

The top half of the cover features a photograph of the interior of a large, rustic wooden barn. The structure is composed of numerous dark wooden beams and planks, creating a complex geometric pattern. Light enters through several small, rectangular openings in the upper walls, casting soft, warm glows. A series of small, warm-toned string lights are strung across the upper part of the barn. In the center, a dark blue speech bubble with a white border contains the text 'CONNECT ADA'.

CONNECT ADA

FINAL REPORT

February 2020



progressive | ae

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1 INTRODUCTION

Walking and bicycling is a key priority for Ada constituents – it is a focal point of many of Ada’s community events and celebrations, and it is a part of how the community stays healthy. For some, it is their means of traveling to work, school, shopping, and social events. For many, it is an important factor in their choice of Ada as a place to live. This has also been demonstrated by residents’ choice to align their tax investments with these values and interests. In 2006, Township voters approved a 15-year property tax millage of .5 mills (\$0.50 per \$1,000 of taxable value) for use in constructing and maintaining a trail network in the Township. This forward-thinking investment by Ada Township residents resulted in the construction of 15.5 miles of trails. With the millage expiring in 2021, a renewal is needed to maintain a high-quality experience on the trails Ada already has and to expand the network to reach more places and close existing gaps into neighboring communities, the State’s Iron Belle Trail system,¹ and Ada Village.²

The Connect Ada Plan updates Ada Township’s Trail Plan by suggesting key walking and bicycling improvements for consideration in the Township’s 2020 non-motorized trail millage renewal. The project team kicked off the Connect Ada planning process in October 2019, meeting with the Township Trail Committee. A Situation Analysis was performed to identify key priorities, perform a SWOC (strengths, weaknesses, opportunities, and challenges) analysis of Ada’s walking and biking network, and draft initial lists of possible projects and evaluation criteria. A conditions and network assessment evaluated street crossing barriers, population and employment densities, and collision history. Key stakeholders and the public were engaged through in-person workshops in November and an online survey in December. These all contributed to the development of a plan vision and key projects to select from should a millage progress.

Figure 1 Connect Ada Planning Process Timeline



CONNECT ADA VISION STATEMENT

Building on the Township’s mission, Connect Ada envisions a safe and seamless walking and bicycling network that connects the places where people live, work, and visit.

¹ Michigan Department of Natural Resources, “Michigan’s Iron Belle Trail: Interactive Trail Map.” <https://midnr.maps.arcgis.com/apps/webappviewer/index.html?id=981d6168f3b5400f8de1b69d1d674d10>

² Ada Township, “Envisioning Ada,” 2013. <http://adamichigan.org/village>

2 SITUATION ANALYSIS

A SWOC analysis identified initial strengths, weaknesses, opportunities, and challenges in Ada Township, based on four primary inputs:

- Envision Ada (2013)
- Ada Township Strategic Plan (2017)
- Ada Township Capital Improvements Plan: 2019-2024 (2019)
- October 22, 2019, Trails Committee meeting with the project team

These inputs highlight key Township values and the conditions Connect Ada responds to. Figure 2 summarizes the situation analysis, presenting conditions as communicated through engagement and analysis.

Figure 2 Situation Analysis Findings: Strengths, Weaknesses, Opportunities, and Challenges in Ada Township Non-Motorized Network

