CIVIL / STRUCTURAL
STANDARD DRAWINGS

AUGUST 2019

APPROVED BY: ______________________ DATE: __________
MOISES GUTIERREZ
DECM DEPUTY EXECUTIVE DIRECTOR DESIGN AND ENGINEERING

APPROVED BY: ______________________ DATE: __________
KERRY PIHLSTROM
DECM DIRECTOR OF CIVIL AND STRUCTURAL DESIGN

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1. ALL HORIZONTAL AND VERTICAL DISTANCES ARE IN FEET AND OR DECIMALS OF A FOOT EXCEPT AS NOTED OTHERWISE ON PLANS.
2. LENGTH OF CURVES AND STATIONING SHOULD BE COMPUTED BASED ON THE ARCH DEFINITION.

NOTE: STATIONS SHOWN ARE FOR EXAMPLE ONLY.

SUPERELEVATION DEVELOPMENT

CREST VERTICAL CURVE

SAG VERTICAL CURVE

SIMPLE CIRCULAR CURVE

CIRCULAR CURVE WITH SPIRAL

COMPOUND CURVE WITH JOINING SPIRALS

SIMPLE SPIRAL

STATION EQUATION DEVELOPMENT

TABLE OF CONTENTS

DESIGNED BY: H. XIANGDONG
DRAWN BY: C. GALLAGHER
CHECKED BY: J. BAILEY
APPROVED BY:

DATE:

SUBMITTED BY:

CONTRACT No.:
FILENAME:

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NOTE: STATIONS SHOWN ARE FOR EXAMPLE ONLY.
GENERAL NOTES:
1. TRACK RAILS AND CONTRACT DOCUMENTS ARE PREPARED WITH 115 RE RAIL SECTION.
2. DETAILS SHOW NEW WHEEL AND STANDARD 115 RE TRACK RAILS.
3. 1/8" NOMINAL DIMENSION, BUT DIMENSION VARIES WITH ALTERNATIVE RAIL PROFILES.

TRACK RAILS - 115 RE
SCALE: 1/8" = 1'-0"

TRACK GAUGE, RAIL AND WHEELS POSITION
SCALE: 1/8" = 1'-0"

TRACK RAILS HEAD CONTACT DISTANCE = VARIES
53.75' (BETWEEN WHEELS)
TOP OF RAIL

TRACK GAUGE = 56.50' (TANGENT TRACK AND CURVED TRACKS)

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53.75' (BETWEEN WHEELS)
TOP OF RAIL

TRACK GAUGE = 56.50' (TANGENT TRACK AND CURVED TRACKS)
GENERAL NOTES:
1. TIE TO BE SYMMETRICAL ABOUT THE CENTERLINE OF TRACK.
2. SHOULDERS SHOULD BE POSITIONED ON LONGITUDINAL CENTERLINE OF TIE.
3. REINFORCEMENT ARE NOT SHOWN. LOCATION, SIZE, AND STRENGTH OF PRESTRESSED REINFORCEMENT STRANDS REQUIRED TO MEET SPECIFICATIONS SHALL BE BY THE CONTRACTOR.
4. LOCATIONS AND SPACING OF TIE INSTALLATIONS ARE GIVEN IN THE TRACK CHART DRAWINGS.
5. TIE SPACING ON CURVES SHALL BE MEASURED AT THE CENTERLINE OF THE OUTSIDE RAIL.
BALLAST LIMITS AT TURNOUT AREA

CONNECT WALKWAY TO GUIDEWAY
WALKWAY PER CONTRACT DRAWINGS

CL SWITCH ROD #1

CL TRACK

TOP EDGE OF BALLAST

SWITCH HEAD BLOCK TIES

EDGE OF WALKWAY

CONNECT WALKWAY TO GUIDEWAY
WALKWAY PER CONTRACT DRAWINGS

BALLASTED TRACK CONSTRUCTION
WALKWAY DETAIL AND BALLAST LIMITS
AT TURNOUT AREA
GENERAL NOTES:
1. STANDARD RUBBER GAUGE INSERTS SHALL BE INSTALLED AT ROADWAY WIDTH OF CROSSING. MODIFIED RUBBER GAUGE INSERTS SHALL BE INSTALLED AT PEDESTRIAN/SIDEWALK WIDTH WITHIN THE ROAD CROSSING.
2. FLANGEWAY WIDTH SHALL BE 2 1/2" AT ROAD CROSSING AND SHALL BE 2 1/4" MAXIMUM AT PEDESTRIAN/SIDEWALK CROSSING.
3. DESIGN ALL CROSSINGS TO PROVIDE 1:40 RAIL CANT THROUGHOUT.
4. RUBBER FLANGEWAY INSERTS AND RAIL FASTENERS MUST BE REMOVABLE AND REUSABLE TO FACILITATE RAIL ACCESS OR REPLACEMENT.
5. CROSSING TO INCLUDE GALVANIZED "E" CLIPS.
6. GRIND BASE OF RAIL SMOOTH AT WELDS
7. END MODULES TO HAVE 45 DEGREE SLOPE FROM BOTTOM OF RAIL TO TOP OF MODULE AND 1" TAPPER UNDER RAIL.

STANDARD RUBBER GAUGE 2 1/2" FLANGEWAY

RUBBER RAIL GROOVE FILLER
2 - 1/2" WHEEL FLANGEWAY GAP

"PANDROL" BRAND RAIL CLIP TYPE "E" 2005
"PANDROL" BRAND NYLON INSULATOR #400
3/8" UHMW POLYETHYLENE

CENTER STRIP PAVEMENT MATCH ADJACENT ROADWAY THICKNESS AND DETAILS
CONCRETE
12" MIN AGGREGATE BASE COURSE
1 - 1/2" THICK MAX. 38" GRAVEL
4 1/2" GAUGE...2'-0" MIN (TYP)
7" SUBBALLAST

ROADWAY TIE - IN SECTION VARY, REFER TO ROADWAY DWG FOR MATERIALS, THICKNESSES AND DETAILS

TRACK DRAIN (TYP)

SUBGRADE
6" SUBBALLAST
12" MIN AGGREGATE BASE COURSE
SUBGRADE
1 - 1/2" THICK MAX. 38" GRAVEL

RUBBER FLANGEWAY INSERTS AND RAIL FASTENERS MUST BE REMOVABLE AND REUSABLE TO FACILITATE RAIL ACCESS OR REPLACEMENT.

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CONNECTION DETAIL

RUBBER GROOVE FILLER
BOTTOM OF RAIL
3/4" JOINT MASTIC
4 1/2" GAUGE...2'-0" MIN (TYP)
7" SUBBALLAST

ROADWAY TIE - IN SECTION VARY, REFER TO ROADWAY DWG FOR MATERIALS, THICKNESSES AND DETAILS

TRACK DRAIN (TYP)

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1 - 1/2" THICK MAX. 38" GRAVEL

RUBBER FLANGEWAY INSERTS AND RAIL FASTENERS MUST BE REMOVABLE AND REUSABLE TO FACILITATE RAIL ACCESS OR REPLACEMENT.

END PANEL DETAIL

RUBBER GROOVE FILLER
BOTTOM OF RAIL
3/4" JOINT MASTIC
4 1/2" GAUGE...2'-0" MIN (TYP)
7" SUBBALLAST

ROADWAY TIE - IN SECTION VARY, REFER TO ROADWAY DWG FOR MATERIALS, THICKNESSES AND DETAILS

TRACK DRAIN (TYP)

SUBGRADE
6" SUBBALLAST
12" MIN AGGREGATE BASE COURSE
SUBGRADE
1 - 1/2" THICK MAX. 38" GRAVEL

RUBBER FLANGEWAY INSERTS AND RAIL FASTENERS MUST BE REMOVABLE AND REUSABLE TO FACILITATE RAIL ACCESS OR REPLACEMENT.
GENERAL NOTES:
1. PEDESTRIAN AND MAINTENANCE ACCESS CROSSING PANELS TO BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
2. SIZE OF PANELS SHOWN ON THIS DRAWING ARE FOR ILLUSTRATION ONLY. ACTUAL SIZE MAY DEPEND ON MANUFACTURER.
3. FLANGEWAY FILLERS SHALL BE PROVIDED ON ALL PEDESTRIAN AND MAINTENANCE ACCESS CROSSINGS.
4. A FILLER RAMP SHALL BE SHAPED OUT OF ASPHALT TO REDUCE POSSIBLE DAMAGE FROM DRAGGING EQUIPMENT AND TO PREVENT SHIFTING. ASPHALT FILLER SHALL BE INSTALLED PRIOR TO RAIL TRAFFIC IMPROVEMENT AND SHOULD NOT BE PLACED IN CLOSE CONTACT WITH RAILS AND FASTENERS.
5. PRECAST CONCRETE PANELS SURFACE SHALL BE MATCHED TO MATCH COLOR OF STATION WALKWAY AREA. SEE CONTRACT DRAWINGS FOR ADDITIONAL SURFACE FINISHING REQUIREMENTS.
6. NEOPRENE PADS SHALL BE ADHERED TO CONCRETE TIES WITH AREMA SC-200 CEMENT WITH HARDENER ADDITIVE OR APPROVED EQUIVALENT.
7. FOR LIMITS OF CROSSING SEE TRACK CHART DRAWING.
8. 10'-0" LENGTH CONCRETE TIES CAN BE USED AS AN ALTERNATIVE.

BILL OF MATERIALS
14' CROSSING PANEL UNIT

<table>
<thead>
<tr>
<th>QTY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>FIELD BLOCK SECTION WITH LIFTING INSERT</td>
</tr>
<tr>
<td>1</td>
<td>CENTER BLOCK SECTION WITH LIFTING INSERT</td>
</tr>
<tr>
<td>12</td>
<td>1/2&quot; FIELD BLOCK NEOPRENE PAD</td>
</tr>
<tr>
<td>6</td>
<td>3/4&quot; CENTER BLOCK NEOPRENE PAD</td>
</tr>
<tr>
<td>30 TF</td>
<td>FIELD SIDE RUBBER FLANGEWAY INSERT</td>
</tr>
<tr>
<td>30 TF</td>
<td>GAUGE SIDE RUBBER FLANGEWAY INSERT</td>
</tr>
<tr>
<td>A/R</td>
<td>ASPHALT FILLER</td>
</tr>
</tbody>
</table>
1. Each fastener shall be installed with at least one 1/8" thick HDPE shim.
2. Total number of shims placed under rail fastener body for height adjustment shall be limited to a maximum of two shims and a maximum total thickness of 1/2".
3. Standard direct fixation fastener shall be supplied with two types of configurations:
   3.1 Standard fasteners with rail seat canted 1:40 for fastening rail on mainline primary track. H=1 7/8".
   3.2 Standard special trackwork fasteners with rail seat non canted for fastening single rail within the limit of turnout and crossover. H=1 1/2".
4. At locations where DF fasteners are under rail joints, install Pandrol Type C-2063 rail clips or approved equals.

Shim Configuration
Thickneses: 1/16", 1/8", 3/16", 1/4"

Note:
Shim shape and holes shall be compatible with fastener shape, size & anchor bolt location. Material: High Density Polyethylene (HDPE)

Plan

Insert Vertical Tolerance

R.I.T.

Sound Transit
Direct Fixation
Standard Fastener Details

Design:

Sound Transit

Drawn by

Scale: 3" = 1'-0"
GENERAL NOTES:
1. EACH FASTENER SHALL BE INSTALLED WITH AT LEAST ONE 1/8" THICK HDPE SHIM.
2. TOTAL NUMBER OF SHIMS PLACED UNDER RAIL FASTENER BODY FOR HEIGHT ADJUSTMENT SHALL BE LIMITED TO A MAXIMUM OF TWO SHIMS AND A MAXIMUM TOTAL THICKNESS OF 1/2".
3. STANDARD DIRECT FIXATION FASTENER SHOULD BE SUPPLIED WITH TWO TYPES OF CONFIGURATIONS:
   3.1. STANDARD FASTENERS WITH RAIL SEAT CANTED 1:40 FOR FASTENING RAIL ON MAINLINE PRIMARY TRACK. H=1 7/8".
   3.2. STANDARD SPECIAL TRACKWORK FASTENERS WITH RAIL SEAT NON CANTED FOR FASTENING SINGLE RAIL WITHIN THE LIMIT OF TURNOUT AND CROSSOVER. H=1 1/2".
4. AT LOCATIONS WHERE DF FASTENERS ARE UNDER RAIL JOINTS, INSTALL PANDROL TYPE C-2063 RAIL CLIPS OR APPROVED EQUALS.

