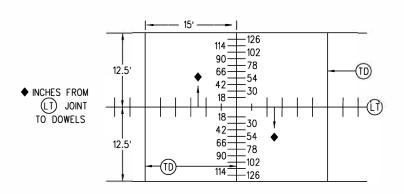
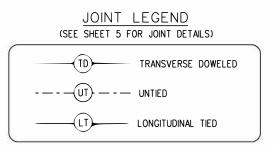
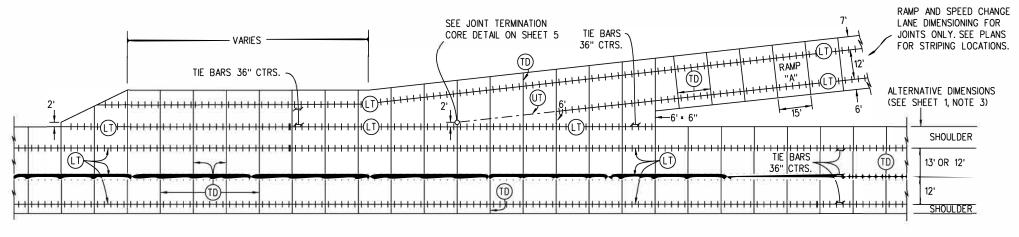


RAMP "A" DOWEL BAR DETAIL FOR (TD) JOINT WITH A 12 FT. LANE

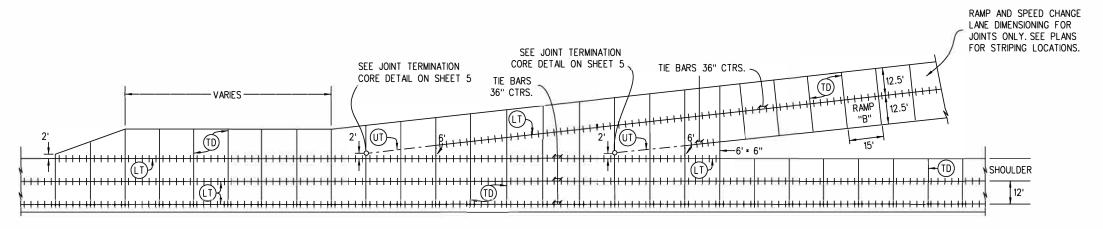


RAMP "B" DOWEL BAR DETAIL FOR TD JOINT WITH CENTER LONGITUDINAL SPLIT LANE



