

Tri-Community Non-Motorized Trail Study Committee January 15, 2021 at 2:00 pm

This public meeting will be held using Zoom video/audio conference technology due to the COVID-19 restrictions currently in place.

- 1) Call to Order
- 2) Roll Call
- 3) Public Comments (3 minutes)
- 4) Approval of Agenda
- 5) Approval of Minutes
 - a) December 30, 2020
- 6) New Business:
 - a) Presentation of Trail & Route Design, Friends of Blue Star
- 7) Open Committee Discussion
- 8) Review next steps; engineering
- 9) Discuss dates/regular slot for future meetings
- 10) Communications
 - a) Dan Fox email
- 11) Public Comments (3 minutes)
- 12) Adjourn

Join Zoom Meeting (one click):

<https://us02web.zoom.us/j/2698572603>

Join by phone by dialing:

(312) 626-6799 -or- (646) 518-9805

Then enter "Meeting ID": 2698572603

Blue Star Joint Trail Joint Study Committee

Minutes from Dec 30, 2020 Meeting

First meeting of the committee since Feb 26, 2020 commenced at 2 PM via Zoom due to Covid

Present: Brenda Marcy, Cindy Osman, Jerry Donovan, Kathy Mooradian, Ken Trester, Holly Leo, John Adams, Richard Donovan plus Griffin Graham, Twp Manager and Karen Doyle Hayman, interim city manager of Saugatuck. **Missing:** Rich Labombard, Manager of Douglas

Motion to **approve agenda** made by Richard Donovan, seconded by Ken Trester

Holly opened meeting by calling for **public comments**. There were none. She offered some comments prior to new business to set the stage. Promoted trail as an economic driver and looks forward to committee working together to make it happen. This meeting to be simple, a reconvening of purpose after long hiatus.

New Business: Holly restated objectives of this committee are outlined in the joint resolution. 'this is our mission'. She then reviewed the joint resolution passed by Saugatuck (the other two communities agreed to the same resolution) as a refresher. **Elections:** Motion to elect Holly Leo to continue as chair by R. Donovan, seconded by K. Trester. Motion to keep Brenda Marcy as Vice chair by Cindy Osman, seconded by K. Mooradian. Motion to keep Kathy Mooradian as recording secretary by Cindy Osman, seconded by Ken Trester. All the above motions carried unanimously.

Next steps discussion: A basic committee working timeline was presented. Construction would begin in May 2023. It is subject to change due to the fact that MDOT and DNR dictate a good part of the timeline and other factors such as grant application and awards timing. People agreed it seemed reasonable and no faster action could be done. J. Adams mentioned 75% of funding is from grants and FOBST must raise the other 25% and he cannot start until he gets the structure and direction to do a proper capital campaign.

Engineering needs and costs: R. Donovan shared the role of the engineer and a process that FOBST used in the past to put it out to engineering firms. FOBST will not be the ones to hire the engineering firm (not their expertise or role). Jointly the three communities will need to do this. Discussion about whether to go all new (an unknown) or hire firm that Douglas and the Township already use given they have much knowledge (possible cost savings). Ken T and Cindy O want to see engineering already done first; all agreed this makes sense. The Friends representatives were clear that they were still paying for the engineering costs even though they have now exceeded the original predictions. Logistics of getting a firm paid were shared.

Saugatuck will look into doing an escrow account as one idea. Township will look into whether Prein and Newhoff would even consider being one of the possible firms.

Committee Comments: Cindy commented on the need to see whole design (not just bridge) prior to hiring a firm. Adams agreed the Friends of the Blue Star Trail could provide a presentation of all three communities' contiguous trail routes.

Many on the committee stated they were reenergized and liked feeling the spirit of cooperation

Public comments:

Scott Dean looks forward to future work of the committee

Barry Johnson promoted that the 2-lane option was out for him - could not be done due to fire department getting over the bridge.

Next meeting: to be held within 2 weeks. Need for speed due to concerns over getting grants applications in on time, once design agreed.

Respectfully presented by K Mooradian, Recording Secretary and Douglas City Council member. 1/4/2021

TRAIL ROUTE + DESIGN

Tri-community Study
Committee for the Blue Star
Trail

January 15, 2021



Outline

A. Introduction

B. Remaining Concerns

C. Design Considerations & Route Options

D. Costs

E. Next Steps

A. Introduction

- Goal is to provide enough information so we can make a high-level recommendation to the governing bodies
- We can explain concepts but *we are not engineers*
- Assumptions: Trail should have a uniform design that complies with AASHTO standards and that people want to use
- Consider facts and opinion of licensed experts, not anecdotes
- More details and conceptual engineering plans are provided in an Addendum below

B. Remaining Concerns: Shared by All

- **Safety**
 - Parts of existing layout are unsafe, confusing
- **Cost to Build**
- **Annual maintenance costs, responsibility**
 - annual maintenance vs. long term repair, replacement
- **Aesthetics**

B. Remaining Concerns: City & Twp

- Douglas/Saugatuck City:
 - Emergency vehicle access over the bridge
- Saugatuck City:
 - Traffic flow at Lake Street; whether to install traffic signals
- Saugatuck Township:
 - Whether to keep route through Alamanchier Park or consider possibly less expensive option along North St. and Elizabeth St.

C. Route/Design Considerations - MDOT

- MDOT Transportation Alternatives Program (TAP) is source of 60% of projected funding; applicants compete for funding
- MDOT/TAP requires trail to meet standards set by American Association of State Highway Transportation Officials (AASHTO)
- If any section of the Trail does not meet AASHTO, it would “reduce the competitiveness” of an application for any nearby sections of the Trail
- Some AASHTO standards are subject to interpretation, but MDOT will not provide specific guidance until a grant application is submitted

LEGEND

 EXISTING BLUE STAR TRAIL:


 Connecting Saugatuck City to Saugatuck Twp. and the Beeline Trail to Holland


 Old Allegan Rd. to North St.

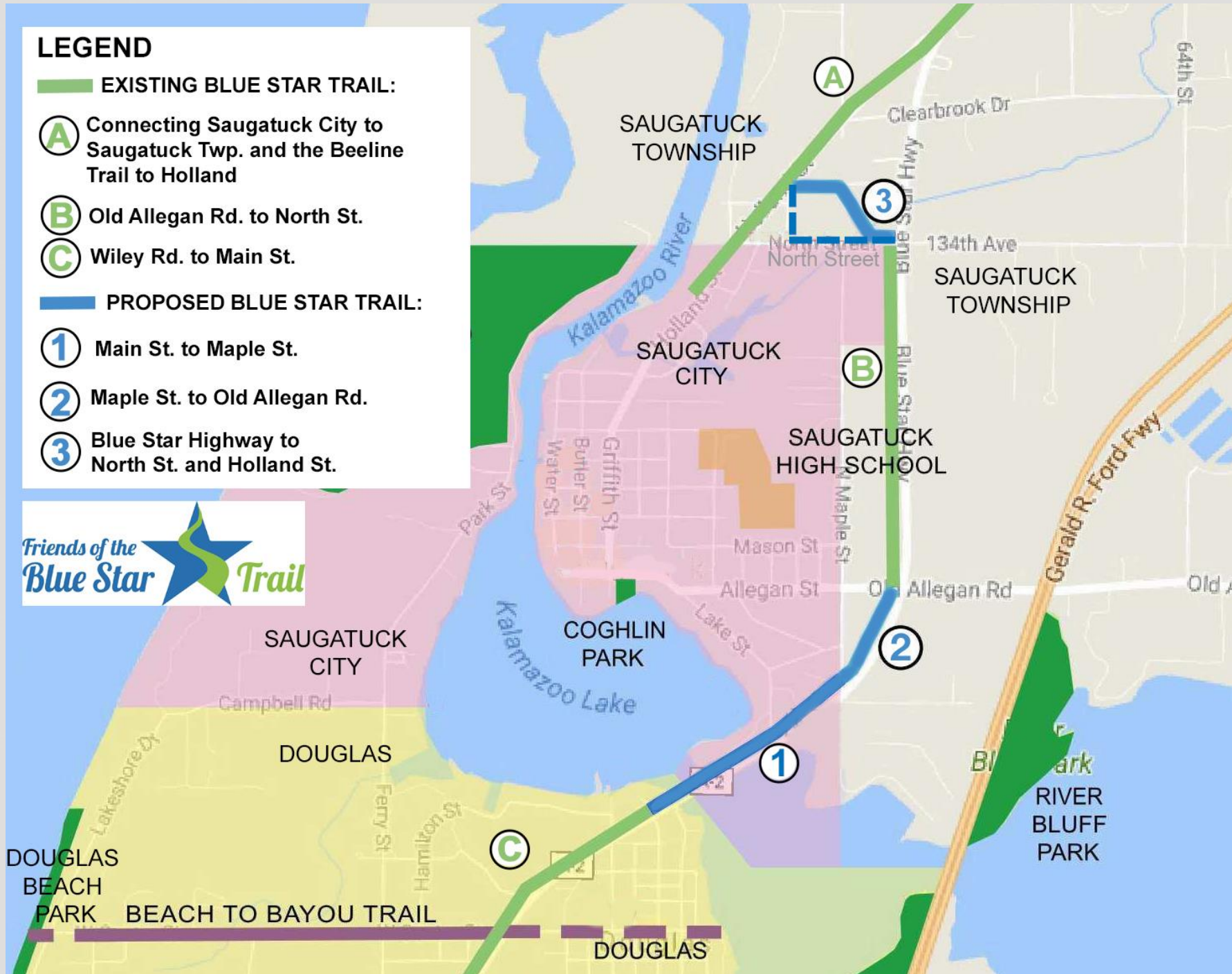
 Wiley Rd. to Main St.

 PROPOSED BLUE STAR TRAIL:

 1 Main St. to Maple St.

 2 Maple St. to Old Allegan Rd.

 3 Blue Star Highway to North St. and Holland St.



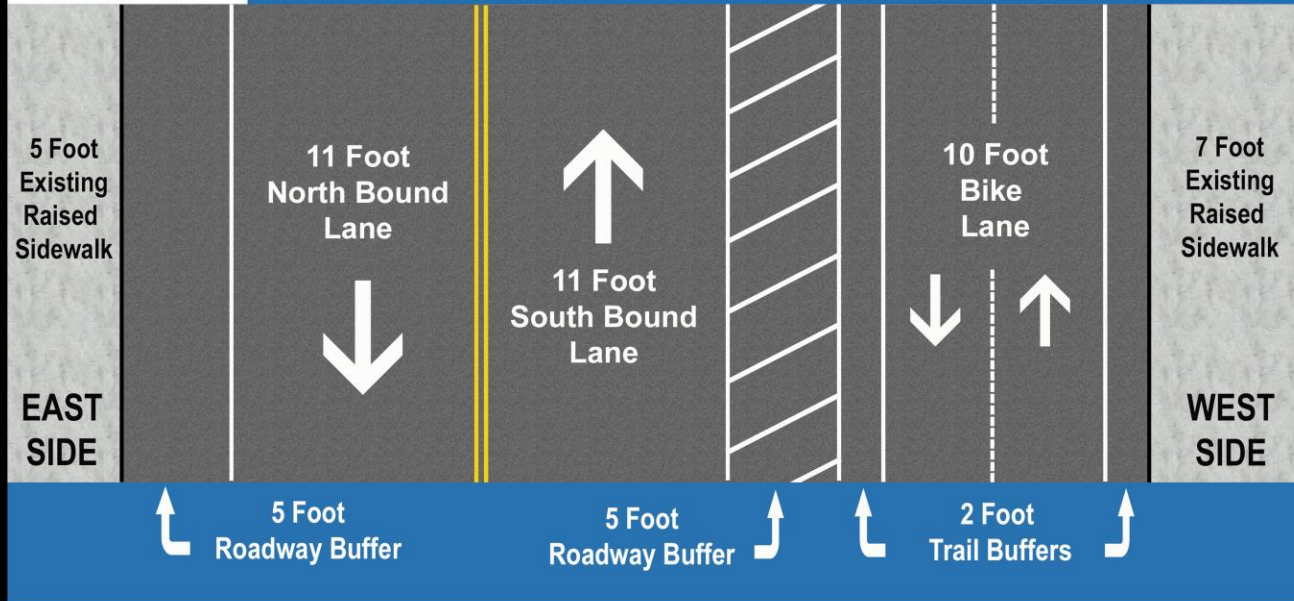
C. ROUTE OPTIONS

Douglas/Saugatuck City: Bridge to Lake St.

