

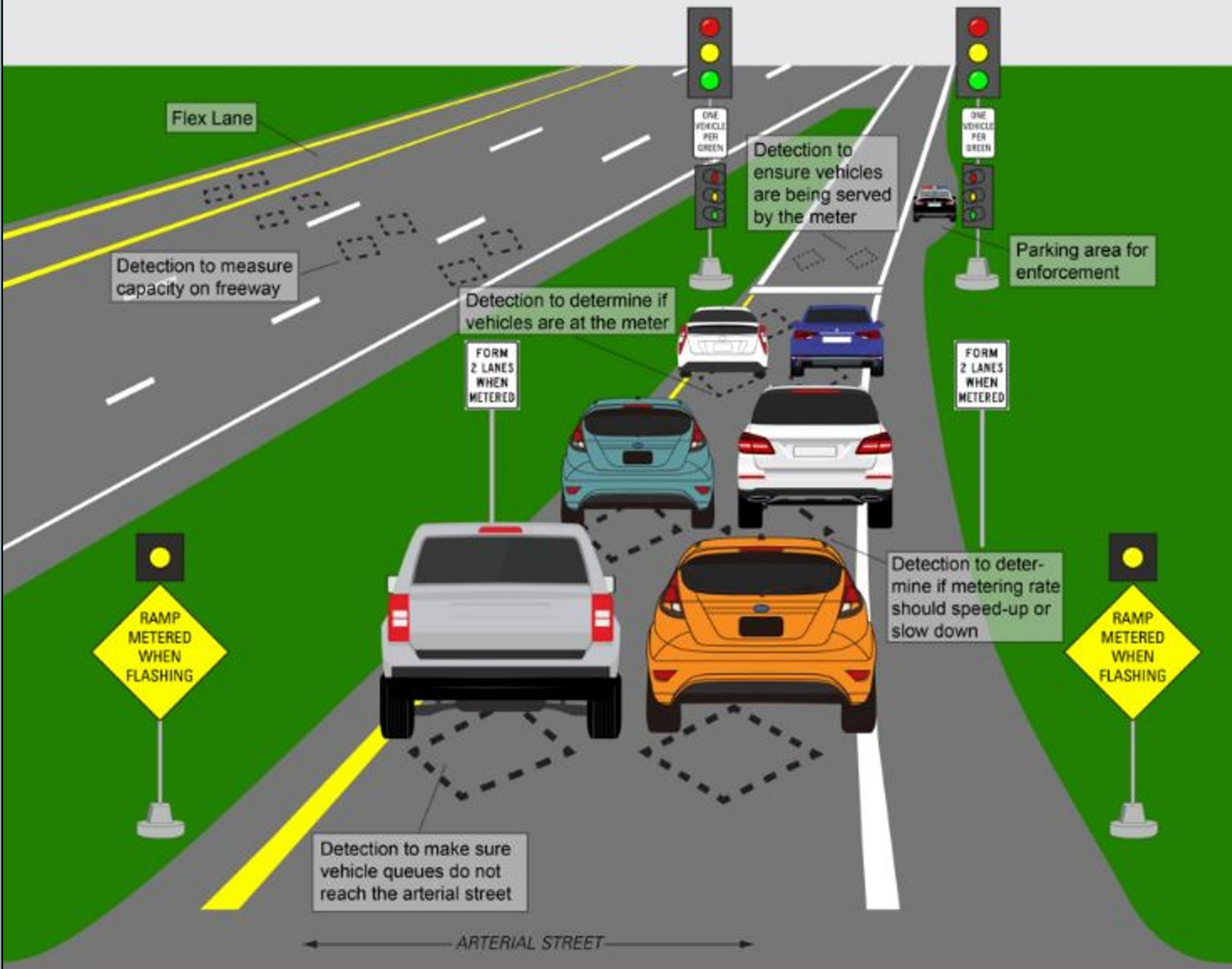
Legend

	Existing Full-Time Lanes		Existing Camera		Existing Electronic Message Board		Proposed Crash Investigation Site		Proposed Ramp Meter		Proposed Lane Control Signs with Camera and Detection
	Proposed Part-Time Flex Lane										

I-96 From Kent Lake Road to I-696 / I-275 / M-5



What will ramp metering look like?



Ramp metering...

