**FIGURE 7010.101**

**PLAIN JOINT** (Abutting Pavement Slabs)

- **"B"**
  - 30" Long Tie Bar at 12" Centers

**CONTRACTION JOINT**

- **"C"**
  - 30" Long Tie Bar at 12" Centers

**DOWELED CONTRACTION JOINT**

- **"CD"**
  - 18" Long Dowel at 12" Centers

**TIED CONTRACTION JOINT**

- **"CT"**
  - 30" Long Tie Bar at 12" Centers

**ABUTTING JOINT**

- **"CT"**
  - 18" Long Dowel at 12" Centers

- **"RD"**
  - 30" Long Tie Bar at 12" Centers

**HEADER JOINT** (End Rigid Pavement)

- **"HT"**
  - Plastic or Tarpaper Wrapped

**DAY’S WORK JOINT** (Non-working)

- **"DW"**
  - 24" min.
  - Top of Slab

**ABUTTING PAVEMENT JOINT**

- **"RD"**
  - Top of Curb

**DAY’S WORK JOINT** (Non-working)

- **"DW - CG"**
  - Top of Slab

**CURB AND GUTTER UNIT**

- **"DW - CG"**
  - Top of Curb

**RIGID TIE**

- **"RT"**
  - Top of Curb

**HOLE DIAMETER**

- **"C"**
  - Larger than Dowel

- **"CD"**
  - Larger than Dowel

**DIMENSIONS**

- **"B"**
  - Top of Curb

- **"DW"**
  - Top of Slab

**REVISIONS:**

- Added Detail D-3 and removed language on Detail D-1 on page 4.

- Added Detail D-3 as an option for ‘K’ and ‘L’ joints on page 5.

**NOTES:**

1. See dowel assemblies for fabrication details.
2. See Bar Size Table.
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 1/4 inch tool for length of joint indicated if formed; edging not required when cut with diamond blade saw. Remove header block and board when second slab is placed.
6. Unless otherwise specified, 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 day’s work. Remove any pavement damaged due to the drilling at no additional cost to the Contracting Authority.
### BAR SIZE TABLE

<table>
<thead>
<tr>
<th>Size</th>
<th>Dowel Diameter</th>
<th>Tie Bar Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 8&quot;</td>
<td>3/8</td>
<td>#6</td>
</tr>
<tr>
<td>≥ 8&quot; but &lt; 10&quot;</td>
<td>1 1/4</td>
<td>#10</td>
</tr>
<tr>
<td>≥ 10&quot;</td>
<td>1 1/2</td>
<td>#11</td>
</tr>
</tbody>
</table>

When tying into old pavement, T represents the depth of sound PCC.

---

**Figures**

**Figure 7010.101**

**BAR PLACEMENT**

(Applies to all joints unless otherwise detailed.)

**DETAIL A**

(Saw cut formed by conventional concrete sawing equipment.)

**DETAIL B**

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

**DETAIL C**

**SECTION A-A**

(Detail at Edge of Pavement)

**C' JOINT IN CURB**

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

**TRANSVERSE CONTRACTION**
PLAIN JOINT
(Abutting Pavement Slabs)

'BT'
ABUTTING PAVEMENT JOINT - RIGID TIE

<table>
<thead>
<tr>
<th>Joint</th>
<th>Bars</th>
<th>Bar Length and Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 8&quot;</td>
<td>'BT-1'</td>
<td>#4 36&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td>≥ 8&quot;</td>
<td>'BT-2'</td>
<td>#5 36&quot; Long at 30&quot; Centers</td>
</tr>
</tbody>
</table>

'BT'
ABUTTING PAVEMENT JOINT - RIGID TIE (Drilled)

<table>
<thead>
<tr>
<th>Joint</th>
<th>Bars</th>
<th>Bar Length and Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 8&quot;</td>
<td>'BT-5'</td>
<td>#4 24&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td>≥ 8&quot;</td>
<td>'BT-3'</td>
<td>#5 24&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td></td>
<td>'BT-4'</td>
<td>24&quot; Long at 15&quot; Centers</td>
</tr>
</tbody>
</table>