Option 1: 2-lanes over bridge, with optional traffic signals

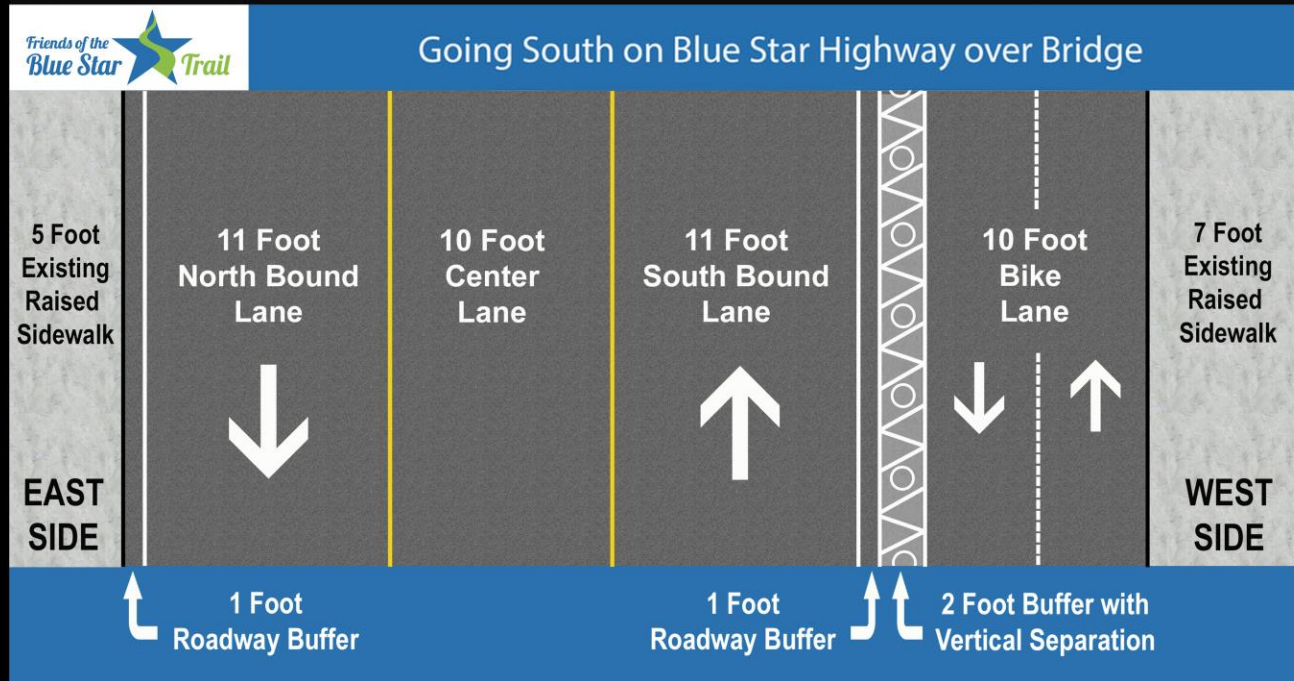
Option 2: 3-lanes over bridge, "Split Trail"

**Option 1:
Two Lane**

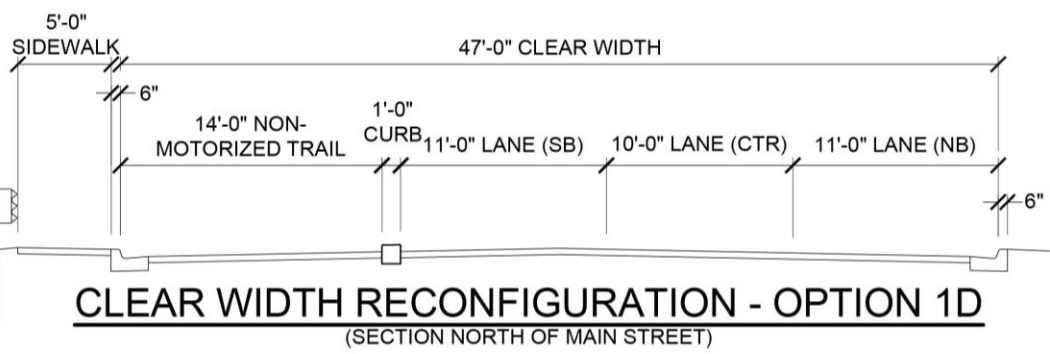
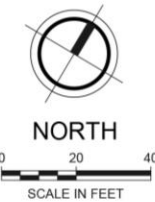
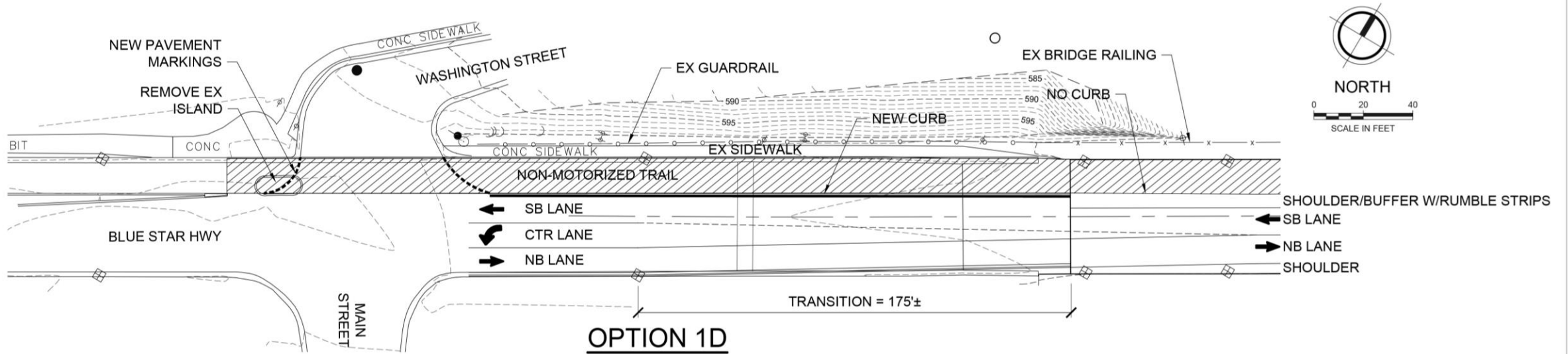


compared to

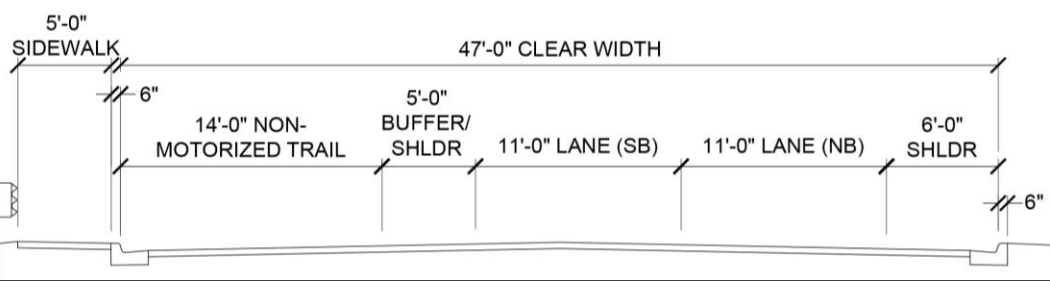
**Option 2:
Three Lane**







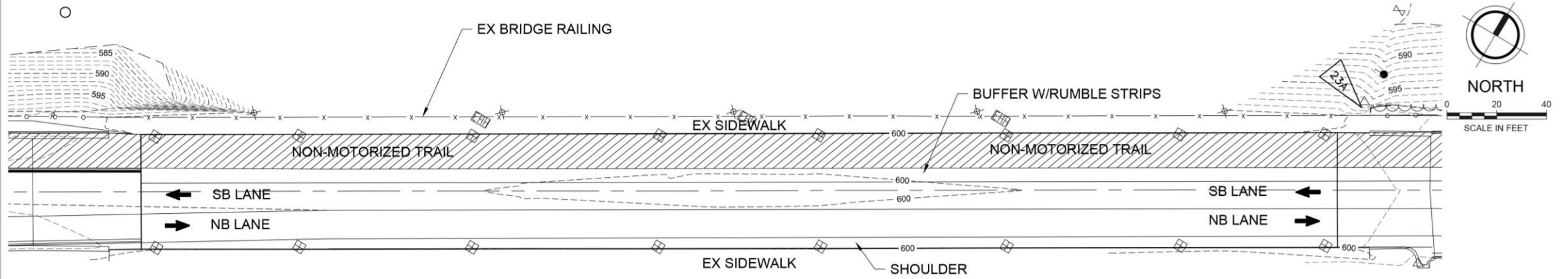
OPTION 1D - NON-MOTORIZED TRAIL IN EXISTING ROADWAY, WEST SIDE, TWO LANE PLUS BUFFER SECTION
DESCRIPTION: UNDER THIS OPTION, THE NORTHWESTERN 14 FEET OF EXISTING PAVEMENT WOULD BE CONVERTED TO THE NON-MOTORIZED TRAIL. SEPARATION BETWEEN THE SOUTHBOUND LANE AND NON-MOTORIZED TRAIL WOULD BE ACHIEVED BY A 5-FOOT BUFFER WIDTH. THE EXISTING WIDE 3-LANE PLUS BIKE LANE/SHOULDER CONFIGURATION WOULD BE CONVERTED TO A 2-LANE SECTION WITH BUFFER/SHOULDER, WITH TRANSITION FOR THE LEFT TURN LANE AT MAIN STREET. A CONCRETE CURB WOULD BE USED IN THE TRANSITION WHERE THE 5-FOOT BUFFER CAN'T BE PROVIDED.