Uses traffic signals on ramps to smooth the flow of traffic onto the freeway to:

- Reduce congestion by managing the number of entering vehicles.
- Break up platoons that form on the ramp and have difficulty entering the freeway.

How it works...

1. *Ramp Metered When Flashing* signs alert motorists that signal is on.
2. Entering traffic forms two lanes, prepared to stop at signal.
3. On **red** signal, traffic stops at white stop bar as it would for any other traffic signal.
4. Alternating **green** signals allow the next motorist closest to signal to enter freeway.

Expected benefits of flex lane & ramp metering...

1. **Improved Safety**
 - Reduced rear-end crashes
 - Reduced merge crashes
2. **Improved Travel Time Reliability**
 - Improved travel time consistency
 - Eastbound morning – up to 65%
 - Westbound afternoon – up to 75%
 - Reduced peak period duration
 - Eastbound morning – up to 80%
 - Westbound afternoon – up to 67%

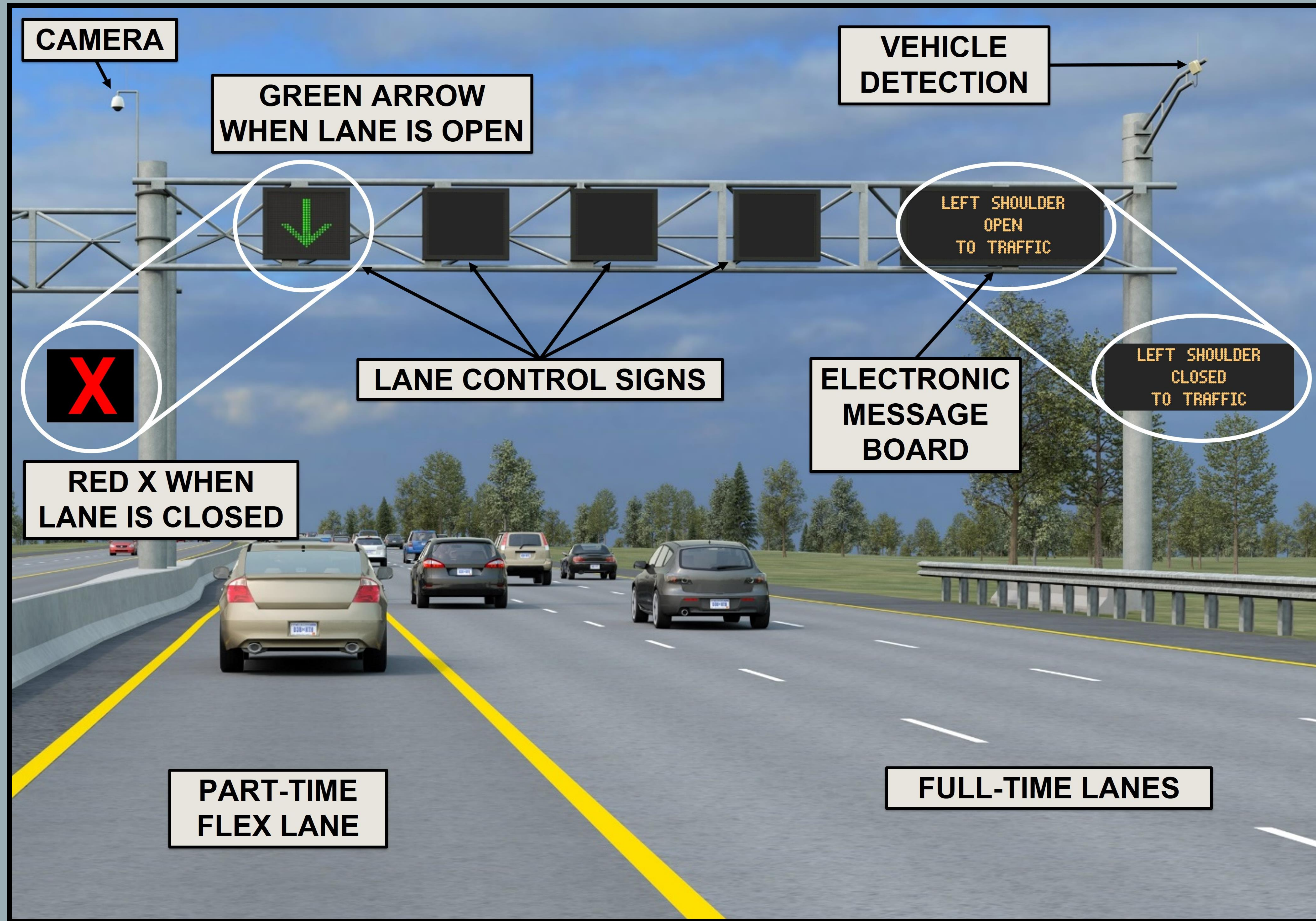


States using ramp metering...

