

PART 2
Bandemer-Barton Trail Study
Bandemer Park and Barton Nature Area

Washtenaw County, MI



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1.0 Part 1 – Pathway through Barton Nature Area

1.1 PROJECT BACKGROUND

The pedestrian trail system throughout the City of Ann Arbor is a highly valued means of recreation and transportation within the community. In addition, parts of this system help make up an even larger trail system within the region which is known as the Border-to-Border Trail (B2B). A crucial section for the continuation of this trail is a proposed pathway that will create a connection from Bandemer Park to Huron River Drive, through the Barton Nature Area. This new pathway will aid in balancing the natural aesthetics of the area while providing fully accessible pedestrian facilities along the trail, increasing both functionality and pedestrian safety while minimizing impacts to the surrounding area. The new pathway connection between the Bandemer Park and Barton Nature Area will significantly enhance the B2B Trail and expand the existing trail system within the City of Ann Arbor.

In order to determine the preferred alternative, a detailed site investigation was conducted at both Bandemer Park and the Barton Nature Area. This investigation was a collaborative team effort made up of members from the Ann Arbor Parks and Recreation Department, Washtenaw County Parks and Recreation Commission, Ann Arbor Natural Area Preservation (NAP), and the consultant team made up of OHM Advisors, Bergmann, and SME. The information gathered during the site investigation has assisted in the evaluation of the existing path and in the conceptualization of a new path which prioritizes the safety and accessibility of all users as well as minimizes the impacts to the surrounding natural environment.