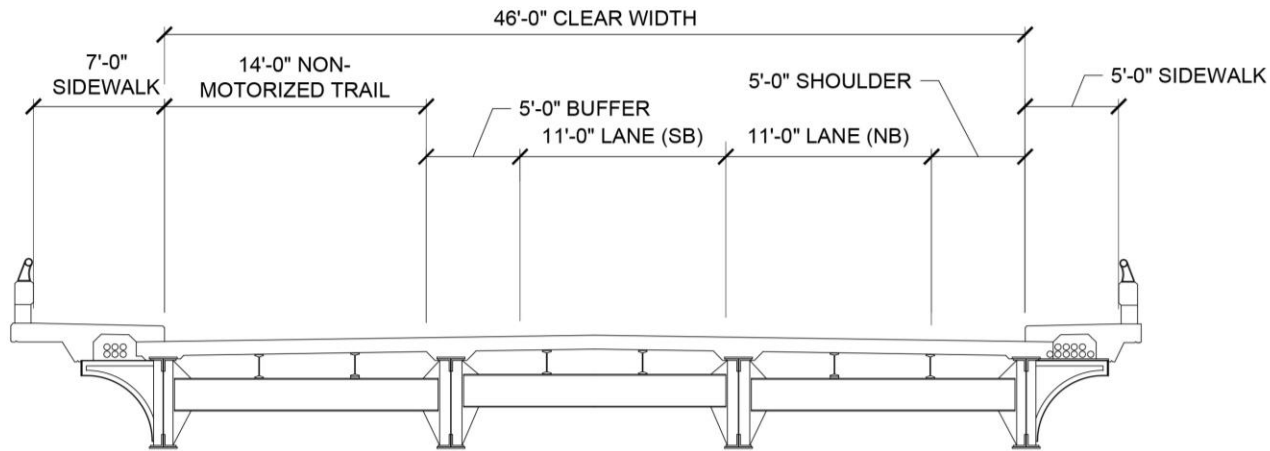
BLUE STAR TRAIL IMPROVEMENTS
CITY OF SAUGATUCK, MI
EXISTING TRAIL TO KALAMAZOO RIVER BRIDGE

Going South on Blue Star Highway over Bridge





OPTION 1D



CLEAR WIDTH RECONFIGURATION - OPTION 1D

OPTION 1D - NON-MOTORIZED TRAIL IN EXISTING ROADWAY, TWO LANE PLUS BUFFER/SHOULDER SECTION
 DESCRIPTION: UNDER THIS OPTION, THE NORTHWESTERN 14 FEET OF EXISTING BRIDGE SURFACE WOULD BE CONVERTED TO THE NON-MOTORIZED TRAIL. SEPARATION BETWEEN THE SOUTHBOUND LANE AND NON-MOTORIZED TRAIL WOULD BE ACHIEVED BY A 5-FOOT BUFFER. THE EXISTING WIDE 3-LANE PLUS BIKE LANE/SHOULDER CONFIGURATION WOULD BE CONVERTED TO A 2-LANE SECTION WITH A BUFFER ON THE WEST SIDE AND SHOULDER ON THE EAST SIDE.

BLUE STAR TRAIL IMPROVEMENTS
 CITY OF SAUGATUCK, MI
 KALAMAZOO RIVER BRIDGE

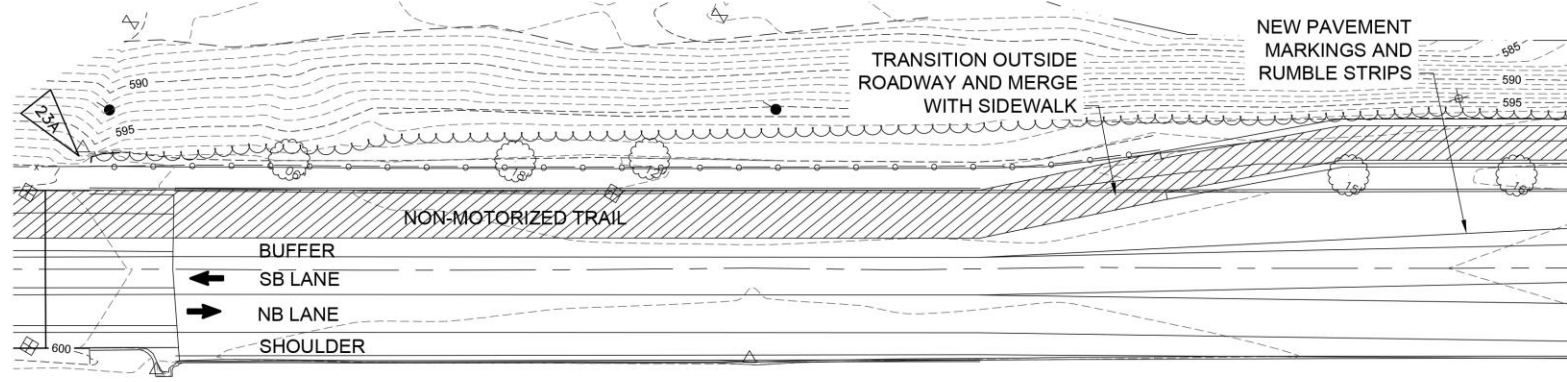
PART 2 - OPTION 1D



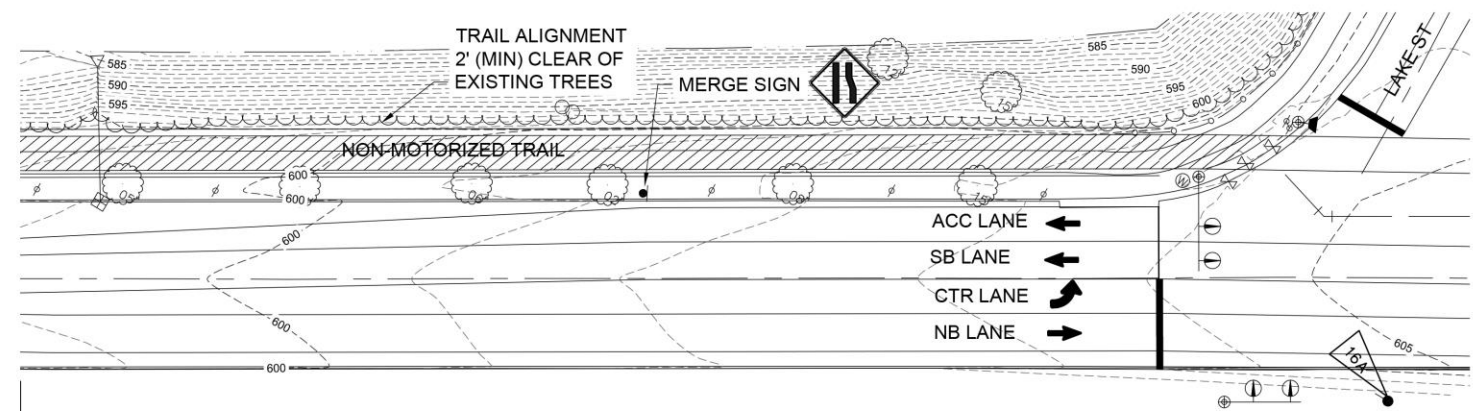
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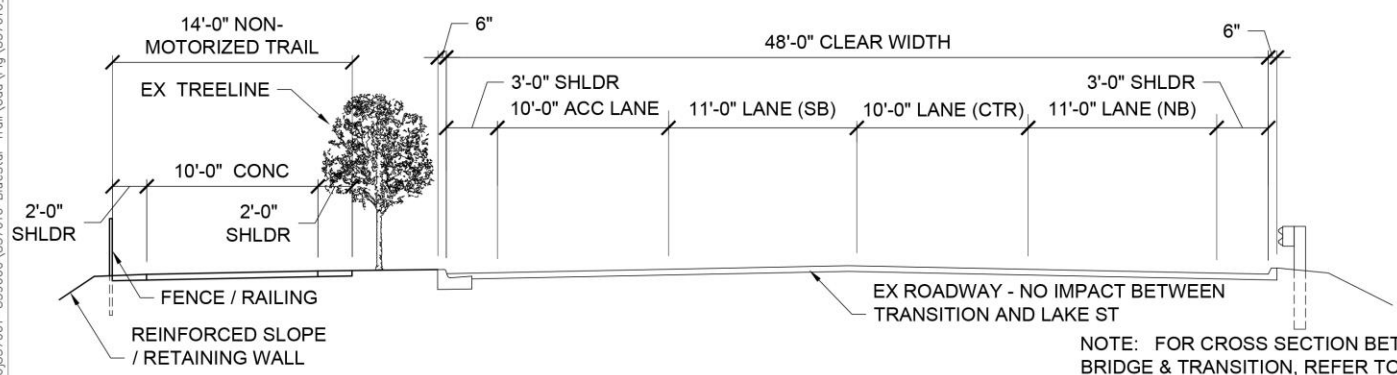




OPTION 1D



OPTION 1D



CLEAR WIDTH RECONFIGURATION - OPTION 1D
(SECTION AT NORTH OF TRANSITION)

OPTION 1D - NON-MOTORIZED TRAIL IN EXISTING ROADWAY, TWO LANE PLUS BUFFER/SHOULDER SECTION, TRANSITION OUTSIDE ROADWAY
 DESCRIPTION: UNDER THIS OPTION, THE NORTHWESTERN 14 FEET OF EXISTING PAVEMENT WOULD BE CONVERTED TO THE NON-MOTORIZED TRAIL. SEPARATION BETWEEN THE SOUTHBOUND LANE AND NON-MOTORIZED TRAIL WOULD BE ACHIEVED BY A 5-FOOT BUFFER WIDTH. THE EXISTING WIDE 3-LANE PLUS BIKE LANE/SHOULDER CONFIGURATION WOULD BE CONVERTED TO A 2-LANE SECTION WITH SHOULDERS. TRANSITION WOULD BE MADE BEHIND THE CURB AWAY FROM THE BRIDGE.

BLUE STAR TRAIL IMPROVEMENTS
 CITY OF SAUGATUCK, MI
 KALAMAZOO RIVER BRIDGE TO LAKE STREET

PART 3 - OPTION 1D

837010
 FEV PROJECT NO.

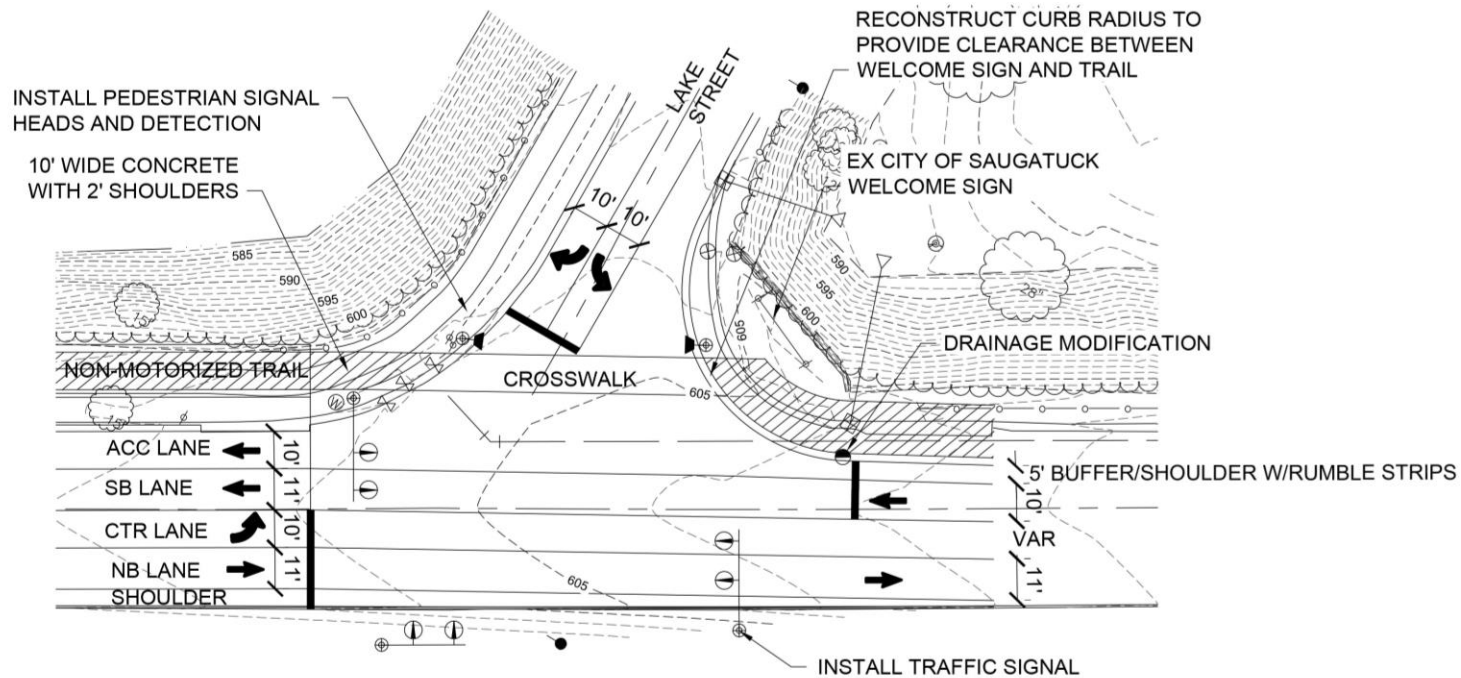


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Looking North on Blue Star Highway at Lake Street







TRAIL FRONT OF WELCOME SIGN
SIGNALIZED - OPTION 1D

OPTION 1D - SIGNALIZED WITH COMBINED NON-MOTORIZED TRAIL AND SIDEWALK
 DESCRIPTION: UNDER THIS OPTION THE INTERSECTION WOULD BE CONVERTED FROM MINOR STREET STOP CONTROLLED TO TRAFFIC SIGNAL CONTROLLED. THE EXISTING SIDEWALK SOUTH OF THE INTERSECTION WOULD BE REPLACED WITH A 10-FOOT TRAIL WITH 2-FOOT SHOULDERS. A NON-MOTORIZED TRAIL CROSSING WOULD BE PROVIDED TO CROSS LAKE STREET. ON THE NORTH SIDE OF THE INTERSECTION, THE NON-MOTORIZED TRAIL WOULD BE CONSTRUCTED IN FRONT OF THE EXISTING CITY OF SAUGATUCK WELCOME SIGN.

