Bridge Approach
## Bridge Approach

<table>
<thead>
<tr>
<th>NO.</th>
<th>DATE</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>BR-101</td>
<td>04-21-15</td>
<td>Bridge Approach Section (General Details)</td>
</tr>
<tr>
<td>BR-102</td>
<td>10-17-17</td>
<td>Bridge Approach Section (Two-Lane, Abutting PCC Pavement)</td>
</tr>
<tr>
<td>BR-103</td>
<td>10-17-17</td>
<td>Bridge Approach Section (Two-Lane for Bridge Reconstruction, PCC Pavement)</td>
</tr>
<tr>
<td>BR-104</td>
<td>10-17-17</td>
<td>Bridge Approach Section (at Existing Bridges, PCC Pavement)</td>
</tr>
<tr>
<td>BR-105</td>
<td>04-21-15</td>
<td>Bridge Approach Section (Two-Lane, HMA Pavement)</td>
</tr>
<tr>
<td>BR-106</td>
<td>04-21-15</td>
<td>Bridge Approach Section (Two-Lane for Bridge Reconstruction, HMA Pavement)</td>
</tr>
<tr>
<td>BR-107</td>
<td>04-21-15</td>
<td>Bridge Approach Section (at Existing Bridges, HMA Pavement)</td>
</tr>
<tr>
<td>BR-111</td>
<td>04-21-15</td>
<td>PCC Overlay of Reinforced Bridge Approach Section</td>
</tr>
<tr>
<td>BR-112</td>
<td>10-17-17</td>
<td>Bridge Approach Details (in Conjunction with Bridge Deck Overlay)</td>
</tr>
<tr>
<td>BR-121</td>
<td>04-21-15</td>
<td>Bridge Approach Details (Secondary Roads)</td>
</tr>
<tr>
<td>BR-201</td>
<td>10-17-17</td>
<td>Double Reinforced 10&quot; Approach</td>
</tr>
<tr>
<td>BR-202</td>
<td>10-17-17</td>
<td>Double Reinforced 10&quot; Approach with Variable Depth Paving Notch</td>
</tr>
<tr>
<td>BR-203</td>
<td>10-17-17</td>
<td>Double Reinforced 12&quot; Approach</td>
</tr>
<tr>
<td>BR-204</td>
<td>10-17-17</td>
<td>Double Reinforced 12&quot; Approach with Variable Depth Paving Notch</td>
</tr>
<tr>
<td>BR-205</td>
<td>10-15-19</td>
<td>Double Reinforced 12&quot; Approach (Slab Bridge)</td>
</tr>
<tr>
<td>BR-211</td>
<td>10-17-17</td>
<td>Bridge Approach (Abutting PCC or Composite Pavement)</td>
</tr>
<tr>
<td>BR-212</td>
<td>04-21-15</td>
<td>Bridge Approach (Abutting HMA Pavement)</td>
</tr>
<tr>
<td>BR-213</td>
<td>04-21-15</td>
<td>Bridge Approach (Abutting Pavement)</td>
</tr>
<tr>
<td>BR-231</td>
<td>10-17-17</td>
<td>Bridge Approach (Multi-Lane, Curbed Roadway)</td>
</tr>
<tr>
<td>BR-241</td>
<td>04-18-17</td>
<td>Double Reinforced 10&quot; Approach On Gravel Roads</td>
</tr>
</tbody>
</table>
**Sections and details apply to Standard Road Plans BR-112 and BR-102 through BR-107.**

1. **Design Shoulder width.**
2. **Reinforced Bridge Approach Section.**
3. **Build curb. See Detail 'C'.**
4. **Reinforcing Bar.**
5. **Temporary paving block removed by paving contractor.**
6. **Bridge Abutment.**
7. **Longitudinal Joint (PV-101):**
   - Single pour - Saw cut joint per Detail B.
   - Two pours - Use "KS-1" joint.
8. **Secure polymer grid on top of paving notch.**
9. **Extend polymer grid to 2 feet outside edge of pavement.**
10. **Trim fabric to edge of excavation.**
11. **If bridge is skewed, place additional #5 bar parallel to skewed face.**
12. **T = 10 inches.**

### Possible Contract Item:
Bridge Approach, Two Lane

### Possible Tabulation:
112-6

---

**JOINT TYPE FOR MOVABLE ABUTMENT BRIDGES**

<table>
<thead>
<tr>
<th>Joint</th>
<th>Concrete Beam Maximum Bridge Length</th>
<th>Steel Girder Maximum Bridge Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF-1</td>
<td>375'</td>
<td>250'</td>
</tr>
<tr>
<td>CF-2</td>
<td>465'</td>
<td>320'</td>
</tr>
<tr>
<td>CF-3</td>
<td>575'</td>
<td>400'</td>
</tr>
</tbody>
</table>

---

**SECTION A-A**

- **Polymer Grid**
- **Modified Subbase**
- **Normal Pavement Slope**
- **Earth Excavation Limits**
- **E' Joint**
- **Bridge Rail End Section**
- **CF or 'E' Joint Per Detail 'A'**
- **4'' Sloped Curb, see Detail 'D'**

**SECTION B-B**

- **Polymer Grid**
- **Modified Subbase**
- **Normal Pavement Slope**
- **Earth Excavation Limits**
- **E' Joint**
- **Bridge Rail End Section**
- **CF or 'E' Joint Per Detail 'A'**
- **4'' Sloped Curb, see Detail 'D'**

**SECTION C-C**

- **Polymer Grid**
- **Modified Subbase**
- **Normal Pavement Slope**
- **Earth Excavation Limits**
- **E' Joint**
- **Bridge Rail End Section**
- **CF or 'E' Joint Per Detail 'A'**
- **4'' Sloped Curb, see Detail 'D'**

