Tribal Pedestrian Safety via Pop-Ups and Pedestrian Plans

Cheyenne Room, Huntley Lodge
Big Sky, Montana
September 16, 2019
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Agenda

10:00a  Why Tribal Pedestrian Safety is a Critical Transportation Issue & Brief Introduction to Pedestrian Safety Action Plans

10:15a  Introductions & Listening Session: Key Pedestrian Safety Issues in Your Home Community

11:00a  Pop-up Demo Projects & Planning/Design

Noon  Lunch

1:00p  Field Exercise - Big Sky Resort Pop-Up

2:30p  Return to Cheyenne Room - Incorporating Pop-Ups into a PSAP + Individual PSAP Work

3:45p  Final Wrap-Up

4:00p  Adjourn
Why Tribal Pedestrian Safety is a Critical Transportation Issue 
& Pedestrian Safety Action Plans
### Pedestrian Fatality Statistics

<table>
<thead>
<tr>
<th>Crash Characteristics</th>
<th>URBAN CRASHES (%)</th>
<th>RURAL CRASHES (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservation Jurisdiction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0</td>
<td>28.9</td>
</tr>
<tr>
<td>No</td>
<td>100</td>
<td>71.1</td>
</tr>
<tr>
<td>Time of Day (Crash)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dark</td>
<td>24.3</td>
<td>72.3</td>
</tr>
<tr>
<td>Daylight</td>
<td>24.3</td>
<td>21.3</td>
</tr>
<tr>
<td>Dawn/Dusk</td>
<td>2.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Dark/Lighted</td>
<td>48.6</td>
<td>6.4</td>
</tr>
<tr>
<td>Alcohol Involvement (BAC&gt;0.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>69.2</td>
<td>54.2</td>
</tr>
<tr>
<td>No</td>
<td>30.8</td>
<td>45.8</td>
</tr>
<tr>
<td>Day Of Crashes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekday (M-TH)</td>
<td>38.5</td>
<td>60.8</td>
</tr>
<tr>
<td>Weekend (F-S)</td>
<td>61.5</td>
<td>39.2</td>
</tr>
<tr>
<td>Roadway Profile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>87.5</td>
<td>64.4</td>
</tr>
<tr>
<td>Grade</td>
<td>14.3</td>
<td>22.2</td>
</tr>
<tr>
<td>Hillcrest/Sag</td>
<td>0.0</td>
<td>13.4</td>
</tr>
</tbody>
</table>

### Pedestrian Characteristics

<table>
<thead>
<tr>
<th>Pedestrian Characteristics</th>
<th>URBAN CRASHES (%)</th>
<th>RURAL CRASHES (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>80</td>
<td>70.4</td>
</tr>
<tr>
<td>Pedestrian Drinking (Males)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>54.3</td>
<td>58.6</td>
</tr>
<tr>
<td>Top Contributing Factor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walking in Road</td>
<td>28.2</td>
<td>54.1</td>
</tr>
<tr>
<td>Improper Crossing</td>
<td>20.5</td>
<td>6.2</td>
</tr>
<tr>
<td>Not Visible to Driver</td>
<td>7.7</td>
<td>18.8</td>
</tr>
<tr>
<td>Dart/Run into Road</td>
<td>23.1</td>
<td>2.1</td>
</tr>
<tr>
<td>Failure to Yield</td>
<td>5.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Other</td>
<td>15.4</td>
<td>8.8</td>
</tr>
</tbody>
</table>
Contributing Factors

- Rurality
- Lack of visibility
- Income Inequality
- Lack of crash data
- Speeding and speed variations
- Lack of traffic control devices
- Lack of pedestrian accommodations
- Alcohol involved with peds & drivers
Pedestrian Fatality Statistics

Graph of Pedestrian Fatality Locations 2010-2014 from the Tribal Transportation Strategic Safety Plan

https://www.tribalsafety.org/pedestrian

- Asian or Pacific Islander: 8.1
- White, Non-Hispanic: 12.4
- Hispanic or Latino: 13.9
- Black or African American: 18.3
- American Indian or Alaska Native: 33

U.S. Overall: 14.8
Between January - June 2017, Montana had five pedestrian fatalities; then for the first six months of 2018, Montana had six pedestrian fatalities.