BLUE STAR TRAIL IMPROVEMENTS
 CITY OF SAUGATUCK, MI
 LAKE STREET INTERSECTION



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Option 1: Optional Traffic Signals

- Signals would only operate during high season
- Remotely controlled by first responders to stop traffic from crossing bridge
- Would improve safety and traffic flow at Lake St. intersection
- \$250,000 cost (est. as of 2019)
 - TAP grant would not fund, but CMAQ probably would fund 80%
- Informal discussions show residents in favor

Option 1 (2 lanes): Emergency Access

Factors that reduce the risk of delay for emergency responders under 2-lane option:

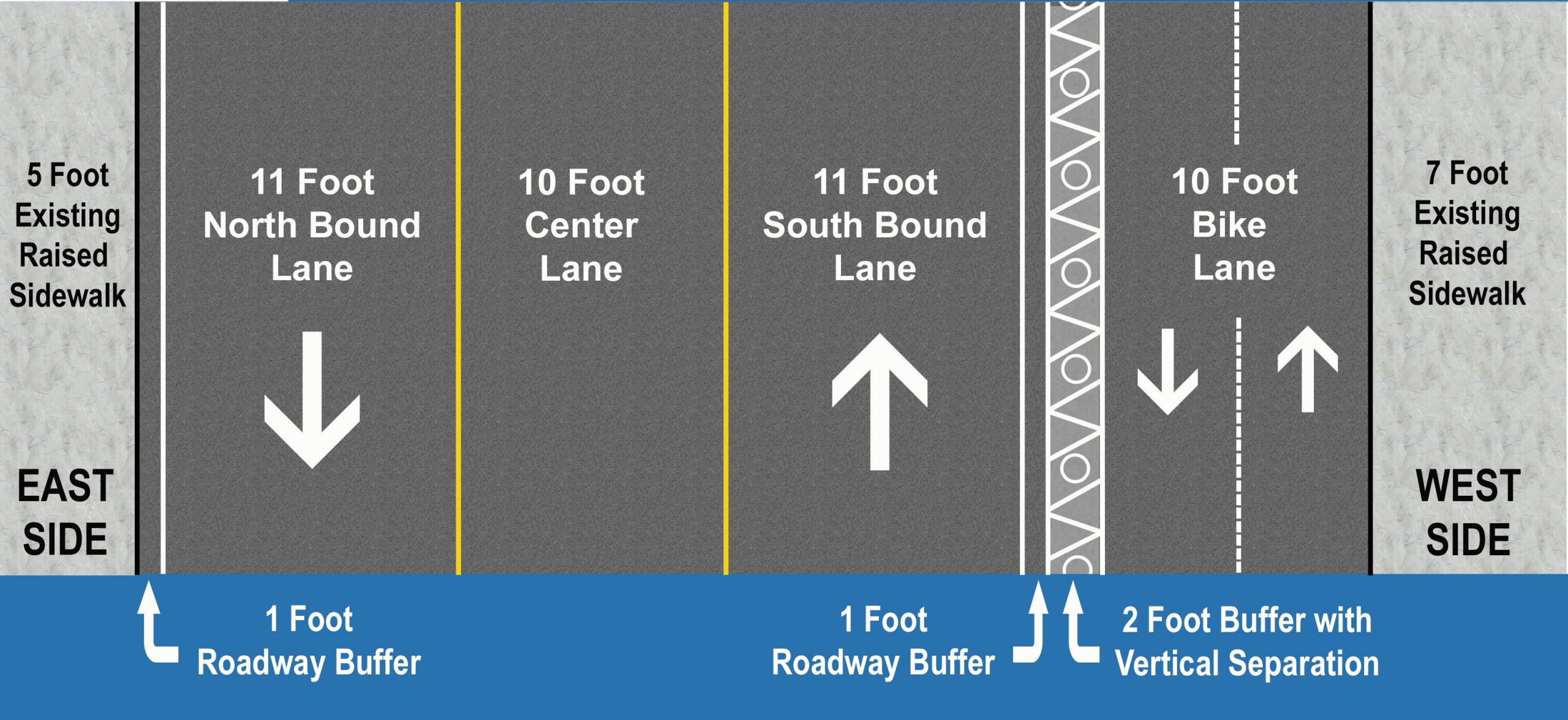
- a. ML 257.653 requires motorists to immediately pull off to side for emergency vehicles; can install signs to remind them
- b. Vehicles can make room for responders by using buffer and bike lanes
- c. Traffic signals with remote control can significantly reduce risk on bridge and in Douglas
- d. Rare for a bridge to have dedicated lane for emergency vehicles
- e. Smoother connection to 2-lanes in Douglas

Option 2: 3-Lane Option

"Split Trail"

- pedestrians use existing sidewalk
- narrowed bike lane on bridge roadway
- retains 10-11 ft. center lane

Going South on Blue Star Highway over Bridge



Option 2: Considerations

- MDOT has informally approved concept but specific requirements are unclear
- MDOT says by installing some form of “vertical separation” (physical divider) between bike lane on roadway and SB traffic lane, width of bike lane and buffer can be reduced from 19’ to 13’ to provide space for a center lane
- Divider raises aesthetic and maintenance concerns

Examples of Vertical Separators



Austin, TX (Source: City of Austin)

Concrete curbs can either be cast in place or precast. This type of buffer element is more expensive to construct and install but provides a continuous raised buffer that is attractive with little long-term maintenance required. Mountable curbs are an option where emergency vehicle access may be required.



Portland, OR (Source: Oregon Transportation Research and Education Consortium)

This form of separation provides an aesthetic element to the streetscape, a suitable vertical barrier, and is quick to install. However, depending on the placement, this treatment is more expensive than other solutions, requires maintenance of the landscaping, and may not be as appropriate on higher speed streets.

