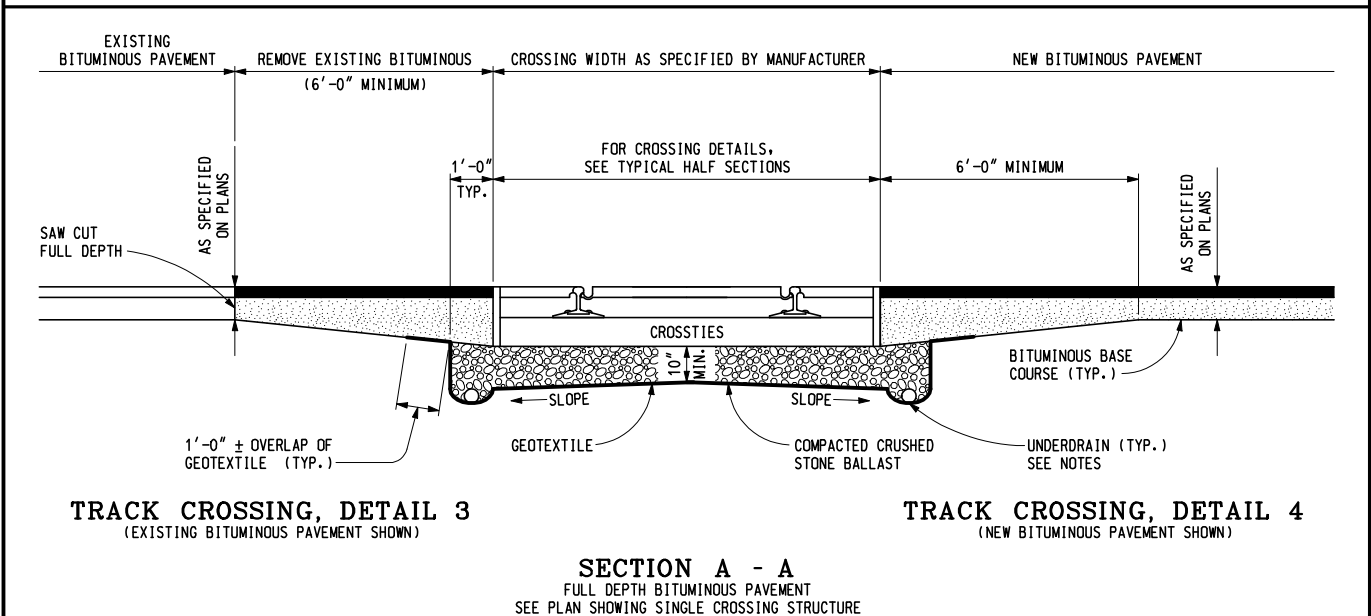
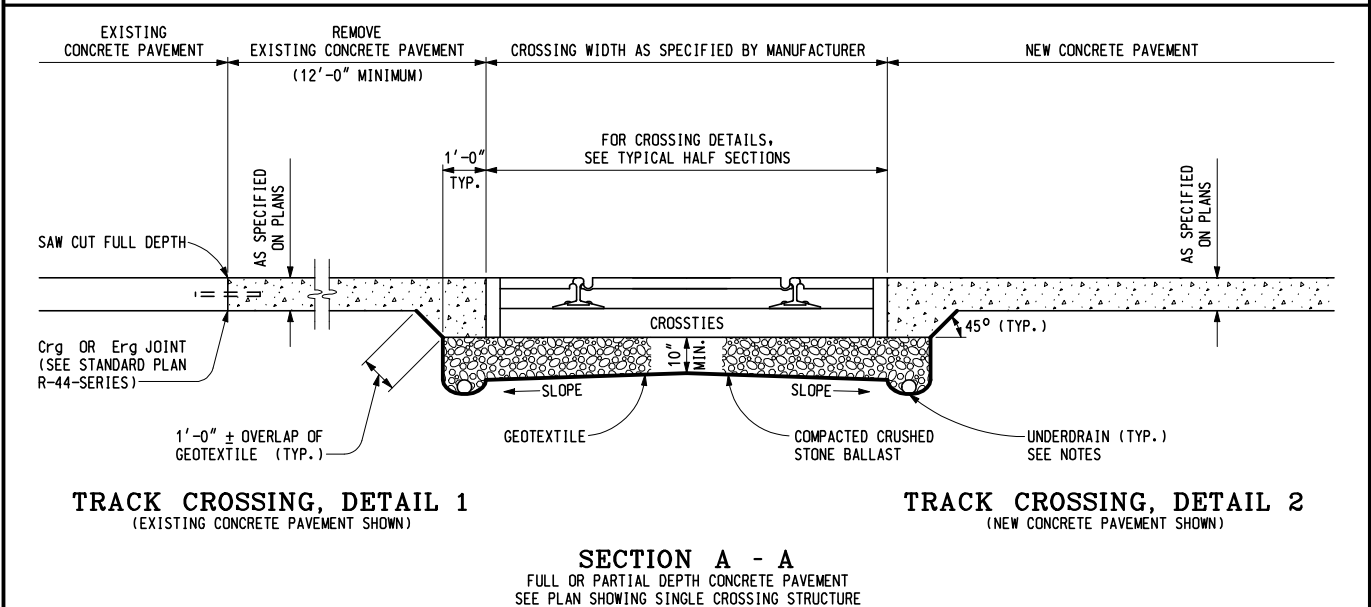
