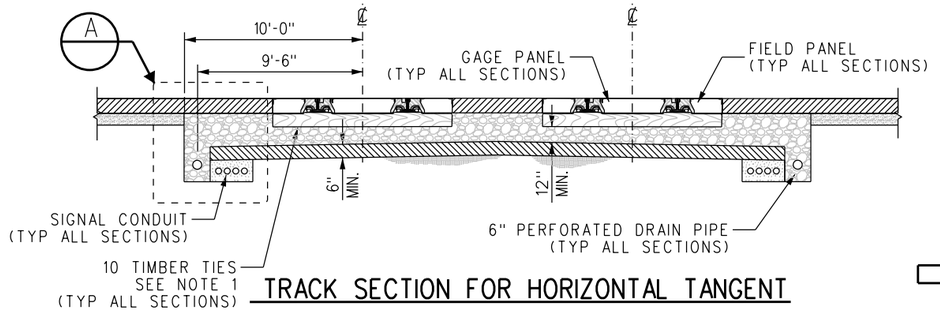
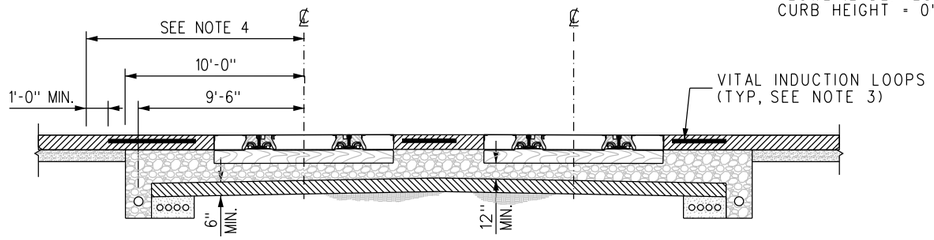
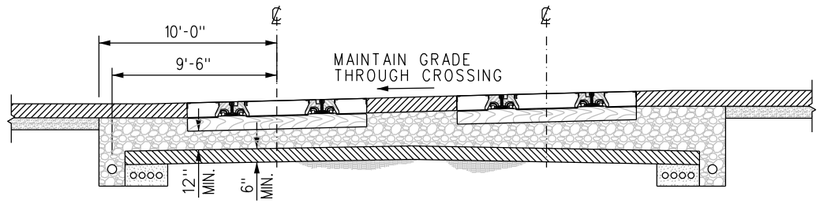


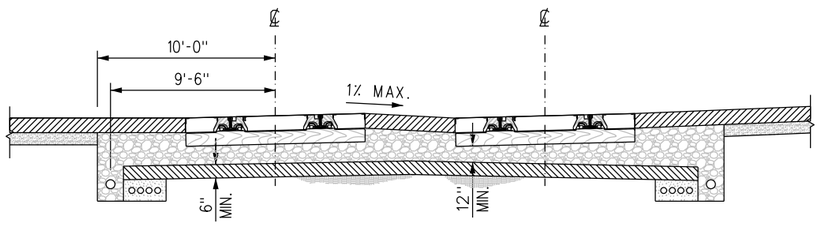
TRACK SECTION FOR HORIZONTAL TANGENT



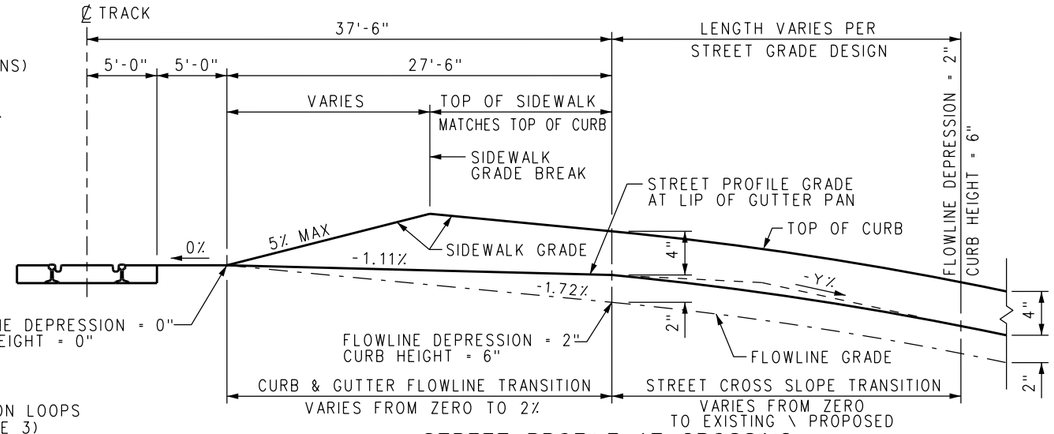
TRACK SECTION FOR HORIZONTAL TANGENT AT CROSSING WITH EXIT GATES AND VITAL INDUCTION LOOPS



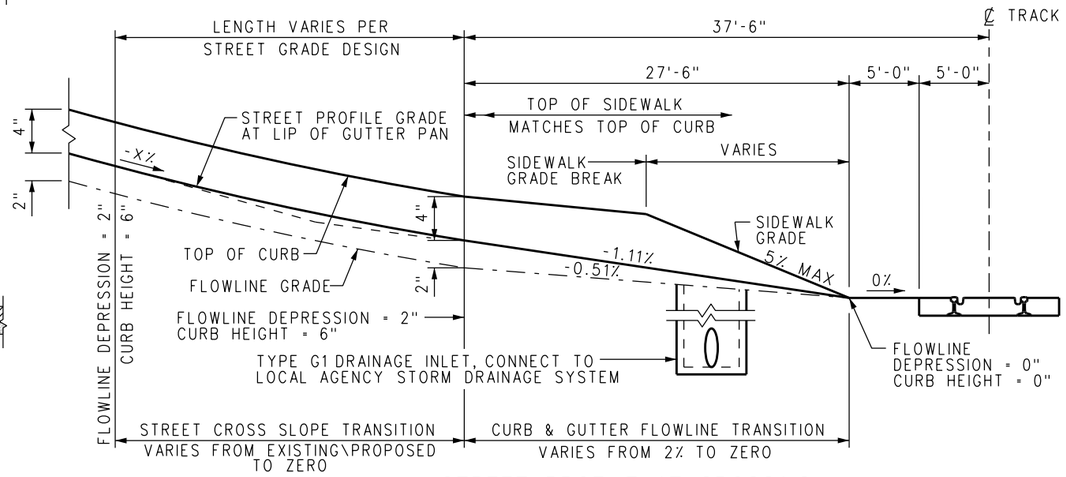
TRACK SECTION FOR SUPERELEVATED CURVE (RAILS IN THE SAME PLACE)



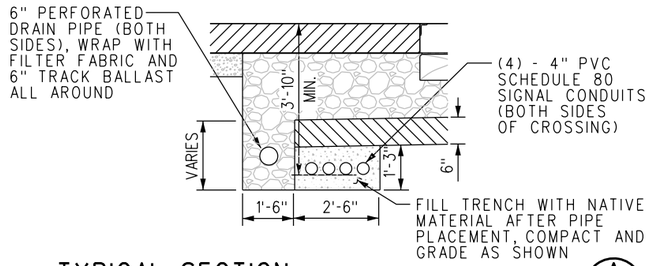
TRACK SECTION FOR SUPERELEVATED CURVE (RAILS NOT IN SAME PLANE)



STREET PROFILE AT CROSSING STREET GRADE DESCENDS AWAY FROM TRACKS



STREET PROFILE AT CROSSING STREET GRADE DESCENDS TOWARDS TRACKS



TYPICAL SECTION DRAINAGE PIPE AND CONDUIT DETAILS (A)

NOTES:

1. REFER TO ES4201 FOR GRADE CROSSING TRACK COMPONENTS.
2. PAVEMENT OUTSIDE OF RAILROAD TRACK SHALL BE CONSTRUCTED AS PER APWA STANDARD 133-2.
3. VITAL INDUCTIVE LOOPS SHALL BE INSTALLED PER ES8405.
4. ASPHALT PAVEMENT JOINT SHALL BE A MINIMUM OF 1' BEYOND THE END OF THE VITAL INDUCTIVE LOOP.

LEGEND

- ASPHALT PAVEMENT
- CRUSHED MISCELLANEOUS BASE
- BALLAST
  12" MIN. BENEATH BOTTOM OF TIE
- COMPACTED HOT MIX ASPHALT (HMAC) UNDERLAYMENT
  HMAC UNDERLAYMENT SHALL BE IN ACCORDANCE WITH SCRRA'S STANDARD SPECIFICATION 32 12 00
  COMPACT WITH STEEL VIBRATORY ROLLER TO 95% RELATIVE COMPACTION.
  CROWN AT CENTER OF TRACKS WITH 2% SLOPE AWAY FROM CENTER OF TRACKS.
  PLACE HMAC IN TWO 3" THICK LIFTS.
- SUBGRADE ROADBED
  SCARIFY 6" DEEP AND COMPACT WITH STEEL VIBRATORY ROLLER TO 90% RELATIVE COMPACTION.

REV.	DATE	DESCRIPTION	DES.	ENG.
A	10-22-18	REVISED SECTIONS, NOTES AND ADDED LEGEND	AC	AT

DRAWN BY: HDR DATE: 03/31/2011

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ENGINEERING STANDARDS

HIGHWAY-RAIL GRADE CROSSING
TYPICAL SECTIONS

STANDARD 4001
SCALE: NTS
REVISION A SHEET 1 OF 1
CADD FILE: ES4001

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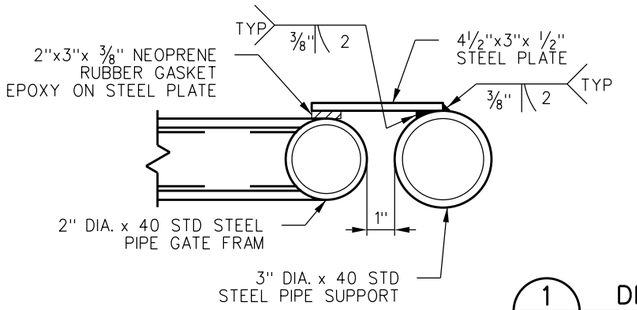
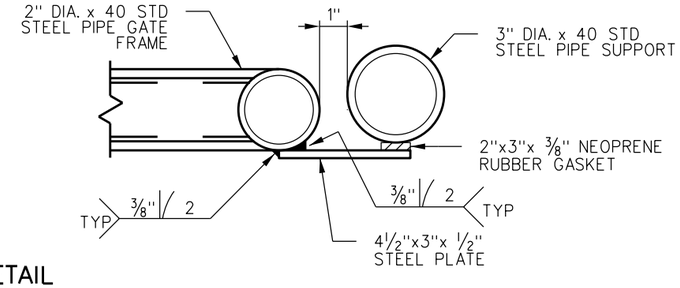
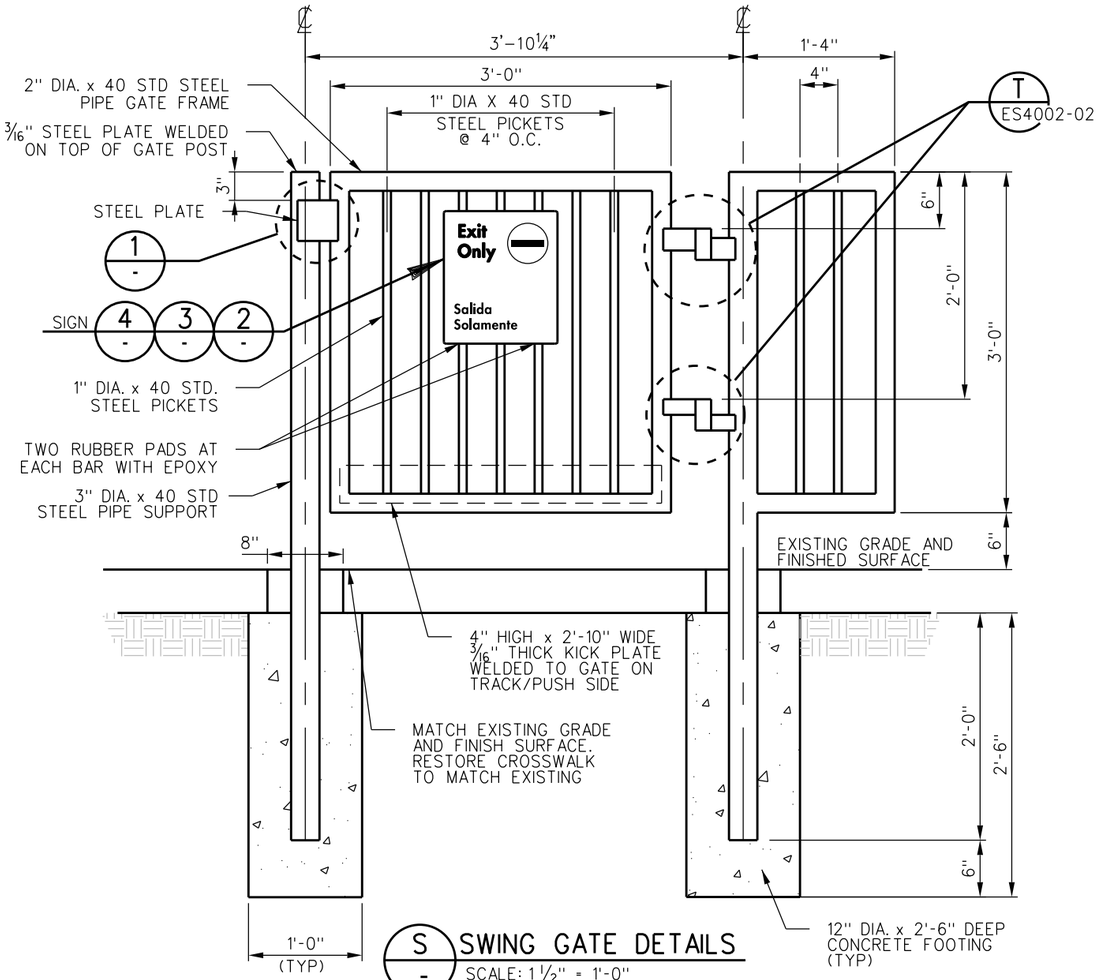


1 - DETAIL
NOT TO SCALE





S - SWING GATE DETAILS
SCALE: 1 1/2" = 1'-0"

APPLICATION OF SWING GATES:

1. ENTRY/EXIT SWING GATE:
   - -NOT USED IN CONJUNCTION WITH ACTIVE WARNING PEDESTRIAN GATE
   - -INTENDED TO SLOW PEDESTRIANS AND TO ENCOURAGE THEM TO STOP AND LOOK BOTH WAYS DOWN THE TRACK FOR APPROACHING TRAINS BEFORE ENTERING THE CROSSING APPROACHING TRAINS BEFORE ENTERING THE CROSSING
   - -SIGNAGE ON DETAIL 2, "PULL TO OPEN" AND "LOOK" SIGN TO BE INSTALLED ON APPROACH SIDE OF GATE
   - -SIGNAGE ON DETAIL 4, "PUSH TO OPEN" TO BE INSTALLED ON TRACK SIDE OF GATE
2. EMERGENCY EXIT GATE:
   - -USED IN CONJUNCTION WITH ACTIVE WARNING PEDESTRIAN GATE
   - -INTENDED AS AN ESCAPE ROUTE FOR PEDESTRIANS OCCUPYING THE CROSSING WHEN THE ACTIVE WARNING PEDESTRIAN GATE IS ACTIVATED
   - -SIGNAGE ON DETAIL 3, "EXIT ONLY" ON APPROACH SIDE OF GATE
   - -SIGNAGE ON DETAIL 4, "PUSH TO OPEN" TO BE INSTALLED ON TRACK SIDE OF GATE

CONSTRUCTION NOTES:

1. A DUPLEX SYSTEM (PAINT OR POWDER COAT OVER GALVANIZING) SHALL BE USED FOR THE SWING GATE ASSEMBLY AND HAND RAILING. AFTER FABRICATION AND SURFACE PREPARATION, THE SWING GATE ASSEMBLY AND HANDRAILING SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 (PRODUCTS) AND A153 (HARDWARE). COATING WHICH HAS BEEN SHOP OR FIELD CUT, BURNED BY WELDING OR DAMAGED SHALL BE REPAIRED OR RE-COATED IN ACCORDANCE WITH ASTM A780.
2. AFTER CLEANING AND PROFILING GALVANIZED SURFACE IN ACCORDANCE WITH ASTM D6386, THE SWING GATE ASSEMBLY AND HANDRAILING SHALL BE PAINTED OR POWDERCOATED WITH A ZINC-RICH PRIME COAT, HIGH PERFORMANCE FIRST COAT AND ACRYLIC TOP COAT. THE PAINT COLOR SHALL BE RAL 6005 UNLESS NOTED OTHERWISE.
3. SWING GATE WILL BE INSTALLED AFTER SIDEWALK HAS BEEN CONSTRUCTED.

PEDESTRIAN SWING GATES HAVE TWO DISTINCT FUNCTIONS AS DEFINED BELOW. THE APPROPRIATE SIGNAGE SHALL BE INSTALLED ACCORDING TO THE APPLICATION OF THE SWING GATE.

Pull Gate To Open

Jale para abrir

LOOK

NOTES:
1. FOR SIGN DIMENSIONS AND DETAILS, SEE ES3318 AND ES3319.
2. LOOK SIGN MAY BE MOUNTED ON SEPARATE POST PER ES3319.

2 - APPROACH SIDE ENTRY/EXIT GATE
SCALE: 1 1/2" = 1'-0"

Exit Only

Salida Solamente

3 - APPROACH SIDE EMERGENCY EXIT GATE
SCALE: 3/4" = 1'-0"

Push Gate To Open

Empuje para abrir

4 - TRACK SIDE EMERGENCY EXIT GATE AND ENTRY/EXIT GATE
SCALE: 3/4" = 1'-0"

REV.	DATE	DESCRIPTION	DES.	ENG.
E	10-09-20	REVISE SWING GATE DETAIL	AC	JMM
D	10-22-18	REVISED DETAILS AND NOTES	AC	AT
C	10-14-16	REVISED DETAIL 2 NOTE	AC	NDP
B	11-01-13	ADD NOTE 3, REVISE FOOTINGS	AC	NDP
A	5/22/12	ADD KICK PLATE TO DETAIL S	AC	NDP

DRAWN BY: A. CARLOS DATE: 03/31/2011

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ENGINEERING STANDARDS

PEDESTRIAN SWING GATE DETAILS

STANDARD 4002
SCALE: AS NOTED
REVISION E SHEET 1 OF 2
CADD FILE: ES4002-01

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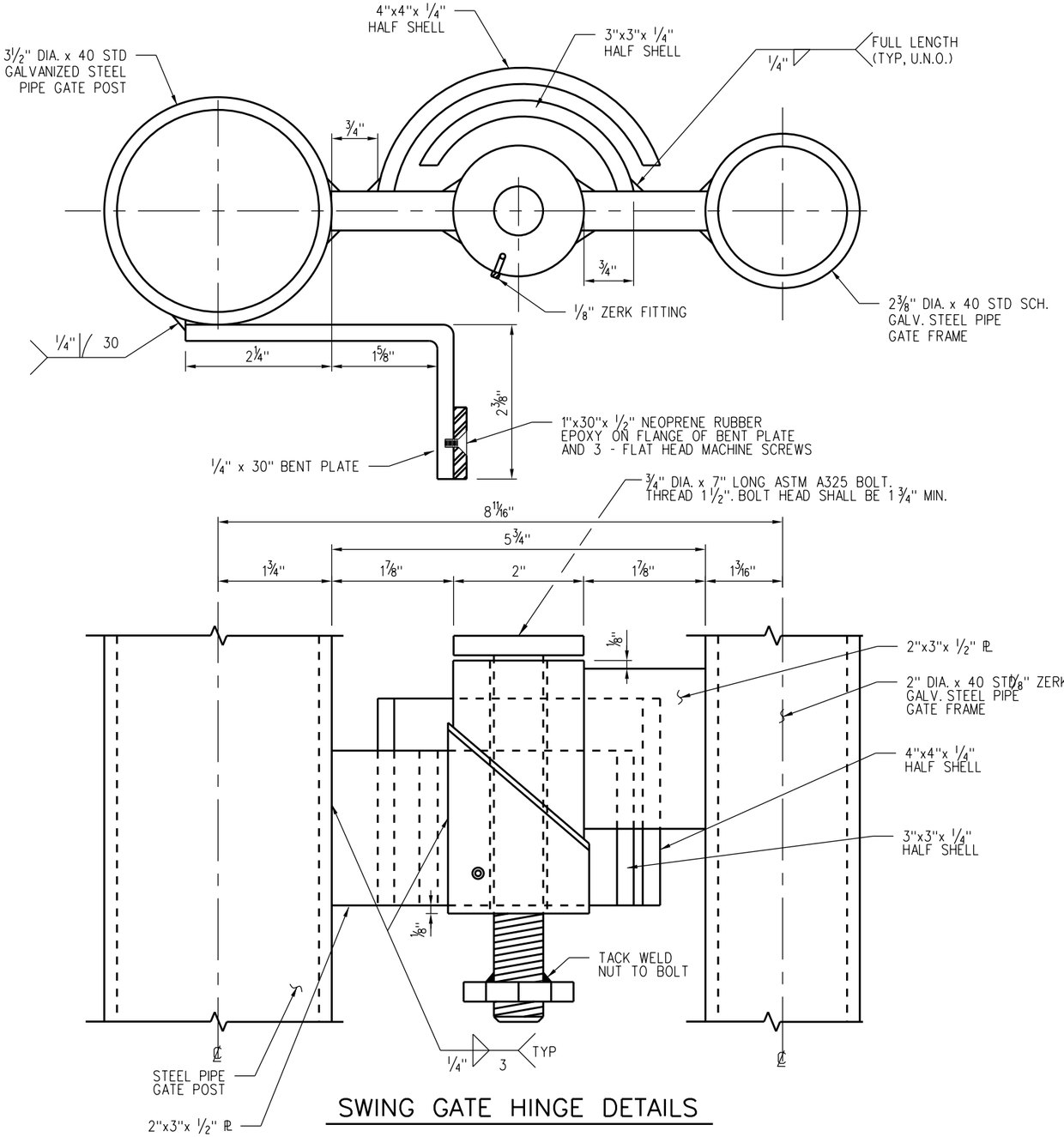
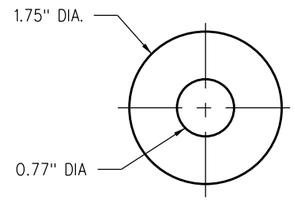
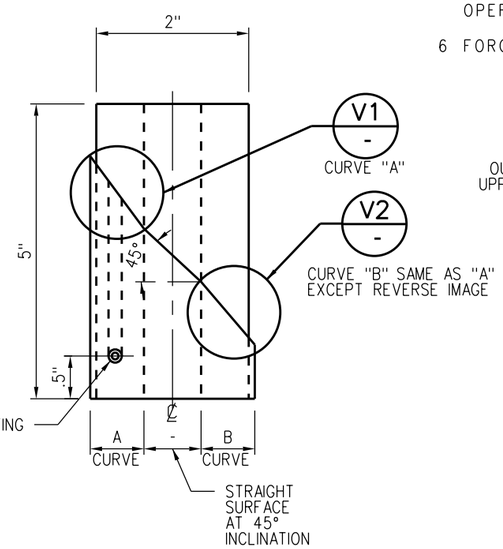
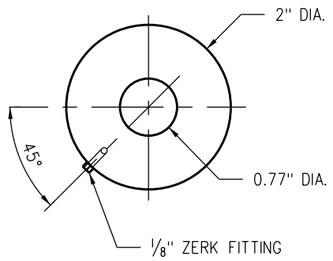


SWING GATE HINGE DETAILS

T - DETAIL T







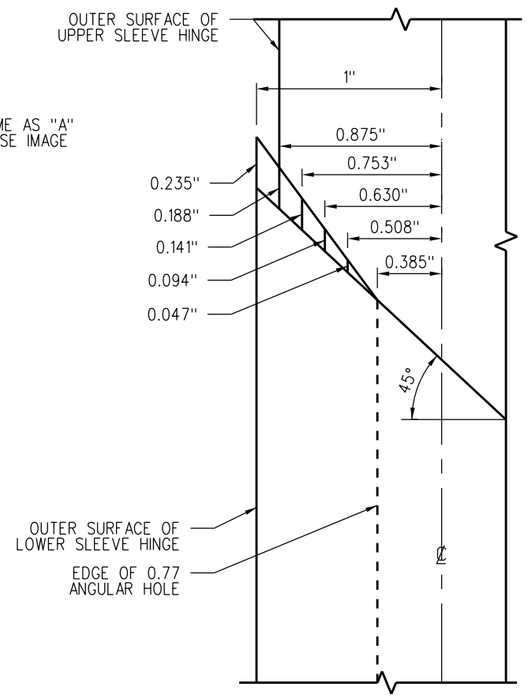
HINGE SLEEVE DETAILS

U - DETAIL U

NOTES:

1. HINGE SLEEVE GRADE OF STEEL TO BE ASTM A441 HARDENED STEEL.
2. ALL HINGE SLEEVE DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.
3. HINGE SLEEVE MACHINING SHALL BE PRECISION TO THE NEAREST THOUSANDTH OF AN INCH (0.001).
4. ROTATING CURVED CONTACT SURFACES OF HINGE SLEEVE, (CURVE SURFACES 'B' AND 'A') TO BE POLISHED.
5. CONSTRUCT AND ASSEMBLE ONE GATE FOR TESTING, SCRRA TO WITNESS GATE TESTING AND APPROVE GATE OPENING AND CLOSING OPERATION BEFORE ANY WORK DONE AT ANY STATION PEDESTRIAN CROSSING. IF GATE OPERATION IS NOT APPROVED BY SCRRA, MODIFY GATE AND GATE HINGE AS NECESSARY AND REPEAT TESTING UNTIL GATE OPERATION IS APPROVED BY SCRRA.

6 FORCE REQUIRED TO OPERATE SHALL BE 22N (5 LBS) MAX.



HINGE SLEEVE CURVE DETAIL

CURVE "B" SAME AS "A" EXCEPT REVERSE IMAGE

V - DETAIL V1 & V2

REV.	DATE	DESCRIPTION	DES.	ENG.
B	10-09-20	REVISE SWING GATE HINGE DETAILS	AC	JMM
A	9-21-10	REVED NOTE DETAIL "T" AND NOTE	AC	NDP

DRAWN BY: A. CARLOS DATE: 03/31/2011

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ENGINEERING STANDARDS

PEDESTRIAN SWING GATE DETAILS

STANDARD 4002
SCALE: NTS
REVISION B SHEET 2 OF 2
CADD FILE: ES4002-02

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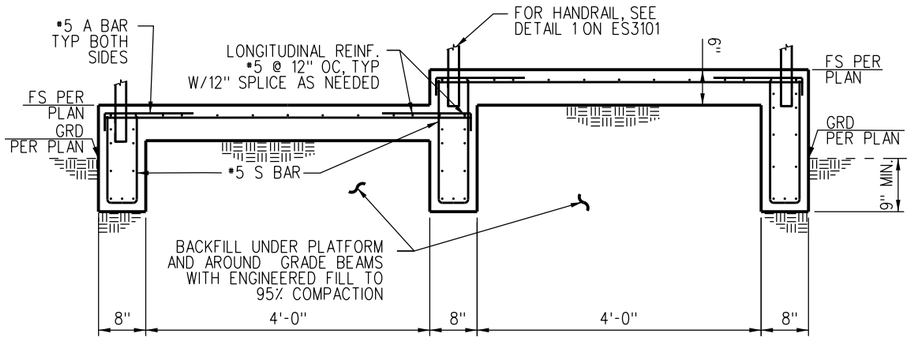
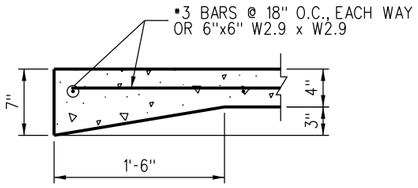


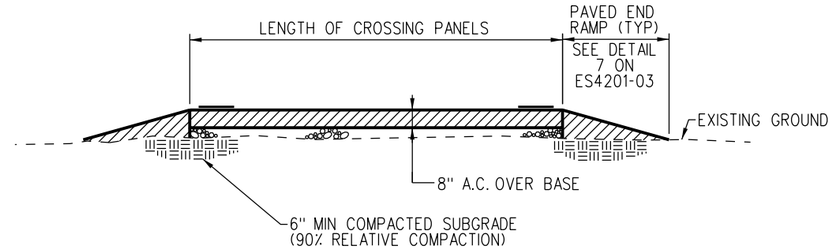
ADA RAMP SECTION 6.