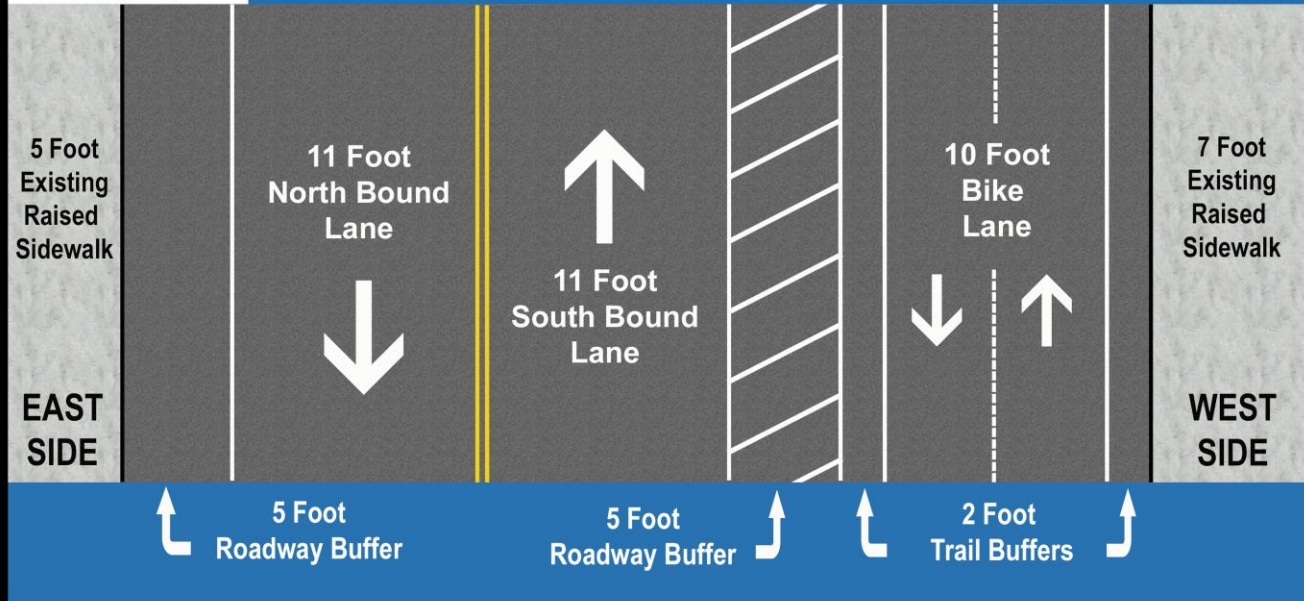
Option 1: Two Lane

compared
to

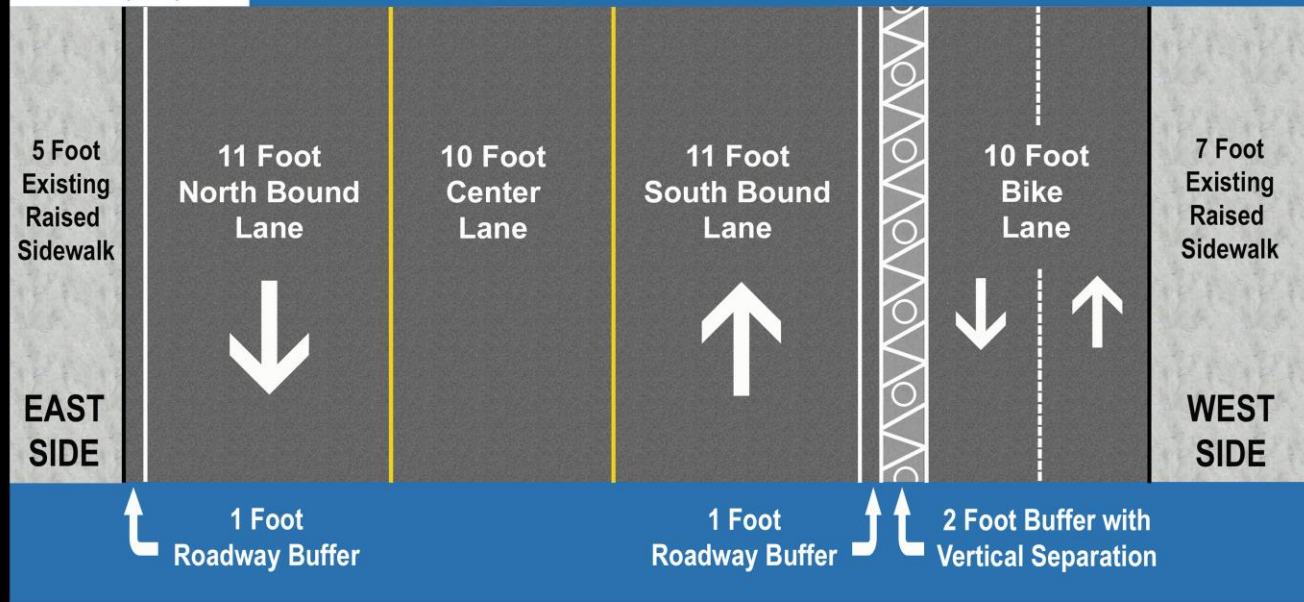
Option 2: Three Lane



Going South on Blue Star Highway over Bridge

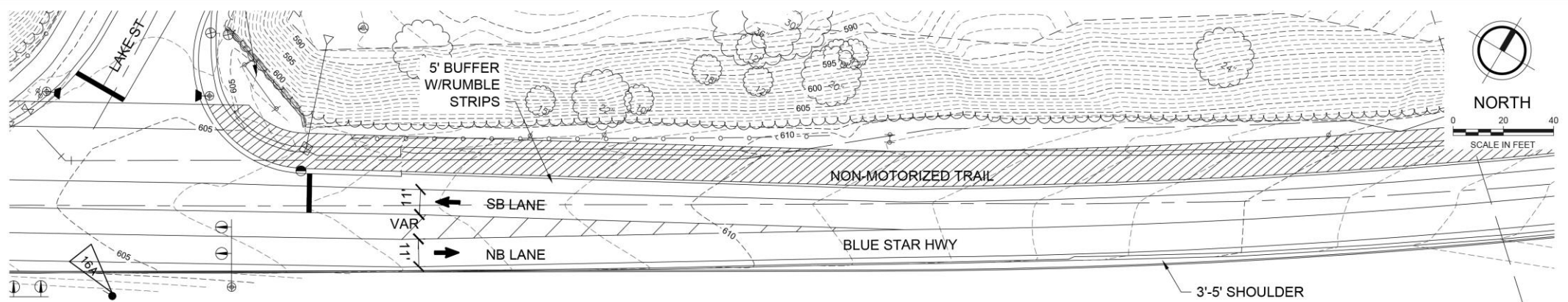


Going South on Blue Star Highway over Bridge

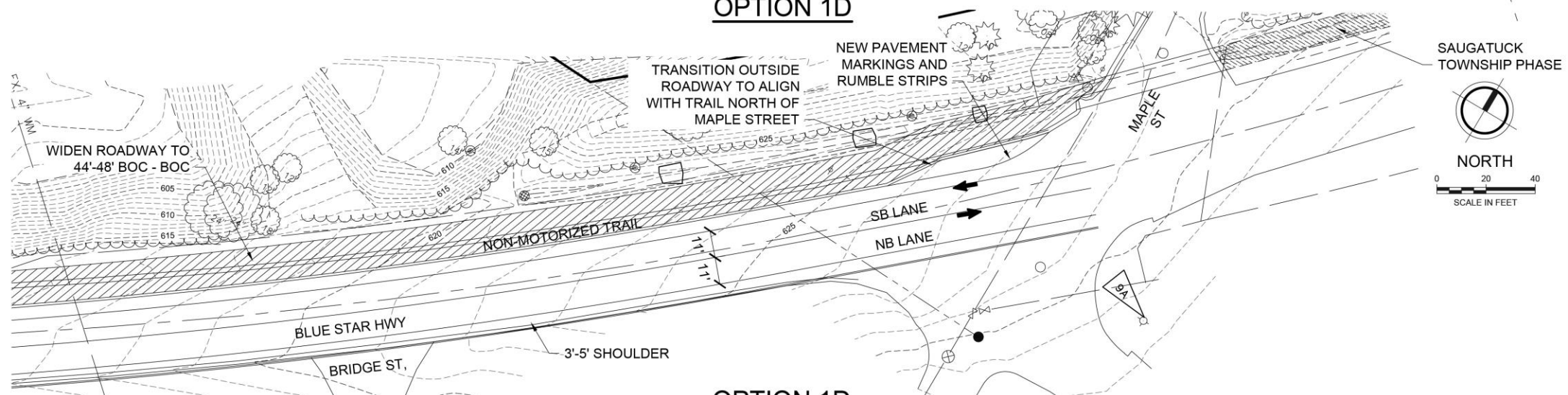


Saugatuck City: Lake St. to Maple St.

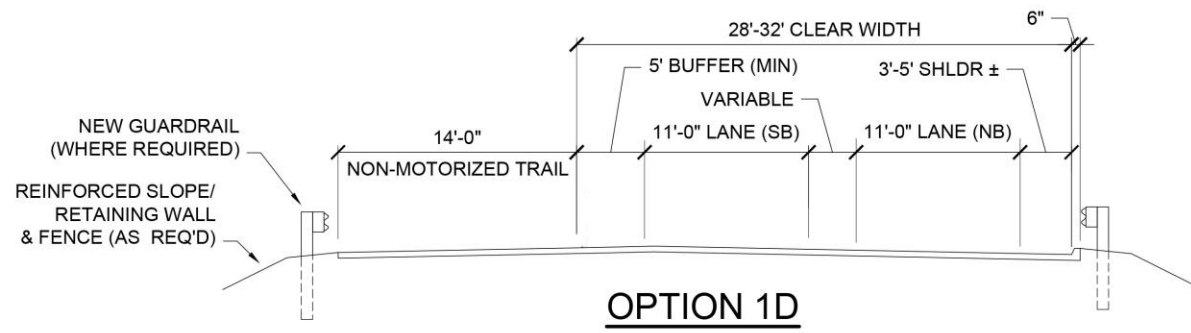
- Utilizes a portion of existing southbound shoulder
- Some slope reinforcement/retaining wall and fencing required
- Part of buffer area would likely be grass
- At Maple Street, existing ditch would be enclosed to allow transition out of the roadway



OPTION 1D



OPTION 1D



OPTION 1D - NON-MOTORIZED TRAIL IN EXISTING ROADWAY, TWO LANE PLUS BUFFER/SHOULDER SECTION DESCRIPTION: UNDER THIS OPTION, THE ROAD WOULD BE WIDENED, AND THE NORTHWESTERN 14 FEET OF EXISTING PAVEMENT WOULD BE CONVERTED TO THE NON-MOTORIZED TRAIL. SEPARATION BETWEEN THE SOUTHBOUND LANE AND NON-MOTORIZED TRAIL WOULD BE ACHIEVED BY A 5-FOOT BUFFER WIDTH. TRANSITION WOULD BE MADE TO MAINTAIN THE LEFT TURN LANE AT LAKE STREET.

BLUE STAR TRAIL IMPROVEMENTS
 CITY OF SAUGATUCK, MI
 LAKE STREET TO MAPLE STREET
 PART 5 - OPTION 1D



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Saugatuck Township Route Options

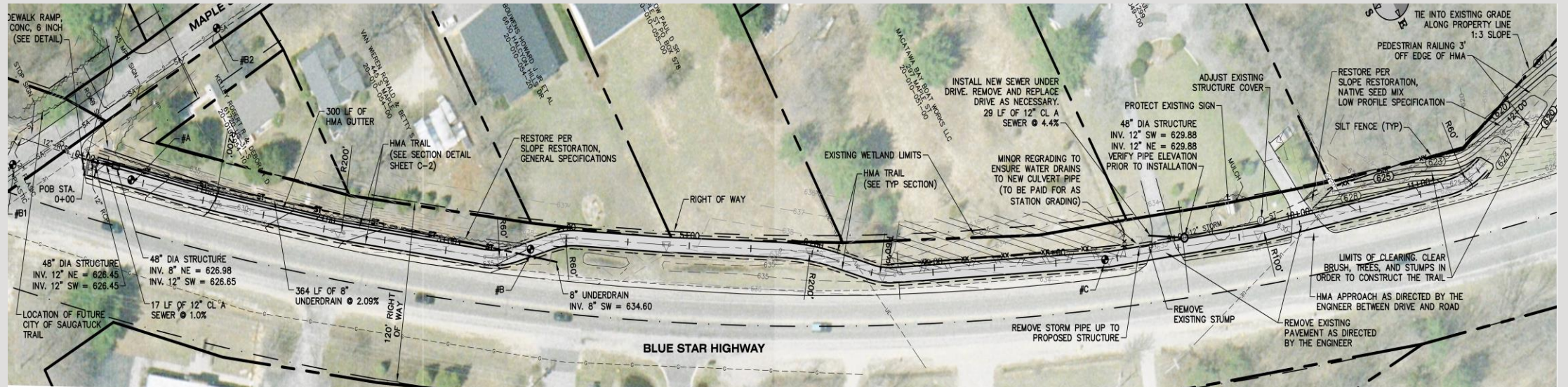
- **Map Section #2** – Maple St. to Old Allegan Rd.

- **Map Section #3**

Option 1: from BSH to Holland St. crossing
Alamanchier Park

Option 2: North St. (using ROW shared by Twp &
City) to Elizabeth St. to Holland St. (avoids the Park)

Saugatuck Twp – Maple St. to Old Allegan Rd.



TRAIL QUANTITIES THIS SHEET

69 Syd Pavt, Rem	3 Ea Dr Structure, 48 inch dia
103 Sft Sidewalk Ramp, Conc, 6 inch	2 Ea Dr Structure Cover, Type B
12 Sta Station Grading	1 Ea Dr Structure Cover, Type K
1945 Syd Aggregate Base, 6 inch	49 Ft Sewer, CI A, 12 inch, Tr Det B
455 Syd Shoulder, CI II, 3 inch	1 Ea Underdrain, Outlet Ending, 8 inch
245 Ton HMA, 13A	364 Ft Underdrain, Outlet, 8 inch
4 Ton HMA Approach	10 Sta Slope Restoration, General
10 Ft Detectable Warning Surface	2 Sta Slope Restoration, Native Seed Mix, Low Profile
1 Ea Stump, Rem, 6 inch to 18 inch	465 Ft Erosion Control, Silt Fence
1 Ea Dr Structure Cover, Adj, Case 2	37 Ft Sewer, Rem, Less than 24 inch
138 Ft Pedestrian Railing	300 Ft Curb Sloped, HMA
0.01 Acre Clearing	

Depth:	Material Description: A
0'	Dark brown, wet, silty top soil, with gravel (0.5' thick approx.)
1'-6.3'	Starting at 0.5': Brown/gray, stiff, wet (fully saturated) clay, trace gravel,
Groundwater:	Not encountered

