Introduction of the Interim TMM to BC Road Builders
March 1, 2016
Agenda

1.0 Introduction
2.0 Background
3.0 Design Process
4.0 Final Product
5.0 Highlights
6.0 Other Helpful Info
7.0 Potential Cost Changes
8.0 Benefits
9.0 Rollout
10.0 Additional Info
1.0 Introduction

Discuss

- Development process of the Interim TMM
- Highlights/changes to traffic management and traffic control
- Impacts to the 2016 construction season and beyond
2.0 Background

- Conflicts with interpretation and implementation
- Deliverables hard to define
- Quality of plans and reviews
- Incidents/near misses – types and severity
- Development & progress of roadside initiatives
- Root cause analysis
3.0 Design Process
3.1 Design Team

- Project Managers: Tracy Wynnyk, Shawn Grant
- Engineering: Jennifer Hardy, John Babineau, Jerry Froese, Kenedee Ludwar
- Safety, Graphic Services, Districts, Field Services
- Stakeholder Representatives
  - BC Road Builders
  - BCCSA
  - BCMSA
  - WorkSafeBC
3.2 Resources

- Existing Ministry Manuals
  - 1999 Traffic Control Manual for Work on Roadways
  - 2001 Traffic Management Guidelines for Work on Roadways
- NCHRP Report 476 – Nighttime Traffic Control
- Relevant Technical Circulars (e.g. Reflectivity, speed reader boards, DMS)
- 2009 US MUTCD
- Jurisdiction Traffic Control Manuals (e.g. Minnesota, Washington, Nova Scotia)
- Feedback from Stakeholders
4.0 Final Product

- **Interim TMM** - December 2015
- 660 pages
- Combines 1999 Traffic Control and 2001 Traffic Management Manuals
- T-Circs
- Current Construction Sign Catalogue
4.1 Structure

- **Part A – Traffic Management**
  - Section 1 – Introduction
  - Section 2 – Fundamentals
  - Section 3 – Traffic Management Plans

- **Part B – Traffic Control**
  - Section 4 – Traffic Control Devices
  - Section 5 – Traffic Control Persons
  - Section 6 – Layouts – General Instructions
Section 7 to 19: Layouts

- Section 7: Two Lane Two Way
- Section 8: Multilane Undivided
- Section 9: Multilane Divided
- Section 10: Mobile Work
- Section 11: Intersections
- Section 12: Roundabouts
- Section 13: Milling, Paving, Sealcoating
- Section 14: Pavement Marking
- Section 15: Surveying
- Section 16: Avalanche Control
- Section 17: Utility Work
- Section 18: Bicycle Lanes
- Section 19: Other - Tow Truck Recovery
• Appendices
  • Glossary
  • Commonly Used Construction Signs
  • Traffic Management Plan Templates
  • Traffic Management Audit Forms
  • Lane Closure Request Forms
  • Tables A to D: Device Spacing, Taper Lengths, Risk Assessment
5.0 Highlights

- Changes or New Information
- Notable Updates
- No changes
5.1 Changes or New Information

- Traffic Management Plans
- High Speed Work
- Buffer Vehicle
- Shadow Vehicle
TMP Categories

- **Category 1** – previously Cat 1,2: minimal impact, simple terrain, two-lane highways, lower speeds and volumes.

- **Category 2** – previously Cat 3: speed, volume, complexity. Moderate impact due to characteristics or type of work.

- **Category 3** – previously Cat. 4,5: complex and significant impact, higher volumes and speeds, long duration, night work, mountainous, lane closures/detours

  - Engineering Signoff may be required on Category 2, is mandatory on Category 3

  Reference: 3.3 Project Category Determination
TMP Documentation

- **Category 1:**
  - Traffic Control Plan
    (use TMP Category 1 form or equivalent)

- **Category 2:**
  - Traffic Control Plan
  - Implementation Plan

- **Category 3:**
  - Traffic Control Plan
  - Public Information Plan
  - Incident Management Plan
  - Implementation Plan

Other plan documentation may be required depending on project specifications
High Speed Work

Channelizing devices

- Drums - have replaced tubes on the leading tapers
- Tubes are used to delineate lanes
- Exceptions to use a reduced standard are shown as OPTION in Layouts (lower speed, shoulder work, limited space)
High Speed Work

Taper lengths have increased:

1999: TABLE A
Positioning of devices on conventional roadways for various speed limits.

