

Madison Beltline Public Involvement Meeting

July 2019

Project ID: 1206-06-08
US 12: Whitney Way to I-39/90



Agenda

- Beltline Purpose and Need
- Project Alternatives
 - Alt 1: Resurfacing
 - Alt 2: Resurfacing w/ Dynamic Part-Time Shoulder Use (DPTSU)
- DPTSU Concept
- Project Schedule
- Open Discussion

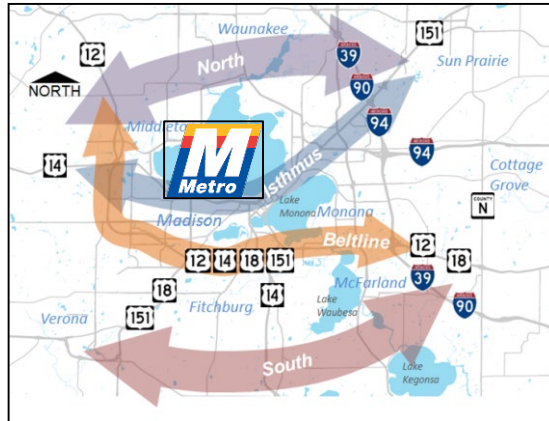


Beltline Maintenance Projects 2012 - Present

WisDOT Study / Engineering

2012 - 2018

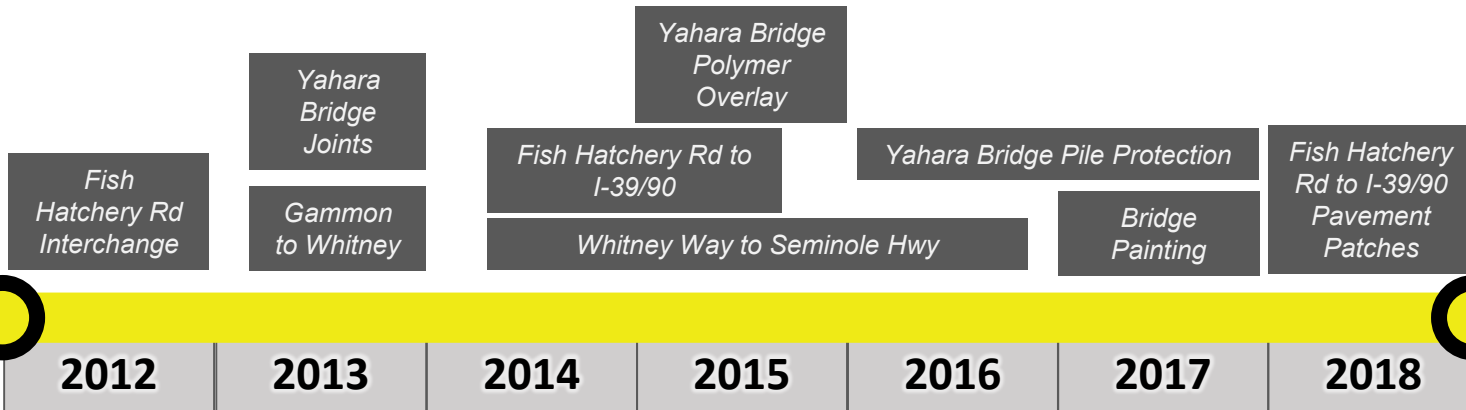
*Beltline PEL
Focus =
Long-Term
Solutions*



2019 - 2021

Overlay Projects

2019: Seminole to I-39/90 Pavement
 2020: South Towne Bridge
 2021: Whitney Way to I-39/90 Pavement
 - Alt 1: Resurfacing
 - Alt 2: Resurfacing with DPTSU
 Note: Alts each include barrier and drainage improvements



Ongoing Pavement & Bridge Preventative Maintenance Projects

Project Purpose and Need

Project Purpose:

- Address deteriorating needs in the pavement structure and median areas
- Address operational issues during weekday peak periods and unexpected congestion

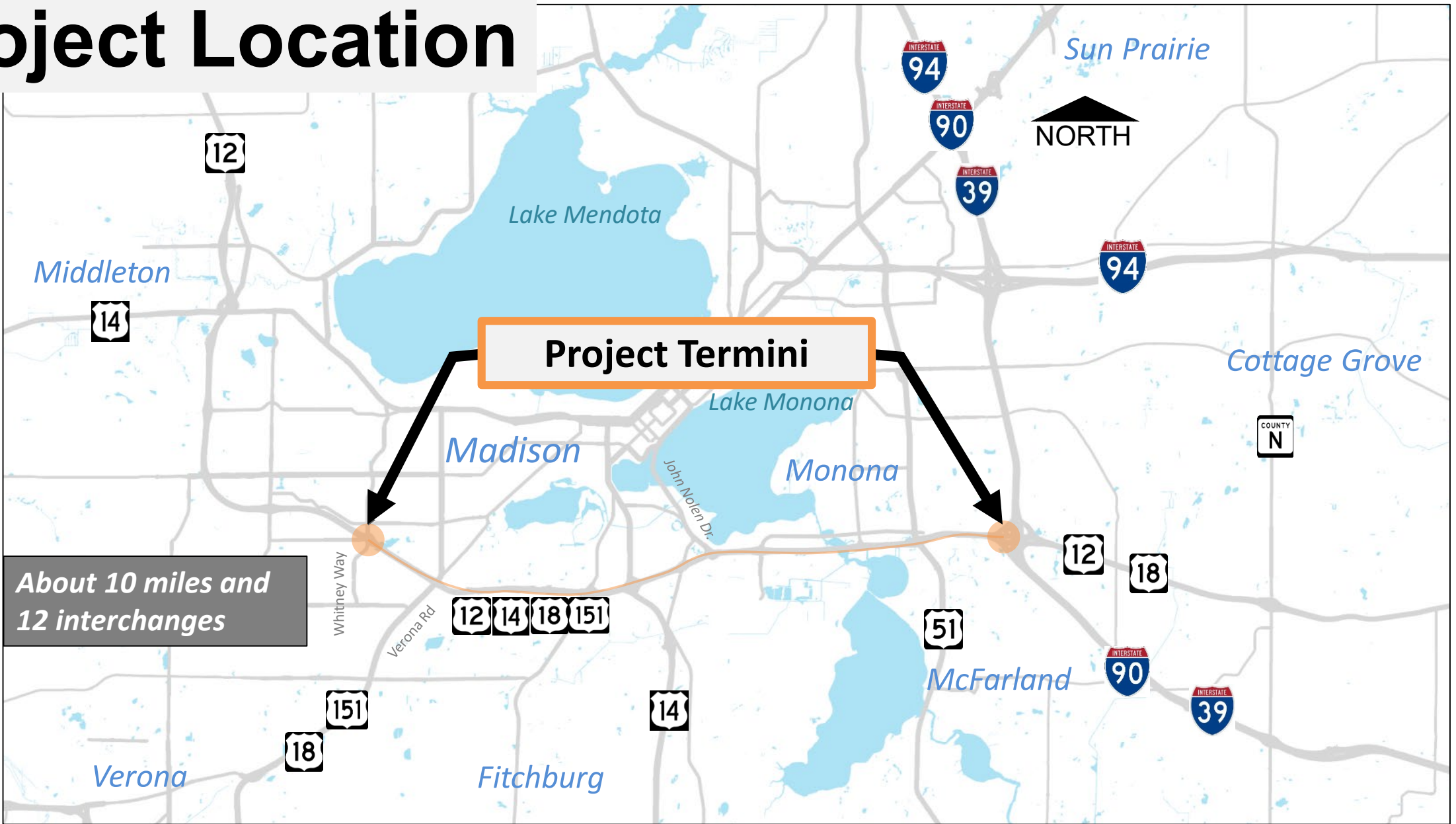
Project Purpose and Need

Project Needs:

- Existing Pavement Condition
- Median Barrier Condition
- Roadway Drainage System
- Operational Issues
 - Crashes
 - Travel Time and Level of Service
 - Travel Time Reliability



Project Location



About 10 miles and 12 interchanges



Project Alternatives

Alt 1: Resurfacing

Seminole Highway to I-39/90:

- Resurfacing
- Median Barrier Improvements
- Drainage Improvements

Alt 2: Resurfacing with DPTSU

Seminole Highway to I-39/90:

- Resurfacing
- Median Barrier Improvements
- Drainage Improvements

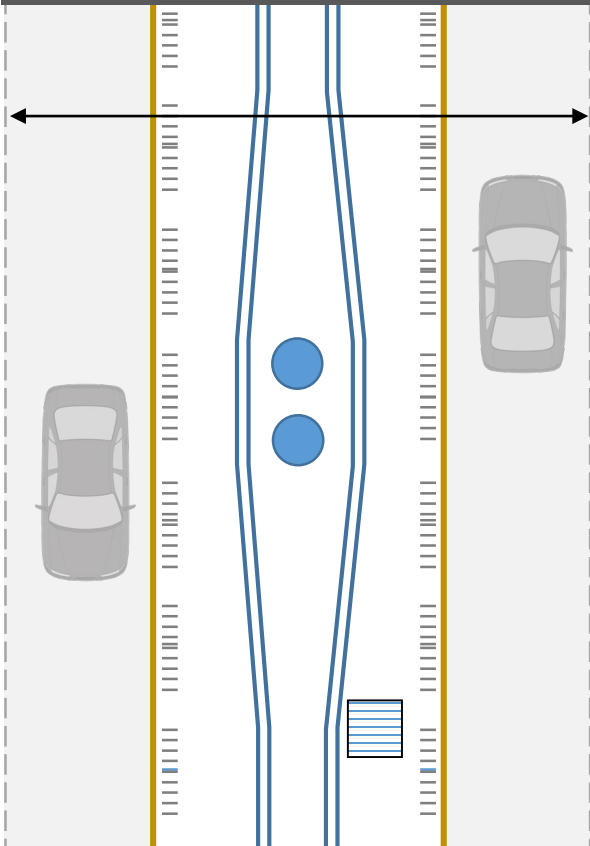
Whitney Way to I-39/90:

- DPTSU Infrastructure and Pavement Restriping

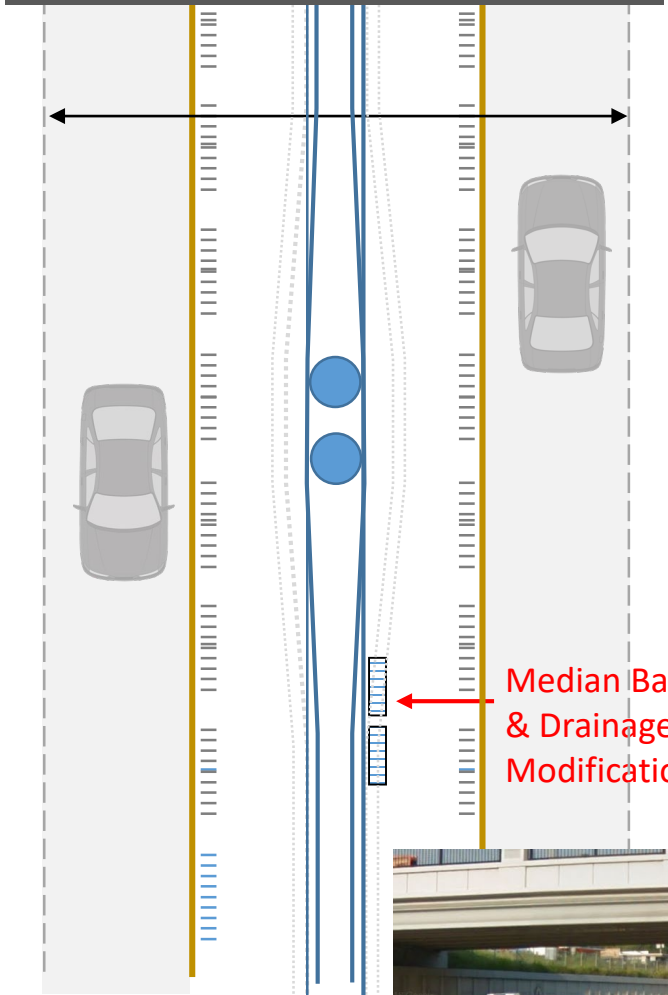


Lane-Usage and Drainage

No-Build Alternative



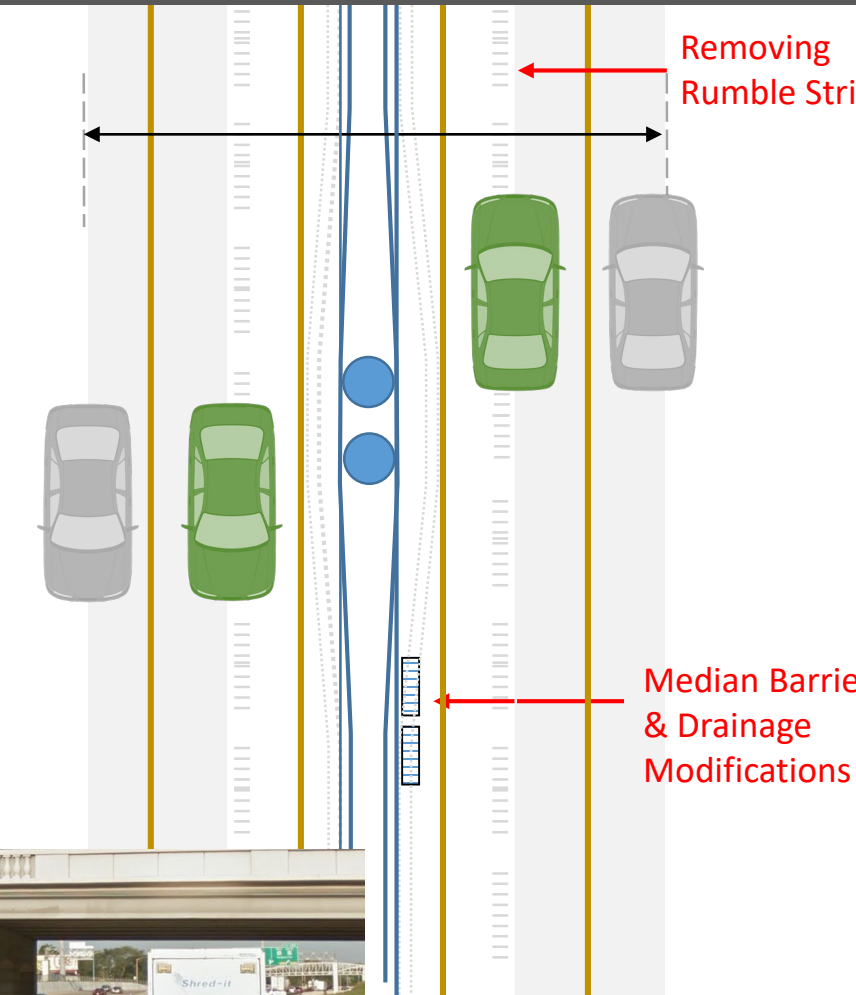
Alt 1: Resurfacing



Median Barrier & Drainage Modifications



Alt 2: Resurfacing w/ DPTSU

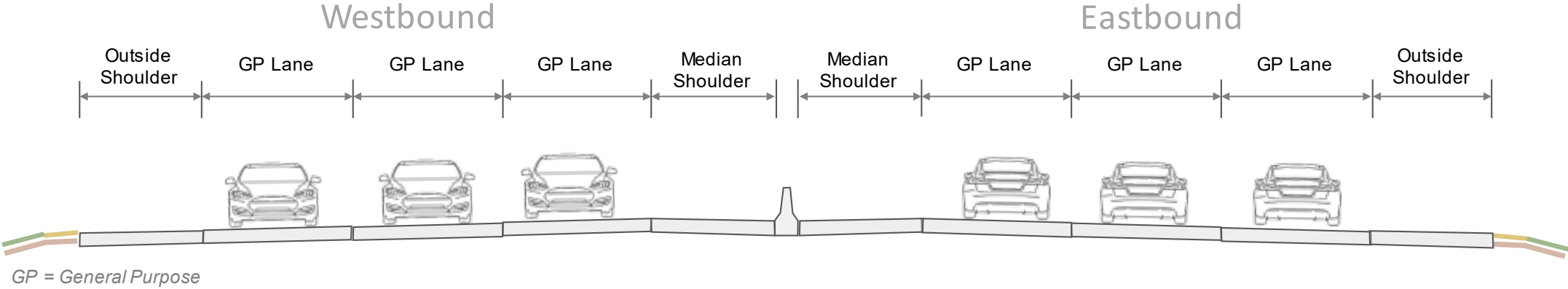


Removing Rumble Strips

Median Barrier & Drainage Modifications

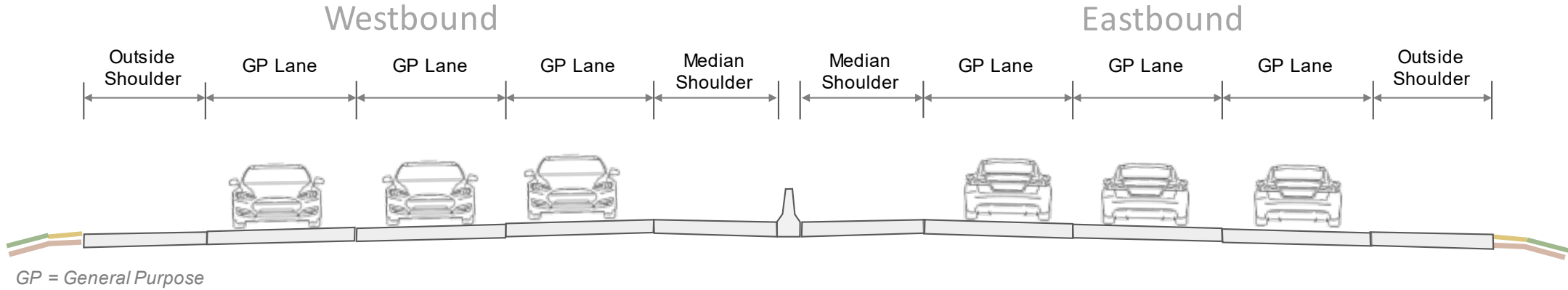
Cross Section

Typical Existing (No-Build) and Resurfacing (Alt 1) Beltline Cross Section

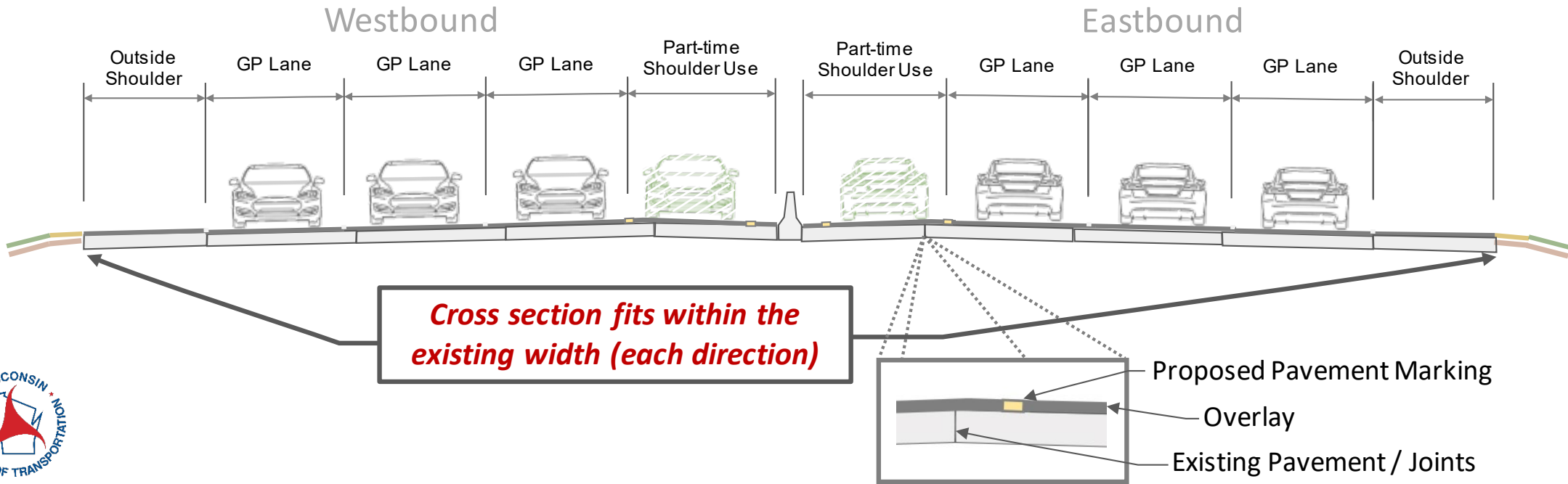


Cross Section

Typical Existing (No-Build) and Resurfacing (Alt 1) Beltline Cross Section



Typical Resurfacing with Dynamic Part-time Shoulder Use (Alt 2) Beltline Cross Section



Dynamic Part-Time Shoulder Use Nationally

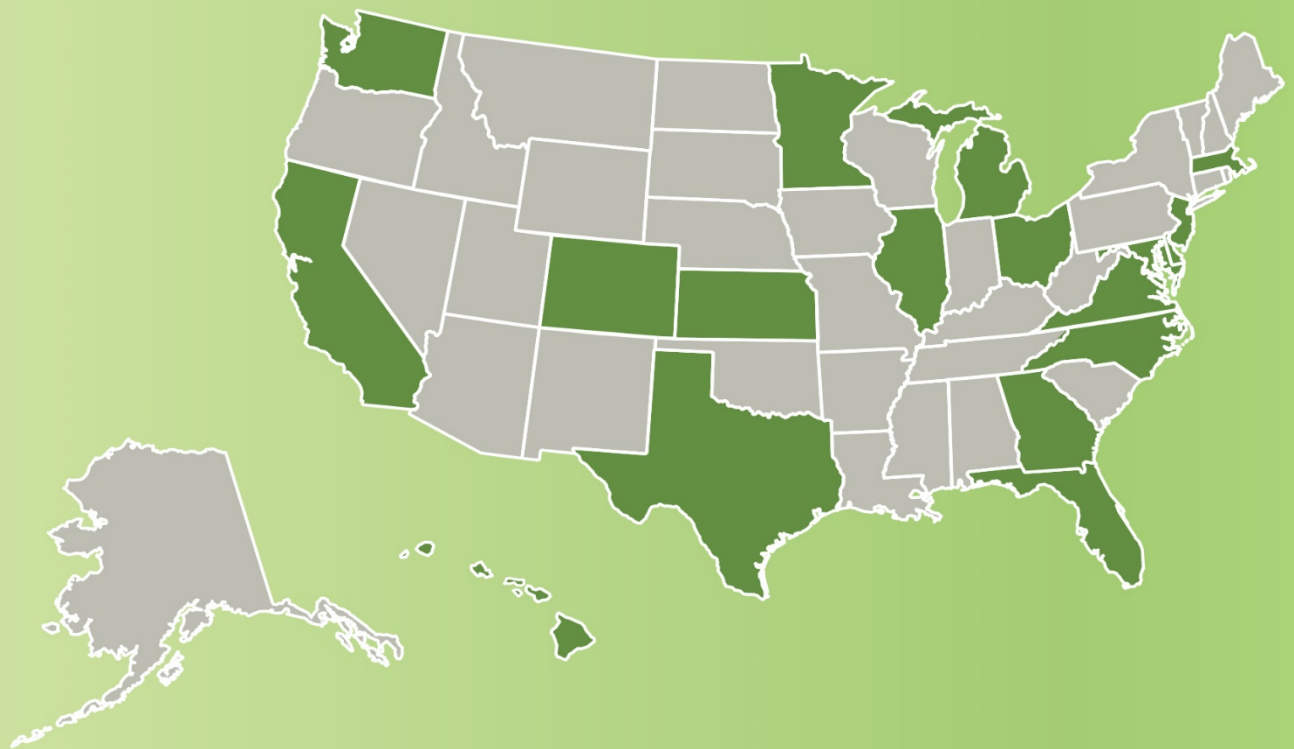
Part-time shoulder use is being used effectively around the country, including the Midwest, to address recurring congestion.



Image: I-35W in Minnesota

Part-time Shoulder Use in the United States

States with Part-Time Shoulder Use in 2018



What is DPTSU?

DPTSU stands for “Dynamic Part-time Shoulder Use”

