TO: All Design, Operations, and District Personnel, and Consultants

FROM: /s/ Elizabeth W. Phillips
Elizabeth W. Phillips
Manager, Office of Standards and Policy
Bridge Design Division

SUBJECT: Turn Lane Deceleration Length

REVISES: Indiana Design Manual Figure 46-4J

EFFECTIVE: Stage 1 submittal on or after September 1, 2018

The length of a turn lane should provide both the deceleration length needed for a turning vehicle to enter the turn lane and slow to a stop before the intersection as well as sufficient storage for the queue during the design hour.

Figure 46-4J, Deceleration Distance for Turn Lane, has been revised to include full-width deceleration lengths consistent with AASHTO A Policy on Geometric Design of Highways and Streets (Green Book), 2011, Table 10-5, Minimum Deceleration Lengths for Exit Terminals, for the stopped condition.

These values are lower than previous IDM values for speeds 40 mph and above, but higher than Green Book Table 9-22, Desirable Full Deceleration Lengths.

The revised figure is included for reference on the following page and has been incorporated into IDM Chapter 46 on-line.

Projects outside effective date may also use the revised values.
Design Speed (mph) | $L_D$, Full-Width Auxiliary Lane (ft)
--- | ---
60 | 530
55 | 480
50 | 435
45 | 385
40 | 320
35 | 280
30 | 235
25 | 200

Grade-Adjustment Factor for Downgrade, $G_d$

<table>
<thead>
<tr>
<th>$0 \leq G_d &lt; 2$</th>
<th>$2 \leq G_d &lt; 3$</th>
<th>$3 \leq G_d &lt; 4$</th>
<th>$4 \leq G_d &lt; 5$</th>
<th>$5 \leq G_d \leq 6$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>1.10</td>
<td>1.20</td>
<td>1.28</td>
<td>1.35</td>
</tr>
</tbody>
</table>

Grade-Adjustment Factor for Upgrade, $G_u$

<table>
<thead>
<tr>
<th>$0 \leq G_u &lt; 2$</th>
<th>$2 \leq G_u &lt; 3$</th>
<th>$3 \leq G_u &lt; 4$</th>
<th>$4 \leq G_u &lt; 5$</th>
<th>$5 \leq G_u \leq 6$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>0.95</td>
<td>0.90</td>
<td>0.85</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Note: The grade-adjustment factor multiplied by the length $L_D$ provided above will provide the deceleration-lane length adjusted for grade. The adjustment factor applies to each design speed.

DECELERATION DISTANCE FOR TURN LANE

Figure 46-4J