Indiana Design Manual

Updated Maintenance of Traffic Chapter

David Boruff, INDOT
IDM - Maintenance of Traffic Chapter Update

• Goals:
  • Recognize new practices, technologies
  • Emphasize safety

• Collaborative Effort:

• Reorganized
  • Will be in one Chapter (503)

• FHWA is ready to approve; formal approval soon
IDM - Maintenance of Traffic Chapter Update

- MOT Plan should be formulated early
  - during scoping
  - For interstate projects- check of Congestion Policy before MOT plan

- Estimating the amount of impact to the public

- Selecting the overall Strategy
IDM - Maintenance of Traffic Chapter Update

• Selecting the Traffic Control Strategy

• The new method:
  • Consider road closure with detour
    • Safer for motorists and workers
    • Reduces construction time,
    • Enhances quality of work
    • May reduce construction costs
  • If not, then consider a crossover or runaround
    • Safety, work quality
  • If not, the traffic maintained adjacent to the work area

• Selection made during scoping, designers should verify
Selecting the Traffic Control Strategy (cont.)

Factors to check closure/detour viability include:
- Location/duration of work
- Length of potential detour
- Detour route ability to accommodate additional traffic
- Effect of closure on property owners, schools, emergency service providers, hospitals

Interstate closures
- Require FHWA approval
- Detour needs to be on another Freeway
IDM - Maintenance of Traffic Chapter Update

• Guidance on Positive Protection

• Required by INDOT Standards/Best Practice
  • Separating two way traffic on a freeway
  • Freeway shoulder closures (> 3 days)
  • Shadow vehicle in travel lanes- truck mounted attenuators
  • Freeway Pavement Drop-offs- close to traffic & > 5”
  • Bridge re-construction when done by sides

• Situations where it should be considered
  • Two way traffic, shoulder closures, pavement drop-off on a divided highway
  • Traffic adjacent to the work area
  • Protect steep slopes & fixed objects- within construction clear zone
• Acceptable Mobility

• Interstates-
  Provided in Interstate Highway Congestion Policy

• Non-interstates:
  • Maintaining same as before construction is desirable
  • Should be at least LOS E
    LOS E = traffic still flows but density is high, intersection delay ~ 45 to 60 secs
IDM - Maintenance of Traffic Chapter Update

• Lane Width Reductions
  • How much is acceptable?
    • Interstates and other Divided Highways– 11 ft with 1 ft shoulders
    • Non- divided Highways- 10 ft with 1 ft shoulders

• Available Clear Width & Wide Vehicles
  • Extended annual permits issued for wide loads ≤ 12 ft 4 in
  • Wide load warning signs needed
  • Detailed in INDOTs Standard Drawings
IDM - Maintenance of Traffic Chapter Update

• Longitudinal Buffer Space
  • Between taper and work area
  • Improves safety

<table>
<thead>
<tr>
<th>Speed (mph)</th>
<th>MUTCD Based Buffer Length (ft)</th>
<th>INDOT Skips Based Buffer Length (ft)</th>
<th>Number of Skips</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>115</td>
<td>120</td>
<td>3</td>
</tr>
<tr>
<td>25</td>
<td>155</td>
<td>160</td>
<td>4</td>
</tr>
<tr>
<td>30</td>
<td>200</td>
<td>200</td>
<td>5</td>
</tr>
<tr>
<td>35</td>
<td>250</td>
<td>280</td>
<td>7</td>
</tr>
<tr>
<td>40</td>
<td>305</td>
<td>320</td>
<td>8</td>
</tr>
<tr>
<td>45</td>
<td>360</td>
<td>360</td>
<td>9</td>
</tr>
<tr>
<td>50</td>
<td>425</td>
<td>440</td>
<td>11</td>
</tr>
<tr>
<td>55</td>
<td>495</td>
<td>520</td>
<td>13</td>
</tr>
<tr>
<td>60</td>
<td>570</td>
<td>600</td>
<td>15</td>
</tr>
<tr>
<td>65</td>
<td>645</td>
<td>680</td>
<td>17</td>
</tr>
<tr>
<td>70</td>
<td>730</td>
<td>760</td>
<td>19</td>
</tr>
</tbody>
</table>
Longitudinal Buffer Space (cont)

