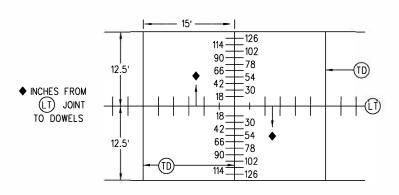
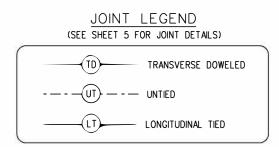
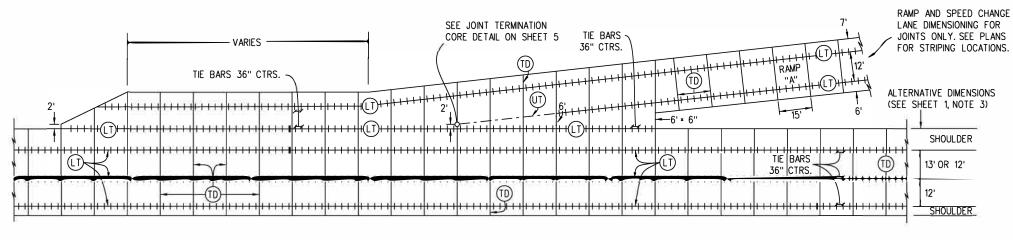


RAMP "A" DOWEL BAR DETAIL FOR (TD) JOINT WITH A 12 FT. LANE

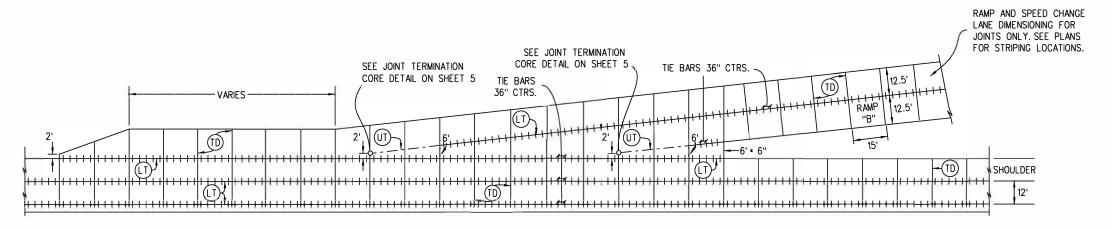


RAMP "B" DOWEL BAR DETAIL FOR TD JOINT WITH CENTER LONGITUDINAL SPLIT LANE



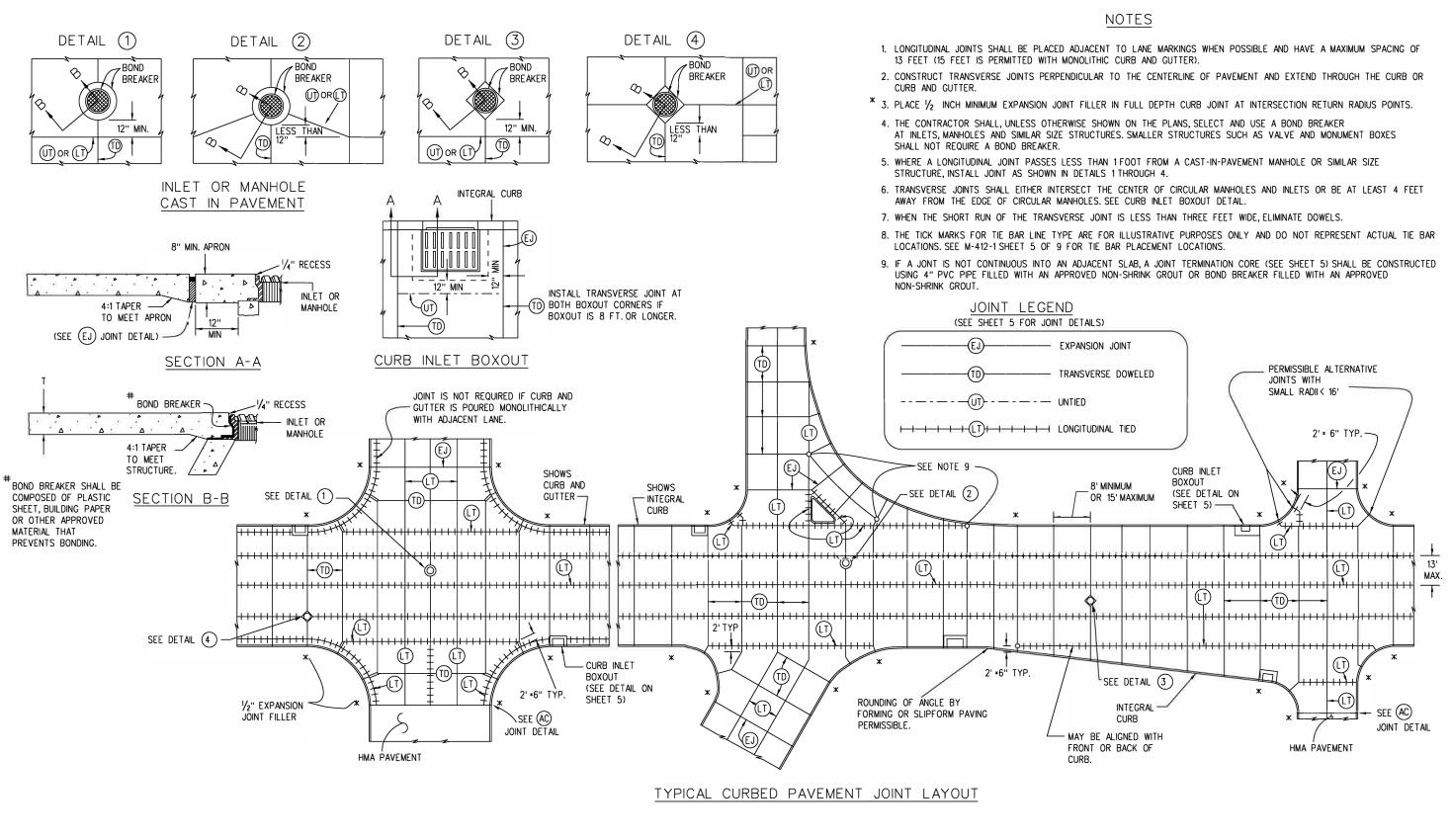


## MULTI-LANE WITH ACCELERATION AND DECELERATION LANES AND CONCRETE SHOULDERS



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

Computer File Information			Sheet Revisions	Colorado Department of Transportation	CONCRETE	STANDARD PLAN NO.
Creation Date: 07/31/19		Date:	Comments	2829 West Howard Place	CONCRETE	M-412-1