**DETAIL 'A'**

- **Movable Abutment Bridge**
- **Design Shoulder**
- **Normal Pavement Slope**
- **Earth Excavation Limits**
- **E' Joint**
- **Bridge Rail End Section**
- **CF or 'E' Joint Per Detail 'A'**
- **4'' Sloped Curb, see Detail 'D'**

**DETAIL 'C'**

- **Five-Hole Bridge Rail End Section**
- **Retrofit Bridge Rail End Section**
- **CF or 'E' Joint Per Detail 'A'**
- **4'' Sloped Curb, see Detail 'D'**

**DETAIL 'D'**

- **Low Speed Bridge Rail End Section**
- **CF or 'E' Joint Per Detail 'A'**
- **2'' Standard Curb, see PV-102**

---

**BRIDGE APPROACH SECTION**

- **(GENERAL DETAILS)**
- **Possible Contract Item:**
  - Bridge Approach, Two Lane
- **Possible Tabulation:**
  - 112-6

---

**REVISIONS:**
- New. Replaces RK-19A.
Pay Limits for Contract Item

For joint details, see **PV-101**.

1. Build curb to end of Reinforced Bridge Approach Section. See Curb Location Details (Section B-B on BR-101).
3. Longitudinal Joint (PV-101)
   - Single Pour - Saw cut joint per Detail B
   - Two Pours - Use "KS-1" joint
4. "CD" Joints required up to 300 feet each way from end of Reinforced Bridge Approach Section.
5. Excavation limits of Modified Subbase 2 feet outside of pavement edge, see BR-101.
6. Slope subdrain to drain.
7. Place an "X" in the plastic concrete near the "EF" joint at the outside edge of pavement.
8. Place "TD" joint where PCC shoulder. Place "B" joint otherwise.

**Possible Subbase**

**Possible Contract Item**
Bridge Approach, Two Lane

**Possible Tabulation:**
1-2-6

**STANDARD ROAD PLAN**

**BR-102**

**BRIDGE APPROACH SECTION**
(TWO-LANE, ABUTTING PCC PAVEMENT)
Approach Roadway

Bridge Floor

See Detail 'A'

See Detail 'C'

Grid
Polymer

Modified Subbase

'EF' Joint
Granular Backfill line

Excavate to existing 2'
Modified Subbase

Pay Limits for Contract Item
As required by skew angle (20' Min.)

Reinforced Section
Non-Reinforced Section

'CD' Joint
'EF' Joint

Existing Joint or Crack

Existing Pavement (if applicable)

5' Min.
10'

Design Shoulder
(See Project Typical Drawings)

Perforated Subdrain (Polyethylene, Corrugated Tubing)

See DR-306 for outlet details

PV-103.

For joint details, see PV-101.

1. Build curb to end of Reinforced Bridge Approach Section.
   See Curb Location Details (Section B-B on BR-101).


3. Longitudinal Joint (PV-101):
   Single Pour - Saw cut joint per Detail B.
   Two Pours - Use 'KS-1' joint.

4. Minimum 1 panel, maximum 3 panels. 15 foot minimum. 20 foot maximum panel length. Use 'CV' joints.

5. Excavation limits of Modified Subbase 2 feet outside of pavement edge, see BR-101.

6. Slope subdrain to drain.

7. Place an "X" in the plastic concrete near the 'EF' joint at the outside edge of pavement.

8. Place 'RD' joint where PCC shoulder. Place 'B' joint otherwise.

Possible Contract Item:
Bridge Approach, Two Lane

Possible Tabulation:
112-6
BRIDGE APPROACH SECTION  
(AT EXISTING BRIDGES, PCC PAVEMENT)
Approach Roadway

Bridge Floor

Detail 'A'
See

Granular Backfill line
Excavate to existing
Modified Subbase

'CD' Joint
As required by skew angle (20' Min.)

Reinforced Section

Non-Reinforced Section

'KT-2' or 'L-2'

HMA Pavement

Polymer Grid

4''

See Detail 'B'

Reinforced
Section

Pay Limits for Contract Item

Section

Possible Contract Item:
Bridge Approach, Two Lane
Possible Tabulation:
1"-2/6

Subbase (if applicable)

Modified Subbase

Polymer Grid

4''

Subbase (if applicable)

HMA Pavement

PLAN VIEW

SECTION THRU CENTERLINE

For joint details, see PV-101.

1. Build curb to end of Reinforced Bridge Approach Section. See Curb Location Details (Section B-B on BR-101).
3. Longitudinal Joints (PV-101):
   Single Pour - Saw cut joint per Detail B.
   Two Pours - Use 'KS-1' joint.
4. Excavation limits of Modified Subbase 2 feet outside of pavement edge, see BR-101.
5. The Contractor may need to saw cut the HMA pavement full depth to accommodate the 'B' joint.
6. Place 'RD' joint where PCC shoulder. Place 'B' joint otherwise.

Possible Specimen:
Bridge Approach, Two Lane
Possible Tabulation:
1"-2/6
Approach Roadway

Bridge Floor

Detail 'A'

See
2'

Modified Subbase

Granular Backfill line

Excavate to existing 4''

Polymer Grid

See Detail 'B'

'CD' Joint

20'

Non-Reinforced Section - 40' Min.

As required by skew angle (20' Min.)

Reinforced Section

Pay Limits for Contract Item

'CD' Joint

20'

'CD' Joint

20'

HMA Pavement

Possible Contract Item: Bridge Approach, Two Lane

Possible Tabulation: 112-6

For joint details, see PV-101.

1. Build curb to end of Reinforced Bridge Approach Section. See Curb Location Details (Section B-B on BR-101).
3. Longitudinal Joint (PV-101):
   - Single Pour - Saw cut joint per Detail B.
   - Two Pours - Use 'KS-1' joint.
4. Minimum 2 panels, maximum 3 panels. 20 foot panel length. Use 'CD' joints.
5. Excavation limits of Modified Subbase 2 feet outside of pavement edge, see BR-101.
6. The Contractor may need to saw cut the HMA pavement full depth to accommodate the 'B' joints.
7. Place 'RD' joint where PCC shoulder. Place 'T' joint otherwise.