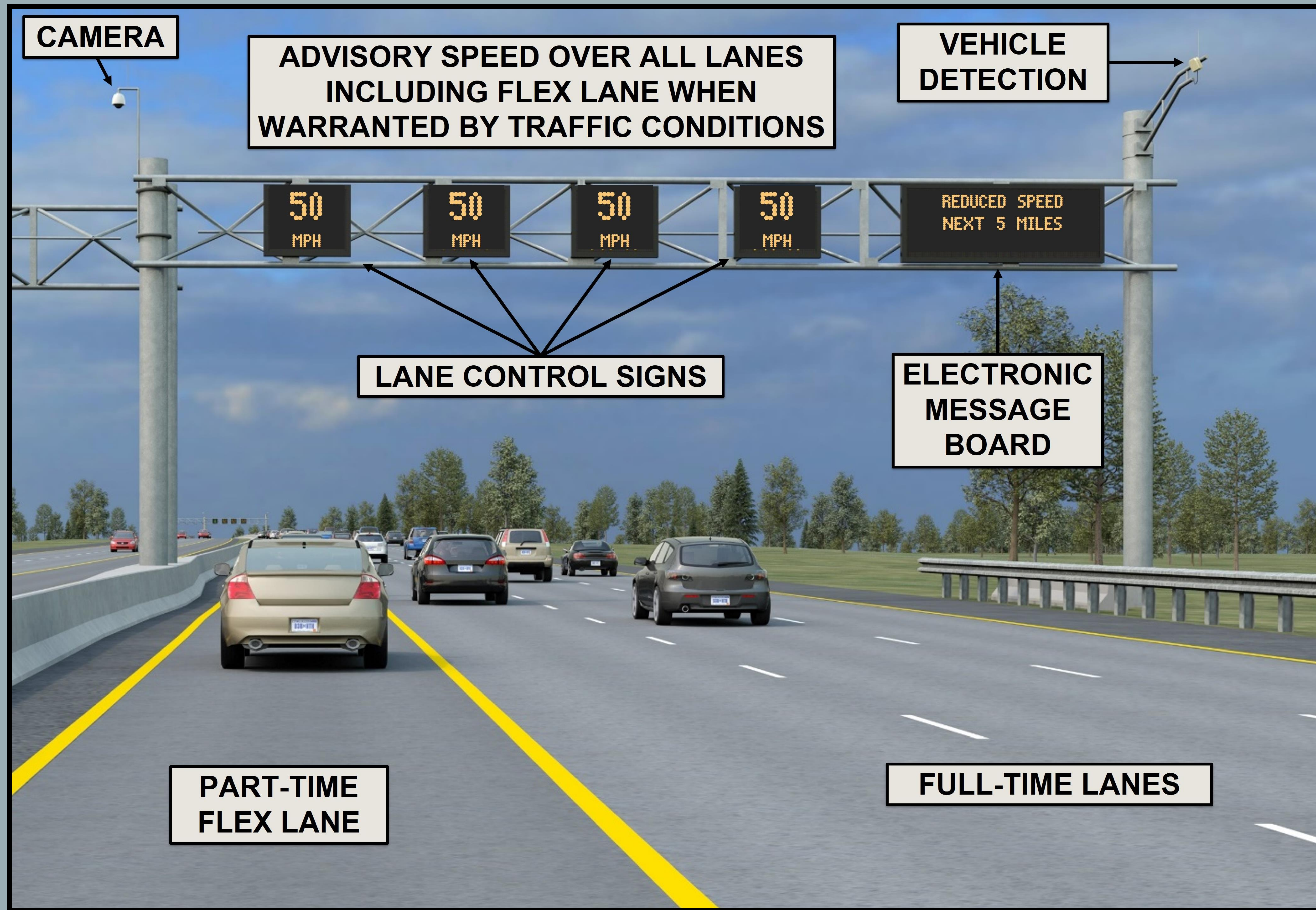
- | | |
|------------|--|
| Arizona | New York |
| California | Ohio |
| Colorado | Oregon |
| Florida | Pennsylvania |
| Georgia | Texas |
| Illinois | Utah |
| Kansas | Washington |
| Minnesota | Wisconsin |
| Missouri | |
| Nevada | Washington D.C. also uses ramp meters. |

Ramp meter locations...