Designer Initials: JBK	(R-X)	01/31/22	Revised all sheets.	2829 West Howard Place CDOT HQ, 3rd Floor	DATIENTENIT IONITO	IVI-412-1
Last Modification Date: 01/31/22	(R-X)			Denver, CO 80204 Phone: 303-757-9021 FAX: 303-757-9868	PAVEMENT JOINTS	Standard Sheet No. 2 of 9
Detailer Initials: LTA/HMG	(R-X)			7110110 000 707 002117111 000 707 0000		
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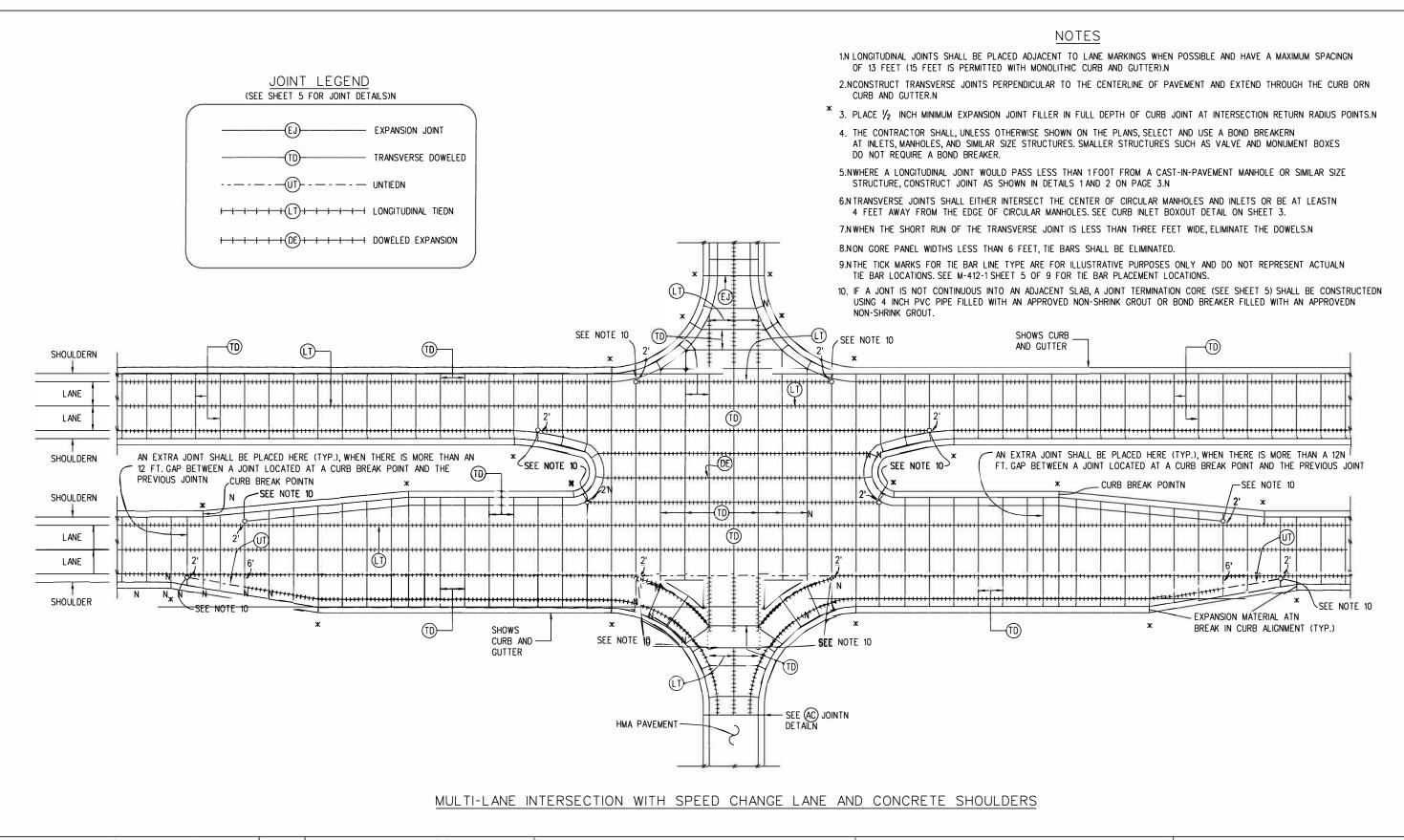
Phone: 303-757-9021 FAX: 303-757-9868 Construction Engineering Services

# **CONCRETE** PAVEMENT JOINTS

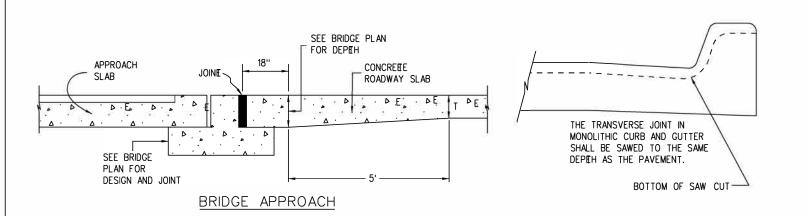
STANDARD PLAN NO. M-412-1Standard Sheet No. 3 of 9

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Computer File Information			Sheet Revisions	Colorado Department of Transportation	CONCRETE	STANDARD PLAN NO.
Creation Date: 07/31/19		Date:	Comments	· · · · · · · · · · · · · · · · · · ·	CONCRETE	M 412 1
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Last Modification Date: 01/31/22	(R-X)			2829 West Howard Place NCDOT HQ, 3rd Floor Denver, CO 80204 Phone: 303-757-9021 FAX: 303-757-9868	PAVEMENT JOINTS	Standard Sheet No. 4 of 9
Detailer Initials: LTA/HMG	(R-X)					
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: EnglishN	(R-X)			Construction Engineering Services JBK	Issued by the Project Development Branch: July 31, 2019	Project Sheet Number:



## NOTE

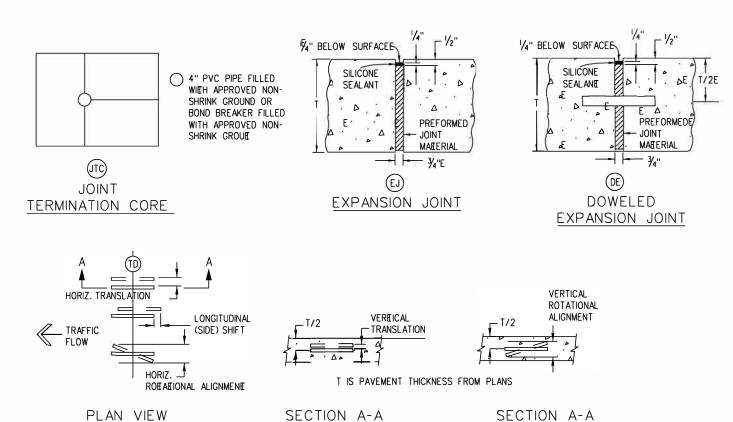
1. PAVEMENE THICKNESS (T), SHALL BE AS SHOWN ON THE PLANS.

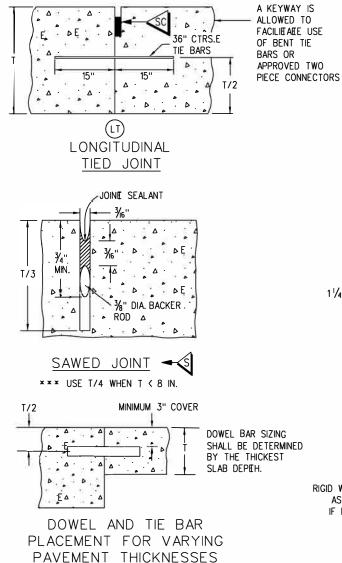
#### REINFORCING SIZE TABLE

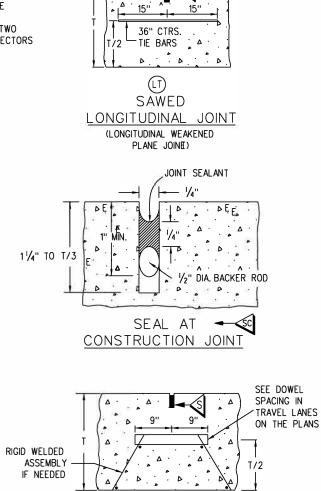
TIE BAR SIZE IS NO. 5 WHEN PAVEMENE IS PLACED ON UNBOUND BASES.

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

PAVEMENE 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.







(TD)

DOWELED TRANSVERSE

CONSTRUCTION OR CONTRACTION JOINT (TRANSVERSE WEAKENED PLANE JOINT)



SEE SUBSECTION 412.13(b)2 FOR ALLOWED TOLERANCE VALUES.

SHOWING VEREICAL

TRANSLATION TOLERANCE

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Detailer Initials: LTA/HMG	(R-X)			
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SHOWING HORIZ. TRANSLATION,

LONGITUDINAL (SIDE) SHIFE AND

HORIZ. ROEAEIONAL ALIGNMENE

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SHOWING VEREICAL

ROTATIONAL ALIGNMENT

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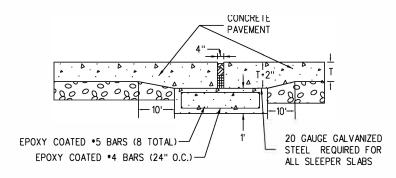
CONCRETE
PAVEMENT JOINTS

M-412-1 Standard Sheet No. 5 of 9

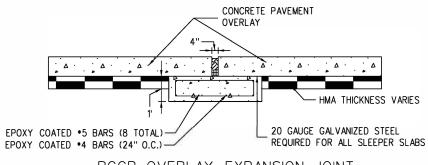
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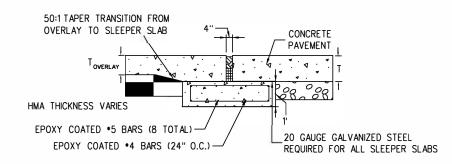
STANDARD PLAN NO.