See Detail 'C'

Bridge Floor

Granular Backfill and Subdrain by others

Excavate to existing Granular Backfill line

SECTION THRU CENTERLINE

Possible Tabulation:
Bridge Approach, Two Lane

PV-101

BR-106

REV 04-21-15

STANDARD ROAD PLAN

BRIDGE APPROACH SECTION
(TWO-LANE FOR BRIDGE RECONSTRUCTION, HMA PAVEMENT)

REVISIONS: New. Replaces RK-19H.

APPROVED BY DESIGN METHODS ENGINEER
1. Build curb to end of Reinforced Bridge Approach Sections. See Curb Location Details (Section B-B on BR-101).
3. Longitudinal Joints (PV-101):
   - Single Pour - Saw cut joint per Detail B.
   - Two Pour - Use 'KS-1' joint.
4. Excavation limits of Modified Subbase 2 feet outside of pavement edge, see BR-101.
5. Minimum 2 panels, maximum 3 panels 20' foot panel length. Use 'CD' joints.
6. The contractor may need to saw cut the HMA pavement full depth to accommodate the 'B' joint.
7. Place 'RD' joint where PCC shoulder. Place 'B' joint otherwise.

For joint details, see PV-101.

Possible Contract Item: Bridge Approach, Two Lane
Possible Tabulation: 112-6
**PCC Overlay of Reinforced Bridge Approach Section**

- **Existing Joint Rebuilding Requirements**
  - **Existing Joint Width**
    - 0 to 1" See Detail 'A'
    - 1" to 2" See Detail 'A'
    - Greater than 2" See Detail 'E'

- **JOINT REBUILDING REQUIREMENTS**
  - **Existing Joint Width**
    - 0 to 1" See Detail 'A'
    - 1" to 2" See Detail 'A'
    - Greater than 2" See Detail 'E'

- **Detail 'A'**
  - Remove HMA Resurfacing if present. The cost of removal is considered incidental to "Bridge Floor Overlay" as detailed herein.
  - Existing shoulder elevation to be raised to match new pavement grade.
  - At first existing "CF" joint beyond PCC Overlay area, clean joint, trim to 2" + 1/2 and install preformed joint material 4" + 1/2 wide times pavement thickness minus 1 inch deep with lubricant adhesive. See Materials I.M. 436.06 for list of approved materials.
  - Reinforced bridge approach section overlay "Runout" stops not to exceed 1 inch in 50 feet from profile grade.
  - Existing joint. Remove all expansion material and clean joint area. Do not overlay and saw out.
  - Saw and seal over existing joint. Refer to Detail 'C' on PV-101.
  - Tire buffings. Refer to Detail 'H' on PV-101.
  - Existing joint. Remove all expansion material and fill with overlay material.
  - Applicable only if a transverse crack in the reinforced section exists.

- **Detail 'B'**
  - Sealed joints installed at locations of overlaid existing joints as detailed in the plans.
  - Joint U.A.C. for list of approved materials.
  - Reinforced bridge approach section overlay "Runout" stops not to exceed 1 inch in 50 feet from profile grade.
  - Scarify to the minimum depth of 1/2" the existing PCC surface of the reinforced bridge approach section.
  - Scarify deep enough to provide a minimum overlay thickness of 1/2".
  - Overlay the scarified approach pavement with PCC according to Section 2413 of the Standard Specifications. The existing joint at the bridge end is not to be overlaid and cut out by saw. Use a method approved by the Engineer.
  - Install sealed joint at the bridge end and at the locations of overlaid existing joints as detailed in the plans.
  - Trim the first existing "CF" joint beyond the resurfaced area to a uniform 3" + 1/2" width, clean joint and install new preformed joint material with lubricant adhesive.

- **Detail 'C'**
  - After undersealing (by others), work is to proceed in the following sequence and according to the traffic control plans:
    1. Rout out existing joints as detailed in the plans.
    2. Scarify to the minimum depth of 1/2" the existing PCC surface of the reinforced bridge approach section.
    3. Overlay the scarified approach pavement with PCC according to Section 2413 of the Standard Specifications. The existing joint at the bridge end is not to be overlaid and cut out by saw. Use a method approved by the Engineer.
    4. Install sealed joint at the bridge end and at the locations of overlaid existing joints as detailed in the plans.
    5. Trim the first existing "CF" joint beyond the resurfaced area to a uniform 3" + 1/2" width, clean joint and install new preformed joint material with lubricant adhesive.

- **Detail 'D'**
  - Routing at joints will be measured and paid for as "Class A Deck Repair" according to Section 2413 of the Standard Specifications.

- **Detail 'E'**
  - Overlaying of the bridge approach pavement with PCC will be paid for at the contract unit price for "Deck Overlay" according to Section 2413 of the Standard Specifications. The existing joint at the bridge end is not to be overlaid and cut out by saw. Use a method approved by the Engineer.

Sealed joints installed at locations of existing joints will not be paid for separately, but are incidental to "Deck Overlay".

For raising HMA shoulder to match the PCC overlay of the bridge approach pavement, Class II compaction is required as specified in Section 2303 of the Standard Specifications. Asphault binder and tack coat are incidental.

Construct "Granular Shoulders, Type B" according to Section 2131 of the Standard Specifications when other than paved shoulders exist.

For joint details, refer to PV-101.
Saw Cut Line for Removal

#8 Bars at 12'' Centers

Existing Shoulder

Modified Subbase

Polymer Grid

Backfill

Subdrain

Perforated

Porous Backfill

Excavation Limits

Pay Limits for
Bridge Approach

As required by skew angle (20' Min.)