SCALE: NTS



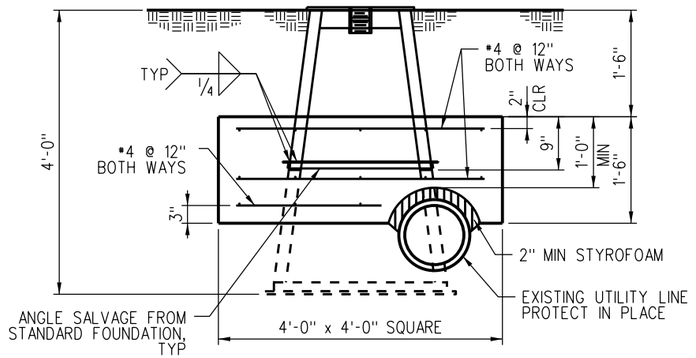
SIDEWALK & THICKENED EDGE DETAIL AT DRIVEWAY 7.

SCALE: NTS



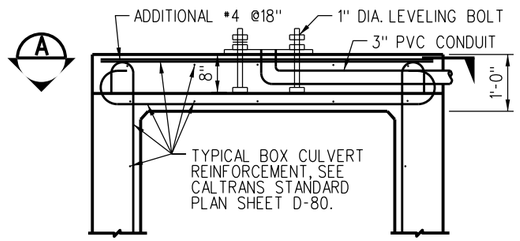
SECTION AT PED CROSSING BETWEEN CONCRETE PANELS 8.

SCALE: NTS



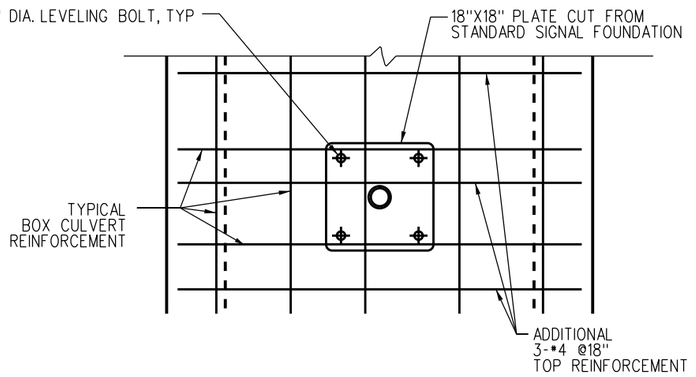
SIGNAL FOUNDATION ON UTILITY 4.

SCALE: 3/4" = 1'-0"



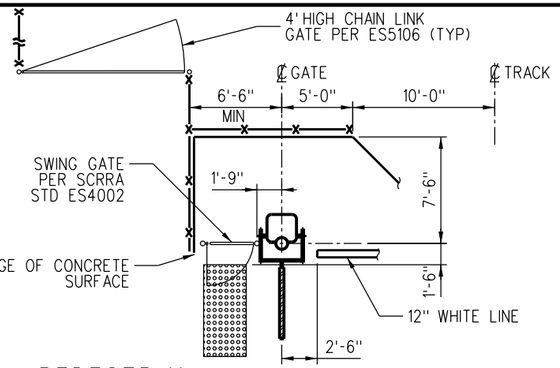
SIGNAL FOUNDATION ON CONCRETE BOX 5.

SCALE: 3/4" = 1'-0"



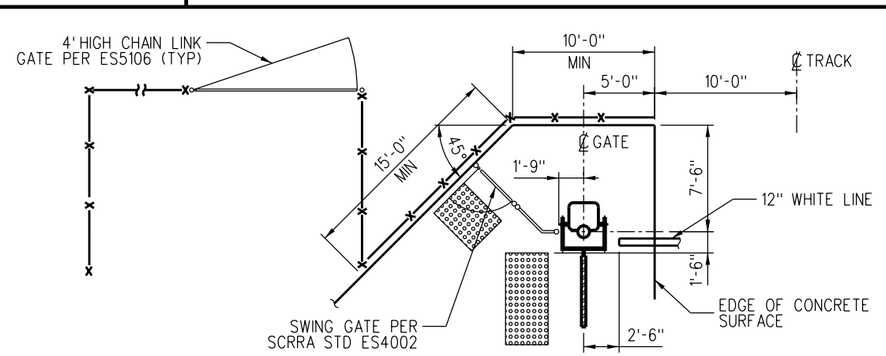
SECTION A.

SCALE: NTS



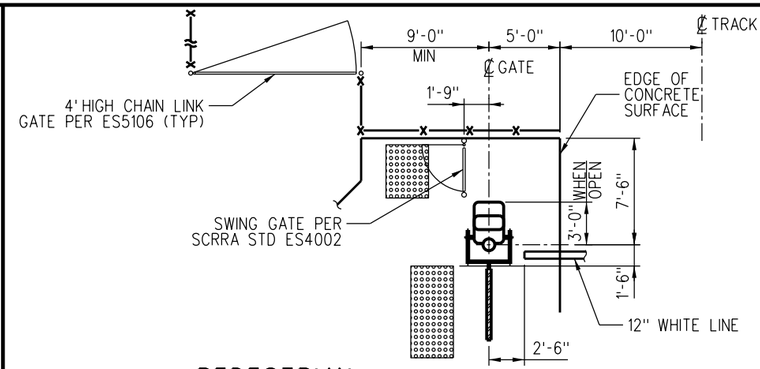
PEDESTRIAN GATE LAYOUT 1.

SCALE: 3/16" = 1'-0"



PEDESTRIAN GATE LAYOUT 2.

SCALE: 3/16" = 1'-0"



PEDESTRIAN GATE LAYOUT 3.

SCALE: 3/16" = 1'-0"

REV.	DATE	DESCRIPTION	DES.	ENG.
A	10/02/18	REVISED GATE CALLOUTS	AC	AT

DRAWN BY: A. CARLOS DATE: 09/20/16

PRINCIPAL ENGINEER, DESIGN & STANDARDS

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SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
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ENGINEERING STANDARDS

PEDESTRIAN GATE LAYOUT, SIGNAL FOUNDATION AND ADA RAMP DETAILS

STANDARD 4003
SCALE: AS NOTED
REVISION A SHEET 1 OF 1
CADD FILE: ES4003

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NOTES:

PEDESTRIAN CROSSING SHOULD PROVIDE A SAFE ENVIRONMENT FOR PEDESTRIANS, BICYCLISTS AND PERSONS WITH DISABILITIES WHILE NAVIGATING THE CROSSING. DURING THE DESIGN OF THE CROSSING, THE DESIGN ENGINEER SHALL CONSIDER FACTORS SUCH AS PRESENT OF STATIONS IN THE VICINITY, ESTABLISHMENT OF QUIET ZONES, NUMBER OF TRACKS, TRAVEL DISTANCE ACROSS TRACKS TO REACH A SAFE REFUGE LOCATION, SKEW AND VERTICAL PROFILE ACROSS THE CROSSING, VISIBILITY RESTRICTIONS, VOLUME OF PEDESTRIAN ACTIVITY, CURRENT AND FUTURE DEVELOPMENT IN AND AROUND THE CROSSING AND RIGHT-OF-WAY. IN THE DISCUSSION OF THE DESIGN CONSIDERATIONS, THE TERM "FULL PEDESTRIAN TREATMENTS" SHALL INCLUDE SIGNAGE, MARKINGS, CHANNELIZATION FENCING, ACTIVE WARNING DEVICES WITH GATES AND SWING GATES. SCRRA's POLICY AND PRACTICE IS TO APPLY FULL PEDESTRIAN TREATMENTS TO HIGHWAY RAIL CROSSINGS. THE ATTACHED FIGURE GRAPHICALLY SHOWS THE DECISION STEPS THAT SHALL BE FOLLOWED DURING THE DESIGN OF THE PEDESTRIAN TREATMENT AT CROSSINGS. THIS PROCESS SHALL BE SIMILAR FOR ANY TYPE OF PEDESTRIAN CROSSING AND DEFINES THE SCRRA RECOMMENDED APPROACH TO THE APPLICATION OF PEDESTRIAN TREATMENTS AT CROSSINGS.

DECISION POINT 1

THE EXISTENCE OF PEDESTRIAN ACTIVITY SHALL BE DETERMINED. THIS INCLUDES SIDEWALKS LEADING UP TO THE RIGHT-OF-WAY, OR EVIDENCE OF PEDESTRIANS CROSSING AT THE LOCATION. SCRRA STANDARDS AND CRITERIA CALL FOR THE ADDITION OF PEDESTRIAN TREATMENTS IF PEDESTRIANS UTILIZE THE AREA FOR CROSSING. THE FOLLOWING ACTIONS SHALL BE TAKEN WHEN EVIDENCE OF ACTIVITY EXISTS WITHOUT PEDESTRIAN FACILITIES:

- DETERMINE IF THE PEDESTRIAN ACTIVITY IS LEGAL.
- WORK WITH THE LOCAL MUNICIPALITY TO IMPLEMENT SIDEWALKS.
- IF WARRANTED, THE DESIGN SHALL PROVIDE SIDEWALKS OVER THE RIGHT-OF-WAY.
- IF WARRANTED, TAKE STEPS TO PREVENT POSSIBLE TRESPASSING.

DECISION POINT 2

IF THE CROSSING IS TO BE INCLUDED IN A QUIET ZONE, THE CROSSING SHALL RECEIVE FULL TREATMENT FOR SAFETY ENHANCEMENTS AND QUIET ZONE SIGNAGE SHALL BE INSTALLED.

DECISION POINT 3

THE TYPE OF PEDESTRIAN CROSSING IS ANALYZED AT THIS STEP. A PEDESTRIAN CROSSING WITHIN A STATION - OR A PEDESTRIAN CROSSING ASSOCIATED WITH A VEHICLE CROSSING ADJACENT TO THE STATION - REQUIRES FULL PEDESTRIAN TREATMENT.

DECISION POINT 4

IS THE CROSSING LOCATED WITHIN A 10 MINUTE WALKING DISTANCE OF A SCHOOL, HOSPITAL, OR OTHER FACILITY THAT CAN BE EXPECTED TO SUPPORT DISABLED PEOPLE? IF THE ANSWER IS "YES" TO ANY OF THE LISTED FACILITIES, THEN THE CROSSING REQUIRES FULL PEDESTRIAN TREATMENT. IF THE ANSWER IS NO, THEN IS THERE SIGNIFICANT PEDESTRIAN ACTIVITY AT THE CROSSING? IN ORDER TO ANSWER "NO" TO WEATHER THERE IS SIGNIFICANT PEDESTRIAN ACTIVITY, A STUDY OF THE CROSSING SHALL BE CONDUCTED, IN ORDER TO DETERMINE THE VOLUME OF PEDESTRIANS USING THE CROSSING BOTH ON-PEAK AND OFF-PEAK HOURS, THE TYPES OF PEDESTRIANS (i.e. SCHOOL CHILDREN, ELDERLY, DISABLED, BIKE RIDERS, etc.) AND THE BEHAVIOR PATTERN OF THE PEDESTRIANS (ARE THE PEDESTRIANS BEHAVING IN A SAFE MANNER IN USING THE CROSSING, COGNIZANT OF POTENTIAL TRAIN ACTIVITY. THE RESULTS OF THIS STUDY SHALL BE DISCUSSED WITH SCRRA AND CPUC FOR CLEAR CONSENSUS WITH THE SAFETY REVIEW TEAM AS TO THE PRESENCE OR ABSENCE OF SIGNIFICANT PEDESTRIAN ACTIVITY. FULL TREATMENTS ARE REQUIRED IN THE EVENT OF A YES ANSWER TO ANY OF THESE QUESTIONS.

DECISION POINT 5

DOES THE CROSSING HAVE THREE OR MORE MAIN OR CONTROLLED SIDING RAILROAD TRACKS?

DECISION POINT 6

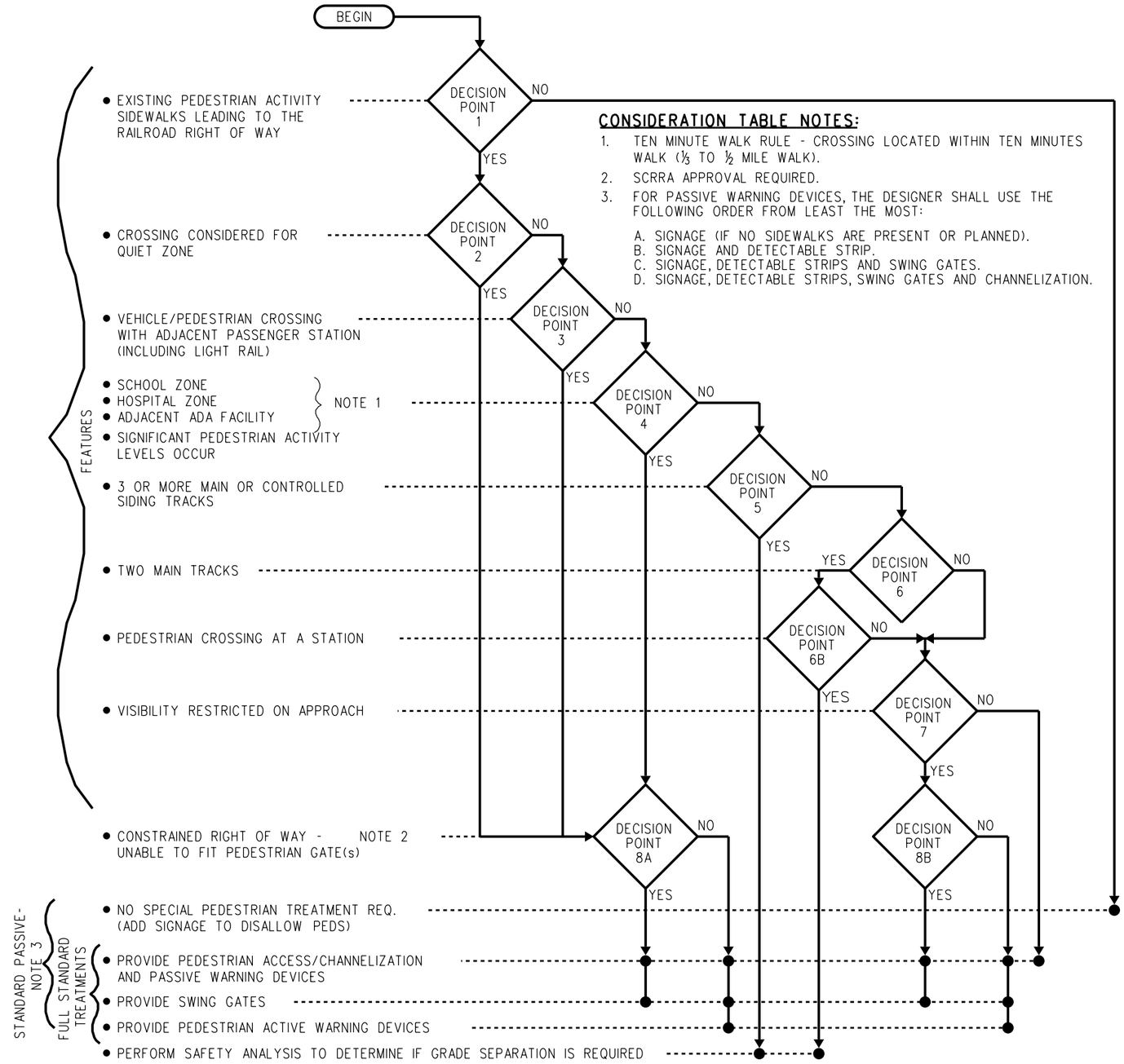
DOES THE CROSSING HAVE TWO MAIN RAILROAD TRACKS?
IF THE ANSWER IS "YES", DECISION POINT 6B NEEDS TO BE ANSWERED TO WHETHER THE CROSSING WITH 2 OR MORE TRACKS IS AT A STATION. IF THE ANSWER TO DECISION POINT 6B IS "YES", A SAFETY ANALYSIS OF THE CROSSING SHALL BE PERFORMED TO DETERMINE IF THE PEDESTRIAN-RAIL GRADE CROSSING CAN SAFELY REMAIN AT-GRADE OR WILL BE REQUIRED TO BE GRADE SEPARATED.
THIS DECISION POINT IS ARRANGED SO THAT A "NO" ANSWER FOR THIS QUESTION ACCOUNTS FOR TWO TRACKS IN RURAL AREAS THAT SEE FEW PEDESTRIANS. IN THIS CASE, IT MAY NOT BE APPROPRIATE TO INSTALL FULL PEDESTRIAN TREATMENTS, BUT SHALL NEED APPROVAL FROM SCRRA. IN AN URBAN ENVIRONMENT, HOWEVER, FULL TREATMENTS ARE REQUIRED WHEN MULTIPLE TRACKS ARE IN A LOCATION WITH LIMITED VISIBILITY.

DECISION POINT 7

DOES THE CROSSING LOCATION HAVE RESTRICTED VISIBILITY? FULL TREATMENTS ARE REQUIRED WHEN THERE IS LIMITED VISIBILITY AT CROSSINGS.

DECISION POINT 8

IS THE RIGHT-OF-WAY NECESSARY TO COMPLY WITH THE MANUAL UNOBTAINABLE? IF NOT, THEN FULL PEDESTRIAN TREATMENTS ARE REQUIRED. SCRRA STANDARD DRAWINGS INCLUDE VARIATIONS TO THE STANDARD CONFIGURATION DEPENDING ON THE AVAILABLE RIGHT-OF-WAY. IN CASES WHERE THE RIGHT-OF-WAY REQUIRED FOR THE USE OF ONE OF THESE STANDARD APPLICATIONS CANNOT BE ACQUIRED DUE TO EXISTING PROPERTY USES, OR BECAUSE OF OTHER CONDITIONS, A REQUEST FOR SPECIAL DESIGN CONSIDERATION FOR A NON-STANDARD DESIGN APPLICATION MUST BE SUBMITTED TO SCRRA FOR REVIEW AND APPROVAL.



CONSIDERATION TABLE NOTES:

1. TEN MINUTE WALK RULE - CROSSING LOCATED WITHIN TEN MINUTES WALK (⅓ TO ½ MILE WALK).
2. SCRRA APPROVAL REQUIRED.
3. FOR PASSIVE WARNING DEVICES, THE DESIGNER SHALL USE THE FOLLOWING ORDER FROM LEAST THE MOST:
   - A. SIGNAGE (IF NO SIDEWALKS ARE PRESENT OR PLANNED).
   - B. SIGNAGE AND DETECTABLE STRIP.
   - C. SIGNAGE, DETECTABLE STRIPS AND SWING GATES.
   - D. SIGNAGE, DETECTABLE STRIPS, SWING GATES AND CHANNELIZATION.

REV.	DATE	DESCRIPTION	DES.	ENG.
A	10/02/18	REVISED NOTES AND TABLE	AC	AT

DRAWN BY: A. CARLOS DATE: 03/31/2011

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

PEDESTRIAN CROSSING DESIGN
CONSIDERATION TABLE

STANDARD 4004
SCALE: NTS
REVISION A SHEET 1 OF 1
CADD FILE: ES4004

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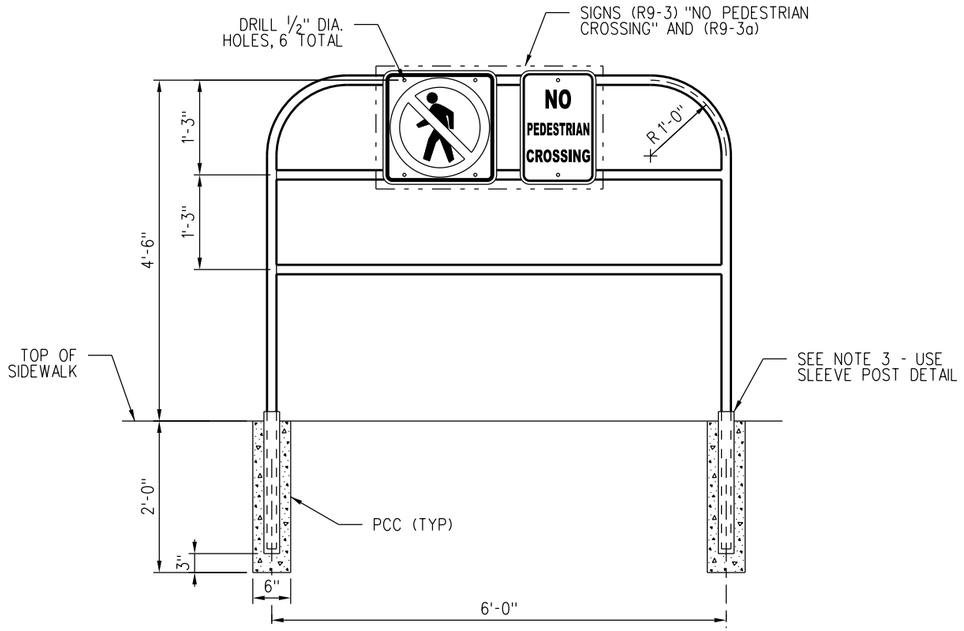

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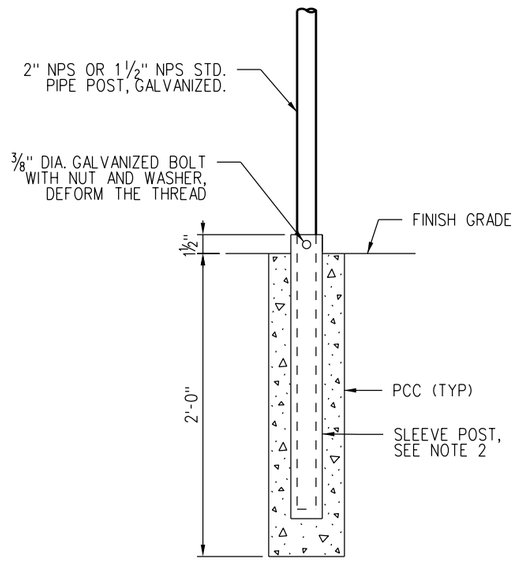
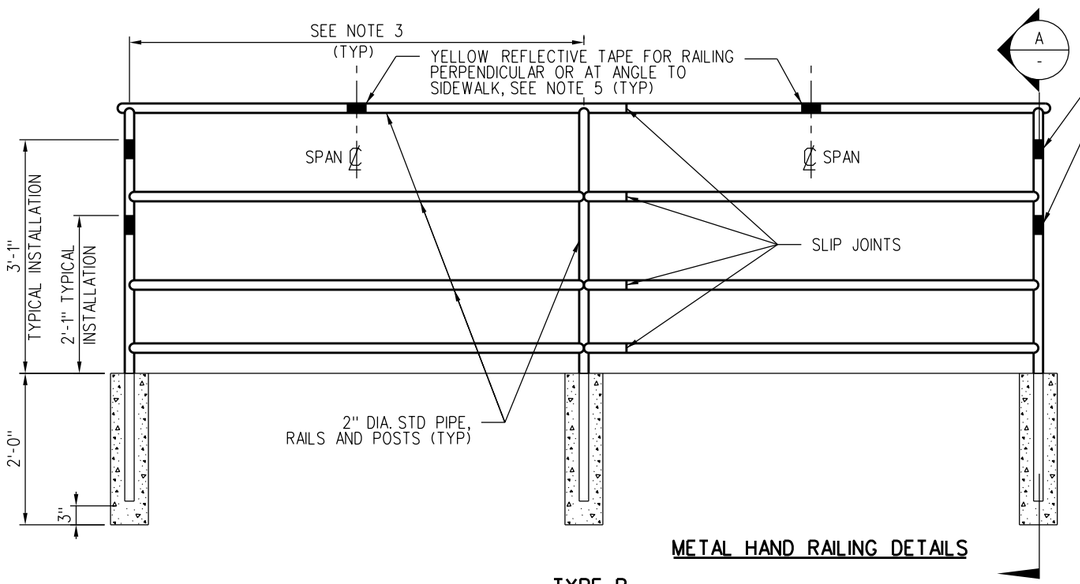


SLEEVE POST FOR REMOVEABLE METAL HAND RAILING

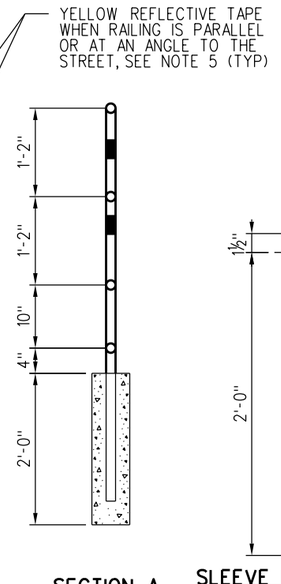
NOTES:

1. PEDESTRIAN BARRICADE SHALL BE AS PER CALTRANS PLAN ES-7Q, DETAIL C AND AS MODIFIED HEREWITH.
2. PIPE POST TO BE SET 2'-6" BACK FROM FACE OF CURB UNLESS OTHERWISE SPECIFIED.
3. STEEL SLEEVE POST TO BE CONSTRUCTED WITH A DIAMETER OF 1/10" LARGER THAN POST. WALL THICKNESS OF SLEEVE TO BE SAME AS POST OR LARGER.
4. CONTRACTOR MAY SUBMIT ALTERNATIVE DETAILS FOR APPROVAL BY SCRRA.
5. FOR MINIMUM PIPE DIAMETERS AND WALL THICKNESS REFER TO ASTM A6M.
6. THE LOCATION OF BARRICADE SHALL BE COORDINATED WITH LOCAL AUTHORITY AND SCRRA.
7. ADDITIONAL "NO CROSSING" SIGN (R9-3) AND "NO PEDESTRIAN CROSSING" (R9-3a) SIGNS AS PER CA MUTCD SHALL BE INSTALLED AT APPROPRIATE LOCATIONS AS NEEDED.
8. BARRICADE SHALL BE PAINTED OR POWDERCOATED WITH A ZINC-RICH PRIME COAT, HIGH PERFORMANCE FIRST COAT AND ACRYLIC TOP COAT. THE PAINT COLOR SHALL BE RAL 6005 UNLESS NOTED OTHERWISE.

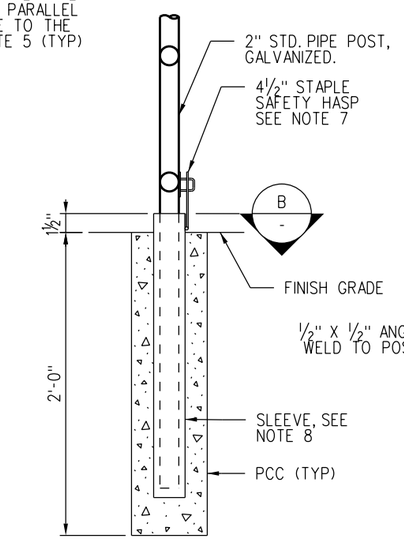
PEDESTRIAN BARRICADE DETAILS



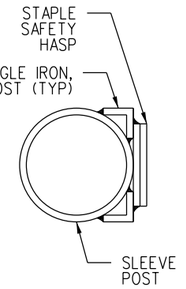
TYPE B



SECTION A



SLEEVE POST FOR REMOVEABLE METAL HAND RAILING



SECTION B

NOTES:

1. METAL HAND RAILING SHALL BE AS PER APWA STANDARD PLAN 600-2, "TYPE B" AND AS MODIFIED HEREWITH.
2. RAILS, POSTS AND PICKETS SHALL BE GALVANIZED STEEL PIPE.
3. MAXIMUM SPACING OF POSTS SHALL BE 8'-0" ON STRAIGHT ALIGNMENTS, AND 6'-0" ON CURVED ALIGNMENTS WITH LESS THAN 30' RADIUS. MAKE SPACING UNIFORM BETWEEN CHANGES IN ALIGNMENTS.
4. WELDS SHALL BE SLOT OR FILLET WELDS EQUAL TO THICKNESS OF PIPE. WELD ALL JOINTS ALL AROUND.
5. INSTALL 3" WIDE, HIGH VISIBILITY YELLOW REFLECTIVE TAPE, WRAP AROUND ENTIRE POST.
6. HANDRAIL SHALL BE PAINTED OR POWDERCOATED WITH A ZINC-RICH PRIME COAT, HIGH PERFORMANCE FIRST COAT AND ACRYLIC TOP COAT. THE PAINT COLOR SHALL BE RAL 6005 UNLESS NOTED OTHERWISE.
7. STAPLE SAFETY HASP SHALL BE WELDED TO THE SLEEVE POST AND HAND RAILING POST, ON THE SIDE FACING TOWARDS THE WARNING DEVICE. STAPLE SAFETY HASP SHALL BE PAINTED OR POWDERCOATED TO MATCH HAND RAILING. AN SCRRA PADLOCK WILL BE PROVIDED TO LOCK THE STAPLE SAFETY HASP.
8. STEEL SLEEVE POST TO BE CONSTRUCTED WITH A DIAMETER OF 1/10" LARGER THAN POST. WALL THICKNESS OF SLEEVE TO BE SAME AS HAND RAILING POST OR LARGER.

