Pavement
<table>
<thead>
<tr>
<th>NO.</th>
<th>DATE</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV-3</td>
<td>04-16-19</td>
<td>Safety Edge</td>
</tr>
<tr>
<td>PV-10</td>
<td>04-21-20</td>
<td>Rumble Strip Panel for Intersection Approach</td>
</tr>
<tr>
<td>PV-12</td>
<td>10-20-20</td>
<td>Milled Shoulder Rumble Strips</td>
</tr>
<tr>
<td>PV-13</td>
<td>10-17-17</td>
<td>Milled Centerline Rumble Strips</td>
</tr>
<tr>
<td>PV-20</td>
<td>10-21-14</td>
<td>Paved Islands</td>
</tr>
<tr>
<td>PV-101</td>
<td>04-19-22</td>
<td>Joints</td>
</tr>
<tr>
<td>PV-102</td>
<td>04-21-20</td>
<td>PCC Curb Details</td>
</tr>
<tr>
<td>PV-103</td>
<td>04-19-22</td>
<td>Manhole Boxouts in PCC Pavement</td>
</tr>
<tr>
<td>PV-104</td>
<td>04-21-20</td>
<td>Ramped Median Nose</td>
</tr>
<tr>
<td>PV-105</td>
<td>10-21-14</td>
<td>PCC Pavement Widening</td>
</tr>
<tr>
<td>PV-106</td>
<td>10-17-17</td>
<td>PCC Railroad Approach Section</td>
</tr>
<tr>
<td>PV-121</td>
<td>04-21-15</td>
<td>Jointing PCC Pavement Widening</td>
</tr>
<tr>
<td>PV-201</td>
<td>04-19-22</td>
<td>Manhole Boxouts in HMA Pavement and HMA Overlays</td>
</tr>
<tr>
<td>PV-202</td>
<td>04-21-20</td>
<td>Hot Mix Asphalt Resurfacing</td>
</tr>
<tr>
<td>PV-203</td>
<td>04-21-20</td>
<td>HMA Base Widening</td>
</tr>
<tr>
<td>PV-204</td>
<td>10-17-17</td>
<td>HMA Railroad Approach Section</td>
</tr>
<tr>
<td>PV-301</td>
<td>04-21-20</td>
<td>Superelevation Details Two Lane Roadway</td>
</tr>
<tr>
<td>PV-302</td>
<td>04-21-20</td>
<td>Superelevation Details Four Lane Roadway Depressed Median</td>
</tr>
<tr>
<td>PV-303</td>
<td>04-21-20</td>
<td>Superelevation Details Ramps</td>
</tr>
<tr>
<td>PV-304</td>
<td>04-19-22</td>
<td>Superelevation Details Six Lane Roadway Depressed Median</td>
</tr>
<tr>
<td>PV-305</td>
<td>04-19-22</td>
<td>Superelevation Details Six Lane Roadway Closed Median</td>
</tr>
<tr>
<td>PV-306</td>
<td>04-19-22</td>
<td>Superelevation Details Eight Lane Roadway Closed Median</td>
</tr>
<tr>
<td>PV-307</td>
<td>04-19-22</td>
<td>Superelevation Details Eight Lane Roadway Depressed Median</td>
</tr>
<tr>
<td>NO.</td>
<td>DATE</td>
<td>TITLE</td>
</tr>
<tr>
<td>-----</td>
<td>----------</td>
<td>----------------------------------------------------</td>
</tr>
<tr>
<td>PV-410</td>
<td>04-21-20</td>
<td>Deceleration Taper for 16' Exit Ramp</td>
</tr>
<tr>
<td>PV-411</td>
<td>04-21-20</td>
<td>Acceleration Taper for 16' Entrance Ramp</td>
</tr>
<tr>
<td>PV-412</td>
<td>04-21-20</td>
<td>Deceleration Taper for 18' Exit Loop</td>
</tr>
<tr>
<td>PV-414</td>
<td>04-21-20</td>
<td>Acceleration Taper for 18' Entrance Loop</td>
</tr>
<tr>
<td>PV-418</td>
<td>10-21-14</td>
<td>One-Lane Detour Connection</td>
</tr>
<tr>
<td>PV-428</td>
<td>10-21-14</td>
<td>Two-Lane Detour Connection</td>
</tr>
<tr>
<td>PV-500</td>
<td>04-21-15</td>
<td>Median Crossover (50' Median)</td>
</tr>
<tr>
<td>PV-501</td>
<td>04-21-20</td>
<td>Median Crossover (50' Median) 16' Wide 1 Lane</td>
</tr>
<tr>
<td>PV-502</td>
<td>04-21-20</td>
<td>Median Crossover (50' Median) 28' Wide 2 Lane</td>
</tr>
<tr>
<td>PV-503</td>
<td>04-21-15</td>
<td>Median Crossover (64' Median)</td>
</tr>
<tr>
<td>PV-504</td>
<td>04-21-20</td>
<td>Median Crossover (64' Median) 16' Wide 1 Lane</td>
</tr>
<tr>
<td>PV-505</td>
<td>04-21-20</td>
<td>Median Crossover (64' Median) 28' Wide 2 Lane</td>
</tr>
<tr>
<td>PV-506</td>
<td>04-21-15</td>
<td>Median Crossover (68.24' Median)</td>
</tr>
<tr>
<td>PV-507</td>
<td>04-21-20</td>
<td>Median Crossover (68.24' Median) 16' Wide 1 Lane</td>
</tr>
<tr>
<td>PV-508</td>
<td>04-21-20</td>
<td>Median Crossover (68.24' Median) 28' Wide 2 Lane</td>
</tr>
<tr>
<td>PV-509</td>
<td>04-21-15</td>
<td>Median Crossover (82' Median)</td>
</tr>
<tr>
<td>PV-510</td>
<td>04-21-20</td>
<td>Median Crossover (82' Median) 16' Wide 1 Lane</td>
</tr>
<tr>
<td>PV-511</td>
<td>04-21-20</td>
<td>Median Crossover (82' Median) 28' Wide 2 Lane</td>
</tr>
<tr>
<td>PV-512</td>
<td>04-21-15</td>
<td>Median Crossover (100' Median)</td>
</tr>
<tr>
<td>PV-513</td>
<td>04-21-20</td>
<td>Median Crossover (100' Median) 16' Wide 1 Lane</td>
</tr>
<tr>
<td>PV-514</td>
<td>04-21-20</td>
<td>Median Crossover (100' Median) 28' Wide 2 Lane</td>
</tr>
</tbody>
</table>
Quantities for Safety Edge are included in the estimated quantity of the pavement or shoulder. For HMA quantities calculated by area, the Safety Edge is measured as one foot of width regardless of thickness.

See paving typicals for placement within roadway.

The number of HMA lifts shown are for illustration purposes only.

1. Material in excess of 1' width is contractor's option.
2. Coverage thickness to exceed nominal maximum aggregate size.

PCC

HMA

Edge of Pavement or Shoulder

1'-0" Safety Edge

Edge of Pavement or Shoulder

1'-0" Safety Edge

Pavement or Shoulder

Edge of Pavement or Shoulder

1'-0" Safety Edge

Var.

1'-0"

30°
Construct rumble strip panel prior to opening to traffic.

Refer to the contract documents for pavement patching and jointing information.

Possible Contract Items:
- CD Joint Assembly
- CT Joint
- Patches, Full-Depth Finish, by Area
- Patches, Full-Depth Finish, by Count
- Rumble Strip Panel (in Full Depth Patch)
- Rumble Strip Panel (PCC Surface)
- Rumble Strip Panel (HMA Surface)

Possible Tabulations:
- LOCATION STATION
- PV-10
- 102-6C
- 112-7

RUMBLE STRIP PANEL
FOR INTERSECTION APPROACH
Do not place structural rumble strips areas where:
- a lane’s paved width is less than 14 feet
- milled shoulder rumble strips will be placed

Placement of structural rumble strips will be incidental to "Standard or Slip Form Portland Cement Concrete Pavement".

Possible Contract Item:
Standard or Slip Form Portland Cement Concrete Pavement

REVISION: 10-17-17
APPROVED BY DESIGN METHODS ENGINEER
Place continuous Milled Rumble Strips (no 12 foot gaps) on all median side shoulders and on all interstate shoulders.

Gap rumble strips at transverse joints. Centering the gap about the joint is desirable. Maintain a minimum of 3 inches between rumble and transverse joint.

Possible Contract Items:
- Asphalt Emulsion for Fog Seal (Shoulder Rumble Strips)
- Milled Shoulder Rumble Strips, HMA Surface
- Milled Shoulder Rumble Strips, PCC Surface

Possible Tabulation:
- 112-10

Milled Shoulder Rumble Strips,

See Detail 'A'

24" Gap (not to exceed 30")

Milled Rumble Strips

48' typical

GAP DETAILS

PLAN

SECTION

MILLED RUMBLE STRIP

DESIGNER INFORMATION
1. Place continuous Milled Rumble Strips (no 12 foot gaps) on all median side shoulders and on all interstate shoulders.

2. Begin rumbles 100 feet beyond paved side roads or 50 feet for driveways or granular side roads.
Centerline rumble strip placement is the same regardless of centerline pavement marking.

1. Gap rumble strips at PCC transverse joints. Centering the gap about the joint is desirable. Maintain a minimum of 3 inches between rumble and transverse joint.

2. Center 4 inch gap over longitudinal joint.

Possible Pavement Markings:
- Milled Rumble Strip
- Longitudinal Joint
- Transverse Joint
- Gap (not to exceed 30')

Possible Contract Items:
- Milled Centerline Rumble Strips, HMA Surface
- Milled Centerline Rumble Strips, PCC Surface

Possible Tabulation:

Milled Centerline Rumble Strips, HMA Surface
Milled Centerline Rumble Strips, PCC Surface
Stop rumbles 180 feet in advance of paved side roads or 75 feet for granular side roads.
After required signs have been placed, fill any unused holes for sign posts with Flowable Mortar meeting the requirements of Section 2506 of the Standard Specifications. This work is incidental to sign placement.

Refer to Standard Road Plan PV-102 for curb information.

1. Shape surface of island as necessary to drain.
2. Radius point is located at back of curb. Pave across and between curbs on a straight line. See tabulation 112-4.
3. ‘E’ Joint, see PV-101.
5. The furnishing and placing of granular backfill is incidental to the price bid for 6 inch P.C. Concrete Median.

Possible Contract Items:
- Curb and Gutter, P.C. Concrete
- Median, P.C. Concrete, 6 inch

Possible Tabulation:

Radius Point

Possible Tabulation:

112-4
FIGURE 7010.101

'DW' 3 4 7
DAY'S WORK JOINT (Non-working)

Pavement Edge
Header Board

30" Long Tie Bar
at 12" Centers

24" min.
Plastic or Tarpaper Wrapped

Header Block

'T' 1

See Detail A or B

See Detail C

18" Long Dowel
at 12" Centers

See Detail A or B

30" Long Tie Bar
at 12" Centers

See Bar Size Table for Contraction Joints on Sheet 2.

