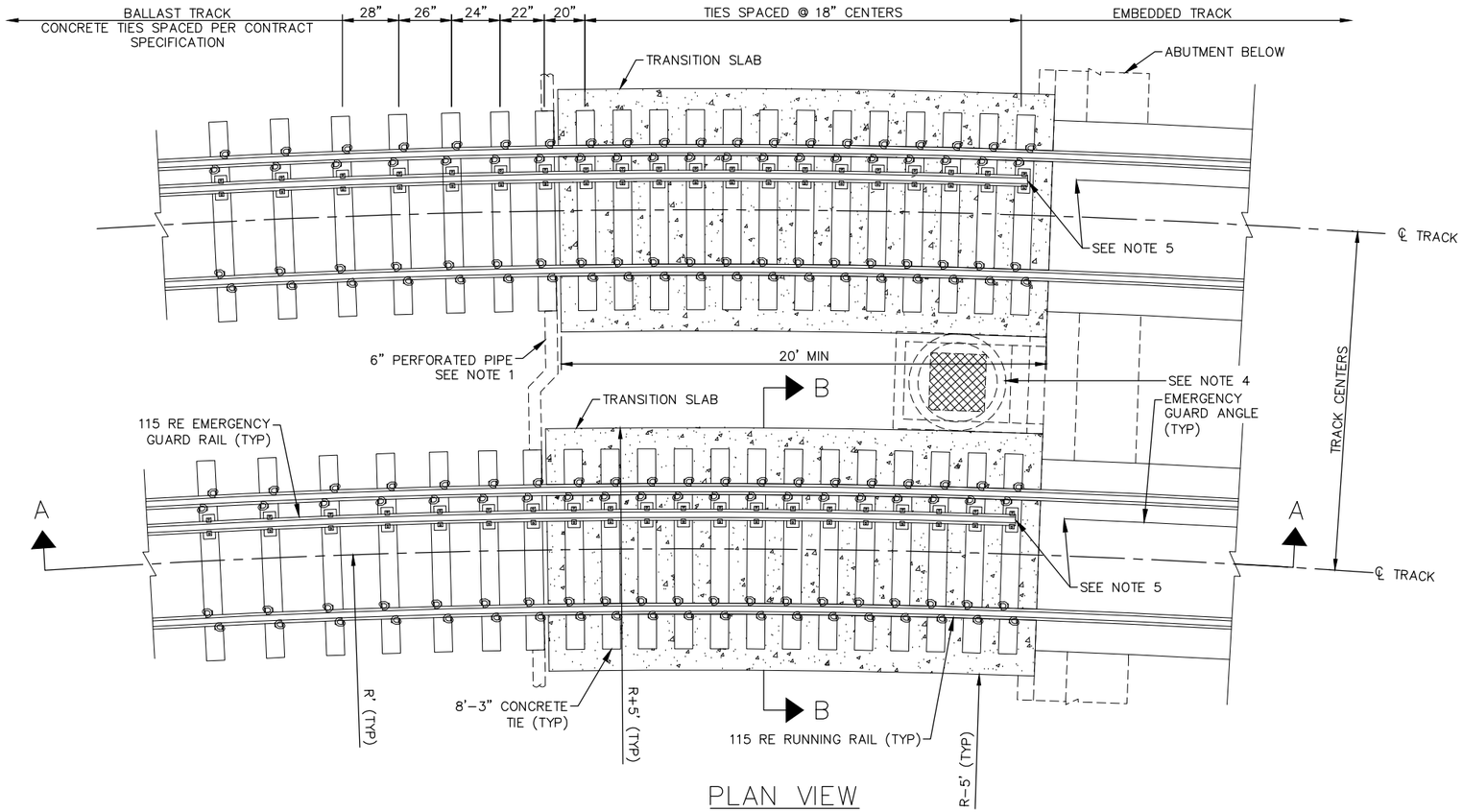
Jan, 18 2016 12:51 pm V:\3400_ADC\CAD\OVERALL\plan sheets\TRACK\00-TRK-DTL-600.dwg By: MaurisBM



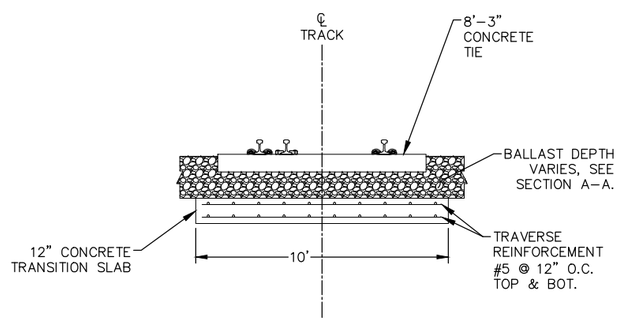
INSET A
N.T.S.



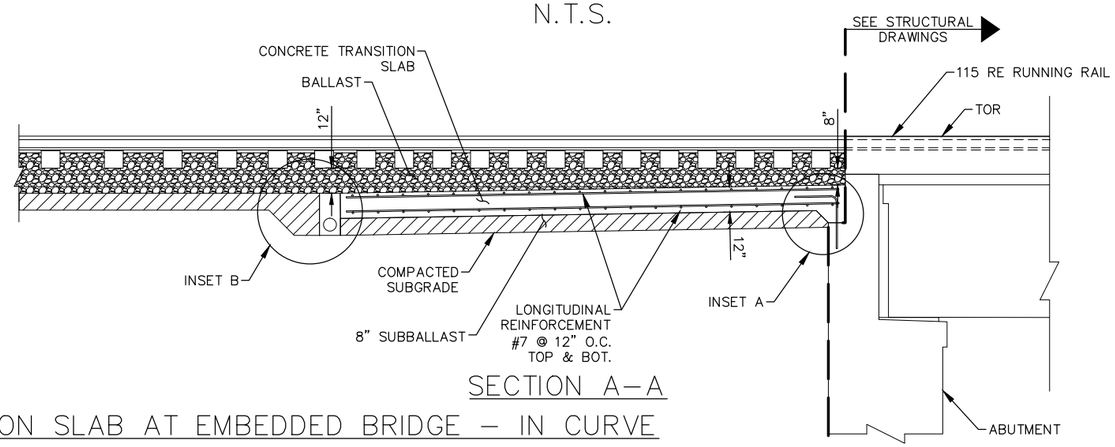
INSET B
N.T.S.



PLAN VIEW
N.T.S.



SECTION B-B



SECTION A-A

LRT – BALLAST TRANSITION SLAB AT EMBEDDED BRIDGE – IN CURVE

NOTE:
1. CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS.
2. RIGHT HAND CURVE ILLUSTRATED. FOR LEFT HAND CURVE MIRROR PLAN ABOUT HORIZONTAL AXIS.
3. WEST TRANSITION ILLUSTRATED. FOR EAST TRANSITION MIRROR PLAN ABOUT VERTICAL AXIS.
4. SPECIAL DRAINAGE STRUCTURE AT ABUTMENT. SEE DRAINAGE PLANS.
5. END EMERGENCY GUARD RAIL AND EMERGENCY GUARD ANGLE 12 INCHES FROM TRANSITION POINT. WORK END OF EMERGENCY GUARD RAIL AS INDICATED BY DETAILS A AND BE ON SHEET DTL-203.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

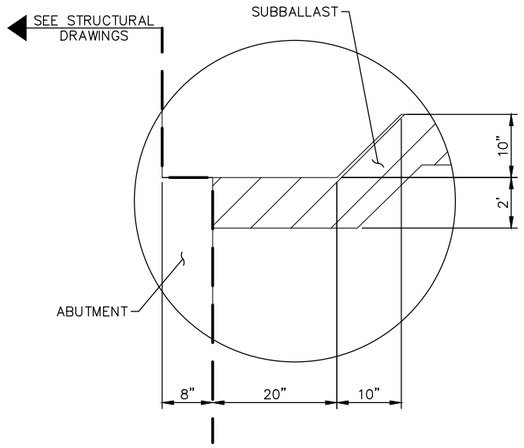
CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS TYPE F