METAL HAND RAILING DETAILS

REV.	DATE	DESCRIPTION	DES.	ENG.
D	10/02/18	REVISED NOTE 6	AC	AT
C	10-14-16	REVISED TYPE 1 DETAIL AND NOTES	AC	NDP
B	04-29-16	ADDED NOTE 6.	AC	NDP
A	06-19-15	REVISED NOTE 2.	AC	NDP

DRAWN BY: A. CARLOS DATE: 03/31/2011

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

PEDESTRIAN BARRICADE AND METAL HAND RAILING DETAILS

STANDARD 4005
SCALE: NTS
REVISION D SHEET 1 OF 1
CADD FILE: ES4005

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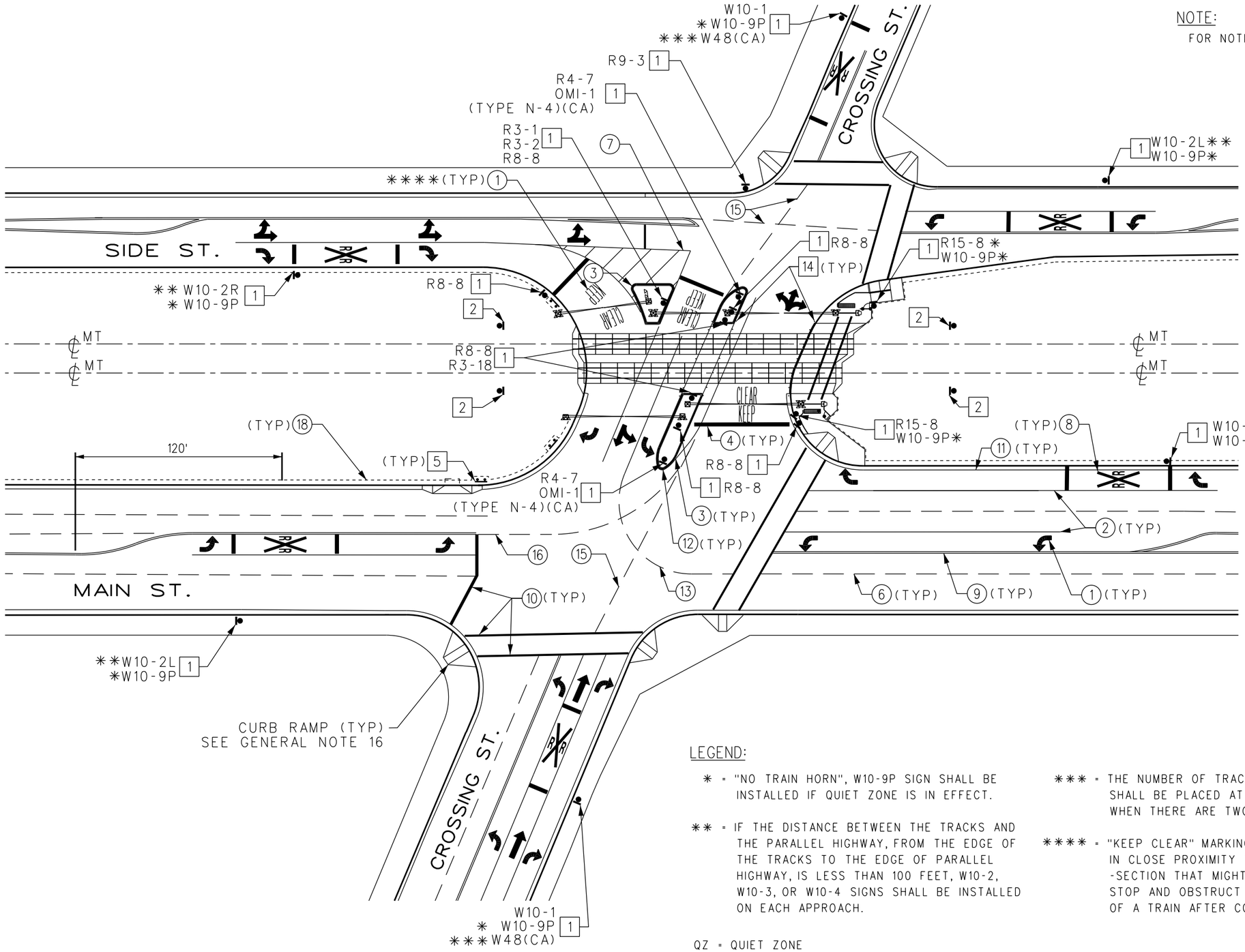

NOTE:

FOR NOTES, SEE SHEET 2 OF 2.

LEGEND:

* = "NO TRAIN HORN", W10-9P SIGN SHALL BE INSTALLED IF QUIET ZONE IS IN EFFECT.

** = IF THE DISTANCE BETWEEN THE TRACKS AND THE PARALLEL HIGHWAY, FROM THE EDGE OF THE TRACKS TO THE EDGE OF PARALLEL HIGHWAY, IS LESS THAN 100 FEET, W10-2, W10-3, OR W10-4 SIGNS SHALL BE INSTALLED ON EACH APPROACH.

*** = THE NUMBER OF TRACKS [W48(CA)] SIGN SHALL BE PLACED AT THE GRADE CROSSING WHEN THERE ARE TWO OR MORE TRACKS.

**** = "KEEP CLEAR" MARKINGS WILL BE INSTALLED IN CLOSE PROXIMITY TO A SIGNALIZED INTER--SECTION THAT MIGHT CAUSE VEHICLES TO STOP AND OBSTRUCT THE THROUGH PASSAGE OF A TRAIN AFTER CONSULTATION WITH SCRRA.

QZ = QUIET ZONE

STREET SIGN INDEX

W10-1 (36" DIA.)	R3-1 (36"x36")
W10-2R (36"x36")	R3-2 (36"x36")
W10-3 (36"x36")	R3-18 (24"x24")
W10-4 (36"x36")	R4-7 (24"x30")
W10-5 (36"x36")	R8-8 (24"x30")
W10-9P (24"x30")	R9-3a (18"x24")
W10-11 (36"x36")	R9-3 (18"x18")
W10-12 (36"x36")	R9-3bp (12"x18")
W48 (CA) (24"x30")	R10-6 (24"x36")
OMI-3 TYPE N-1 (18"x18")	R15-8 (18"x36")
OMI-1 TYPE N-4 (18"x18")	

REV.	DATE	DESCRIPTION	DES.	ENG.
B	10-03-18	REVISED PLAN AND SIGNAGE	AC	AT
A	11-15-16	REVISED DRAWING	AC	NDP

DRAWN BY: A. CARLOS DATE: 07/18/2011

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

GRADE CROSSING MARKING AND SIGNAGE

STANDARD 4006

SCALE: NTS

REVISION B SHEET 1 OF 2

CADD FILE: ES4006-01

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FileName=> \\scrrapw11ics01\iCS_pdf_work_dir\89\492_7\ES4006-01.dgn

GENERAL NOTES:

1. THE METHOD OF PAVEMENT MARKING AND MARKER INSTALLATION SHALL CONFORM TO CALTRANS LATEST STANDARD SPECIFICATIONS FOR PAVEMENT MARKINGS OR AS REQUIRED BY LOCAL JURISDICTION.
2. NO MARKING TO BE DONE PRIOR TO FIELD INSPECTION AND APPROVAL OF LAYOUT BY SCRRA IN THE FIELD.
3. PAVEMENT MARKING SHALL BE THERMOPLASTIC MATERIALS AND SHALL CONFORM TO SECTION 84-2.0B, "THERMOPLASTIC" 2 OF THE CALTRANS STANDARD SPECIFICATION OR AS REQUIRED BY LOCAL JURISDICTION.
4. THE APPLICATIONS OF THERMOPLASTIC MATERIALS SHALL BE IN ACCORDANCE WITH CALTRANS STANDARD SPECIFICATIONS SECTION 84-2.03, "CONSTRUCTION" OR AS REQUIRED BY LOCAL JURISDICTION.
5. PAVEMENT DELINEATIONS PATTERNS SHALL CONFORM TO THE DETAILS IN THE CALTRANS STANDARD PLAN A20A, A20B, A20C, A20D AND A24E ARROW SYMBOLS SHALL BE WHITE UNLESS SPECIFIED IN THE PLANS AND CA MUTCD LATEST EDITION.
6. PAVEMENT ARROW IN FRONT OF A TURN LANE SHALL BE PLACED APPROXIMATELY 10 FEET FROM THE LIMIT LINE AND THE ARROW AT THE BACK OF A TURN LANE SHALL BE PLACE APPROXIMATELY 5 FEET FROM THE END WHERE THE VEHICLE ENTERS THE LANE.
7. ALL CROSSWALKS SHALL BE PER CA MUTCD AND LOCAL JURISDICTION REQUIREMENTS.
8. BEYOND RESURFACING LIMITS, ALL CONFLICTING MARKINGS, PAINTED SYMBOLS, AND RAISED PAVEMENT MARKERS SHALL BE REMOVED. PAINTED MARKING SHALL BE REMOVED BY WET SAND BLASTING OR AS REQUIRED BY LOCAL JURISDICTION.
9. ALL EXISTING SIGNS AND POSTS NOT TO BE REUSED SHALL BE REMOVED.
10. RELOCATED OR NEW SIGNS AS SHOWN ON PLANS SHALL BE INSTALLED ON NEW POST, EXCEPT WHERE STREET LIGHT POLES ARE USED FOR SIGN POSTING, NEW SIGN POSTS SHALL BE UNISTRUT BREAK AWAY TYPE, 2-INCH SQUARE TUBE.
11. ALL TRAFFIC SIGNS SHALL HAVE RETROREFLECTIVE SHEETING AND SHALL CONFORM TO LATEST CALTRANS STANDARD PLANS AND SPECIFICATIONS AND THE LATEST CALIFORNIA SIGN SPECIFICATIONS. ALL SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH CALTRANS STANDARD PLANS AND SPECIFICATIONS OR AS REQUIRED BY LOCAL JURISDICTION.
12. PEDESTRIAN BARRICADE SHALL BE AS PER SCRRA ENGINEERING STANDARD DRAWING ES4005.
13. NO SIGNS SHALL BE INSTALLED PRIOR TO FIELD INSPECTION AND APPROVAL OF LAYOUT BY SCRRA IN THE FIELD. THE SIGNS SHALL NOT BLOCK CLEAR VIEWS OF RAILROAD WARNING SIGNAL LIGHTS.
14. QUIET ZONE SIGNS SHALL BE INSTALLED ONLY IN DESIGNATED QUIET ZONES.
15. SIZES FOR WARNING SIGNS SHALL BE AS SHOWN IN CA MUTCD, TABLE 2C-2. THE ADVANCE PLACEMENT DISTANCE OF WARNING SIGNS SHALL BE AS SHOWN IN CA MUTCD, TABLE 2C-4. SIZES FOR GRADE CROSSING SIGNS SHALL BE AS SHOWN IN CA MUTCD, TABLE 8B-1.
16. CURB RAMPS AND ISLAND PASSAGEWAY SHALL BE DESIGNED TO MEET ADA REQUIREMENTS PER CALTRANS STANDARD PLAN A88A AND A88B.

MARKING NOTES:

(1) PAVEMENT MARKING AS PER CALTRANS STD PLAN A24A OR A24D OR A24E OR CA MUTCD (LATEST EDITION)

(2) 8" WHITE CHANNELIZING LINE WITH REFLECTIVE AND RAISED PAVEMENT MARKERS PER CALTRANS STD PLAN A20D, DETAIL 38

(3) 4" SOLID YELLOW MARKING AROUND MEDIAN PER CALTRANS STD PLAN A20B, DETAIL 24

(4) 24" SOLID WHITE STOP LINE PLACED 8' IN ADVANCE OF GATE ARM

(5) TYPE 1 PEDESTRIAN BARRICADE PER ES4005

(6) 4" WHITE MARKING AND MARKER PER CALTRANS STD PLAN A20A DETAIL 9

(7) 4" SOLID WHITE EDGELINE PER CALTRANS STD PLAN A20B, DETAIL 27B

(8) RAILROAD CROSSING SYMBOL PER CALTRANS STD PLAN A24B

(9) 4" DOUBLE YELLOW MARKING PER CALTRANS STD PLAN A20A, DETAIL 21

(10) 12" WHITE LIMIT / CROSSWALK LINE PER CALTRANS STD PLAN A24E

(11) CURB (CURB ON HIGHWAY PARALLEL WITH THE TRACK SHALL BE RED WITHIN 150' OF THE CROSSING)

(12) MEDIAN NOSE YELLOW W/ RPM'S 2' O.C. STD PLAN A20B, TYPE "D"

(13) LANE LINE EXTENSIONS PER CALTRANS STD PLAN A20D, DETAIL 40

(14) PAVEMENT MARKING AND RAISED PAVEMENT MARKERS PER SCRRA STD. ES4016

(15) CENTER LINE EXTENSIONS PER CALTRANS STD PLAN A20D, DETAIL 41

(16) CENTER LINE EXTENSIONS TYPE "AY" NON-REFLECTIVE PER CALTRANS STD PLAN A20D, DETAIL 41A

(17) LANE LINE EXTENSIONS TYPE "A" NON-REFLECTIVE PER CALTRANS STD PLAN A20D, DETAIL 40A

(18) ROW FENCE:
4' HIGH CHAIN LINK FENCE WITHIN 150' OF BACK OF SIDEWALK/CROSSING PER SCRRA STD. ES5016
6' WELDED WIRE MESH FENCE BEYOND 150' OF BACK OF SIDEWALK/CROSSING PER SCRRA STD. ES5015

SIGN NOTES:

[1] ROAD SIDE SIGN AND POST SEE GENERAL NOTE 15

[2] NO TRESPASSING SIGN PER ES5214 (TYP)

REV.	DATE	DESCRIPTION	DES.	ENG.
C	10-22-18	REVISED NOTES	AC	AT
B	10-14-16	REVISED NOTES	AC	NDP
A	04-17-13	REVISED NOTE 11.	AC	NDP

DRAWN BY: A. CARLOS DATE: 07/18/2011

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

GRADE CROSSING MARKING AND SIGNAGE

STANDARD 4006
SCALE: NTS
REVISION C SHEET 2 OF 2
CADD FILE: ES4006-02

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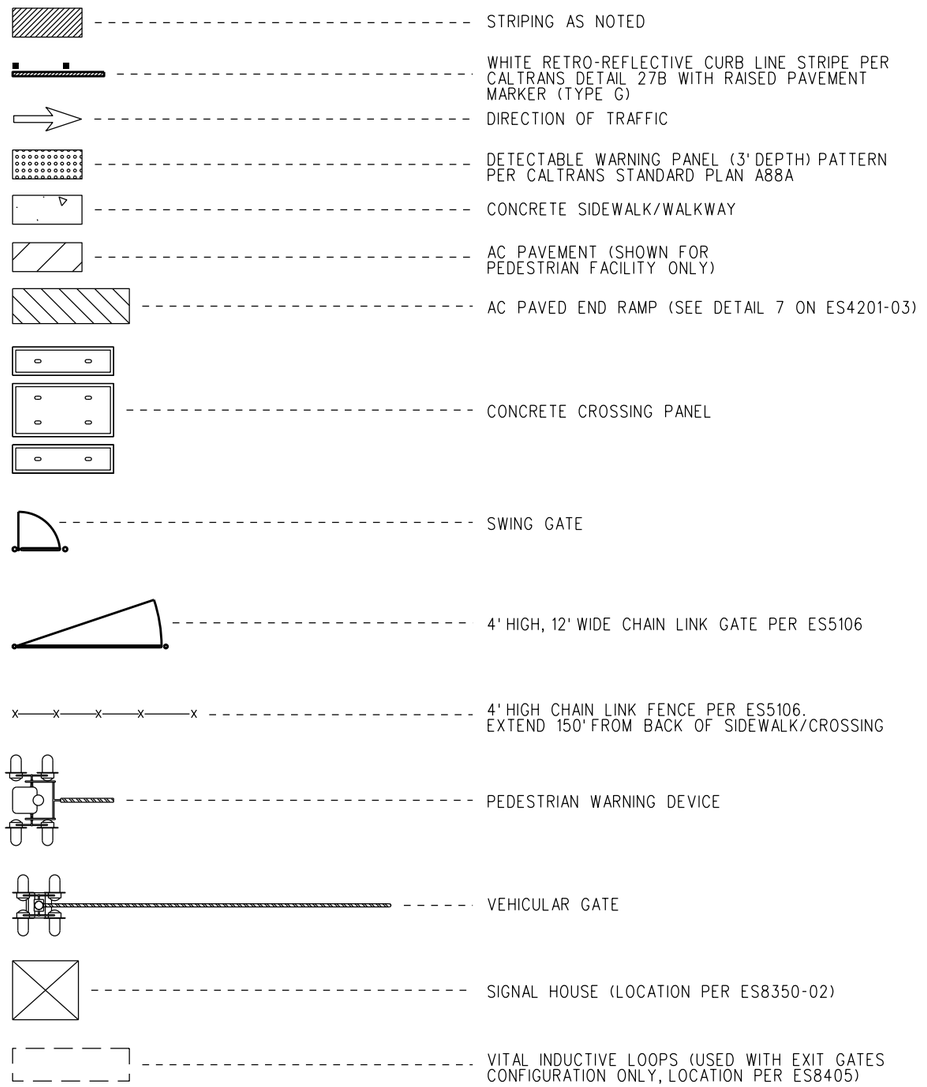
NOTES:

1. THESE STANDARDS ARE NOT INTENDED TO REPLACE EXISTING REGULATORY STANDARDS, NOR TO BE A SUBSTITUTE FOR ENGINEERING KNOWLEDGE, EXPERIENCE AND JUDGMENT, BUT ARE REQUIREMENTS, WHICH ARE MOST IMPORTANT FOR SAFE CONSTRUCTION, MAINTENANCE AND OPERATION OF PEDESTRIAN FACILITIES AT HIGHWAY-RAIL GRADE CROSSINGS. SINCE THE ACTUAL DESIGN WILL TYPICALLY BE SITE SPECIFIC, INFORMATION SHOWN ON THIS DRAWING WILL BE MODIFIED AS NECESSARY IN CLOSE COLLABORATION WITH SCRRA.
2. FOLLOW CALIFORNIA MUTCD FOR STRIPING, SIGNING, AND OTHER TRAFFIC WARNING DEVICES.
3. REFER TO THE FOLLOWING FOR ADDITIONAL DESIGN INFORMATION:
   a. SCRRA ENGINEERING STANDARD ES4201 FOR CONCRETE PANELS AND PAVED END RAMP.
   b. SCRRA ENGINEERING STANDARD ES5102 FOR INTER-TRACK FENCE.
   c. SCRRA ENGINEERING STANDARD ES5107 FOR SECURITY ACCESS GATE AND BOLLARDS.
   d. SCRRA ENGINEERING STANDARD ES4001 FOR TRACK SECTIONS AND ASPHALT CONCRETE PAVEMENT DETAILS.
   e. SCRRA ENGINEERING STANDARD ES4002 FOR PEDESTRIAN SWING GATE DETAILS.
   f. SCRRA ENGINEERING STANDARD ES8308 AND ES8309 FOR PEDESTRIAN ACTIVE WARNING DEVICES.
   g. CALTRANS STANDARD PLANS A20A, A20B, A20C, A20D AND A24E FOR PAVEMENT MARKERS AND TRAFFIC LINES.
   h. CALTRANS STANDARD PLAN RSP A88A FOR DETECTABLE WARNING PANEL (SURFACE).
   i. SCRRA ENGINEERING STANDARD ES4005 FOR METAL HAND RAILING.
4. FENCING AND METAL HAND RAILING LOCATIONS SHALL BE ADJUSTED AS NECESSARY TO PROVIDE SCRRA MAINTENANCE VEHICLES ACCESS TO RIGHT-OF-WAY AND SIGNAL & TRACK FACILITIES.
5. PREEMPTION AND TOTAL WARNING TIME SHALL TAKE INTO CONSIDERATION THE PEDESTRIAN WALKING DISTANCE AND CLEARANCE TIME AND SHALL MEET THE REGULATIONS AND REQUIREMENTS OF THE AMERICAN WITH DISABILITIES ACT (ADA) AND CA MUTCD.
6. THE WIDTH OF SIDEWALKS ON THE SIDE OF THE GATES OPPOSITE THE RAIL SHALL BE A MINIMUM OF FIVE (5) FEET.
7. PAVEMENT MARKING SHALL BE THERMOPLASTIC MATERIALS AND SHALL CONFORM TO SECTION 84-2.02B "THERMOPLASTIC" OF THE CALTRANS STANDARD SPECIFICATION OR AS REQUIRED BY LOCAL JURISDICTION.
8. A DRIVEWAY PER CALTRANS STANDARD PLAN A87A SHALL BE PROVIDED FOR MAINTENANCE ACCESS. WHERE ROW IS CONSTRAINED, A 4" HIGH, 12' WIDE DEPRESSED CURB MAY BE USED FOR MAINTENANCE ACCESS. CURB HEIGHT TRANSITION SHALL BE 3' FOR A 6" CURB AND 4' FOR A 8" CURB. DRIVEWAYS USING A 4' DEPRESSED CURB SHALL BE CONSTRUCTED PER DETAIL 7 ON ES4003.
9. TYPE OF PEDESTRIAN GATE LAYOUT AND FENCING SHALL BE SELECTED BASE ON SITE CONDITIONS, RIGHT-OF-WAY WIDTHS, MAINTENANCE ACCESS, AND SIGNAL HOUSE LOCATION AND SHALL BE FINALIZED AFTER SCRRA REVIEW AND APPROVAL.
10. PEDESTRIAN GATE ASSEMBLIES SHALL BE AS PER ES8308. FLASHING LIGHTS, NUMBERS, LOCATIONS & DIRECTIONS AS PER SIGNAL PLANS AND AS PER SCRRA APPROVAL.
11. ALL FENCING WITHIN 150' OF A CROSSING SHALL BE 4' HIGH.
12. INTER-TRACK FENCE SHALL EXTEND THROUGH THE STATION AND 150' BEYOND THE END OF THE PLATFORM OR THE END OF A CROSSING, WHICHEVER IS GREATER.

LEGEND



REV.	DATE	DESCRIPTION	DES.	ENG.
A	10-14-22	DETECTABLE WARNING PANEL LEGEND	AC	TQ

DRAWN BY: A. CARLOS DATE: 10/31/2018

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

GRADE CROSSINGS
NOTES AND LEGEND

STANDARD 4010
SCALE: NTS
REVISION A SHEET 1 OF 1
CADD FILE: ES4010

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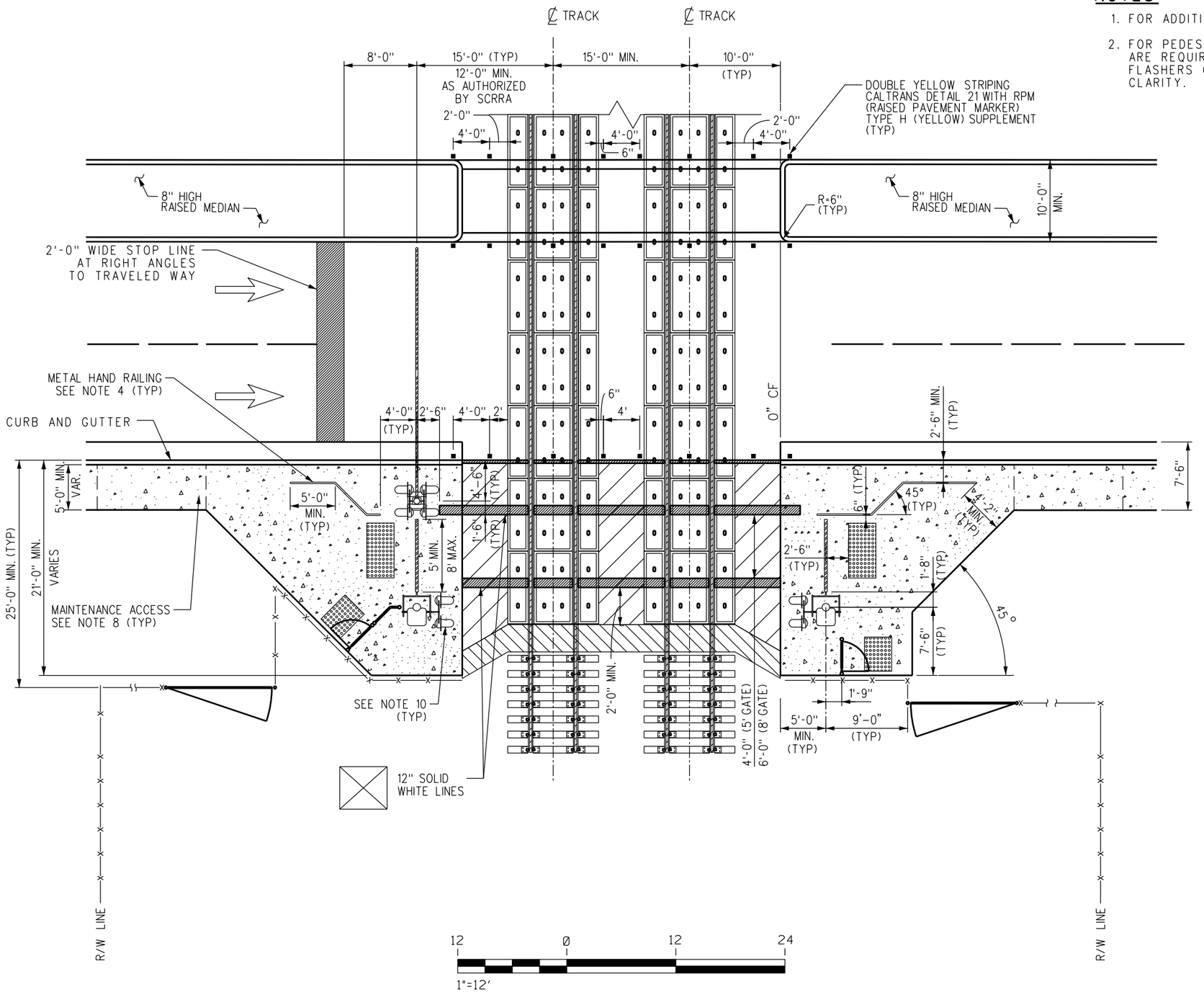
NOTES:

1. FOR ADDITIONAL NOTES AND LEGEND SEE ES4010.
2. FOR PEDESTRIAN WARNING DEVICE, FLASHERS ARE REQUIRED FOR EACH PEDESTRIAN APPROACH. FLASHERS ONLY SHOWN ON ONE APPROACH FOR CLARITY.