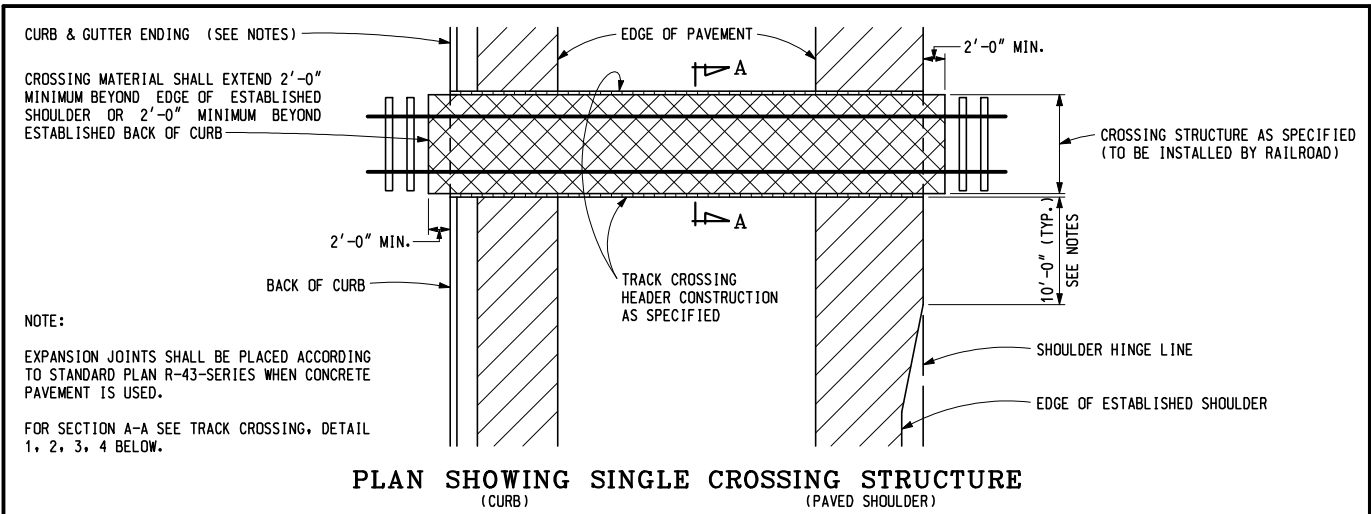
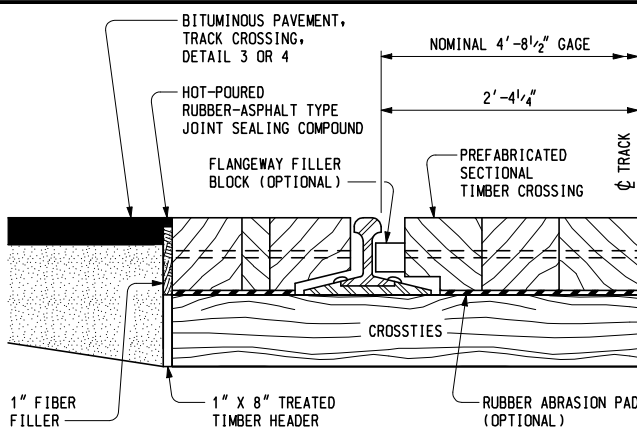