KEYED JOINT FOR ADJACENT SLABS
(Where T is 8" or more)

See Detail C

'SEET DETAIL C'

See Detail E

See Detail E

See Detail E

See Detail D-1, D-2, or D-3

See Detail D-1, D-2, or D-3

See Detail E

See Detail E

See Detail E

See Detail E

See Detail D-1, D-2, or D-3

'KS-1'
(Single Reinforced Pavement (Bridge Approach))

<table>
<thead>
<tr>
<th>Joint</th>
<th>Bars</th>
<th>Bar Length and Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#5 Bars, 30&quot; Long at 12&quot; Centers</td>
<td></td>
</tr>
</tbody>
</table>

'KS-2'
(Double Reinforced Pavement (Bridge Approach))

<table>
<thead>
<tr>
<th>Joint</th>
<th>Bars</th>
<th>Bar Length and Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#5 Bars at 12&quot; Centers</td>
<td></td>
</tr>
</tbody>
</table>

'KT'
ABUTTING PAVEMENT JOINT - KEYWAY TIE

<table>
<thead>
<tr>
<th>Joint</th>
<th>Bars</th>
<th>Bar Length and Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 8&quot;</td>
<td>'KT-1'</td>
<td>#4 30&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td>≥ 8&quot;</td>
<td>'KT-2'</td>
<td>#5 30&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td></td>
<td>'KT-3'</td>
<td>30&quot; Long at 15&quot; Centers</td>
</tr>
</tbody>
</table>

L Granted JOINT

<table>
<thead>
<tr>
<th>Joint</th>
<th>Bars</th>
<th>Bar Length and Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≥ 8&quot;</td>
<td>'KT-3' 30&quot; Long at 15&quot; Centers</td>
</tr>
</tbody>
</table>

'KT-3' and 'L-3'

See Detail E

See Detail E

See Detail E

See Detail D-1, D-2, or D-3

See Detail D-1, D-2, or D-3

See Detail E

See Detail E

See Detail E

See Detail E

See Detail E

See Detail E

See Detail E

See Detail D-1, D-2, or D-3

See Detail D-1, D-2, or D-3

See Detail D-1, D-2, or D-3
LONGITUDINAL CONTRACTION

FIGURE 7010.101
SUDAS DIRECTOR
DESIGN METHODS ENGINEER

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

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

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)

KEYWAY DIMENSIONS

<table>
<thead>
<tr>
<th>Keyway Type</th>
<th>Pavement Thickness</th>
<th>T</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>8&quot; or greater</td>
<td>$\frac{13}{4}$</td>
<td>$2\frac{3}{4}$</td>
<td></td>
</tr>
<tr>
<td>Narrow</td>
<td>Less than 8&quot;</td>
<td>1&quot;</td>
<td>2&quot;</td>
<td></td>
</tr>
</tbody>
</table>

When tying into old pavement, $T$ represents the depth of sound PCC.

Sealant or cleaning not required.
Compact tire buffings by spading with a square-nose shovel.

Predrill or preform holes in joint material for appropriate dowel size. Coat the free end of dowel bar to prevent bond with pavement. At intake locations, dowel bars may be cast-in-place.

Joint Sealant Material

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.

Joint Sealant Material

See Bar Size Table.

Edge with 1/4 inch tool for length of joint indicated if formed; edging not required when cut with diamond blade saw.

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.

Compact tire buffings by spading with a square-nose shovel.

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.

Compact tire buffings by spading with a square-nose shovel.

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.

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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.
CONTRACTION JOINTS

Dowel Assemblies

Dowel Height and Diameter

Spaces between dowel bars are nominal dimensions with a $\frac{3}{8}$" allowable tolerance.