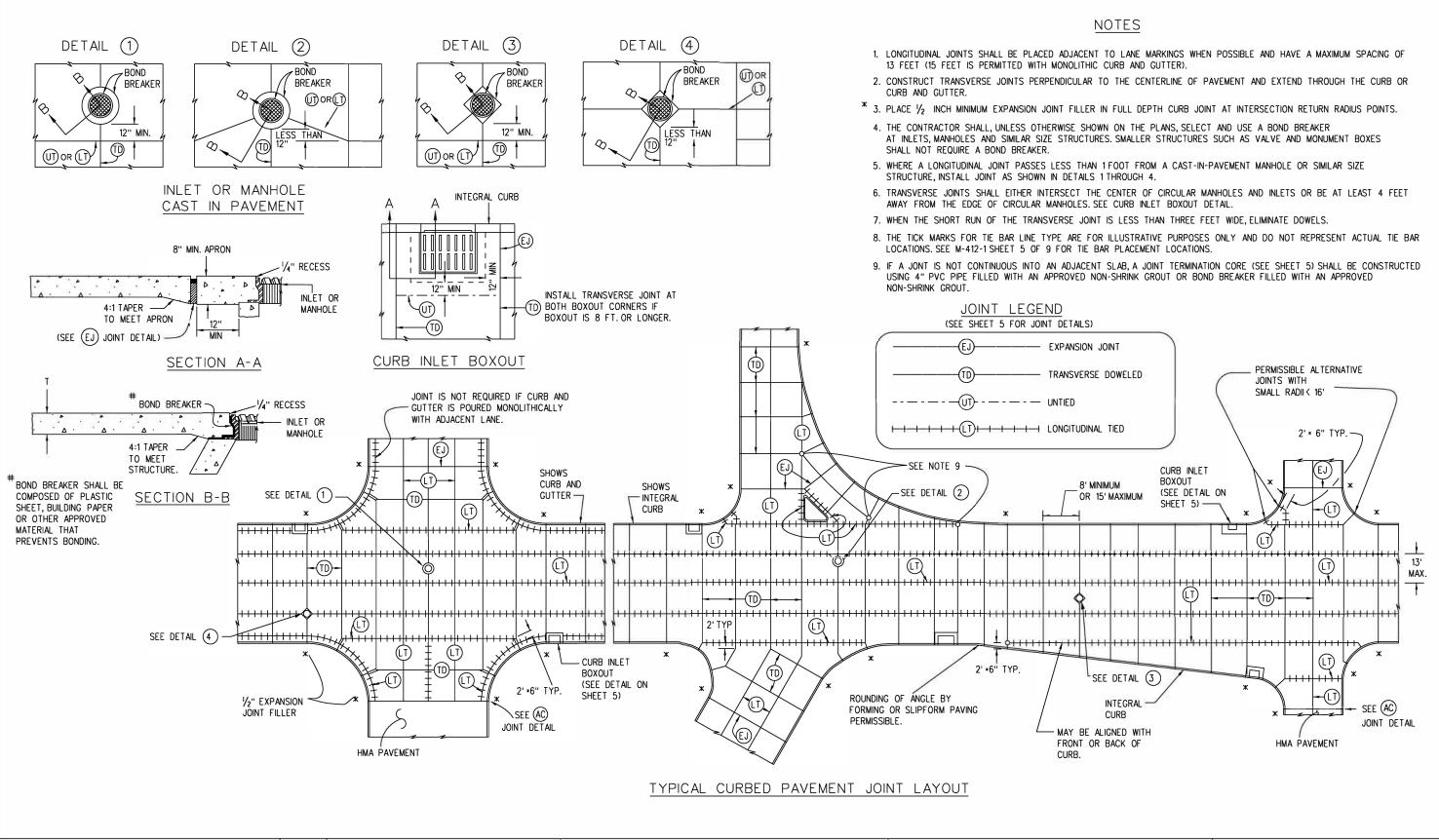


## MULTI-LANE WITH ACCELERATION AND DECELERATION LANES AND CONCRETE SHOULDERS



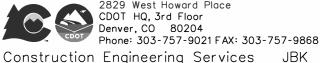
OPTIONAL LONGITUDINAL JOINT IN CENTER FOR SINGLE LANE ACCELERATION AND DECELERATION LANE