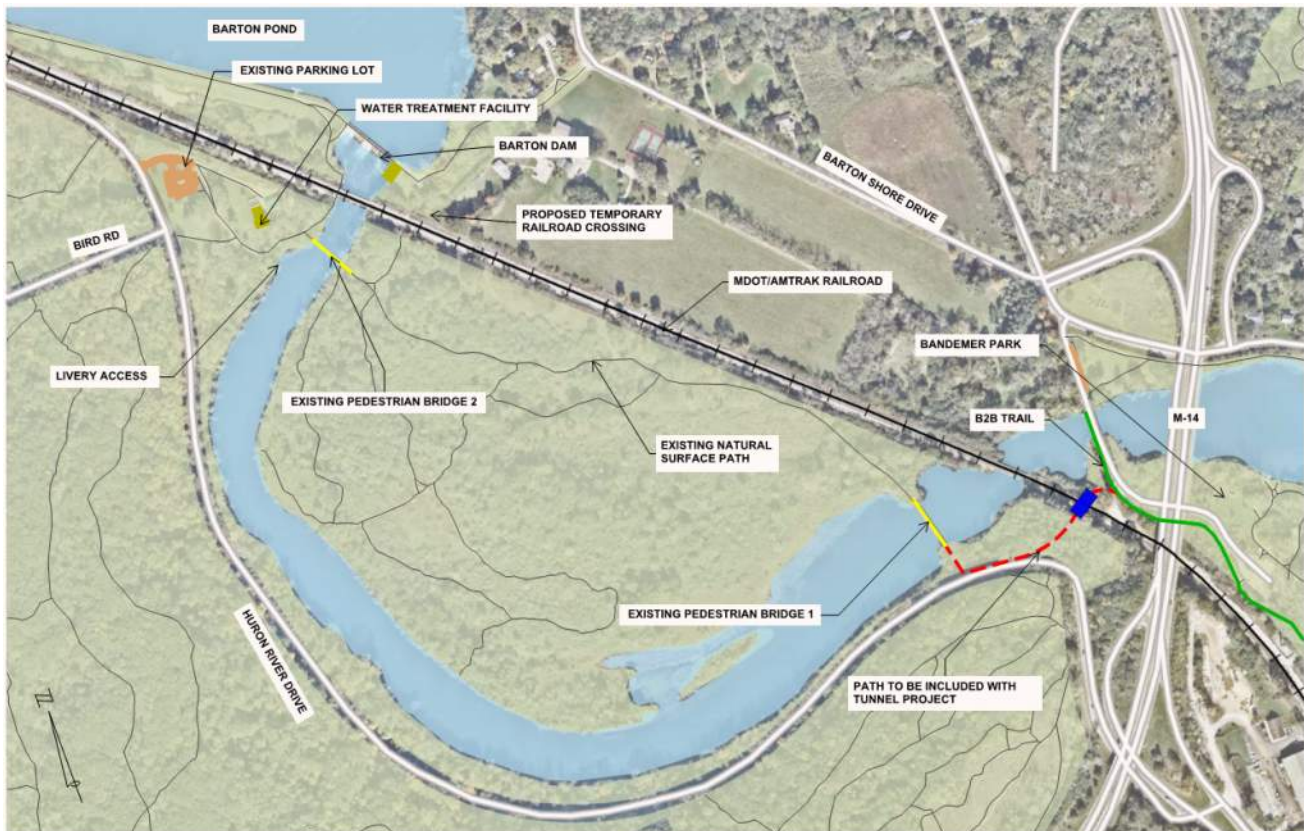


Exhibit 1-1: Area Map

1.2 PUBLIC ENGAGEMENT

A public meeting was held on February 26, 2019 at 6:30pm at Forsythe Middle School to seek initial public feedback to the City of Ann Arbor and Washtenaw County Parks and Recreation Commission (WCPARC) regarding the Border-to-Border Trail (B2B) Barton-Bandemer Connection Project. 60 members of the public signed in at the meeting, which consisted of a brief presentation by City and County staff, followed by open discussion/questions, then an open-house format with more detailed maps and staff/consultants at each station to discuss the project with interested parties.

In total, 60 written comments have been received (as of March 12, 2019), 19 of which were written comments collected at the public meeting, 13 were in the form of emails to County and City staff, and 28 were received through on-line form submissions during the two weeks afterwards. The meeting's presentation and figure displays were posted on the same website as the comment sheets to provide as much information as possible to the public who were unable to attend the meeting. Per the request of some members of the public, the comment period has been re-opened and left open-ended.

Common themes supporting the project expressed include (not representative of quantity of expression):

- The underpass is essential for the future success of the B2B and bike and pedestrian traffic to move in to, and out of, the city in the North Main St./Huron River Drive area
- Support for the underpass portion of the project because of a clear desire for the pedestrian connection and a desire by the rail to prevent crossing the tracks
- Support for the underpass because it also connects the hiking and biking trails of the adjacent nature areas to parking areas and the B2B in Bandemer Park
- Support for the overall project to provide a safe bike route along N. Main St. at the M-14 interchange.
- Overall project would be a benefit to the community
- Support or no concern for paving the main (existing woodchip) trail through Barton Nature Area as long as it is part of a regional system
- Support of paving in the nature area if disturbance and path width is kept to a minimum to keep as much existing vegetation and feel
- Support of improving ADA connections and improving safety
- Current woodchip trail is often muddy and difficult to use, paving would solve this

Common themes with concerns for the project expressed include (not representative of quantity of expression):

- Concern that the project will take too long to implement and a desire to implement the project quickly
- Concern for how the trail and underpass will change demand for the current parking lot near Barton Dam and the use of any of the nature trails in Bird Hills and surrounding nature areas
- Request of the team to make the underpass feel safe through use of sight lines, lightning, and other measures
- Concern for overall project costs and how to pay for it
- Need an explanation for why a gated crossing (much cheaper) could not be used instead of an underpass
- Build the underpass but don't touch the nature area because it is nice as-is
- Concern for stormwater runoff from a paved trail in the nature area
- Would like to add a limestone or dirt path next to the paved path for runners
- Consider alternate materials to asphalt for the trail in the nature area such as porous paving or limestone
- Oppose paving the wood chip trail in the nature area
- Need to ensure all of the alternatives to paving the trail been explored
- Concern for increased incursion into natural areas

1.3 ALTERNATIVES STUDIED

1.3.1 Alternative 1: Alignment Parallel to the Railroad Tracks

The first pathway alternative proposes to construct a path parallel to the existing railroad tracks at the northeast end of the nature area. This alignment would be located outside of the railroad Right-of-Way (ROW) and maintain a safe distance from the tracks. This path follows the existing natural surface trail from Bridge 1, nearest to Bandemer Park, to a point several hundred feet to the northwest. From here, the proposed alignment diverges from the existing path across a more open area with less tree impacts. This alignment reconnects with the existing natural surface trail several hundred feet south of Bridge 2 of the Barton Nature Area before continuing across the bridge. Upon crossing Bridge 2, the path diverges from the existing gravel drive to run parallel to Huron River Drive along the south side of the existing parking lot.

