### SLOPE RATIOS FOR SUPERELEVATION TRANSITIONS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>DESIGN SPEED, MPH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>45-50</td>
</tr>
<tr>
<td>2 Lane &amp; 4 Lane</td>
<td>1:200</td>
</tr>
<tr>
<td>8 Lane</td>
<td>1:190</td>
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</tbody>
</table>

### SUPERELEVATION TRANSITIONS - HIGH SPEED ROADWAYS

#### NOTES:

1. These details apply to both paved and grassed shoulders. For median shoulders use 0.05 in lieu of 0.06.
2. SHOULDER ON HIGH SIDE: A shoulder slope of 0.06 downward from the edge of travel way will be maintained until a 0.07 break in slope at the pavement edge is reached due to superelevation of the pavement. As the pavement superelevation increases, the 0.07 break in slope will be maintained and the shoulder flattened until the shoulder slope reaches the minimum of 0.02 downward from the edge of travel way. Any further increase in pavement superelevation will necessitate sloping the inside half of the shoulder toward the travel way and the outer half outward, both at 0.02 for superelevations 0.06-0.09 and both at 0.03 for superelevation 0.10. For shoulders with paved widths 5 feet or less see Special Shoulder Break Over Details on Sheet 2 of 2.
3. SHOULDER ON LOW SIDE: Maintain 0.06 cross slope across shoulder until pavement cross slope reaches 0.06. For pavement cross slopes greater than 0.06, shoulder to have same slope as pavement. See SHOULDER SLOPES ON SUPERELEVATION SECTION (SHEET 2).

### SUPERELEVATION TRANSITIONS

- **Normal Section:**
  - Normal Slope To Match Pavt.
  - Slope As Indicated On Plans
- **Fully Super Elevated Section:**
  - Shoulder Slope 0.06 (0.05 For Medians) Until Pavt. Cross Slope Reaches That Rate
  - Shoulder Slope Not Steeper Than 0.07
- **Reverse CROWN Section:**
  - Shoulder Slope 0.06 (0.05 For Medians) Until Pavt. Cross Slope Reaches That Rate
  - Shoulder Slope Not Steeper Than 0.07
  - Note: Algebraic Difference In Cross Slope Not To Exceed 0.07
- **Normal Crown Section:**
  - Shoulder Slope 0.06 (0.05 For Medians) Until Pavt. Cross Slope Reaches That Rate
  - Shoulder Slope Not Steeper Than 0.07
  - Note: Algebraic Difference In Cross Slope Not To Exceed 0.07

### SHOULDER CONSTRUCTION WITH SUPERELEVATION

- **Shoulder Slope 0.06 (0.05 For Medians) Until Pavt. Cross Slope Reaches That Rate**
- **Shoulder Slope Not Steeper Than 0.07**
- **Note: Algebraic Difference In Cross Slope Not To Exceed 0.07**

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**REVISED 07/04/18**

**LAST REVISION 07/04/18**

**DESCRIPTION:**

**FY 2019-20 STANDARD PLANS**

**INDEX:**

**SHEET:** 000-510  1 of 2
HIGH SPEED ROADWAYS

SUPERELEVATION TRANSITIONS -

1. For shoulders with paved widths 5 feet or less see special shoulder break over details.

2. For Concrete pavement, the first 1'-0" of the outside shoulder is cast with the outside travel lane and will have the same cross slope as the outside lane. The shoulder break over will occur at the outside edge of the outside slab.

SPECIAL SHOULDER BREAK OVER DETAILS

SECTIONS

SECTION A-A
NORMAL CROWNED SECTION

SECTION B-B
SUPERELEVATION SECTION LT. & RT.

SECTION C-C
SUPERELEVATION SECTION LT.
PLANE INCLINED SECTION RT.

SECTION D-D
PLANE INCLINED TRANSITION LT.

SECTION E-E
SUPERELEVATION TRANSITION LT.
FULL SUPERELEVATION RT.

SECTION F-F
FULL SUPERELEVATION LT. & RT.

8-LANE PAVEMENT WITH ONE LANE SLOPED TO MEDIAN
GENERAL NOTES:
1. Obtain superelevation by rotating the plane successively about the break points of the section until the plane has attained a slope equal to that required by the Plans. Should the rotation traverse the entire section and further superelevation be required, the remaining rotation of the plane shall be about the low edge of the inside travel lane. Crown is to be removed in the auxiliary lane in the outside of the curve only when the adjoining travel lanes require positive superelevation.