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.

Place bars within the limits shown under dowel assemblies.

Edge with 1/8 inch tool for length of joint. For HT joint, remove header block and board when second slab is placed.

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.

'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.

See dowel assemblies for fabrication details.

Place bars within the limits shown under dowel assemblies.

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.

Place bars within the limits shown under dowel assemblies.

Edge with 1/8 inch tool for length of joint. For HT joint, remove header block and board when second slab is placed.

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.

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Edge with 1/8 inch tool for length of joint. For HT joint, remove header block and board when second slab is placed.

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.

'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.

See dowel assemblies for fabrication details.

Place bars within the limits shown under dowel assemblies.

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.

Place bars within the limits shown under dowel assemblies.

Edge with 1/8 inch tool for length of joint. For HT joint, remove header block and board when second slab is placed.

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.

'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.

See dowel assemblies for fabrication details.
**TRANSVERSE CONTRACTION**

**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**

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>$\frac{3}{4}$</td>
<td>$\frac{7}{8}$</td>
<td>#6</td>
</tr>
<tr>
<td>$\geq 8&quot;$ but $&lt; 10&quot;$</td>
<td>$1\frac{1}{4}$</td>
<td>$1\frac{3}{8}$</td>
<td>#10</td>
</tr>
<tr>
<td>$\geq 10&quot;$</td>
<td>$1\frac{1}{2}$</td>
<td>$1\frac{5}{8}$</td>
<td>#11</td>
</tr>
</tbody>
</table>

Tubular Dowel Bars will not be allowed for RD joints.

**SECTION A-A**
(Detail at Edge of Pavement)

**LEGEND**

- Existing Pavement
- Proposed Pavement

---

**NOTES**

- Material
- Joint Sealant
- Sealant
- Saw Cut
- Top of Slab
- Top of Pavement
- Sealant
- Joint Sealant Material
- Crack or Joint Line

---

**REVISIONS:**

- Modified circle note 32.
Figure 7010.101

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

See Detail C

---

**'KS-1'**

[Single Reinforced Pavement (Bridge Approach)]

**'KS-2'**

[Double Reinforced Pavement (Bridge Approach)]

See Detail E

---

**'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; 'KT-1'</td>
<td>#4</td>
<td>30&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td>≥ 8&quot; 'KT-2'</td>
<td>#5</td>
<td>30&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td>'KT-3'</td>
<td>#5</td>
<td>30&quot; Long at 15&quot; Centers</td>
</tr>
</tbody>
</table>

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; 'L-1'</td>
<td>#4</td>
<td>36&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td>≥ 8&quot; 'L-2'</td>
<td>#5</td>
<td>36&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td>'L-3'</td>
<td>#5</td>
<td>36&quot; Long at 15&quot; Centers</td>
</tr>
</tbody>
</table>

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

---

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

---

**'B'**

**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; 'BT-5'</td>
<td>#4</td>
<td>24&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td>≥ 8&quot; 'BT-3'</td>
<td>#5</td>
<td>24&quot; Long at 30&quot; Centers</td>
</tr>
<tr>
<td>'BT-4'</td>
<td>#5</td>
<td>24&quot; Long at 15&quot; Centers</td>
</tr>
</tbody>
</table>

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

---

**'K'**

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

See Detail E

---

**LEGEND**

<table>
<thead>
<tr>
<th>Color</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gray</td>
<td>Existing Pavement</td>
<td></td>
</tr>
<tr>
<td>Blue</td>
<td>Proposed Pavement</td>
<td></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.

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'

---

**REVISIONS:**

- Modified circle note 32.

---

**SHEET 3 of 8**
**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>1&quot;</td>
<td>23/4</td>
<td>1&quot;</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>

**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.)

**DETAIL E**

(Required when tying into old pavement, T represents the depth of sound PCC.)

-Sealant or cleaning not required.

**LONGITUDINAL CONTRACTION**

**TIE BAR PLACEMENT**

(Appplies to all joints unless otherwise detailed.)

**DETAIL D**

(Crack or Joint Line)

**LEGEND**

- Existing Pavement
- Proposed Pavement

**SHEET 4 OF 8**

**REVISION**

04-19-22
FIGURE 7010.101

DOWELED EXPANSION JOINTS

<table>
<thead>
<tr>
<th>TYPE</th>
<th>WIDTH</th>
<th>FILLER MATERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED</td>
<td>1&quot; Nominal</td>
<td>Resilient (Detail F)</td>
</tr>
<tr>
<td>EE</td>
<td>2&quot; Nominal</td>
<td>Flexible Foam (Detail F)</td>
</tr>
<tr>
<td>EF</td>
<td>3 1/2&quot; Nominal</td>
<td>Flexible Foam (Detail G)</td>
</tr>
</tbody>
</table>

Tubular Dowel Bars will not be allowed for expansion joints.

See Bar Size Table for Doweled Expansion Joints.

Dowel Diameter: 3/4" 1 1/4" 1 1/2"

< 8" ≥ 8" but < 10" ≥ 10"

PREVENT BONDING

Predrill or preform holes in joint material for appropriate dowel size.

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

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.

Tire Buffings

See Bar Size Table for Doweled Expansion Joints.

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

Existing Pavement

Proposed Pavement

Legend

EXPANSION JOINTS

DETAIL F

DETAIL G

DETAIL H

DETAIL B-B

JOINT IN CURB
(View at Back of Curb)

'CF' JOINT

Width (See table below)

'EE'

JOINT IN CURB
(View at Back of Curb)

'ED', 'EE', 'EF'

1" EXPANSION JOINT

See Detail F or Detail G
(See Bar Size Table for Doweled Expansion Joints)

15

16

17

18

19

20
CONTRACTION JOINTS

Spaces between dowel bars are nominal dimensions with a 0.375" allowable tolerance.

Dowel assemblies: 8" to 10.75" pitch and 4" to 5" depth.

Tie Wire: 0.306" diameter wire. Wire sizes shown are the minimum required.

Leg: Use wires with a minimum tensile strength of 50 ksi.

Tubular Dowel Bars will not be allowed for RD joints.

Dowel Height and Diameter for Doweled Contraction Joints:

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

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.

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.
EXPANSION JOINTS

PLAN

Spaces between dowel bars are nominal dimensions with a ±1/8" allowable tolerance.

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&quot;</td>
</tr>
<tr>
<td>&quot;EE&quot;</td>
<td>2&quot;</td>
</tr>
<tr>
<td>&quot;EF&quot;</td>
<td>3 1/2&quot;</td>
</tr>
</tbody>
</table>

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.

DOWEL ASSEMBLIES

Dowel Height and Diameter for Doweled Expansion Joints

<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 1/2&quot;</td>
<td>3/4 &quot;</td>
</tr>
<tr>
<td>8&quot; to 8 1/2&quot;</td>
<td>3 1/2&quot;</td>
<td>3/4 &quot;</td>
</tr>
<tr>
<td>10&quot; to 10 1/2&quot;</td>
<td>5 1/4&quot;</td>
<td>1 1/4</td>
</tr>
<tr>
<td>12&quot; to 12 1/2&quot;</td>
<td>6 1/4&quot;</td>
<td>1 1/4</td>
</tr>
</tbody>
</table>

Tubular Dowel Bars will not be allowed for expansion joints.
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 to 6 inches. For taper and variable width pavements: 3 to 12 inches.

- **PLACEMENT LIMITS**
  - **(Rural Section)**
  - **(Curb and Gutter - Gutterline Jointing)**
  - **(Curb and Gutter - 1/4 or 1/3 Point Jointing)**

- **BEND AROUND DOWEL**
  - Diameter of bend around dowel is dowel diameter + 1/8 to 3/16 inches.

- **DOWEL ASSEMBLIES**
  - Use wires with a minimum tensile strength of 50 ksi.
**FIGURE 7010.102**

**BEAM CURB**
*For short replacement sections, match existing curb profile*

**DROP CURB AT SIDEWALK**

**DRIVEWAY DROP CURB**
(Iowa Department of Transportation is not the Contracting Authority)

**DRIVEWAY DROP CURB**
(Iowa Department of Transportation is the Contracting Authority)

**6" STANDARD CURB**

**6" SLOPED CURB**

**4" SLOPED CURB**

For joint details, see PV-101.

1. 6 inch Standard Curb, 6 inch Sloped Curb, or 4 inch Sloped Curb as specified.
2. ½ inch if Proposed Pavement is HMA. No elevation difference if Proposed Pavement is PCC.
3. ‘BT’, ‘KT’, or ‘L’ joint if Proposed Pavement is PCC. ‘B’, ‘K’ joint if Proposed Pavement is HMA.
4. 0 to 2 inches for residential entrances. 1½ to 3 inches for industrial or commercial entrances.

**REVISIONS:**
- New circle note 4 on Sheet 1. Renumbered circle note on Sheet 5.
- Split DRIVEWAY DROP CURB detail into two details. Added
If proposed pavement is PCC, match joint spacing for proposed pavement. Place 'E' joints in curb and gutter section where expansion joints are to be placed in proposed pavement.

**FIGURE 7010.102**

**SHEET 2 OF 2**

**PCC CURB DETAILS**

**REVISION:** 04-21-20

**SUDAS DIRECTOR**

**DESIGN METHODS ENGINEER**

5. New circle note 4 on Sheet 1. Renumbered circle note on Sheet 5.

MANHOLE BOXOUTS IN PCC PAVEMENT

Construct boxout with Class C concrete or match pavement class. Minimum 2 inches clear on reinforcement. Minimum 12 inches of concrete between outside of casting and nearest joint. Center casting within boxout area if possible.

1. "KT-1", "KT-2", "BT-1", or "BT-2" joint if three-piece floating casting (SW 601 Type B and D or SW-602 Type F) is used. 'E' joint if two-piece fixed casting (SW 601 Type A and C or SW-602 Type E) is used.

2. 4 foot 8 inch (typ.) #4 bar. Place at mid-slab.

3. #4 hoops (variable length). Place at mid-slab.

4. No boxout is required for three-piece floating castings (SW 601 Type B and D or SW-602 Type F). If a boxout is used with a three-piece casting, construct as detailed in Section A-A for three-piece floating casting.

5. If a circular boxout is cut and extracted after PCC construction, a 'B' joint may be substituted for the 'E' joint if approved by the Engineer.

FIGURE 7010.103
SHEET 1 OF 1
(For three-piece floating casting)
When X or Y is 4 feet or greater the expansion joints will be at the beginning of the rounded median.

Quantities for ramped median nose area is included in roadway pavement quantities.

When X or Y is 4 feet or greater the expansion joints will be at the beginning of the rounded median.

For details of paved median, see contract documents.

If boxout length is less than or equal to 12 feet, provide 'C' Joint. If boxout length is greater than 12 feet, provide 'RD' joint.

Special shaping of curb.