Strengths	Weaknesses	Opportunities	Challenges
Investments are attracting and retaining residents, businesses, and visitors	Limited resources of a small community	Make walkability improvements within the Village, to the Village, and to regional connections	Major physical barriers such as Fulton Street (M-21), the Grand River, and Thornapple River
Ada's beautiful natural environment, including rivers, streams, and rolling forests	Many residential neighborhoods are not connected to the Village or each other	Connecting people to the Grand and Thornapple Rivers	Kent County Road Commission and MDOT control roads
Many schools are accessible by trail	Without transit, parking supply is a concern	Trail-oriented development (TrOD)	Balancing new trails with short and long term maintenance
Amway's global headquarters serves as a major anchor for township employment, residency, and retail activity	Historic Ada's perception as "old"	Ensure street frontage in the Village--including along Fulton--is pedestrian-scaled using building design and parking strategies	Majority of existing Trail Fund required for debt service payments
Proximity to Grand Rapids	Current trail network primarily oriented to recreation (and not to general transportation needs)	Bolstering connections to Ada Village as a destination	Perception that Amway has outsized influence on policy decisions
Trail Fund's successful construction of trails		Funding sources such as Transportation Alternatives Program (TAP), Safe Routes to Schools (SRTS), Michigan Natural Resources Trust Fund (MNRTF)	Dependency on Amway as Ada's largest employer and taxpayer
Ada's world-class park and recreational facilities		Park once opportunity for Amway employees to visit Ada Village from workplace	Pressure to develop open spaces in the Township