<table>
<thead>
<tr>
<th>*</th>
<th>Regulatory speed limit</th>
<th>50 km/h</th>
<th>60 km/h</th>
<th>70 km/h</th>
<th>80 km/h</th>
<th>90-100 km/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>Taper length for lane closure</td>
<td>35 (1:10)</td>
<td>55 (1:15)</td>
<td>75 (1:20)</td>
<td>90 (1:25)</td>
<td>110 (1:30)</td>
</tr>
</tbody>
</table>

2015:

TABLE A - TAPER LENGTHS

<table>
<thead>
<tr>
<th>Taper Types (m)</th>
<th>Regulatory Speed Limit before Work Begins (km/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≤50</td>
</tr>
<tr>
<td>Merge Taper Length</td>
<td>$L_M$</td>
</tr>
</tbody>
</table>

MAXIMUM 70 km/h
High Speed Work

Device spacing has increased for high speed roadways
Minimum 5 devices for establishing tapers

Table 4.6: Excerpt from Table B – Device Spacing Lengths

<table>
<thead>
<tr>
<th>Device Spacing (m)</th>
<th>Regulatory Speed Limit before Work Begins (km/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≤50</td>
</tr>
<tr>
<td>Channelizing Device Spacing for Tapers C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 m</td>
</tr>
<tr>
<td>Max. Channelizing Device Spacing on Curves and Tangents D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 m</td>
</tr>
</tbody>
</table>
Buffer Vehicle

- **1999:**
- **2015:**
Shadow Vehicle

1999:
- Continuously slow moving work as a mobile advance warning device. Placed as far off the travel lane as practical

2015
- Increased use for High Speed High Volume
5.2 Notable Updates

1. Slow Down Move Over
2. Signs
3. References for ‘Cones’
4. Other devices and technologies
5. TCPs
6. Treatment of drop offs
7. Layouts
Slow Down Move Over

Slow Down Move Over Legislation

Ref: Section 2.4 Management of Speed
Signs

- C-019
- C-030-5AR
- C-018-6A
- C-118-R
- C-082
- C-039

MIN. $196 FINE
SPEEDING IN WORK ZONES

CAUTION
THIS TRUCK STOPS FREQUENTLY
Cones

**Figure 4.8: Cones**

- **All Fluorescent Red-Orange**
  - 15 cm (6”)
  - 45 cm (18”)
  - 75-100 mm (3-4”)
  - 150 mm (6”)
  - 50-75 mm (2”)
  - 150 mm (6”)

- **White Reflectorized Band**
  - 100 mm (4”)
  - 150 mm (6”)
  - 70 cm (28”)

- **for road marking only**
  - Lane Closure Tapers 60 km/h or less
  - May be substituted for 45 cm
  - Speed Limit 70 km/h or greater (May be substituted for 45 cm cone)
Additional Devices

- Temporary Lane Separators & Longitudinal Channelizing Devices
- Temporary Stop Bars, Transverse Rumble Strips & Automated Flagging Assistance Devices
- Vehicle Mounted Crash Attenuators & Work Zone Fencing
Traffic Control Persons

- 2015 TMM includes expanded information on:
  - Roles & Responsibilities of TCS & TCP (5.1)
  - Use of TCPs in Work Zones (5.2)
  - Minimum Requirements for TCPs (5.3)
  - TCP Positioning and Signals (5.6)
  - Prohibitions (5.7.3)
  - Overhead lighting at night (4.9)
Treatment of Drop Offs

- Depending on the height of the drop off, shoulder width & length of exposure:
  - Various options for protection provided
  - Signs and channelizing devices may be used in a number of situations
  - The requirement for backfilling has been removed
- Closing a lane or creating a lane shift can provide the minimum offset from the dropoff.
Section 7: Traffic Control Layouts – Two-Lane, Two-Way Roadways

7.8 Lane Closure with TCPs – Single Lane Alternating – Short and Long Duration

Purpose:
This layout shows the appropriate positions of TCPs when they are controlling traffic for a lane closure on a two-lane, two-way roadway.

Standard:
- When used at night, the TCP station shall be illuminated with overhead lighting.
- Barricades are required at each end of the work activity area for long-duration work.