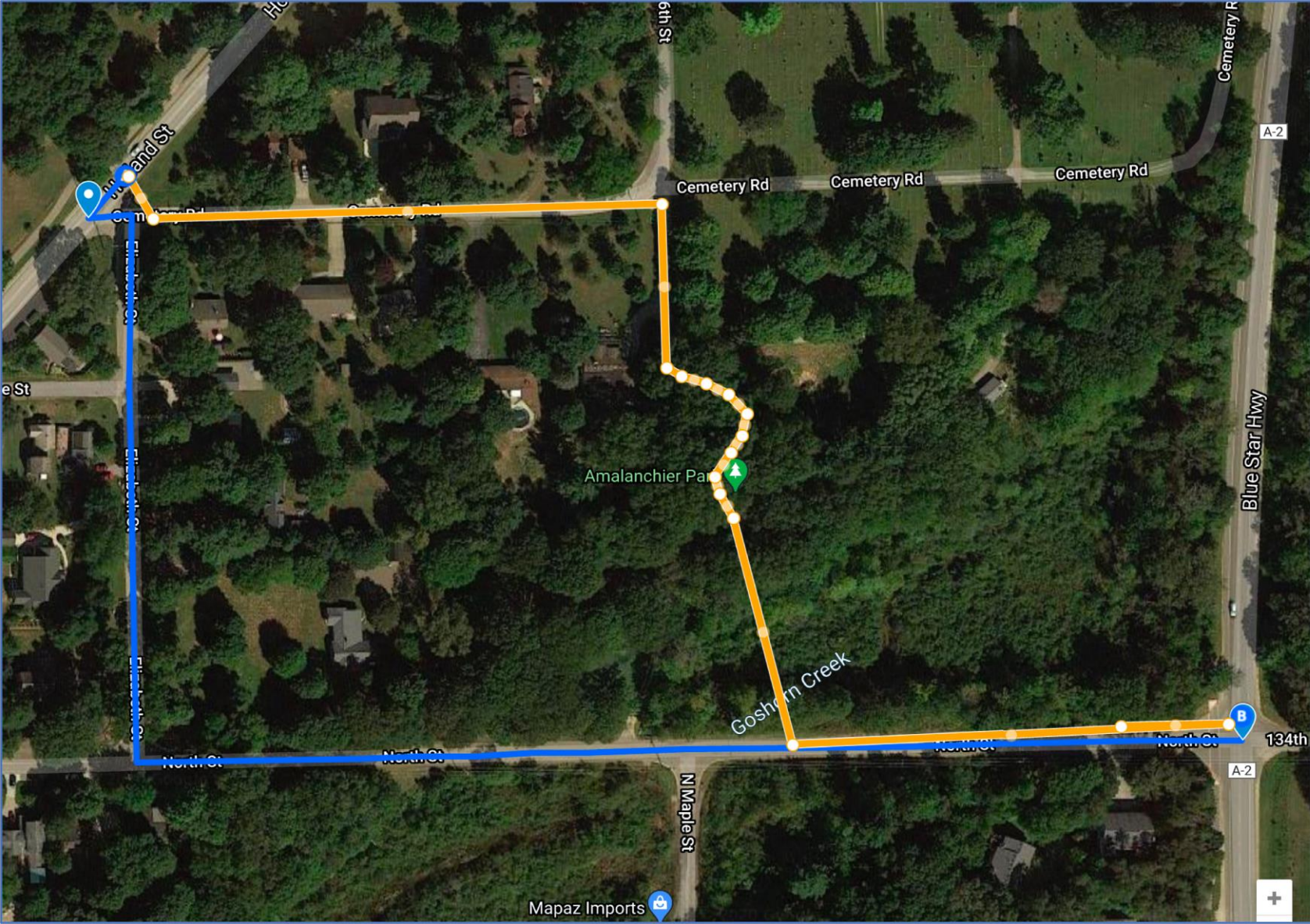
Depth:	Material Description: B1*
0'-2'	SAND, medium brown, moist
2'-5'	CLAY, gray, sandy, moist
5'-15'	CLAY, bright gray, sandy, moist, hard
15'-20'	SAND, medium to fine, light brown, dry
Groundwater:	Not encountered
* Obtained from sewer AS-BUILT drawings	

Depth:	Material Description: B2*
0'-7.5'	SAND, medium brown, moist
7.5'-20'	CLAY, gray, sandy, wet
Groundwater:	Not encountered
* Obtained from sewer AS-BUILT drawings	

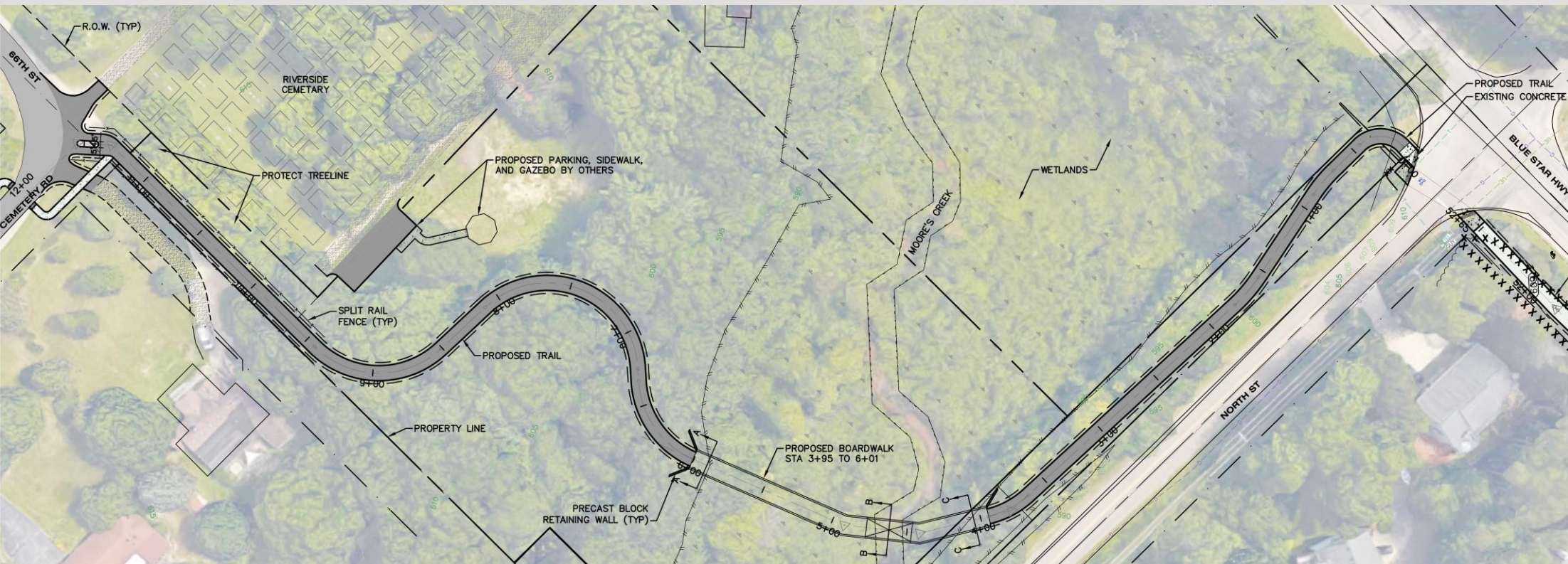
Depth:	Material Description: B
0'	Red-brownish to dark brown top soil, with some brown, sandy clay
1'	Dark brown, coarse sand, then reddish, dark brown, coarse sand
2'	Dark brown silty clay, damp
3'-5.5'	Dark grey & brown clayey/silty, w/ sand, trace gravel, wet
Groundwater:	3' +/-

Depth:	Material Description: C
0'	Topsoil, roots, trace clay
1'	Clayey sand, dark brown, trace gravel
2'	Gray, stiff clay, trace gravel
3'	Gray, stiff clay, trace gravel, damp
4'-6'	Auger refusal @ 4.3' (rocks/gravel)
Groundwater:	Not encountered

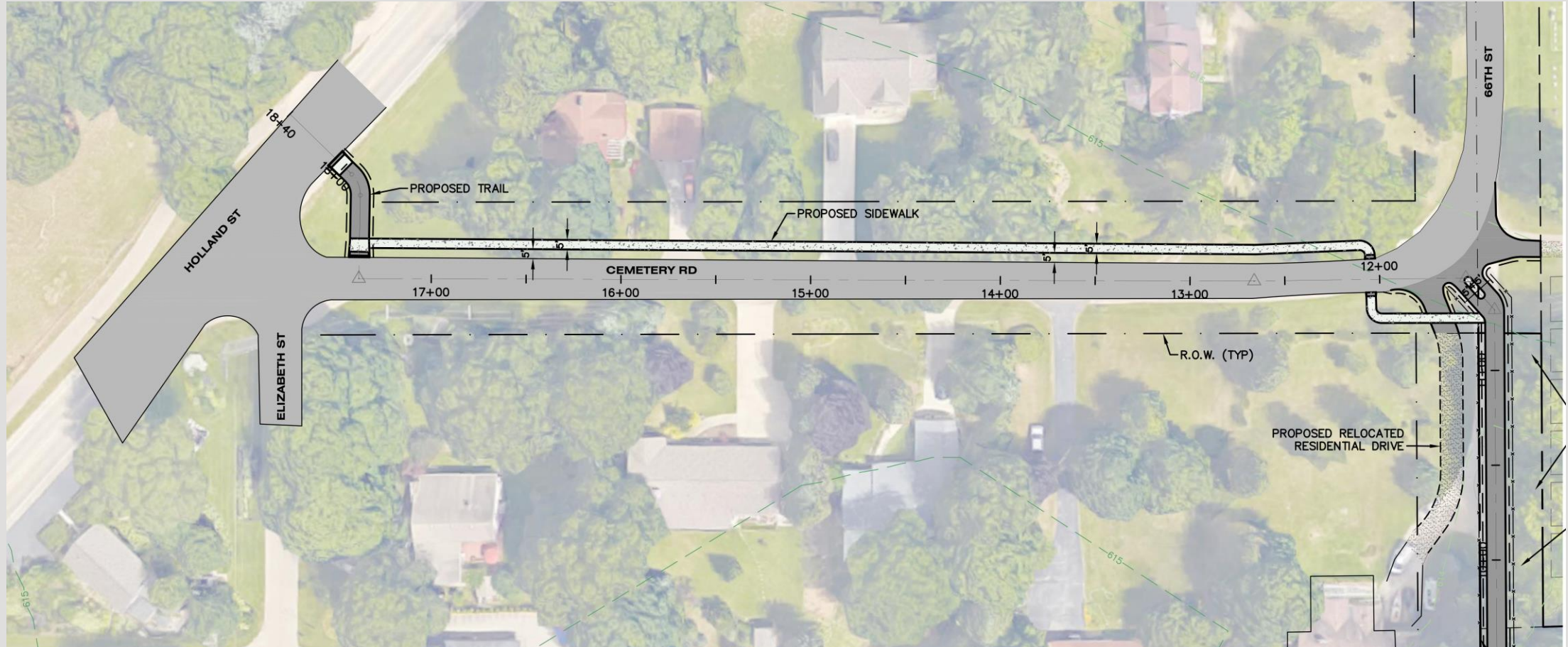
Township Options - Map



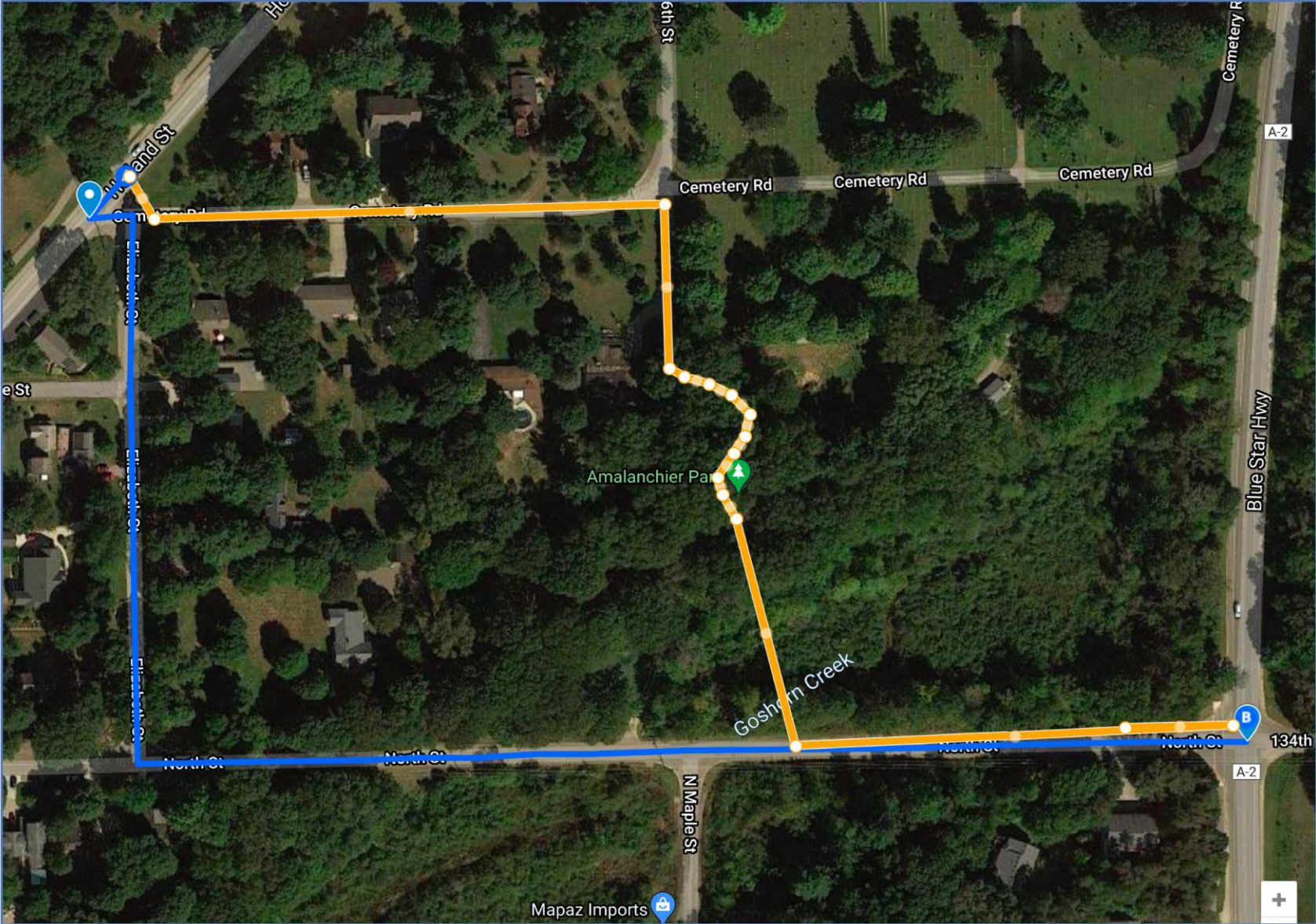
Option 1 - Alamanchier Park Crossing from North St. to Cemetery Rd.