(Reinforced)

(Non-Reinforced)

#5 Bars at 12'' Centers

#5 Bars at 12'' Centers

Normal Pavement Slope

Edge of Proposed Shoulder

Earth

2''

4''

6''

10''

12''

12'' Min.

Approach Roadway

Detail 'A'

Detail 'B'

Existing Joint

Excavation Limits

SECTION E-E

SECTION THRU CENTERLINE

Possible Contract Items:
Bridge Approach, Two Lane
Paved Shoulder, P.C. Concrete

Possible Tabulation:

Bridge Deck Overlay

Possible Tabulation:

112-6

Possible Tabulation:

STANDARD ROAD PLAN
BR-112
REVISION 01-11-17

BRIDGE APPROACH DETAILS
(IN CONJUNCTION WITH
BRIDGE DECK OVERLAY)

Maintain traffic in adjacent lanes.

For joint details, see PV-101.

If an existing "CF" joint is located approximately 60 feet from the new 'B' or 'RT' joint, the joint is to be recut to a width of 4 inches and new form joint material installed. If no "CF" exists, construct a new "CF" joint approximately 60 feet from the new 'B' or 'RT' joint.

Modified Subbase under paved shoulder panels adjacent to the bridge approach is incidental to "Paved Shoulder, P.C. Concrete", unless measured and paid for elsewhere on the project plans.

1. Build curb to end of Reinforced Bridge Approach Section. See Curb Location Details (Section B-B on BR-101).
2. Place 'RO' joint if P.C. Shoulder, 'B' joint otherwise.
3. Optional 'KS-1' joint.
4. See Typical Paving Cross-Sections.
5. Slope Subdrain to drain.
6. Place 'RT' joint if existing pavement is P.C., 'B' joint otherwise.
7. If bridge is skewed, place additional #5 bar parallel to skewed face.
8. T=10 inches.
Use the same concrete for the bridge approach section as is used for the remainder of the project pavement.

For joint details, see PV-101.

1. If bridge is skewed, place additional #5 bar parallel to skewed face.
2. T is the same thickness as required for the remainder of the project pavement.

Possible Contract Items:
- Bridge Approach, Secondary Roads
- Standard or Slip-Form PCC Pavement

Possible Tabulation: 112-6

Quantity for 20 foot long approach section for 24 foot pavement is 53.33 square yards of "Bridge Approach."
SECTION THRU CENTERLINE
(Abutting PCC or Composite Pavement)

SECTION THRU CENTERLINE
(Abutting HMA Pavement)
**Approach Roadway**

<table>
<thead>
<tr>
<th>#4 bars at 12&quot; Centers</th>
<th>D=2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION A-A</td>
<td></td>
</tr>
</tbody>
</table>

| D=2"                     | 24"  |
| 6                         | 5    |

**BENT BAR SHAPES**

<table>
<thead>
<tr>
<th>Deck</th>
<th>Bridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>15'-0&quot; min.</td>
<td>20'-0&quot;</td>
</tr>
</tbody>
</table>

**Sloped Curb per Section 'C'**

<table>
<thead>
<tr>
<th>Detail 'E'</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Design shoulder width</td>
<td></td>
</tr>
<tr>
<td>Reinforced bridge approach section</td>
<td></td>
</tr>
</tbody>
</table>

**Expansion joint at end of Bridge Rail End Section:** Place joint filler the full depth of the bridge approach pavement. In areas with curb, place full depth of pavement plus curb and shape material to fit the shape of the curb per Section B-B of PV-101. Seal joint per Detail F of PV-101.

- Fixed Abutment Bridges: Type 'E' Joint
- Moveable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Minimum filler width is the abutment 'CF' joint width. Joint oinng as required to completely fill from back side of curb to front fack of bridge wing.

**APPRAOCH PAVEMENT LAYOUT AT A SKEW**

**DETAIL 'D'**

| Joint length as required to completely fill from back of curb to front face of bridge wing. Minimum filler width is the abutment 'CF' joint width. Joint oinng as required to completely fill from back side of curb to front face of bridge wing.

**DETAIL 'G'**

| Joint length as required to completely fill from back of curb to front face of bridge wing. Minimum filler width is the abutment 'CF' joint width. Joint oinng as required to completely fill from back side of curb to front face of bridge wing.

---

**STANDARD ROAD PLAN**

**BR-201**

**DOUBLE REINFORCED 10'' APPROACH**
For joint details, see PV-101.
For curb details, see Detail 'G'.

All Transverse Bars are #5.

See BR-211 or BR-212 for shoulders.

1. 2" to 2\(\frac{1}{2}\)" clear to bent bar.
2. Minimum lap length: #5 bars - 18 inches
   #6 bars - 27 inches
   #9 bars - 48 inches
3. If bridge is skewed, place additional #5 bar parallel
to skewed face.

Possible Contract Item:
Bridge Approach, BR-202
Possible Tabulation:
112-6

**DETAIL 'A'**

- Resilient Joint Filler
- Polymer Grid
- Modified Subbase
- Pavement Lug
- Approach Pavement

See Table for Joint Type

**DETAIL 'B'**

- Resilient Joint Filler
- Pavement Lug
- Approach Pavement

See Table for Joint Type

**Joint Type for Moveable Abutment Bridges**

<table>
<thead>
<tr>
<th>Joint</th>
<th>Maximum Bridge Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Concrete Beam or Slab</td>
</tr>
<tr>
<td>CF-1</td>
<td>370</td>
</tr>
<tr>
<td>CF-2</td>
<td>465</td>
</tr>
<tr>
<td>CF-3</td>
<td>575</td>
</tr>
</tbody>
</table>

**Moveable Abutment**
If bridge is skewed, place additional #5 bar parallel to skewed face.

2" clear to bent bar.

