



GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF TRANSPORTATION
LANSING

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DIRECTOR

M-14 from US-23 BR to Barton Drive
RSA Response Letter

To whom it may concern:

In 2021, The Michigan Department of Transportation (MDOT) conducted a Road Safety Audit (RSA) on M-14 from East of Miller Avenue to East of Barton Drive. An RSA is a formal safety performance examination of an existing or future road or intersection by an independent multi-disciplinary team. Upon completion, the RSA released both short- and long-term recommendations. The recommendations were given over to the MDOT Brighton Transportation Service Center (TSC) for review and consideration. Attached are the responses to each recommendation from the RSA team.

Sincerely,

Mark Sweeney, P.E.
Brighton TSC Manager

1) Issue: M-14 mainline eastbound and westbound sight lines, rear-ends

a) Suggestion:

Short-term

(1) Corridor-wide clearing: Tree clearing.

(a) Response: Tree and brush clearing off the shoulder was performed where necessary to improve site distance. As vegetation grows back, tree and brush clearing could be needed in the future.

(2) Corridor-wide horizontal curve chevrons: Increase chevron placement.

(a) Response: This work is ongoing and will be completed in 2023/2024. The number of chevron signs will be increased to meet current MDOT standards, and the existing chevron signs will be replaced with new higher reflectivity signs.

(3) Corridor-wide investigation for glare screen: Investigate need for glare screen.

(a) Response: MDOT investigated the height of the median barrier wall to verify the need for a glare screen. In some locations, the height of the median barrier already meets the requirements for a concrete barrier wall with glare screen. However, in some areas, it does not meet the height requirements. Due to the complexity of adding the concrete glare screen, this is considered a mid-term fix. Currently, funding for a project to construct the glare screen has not been identified.

(4) Corridor-wide pavement marking upgrade: Wet reflective polyurea pavement markings.

(a) Response: Wet reflective polyurea pavement markings were placed along the through-lanes of the M-14 corridor, within the limits of the RSA, in 2022. The pavement markings were recessed, except on the bridges. The pavement markings are starting to fade. MDOT will include this area with the 2024/2025 pavement marking contract.

Mid-term

(5) Corridor-wide signing upgrade: Upgrade warning sign reflectivity.

(a) Response: Critical ground-mounted warning signs at the eastbound M-14 Barton exit ramp have been replaced with upgraded reflectivity. MDOT currently has an M-14 corridor-wide sign upgrade project programmed for construction in 2027. At that time, the rest of the signs in the corridor will be replaced. When replaced, all signs will include upgraded reflectivity.

2) Issue: Main Street on ramp to eastbound M-14 single motor vehicle, rear-ends, and sideswipes.

a) Suggestion:

Short-term

(6) Add Thru Traffic Keep Left sign on M-14 prior to on ramp.

(a) Response: This was not completed. After further review, there are concerns with trying to move the through-traffic to the left lane. To have traffic in the slower right lane switch into the passing lane could cause additional crashes on its own. This sign is more appropriate when through-traffic needs to merge into the left lane to continue through, which they do not here. Therefore, it was decided not to install these signs.

(7) Merge pavement markings.

(a) Response: Merge arrow pavement markings are currently planned to be completed in 2024/2025. To note, the merge is to the right, not to the left, as shown in the RSA report. Also, three arrows are not per MDOT's guidelines, which MDOT will be following the quantity in our guidelines.

Mid-term

(8) Modify ramp profile: Modify profile of existing ramp.

(a) Response: This should be listed as a long-term solution because it requires the ramp to be reconstructed and possibly affects the elevations needed on Main Street and Huron River Drive. This concept can be reviewed during the design of a future project at Main Street.

Long-term

(9) New ramp alignment and profile: Change on ramp alignment to allow for elevation difference.

(a) Response: Not currently implementable. This concept can be reviewed during the design of a future project at Main Street.

(10) Modified diamond interchange: Convert to modified diamond interchange.

(a) Response: Not currently implementable. This concept can be reviewed during the design of a future project at Main Street.

(11) Roundabout: Add roundabout to Huronview Boulevard.

(a) Response: Not currently implementable. This concept can be reviewed during the design of a future project at Main Street.

- 3) Issue: M-14 off ramp to Main Street single motor vehicle crashes, rear-end, and sideswipes.
a) Suggestion:

Short-term

- (12) Taper pavement marking: Add taper pavement marking from gore.
(a) Response: A taper pavement marking to go from one lane at the gore to two lanes past the gore was completed in 2023.
- (13) Optical speed bars: Add.
(a) Response: After reviewing crash data, there does not appear to be a crash pattern related to excessive speeds. Since the purpose of optical speed bars is to slow traffic down, they will not be placed at this time. But further monitoring will take place.