3 CANDIDATE PROJECTS AND ENHANCEMENTS

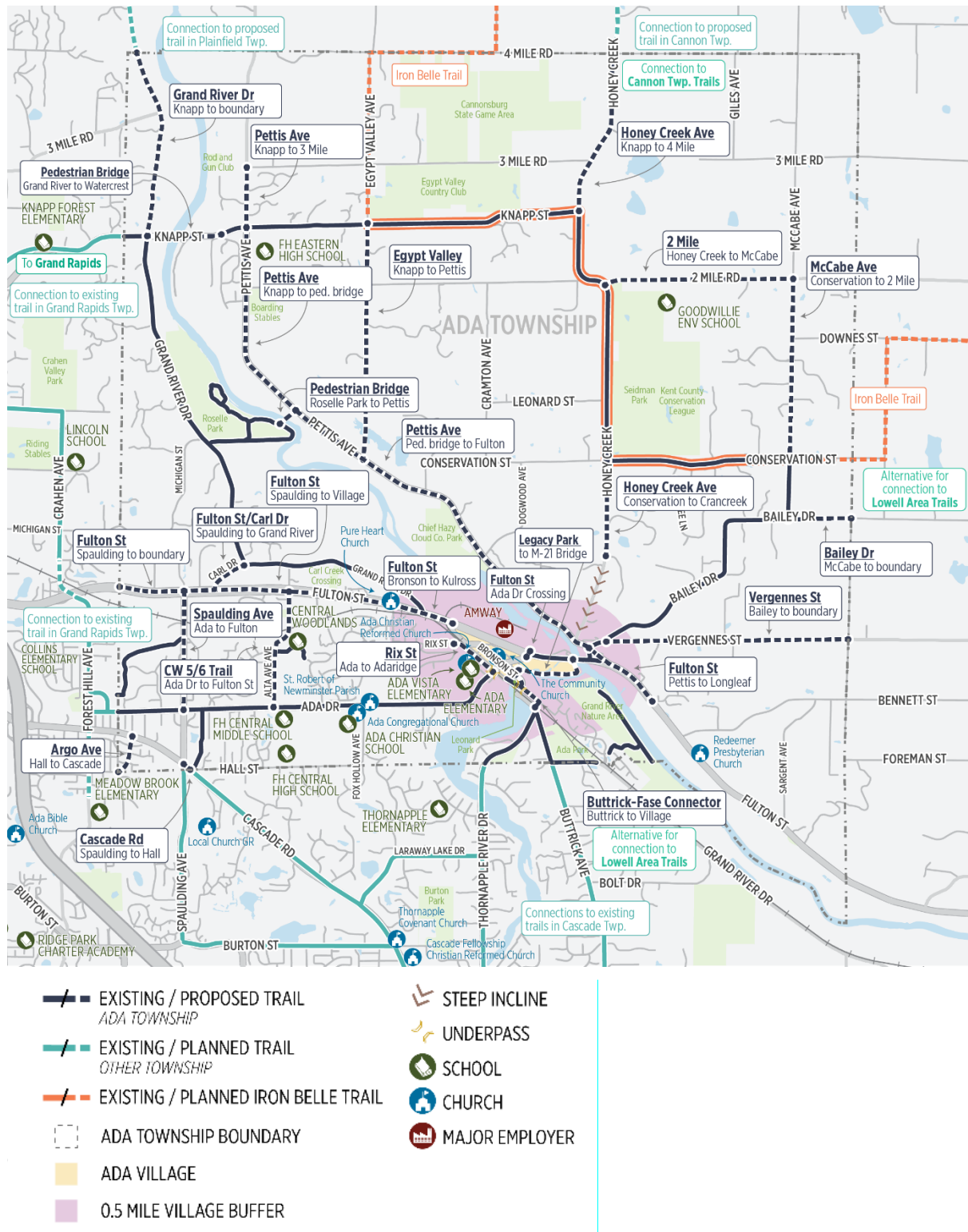
CANDIDATE PROJECTS

The following list of 26 project candidates was collectively developed through input from the Ada Township Trail Committee, Kent County Road Commission (KCRC), MDOT, and local residents. The Trail Committee had elevated an initial list of 18 projects prior to a public workshop and survey, where community members added eight additional projects for consideration (highlighted in blue below). These projects are mapped in Figure 3.

Figure 3 Non-Motorized Project Candidates

Project ID #	Project Location	Project Type
1	Spaulding Ave Trail: Ada Drive to Fulton Street	Path and Crossing
2	Fulton Street Trail: Spaulding Avenue to Carl Drive; and Carl Drive: Fulton Street to Grand River Drive	Path
3	Fulton Street Trail: Spaulding Avenue to Township Boundary	Path
4	Pettis Avenue Trail: Knapp Street to 3 Mile Road	Path
5	Pettis Avenue Trail and Crossing: Knapp Street to River Pedestrian Bridge	Path and Crossing
6	McCabe Avenue Trail: Conservation Street to 2 Mile Road	Path
7	Fulton Street Trail: Pettis Avenue to Longleaf Drive	Path
8	Legacy Park Trail: to M-21 Bridge	Path
9	Rix Street Trail: Ada Drive to Adaridge Drive	Path
10	Honey Creek Avenue Trail: Conservation Street to Crancreek Drive	Path
11	Fulton Street Trail: Bronson Street to Kulross Avenue	Path
12	Grand River Drive Trail: Knapp Street to Township Boundary	Path
13	Bailey Drive Trail: McCabe Avenue to Township Boundary	Path
14	Honey Creek Avenue Trail: Knapp Street to 4 Mile Road	Path
15	Argo Avenue Trail: Hall Street to Cascade Road	Path
16	Cascade Road Trail: Spaulding Avenue to Hall Street	Path
17	Pedestrian Bridge: Grand River Drive to Watercrest Drive	Bridge
18	Pedestrian Bridge and Crossing: Roselle Park to Pettis Avenue	Bridge and Crossing
19	Pettis Avenue Trail: From Pedestrian Bridge to Fulton Street	Bridge
20	Vergennes Street Trail: Bailey Drive to Boundary	Path
21	Central Woodlands 5/6 Trail: Ada Drive to Fulton Street	Path
22	Buttrick-Fase Connector Trail and Crossing: Buttrick Avenue to the Village, via Fase Street	Path and Crossing
23	Fulton Street Crossing: Improved Crossing at Ada Drive	Crossing
24	2 Mile Trail: Honey Creek Avenue to McCabe Avenue	Path
25	Egypt Valley Trail: Knapp Street to Pettis Avenue	Path
26	Fulton Street Trail: Spaulding Avenue to Village	Path

Figure 4 Map of Non-Motorized Candidate Projects



NON-MOTORIZED INFRASTRUCTURE ENHANCEMENTS

Ongoing maintenance and enhancements such as benches, lighting, and signs will ensure Ada's trail system remains safe, user-friendly, connected, and enjoyable.