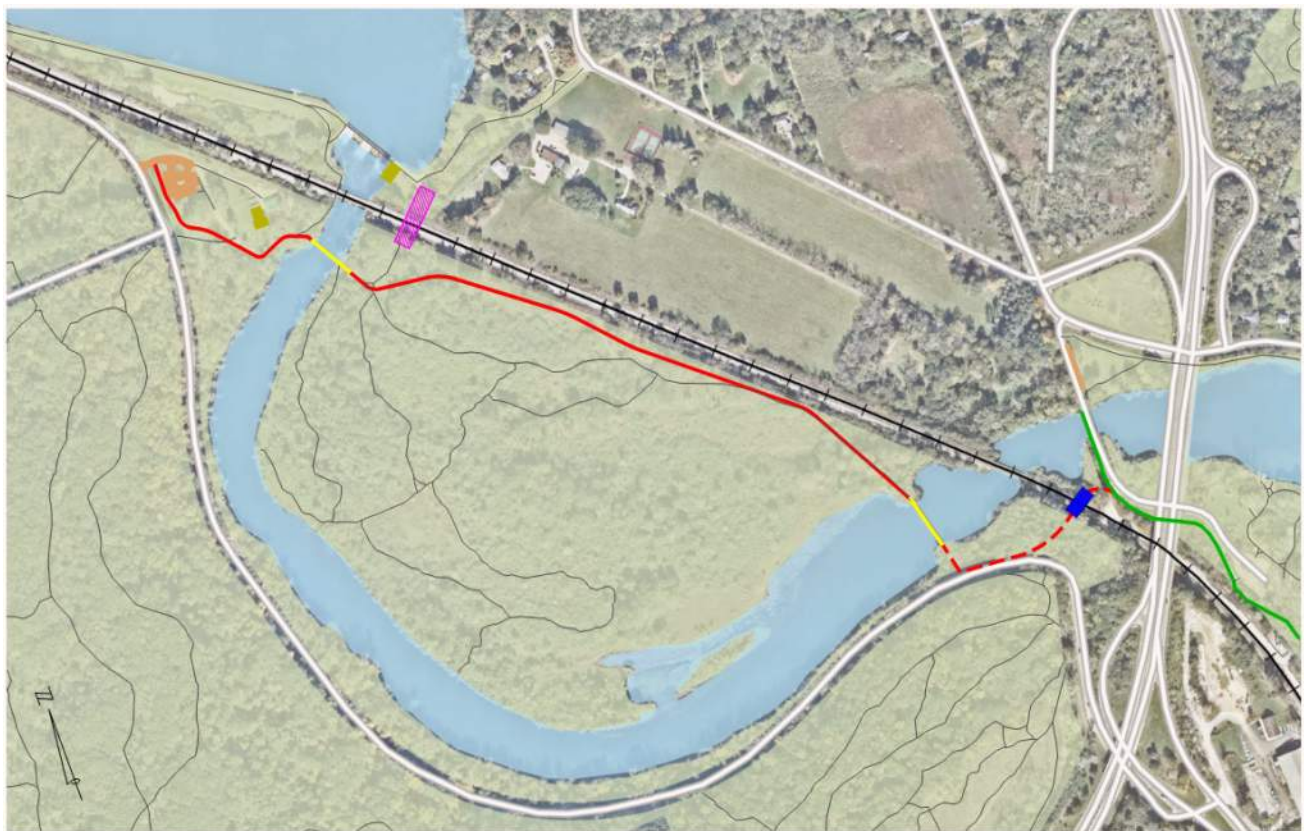


Exhibit 1-2: Alternative 1 Plan View

1.3.2 Alternative 2: Alignment along the Existing Natural Surface Trail with Minor Improvements

The second alternative for the pathway proposes to construct the path following the route of the existing natural trail that cuts through Barton Nature Area. This proposed alignment would closely match the existing alignment but would make adjustments to improve rideability and sight distance, while accommodating a 10-foot wide path. These adjustments would also involve impacts to surrounding trees and brush. Upon crossing Bridge 2, the path would continue along the east side of the parking lot and the existing gravel drive.