REV.	DATE	DESCRIPTION	DES.	ENG.
D	10/16/20	ADDED MEDIAN	AC	JMM
C	10/31/18	REVISED PLAN, OMIT NOTES AND LEGEND	AC	AT
B	09/21/16	REVISED PEDESTRIAN GATE CONFIGURATION	AC	NDP
A	06/19/15	REVISED GATE ARMS AND DETECTABLE WARNING STRIPS	AC	NDP

DRAWN BY: HDR DATE: 12/12/09

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

PEDESTRIAN FACILITIES AT VEHICLE CROSSING ENTRANCE GATES ONLY

STANDARD 4011
SCALE: NTS
REVISION D SHEET 1 OF 1
CADD FILE: ES4011

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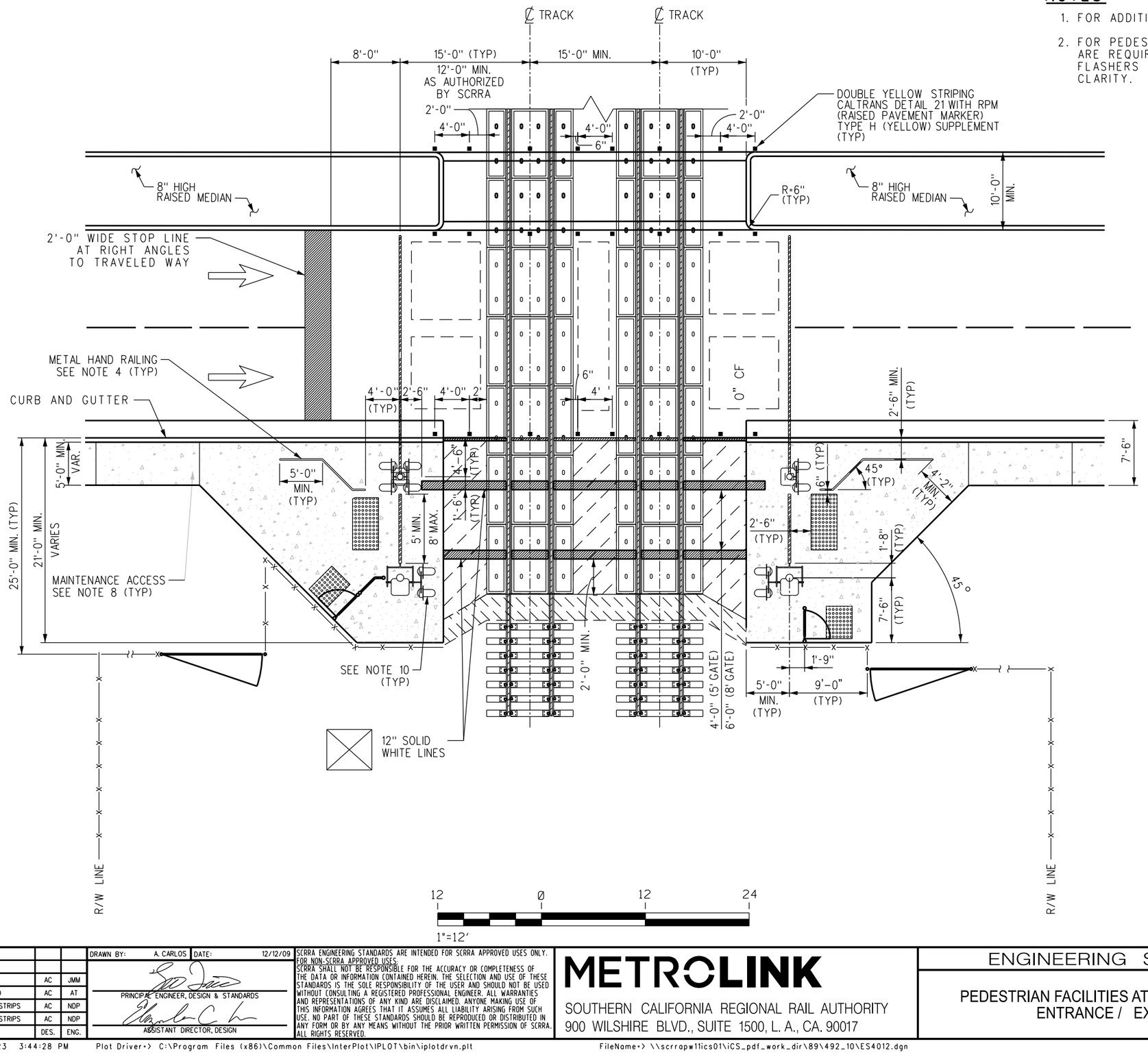
NOTES:

1. FOR ADDITIONAL NOTES AND LEGEND SEE ES4010.
2. FOR PEDESTRIAN WARNING DEVICE, FLASHERS ARE REQUIRED FOR EACH PEDESTRIAN APPROACH. FLASHERS ONLY SHOWN ON ONE APPROACH FOR CLARITY.



REV.	DATE	DESCRIPTION	DES.	ENG.
D	10-16-20	ADDED MEDIAN	AC	JMM
C	10-31-18	REVISED PLAN, OMITTED NOTES AND LEGEND	AC	AT
B	10-21-16	REVISED GATE ARMS AND DETECTABLE WARNING STRIPS	AC	NDP
A	06-19-15	REVISED GATE ARMS AND DETECTABLE WARNING STRIPS	AC	NDP

DRAWN BY: A. CARLOS DATE: 12/12/09

PRINCIPAL ENGINEER, DESIGN & STANDARDS

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900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

PEDESTRIAN FACILITIES AT VEHICLE CROSSING ENTRANCE / EXIT GATES

STANDARD 4012
SCALE: NTS
REVISION D SHEET 1 OF 1
CADD FILE: ES4012

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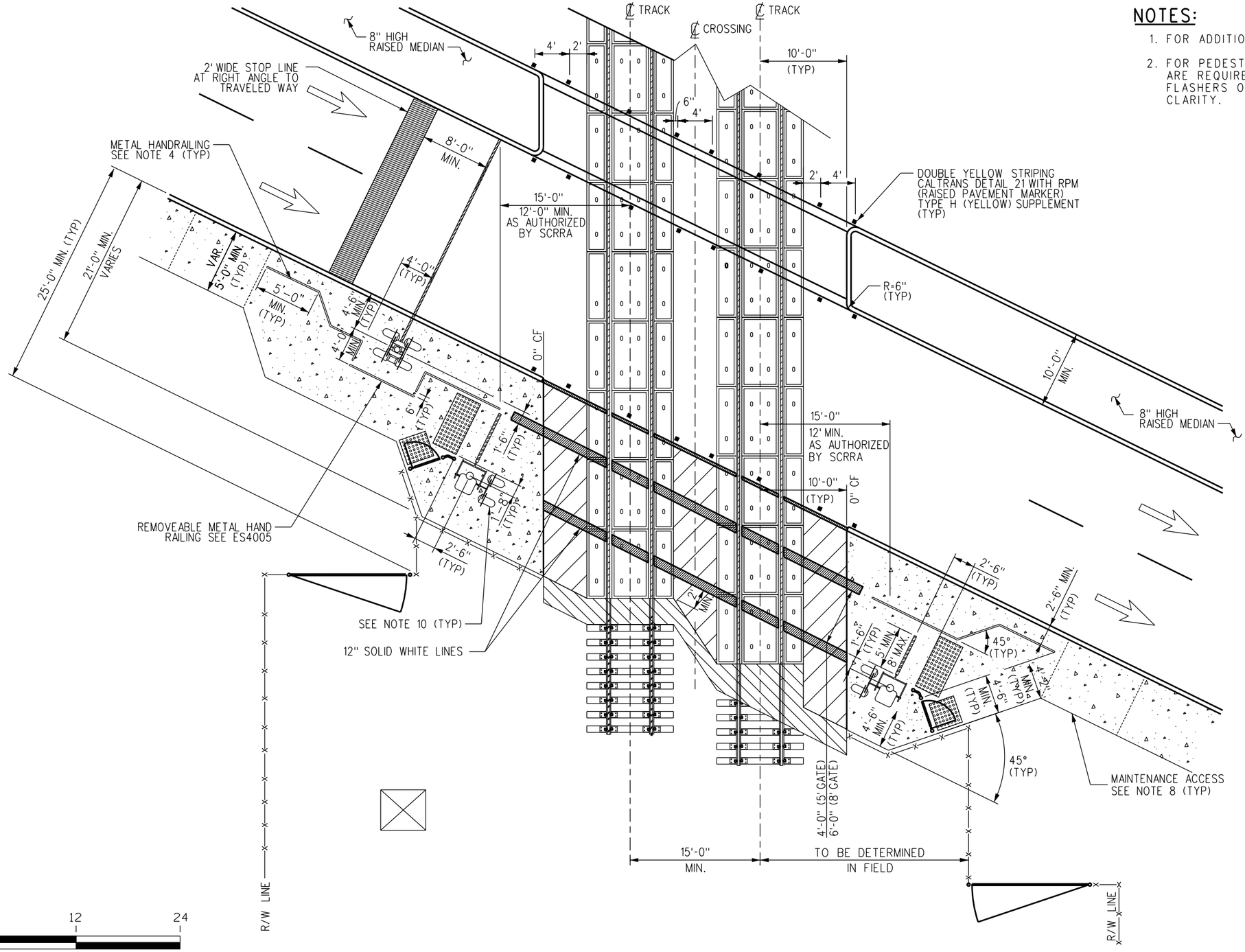


NOTES:

1. FOR ADDITIONAL NOTES AND LEGEND SEE ES4010.
2. FOR PEDESTRIAN WARNING DEVICE, FLASHERS ARE REQUIRED FOR EACH PEDESTRIAN APPROACH. FLASHERS ONLY SHOWN ON ONE APPROACH FOR CLARITY.

REV.	DATE	DESCRIPTION	DES.	ENG.
C	10-31-18	REVISED PLAN OMITTED NOTES AND LEGEND	AC	AT
B	10-28-16	REVISE NOTES, LEGEND AND FENCING	AC	NDP
A	06-19-15	REVISED GATE ARMS AND DETECTABLE WARNING STRIPS	AC	NDP

DRAWN BY: HDR DATE: 12/12/09

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

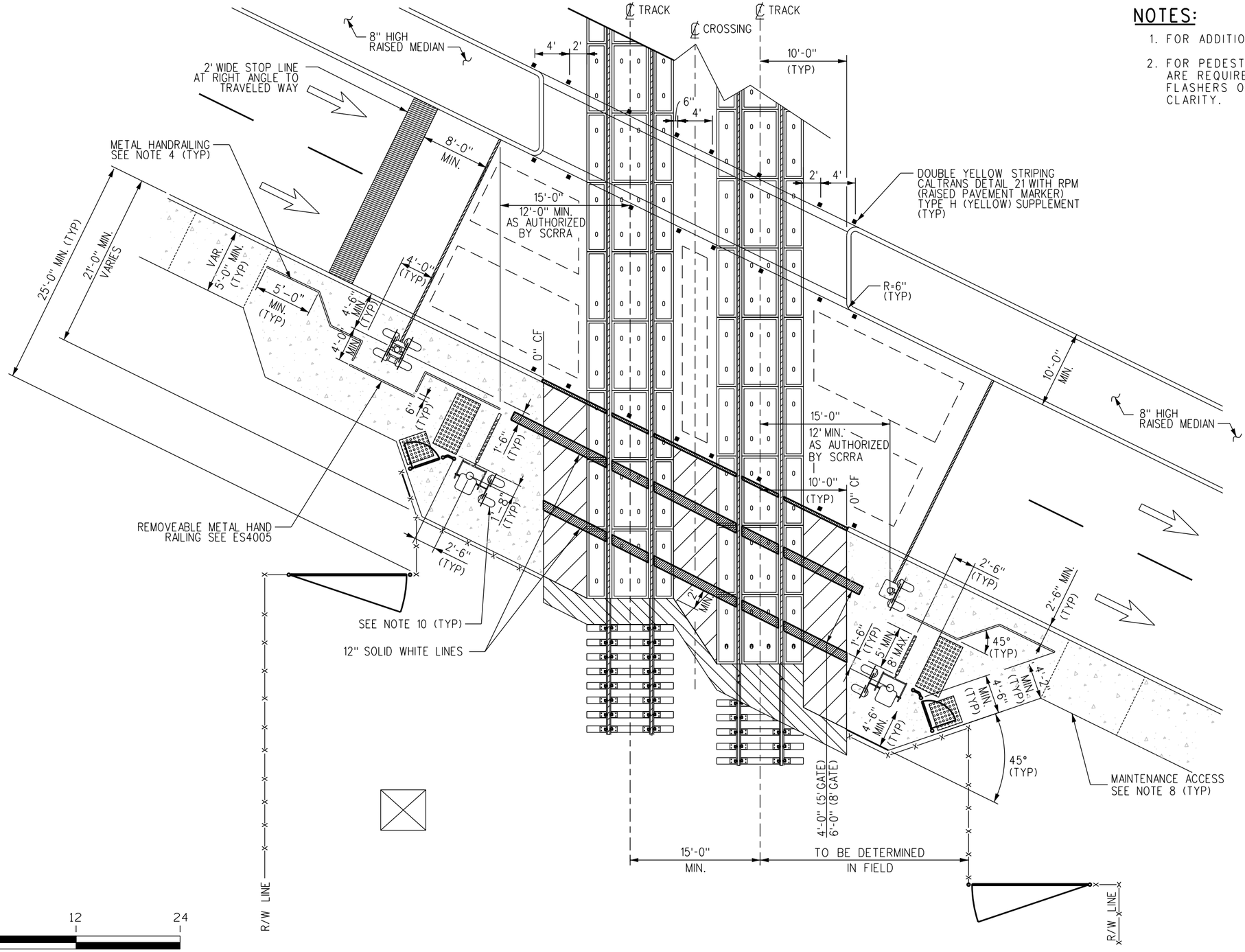
PEDESTRIAN FACILITIES AT ACUTE ANGLE VEHICLE CROSSING - ENTRANCE GATES ONLY

STANDARD 4013
SCALE: NTS
REVISION C SHEET 1 OF 1
CADD FILE: ES4013

UserName•› scrrapw11ics01$ Date Plotted: 3/27/2023 3:44:10 PM Plot Driver•› C:\Program Files (x86)\Common Files\InterPlot\IPLOT\bin\iplotdrvn.plt FileName•› \\scrrapw11ics01\iCS_pdf_work_dir\89\492_11\ES4013.dgn

NOTES:

1. FOR ADDITIONAL NOTES AND LEGEND SEE ES4010.
2. FOR PEDESTRIAN WARNING DEVICE, FLASHERS ARE REQUIRED FOR EACH PEDESTRIAN APPROACH. FLASHERS ONLY SHOWN ON ONE APPROACH FOR CLARITY.



REV.	DATE	DESCRIPTION	DES.	ENG.
C	10-03-18	REVISED PLAN, OMITTED NOTES AND LEGEND	AC	AT
B	10-28-16	REVISE NOTES, LEGEND AND FENCING	AC	NDP
A	06-19-15	REVISED GATE ARMS AND DETECTABLE WARNING STRIPS	AC	NDP

DRAWN BY: HDR DATE: 12/12/09

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

PEDESTRIAN FACILITIES AT ACUTE ANGLE VEHICLE CROSSING - ENTRANCE / EXIT GATES

STANDARD 4014
SCALE: NTS
REVISION C SHEET 1 OF 1
CADD FILE: ES4014

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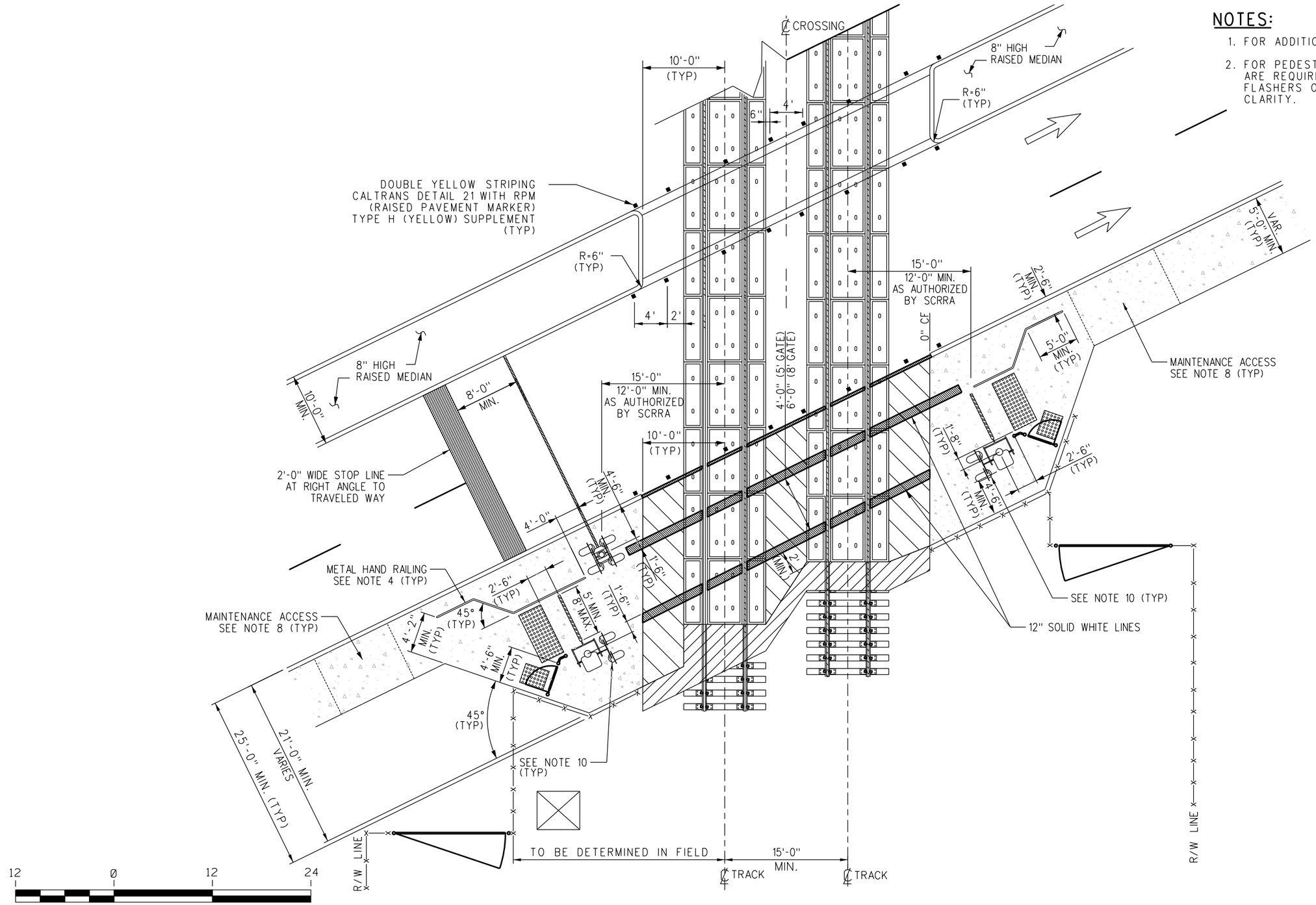
NOTES:

1. FOR ADDITIONAL NOTES AND LEGEND SEE ES4010.
2. FOR PEDESTRIAN WARNING DEVICE, FLASHERS ARE REQUIRED FOR EACH PEDESTRIAN APPROACH. FLASHERS ONLY SHOWN ON ONE APPROACH FOR CLARITY.



REV.	DATE	DESCRIPTION	DES.	ENG.
C	10-03-18	REVISED PLAN OMITTED NOTES AND LEGEND	AC	AT
B	10-28-16	REVISE NOTES, LEGEND AND FENCING	AC	NDP
A	06-19-15	REVISED GATE ARMS AND DETECTABLE WARNINGS STRIPS	AC	NDP

DRAWN BY: HDR DATE: 12/12/09

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

PEDESTRIAN FACILITIES AT OBTUSE ANGLE VEHICLE CROSSING - ENTRANCE GATES ONLY

STANDARD 4015
SCALE: NTS
REVISION C SHEET 1 OF 1
CADD FILE: ES4015

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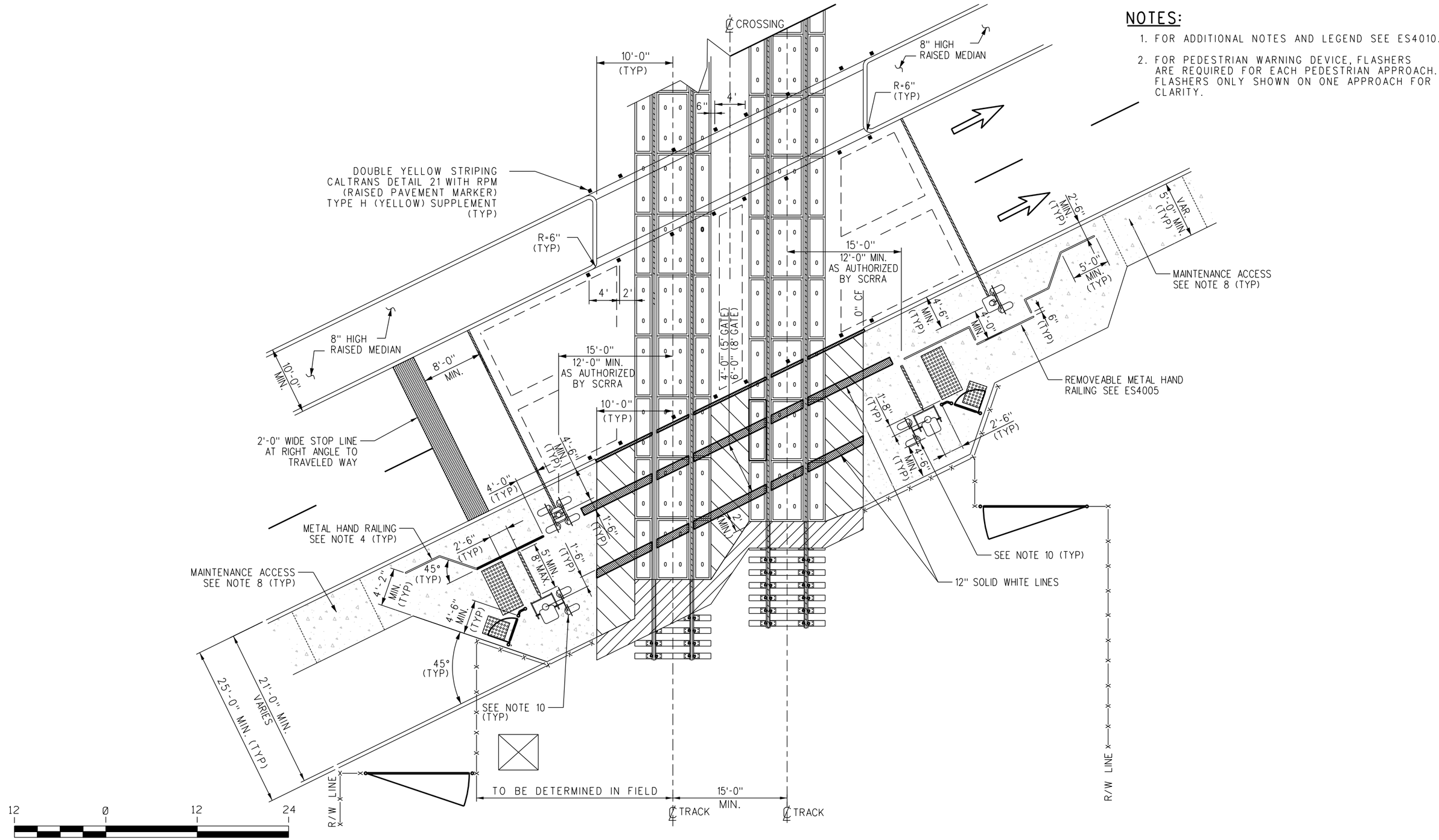
NOTES:

1. FOR ADDITIONAL NOTES AND LEGEND SEE ES4010.
2. FOR PEDESTRIAN WARNING DEVICE, FLASHERS ARE REQUIRED FOR EACH PEDESTRIAN APPROACH. FLASHERS ONLY SHOWN ON ONE APPROACH FOR CLARITY.



REV.	DATE	DESCRIPTION	DES.	ENG.
C	10-03-18	REVISED PLAN OMITTED NOTES AND LEGEND	AC	AT
B	10-28-16	REVISE NOTES, LEGEND AND FENCING	AC	NDP
A	06-19-15	REVISED GATE ARMS AND DETECTABLE WARNING STRIPS	AC	NDP

DRAWN BY: HDR DATE: 12/12/09

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

PEDESTRIAN FACILITIES AT OBTUSE ANGLE VEHICLE CROSSING - ENTRANCE / EXIT GATES

STANDARD 4016
SCALE: NTS
REVISION C SHEET 1 OF 1
CADD FILE: ES4016

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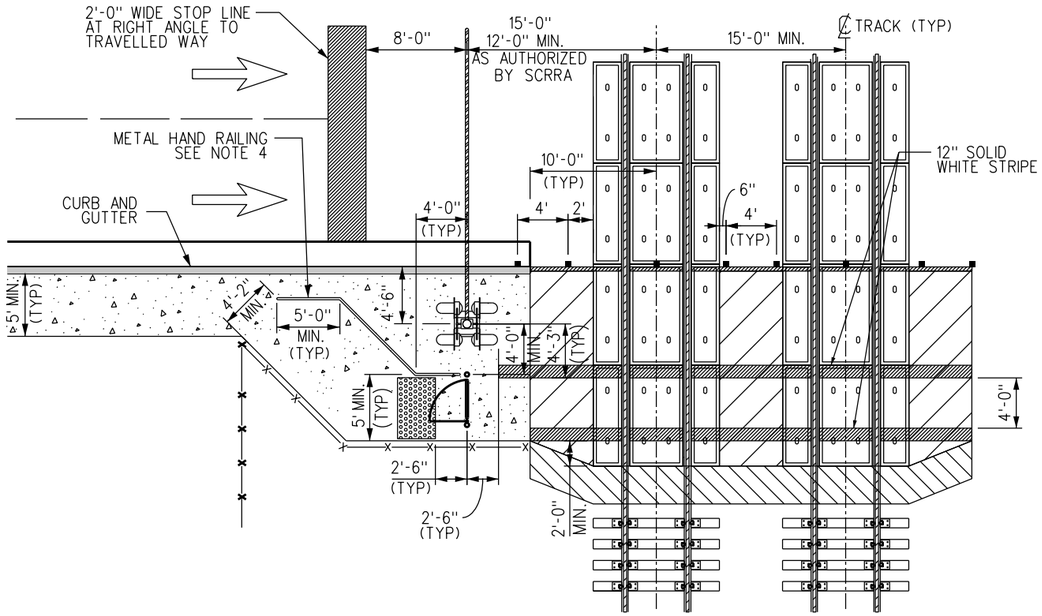
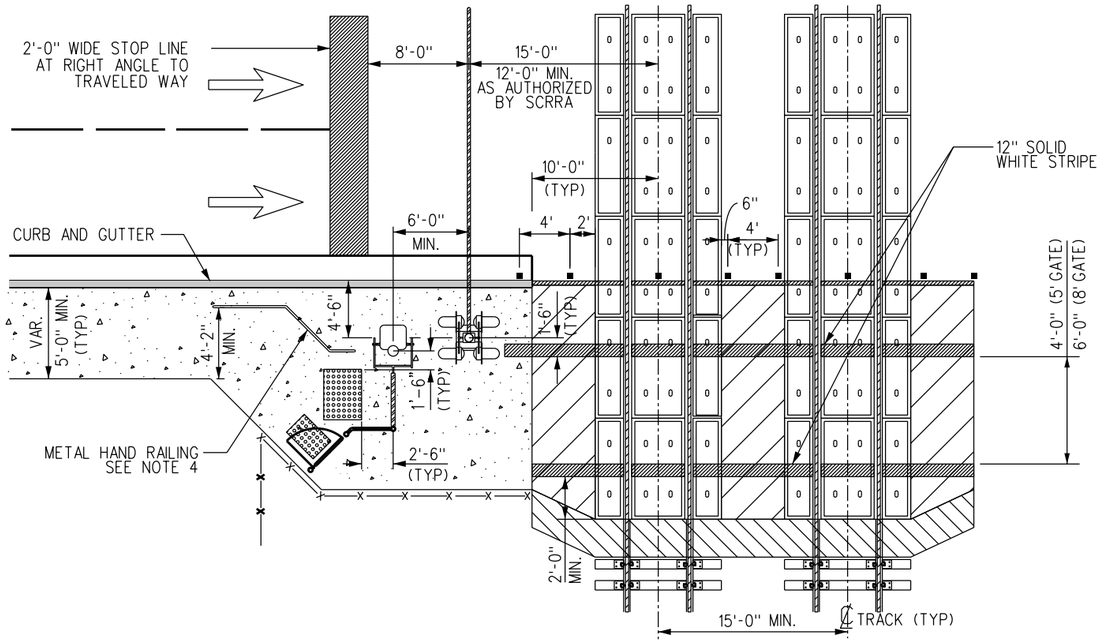
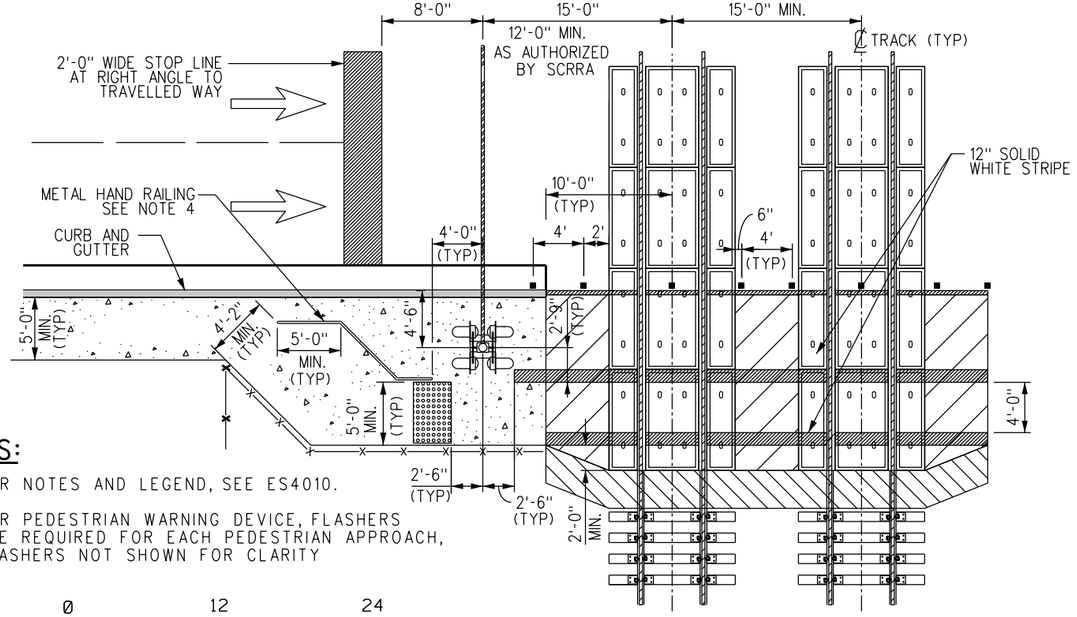