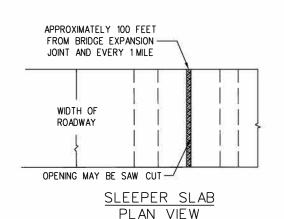
PCCP EXPANSION JOINT

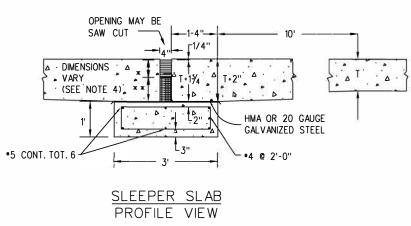


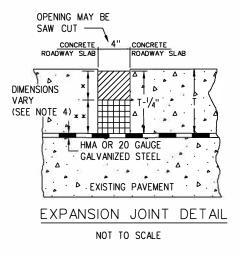
PCCP OVERLAY EXPANSION JOINT



PCCP OVERLAY TO EXISTING PCCP TRANSITION WITH EXPANSION JOINT





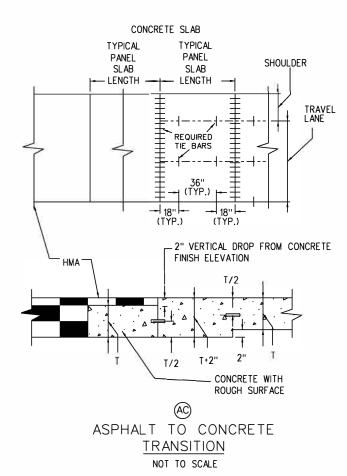




- 1. CONCRETE EXPANSION JOINTS SHALL BE REQUIRED AT THE LOCATIONS SHOWN. SLEEPER SLABS FOR THE CONCRETE EXPANSIONS SHALL BE CLASS D OR P CONCRETE. REINFORCING STEEL SHALL BE GRADE 60 EPOXY COATED. THE COST OF THE CONCRETE, REINFORCING STEEL, AND GALVANIZED STEEL SHALL NOT BE PAID FOR SEPARATELY BUT SHALL 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.

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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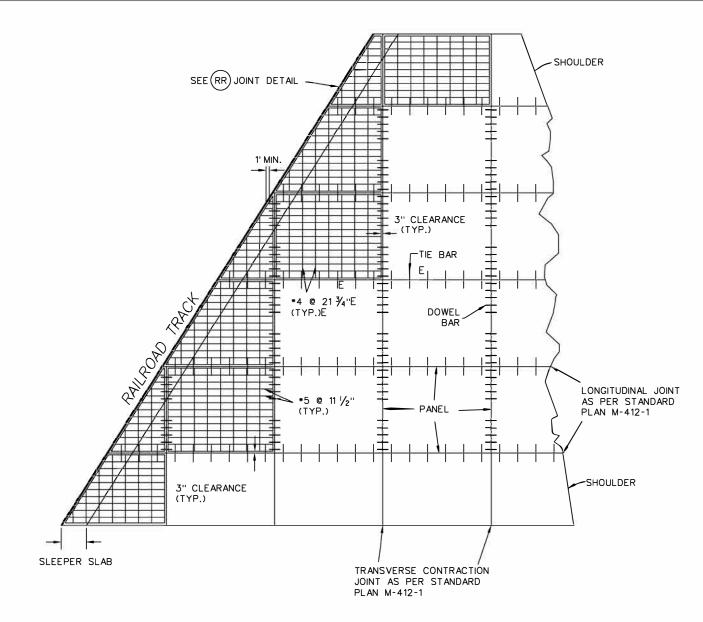
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CONCRETE
PAVEMENT JOINTS

-	STANDARD PLAN NO.
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- A	Daniant Chart Number

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## SKEWED RAILROAD PLAN VIEW