DISCIPLINE: TRACK

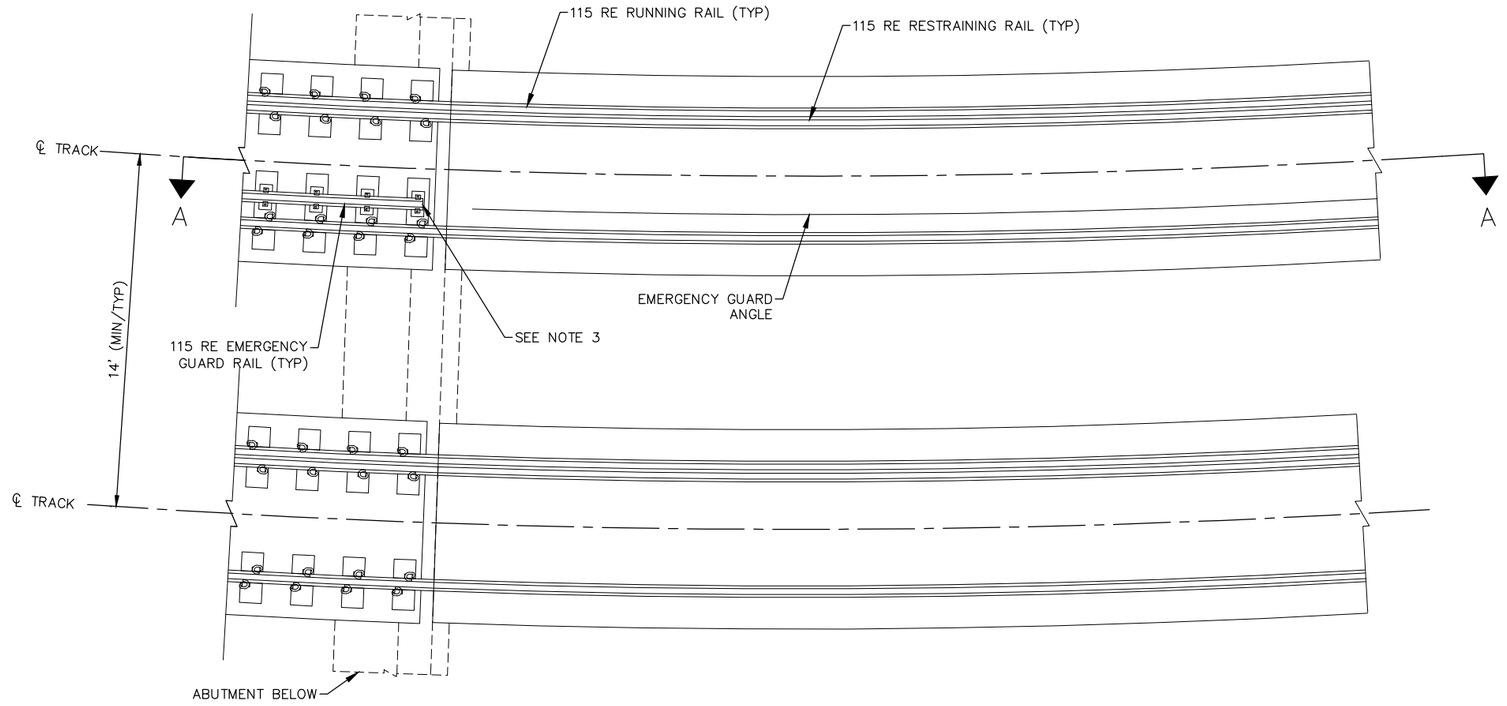
SHEET NAME: 00-TRK-DTL-607

SHEET 102 OF 114

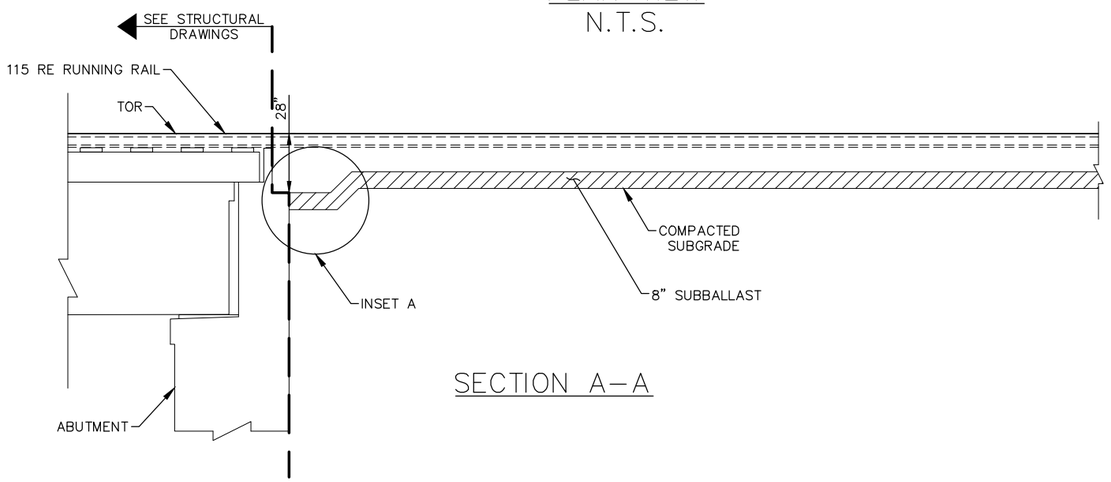
Jan, 18 2016 12:51 pm V:\3400_ADC\CAD\OVERALL\plan sheets\TRACK\00-TRK-DTL-600.dwg By: MaurisBM



INSET A
N.T.S.



PLAN VIEW
N.T.S.



SECTION A–A

NOTE:.
1. RIGHT HAND CURVE ILLUSTRATED. FOR LEFT HAND CURVE MIRROR PLAN ABOUT HORIZONTAL AXIS.
2. WEST TRANSITION ILLUSTRATED. FOR EAST TRANSITION MIRROR PLAN ABOUT VERTICAL AXIS.
3. END EMERGENCY GUARD RAIL AND EMERGENCY GUARD ANGLE 12 INCHES FROM TRANSITION POINT. WORK END OF EMERGENCY GUARD RAIL AS INDICATED BY DETAILS A AND BE ON SHEET DTL–203.

LRT – EMBEDDED TRANSITION SLAB AT DIRECT FIXATION BRIDGE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

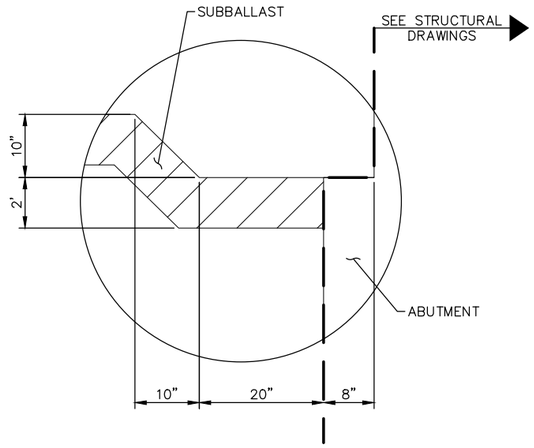
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS
TYPE G

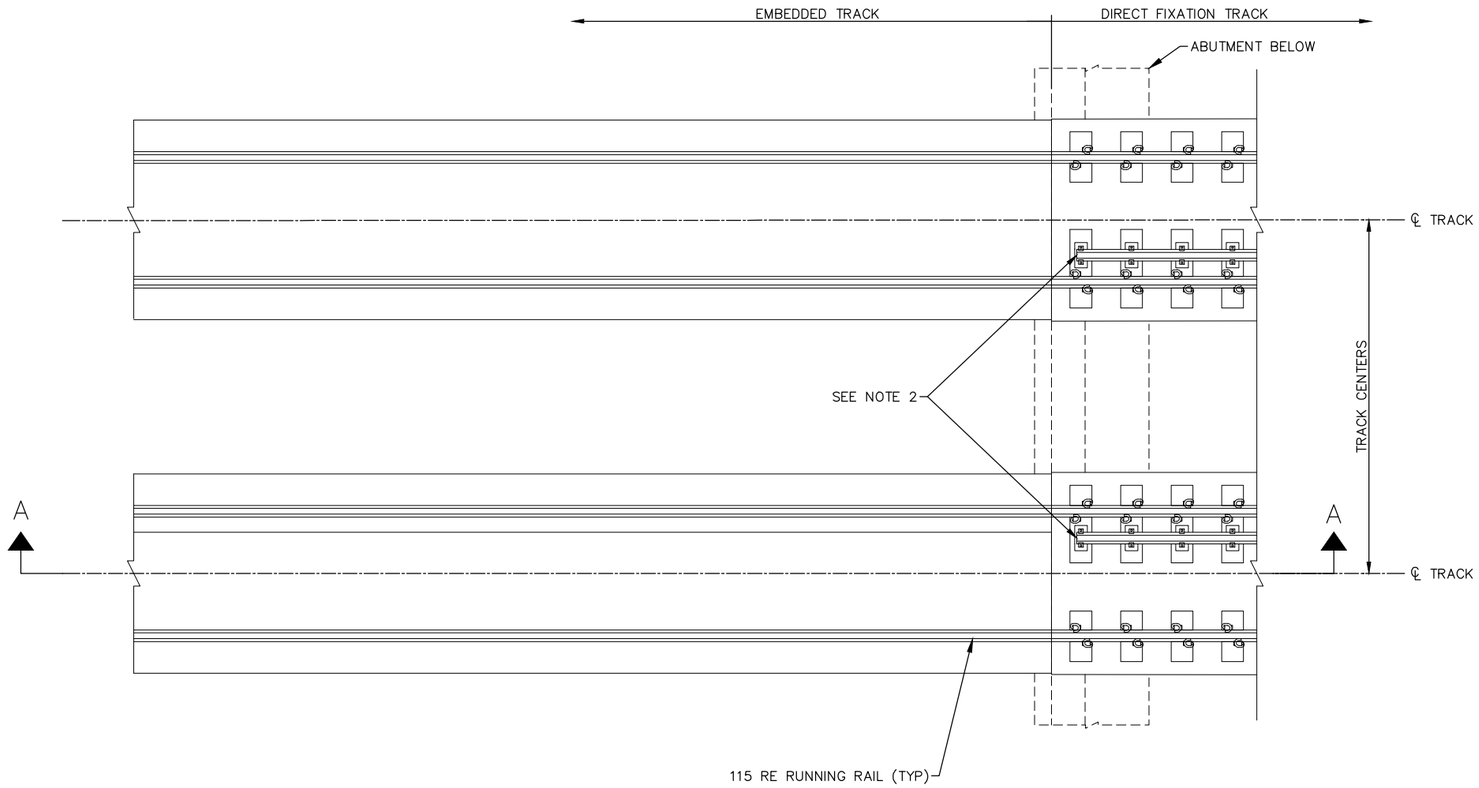
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-608

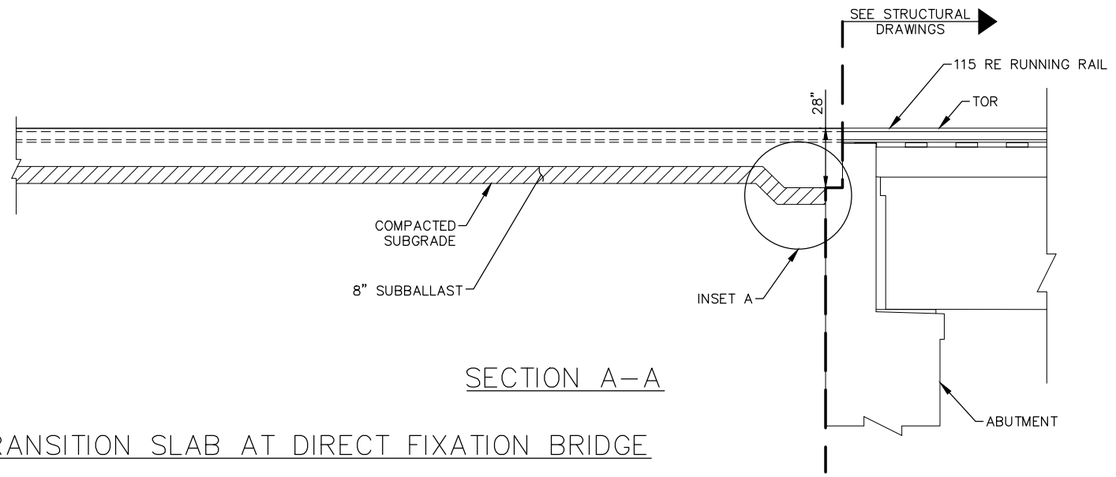
SHEET 103 OF 114



INSET A
N.T.S.