SWING GATE ONLY



PED GATE IN-LINE WITH WARNING DEVICES WITH EMERGENCY REFUGE AREA WITH LIMITED RIGHT-OF-WAY



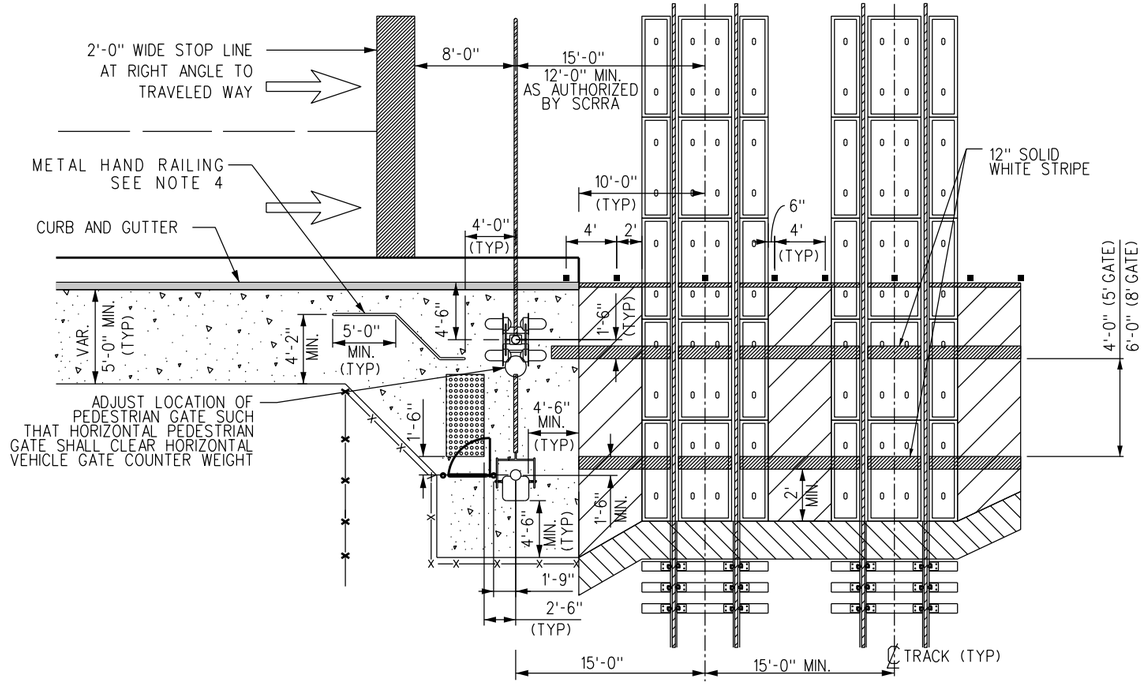
NOTES:

1. FOR NOTES AND LEGEND, SEE ES4010.
2. FOR PEDESTRIAN WARNING DEVICE, FLASHERS ARE REQUIRED FOR EACH PEDESTRIAN APPROACH, FLASHERS NOT SHOWN FOR CLARITY

12 0 12 24

1"=12'

NO PED GATE OR PED SWING GATE



PED GATE WITH EMERGENCY REFUGE AREA

REV.	DATE	DESCRIPTION	DES.	ENG.
C	10-10-18	REVISED PLANS AND NOTE	AC	AT
B	10-28-16	REVISED CALLOUTS	AC	NDP
A	06-19-15	REVISED DETECTABLE WARNING STRIPS	AC	NDP

DRAWN BY: HDR DATE: 12/12/09

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

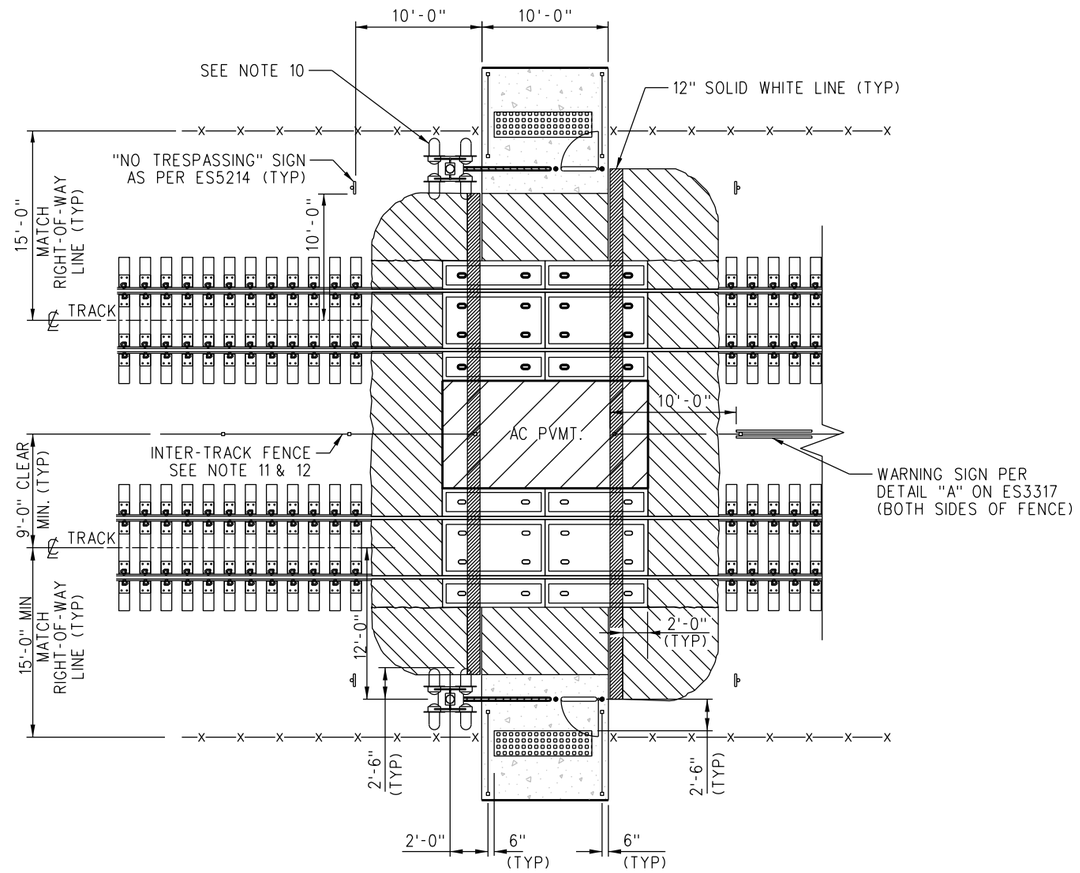
TYPICAL PEDESTRIAN TREATMENT DETAILS

STANDARD 4017
SCALE: NTS
REVISION C SHEET 1 OF 1
CADD FILE: ES4017

UserName•› scrrapw11ics01$ Date Plotted: 3/27/2023 3:44:29 PM Plot Driver•› C:\Program Files (x86)\Common Files\InterPlot\IPLOT\bin\iplotdrvn.plt FileName•› \\scrrapw11ics01\iCS_pdf_work_dir\89\492_15\ES4017.dgn

NOTES:

1. FOR ADDITIONAL NOTES AND LEGEND SEE ES4010.
2. FOR PEDESTRIAN WARNING DEVICE, FLASHERS ARE REQUIRED FOR EACH PEDESTRIAN APPROACH.
3. PLACEMENT OF PEDESTRIAN GATE AND EMERGENCY SWING GATE MAY BE SWITCHED DEPENDING ON APPLICATION OF THIS STANDARD. THE PLACEMENT OF THE EMERGENCY SWING GATE SHALL AVOID IMPEDING THE PATH OF TRAVEL WHEN OPEN.



12 0 12 24

1"=12'

REV.	DATE	DESCRIPTION	DES.	ENG.
F	03-31-23	REVISED HMAC	AC	RG
E	10-16-20	REVISED DETAIL AND NOTES	AC	JMM
D	10-10-18	REVISED NOTES	AC	AT
C	10-28-16	REVISED NOTES AND CALLOUTS	AC	NDP
B	06-19-15	REVISED CONCRETE CROSSING PANELS	AC	NDP
A	12-15-14	REVISED DETECTABLE WARNING STRIP	AC	NDP

DRAWN BY: HDR DATE: 12/12/09

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

PEDESTRIAN CROSSING ONLY

STANDARD 4018
SCALE: NTS
REVISION F SHEET 1 OF 1
CADD FILE: ES4018

UserName•› scrrapw11ics01$ Date Plotted: 3/28/2023 10:26:23 PM Plot Driver•› C:\Program Files (x86)\Common Files\InterPlot\IPLOT\bin\iplotdrvn.plt
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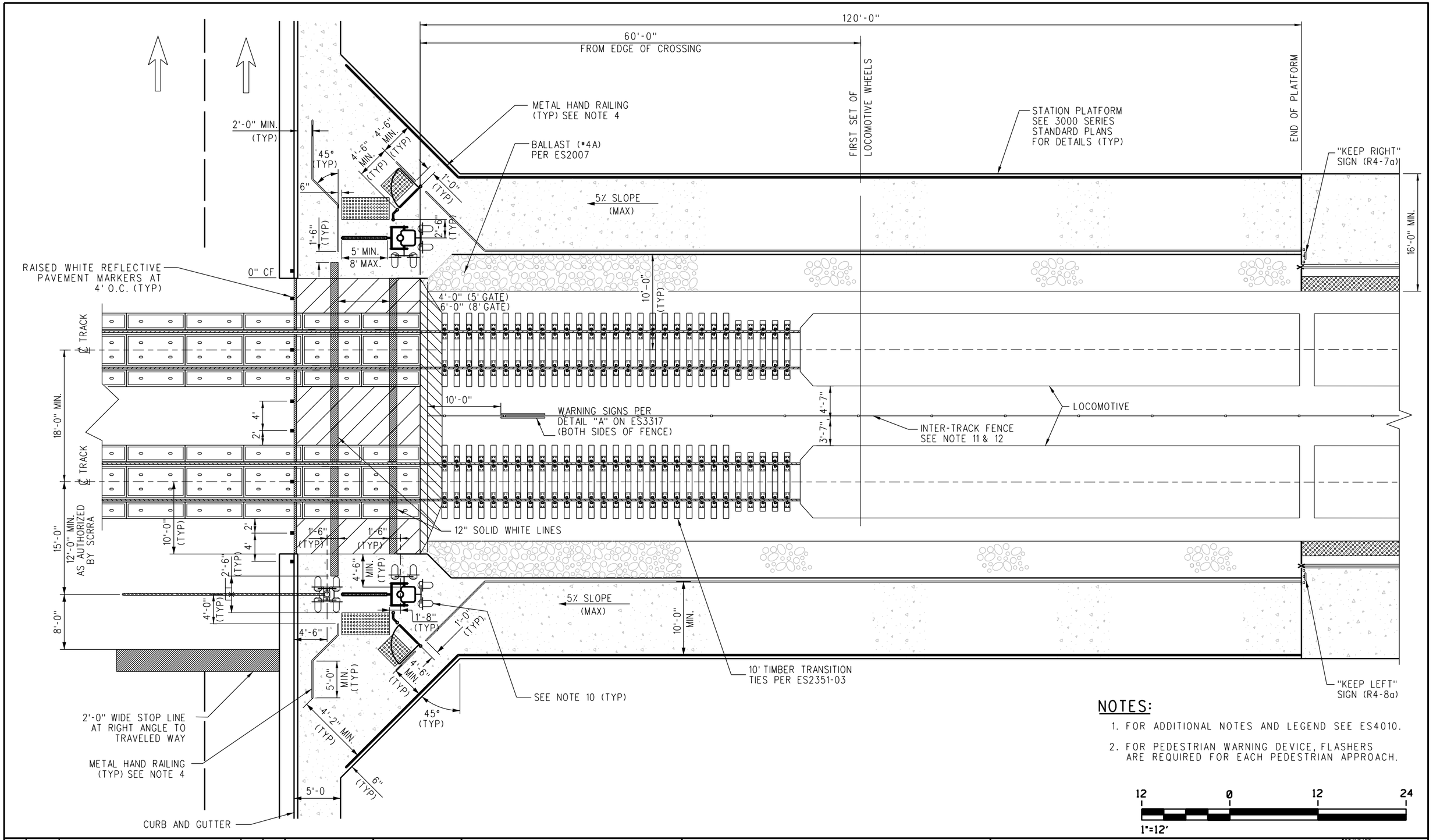

NOTES:

1. FOR ADDITIONAL NOTES AND LEGEND SEE ES4010.
2. FOR PEDESTRIAN WARNING DEVICE, FLASHERS ARE REQUIRED FOR EACH PEDESTRIAN APPROACH.

12 0 12 24

1"=12'

REV.	DATE	DESCRIPTION	DES.	ENG.
E	10-16-20	REVISED PLAN	AC	JMM
D	10-10-18	REVISED PLAN AND NOTES	AC	AT
C	05-31-17	REVISED BALLAST NOTE	AC	LA
B	10-28-16	REVISED PLAN AND GENERAL NOTES	AC	NDP
A	06-19-15	REVISED GATE ARMS AND DETECTABLE WARNING STRIPS	AC	NDP

DRAWN BY: HDR DATE: 12/12/09

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

PEDESTRIAN / VEHICLE CROSSING ADJACENT TO STATION

STANDARD 4020
SCALE: NTS
REVISION E SHEET 1 OF 1
CADD FILE: ES4020

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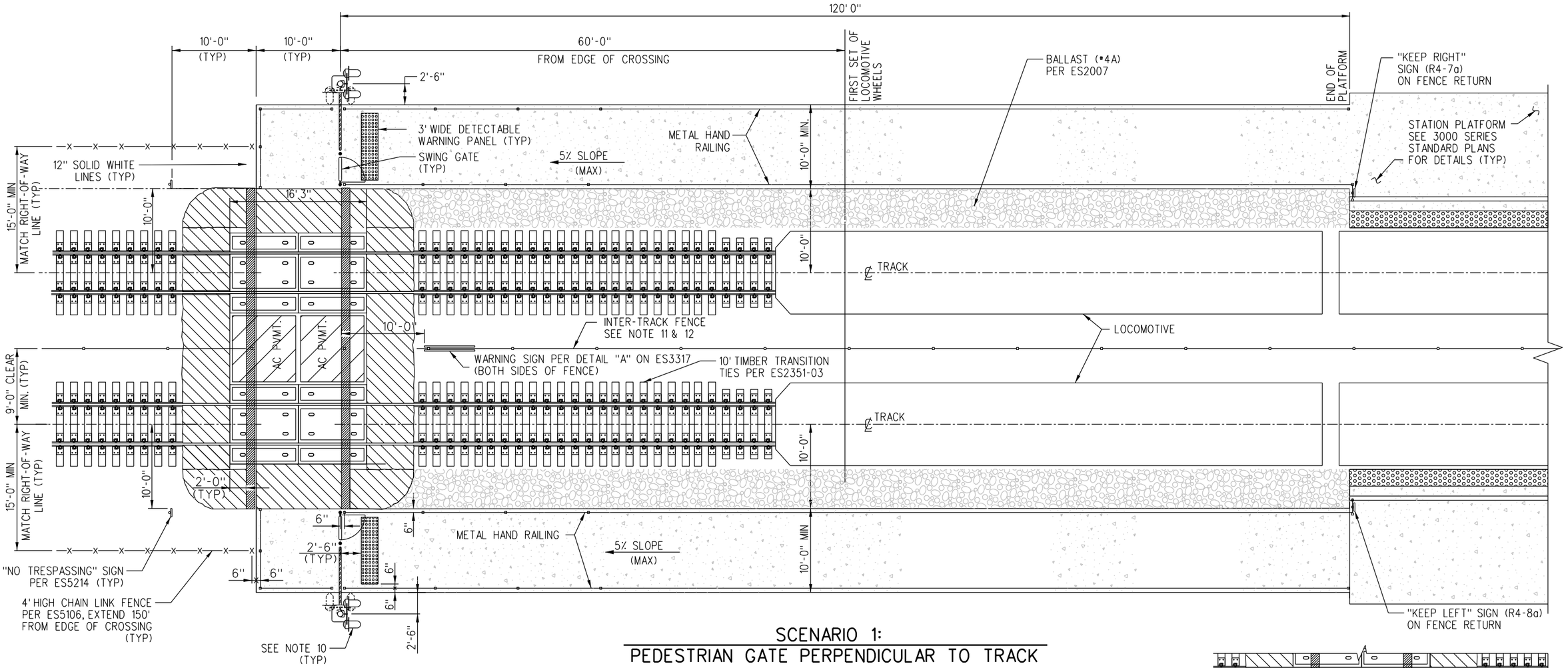
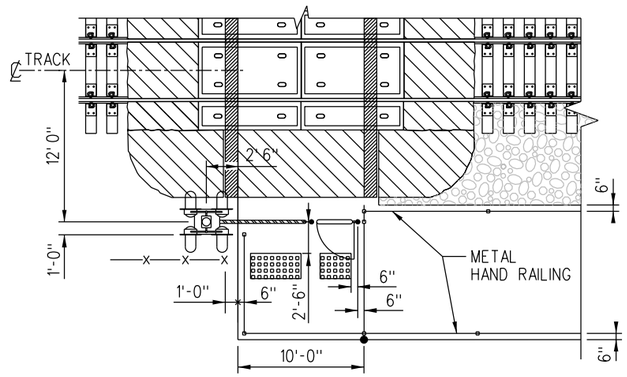


SCENARIO 1:
PEDESTRIAN GATE PERPENDICULAR TO TRACK



SCENARIO 2:
PEDESTRIAN GATE PARALLEL TO TRACK

NOTES:

1. FOR ADDITIONAL NOTES AND LEGEND SEE ES4010.
2. FOR PEDESTRIAN WARNING DEVICE, FLASHERS ARE REQUIRED FOR EACH PEDESTRIAN APPROACH.

12 0 12 24

1"=12'

REV.	DATE	DESCRIPTION	DES.	ENG.
G	03-31-23	REVISED HMAC	AC	RG
F	10-16-20	REVISED PLATFORM LOCATION	AC	JMM
E	10-10-18	REVISE NOTES	AC	AT
D	05-31-17	REVISE BALLAST NOTE	AC	LA
C	10-28-16	REVISED NOTES AND CALLOUTS	AC	NDP
B	06-19-15	REVISED CONCRETE CROSSING PANELS	AC	NDP
A	12-16-14	REVISED DETECTABLE WARNING STRIP	AC	NDP

DRAWN BY: HDR DATE: 12/12/09

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

PEDESTRIAN CROSSING ADJACENT TO STATION

STANDARD 4021
SCALE: NTS
REVISION G SHEET 1 OF 1
CADD FILE: ES4021

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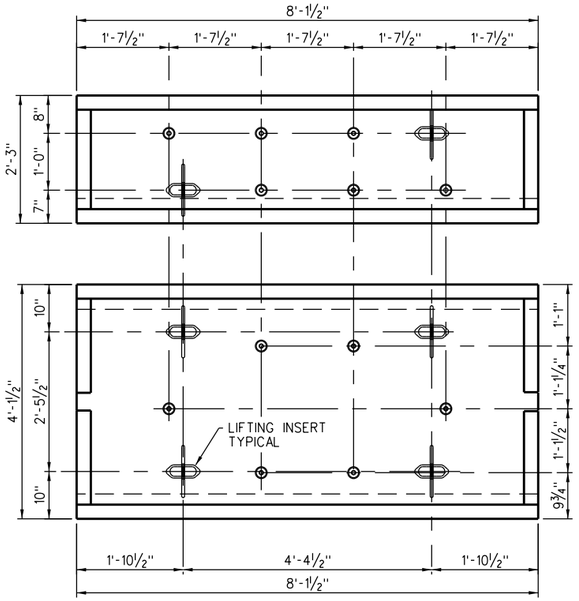
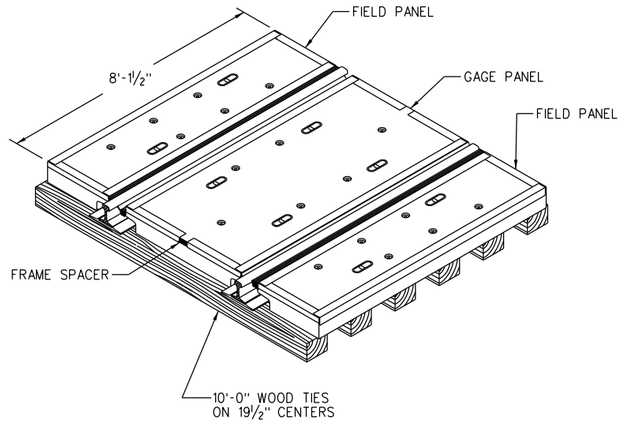
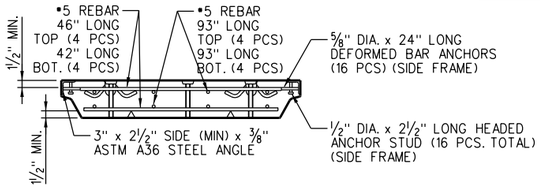


PLAN
SCALE: ¾" = 1'-0"

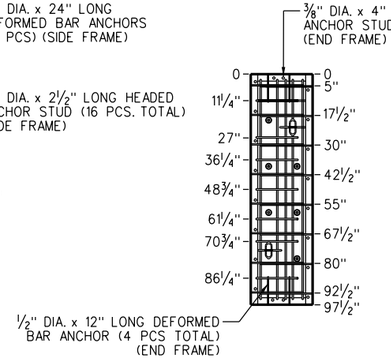


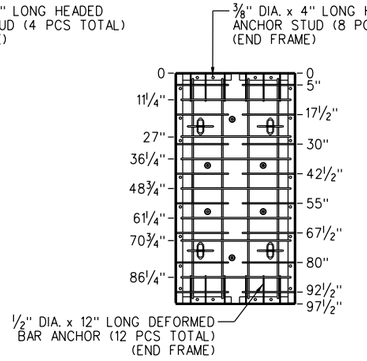
ISOMETRIC VIEW
SCALE: NONE

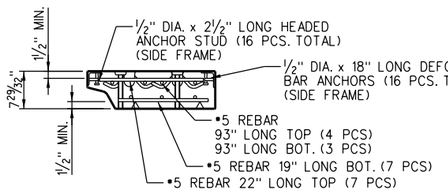
RAIL SIZE	PANEL HEIGHT	GAGE PANEL WEIGHT	FIELD PANEL WEIGHT
136	7⅞"	3400 LBS.	1800 LBS.



CROSS SECTION - GAGE PANEL
DETIAIL 1
SCALE: ¾" = 1'-0"







CROSS SECTION - FIELD PANEL
DETAIL 2
SCALE: ¾" = 1'-0"

FIELD PANEL
DETAIL 3
SCALE: ⅜" = 1'-0"

GAGE PANEL
DETAIL 4
SCALE: ⅜" = 1'-0"

NOTE:
Concrete compressive strength shall be as follows:
28 days = 6000psi MINIMUM.
Shipment = 4000psi MINIMUM.
Removal from forms = 2500psi MINIMUM.

MATERIAL SPECIFICATIONS:
1. STRUCTURAL STEEL SHALL CONFORM TO ASTM A-36 SPECIFICATIONS. WELDING TO BE PER AWS CODE.
2. ALL EXPOSED STEEL TO RECEIVE ONE COAT PRIMER.
3. END ANGLES FOR GAGE PANEL SHOULD HAVE 3" GAP MINIMUM RESISTANCE TO IMPROVE SHUNT RESISTANCE. REINFORCING MATERIAL AND CLADDING TO BE CONSTRUCTED TO MEET SHUNTING REQUIREMENT. A NON-CONDUCTIVE SPACER TO BE ATTACHED TO GAGE FRAME.
4. CLADDING ON ENDS OF PANELS SHOULD EXTEND BEYOND CONCRETE +/- 1/8 " , -0" TO IMPROVE MATCH WITH ADJACENT PANELS.
5. REINFORCING STEEL SHALL CONFORM TO CURRENT ASTM A-615 SPECIFICATION, GRADE 60. IF ANY WELDING OF REINFORCEMENT STEEL IS REQUIRED, MATERIAL SHALL CONFORM TO ASTM A-706 SPECIFICATION, GRADE 60.
6. CONCRETE MATERIAL MIXING, PLACING AND CURING TO BE IN ACCORDANCE WITH PCI "MANUAL FOR QUALITY CONTROL: PRECAST AND PRESTRESSED CONCRETE." MANUAL 115, EDITION 4. CEMENT SHALL HAVE NO MORE THAN 0.6% TOTAL ALKALI CONTENT. MAXIMUM WATER/CEMENT RATIO = 0.44 (BY WEIGHT). AIR ENTRAINMENT = 6% +/- 1% IN PLASTIC CONCRETE. SLUMP 3" MAXIMUM.
7. TOP SURFACE SHALL BE NON-CRACK DESIGN AND IS TO BE SEALED TO PREVENT ION MIGRATION DUE TO SALTING.
8. CURING SHALL FOLLOW THE RECOMMENDATIONS AND PROCEDURES FO PCIIN 4TH EDITION DIVISION 4.
9. 3/16 " WEEP/INSPECTION HOLES SHALL BE PLACED EVERY TWO FEET MINIMUM ALONG THE TOP OF THE STEEL FRAME ALONG A LINE 3/4 " FROM OUTSIDE EDGE.
10. FLANGEWAY FILLER TO BE PERMANENTLY PRE-ATTACHED AND HAVE THE FOLLOWING PROPERTIES:
    - TENSILE STRENGTH (ASTM D412) 850 PSIMIN.
    - ULTIMATE ELONGATION (ASTM D412) 400% MIN.
    - TEAR STRENGTH (ASTM D624) AT 25 DEGREES CELSIUS, 150-PLI MIN.
    - HARDNESS (ASTM D2240) 75 +/- 5% SHORE A.
    - COMPRESSION SET (ASTM 395 METHOD B) 100 DEGREES CELSIUS FOR 70 HOURS, 45% MAX.
    - ACCELERATED AGING TEST (ASTM D573) 70 HOURS AT 100 DEGREES CELSIUS MUST NOT EXHIBIT A REDUCTION IN PROPERTIES BY GREATER THAN 20%.
    - OZONE RESISTANCE TEST (ASTM D518) MUST HAVE NO CRACKING AFTER EXPOSURE TO 50-PPHM OZONE FOR 96 HOURS AT 40 DEGREES CELSIUS.
    - VOLUME RESISTIVITY = 1 X 10 (OHM-CM) OR GREATER (ASTM D257), BUT USING 18% NACL/WATER SOLUTION IN PLACE OF DISTILLED WATER FOR 168 HOURS AT 25 DEGREES CELSIUS AND TESTED AT 500 VDC.
    - ELECTRICAL RESISTANCE: MINIMUM RESISTANCE 10 MEGA OHMS MEASURED AT 500 VDC.
    - LOW TEMPERATURE BRITTLENESS (ASTM D2137) AT -40 DEGREES CELSIUS.
    - A SAMPLE SELECTION OF THE FLANGEWAY MATERIAL SHALL BE PHYSICALLY TESTED BY APPLYING A LATERAL FORCE OF 10 LB./IN. AT 50 DEGREES CELSIUS. THE MAXIMUM LATERAL DISPLACEMENT OF THE TEST IS NOT TO EXCEED 1/4 ". TEST RESULTS MUST BE SUBMITTED FOR APPROVAL OF SCRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION.
    - MANUFACTURER TO DESIGN THE PRE-ATTACHED FLANGEWAY FILLER TO ALLOW FOR REMOVAL OF PANELS FOR MAINTENANCE WITHOUT DAMAGING THE FLANGEWAY FILLER OR ANY OTHER COMPONENTS DESIGNED TO HOLD PANEL TOGETHER.