Minimum lap length: #5 bars - 18 inches
#6 bars - 27 inches
#8 bars - 48 inches

If bridge is skewed, place additional #5 bar parallel to skewed face.
Details 'C' and 'F' refer to the construction of bridge approaches with different types of pavements and subdrains. The diagram illustrates the construction sequence and material layers required for each type of pavement.

For Abutting PCC or Composite Pavement:
- Double Reinforced Section as required by skew angle
- Single Reinforced Section
- Non-Reinforced Sections

For Abutting HMA Pavement:
- Double Reinforced Section as required by skew angle
- Single Reinforced Section
- Non-Reinforced Sections

('EF' Joint is used for transitions between different pavement types, and 'CD' Joint is used for transitions between reinforced and non-reinforced sections.)

The subdrain system includes 4" Perforated Subdrain and 4" Subdrain Location as indicated.

If abutting pavement (PCC or HMA) is not in place, refer to BR-213.
Bent Bar Shapes

(Pavement Lug) 12" Centers
#5 bars at #4 bars at 12" Centers or #4 Rebar Steel Rod 3/8" dia. x 24"

LAYOUT AT A SKEW
Joint Placement

DETAIL 'D'
(Back of Curb Placement)

DETAIL 'E'
(Back of Curb Placement)

Expansion joint at end of Bridge Rail End Section: Place joint filler the full depth of the bridge approach pavement. In areas with curb, place full depth of pavement plus curb and shape material to fit the shape of the curb per Section B-B of PV-101. Seal joint per Detail F of PV-101.

- Fixed Abutment Bridges: Type 'E' Joint.
- Moveable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Minimum filler width is the abutment 'CF' joint width. Joint length as required to completely fill from back side of curb to front face of bridge wing.

Approach Pavement

Layout at a Skew

Design Shoulder

Modified Subbase

Excavation Limits

SECTION A-A

SECTION B-B

BENT BAR SHAPES

APPROACH PAVEMENT

Bridge Rail End Section

Bridge Deck

Roadway Pavement

Gutter Line

Bridge Rail End Section

Curb per Detail 'G'

Curb per Detail 'G'

See Detail 'E'

Longitudinal Joint (PV-101):
Single pour - Saw cut joint per Detail 8.
Two pours - Use KS-2 Joint.

Refer to BR-211, BR-212, or BR-231.

Design shoulder width.

Reinforced bridge approach section.

Moveable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Minimum filler width is the abutment 'CF' joint width. Joint length as required to completely fill from back side of curb to front face of bridge wing.
SECTION THRU CENTERLINE
(Abluting PCC or Composite Pavement)

Pay Limits for Contract Item

Double Reinforced Section
As required by skew angle (20'-0" min.)

Single Reinforced Section
20'-0"

Non-Reinforced Sections
20'-0"
10'-0"

"DW or RT" Joint
Abutting PCC or Composite Pavement

"EF" Joint

"CD" Joint

Subbase (if applicable)

"B" Joint
Abutting HMA Pavement

Bridge Approach Section

Polymer Grid

Subbase (if applicable)

Modified Subbase

Backfill

Granular Backfill line

Excavate to existing

If abutting pavement (PCC or HMA) is not in place, refer

to BR-213.

DETAIL 'C'
(Doweled PCC Pavement)

"D" or "RT" Joint
Abutting PCC or Composite Pavement

4" Subdrain Location
(Abluting PCC or Composite Pavement)

"EF" Joint

Pay Limits for Contract Item

Double Reinforced Section
As required by skew angle (20'-0" min.)

Single Reinforced Section
20'-0"

Non-Reinforced Sections
20'-0"
10'-0"

"DW or RT" Joint
Abutting PCC or Composite Pavement

"EF" Joint

"CD" Joint

Subbase (if applicable)

"B" Joint
Abutting HMA Pavement

Bridge Approach Section

Polymer Grid

Subbase (if applicable)

Modified Subbase

Backfill

Granular Backfill line

Excavate to existing

If abutting pavement (PCC or HMA) is not in place, refer

to BR-213.

DETAIL 'F'

1. Design shoulder width.
2. Reinforced bridge approach section.
3. Expansion joint at end of Bridge Rail End Section. Place joint filler the full depth of the bridge approach pavement. In areas with curb, place full depth of pavement plus curb and shape material to fit the shape of the curb per Section 6-B of PV-101. Seal joint per Detail F of PV-101.
   - Fixed Abutment Bridges: Type 'E' joint.
   - Movable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Minimum filler width is the abutment 'CF' joint width. Joint length as required to completely fill from back side of curb to front face of bridge wing.
4. Longitudinal Joint (PV-101).
   - Single pour - Saw cut joint per Detail B.
   - Two pours - Use 'KS-2' joint.
5. Refer to BR-211, BR-212, or BR-231.
6. APPROACH PAVEMENT LAYOUT AT A SKEW
7. Reinforced bridge approach section.
8. Expansion joint at end of Bridge Rail End Section. Place joint filler the full depth of the bridge approach pavement. In areas with curb, place full depth of pavement plus curb and shape material to fit the shape of the curb per Section 6-B of PV-101. Seal joint per Detail F of PV-101.
   - Fixed Abutment Bridges: Type 'E' joint.
   - Movable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Minimum filler width is the abutment 'CF' joint width. Joint length as required to completely fill from back side of curb to front face of bridge wing.

BENT BAR SHAPES

DETAIL 'G'
(Back of Curb Placement)

DETAIL 'E'
(Joint Placement)

5" Joint - Fixed Abutment Bridges: Type 'E' joint.
20" Joint - Movable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Minimum filler width is the abutment 'CF' joint width. Joint length as required to completely fill from back side of curb to front face of bridge wing.
For joint details, see PV-101.

For curb details, see Detail 'G'.

All Transverse Bars are #5.

See BR-211 or BR-212 for shoulders.

1. 2" to 2 1/2" clear to bent bar.