If boxout length is greater than 12 feet, provide 'EE' Joint. If median is paved, place expansion joints at the end of normal curb.

1. For details of paved median, see contract documents.
2. "EE" Joint. Expansion joints located at the end of normal curb.
3. "E" Joint. If median is paved, place expansion joints at the end of normal curb.
4. If boxout length is less than or equal to 12 feet, provide 'C' Joint. If boxout length is greater than 12 feet, provide 'RD' joint.
5. Special shaping of curb.
6. Quantities for ramped median nose area is included in roadway pavement quantities.
7. When X or Y is 4 feet or greater the expansion joints will be at the beginning of the rounded median.

\[ X = \frac{W}{2} + 7.5'' \]
\[ Y = \frac{W}{2} + 12'' \]

\[ W = \text{Width from back of curb to back of curb} \]

12" Hole for Sign Post (if required)
*W* and *T* are specified by the individual project plans. Dimensions may vary for superelevated curves or at locations specifically designated by the Engineer.

For joint details, refer to PV-101 and PV-121.

Install contraction joints adjacent to all existing joints or at the interval specified on the plans. Extend existing expansion joint through the widening unit. This work is incidental to other work on the project.

Construct special shaping of widening units through bridge approach sections as directed by the Engineer. The joint between the widening unit and the end of a bridge consists of a 3 inch wide joint filled with full depth bituminous resilient filler as specified in Article 4136.03, A of the Standard Specifications.

Excavation in excess of that indicated is incidental to other work on the project.

1. 'BT-3' placed at mid-height unless noted otherwise.
2. For ramps and superelevated curves, match the cross-slope of the widening unit to the existing pavements.
3. See Section 2514 (for Portland Cement Concrete Widening) or Section 2213 (for Base Widening) of the Standard Specifications.

Possible Contract Items:
- Portland Cement Concrete Pavement Widening
- Base Widening, Portland Cement Concrete
- Removal of Curbs
- Removal of Flumes
- Shoulders
- Excavation, Class 13, For Widening
- Special Backfill

Possible Tabulations:
- 106-5
- 106-4
- 110-4
- 110-3
For joint details, see PV-101.

1. Ballast meeting Railroad specifications may be substituted for modified subbase.
2. #6 Bars at 12" centers located at half of the pavement thickness. Wire tie at all interactions with other bars. Lap a minimum of 1 foot when necessary and securely wire tie.
3. #8 Bars x (Approach Width - 4').
4. Outlet subdrain into ditch or storm sewer. See DR-303 and DR-306. Slope subdrain to drain.
5. Slope according to ARIEMA specifications.

Possible Contract Item:
Railroad Approach Section, P.C.C.

Possible Tabulation:
112-3

Crossing Material
Symmetrical about centerline of tracks

TYPICAL SECTION A-A

TYPICAL HALF PLAN
STRAIGHT CROSSING

SLOPE according to ARIEMA specifications.
**Typical Half Plan Skewed Crossing**

(Symmetrical about centerline of tracks)

- **Angle of Crossing**
- **By Railroad**
- **Crossing Material** (by Railroad)
- **By Road Contractor**
- **See Detail 'B'**
- **CD or RD Joint**
- **EF Joint**
- **75' minimum, 102' maximum**
- **5'-6'' min.**
- **2'' Clear**
- **PCC Pavement**
- **HMA Underlayment**
- **Ballast**
- **Modified Subbase**
- **Outlet subdrain into ditch or storm sewer.**
- **Slope according to AREMA specifications.**

---

**Note:** Ballast meeting Railroad specifications may be substituted for modified subbase.

**FAQ:**

1. #5 Bars at 12'' centers located at half of the pavement thickness. Wire tie at all intersections with other bars. Lap a minimum of 1 foot when necessary and securely wire tie.
2. #5 Bars x (Approach Width - 4'').
3. Outlet subdrain into ditch or storm sewer. See DR-303.
4. Slope subdrain to drain.
5. Slope according to AREMA specifications.
Maximum 20' 'C' or 'CD' Cracks No Joint

For joint details, see PV-101.
For curb details, see PV-102.

1. If more than 20 feet, add extra joint at midpoint.
2. "BT" Joint.

Possible Curb

Min. 5'

Possible Curb

Cut joints opposite existing joints first, then make intermediate cuts.

Possible Curb

Min. 5'

Possible Curb

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Possible Curb

Min. 5'
Construct boxout with Class C concrete or match pavement class. Minimum 2 inches clear on reinforcement. Minimum 12 inches of concrete between outside of casting and nearest joint. Center casting within boxout area if possible.

1. 4 foot 8 inch (typ.) #4 bar. Place at mid-slab.
2. If boxout is constructed prior to placement of HMA overlay or final lift of HMA pavement, boxout may be constructed low, with a 'B' joint in place of the 'E' joint, and then final lift or overlay placed.
3. Apply tack coat.
4. #4 hoops (variable length). Place at mid-slab.
**TYPICAL PLAN FOR FILLET AT ENTRANCE OR INTERSECTING ROAD**

**TYPICAL SECTION FULL DEPTH AND SURFACE PATCHES**

**SECTION A-A (WEDGE SHAPED FILLET)**

**SECTION A-A (FULL THICKNESS FILLET - NON-PAVED ROAD)**

**NORMAL FILLET SIZES**

<table>
<thead>
<tr>
<th>TYPE OF ACCESS</th>
<th>Min. - ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Entrance</td>
<td>40</td>
</tr>
<tr>
<td>Farm Entrance</td>
<td>60</td>
</tr>
<tr>
<td>Commercial Entrance</td>
<td>80</td>
</tr>
<tr>
<td>Non-Paved Road</td>
<td>100</td>
</tr>
<tr>
<td>Paved Road</td>
<td>Variable*</td>
</tr>
</tbody>
</table>

*See layout drawing for details of construction of special areas.

**GENERAL DETAILS**

Fillet width is 3.33 feet for each inch of overlay thickness.

The ratio of the Intermediate Course runout length to the total runout length is the same as the ratio of the Intermediate Course resurfacing thickness to the total resurfacing thickness.

Special shaping of existing surface prior to placement of fillet may be required by the Engineer and is incidental to other work on the project.

For existing fillets at non-paved roads and entrances, construct a wedge shaped fillet matching the thickness of the resurfacing.

**RESURFACING HOT MIX ASPHALT**
LEVELING COURSE
(See Tabulation for Location)

STRENGTHENING COURSE
(See Tabulation for Location)

SINGLE COURSE RESURFACING

LEVELING COURSE
(See Tabulation for Location)

STRENGTHENING COURSE
(See Tabulation for Location)

DOUBLE COURSE RESURFACING
"P" and "T" are specified by the individual project plans. Dimensions may vary for superelevated curves or at locations specifically designated by the Engineer.

Handle excavated asphalt materials as detailed elsewhere in the project plans.

Construct special shaping of widening units through bridge approach sections as directed by the Engineer.

Excavation in excess of that indicated is incidental to other work on the project.

Place Special Backfill only at locations where specifically required by the Engineer. This work will be paid for as "Extra Work" as per Article 1109.03 of the Standard Specifications.

6 inches of Special Backfill required when widening unit is part of the proposed traffic lane or when noted in project plans.

Possible Contract Items:
- Base Widening, Hot Mix Asphalt Mixture
- Removal of Curb
- Removal of Flumes
- Excavation, Class 13, For Widening
- Special Backfill
- Asphalt Binder

Possible Tabulations:
- 106-5
- 110-4
- 110-3
1. 16 inch approach thickness includes thickness of HMA resurfacing.
2. Outlet subdrain in ditch or sewer. See DR-303 and DR-306. Slope subdrain to drain.
3. Ballast meeting Railroad specifications may be substituted for modified subbase.
4. Slope subgrade toward drain according to AREMA specs.
5. Geosynthetic material need not be placed under modified subbase.

Possible Contract Item: Railroad Approach Section, HMA
Possible Tabulation: 112-3
TRANSITION DETAILS - TANGENT TO CURVE

- A = Normal Shoulder Slope
- B = Normal Cross Slope (2%)
- C = Distance to Change Cross Slope from 0% to e
- D = Distance to Change Cross Slope from 0% to 2%
- M = 12' Regardless of Pavement Width
- N = 30% of Runoff Length (L)
- X = Distance to Change Cross Slope from 0% to e
- Y = Normal Shoulder Slope

TRANSITION DETAILS - SPIRAL CURVE

- A = Normal Shoulder Slope
- B = Normal Cross Slope (2%)
- C = Distance to Change Cross Slope from 0% to e
- D = Distance to Change Cross Slope from 0% to 2%
- M = 12' Regardless of Pavement Width
- N = 30% of Runoff Length (L)
- X = Distance to Change Cross Slope from 0% to e
- Y = Normal Shoulder Slope

Possible Tabulation:

101-18
Refer to specific curve data contained in project plans for tangent runoff length ($x$), runoff length ($L$) and full superelevation ($e$).

When spiral curve transitions are not required:
Place 70% of full superelevation at the PC and PT.
Place 30% of the runoff length within the curve.

Unless otherwise specified, all lengths are measured along the centerline of construction.

Superelevations on this standard are shown for curves to the right. Curves to the left are a mirror image of what is shown.

Smooth curves should be established at the time of construction at sections A-D along the profile edges of lines A-C.

Axis of rotation coincides with profile grade location.

$$m = 30\% \text{ of Runoff Length (}L\text{)}$$
$$g = 24\% \text{ Regardless of Pavement Width}$$
$$L = \text{Distance to Change Cross Slope from } 0\% \text{ to } e$$
$$e = \text{Superelevation Rate}$$
$$x = \text{Distance to Change Cross Slope from } 0\% \text{ to } 2\%$$
$$s = \text{Normal Shoulder Slope}$$

Spiral curve length coincides with runoff length ($L$).

Possible Tabulation:

101-18
High Side Shoulder: Maintain normal shoulder cross slope (s) until the cross slope break with the adjacent pavement reaches 8%. Maintain 6% breakover until superelevation rate reaches 7%. If superelevation rate exceeds 7%, maintain a 1% shoulder cross slope away from the adjacent pavement.

Low Side Shoulder: Maintain normal shoulder cross slope (s) until the adjacent pavement slope equals s, then slope the shoulder at the same cross slope as the adjacent pavement.

Subgrade Surface

70% of Full Superelevation
High Side Shoulder: Maintain normal shoulder cross slope (e), until the cross slope break with the adjacent pavement reaches 8.0%. Maintain 6% breakover until superelevation rate reaches 7%. If superelevation rate exceeds 7%, maintain a 1% shoulder cross slope away from the adjacent pavement.

Low Side Shoulder: Maintain normal shoulder cross slope (e) until the adjacent pavement slope equals s, then slope the shoulder at the same cross slope as the adjacent pavement.