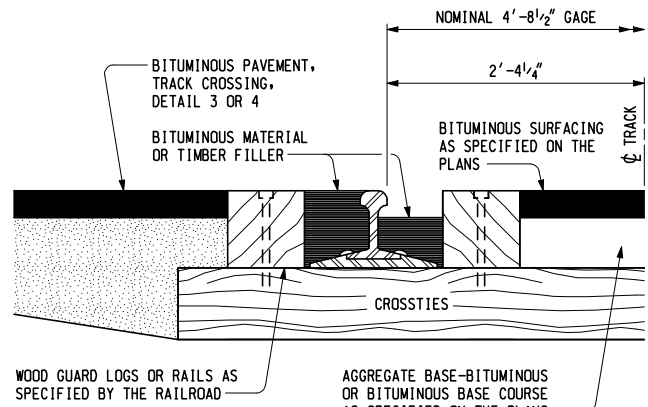


 PREPARED BY DESIGN DIVISION DRAWN BY: <u>B.L.T.</u> CHECKED BY: <u>W.K.P.</u>	<u>William C. Stanchard</u> RAILROAD COORDINATION ENGINEER	<u>Gregory J. Rosine</u> ENGINEER - ROAD DESIGN	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY TECHNICAL SERVICES STANDARD PLAN FOR			
	<u>David C. Pils</u> ENGINEER OF CONSTRUCTION & TECHNOLOGY	<u>John D. Miller</u> ENGINEER OF DESIGN	TRACK CROSSINGS			
	<u>Calvin Roberts</u> ENGINEER OF MAINTENANCE	<u>Gregory J. Rosine</u> DEPARTMENT DIRECTOR				
	<u>John X. O'Shealy</u> ENGINEER OF TRAFFIC AND SAFETY	<u>John X. O'Shealy</u> CHIEF ENGINEER/DEPUTY DIRECTOR BUREAU OF HIGHWAY TECHNICAL SERVICES	9-14-2001 F.H.W.A. APPROVAL	3-20-2001 PLAN DATE	R-121-B	SHEET 1 OF 4



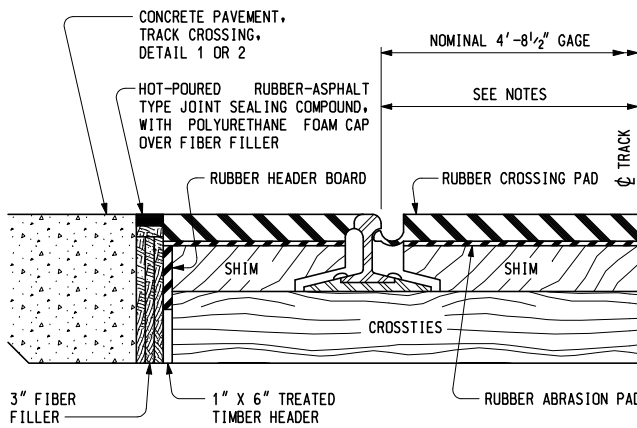
NOTE: USE 3" FILLER WITH POLYURETHANE FOAM CAP AND JOINT SEALING COMPOUND FOR CONCRETE PAVEMENT APPROACHES. (FULL OR PARTIAL DEPTH)