Exhibit 1-3: Alternative 2 Plan View

1.3.3 Alternative 3: Alignment along the Existing Natural Surface Trail

The third pathway alternative proposes to match the existing natural surface trail alignment. The impacts would be limited to the surrounding immediate area only to accommodate a 10-foot wide path. Rideability and sight distance would remain the same as existing conditions but would have reduced visibility when compared with Alternative 2. Between the parking lot and Bridge 2, the alignment would match the Alternative 2 proposal.



Exhibit 1-4: Alternative 3 Plan View

1.4 OTHER ALTERNATIVES CONSIDERED

Throughout the development of the three alternative paths, other possibilities were considered as further alternatives to the pathway connection between Bandemer Park and the Barton Nature Area.

One additional alignment was proposed to run south of the primary existing trail. This idea was eliminated as it would require the pathway to be constructed through a low-lying area. Low-lying areas are generally more saturated which can lead to issues in finding suitable subbase and drainage for the pathway. In addition to the large impact on the trees in this area, a number of existing foot trails would be significantly impacted by the construction of this alternative. Although the trees in this area are of lower quality, and the foot trails are supplementary, it would be beneficial for this area to remain unimpacted by the project to provide a well-rounded experience for the area.

Another addition to Alternative 2 and Alternative 3 was considered as well. As these alignments would be impacting the primary natural surface trail in the nature area, a parallel footpath adjacent to the proposed trail alignment was considered. This option was ultimately ruled out due to additional tree impacts.

2.0 Existing Project Conditions

2.1 EXISTING SITE CONDITIONS

The Barton Nature Area, which makes up much of the proposed site location in the City of Ann Arbor, is located between the Huron River and the Michigan Line Railroad. Nearby features include a Water Treatment Plant, a gravel parking lot, a canoe launch area for the livery, and the Barton Dam north of the railroad. Currently, this area is served by one primary natural surface pathway in addition to several side trails which predominantly extend south towards the Huron River. The primary trail within the Barton Nature Area is connected at both ends by pedestrian bridges. At the southern end, Bridge 1 is 8-foot wide, is in need of moderate repairs, and has a small roadside parking area adjacent to Huron River Drive. At the northern end, Bridge 2 is 10-foot wide, and is in good condition with minor repairs needed, and connects pedestrians to a nearby parking lot and livery area. Note that any upgrades or improvements to either of the pedestrian bridges are not included in this project and are being investigated by the City of Ann Arbor. Along the primary trail, there are two areas with steep side slopes which currently include fencing for pedestrian safety. These locations are north of Bridge 1 and Bridge 2 and will require improvements to the fence with any new alignment.

2.1.1 Existing Utilities

The Barton Nature Area is mostly a natural, untouched environment; however, there are existing utilities, as well as ongoing utility projects, which should be noted during the design and construction of this pathway. It is not anticipated that the utilities themselves will be impacted by the proposed pathway construction.

Existing overhead electric lines run parallel with the railroad tracks along the north side of the site. The Alternative 1 alignment would be most affected by the location of these electric lines. Any path located near these lines would have to maintain proper clearance, both from poles and the lines themselves, and there could be a potential for a conflict during future utility work on these lines. There are also fiber optic cables within the railroad right of way. Although the fiber optic cables will not be impacted by any proposed pathway alignment, they will likely require some additional protection for temporary construction access.