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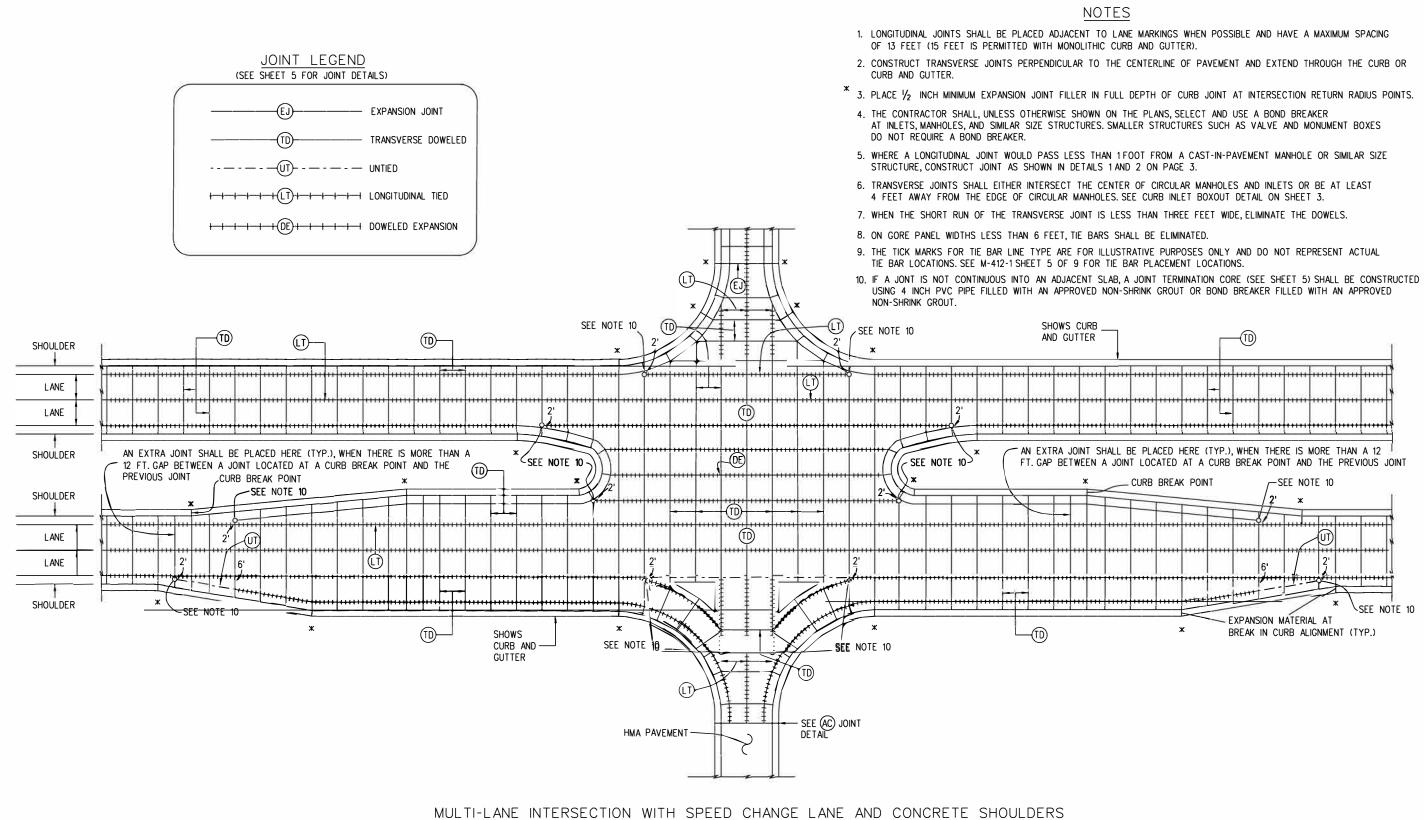


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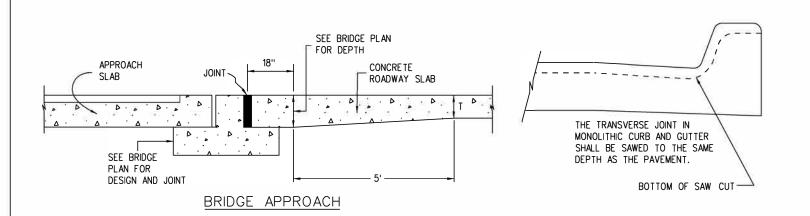
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Last Modification Date: 01/31/22	(R-X)			Denver, CO 80204  Phone: 303-757-9021 FAY: 303-757-9868	PAVEMENT JOINTS	Standard Sheet No. 4 of 9
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# REINFORCING SIZE TABLE TIE BAR SIZE IS NO. 5 WHEN