2. When positive superelevation is required, continue the slope of the pavement across the gutter on the high side.

3. Place short vertical curves at all angular profile breaks within the limits of the superelevation transition.

4. The variable superelevation transition length "L" has a minimum value of 30 feet for design speeds under 40 MPH and 75 feet for design speeds of 40 MPH or greater.

5. Roadway sections having lane arrangements different from those shown, but composed of a series of planes, are superelevation in a similar manner.

TWO TRAVEL LANES EACH DIRECTION
TWO TRAVEL LANES EACH DIRECTION WITH MEDIAN
TWO TRAVEL LANES EACH DIRECTION WITH MEDIAN AND AUXILIARY LANES
THREE TRAVEL LANES EACH DIRECTION WITH MEDIAN

UNDIVIDED FACILITIES
DIVIDED FACILITIES

PARABOLIC SECTION

SUPERELEVATION TRANSITION SECTIONS
FOR LOW SPEED HIGHWAYS

GENERAL NOTES:
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UNDIVIDED FACILITIES
DIVIDED FACILITIES

PARABOLIC SECTION

SUPERELEVATION TRANSITION SECTIONS
FOR LOW SPEED HIGHWAYS
TWO LANES EACH DIRECTION

PROFILE

LINE
A  Inside Travel Lane
B  Inside Lane Line
C  Inside Median Edge Pavement
D  Construction
E  Outside Median Edge Pavement
F  Outside Lane Line
G  Outside Travel Lane

Inside And Outside Are Relative To Curve Center

PROFILE

TWO LANES EACH DIRECTION WITH MEDIAN AND AUXILIARY LANE

PROFILE

EXAMPLE SUPERELEVATION SECTIONS AND PROFILES FOR LOW SPEED HIGHWAYS

Note:
The sections and profiles shown are examples of superelevation transitions.

Similar schemes should be used for roadways having other sections.

PROFILES FOR LOW SPEED HIGHWAYS

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SHEET
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REVISED
11/01/18

DESCRIPTION:
FY 2019-20
STANDARD PLANS

SUPERELEVATION TRANSITIONS - LOW SPEED HIGHWAYS
GENERAL NOTES:

1. Taper-Type exit and entrance terminals as detailed shall not be used on ramps for which a speed of 50 MPH or greater cannot be maintained. For such ramps, parallel deceleration and acceleration lanes shall be used in place of tapers with lengths set according to AASHTO.

2. Shoulder Pavement:
   A. Concrete Pavement Projects: Where shoulder pavement adjacent to shoulder gutter is less than 6' wide, it shall be identical to the adjacent roadway pavement beginning with the transverse joint nearest the point of 6' width.
   B. Flexible Pavement Projects: Where shoulder pavement used in conjunction with shoulder gutter is less than 6' uniform width, it shall be identical to the adjacent roadway pavement.

3. For concrete pavement joint details and layouts at entrance and exit ramp terminals, see Index 350-001.

LEGEND:

- Shoulder Pavement

SINGLE LANE RAMPS - EXIT TERMINALS

DESCRIPTION:

FY 2019-20 STANDARD PLANS

RAMP TERMINALS

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SHEET 1 of 5
THREE THRU LANES - APPROACH AUXILIARY LANE
(Shown Without Shoulder Gutter)

FLEXIBLE PAVEMENT THICKNESS TRANSITION

DETAIL "A"

SECTION A-A

SECTION B-B

SECTION C-C

TWO LANE RAMPS - EXIT TERMINALS
**TAPER - TYPE ENTRANCE**

1. Flexible Pavement
2. Concrete Pavement
3. Shoulder Slope Break
4. Shoulder Pavement

**PARALLEL - TYPE ENTRANCE**

1. Flexible Pavement
2. Concrete Pavement
3. Shoulder Slope Break
4. Shoulder Pavement

**LEGEND:**

- Shoulder Pavement

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**SINGLE LANE RAMPS - ENTRANCE TERMINALS**

**STANDARD PLANS**

FY 2019-20

**RAMP TERMINALS**

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Sheet 4 of 5
TAPER - TYPE ENTRANCE
(Shown Without Shoulder Gutter)

PARALLEL - TYPE ENTRANCE
(Shown With Shoulder Gutter)