Option 1 – Cemetery Rd. to Holland St.



Township Options - Map



Saugatuck Twp North - Considerations

- **North St./Elizabeth St. Option**

- Less expensive?
- City approval required for use of ROW?
- Township would install sidewalk on Elizabeth

- **Alamanchier Park Option**

- Included in Twp Parks Plan as feature of undeveloped Park; favored by Twp Parks Committee
- Good location for a trail head with parking and lavatories, water fountain
- DNR scores more points for projects that involve parks
- School science teachers say they would use Park trail

D. COSTS: City Option 1 (2 lanes), Twp Park Option

Trail Section	Construction	Contingencies	Total
Existing Trail to Kalamazoo River Bridge (Douglas)	\$27,250	\$6,800	\$34,050**
Bridge to Maple St. (Saugatuck City)	\$224,950	\$56,300	\$281,250**
Maple St. to Old Allegan Rd (Township)	\$150,000	\$15,000	\$165,000*
North St. to Holland St. (Township)	\$500,000	\$50,000	\$550,000*
	\$902,200	\$128,100	\$1,030,300
Traffic Signal Option	\$200,000	\$50,000	\$250,000**
Sources: *Hurley Stewart 2018, **F&V, 6/19			
N.B. Excludes engineering costs (est. 20% of total)			

COSTS: City Option 2 (3 Lanes)

- Similar to 2-lane option but add cost of vertical separators acceptable to MDOT

E. Next Steps

1. Ascertain Committee's preferred route and design
2. Have engineering firm confirm compliance with MDOT requirements and safety standards, update cost estimate
3. review with Councils, Board, Fire Dept. if requested
4. Consider whether additional public input is needed and, if so, how

Addendum Materials

- List of Original & Remaining Design Considerations
- Benefits of Traffic Signals
- Summary of options from F&V
- More Examples of Vertical Separators

**Blue Star Trail Feasibility Study – Main Street to Maple Street
Comparison of 2 Lane Option and 3 Lane Split Trail Option**

Design Consideration	2 Lane	3 Lane Split Trail
Estimated construction cost from Main Street to Maple Street (excluding traffic signals & estimated engineering expense)	\$315,000	TBD-Expect Modestly Higher
Does it widen the existing Saugatuck sidewalk leading to bridge from Lake St., requiring retaining walls/slope stabilization/fencing?	Yes	Yes
Is bike trail separate from existing sidewalk on Kalamazoo River bridge?	Yes	Yes
Is trail separate from existing sidewalk from Lake Street to Kalamazoo River bridge?	No	No
Is the lane configuration maintained at Lake Street?	Yes	Yes
- Is the southbound acceleration lane maintained at Lake Street?	Yes	Yes
- Is the northbound left turn lane maintained at Lake Street?	Yes	Yes
- Is the southbound approach lane configuration maintained?	Yes ³	Yes ³
How do the anticipated legacy costs compare?	Lower	TBD – Expect Slightly Higher
Does the option maintain 3 lanes on the Bridge?	No	Yes
Is the entire bridge width (excluding sidewalks) maintained for emergency situations?	Yes	TBD
What is the minimum shoulder width on the east of bridge for cyclists and mopeds?	5'	TBD
What is the minimum shoulder width at Lake St. & Main St. intersections?	0	0
Will the view from the bridge on the trail side be affected from railing modification (slightly, below 54")?	No	No
Will vertical separation between trail and vehicle lanes be required on the bridge?	No	Yes
Does the option incorporate the use of (low maintenance) fencing between Lake Street and the bridge?	Yes	Yes
How do the anticipated maintenance costs compare?	Lower	TBD - Expect Slightly Higher
Can snow removal be accomplished effectively?	Yes	TBD
Is a new snow removal operation required?	Yes ²	TBD ²
Can the option be designed and constructed to meet traffic and safety standards?	Yes	Yes
Can the option be designed to meet MDOT design requirements?	Yes	TBD
Can the option be designed to meet MDOT funding requirements?	Yes	TBD
Can parts of the trail be implemented without MDOT funding?	No	No
Does the trail cross Lake Street?	Yes	Yes
Is the sidewalk width leading to the bridge intended to serve multiple types of non-motorized users?	Yes	Yes
Is the raised sidewalk on the bridge intended to serve multiple types of non-motorized users?	No	No
Can the option be coordinated with the Douglas portion of the trail effectively?	Yes	TBD
Does the option reduce driver confusion for southbound traffic at Main Street?	Yes	TBD

Is the transition for southbound traffic between bridge and Main Street improved?	Yes	TBD
Is the left turn lane for southbound traffic at Main Street maintained?	Yes	Yes
Design Consideration	2 Lane	3 Lane Split Trail
Does the option incorporate the use of decorative railings?	No	No
Will the City be provided with funds for trail maintenance?	TBD	TBD
Is a traffic signal recommended at Lake Street?	Yes	Yes
Will the peak hour performance of the intersection be improved with signals?	Yes	Yes
Does the trail conflict with the palette sign?	No	No
Can a landscaping area be preserved around the palette sign?	Yes	Yes
How will the aesthetics of the Lake St. intersection & palette sign change?	See Renderings	See Renderings
Can the palette sign be relocated slightly if aesthetics remain a concern?	Yes	Yes
Will southbound trail users be directed to downtown Saugatuck via Old Allegan Road?	Yes	Yes

Notes:

1. The trail crosses Washington Street and Maple Street.
2. If desired by the City. Snow removal on Blue Star Trail has been done on a case-by-case basis, depending on community preference.
3. While not currently marked as a turn lane, the width currently used for right turns onto Lake Street would be used to provide space to avoid impacting the palette sign area. Peak hour right turns onto Lake Street are 40/hour (compared to 250/hour for left turns onto Lake Street).



December 22, 2020

Benefits of Traffic Signals at the Lake St./Blue Star Hwy. (BSH) Intersection

Introduction. We share the concern of the Fire Department, City Council, and members of the public that the configuration of the Trail from Lake Street south over the bridge should not significantly impede the ability of emergency responders to get through that corridor when traveling south. Working with traffic engineers at Fleis & VandenBrink (F&V) last year, we developed two solutions that meet relevant safety standards. One would retain a center lane, but require some form of vertical separation between the bike lane and southbound traffic lane; it may be difficult to find a form of separation that would be aesthetically acceptable but also meet MDOT approval. The second option would eliminate the center lane to make room for the Trail and a buffer lane.

As part of its work, F&V suggested consideration of installing seasonal traffic signals at the Lake St./BSH intersection. Three posts would be required; FOTBST paid for digital renderings that show what the signals would look like, available on our website (<https://www.fotbst.org/saugatuck-city-options>). The signals would be programmed to “blink” during most of the year, only fully functioning during peak times determined by Council.

F&V conservatively estimated the cost of installing the signals in 2019 as \$250,000¹ and the cost to maintain them as \$3,000 per year. Though BSH is a county road, we are told by the County Road Commission that it would be the City’s responsibility to install and maintain a signal at that location. Grant funds are not available for such an expenditure through the TAP or DNR programs that will fund the Trail, but might be available through a Congestion Mitigation and Air Quality (CMAQ) grant. We are advised that CMAQ funds are not likely to be available until 2024 unless funds earmarked for another project become available sooner.

¹ Mast arms, poles, foundations & other structural components \$110,000
Controller and Electrical \$55,000
Vehicle signals \$19,000
Enhanced crosswalk equipment \$16,000
Contingency reserve \$50,000

In our information sessions with local residents and informal conversations, virtually no one objected to installation of the signals and, indeed, a number of people opined that there should be signals there now, both for safety and traffic flow.

As discussed below, at F&V's suggestion, in summer 2018 FOTBST paid for a traffic study of the intersection to evaluate the impact of the Trail on traffic flow. The study indicated that, at this point in time, the volume of traffic alone did not require signals except for certain peak periods during the summer. However, that does not mean that signals would not improve the safety of pedestrians, bikers and vehicles nor that traffic flow would not be improved by the installation of signals.

Effect of Signals on Traffic. F&V's analysis of traffic conditions during 2018 showed that during midday peak traffic hours in the summer months, the wait time for people in vehicles turning left (north) on BSH from Lake St. was **40.6** seconds and the Level of Service (LOS) grade is an **E** (with A being best and F worst). If 20 trail users per hour were introduced to the crossing at Lake St. under this scenario (the assumption used by F&V's traffic engineer), it would increase the wait time by **3.4** seconds to **44.0** seconds and the LOS grade would remain unchanged. *If signals were installed*, the wait time for those turning left on the BSH from Lake St. would be reduced by 32.2 seconds to **11.8 seconds** and the LOS grade would improve to **B**, for that time period.

With respect to the average wait time for those turning right on the BSH from Lake St. during peak periods, installing signals would reduce the average wait time by **.9** seconds to **14.9** and improve the LOS grade from **C** to **B**.

Benefits of Signals for Emergency Responders. The traffic signals can be remotely managed by Fire/Police responders to improve response times while traveling south over the bridge. Emergency responders would also be able to use this remote control to better manage traffic congestion if vehicles are diverted to the BSH from I-196 because of an accident.

To illustrate how this would work, assume a fire engine leaves the SDFD station heading south and remotely turns the traffic signals at Lake St. red in all directions when it is one-half mile away (the range of the remote control), just as a southbound vehicle has passed through that intersection. Our analysis shows that it would take the fire engine 3 minutes to catch the vehicle, at which point they would both be south of Wiley Rd., i.e. well beyond the bridge and even the Center St. intersection. Other southbound vehicles would have been stopped at the Lake St. signal or have been even farther south than our hypothetical vehicle. This means that the southbound lane over the bridge would be clear when the fire engine reached it.

Alternate Scenario. The Fire Dept. has commented that sometimes when drivers hear sirens they panic and stop their vehicles in the traffic lane. It is unclear how often this

happens; F&V has proposed signage to remind drivers to pull over for emergency vehicles. In that case, the fire engine could simply pull into the northbound lane and drive around the stopped vehicle. It seems unlikely that two drivers in the north and southbound lanes would stop next to each other and neither one would move in response to the sirens and a honking emergency driver. At the Fire Dept.'s request (and FOTBST's expense), F&V conducted an "autoturn analysis" to show how fire vehicles would be able to maneuver around vehicles stopped on the bridge.