- Can be used when taper is in or adjacent to a curve-
  improves sight distance to work zone
IDM - Maintenance of Traffic Chapter Update

• Construction Clear Zones
  • Increased over current values- matches Roadside Design Guide
  • Where R/W is limited may be reduced

<table>
<thead>
<tr>
<th>Speed (mph)</th>
<th>Width (ft)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 to 40</td>
<td>13</td>
</tr>
<tr>
<td>45 to 50</td>
<td>16</td>
</tr>
<tr>
<td>55</td>
<td>23</td>
</tr>
<tr>
<td>60 to 70</td>
<td>30</td>
</tr>
</tbody>
</table>

Note:
* Where the available width is restricted the construction clear-zone width may be reduced to 12 ft in a cut slope section and 18 ft in a fill slope section.

CLEAR-ZONE WIDTH (ft)
FOR CONSTRUCTION ZONE

Figure 503-3E
IDM - Maintenance of Traffic Chapter Update

• Pavement Drop-Offs for Freeways
  • “Acceptable” limit reduced from 3” to 2”
  • If exceeded channelizing devices or positive protection required
    • Extent of drop-off
    • Proximity to nearest travel lane
IDM - Maintenance of Traffic Chapter Update

• Pedestrian Considerations
  
  • Detours have to be provided for existing sidewalks that are closed
  
  • Sidewalks must be at least 48” wide
    • If existing is < 48” temporary must be at least that width
    • If < 60” then a 5 ft by 5ft passing spaces must be provided
  
  • Curb ramp slopes can be no greater than 12:1
  
  • Parking not allowed within 50 ft. of temporary mid-block crossings
  
  • Existing pedestrian features of signals must be maintained
IDM - Maintenance of Traffic Chapter Update

• Temporary Speed Limits
  • Should be set no lower than 10 mph below permanent
    • Drivers are reluctant to slow down
    • Exception for when workers are present - intermittent worksite speed limit

• Intermittent vs Continuous Use Worksite speed limits
  • Intermittent → protects workers → “When Flashing Plaque” → TWSSLA pay item
  • Continuous Use → protects motorists → Construction Sign pay item
  • Both types established through the Indiana Code

• End Work Zone/Worksite Speed Limit sign is recommended
IDM - Maintenance of Traffic Chapter Update

• Transverse Rumble Strips
  • Can be Fixed or Portable
  • On all freeway bridge projects w/ lane closures
  • In the middle of long work zones- aid in driver alertness
  • Back of queue warning

Portables:
Shorter term applications- like flagging
Automated Flagger Assistance Devices

- With flagging - two lane roads, AADT <10,000, short duration work
- Two types:
  - “STOP”/“SLOW” Paddle
  - Red/Yellow lens
IDM - Maintenance of Traffic Chapter Update

• Continuing Work...

• Wet Reflective Pavement Markings

• Use of movable barrier wall
  • Protection for shorter duration work, like pavement patching on a freeway

• Driveway Assistance Devices
  • Aids property owners within work zone in safely entering traffic flow
  • Isn’t a signal, doesn’t require a separate phase= less delay for traffic
  • Not in the MUTCD yet; under experimentation
IDM - Maintenance of Traffic Chapter Update

• Driveway Assistance Devices- SR 47 Bridge Project
IDM - Maintenance of Traffic Chapter Update

- Driveway Assistance Devices- US 6 Bridge Project
IDM - Maintenance of Traffic Chapter Update

• Speed Limit Compliance & Enforceability
  • Work Zone Speed Limit Focus Group
    • State Police
    • Industry
    • INDOT
  • Some Recommendations already adopted:
    e.g. for longer work zones: distance plaques, additional speed limit signs
  • Variable Speed Limits
IDM - Maintenance of Traffic Chapter Update

David Boruff
INDOT, Office of Traffic Administration
dboruff@indot.in.gov
Office: 317-234-7975