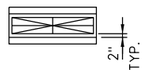
FINISH:
1. ALL RECESSES AND MINOR CONCRETE SPALLS ARE TO BE FILLED AND FINISHED TO THE PANEL DIMENSIONS USING THE PROPER BONDING AGENT AND REPAIR MATERIAL. SURFACE OF THE REPAIRED AREA IS TO MATCH THE COLOR AND TEXTURE OF THE SURROUNDING AREAS.
2. THE DRIVING SURFACE IS TO HAVE A LIGHT BROOM FINISH OR AS APPROVED BY THE SCRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION. THE ADDITION OF WATER TO THE CONCRETE SURFACE FINISH DURING CASTING IS NOT PERMITTED.

GENERAL:
1. THE MANUFACTURER SHALL BE ISO 9000 OR AAR M-1003 CERTIFIED. ALL TESTING PERSONNEL SHALL BE A MINIMUM OF ACILEVEL 1 CERTIFIED.
2. THE FABRICATOR SHALL BE RESPONSIBLE FOR LOADING AND PROPERLY SECURING ALL PRECAST CONCRETE MEMBERS FOR SHIPMENT.
3. THE MANUFACTURER SHALL WARRANTY THE PRODUCT FOR A MINIMUM OF TEN YEARS AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP.
4. MANUFACTURER TO PERMANENTLY MARK EACH PANEL WITH A CONCRETE IMPRINT FOR SIZE OF RAIL, WEIGHT OF PANEL, MANUFACTURER'S I.D., MONTH/DAY/YEAR OF MANUFACTURE AND CROSSING TYPE. END OF EACH PANEL TO BE STENCILED PAINTED WITH SIZE OF RAIL, WEIGHT OF PANEL AND CROSSING TYPE.

NOTES:
1. GRADE CROSSING GAGE PANELS SHALL BE SHUNT RESISTANT.
2. PANELS SHALL BE STEEL CLAD USING 3" X 3" X ⅜" ANGLE.
3. PANELS MUST BE MANUFACTURED FOR USE WITH SCRRA STANDARD 136 LB. WELDED RAIL WITH "PANDROL" TYPE PLATES AND FASTENERS (OR APPROVED EQUAL).
4. PANELS SHOULD BE INSTALLED ON 10 FT., FLAT, GOOD QUALITY TIMBER RAILROAD TIES. TIE SPACING THROUGH CROSSING AREA SHOULD BE 19½" CENTERS.
5. REFER TO MANUFACTURER'S INSTALLATION AND HANDLING MANUAL FOR INSTALLATION INSTRUCTIONS.
6. EXCAVATION FOR CROSSING SUBGRADE OR SIGNAL CONDUITS SHALL NOT OCCUR UNTIL SCRRA SIGNAL LINES AND PUBLIC UTILITY UNDERGROUND LINES HAVE BEEN LOCATED BY THEIR OWNERS.
7. A 6" ASPHALT UNDERLAYMENT WILL BE PLACED OVER COMPACTED SUBGRADE (95% RELATIVE COMPACTION) AND CROWNED IN THE CENTER TO DRAIN TO BOTH SIDES OF THE TRACK STRUCTURE WITH A 2% SLOPE TOWARDS THE 6" PERFORATED PIPES. THE ASPHALT LAYER SHOULD EXTEND 10 FT. BEYOND THE ENDS OF THE CROSSING ALONG THE TRACK
8. BALLAST SECTION UNDER CROSSING TIES TO BE A MINIMUM OF 10" OF 1½" TO 2" ROCK.
9. SIGNAL CONDUITS AND SPARES ARE TO BE PLACED IN TRENCHES. CROSSINGS WHERE RAISED MEDIAN ISLANDS ARE TO BE INSTALLED, ONE OF THE FOUR CONDUITS (ON BOTH SIDES OF THE TRACK) IS TO BE TERMINATED AND CAPPED IN THE CENTER OF CROSSING. ALL SIGNAL CONDUITS AND SPARES ARE TO BE CAPPED ON BOTH ENDS. SIGNAL CONDUITS ARE TO EXTEND A MINIMUM OF 8 FT. BEYOND TRAVELED ROADWAY OR SIDEWALK AREA.
10. PERFORATED DRAIN LINES WILL BE INSTALLED TO SUIT LOCAL CONDITIONS TO DISCHARGE WATER AWAY FROM CROSSING. DRAIN LINES WILL BE EXTENDED TO MEET LOCAT DITCHES, STORM DRAINS, OR CHANNELS WHERE AVAILABLE. DRAIN LINES ARE TO HAVE A MINIMUM FALL OF ¼" INCH PER FOOT PARALLEL TO THE TRACK AND ½" INCH PER FOOT AT EXTENSIONS. UNLESS LOCAL CONDITIONS DICTATE OTHERWISE, FALL OF PIPE WILL FOLLOW GENERAL GRADE OF TRACK FOR GRADES OF 0.5% OR MORE, FOR LESSER GRADES THE PIPE WILL PEAK IN CENTER OF CROSSINGS AND FALL IN BOTH DIRECTIONS. ALL PORTIONS OF THE DRAIN LINES BEYOND 12 FEET FROM TRACK CENTERLINE ARE TO BE 8 INCH DIAMETER, ¼" INCH WALL STEEL PIPE
11. CONCRETE CROSSING PANELS WITH PRE- ATTACHED RUBBER -FILLERS TO BE INSTALLED PER MANUFACTURERS INSTRUCTIONS.
12. ON EITHER END OF THE NEW CROSSING PANEL LIMITS, 24 - 10 FOOT LONG WOOD TIES AT 19½" CENTER TO CENTER WITH "PANDROL" TYPE, OR APPROVED EQUAL PLATES, WITH SCREW SPIKES, SHALL BE INSTALLED BEYOND THE END OF THE CROSSING PANELS. INSTALL WOOD TIES WITH HEART DOWN. BEYOND THE LIMITS OF THE NEW CROSSING PANELS, 40 FOOT LENGTH OF NEW RAIL PER SIDE SHALL BE INSTALLED PER SCRRA STANDARDS. 10 FOOT WOOD TIES MUST BE OF GOOD QUALITY. TIES SHALL BE STRAIGHT, WELL SAWN, BE SQUARE AT ENDS, HAVE BOTTOM AND TOP PARALLEL. CHECK TIES FOR HIGH AND LOW SPOTS. A TIE IS CONSIDERED STRAIGHT WHEN A STRAIGHT LINE FROM A POINT ON ONE END OF THE CROSS TIE TO A CORRESPONDING POINT ON THE OTHER END IS NO MORE THAN 1½" FROM THE SURFACE AT ANY POINT.
13. NO RAIL JOINTS ALLOWED IN CROSSING UNLESS APPROVED BY SCRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION.
14. PANELS SHOULD BE PLACED IN A WIDTH SUITABLE TO COVER THE PROJECTED BACK OF SIDEWALK ON BOTH SIDES OF THE STREET AND 3 FT. MINIMUM BEYOND BACK OF SIDEWALK.
15. BALLAST IN THE CRIB AREA IS TO BE APPROXIMATELY ¾" LOWER THAN THE TOP OF THE TIE. REMOVE ANY DEBRIS AND STONES FROM THE TOP OF THE TIES.
16. PLACE THE FIRST PANELS IN THE CENTER OF THE CROSSING. PLACE PANELS WORKING TOWARDS EITHER END. DOING THIS WILL MINIMIZE ANY MISTAKES IN THE TIE SPACING.
17. TIES ARE TO BE FIELD -DRILLED FOR LAG SCREWS DO NOT OVERDRIVE THE LAG SCREW.
18. HIGHWAY APPROACHES SHOULD BE AT LEAST 3 TO 8 FT. WIDE, ALLOWING FOR PROPER COMPACTING USING A VIBRATORY ROLLER. PLATE COMPACTORS ARE NOT SUFFICIENT FOR HIGHWAY APPLICATIONS. THE LIFT THICKNESS OF ASPHALT SHALL BE A MINIMUM OF 2" AND A MAXIMUM OF 4". THE FINAL LIFT OF ASPHALT SHOULD BE ¼" TO ½" HIGHER THAN THE TOP OF THE CROSSING SURFACE (ASPHALT WILL SETTLE). DO NOT ALLOW HIGHWAY TRAFFIC OVER THE CROSSING UNTIL THE FINAL LAYER OF ASPHALT HAS BEEN COMPACTED.
19. THE HOT MIX ASPHALTIC CONCRETE SECTION (HMAC) SHALL EXTEND THREE FEET PAST THE END OF THE CONCRETE PANEL IN EACH DIRECTION PER ASTM DSST. D1557-91 90% COMPACTION.
20. ALL HOLES AND BLOCKOUTS WITHIN SIDEWALK AREA SHALL BE FILLED FLUSH WITH EPOXY TO MATCH THE COLOR OF THE SURROUNDING AREA.

TOLERANCES:
1. OUT OF SQUARE 3/16" (MEASURED ALONG THE DIAGONAL)
2. LENGTH, WIDTH AND THICKNESS: +/- ⅛"
3. THE BOTTOM SURFACE, WHICH WILL BE IN CONTACT WITH THE TIES, SHALL NOT UNDULATE IN ANY DIRECTION MORE THAN 3/32". SEE SPECIAL TESTING NOTE 3.
4. REINFORCEMENT PLACEMENT SHALL BE +/- ¾" HORIZONTAL, +/- ⅛" VERTICAL.

SPECIAL TESTING:
1. TWICE ANNUALLY, VENDORS SHALL SUBMIT (VIA AN INDEPENDENT TESTING LABORATORY TO SCRRA) THE FOLLOWING TEST ON THE APPROVED MIX DESIGN:
    - ASTM C666 FREEZE/THAW
    - ASTM C227 MORTAR BAR METHOD
    - ASTM C1260 AT TOTAL ALKALI BURDEN = 0.06%
2. GAGE PANELS SHALL BE DESIGNED WITH SHUNT RESISTANT FEATURES IN ORDER TO PROVIDE A MINIMUM ELECTRICAL RESISTANCE.
3. A REPRESENTATIVE SAMPLE OF PANELS SHALL BE CHECKED PERIODICALLY FOR BOTTOM FLATNESS BY USING A STRAIGHT EDGE CALIBRATED TO WITHIN +/- 1/32" AND A TAPER GAGE AS FOLLOWS:
   8 POSITIONS OF FLATBAR (----) CHECK FLATNESS AT EACH POSITION USING TAPER GAGE.



REV.	DATE	DESCRIPTION	DES.	ENG.
B	06-19-15	REVISED NOTE 19	AC	NDP
A	03/18/13	REVISED GAGE PANEL DIMENSIONS & PANEL WEIGHTS	AC	NDP

DRAWN BY: A. CARLOS DATE: 04/12/02

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

PRECAST CONCRETE PANELS
FOR HIGHWAY - RAIL GRADE CROSSING

STANDARD 4201
SCALE: AS NOTED
REVISION B SHEET 1 OF 3
CADD FILE: ES4201-01

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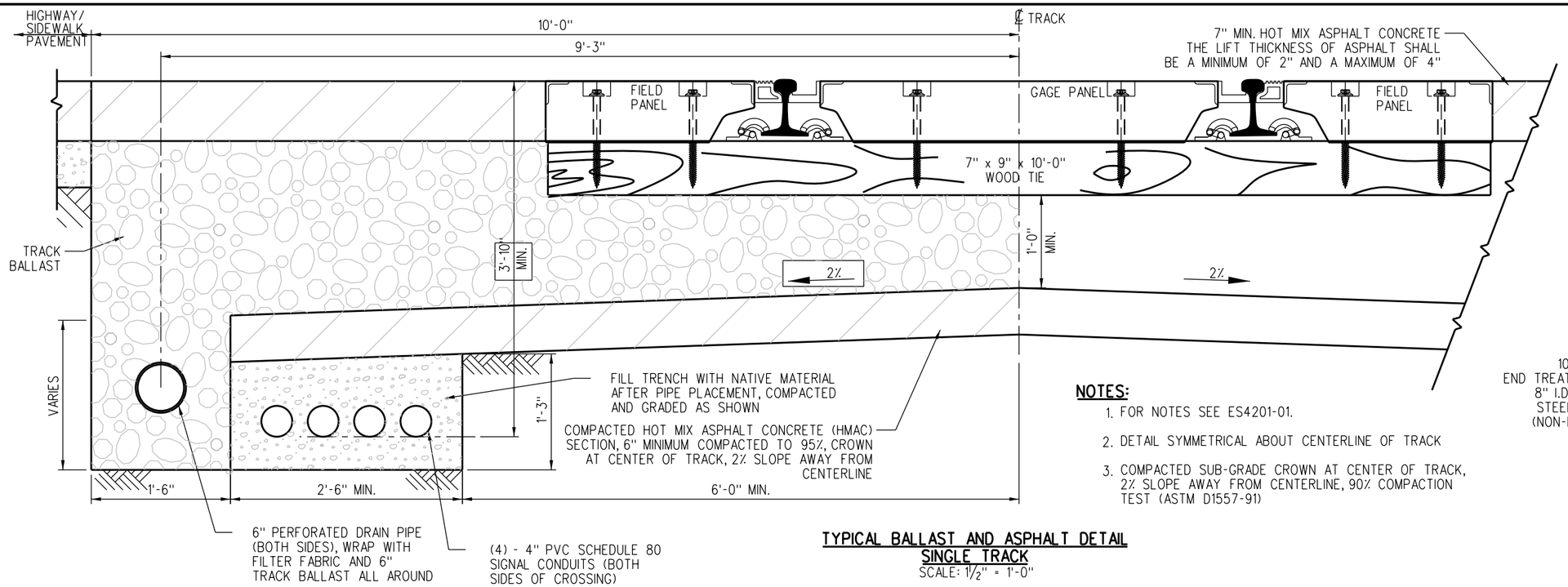
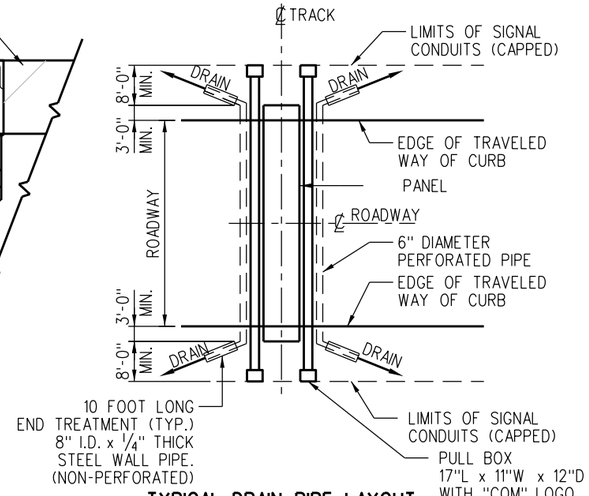


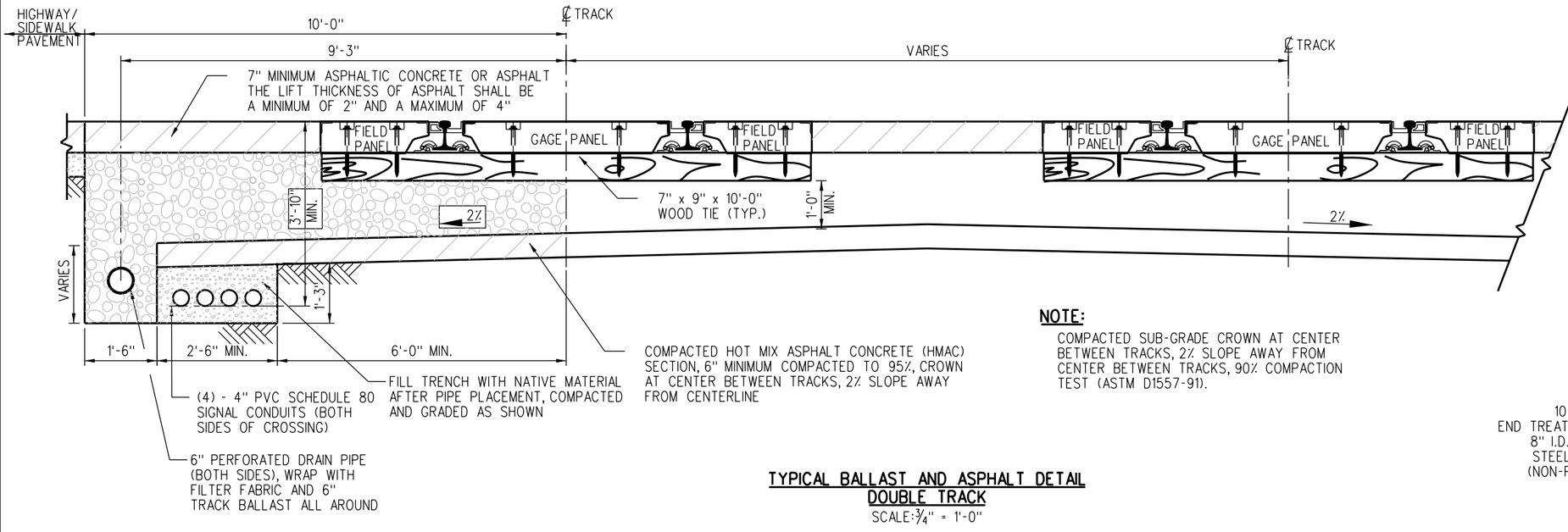
TYPICAL BALLAST AND ASPHALT DETAIL
SINGLE TRACK
SCALE: 1½" = 1'-0"

NOTES:

1. FOR NOTES SEE ES4201-01.
2. DETAIL SYMMETRICAL ABOUT CENTERLINE OF TRACK
3. COMPACTED SUB-GRADE CROWN AT CENTER OF TRACK, 2% SLOPE AWAY FROM CENTERLINE, 90% COMPACTION TEST (ASTM D1557-91)



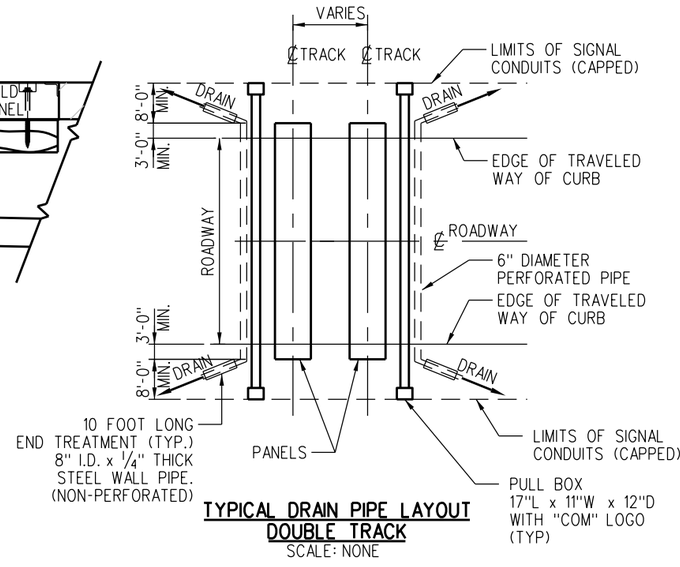
TYPICAL DRAIN PIPE LAYOUT
SINGLE TRACK
SCALE: NONE



TYPICAL BALLAST AND ASPHALT DETAIL
DOUBLE TRACK
SCALE: ¾" = 1'-0"

NOTE:

COMPACTED SUB-GRADE CROWN AT CENTER BETWEEN TRACKS, 2% SLOPE AWAY FROM CENTER BETWEEN TRACKS, 90% COMPACTION TEST (ASTM D1557-91).



TYPICAL DRAIN PIPE LAYOUT
DOUBLE TRACK
SCALE: NONE

REV.	DATE	DESCRIPTION	DES.	ENG.
C	11-07-18	REVISED NOTES	AC	AT
B	06-19-15	ADDED PULLBOX TO DRAIN PIPE LAYOUTS	AC	NDP
A	03-14-12	REVISED FIELD AND GAGE RUBBER	AC	NDP

DRAWN BY: A. CARLOS DATE: 03/31/2011

PRINCIPAL ENGINEER, DESIGN & STANDARDS

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ENGINEERING STANDARDS

PRECAST CONCRETE PANELS
FOR HIGHWAY - RAIL GRADE CROSSING

STANDARD 4201
SCALE: AS NOTED
REVISION C SHEET 2 OF 3
CADD FILE: ES4201-02

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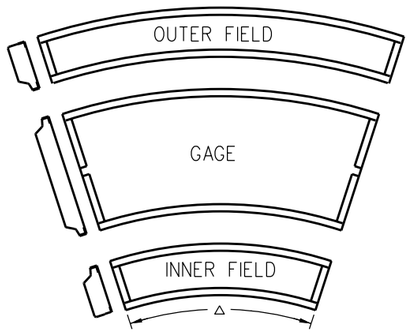


(SEE PANEL CURVATURE TABLES)

CURVATURE TABLE (ON CONCRETE TIES)

DEGREE OF CURVE	RADIUS IN FEET	△	CURVE PANEL?
2° OR LESS	2865'	0.20°	NO
3°	1910'	0.30°	YES
4°	1433'	0.40°	YES
5°	1146'	0.50°	YES
6°	955'	0.60°	YES
7°	819'	0.70°	YES
8°	717'	0.80°	YES
9°	637'	0.90°	YES
10°	574'	1.00°	YES
11°	522'	1.10°	YES
12°	478'	1.20°	YES
13°	442'	1.30°	YES
14°	410'	1.40°	YES

CURVATURE TABLE (ON WOOD TIES)

DEGREE OF CURVE	RADIUS IN FEET	△	CURVE PANEL?
3° OR LESS	1910'	0.24°	NO
4°	1433'	0.32°	YES
5°	1146'	0.40°	YES
6°	955'	0.48°	YES
7°	819'	0.56°	YES
8°	717'	0.66°	YES
9°	637'	0.74°	YES
10°	574'	0.82°	YES
11°	522'	0.90°	YES
12°	478'	0.98°	YES
13°	442'	1.06°	YES
14°	410'	1.14°	YES

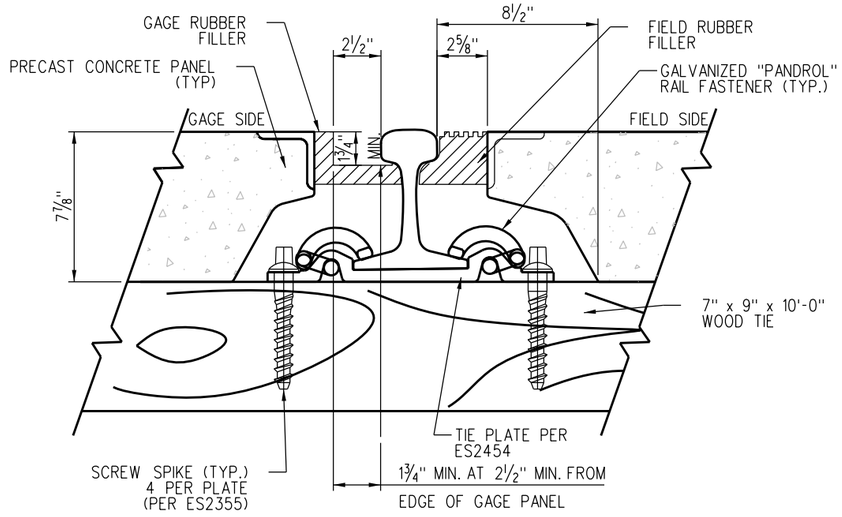
NOTES:

A. A CURVED PANEL IS A PANEL THAT IS PIE SHAPED WITH A LONGER OUTER LENGTH THAN THE INNER LENGTH WITH TRUE RADIUSED OUTER AND INNER STEEL.

B. CURVED PANELS USE STANDARD REINFORCEMENT SIMILAR TO TANGENT PANEL STANDARD REINFORCEMENT.

C. LAG HOLES MUST LINE UP WITH THE CENTERLINE OF TIES.

CURVED CONCRETE PANELS
DETAIL 5

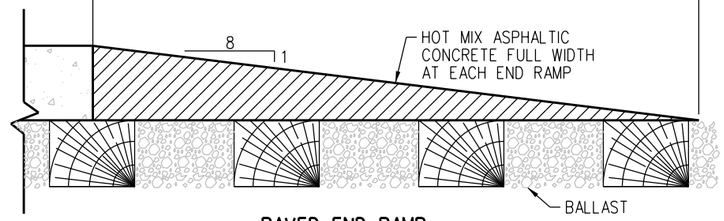


NOTES:

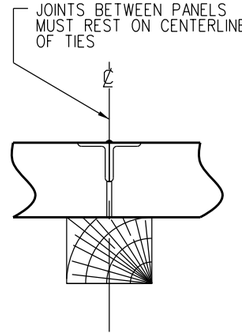
A. VENDOR SHALL SUBMIT PRE-ATTACHED FLANGEWAY FILLER DESIGN AND DETAILS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
B. SHUNT RESISTANT RUBBER FILLERS BOLTED TO STEEL FRAME ON 12" CENTERS.
C. LAG-DOWN CONCRETE PANELS WITH PRE-ATTACHED RUBBER FILLER COMES IN STANDARD LENGTHS OF 8'-1½".

DETAIL 6

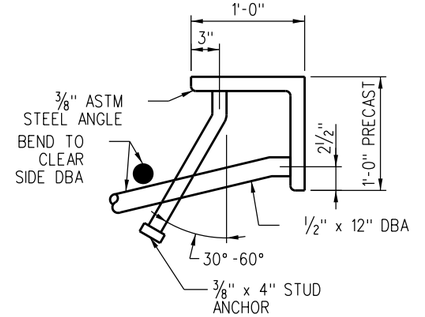
NOTE:
SLOPE OF RAMP SHALL NOT EXCEED 8:1 PER CPUC GO NO. 118-A.



PAVED END RAMP
DETAIL 7



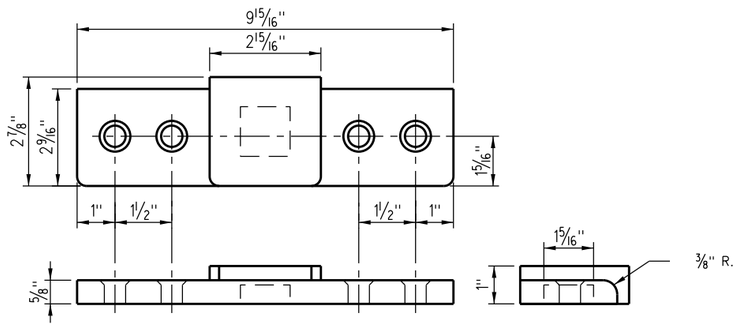
JOINT BETWEEN PANELS
DETAIL 8



NOTE:
DBA = DEFORMED BAR ANCHOR

END FRAME
DETAIL 9

NOTE:
ALL RADII TO BE ¼" EXCEPT WHERE NOTED.



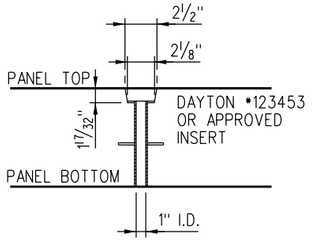
TYPICAL SHUNT SPACER
DETAIL 10

LIFTING INSERTS SHALL BE DESIGNED WITH A MINIMUM SAFETY FACTOR=4. PROFESSIONAL ENGINEER STAMPED AND SEALED DETAILS AND DESIGN CALCULATIONS MUST BE SUBMITTED TO THE SCRRA DIRECTOR OF ENGINEERING AND CONSTRUCTION FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.

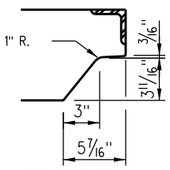
LIFTING INSERTS SHALL BE MECHANICALLY GALVANIZED OR SIMILARILY PROTECTED AGAINST CORROSION.

LIFTING DEVICES SHALL BE USABLE WITH BURKE OR DAYTON 5-TON CLUTCH SYSTEMS.