Figure 5 Non-Motorized Infrastructure Enhancements

	Improvement	Benefits	Relative Cost
Enhancements	Benches	<ul style="list-style-type: none"> • Benches provide places to sit along trails • Strategic siting can invite people to stop at a viewpoint or allow for a brief break along a long stretch. 	\$
	Bike Racks	<ul style="list-style-type: none"> • Bike racks provide a designated place to park bicycles, helping keep bikes safe from theft and out of walkways. 	\$
	Trash Cans	<ul style="list-style-type: none"> • Trash cans help keep trails clean and deter littering, by providing a designated place to discard waste. 	\$
	Lighting	<ul style="list-style-type: none"> • Trails lights allow trail use to extend past dusk, or before dawn • Lighting is also a key safety enhancement, helping people see their surroundings throughout a run or ride. 	\$\$-\$\$\$
	Wayfinding Signs	<ul style="list-style-type: none"> • Wayfinding signage guides people to popular landmarks or other trail routes nearby. • Signs can be oriented for different audiences: indicating direction and distance to tourism destinations, business districts, schools, or other prominent destinations. 	\$
	Crossing Enhancements	<ul style="list-style-type: none"> • High visibility crosswalks increase drivers' awareness of the potential for people walking across the street, and make people more visible while crossing. 	\$\$-\$\$\$
	Trailhead Parking	<ul style="list-style-type: none"> • Trailhead parking enables visitors to travel to and experience choice trails around the Township, even if they do not live within walking distance. • Designated parking can also reduce unsafe parking on road shoulders. 	\$\$\$\$
	Trail Counter	<ul style="list-style-type: none"> • Trail counters help the Township learn more about how often trails are used. • Data from trail counters can be key to supporting future grant applications. 	\$\$\$\$
Maintenance	Brush Trimming	<ul style="list-style-type: none"> • Brush trimming keeps trails free from branches, brush, and other debris that might grow or make its way onto a trail otherwise. • Brush trimming supports trail safety by removing obstacles from walking and bicycling pathways. 	\$\$-\$\$
	Trail Cleaning	<ul style="list-style-type: none"> • Regular cleaning helps keep litter and debris off trails, maintaining them for long term use and enjoyment. 	\$\$-\$\$
	Pavement Repair	<ul style="list-style-type: none"> • Over time, pavement cracks and breaks, and creates potential obstacles for walking and biking. Regular repair reduces the obstruction these trail cracks pose to trail safety. 	\$\$

	Improvement	Benefits	Relative Cost
	Plowing	• Plowing can keep trails open and safe through winter months, enabling people to enjoy them year-round. Without plowing some trails can be used for skiing.	\$

Cost Key: \$ = \$0 - \$2,000; \$\$ = \$2,001-\$5,000; \$\$\$ = \$5,001-\$10,000; \$\$\$\$ = \$10,000

STREET CROSSINGS

Connect Ada relies on a combination of improvements along and across roadways. For the most part, the candidate project list consists of paths and walkways along, and separated from, existing roadways.

Projects across roadways can be more complex because of the nature of the roads to be crossed. However, without addressing these crossings, it is impossible to have a completely connected network.

Neighborhood and Commercial Streets

Neighborhood crossing improvements can be relatively simple, such as marked crosswalks, curb extensions or traffic calming that slows traffic and enhances the visibility of people on foot or bicycle trying to cross the street. That said, the enhancements must be approved by the County Road Commission. Potential design treatments for improved commercial and neighborhood crossings include:

- High visibility continental crosswalks
- Count-down pedestrian signal heads
- Leading pedestrian intervals at traffic signals that give pedestrians advance time to cross the street before traffic starts to move
- Trail way-finding signs
- HAWK pedestrian signals that act as traffic signals to stop cars via pedestrian activation
- Rectangular Rapid Flashing Beacons, which are high visibility beacons to signal to drivers that they shall yield to pedestrians in the crosswalk
- Pedestrian refuge islands that provide the opportunity for pedestrians to cross one direction of traffic at a time via an island at the centerline
- Signs reinforcing the legal requirement that drivers yield to pedestrians in crosswalks

Pictures illustrating best practice applications of these tools can be found in Figure 7.