A water main project is currently being proposed in the northwest corner of the Barton Nature Area. Here, a new raw water main would be constructed to transfer water from Barton Pond to the City's Water Treatment Plant. This is a critical project as Barton Pond is a raw water supply source for the City's Water Treatment Plant. The City of Ann Arbor has identified this project in their Capital Improvement Plan (CIP) and has assigned it great importance as it would replace the existing aging infrastructure. The proposed water main would extend to the southwest of Barton Pond, south of the Huron River, before crossing underneath the river, and tying into the water treatment plant. Any new path constructed through this area would require additional coordination with the City to determine the best location to avoid future conflicts. Additionally, a permit for working within the Railroad property will be required for both the water main and pathway projects. The City has expressed a desire to include both the new water main and pathway projects under the same permit. The construction access and overall constructability is discussed further in 3.1.2.

2.2 ENVIRONMENTAL REVIEW

The impacts on the surrounding trail network within the Barton Nature Area were weighed heavily in the design of alternatives. In order to minimize the impacts on the environment, multiple factors were assessed.

2.2.1 Tree Survey

A tree survey was conducted to determine the location, type, and quality of trees in proximity to the existing trails as well as which trees may need to be removed as part of the construction of a new trail. All alternatives were designed to avoid impacts to any high-quality trees; however, impacts to other trees will be apparent with any of

these alternatives. Although the preferred alternative does not have the least impact on trees, Natural Area Preservation unit of Ann Arbor Parks & Recreation (NAP) has reviewed these impacts and is comfortable with this option.

2.2.2 Ecological Areas

The Ann Arbor NAP provided a map of Barton Nature Area highlighting the quality of the ecological areas throughout the area (see Exhibit 2-1 below). NAP advised that the green areas should be avoided as much as possible, as they contain high quality prairie habitat. This played a large role in the selection of the preferred alternative. NAP was less concerned with yellow, red, and orange areas and as there are already existing trails in this area, a new trail along the existing trail with a slightly larger footprint was deemed acceptable.