#### NOTE ON SKEWED RAILROAD DETAILS:

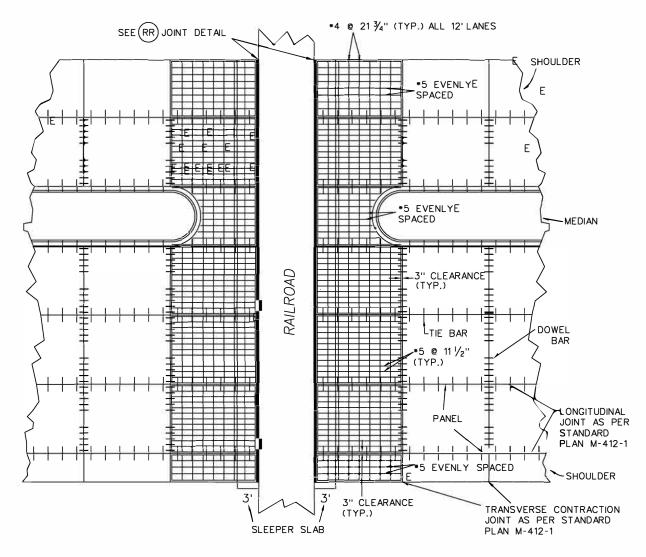
1.E IF THE FIRST PANEL ADJACENT TO THE RAIL ROAD CROSSING IS LESS THAN ONE HALF THE AREAE OF A NORMAL FULL PANEL, THEN THE FIRST PARTIAL PANEL AND THE NEXT FULL PANEL SHALL BE LONGITUDINALLY AND TRANSVERSLY REINFORCED AS SHOWN IN THE DETAILS. IF THE AREA OF THE FIRST PANEL ADJACENT TO THE RAIL ROAD CROSSING 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.E CONCRETE CLASS P OR CLASS D SHALL BE USED FOR THE SLEEPER SLAB.
- 2.EGRADE 60 EPOXY COATED REINFORCING STEEL IS REQUIRED, OTHER THAN TIE AND DOWEL BARS.E
- 3.EALL COST ASSOCIATED WITH THE REQUIREMENTS OF THESE DETAILS SHALL BE INCLUDED IN THE COST OFE ITEM 412 - CONCRETE PAVEMENT (\_ INCH).
- 4. THE CONTRACTOR SHALL PROVIDE, FOR APPROVAL, TO THE ENGINEER A DETAILED PLAN SHOWING THE JOINTE CONFIGURATION A MINIMUM OF TWO WEEKS PRIOR TO THE START OF REINFORCING STEEL FABRICATION.E
- 5.ETHESE DETAILS SHALL APPLY TO BOTH SIDES OF THE RAIL ROAD CROSSING, IF CONCRETE PAVEMENT ISE REQUIRED.E

#### NOTE ON PERPENDICULAR RAILROAD DETAILS:

1.ETHE 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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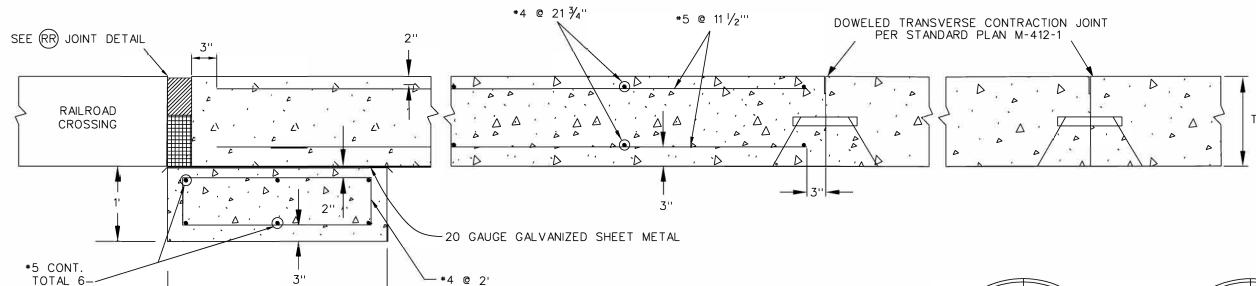
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CONCRETE
PAVEMENT JOINTS

