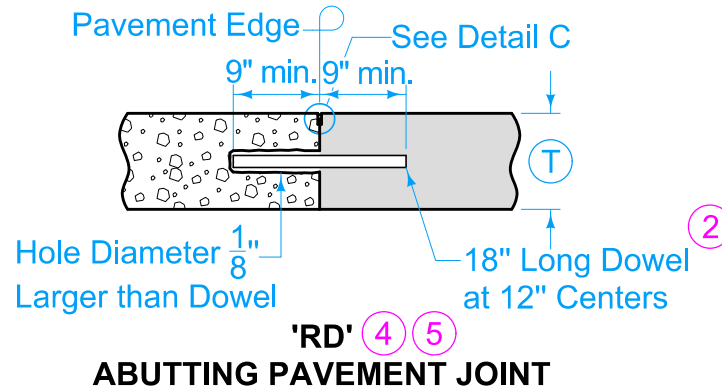
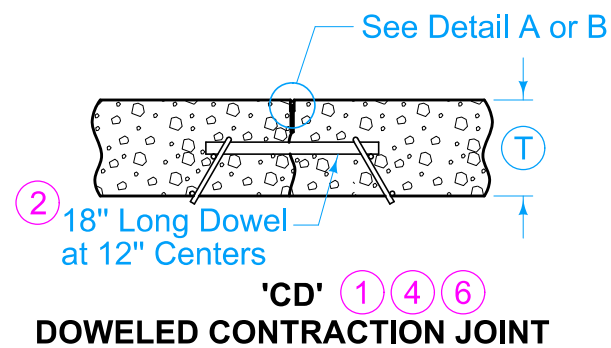
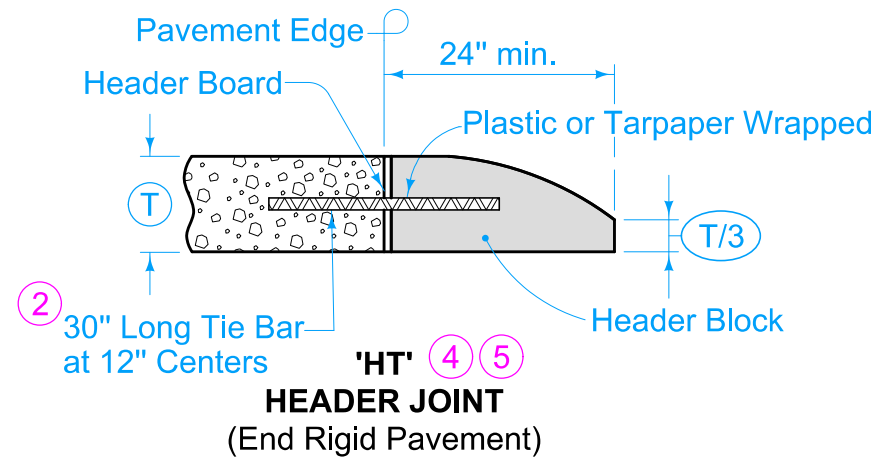
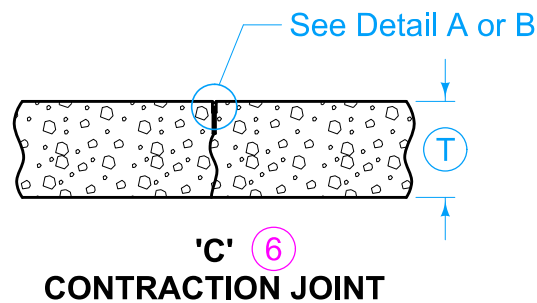
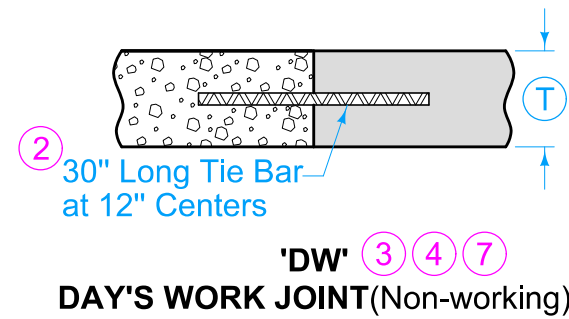
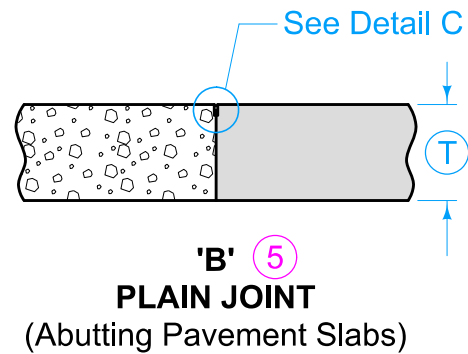
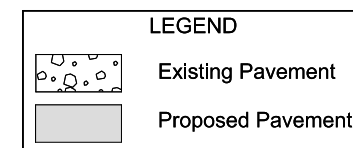
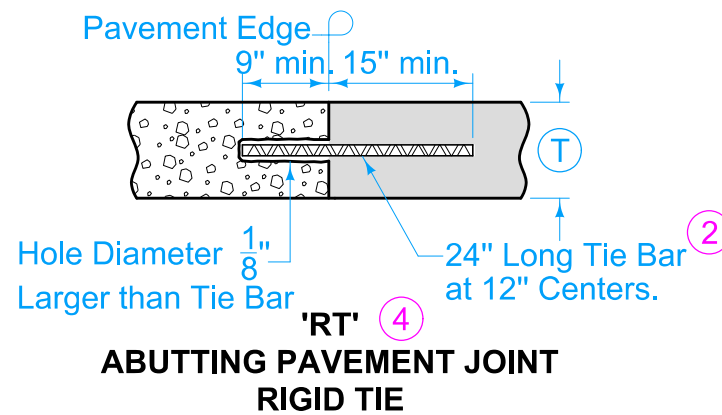
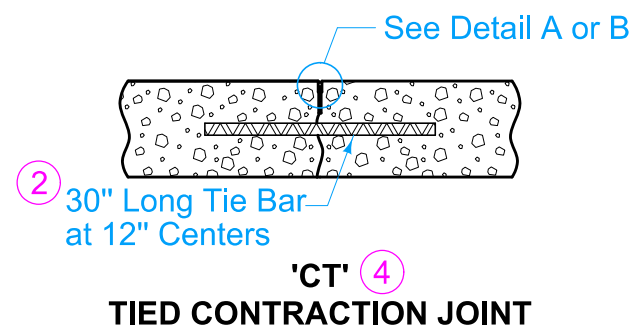
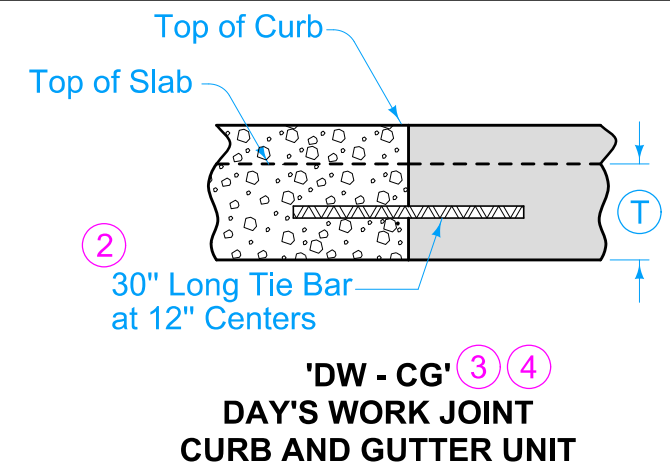