State Highways

Crossings of State Highways, such as Fulton Avenue, (M-21) are more complex both because these roadways have higher traffic volumes, but also because their principle purpose is to efficiently and reliably move regional traffic. People in Ada have described that crossing Fulton Ave feels uncomfortable and unsafe because of high traffic speeds and motor vehicle turning movements. Based upon this feedback, one immediate action during the course of this plan's

development is MDOT's commitment to supplement existing marked crossings on M-21 with high visibility crosswalks.

Longer term projects to add grade-separated crossings to M-21 are proposed to improve trail access between Amway and Ada Village include an undercrossing near the Grand River as an extension of the Legacy Trail and a mid-block crossing between the signals at Headley Street and Ada Drive.

Based upon cost and feasibility, as well as the user experience, a tunnel crossing is recommended should this project move forward. A full reference to the pros and cons for tunnels versus overpasses has been summarized in Page 7 of the costing-support memo by Progressive AE in Appendix B.

Figure 6 Photos of the Fred Meijer Standale Tunnel



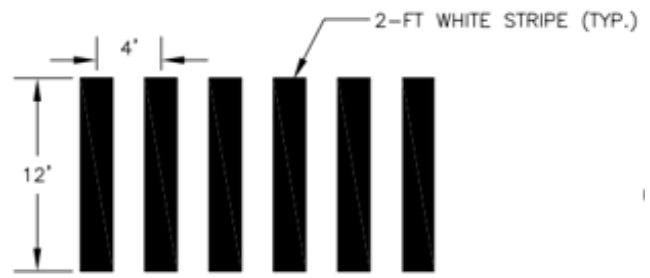
Photo Credit: Scott Conners, City of Walker, and Jason Washler, Prein & Newhof

Figure 7 Neighborhood Crossings and Signage - Best Practice Toolkit

Improvement	In Practice
<p>Striping Continental Standard Crosswalks</p> <p>Source: NACTO Urban Street Design Guide</p>	<ul style="list-style-type: none"> • Stripe all signalized crossings and/or major pedestrian or bicycle crossing desire lines • Stripe the crosswalk at least as wide as the walkway it connects • Use high visibility zebra markings to ensure pedestrian visibility (See Continental Standard in MUTCD) • Provide ADA-accessible curb ramps on either side of crosswalks • Strip stop bars at least 8 feet in advance of the crosswalk



Source: Nelson\Nygaard, from Somerville, Massachusetts



Sample Specification: Cambridge, MA

"Two-Can" Bike Crossing



Source: Nelson\Nygaard, Cambridge, MA

- Paint applications that reinforce bicycles can also make use of a crosswalk to cross the street
- Has also been applied as green thermoplast dashes in many cities (as pictured below)



Source: Nelson\Nygaard, Seattle, WA

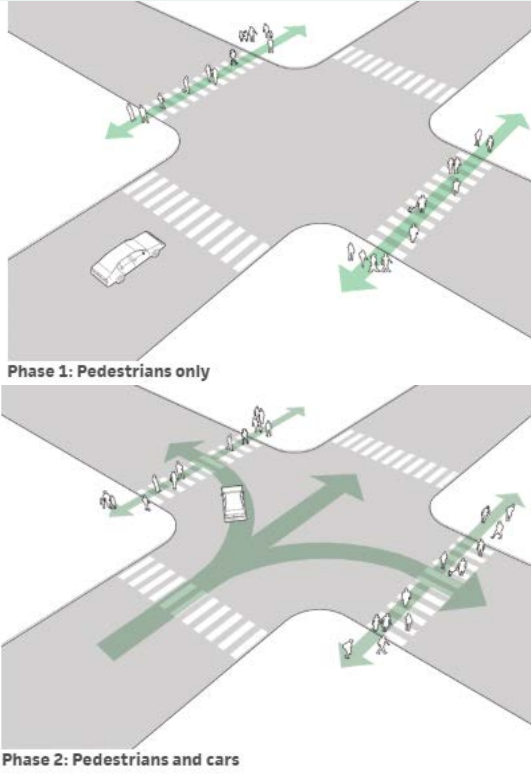
Count-Down Pedestrian Signal Heads



Source: Nelson\Nygaard, from Washington, D.C.