Subgrade Surface

Profile Grade Line

Rotation Axis of Rotation

CASE U
(Section where e ≥ 7.0%)

CASE T
(Section where high side shoulder crown break rule occurs)

CASE S
(Section where low side shoulder crown break rule occurs)

LEFT ROADWAY

RIGHT ROADWAY

SECTION WHERE SHOULDER SLOPE TRANSITION BEGINS

DIAGRAMMATIC PROFILES OF THE PAVEMENT EDGE LINES

SUPERELEVATION DETAILS

FOUR LANE ROADWAY

DEPRESSED MEDIAN

APPROVED BY DESIGN METHODS ENGINEER

STANDARD ROAD PLAN
PV-302
SHEET 3 of 3

REV: 2
REVISED: 04-21-20

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CASE A
TRANSITION DETAILS - TANGENT TO CURVE
WHEN NORMAL CROSS SLOPE IS IN THE OPPOSITE DIRECTION AS SUPERELEVATION

CASE B
TRANSITION DETAILS - TANGENT TO CURVE
WHEN NORMAL CROSS SLOPE IS IN THE SAME DIRECTION AS SUPERELEVATION

Possible Tabulation:
101-18
Superelevation Details

1. High Side Shoulder: Maintain normal shoulder cross slope (s), until the cross slope break with the adjacent pavement reaches 8.5%. Maintain 6% breakover until superelevation rate reaches 7%. If superelevation rate exceeds 7.5%, maintain a 1% shoulder cross slope away from the adjacent pavement.

2. Low Side Shoulder: Maintain normal shoulder cross slope (s) until the adjacent pavement slope equals s, then slope the shoulder at the same cross slope as the adjacent pavement.

3. Subgrade Surface: Subgrade surface cross slope parallel to pavement surface cross slope.

CASE A

SECTION WHERE SHOULDER SLOPE TRANSITION BEGINS

CASE U

(Section where e ≥ 7.0%)

CASE T

(Section where high side shoulder crown break rule occurs)

CASE S

(Section where low side shoulder crown break rule occurs)
PROFILE GRADE

SECTION D-D
(Full Superelevation)

SECTION C-C

SECTION A-A
(Typical Section)

CASE B

CASE U
(Section where high side shoulder crown break rule occurs)

CASE T
(Section where high side shoulder crown break rule occurs)

CASE S
(Section where low side shoulder crown break rule occurs)

SECTION WHERE SHOULDER SLOPE TRANSITION BEGINS

1. High Side Shoulder: Maintain normal shoulder cross slope (s), until the cross slope break with the adjacent pavement reaches 8.0%. Maintain 8% breakover until superelevation rate reaches 7%. If superelevation rate exceeds 7%, maintain a 1% shoulder cross slope away from the adjacent pavement.

2. Low Side Shoulder: Maintain normal shoulder cross slope (s) until the adjacent pavement slope equals s, then slope the shoulder at the same cross slope as the adjacent pavement.

3. Subgrade Surface: Subgrade surface cross slope parallel to pavement surface cross slope.

Parallel to pavement surface cross slope.

Subgrade Surface: Subgrade surface cross slope adjacent pavement.

Then slope the shoulder at the same cross slope as the adjacent pavement.

If superelevation rate exceeds 7.0%, maintain breakover until superelevation rate reaches 7%. Maintain 8% slope (s), until the cross slope break with the adjacent pavement reaches 8.0%. Maintain 8% slope (s) until the cross slope break with the adjacent pavement reaches 8.0%.
TRANSITION DETAILS - TANGENT TO CURVE

TRANSITION DETAILS - SPIRAL CURVE

Spiral curve length coincides with runoff length (L).

Possible Tabulation:
101-18
High Side Shoulder: Maintain normal shoulder cross slope (s), until the cross slope break with the adjacent pavement reaches 8.0%. Maintain 8% breakover until superelevation rate reaches 7%. If superelevation rate exceeds 7.0%, maintain a 1% shoulder cross slope away from the adjacent pavement.

Low Side Shoulder: Maintain normal shoulder cross slope (s) until the adjacent pavement slope equals s, then slope the shoulder at the same cross slope as the adjacent pavement.

Subgrade Surface: Subgrade surface cross slope parallel to pavement surface cross slope.
High Side Shoulder: Maintain normal shoulder cross slope (s), until the cross slope break with the adjacent pavement reaches 8%. Maintain 8% breakover until superelevation rate reaches 7%. If superelevation rate exceeds 7.5%, maintain a 1% shoulder cross slope away from the adjacent pavement.

Low Side Shoulder: Maintain normal shoulder cross slope (s) until the adjacent pavement slope equals s, then slope the shoulder at the same cross slope as the adjacent pavement.

Subgrade Surface: Subgrade surface cross slope parallel to pavement surface cross slope.

CASE A
(e ≥ 3.6%)
(between sections C & D)

CASE B
(2.8% < e < 3.6%)
(between sections C' & C)

CASE C
(e ≤ 2.8%)
(between sections B & C')
TRANSITION DETAILS - TANGENT TO CURVE

TRANSITION DETAILS - SPIRAL CURVE

Refer to specific curve data contained in project plans for tangent runout length \( x \), runoff length \( L \) and full superelevation \( e \).

When spiral curve transitions are not required:
Place 73% of full superelevation at the P.C. and P.T.
Place 33% of the runoff length within the curve.

Unless otherwise specified, all lengths are measured along the centerline of construction.

Superelevations on this standard are shown for curves to the right. Curves to the left are a mirror image of what is shown.

Smooth curves should be established at the time of construction at sections A-F along the profile edge of lines A-E.

See Detail A for profile grade location.

\[ m = 35\% \text{ of Runoff Length (} L \text{)} \]
\[ a = 36' \]
\[ l = \text{Distance to Change Cross Slope from 0\% to } e \]
\[ e = \text{Superelevation Rate} \]
\[ x = \text{Distance to Change Cross Slope from 0\% to } 2.5\% \]
\[ s = \text{Normal Shoulder Slope} \]

Spiral curve length coincides with runoff length \( L \)
High Side Shoulder: Maintain normal shoulder cross slope \((s)\) until the cross slope break with the adjacent pavement reaches 8.0%, then slope the shoulder at the same rate as the adjacent pavement maintaining an 8% cross slope breakover.

Low Side Shoulder: Maintain normal shoulder cross slope \((s)\) until the adjacent pavement slope equals \(s\), then slope the shoulder at the same cross slope as the adjacent pavement.

Subgrade Surface: Subgrade surface cross slope parallel to pavement surface cross slope.
**DIAGRAMMATIC PROFILES OF THE PAVEMENT EDGE LINES**

**TABLE OF OFFSETS AND DROPS FOR LEFT ROADWAY**

<table>
<thead>
<tr>
<th>Location of Cross Sections</th>
<th>A</th>
<th>A'</th>
<th>B</th>
<th>C</th>
<th>C'</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Line A To Line B</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<td>5</td>
</tr>
<tr>
<td>Offset (Ft.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drop (Ft.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slope (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Line B To Line C</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
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<td>2.0</td>
<td>2.0</td>
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<td></td>
</tr>
<tr>
<td>From Line C To Line D</td>
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<tr>
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</tr>
<tr>
<td>Slope (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From Line D To Line E</td>
<td>12</td>
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<td>12</td>
<td>12</td>
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</tr>
<tr>
<td>Offset (Ft.)</td>
<td>-2.5</td>
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<tr>
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<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
</tr>
<tr>
<td>Slope (%)</td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

*Refer to plan details for shoulder width.

**TABLE OF OFFSETS AND DROPS FOR RIGHT ROADWAY**

<table>
<thead>
<tr>
<th>Location of Cross Sections</th>
<th>A</th>
<th>A'</th>
<th>B</th>
<th>C</th>
<th>C'</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Line A To Line B</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<td>12</td>
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<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Offset (Ft.)</td>
<td>-2.0</td>
<td>-2.0</td>
<td>0.0</td>
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*Refer to plan details for shoulder width.
**TRANSITION DETAILS - TANGENT TO CURVE**

- **Construction**: Profile Grade Line

**TRANSITION DETAILS - SPIRAL CURVE**

- **Construction**: Profile Grade Line

---

**SUPERELEVATION DETAILS**

- **Possible Tabulation**: 101-18

---

**IOWA DOT**

**STANDARD ROAD PLAN**

**PV-306**

**EIGHT LANE ROADWAY**

**CLOSED MEDIAN**

---

- Refer to specific curve data contained in project plans for tangent runoff length (x), runoff length (L), and full superelevation (e).

- When spiral curve transitions are not required:
  - Place 70% of full superelevation at the P.C. and P.T.
  - Place 30% of the runoff length within the curve.

- Unless otherwise specified, all lengths are measured along the centerline of construction.

- Superelevations on this standard are shown for curves to the right. Curves to the left are a mirror image of what is shown.

- Smooth curves should be established at the time of construction at sections A-F along the profile edges of lines A-F.

- See Detail A for profile grade location.

- **m** = 30% of Runoff Length (L)
- **g** = 48°
- **L** = Distance to Change Cross Slope from 0% to e
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- **x** = Distance to Change Cross Slope from 0% to 2.5%
- **s** = Normal Shoulder Slope

- Spiral curve length coincides with runoff length (L)

---

**CLOSED MEDIAN**

**EIGHT LANE ROADWAY**

**SUPERELEVATION DETAILS**

**PV-306**

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**CLOSED MEDIAN**

**EIGHT LANE ROADWAY**

**SUPERELEVATION DETAILS**

**PV-306**

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**IOWA DOT**

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**CLOSED MEDIAN**

**EIGHT LANE ROADWAY**

**SUPERELEVATION DETAILS**

**PV-306**

**EIGHT LANE ROADWAY**

**CLOSED MEDIAN**

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- **x** = Distance to Change Cross Slope from 0% to 2.5%
- **s** = Normal Shoulder Slope

- Spiral curve length coincides with runoff length (L)
High Side Shoulder: Maintain normal shoulder cross slope (s) until the cross slope break with the adjacent pavement reaches 8.0%, then slope the shoulder at the same rate as the adjacent pavement maintaining an 8% cross slope breakover.

Low Side Shoulder: Maintain normal shoulder cross slope (s) until the adjacent pavement slope equals s, then slope the shoulder at the same cross slope as the adjacent pavement.

Subgrade Surface: Subgrade surface cross slope parallel to pavement surface cross slope.

3.0% → 0.0% → 0.0% → 0.0% → 0.0% → 0.0%

4' 2' 4' 1'

DETAIL A

PROFILE GRADE
CASE C
(e ≤ 2.8%)

CASE B
(2.8% < e < 3.6%)

CASE A
(e ≥ 3.6%)

CASE S
(Section where low side shoulder crown break rule occurs)

CASE T
(Section where high side shoulder crown break rule occurs)

High Side Shoulder: Maintain normal shoulder cross slope (s) until the cross slope break with the adjacent pavement reaches 8.0%, then slope the shoulder at the same rate as the adjacent pavement maintaining an 8% cross slope breakover.

Low Side Shoulder: Maintain normal shoulder cross slope (s) until the adjacent pavement slope equals s, then slope the shoulder at the same cross slope as the adjacent pavement.