TYPICAL HALF SECTION
PREFABRICATED TREATED TIMBER SECTIONAL CROSSING



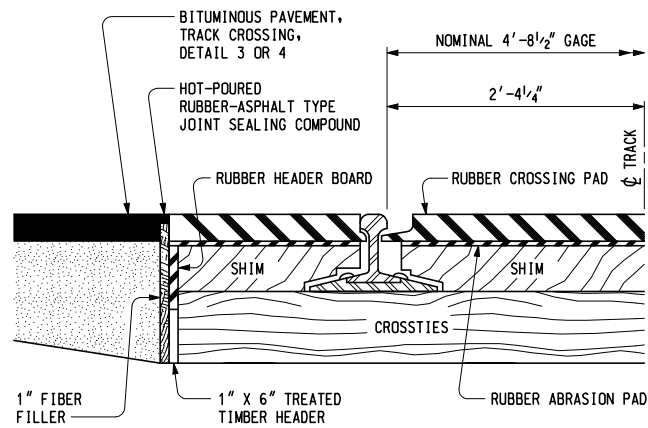
NOTE: FOR OTHER TYPES OF PAVEMENT APPROACHES, INSTALL AS SPECIFIED ON THE PLANS.

TYPICAL HALF SECTION
BITUMINOUS WITH GUARD LOG CROSSING OR BITUMINOUS WITH FLANGE RAIL CROSSING



NOTE: WHEN INSTALLING A FULL DEPTH RUBBER CROSSING, USE 2" FIBER FILLER WITH POLYURETHANE FOAM CAP AND JOINT SEALING COMPOUND.

TYPICAL HALF SECTION
SHIMMED RUBBER CROSSING (CONCRETE PAVEMENT, FULL OR PARTIAL DEPTH)

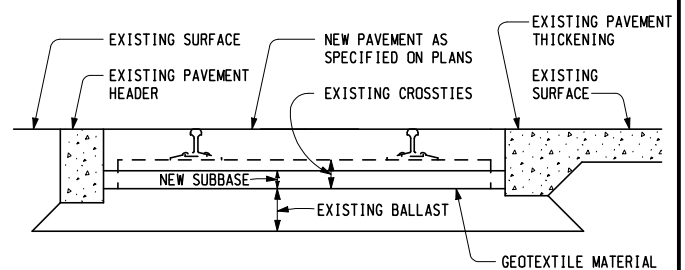


NOTE: WHEN INSTALLING A FULL DEPTH RUBBER CROSSING, ELIMINATE THE FIBER FILLER JOINT.

TYPICAL HALF SECTION
SHIMMED RUBBER CROSSING (BITUMINOUS PAVEMENT)

1. ELIMINATE RAIL JOINTS WITHIN ROADWAY AND FOR A DISTANCE OF AT LEAST 30'-0" BEYOND EACH END OF THE ROADWAY CROSSING MATERIAL.
2. FULLY BOX ANCHOR ALL TIES THROUGH THE CROSSING AREA AND AT LEAST 20'-0" BEYOND OR APPROPRIATELY BOX ANCHOR TIES ON EACH SIDE OF THE CROSSING.
3. USE AT LEAST TWO SPIKES IN EACH TIE PLATE, USE DOUBLE SHOULDER TIE PLATES TO PROVIDE ADEQUATE BEARING.
4. USE RUBBER TIE PADS UNDER TIE PLATES ON EACH CROSSTIE WITHIN LIMIT OF CROSSING (OPTIONAL).
5. CROSSTIE, EXACT LENGTH AS SPECIFIED.

TYPICAL CONNECTION OF RAIL TO CROSSTIE



1. REMOVE EXISTING PAVEMENT HEADERS, RAILS, TIES, CROSSING MATERIALS AND BALLAST TO BOTTOM OF EXISTING CROSSTIES OR AS SPECIFIED ON THE PLANS.
2. STABILIZE ANY REMAINING BALLAST WITH A ROLLER.
3. INSTALL GEOTEXTILE MATERIAL AS RECOMMENDED.
4. ADD NEW SUBBASE TO UNDISTURBED SUBGRADE.
5. PLACE CONCRETE OR BITUMINOUS SURFACE AS SPECIFIED ON PLANS TO MEET EXISTING SURFACE.