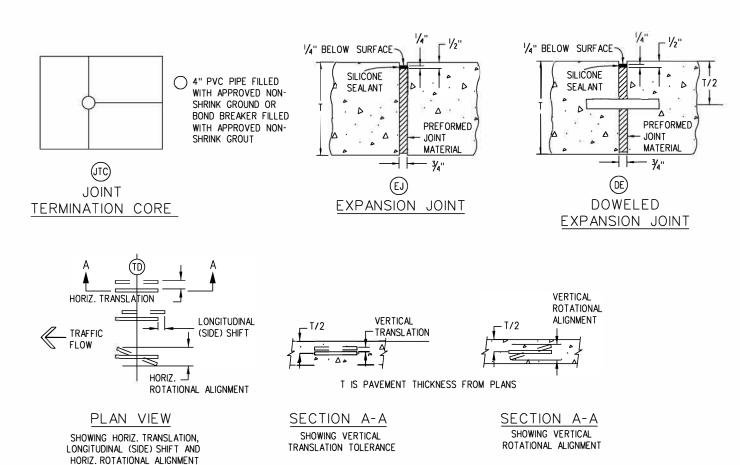
PAVEMENT IS PLACED ON UNBOUND BASES.

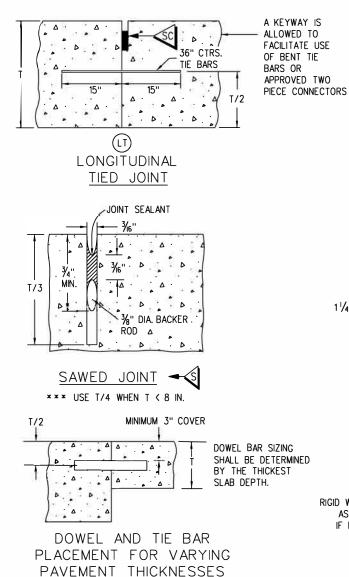
TIE BAR IS NO.6 WHEN PAVEMENT IS PLACED ON LIME TREATED SOIL, ASPHALT OR CEMENT TREATED, MILLED ASPHALT, OR RECYCLED ASPHALT BASES.

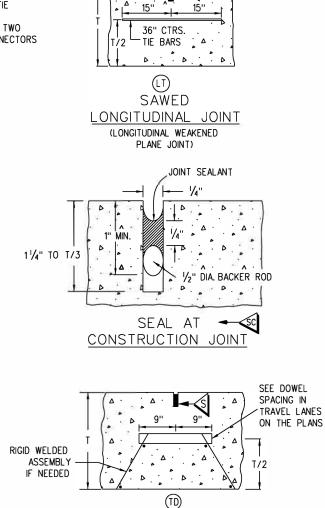
PAVEMENT THICKNESS (T)	DOWEL BAR DIAMETER
7 IN. × T < 8 IN.	1 IN.
8 IN. * T * 10 IN.	1.25 IN.
10 IN. ⟨ T × 15 IN.	1.50 IN.

NOTE

1. PAVEMENT THICKNESS (T), SHALL BE AS SHOWN ON THE PLANS.







DOWELED TRANSVERSE

CONSTRUCTION OR CONTRACTION JOINT

(TRANSVERSE WEAKENED PLANE JOINT)

DETAILS	<u>ILLUSTRA</u> 1	TING DO	<u>WEL</u>	PLACE	MENT	TOLERANCES
SEE	SUBSECTION	412.13(b)2	FOR	ALLOWED	TOLERAN	CE VALUES.

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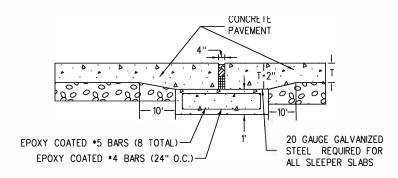
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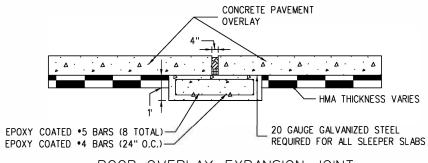
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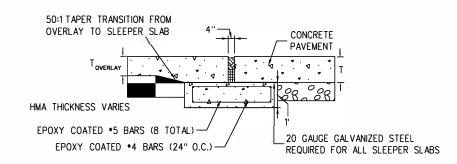
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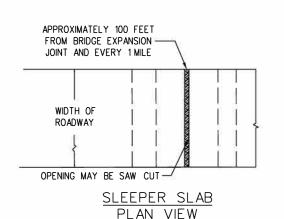
PCCP EXPANSION JOINT