**What's being done?**

- **MDT pedestrian issue review** during all construction projects to determine best practices.
- **Comprehensive Highway Safety Plan** requires annual review of fatalities on high-risk roads + fatalities & serious injuries per capita among older drivers & pedestrians.
- **Roadway Departure & Intersection Crashes emphasis area** seeks to build infrastructure improvements that mitigate intersection-related crashes; e.g., mid-block crossing fixes.
Steps For Drafting Pedestrian Safety Action Plans (PSAPs) or TPSAPs

How to Develop a Pedestrian Safety Action Plan

Federal Highway Administration
FHWA-SA-09-05
Revised March 2009

NHTSA
Pedestrian and Bicycle Information Center

Step 1 - Establish Goals and Objectives
- Determine the scope of the safety action plan
- Establish goals and targets for improving safety

Step 2 - Analyze Safety Data
- Perform analysis of high crash and high risk locations
- Identify spot locations, corridors, areas, and system-wide problems

Step 3 - Gather Stakeholder Input
- Identify community stakeholders to involve
- Establish venues and channels for gathering stakeholder input

Step 4 - Identify Safety Improvements
- Diagnose sites to understand safety problems
- Develop recommendations for policy changes, design and countermeasure improvements, and behavioral programs

Step 5 - Implement and Evaluate Programs
- Identify funding sources and strategies to support projects
- Determine criteria for prioritizing projects
- Collect data to evaluate programs and inform future actions
Education & Encouragement
Adding a sidewalk cuts in half the risk that a pedestrian will be struck by a car.

Formalizing an existing desire line ("goat trail") ensures its usage and community connectivity.
Creating Safe Pedestrian Crossings

• Reduce walking distance (shorten crossing)

• Offer peds choices on low-speed roadways & disperse traffic

• Less traffic = more pedestrian friendly

• Use appropriate traffic controls; e.g.,
  ✓ Marked crosswalks
  ✓ Warning signs or flashers
  ✓ Stop signs & traffic signals
  ✓ Crossing guards @ schools

• Slow vehicle speeds
Introductions & Listening Session: Your Community’s Pedestrian Safety Concerns
Pop-up Demonstration Projects & Planning/Design
Short term action, for long term change
Process:
walk audits
Traffic Calming “Pop-Ups”

Process:
• Goal setting, choosing interventions, drafting designs
• Data collection plan
• Permitting
• Installation day
• Sharing results
“Our goal with this project is to calm traffic and **reduce the number of speeding vehicles** that use Yellowstone and Meagher as through streets as well as **demonstrate the willingness of West Side residents to find to creative solutions to issues in our neighborhood.**”

- Valley Unit Neighbors, August 2018
Pedestrian Islands

Curb Extensions
Protected Pedestrian Lanes

Small Town & Rural Multimodal Design Guide

St Charles, MN

Protected Bike Lanes

City of Whitefish, 2016

NACTO Urban Bikeway Design Guide

Burlington DPW Quick Build Guide
Traffic circles

Albuquerque, 1993

WTI - Bozeman, 2018

NACTO Urban Street Design Guide

WTI - Bozeman, 2019
Drafting Designs
Data Collection

• Public input
• Public behavior
• Vehicle speed, volume, crash history

Proposing a project

• Project description, design sketches
• Permission from local agency
Installation Day

- Traffic control plan
- Staging area for materials, volunteer coordination
- Line out task teams
- Communication
- Signage
- Media coverage
Project summary

• Send thank yous!
• Do designs need adjusted based on data or feedback?
• What did you learn?
• Resources to implement a longer-term project?
• How to share project results with ALL stakeholders?
Materials with Which You Can Build Today's Pop-Up
Inventory of Archived Materials with Which You Can Build Today’s Pop-Up

Assumed space between tires (ft) = 10
Assumed length of haybale (ft) = 4

<table>
<thead>
<tr>
<th>Segment Number</th>
<th>Segment Location</th>
<th>Length (ft)</th>
<th># of Hay bales</th>
<th># of Candlesticks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WFT 1 to WFT 2</td>
<td>112</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>WFT 2 to WFT 3</td>
<td>122</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>WFT 3 to TP3</td>
<td>58</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>WFT 4 to PP</td>
<td>54</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>TP 2 to Exist. SW</td>
<td>60</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>PP to TP8</td>
<td>67</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Intersection</td>
<td>121</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Reduction Zone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>594</td>
<td>43</td>
<td>42</td>
</tr>
</tbody>
</table>

Hay bale and candlestick quantities

Paint Depth
Pavement marking width
Note: 1 mil is 1/1000"

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Length (ft)</th>
<th>FT³ of paint</th>
<th>Gallons of Paint</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP - 1</td>
<td>Across Access Drive</td>
<td>171</td>
<td>0.29</td>
<td>2.1</td>
</tr>
<tr>
<td>PP - 2</td>
<td>Across Access Drive</td>
<td>170</td>
<td>0.28</td>
<td>2.1</td>
</tr>
<tr>
<td>CW2</td>
<td>Sitting Bull Crosswalk</td>
<td>25</td>
<td>0.04</td>
<td>0.3</td>
</tr>
<tr>
<td>CW1</td>
<td>Sitting Bull Crosswalk</td>
<td>25</td>
<td>0.04</td>
<td>0.3</td>
</tr>
<tr>
<td>CW3</td>
<td>Big Sky Resort Rd Cro</td>
<td>30</td>
<td>0.05</td>
<td>0.4</td>
</tr>
<tr>
<td>CW4</td>
<td>Big Sky Resort Rd Cro</td>
<td>30</td>
<td>0.05</td>
<td>0.4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>451</td>
<td>0.75</td>
<td>5.6</td>
</tr>
</tbody>
</table>