- Also known as “Hard Shoulder Running”
- Use of shoulders part-time for travel during busiest hours
- Cost-effective interim solution to address recurring congestion
- Can be classified as:
 - A Transportation System Management and Operations Strategy
 - A Performance-Based Practical Design approach, used by FHWA & WisDOT



Reference:

<https://ops.fhwa.dot.gov/publications/fhwahop15023/ch1.htm>

Static vs. Dynamic Part-time Shoulder Use

Static

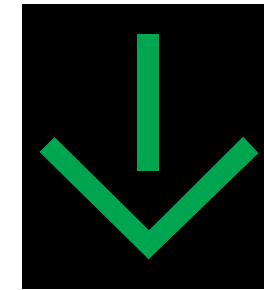


*Example in
Massachusetts*

***No Dynamic (changeable)
Signing Component***



Dynamic



In Operation

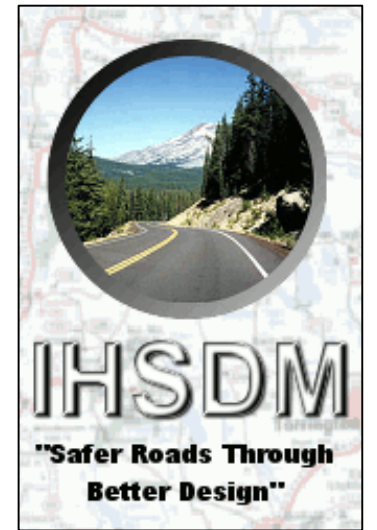


Not in
Operation

***Generally paired with
static signing***

Safety

- Experience in the U.S. to date has not identified major safety issues with part-time bus, static, or dynamic shoulder use that led to discontinuation.
- The best available predictive crash analysis tool (IHSDM) was used for this project's safety analysis.
- The relative analysis showed that with the activation of DPTSU, the number of predicted crashes is not anticipated to increase compared to a No-Build condition.