DETAIL 5
TYPICAL SECTION FOR PAVEMENT
REPLACEMENT OF ABANDONED CROSSING

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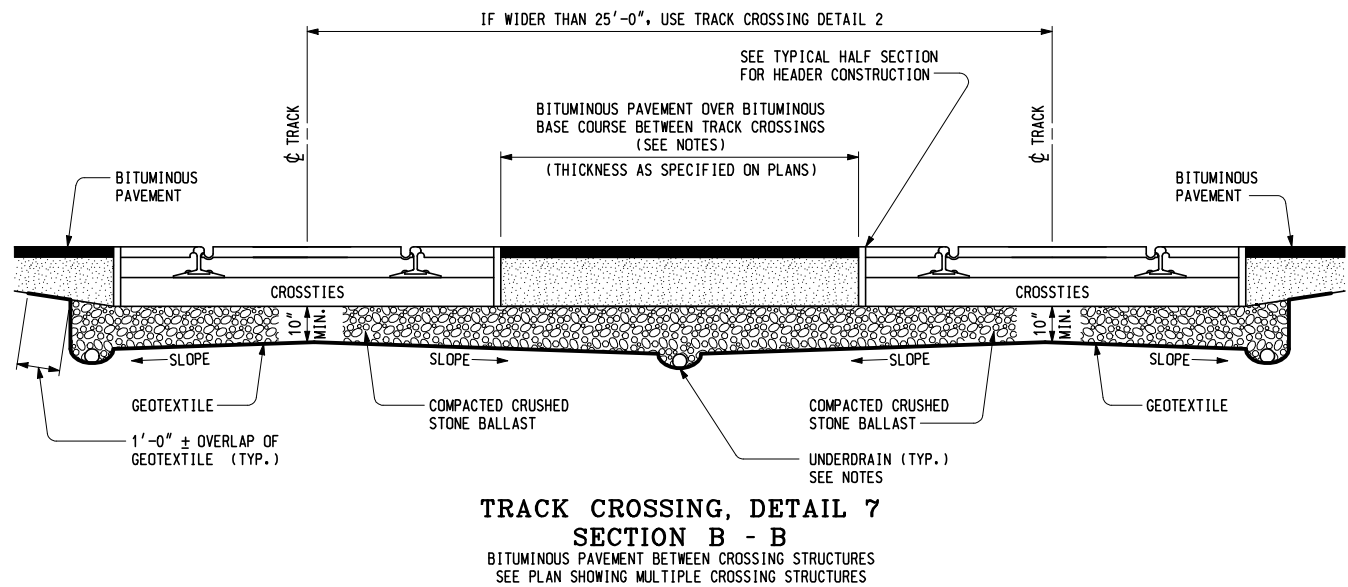
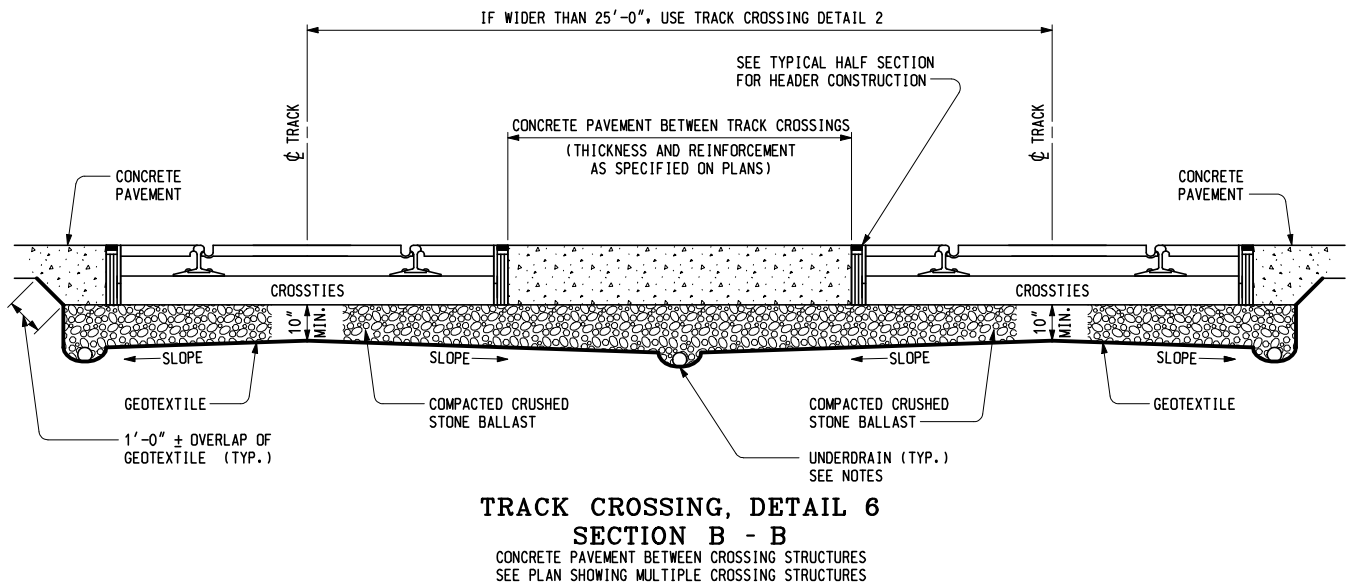
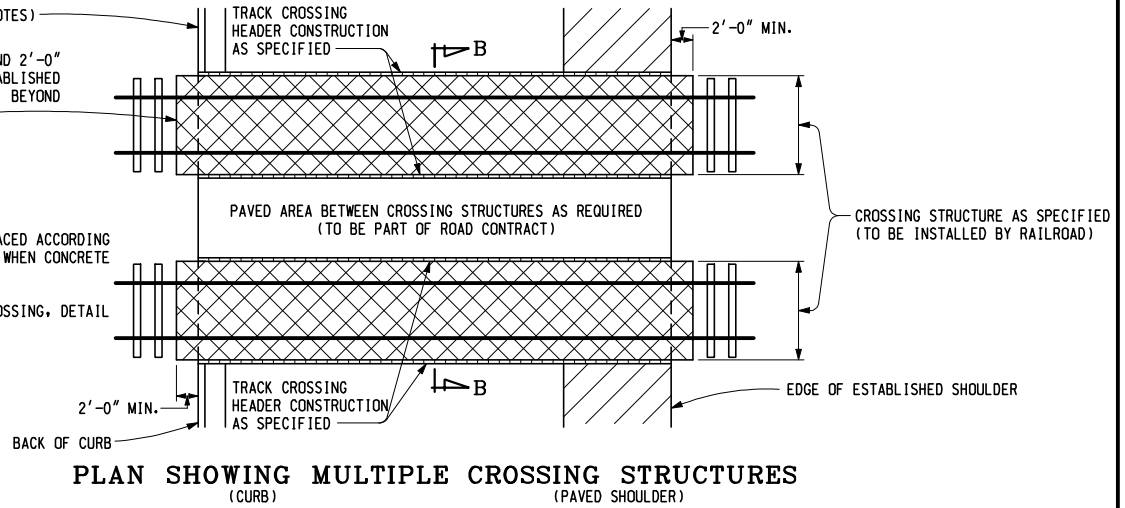
CURB & GUTTER ENDING (SEE NOTES)

