**ADJACENT BOX BEAM NOTES:**

1. FOR ALTERNATE END BLOCK REINFORCEMENT DETAIL, SEE SHEET 8.
2. 
   - #4 BARS, A1, WITH 21" MAXIMUM SPACING ARE SHOWN AS INTERFACE SHEAR REINFORCEMENT. IF THE DESIGN REQUIRES A GREATER SHEAR REINFORCEMENT, #4 WITH A 21" MINIMUM SPACING IS REQUIRED TO SATISFY THE MINIMUM LAP SPLICE LENGTH.
   - BETWEEN A1 & A2

3. OMIT SHEAR KEY ON THE FASCIA SIDE OF BEAMS.
4. FOR TYPICAL CORNER BLOCKOUT DETAIL, SEE BC-775M.

**LEGEND:**

1. AT WATERED FRT X (A1) IS CONSIDERED A STIRRUP ONLY IN THE END BLOCK AREA OR UP TO WHERE THE BEAM DESIGN REQUIRES 3" SPACING OF THE STIRRUPS TO PROVIDE SPLITTING RESISTANCE.
2. A STIRRUP ALONG THE ENTIRE LENGTH OF THE BEAM.
3. #4, A1 (TYP.) IS SPACED AT 21" AS DESIGN INDEPENDENTLY OF A2 AND A3 OUTSIDE THE END BLOCK.

**SHAPER REQUIREMENT IN DM-4 D5.10.10.1, ALTERNATE A1 AND A2 WITH A3 REINFORCEMENT DETAIL TO SATISFY THE SPLITTING RESISTANCE REQUIREMENT IN ACCORDANCE WITH DM-4 D5.10.10.1, AS REQUIRED TO PROVIDE SPLITTING RESISTANCE REINFORCEMENT IN ACCORDANCE WITH DM-4 D5.10.10.1.

**COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF PROJECT DELIVERY STANDARD BOX BEAM REINFORCEMENT DETAILS ADJACENT BOX BEAM RECOMMENDED NOV. 21, 2014 SHEET 2 OF 8 BD-661M**
1. Do not place more than one column of prestressing strands in the webs.

2. Typical all beams are used when dowels are placed in the same horizontal plane. (See Note 1)

3. The maximum depth of the beam dapping area is based on the maximum grade and camber. Use beveled sole plate, see BC-755M.

4. Minimum grade for use of dapping is based on limiting the maximum dapping area to 1/3 and maintaining 1/3 minimum confinement reinforcement in the proposed beam dapping area.

5. Use beam dapping, a maximum clearance of T1 must be provided between the bottom of the beam (before consideration of the camber) and the top of the beam seat to ensure inspeckibility of the beam seat.

6. Part-out with beam daps are not permitted.

7. The maximum beam depth is 15 ft.

8. The maximum beam depth is 9 ft.

9. For beam dapping, a minimum clearance of T1 must be provided above the bottom of the beam before consideration of the camber.

10. When beam dapping is used and the beam and bearing pad is on the side, the beam seat must slope to ensure even bearing pressure on the pad.

**Beam Dap Notes**

1. Ti is the thickness at end of beam for dapping and the bearing pad (to be vertical end of beam). (See Note 1)

2. Tii is dapping thickness at centerline of beam. (See Note 2)

3. Tii is defined as the dapping thickness based on the slope of the beam due to the grade and camber.

4. Beam seat and bottom of beam bearing area requirements as per design manual part 4, section 14.7.6.3.9dP.

5. Maximum grade for use of dapping is based on limiting the maximum dapping area to 1/3 and maintaining 1/3 minimum confinement reinforcement in the proposed beam dapping area.

6. For beam dapping, a minimum clearance of T1 must be provided between the bottom of the beam (before consideration of the camber) and the top of the beam seat to ensure inspectability of the beam seat.

7. Part-out with beam daps are not permitted.

8. The maximum beam depth is 15 ft.

9. The maximum beam depth is 9 ft.

10. When beam dapping is used and the beam and bearing pad is on the side, the beam seat must slope to ensure even bearing pressure on the pad.