Pavement Paint Quantities

MDT Epoxy paint application rate is 22mils times the specified width times length

<table>
<thead>
<tr>
<th>Tire Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Wayfinding tires = 5</td>
</tr>
<tr>
<td># of Tire Planters = 16</td>
</tr>
<tr>
<td>Total Tires = 21</td>
</tr>
</tbody>
</table>

(Note: 2 tires per planter)

Big Sky Pop-Up Planning & Design Aerial Map

- **Green diamond**: half-tire used for way finding
- **Blue diamond**: 2 tires stacked as planters at crosswalks
- **Maroon line**: alternating hay bale & delineator for path designation
- **White line**: pavement paint
- **Black line**: intended route limits (without delineation)
- **Orange line**: delineators only
- **Yellow area**: intersection reduction zone
Description of Features

Green diamond: half tire used for way finding
Maroon line: alternating hay bale and delineator for path designation
Black line: intended route limits (without delineation)

Blue diamond: 2 tires stacked as planters at crosswalks
White line: pavement paint
Yellow area: intersection reduction zone
Orange line: delineators only
POTENTIAL CONSTRUCTION MATERIALS FOR TRAFFIC CALMING "POP-UPS" IN TRIBAL COMMUNITIES
Lunch
Field Exercise
Big Sky Resort Pop-Up
Incorporating Pop-Ups into a Pedestrian Safety Action Plans + Individual PSAP Work
# FHWA Pedestrian Safety Action Plan Template

## Step 1 - Establish Goals and Objectives
- Determine the scope of the safety action plan
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## Step 5 - Implement and Evaluate Programs
- Identify funding sources and strategies to support projects
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Problem #1: Sedentary Lifestyles
Problem #1: Sedentary Lifestyles

Adult Obesity

- States with 15% - <20% obesity
- States with 20% - <25% obesity
- States with 25% - <30% obesity
- States with 30% - <35% obesity
- States with 35% or > obesity
Problem #2: Generational Car Culture

In 1969, 50% of American children walked to school.

In 2006, just 15% walked to school.
Problem #2: Generational Car Culture

In 1969, 50% of American children walked to school.

In 2006, just 15% walked to school.
Problem #3: Unsafe Streets
Problem #3: Unsafe Streets

Pedestrian fatality risk at different collision speeds
Surgeon General’s Call to Action on Walking & Walkable Communities (2015)

Goal 1. Make Walking a National Priority

Goal 2. Design Communities that Make It Safe and Easy to Walk for People of All Ages and Abilities

Goal 3. Promote Programs and Policies to Support Walking Where People Live, Learn, Work, and Play

Goal 4. Provide Information to Encourage Walking and Improve Walkability

Goal 5. Fill Surveillance, Research, and Evaluation Gaps Related to Walking and Walkability
Goal 1. Make Walking a National Priority

Goal 2. Design Communities that Make It Safe and Easy to Walk for People of All Ages and Abilities

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Goal 4. Provide Information to Encourage Walking and Improve Walkability

Goal 5. Fill Surveillance, Research, and Evaluation Gaps Related to Walking and Walkability
Resources
Resources

NHTSA: nhtsa.dot.gov

ITE: www.ite.org

AASHTO/NCHRP: safety.transportation.org

PBIC: www.walkinginfo.org

FHWA: safety fhwa dot gov
Pop-Up Project Resources

- [https://www.aarp.org › aarp › a-Pop-Up-Demonstrations-Printable-272017](https://www.aarp.org › aarp › a-Pop-Up-Demonstrations-Printable-272017)
- [https://safety.fhwa.dot.gov › ped_bike › ped_focus › docs › fhwasa0512](https://safety.fhwa.dot.gov › ped_bike › ped_focus › docs › fhwasa0512)
Final Wrap Up

“As I walk, as I walk, the universe is walking with me.”
-- from the Navajo rain dance ceremony
Please Complete the Evaluation & Leave It with Us
In beauty may I walk
All day long may I walk
Through the returning seasons may I walk

Beautifully I will possess again
Beautifully birds
Beautifully joyful birds

On the trail marked with pollen may I walk
With grasshoppers about my feet may I walk
With dew about my feet may I walk
With beauty may I walk
With beauty before me may I walk
With beauty behind me may I walk
With beauty above me may I walk
With beauty all around me may I walk

In old age, wandering on a trail of beauty, lively, may I walk
In old age, wandering on a trail of beauty, living again, may I walk

It is finished in beauty
It is finished in beauty
Feel free to contact:

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