Subgrade Surface: Subgrade surface cross slope parallel to pavement surface cross slope.

Left Roadway

Right Roadway

Section where high side shoulder crown break rule occurs

Section where low side shoulder crown break rule occurs
### TABLE OF OFFSETS AND DROPS FOR LEFT ROADWAY

<table>
<thead>
<tr>
<th>Location of Cross Sections</th>
<th>Offset (Ft.)</th>
<th>Slope (%)</th>
<th>Drop (Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Line A To Line B</td>
<td>Offset (Ft.)</td>
<td>12 12 12 12 12</td>
<td>12 12 12 12 12</td>
</tr>
<tr>
<td></td>
<td>Slope (%)</td>
<td>2.5 2.5 2.5 2.5 2.5</td>
<td>2.5 2.5 2.5 2.5 2.5</td>
</tr>
<tr>
<td></td>
<td>Drop (Ft.)</td>
<td>0.30 0.30 0.30 0.30 0.30</td>
<td>0.30 0.30 0.30 0.30 0.30</td>
</tr>
<tr>
<td>From Line B To Line C</td>
<td>Offset (Ft.)</td>
<td>12 12 12 12 12</td>
<td>12 12 12 12 12</td>
</tr>
<tr>
<td></td>
<td>Slope (%)</td>
<td>2.0 2.0 2.0 2.0 2.0</td>
<td>2.0 2.0 2.0 2.0 2.0</td>
</tr>
<tr>
<td></td>
<td>Drop (Ft.)</td>
<td>0.24 0.24 0.24 0.24 0.24</td>
<td>0.24 0.24 0.24 0.24 0.24</td>
</tr>
<tr>
<td>From Line C To Line D</td>
<td>Offset (Ft.)</td>
<td>12 12 12 12 12</td>
<td>12 12 12 12 12</td>
</tr>
<tr>
<td></td>
<td>Slope (%)</td>
<td>2.5 2.5 2.5 2.5 2.5</td>
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</tr>
<tr>
<td></td>
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<td>0.24 0.24 0.24 0.24 0.24</td>
<td>0.24 0.24 0.24 0.24 0.24</td>
</tr>
<tr>
<td>From Line D To Line E</td>
<td>Offset (Ft.)</td>
<td>12 12 12 12 12</td>
<td>12 12 12 12 12</td>
</tr>
<tr>
<td></td>
<td>Slope (%)</td>
<td>2.5 2.5 2.5 2.5 2.5</td>
<td>2.5 2.5 2.5 2.5 2.5</td>
</tr>
<tr>
<td></td>
<td>Drop (Ft.)</td>
<td>0.30 0.30 0.30 0.30 0.30</td>
<td>0.30 0.30 0.30 0.30 0.30</td>
</tr>
</tbody>
</table>

* Refer to plan details for shoulder width

### TABLE OF OFFSETS AND DROPS FOR RIGHT ROADWAY

<table>
<thead>
<tr>
<th>Location of Cross Sections</th>
<th>Offset (Ft.)</th>
<th>Slope (%)</th>
<th>Drop (Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Line A To Line B</td>
<td>Offset (Ft.)</td>
<td>12 12 12 12 12</td>
<td>12 12 12 12 12</td>
</tr>
<tr>
<td></td>
<td>Slope (%)</td>
<td>2.5 2.5 2.5 2.5 2.5</td>
<td>2.5 2.5 2.5 2.5 2.5</td>
</tr>
<tr>
<td></td>
<td>Drop (Ft.)</td>
<td>0.30 0.30 0.30 0.30 0.30</td>
<td>0.30 0.30 0.30 0.30 0.30</td>
</tr>
<tr>
<td>From Line B To Line C</td>
<td>Offset (Ft.)</td>
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<td>12 12 12 12 12</td>
</tr>
<tr>
<td></td>
<td>Slope (%)</td>
<td>2.0 2.0 2.0 2.0 2.0</td>
<td>2.0 2.0 2.0 2.0 2.0</td>
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<tr>
<td></td>
<td>Drop (Ft.)</td>
<td>0.24 0.24 0.24 0.24 0.24</td>
<td>0.24 0.24 0.24 0.24 0.24</td>
</tr>
<tr>
<td>From Line C To Line D</td>
<td>Offset (Ft.)</td>
<td>12 12 12 12 12</td>
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<td></td>
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<td>2.5 2.5 2.5 2.5 2.5</td>
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* Refer to plan details for shoulder width

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**DIAGRAMMATIC PROFILES OF THE PAVEMENT EDGE LINES**
Refer to specific curve data contained in project plans for tangent runout length (x), runoff length (L) and full superelevation (e). When spiral curve transitions are not required:
Place 73% of full superelevation at the PC and PT. Place 33% of the runoff length within the curve. Unless otherwise specified, all lengths are measured along the centerline of construction. Superelevations on this standard are shown for curves to the right. Curves to the left are a mirror image of what is shown. Smooth curves should be established at the time of construction at sections A-F along the profile edges of lines A-D. Axis of rotation coincides with profile grade location.

\[
m = 35\% \text{ of Runoff Length (L)}
\]

\[
\theta = 48' \text{ Regardless of Pavement Width}
\]

\[
g = \text{Normal Cross Slope (2.5\%)}
\]

\[
L = \text{Distance to Change Cross Slope from 0\% to e}
\]

\[
e = \text{Superelevation Rate}
\]

\[
x = \text{Distance to Change Cross Slope from 0\% to 2.5\%}
\]

\[
s = \text{Normal Shoulder Slope}
\]

Spiral curve length coincides with runoff length (L).
High Side Shoulder: Maintain normal shoulder cross slope(s), until the cross slope break with the adjacent pavement reaches 8.0%. Maintain 8% breakover until superelevation rate reaches 7%. If superelevation rate exceeds 7.0%, maintain a 1% shoulder cross slope away from the adjacent pavement.

Low Side Shoulder: Maintain normal shoulder cross slope(s) until the adjacent pavement slope equals s, then slope the shoulder at the same cross slope as the adjacent pavement.

Subgrade Surface: Subgrade surface cross slope parallel to pavement surface cross slope.
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Subgrade Surface: Subgrade surface cross slope parallel to pavement surface cross slope.

High Side Shoulder: Maintain normal shoulder cross slope(s), until the cross slope break with the adjacent pavement reaches 8.0%. Maintain 8% breakover until superelevation rate reaches 7%. If superelevation rate exceeds 7.0%, maintain a 1% shoulder cross slope away from the adjacent pavement.

Low Side Shoulder: Maintain normal shoulder cross slope(s), until the adjacent pavement slope equals s, then slope the shoulder at the same cross slope as the adjacent pavement.

Subgrade Surface: Subgrade surface cross slope parallel to pavement surface cross slope.
### TABLE OF OFFSETS AND DROPS FOR LEFT ROADWAY

<table>
<thead>
<tr>
<th>Location of Cross Sections</th>
<th>Offset (ft)</th>
<th>Slope (%)</th>
<th>Drop (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Line A To Line B</td>
<td>12</td>
<td>2.5</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>2.5</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>2.5</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>2.5</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>2.5</td>
<td>0.30</td>
</tr>
</tbody>
</table>

### TABLE OF OFFSETS AND DROPS FOR RIGHT ROADWAY

<table>
<thead>
<tr>
<th>Location of Cross Sections</th>
<th>Offset (ft)</th>
<th>Slope (%)</th>
<th>Drop (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Line A To Line B</td>
<td>48</td>
<td>-0.24</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>0.24</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>0.24</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>0.24</td>
<td>0.24</td>
</tr>
</tbody>
</table>

* Refer to plan details for shoulder width.

**Diagrammatic Profiles of the Pavement Edge Lines**
Profile Grade
Stationing and Base Line

Begin Ramp
End Taper

600'

Line 'A'
Line 'C'

Drop
Variable

SECTION A-A

Transition
Shoulder

EDGE OF PAVEMENT

Mainline Shoulder
Begin Taper

Shoulder Width beyond Edge of Pavement is 1332 square yards.

For joint details, see PV-101.

For header construction details at the beginning of taper, see Typical 7101 or Typical 7102.

Construct subbase for ramp exit pavement the same thickness as mainline subbase.

NOTE: The algebraic difference between profile grade for Ramp Base Line at M and relative profile grade of Mainline at C is 0.2%.

PROFILE

| DISTANCE FROM POINT ALONG LINE 'A' (FT.) | 0 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 | 1050 | 1100 | 1150 | 1200 |
|----------------------------------------|---|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| OFFSET (FT.)                           | 0 | 1.67 | 3.33 | 5.00 | 6.67 | 8.33 | 10.00 | 11.67 | 13.33 | 15.00 | 16.67 |
| SLOPE (%)                              | 0.0 | 0.12 | 0.17 | 0.22 | 0.27 | 0.32 | 0.37 | 0.42 | 0.47 | 0.52 | 0.57 | 0.62 | 0.67 | 0.72 |
| DROP (FT.)                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| OFFSET (FT.)                           | 0 | 0.80 | 1.15 | 1.50 | 1.85 | 2.20 | 2.55 | 2.90 | 3.25 | 3.60 | 3.95 |
| SLOPE (%)                              | 0.0 | 0.12 | 0.17 | 0.22 | 0.27 | 0.32 | 0.37 | 0.42 | 0.47 | 0.52 | 0.57 | 0.62 | 0.67 | 0.72 |
| DROP (FT.)                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| OFFSET (FT.)                           | 0 | 0.80 | 1.15 | 1.50 | 1.85 | 2.20 | 2.55 | 2.90 | 3.25 | 3.60 | 3.95 |
| SLOPE (%)                              | 0.0 | 0.12 | 0.17 | 0.22 | 0.27 | 0.32 | 0.37 | 0.42 | 0.47 | 0.52 | 0.57 | 0.62 | 0.67 | 0.72 |
| DROP (FT.)                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

NOTE: The width of the outside lane to the Edge of Pavement.

DECELERATION TAPER
FOR 16' RAMP

Shoulder Width beyond Edge of Mainline Pavement

<table>
<thead>
<tr>
<th>6'</th>
<th>10'</th>
<th>12'</th>
</tr>
</thead>
<tbody>
<tr>
<td>8'</td>
<td>NA</td>
<td>9'</td>
</tr>
<tr>
<td>10'</td>
<td>10'</td>
<td>10'</td>
</tr>
<tr>
<td>12'</td>
<td>NA</td>
<td>12'</td>
</tr>
</tbody>
</table>

NOTE: W, is the width of the outside lane to the Edge of Pavement.
Transverse Joints Perpendicular to Mainline Pavement

CD Joints at 15’ Max. Spacing along Mainline

Reference Point for 15’ Max. Joint Spacing

CD Joints at 15’ Max. Spacing along Ramp

Transverse Joints Perpendicular to Ramp Baseline

16’ EXIT RAMP

3. BT-2' or KT-2' Joint.
5. 'B' Joint, 2’ minimum, 4’ maximum.
6. 10’ minimum or equal to mainline shoulder width.
7. 'B' or 'C' Joint, 2’ minimum, 4’ maximum.
8. L-2' Joint.

