

Blue Star Trail - Route Descriptions and Alternates

Washington Street to Lake Street (Douglas and Saugatuck)

Option 1 – 3 Lane Roadway with 8' Non-motorized Trail

- Restripe roadway to provide three each 11 foot traffic lanes
- Add 3 foot separation between trail and southbound traffic lane via pavement marking and vertical separation (traffic delineators, or other to be determined).
- Provides 8 foot non-motorized pathway with paved 2 foot clear zones on each side.
- North bridge approach includes a 10 foot wide separated trail behind the curb with a bike rail on the west side along the embankment (same for both alternates).

Observations/Discussion

- May require "design exception" from MDOT for 8 foot wide trail. Good justification is available.
- Vertical separation proposed through use of traffic delineators. MDOT may require curb or other separation technique.
- Maintains full 3 lane section through bridge and approaches. 11 foot center lane highly desirable by emergency services.
- **Estimated Construction Cost for this Alternative is \$130,000**

Option 2 – 2 Lane Roadway with 10' Non-motorized Trail and Traffic Signal

- Restripe roadway to provide 2 lane bridge crossing with 4.5 foot paved shoulders and greater separation from non-motorized trail. Vertical separation also required or highly recommended (traffic delineators or other to be determined).
- Provides 10 foot wide non-motorized trail with paved 2' clear paved clear zones on each side.
- South bridge approach transitions back to 3 lanes for left turns at Washington Street. This section has 2 each 11' travel lanes with a 10' left turn lane and no shoulders.
- Two lane alternate requires traffic signal at Lake Street for emergency vehicles

Observations/Discussion

- Short left turn lane stacking at south end of bridge may cause traffic backups
- Vertical separation proposed through use of traffic delineators. MDOT may require curb or other separation technique.
- Traffic Signal Provides the following benefits:
 - o Southbound traffic lane through bridge can be cleared of traffic via remote control of the signal before emergency vehicles get to the bridge.
 - o Would provide traffic control of vehicular and pedestrian traffic at the Lake Street intersection during normal operation.
- Adds fairly significant cost (approx. \$150,000), of which only approximately 20% would be eligible for funding participation.
- **Estimated Construction Cost for this Alternative is \$280,000**

Alternates Also Considered for this section but not recommended for further evaluation

- Two lane roadway w/o traffic signal. – Not supported by Emergency Responders.
- Various width additions to the existing concrete sidewalk on north side. – Requires bike railing along traffic lane/edge of sidewalk as well as increased height rail on outer edge of bridge. Significantly changes the bridge loading and drainage systems. Very high costs.
- Three lanes configuration with 11.5' travel lanes and 10' left turn lane. – Not supported by Emergency Responders due to limited left turn lane width.
- For northerly bridge section, on roadway lane to Lake Street (utilizes existing acceleration lane). – Traffic impacts at Lake Street due to loss of existing acceleration lane.

Blue Star Trail - Route Descriptions and Alternates

Lake Street to Maple Street (City of Saugatuck)

Option 1 – Full Roadway Separation with At Grade Boardwalk or Retaining Wall Section

- Maintains existing roadway as-is
- Requires guardrail relocation north of Lake Street
- Limited top width and steep embankment section on northwest side of roadway requires adding an at-grade boardwalk or retaining wall section north to Bridge Street to provide 10' separated trail with required clear zone (5' from edge of paved shoulder).
- From Bridge Street to Maple Street, embankment reverses and retaining wall on west side of trail likely required.

Observations/Discussion

- AASHTO Compliant separation
- No roadway configuration changes
- **Estimated Construction Cost for this Alternative is \$675,000**

Option 2 – 10' Non-motorized Trail with Reduced Separation

- Because of the high cost of Option 1, it may be possible to reduce the roadway separation requirement by adding a vertical separation component. This option would add concrete curb and gutter to the west side of the roadway along with a vertical component such as delineators. This can then reduce the separation from the travel lane to approximately 4 feet, and reduces the overall top width requirement by approximately 7 feet from Option 1.
- Requires existing guardrail relocation to face of curb.
- Roadway reconfiguration consists of cutting and removing paved shoulder and adding concrete curb and gutter at lane line.
- From Bridge to Maple, embankment reverses and retaining wall on west side of trail likely required.

Observations/Discussion

- Reduced horizontal separation from AASHTO minimum 5 feet requires vertical element and design exception approval from MDOT.
- Vertical separation proposed through use of traffic delineators and curb and gutter. Curb and gutter may not be eligible for TAP funding and may increase the local share requirement.
- Roadway drainage reconfiguration required
- **Estimated Construction Cost for this Alternative is \$600,000**

Alternates Also Considered for this section but not recommended for further evaluation

- Utilize a portion of the existing paved shoulder with pavement marking and rumble strips. = Requires a significant design exception. AASHTO standards require a minimum 5' separation from the edge of the paved shoulder (not lane line). Existing paved shoulder width on roadway is needed to continue to comply with AASHTO roadway standards.

Blue Star Trail - Route Descriptions and Alternates

Maple Street to Old Allegan Road (Saugatuck Township)

Three Distinct Typical Cross Sections Apply to the Area (No Alternates Provided)

All Sections are AASHTO compliant Separated Trails with No Roadway Reconfiguration

10' HMA Trail with Retaining Wall - From Maple to approximately 350' north

This section has a steep embankment up from the roadway and some structures close to the right of way line that will require a retaining wall to be constructed in order to construct the path within the right of way.

10' Separated Trail

The section from 350 feet north of Maple to 900 feet north of Maple has grades that allow for a standard separated trail construction.

- AASHTO Compliant separation
- No roadway configuration changes

Boardwalk – Old Allegan Road to 300 feet South

The northernmost section of trail to Old Allegan Road has wetland/low area adjacent to the roadway and will require a boardwalk section.

Estimated Construction Cost for this section is \$450,000

Alternates Also Considered for this section but not recommended for further evaluation

- None

Blue Star Trail - Route Descriptions and Alternates

Blue Star Highway to Holland Street via North Street, Amalanchier Park and 66th Street (Saugatuck Township)

Two Distinct Typical Cross Sections Apply to the Area

All Sections are AASHTO compliant Separated Trails with No Roadway Reconfiguration

10' Separated Trail

The section will apply along North Street (construction along old RR grade offset from roadway) from the Blue Star Highway to just east of the creek crossing, then north through Amalanchier Park and then along the east side of 66th Street (adjacent to cemetery) to Holland Street and the Beeline Trail to Holland.

Boardwalk

This section will apply to the wetland/creek crossing in Amalanchier Park. The length of boardwalk will be limited as much as practical.

Observations/Discussion

- This section of trail will be routed through a forested, undeveloped park setting providing a high aesthetic user experience.
- This section of 66th Street has very few residences. Location on the east side would not impact any residences but may require some tree removal.
- **Estimated Construction Cost for this section is \$330,000**

Alternates Also Considered for this section but not recommended for further evaluation

- Continue trail along the west side of the Blue Star Highway to Clearbrook and then along Clearbrook to Holland Street. – Requires at grade boardwalk or retaining wall due to steep dropoff near roadway and high costs.
- Continue trail along the north side of North Street to Holland Street rather than north through Amalanchier Park. – Limited right of way and steep slopes would require retaining wall, higher costs and greater impact to residences than other alternatives. A timber bridge crossing of the creek would still be required.
- A shared use roadway for the 66th Street portion was considered by would not be supported by the Road Commission. Grant requirements would dictate concrete sidewalks on both sides of the roadway which make cost comparable to a separated trail.