SHIM CONFIGURATION
THICKNESSES: 1/16", 1/8", 3/16", 1/4"

NOTE:
SHIM SHAPE AND HOLES SHALL BE COMPATIBLE WITH FASTENER SHAPE, SIZE & ANCHOR BOLT LOCATION. MATERIAL: HIGH DENSITY POLYETHYLENE (HDPE).

ANCHOR INSERT (TYP) SEE NOTE 3

TOP OF PLINTH (TYP)

CONCRETE PLINTH

ANCHOR INSERT (TYP)

SHIM SHAPE AND HOLES SHALL BE COMPATIBLE WITH FASTENER SHAPE, SIZE & ANCHOR BOLT LOCATION. MATERIAL: HIGH DENSITY POLYETHYLENE (HDPE).
GENERAL NOTES:
1. EACH FASTENER SHALL BE INSTALLED WITH AT LEAST ONE 1/8" THICK HDPE SHIM.
2. TOTAL NUMBER OF SHIMS PLACED UNDER RAIL FASTENER BODY FOR HEIGHT ADJUSTMENT SHALL BE LIMITED TO A MAXIMUM OF TWO SHIMS AND A MAXIMUM TOTAL THICKNESS OF 1/2".
3. FASTENER HEIGHT WITH RAIL SEAT CANTED 1:40 FOR FASTENING RAIL ON MAINLINE PRIMARY TRACK - H=2 3/4".
4. AT LOCATIONS WHERE FASTENERS ARE UNDER RAIL JOINTS, INSTALL PANDROL TYPE "C-2063" RAIL CLIPS OR APPROVED EQUALS.

SHIM CONFIGURATION
THICKNESSES: 1/16", 1/8", 3/16", 1/4".

NOTE:
SHIM SHAPE AND HOLES SHALL BE COMPATIBLE WITH FASTENER SHAPE, SIZE & ANCHOR BOLT LOCATION. MATERIAL: HIGH DENSITY POLYETHYLENE (HDPE).

SHIM LENGTH TO SUIT FASTENER + 1"
FASTENER LENGTH, 19" MAX / 17" MIN

HIGH RESILIENT FASTENER
SCALE 1:1/8

ELEVATION
PLUMB TOLERANCE ± 1°
TOP OF CONCRETE TO TOP OF INSERT TOLERANCE +0" TO -1/16"
GENERAL NOTES:
1. EACH FASTENER SHALL BE INSTALLED WITH AT LEAST ONE 1/8" THICK HDPE SHIM.
2. TOTAL NUMBER OF SHIMS PLACED UNDER RAIL FASTENER BODY FOR HEIGHT ADJUSTMENT SHALL BE LIMITED TO A MAXIMUM OF TWO SHIMS AND A MAXIMUM TOTAL THICKNESS OF 1/2".
3. FASTENING RAIL ON MAINLINE PRIMARY TRACK.
4. AT LOCATIONS WHERE DF FASTENERS ARE UNDER RAIL JOINTS, INSTALL PANDROL TYPE "C-2063" RAIL CLIPS OR APPROVED EQUALS.

SHIM SHAPE AND HOLES SHALL BE COMPATIBLE WITH FASTENER SHAPE, SIZE & ANCHOR BOLT LOCATION. MATERIAL: HIGH DENSITY POLYETHYLENE (HDPE).

SHIM CONFIGURATION
THICKNESSES: 1/16", 1/8", 3/16", 1/4"
GENERAL NOTES:
1. INSTALL PLUG INSERTS DURING CONSTRUCTION TO KEEP THE INSERTS CLEAN AND FREE OF FOREIGN MATERIAL.
2. THIN PLASTIC PUSH-IN THIMBLE TYPE PLUGS MAY BE USED FOR TEMPORARY PROTECTION OF THE THREADS DURING CONSTRUCTION OR FOR PROTECTION OF THE INSERTS IF THEY ARE LEFT OPEN. HOWEVER, THIN PLASTIC PUSH-IN THIMBLE TYPE PLUGS MAY NOT BE USED AS PERMANENT PLUGS ON INSERTS THAT ARE LEFT OPEN.
3. INSERTS THAT ARE LEFT OPEN AT THE CONCLUSION OF THE PROJECT SHALL BE PLUGGED WITH A REMOVABLE THREADED PLUG THAT IS FLUSH TO THE ADJACENT CONCRETE SURFACE.
4. PLUGS TO HAVE EITHER HEX OR SQUARE RECESS FOR WRENCH.
5. ANCHOR BOLTS SHALL BE CENTERED ON THEIR LOCKING WASHER +/- 1/8"
DIRECT FIXATION TRACK INSTALLATION PROCEDURES:

These procedures are provided as a reference guide only, and begin with acceptance of the base (invert, aerial, or slab) concrete in place. Alternate installation procedures achieving equal results may be submitted by contractor for construction resident engineers approval. Direct fixation track construction pertains to the following types of track installations:

A. Direct fixation track on tunnel invert.
B. Direct fixation track on aerial structures.
C. Direct fixation track on an at-grade slab track.

The following procedures outline the sequence of the installation for the above types of track construction:

1. Survey center line of track, establishing survey points (horiz & vert) every 10 feet on tangents and 5 feet on curves.
2. Prepare cut sheets based on existing base concrete elevations to establish top of rail and plinth concrete elevations.
3. Roughened base concrete shall be clean and free of laitance to provide a rough surface for interlocking of plinth concrete to parent base concrete.
4a. Inspect and confirm position of existing epoxy-coated reinforcing bar dowels to suit proposed plinth concrete pad lengths, widths and layouts.
4b. Alter by removal or bending existing dowels to suit plinth pad concrete dimensions and layout.
4c. Add additional dowels where required, to supplement removed dowels.
4d. Place reinforcing bars, forming cages, within the plinth concrete envelope providing the stated side clearance to the concrete surface.
5a. Position formwork to generate plinth concrete shape, length, and opening in accordance with standard drawings and approved contractor shop drawings.
5b. Forms or spoons shall be positioned to provide plinth concrete top elevation accurate to the tolerances stated in the specifications and as shown on the standard drawings.
6a. Using cut sheets and established survey points, position, locate and jig anchor bolt inserts for direct fixation fasteners.
6b. On curves requiring emergency guard rail, position, locate and jig anchor bolt inserts for direct fixation fasteners.
7. Clean base concrete of all oils, contaminants and dirt for application of bonding agent, as required.
8. Prior to bonding agent application, inspection and approval must be obtained from the construction resident engineer.
9. Apply bonding agent to base concrete surfaces in the areas of plinth concrete construction.
10. Place plinth concrete with appropriate vibration to fill all corners, and gaps around reinforcing bars and embedded anchor inserts.
10a. The specified and as shown on the standard drawings.
10b. Concrete shall be placed and finished to generate a smooth void free concrete plinth surface in accordance with the specifications.
11. After plinth concrete has reached sufficient strength to retain embedded anchor inserts, remove anchor bolts and framework and patch surface voids as required using epoxy grout.

QUALITY CHECKS:

1. All direct fixation on fastener plinth concrete top surface shall be:

   a. Level with a tolerance of 1/8" over 24" laterally.
   b. Sloped for superelevation with a tolerance of 1/8" over 24" laterally.
   c. Level (or tangent grade line) with a tolerance of:
      - 1/8" over 8' longitudinally
      - 1/4" over 16'6" longitudinally
   d. Fasteners in vertical curve track shall be checked by similar procedure using vertical offsets between fasteners as comparison.
   e. Adjacent plinth concrete pads shall be within the above tolerances. Adjacent fastener levels shall be within 1/16" of each other.

2. Plinth concrete shall be quality checked prior to placement of fasteners. Plinth concrete surface shall be uniform, no sags or crowns in fastener seat area and emergency guard rail base plate area.

3. Direct fixation fastener position shall be quality checked prior to placement of rail by the string line method. High out of tolerance fasteners shall be corrected by shim changeouts or grinding of concrete plinth surface where it is apparent that one or two isolated fasteners are high. In this quality check procedure, all fasteners shall be tightly bolted to the plinth concrete surface during this test.

4. A minimum of one 1/8" thick shim shall be installed under each fastener. A maximum of 1/4" thick shims shall be installed under fasteners as a corrective procedure. However, only 3 fasteners consecutively maximum shall be allowed 1/2" thick shims. Fasteners requiring 2/4" and higher shim height shall be limited to six consecutive fasteners. The nominal fastener shim height shall be 1/16" at all locations except direct fixation track in station areas where the nominal shim height shall be 1/4".

5. Quality check detail is shown for 3/4" fastener spacing. See drawing No S-13/R-12/S-02 for additional fastener spacing criteria.

6. Quality check for testing electrical isolation shall be as specified in the standard specifications.
GENERAL NOTES:
1. Plinth concrete shall be placed in segments. Segments shall between 2 and 8 fastener lengths.
2. Place plinth gaps, as required, including structural joints, drainage pathways, and passage of signal or other cables.
3. Plinth surface shown does not include applicable cross slope or construction tolerances. The contractor is responsible to field verify ability to place minimum required direct fixation heights as shown and any necessary modifications to the plinth surface to maintain the PGL.
4. For fastener spacing in curves, see DWG STD-KAD121.
5. For standard fastener details see DWG STD-KAD100.
6. For standard restraining rail details see DWG STD-KAD101.

EMERGENCY GUARD RAIL

DIRECT FIXATION TANGENT WITHOUT EMERGENCY GUARD RAIL INSTALLATION

DIRECT FIXATION WITH EMERGENCY GUARDRAIL

SCALE: 1" = 1'-0"
GENERAL NOTES:
1. PLACEMENT OF TIE BARS TO BE CLEAR OF FASTENER INSERT ANCHOR.
2. FOR EMERGENCY GUARD RAIL (EGR) LOCATION SEE TRACK CHARTS.

2 FASTENER LONGITUDINAL PLINTH LAYOUT
SCALE: 1" = 1'-0"

4 FASTENER LONGITUDINAL PLINTH LAYOUT
SCALE: 1" = 1'-0"

8 & 6 FASTENER LONGITUDINAL PLINTH LAYOUT
SCALE: 1" = 1'-0"
GENERAL NOTES:
1. TIE WIRES TO BE INSULATED.
2. PLINTH THICKNESSES SHOWN DO NOT CONSIDER SLAB CROSS SLOPE AND DO NOT ACCOUNT FOR SLAB CONSTRUCTION TOLERANCES.
3. PLINTH HEIGHT IS SUBJECT TO INCREASE OR DECREASE BASED ON AS-BUILT STRUCTURE SURFACE AND RETAINING DESIGNED PROFILE GRADE LINE.

TIE BAR DETAIL

EGR WITH SUPERELEVATION

RESTRAINING RAIL WITH SUPERELEVATION

TANGENT NO SUPERELEVATION

EGR TANGENT NO SUPERELEVATION

RESTRAINING RAIL NO SUPERELEVATION

MAXIMUM SUPERELEVATION (Ea = 4"

MINIMUM SUPERELEVATION (Ea = 1/2"

TOP OF SLAB

#4 STIRRUP BARS

1 1/2" MINIMUM ALL SIDES

1 1/2" MINIMUM ALL SIDES

1 1/2" MINIMUM ALL SIDES

1 1/2" MINIMUM ALL SIDES
GENERAL NOTES:
1. PLACEMENT OF TIE BARS TO BE CLEAR OF FASTENER INSERT ANCHORS.
2. FOR EMERGENCY GUARD RAIL (EGR) LOCATIONS SEE TRACK CHARTS.