REVISIONS:
- Removed INTERIM from the standard.

APPROVED BY DESIGN METHODS ENGINEER

STANDARD ROAD PLAN
PV-410
DECELERATION TAPER
FOR 16’ RAMP
NOTE: The algebraic difference between profile grade for Ramp Base Line at $F$ and relative profile grade of Mainline at $H$ is 0.54%.

The Shoulder Width beyond Edge of Mainline Pavement is 1793 square yards.

For joint details, see PV-101

1. For header construction details at the end of taper, see Typical 7101 or Typical 7102.

2. Construct subbase for ramp entrance pavement the same thickness as mainline subbase.

Construct ramp entrance pavement the same thickness as mainline pavement.

Ramp entrance pavement shown by shaded area is 1793 square yards.

For joint details, see PV-101

1. For header construction details at the end of taper, see Typical 7101 or Typical 7102.

2. Construct subbase for ramp entrance pavement the same thickness as mainline subbase.

Construct ramp entrance pavement the same thickness as mainline pavement.

Ramp entrance pavement shown by shaded area is 1793 square yards.

For joint details, see PV-101

1. For header construction details at the end of taper, see Typical 7101 or Typical 7102.

2. Construct subbase for ramp entrance pavement the same thickness as mainline subbase.
Transverse joints perpendicular to ramp baseline

'CD' joints at 15' max. spacing along mainline

Construct transverse joints on the entrance ramp taper perpendicular to the tapered edge where the gore area is greater than 4 feet.

'C' Joint equal to mainline shoulder width.

10' minimum, or equal to mainline shoulder width.

'B' or 'C' Joint. 2' minimum, 4' maximum.

'L-2' Joint.

Removed INTERIM from the standard and modified leader line for circle note 9.

ACCELERATION TAPER FOR 16' ENTRANCE RAMP
Plan

Profile

Table of offseats and drops for 18' loop taper

Distance from point along line A[f] to line B

<table>
<thead>
<tr>
<th>Offset (ft)</th>
<th>SLOPE (%)</th>
<th>DROP (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td>1.00</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>2.00</td>
<td>0.20</td>
<td>0.20</td>
</tr>
<tr>
<td>3.00</td>
<td>0.25</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Profile

NOTE: The algebraic difference between profile grade for Loop Base Line at M and relative profile grade of Mainline at C is 0.2%.

Profile Grade

Taper Ratio

Table of shoulder transition lengths

<table>
<thead>
<tr>
<th>Shoulder Width beyond edge of mainline pavement</th>
<th>4'</th>
<th>6'</th>
<th>8'</th>
</tr>
</thead>
<tbody>
<tr>
<td>12'</td>
<td>NA</td>
<td>67</td>
<td>60</td>
</tr>
</tbody>
</table>

NOTE: W is the width of the outside lane to the Edge of Pavement.
Transverse Joints Perpendicular to Mainline Pavement

Transverse Joints Perpendicular to Loop Baseline

18' EXIT LOOP

1. 'BT-2' or 'KT-2' Joint.
2. 'C' Joint.
3. 'B' Joint. 2' minimum, 4' maximum.
4. 'L-2' Joint.
5. 10' minimum or equal to mainline shoulder width.
6. 'B' or 'C' Joint. 2' minimum, 4' maximum.

Reference Point for 15' Max. Joint Spacing

CD' Joints at 15' max. Spacing along Mainline

CD' Joints at 15' max. Spacing along Loop

PV-412

STANDARD ROAD PLAN

DECELERATION TAPER
FOR 18' EXIT LOOP
Construct loop entrance pavement the same thickness as mainline pavement.

Loop entrance pavement shown by shaded area is 1329 square yards.

For joint details, see PV-101.

1. For header construction details at the end of taper, see Typical 7101 or Typical 7102.

2. Construct subbase for loop entrance pavement the same thickness as subgrade.

NOTE: W is the width of the outside lane to the Edge of Pavement.

Concrete

Subbase

Mainline Edge of Pavement

Pavement

Shoulder

Ramp Taper Edge of Pavement

Edge of Pavement

End Loop

Profile Grade

Pavement

Begin Loop

Entrance

End Loop

Profile Grade

Loop Base Line

End Loop

Profile Grade

Loop Base Line

NOTE: The algebraic difference between profile grade for Loop Base Line at F and relative profile grade of Mainline at H is 0.36%.

Taper Angle = 2° 17' 26.20"

Distance From Point E Along Line 'A' (Ft.)

Table of Shoulder Transition Lengths

Table of Offsets and Drops for 18' Loop Taper

NOTE: From G to P cross-slope between Line 'A' and Line 'C' is a constant 3%.

Table of Shoulder Transition Lengths

<table>
<thead>
<tr>
<th>Shoulder Width beyond Edge of Mainline Pavement</th>
<th>8'</th>
<th>10'</th>
<th>12'</th>
</tr>
</thead>
<tbody>
<tr>
<td>17'</td>
<td>7101</td>
<td>7102</td>
<td>7103</td>
</tr>
</tbody>
</table>

For header construction details at the end of taper, see Typical 7101 or Typical 7102.

Construct subbase for loop entrance pavement the same thickness as subgrade.

NOTE: W is the width of the outside lane to the Edge of Pavement.
Transverse Joints Perpendicular to Mainline Pavement

Transverse Joints Perpendicular to Loop Baseline

CD' Joints at 15' max. Spacing along Mainline

Reference Point for 15' Max. Joint Spacing

CD' Joints at 15' max. Spacing along Loop

18' ENTRANCE LOOP

1. 'BT-2' or 'KT-2' Joint.
2. 'C' Joint.
3. 'B' Joint. 2' minimum, 4' maximum.
4. 'L-2' Joint.
5. Construct transverse joints on the entrance loop taper perpendicular to the loop baseline where the gore area is 4 feet or greater.
6. 'C' Joint equal to mainline shoulder.
7. 10' minimum or equal to mainline shoulder width.
8. 'B' or 'C' Joint. 2' minimum, 4' maximum.
### Table of Offsets and Drops for Detour Pavement

<table>
<thead>
<tr>
<th>Distance (ft)</th>
<th>Offset (ft)</th>
<th>Drop (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.08</td>
<td>4.00</td>
<td>0.16</td>
</tr>
<tr>
<td>200</td>
<td>4.00</td>
<td>0.16</td>
</tr>
<tr>
<td>175</td>
<td>4.00</td>
<td>0.15</td>
</tr>
<tr>
<td>150</td>
<td>4.00</td>
<td>0.15</td>
</tr>
<tr>
<td>125</td>
<td>4.00</td>
<td>0.15</td>
</tr>
<tr>
<td>100</td>
<td>4.00</td>
<td>0.15</td>
</tr>
<tr>
<td>75</td>
<td>4.00</td>
<td>0.15</td>
</tr>
<tr>
<td>50</td>
<td>4.00</td>
<td>0.15</td>
</tr>
<tr>
<td>25</td>
<td>4.00</td>
<td>0.15</td>
</tr>
</tbody>
</table>

**NOTE:** The elevations are established by a constant 4% slope across the appropriate detour widths based on a radius of 1000'. Drop = (0.04) x (Offset).

---

**PLAN**

**PROFILE**

- **End/Begin Base Line Stationing and Profile Grade**
- **Base Line**
- **Detour Pavement**
- **Profile Grade**
- **Stationing and Base Line End/Begin**

**SECTION A-A**

**Detour Pavement Edge of New Pavement**

- **4' Header**
- **Special Backfill**
- **Roadway Pavement**
- **Detour**

**NOTE:** The algebraic difference between profile grade for Ramp Base Line at [B] and relative profile grade of Mainline at [C] is 0.63%.

**NOTE:** The elevations are established by a constant 4% slope across the appropriate detour widths based on a radius of 1000'. Drop = (0.04) x (Offset).

**Possible Contract Items:**
- Detour Pavement
- Special Backfill

**IOWA DOT STANDARD ROAD PLAN**

**PV-418**

**One-Lane Detour Connection**

**DESIGNER INFORMATION**

**PV-101**

**REVISED**

- Changed "Ramp entrance" to "Detour connection" and "Detour ramp" to "Detour connection".
- Added 50' header and Detail 'A'.

**APPROVED BY DESIGN METHODS ENGINEER**

- Section A-A
- PLAN
- PROFILE
- TABLE OF OFFSETS AND DROPS FOR DETOUR PAVEMENT

**REVISIONS:**
- Removed circle notes.
- Added 50' header and Detail 'A'.

**Construct detour connection pavement and subbase the same thickness as detour pavement and subbase.**

**Detour connection pavement shown by shaded area is 147.89 square yards.**

**For joint details, see PV-101**
TABLE OF OFFSETS AND DROPS FOR DETOUR PAVEMENT

<table>
<thead>
<tr>
<th>DISTANCE (P.L.)</th>
<th>OFFSET (P.L.)</th>
<th>DROP (P.L.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>275.33</td>
<td>3.00</td>
<td>0.12</td>
</tr>
<tr>
<td>275</td>
<td>3.00</td>
<td>0.12</td>
</tr>
<tr>
<td>250</td>
<td>3.00</td>
<td>0.13</td>
</tr>
<tr>
<td>225</td>
<td>3.00</td>
<td>0.13</td>
</tr>
<tr>
<td>200</td>
<td>3.00</td>
<td>0.15</td>
</tr>
<tr>
<td>175</td>
<td>3.20</td>
<td>0.17</td>
</tr>
<tr>
<td>150</td>
<td>3.20</td>
<td>0.33</td>
</tr>
<tr>
<td>125</td>
<td>3.20</td>
<td>0.33</td>
</tr>
<tr>
<td>100</td>
<td>3.20</td>
<td>0.67</td>
</tr>
<tr>
<td>75</td>
<td>3.20</td>
<td>1.15</td>
</tr>
</tbody>
</table>

NOTE: The elevations are established by a constant 4% slope across the appropriate detour widths based on a radius of 1000'. Drop = (0.04) x (Offset).

NOTE: The algebraic difference between profile grade for Ramp Base Line at B and relative profile grade of Mainline at C is 0.88%.

SECTION A-A

NOTE: The elevation difference between profile grade for Ramp Base Line at B and relative profile grade of Mainline at C is 0.88%.
Detour Pavement options: 9" PCC or 12" HMA

For joint details, see PV-101.

1. Median crossover is symmetrical about centerline.
2. Beveled pipe and guard. See DR-212.
4. "KT-2" or "L-2" joint if mainline pavement is new construction. Bend bars out. "BT-3" joint if mainline pavement is existing. "B" joint if Detour Pavement is HMA.
5. For PCC Detour Pavement, "KT-2" or "L-2" spaced at one-quarter median width.
6. For PCC Detour Pavement, match existing roadway joints. "CD" joints are required.
7. For PCC Detour Pavement, 2 foot "C" Joint.