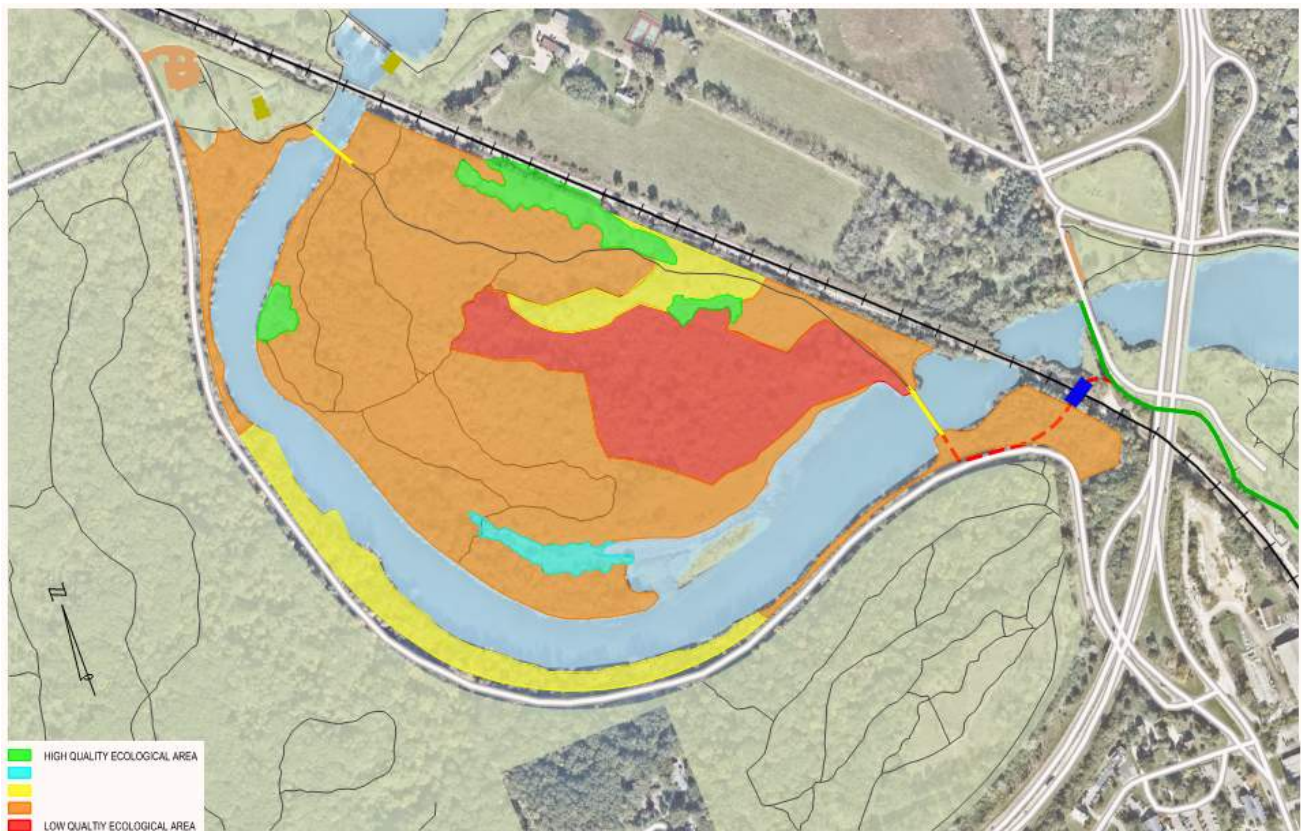


Exhibit 2-1: Ecological Areas

3.0 Proposed Alternatives

3.1 ALTERNATIVE INTRODUCTION

The connection between Bandemer Park and the Barton Nature Area has been previously identified as an important piece in the City of Ann Arbor trail system and the Border-to-Border Trail (B2B). The alternatives provided in this document represent recommendations for improving the current trail through the Barton Nature Area. While balancing trail aesthetics, functionality, and minimizing environmental impact were important factors, prioritizing user safety and accessibility was paramount in the selection and design of the presented alternatives.

3.1.1 Geometrics

The alternative path designs were created following the MDOT Road Design Manual guidelines on bicycle facilities and the 2012 AASHTO Guide to the Development of Bicycle Facilities, 4th edition. A minimum path width of 8-10 feet with a 2-foot minimum clearance from adjacent obstructions, in addition to an 18-mph design speed for horizontal curves, were determined to be two of the driving factors in both the creation and selection of the alternatives. A final design will incorporate ADA compliant cross slopes of 2% or less and profile grades preferably 5% or less but no greater than 8.3%. The area just north of Bridge 2 will require extra attention to achieve ADA compliance as there is a short, but steep hill. A switchback is proposed as a part of the preferred alternative to circumvent this issue without needing to significantly change the existing ground profile.

3.1.2 Constructability

All three alternatives encounter many of the same challenges during the construction process. Access to the Barton Nature Area by construction equipment is limited by the Huron River and the MDOT/Amtrak railroad. Temporary bridges and/or barges to transport equipment to the peninsula would be both complex and costly. The ideal access point is just southeast of the Barton Dam but will require a temporary railroad crossing permit for this designated high-speed rail corridor. The water main project previously identified in this area could be coordinated as an access point for construction on this project. The City and the County have expressed the desire to have a Joint Permit for a temporary crossing to provide access for both projects.

North of Bridge 2, all three alternatives are anticipated to encounter the same constructability issues. Access to the parking lot will need to remain open throughout construction. Additionally, there is a canoe livery access point to the Huron River that the trail construction will impact. The canoe livery is operated by Ann Arbor Parks and Recreation, so additional coordination with them through design and construction will be required to maintain access.

Heavy construction traffic damaging the proposed pathway is an item of concern. To accommodate construction equipment, the proposed pathway section will be greater than a typical trail. A 4 inch asphalt section over a 12 inch aggregate base course is under consideration as well as other section options. Although construction loads were the driving force behind a thicker section, there is also the added benefit of an extended lifespan for a pathway with limited construction access.