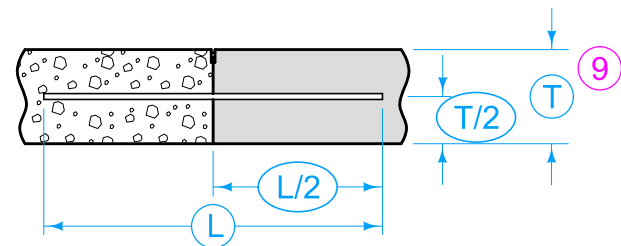
- 1 See dowel assemblies for fabrication details.
- 2 See Bar Size Table for Contraction Joints on Sheet 2.
- 3 Locate 'DW' joint at a mid-panel location between future 'C' or 'CD' joints. Place no closer than 5 feet to a 'C' or 'CD' joint.
- 4 Place bars within the limits shown under dowel assemblies.
- 5 Edge with 1/8 inch tool for length of joint. For HT joint, remove header block and board when second slab is placed.
- 6 Unless specified otherwise, use 'CD' transverse contraction joints in mainline pavement when T is greater or equal to 8 inches. Use 'C' joints when T is less than 8 inches.
- 7 'RT' joint may be used in lieu of 'DW' joint at the end of the days work. Remove any pavement damaged due to the drilling at no additional cost to the Contracting Authority.



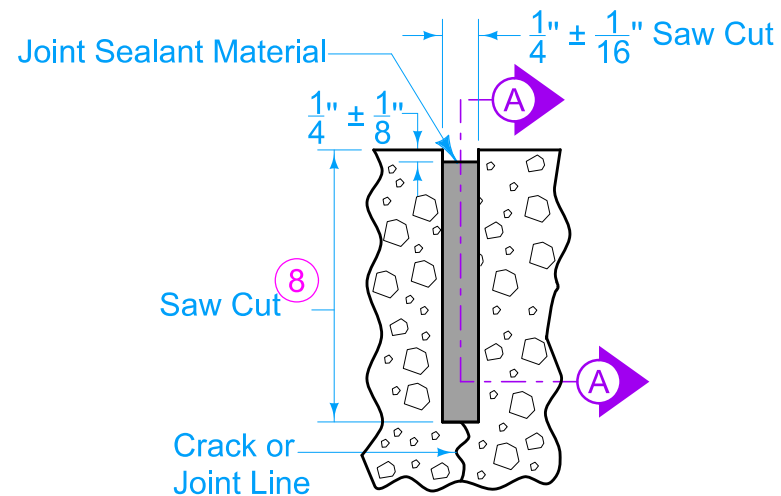
		REVISION	
		14	10-20-26
FIGURE 7010.101	STANDARD ROAD PLAN	PV-101	
REVISIONS: Removed Interim		SHEET 1 of 8	
SUDAS DIRECTOR		DESIGN METHODS ENGINEER	

JOINTS

TRANSVERSE CONTRACTION

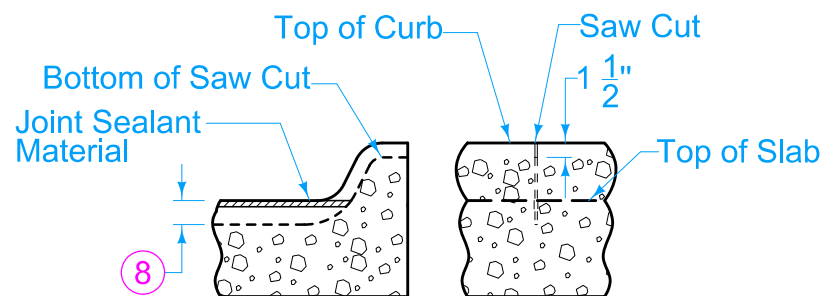


BAR PLACEMENT
(Applies to all joints unless otherwise detailed.)

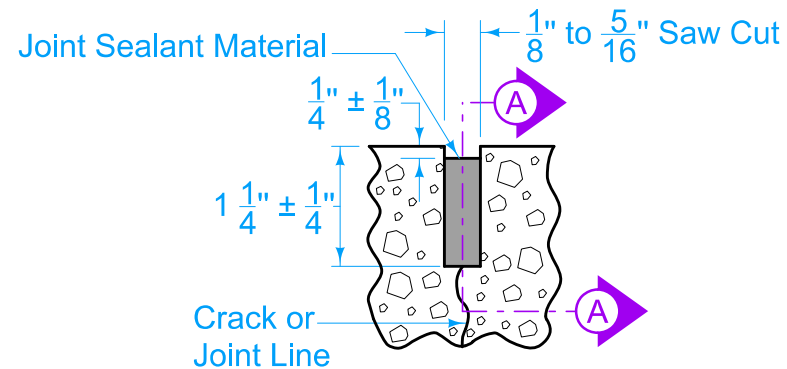


DETAIL A
(Saw cut formed by conventional concrete sawing equipment.)

- (8) Saw 'CD' joint to a depth of $T/3 \pm 1/4"$; saw 'C' joint to a depth of $T/4 \pm 1/4"$.
- (9) When tying into old pavement, (T) represents the depth of sound PCC.



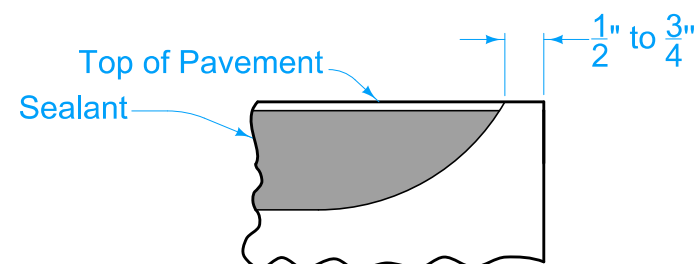
'C' JOINT IN CURB
(Match 'CT', 'CD', or 'C' joint in pavement.)



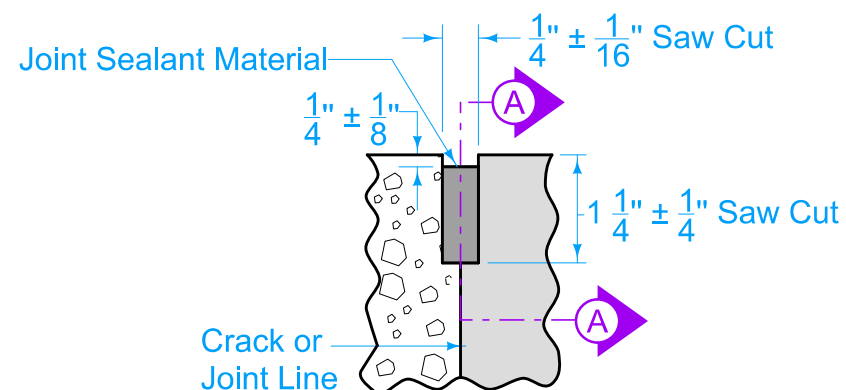
DETAIL B
(Saw cut formed by approved early concrete sawing equipment.)