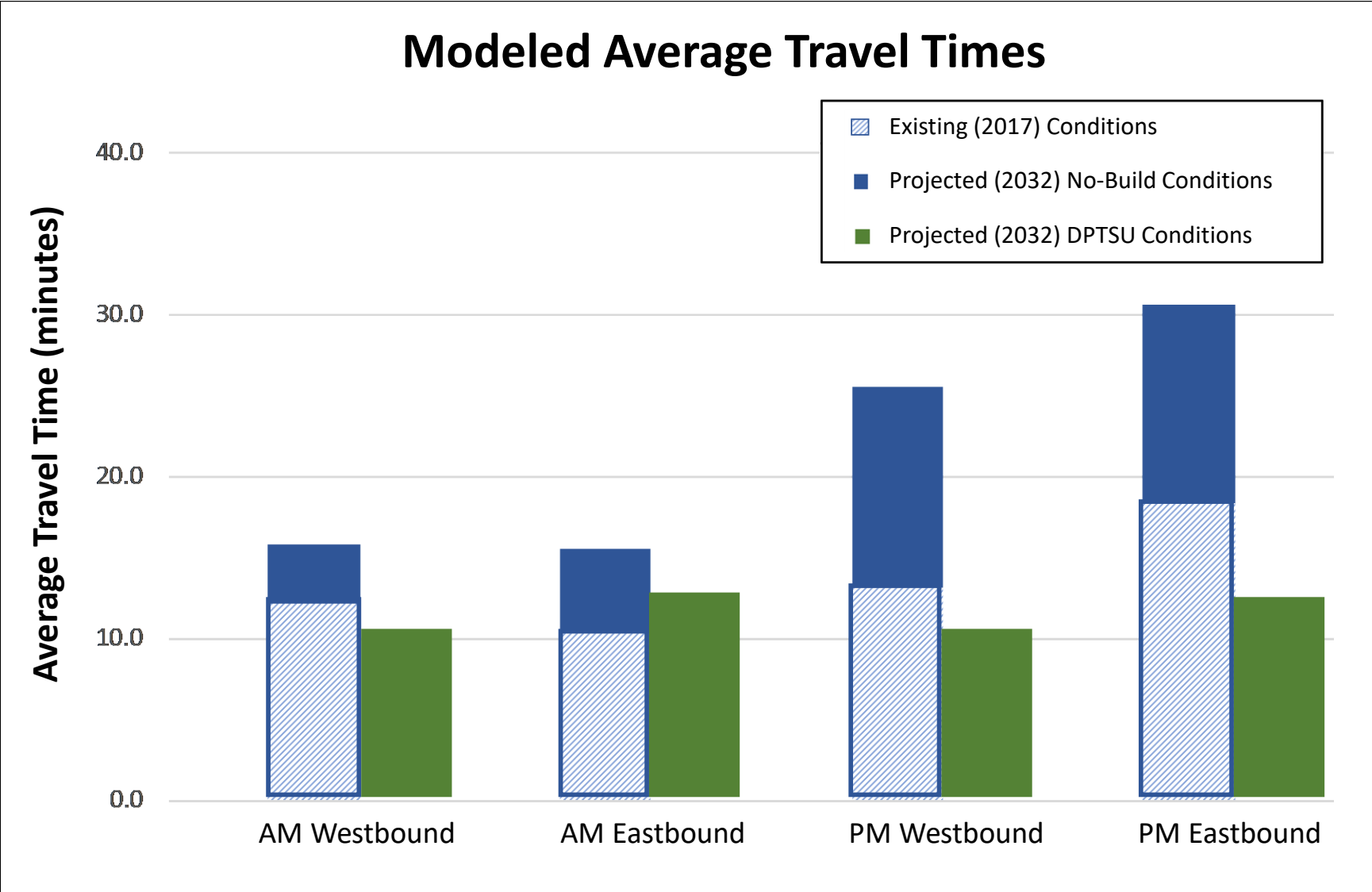


**IHSDM = Interactive
Highway Safety
Design Model**



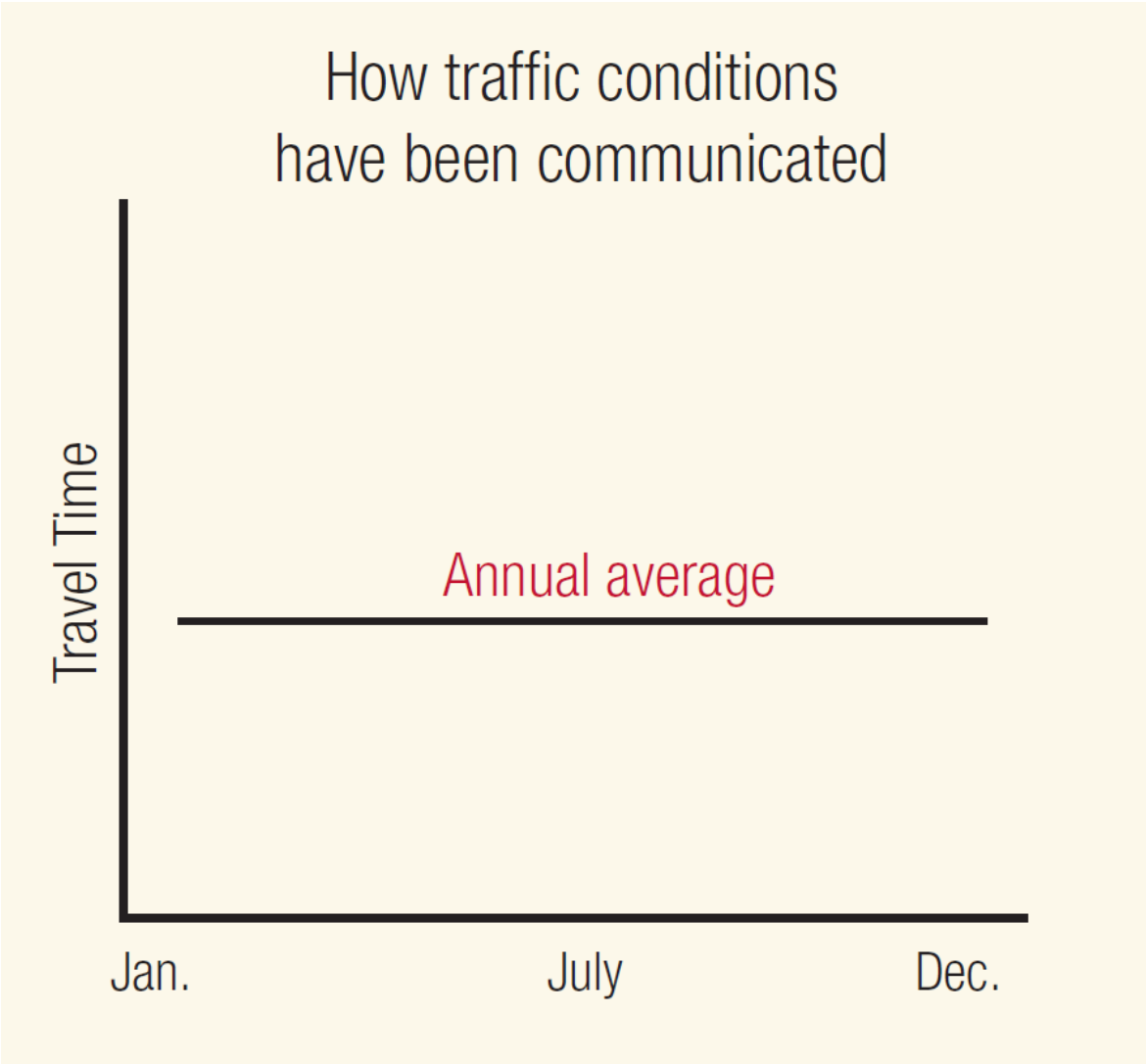
Travel Time

Average Travel Time During AM and PM Peak Hours: Whitney Way to I-39/90



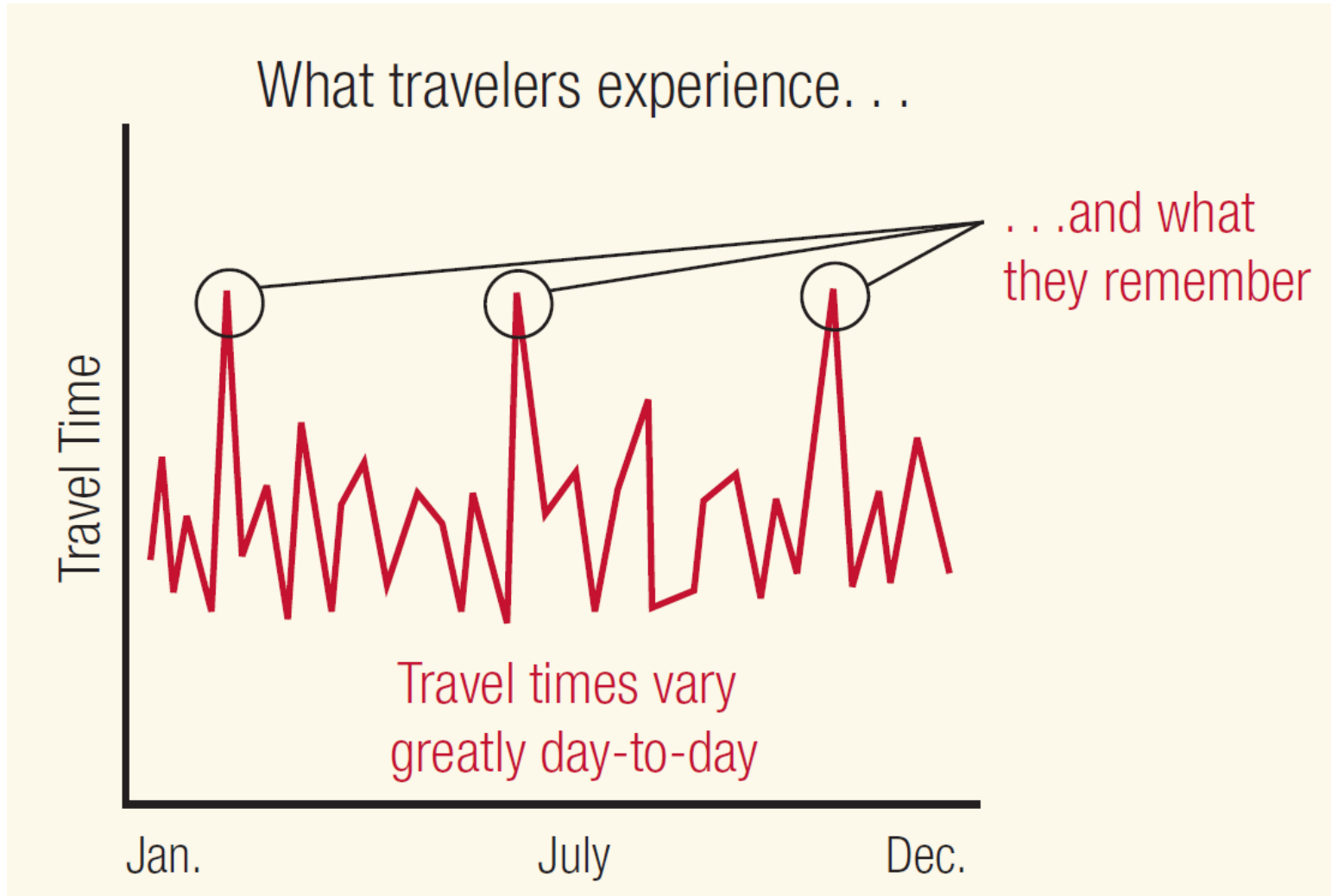
Note: Field-measured travel times may be longer for a variety of reasons (incidents, disabled vehicles, weather, etc.).

Travel Time Reliability