2. Minimum lap length: #5 bars - 18 inches
   #6 bars - 27 inches
   #8 bars - 48 inches

3. If bridge is skewed, place additional #5 bar parallel to skewed face.

Possible Contract Item:
Bridge Approach, BR-204

Possible Tabulation:
112-6

JOIN TYPE FOR
MOVEABLE ABUTMENT BRIDGES

<table>
<thead>
<tr>
<th>Joint</th>
<th>Concrete Beam</th>
<th>Steel Girder</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF-1</td>
<td>370</td>
<td>250</td>
</tr>
<tr>
<td>CF-2</td>
<td>465</td>
<td>320</td>
</tr>
<tr>
<td>CF-3</td>
<td>575</td>
<td>490</td>
</tr>
</tbody>
</table>

DETAIl 'A'

DETAIl 'B'

MOVEABLE ABUTMENT
2" to 2\(\frac{1}{2}\)" clear to bent bar.

2 Minimum lap length: #5 bars - 18 inches
#6 bars - 27 inches
#8 bars - 48 inches

3 If bridge is skewed, place additional #5 bar parallel to skewed face.

DETAIL 'A'

- #4 Bars at 12" Centers
- #5 Bars at 12" max. Centers
- #5 Bars at 12" Centers
- #8 Bars at 12" Centers
- Steel Rod
- Resilient Joint Filler
- Modified Subbase
- Polymer Grid

DETALLE 'B'

- Expansion Joint on Bridge
- Final Grade Line
- Approach Pavement
- Drilled holes
- 2\(\frac{1}{2}\)" dia. x 24" Steel Rod, place at 32" spacing full length of Paving Notch through drilled holes
- 2" thick x 16" wide Resilient Joint Filler placed full length of Paving Notch

FIXED ABUTMENT

- #5 Bars at 12" max. Centers
- #5 Bars at 12" max. Centers
- #5 Bars at 12" max. Centers
- #5 Bars at 12" max. Centers
- #5 Bars at 12" max. Centers

STANDARD ROAD PLAN

DOUBLE REINFORCED 12" APPROACH
WITH VARIABLE DEPTH PAVING NOTCH
SECTION THRU CENTERLINE
(Abutting PCC or Composite Pavement)

DETAIL 'C'
(Downed PCC Pavement)

SECTION THRU CENTERLINE
(Abutting HMA Pavement)

DETAIL 'F'
(Composite Pavement)

4" SUBDRAIN LOCATION
**BENT BAR SHAPES**

**APPROACH PAVEMENT LAYOUT AT A SKEW**

**DETAIL 'G'**

- #4 bars at 12" Centers
- #5 bars at 12" Centers (Pavement Lug)

**DETAIL 'E'**

- Curb per Detail 'G'

**SECTION A-A**

- Approach Roadway
- Normal Pavement Slope
- Polymer Grid
- Modified Subbase
- Excavation Limits
- Curb per Detail 'G'
- Earth
- 24"
- 6"

**SECTION B-B**

- Polymer Grid
- Modified Subbase
- Excavation Limits
- Design Shoulder
- 24"
- 6"

**APPENDIX**

- Longitudinal Joint (PV-101):
  - Single pour - Saw cut joint per Detail B.
  - Two pours - Use Kit 2 Joint.

- Refer to BR-211, BR-212, or BR-231.

- Design shoulder width.

- Reinforced bridge approach section.

- Expansion joint at end of Bridge Rail End Section: Place joint filler the full depth of the bridge approach pavement. In areas with curb, place full depth of pavement plus curbs and shape material to fit the shape of the curb per Section B-B of PV-101. Seal joint per Detail F of PV-101.
  - Fixed Abutment Bridges: Type 'E' Joint.
  - Moveable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Minimum filler width is the abutment "CF" joint width. Joint length as required to completely fill from back side of curb to front face of bridge wing.

- Refer to BR-204, BR-241, or BR-242.

- Double reinforced 12" approach with variable depth paving notch.
For joint details, see PV-101.
For curb details, see Detail 'G'.
All transverse bars are #5.
Use epoxy coated bars for all reinforcement.
Quantities for both the 1'-9" top part of the sleeper slab and the 6'-3" portion under the approach pavement have been included in the double reinforced section quantities.

- Build 4 inch Sloped Curb to end of Reinforced Sections.
- Longitudinal Joint (PV-101):
  - Single Pour - Saw cut joint per Detail B. Two Pours - Use 'KS-1' joint (Single Reinforced Section)
  - Use 'KS-2' joint (Double Reinforced Section)
- Extend 'CD' and 'EF' joints where PCC Shoulder.
- Polymer Grid and excavation limits of Modified Subbase 2 feet outside of pavement edge.
- Slope subdrain to drain.
- Place an "X" in the plastic concrete near the 'EF' joint at 2 feet outside of pavement edge.
- Place an "X" in the plastic concrete near the 'EF' joint at 2 feet outside of pavement edge.
- Place a "K" in the plastic concrete near the 'EF' joint at 2 feet outside of pavement edge.
- Place a "RD" Joint where PCC shoulder. Place 'B' joint otherwise.
- ½ inch Preformed Joint Filler and seal top.
- For joint details, see PV-101.
- For curb details, see Detail 'G'.
- All transverse bars are #5.
- Use epoxy coated bars for all reinforcement.
- Quantities for both the 1'-9" top part of the sleeper slab and the 6'-3" portion under the approach pavement have been included in the double reinforced section quantities.

Pay limits for contract item include the following areas:
- Double Reinforced Section
- Sleeper Beam Section
- Single Reinforced Section
- Non-Reinforced Section

For joint details, see PV-101.
SECTION THRU CENTERLINE

(Abluting PCC or Composite Pavement)

- Double Reinforced Section
- Single Reinforced Section
- Non-Reinforced Sections
- CD Joint
- EF Joint
- DF or RT Joint
- 4" Subdrain Location

4" SUBDRAIN LOCATION

- Polymer Grid
- 4" Perforated Backfill
- Backfill
- Modified Subbase
- Subbase
- Bridge Floor

DETAIL 'D'

(Dowelled PCC Pavement)

- EF Joint
- Subbase
- Modified Subbase
- 4" Perforated Subdrain
- Backfill

- As required by skew angle (20'-0" min.)