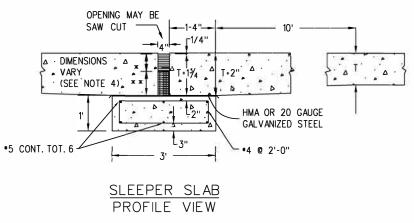


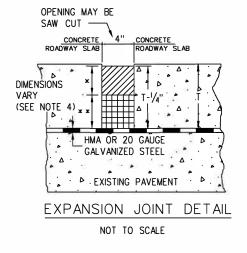




PCCP OVERLAY TO EXISTING PCCP TRANSITION WITH EXPANSION JOINT





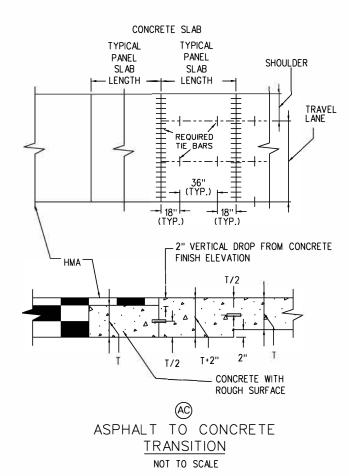




- 1. CONCRETE EXPANSION JOINTS SHALL BE REQUIRED AT THE LOCATIONS SHOWN. SLEEPER SLABS FOR THE CONCRETE EXPANSIONS SHALL BE CLASS D OR P CONCRETE. REINFORCING STEEL SHALL BE GRADE 60 EPOXY COATED. THE COST OF THE CONCRETE, REINFORCING STEEL, AND GALVANIZED STEEL SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF ITEM 412 CONCRETE PAVEMENT BID ITEM.
- 2. AT EACH OF THE RECONSTRUCTION EXPANSION JOINTS A PIPE EDGE DRAIN SHALL BE INSTALLED PER M-605-1 OF THE M&S STANDARD PLANS. THE EDGE DRAIN SHALL CONTINUE 2 FEET BEYOND BOTH SIDES OF THE EXPANSION JOINT AND INCLUDE A TRANSVERSE UNDERDRAIN AT EACH END ON THE EDGE DRAIN. IF THE UNDERDRAIN PIPE CANNOT DRAIN OUTSIDE OF THE ROADWAY PRISM, THE PIPE EDGE DRAIN SHALL NOT BE INSTALLED. THIS WORK SHALL NOT BE PAID FOR SEPERATELY, BUT SHALL BE INCLUDED IN THE PRICE OF ITEM 412 CONCRETE PAVEMENT.
- 3. \*4 INCH WIDE PRECOMPRESSED CHEMICALLY RESISTANT FOAM TOPPED WITH A TRAFFIC-GRADE SILICONE SEALANT SUCH AS WILLSEAL 250, WABO HSEAL, EMSEAL BEJS SYSTEM, OR AN ALTERNATIVE AS APPROVED BY THE ENGINEER AND REGION MATERIALS ENGINEER. EXPANSION JOINTS SHALL BE PLACED AT APPROXIMATELY ONE MILE INCREMENTS AS DIRECTED BY THE ENGINEER. THE COST SHALL BE INCLUDED IN ITEM 412 - PLACE CONCRETE PAVEMENT. DEPTH OF SEALANT SHALL BE BASED ON THE TABLE BELOW.

7	PAVEMENT THICKNESS (T)	SEALANT DEPTH (INCHES:		
	* 11 IN.	4		
	> 11 IN.	6		

4. \*\*STYROFOAM OR OTHER MATERIAL AS APPROVED BY THE ENGINEER AND REGION MATERIALS ENGINEER.