PLAN VIEW
N.T.S.



SECTION A–A

NOTE:.
1. WEST TRANSITION ILLUSTRATED. FOR EAST TRANSITION MIRROR PLAN ABOUT VERTICAL AXIS.
2. END EMERGENCY GUARD RAIL 12 INCHES FROM TRANSITION POINT. WORK END OF EMERGENCY GUARD RAIL AS INDICATED BY DETAILS A AND BE ON SHEET DTL–203.

LRT – EMBEDDED TRACK TRANSITION SLAB AT DIRECT FIXATION BRIDGE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

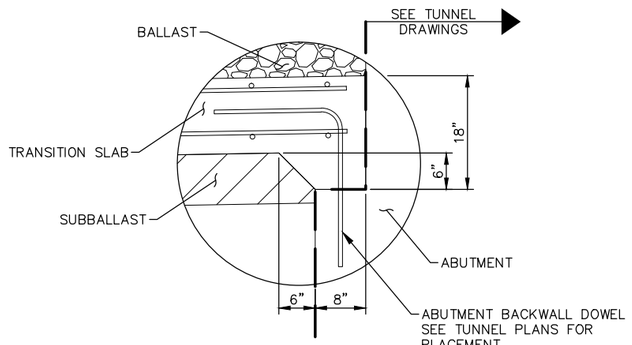
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS TYPE H

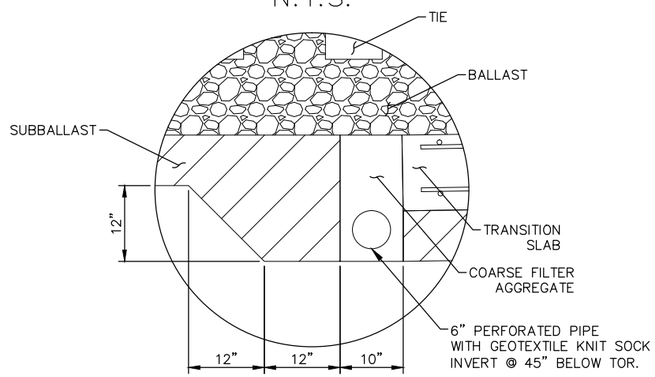
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-609

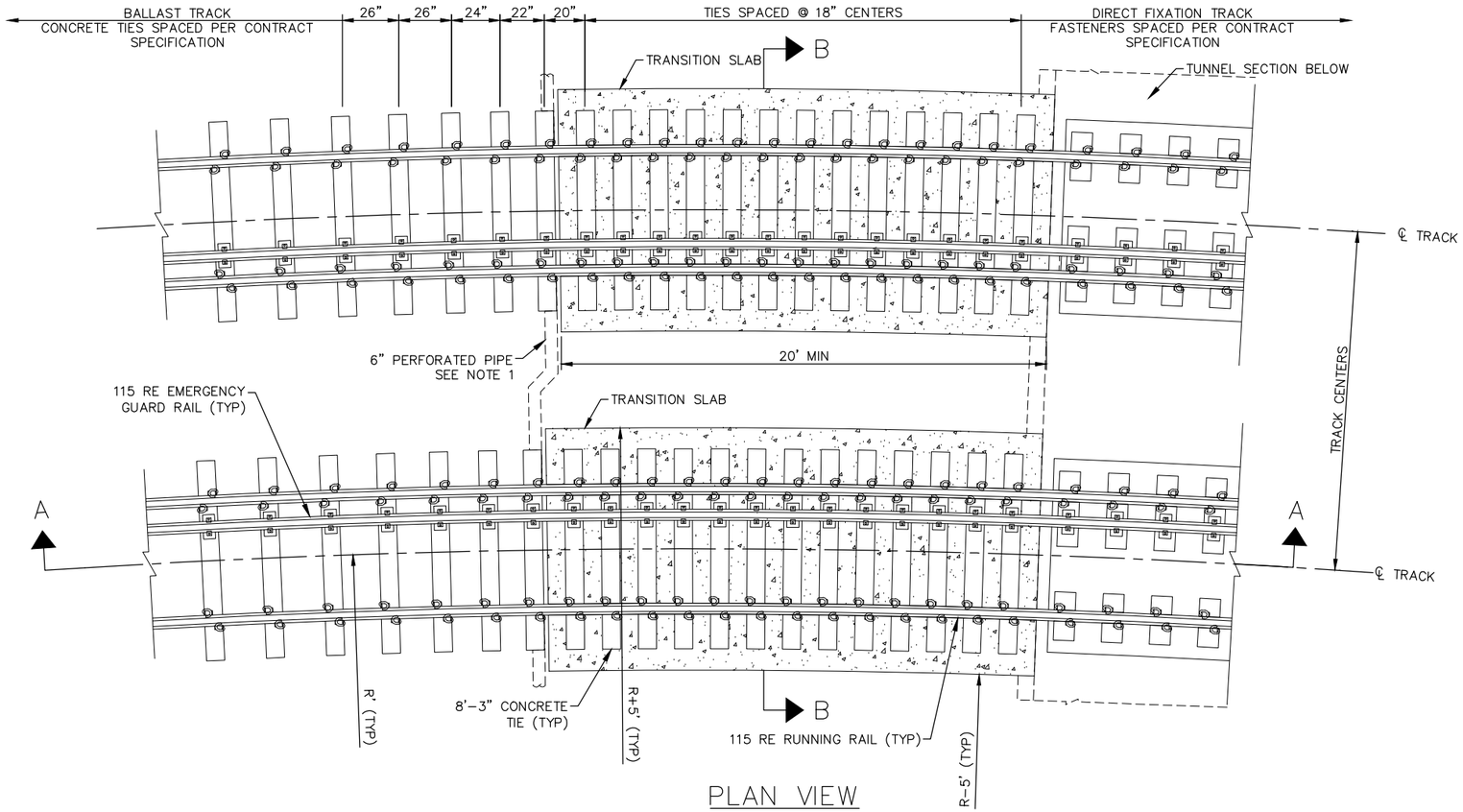
SHEET 104 OF 114



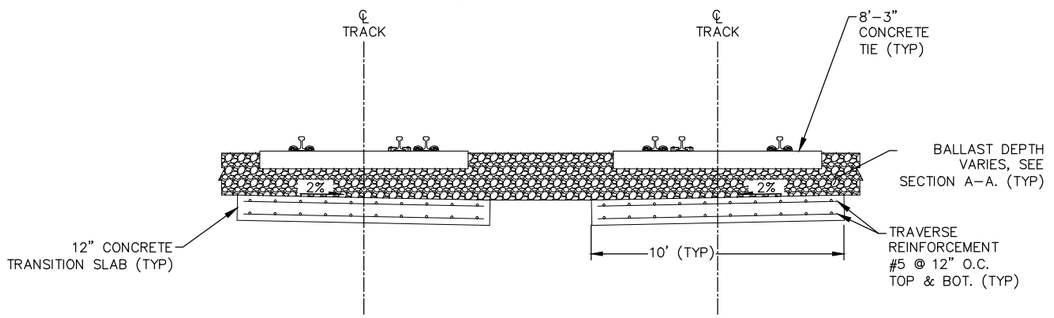
INSET A
N.T.S.



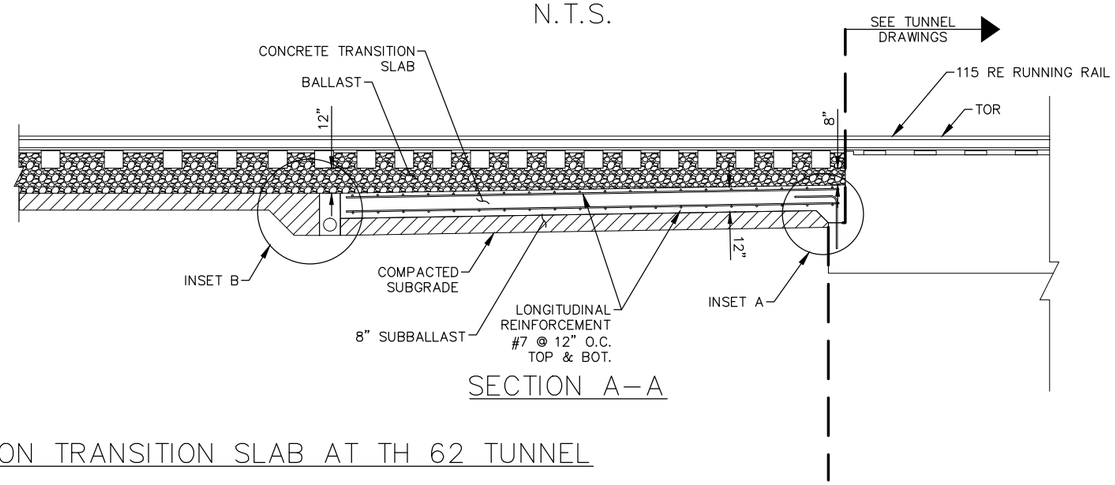
INSET B
N.T.S.



PLAN VIEW
N.T.S.



SECTION B-B



SECTION A-A

NOTE:
1. CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS.
2. WEST TRANSITION ILLUSTRATED. FOR EAST TRANSITION MIRROR PLAN ABOUT VERTICAL AXIS.
3. SPECIAL DRAINAGE STRUCTURE AT ABUTMENT. SEE DRAINAGE PLANS.