DETAIL 'E'

- Subbase
- Polymer Grid
- Bridge Floor

- 4" SUBDRAIN LOCATION

- As required by skew angle (20'-0" min.)

- Modified Subbase
- 4" Perforated Subdrain
- Backfill

- If abutting pavement (PCC or HMA) is not in place, refer to BR-213.
Joint Placement
Back of Curb Placement

DETAIL 'G'

8" 4" 1" 2" 7"

Curb per Detail 'G'

Provide 3" Preformed Joint Filler and seal top

See Detail 'H'

Bridge Rail End Section

Bridge Floor

Provide 3" Preformed Joint Filler and seal top

DETAIL 'F'
(Joint Placement)

Bridge Rail End Section

Gutter Line

CURB per Detail 'G'

DETAIL 'Y'
(Back of Curb Placement)

DETAIL 'G'

BR-205

REVISION
10-15-19

SHEET 4 of 4

REVISIONS:
Modified leader line for circle note 4 in PLAN VIEW on Sheet 1.

APPROVED BY DESIGN METHODS ENGINEER

STANDARD ROAD PLAN
5

DOUBLE REINFORCED 12" APPROACH
(SLAB BRIDGE)
Approach Roadway
(Check Project Typical Drawings)

Design Shoulder
See DR-306 for outlet details

- Pay limits for contract item
  include the following areas:
  
  - Double Reinforced Section
  - Single Reinforced Section
  - Non-Reinforced Section

For joint details, see PV-101.

1. Build 4 inch Sloped Curb to end of Double Reinforced Section.
2. See BR-201, BR-202, BR-203, or BR-204.
3. Longitudinal Joint (PV-101):
   Single Pour - Saw cut joint per Detail B
   Two Pours - Use 'KS-1' joint (Single Reinforced Section)
   Use 'KS-2' joint (Double Reinforced Section)

4. Extend 'CD' and 'EF' joints where PCC Shoulder.
5. Polymer Grid and excavation limits of Modified Subbase 2 feet outside of pavement edge. See BR-201, BR-202, BR-203, or BR-204.
6. Slope subdrain to drain.
7. Place an "X" in the plastic concrete near the 'EF' joint at the outside edge of pavement.
8. Place 'RD' Joint where PCC Shoulder. Place 'B' joint otherwise.

See Detail 'D' (Polyethylene, Corrugated Tubing)
4" Perforated Subdrain (Polyethylene, Corrugated Tubing)
See DR-306 for outlet details

PV-101
BR-201
BR-202
BR-203
BR-204
Approach Roadway

PLAN VIEW

See Detail 'D'

Design Shoulder
(See Project Typical Drawings)

See Detail 'D'

Double Reinforced Section

Single Reinforced Section

Non-Reinforced Section

Pay limits for contract item include the following areas:

1. Build 4 inch Sloped Curb to end of Double Reinforced Section.
2. See BR-201, BR-202, BR-203, or BR-204.
3. Longitudinal Joint (PV-101):
   - Single Pour - Saw cut joint per Detail B.
   - Two Pours - Use 'KS-1' joint (Single Reinforced Section).
   - Use 'KS-2' joint (Double Reinforced Section).
4. Extend 'CD' joints where PCC Shoulder.
5. Polymer Grid and excavation limits of Modified Subbase 2 feet outside of pavement edge. See BR-201, BR-202, BR-203, or BR-204.
6. Place 'RD' joint where PCC shoulder. Place 'B' joint otherwise.

PV-101

For joint details, see PV-101.

For joint details, see PV-101.

PV-101

BRIDGE APPROACH
(ABUTTING HMA PAVEMENT)
For Jointing Details, see PV-101.

If abutting pavement (PCC or HMA) is not in place when bridge approach pavement is constructed, the following procedure applies:

1. The paving contractor of bridge the approach pavement paves Additional Pavement (as shown in Detail 'A'), constructs 'C' joint at end of bridge approach section, and leaves it in this state.
2. The paving contractor of the abutting pavement saw cuts full depth at 'C' joint and removes Additional Pavement (see Detail 'B'), then
3. The paving contractor of the abutting pavement constructs 'RT' joint or 'B' joint, accordingly (see Detail 'C').

This work is incidental to other work as follows:

Detail 'A': Bridge Approach, BR-203.
Details 'B' and 'C': Standard or Slip Form PCC Pavement, or Hot Mix Asphalt Mixture.
Include the following areas in the construction:

- Pay limits for contract item
- Double Reinforced Section
- Single Reinforced Section
- Non-Reinforced Section
- Pavement
- 'P.C.C.', 'E F', 'KT-2' or 'L-2'
- 10' Max. 5' Min Joint Contract
- Raised Median
- Pavement
- 'P.C.C.', 'C D', 'KT-2' or 'L-2'
- 10' Max. 5' Min Joint
- Raised Median

For joint details, see PV-101.

- Build 4 inch Sloped Curb, unless noted otherwise in the plans.
- See BR-201, BR-202, BR-203, or BR-204.
- Longitudinal joint (PV-101):
  - Single Pour - Saw cut joint per Detail B.
  - Two Pours - Use 'KS-1' joint (Single Reinforced Section).
  - Use 'KS-2' joint (Double Reinforced Section).
- Polymer Grid and excavation limits of Modified Subbase 2 feet outside of pavement edge. See BR-201, BR-202,BR-203, or BR-204.
- Slope subdrain to drain.
- Place an "X" in the plastic concrete near the "EF" joint at the outside edge of pavement.
- 4 inch perforated subdrain (polyethylene, corrugated tubing).
- See DR-332 or DR-306 for outlet details.
- "DW" or "RT" joint.