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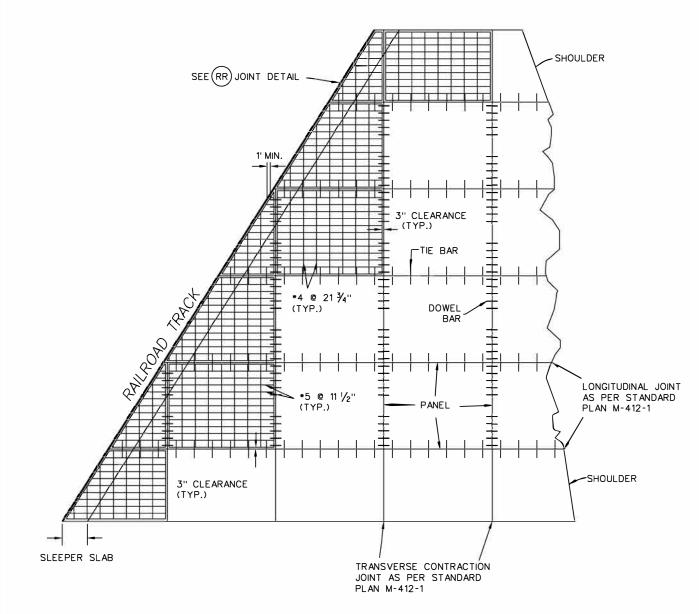


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CONCRETE
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## SKEWED RAILROAD PLAN VIEW

#### NOTE ON SKEWED RAILROAD DETAILS:

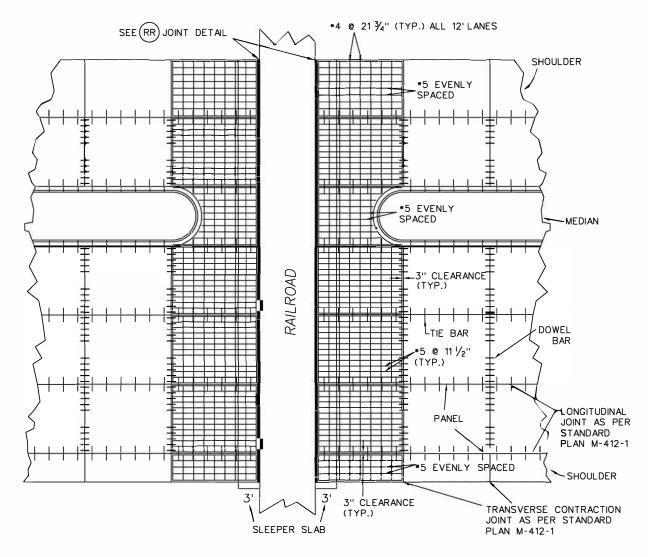
1. IF THE FIRST PANEL ADJACENT TO THE RAIL ROAD CROSSING IS LESS THAN ONE HALF THE AREA OF A NORMAL FULL PANEL, THEN THE FIRST PARTIAL PANEL AND THE NEXT FULL PANEL SHALL BE LONGITUDINALLY AND TRANSVERSLY REINFORCED AS SHOWN IN THE DETAILS. IF THE AREA OF THE FIRST PANEL ADJACENT TO THE RAIL ROAD CROSSING IS GREATER THAN ONE HALF THE AREA OF A NORMAL FULL PANEL, THEN JUST THE FIRST PARTIAL PANEL SHALL BE REINFORCED.

## NOTES ON ALL RAILROAD DETAILS:

- 1. CONCRETE CLASS P OR CLASS D SHALL BE USED FOR THE SLEEPER SLAB.
- 2. GRADE 60 EPOXY COATED REINFORCING STEEL IS REQUIRED, OTHER THAN TIE AND DOWEL BARS.
- 3. ALL COST ASSOCIATED WITH THE REQUIREMENTS OF THESE DETAILS SHALL BE INCLUDED IN THE COST OF ITEM 412 - CONCRETE PAVEMENT (\_ INCH).
- 4. THE CONTRACTOR SHALL PROVIDE, FOR APPROVAL, TO THE ENGINEER A DETAILED PLAN SHOWING THE JOINT CONFIGURATION A MINIMUM OF TWO WEEKS PRIOR TO THE START OF REINFORCING STEEL FABRICATION.
- 5. THESE DETAILS SHALL APPLY TO BOTH SIDES OF THE RAIL ROAD CROSSING, IF CONCRETE PAVEMENT IS