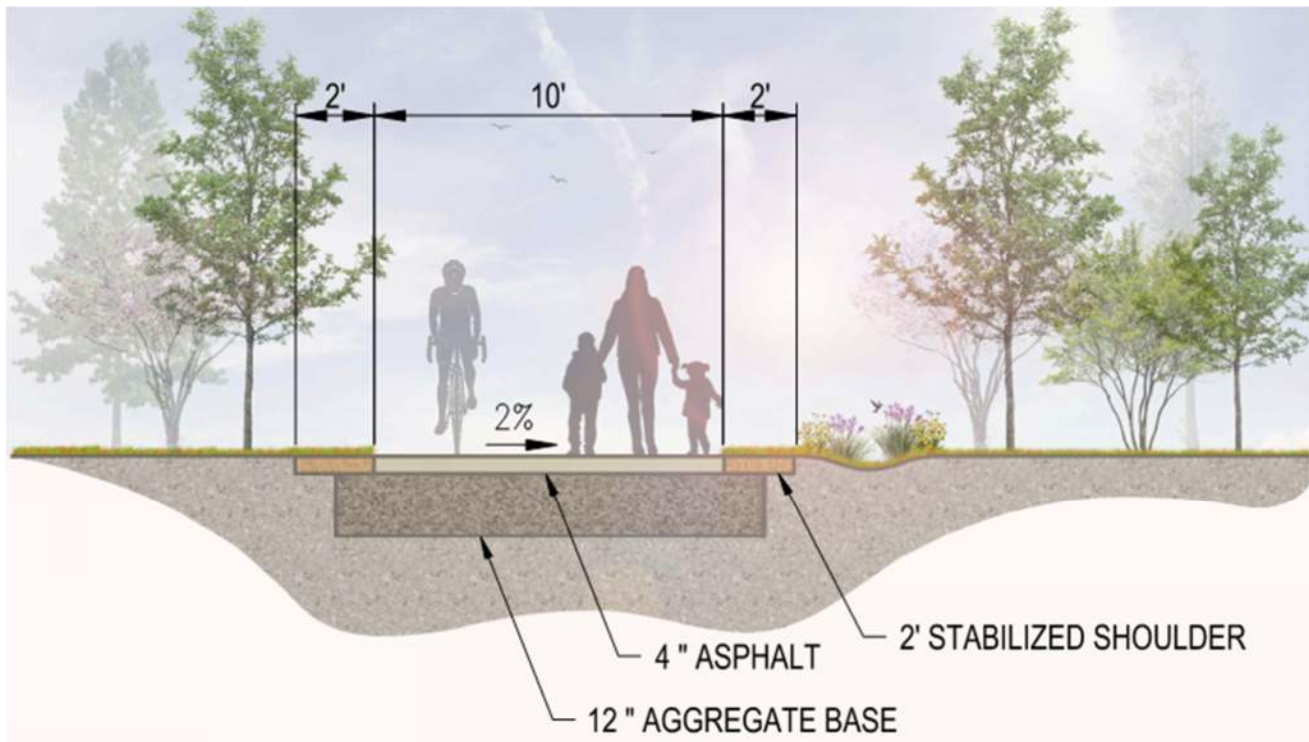


Exhibit 3-1: Conceptual Cross-Section

3.1.3 Drainage

All alternative pathways will take into account improvements to the existing drainage. The proposed cross-section will have a uniform cross slope directed to the lower lying area of the path, the direction and slope will vary to accommodate drainage and curvature of the pathway. Areas with existing culverts will be re-evaluated to accommodate new drainage patterns. The size and condition of the culverts will also be evaluated to determine if a replacement is needed. Specific areas along the trail, specifically near the Water Treatment Plant, as well as in the area a few hundred feet north of the southern bridge, were identified as having existing drainage issues. These are low lying areas with apparent poor soils where water collects and could potentially have adverse impacts on a proposed pathway if not addressed. Providing positive drainage through grading, culverts, and profile corrections will be incorporated in the proposed design.

3.2 ALTERNATIVE COMPARISON

While all three alternatives share many of the same design characteristics, they also vary from one another in terms of location and alignment. The advantages and disadvantages produced by each alternative are described below to provide an overall outline.