Long-term

- (14) Merge/diverge capacity analysis.
(a) Response: This was reviewed conceptually as part of the planning and environmental linkages (PEL) study. Alternative 4 was developed and is being carried forward. Further details can be found in the PEL study.
- (15) Two-lane ramp alignment plus bridge widening: Add a second exit lane and move the alignment of the off ramp west to increase ramp radius with bridge widening.
(a) Response: This was reviewed conceptually as part of the PEL study. Alternative 4 was developed and is being carried forward. Further details can be found in the PEL study.

- 4) Issue: Bridge single motor vehicle crashes and rear-ends.
a) Suggestion:

Short-term

- (16) Side mounted delineators.
(a) Response: High-emphasis delineators were placed in 2022 as part of an already programmed MDOT project to place highly reflective delineators along US-23 and portions of M-14.
- (17) 3M panel delineators.
(a) Response: High-emphasis delineators were placed in 2022 as part of an already programmed MDOT project to place highly reflective delineators along US-23 and portions of M-14.

Mid-term

- (18) Deck drain collection system.

- (a) Response: The deck drain system is not an approved MDOT design. Furthermore, this bridge is fracture critical and would not be able to support the weight of the number of additional components needed for this 900-foot-long structure. There are additional concerns regarding stormwater management. This recommendation will not be implemented.

Long-term

- (19) Increase bridge width: Increase eastbound and westbound right-lane widths.
 - (a) Response: Increasing the width of the bridge could only take place when the structure is replaced because of the fracture critical nature of the bridge. This will be reviewed when funding becomes available to replace the bridge.
- 5) Issue: Barton Drive off ramp.
- a) Suggestion:

Short-term

- (20) Pavement markings: Wet reflective polyurea pavement markings.
 - (a) Wet reflective polyurea will be placed in the 2024/2025 durable pavement marking contract. The markings will be recessed except on the bridge.
- (21) Exit warning sign upgrades: Upgrade exit warning sign, with flasher, potentially oversized.
 - (a) Response: These ground-mounted warning signs have been replaced with upgraded reflectivity. A flashing beacon is planned for the advance curve warning sign. The tentative implementation is in 2024.

Mid-term

- (22) Flush paved area.
 - (a) MDOT's assessment is that the guardrail at the back of the curb is not causing any operational issues for the interchange. If the Barton Drive ramps are realigned with a future project, then the offset of the guardrail will be reviewed at that time.
- (23) Qwick Kurb in gore pending sight distance and winter maintenance.
 - (a) Response: There are concerns that the system will create a sight distance issue in an area that already has a sight distance issue with the existing traffic. Furthermore, the gore couldn't be properly plowed during winter events, which could lead to other safety concerns. Therefore, the Qwick Kurb system will not be installed at this time.
- (24) Raised median island.
 - (a) Response: A curbed island within this gore would create safety concerns with vehicles hitting the curb at freeway speeds. Furthermore, the gore couldn't be

properly plowed during winter events, which could bring other safety concerns. Therefore, the raised medial island will not be installed at this time.

(25) Lighting.

(a) Response: A project for lighting is programmed for the 2027/2028. Additional National Environmental Policy Act (NEPA) review is required prior to implementation.

6) Issue: Barton Drive on ramp.

a) Suggestion:

Short-term

(26) Stop Ahead sign plus post sheeting: Add additional Stop Ahead signing, with retro reflectivity and post sheeting.

(a) MDOT completed this work in August 2023.

Mid-term

(27) Acceleration lane with design exception: Add acceleration lane using modified existing shoulder, remove stop condition.

(a) Response: This was reviewed as part of the PEL study. This concept was reviewed but dismissed. Further details can be found in the PEL study.

Long-term

(29) Full acceleration: Add full-width acceleration lane and shoulder.

(a) Response: This was reviewed as part of the PEL study. This concept was reviewed but dismissed. Further details can be found in the PEL study.

7) Issue: Barton Drive and Whitmore Lake interchange.

a) Suggestion:

Long-term

(29) Free flow interchange.

(a) Response: The PEL study has reviewed alternate interchange layouts at this location, and roundabouts are a possible alternative, but not this layout. Alternative 4, as shown in the PEL, was developed and is being carried forward.

(30) Free flow and fly over interchange.

(a) Response: This was reviewed as part of the PEL study. A flyover alternative was reviewed but dismissed. Further details can be found in the PEL study.

8) Issue: M-14 between Barton Drive and tri-level and interchange

a) Suggestion:

Short-term

(31) Thru Traffic Keep Left sign.

(a) This was not completed. After further review, there are concerns with trying to move through-traffic to the left lane. To have traffic in the slower right lane

switch into the fast lane could cause additional crashes on its own. This sign is more appropriate when through-traffic needs to merge into the left lane to continue through, which they do not here. Therefore, it was decided not to install these signs.