LRT – DIRECT FIXATION TRANSITION SLAB AT TH 62 TUNNEL

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

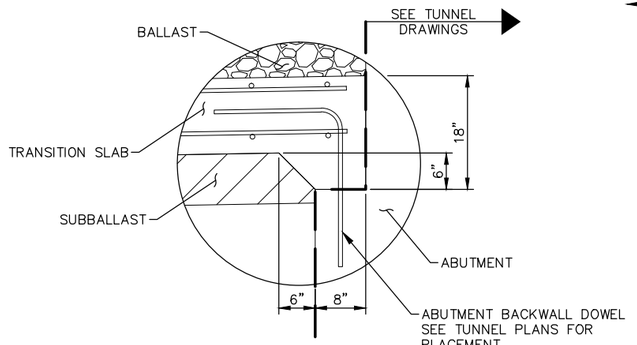
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS TYPE J

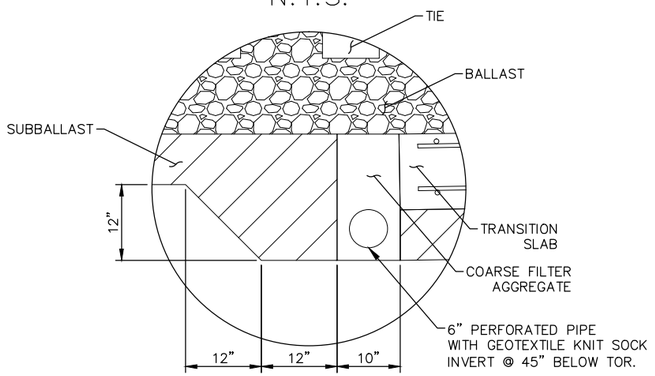
DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-610

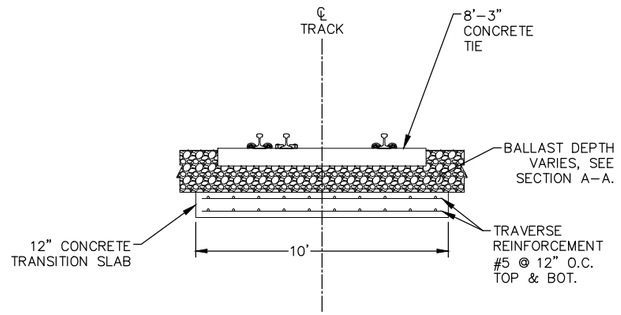
SHEET 105 OF 114



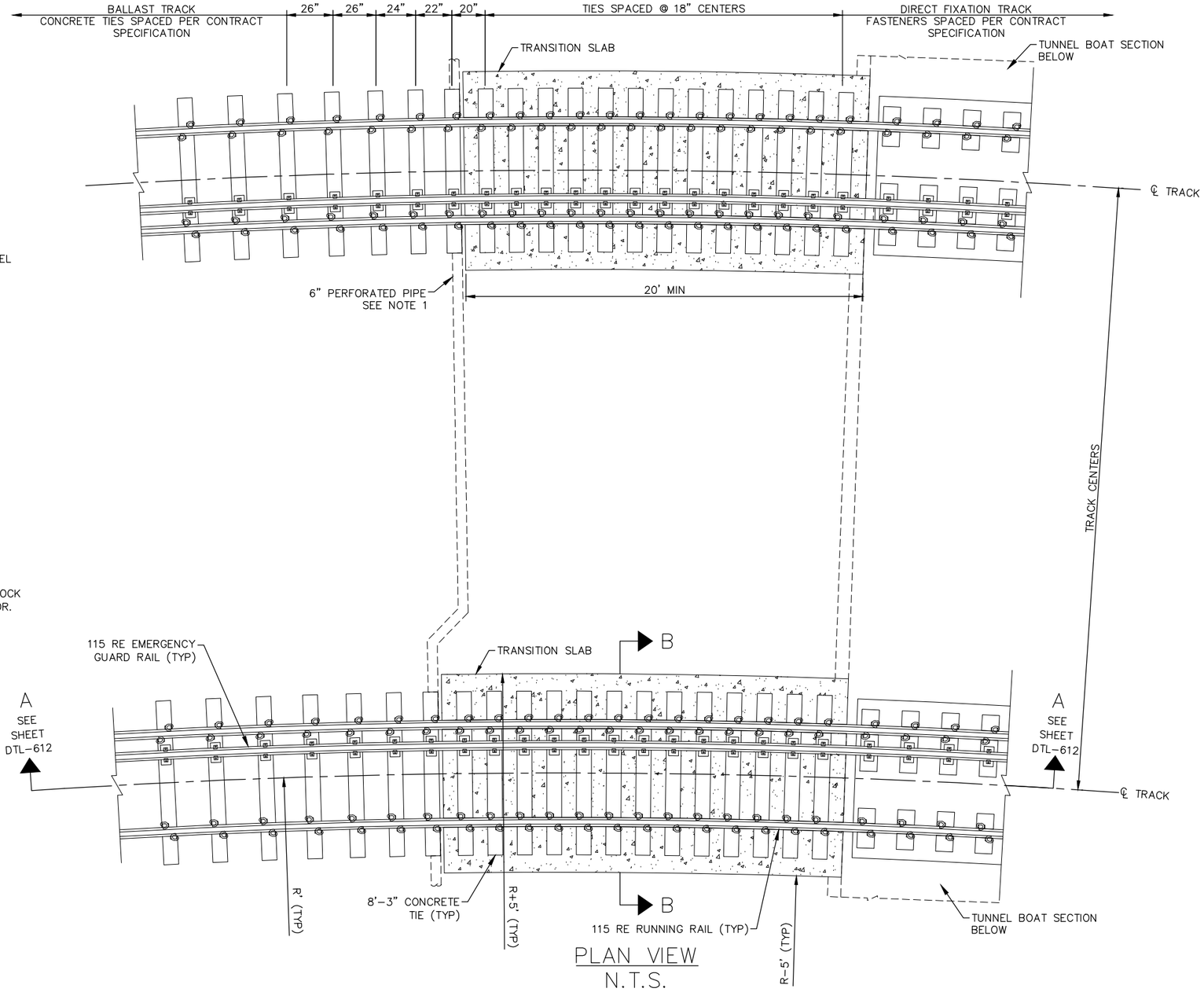
INSET A
N.T.S.



INSET B
N.T.S.



SECTION B-B



PLAN VIEW
N.T.S.

NOTE:
1. CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS.

LRT – DIRECT FIXATION TRANSITION SLAB AT KENILWORTH TUNNEL – WEST END

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

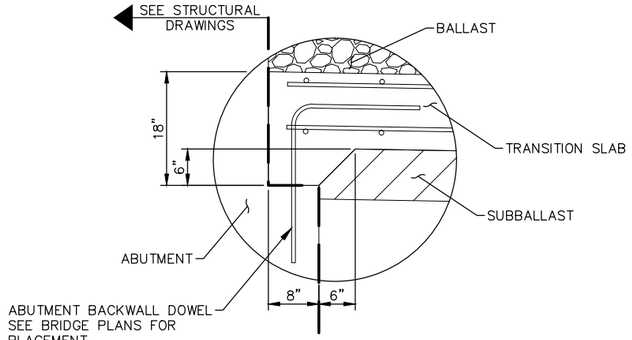
CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS TYPE K