BAR SIZE TABLE FOR CONTRACTION JOINTS				
(T)	Solid Dowel Diameter	Tubular Dowel Diameter	Elliptical	Tie Bar Size
< 8"	3/4"	7/8"	N/A	#6
≥ 8" but < 10"	1 1/4"	1 3/8"	Small	#10
≥ 10"	1 1/2"	1 5/8"	Medium	#11

Tubular and Elliptical Dowel Bars will not be allowed for RD joints.

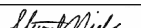


SECTION A-A
(Detail at Edge of Pavement)



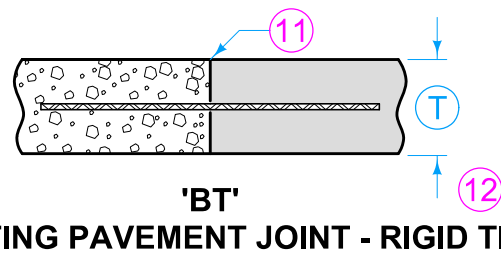
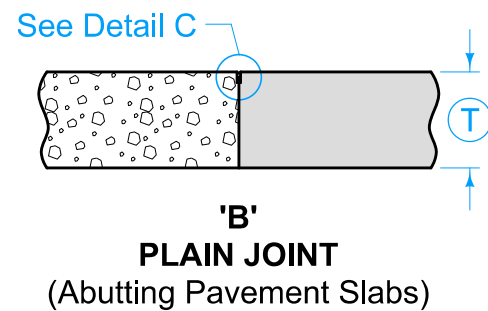
DETAIL C

LEGEND	
	Existing Pavement
	Proposed Pavement

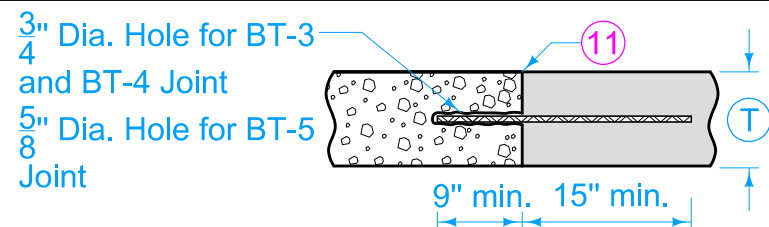
		REVISION	
		14	10-20-26
		PV-101	
FIGURE 7010.101	STANDARD ROAD PLAN	SHEET 2 of 8	
REVISIONS: Removed Interim			
			
SUDAS DIRECTOR		DESIGN METHODS ENGINEER	

TRANSVERSE CONTRACTION

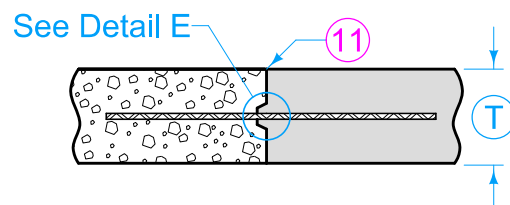
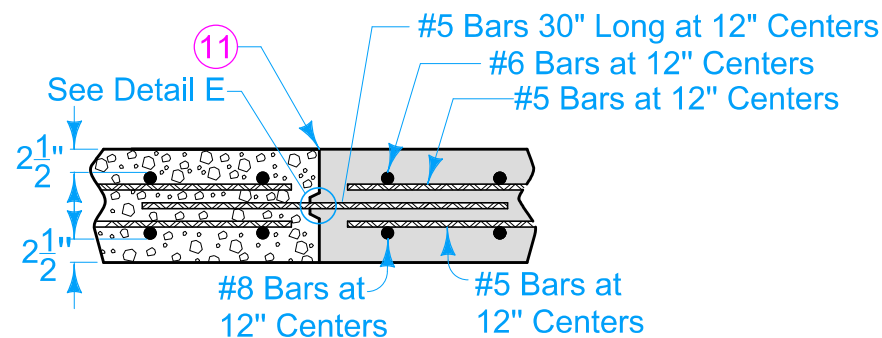
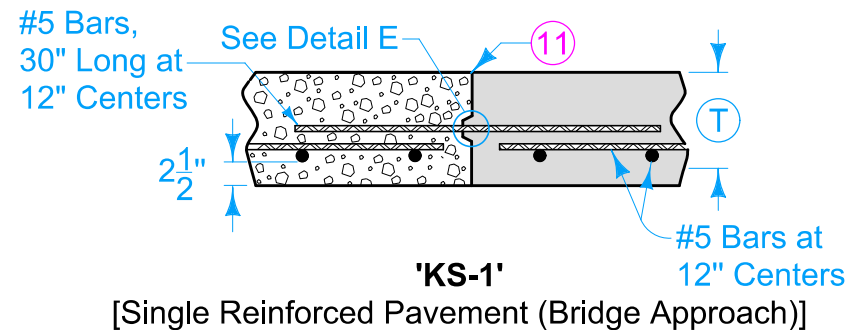
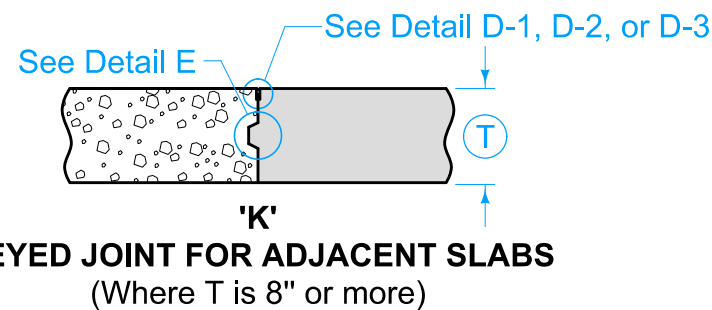
JOINTS



(T)	Joint	Bars	Bar Length and Spacing
< 8"	'BT-1'	#4	36" Long at 30" Centers
		#5	30" Long at 30" Centers
≥ 8"	'BT-2'	#5	36" Long at 30" Centers
	'BT-6'	#5	36" Long at 15" Centers



(T)	Joint	Bars	Bar Length and Spacing
< 8"	'BT-5'	#4	24" Long at 30" Centers
≥ 8"	'BT-3'	#5	24" Long at 30" Centers
	'BT-4'		24" Long at 15" Centers

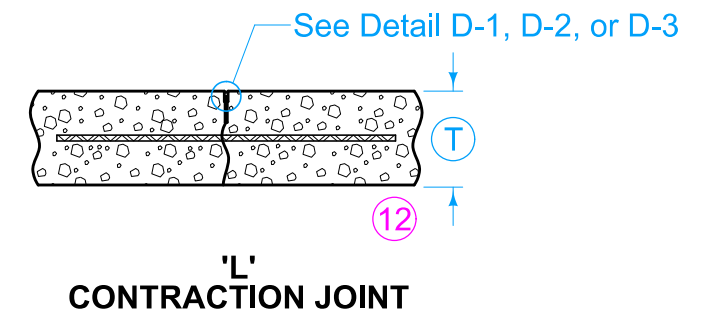


(T)	Joint	Bars	Bar Length and Spacing
< 8"	'KT-1'	#4	30" Long at 30" Centers
≥ 8"	'KT-2'	#5	30" Long at 30" Centers
	'KT-3'		30" Long at 15" Centers

LONGITUDINAL CONTRACTION

- 10 Bar supports may be necessary for fixed form paving to ensure the bar remains in a horizontal position in the plastic concrete.
- 11 Sawing or sealing of joint not required.
- 12 The following joints are interchangeable, subject to the pouring sequence:
'L-1', 'BT-1', and 'KT-1'
'L-2', 'BT-2', and 'KT-2'
'L-3', 'BT-6', and 'KT-3'

KT joints should not be used when DOT is contracting authority.



