- **Plain Joint** (Abutting Pavement Slabs): See Detail C
- **Contraction Joint**: See Detail A or B
- **Dowelled Contraction Joint**: See Detail A or B
- **Tied Contraction Joint**: See Detail A or B
- **Day's Work Joint (Non-working)**: See Bar Size Table for Contraction Joints on Sheet 2.
- **Header Joint**: 30" Long Tie Bar at 12" Centers
- **Day's Work Joint (End Rigid Pavement)**: 18" Long Dowel at 12" Centers
- **Curb and Gutter Unit**: 30" Long Tie Bar at 12" Centers

**Legend**
- Existing Pavement
- Proposed Pavement

**Notes**
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 the distance between future joints exceeds 8 inches. Use 'C' joints when the distance is less than 8 inches.
7. 'RT' joint may be used in lieu of 'DW' joint at the edge of the days work. Remove any pavement damaged due to the drilling at no additional cost to the Contracting Authority.
8. 'CT' joint may be used alternatively to 'CD' joint.
**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.)

**SECTION A-A**

(Detail at Edge of Pavement)

**TRANSVERSE CONTRACTION**

**DETAIL C**

1. Saw 'CD' joint to a depth of T/3 ± 1/4"; saw 'C' joint to a depth of T/4 ± 1/4".
2. When tying into old pavement, T represents the depth of sound PCC.

---

**BAR SIZE TABLE FOR CONTRACTION JOINTS**

<table>
<thead>
<tr>
<th>T</th>
<th>Solid Dowel Diameter</th>
<th>Tubular Dowel Diameter</th>
<th>Tie Bar Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 8&quot;</td>
<td>3/4</td>
<td>7/8</td>
<td>#6</td>
</tr>
<tr>
<td>≥ 8&quot;  but &lt; 10&quot;</td>
<td>1 1/2&quot;</td>
<td>1 3/8&quot;</td>
<td>#10</td>
</tr>
<tr>
<td>≥ 10&quot;</td>
<td>1 1/2&quot;</td>
<td>1 5/8&quot;</td>
<td>#11</td>
</tr>
</tbody>
</table>

Tubular Dowel Bars will not be allowed for RD joints.

---

**LEGEND**

- Existing Pavement
- Proposed Pavement
See Detail C

"B"
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>&quot;BT-1&quot;</td>
<td>#4 36&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td>≥ 8&quot;</td>
<td>&quot;BT-2&quot;</td>
<td>#5 36&quot; Long at 30&quot; Centers</td>
</tr>
</tbody>
</table>

3/4" Dia. Hole for BT-3 and BT-4 Joint
5/8" Dia. Hole for BT-5 Joint

9" min. 15" min.

"KT"
ABUTTING PAVEMENT JOINT - KEYWAY TIE

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

See Detail E

"KT-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>&lt; 8&quot;</td>
<td>&quot;KT-1&quot;</td>
<td>#4 30&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td>≥ 8&quot;</td>
<td>&quot;KT-2&quot;</td>
<td>#5 30&quot; Long at 30&quot; Centers</td>
</tr>
</tbody>
</table>

Sawing or sealing of joint not required.

The following joints are interchangeable, subject to the pouring sequence:
"BT-1", "L-1", and "KT-1"
"KT-2" and "L-2"
"KT-3" and "L-3"

See Detail E

"KS-1"
[Single Reinforced Pavement (Bridge Approach)]

See Detail E

"KS-2"
[Double Reinforced Pavement (Bridge Approach)]

See Detail E

"L"
CONTRACTION JOINT

<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>&quot;L-1&quot;</td>
<td>#4 36&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td>≥ 8&quot;</td>
<td>&quot;L-2&quot;</td>
<td>#5 36&quot; Long at 30&quot; Centers</td>
</tr>
</tbody>
</table>

Bar supports may be necessary for fixed form paving to ensure the bar remains in a horizontal position in the plastic concrete.

9'' min. 15'' min.

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

See Detail E

See Detail C

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

LEGEND

Existing Pavement

Proposed Pavement

Revisions:

Note 2. Added new circle note 14 and renumbered remaining notes.

Added tubular dowel option to transverse contraction joints. Modified circle note 2. Added new circle note 14 and renumbered remaining notes.

Figure D-1, D-2, or D-3

SUDAS

KOWADOT

PV-101

SHEET 3 of 8

BAR SUPPORTS

ABUTTING PAVEMENT JOINT

PLANE JOINT

ABUTTING PAVEMENT JOINT

KEYWAY JOINT

ABUTTING PAVEMENT JOINT

RIGID TIE

BAR SUPPORTS

ABUTTING PAVEMENT JOINT

PLANE JOINT

ABUTTING PAVEMENT JOINT

KEYWAY JOINT

ABUTTING PAVEMENT JOINT

RIGID TIE

JOINTS
When tying into old pavement, \( T \) represents the depth of sound PCC.

Sealant or cleaning not required.

### Keyway Dimensions

<table>
<thead>
<tr>
<th>Keyway Type</th>
<th>Pavement Thickness</th>
<th>Keyway Type</th>
<th>Pavement Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>8&quot; or greater</td>
<td>💥</td>
<td>1(\frac{3}{4})&quot;</td>
</tr>
<tr>
<td>Narrow</td>
<td>Less than 8&quot;</td>
<td>🟢</td>
<td>1&quot;</td>
</tr>
</tbody>
</table>

### Tie Bar Placement

(Applies 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.)