- Countdown programming gives people crossing more information about how much time is left to safely cross the street
- When installed with pushbuttons, a 29% reduction in total pedestrian crashes and a 30% reduction in fatal/injury pedestrian crashes were observed

Leading Pedestrian Intervals (LPI) at Traffic Signals



Source: nacto.org

- Enhancing pedestrian crossing signal heads can also allow for LPI enhancements
- An LPI programs the signal to give pedestrians a 3 to 7 second head start ahead of the green light phase, to ensure visibility for safe crossing
- Most critical application areas include those where there is heavy turning volume, which could create conflict with those crossing the street
- Shown to reduce pedestrian-vehicle collisions as much as 60%

Wayfinding Signs



Source: Nelson\Nygaard, from Chicago

- Wayfinding can support the use of a trail system and the connections to and from it
- Ada should conduct a detailed wayfinding study and audit to identify locations that could benefit from signage to mitigate confusion and to ensure the system is comprehensive to users
- As part of this, a hierarchy of signage typologies could also be developed, including those for major vs supportive navigation
- Signage could also be interimly-deployed as a "pilot" by applying them with zipties to other vertical parking or light poles
- Bicycle Boulevard principles could also be deployed, to indicate distance in time and miles to and from the village, schools, and major parks (as pictured in the example from Fresno)



Source: Nelson\Nygaard, from Fresno

Trail Yield / Share the Path Signage



Source: Nelson\Nygaard, from California

- Many towns and trail organizations create custom signage for trails to encourage proper yielding behavior in these share areas
- Some towns include signage with terms like "Courteous Cycling Welcome", "Share the Path," and so on to reinforce the cultural manner of the rule policy context

HAWK Signals



Source: pedbikeimages.org

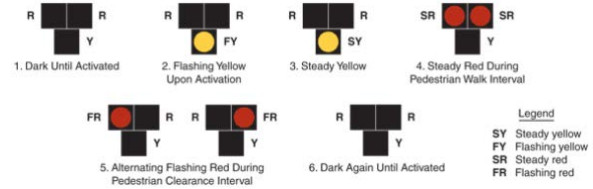
- HAWK: High-Intensity Activated crosswalk
- Installed as mid-block crosswalks that include both a vehicle beacon and pedestrian signal heads.
- Most effective when used a locations that have high rate of pedestrian activity with high volumes of crossing traffic that doesn't allow sufficient gaps in traffic for pedestrians to cross the road safely.
- The beacons have resulted in crash reductions, according to one FHWA study. There was a 69 percent reduction in vehicle pedestrian crashes, as well as a 29 percent



Source: NelsonWygaard, from Northampton, MA

decrease in all crashes ([Fitzpatrick, 2012](#)). Additionally, the vehicle compliance is high, with up to 97 percent vehicle compliance of stopping at crosswalk during the steady red beacon phase.

- The beacon remains dark until it is activated by a pedestrian with a pushbutton. (See diagrams below for signal progressions)



Source: https://nacto.org/wp-content/uploads/2015/04/hawk_ped_signals_a_survey_of_national_guidance_cic.pdf



Pedestrian hybrid beacon phases
Source: Michele Weisbart

Rectangular Rapid Flashing Beacons (RRFB)



Source: NelsonWygaard, from Miami Beach, Florida

- RRFBs are user-activated flashing lights that supplement crossings at an unsignalized location
- The signal can either be activated passively through detection or manually through the use of a push-button

Median Refuge Islands



Source: nacto.org, from Portland, OR

- Median refuge islands shorten crossing distances and also allow users of all ages to make a safe two-stage crossing, where they only have to cross one direction of traffic at a time
- Levels of signage should be tailored according to the degree of vehicular volume present at the installation area