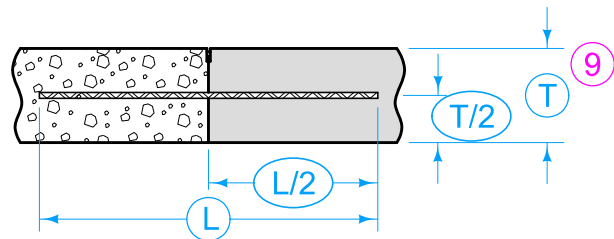
(T)	Joint	Bars	Bar Length and Spacing
< 8"	'L-1'	#4	36" Long at 30" Centers
≥ 8"	'L-2'	#5	36" Long at 30" Centers
	'L-3'		36" Long at 15" Centers

LEGEND	
	Existing Pavement
	Proposed Pavement

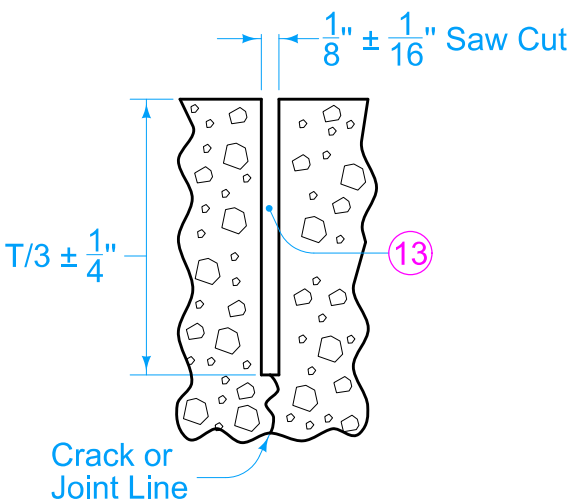
		REVISION	
		14	10-20-26
		PV-101	
		SHEET 3 of 8	
FIGURE 7010.101	STANDARD ROAD PLAN		

REVISIONS: Removed Interim	
SUDAS DIRECTOR	DESIGN METHODS ENGINEER

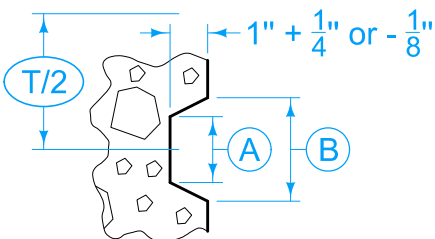
JOINTS



TIE BAR PLACEMENT
(Applies to all joints unless otherwise detailed.)

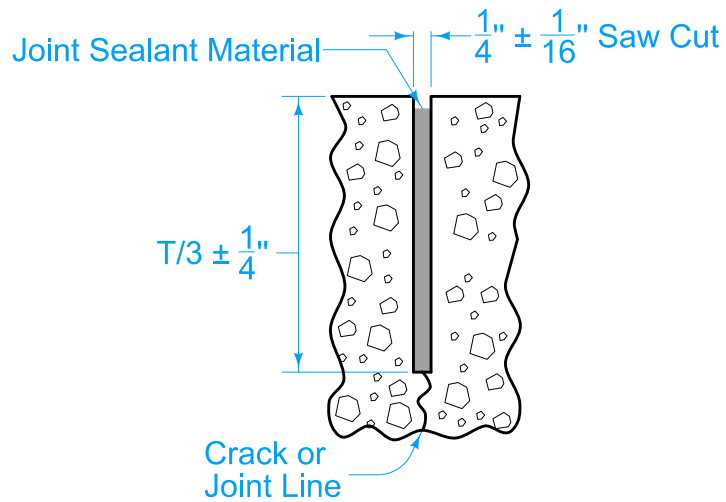


DETAIL D-1
(Required when specified in the contract documents.)

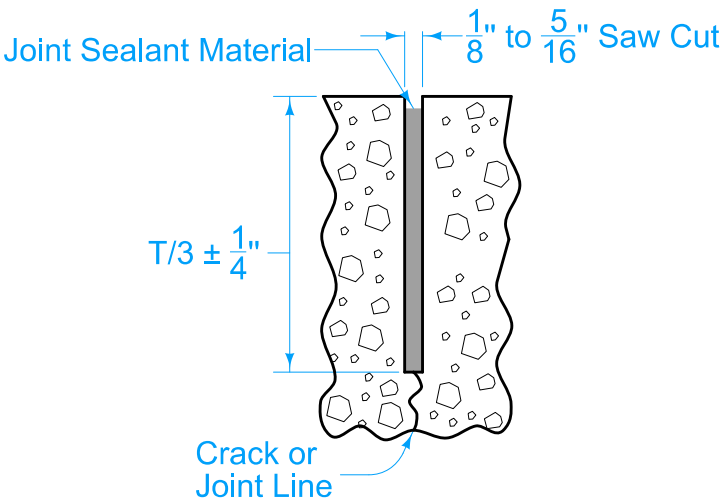


DETAIL E

KEYWAY DIMENSIONS			
Keyway Type	Pavement Thickness $\textcircled{T}$	$\textcircled{A}$	$\textcircled{B}$
Standard	8" or greater	$1\frac{3}{4}$ "	$2\frac{3}{4}$ "
Narrow	Less than 8"	1"	2"



DETAIL D-2
(Required when the Department of Transportation is not the Contracting Authority, or when specified in the contract documents)



DETAIL D-3
(Required when the Department of Transportation is the Contracting Authority, or when specified in the contract documents)