APPROVED BY DESIGN METHODS ENGINEER

STANDARD ROAD PLAN
(MULTI-LANE, CURBED ROADWAY)
For joint details, refer to PV-101.

For curb details, see Detail 'F'.

All transverse bars are #5.

1. 2" min. to 2.1/2 max. clear to bent bar.
2. Minimum lap length: #5 Bars - 36" #6 Bars - 45" #8 Bars - 56"
3. If bridge is skewed, place additional #5 bar parallel to skewed face.

Possible Contract Item:
Bridge Approach, BR-241
Possible Tabulation:
112-6

Possible Tabulation:

PV-101
All transverse bars are #5.

Double Reinforced Section (20'-3" min.)

#5 Bars at 12" max. Centers
#6 Bars at 12" Centers
#8 Bars at 12" Centers
Approach Pavement
Approach Pavement
Approach Pavement

'Reinforced Joint Filler
'Reinforced Joint Filler
'Reinforced Joint Filler

Special Backfill
Special Backfill
Special Backfill

'Detail 'A"
(All Abutments)

'Detail 'B"

'Detail 'C"
(Pavement Bevel)

See Detail 'C'

Approach Pavement
Approach Pavement
Approach Pavement

See Detail 'B'

'Detail 'A"
(All Abutments)

'Detail 'B"

'Detail 'C"
(Pavement Bevel)

Possible Contract Item:
Bridge Approach, BR-241
Possible Tabulation:
112-6

PV-101
All transverse bars are #5.

Double Reinforced Section (20'-3" min.)

#5 Bars at 12" max. Centers
#6 Bars at 12" Centers
#8 Bars at 12" Centers
Approach Pavement
Approach Pavement
Approach Pavement

'Reinforced Joint Filler
'Reinforced Joint Filler
'Reinforced Joint Filler

Special Backfill
Special Backfill
Special Backfill

'Detail 'A"
(All Abutments)

'Detail 'B"

'Detail 'C"
(Pavement Bevel)

See Detail 'C'

Approach Pavement
Approach Pavement
Approach Pavement

See Detail 'B'

'Detail 'A"
(All Abutments)

'Detail 'B"

'Detail 'C"
(Pavement Bevel)

Possible Contract Item:
Bridge Approach, BR-241
Possible Tabulation:
112-6

PV-101
All transverse bars are #5.

Double Reinforced Section (20'-3" min.)

#5 Bars at 12" max. Centers
#6 Bars at 12" Centers
#8 Bars at 12" Centers
Approach Pavement
Approach Pavement
Approach Pavement

'Reinforced Joint Filler
'Reinforced Joint Filler
'Reinforced Joint Filler

Special Backfill
Special Backfill
Special Backfill

'Detail 'A"
(All Abutments)

'Detail 'B"

'Detail 'C"
(Pavement Bevel)

See Detail 'C'

Approach Pavement
Approach Pavement
Approach Pavement

See Detail 'B'

'Detail 'A"
(All Abutments)

'Detail 'B"

'Detail 'C"
(Pavement Bevel)

Possible Contract Item:
Bridge Approach, BR-241
Possible Tabulation:
112-6

PV-101
All transverse bars are #5.

Double Reinforced Section (20'-3" min.)

#5 Bars at 12" max. Centers
#6 Bars at 12" Centers
#8 Bars at 12" Centers
Approach Pavement
Approach Pavement
Approach Pavement

'Reinforced Joint Filler
'Reinforced Joint Filler
'Reinforced Joint Filler

Special Backfill
Special Backfill
Special Backfill

'Detail 'A"
(All Abutments)

'Detail 'B"

'Detail 'C"
(Pavement Bevel)

See Detail 'C'

Approach Pavement
Approach Pavement
Approach Pavement

See Detail 'B'

'Detail 'A"
(All Abutments)

'Detail 'B"

'Detail 'C"
(Pavement Bevel)

Possible Contract Item:
Bridge Approach, BR-241
Possible Tabulation:
112-6

PV-101
All transverse bars are #5.

Double Reinforced Section (20'-3" min.)

#5 Bars at 12" max. Centers
#6 Bars at 12" Centers
#8 Bars at 12" Centers
Approach Pavement
Approach Pavement
Approach Pavement

'Reinforced Joint Filler
'Reinforced Joint Filler
'Reinforced Joint Filler

Special Backfill
Special Backfill
Special Backfill

'Detail 'A"
(All Abutments)

'Detail 'B"

'Detail 'C"
(Pavement Bevel)

See Detail 'C'

Approach Pavement
Approach Pavement
Approach Pavement

See Detail 'B'

'Detail 'A"
(All Abutments)

'Detail 'B"

'Detail 'C"
(Pavement Bevel)
Two pours - Use 'KS-2' joint.

Single pour - Saw cut joint per Detail B.

Longitudinal Joint (PV-101):
- Two pours - Use 'KS-2' joint.
- Single pour - Saw cut joint per Detail B.
DETAIL 'D'
(Joint Placement and Curb)

DETAIL 'E'
(Back of Curb Placement)

DETAIL 'F'
Curb per Gutter Line

Bridge Rail End Section

Curb per Detail 'F'

See Detail 'E'

6'-0" Curb Radii

3'-0" Base Area

End Section

Bridge Rail 'E' Joint

Deck

Bridge Rail 'E' Joint

ON GRAVEL ROADS

DOUBLE REINFORCED 10" APPROACH

STANDARD ROAD PLAN

BR-241

SHEET 3 OF 3

REVISIONS:
New

APPROVED BY DESIGN METHODS ENGINEER

REVISION
Date 04/18/17

IOWA DOT

BRIAN SMITH

DOUBLE REINFORCED 10" APPROACH ON GRAVEL ROADS