Yield to Pedestrians Signage

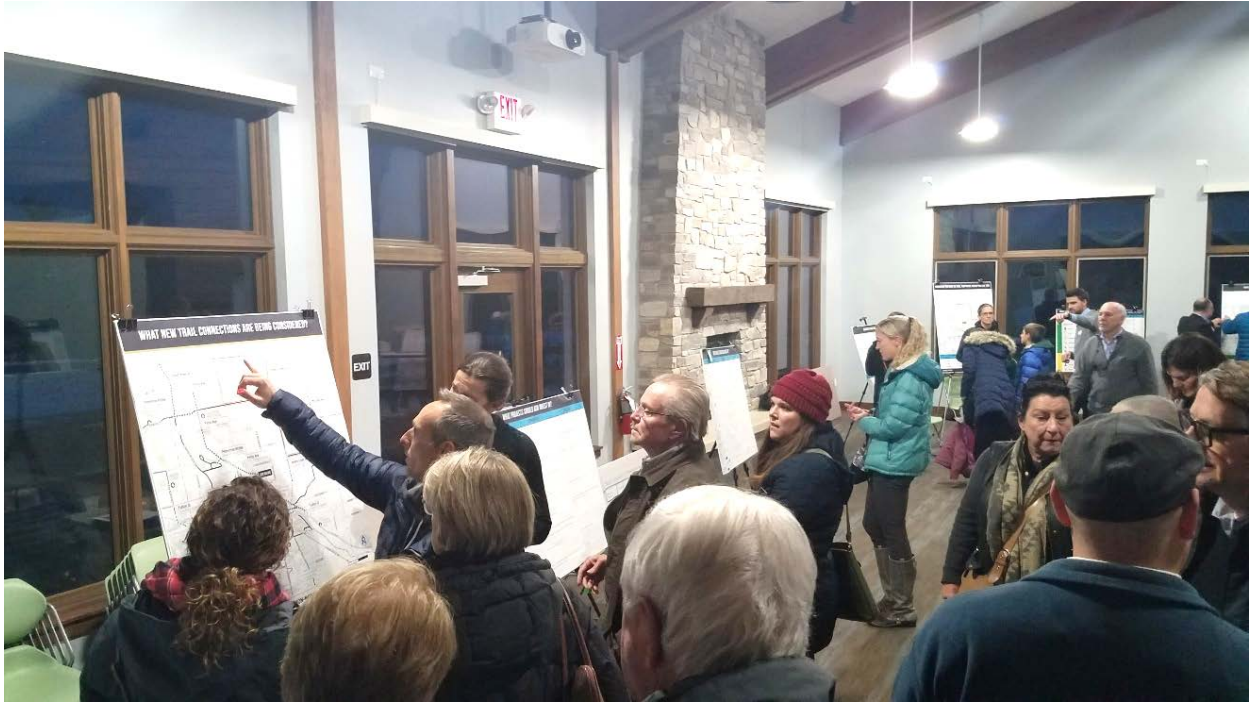


Source: Nelson\Nygaard, from Washington, D.C.

- Yield to Pedestrian Signage, when applied in-street could reinforce yielding or stopping when a pedestrian is present in the crosswalk
- Policy change would be needed to ensure

4 OUTREACH AND ENGAGEMENT

Engagement Summary



On November 12, 2019, the Connect Ada project team hosted two public workshops at Roselle Park, asking people for input on potential projects from previous planning efforts and to document other opportunities to improve walking and biking in the Township. Even though it was hosted on the day after the first major snowstorm of the season, over 100 people attended the workshops to share their feedback.³

In addition, because Ada's roads are not locally owned or maintained, the project team met with staff from the Kent County Road Commission and MDOT. The purpose of that meeting was to discuss opportunities and challenges to installing and maintaining walking, biking, trails, crossings, and signals in Ada. The team also hosted a working meeting with Ada's Trail Committee to discuss direction based on all of the input received from stakeholders.