CROSSING MATERIAL SHALL EXTEND 2'-0" MINIMUM BEYOND EDGE OF ESTABLISHED SHOULDER OR 2'-0" MINIMUM BEYOND ESTABLISHED BACK OF CURB

NOTE:

EXPANSION JOINTS SHALL BE PLACED ACCORDING TO STANDARD PLAN R-43-SERIES WHEN CONCRETE PAVEMENT IS USED.

FOR SECTION A-A SEE TRACK CROSSING, DETAIL 1, 2, 3, 4 BELOW.



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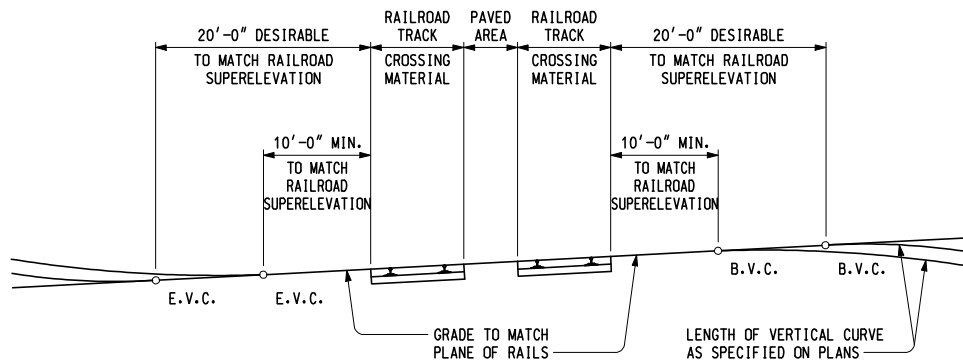
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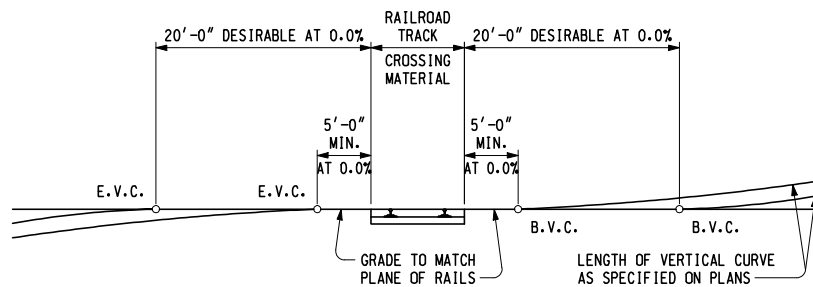
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B.V.C. = BEGINNING OF VERTICAL CURVE
E.V.C. = END OF VERTICAL CURVE

NOTE: WHEN CROSSING CONSISTS OF TWO OR MORE TRACKS,
ALL TRACKS SHOULD BE IN THE SAME PLANE.

TYPICAL SECTION WITH RAILROAD IN SUPERELEVATION



TYPICAL SECTION WITH RAILROAD ON LEVEL PLANE

NOTES:

THE RAILROAD COMPANY WILL FURNISH AND INSTALL THE CROSSING STRUCTURE INCLUDING UNDERDRAIN, GEOTEXTILE MATERIAL, BALLAST, WOOD TIES, RAILS, CROSSING SURFACE, AND HEADERS.

THE EDGES OF THE PAVEMENT GUTTERS AND THE CROWN ON EITHER SIDE OF THE CROSSING SHALL BE SMOOTHLY TRANSITIONED TO MEET THE PROPOSED GRADE OF THE RAILROAD TRACK. THE CROSSING SHOULD BE INSTALLED APPROXIMATELY $\frac{1}{2}$ " ABOVE THE PROPOSED PLAN GRADE TO ALLOW FOR SETTLEMENT AT ACTIVE MAIN LINE TRACKS, UNLESS THE RAILROAD CONSOLIDATES (VIBRATES) BALLAST AS DETERMINED BY THE ENGINEER. TEMPORARY BITUMINOUS WEDGING MAY BE REQUIRED.

THE HEIGHT OF ANY CURB ADJACENT TO THE RAILROAD TRACKS SHALL BE REDUCED TO 1" AT A POINT 8'-6" FROM THE CENTERLINE OF THE TRACK, NORMAL TO THE TRACK, BY STANDARD TRANSITIONS SPECIFIED ON STANDARD PLAN R-30-SERIES, UNLESS OTHERWISE SPECIFIED ON THE PLANS.