8 & 6 FASTENER LONGITUDINAL PLINTH LAYOUT

4 FASTENER LONGITUDINAL PLINTH LAYOUT

2 FASTENER LONGITUDINAL PLINTH LAYOUT

DETAIL - STIRRUPS

NOTE:
ADDITIONAL PLINTH REINFORCING NOT SHOWN FOR CLARITY.
TIE WIRES TO BE INSULATED.
PLINTH THICKNESS SHOWN DO NOT CONSIDER SLAB CROSS SLOPE AND DO NOT ACCOUNT FOR SLAB CONSTRUCTION TOLERANCES.
PLINTH HEIGHT IS SUBJECT TO INCREASE OR DECREASE BASED ON AS-BUILT STRUCTURE SURFACE AND RETAINING DESIGNED PROFILE GRADE LINE.

MAXIMUM SUPERELEVATION (Ea = 4")

MINIMUM SUPERELEVATION (Ea = 1/2")

TANGENT NO SUPER ELEVATION

EGR WITH SUPERELEVATION

EGR TANGENT NO SUPER ELEVATION

RESTRAINING RAIL WITH SUPERELEVATION

RESTRAINING RAIL NO SUPER ELEVATION

GENERAL NOTES:
1. TIE WIRES TO BE INSULATED.
2. PLINTH THICKNESS SHOWN DO NOT CONSIDER SLAB CROSS SLOPE AND DO NOT ACCOUNT FOR SLAB CONSTRUCTION TOLERANCES.
3. PLINTH HEIGHT IS SUBJECT TO INCREASE OR DECREASE BASED ON AS-BUILT STRUCTURE SURFACE AND RETAINING DESIGNED PROFILE GRADE LINE.
GENERAL NOTES:
1. FOR EMERGENCY GUARD RAIL DIRECT FIXATION TYPICAL SECTION AND DETAIL SEE DWG KAD120.
2. FOR LIMITS OF EMERGENCY GUARD RAILS SEE TRACK CHART DRAWING.
3. WITHIN THE FLARED END, THE EMERGENCY GUARD RAIL SHALL BE FASTENED IN SPACING OF 30" OR LESS. OTHER THAN THE FLARED END, THE EMERGENCY GUARD RAIL SHALL BE FASTENED IN 5'-0" OR LESS.

PLAN VIEW - EMERGENCY GUARD RAIL INSTALLATION
SCALE: 1/2" = 1'-0"

GUARD RAIL BEVEL END DETAIL
AT EACH END OF INSTALLATION
SCALE: 3" = 1'-0"
GENERAL NOTES:
1. Submit steel angle frame and grating shop drawings to resident engineer for approval prior to fabrication. Frame and grate shall be galvanized steel.
2. Bolt grates to frame.
3. Slot bottom of boot at center of drain to allow boot voids drainage. Slot shall be 6" long by 4" wide at gauge side. Seal with elastomeric gROUT or sealant the open cavities of the rail boot in the downstream side of the slot. Remove 6" length of rubber extrusion flangeway former to drain the track flangeway.

SECTION A - NTS

SECTION B - NTS

SECTION C - NTS

SOUND TRANSIT

STANDARD DRAWING

TRACKWORK

EMBEDDED TRACK CONSTRUCTION
ROAD INTERSECTIONS TRACK SLAB TRACK DRAIN (115RE)
NOTE:

TOP OF DRAIN ALONG PLATFORMS SHALL BE SET AT A MIN. OF 3/4" BELOW TOP OF RAIL. CONCRETE SURFACE SHALL BE GRADED LOCALLY AROUND DRAIN.

TYPICAL TRACK DRAIN AND TRACKWAY DRAIN LOCATION PLAN

SCALE: 1/8" = 1'-0"
GENERAL NOTES:
1. SEE CONDUIT PLANS FOR LOCATION OF BLOCKOUTS.
2. ADJUST LOCATIONS OF CONDUITS AND BLOCKOUTS IN FIELD TO AVOID INTERFERENCE WITH RAIL SUPPORTS.
3. BLOCKOUT DIMENSION IS FROM EITHER FIELD OR GAUGE SIDE OF RAILHEAD OR FLANGED RAIL WITH 115 RE RAIL.
4. DISCONTINUE RAIL BOOT THROUGH BLOCKOUT.
5. PROVIDE 1 INCH OVERLAP INTO THE BLOCKOUT.
6. MINIMUM DEPTH FOR 2 INCH CONDUIT BLOCKOUT IS TO THE BASE OF RAIL OR TOP OF FIRST POUR, WHICHEVER IS DEEPER.
7. IF ROUTING CONFLICTS REQUIRE A VERTICAL STUB UP OF THE 2" CONDUIT THEN INCREASE BLOCKOUT DEPTH TO 1 FOOT.
8. CONDUITS SHALL BE CAPED AND A NYLON PULLROPE INSERTED PRIOR TO ANY CONCRETE POUR. AFTER RAIL INSTALLATION COMPLETE MANDREL THE CONDUIT AND RE-CAP LEAVING PULLROPE FOR FOLLOW-ON SYSTEMS CONTRACTOR.
9. AFTER INSTALLATION IS COMPLETE, FILL BLOCKOUT WITH TEMPORARY WOOD BLOCKS TO LEVEL FLUSH WITH ROAD SURFACE. CUT AND PLACE WOOD AS NECESSARY TO PROTECT CONDUIT STUB.
10. ELASTOMERIC GROUT PLACEMENT AND WELDED RAIL CONNECTIONS SHALL BE PERFORMED BY THE FOLLOW-ON SYSTEMS CONTRACTOR.

1. Set conduit plans for location of blockouts.
2. Adjust locations of conduits and blockouts in field to avoid interference with rail supports.
3. Blockout dimension is from either field or gauge side of railhead or flanged rail with 115 RE rail.
4. Discontinue rail boot through blockout.
5. Provide 1 inch overlap into the blockout.
6. Minimum depth for 2 inch conduit blockout is to the base of rail or top of first pour, whichever is deeper.
7. If routing conflicts require a vertical stub up of the 2" conduit then increase blockout depth to 1 foot.
8. Conduits shall be capped and a nylon pullrope inserted prior to any concrete pour. After rail installation complete mandrel the conduit and re-cap leaving pullrope for follow-on systems contractor.
9. After installation is complete, fill blockout with temporary wood blocks to level flush with road surface. Cut and place wood as necessary to protect conduit stub.
10. Elastomeric grout placement and welded rail connections shall be performed by the follow-on systems contractor.

RAIL CONNECTION BLOCKOUT WITH 2" CONDUIT SECTION

RAIL CONNECTION BLOCKOUT PLAN VIEW

RAIL CONNECTION BLOCKOUT WITH 3" CONDUIT SECTION
### General Notes:
1. Geometric distances based on 4'-8 1/2" gauge. Geometric distances based on tangent PITO to PITO. Turnouts are based on ARAA plan.
2. An increase of 1.0 foot in Track Centers causes an increase of N2 and N in the 'D' and 'Z' distances respectively.
3. All data except 'G', 'K', and 'M' also apply to single crossovers.
4. For all single crossovers on ballasted and or tracks, connecting tracks with centers equal to or greater than 15'-0", shall be designed as two turnouts with a tangent track connection between the turnouts.

### TURNOUT Data Table

<table>
<thead>
<tr>
<th>Turnout Number</th>
<th>Frog Angle</th>
<th>Switch Length &amp; Type</th>
<th>Lead C</th>
<th>Ps to PITO A</th>
<th>Pto to 1/2&quot; PP B</th>
<th>Centerline Radius</th>
<th>Point Angle from Tang</th>
<th>Switch</th>
<th>Heel Angle</th>
<th>Radiu</th>
<th>Toe Length</th>
<th>Heel Length</th>
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<td>26.7917</td>
<td>23.7500</td>
<td>186.10</td>
<td>1°11'25&quot;</td>
<td>2°54'00&quot;</td>
<td>6.1855</td>
<td>4.5060</td>
<td>6.5060</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>11°25'16&quot;</td>
<td>13.00 CV</td>
<td>44.5417</td>
<td>26.7917</td>
<td>23.7500</td>
<td>186.10</td>
<td>1°11'25&quot;</td>
<td>2°54'00&quot;</td>
<td>6.1855</td>
<td>4.5060</td>
<td>6.5060</td>
<td></td>
</tr>
<tr>
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<td>9°31'38&quot;</td>
<td>13.00 CV</td>
<td>89.7580</td>
<td>89.7580</td>
<td>21.2491</td>
<td>253.68</td>
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<td>2°54'00&quot;</td>
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<td>4.5060</td>
<td>6.5060</td>
<td></td>
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<tr>
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<td>89.7580</td>
<td>89.7580</td>
<td>21.2491</td>
<td>253.68</td>
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<td>2°54'00&quot;</td>
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<td>4.5060</td>
<td>6.5060</td>
<td></td>
</tr>
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(Dimensions in feet unless otherwise noted)

### CROSSOVER Data Table

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<th>Track Center T</th>
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<th>Crossing Data</th>
<th>Other Data</th>
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</table>

(Dimensions in feet unless otherwise noted)
GENERAL NOTES:
1. RIGHT HAND INSULATED GAUGE PLATE NO. 1G AND 2G SHOWN,
   LEFT HAND PLATE IS OPPOSITE.
2. GAUGE PLATES NO. 1 AND 2 ARE DESIGNED TO ACCOMMODATE
   SWITCH MACHINE CONNECTION ON EITHER END. DIMENSIONS
   MUST BE HELD TO SPECIFIED TOLERANCES.
3. ALL SPECIAL TRACKWORK FASTENING PLATES SHALL BE
   INSULATED.
4. GAUGE PLATES FOR FROG INSTALLATION SHALL INCLUDE
   WELD ON SHOULDERS FOR GUARD RAIL HOLD DOWN
   ASSEMBLY.

PLATE IDENTIFICATION NUMBER CLEARLY
STEMED WITH 1" MINIMUM HEIGHT
CHARACTERS IN THIS GENERAL AREA

HOLE FOR SPIKING
SWITCH POINT IN
CLOSED POSITION
FOR PLATE 1G ONLY

TO SUIT BOLTLESS
ADJUSTABLE RAIL BRACE

PLATE No. 0G

G1-First Gauge Plate
G2-Second Gauge Plate
G3-Third Gauge Plate

G1-FIRST GAUGE PLATE
G2-SECOND GAUGE PLATE
G3-THIRD GAUGE PLATE

TYPICAL FROG GAUGE PLATE

TYPICAL FROG GAUGE PLATE

FROGS

G1-First Gauge Plate
G2-Second Gauge Plate
G3-Third Gauge Plate

SWITCHES

GAUGE PLATE IDENTIFICATION STAMPING

SPECIFIC PLATE NUMBER FOR POSITION

SPECIFIC PLATE NUMBER FOR POSITION

0G-Gauge Plate Ahead of Point of Switch
1G-First Gauge Plate
2G-Second Gauge Plate

SWITCH GAUGE PLATES ARE IDENTICAL ON ALL SWITCH TYPES

0G SPECIFIC PLATE NUMBER FOR POSITION

1G-FIRST GAUGE PLATE

2G-SECOND GAUGE PLATE

0G GAUGE PLATE AHEAD OF POINT OF SWITCH

1G-FIRST GAUGE PLATE BEHIND POINT OF SWITCH

3G-SECOND GAUGE PLATE BEHIND POINT OF SWITCH

SWITCH GAUGE PLATES ARE IDENTICAL ON ALL SWITCH TYPES

0G SPECIFIC PLATE NUMBER FOR POSITION

1G-FIRST GAUGE PLATE

2G-SECOND GAUGE PLATE

3G-THIRD GAUGE PLATE

SOUND TRANSIT

STANDARD DRAWING

TRACKWORK

SPECIAL TRACKWORK

GAUGE PLATES

BALLASTED

DRAWING No.: STD-KAD305

SHEET No.: 0

CONTRACT No.: 0

FILENAME: T:\_HQ_INTERNAL\EXHIBITS\GUIDANCE-STANDARD_DRAWINGS - WORKING\CIVIL-STRUCTURAL\2019\STANDARD\DRAWINGS\STD-KAD305.DWG