Graphic Source: https://ops.fhwa.dot.gov/publications/tt_reliability/brochure/ttr_brochure.pdf

Travel Time Reliability



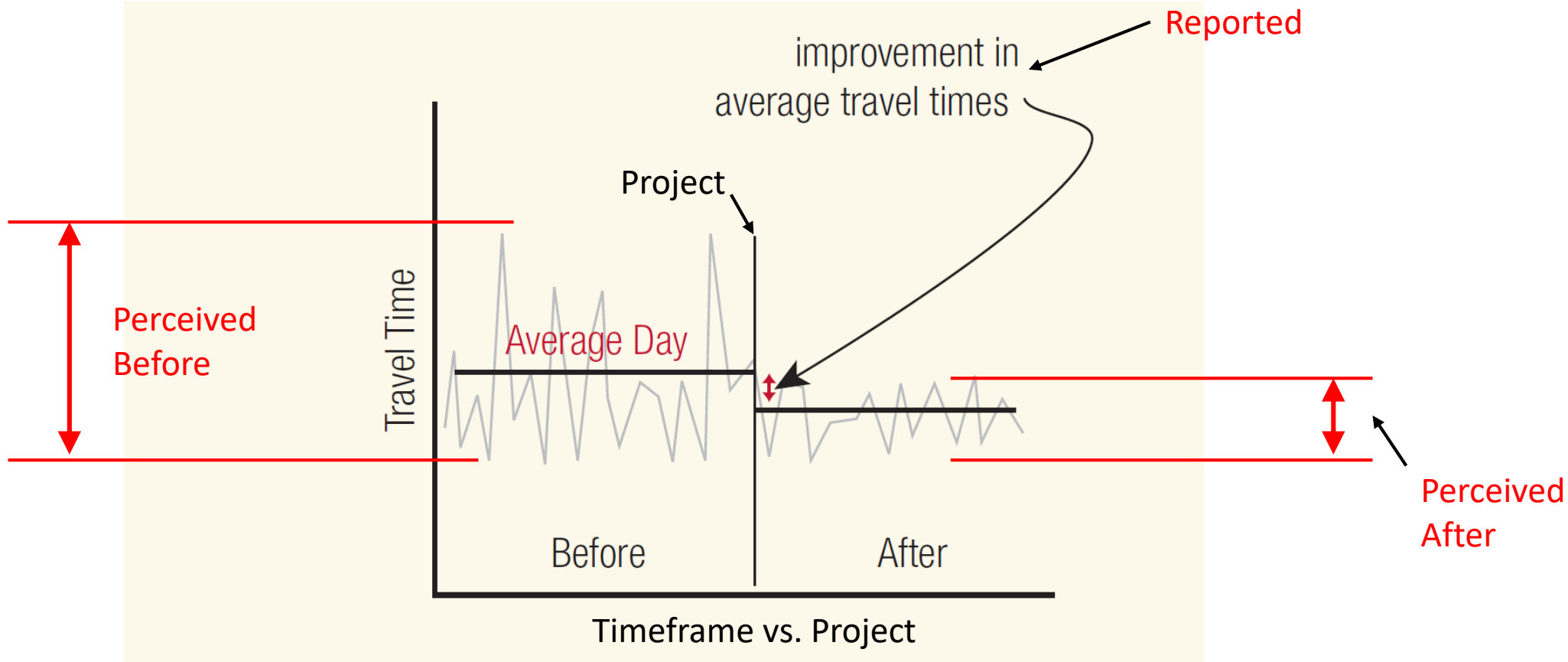
Travel time reliability measures the extent of this unexpected delay

Example: Getting to Work



Project Feasibility: Travel Time Reliability

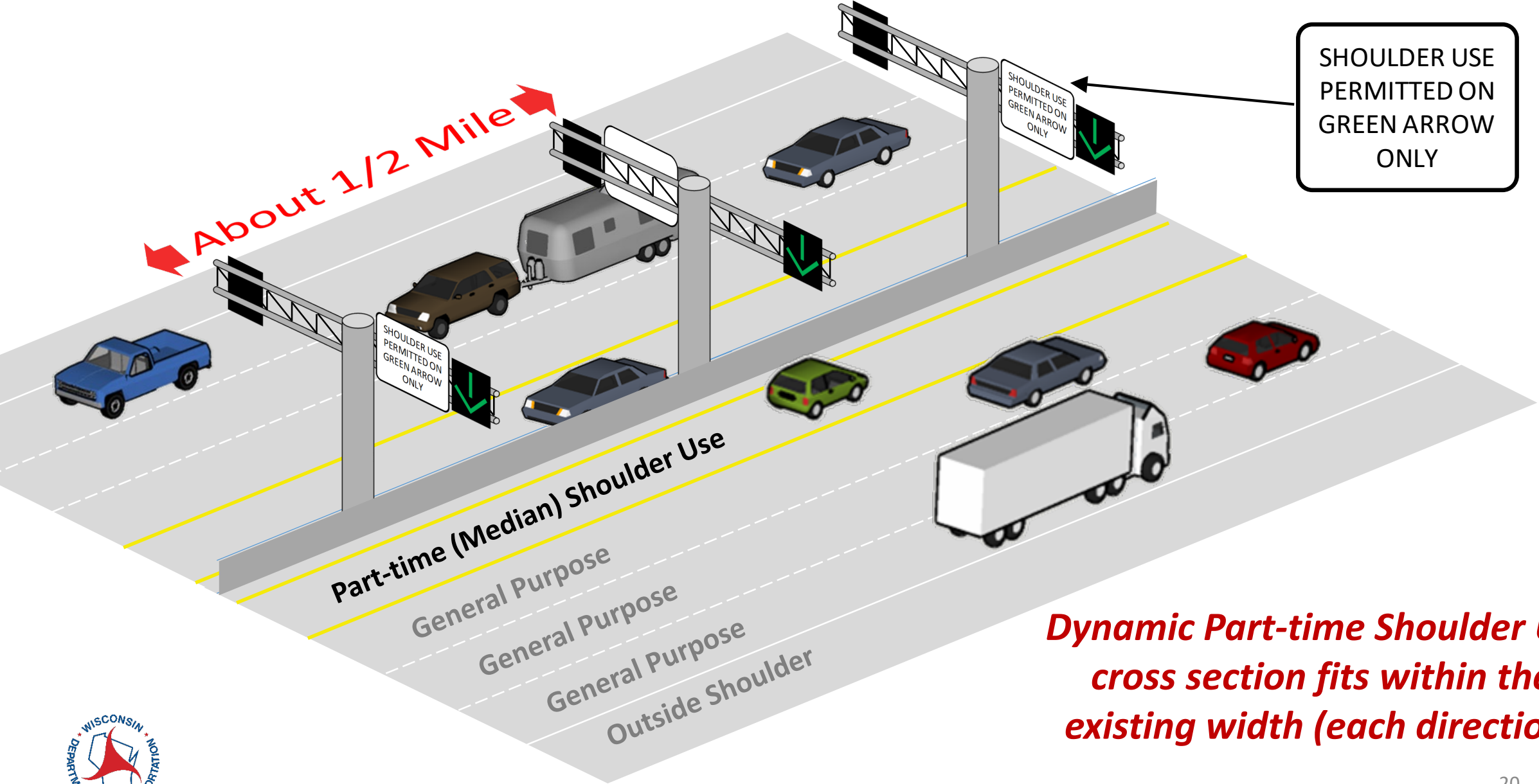
Reliability measures capture the benefits of traffic management