1. Milford Road on ramps
2. Westbound Wixom Road on ramp
3. Novi Road on ramps



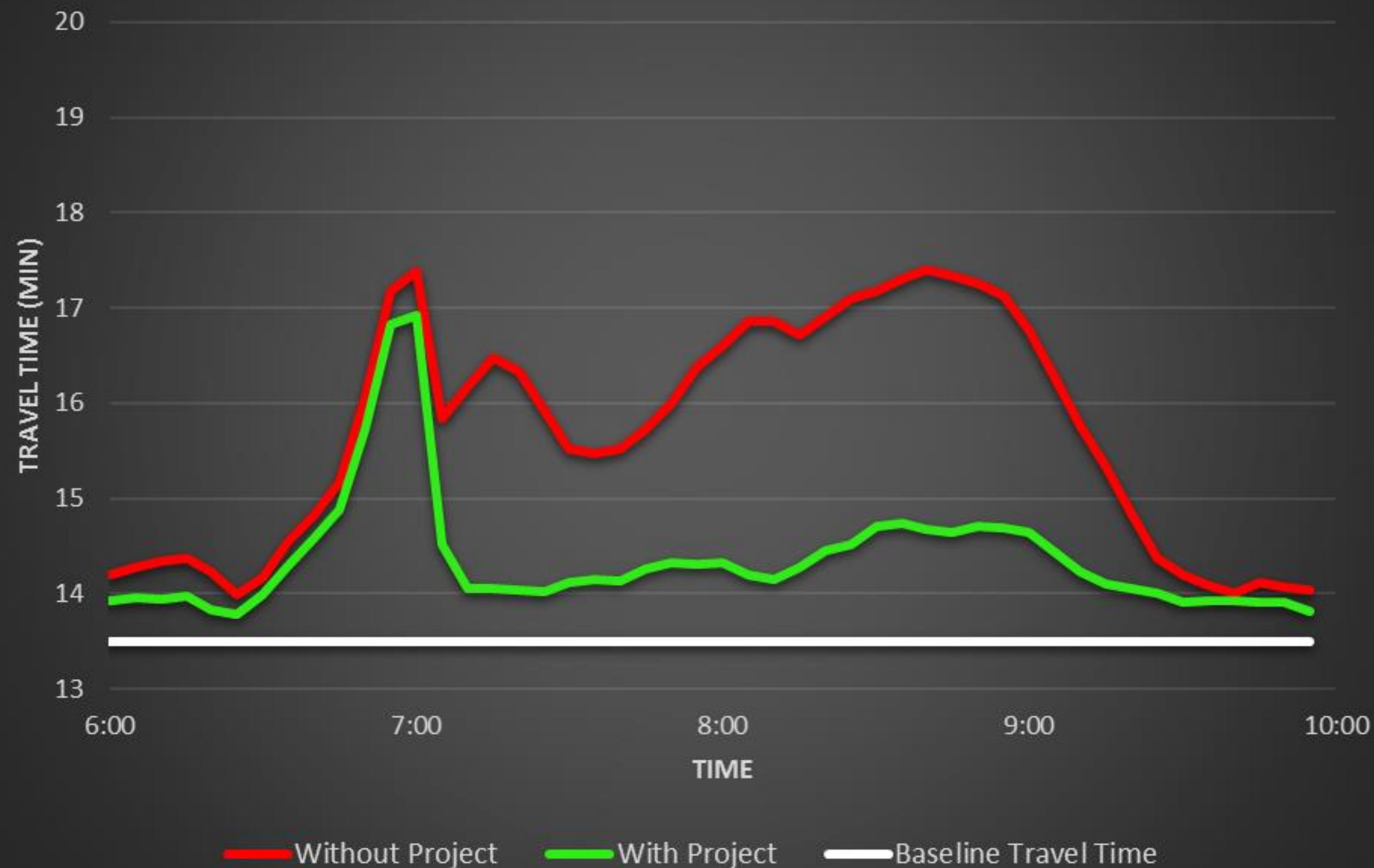
Flex Lane OPEN or CLOSED



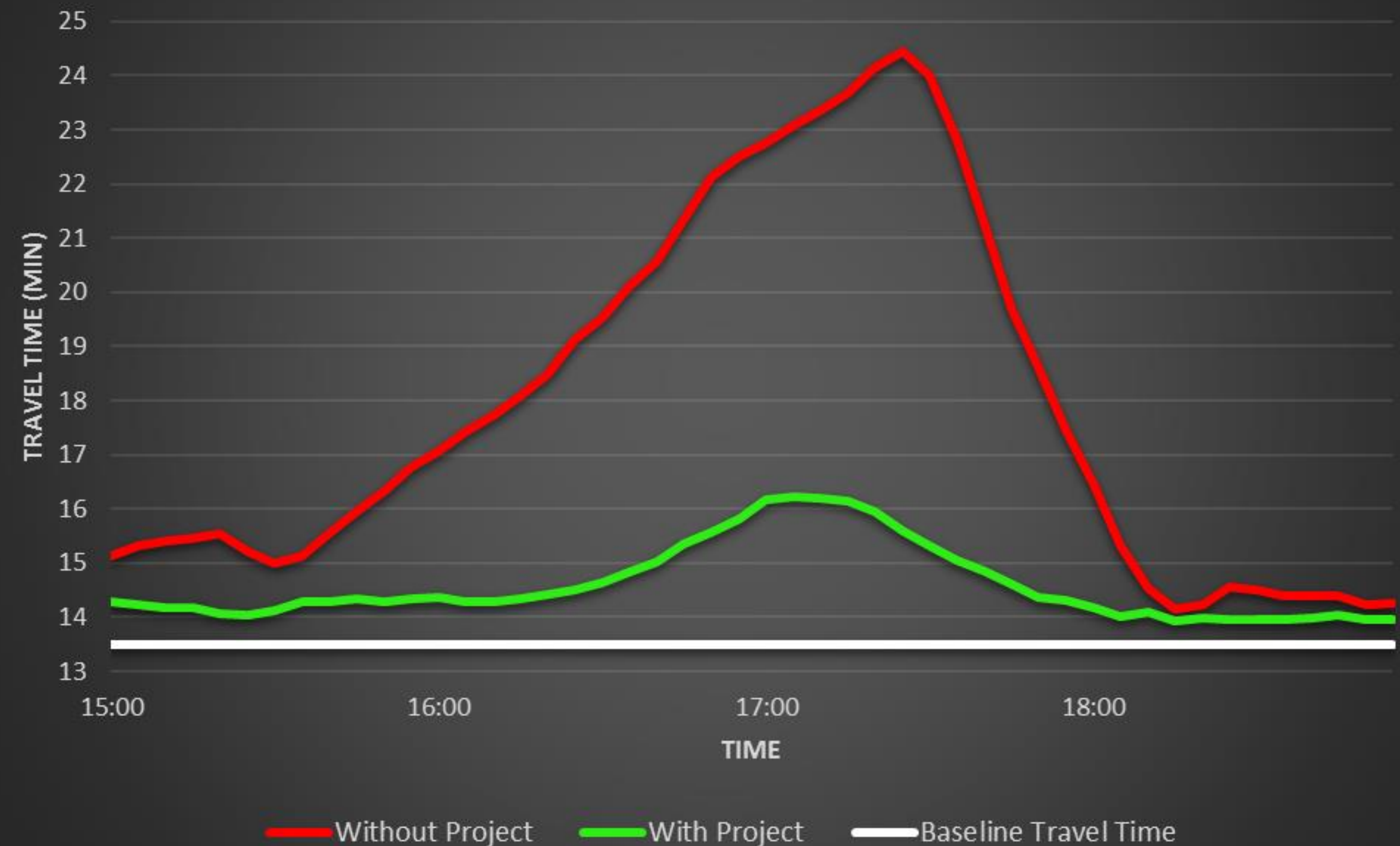
Flex Lane OPEN with ADVISORY SPEED