DESIGNED BY: H. XIANGDONG

DRAWN BY: C. GALLAGHER

CHECKED BY: J. BAILEY

APPROVED BY: J. BAILEY

DATE: 08/12/19

SOUND TRANSIT

STANDARD DRAWING

TRACKWORK

SPECIAL TRACKWORK

GAUGE PLATES

BALLASTED

DRAWING No.: STD-KAD305

SHEET No.: 0

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DATE: 08/12/19

SOUND TRANSIT

STANDARD DRAWING

TRACKWORK

SPECIAL TRACKWORK

GAUGE PLATES

BALLASTED
TABLE A

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DESCRIPTION</th>
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<td>H3</td>
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<td>H4</td>
<td>RESILIENT RAIL CLIP (SEE NOTE 4)</td>
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<td>ANCHOR BOLT</td>
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<td>H8</td>
<td>ADJUSTABLE CLIP HOLDER (SEE NOTE 4)</td>
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<tr>
<td>H9</td>
<td>SHIMS</td>
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<td>SPACE COVER PLATES</td>
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<td>GALVANIZED STEEL HEIGHT-ADJUSTMENT SHIMS (SEE NOTES 2 &amp; 3)</td>
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<td>EPOXY GROUT (FOR ALTERNATIVE 1 INSTALLATION ONLY)</td>
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BILL OF MATERIAL

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GENERAL NOTES:

1. AT THE OPTION OF THE INSTALLATION CONTRACTOR, ANCHOR INSERT SHALL BE INSTALLED BY EITHER THE DRILL AND GROUT METHOD OR CAST-IN-PLACE WITH SECOND CONCRETE.
2. THE HEIGHT-ADJUSTMENT SHIMS SHALL PROVIDE 1/4 INCH MINIMUM HORIZONTAL PROJECTION BEYOND ALL SIDES OF THE FASTENER AT ANY INSTALLED POSITION.
3. TOTAL NUMBER OF SHIMS PLACED UNDER RAIL FASTENER BODY FOR HEIGHT ADJUSTMENT SHALL BE LIMITED TO A MAXIMUM TOTAL THICKNESS OF 1/2".
4. SHIMS OF RAIL FASTENERS ARE LOCATED UNDER RAIL JOINTS. INSTALL PANDROL TYPE YE-2067 RAIL CLIPS OR APPROVED EQUAL.
5. BOLT HOLES DIAMETER AND NUMBER OF ANCHOR BOLTS REQUIRED FOR INSTALLATION SHALL BE AS RECOMMENDED BY THE SUPPLIER OF DF FASTENERS.
6. FIXED CLIPS ARE REQUIRED AT LOCATIONS THAT SPRING CLIP HOLDER OR SPRING CLIP WILL NOT FIT. THIS WILL OCCUR AT BOLTED JOINTS AND NARROW AREAS BETWEEN RAILS. CONTRACTOR WILL BE RESPONSIBLE TO LOCATE AREAS WHERE THESE INSTALLATIONS WILL OCCUR.
7. SHIMS SLOTTED HOLES SHAPE AND SIZE SHALL BE AS RECOMMENDED BY THE SUPPLIER OF DF FASTENERS.

ELEVATION INSERT PLACEMENT TOLERANCE

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<tr>
<td>TOP OF CONCRETE TO TOP OF INSERT TO FLANGE</td>
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<td>TOP OF SECOND POUR CONCRETE</td>
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DRILL AND GROUT METHOD INSTALLATION ALTERNATIVE 1 DETAIL

CAST-IN-PLACE INSTALLATION ALTERNATIVE 2 DETAIL

SOUND TRANSIT STANDARD DRAWING

TRACKWORK

SPECIAL TRACKWORK RAIL FASTENER DETAILS

DIRECT FIXATION

DRAWN BY:

DESIGNED BY:

CHECKED BY:

APPROVED BY:

DRAWN BY:

DESIGNED BY:

CHECKED BY:

APPROVED BY:

DRAWN BY:

DESIGNED BY:

CHECKED BY:

APPROVED BY:
GENERAL NOTES:
1. RAIL AND COMPONENTS CONFORM TO 115 RE RAIL SECTION OR THEIR HEIL SIDE.
2. 19'-6" CURVED SWITCH TO BE INSTALLED AT NO. 10 FULLY WELDED TURNOUT.
3. ALL STOCK, SWITCH POINT AND CLOSURE RAILS ARE FABRICATED FROM HIGH STRENGTH RAIL.
4. FOR RH TURNOUT, RH POINT AND RH STOCK RAILS ARE CURVED; RH POINT AND RH STOCK RAILS ARE STRAIGHT; FOR LH TURNOUT, LH POINT AND LH STOCK RAILS ARE CURVED; LH POINT AND LH STOCK RAILS ARE STRAIGHT.
5. THE DESIGN CONFIGURATION AND DIMENSIONS OF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES AND MAY BE REVISED BY THE CONTRACTOR. THE FINAL DETAILS, DIMENSIONS AND BILL OF MATERIALS WILL BE DETERMINED BY THE CONTRACTOR.
6. DIMENSION OF STOCK RAIL EXTENSION FROM POINT OF SWITCH WILL VARY DEPENDING ON LOCATION OF INSULATED JOINT ON EACH SIDE OF THE TURNOUT.
7. REBARS DETAILS SHOWN ARE FOR CONCRETE PLINTHS SIZED AND DESIGNED FOR TWO SPECIAL TRACKWORK FASTENERS. REBARS AND DOWELS DETAILS WILL BE TYPICAL FOR ALL LARGER CONCRETE PLINTHS WITH MORE THAN TWO SPECIAL TRACKWORK FASTENERS.

SOUND TRANSIT
STANDARD DRAWING
19'-6" CURVED SPLIT SWITCH
DIRECT FIXATION TRACK

BILL OF MATERIAL
19'-6" CURVED INSULATED SPLIT SWITCH

QTY DESCRIPTION
1. 19'-6" CURVED INSULATED SPLIT SWITCH RAILS (SEE DWG STD-KAD100) FOR INFORMATIONAL PURPOSES, AND MAY BE REVISED BY THE CONTRACTOR
2. ISOLATED VERTICAL SWITCH RODS, No. 1 TO No. 4 WITH TYPE 1/2" CLIP
3. STANDARD SPECIAL TRACKWORK FASTENERS
4. SPECIAL TRACKWORK FASTENER

UNCONTROLLED DOCUMENT FROM SOUNDTRANSIT.ORG

FILENAME: T:\_HQ_INTERNAL\EXHIBITS\GUIDANCE-STANDARD_DRAWINGS - WORKING\CIVIL-STRUCTURAL\2019\STANDARD\DRAWINGS\STD-KAD321.DWG
DATE: 8/20/19
CHK: 4 3/16"
APP: 7"
REVISION: 5100 PER AREMA STANDARD PLAN No. 221-08), SEE NOTE 4.

1. STANDARD SPECIAL TRACKWORK FASTENERS
2. STANDARD SPECIAL TRACKWORK FASTENERS
3. STANDARD SPECIAL TRACKWORK FASTENERS
4. STANDARD SPECIAL TRACKWORK FASTENERS
5. STANDARD SPECIAL TRACKWORK FASTENERS

GENERAL NOTES:
1. RAIL AND COMPONENTS CONFORM TO 115 RE RAIL SECTION OR THEIR HEIL SIDE.
2. 19'-6" CURVED SWITCH TO BE INSTALLED AT NO. 10 FULLY WELDED TURNOUT.
3. ALL STOCK, SWITCH POINT AND CLOSURE RAILS ARE FABRICATED FROM HIGH STRENGTH RAIL.
4. FOR RH TURNOUT, RH POINT AND RH STOCK RAILS ARE CURVED; RH POINT AND RH STOCK RAILS ARE STRAIGHT; FOR LH TURNOUT, LH POINT AND LH STOCK RAILS ARE CURVED; LH POINT AND LH STOCK RAILS ARE STRAIGHT.
5. THE DESIGN CONFIGURATION AND DIMENSIONS OF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES AND MAY BE REVISED BY THE CONTRACTOR. THE FINAL DETAILS, DIMENSIONS AND BILL OF MATERIALS WILL BE DETERMINED BY THE CONTRACTOR.
6. DIMENSION OF STOCK RAIL EXTENSION FROM POINT OF SWITCH WILL VARY DEPENDING ON LOCATION OF INSULATED JOINT ON EACH SIDE OF THE TURNOUT.
7. REBARS DETAILS SHOWN ARE FOR CONCRETE PLINTHS SIZED AND DESIGNED FOR TWO SPECIAL TRACKWORK FASTENERS. REBARS AND DOWELS DETAILS WILL BE TYPICAL FOR ALL LARGER CONCRETE PLINTHS WITH MORE THAN TWO SPECIAL TRACKWORK FASTENERS.
GENERAL NOTES:

1. FOR REINFORCEMENT BAR DETAILS SEE AREMA PLAN 325-12.
2. ALL SPECIAL TRACKWORK TURNOUT PLATES MUST BE INSULATED.
3. SOME OR ALL SWITCH POINTS MAY BE FURNISHED IN 115 TW (THICK WEB) RAIL INSTEAD OF STANDARD 115 RE. THICK WEB RAIL SHALL BE BETHLEHEM STEEL BSCO. 115 TW RAIL SECTION (AS SHOWN) OR APPROVED EQUAL.
4. HEEL BLOCK - CAST STEEL, CLASS B, HARD. 115 TW (THICK WEB) RAIL INSTEAD OF STANDARD 115 RE. THICK WEB RAIL SHALL BE BETHLEHEM STEEL BSCO. 115 TW RAIL SECTION (AS SHOWN) OR APPROVED EQUAL.
GENERAL NOTES:
1. FROG RAIL TO BE 1 1/2 RE PREMIUM RAIL.
2. FLANGEWAYS TO BE 1 5/8" WIDE BY 1 7/8" DEEP.
3. RAIL-END DRILLING, BAR PUNCHING AND TRACK BOLTS SHALL BE IN ACCORDANCE WITH AREMA MANUAL FOR 36" SIX-HOLE JOINT BARS FOR JOINTED TRACK EXCEPT FOR FROG HEEL LEGS, WHICH SHALL BE 5 HOLE JOINTS.
4. RAIL ENDS SHALL BE BEVELED IN ACCORDANCE WITH AREMA PLAN NO. 1005-03.
5. RIGHT HAND FROG SHOWN. LEFT HAND FROG OPPOSITE.
6. FOR ADDITIONAL DETAILS OF GUARD RAILS SEE DRAWING NO. STD-KAD310.
7. THE DESIGN CONFIGURATION AND DIMENSIONS OF FROG AND FROG PLATES ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DESIGN CONFIGURATION AND DIMENSIONS WILL BE BY CONTRACTOR'S FABRICATOR OF TURNOUT SUBJECT TO APPROVAL BY RESIDENT ENGINEER.
8. ALL SPECIAL TRACKWORK FASTENING PLATES SHALL BE INSULATED.
9. SPARE FROG SHALL BE PROVIDED WITH 12" LONGER TOE LENGTH AND 12" LONGER HEEL LENGTH. (SPARE FROG TOE LENGTH = 5'-6" SPARE FROG HEEL LENGTH = 7'-4"

BILL OF MATERIAL
NO. 5 RAILBOUND MANGANESE FROG

<table>
<thead>
<tr>
<th>QTY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 EA</td>
<td>NO. 5 RAILBOUND MANGANESE FROG COMPLETE (PER AREMA STD PLAN-322-B) MODIFIED AS SHOWN</td>
</tr>
<tr>
<td>AIR</td>
<td>FROG PLATES, (BR1 TO BR6) (FOR BALLASTED TRACK ONLY)</td>
</tr>
</tbody>
</table>

uncontrolled document from soundtransit.org
No. 5 Equilateral Turnout

Scale: 1/8" = 1'-0"

Legend:
- Standard of fastener, no cant
- Standard of fastener 1:40 cant
- DF special trackwork fastener

General Notes:
1. Rail and components conform to the 115RE rail section.
2. Final locations of bonded insulated joints will depend on the location of turnout installation. Verify final location of insulated joints with the resident engineer before fabrication of the turnout.
3. Dimensions of stock rail extension from point of switch will vary depending on location of insulated joint on each side of the turnout.
4. Rail cant transition from zero cant to 1:40 cant to be performed in plinth. Zero cant fasteners shall be used throughout the transition.