1.2.1 Alternative 1: Alignment Parallel to the Railroad Tracks

Alternative 1 is a path constructed parallel to and south of the Michigan Line Railroad tracks. In comparison to the existing primary trail, this path provides pedestrians with better sight distance and will impact fewer surrounding trees. This path leaves much of the south portion of the existing natural surface trail intact, which in turn will provide two different experiences of the nature area. The proximity of this alignment to the railroad did pose concerns about user experience. Another concern is that this alignment significantly impacts the largest high-quality ecological area within the Nature Area. NAP has strongly discouraged this proposed alignment.

3.2.1 Alternative 2: Alignment along the Existing Natural Surface Trail

Alternative 2 is a path constructed along the primary existing trail through the Barton Nature Area. By following the existing alignment, more of the surrounding area will be left natural. The existing trail has already been established as the thru route through the Nature Area. By using this alignment, the primary route would benefit from improved sight distance, drainage improvements, and a wider pathway. However, those improvements would result in additional impacts; for example, more clearing and tree removal than the other two alternatives.

3.2.2 Alternative 3: Alignment matching the Existing Natural Surface Trail

Alternative 3 is a path constructed along the alignment of the existing trail. While this would reduce the removal of trees and the impacts to the surrounding area, it does not provide the safest option. As a continuation of the B2B trail and the upgrade to a paved surface, this trail will see an increase in bicycle traffic, as well as pedestrian traffic, and does not provide for adequate sight distance or safe horizontal curve radii.

4.0 Recommended Alternative

Upon review of the information provided in this report, Alternative 2 is the recommended pathway alignment. This option provides all pedestrians and bicyclists with a safe and aesthetic route through the Barton Nature Area with a level of impact that is acceptable to the Ann Arbor NAP. Furthermore, preliminary cost estimates were compared for the three alternatives and no significant cost savings was found based on alignment alone.

Several items are being considered for inclusion in this alternative and discussions will continue as the design progresses. Site furnishings such as benches and trash cans may be included in the project. There is a switchback area that is currently proposed on the north side of Bridge 2 that will need to be further detailed. This will provide an ADA compliant portion of the pathway without needing to significantly change the existing profile of the main path. It also provides an enhanced connection to the pathway to the Barton Dam. North of Bridge 1, the existing and proposed trail alignment encounters steep side slopes on both sides of the trail. In addition, the width of the trail will need to be reduced in this area as the bridge is also only 8 feet in width. Several options are being considered for this area including, but not limited to, the following: narrowing the pathway from 10 feet wide to 8 feet wide where the side slopes begin to steepen, cutting the profile of the proposed pathway to accommodate a 10-foot wide pathway while limiting grading limits, and/or potentially constructing an observation deck and pull off area at the north end of the bridge to provide space for passing cyclists and pedestrians.

The project team has held discussions with the canoe livery in order to accommodate their needs both during and after construction. Several options are currently being considered to accommodate their operations, however none of these options impacted the selection of the preferred alternative. The canoe livery will be included in discussions throughout the design process.

Parking has also been an item of discussion. The parking lot nearest Barton Dam will likely require ADA improvements. There is also roadside parking along Huron River Drive near the potential railroad underpass area; however, any proposed improvements to those areas, as well as the trail south of Bridge 1, will be a part of the underpass portion of the project.

Moving forward with the design of Alternative 2 will lead to the following actions commencing:

- 1.) Obtain Parks Advisory Commission (PAC) approval to pave within the nature area.
- 2.) Soil borings will be conducted along the proposed alignment in strategically chosen locations to determine the subsurface conditions. These borings will provide crucial information needed for any profile corrections as well as the development of a proposed trail cross-section. The preliminary estimate (Appendix A) depicts a 4-inch pavement section atop a 12-inch aggregate base course to accommodate heavy construction traffic and increase the longevity of the path. This cross-section can be further evaluated during detailed design.



- 3.) Coordination with the canoe livery will commence to determine how to accommodate their operations during construction. In addition, a permanent layout will be developed to provide river access for both the livery and the public while maintaining a safe path through the construction area.
- 4.) Wetland and floodplain delineation will occur throughout the project limits.
- 5.) Coordination with MDOT, Amtrak, and the Water Treatment Plant for the temporary railroad crossing.