**Box Beam Dap Design Parameters**

<table>
<thead>
<tr>
<th>Beam Depth (in)</th>
<th>T1 (in)</th>
<th>T2 (in)</th>
<th>T3 (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>14</td>
<td>8</td>
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<td>4</td>
</tr>
<tr>
<td>16</td>
<td>10</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

*Use beveled sole plate, see BC-755M.
STANDARD
BD-661M
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

OVERHANG LIMITED
ADJACENT BOX BEAMS
SUPPORTING BARRIER
CONCRETE DECK
INCREASE THICKNESS AS REQUIRED TO PROVIDE MINIMUM REQUIRED COVER (RAKED FINISH) & V-NOTCH CONSTR. JT.

LEGEND
1. FOR BEAM DIMENSIONS AND BEAM REINFORCEMENT, SEE SHEET 2.

BARRIER/SIDEWALK NOTES:
ADJACENT BOX BEAM SUPPORTING TYPICAL SIDEWALK
NOTE: TYPICAL BARRIER SHOWN. ALTERNATE BARRIER IS SIMILAR.

REINFORCEMENT BAR NOTES
1. REINFORCEMENT BAR DIMENSIONS ARE OUT TO OUT OF BAR.
2. DIMENSIONS ALONG CURVED PORTIONS OF BAR ARE MEASURED ALONG THE OUTSIDE EDGE.
3. ALL REINFORCEMENT SHOULD BE EPOXY COATED IN ACCORDANCE WITH PUBLICATION 408, SECTION 709.

FOR BARRIERS WITH TYPICAL SIDEWALK

NOTES
1. FOR GEOMETRIC AND REINFORCEMENT DETAILS, SEE BD-601M.
2. FOR WATERPROOFING DETAIL AT SHEAR LEGS OF THE BARRIER BAR TO BE EMBEDDED ENTIRELY WITHIN ONE BEAM.
3. FOR DETAILS, SEE BC-720M.

REINFORCEMENT DETAIL
FOR BARRIERS WITH TYPICAL SIDEWALK

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STANDARD
BOX BEAM REINFORCEMENT DETAILS
ADJACENT BOX BEAM

NOV. 21, 2014

RECOMMENDED SHEET 4 OF 8
BD-661M
1. FOR BEAM DIMENSIONS AND BEAM REINFORCEMENT, SEE SHEET 2.

2. DIMENSIONS ALONG CURVED PORTIONS OF BAR ARE MEASURED ALONG THE OUTSIDE EDGE.

3. ALL REINFORCEMENT SHOULD BE EPOXY COATED IN ACCORDANCE WITH PUBLICATION 408, SECTION 709.

REINFORCEMENT BAR NOTES:
1. REINFORCEMENT BAR DIMENSIONS ARE OUT TO OUT OF BAR.
2. DIMENSIONS ALONG CURVED PORTIONS OF BAR ARE DETERMINED ALONG THE OUTSIDE EDGE.
3. ALL REINFORCEMENT SHOULD BE EPOXY COATED IN ACCORDANCE WITH PUBLICATION 408, SECTION 709.

ALTERNATE SIDEWALK REINFORCEMENT DETAIL

REINFORCEMENT DETAIL BELOW)

WIDTH)

1'-0"

1'-4" MIN.

1'-0"

2" CLR. (TYP.)

#5 BARS @ 12" MAX.

1'-2" + T_s = 2" (TYP.)

1'-4" + T_s = 3" (TYP.)