Notes:
1. RAIL AND COMPONENTS CONFORM TO THE 115RE RAIL SECTION.
2. FINAL LOCATIONS OF BONDED INSULATED JOINTS WILL DEPEND ON THE LOCATION OF TURNOUT INSTALLATION. VERIFY FINAL LOCATION OF INSULATED JOINTS WITH THE RESIDENT ENGINEER BEFORE FABRICATION OF THE TURNOUT.
3. DIMENSIONS OF STOCK RAIL EXTENSION FROM POINT OF SWITCH WILL VARY DEPENDING ON LOCATION OF INSULATED JOINT ON EACH SIDE OF THE TURNOUT.
4. RAIL CANT TRANSITION FROM ZERO CANT TO 1:40 CANT TO BE PERFORMED IN PLINTH. ZERO CANT FASTENERS SHALL BE USED THROUGHOUT THE TRANSITION.

Sound Transit
Standard Drawing
No. 5 Equilateral Turnout
13'-0" Curved Equilateral Split Switch
Direct Fixation

LEGEND:
- Standard of fastener, no cant
- Standard of fastener 1:40 cant
- DF special trackwork fastener

GENERAL NOTES:
### General Notes:
1. Rail and components shall conform to 115 RE rail section.
2. All plate layouts and dimensions are for information only. Final plate layouts and dimensions shall be by contractor and approved by resident engineer.
3. For rail fastener details in direct fixation track, see drawing STD-KAD306.

### Bill of Material

**No. 5 EQ. Insulated Split Switch Complete**

<table>
<thead>
<tr>
<th>QTY</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Switch Points, made from 42'-5 13/16&quot; long rail RH and LH complete with reinforcing bars, heel block, and stop attached (Point detail 5100 per APEMA Standard Plan No. 221-08)</td>
</tr>
<tr>
<td>1</td>
<td>Undercut stock rails, RH and LH.</td>
</tr>
<tr>
<td>4</td>
<td>Insulated vertical switch rods, No. 1 rod with basket for 1 1/4&quot; Ø rod</td>
</tr>
<tr>
<td>1</td>
<td>Insulated gauge plate OG. 1GE and 2GE complete with adjustable braces.</td>
</tr>
<tr>
<td>6</td>
<td>Brakes slide plates No. 1 complete with adjustable braces.</td>
</tr>
<tr>
<td>1</td>
<td>Plate stops SS and XS.</td>
</tr>
<tr>
<td>6</td>
<td>Plate stop G.</td>
</tr>
<tr>
<td>20</td>
<td>3/4&quot; x 2 1/4&quot; machine bolts.</td>
</tr>
</tbody>
</table>

### Plate Details (Ballasted)

**PLATE DETAILS (BALLASTED)**

**PLATE STOP DETAILS**

---

**Scale:** 3/4" = 1'-0"
GENERAL NOTES:
1. FROG RAIL TO BE 115 RE PREMIUM RAIL.
2. FLANGEWAYS TO BE 1 5/8" WIDE BY 1 7/8" DEEP.
3. RAIL END DRILLING, BAR PUNCHING AND TRACK BOLTS SHALL BE IN
   ACCORDANCE WITH AREMA MANUAL, FOR 36" 5-HOLE JOINT BARS FOR
   JOINTED TRACK EXCEPT FOR FROG HEEL LEGS, WHICH SHALL BE 5
   HOLE JOINTS.
4. RAIL ENDS SHALL BE BEVELED IN ACCORDANCE WITH AREMA PLAN NO.
   600-60.
5. THE DESIGN CONFIGURATION AND DIMENSIONS OF FROGS AND FROG
   PLATES AND FOR INFORMATIONAL PURPOSES FINAL DESIGN
   CONFIGURATION AND DIMENSIONS WILL BE BY CONTRACTORS
   FABRICATION OF TURNOUT SUBJECT TO APPROVAL BY RESIDENT
   ENGINEER.
6. FOR ADDITIONAL DETAILS OF GUARD RAILS SEE DRAWING STD-KAD310.
7. SPARE FROG SHALL BE PROVIDED WITH 1 1/2" LONGER TOE LENGTH AND
   1 5/8" LONGER HEEL LENGTH. (SPARE FROG TOE LENGTH = 5'-6" SPARE
   FROG HEEL LENGTH = 7'-4")
8. ALL SPECIAL TRACKWORK FASTENING SHALL BE INSULATED.

Bill of Material

<table>
<thead>
<tr>
<th>NO. 5 EQ. INSULATED SPLIT SWITCH COMPLETE</th>
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<tbody>
<tr>
<td>GTY</td>
</tr>
<tr>
<td>1 EA</td>
</tr>
<tr>
<td>1 EA</td>
</tr>
<tr>
<td>A/R</td>
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SOUND TRANSIT
STANDARD DRAWING
TRACKWORK
NO. 5 EQUI-LATERAL RBM FROG
BALLASTED

Drawing Date: 8/2019

DESIGNED BY: H. XIANGDONG
DRAWN BY: C. GALLAGHER
CHECKED BY: J. BAILEY
APPROVED BY: J. BAILEY

CONTRACT No.:
FILENAME: STD-KAD358
DRAWING No.: 0
SHEET No.: 1
REV: 1
SCALE: 1 1/2" = 1'-0"
FLARE DETAIL

PLAN

SCALE: 3/4" = 1'-0"
GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY THE CONTRACTOR AFTER APPROVAL BY THE RESIDENT ENGINEER.
3. SPARE FROG SHALL BE PROVIDED WITH 12" LONGER TOE LENGTH AND 12" LONGER HEEL LENGTH.

NO. 6 RAILBOUND MANGANESE FROG ASSEMBLY

SCALE: 3/4" = 1'-0"
GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. THE DESIGN CONFIGURATION, PLINTH LAYOUT AND DIMENSIONS OF DF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY THE CONTRACTOR AFTER APPROVAL BY THE RESIDENT ENGINEER.
3. SPARE DIAMOND CROSSING SHALL BE PROVIDED WITH 12" LONGER TOE LENGTH AND 12" LONGER HEEL LENGTH.

NO. 6 DF DIAMOND CROSSING 15'-9" TC
SCALE: 3" = 1'-0"

STANDARD DRAWING
TRACKWORK
NO. 6 DIAMOND CROSSING
DIRECT FIXATION
FOR 15'-9" DOUBLE CROSSOVER

DESIGNED BY:
C. GALLAGHER
J. BAILEY

DRAWN BY:

CHECKED BY:

APPROVED BY:

SOUND TRANSIT
GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. THE DESIGN CONFIGURATION, PLINTH LAYOUT AND DIMENSIONS OF DF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY THE CONTRACTOR AFTER APPROVAL BY THE RESIDENT ENGINEER.
3. SPARE DIAMOND CROSSING SHALL BE PROVIDED WITH 12" LONGER TOE LENGTH AND 12" LONGER HEEL LENGTH.

NO. 6 DF DIAMOND CROSSING 15'-9" TC
SCALE: 3" = 1'-0"
## Bill of Material

### No. 8 BALLASTED AND WELDED

**Bill of Material**

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<td>1. ASY. 18'-6&quot; CURVED SWITCH COMPOSITE</td>
<td>16</td>
<td>STD-PAD60</td>
</tr>
<tr>
<td>2. ASY. 12'-0&quot; REUSABLE GUARD RAIL WITH PLATES</td>
<td>9</td>
<td>STD-PAD80</td>
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<tr>
<td>1 EACH: CLOSURE RAIL WITH BONDED INSULATED JOINTS 25'-5 1/16&quot; AND 40'-6&quot;</td>
<td>43</td>
<td>STD-PAD404</td>
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<tr>
<td>1 EACH: CLOSURE RAIL 20'-3 1/4&quot;, 18'-6&quot; AND 38'-6&quot;</td>
<td>8</td>
<td>STD-PAD403</td>
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<tr>
<td>1 SET: CONCRETE SWITCH TIES AS LISTED (SEE NOTE 8)</td>
<td>10</td>
<td>STD-PAD80</td>
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<tr>
<td>10 STANDARD PAN/ROL TIE PLATES FOR &quot;V&quot; CLIPS (SEE NOTE 6)</td>
<td>10</td>
<td>STD-PAD80</td>
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<tr>
<td>12 THERMI WELDS</td>
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<td>STD-PAD80</td>
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<tr>
<td>141 HIGH DENSITY POLYETHYLENE PADS (VARIOUS SIZES)</td>
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### Bill of Material

**Concrete Switch Ties**

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<tr>
<td>9'-0&quot;</td>
<td>9</td>
</tr>
<tr>
<td>11'-0&quot;</td>
<td>9</td>
</tr>
<tr>
<td>12'-0&quot;</td>
<td>6 (SEE NOTE 6)</td>
</tr>
<tr>
<td>15'-0&quot;</td>
<td>4</td>
</tr>
<tr>
<td>16'-0&quot;</td>
<td>4</td>
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<tr>
<td>18'-0&quot;</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>55</td>
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</table>

**General Notes:**

1. LEFT HAND Turnout SHALL BE opposite to that shown.
2. RAIL and components conform to the 115 REV. 5 RAIL SECTION.
3. ALL RAILS INDICATED BY SOLID LINES IN RAIL LAYOUT DIAGRAM ARE FULLY HEAT TREATED OR HEAT-HARDENED RAIL.
4. DASHED LINES IN RAIL LAYOUT DIAGRAM INDICATE CONTINUOUS WELDED RAIL (STD. OR HEAT TREATED) BEYOND Turnout RAIL. RAIL INDICATED BY DASHED LINES ARE NOT INCLUDED IN THE BILL OF MATERIAL ON THIS DRAWING.
5. CLOSURE RAIL LENGTHS ALLOW 7/8" FOR EACH THERMI WELD.
6. INSULATED STANDARD PLATES SHALL BE FURNISHED FOR ALL TIES WHERE SPECIAL PLATES ARE NOT REQUIRED.
7. ALL SPECIAL TRACKWORK Turnout PLATES MUST BE INSULATED.
8. HEADBOLT TIES FOR POWER Switch MACHINE SHALL BE 55" IN SECTION AND SHALL BE DAPPED AS REQUIRED FOR Switch MACHINE.
9. BONDED INSULATION JOINTS ARE NOT REQUIRED IN SOME Turnout INSTALLATION. SEE RESPECTIVE CONTRACTS TRACK CHART DRAWINGS FOR DETAILS.
10. INCREASE THE LENGTH OF CONCRETE TIE CONTINUOUSLY WITH THE REQUIREMENTS OUTSIDE RAIL TO THE END OF THE TIE. IN CASE SUCH TIE SETTINGS IS NOT AVAILABLE, INCREASE TIE LENGTH BY A FAMILY STYLE IS ALLOWED.
GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. FOR MAINLINE OR OTHER DESIGNATED TURNOUTS, ENDS SHALL BE LEFT BLANK FOR WELDING.
3. THE DESIGN CONFIGURATION, PLINTH LAYOUT AND DIMENSIONS OF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY CONTRACTOR AFTER APPROVAL BY RESIDENT ENGINEER.

GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. FOR MAINLINE OR OTHER DESIGNATED TURNOUTS, ENDS SHALL BE LEFT BLANK FOR WELDING.
3. THE DESIGN CONFIGURATION, PLINTH LAYOUT AND DIMENSIONS OF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY CONTRACTOR AFTER APPROVAL BY RESIDENT ENGINEER.

GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. FOR MAINLINE OR OTHER DESIGNATED TURNOUTS, ENDS SHALL BE LEFT BLANK FOR WELDING.
3. THE DESIGN CONFIGURATION, PLINTH LAYOUT AND DIMENSIONS OF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY CONTRACTOR AFTER APPROVAL BY RESIDENT ENGINEER.

GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. FOR MAINLINE OR OTHER DESIGNATED TURNOUTS, ENDS SHALL BE LEFT BLANK FOR WELDING.
3. THE DESIGN CONFIGURATION, PLINTH LAYOUT AND DIMENSIONS OF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY CONTRACTOR AFTER APPROVAL BY RESIDENT ENGINEER.

GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. FOR MAINLINE OR OTHER DESIGNATED TURNOUTS, ENDS SHALL BE LEFT BLANK FOR WELDING.
3. THE DESIGN CONFIGURATION, PLINTH LAYOUT AND DIMENSIONS OF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY CONTRACTOR AFTER APPROVAL BY RESIDENT ENGINEER.

GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. FOR MAINLINE OR OTHER DESIGNATED TURNOUTS, ENDS SHALL BE LEFT BLANK FOR WELDING.
3. THE DESIGN CONFIGURATION, PLINTH LAYOUT AND DIMENSIONS OF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY CONTRACTOR AFTER APPROVAL BY RESIDENT ENGINEER.

GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. FOR MAINLINE OR OTHER DESIGNATED TURNOUTS, ENDS SHALL BE LEFT BLANK FOR WELDING.
3. THE DESIGN CONFIGURATION, PLINTH LAYOUT AND DIMENSIONS OF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY CONTRACTOR AFTER APPROVAL BY RESIDENT ENGINEER.

GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. FOR MAINLINE OR OTHER DESIGNATED TURNOUTS, ENDS SHALL BE LEFT BLANK FOR WELDING.
3. THE DESIGN CONFIGURATION, PLINTH LAYOUT AND DIMENSIONS OF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY CONTRACTOR AFTER APPROVAL BY RESIDENT ENGINEER.
GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. FOR MAINLINE OR OTHER DESIGNATED TURNOUTS, ENDS SHALL BE LEFT BLANK FOR WELDING.
3. THE DESIGN CONFIGURATION AND DIMENSIONS OF DF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY TURNOUT CONTRACTOR AFTER APPROVAL BY RESIDENT ENGINEER.
4. FOR DETAIL OF 13'-0" ADJUSTABLE GUARD RAIL SEE DWG STD-KAD311.
5. FOR ADDITIONAL DETAIL OF NO. 8 FROG ON NO. 8 DOUBLE CROSSOVER INSTALLATION SEE DWG STD-KAD372.
6. SPARE FROG SHALL BE PROVIDED WITH 12" LONGER TOE LENGTH AND 12" LONGER HEEL LENGTH (SPARE FROG TOE LENGTH = 7'-3" SPARE FROG HEEL LENGTH = 10'-5")

BILL OF MATERIAL

<table>
<thead>
<tr>
<th>NO. 8 RAILBOUND MANGANESE FROG</th>
</tr>
</thead>
<tbody>
<tr>
<td>QTY</td>
</tr>
<tr>
<td>A/R</td>
</tr>
<tr>
<td>A/R</td>
</tr>
<tr>
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</tr>
<tr>
<td>1</td>
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</tbody>
</table>

OUTLINE PLINTH CONCRETE
DIRECT FIXATION PLINTH-CONCRETE OUTLINE

NO. 8 RAILBOUND MANGANESE FROG

SCALE: 3/4" = 1'-0"
GENERAL NOTES:
1. RAIL AND COMPONENTS CONFORM TO THE 115 RE RAIL SECTION.
2. FOR GUARD RAIL DATA REFER TO DWG STD-KAD311.
3. PROVIDE WHEEL FALSE FLANGE WEAR RAMP AT RAIL HEAD TO SUIT WHEEL THREAD WIDTH.
4. FILL UNDERSIDE Voids OF FROG CASTING WITH TWO COMPONENT POLYURETHANE HAVING AN EB SHEAR DURABILITY, MACHINE EXCESS FILL MATERIAL TO PROVIDE A FLAT FROG SURFACE.

BILL OF MATERIAL - FROG
NO 8 WELDED BOLTLESS MANGANESE FROG COMPLETE

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<th>ITEM NO</th>
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<tbody>
<tr>
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<td>1</td>
<td>NO 8 - 115RE WELDED BOLTLESS MANGANESE FROG CASTING</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>TOE RAIL</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>HEEL RAIL</td>
</tr>
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<td>4</td>
<td>1 SET</td>
<td>FASTENERS NO H2 THROUGH H4</td>
</tr>
<tr>
<td>5</td>
<td>AS REQUIRED</td>
<td>POLYURETHANE FILLER</td>
</tr>
</tbody>
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FABRICATION TO DESIGN INTERNAL Voids, COOLING POCKETS, AND POSITIONS TO CONTROL CASTING

FILL UNDERSIDE OF CASTING REFER TO NOTE 4

FILL UNDERSIDE OF CASTING REFER TO NOTE 4

SECTION A
SCALE 3" = 1'-0"

SECTION AT 5/8" POINT
SCALE 3" = 1'-0"

SECTION AT THROAT
SCALE 3" = 1'-0"
GENERAL NOTES:
1. LEFT HAND TURNOUT SHALL BE OPPOSITE TO THAT SHOWN.
2. RAIL AND COMPONENTS CONFORM TO THE 115 RE RAIL SECTION.
3. ALL RAILS INDICATED BY SOLID LINES IN RAIL LAYOUT DIAGRAM ARE FULLY HEAT TREATED OR HEAD HARDENED.
4. DASHED LINES IN RAIL LAYOUT DIAGRAM INDICATE CONTINUOUS WELDED RAIL. STD OR HEAT TREATED BEYOND TURNOUT RAIL. RAIL INDICATED BY DASHED LINES ARE NOT INCLUDED IN THE BILL OF MATERIALS ON THIS DRAWING.
5. CLOSURE RAIL LENGTHS ALLOWED 71/8" FOR EACH THERMITE WELD.
6. INSULATED SINGLE RAIL PLATES SHALL BE FURNISHED FOR 6. ALL TIES WHERE SPECIAL PLATES ARE NOT REQUIRED.
7. ALL SPECIAL TRACKWORK TURNOUT PLATES MUST BE INSULATED.
8. HEADLOCK TIES FOR POWER SWITCH MACHINE SHALL BE INSULTED IN SECTION AND SHALL BE DAPPED AS REQUIRED FOR SWITCH MACHINE.
9. BONDED INSULATED JOINTS ARE NOT REQUIRED IN SOME TURNOUT INSTALLATION. SEE RESPECTIVE CONTRACT DRAWING FOR DETAIL.
10. INCREASE THE LENGTH OF CONCRETE TIE CONTINUOUSLY WITH THE REQUIRED MINIMUM LENGTH OF 25 3/4" FROM THE GAUGE SIDE OF THE TIE. IN CASE OF SUCH TIE SETTING IS NOT AVAILABLE, INCREASE TIE LENGTH IN A FAMILY STYLE IS ALLOWED.

SOUND TRANSIT STANDARD DRAWING
TRACKWORK
NO. 10 TURNOUT WITH 19'-6" CURVED SWITCH BALLASTED AND WELDED

DRAWN BY:
CHECKED BY:
APPROVED BY:

C. GALLAGHER
H. XIANGDONG

SCALE:
CONTRACT NO.:
FILENAME:
DATE:

AS NOTED
STD-KAD400
8/2019

(SEE NOTE 9)
(SHOP FABRICATED)

INCREASE THE LENGTH CONTINUOUSLY (SEE NOTE 10).

THICKNESS AT POINT
5/16"

TOE LENGTH
14 1/8"

TOE SPREAD
8 3/8"

HEEL SPREAD
6 1/4"

HEEL ANGLE
1/2°

SOUND TRANSIT

RAIL LAYOUT DIAGRAM
SCALE: 1/4" = 1'-0"

Bill of Material

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>19'-6&quot; CURVED SWITCH COMPLETE</td>
</tr>
<tr>
<td>2.</td>
<td>19'-6&quot; GUARD RAIL WITH PLATES &amp; NO. 19 RAIL BRACES</td>
</tr>
<tr>
<td>3.</td>
<td>CLOSURE RAILS WITH BONDED INSULATED JOINTS 34 1/2&quot; AND 36 0&quot; (SEE NOTE 9)</td>
</tr>
<tr>
<td>4.</td>
<td>CLOSURE RAILS 28'-0&quot;, 34'-0&quot;, 36'-0&quot;, 38'-0&quot;</td>
</tr>
<tr>
<td>5.</td>
<td>CONCRETE SWITCH TIES AS LISTED (SEE NOTE 8)</td>
</tr>
<tr>
<td>6.</td>
<td>THERMITE WELDS</td>
</tr>
<tr>
<td>7.</td>
<td>4&quot; CONCRETE TIE (STD)</td>
</tr>
</tbody>
</table>

DRAWN BY:
CHECKED BY:
APPROVED BY:

C. GALLAGHER
H. XIANGDONG

THICKNESS AT POINT
2 1/2"

VERTICAL CLEARANCE
1 1/2"

VERTICAL CLEARANCE AT LOCK OUT POINT
1 1/2"

VERTICAL CLEARANCE AT GAUGE LINE POINT
1 1/2"

VERTICAL CLEARANCE AT LOCK OUT POINT AS SHOWN
1 1/2"

VERTICAL CLEARANCE AT GAUGE LINE POINT AS SHOWN
1 1/2"

VERTICAL CLEARANCE AT LOCK OUT POINT AS SHOWN (SHOP FABRICATED)
1 1/2"

VERTICAL CLEARANCE AT GAUGE LINE POINT AS SHOWN (SHOP FABRICATED)
1 1/2"

VERTICAL CLEARANCE AT LOCK OUT POINT AS SHOWN (SHOP FABRICATED)
1 1/2"

VERTICAL CLEARANCE AT GAUGE LINE POINT AS SHOWN (SHOP FABRICATED)
1 1/2"

VERTICAL CLEARANCE AT LOCK OUT POINT AS SHOWN (SHOP FABRICATED)
1 1/2"

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VERTICAL CLEARANCE AT LOCK OUT POINT AS SHOWN (SHOP FABRICATED)
1 1/2"

VERTICAL CLEARANCE AT GAUGE LINE POINT AS SHOWN (SHOP FABRICATED)
1 1/2"
NO. 10 DOUBLE Crossover DIRECT FixATION Plan

1. Rail and components conform to the 115 RE Rail section.
2. All rail indicated by solid lines in rail layout diagram are high-strength rails.
3. Dashed lines in rail layout diagram indicate continuously welded rail. All high-strength rails beyond turnout rail are non-continuous welded rails. Dimensions are not included in the bill of material on this drawing.
4. Closure rail lengths allow 7/8" for each thermoweld. Special configuration and dimensions of all rail fasteners and concrete plinth layout are for informational purposes only. Final rail dimensions and BIM models shall be by contractor after approval by Resident Engineer.
5. Standard special trackwork direct fixation fasteners shall be furnished where special trackwork fasteners are not required.
6. For details of transitioning of rail cant see STD-KAD401.