### Longitudinal Contraction

#### Legend

- **Existing Pavement**
- **Proposed Pavement**
CONTRACTION JOINTS

Spaces between dowel bars are nominal dimensions with a $\frac{1}{4}$" allowable tolerance.

<table>
<thead>
<tr>
<th>DOWEL ASSEMBLIES</th>
<th>LONGITUDINAL SECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Leg</td>
</tr>
<tr>
<td>23</td>
<td>Tie Wire</td>
</tr>
<tr>
<td>24</td>
<td>Anchor Pins</td>
</tr>
<tr>
<td>25</td>
<td>8&quot; to 7 1/2&quot;</td>
</tr>
<tr>
<td>26</td>
<td>7/2&quot; to 7&quot;</td>
</tr>
<tr>
<td>27</td>
<td>1/2&quot; min. Both Sides</td>
</tr>
</tbody>
</table>

**Dowel Height and Diameter for Doweled Contraction Joints**

<table>
<thead>
<tr>
<th>T</th>
<th>DH/23</th>
<th>Diameter (Solid)</th>
<th>Diameter (Tubular)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7&quot; to 7 1/2&quot;</td>
<td>3 1/2&quot;</td>
<td>2 3/4&quot;</td>
<td>7/8&quot;</td>
</tr>
<tr>
<td>8&quot; to 9 1/2&quot;</td>
<td>4 1/2&quot;</td>
<td>3 1/4&quot;</td>
<td>1 3/8&quot;</td>
</tr>
<tr>
<td>10&quot; to 11 1/2&quot;</td>
<td>5 1/4&quot;</td>
<td>4 1/2&quot;</td>
<td>1 5/8&quot;</td>
</tr>
<tr>
<td>12&quot; to 13&quot;</td>
<td>6 1/4&quot;</td>
<td>5 1/2&quot;</td>
<td>1 7/8&quot;</td>
</tr>
</tbody>
</table>

Tubular Dowel Bars will not be allowed for RD joints.
Expansion Joints

Spaces between dowel bars are nominal dimensions with a \( \frac{3}{4}'' \) allowable tolerance.

Dowel Assemblies

<table>
<thead>
<tr>
<th>Joint Type</th>
<th>( T )</th>
<th>( \text{DH} )</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>7'' to 7( \frac{1}{2}'' )</td>
<td>( \frac{3}{4}'' )</td>
<td>( \frac{3}{4}'' )</td>
<td></td>
</tr>
<tr>
<td>8'' to 9( \frac{1}{2}'' )</td>
<td>( \frac{4}{4}'' )</td>
<td>( \frac{1}{4}'' )</td>
<td></td>
</tr>
<tr>
<td>10'' to 11( \frac{1}{2}'' )</td>
<td>( \frac{5}{4}'' )</td>
<td>( \frac{1}{4}'' )</td>
<td></td>
</tr>
<tr>
<td>12'' to 13''</td>
<td>( \frac{6}{4}'' )</td>
<td>( \frac{1}{4}'' )</td>
<td></td>
</tr>
</tbody>
</table>

Tubular Dowel Bars will not be allowed for expansion joints.

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.

Use wires with a minimum tensile strength of 50 ksi.

Details apply to both transverse contraction and expansion joints.

Weld alternately throughout.

0.306 inch diameter wire. Wire sizes shown are the minimum required.

Maximum 0.177 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.

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.

Clip and remove center portion of tie during field assembly.

1/4 inch diameter wire.

Approved Expansion Tube

Expansion Joint and Assembly

Sides

Both Sides

Min. 5''

ELEVATION

SECTION THRU EXPANSION JOINT

Joint Opening and Expansion Tube Extension

<table>
<thead>
<tr>
<th>Joint Type</th>
<th>Minimum Tube Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;ED&quot;</td>
<td>1''</td>
</tr>
<tr>
<td>&quot;EE&quot;</td>
<td>2''</td>
</tr>
<tr>
<td>&quot;EF&quot;</td>
<td>( \frac{3}{4}'' )</td>
</tr>
<tr>
<td>&quot;EF&quot;</td>
<td>9''</td>
</tr>
</tbody>
</table>

For Doweled Expansion Joints

Tubular Dowel Bars will not be allowed for expansion joints.

Details apply to both transverse contraction and expansion joints.

Weld alternately throughout.

0.306 inch diameter wire. Wire sizes shown are the minimum required.

Maximum 0.177 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.

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.

Clip and remove center portion of tie during field assembly.

1/4 inch diameter wire.
FIGURE 7010.101

OPTIONAL LEG SHAPES

ANCHOR PIN

Anchor Pin
#1/0 Gauge Wire
(0.306" diameter)

1" min.
12" min.

45°

Dowel Assemblies

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

D + 3/8" max.

Back of Curb

Longitudinal Joint
Top of Pavement

Centerline Joint
Gutterline Joint

1/4 or 1/3 Point
Longitudinal Joint

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.

Use wires with a minimum tensile strength of 50 ksi.

Details apply to both transverse contraction and expansion joints.

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

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

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