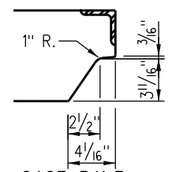
TYPICAL LIFTING DEVICE AND BLOCKOUT
DETAIL 11



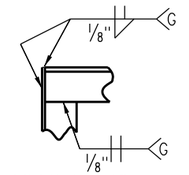
LAG HOLE DETAIL
DETAIL 12



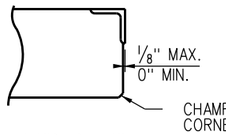
FIELD PANEL



GAGE PANEL



WELD DETAIL



END DETAIL

TYPICAL ANGLE DETAILS

REV.	DATE	DESCRIPTION	DES.	ENG.
C	10-10-18	REVISED DETAIL 7	AC	AT
B	3-07-14	REVISED GAUGE RUBBER DETAILS	AC	NDP
A	3-14-12	REVISED DETAIL 6	AC	NDP

DRAWN BY: A. CARLOS DATE: 03/31/2011

PRINCIPAL ENGINEER, DESIGN & STANDARDS

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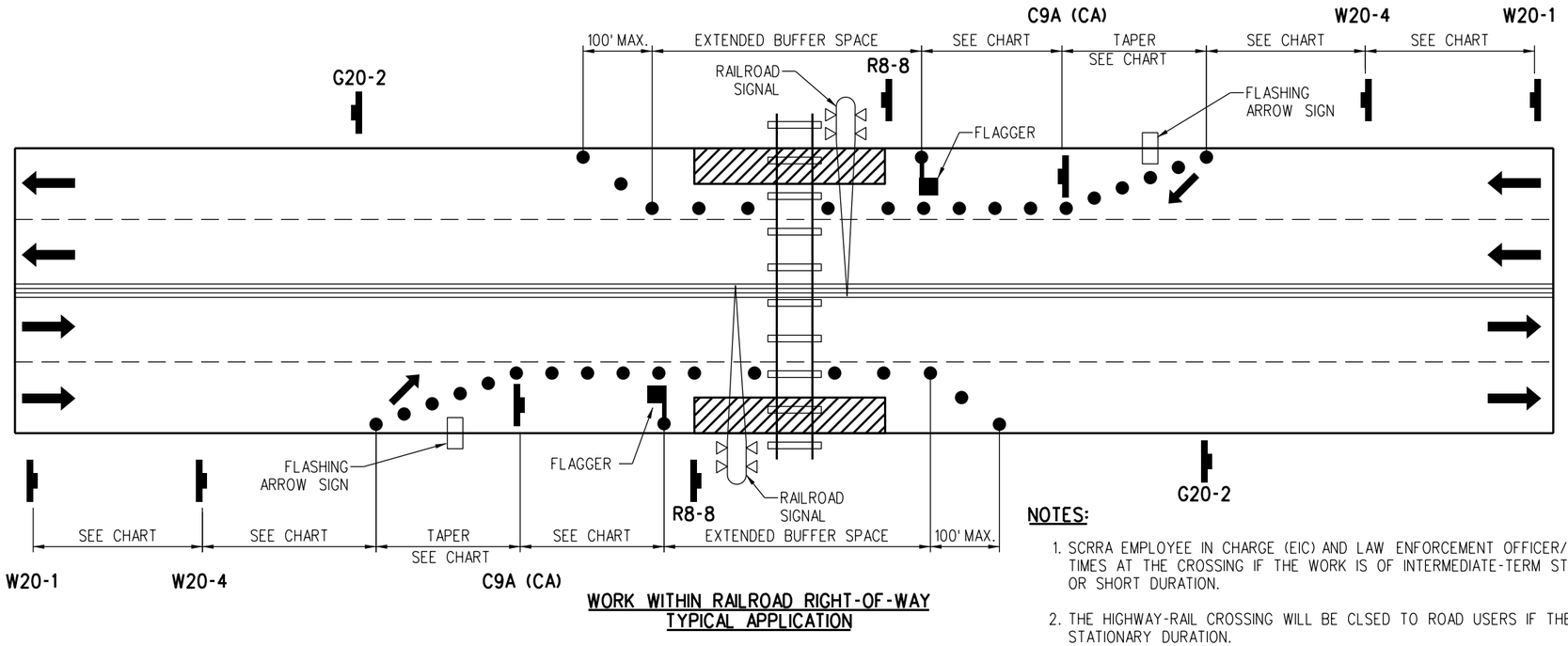
ENGINEERING STANDARDS

PRECAST CONCRETE PANELS
FOR HIGHWAY - RAIL GRADE CROSSING

STANDARD 4201
SCALE: NTS
REVISION C SHEET 3 OF 3
CADD FILE: ES4201-03



WORK WITHIN RAILROAD RIGHT-OF-WAY
TYPICAL APPLICATION

LEGEND:

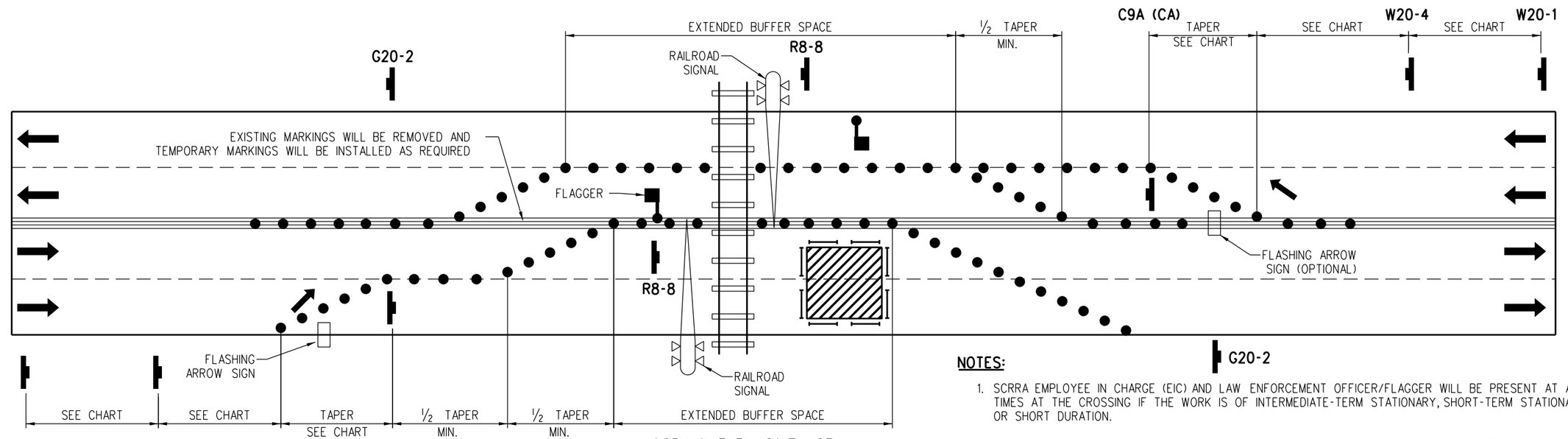
- ROAD WORK AHEAD — W20-1
- ONE LANE ROAD AHEAD — W20-4
- C9A (CA)
- END ROAD WORK — G20-2
- DO NOT STOP ON TRACKS — R8-8
- SIGN
- CONE OR PORTABLE DELINEATOR
- FLASHING ARROW SIGN
- FLAGGER
- DIRECTION OF TRAFFIC
- WORK SPACE
- TYPE III BARRICADE

NOTE:

FOR ADDITIONAL NOTES AND CHART SEE SHEET ES4301-02.

NOTES:

1. SCRRA EMPLOYEE IN CHARGE (EIC) AND LAW ENFORCEMENT OFFICER/FLAGGER WILL BE PRESENT AT ALL TIMES AT THE CROSSING IF THE WORK IS OF INTERMEDIATE-TERM STATIONARY, SHORT-TERM STATIONARY, OR SHORT DURATION.
2. THE HIGHWAY-RAIL CROSSING WILL BE CLSED TO ROAD USERS IF THE WORK IS OF LONG-TERM STATIONARY DURATION.



WORK IN THE VICINITY OF
RAILROAD RIGHT-OF-WAY
TYPICAL APPLICATION

NOTES:

1. SCRRA EMPLOYEE IN CHARGE (EIC) AND LAW ENFORCEMENT OFFICER/FLAGGER WILL BE PRESENT AT ALL TIMES AT THE CROSSING IF THE WORK IS OF INTERMEDIATE-TERM STATIONARY, SHORT-TERM STATIONARY, OR SHORT DURATION.
2. A LAW ENFORCEMENT OFFICER/FLAGGER WILL BE PRESENT AT ALL TIMES AT THE CROSSING AND THE RAILROAD CROSSING WARNING SIGNALS WILL BE RELOCATED OR INSTALLED TO PREVENT VEHICLES FROM STOPPING ON THE TRACK IF THE WORK IS OF LONG-TERM STATIONARY DURATION.

REV.	DATE	DESCRIPTION	DES.	ENG.
X	XX-XX-XX	REVISION	XX	XX

DRAWN BY: A. CARLOS DATE: 04/01/03

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

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ENGINEERING STANDARDS

TEMPORARY TRAFFIC CONTROL
AT OR NEAR GRADE CROSSINGS

STANDARD 4301
SCALE: NTS
REVISION -
SHEET 1 OF 2
CADD FILE: ES4301-01

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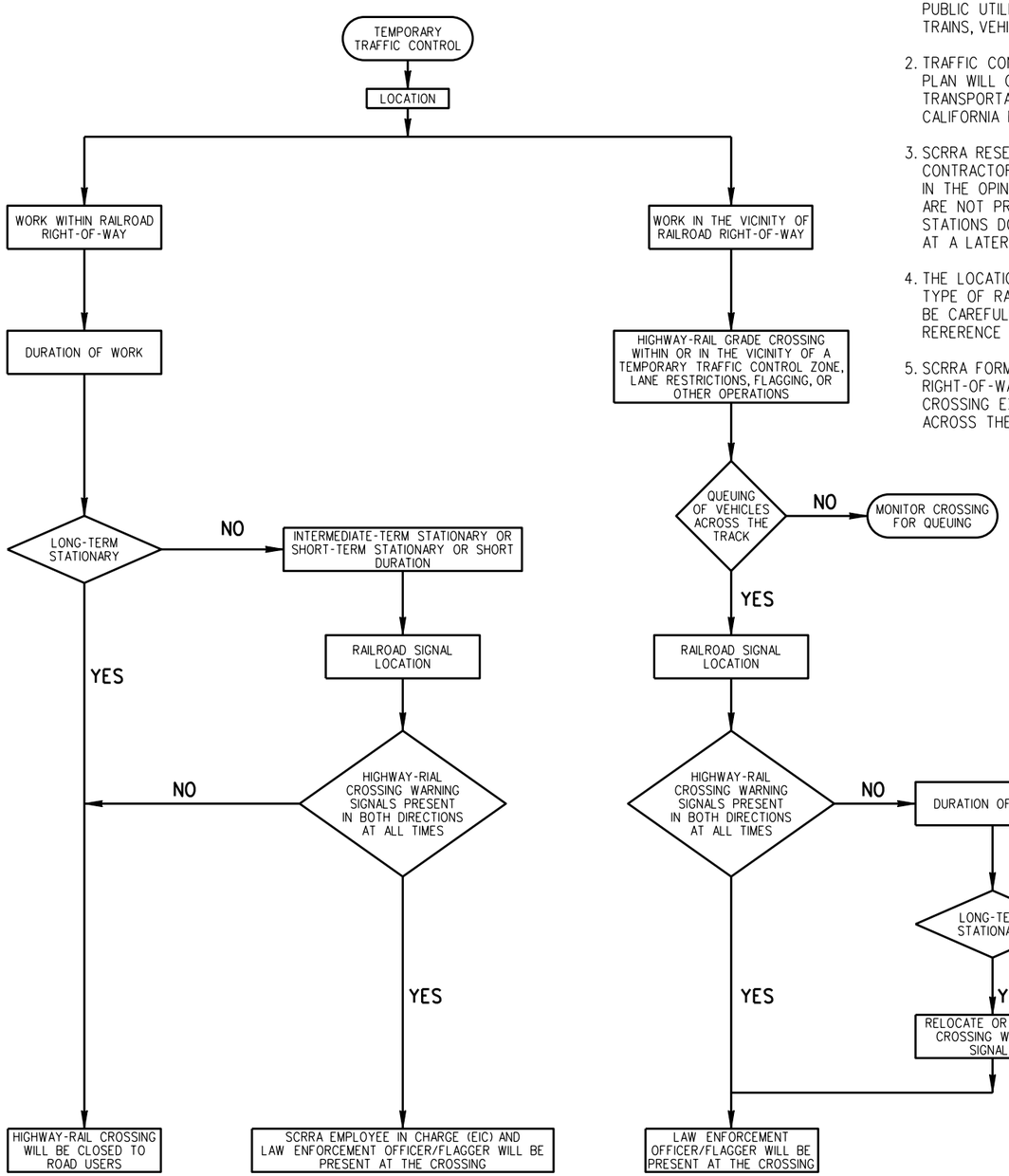
FLOW CHART



NOTES:

1. TEMPORARY TRAFFIC CONTROL PLANNING AND DESIGN SHALL BE COORDINATED WITH THE SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY (SCRRA) SINCE PUBLIC AGENCIES AND SCRRA ARE OBLIGATED TO COORDINATE ALL INSTALLATION, OPERATION, MAINTENANCE USE AND PROTECTION OF GRADE CROSSINGS ACTIVITIES UNDER THE CALIFORNIA PUBLIC UTILITIES COMMISION. IN ORDER TO ASSURE NO DEGREDATION OF THE SAFE OPERATION OF GRADE CROSSINGS AND TO PROVIDE SAFE AND EFFICIENT MOVEMENTS OF TRAINS, VEHICLES, BICYCLISTS AND PEDESTRIANS, SCRRA MUST APPROVE ANY AND ALL TEMPORARY TRAFFIC CONTROL PLANS AND DEVICES.

2. TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO SCRRA FOR ALL ACTIVITIES LOCATED WITHIN OR IN THE VICINITY OF HIGHWAY-RAIL GRADE CROSSINGS. TRAFFIC CONTROL PLAN WILL COMPLY WITH THE CURRENT EDITIONS OF THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) PUBLISHED BY THE U.S. DEPARTMENT OF TRANSPORTATION; "WORK AREA TRAFFIC CONTROL HANDBOOK" (WATCH) PUBLISHED BY SOUTHERN CALIFORNIA CHAPTER OF THE AMERICAN PUBLIC WORKS ASSOCIATION AND CALIFORNIA MUTCD PUBLISHED BY THE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION (CALTRANS).

3. SCRRA RESERVES THE RIGHT TO CLOSE THE CROSSING TO VEHICLE TRAFFIC, REVOKE THE TEMPORARY RIGHT OF ENTRY AGREEMENT OR ASK THE PUBLIC AGENCY OR THE CONTRACTOR TO CANCEL THE TEMPORARY TRAFFIC CONTROL IF, THE PUBLIC AGENCY OR CONTRACTOR ACTIVITY DOES NOT MEET CALIFORNIA MUTCD SECTION 6G REQUIREMENTS; IN THE OPINION OF SCRRA, THE WORK INTERFERES WITH OR ENDANGERS THE MOVEMENT OF ROAD USERS AND TRAIN TRAFFIC; LAW ENFORCEMENT OFFICER(S) OR FLAGGER(S) ARE NOT PRESENT AT THE HIGHWAY-RAIL GRADE CROSSING; OR THE FLAGGER QUALIFICATIONS, CLOTHING, HAND-SIGNAL DEVICES, FLAGGER PROCEDURES AND FLAGGER STATIONS DOES NOT MEET THE SCRRA, MUTCD, WATCH OR CALTRANS REQUIREMENTS. THE TRAFFIC CONTROL WILL BE TERMINATED INSTANTLY AND WORK WILL BE RESUMED AT A LATER DATE AFTER APPROVAL HAS BEEN GRANTED BY SCRRA.

4. THE LOCATION AND DURATION OF TEMPORARY TRAFFIC CONTROL, PROTECTION OR LACK OF PROTECTION BY RAILROAD CROSSING WARNING SYSTEM IN BOTH DIRECTIONS, TYPE OF RAIL AND HIGHWAY TRAFFIC AND FLAGGING CAN AFFECT THE DESIGN AND SELECTION OF TEMPORARY TRAFFIC CONTROL PLAN. THESE VARIABLE FACTORS SHOULD BE CAREFULLY STUDIED PRIOR TO DESIGNING AND IMPLEMENTING TEMPORARY TRAFFIC CONTROL ZONES. REFER TO THE ACCOMPANIED FLOW CHART THAT PROVIDES A QUICK RERERENCE TO THE RELATIONSHIP BETWEEN RAILROAD CROSSING CONDITIONS AND TRAFFIC CONTROL REQUIREMENTS.

5. SCRRA FORM NO. 6 (TEMPORARY RIGHT OF ENTRY AGREEMENT) WILL BE EXECUTED AND SUBMITTED WHEN THE CONSTRUCTION ACTIVITY IS LOCATED WITHIN THE RAILROAD RIGHT-OF-WAY. SCRRA FORM NO. 5 (INDEMNIFICATION AND ASSUMPTION OF LIABILITY AGREEMENT) WILL BE EXECUTED AND SUBMITTED WHEN HIGHWAY-RAIL GRADE CROSSING EXIST WITHIN OR IN THE VICINITY OF A TEMPORARY TRAFFIC CONTROL ZONE, LANE RESTRICITIONS, FLAGGING OR OTHER OPERATIONS AND QUEUING OF VEHICLES ACROSS THE TRACK(S) CANNOT BE AVOIDED.

CHART

MINIMUM RECOMMENDED DELINEATOR AND SIGN PLACEMENT

TRAFFIC ** SPEED	TAPER LENGTH (EACH LANE)	DELINEATOR SPACING		SIGN SPACING (BETWEEN SIGNS)	BUFFER SPACE (OR FLAGGER STATION)
		TAPER	TANGENT		
25 MPH	150 Ft	25 Ft	50 Ft	150 Ft	55 Ft
30 MPH	200 Ft	30 Ft	60 Ft	200 Ft	85 Ft
35 MPH	250 Ft	35 Ft	70 Ft	250 Ft	120 Ft
40 MPH	350 Ft	40 Ft	80 Ft	350 Ft	170 Ft
* 45 MPH	550 Ft	45 Ft	90 Ft	550 Ft	220 Ft
* 50 MPH	600 Ft	50 Ft	100 Ft	600 Ft	280 Ft
* 55 MPH	1000 Ft	50 Ft	100 Ft	1000 Ft	335 Ft

NOTES: * REFER TO SECTION 8 OF WATCH MANUAL FOR HIGH SPEED SITUATIONS. DISTANCES SHOWN IN PARENTHESIS ARE APPROXIMATE.
** 85TH PERCENTILE SPEED OR AS DIRECTED BY THE ENGINEER.

REV.	DATE	DESCRIPTION	DES.	ENG.
A	09-11-12	REVISED FLO CHART	AC	NDP

DRAWN BY: A. CARLOS DATE: 04/30/05

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

TEMPORARY TRAFFIC CONTROL
AT OR NEAR GRADE CROSSINGS

STANDARD 4301
SCALE: NTS
REVISION A SHEET 2 OF 2
CADD FILE: ES4301-02

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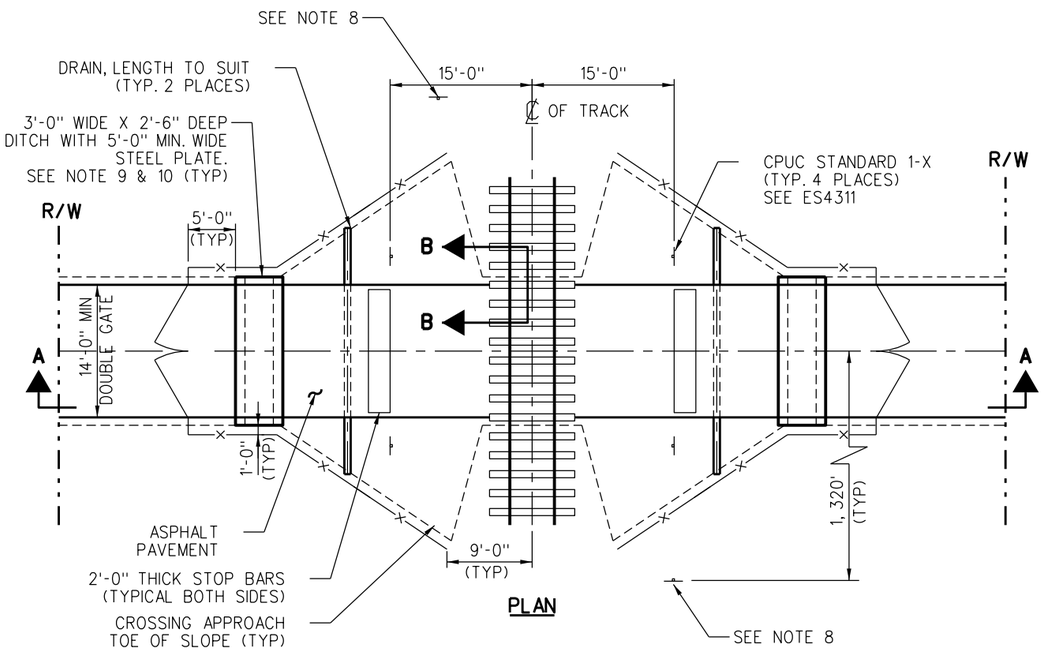
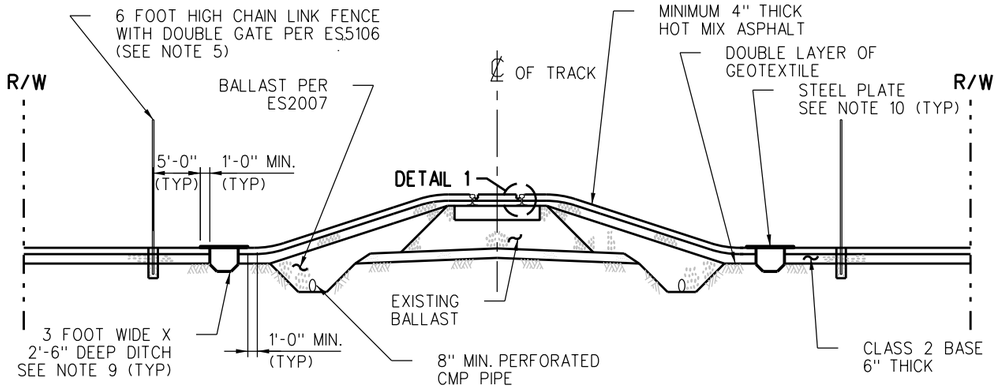
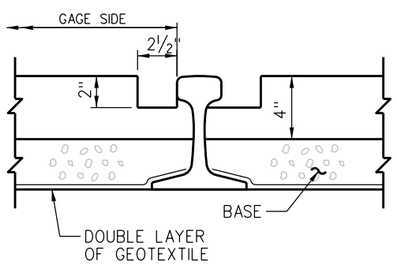


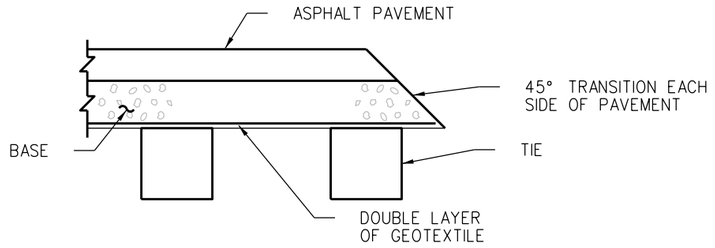
PLAN



SECTION A-A



DETAIL 1



SECTION B-B

NOTES:

1. REQUESTS FOR TEMPORARY CONSTRUCTION CROSSINGS WILL BE CONSIDERED BY SCRRA ONLY WHERE IT IS SHOWN THAT EXTREME HARDSHIP AND/OR UNUSUAL CONDITIONS EXIST THAT JUSTIFIES THE CROSSING.

2. GEOTEXTILE MUST BE PLACED OVER THE TIE PLATES AND OTHER TRACK MATERIAL (OTM) TO KEEP ASPHALT AND BASE AWAY. THE MINIMUM WEIGHT OF GEOTEXTILE SHALL BE 4.5 OZ. PER SQ. YARD AND THICKNESS SHALL BE 40 MILS.

3. THE CROSSING SHALL ONLY BE OPENED AND USED WHEN AN SCRRA AUTHORIZED EMPLOYEE IN CHARGE (EIC) IS PRESENT AND SUPERVISING THE USE OF THE CROSSING. THE APPROVAL OF THE EIC MUST FIRST BE OBTAINED EACH TIME WHEN ANY EQUIPMENT MOVEMENT OVER THE CROSSING IS NEEDED. THE EIC SHALL SUPERVISE THE CLOSURE OF THE CROSSING BEFORE LEAVING THE CROSSING.

4. THE CHAINLINK FENCE SHALL MEET SCRRA ENGINEERING STANDARD ES5106.

5. CHAINLINK FENCE GATES WILL BE LOCKED WITH SCRRA LOCK ONLY. PROVIDE KEEPERS TO HOLD GATES OPEN.

6. COLD MIX ASPHALT IS NOT AN SCRRA APPROVED MATERIAL FOR THE PAVEMENT. HOT MIX ASPHALT MUST COMPLY WITH CALTRANS SPECIFICATIONS.

7. ENVIRONMENTAL RULES OF THE LOCAL AUTHORITY SHALL BE FOLLOWED WHEN DISPOSING OF THE ASPHALT MATERIALS.

8. WHISTLING POINT SIGNS PER ES5216 SHALL BE INSTALLED 1,320 FEET (1/4 MILE) FROM THE CENTERLINE OF THE TEMPORARY CONSTRUCTION CROSSING AND BAGGED SO SIGNS ARE NOT VISIBLE. AT THE BEGINNING OF EVERY SHIFT, WHEN THE CROSSING IS TO BE PLACED IN USE, THE BAGS SHALL BE REMOVED BY THE SCRRA AUTHORIZED EIC FROM THE WHISTLE POINT SIGNS AND REPLACED AT THE END OF THE SHIFT BY THE SCRRA AUTHORIZED EIC WHEN THE CROSSING IS CLOSED AND REMOVED FROM SERVICE.

9. DITCH REQUIREMENTS:

   A. LENGTH AND DISTANCE OF DITCH TO CENTERLINE OF TRACK WILL BE DEPENDENT ON SITE CONDITIONS. THE CONTRACTOR SHALL WORK WITH SCRRA ON DETERMINING THE LENGTH AND DISTANCE OF DITCH FROM CENTERLINE OF TRACK NEEDED TO ACCOMMODATE THE PROJECT'S SITE CONDITION.

   B. WHERE SOFT/LOOSE GROUND CONDITIONS EXIST, SIDES OF DITCH SHALL BE SLURRIED TO STABILIZE THE GROUND AND MAINTAIN DITCH INTEGRITY. THE 3'-0" WIDE X 2'-6" DEEP DITCH DIMENSIONS MUST BE MAINTAINED WHEN SLURRY IS USED TO STABILIZE THE GROUND.

10. STEEL PLATE REQUIREMENTS:

    A. WHEN AUTHORIZED BY THE SCRRA EIC, STEEL PLATES SHALL BE PLACED ACROSS DITCHES AT THE BEGINNING OF EVERY SHIFT AND REMOVED AT THE END OF THE SHIFT.

    B. STEEL PLATES SHALL BE SECURED TO THE ROADWAY TO PREVENT SLIPPAGE/MOVEMENT OF STEEL PLATES WHILE THE CROSSING IS IN SERVICE. CONTRACTOR SHALL PROVIDE THE APPROPRIATE STEEL PLATE THICKNESS AND WIDTH NEEDED FOR THE TYPE OF EQUIPMENT PROPOSED TO TRAVERSE THE CROSSING.

    C. STEEL PLATES SHALL BE STORED AND SECURED IN AREAS THAT WILL NOT FOUL THE TRACKS OR CAUSE A HAZARD TO PERSONNEL/EQUIPMENT WHEN NOT IN USE. STEEL PLATES SHALL BE ONLY STORED ON THE SIDE OF THE TRACK FOR WHICH IT IS BEING USED (STEEL PLATES SHALL NOT BE CARRIED OVER THE TRACKS DAILY FOR STORAGE).