#### NOTE ON PERPENDICULAR RAILROAD DETAILS:

1. THE LENGTH OF THE FIRST PANEL ADJACENT TO THE RAIL ROAD SHALL BE BETWEEN 12 AND 15 FEET.



## PERPENDICULAR RAILROAD PLAN VIEW

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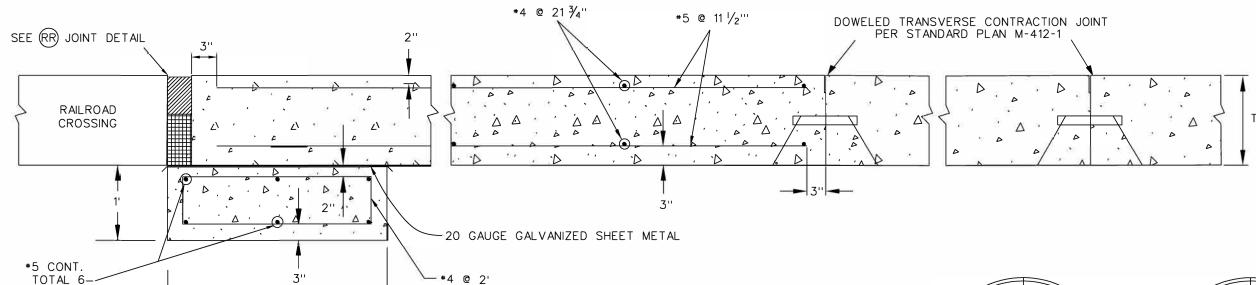


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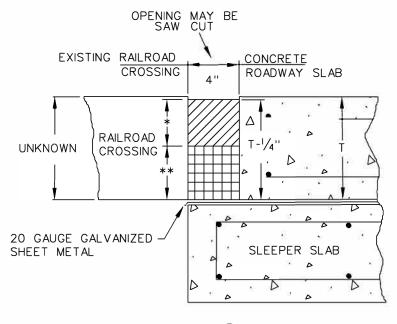
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RAILROAD PROFILE VIEW



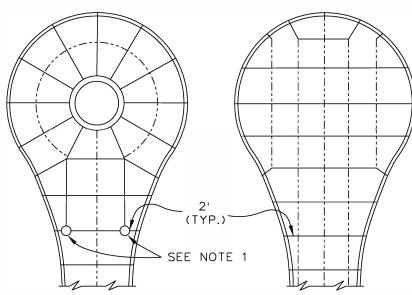
## RAILROAD JOINT DETAILS

#### NOTES ON RAILROAD JOINTS:

1. \* FOR SKEWED RAILROADS: 2" WIDE X 3" DEEP CHEMICALLY RESISTANT NEOPRENE JOINT SEAL.

FOR PERPENDICULAR RAILROADS: PREFORMED COMPRESSION SEALS MEETING THE REQUIREMENTS OF SECTION 412 FOR THE OPENING SHOWN.

2. \*\* PREFORMED EXPANSION JOINT FILLER AS APPROVED BY THE ENGINEER.



CUL-DE-SAC

### NOTE ON CUL-DE-SACS:

OPEN CENTER

1. IF A JOINT IS NOT CONTINUOUS INTO AN ADJACENT SLAB, A JOINT TERMINATION CORE (SEE SHEET 5) SHALL BE CONSTRUCTED USING 4" PVC PIPE FILLED WITH AN APPROVED NON-SHRINK GROUT OR BOND BREAKER FILLED WITH AN APPROVED NON-SHRINK GROUT.