Possible Contract Items:
- Granular Shoulders, Type A
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Removal of Pavement
- Special Backfill

Possible Tabulation:
- Granular Shoulders, Type A
- Detour Pavement

**TABLE OF OFFSETS AND DROPS (PAVED SHOULDERS)**

<table>
<thead>
<tr>
<th>Distance From Location Station (Feet)</th>
<th>468.69</th>
<th>450</th>
<th>425</th>
<th>400</th>
<th>375</th>
<th>350</th>
<th>325</th>
<th>300</th>
<th>275</th>
<th>250</th>
<th>225</th>
<th>200</th>
<th>175</th>
<th>150</th>
<th>125</th>
<th>100</th>
<th>75.5</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset from inside edge of Pavement (Feet):</td>
<td>0.02</td>
<td>0.03</td>
<td>0.02</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Cross-Slope from inside edge of Pavement:</td>
<td>0.00%</td>
<td>3.00%</td>
<td>2.44%</td>
<td>2.02%</td>
<td>2.25%</td>
<td>2.25%</td>
<td>2.02%</td>
<td>2.25%</td>
<td>2.25%</td>
<td>2.02%</td>
<td>2.25%</td>
<td>2.25%</td>
<td>2.02%</td>
<td>2.25%</td>
<td>2.25%</td>
<td>2.02%</td>
<td>2.25%</td>
<td>2.25%</td>
</tr>
<tr>
<td>Drop from inside edge of Pavement (Feet):</td>
<td>0.24</td>
<td>0.20</td>
<td>0.12</td>
<td>0.12</td>
<td>0.32</td>
<td>0.12</td>
<td>0.32</td>
<td>0.12</td>
<td>0.32</td>
<td>0.12</td>
<td>0.32</td>
<td>0.12</td>
<td>0.32</td>
<td>0.12</td>
<td>0.32</td>
<td>0.12</td>
<td>0.32</td>
<td>0.12</td>
</tr>
</tbody>
</table>

**LOCATION STATION**

<table>
<thead>
<tr>
<th>POINT / LOCATION</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCATION STATION</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
</tr>
</tbody>
</table>

**PLAN**

- Begin Shoulder Removal
- Begin Detour Pavement
- 2' Offset
- 167.28'
- 206.35'
- 468.69'
- 95.06'
- 3:1
- 5:1
- 8:1
- 6'

**SECTION A-A**

- 6" min. Thickness
- Special Backfill
- Existing Shoulder (UAC)
- See Det. 'A'
- Existing Ditch Bottom

**DETAIL 'A'**

- Paintline
- 6' Header
- Edge of New Pavement

**PERSPECTIVE VIEW**

- Ditch Slope and Beveled Pipe

**DESIGN QUANTITY TABLE**

<table>
<thead>
<tr>
<th>Detour Pavement</th>
<th>Special Backfill</th>
<th>Granular Shoulder</th>
<th>Tons</th>
<th>Sq. Yds.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2095</td>
<td>1265</td>
<td>275</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SHEET 1 of 1**

- Updated references to renamned standards.

**APPROVED BY DESIGN METHODS ENGINEER**

**STANDARD ROAD PLAN**

**PV-500**

**MEDIA CROSSOVER**

(50' MEDIAN)
Detour Pavement options: 9" PCC or 12" HMA

For joint details, see PV-101.

1. Median crossover is symmetrical about centerline.
3. For PCC Detour Pavement, match existing roadway joints. "CD" joints are required.
4. "KT-2" or "L-2" joint if mainline pavement is new construction. Bend bars out.
5. "BT-3" joint if mainline pavement is existing. "B" joint if Detour Pavement is HMA.

Possible Contract Items:
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Granular Shoulders, Type A
- Removal of Pavement
- Special Backfill

Possible Table Contents:
- PV-101
- DR-504
- CD joints are required.
- Median pipe for crossover. See DR-504.
- For joint details, see PV-101.
Possible Tabulation:

Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.

1. Median crossover is symmetrical about centerline.
3. For PCC Detour Pavement, match existing roadway joints. 'CC' joints are required.
4. 'KT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out.
   BT-3 joint if mainline pavement is existing.
   'B' joint if Detour Pavement is HMA.

**TABLE OF OFFSETS AND DROPS**

<table>
<thead>
<tr>
<th>Distance (Feet)</th>
<th>515.48</th>
<th>525</th>
<th>535</th>
<th>348.20</th>
<th>400</th>
<th>450</th>
<th>490</th>
<th>500</th>
<th>515.48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drop A to C (Feet)</td>
<td>0.26</td>
<td>0.21</td>
<td>0.15</td>
<td>0.12</td>
<td>0.12</td>
<td>0.14</td>
<td>0.17</td>
<td>0.21</td>
<td>0.24</td>
</tr>
<tr>
<td>Drop A to B (Feet)</td>
<td>0.88</td>
<td>0.31</td>
<td>0.53</td>
<td>0.63</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PROFILE**

**PLAN**

**SECTION A-A**

**SECTION B-B**

**DETAIL 'A'**

**PERSPECTIVE VIEW**

**DESIGN QUANTITY TABLE**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Square Yards</th>
<th>Tons of Special Backfill</th>
<th>Tons of Granular Shoulder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detour Pavement</td>
<td>1685</td>
<td>715</td>
<td>1465</td>
</tr>
</tbody>
</table>

*Quantity based on 8" shoulder depth.*
Pavement Edge of New
4'
Detour Shoulder
A
C
D
84.07'
Median
L
C
DITCH SLOPE AND BEVELED PIPE
PERSPECTIVE VIEW
Pavement Roadway
L
V ariable
Pavement SECTION A-A
C of Crossover Width 2%
Special Backfill
Existing Ditch Bottom
DETAIL 'A'

Begin Detour Pavement Begin Shoulder Removal 2' Offset
4

OFFSET FROM里SIDE EDGE OF PAVEMENT (FEET)
Offset from inside edge of Pavement: 6.00, 6.12, 6.32, 6.66, 7.32, 7.89, 10.44, 12.27, 14.28, 16.47, 18.84, 21.46, 24.13, 27.05, 29.15, 32.00, 35.00
Cross-Slope from inside edge of Pavement: 0.00, 1.20, 3.75, 7.50, 12.50, 21.00, 28.00, 37.00, 48.00, 61.00, 80.00, 100.00, 125.00, 150.00, 175.00, 200.00, 225.00, 250.00, 275.00, 300.00, 325.00, 350.00, 375.00, 400.00, 425.00, 450.00, 475.00, 500.00
Drop from inside edge of Pavement: 0.24, 0.25, 0.26, 0.27, 0.28, 0.29, 0.30, 0.41, 0.54, 0.64, 0.75, 0.86, 0.97, 1.08, 1.19, 1.30, 1.41, 1.52, 1.63, 1.74, 1.85, 1.96, 2.07, 2.18, 2.29, 2.40, 2.51, 2.62, 2.73, 2.84

TABLE OF OFFSETS AND DROPS (PAVED SHOULDERS)

<table>
<thead>
<tr>
<th>Distance from Location Station (Feet)</th>
<th>517.88</th>
<th>500</th>
<th>475</th>
<th>450</th>
<th>400</th>
<th>350.69</th>
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<th>150</th>
<th>125</th>
<th>100</th>
<th>84.07</th>
<th>75.5</th>
<th>0</th>
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<tbody>
<tr>
<td>Offset from inside edge of Pavement (Feet)</td>
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<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
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<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
</tr>
<tr>
<td>Cross-Slope from inside edge of Pavement</td>
<td>0.00</td>
<td>1.20</td>
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<td>7.50</td>
<td>12.50</td>
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<td>28.00</td>
<td>37.00</td>
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<td>61.00</td>
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<tr>
<td>Drop from inside edge of Pavement</td>
<td>0.24</td>
<td>0.25</td>
<td>0.26</td>
<td>0.27</td>
<td>0.28</td>
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<td>1.19</td>
<td>1.30</td>
<td>1.41</td>
<td>1.52</td>
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</table>
**Possible Tabulation:**

Detour Pavement options: 9" PCC or 12" HMA

<table>
<thead>
<tr>
<th>Possible Contract Items:</th>
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<tbody>
<tr>
<td>Detour Pavement</td>
</tr>
<tr>
<td>Embankment in Place</td>
</tr>
<tr>
<td>Excavation, Class 10,</td>
</tr>
<tr>
<td>Roadway and Borrow</td>
</tr>
<tr>
<td>Excavation, Class 13,</td>
</tr>
<tr>
<td>Roadway and Borrow</td>
</tr>
<tr>
<td>Granular Shoulders, Type A</td>
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<tr>
<td>Removal of Pavement</td>
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<tr>
<td>Special Backfill</td>
</tr>
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**Possible Tabulation:**

<table>
<thead>
<tr>
<th>TABLE OF OFFSETS AND DROPS</th>
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</thead>
<tbody>
<tr>
<td>Distance (Feet)</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>560.67</td>
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<td>320.00</td>
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<tr>
<td>310.00</td>
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**Possible Tabulation:**

<table>
<thead>
<tr>
<th>DESIGN QUANTITY TABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detour Pavement</td>
</tr>
<tr>
<td>Special Backfill</td>
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<tr>
<td>Granular Shoulder</td>
</tr>
<tr>
<td>Square Yards</td>
</tr>
<tr>
<td>Tons</td>
</tr>
<tr>
<td>Tons</td>
</tr>
</tbody>
</table>

*Quantity based on 8" shoulder depth.*

**Possible Tabulation:**

Detour Pavement options: 9" PCC or 12" HMA

For joint details, see PV-101.

1. Median crossover is symmetrical about centerline.
3. For PCC Detour Pavement, match existing roadway joints. "CD" joints are required.
4. "KT-2" or "L-2" joint if mainline pavement is new construction. Bend bars out.
5. "BT-3" joint if mainline pavement is existing. "B" joint if Detour Pavement is HMA.

**Possible Tabulation:**

Detour Pavement options: 9" PCC or 12" HMA

For joint details, see PV-101.

1. Median crossover is symmetrical about centerline.
3. For PCC Detour Pavement, match existing roadway joints. "CD" joints are required.
4. "KT-2" or "L-2" joint if mainline pavement is new construction. Bend bars out.
5. "BT-3" joint if mainline pavement is existing. "B" joint if Detour Pavement is HMA.

**Possible Tabulation:**

Detour Pavement options: 9" PCC or 12" HMA

For joint details, see PV-101.