DISCIPLINE: TRACK

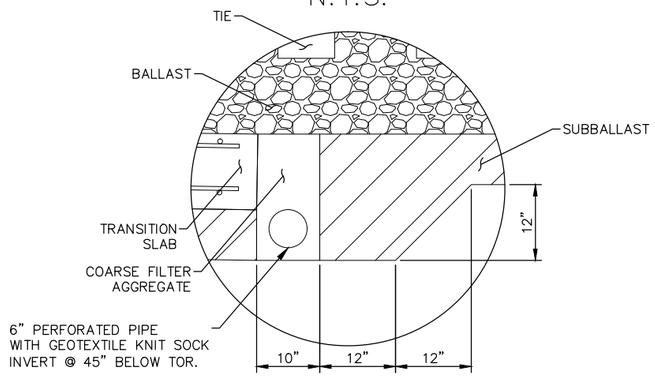
SHEET NAME: 00-TRK-DTL-611

SHEET 106 OF 114

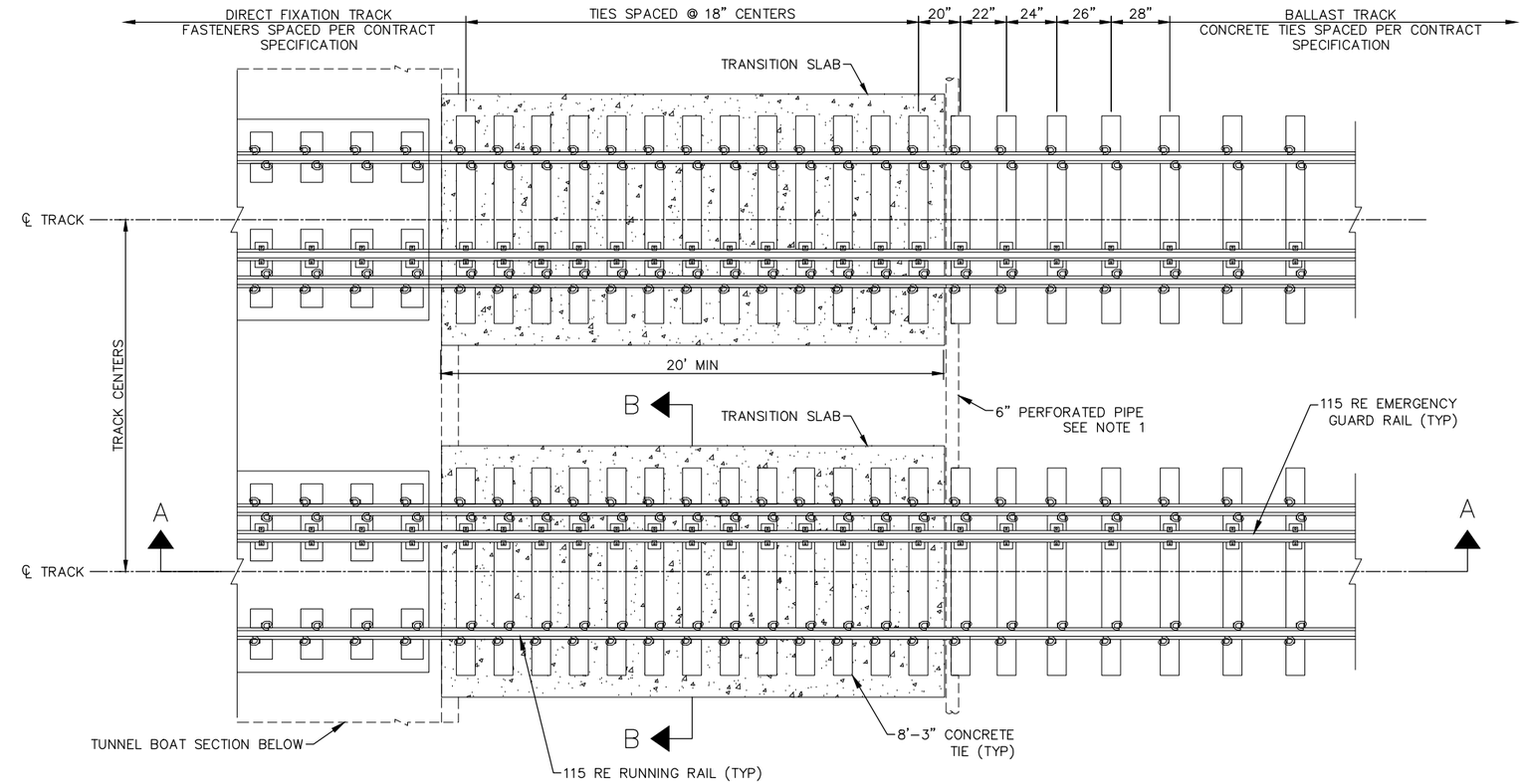
Jan, 18 2016 12:52 pm v:\3400_ADC\CAD\OVERALL\plan sheets\TRACK\00-TRK-DTL-600.dwg By: MaurisBM



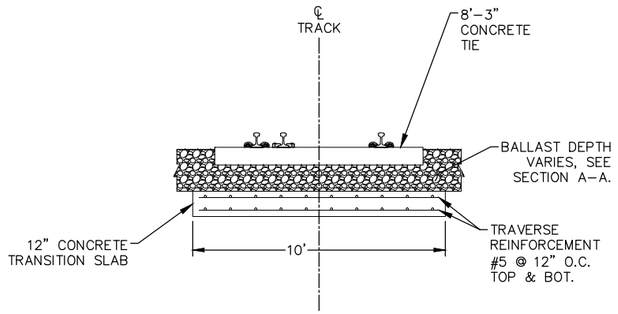
INSET A
N.T.S.



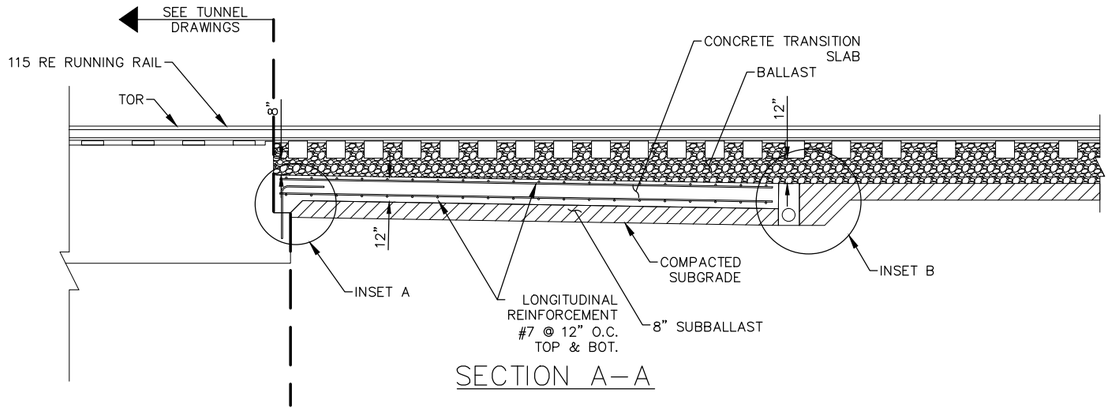
INSET B
N.T.S.



PLAN VIEW
N.T.S.



SECTION B-B



SECTION A-A

NOTE:
1. CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS.

LRT – DIRECT FIXATION TRANSITION SLAB AT KENILWORTH TUNNEL – EAST END

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

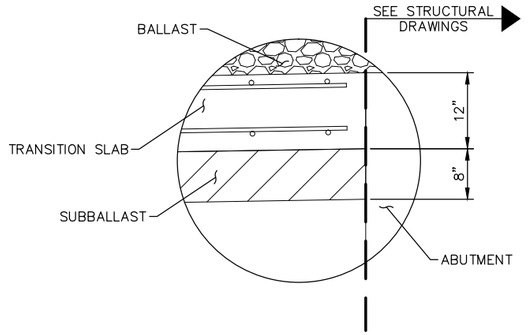
CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS TYPE L

DISCIPLINE: TRACK

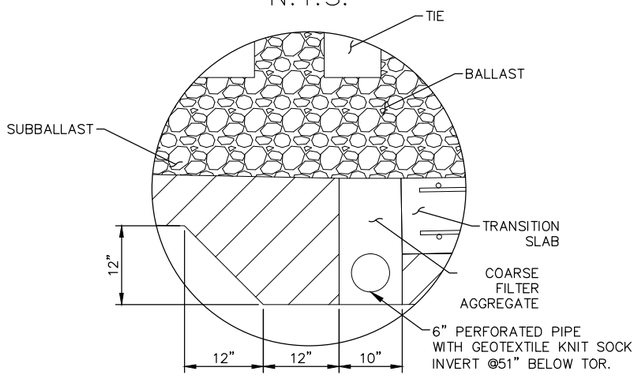
SHEET NAME: 00-TRK-DTL-612

SHEET 107 OF 114

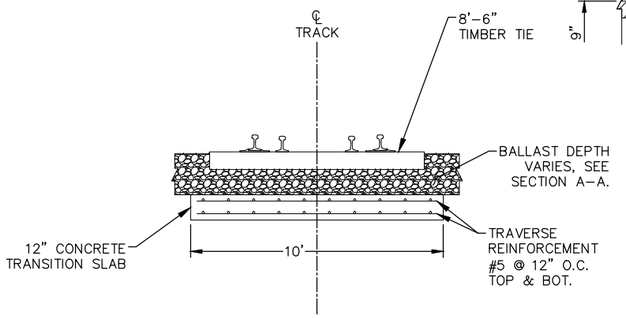
Jan, 18 2016 12:52 pm V:\3400_ADC\CAD\OVERALL\plan sheets\TRACK\00-TRK-DTL-600.dwg By: MaurisBM



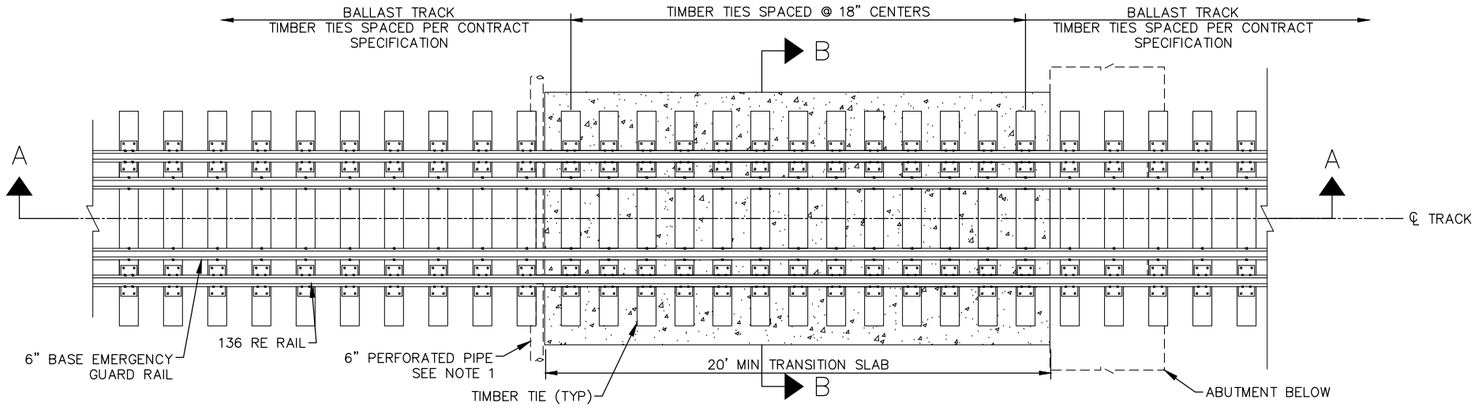
INSET A
N.T.S.



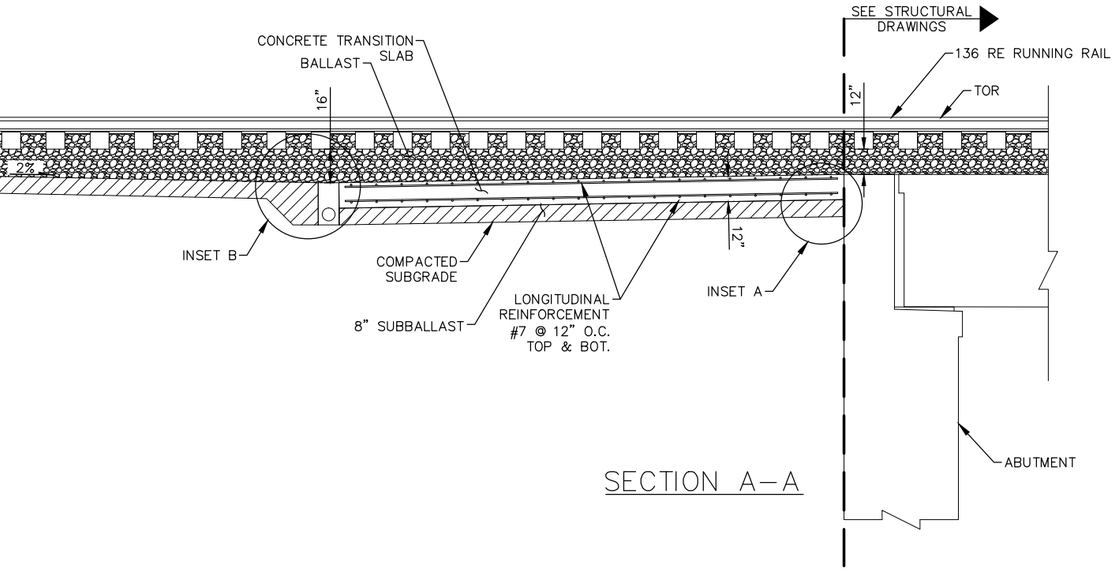
INSET B
N.T.S.