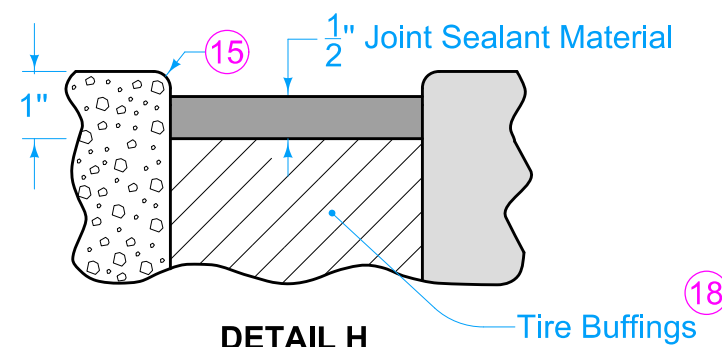
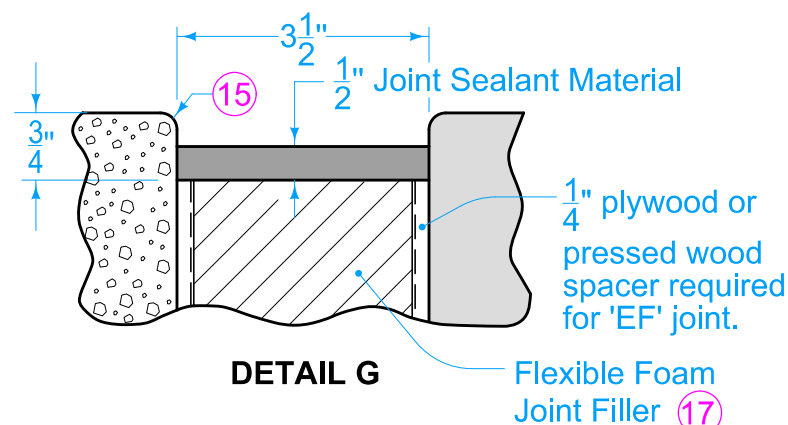
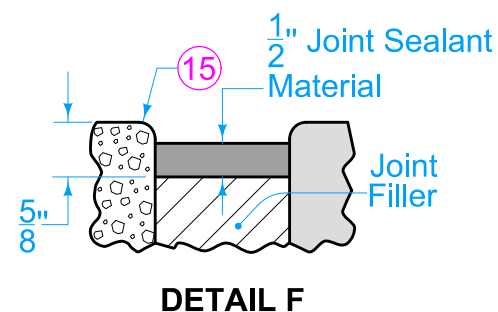
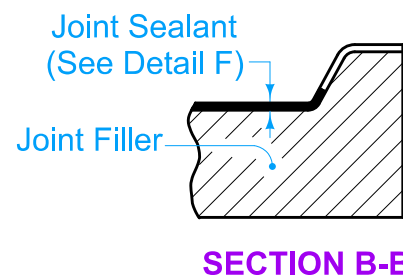
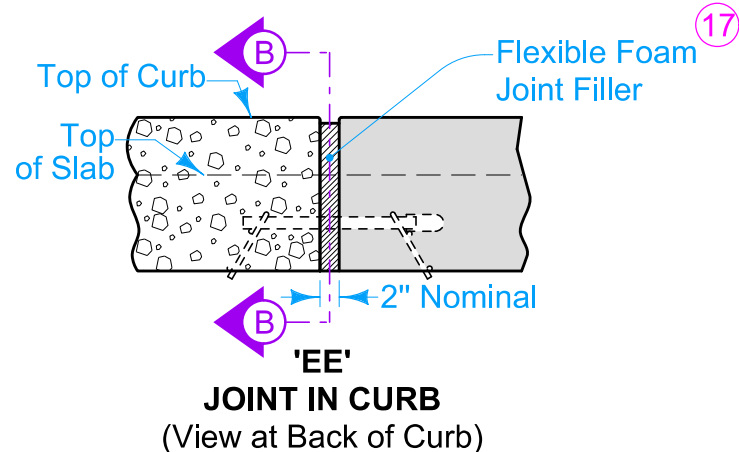
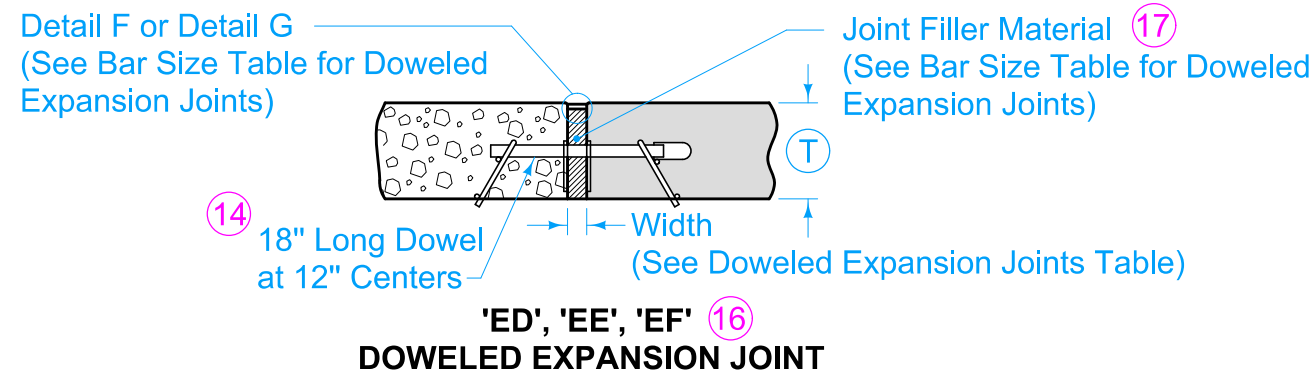
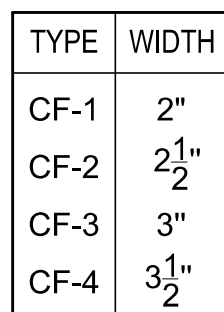
LEGEND	
	Existing Pavement
	Proposed Pavement

SUDAS	IOWA DOT	REVISION	
		14	10-20-26
FIGURE 7010.101	STANDARD ROAD PLAN	PV-101	
REVISIONS: Removed Interim		SHEET 4 of 8	

SUDAS DIRECTOR	DESIGN METHODS ENGINEER

JOINTS	
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LONGITUDINAL CONTRACTION



- 14 See Bar Size Table for Doweled Expansion Joints.
- 15 Edge with 1/4 inch tool for length of joint indicated if formed; edging not required when cut with diamond blade saw.
- 16 See Dowel Assemblies for fabrication details and placement limits. Coat the free end of dowel bar to prevent bond with pavement. At intake locations, dowel bars may be cast-in-place.
- 17 Predrill or preform holes in joint material for appropriate dowel size.
- 18 Compact tire buffings by spading with a square-nose shovel.

DOWELED EXPANSION JOINTS		
TYPE	WIDTH	FILLER MATERIAL (17)
ED	1"	Resilient (Detail F)
EE	2"	Flexible Foam (Detail F)
EF	3 $\frac{1}{2}$ "	Flexible Foam (Detail G)

BAR SIZE TABLE FOR DOWELED EXPANSION JOINTS			
	< 8"	≥ 8" but < 10"	≥ 10"
Dowel Diameter	$\frac{3}{4}$ "	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "
Tubular, GFRP, and Elliptical Dowel Bars will not be allowed for expansion joints.			