1. Median crossover is symmetrical about centerline.
3. For PCC Detour Pavement, match existing roadway joints. "CD" joints are required.
4. "KT-2" or "L-2" joint if mainline pavement is new construction. Bend bars out.
5. "BT-3" joint if mainline pavement is existing. "B" joint if Detour Pavement is HMA.
Detour Pavement options: 9" PCC or 12" HMA

1. Median crossover is symmetrical about centerline.
2. Beveled pipe and guard. See DR-212.
4. "KT-2" or "L-2" joint if mainline pavement is new construction. Bend bars out. "B-1"-3 joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.
5. For PCC Detour Pavement, "L-2" or "KT-2" spaced at one-quarter median width.
6. For PCC Detour Pavement, match existing roadway joints. "CD" joints are required.
7. For PCC Detour Pavement, 2 foot "C" Joint.

Possible Contract Items:
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Removal of Pavement
- Special Backfill
- Granular Shoulders, Type A

Possible Tabulation:
112-8

STANDARD ROAD PLAN

PV-506

Revisions:
- Updated references to renamed standards.

Approved by Design Methods Engineer:

Median Crossover
(68.24' Median)
**Detour Pavement options:** 9" PCC or 12" HMA

For joint details, see PV-101.

1. Median crossover is symmetrical about centerline.
3. For PCC Detour Pavement, match existing roadway joints. "CO" joints are required.
4. "KT-2" or "L-2" joint if mainline pavement is new construction. Bend bars out.
5. "BT-3" joint if mainline pavement is existing. "S" joint if Detour Pavement is HMA.

**Possible Contract Items:**
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Embankment In Place
- Detour Pavement
- Special Backfill

**Possible Tabulation:**

**TABLE OF OFFSETS AND DROPS**

<table>
<thead>
<tr>
<th>Offset A to C (Feet)</th>
<th>Offset A to C (Feet)</th>
<th>Drop A to C (Feet)</th>
<th>Drop A to B (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
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</tr>
<tr>
<td>0.03</td>
<td>0.03</td>
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</table>

**PROFILE**

**DESIGN QUANTITY TABLE**

<table>
<thead>
<tr>
<th>Detour Pavement Sq Yds</th>
<th>Special Backfill Tons</th>
<th>Granular Shoulder Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1370</td>
<td>670</td>
<td>245</td>
</tr>
</tbody>
</table>

*Quantity based on 8" shoulder depth.*
**Detour Pavement options:** 9" PCC or 12" HMA

1. Median crossover is symmetrical about centerline.
3. For PCC Detour Pavement, match existing roadway joints. "CO" joints are required.
4. "KT-2" or "1.2" joint if mainline pavement is new construction. Bend bars out.
   "BT-3" joint if mainline pavement is existing.
5. 16" joint if Detour Pavement is HMA.

---

**Possible Tabulation:**
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Granular Shoulder, Type A
- Removal of Pavement
- Special Backfill

---

**Possible Contract Items:**
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Granular Shoulder, Type A
- Removal of Pavement
- Special Backfill

---

**Standard Road Plan**

**Profile**

**Plan**

---

**TABLE OF OFFSETS AND DROPS**

<table>
<thead>
<tr>
<th>Offset (Feet)</th>
<th>0</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
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<th>650</th>
<th>700</th>
<th>750</th>
<th>800</th>
<th>850</th>
<th>900</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drop A to B</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Drop A to C</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>Drop A to D</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

---

**DESIGN QUANTITY TABLE**

- Detour Pavement
- Special Backfill
- Granular Shoulder

**LOCATION STATION**

---

**PV-508**

**STANDARD ROAD PLAN**

- **MEDIAN CROSSOVER**
  - (68.24' MEDIAN)
  - 28' WIDE 2 LANE

---

**REVISIONS:**
- New logo and modified circle note 2.

---

**APPROVED BY DESIGN METHODS ENGINEER**
Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.

1. Median crossover is symmetrical about centerline.
2. Beveled pipe and guard. See DR-212.
4. "KT"-2 or "L"-2 joint if mainline pavement is new construction. Bend bars out.
5. "BT"-3 joint if mainline pavement is existing.
6. 'B' joint if Detour Pavement is HMA.
7. For PCC Detour Pavement, 'KT"-2 or 'L'-2 spaced at one-quarter median width.
8. For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
9. For PCC Detour Pavement, 2 foot 'C' Joint.

Possible Contract Items:
- Granular Shoulders, Type A
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Removal of Pavement
- Special Backfill

Possible Tabulation:
- 112-8
Detour Pavement options: 9" PCC or 12" HMA

For joint details, see PV-101:

1. Median crossover is symmetrical about centerline.
3. For PCC Detour Pavement, match existing roadway joints. "CT" joints are required.
4. "KT-2" or "L-2" joint if mainline pavement is new construction. Bend bars out.
   "BT-3" joint if mainline pavement is existing. "B" joint if Detour Pavement is HMA.

**Possible Tabulation:**
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Granular Shoulder, Type A
- Emplacement In Place
- Special Backfill

Possible Contract Items:
- DR-504
- PV-510

**Median Pipe for Crossover:** See detail A.

Possible tabulation:
1. Median pipe for crossover. See DR-504.
2. For PCC Detour Pavement, match existing roadway joints. "CT" joints are required.
3. "KT-2" or "L-2" joint if mainline pavement is new construction. Bend bars out.
4. "BT-3" joint if mainline pavement is existing. "B" joint if Detour Pavement is HMA.

**Possible Contract Items:**
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Granular Shoulder, Type A
- Emplacement In Place
- Special Backfill

**Possible Tabulation:**
1. PV-510

**STANDARD ROAD PLAN**

**PV-510**

**16' WIDE 1 LANE**
Detour Pavement options: 9" PCC or 12" HMA

1. Median crossover is symmetrical about centerline.
3. For PCC Detour Pavement, match existing roadway joints. "CD" joints are required.
4. "KT-2" or "L-2" joint if mainline pavement is new construction. Bend bars out.
5. ST-3 joint if mainline pavement is existing. 9" Joint if Detour Pavement is HMA.

Possible Contract Items:
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Granular Shoulder, Type A
- Removal of Pavement
- Special Backfill

Possible Tabulation:

**TABLE OF OFFSETS AND DROPS**

<table>
<thead>
<tr>
<th>Offset A to C (feet)</th>
<th>6.00</th>
<th>5.00</th>
<th>4.00</th>
<th>3.00</th>
<th>2.00</th>
<th>1.00</th>
<th>0.20</th>
<th>0.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drop A to C (feet)</td>
<td>0.24</td>
<td>0.16</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Drop A to B (feet)</td>
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<td>0.45</td>
</tr>
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<td>Drop B to C (feet)</td>
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<td>0.78</td>
<td>0.73</td>
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<td>0.63</td>
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Possible Tabulation:

**DESIGN QUANTITY TABLE**

<table>
<thead>
<tr>
<th>Detour Pavement</th>
<th>2300</th>
<th>995</th>
<th>270</th>
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</thead>
<tbody>
<tr>
<td>Special Backfill</td>
<td>380</td>
<td>135</td>
<td>270</td>
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<tr>
<td>Granular Shoulder</td>
<td>845</td>
<td>310</td>
<td>630</td>
</tr>
</tbody>
</table>

*Quantity based on 8" shoulder depth.

For joint details, see **PV-101**.
Detour Pavement options: 9" PCC or 12" HMA

1. Median crossover is symmetrical about centerline.
2. Beveled pipe and guard. See DR-212.
4. "KT-2" or "L-2" joint if mainline pavement is new construction. Bend bars out. "BT-3" joint if mainline pavement is existing. "B" joint if Detour Pavement is HMA.
5. For PCC Detour Pavement, "KT-2" or "L-2" spaced at one-quarter median width.
6. For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
7. For PCC Detour Pavement, 2 foot 'C' Joint.

Possible Contract Items:
- Granular Shoulders, Type A
- Detour Pavement Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Removal of Pavement
- Special Backfill

Possible Tabulation:

### TABLE OF OFFSETS AND DROPS (PAVED SHOULDERS)

<table>
<thead>
<tr>
<th>Point Location</th>
<th>Offset from Edge of Pavement (Feet)</th>
<th>Drop from Edge of Pavement (Feet)</th>
<th>Distance from Location Station (Feet)</th>
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<tbody>
<tr>
<td><strong>PV-101</strong></td>
<td>6.02</td>
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<td>112-8</td>
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### STANDARD ROAD PLAN

**PV-512**

**100' MEDIAN**

**REVISION**

**04-21-15**

**STANDARD ROAD PLAN**

**APPROVED BY DESIGN METHODS ENGINEER**

**MEDIAN CROSSOVER**
Detour Pavement options: 9" PCC or 12" HMA

1. Median crossover is symmetrical about centerline.
3. For PCC Detour Pavement, match existing roadway joints. "CD" joints are required.
4. KT-2' or "L-2" joint if mainline pavement is new construction. Bend bars out.
   BT-3' joint if mainline pavement is existing. 18' joint if Detour Pavement is HMA.

Possible Contract Items:
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Granular Shoulder, Type A
- Removal of Pavement
- Special Backfill

Possible Tabulation:
Detour Pavement

For joint details, see PV-101.
CD' joints are required.
For PCC Detour Pavement, match existing roadway joints.
Detour Pavement options: 9" PCC or 12" HMA

For joint details, see PV-101.

1. Median crossover is symmetrical about centerline.
3. For PCC Detour Pavement, match existing roadway joints. "CO" joints are required.
4. "KT-2" or "1-2" joint if mainline pavement is new construction. Bend bars out. BT-3' joint if mainline pavement is existing. 16' joint if Detour Pavement is HMA.

Possible Tabulation:

Possible Contract Items:
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Granular Shoulder, Type A
- Removal of Pavement
- Special Backfill

Possible Tabulation:

112-B

**TABLE OF OFFSETS AND DROPS**

| Offset A to C (Feet) | 0.00 | 6.00 | 12.00 | 18.00 | 24.00 | 30.00 | 36.00 | 42.00 | 48.00 | 54.00 | 60.00 | 66.00 | 72.00 | 78.00 | 84.00 | 90.00 | 96.00 | 102.00 | 108.00 | 114.00 | 120.00 | 126.00 | 132.00 | 138.00 | 144.00 | 150.00 | 156.00 | 162.00 | 168.00 | 174.00 | 180.00 | 186.00 |
|---------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Drop A to B [Ft/or]| 0.24 | 0.18 | 0.12 | 0.12 | 0.12 | 0.14 | 0.17 | 0.20 | 0.24 | 0.28 | 0.32 | 0.37 | 0.42 | 0.47 | 0.53 | 0.59 | 0.64 | 0.70 | 0.76 | 0.82 | 0.88 | 0.94 | 1.00 | 1.06 | 1.12 | 1.18 | 1.24 | 1.30 | 1.36 | 1.42 |
| Drop A to B [Yard]| 0.08 | 0.06 | 0.04 | 0.04 | 0.04 | 0.05 | 0.07 | 0.09 | 0.11 | 0.13 | 0.15 | 0.17 | 0.19 | 0.21 | 0.23 | 0.25 | 0.27 | 0.29 | 0.31 | 0.33 | 0.35 | 0.37 | 0.39 | 0.41 | 0.43 | 0.45 | 0.47 | 0.49 | 0.51 | 0.53 |