Note: This diagram shows a general display of the travel time reliability concept and is not intended to reflect traffic data for the Beltline corridor.



System Overview



***Dynamic Part-time Shoulder Use
cross section fits within the
existing width (each direction)***



Dynamic Signing

Active Management



In Operation



Not in Operation



Approaching lane drop or for use in closure scenarios



Digital Blank-out Sign indicating lane drop at ends of the system

Sample DMS Messaging

**LEFT SHOULDER
OPEN
TO TRAFFIC**

**LEFT SHOULDER
EMERGENCY
STOPPING ONLY**

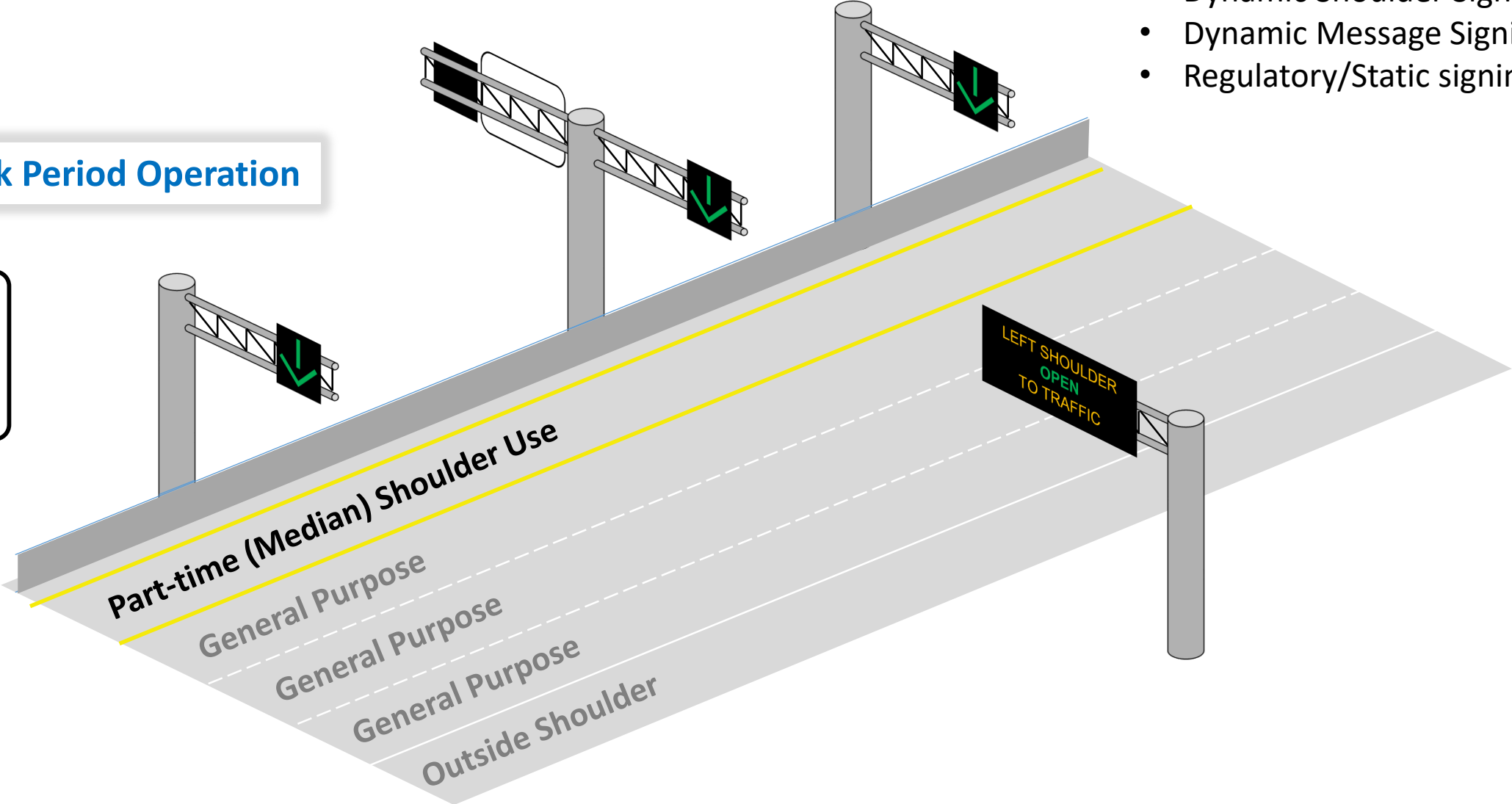


Dynamic Signing

- Dynamic Shoulder Signing
- Dynamic Message Signing
- Regulatory/Static signing

Peak Period Operation

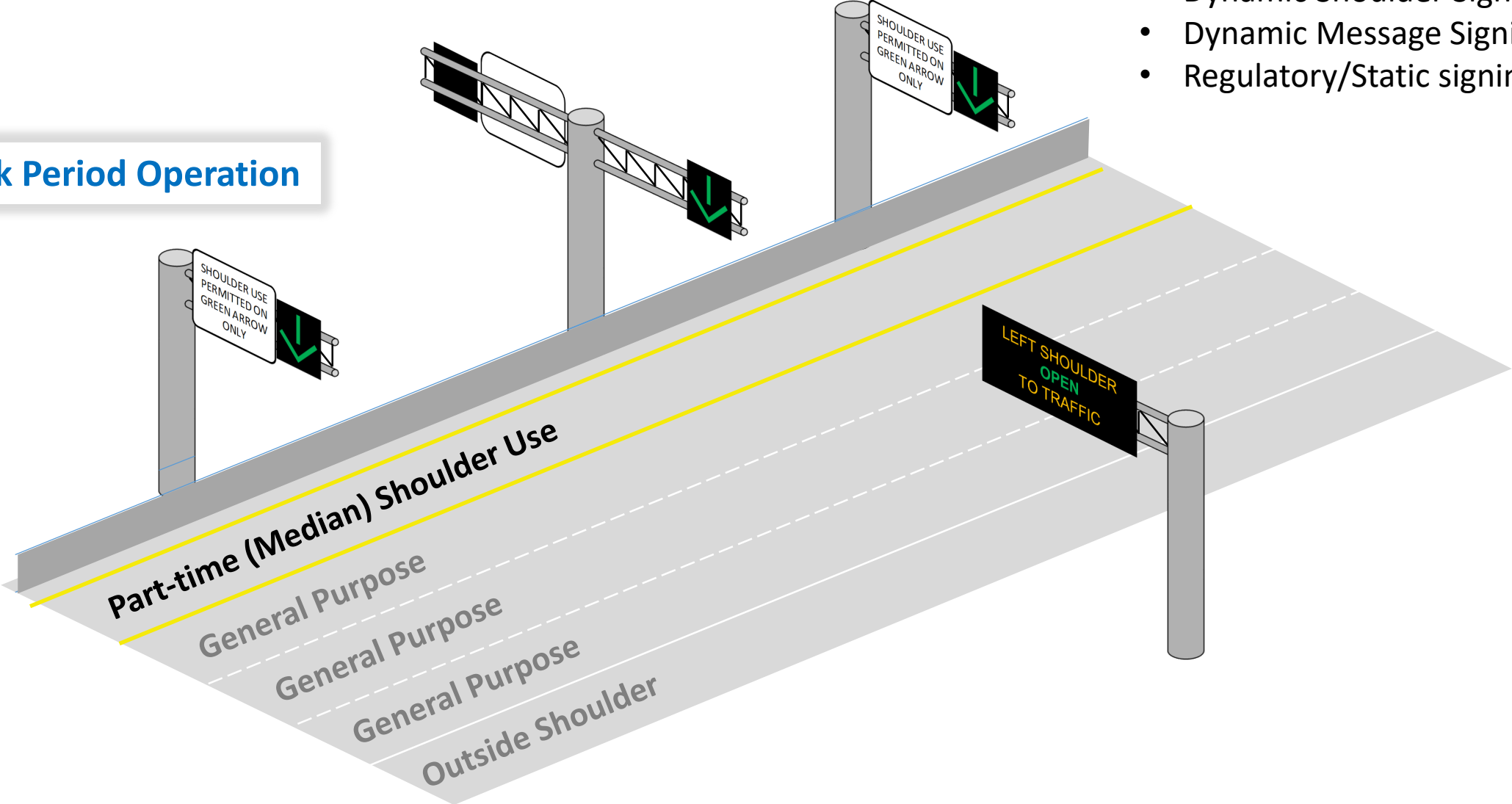
SHOULDER USE
PERMITTED ON
GREEN ARROW
ONLY



Dynamic Signing

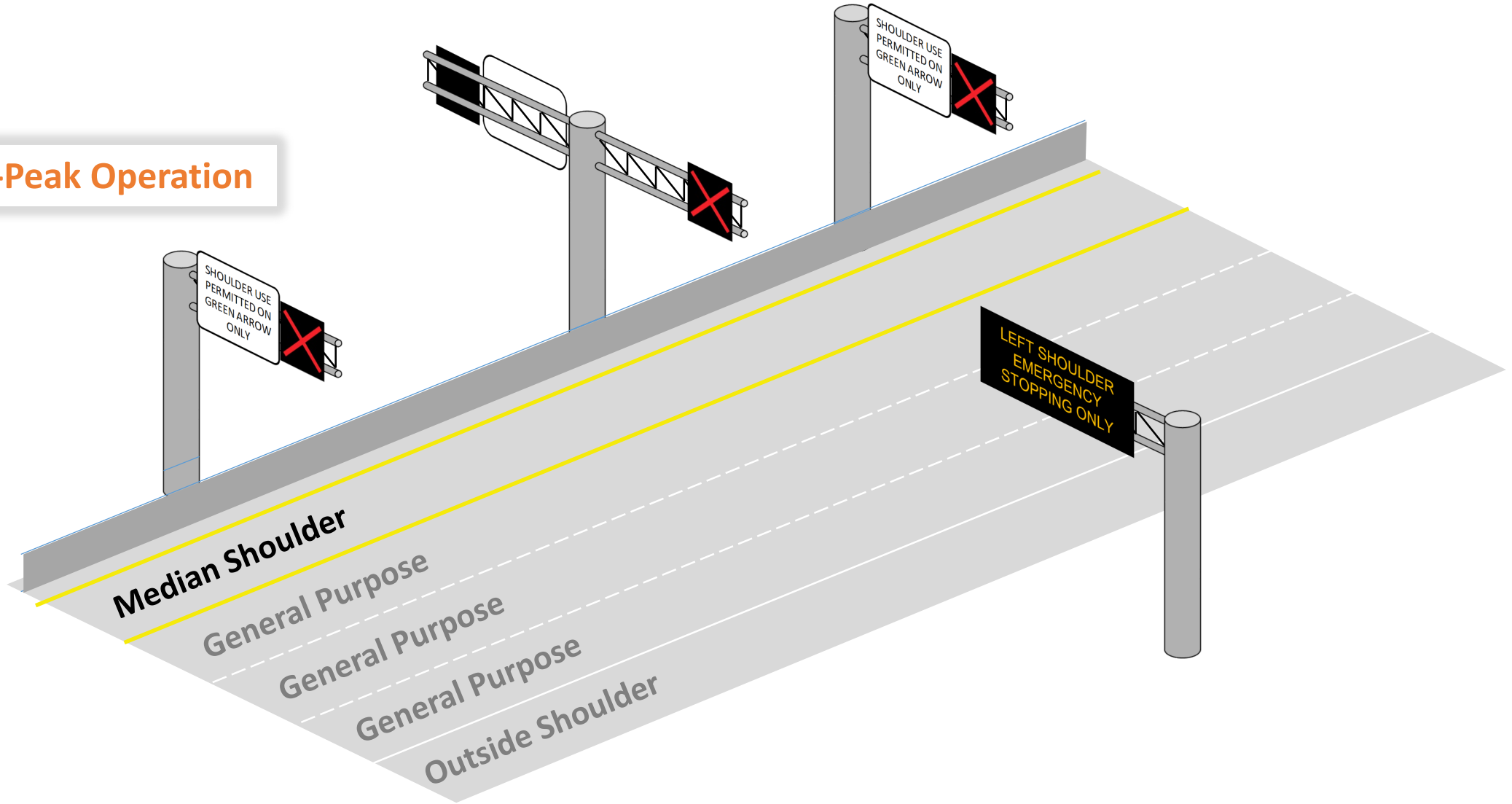
- Dynamic Shoulder Signing
- Dynamic Message Signing
- Regulatory/Static signing