LEGEND

 Existing Pavement

 Proposed Pavement

		REVISION	
		14	10-20-26
		PV-101 SHEET 5 of 8	
FIGURE 7010.101	STANDARD ROAD PLAN		

REVISIONS: Removed interim

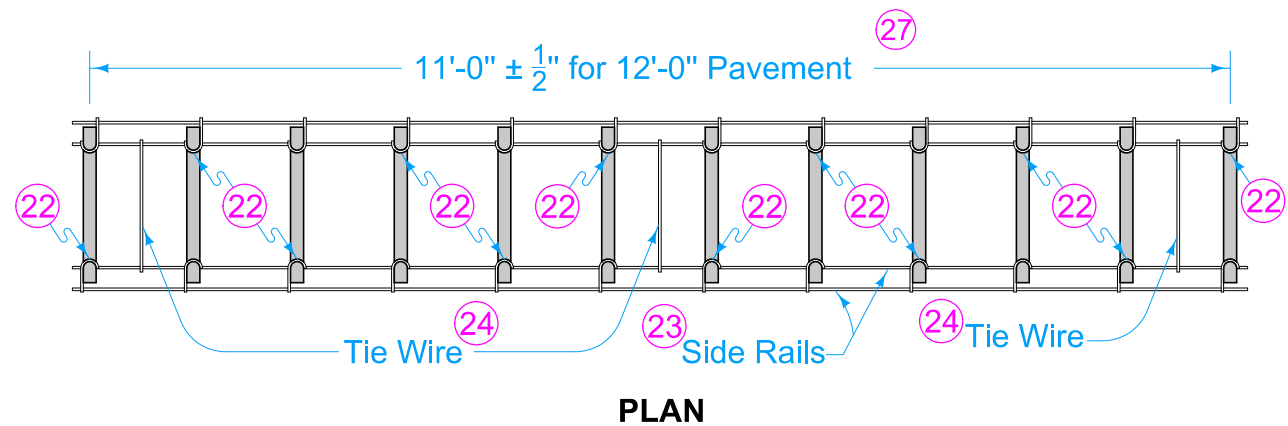

SUDAS DIRECTOR


 DESIGN METHODS ENGINEER

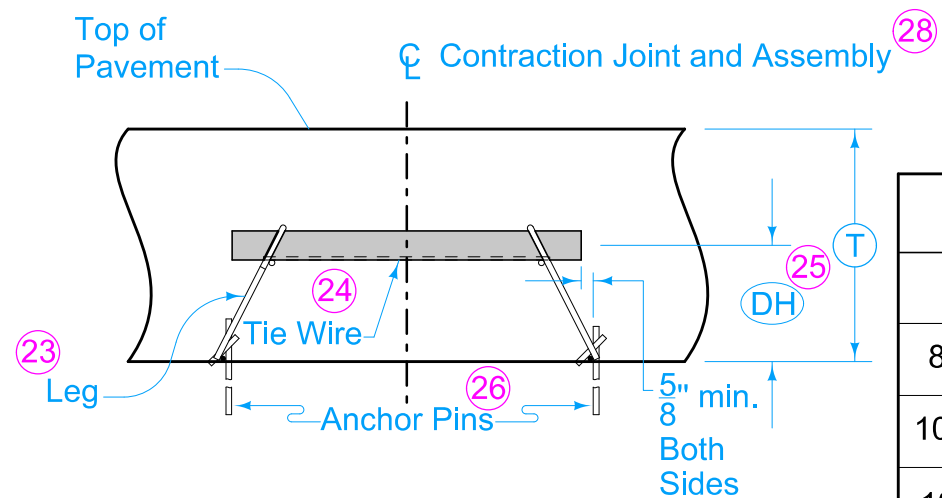
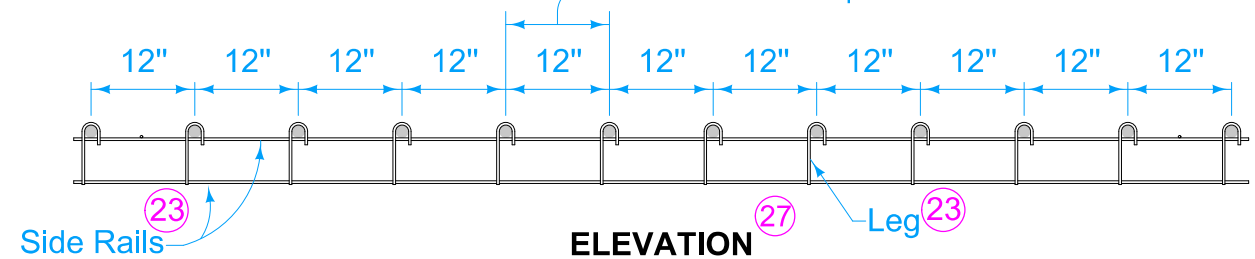
JOINTS

EXPANSION

CONTRACTION JOINTS



Spaces between dowel bars are nominal dimensions with a 1/4" allowable tolerance.



LONGITUDINAL SECTION

DOWEL ASSEMBLIES

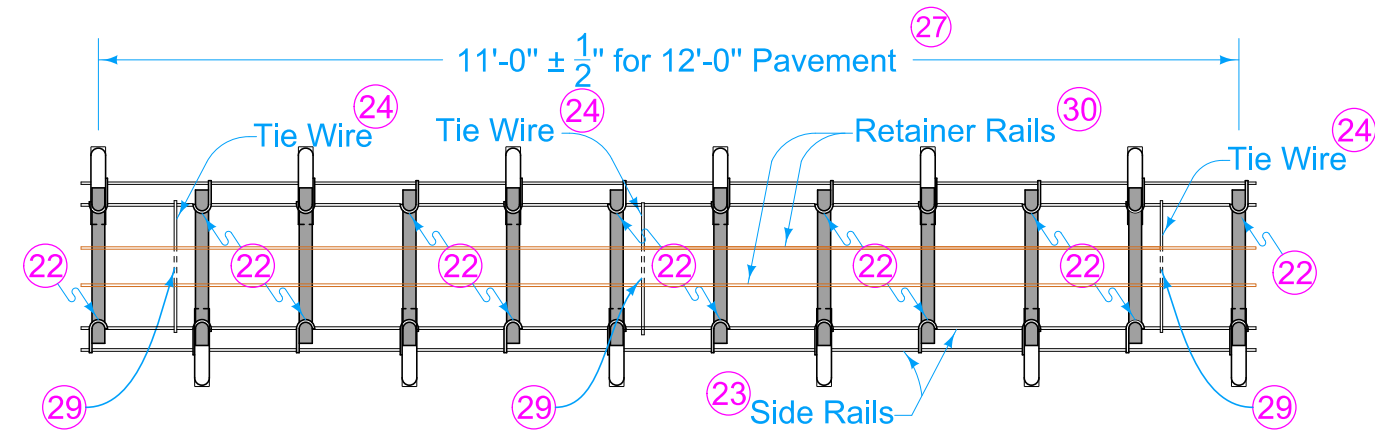
19 20 21

DOWEL HEIGHT AND DIAMETER FOR DOWELED CONTRACTION JOINTS				
T	DH 25	Diameter (Solid)	Diameter (Tubular)	Elliptical
8" to 9 1/2"	4 1/4"	1 1/4"	1 3/8"	Small
10" to 11 1/2"	5 1/4"	1 1/2"	1 5/8"	Medium
12" to 13"	6 1/4"	1 1/2"	1 5/8"	Medium
Tubular, Elliptical Dowel Bars will not be allowed for RD joints.				