Longitudinal Section

Figure 7010.101

Standard Road Plan

SUDAS
IDOWADOT

Joints

**EXPANSION JOINTS**

**PLAN**
- 13'-0" ± 1/2" for 14'-0" Pavement
- 11'-0" ± 1/2" for 12'-0" Pavement
- Tie Wire
- Retainer Rails
- Side Rails

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

**ELEVATION**

- Retainer Rail
- Top of Pavement
- Expansion Joint and Assembly
- Approved Expansion Tube
- Anchor Pins
- Leg

**SECTION THRU EXPANSION JOINT**

<table>
<thead>
<tr>
<th>JOINT OPENING AND EXPANSION TUBE EXTENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint Type</td>
</tr>
<tr>
<td>&quot;ED&quot;</td>
</tr>
<tr>
<td>&quot;EE&quot;</td>
</tr>
<tr>
<td>&quot;EF&quot;</td>
</tr>
</tbody>
</table>

**DOWEL HEIGHT AND DIAMETER**

<table>
<thead>
<tr>
<th>T</th>
<th>DH</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>7&quot; to 7 1/2&quot;</td>
<td>3 1/4&quot;</td>
<td>3/4&quot;</td>
</tr>
<tr>
<td>8&quot; to 9 1/2&quot;</td>
<td>4 1/4&quot;</td>
<td>1 1/2&quot;</td>
</tr>
<tr>
<td>10&quot; to 11 1/2&quot;</td>
<td>5 4/4&quot;</td>
<td>1 1/2&quot;</td>
</tr>
<tr>
<td>12&quot; to 13&quot;</td>
<td>6 4/4&quot;</td>
<td>1 1/2&quot;</td>
</tr>
</tbody>
</table>

**DOWEL ASSEMBLIES**

- 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.
- Wire sizes shown are the minimum required. Use wires with a minimum tensile strength of 50 ksi.
- Details apply to both transverse contraction and expansion joints.
- Weld alternately throughout.
- #1/0 gauge (0.306 inch diameter) wire.
- #10 gauge (0.135 inch diameter) wire, welded or friction fit to upper side rail, both sides.
- Measured from the centerline of dowel bar to bottom of lower side rail + 1/4 inch.
- 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.
- If dowel basket assemblies are required for curbed pavements, the assembly length is based on the jointing layout. See PV-101, sheet 8.
- Clip and remove center portion of tie during field assembly.
- 1/4 inch diameter wire.
- 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.
FIGURE 7010.101

OPTIONAL LEG SHAPES

ANCHOR PIN

OPTIMAL LEG SHAPES

ANCHOR PIN

PLACEMENT LIMITS
(Rural Section)

PLACEMENT LIMITS
(Curb and Gutter - Gutterline Jointing)

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

DOWEL ASSEMBLIES

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 Wire sizes shown are the minimum required. Use wires with a minimum tensile strength of 50 ksi.

21 Details apply to both transverse contraction and expansion joints.

22 Diameter of bend around dowel is dowel diameter + 1/8 to 3/16 inches.

23 For uniform lane widths: 3" - 6". For taper and variable width pavements: 3" - 12".

24 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.

25 Wire sizes shown are the minimum required. Use wires with a minimum tensile strength of 50 ksi.

26 Details apply to both transverse contraction and expansion joints.

27 Diameter of bend around dowel is dowel diameter + 1/8 to 3/16 inches.

28 For uniform lane widths: 3" - 6". For taper and variable width pavements: 3" - 12".

29 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.

30 Wire sizes shown are the minimum required. Use wires with a minimum tensile strength of 50 ksi.

31 Details apply to both transverse contraction and expansion joints.

32 Diameter of bend around dowel is dowel diameter + 1/8 to 3/16 inches.

33 For uniform lane widths: 3" - 6". For taper and variable width pavements: 3" - 12".

34 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.

35 Wire sizes shown are the minimum required. Use wires with a minimum tensile strength of 50 ksi.

36 Details apply to both transverse contraction and expansion joints.

37 Diameter of bend around dowel is dowel diameter + 1/8 to 3/16 inches.

38 For uniform lane widths: 3" - 6". For taper and variable width pavements: 3" - 12".

39 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.

40 Wire sizes shown are the minimum required. Use wires with a minimum tensile strength of 50 ksi.

41 Details apply to both transverse contraction and expansion joints.

42 Diameter of bend around dowel is dowel diameter + 1/8 to 3/16 inches.

43 For uniform lane widths: 3" - 6". For taper and variable width pavements: 3" - 12".