Peak Period Operation



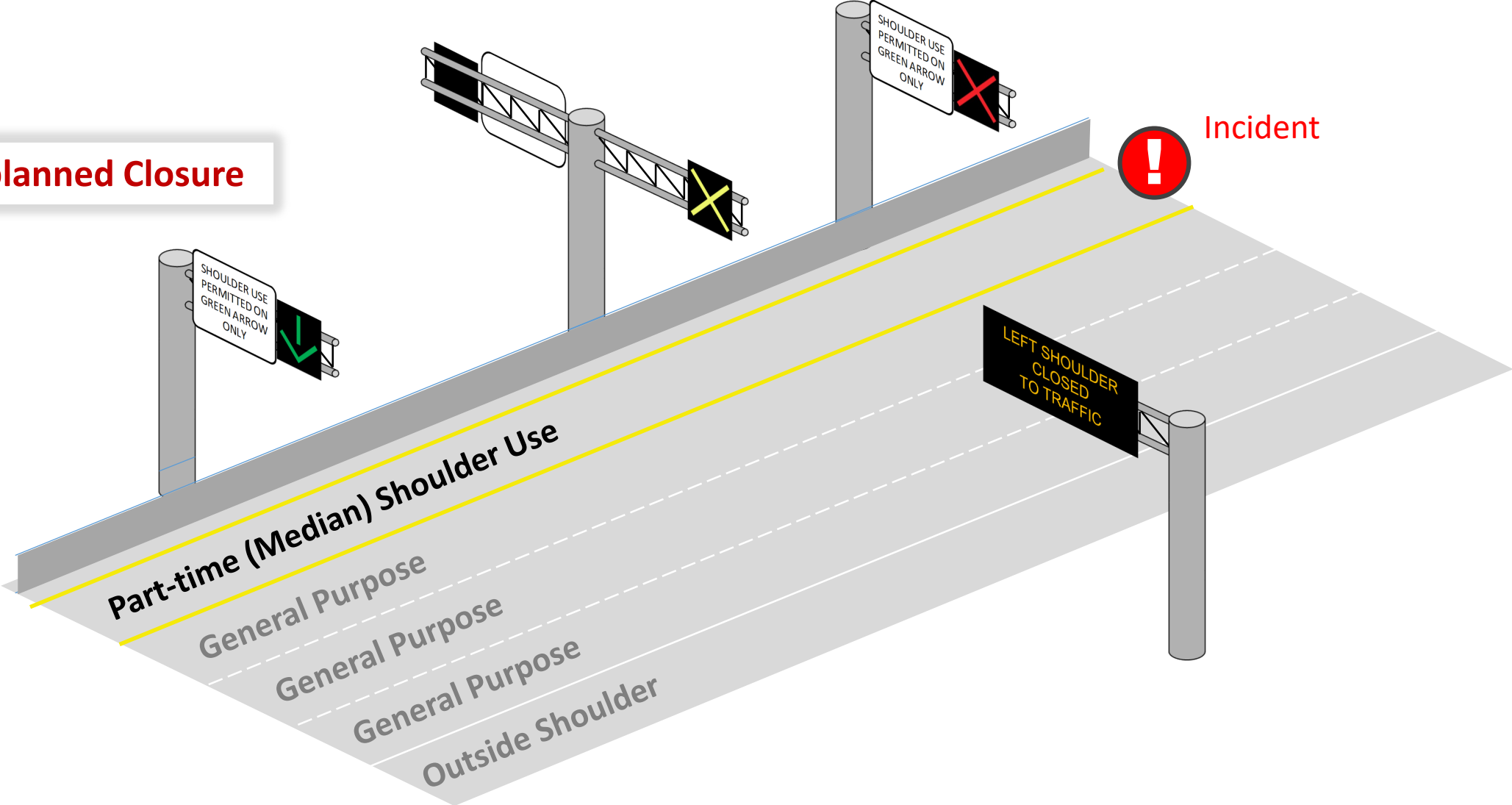
Operations – Off-Peak

Off-Peak Operation

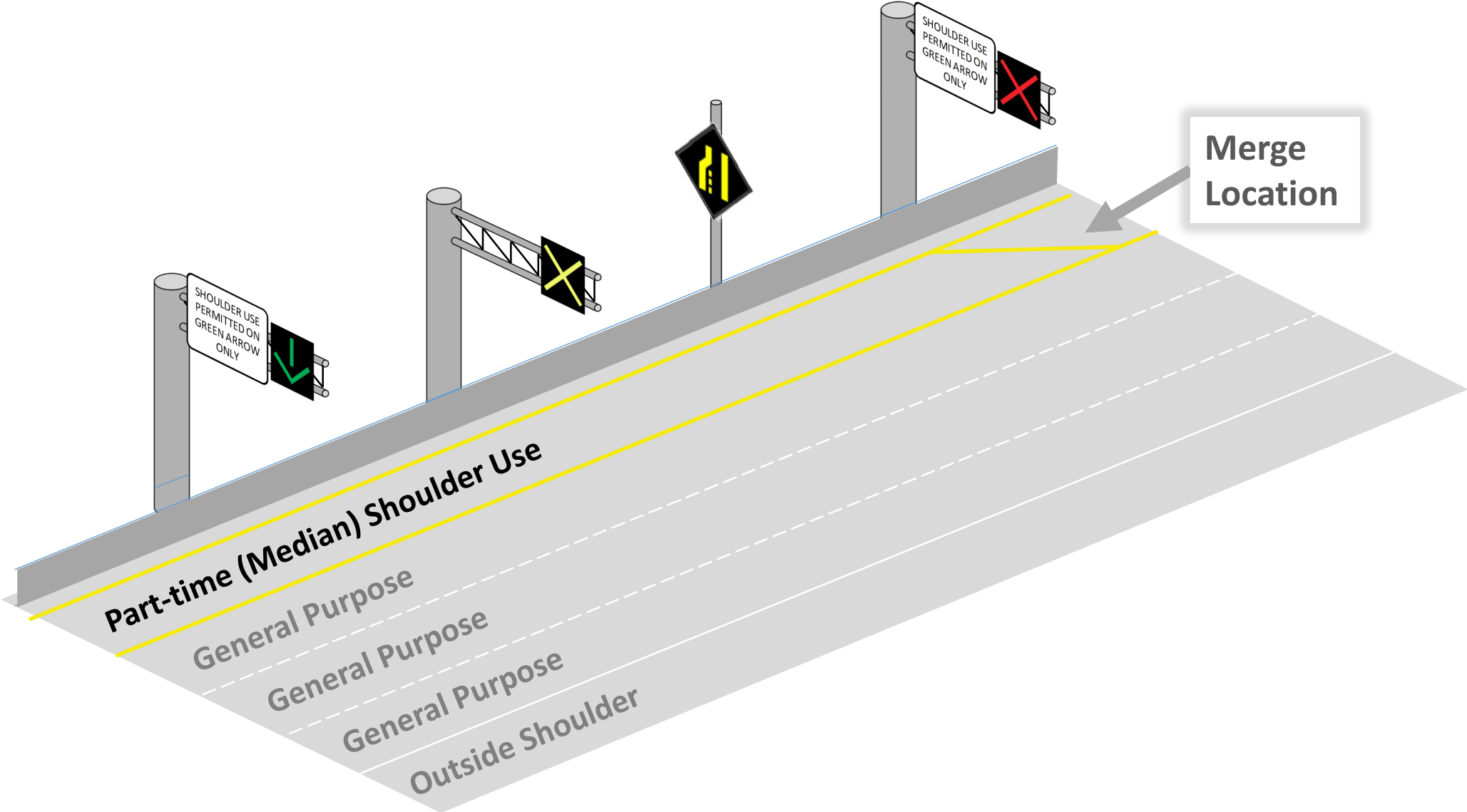


Operations – Closure

Unplanned Closure



Operations – Lane Drop



SHOULDER USE
PERMITTED ON
GREEN ARROW
ONLY



SHOULDER USE
PERMITTED ON
GREEN ARROW
ONLY



**General Purpose
Lanes Open
24 Hours**



SHOULDER USE
PERMITTED ON
GREEN ARROW
ONLY

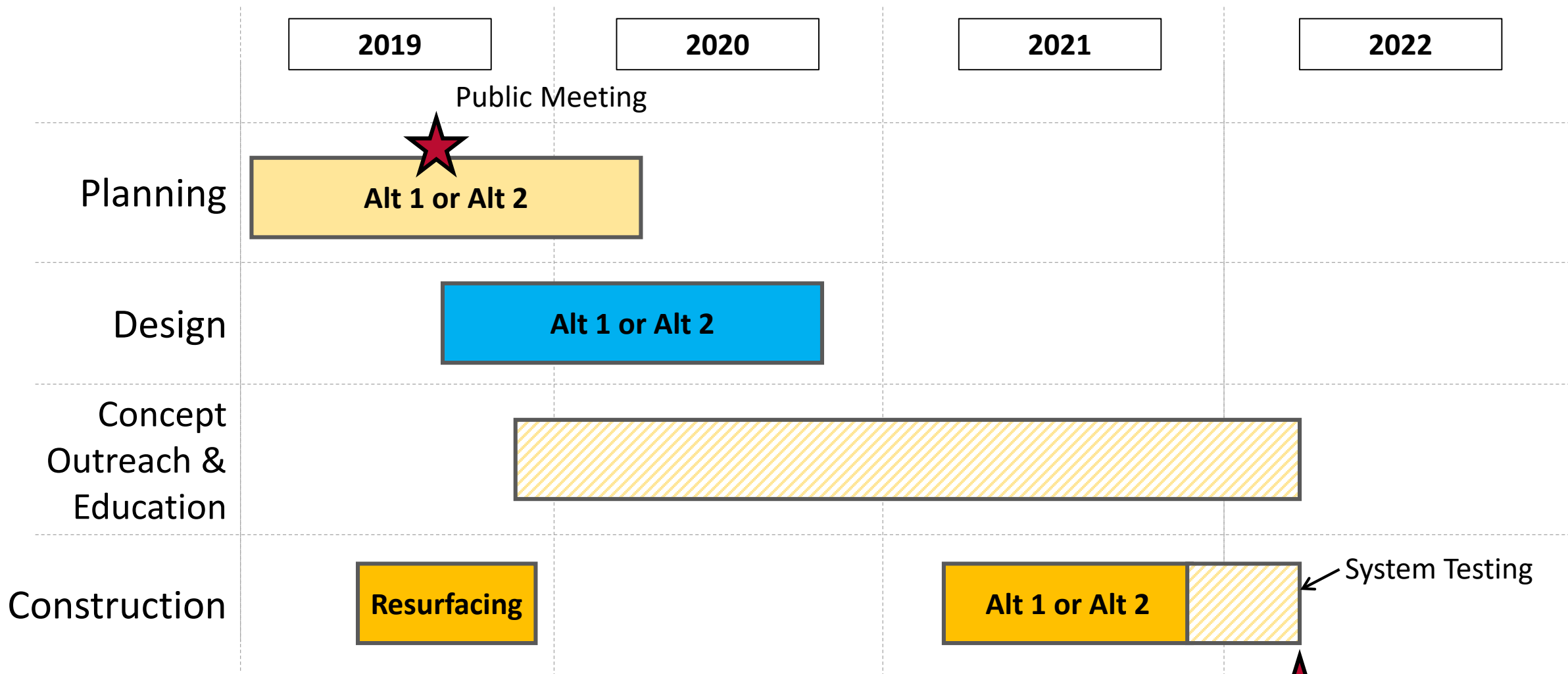


**Dynamic
Part-Time
Shoulder Use**

**General Purpose
Lanes Open
24 Hours**



Project Schedule




Alt 1: Resurfacing

Alt 2: Resurfacing with DPTSU

Note: Alts each include barrier and drainage improvements

 - **Alt 2 Only**

 System Operational

Comments and Discussion

Please provide your input by:

- Filling out the comment form,
- Talking with project staff,
and/or
- Email: Brandon.Lamers@dot.wi.gov