- 19 Use 18 inch long dowel bars with a tolerance of $\pm 1/8$ inch. Ensure the centerlines of individual dowels are parallel to the other dowels in the assembly within $\pm 1/8$ inch.
- 20 Use wires with a minimum tensile strength of 50 ksi.
- 21 Details apply to both transverse contraction and expansion joints.
- 22 Weld alternately throughout.
- 23 0.306 inch diameter wire. Wire sizes shown are the minimum required.
- 24 Maximum 0.177 inch diameter wire, welded or friction fit to upper side rail, both sides.
- 25 Measured from the centerline of dowel bar to bottom of lower side rail + 1/4 inch.
- 26 Per lane width, install a minimum of 8 anchor pins evenly spaced (4 per side), to prevent movement of assembly during construction. Anchor assemblies placed on pavement or PCC base with devices approved by the Engineer.
- 27 If dowel basket assemblies are required for curbed pavements, the assembly length is based on the jointing layout. See PV-101, sheet 8.
- 28 Ensure dowel basket assembly centerline is within 2 inches of the intended joint location longitudinally and has no more than 1/4 inch horizontal skew from end of basket to end of basket.

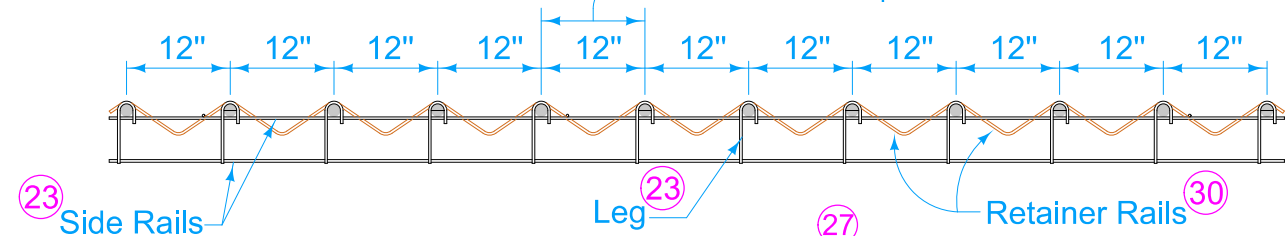
		REVISION	
		14	10-20-26
FIGURE 7010.101	STANDARD ROAD PLAN	PV-101	
		SHEET 6 of 8	
REVISIONS: Removed Interim			
SUDAS DIRECTOR		DESIGN METHODS ENGINEER	
JOINTS			

EXPANSION JOINTS

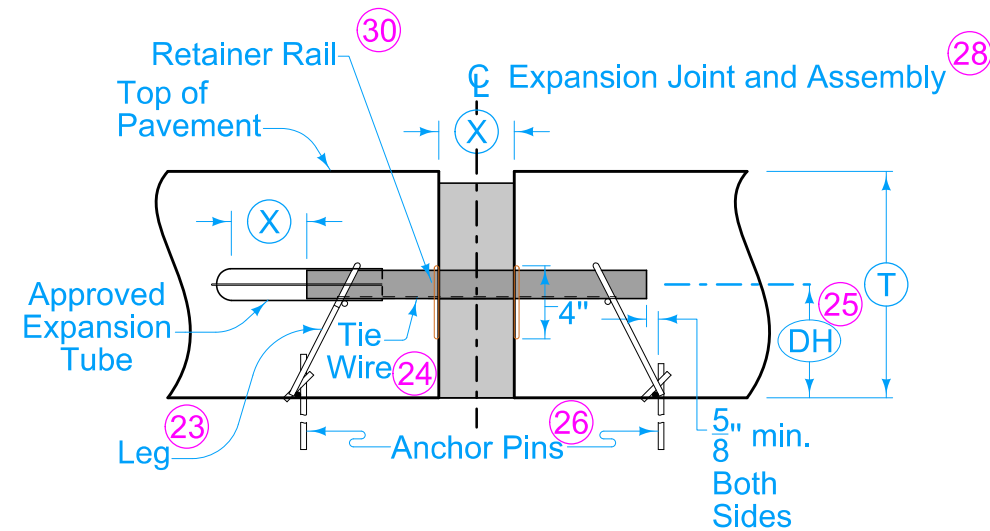


PLAN

Spaces between dowel bars are nominal dimensions with a 1/4" allowable tolerance.



ELEVATION



SECTION THRU EXPANSION JOINT

JOINT OPENING AND EXPANSION TUBE EXTENSION		
Joint Type	(X)	Minimum Tube Length
"ED"	1"	6"
"EE"	2"	7"
"EF"	3 1/2"	9"

DOWEL HEIGHT AND DIAMETER FOR DOWELED EXPANSION JOINTS

(T)	(DH) (25)	Diameter
8" to 9 1/2"	4 1/4"	1 1/4"
10" to 11 1/2"	5 1/4"	1 1/2"
12" to 13"	6 1/4"	1 1/2"

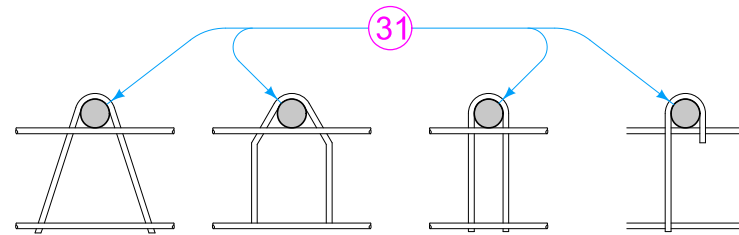
Tubular, GFRP, and Elliptical Dowel Bars will not be allowed for expansion joints.

DOWEL ASSEMBLIES

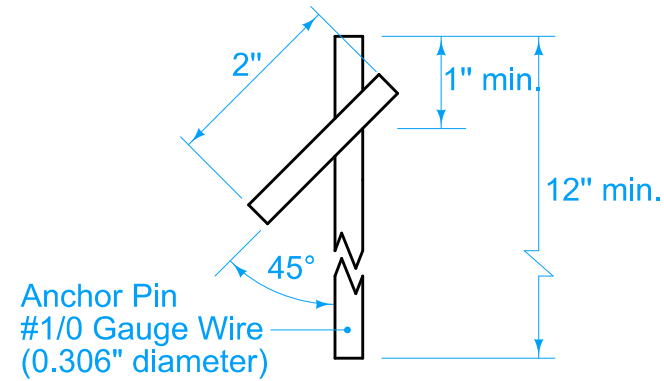
(19) (20) (21)

- (19) Use 18 inch long dowel bars with a tolerance of ± 1/8 inch. Ensure the centerlines of individual dowels are parallel to the other dowels in the assembly within ± 1/8 inch.
- (20) Use wires with a minimum tensile strength of 50 ksi.
- (21) Details apply to both transverse contraction and expansion joints.
- (22) Weld alternately throughout.
- (23) 0.306 inch diameter wire. Wire sizes shown are the minimum required.
- (24) Maximum 0.177 inch diameter wire, welded or friction fit to upper side rail, both sides.
- (25) Measured from the centerline of dowel bar to bottom of lower side rail + 1/4 inch.
- (26) Per lane width, install a minimum of 8 anchor pins evenly spaced (4 per side), to prevent movement of assembly during construction. Anchor assemblies placed on pavement or PCC base with devices approved by the Engineer.
- (27) If dowel basket assemblies are required for curbed pavements, the assembly length is based on the jointing layout. See PV-101, sheet 8.
- (28) Ensure dowel basket assembly centerline is within 2 inches of the intended joint location longitudinally and has no more than 1/4 inch horizontal skew from end of basket to end of basket.
- (29) Clip and remove center portion of tie during field assembly.
- (30) 1/4 inch diameter wire.