REV.	DATE	DESCRIPTION	DES.	ENG.
C	09-20-19	REVISED PLAN, SECTION AND NOTES	AC	JMM
B	08-26-19	REVISED NOTE 3	AC	JMM
A	08-26-19	REVISED PLAN & DETAILS, ADDED NOTES 9 AND 10	AC	JMM

DRAWN BY: A. CARLOS DATE: 05/04/06

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

TEMPORARY CONSTRUCTION CROSSING

STANDARD 4302
SCALE: NTS
REVISION C SHEET 1 OF 1
CADD FILE: ES4302

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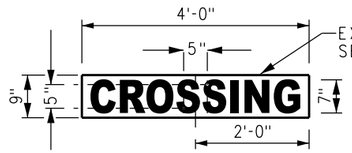
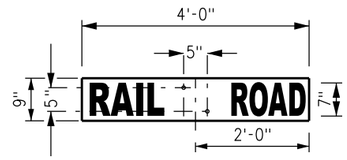
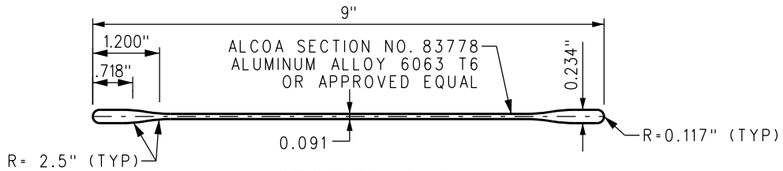


R15-1 FRONT BLADE

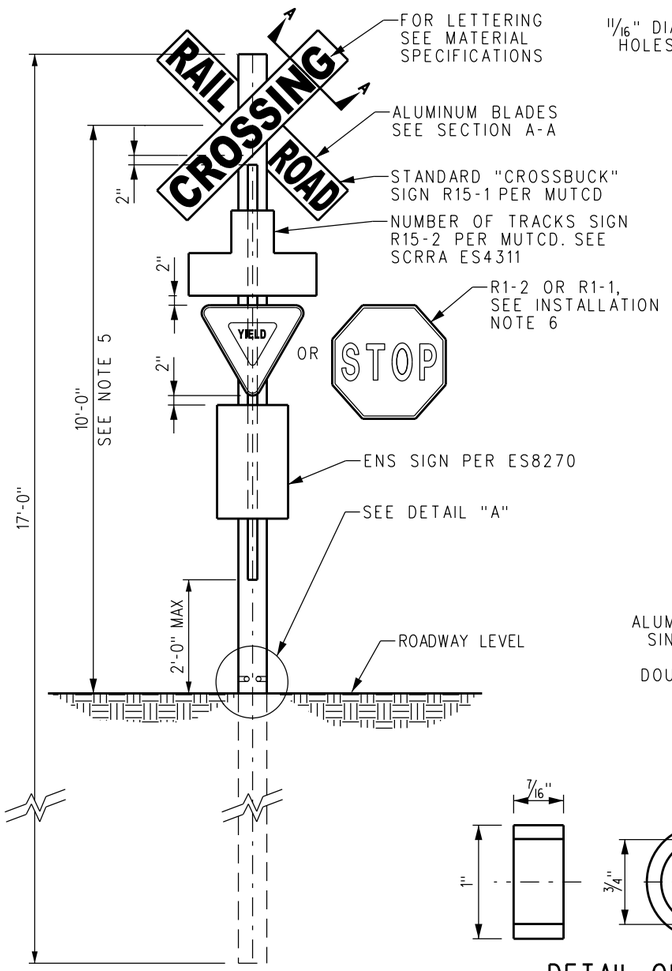


R15-1 REAR BLADE

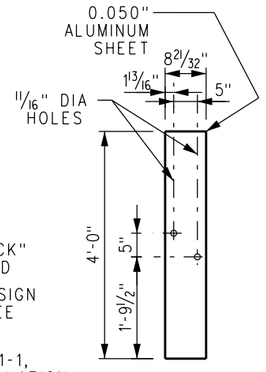


SECTION A-A

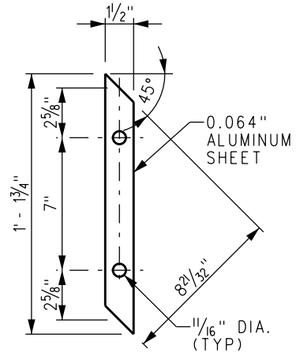
THIS SIGN COMPLIES WITH THE REQUIREMENTS OF CALIFORNIA PUBLIC UTILTIES COMMISSION GENERAL ORDER NO. 75-C AND MUTCD SECTION 8B-2.



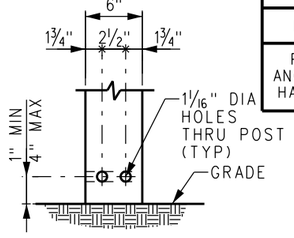
"CROSSBUCK" SIGN



DETAIL OF INSERT



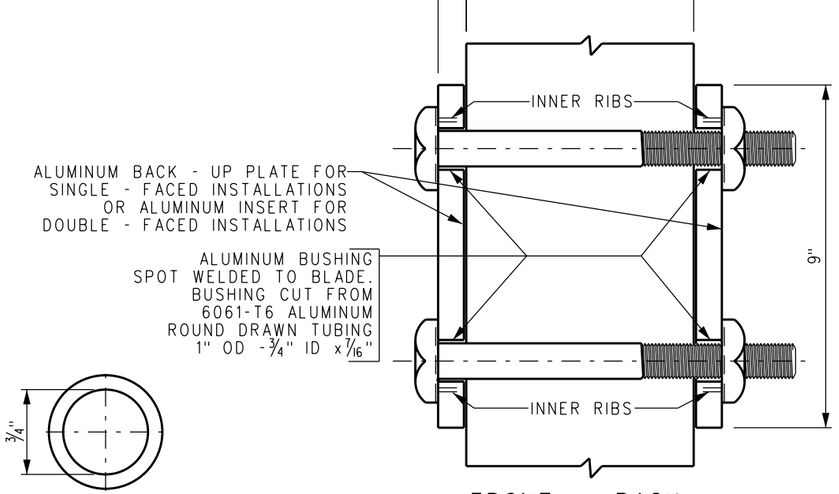
DETAIL OF ALUMINUM BACK UP PLATE



DETAIL "A"

"BREAK AWAY" SIGN POST, 6" x 6" POST MUST BE DRILLED PER DETAIL "A". IF 4" x 4" POST IS USED, DRILLING PER DETAIL "A" NOT REQUIRED.

DETAIL OF ALUMINUM BUSHING



FRONT BACK

SECTION THRU ALTERNATE BLADES

MATERIAL SPECIFICATIONS

PRODUCT	SYSTEM	MANUFACTURER AND PRODUCT
HIGH INTENSITY SHEETING (WHITE)	1	3M SCOTCHLITE HIGH INTENSITY PRISMATIC WHITE GRADE 3930 SHEETING
	2	NIPPON CARBIDE RETRO-REFLECTIVE SHEETING TYPE VIII CRYSTAL GRADE
	3	AVERY DENNISON OMNIVIEW T-9500 PRISMATIC HIGH INTENSITY SHEETING
FONT / GRAPHICS (BLACK)	1	3M PROCESS COLOR SERIES 8851 INK
	2	NIPPON CARBIDE GRAFFITI RESISTANT 3803 INK
	3	AVERY DENNISON 4930 INK
ANTI - GRAFFITI OVERLAY	1	3M PREMIUM PROTECTIVE OVERLAY FILM 1160
	2	NIKKALITE BRAND HI - SCALE F-40801
	3	AVERY DENNISON OL - 1000 PREMIUM ANTI - GRAFFITI FILM
PANEL	1	1/8" THICK ALUMINUM, ALCOA 6016-T6 OR EQUAL
POSTS, ANCHORS & HARDWARE	1	PER SCRRA ES5210

SIGN NOTES:

1. SIGNS SHALL INCLUDE ALUMINUM PANEL, RETROREFLECTIVE SHEETING, POLYURETHANE PAINT, SCREENED-PROCESS COLORS OR FILM, UV PROTECTION OVERLAY, ANTI-GRAFFITI OVERLAY, POSTS, ANCHORS AND HARDWARE.
2. FONT SHALL BE PER SCRRA ES1212, SIZE AS INDICATED.
3. PANEL SHALL BE PAINTED ON ALL SIDES WITH TWO PART ACRYLIC POLYURETHANE PAINT COATING.
4. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4956, CLASS IX OR GREATER. RETROREFLECTIVE SHEETING SHALL HAVE CLASS 1, 3, OR 4 ADHESIVE BACKING WHICH SHALL BE PRESSURE SENSITIVE AND FUNGUS RESISTANT.
5. SCREENED-PROCESS COLORS AND NONREFLECTIVE, OPAQUE BLACK FILM SHALL HAVE EQUIVALENT OUTDOOR WEATHERABILITY CHARACTERISTICS AS THE RETROREFLECTIVE SHEETING.

INSTALLATION NOTES:

1. SIGN NO R15-1 SHALL BE USED ON NEW INSTALLATIONS AND FOR THE REPLACEMENT OF EXISTING RAILROAD HIGHWAY CROSSING SIGNS, ON AN ATTRITION BASIS, AS RENEWALS ARE REQUIRED. EXISTING WOODEN "CROSSBUCK" BLADES SHALL BE REPLACED WITH EXTRUDED ALUMINUM BLADES PER THIS DRAWING, WHEN RENEWAL OF SIGN MESSAGE IS REQUIRED.
2. TWO DOUBLE - FACED, HIGHWAY CROSSING SIGNS SHALL BE PROVIDED AT EACH HIGHWAY CROSSING OF A TRACK OR TRACKS, ONE ON EACH SIDE OF THE TRACK OR ON THE OUTSIDE OF MULTIPLE TRACK CROSSINGS EXCEPT AS OTHERWISE PROVIDED.
3. NUMBER OF TRACKS SIGN, MUTCD NO. R15-2 SHALL BE USED IN CONJUNCTION WITH SIGN NO. R15-1 WHEN REQUIRED.
4. THE SIGN SHALL BE ERECTED ON THE RIGHT HAND SIDE OF THE ROADWAY ON EACH APPROACH TO THE CROSSING. THE SIGN SHALL BE NO CLOSER THAN 4'-1" FROM THE FACE OF THE CURB TO THE CENTER OF POST OR WHERE THERE IS NO CURB, NO CLOSER THAN 8'-1" FROM EDGE OF TRAVELED WAY TO CENTER OF POST. ADDITIONALLY THE SIGNS SHALL BE PLACED NO CLOSER THAN 12'-6" FROM THE CENTER LINE OF TRACK TO THE BACK OF POST.
5. HEIGHT MAY BE VARIED AS REQUIRED BY LOCAL CONDITIONS AND MAY BE INCREASED TO ACCOMMODATE SIGNS MOUNTED BELOW THE R15-1 SIGN.
6. YIELD SIGN (R1-2) SHALL BE INSTALLED AT ALL PUBLIC PASSIVE HIGHWAY-RAIL GRADE CROSSINGS. WHERE A YIELD SIGN WOULD CONFLICT WITH OTHER TRAFFIC CONTROL DEVICES, A STOP SIGN (R1-1) SHALL BE INSTALLED INSTEAD. INSTALLATION OF A STOP SIGN (R1-1) WILL REQUIRE CPUC AUTHORIZATION VIA A G088-B APPLICATION.

REV.	DATE	DESCRIPTION	DES.	ENG.
C	10-19-20	REVISED CROSSBUCK SIGN DETAIL AND NOTES	AC	JJM
B	10-14-16	REVISED MATERIAL SPECIFICATIONS	AC	NDP
A	03-22-13	REVISED MATERIAL SPECIFICATIONS	AC	NDP

DRAWN BY: A. CARLOS DATE: 04/12/02

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

HIGHWAY - RAILROAD CROSSING CROSSBUCK SIGN

STANDARD 4310
SCALE: NTS
REVISION C SHEET 1 OF 1
CADD FILE: ES4310

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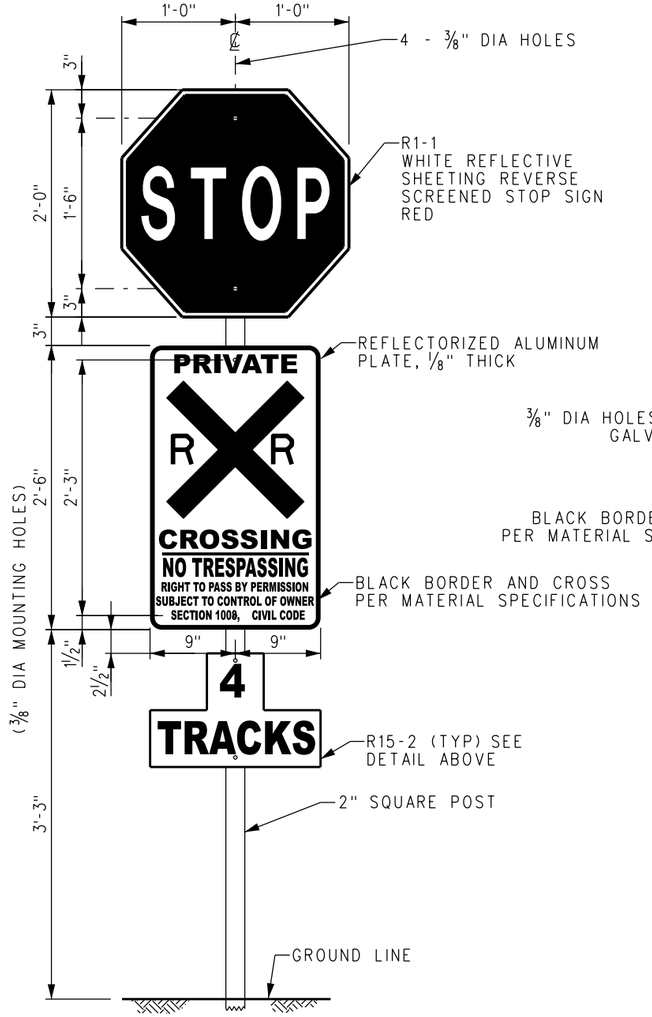
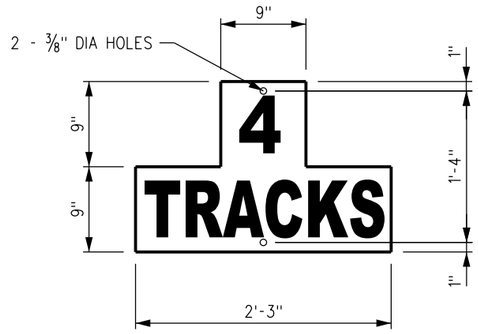


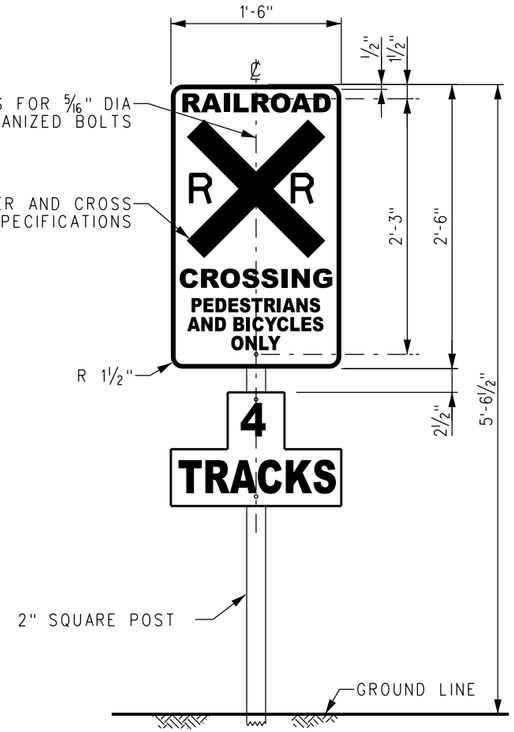
ANCHORED PER SCRRA ES5210

THIS SIGN COMPLIES WITH THE REQUIREMENTS OF
CALIFORNIA PUBLIC UTILITIES GENERAL ORDER NO. 75-D

CPUC STANDARD NO. 1-X



R15-2



ANCHORED PER SCRRA ES5210

THIS SIGN COMPLIES WITH THE REQUIREMENTS OF
CALIFORNIA PUBLIC UTILITIES GENERAL ORDER NO. 75-D

CPUC STANDARD NO. 1-D

MATERIAL SPECIFICATIONS

PRODUCT	SYSTEM	MANUFACTURER AND PRODUCT
HIGH INTENSITY SHEETING (WHITE)	1	3M SCOTCHLITE HIGH INTENSITY PRISMATIC WHITE GRADE 3930 SHEETING
	2	NIPPON CARBIDE RETRO-REFLECTIVE SHEETING TYPE VIII CRYSTAL GRADE
	3	AVERY DENNISON OMNIVIEW T-9500 PRISMATIC HIGH INTENSITY SHEETING
FONT / GRAPHICS (RED)	1	3M DIAMOND GRADE DG-3-4092
	2	AVERY DENNISON OMNICUBE T - 11508
FONT / GRAPHICS (BLACK)	1	3M PROCESS COLOR SERIES 885I INK
	2	NIPPON CARBIDE GRAFFITI RESISTANT 3803 INK
	3	AVERY DENNISON 4930 INK
ANTI - GRAFFITI OVERLAY	1	3M PREMIUM PROTECTIVE OVERLAY FILM 1160
	2	NIKKALITE BRAND HI - SCALE F-40801
	3	AVERY DENNISON OL - 1000 PREMIUM ANTI - GRAFFITI FILM
PANEL	1	⅛" THICK ALUMINUM, ALCOA 6016-T6 OR EQUAL
POSTS, ANCHORS & HARDWARE	1	PER SCRRA ES5210

SIGN NOTES:

1. SIGNS SHALL INCLUDE ALUMINUM PANEL, RETROREFLECTIVE SHEETING, POLYURETHANE PAINT, SCREENED-PROCESS COLORS OR FILM, UV PROTECTION OVERLAY, ANTI-GRAFFITI OVERLAY, POSTS, ANCHORS AND HARDWARE.
2. FONT SHALL BE PER SCRRA ES1212, SIZE AS INDICATED.
3. PANEL SHALL BE PAINTED ON ALL SIDES WITH TWO PART ACRYLIC POLYURETHANE PAINT COATING.
4. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4956, CLASS IX OR GREATER. RETROREFLECTIVE SHEETING SHALL HAVE CLASS 1, 3, OR 4 ADHESIVE BACKING WHICH SHALL BE PRESSURE SENSITIVE AND FUNGUS RESISTANT.
5. SCREENED-PROCESS COLORS AND NONREFLECTIVE, OPAQUE BLACK FILM SHALL HAVE EQUIVALENT OUTDOOR WEATHERABILITY CHARACTERISTICS AS THE RETROREFLECTIVE SHEETING.

INSTALLATION NOTES:

1. CPUC STANDARD NO. 1-X PRIVATE CROSSING SIGN:
   TWO SIGNS SHALL BE USED AT EACH PRIVATE GRADE CROSSING NOT EQUIPPED WITH AUTOMATIC WARNING DEVICES, ONE FACING EACH ROAD APPROACH UNLESS THERE IS NO SPACE TO LOCATE THE SIGN OR SIGNS.
2. CPUC STANDARD NO. 1-D PEDESTRIAN AND BICYCLE CROSSING SIGN:
   FOR USE AT LOCATIONS DESIGNATED BY ORDER OF THE CALIFORNIA PUBLIC UTILITIES COMMISSION. THE WORDING "AND BICYCLES" IS OPTIONAL AND MAY BE OMITTED WHERE APPROPRIATE.
3. THE SIGNS SHALL BE PLACED NO CLOSER THAN 12'-6" FROM THE CENTER LINE OF TRACK TO THE BACK OF POST EXCEPT AS SHOWN FOR INDIVIDUAL STATE REQUIREMENTS.

REV.	DATE	DESCRIPTION	DES.	ENG.
C	10-19-20	REVISED NOTES	AT	JJM
B	10-14-16	REVISED DETAILS, NOTES AND MATERIAL SPECIFICATIONS	AC	NDP
A	03-22-13	REVISED MATERIAL SPECIFICATIONS	AC	NDP

DRAWN BY: A. CARLOS DATE: 04/12/02

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

PRIVATE, PEDESTRIAN AND BICYCLE
RAILROAD GRADE CROSSING SIGN

STANDARD 4311
SCALE: NTS
REVISION C SHEET 1 OF 1
CADD FILE: ES4311

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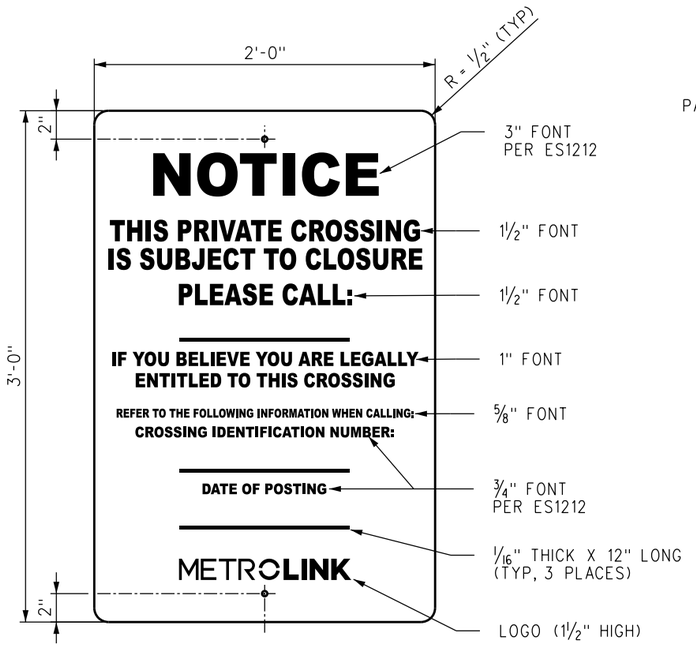
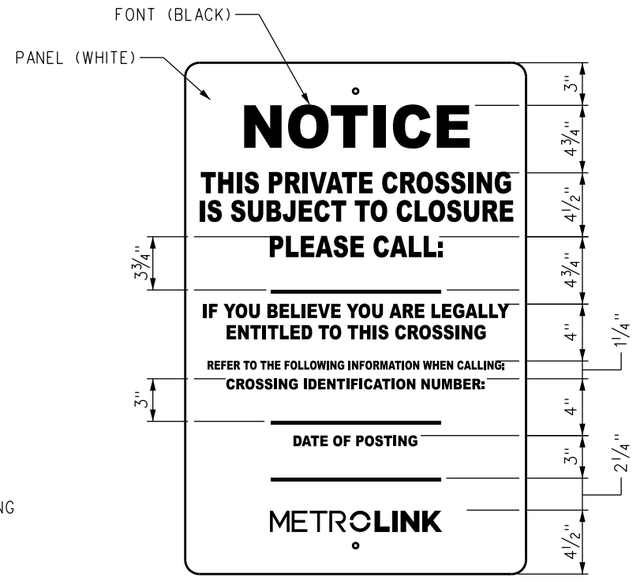
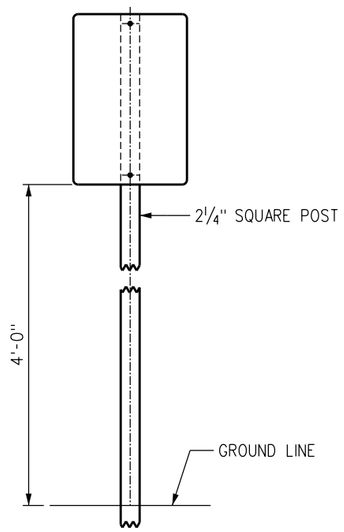


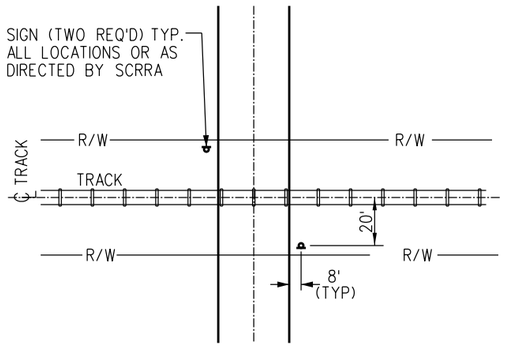
SIGN (SINGLE SIDED)





ANCHORED PER SCRRA ES5210

SIGN ELEVATION



LOCATION OF SIGN

MATERIAL SPECIFICATIONS

PRODUCT	SYSTEM	MANUFACTURER AND PRODUCT
HIGH INTENSITY SHEETING (WHITE)	1	3M SCOTCHLITE HIGH INTENSITY PRISMATIC WHITE GRADE 3930 SHEETING
	2	NIPPON CARBIDE RETRO-REFLECTIVE SHEETING TYPE VIII CRYSTAL GRADE
	3	AVERY DENNISON OMNIVIEW T-9500 PRISMATIC HIGH INTENSITY SHEETING
FONT / GRAPHICS (BLACK)	1	3M PROCESS COLOR SERIES 885I INK
	2	NIPPON CARBIDE GRAFFITI RESISTANT 3803 INK
	3	AVERY DENNISON 4930 INK
ANTI - GRAFFITI OVERLAY	1	3M PREMIUM PROTECTIVE OVERLAY FILM 1160
	2	NIKKALITE BRAND HI - SCALE F-40801
	3	AVERY DENNISON OL - 1000 PREMIUM ANTI - GRAFFITI FILM
PANEL	1	1/8" THICK ALUMINUM, ALCOA 6016-T6 OR EQUAL
POSTS, ANCHORS & HARDWARE	1	PER SCRRA ES5210

SIGN NOTES:

1. SIGNS SHALL INCLUDE ALUMINUM PANEL, RETROREFLECTIVE SHEETING, POLYURETHANE PAINT, SCREENED-PROCESS COLORS OR FILM, UV PROTECTION OVERLAY, ANTI-GRAFFITI OVERLAY, POSTS, ANCHORS AND HARDWARE.
2. FONT SHALL BE PER SCRRA ES1212, SIZE AS INDICATED.
3. PANEL SHALL BE PAINTED ON ALL SIDES WITH TWO PART ACRYLIC POLYURETHANE PAINT COATING.
4. RETROREFLECTIVE SHEETING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4956, CLASS IX OR GREATER. RETROREFLECTIVE SHEETING SHALL HAVE CLASS 1, 3, OR 4 ADHESIVE BACKING WHICH SHALL BE PRESSURE SENSITIVE AND FUNGUS RESISTANT.
5. SCREENED-PROCESS COLORS AND NONREFLECTIVE, OPAQUE BLACK FILM SHALL HAVE EQUIVALENT OUTDOOR WEATHERABILITY CHARACTERISTICS AS THE RETROREFLECTIVE SHEETING.

INSTALLATION AND REMOVAL INSTRUCTIONS:

1. ONE SIGN TO BE PLACED TO RIGHT OF EACH ROADWAY APPROACH MOUNTED ON 12'-0" GALVANIZED POST AND PER ES5210. SIGN TO BE MOUNTED 7'-0" ABOVE GROUND.
2. SIGN TO BE LOCATED 20'-0" FROM CENTERLINE OF NEAREST TRACK WITH THE CENTER OF THE POST NO LESS THAN 8'-0" FROM THE EDGE OF THE TRAVELED ROADWAY.
3. POSITION THE SIGN TO PROVIDE THE BEST POSSIBLE VIEW FROM A ROADWAY APPROACH.
4. A PHOTOGRAPH OF THE SIGN SHALL BE TAKEN UPON COMPLETION OF INSTALLATION FOR RECORDS FILE (INCLUDE DATE ON PICTURE).
5. LEAVE SIGN UP FOR MINIMUM OF 90 DAYS. IF THERE HAVE BEEN NO CALLS OR INQUIRIES AFTER THE 90 DAYS, REMOVE CROSSING. DOCUMENT DATE OF CROSSING REMOVAL, INCLUDING PICTURE AND ANY OTHER MEANS FOR PURPOSE OF DOCUMENTING RECORDS. IF CALL(S) IS RECEIVED AND THE CROSSING IS BEING USED AND CAN BE JUSTIFIED, HANDLE WITH REAL ESTATE OR APPROPRIATE AGREEMENT.

NOTE:

TO BE USED ONLY AT PRIVATE CROSSINGS WHEN THE FOLLOWING CONDITIONS EXIST:

- AN AGREEMENT FOR THE CROSSING DOES NOT EXIST.
- UNABLE TO DETERMINE USE OR OWNER OF THE CROSSING.

REV.	DATE	DESCRIPTION	DES.	ENG.
D	01-01-23	REVISED LOGO	AC	TQ
C	10-19-20	REVISED NOTES	AT	JJM
B	10-14-16	REVISED MATERIAL SPECIFICATIONS	AC	NDP
A	03-22-13	REVISED MATERIAL SPECIFICATIONS	AC	NDP

DRAWN BY: A. CARLOS DATE: 03/12/2012

PRINCIPAL ENGINEER, DESIGN & STANDARDS

ASSISTANT DIRECTOR, DESIGN

METROLINK
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
900 WILSHIRE BLVD., SUITE 1500, L. A., CA. 90017

ENGINEERING STANDARDS

PRIVATE CROSSING CLOSURE NOTIFICATION SIGN

STANDARD 4312
SCALE: NTS
REVISION D SHEET 1 OF 1
CADD FILE: ES4312

UserName=> scrrapw11ics01$ Date Plotted: 3/27/2023 3:44:55 PM Plot Driver=> C:\Program Files (x86)\Common Files\InterPlot\IPLOT\bin\iplotdrvn.plt FileName=> \\scrrapw11ics01\iCS_pdf_work_dir\89\492_27\ES4312.dgn