2020 I-96 EB Travel Times- MORNING

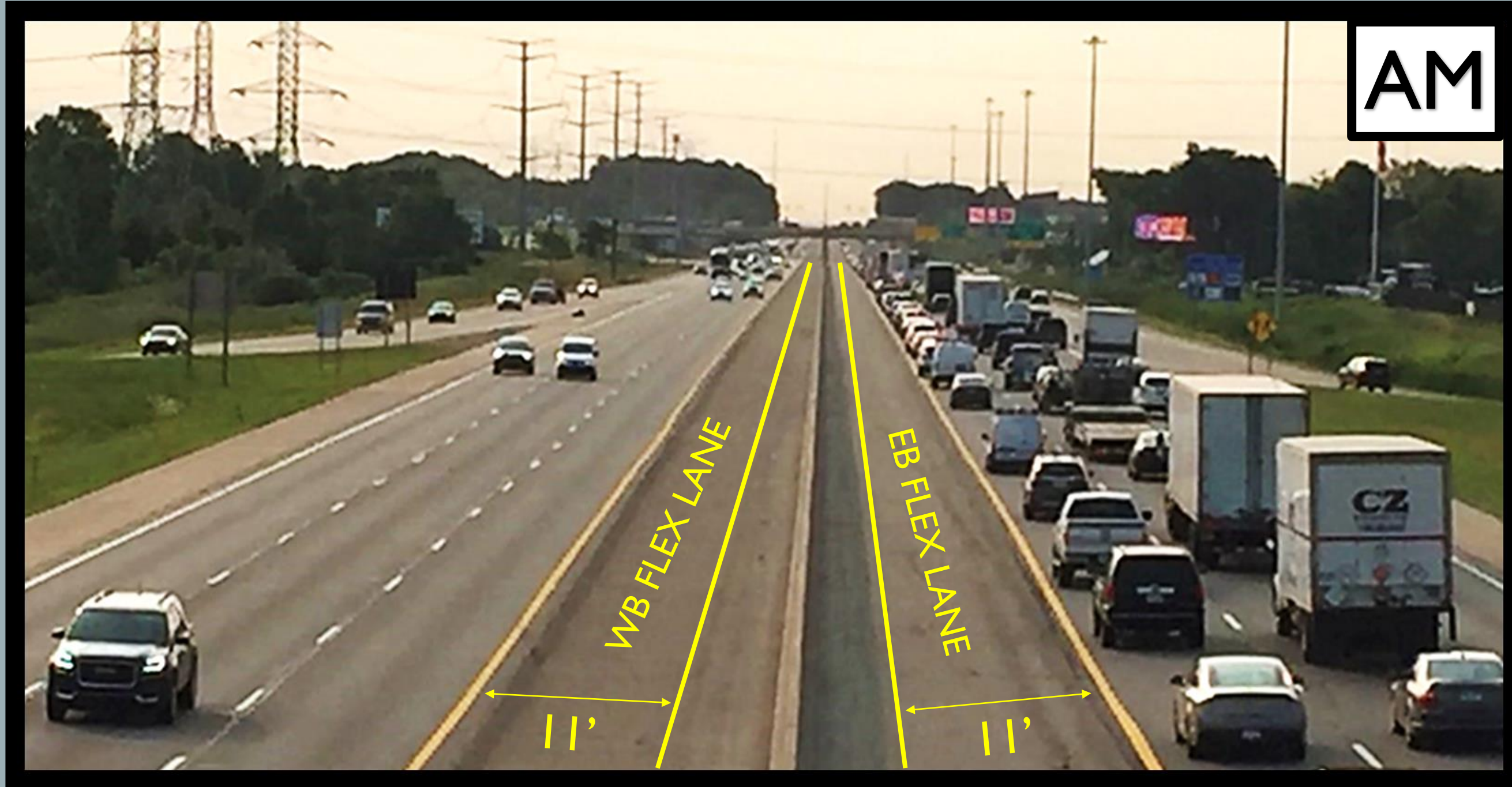


2020 I-96 WB Travel Times - AFTERNOON



- **Reduced travel times**
- **Reduced stop-and-go**

- **Notification of slow downs ahead**
- **Improved travel time reliability**



- 12 miles from Kent Lake Rd to I-275 / I-696 / M-5
- Main corridor between Lansing and Detroit
- 163,000 vehicles per day
- Recurring directional congestion