Bill of Material

<table>
<thead>
<tr>
<th>Description</th>
<th>DWG No.</th>
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</thead>
<tbody>
<tr>
<td>No. 10 Rail, Bound Manganese Frg, Complete</td>
<td>STD-KAD404</td>
</tr>
<tr>
<td>No. 10 Rail, ADJUStable Guard Rail Complete</td>
<td>STD-KAD306</td>
</tr>
<tr>
<td>Rail, Continuous Frg, Complete</td>
<td>STD-KAD304</td>
</tr>
<tr>
<td>Closure Rails with Bonded Insulated Joints 34'-2&quot; &amp; 36'-0&quot;</td>
<td>-</td>
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<tr>
<td>Closure Rails 28'-0&quot; &amp; 34'-2&quot; &amp; 36'-0&quot;</td>
<td>-</td>
</tr>
<tr>
<td>Stocks Rails 28'-0&quot; &amp; 36'-0&quot;</td>
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</tr>
<tr>
<td>Special Trackwork Fasteners</td>
<td>STD-KAD404</td>
</tr>
<tr>
<td>Bonded Insulated Joints (Shop Fabricated)</td>
<td>STD-KAD404</td>
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<tr>
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<td>STD-KAD404</td>
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<tr>
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<td>STD-KAD404</td>
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<tr>
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<td>STD-KAD404</td>
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<tr>
<td>SPECIAL TRACKWORK FASTENERS</td>
<td>STD-KAD404</td>
</tr>
<tr>
<td>STEEL WITHIN CROSSOVER UNIT</td>
<td>STD-KAD404</td>
</tr>
<tr>
<td>1 1/2&quot; SHAFT ROPE</td>
<td>STD-KAD404</td>
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<tr>
<td>Bonded Insulated Joint (Shop Fabricated)</td>
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<tr>
<td>1 1/2&quot; SHAFT ROPE</td>
<td>STD-KAD404</td>
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Sound Transit

Standard Drawing

No. 10 Double Crossover Direct Fixation

15'-9" Track Centers
GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. FOR MAINLINE OR OTHER DESIGNATED TURNOUTS, ENDS SHALL BE LEFT BLANK FOR WELDING.
3. THE DESIGN CONFIGURATION, PLANT LAYOUT AND DIMENSIONS OF DF RAIL FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY CONTRACTOR AFTER APPROVAL BY RESIDENT ENGINEER.

CROSSOVER SYMMETRICAL ABOUT CENTER AXIS.
CENTERLINE CROSSOVER 7'-5 3/8"
1/2" POINT OF END FROG
THEOR. PT 1/2" POINT OF FROG
10'-10" track centers
9'-6" 10'-0"
3'-7 3/8" 15'-0"
2'-0" 15'-8"
11°26'58"
3" MIN 3" MIN
31'-5 3/8" CENTER FROG
47'-7 3/8" LONG DIAGONAL (BETWEEN 1/2" PT. OF END FROG)
NO. 10 DIAMOND CROSSING
 SCALE 3/8" = 1'-0"
GENERAL NOTES:
1. RAIL AND COMPONENTS SHALL CONFORM TO THE 115 RE RAIL SECTION.
2. FOR MAINLINE OR OTHER DESIGNATED TURNOUTS, ENDS SHALL BE LEFT BLANK FOR WELDING.
3. THE DESIGN CONFIGURATION AND DIMENSIONS OF DF FASTENERS ARE FOR INFORMATIONAL PURPOSES ONLY. FINAL DETAILS, DIMENSIONS AND BILL OF MATERIAL WILL BE BY TURNOUT CONTRACTOR AFTER APPROVAL BY RESIDENT ENGINEER.
4. FOR DETAIL OF 16'-6" ADJUSTABLE GUARD RAIL, SEE DRAWING STD-KAD312.
5. FOR ADDITIONAL DETAIL OF NO. 10 FROG ON NO. 10 DOUBLE CROSSOVER INSTALLATION SEE DWG. KAD404 AND KAD405.
6. SPARE FROG SHALL BE PROVIDED WITH 12" LONGER TOE LENGTH AND 12" LONGER HEEL LENGTH. (SPARE FROG TOE LENGTH = 8'-5", SPARE FROG HEEL LENGTH = 12'-4")

No. 10 RAILBOUND MANGANESE FROG

BILL OF MATERIAL

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<tr>
<th>QTY</th>
<th>DESCRIPTION / PROCUREMENT MATERIAL</th>
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<tbody>
<tr>
<td>1</td>
<td>No. 10 RAILBOUND MANGANESE COMPLETE (PER AREMA STD PLAN 618-89)</td>
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<tr>
<td>A/R</td>
<td>SPECIAL TRACKWORK FASTENERS (H2)</td>
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<tr>
<td>A/R</td>
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SOUND TRANSIT

STANDARD DRAWING

TRACKWORK

NO. 10 RAILBOUND MANGANESE FROG

DIRECT FIXATION TRACK

DRAWN BY: C. GALLAGHER
CHECKED BY: J. BAILEY
APPROVED BY: J. BAILEY

CONTRACT No.: STANDARD-DRAWINGS - WORKING
FILE NAME: T:\_HQ_INTERNAL\EXHIBITS\GUIDANCE-STANDARD_DRAWINGS - WORKING\CIVIL-STRUCTURAL\2019\STANDARD\DRAWINGS\STD-KAD407.DWG
SOUND TRANSIT

STANDARD DRAWING

NO. 10 RAILBOUND MANGANESE FROG

DIRECT FIXATION TRACK
GENERAL NOTES:
1. FOR TRANSITION SLAB DETAILS, REFER TO CIVIL DRAWINGS.
2. FOR BALLASTED TRACK SECTION AND DETAILS, SEE TYPICAL TRACK SECTIONS DRAWINGS.
3. FOR PIPE OUTLETS IN BALLASTED TRACKS, REFER TO CIVIL DRAWINGS.
4. TRANSITION SLAB'S REINFORCEMENT SHALL BE ELECTRICALLY BONDED TO TRACK SLAB REINFORCEMENT.

BALLASTED / EMBEDDED TRACK TRANSITION PLAN

BALLASTED TRACK CONSTRUCTION
EMBEDDED TRACK CONSTRUCTION

TRANSITION BETWEEN BALLASTED TRACK AND EMBEDDED TRACK INSTALLATIONS

SCALE: 3/8" = 1'-0"

GENERAL NOTES:
1. FOR TRANSITION SLAB DETAILS, REFER TO CIVIL DRAWINGS.
2. FOR BALLASTED TRACK SECTION AND DETAILS, SEE TYPICAL TRACK SECTIONS DRAWINGS.
3. FOR PIPE OUTLETS IN BALLASTED TRACKS, REFER TO CIVIL DRAWINGS.
4. TRANSITION SLAB'S REINFORCEMENT SHALL BE ELECTRICALLY BONDED TO TRACK SLAB REINFORCEMENT.
CONCRETE TIE
CL TRACK
2:1 SLOPE
SUBBALLAST
12" MIN BALLAST
9'-6" WIDE TRANSITION SLAB
SCALE: 1" = 1'-0"
SECTION
4'-8 1/2" TRACK GAUGE
VARIES
EPOXY BOND BALLAST MAT TO CONCRETE SURFACE - PROTRUSIONS UP TO HOLD BALLAST
#4 @ 12" EW
1'-0" SHOULDER
#6 @ 12" EW
WIDTH VARIES
CL
EPOXY BOND BALLAST MAT TO CONCRETE SURFACE - PROTRUSIONS UP TO HOLD BALLAST
12" (MIN)
4" (MIN)

SCALE: 3/8" = 1'-0"
SECTION - TRANSITION SLAB BETWEEN BALLASTED AND DIRECT FIXATION TRACK
GRADE PIPE, 6" MIN, IS TO BE POSITIONED TO DRAIN STRUCTURE SURFACE WATER FROM O.F. CONCRETE SLAB - REVIEW PROFILE GRADING LINE TO AVOID POTENTIAL TRAPPED/STANDING WATER AREAS (SEE NOTE 3)

DRAIN PIPE (3" DIA MIN) IS TO BE POSITIONED AT TOP SURFACE OF STRUCTURE (SEE NOTE 3)
EPOXY BOND BALLAST MAT TO CONCRETE SURFACE PROTRUSIONS UP TO HOLD BALLAST

GENERAL NOTES:
1. FOR DIRECT FIXATION SECTION AND DETAILS, SEE DWGS STD-KAD120 AND STD-KAD121 AND THE TRACK CHARTS DRAWINGS.
2. FOR BALLASTED SECTION AND DETAILS, SEE TRACKWORK DRAWINGS AND THE TRACK CHARTS DRAWINGS.
3. FOR PIPE OUTLETS IN BALLASTED TRACK, REFER TO DRAINAGE DRAWINGS AND TYPICAL TRACK UNDERDRAIN DETAILS.

SECTION - TRANSITION SLAB BETWEEN BALLASTED AND DIRECT FIXATION TRACK
SCALE: 3/8" = 1'-0"
GENERAL NOTES:
1. FOR DIRECT FIXATION TRACK SLAB DETAILS REFER TO STRUCTURAL DRAWINGS.
2. FOR DIRECT FIXATION TRACK DETAILS, SEE DRAWINGS STD-KAD120 AND STD-KAD121.
3. FOR EMBEDDED TRACK DETAILS, SEE TRACKWORK DRAWINGS.
4. EXTEND RAIL BOOT 4" BEYOND FACE OF SECOND POUR CONCRETE PAVEMENT INFILL.

TRANSITION EMBEDDED TO DIRECT FIXATION TRACK PLAN

EMBEDDED TRACK CONSTRUCTION
DIRECT FIXATION TRACK CONSTRUCTION

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

TRANSITION SLAB

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

DIRECT FIXATION TRACK CONSTRUCTION
EMBEDDED TRACK CONSTRUCTION

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

PLINTH CONCRETE
(SEE NOTE 2)

ANCHOR PLATE (TYP)
PLASTIC TIE (TYP)

CL TRACK DRAIN

TRACK SLAB

TRACK DRAIN

T/R

#5 x 3'-0" DOWEL
@ 12" C.C.

EXPANSION JOINT

REINFORCEMENT PER CONTRACT DRAWINGS

4" (SEE NOTE 4)

8'-0"

TRACKWAY SLAB

CONCRETE PLINTH

1'-9"

1'-5"

5'-6"

6"

12"

@ 10" C.C.

EXPANSION JOINT

#5 x 3'-0" DOWEL

GENERAL NOTES:
1. FOR DIRECT FIXATION TRACK SLAB DETAILS REFER TO STRUCTURAL DRAWINGS.
2. FOR DIRECT FIXATION TRACK DETAILS, SEE DRAWINGS STD-KAD120 AND STD-KAD121.
3. FOR EMBEDDED TRACK DETAILS, SEE TRACKWORK DRAWINGS.
4. EXTEND RAIL BOOT 4" BEYOND FACE OF SECOND POUR CONCRETE PAVEMENT INFILL.
GENERAL NOTES:
1. FOR LIMITS OF RESTRAINING RAIL SEE TRACK CHART DRAWINGS.
2. SEPARATOR AND END BLOCK SHIMS ARE TO BE FABRICATED FOR THE APPROPRIATE FLANGEWAY WIDTH.
3. SEPARATOR BLOCKS ARE 4" LONG, AT 60" MAXIMUM SPACING O.C.
4. RESTRAINING RAIL JOINT BARS ARE 24" LONG, 4 HOLES.
5. RESTRAINING RAIL DRILLING IS 3 1/2" FROM END OF RAIL, 1.75" O.A.A., AT 3 1/32" A.B.R.
6. THREE (3) SHIMS WILL BE PROVIDED WITH EACH SEPARATOR AND END BLOCK TO PROVIDE 1 5/8" FLANGEWAY WITH NEW RAILS.
7. RESTRAINING RAIL IS PRE-DRILLED FOR INSTALLATION OF SEPARATOR BLOCKS. CONTRACTOR SHALL FIELD DRILL RUNNING RAIL TO MATCH HOLES IN RESTRAINING RAIL.
8. FOR RESTRAINING RAIL TYPICAL PRECURVING DETAIL, SEE DRAWING STD-KAD015.
9. CONCRETE TIE SPACING SHALL BE 27" OR LESS ON BALLASTED TRACK CONSTRUCTION.
10. RESTRAINING RAIL TAPERED END IS NOT REQUIRED ON EMBEDDED TRACK CONSTRUCTION.