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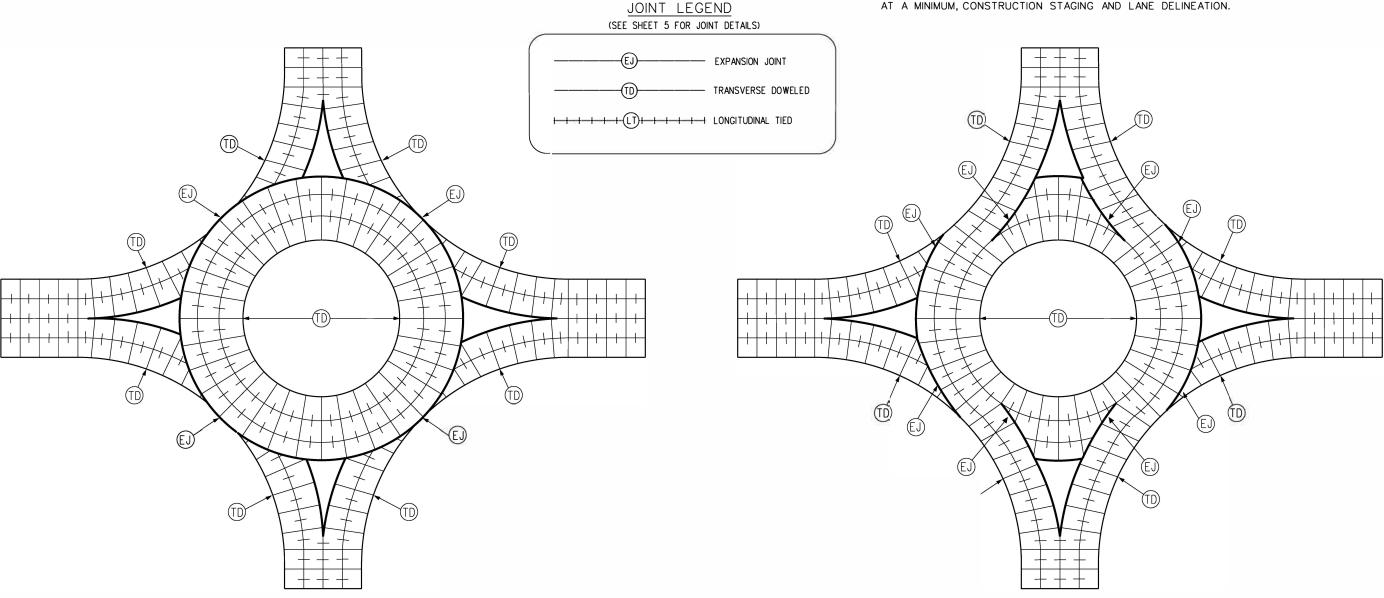
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CLOSED CENTER

## NOTES

- 1. ALL RADIAL AND TRANSVERSE JOINTS SHALL BE (TD) JOINTS.
- 2. (E) JOINTS SHALL BE CONSTRUCTED WITH PREFORMED EXPANSION JOINT FILLER AS APPROVED BY THE ENGINEER.
- 3. THE TICK MARKS FOR TIE BAR LINE TYPE ARE FOR ILLUSTRATIVE PURPOSES ONLY AND DO NOT REPRESENT ACTUAL TIE BAR LOCATIONS. SEE M-412-1 SHEET 5 OF 9 FOR TIE BAR PLACEMENT LOCATIONS.
- 4. EXPANSION JOINTS SHALL BE INSTALLED BETWEEN CONCRETE CURB AND ANY FIXED STRUCTURE OR BRIDGE. EXPANSION JOINT MATERIAL SHALL EXTEND THE FULL DEPTH OF THE CONTACT SURFACE.
- 5. JOINT CONFIGURATIONS SHOWN ARE FOR SIMPLE ROUNDABOUTS AND DO NOT REPRESENT ALL ROUNDABOUT DESIGNS. THE CONTRACTOR SHALL SUBMIT A JOINT LAYOUT FOR APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION. THE PAVEMENT JOINT LAYOUT SHALL CONSIDER, AT A MINIMUM, CONSTRUCTION STAGING AND LANE DELINEATION.



## ISOLATED CIRCLE ROUNDABOUT

PAVE-THROUGH ROUNDABOUT

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