Guidance:
- The distance between the TCP and the Traffic Control Person Ahead C-001-1 sign should not exceed 150 metres.
- When Crew Working – Maximum Speed C-002-2 signs establish a Temporary Speed Zone, the C-002 should be placed upstream of the C-004 or C-018-1.
  - Thank You Resume Speed C-006-1 signs should be placed across from the Crew Working – Maximum Speed C-002-2 signs in the opposing lane.

Options:
- An additional Traffic Control Person Ahead C-001-1 sign may be added to the far side of the road to provide queued drivers with increased awareness of the TCP position.
- The Flagger Ahead C-001-2 sign or Prepare to Stop C-029 sign may be used for additional advance warning where TCPs are stopping traffic.
- A Prepare to Stop C-029 sign may replace the Single Lane Traffic C-020-8 sign for other applications that require traffic to stop (e.g., equipment crossing road).
5.3 No Changes (but often asked)

1. Sign and Device Retro-Reflectivity
2. Emergent and Brief Duration Work
3. Urban, Low Speed Work
Retro-Reflectivity

Since T09-05 and now included in the new Manual:

Construction Signs and Devices
- ASTM Type 9 for all flat, rigid surfaces
- ASTM Type 6 for all curved surfaces

Other Signs and Devices
- ASTM Level specified in Standard Sign Catalog
Emergent and Brief Duration

T-01/13 Amendment for Emergent and Brief Duration Work

- Emergent – unplanned, less than 5 minutes
- Brief – planned, less than 15 minutes.
- No change since the Technical Circular.
Urban Low Speed Work

- Taper lengths and sign spacing match the 1999 Manual
- Most layouts have options for reduced standards for speeds of 60 km/h or less
6.0 Other Helpful Information

- Overlapping work zones
- Queue management techniques
- Installation and removal process
- Parts of the work zone
TERMINATION AREA
Allows traffic to resume normal driving pattern
Includes such items as:
- Downstream tapers
- Work zone end signage
- Resume speed signage

WORK ACTIVITY AREA (WORK AREA)
The specific area within the work zone where the active work is taking place. Typically includes the presence of:
- Workers
- Equipment

BUFFER SPACE
Provides protection for workers and a recovery space for traffic. It is an area where devices may be positioned to protect workers and drivers. It may include such items as:
- Empty space and/or Buffer vehicles
- Attenuators
- Barricades or other such devices

TRANSITION AREA
Moves traffic out of its normal path and identifies what is required of drivers and includes such items as:
- Lane drops/speed drops
- Directional signage
- Traffic control person signage
- Flashing arrow boards

ADVANCE WARNING AREA
Advises traffic of what to expect and includes such items as:
- Lane drops/speed drops
- Directional signage
- Construction/work activity signage
- Dynamic message sign

ADVANCE INFORMATION ZONE (optional)
Typically used when traffic delays are expected. Additional information that may be several kms in advance of the work zone. May include such items as:
- Dynamic message sign
7.0 Potential Cost Changes

Potential Increases:
- Use of drums
- Increased taper lengths
- Use of shadow and buffer vehicles
- Night lighting for TCPs

Potential Savings:
- Increased device spacing
- Reduction in unnecessary TCP use
- Treatment of drop offs
8.0 Benefits

- Greater safety for TCPs, workers and travelling public.
- Consistency in traffic management planning and implementation.
- Clarity of roles and responsibilities for various groups and personnel.
- Better explanations to assist with interpretation.
9.0 Rollout

- T-Circ to introduce Interim TMM expected soon
- Three year phase-in period to allow industry to:
  - Update procedures
  - Develop training plans & train staff
  - Update equipment and resources, if necessary
- Call for the use of the Interim TMM in contract special provisions and other new written agreements
  - Tendering periods increased – 4 weeks for Rehab and 5 weeks for Expansion projects.
2016 Construction Season

- Ministry will be calling for the use of the Interim TMM within
  - Contract special provisions
  - Concessions
  - Other agreements such as LoAs
10.0 Additional Information

- Send questions and comments to: MOTITMM@gov.bc.ca
- Updates may be released from time to time.
- The three year phase in period ends in 2019
- A FAQ page will also be established on our website