SEPARATOR BLOCK ASSEMBLY - SECTION A

RESTRAINING RAIL JOINT ASSY - SECTION B

END BLOCK - SECTION C
GENERAL NOTES:
1. JOINT BAR DIMENSIONS ARE FOR 115RE RAIL. FOR ADDITIONAL INFORMATION ON THE OTHER RAIL SECTION AND JOINT BARS, SEE AREMA MANUAL, VOL 1 CH. 4.
2. ALL STANDARD JOINTS FOR 115RE RAIL SHALL USE 1 1/8" DIAMETER ELLIPTICAL-NECKED FASTNERS. COMPLETE WITH NUTS AND WASHERS.
3. THE APPLIED BOLT TENSION SHALL BE BETWEEN 20,000 LBS AND 30,000 LBS PER BOLT.
4. ALL HOLES DRILLED WITH A DRILL BIT OR SIMILAR METHOD SHALL BE GROUND AND FILED SMOOTH SO AS TO KEEP NO ROUGH EDGES BEFORE ASSEMBLING A BONDED INSULATED JOINT. MAKE SURE RAIL AND JOINT BARS ARE CLEAN AND FREE OF METAL FILINGS.
5. SPRING CLIPS SHALL BE MODIFIED AS REQUIRED TO AVOID CONTACT BETWEEN RAIL CLIP AND JOINT BAR FOR INSULATED JOINTS.
6. FOR BALLASTED AND DIRECT FIXATION TRACK CONSTRUCTION SUSPENDED ALL BONDED INSULATED JOINTS BETWEEN TIES OR DIRECT FIXATION FASTNERS, AS APPLICABLE.
7. FOR EMBEDDED TRACK CONSTRUCTION BONDED INSULATED JOINT AND RAIL SHALL BE ENCASED IN ELASTOMERIC GROUT FOR THE FULL LENGTH AS SHOWN HEREIN.
8. SEE SPECIFICATIONS FOR RAIL GAP DURING INSTALLATION.
9. RAIL HOLES FOR STANDARD JOINT BARS SHALL BE 1-1/4" DIAMETER.

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6. FOR BAL...
GENERAL NOTES:
1. THE BUMPING POST ASSEMBLY SHALL BE CONNECTED TO THE RUNNING RAIL BY THE USE OF RAIL CLAMPS AND BE SUITABLE FOR INSTALLATION IN BALLASTED TRACK CONSTRUCTION.

BILL OF MATERIAL PER POST

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BUMPING POST ASSEMBLY COMPLETE</td>
</tr>
<tr>
<td>1</td>
<td>ANTI-CLIMBER ADAPTER</td>
</tr>
<tr>
<td>AS REQ'd</td>
<td>250 KCMIL CABLE</td>
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<tr>
<td>AS REQ'd</td>
<td>3/4&quot; Ø GROUND ROD</td>
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<tr>
<td>AS REQ'd</td>
<td>EXOTHERMIC WELDING</td>
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GENERAL NOTES:

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SOUND TRANSIT

STANDARD DRAWING

TRACKWORK

BUMPING POST BALLASTED TRACK

(115RE)
GENERAL NOTES:
1. THE BUMPING POST ASSEMBLY SHALL BE CONNECTED TO THE RUNNING RAIL BY THE USE OF RAIL CLAMPS AND BE SUITABLE FOR INSTALLATION IN DIRECT FIXATION TRACK CONSTRUCTION.

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SOUND TRANSIT
STANDARD DRAWING
TRACKWORK
BUMPING POST
DIRECT FIXATION TRACK
(115RE TEE RAIL)

GENERAL NOTES:
1. THE BUMPING POST ASSEMBLY SHALL BE CONNECTED TO THE RUNNING RAIL BY THE USE OF RAIL CLAMPS AND BE SUITABLE FOR INSTALLATION IN DIRECT FIXATION TRACK CONSTRUCTION.

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SOUND TRANSIT
STANDARD DRAWING
TRACKWORK
BUMPING POST
DIRECT FIXATION TRACK
(115RE TEE RAIL)

GENERAL NOTES:
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SOUND TRANSIT
STANDARD DRAWING
TRACKWORK
BUMPING POST
DIRECT FIXATION TRACK
(115RE TEE RAIL)

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SOUND TRANSIT
STANDARD DRAWING
TRACKWORK
BUMPING POST
DIRECT FIXATION TRACK
(115RE TEE RAIL)

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SOUND TRANSIT
STANDARD DRAWING
TRACKWORK
BUMPING POST
DIRECT FIXATION TRACK
(115RE TEE RAIL)

GENERAL NOTES:
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115 RE / RI 59N COMPROMISE RAIL

ELEVATION

115 RE RAIL

LEFT HAND

FLANGE WAY

RIGHT HAND

115 RE RAIL

TRANSITION RAIL

Scale: 3" = 1'-0"
### Foundation

- **1'-0"Ø x 4'-0" deep concrete foundation**
- **1/2" min. non-shrink grout**
- **3'-11 1/2" top of concrete foundation**
- **4" x 4" x 4" HSS post centered on 12" PL**
- **3 1/2" 1" x 2" x 1/4" handle (shown for right-hand installation)**
- **2 1/2" 1" sign bracket**
- **1/2" max.**
- **1'-6" 1" sign bracket**
- **3/16" 48" trackway**

### Key Notes:

1. **Recess backplate. Anchor to concrete foundation. Finish to match adjacent surfaces.** Fill recess with concrete Class 6 (04) per City of Seattle specifications.
2. **Ground all metal to existing ground grid.**
3. **Finish to be shop or factory applied. Finish shall be galvanized with black vinyl coating.**
4. **Gates shall swing open away from trackway and return to their closed position through spring hinge or gravity operation. Gates shall have a take a maximum of 2 lbs to open.**

### PEDESTRIAN CROSSING SWING GATE INSTALLATION

- **HSS 4 x 4 x 5/8"**
- **4" x 4" x 4" HSS post embedded 12" into concrete foundation.**
- **Protect tactile pavers (typ).**
- **PEDESTRIAN APPROACH**
- **Remove 12" x 12" area for gate post installation.**

---

**Sound Transit Standard Drawing**

**Civil**

**Pedestrian Crossing Swing Gate**

**Supervisor:** C. Gallager

**Engineer:** C. Brown

**Contract No.:**

**Filename:** T:\_HQ_INTERNAL\EXHIBITS\GUIDANCE-STANDARD_DRAWINGS - WORKING\CIVIL-STRUCTURAL\2019\STANDARD\DRAWINGS\STD-CRD110.DWG

**Scale:**

**Drawing No.:**

**Facility ID:**

**SUBMITTED BY:**

**CHECKED BY:**

**APPROVED BY:**

**DATE: 8/2019**

**NEW - CIVIL DIRECTIVE & STANDARD DWGS**
Notes:
1. All wood to be pre-treated.
2. Distance between frame braces should not be more than 2'-0".
3. Engineer's Field Office Sign shall be mounted similarly to General Construction Sign, except that Field Office Sign may be Wall-Hung.
4. Wall-Hung Signs shall be secured at bottom as well as top.

Sign Assembly Detail

General Notes:
1. Digital image graphic files for construction signs are to be secured from Sound Transit and sign placement on the site to be in consultation with Sound Transit prior to placement.
2. For number of sign see special provisions.
3. Image provided by Sound Transit shall be printed onto 3M exterior grade, self-adhesive, UV-protected vinyl or equal.

Letters shall be Helvetica medium, and shall be blue, background shall be white.

For more information call the 24-hour Construction hotline at (888)298-2395 or visit www.soundtransit.org
<table>
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<tr>
<th>UTILITY SYMBOLS</th>
<th>PROPOSED</th>
<th>EXISTING</th>
<th>UTILITY LINE</th>
<th>PROPOSED</th>
<th>UTILITY GENERAL NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACILITY TO BE ABANDONED</td>
<td>- - - - - - - -</td>
<td>- - - - - - - -</td>
<td>CABLE TV UNDERGROUND</td>
<td>- - - - - - - -</td>
<td>1. WHERE SPACE ALLOWS, UTILITY FACILITIES ARE SHOWN TO SCALE.</td>
</tr>
<tr>
<td>FACILITY TO BE REMOVED</td>
<td>- - - - - - - -</td>
<td>- - - - - - - -</td>
<td>CABLE TV OVERHEAD</td>
<td>- - - - - - - -</td>
<td>2. THE LOCATIONS OF THE EXISTING UTILITIES ARE APPROXIMATE AND WERE COMPILED FROM INFORMATION PROVIDED BY PUBLIC AND PRIVATE UTILITY AGENCIES, LIMITED FIELD SURVEY, AND SITE VERIFICATION. CONTRACTOR SHALL VERIFY AND UPDATE THIS INFORMATION AND PERFORM DETAILED SURVEY AS REQUIRED TO DETERMINE THE ACTUAL LOCATIONS OF UTILITY FACILITIES.</td>
</tr>
<tr>
<td>WATER METER</td>
<td>- - - - - - - -</td>
<td>- - - - - - - -</td>
<td>ELECTRIC UNDERGROUND</td>
<td>- - - - - - - -</td>
<td>3. MAINTAIN BUILDING SERVICE CONNECTIONS TO ABUTTING PROPERTIES AT ALL TIMES. WATER SERVICES ARE NOT SHOWN.</td>
</tr>
<tr>
<td>WATER MANHOLE</td>
<td>- - - - - - - -</td>
<td>- - - - - - - -</td>
<td>ELECTRIC/TELEPHONE UNDERGROUND</td>
<td>- - - - - - - -</td>
<td>4. THESE SYMBOLS AND ABBREVIATIONS HAVE BEEN ADOPTED FOR USE IN SOUND TRANSIT DESIGNS FOR THE LIGHT RAIL TRANSIT SYSTEM AND MAY NOT BE IN COMPLETE AGREEMENT WITH THOSE SYMBOLS AND ABBREVIATIONS NORMALLY UTILIZED BY INDIVIDUAL UTILITY COMPANIES, AND LOCAL JURISDICTIONS.</td>
</tr>
<tr>
<td>THRUST BLOCK</td>
<td>- - - - - - - -</td>
<td>- - - - - - - -</td>
<td>ELECTRIC/TELEPHONE OVERHEAD</td>
<td>- - - - - - - -</td>
<td>5. ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM, 1988 (NAVD88). FOR LOCAL JURISDICTIONS.</td>
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<tr>
<td>FIRE HYDRANT</td>
<td>- - - - - - - -</td>
<td>- - - - - - - -</td>
<td>OIL PIPELINE</td>
<td>- - - - - - - -</td>
<td>6. WHERE POOTHILING HAS BEEN PERFORMED TO DETERMINE THE DEPTH TO EXISTING UTILITIES, THE DEPTH OF COVER ALONG WITH THE DATE THAT THE POOTHILING WAS PERFORMED IS NOTED ON THE DRAWING.</td>
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<tr>
<td>EMPTY CASING (CAPPED)</td>
<td>- - - - - - - -</td>
<td>- - - - - - - -</td>
<td>GAS</td>
<td>- - - - - - - -</td>
<td>7. UTILITY LOCATES CALL MINIMUM 2 AND MAXIMUM 10 BUSINESS DAYS BEFORE YOU DIG 1-800-424-5555</td>
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<tr>
<td>GATE VALVE</td>
<td>- - - - - - - -</td>
<td>- - - - - - - -</td>
<td>FIBER OPTIC</td>
<td>- - - - - - - -</td>
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TRAFFIC DIRECTION

PAVEMENT MARKING NOTE REFERENCE

EXISTING SIGN TO REMAIN
EXISTING SIGN TO BE REMOVED
EXISTING SIGN TO BE RELOCATED
EXISTING SIGN TO BE INSTALLED
NEW SIGN AND POST

TRAFFIC DIRECTION

LEGEND

PAVEMENT MARKING AND SIGNING

PROPOSED TRAFFIC SIGNAL

1. All traffic items, such as permanent and temporary pavement marking, signing, traffic signal systems and traffic control, shall conform to the requirements and specifications of the local jurisdiction, Washington State Department of Transportation, and the Manual on Uniform Traffic Control Devices (MUTCD) latest edition.

2. Materials and equipment used in each installation and/or modification of pavement markings, signs, and traffic signal systems shall conform with the latest specifications contained in the standards of the local jurisdiction at the location of the installation.