Douglas Signal. It might be worthwhile to explore whether the existing signals at the BSH/Center St. intersection can be upgraded to allow emergency responders to remotely control them as well. This could allow responders to change these signals so they are green for vehicles going south on the BSH and red in all other directions. This would prevent a backup at Center St.

FOTBST's Position. FOTBST is not able to commit to raise the funds for the signals in light of our financial obligations to construct the Trail itself. Nevertheless, we believe that the City should seriously consider them to improve safety and traffic flow during peak season. FOTBST will assist the City in any other way possible. If nothing else, we are told that the infrastructure for signals can be installed when the Trail is constructed, which would facilitate installation of the signals themselves at a later date.

November 13, 2019

Mr. John Adams, President
Friends of the Blue Star Trail
jaquincy48@gmail.com

RE: Blue Star Trail – Status of Current Options

Dear John,

As requested, below is a summary of the Blue Star Trail options that were presented to Saugatuck City council on July 18, 2019. These are the last options that were developed prior to the City meeting with representatives from Douglas and Saugatuck Township to lay out plans for an agency-led project. Following the two options presented in July is a summary of ideas that have been discussed since July 18 in response to concerns raised by the Fire Department.

Option 1D (aka “the sidewalk/road option”)

Part 1 (Washington Street to Kalamazoo River Bridge): The concept used in Douglas south of Washington Street would be extended approximately 200 feet, using a raised curb to place the trail within the existing roadway while maintaining the left turn lane onto Main Street. At the end of the left turn lane taper, the raised curb is replaced with a 5-foot buffer area, producing a 2-lane cross section with a wide northbound shoulder, southbound shoulder/buffer and the non-motorized trail within the curb-to-curb width. We note the following advantages and disadvantages:

- The transition between the new trail and the existing one in Douglas would be a relatively simple one. Southbound Blue Star Highway (BSH) driver confusion should be reduced.
- The existing island would be removed. This could increase driver confusion for vehicles turning south on BSH from Washington Street. This would be mitigated with pavement markings and enhanced signage.
- Using a combination curb and buffer preserves a width for vehicular traffic equivalent to 3 lanes. However, unlike the current layout, emergency responders would require motorists to utilize the shoulders and clear the center turn lane to navigate this portion of the corridor.
- There are no physical barriers between motorized and non-motorized traffic north of the raised curb. This could be mitigated with rumble strips, pavement markings and signage. A series of movable planters or similar could be used to provide more visual delineation of the trail, however, the layout would need to consider emergency response impacts.
- The raised curb would need to be considered during winter maintenance activities.

Part 2 (Kalamazoo River Bridge): In this option, the cross section at the north end of Part 1 is carried across the bridge (14' trail, 5' buffer/shoulder, 11' SB lane, 11' NB lane, 5' shoulder). We note the following advantages and disadvantages:

- This option provides an equivalent of 3 lanes of width.
- Similar to Part 1, emergency responders would require motorists to utilize the shoulders to navigate this portion of the corridor.
- There are no physical barriers between motorized and non-motorized traffic north of the raised curb. This could be mitigated with rumble strips (though not ideal on the bridge deck), pavement markings

and signage. A series of movable planters or similar could be used to provide more visual delineation of the trail, however, the layout would need to consider emergency response impacts.

- Without physical barriers, winter maintenance would be largely unchanged.

Part 3 (Kalamazoo River Bridge to Lake Street): North of the bridge, the trail transitions from being located completely within the curbed width to completely outside the curbed width, merging with the existing sidewalk. The widened sidewalk continues behind the existing tree line on the west side of BSH, requiring slope improvements and fencing. We note the following advantages and disadvantages:

- This option provides an equivalent of 3 lanes of width.
- Similar to Parts 1 & 2, emergency responders would require motorists to utilize the shoulders to navigate the portion south of the transition.
- South of the transition, there are no physical barriers between motorized and non-motorized traffic north of the raised curb. This could be mitigated with rumble, pavement markings and signage. A series of movable planters or similar could be used to provide more visual delineation of the trail, however, the layout would need to consider emergency response impacts.
- At the transition, southbound driver confusion will need to be carefully mitigated with pavement markings, rumble strips and signage (and potentially planters or similar).
- This option has the advantage of maintaining the existing lanes at Lake Street.
- Materials used for slope reinforcement and fencing would be selected based on City input on their longevity, aesthetics and maintenance requirements.
- Winter maintenance would be largely unchanged south of the transition. North of the transition, there would be more surface area to maintain.

Part 4 (Lake Street Intersection): The trail crosses Lake Street similar to a traditional crosswalk at a controlled intersection. The intersection could either remain stop-controlled or be upgraded to signal control, depending on City and Fire Department operational preference. On the north side of the intersection, the trail would maintain clearance around the existing palette sign for landscaping. Beyond that, it would transition into the southbound shoulder area, providing the northbound lane, clear auxiliary area, southbound lane buffer area and trail. We note the following advantages and disadvantages:

- The Lake Street stop bar would be moved back from the intersection. Lake Street drivers would pull forward onto the trail after checking that it is clear to gain sight distance on BSH. This is not an uncommon scenario for crosswalks at skewed intersections.
- The existing wide southbound shoulder currently functions as a right turn lane, of sorts. It would be eliminated under this option.
- Winter maintenance would be largely unchanged.

Part 5 (Lake Street to Maple Street): The trail continues north, utilizing a portion of the existing southbound shoulder area to reduce the slope reinforcement/retaining wall and fencing required. At least part of the buffer area would likely be grass to provide better separation and a space for signage. At Maple Street, the existing ditch would be enclosed to allow the trail to transition out of the roadway and cross Maple Street in a typical crosswalk configuration. We note the following advantages and disadvantages:

- This option can provide an equivalent of 3 lanes of width, depending on the exact positioning of the trail and layout of the buffer area.
- Emergency responders would require motorists to utilize the shoulders to navigate this portion of the corridor.
- Materials used for slope reinforcement and fencing would be selected based on City input on their longevity, aesthetics and maintenance requirements.
- Winter maintenance would need to consider the additional width and snow storage areas but would otherwise be largely unchanged.

Option 2F (aka “the road option”)

Parts 1, 2 and 5 are the same as in Option 1D.

Part 3 (Kalamazoo River Bridge to Lake Street): North of the bridge, the trail would continue within the curbed roadway with 2 lanes and shoulder/buffer areas. A raised curb would replace the buffer where the northbound left turn lane onto Lake Street begins. We note the following advantages and disadvantages:

- This option provides an equivalent of 3 lanes of width.
- Emergency responders would require motorists to utilize the shoulders and clear the left turn lane to navigate this portion of the corridor.
- Southbound driver confusion would be reduced from Option 1D. The raised curb would align southbound traffic such that no lateral movement would be required where it transitions to the 5' buffer.
- The southbound acceleration lane at Lake Street would be eliminated.
- Slope improvements and fencing would not be required.
- The raised curb would need to be considered during winter maintenance activities.

Part 4 (Lake Street Intersection): The curb on the south side of the intersection would be realigned to allow the trail to connect to the existing sidewalk and then cross Lake Street similar to a traditional crosswalk at a controlled intersection. The intersection could either remain stop-controlled or be upgraded to signal control, depending on City and Fire Department operational preference. The north side of the intersection is the same as in Option 1D. We note the following advantages and disadvantages:

- The Lake Street stop bar would be moved back from the intersection. Lake Street drivers would pull forward onto the trail after checking that it is clear to gain sight distance on BSH. This is not an uncommon scenario for crosswalks at skewed intersections.
- The existing wide southbound shoulder currently functions as a right turn lane, of sorts. It would be eliminated under this option.
- The raised curb would need to be considered during winter maintenance activities.

Other Ideas

Split Trail: The AASHTO-required clear width of 14 feet (10' trail proper plus 2' shoulders) is intended to serve all non-motorized users in a corridor. In a split trail scenario on the Kalamazoo River Bridge, pedestrians would be directed to the existing 7' wide sidewalk on the west side of the bridge and a narrowed trail width would be provided. The cross section would be similar to the following:

7' sidewalk / 10' 2-way bikes / 5' buffer / 10' SB In / 9' CTR In / 10' NB In / 2' shldr / 5' sidewalk

This option meets the spirit of the AASHTO guidelines in terms of width provided for all users, however, the letter of AASHTO requires that the width be provided at a single elevation. Unfortunately, MDOT staff would not comment on whether this option would be acceptable for either funding directly or connecting to other funded portions of the project.

Wide buffer: Instead of emergency services relying on a center turn lane to navigate the bridge, the 5' buffer would be widened with the intent that it would be used during emergencies. It would be combined with signage directing motorists to stay in their lane when they see/hear emergency vehicles. The cross section would be similar to the following:

7' sidewalk / 10' trail proper / 4' trail shldrs + 8' buffer / 11' SB In / 11' NB In / 2' shldr / 5' sidewalk

This option provides the AASHTO-required clear width at the same elevation, but the shoulder area would be consolidated on the east side to provide a wide enough buffer area for emergency responders to utilize. Again, MDOT staff would not comment on the acceptability of this option.

Autoturn analysis was completed to demonstrate fire truck navigation of the corridor under various scenarios.

Other signage enhancements:

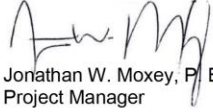
- Signage for southbound BSH traffic north of Lake Street indicating "right turn yield to pedestrians" or similar.
- "Pull over for emergency vehicles" signage could be utilized, depending on trail/lane/shoulder configuration.
- Flashers with directional signs throughout the corridor, directing drivers what action they should take could be utilized. The flashers would be controlled by the Fire Department to be activated during calls.

Although the FOTBST already has copies, we have compiled and attached the following resources, for your reference:

- Option 1D & 2F conceptual plans
- Autoturn Exhibits
- Copies of relevant email correspondence

Sincerely,

FLEIS & VANDENBRINK



Jonathan W. Moxey, P. E.
Project Manager

More Examples of Vertical Separators





From: Daniel Fox <danielwfox101@gmail.com>
Sent: Friday, January 1, 2021 9:17 AM
To: Erin Wilkinson
Subject: Non-Motorized Trail Committee Communication

Erin,

Please include this in the subject committee's next meeting packet.
Thanks.

To the Non-Motorized Trail Committee of the Saugatuck City Council:

As planning for the Blue Star Trail begins to heat up an idea has surfaced that could dramatically speed progress getting the non-motorized trail across the Blue Star Highway bridge. It's simple, inexpensive, and most of all, because it retains the necessary emergency-vehicle, three-lane bridge configuration, it's safe.

Recognizing the behavioral distinction between two types of bicyclists is key to this Blue Star bridge opportunity. As every driver can attest, a great many serious cyclists refuse to ride on bike trails preferring the automobile lanes on the open road. Even when a bike trail parallels a highway, they choose the highway to maintain speed and avoid slower trail pedestrians. This is their right.

Cyclists who, on the other hand, choose a bike trail are more willing to exchange speed for safety. They willingly accommodate slower-moving pedestrian traffic, including children, on the trail. Taking this into account, the existing raised sidewalk (itself already a "non-motorized trail") on the bridge could be widened by a few feet and a center stripe added to segregate trail traffic in two directions. Adding another safety measure, signage could be installed advising trail users to "walk your bike" across the bridge. This is a reasonable request in the same way automobile drivers adjust their vehicle speed and steer past cyclists on the highway.

This approach could also eliminate a second, arguably greater local Blue Star trail obstacle: the bridge over Interstate 196 south of Douglas. Its road and shoulder dimensions are dictated by the federal government, and are unlikely to be altered. Maybe best of all, "walk your bike" over both bridges could allow the trail to be completed through Saugatuck and Douglas in a matter of months, and at a fraction of the cost



Dan Fox
Saugatuck