		REVISION	
		14	10-20-26
FIGURE 7010.101	STANDARD ROAD PLAN	PV-101	
		SHEET 7 of 8	
REVISIONS: Removed Interim			
SUDAS DIRECTOR		DESIGN METHODS ENGINEER	
JOINTS			

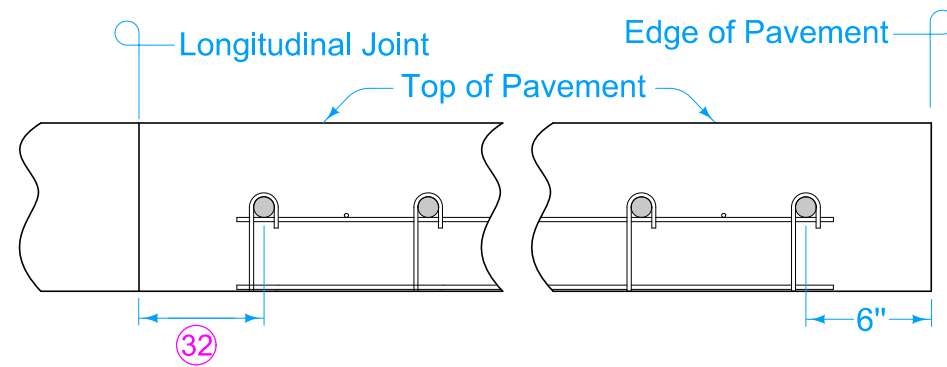


OPTIONAL LEG SHAPES

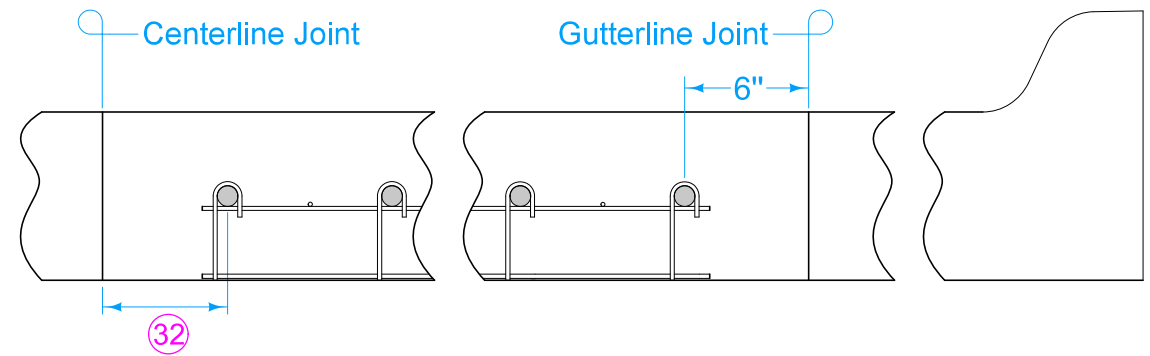


ANCHOR PIN

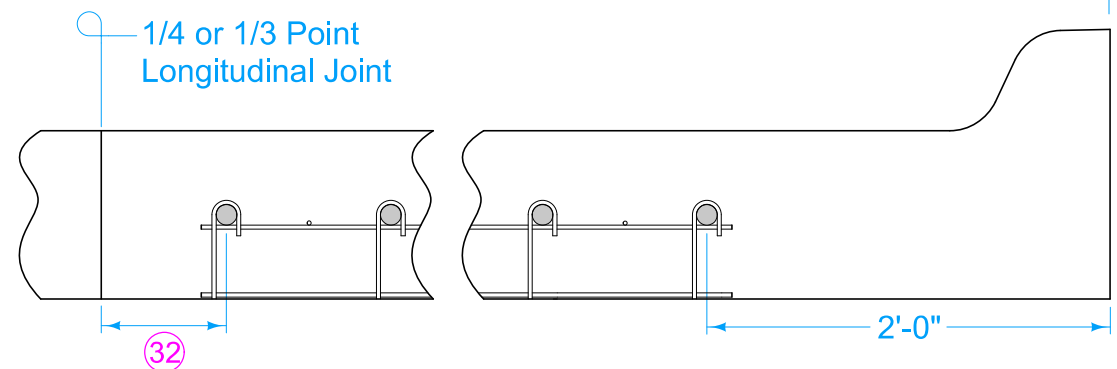
- (19) Use 18 inch long dowel bars with a tolerance of $\pm 1/8$ inch. Ensure the centerlines of individual dowels are parallel to the other dowels in the assembly within $\pm 1/8$ inch.
- (20) Use wires with a minimum tensile strength of 50 ksi.
- (21) Details apply to both transverse contraction and expansion joints.
- (31) Diameter of bend around dowel is dowel diameter + $1/8$ to $3/16$ inches.
- (32) For uniform lane widths: 3 to 6 inches. For taper and variable width pavements: 3 to 12 inches.



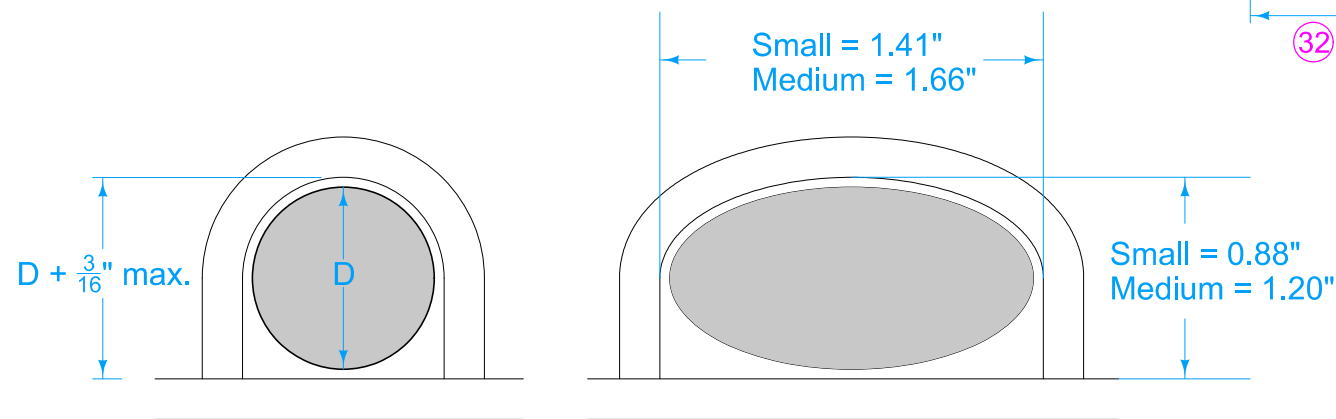
PLACEMENT LIMITS
(Rural Section)



PLACEMENT LIMITS
(Curb and Gutter - Gutterline Jointing)



PLACEMENT LIMITS
(Curb and Gutter - 1/4 or 1/3 Point Jointing)



BEND AROUND DOWEL (31)

DOWEL ASSEMBLIES

(19) (20) (21)

		REVISION	
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		PV-101	
FIGURE 7010.101	STANDARD ROAD PLAN	SHEET 8 of 8	
REVISIONS: Removed Interim			
			
SUDAS DIRECTOR		DESIGN METHODS ENGINEER	
JOINTS			