SECTION B-B



PLAN VIEW
N.T.S.



SECTION A-A

NOTE:
1. CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS.
2. WEST TRANSITION ILLUSTRATED. FOR EAST TRANSITION MIRROR PLAN ABOUT VERTICAL AXIS.

FREIGHT – BALLAST TRACK TRANSITION SLAB AT BALLASTED BRIDGE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

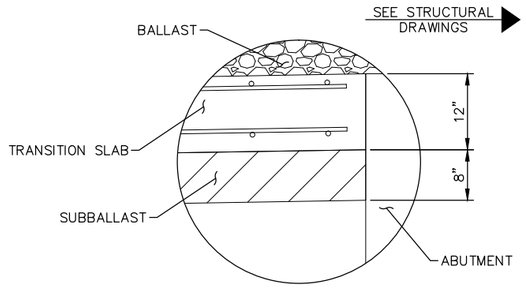
CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS
TYPE M

DISCIPLINE: TRACK

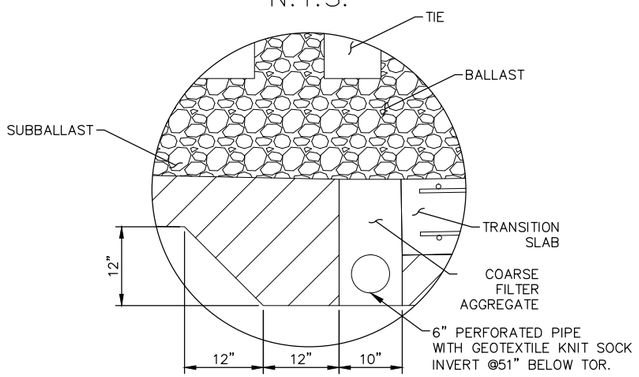
SHEET NAME: 00-TRK-DTL-613

SHEET 108 OF 114

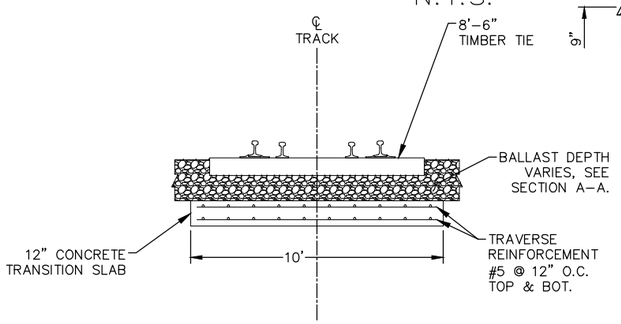
Jan. 18 2016 12:52 pm V:\3400_ADC\CAD\OVERALL\plan sheets\TRACK\00-TRK-DTL-600.dwg By: MaurisBM



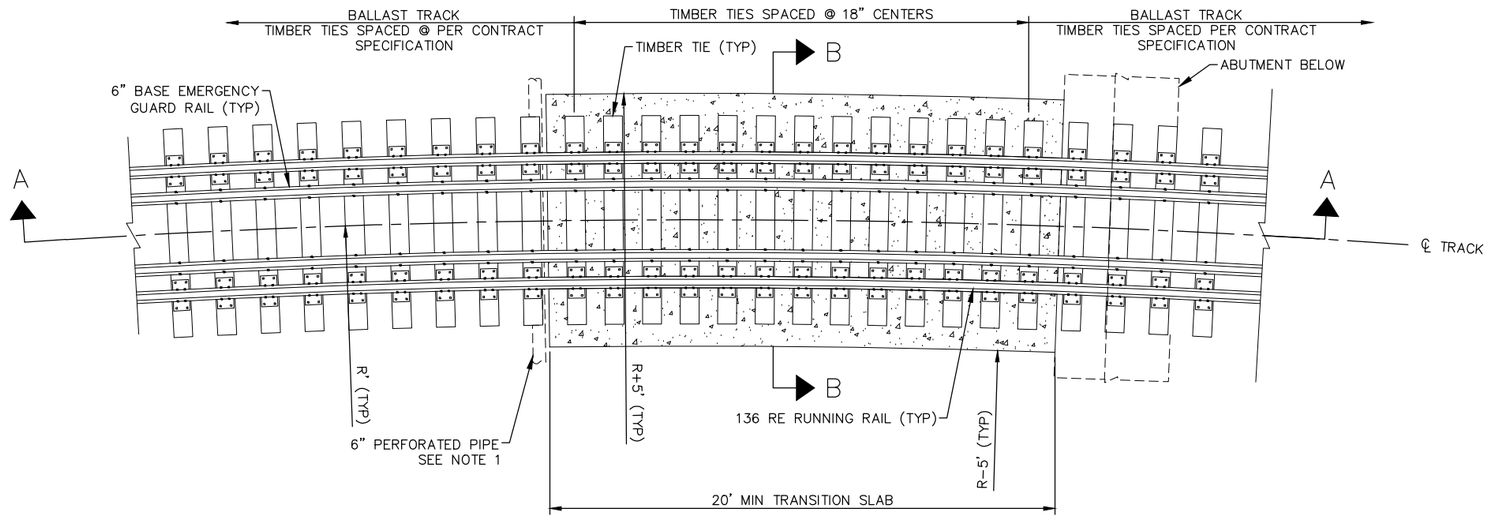
INSET A
N.T.S.



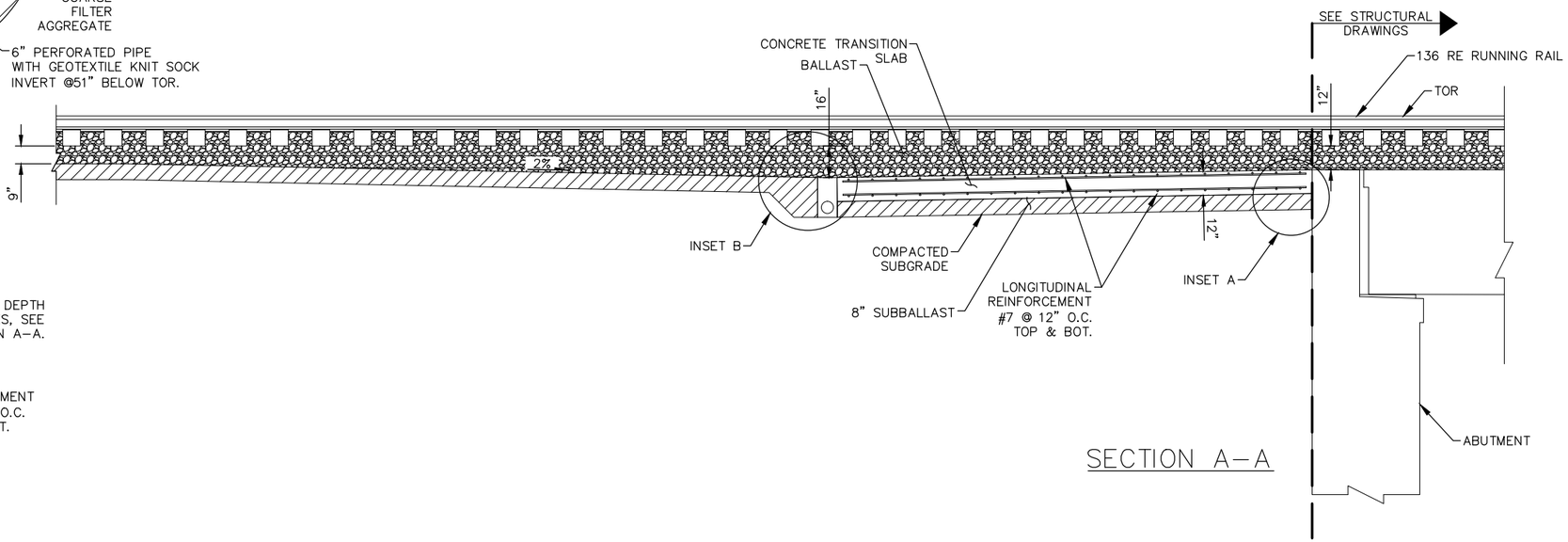
INSET B
N.T.S.



SECTION B-B



PLAN VIEW
N.T.S.



SECTION A-A

NOTE:
1. CONNECT PERFORATED PIPE TO STORM SEWER. SEE DRAINAGE PLANS.
2. RIGHT HAND CURVE ILLUSTRATED. FOR LEFT HAND CURVE MIRROR PLAN ABOUT HORIZONTAL AXIS.
3. WEST TRANSITION ILLUSTRATED. FOR EAST TRANSITION MIRROR PLAN ABOUT VERTICAL AXIS.