UNDERDRAINS WRAPPED IN GEOTEXTILE SHALL BE PLACED WHERE DRAINAGE IS NEEDED AND A POSITIVE OUTLET CAN BE PROVIDED.

PAVEMENT HEADERS FORMED BY THICKENING THE ENDS OF THE CONCRETE PAVEMENT OR THE BASE COURSE FOR THE BITUMINOUS OVERLAY WILL BE INCLUDED IN THE ITEMS OF CONCRETE PAVEMENT, CONCRETE BASE COURSE, BITUMINOUS BASE COURSE, OR AGGREGATE BASE COURSE-BITUMINOUS.

EXPANSION JOINTS AT THE RAILROAD CROSSING SHALL BE CONSTRUCTED AS SPECIFIED ON THIS PLAN. THE ADDITIONAL JOINTS IN THE PAVEMENT SHALL BE LOCATED AS SPECIFIED ON STANDARD PLAN R-43-SERIES AND CONSTRUCTED ACCORDING TO STANDARD PLAN R-39-SERIES.

PAVEMENTS ILLUSTRATED ON THIS PLAN ARE TYPICAL TREATMENTS ONLY, THE TYPE OF PAVEMENT USED WILL BE AS SPECIFIED ON THE PLANS.

BLEND THE APPROACH GRADES TO MATCH THE PLANE OF THE RAILS, USE FLAT VERTICAL CURVES IN ORDER TO ELIMINATE UNNECESSARY UNDULATION OF THE VEHICULAR TRAFFIC.

THE FULL WIDTH OF SHOULDERS SHOULD BE PAVED WITH BITUMINOUS AT THE CROSSING TO MEET THE CROSSING SURFACE MATERIAL. THE SHOULDER WIDTH SHALL NOT BE GREATER THAN 10'-0" EVEN IF THE TRACKS INTERSECT THE ROADWAY AT A SKEWED ANGLE. SHORT TAPERS WILL EXTEND BACK TO THE PAVED PORTION OF THE SHOULDER.

WHEN A RAILROAD CROSSING STRUCTURE IS RAISED, THE PAVEMENT TAPER TO MEET THE RAISED CROSSING STRUCTURE SHOULD BE 0.25% OR AS DIRECTED BY THE ENGINEER. THE PROPOSED TRANSITION LENGTH SHOULD BE SPECIFIED ON THE PLANS. THE EXISTING PAVEMENT SHOULD BE REMOVED OR MILLED TO PROVIDE A STRAIGHT AND VERTICAL BUTT JOINT.

TREATED TIMBER AND/OR RUBBER HEADER BOARDS WILL BE USED WHEN SPECIFIED AND SHALL BE INSTALLED BY THE RAILROAD COMPANY.

IF COLD PATCH MATERIAL OR GRAVEL IS USED AS TEMPORARY FILL IN THE GAP BETWEEN THE CROSSING AND THE PAVEMENT, IT SHALL BE REMOVED PRIOR TO REPLACEMENT WITH A PLANT MIX. THE BITUMINOUS MATERIAL ADJACENT TO THE CROSSING SHALL BE COMPACTED WITH A ROLLER ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS.

SIDEWALK CROSSINGS WILL NORMALLY BE CONSTRUCTED OF BITUMINOUS, TIMBER, OR RUBBER PADS SIMILAR TO THE CROSSING, EXCEPT THAT THE FIBER FILLER AND TREATED TIMBER HEADER MAY BE OMITTED.

THE OPEN ROADWAY AREA BETWEEN THE SAWED PAVEMENT EDGE AND THE NEWLY INSTALLED CROSSING SHALL BE ROLLER COMPACTED PRIOR TO THE PAVEMENT CONTRACTOR FILLING THIS AREA WITH CONCRETE OR BITUMINOUS.

PROPRIETARY CROSSINGS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

SIGNAL WIRE CONDUIT IS TO BE PLACED BY THE RAILROAD AS NEEDED.

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