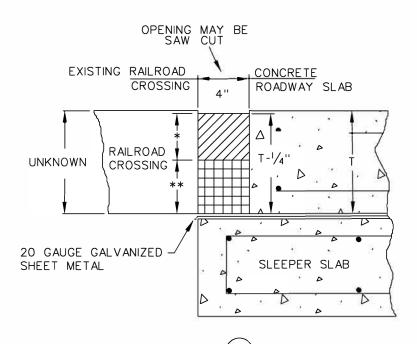
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RAILROAD PROFILE VIEW



TOTAL 6-

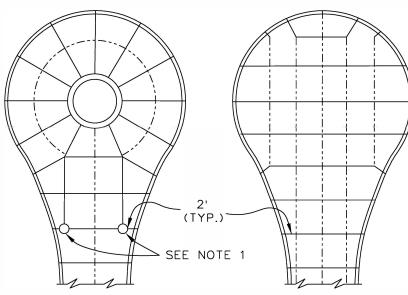
# RAILROAD JOINT DETAILS

#### 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.



OPEN CENTER

CUL-DE-SAC

## NOTE ON CUL-DE-SACS:

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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CONCRETE		
PAVEMENT JOINTS		

Standard Sheet No. 8 of 9

CLOSED CENTER

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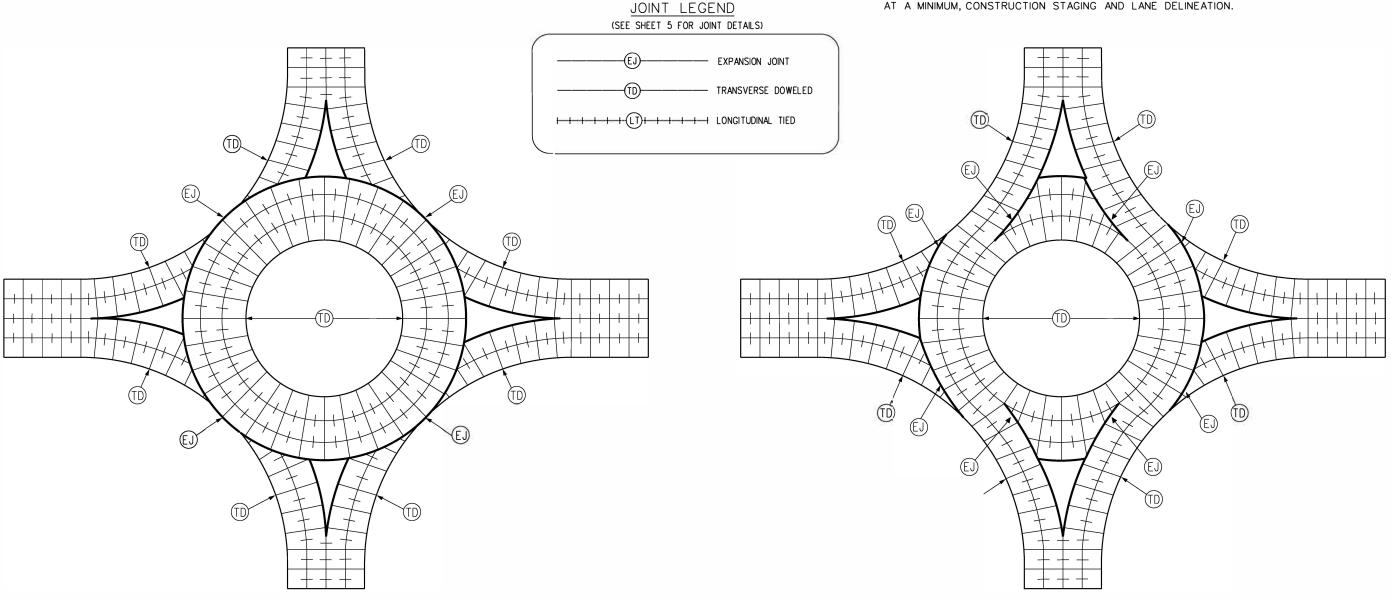
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M-412-1

## 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

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# **CONCRETE PAVEMENT JOINTS**

PAVE-THROUGH ROUNDABOUT

Standard Sheet No. 9 of 9

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M-412-1

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