36" & 48" COMPOSITE ADJACENT BOX BEAMS SUPPORTING ALTERNATE SIDEWALK

ADJACENT BOX BEAM SUPPORTING BARRIER/SIDEWALK NOTES:
1. FOR BEAM DIMENSIONS AND BEAM REINFORCEMENT, SEE SHEET 2.
2. FOR REINFORCEMENT BAR DETAILS OF THE SIDEWALK BARRIER, SEE BD-601M.
3. ALL REINFORCEMENT SHOULD BE EPOXY COATED IN ACCORDANCE WITH PUBLICATION 408, SECTION 709.
**PLANK BEAM**

- **COMPOSITE**
- **TOP OF DECK**
- **PLANK BEAM**
- **VIEW J-J**
- **VIEW H-H**
- **PLAN - 12" DEEP PLANK BEAM**

**TYPICAL STRAND PATTERN**

- **PLANK BEAM NOTE:**
  1. For the 3" spacing of the stirrups at the end of the beam is required to go beyond that shown to satisfy the splitting resistance requirement in DM-4 20.10.10.1. Continue the 3" stirrup spacing.

**COMMONWEALTH OF PENNSYLVANIA**
**DEPARTMENT OF TRANSPORTATION**
**STANDARD BOX BEAM REINFORCEMENT DETAILS**
**PLANK BEAM**

**PLAN - 12" DEEP PLANK BEAM**
BEAM NOTCH DEPTHS FOR COMPOSITE ADJACENT BOX BEAMS

<table>
<thead>
<tr>
<th>APPROACH SLAB TYPE</th>
<th>SLAB TYPE</th>
<th>BACKWALL</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NO</td>
<td>YES</td>
<td>SEE NOTE 2</td>
</tr>
<tr>
<td>1</td>
<td>YES</td>
<td>YES</td>
<td>SEE NOTE 3</td>
</tr>
<tr>
<td>2</td>
<td>YES</td>
<td>YES</td>
<td>SEE NOTES 4 AND 5</td>
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<tr>
<td>3</td>
<td>YES</td>
<td>YES</td>
<td>SEE NOTES 4 AND 5</td>
</tr>
<tr>
<td>4</td>
<td>NO</td>
<td>N/A</td>
<td>SEE NOTE 6</td>
</tr>
<tr>
<td>5</td>
<td>N/A</td>
<td>N/A</td>
<td>SEE NOTE 6</td>
</tr>
</tbody>
</table>

BEAM NOTCH NOTES:
1. REFER TO BD-628M FOR APPROACH SLAB DETAILS.
2. SUPPORT APPROACH SLAB ON ABUTMENT FOR 17", 21", AND 24" DEEP BEAMS.
3. SUPPORT APPROACH SLAB ON ABUTMENT FOR 17", 21", 24" AND 27" DEEP BEAMS.
4. BACKWALL PLACED UNDER APPROACH SLAB.
5. TYPE 3 AND 4 APPROACH SLABS ARE NOT PERMITTED FOR BEAM DEPTHS LESS THAN 33".
6. PROVIDE APPROACH SLAB IN ACCORDANCE WITH RC-23M FOR BRADD BRIDGES.
7. OMIT BEAM NOTCH FOR PLANK BEAMS AND PIER ENDS FOR BEAMS MADE CONTINUOUS.
8. BEAM NOTCH MAY BE OMITTED WHEN PAVING NOTCH IS NOT REQUIRED.
9. ADJUST BEAM NOTCHES AS REQUIRED TO ACCOMMODATE EXPANSION DAMS.

BEAM NOTCH DEPTHS FOR SPREAD BOX BEAMS

<table>
<thead>
<tr>
<th>APPROACH SLAB TYPE</th>
<th>SLAB TYPE</th>
<th>BACKWALL</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NO</td>
<td>YES</td>
<td>SEE NOTE 2</td>
</tr>
<tr>
<td>2</td>
<td>NO</td>
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<td>SEE NOTE 3</td>
</tr>
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</tr>
<tr>
<td>4</td>
<td>YES</td>
<td>YES</td>
<td>SEE NOTES 4 AND 5</td>
</tr>
<tr>
<td>5</td>
<td>NO</td>
<td>N/A</td>
<td>SEE NOTE 6</td>
</tr>
</tbody>
</table>

BEAM NOTCH NOTES:
1. REFER TO BD-628M FOR APPROACH SLAB DETAILS.
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