- Eastbound in the morning
- Westbound in the afternoon



- Limited alternate routes
- Excessive travel times
- Inconsistent travel time reliability
- Frequent crashes
- Available existing wide median shoulders



PROPOSED PROJECT WORK



- Installation of an **Active Traffic Management System (Flex Lane)** from Kent Lake Road to the I-275 / I-696 / M-5 interchange, including:
 - ITS equipment to allow part-time peak-period median shoulder use, provide traffic warnings and advisory speeds and assist in incident management
 - Ramp metering at 8 entrance ramps to help reduce congestion and improve travel time reliability and safety by breaking up entering traffic platoons
 - 7 crash investigation sites along the outside shoulders to assist in clearing incidents



PROPOSED PROJECT WORK



- **Full reconstruction of all lanes and shoulders of I-96 from Kent Lake Road to approximately 1800' east of Haggerty Road in the I-275 / I-696 / M-5 interchange**
- **Reconstruction of the ramps at the Milford Road and Novi Road interchanges**
- **Pavement patching of the ramps at the Wixom Road and Beck Road interchanges**
- **Rehabilitation of the Beck Road Park & Ride lot**
- **Rehabilitation of I I bridges and culvert work**





PLANNED CONSTRUCTION - 2021

Stage 1 Work (Sept 2021 – Nov 2021)

Improve **WB** outside shoulder Kent Lake Road to Wixom Road, and improve/widen **WB** outside shoulder Wixom Road to I-275.

Maintain traffic using off-peak single lane closures on **EB** and **WB** mainline with off-peak entrance and exit ramp closures when actively working in vicinity of ramp.

Stage 2 Work (Sept 2021 – Nov 2021)

Improve **WB** median shoulder Kent Lake Road to Wixom Road, and construct median crossovers west of Kent Lake Road and east of Wixom Road for use in future construction stages.

Maintain traffic using off-peak single lane closures on **EB** and **WB** mainline with closure of **WB** entrance ramps from Wixom Road and Milford Road.

Anticipated duration for 2021 work is approximately 3 months (Sept 2021 – Nov 2021)



FlexRoute
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PLANNED CONSTRUCTION - 2022

Stage 3A Work (Mar 2022 – Jul 2022)

Reconstruct EB I-96 from Kent Lake Road to Wixom Road and construct median drainage from Wixom Road to I-275.

Maintain 2 lanes WB and 2 lanes EB all on WB I-96 for reconstruction of EB I-96 and 2 lanes WB & 3 lanes EB on own bounds for median drainage construction.

Stage 3B & 4 Work (Jul 2022 – Nov 2022/Stage 4 to Jul 2023)

Reconstruct median from Kent Lake Road to I-275 (Stage 3B) and reconstruct EB I-96 from Wixom Road to I-275 (Stage 4).

Maintain 2-3 lanes WB and 3 lanes EB on own bounds for reconstruction of median and 2 lanes WB and 2 lanes EB all on WB for reconstruction of EB I-96.

Anticipated duration for 2022 work is approximately 9 months (Mar 2022 – Nov 2022)

NOTE: Stage 4 work is expected to continue until July 2023



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PLANNED CONSTRUCTION - 2023

Stage 5A Work (Mar 2023 – Aug 2023)

Reconstruct WB I-96 from Wixom Road to I-275.

Maintain 3 lanes WB and 2 lanes EB all on EB I-96 for reconstruction.

Stage 5B Work (Aug 2023 – Nov 2023)

Reconstruct WB I-96 from Kent Lake Road to Wixom Road.

Maintain 2 lanes WB and 2 lanes EB all on EB I-96 for reconstruction.

Anticipated duration for 2023 work is approximately 9 months (Mar 2023 – Nov 2023)

NOTE: Stage 4 work started in 2022 continues until July 2023



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PLANNED CONSTRUCTION - 2024

Stage 6 Work (Dec 2023 – May 2024)

Complete HMA top course paving on WB I-96 from Kent Lake Road to Wixom Road, and complete ITS installation and burn-in from Kent Lake Road to I-275.

Maintain traffic using off-peak single lane closures on EB and WB mainline with off-peak entrance and exit ramp closures when actively working in vicinity of ramp.

Anticipated duration for 2024 work is approximately 6 months (Dec 2023 – May 2024)