FREIGHT – BALLAST TRACK TRANSITION SLAB AT BALLASTED BRIDGE – IN CURVE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

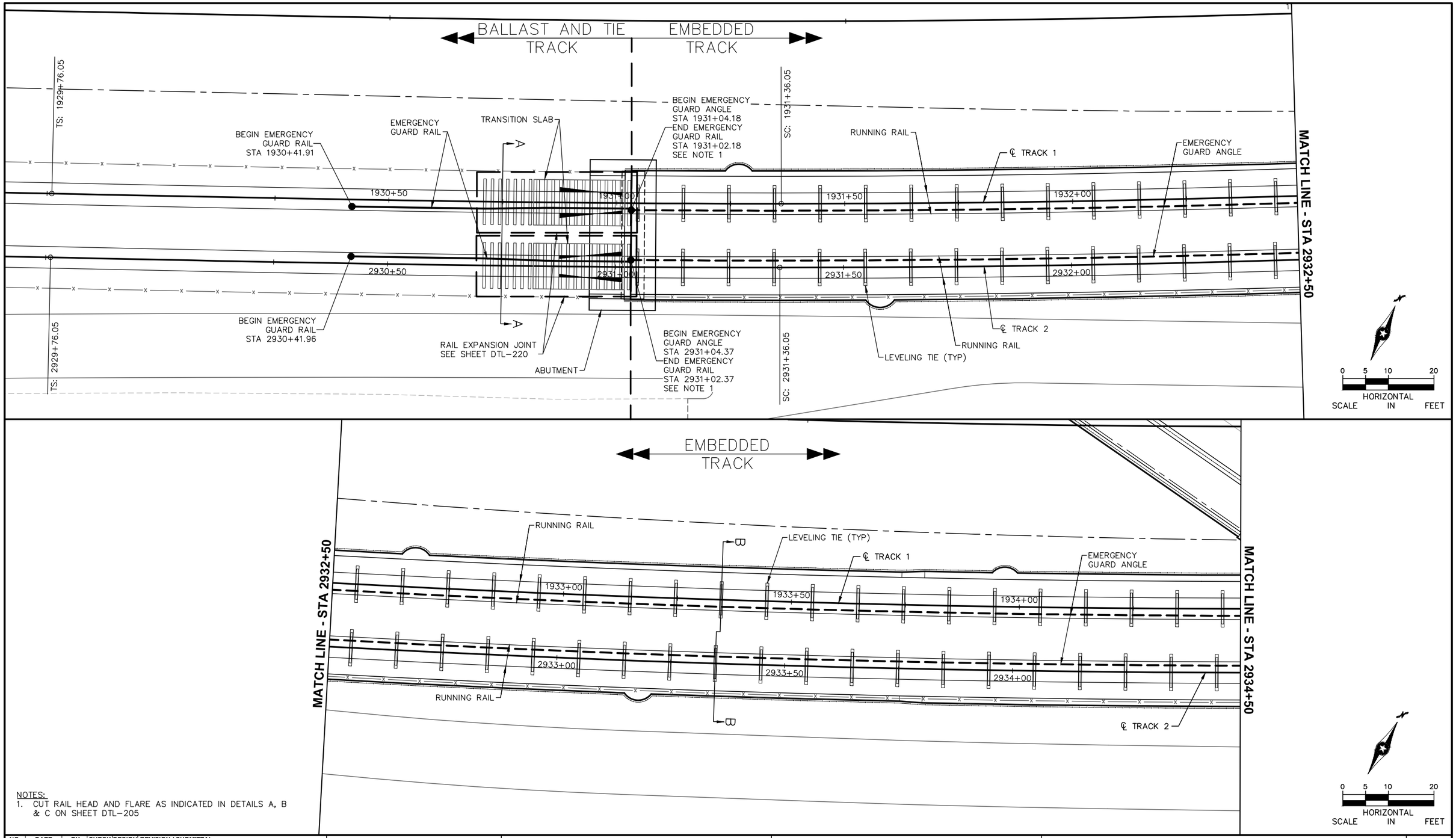
CIVIL - VOLUME 3C
TRACK DETAILS
TRACK TRANSITION DETAILS
TYPE N

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-614

SHEET 109 OF 114

Jan, 18 2016 12:52 pm V:\3400_ADC\CAD\OVERALL\plan sheets\TRACK\00-TRK-DTL-600.dwg By: MaurisBM



NOTES:
1. CUT RAIL HEAD AND FLARE AS INDICATED IN DETAILS A, B & C ON SHEET DTL-205

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
BRIDGE R0697 TRACK LAYOUT
SHEET 1 OF 5

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-620

SHEET 110 OF 114

Jan, 19 2016 02:33 pm V:\3400_ADC\CAD\OVERALL\plan sheets\TRACK\00-TRK-DTL-620.dwg By: MaurisBM

EMBEDDED TRACK

MATCH LINE - STA 2934+50

END EMERGENCY GUARD ANGLE STA 1934+63.95

RUNNING RAIL

END EMERGENCY GUARD ANGLE STA 2934+65.46

8+00

1935+00

1935+50

2935+00

2935+50

℄ TRACK 1

RUNNING RAIL

BEGIN EMERGENCY GUARD ANGLE STA 1936+17.72

LEVELING TIE (TYP)

1936+00

1936+50

2936+00

2936+50

℄ TRACK 2

BEGIN EMERGENCY GUARD ANGLE STA 2936+19.79

EMERGENCY GUARD ANGLE

BEGIN RESTRAINING RAIL STA 1937+12.94

BEGIN RESTRAINING RAIL STA 2937+15.55

RESTRAINING RAIL

1937+00

2937+00

END EMERGENCY GUARD ANGLE STA 2937+14.55

MATCH LINE - STA 2937+50

9+00

0 5 10 20

HORIZONTAL SCALE IN FEET

EMBEDDED TRACK

DIRECT FIXATION TRACK WITH ZERO RESTRAINT RAIL FASTENING SYSTEM

EMBEDDED TRACK

NOTES:
1. CUT RAIL HEAD AND FLARE AS INDICATED IN DETAILS A, B & C ON SHEET DTL-205

MATCH LINE - STA 2937+50

LEVELING TIE (TYP)

SC: 1937+75.95

℄ BNSF WAYZATA SUB

℄ TRACK 1

RUNNING RAIL

EMERGENCY GUARD RAIL

1938+00

1938+50

2938+00

2938+50

SC: 2937+78.57

FRICTION MODIFIER

RUNNING RAIL

℄ TRACK 2

BEGIN EMERGENCY GUARD ANGLE STA 1939+47.77

END EMERGENCY GUARD RAIL STA 1939+45.77 SEE NOTE 1

RESTRAINING RAIL

1939+00

1939+50

2939+00

2939+50

P-OH

END EMERGENCY GUARD ANGLE STA 1940+04.52

EMERGENCY GUARD ANGLE

1940+00

1940+50

1+00

0 5 10 20

HORIZONTAL SCALE IN FEET

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

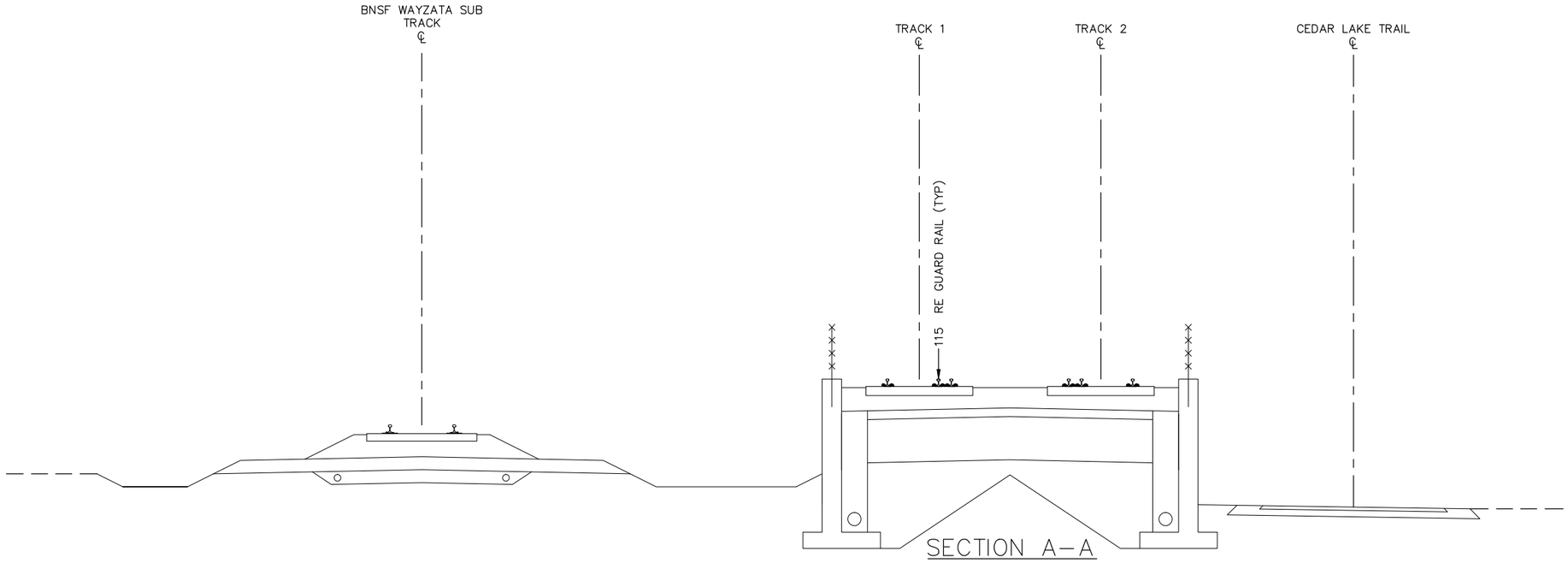
CIVIL - VOLUME 3C
TRACK DETAILS
BRIDGE R0697 TRACK LAYOUT
SHEET 2 OF 5

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-621

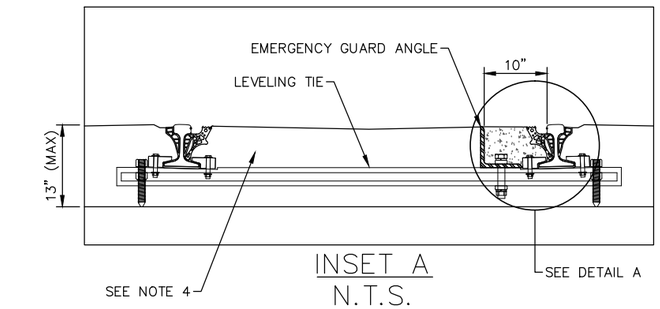
SHEET 111 OF 114

Jan. 19 2016 02:34 pm V:\3400_ADC\CAD\OVERALL\plan sheets\TRACK\00-TRK-DTL-620.dwg By: MaurisBM

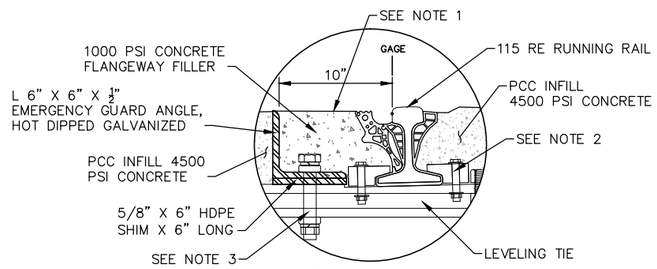


SECTION A–A

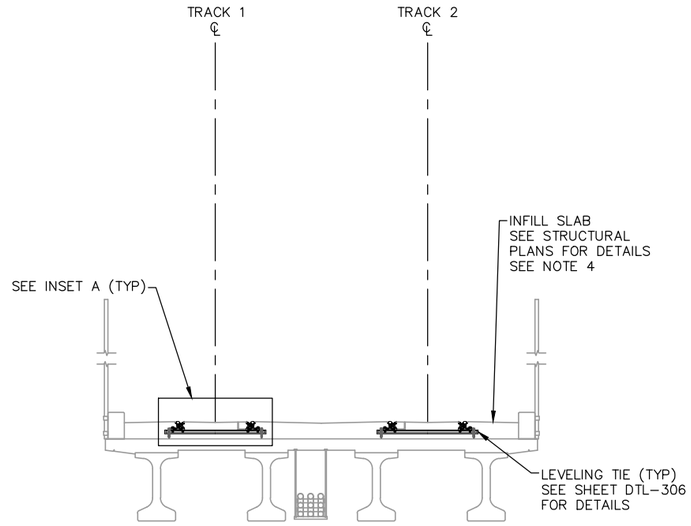
SCALE 0 2.5 5 10 IN FEET



INSET A
N.T.S.



DETAIL A
N.T.S.



SECTION B–B

SCALE 0 2.5 5 10 IN FEET

NOTES:
1. TOP OF PCC INFILL TO BE AT TOR ELEVATION (+0"/–1/4").
2. RUNNING RAIL FASTENER.
3. 7/8"ø ANCHOR BOLT, WASHER, LOCK WASHER, AND NUT.
4. REINFORCING STEEL NOT ILLUSTRATED SEE STRUCTURAL PLANS.
5. REFER TO STRUCTURAL PLANS AND TRACK TYPICAL SECTIONS FOR ADDITIONAL DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

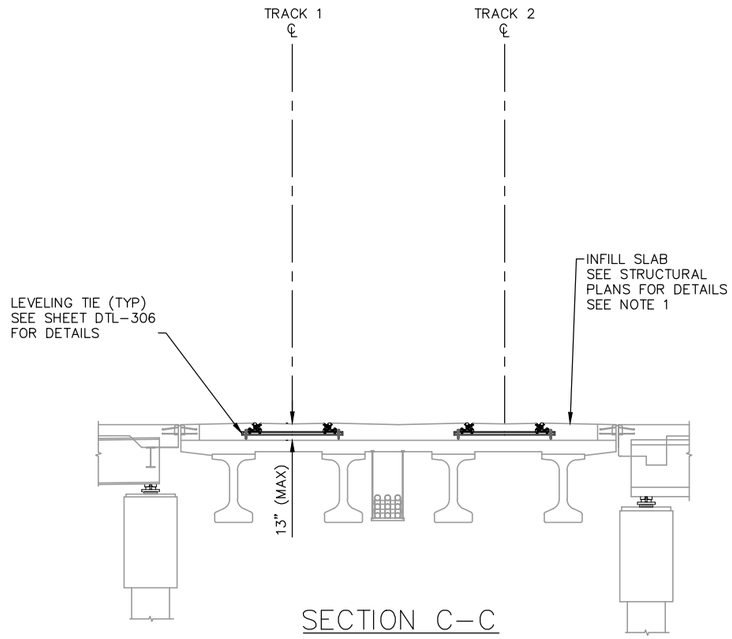
CIVIL - VOLUME 3C
TRACK DETAILS
BRIDGE R0697 TRACK LAYOUT
SHEET 3 OF 5

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-622

SHEET 112 OF 114

Jan, 19 2016 02:35 pm V:\3400_ADC\CAD\OVERALL\plan sheets\TRACK\00-TRK-DTL-600.dwg By: MaurisBM

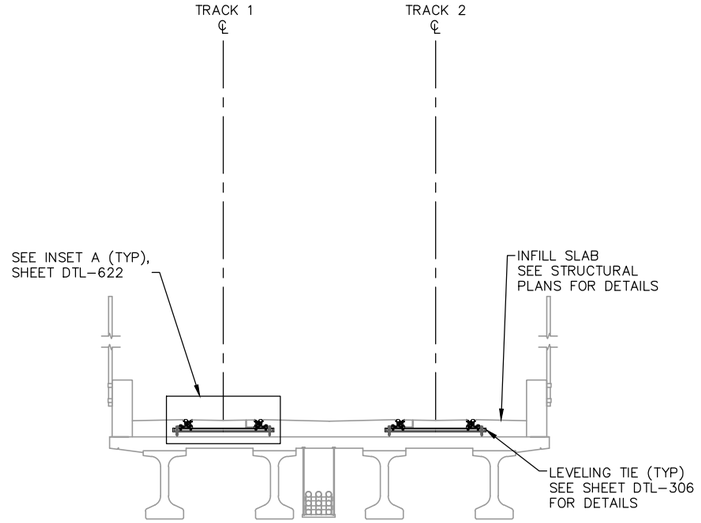


SECTION C-C

0 2.5 5 10

SCALE IN FEET

NOTES:
1. REINFORCING STEEL NOT ILLUSTRATED SEE STRUCTURAL PLANS.
2. REFER TO STRUCTURAL PLANS AND TRACK TYPICAL SECTIONS FOR ADDITIONAL DETAILS.



SECTION D-D

0 2.5 5 10

SCALE IN FEET

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

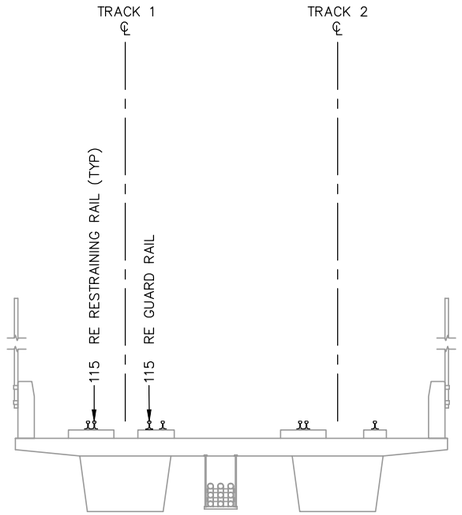
SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
BRIDGE R0697 TRACK LAYOUT
SHEET 4 OF 5

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-623

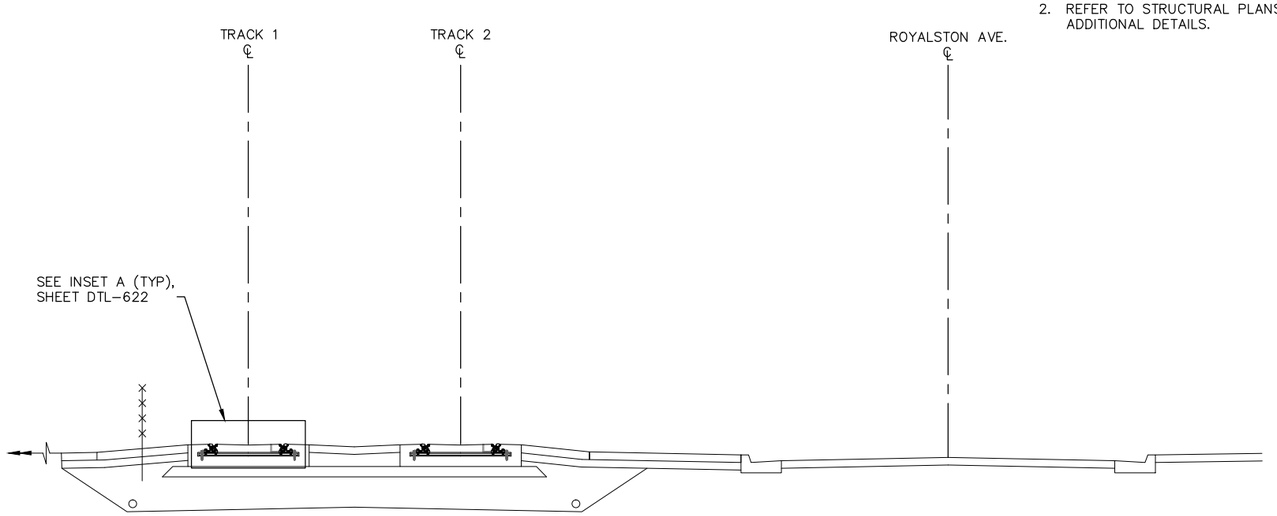
SHEET 113 OF 114



SECTION E–E

0 2.5 5 10
SCALE IN FEET

NOTES:
1. REINFORCING STEEL NOT ILLUSTRATED SEE STRUCTURAL PLANS.
2. REFER TO STRUCTURAL PLANS AND TRACK TYPICAL SECTIONS FOR ADDITIONAL DETAILS.



SECTION F–F

0 2.5 5 10
SCALE IN FEET

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

90% SUBMISSION - 01/22/16

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL - VOLUME 3C
TRACK DETAILS
BRIDGE R0697 TRACK LAYOUT
SHEET 5 OF 5

DISCIPLINE: TRACK

SHEET NAME: 00-TRK-DTL-624

SHEET 114 OF 114

Jan, 19 2016 02:35 pm V:\3400_ADC\CAD\OVERALL\plan sheets\TRACK\00-TRK-DTL-600.dwg By: MaurisBM