Following the public workshops at Roselle Park, the project team posted an online survey asking people to vote for their top three most preferred projects. This offered an additional opportunity for Ada Township residents to vote on project prioritization, if they were unable to attend the workshops in person. The survey was live from December 6th through December 15th. 205 people voted in the online survey.

³ Based on a head count of people in attendance by project staff. Of these, 75 people signed in on sign-in sheets.

Key Takeaways from Community Input

- Walking and biking for exercise is a popular reason for use of non-motorized facilities.
- Feedback on potential projects:
 - Eight new projects were added to the initial 18 candidate projects previously assembled by the Trail Committee (Figure 3).
 - Figure 7 documents the most popular projects at the workshop. The most popular projects were concentrated in and around Ada Village, and along the Pettis Avenue corridor.
 - Many participants noted that Pettis Avenue is a notable gap in the existing network that is already commonly used by people biking.
 - Residents cited speed and volume of through-traffic as concerns in Ada Village, describing that crossing Fulton Street and Ada Drive are a challenge and that almost every intersection needs crossing enhancements.
- Crossing enhancements, generally, were the most-cited spot improvement request. The most popular locations identified for crossing enhancements were:
 - Throughout Ada Village
 - Thornapple River Drive, south of the Village at Fase Street
 - Alta Dale Avenue, especially connecting to Central Woodlands 5/6 School
 - The interchange comprised of the intersections of Fulton Street, Vergennes Street, Bailey Drive, and Pettis Avenue
 - Knapp Street between Grand River Drive and Pettis Avenue
- Many participants also recommended planning new pedestrian crossings with comfort for crossing with children as a central design priority. This input was raised by many parents who were concerned about travel to and from local schools and to, from, and within the Village.

Workshop Exercises

Workshop participants had the opportunity to provide plan input through six exercises. These exercises yielded quantitative and qualitative information about residents' current experiences walking and biking in Ada Township, what non-motorized infrastructure they are seeking, and their priorities in project investments. The following list outlines the exercises and the feedback they sought:

- **“How do you travel in Ada?”** – A table of travel modes and trip purposes, asking participants to mark how they travel for common trip purposes.
- **“What projects should Ada invest in?”** – A series of boards listing and mapping candidate projects, with opportunity to vote by sticker and list opportunities and challenges. These boards provided the opportunity to vote on candidate projects, add more projects to that list, and to outline known challenges and opportunities associated with each.

- **“How easy is it to cross the street in Ada?”** – A map depicting the results of ease of crossing analysis for southwest Ada Township, along with two prompts asking people to identify challenges they have getting to and around within the Village.
- **“Where do you walk or bike, and where would you like to?”** – A map with color-coded markers prompting participants to mark where they currently and would like to walk or bike. This board offered participants a way to visually illustrate where they can and cannot walk or bike, giving project staff an opportunity to learn how well potential projects cover current and desired travel paths.
- **“What spots need improvement?”** – A series of boards offering a list of trail amenities and maintenance priorities with stickers to mark locations in need on the map.
- **“What other ideas...What factors matter in making investment decisions?”** – These boards included two prompt questions to provide open-ended feedback on other ideas to help make non-motorized investment decisions.



Public Voting Summary



Workshop and online survey participants voted for the following projects as their most popular:

Figure 8 Top-Voted Projects

Score	Project Location	How Many Participants Included this Project in their Top 3 Votes	How Many Points Received as Part of 1 st , 2 nd , 3 rd Choices*
1	Pettis Avenue Trail: From Pedestrian Bridge to Fulton Street	94	198
2	Buttrick-Fase Connector Trail: Buttrick Avenue to the Village, via Fase Street	66	181
3	Pettis Avenue Trail and Crossing: Knapp Street to Pedestrian Bridge	84	166
4	Pedestrian Bridge and Crossing: Roselle Park to Pettis Avenue	87	145
5	Rix Street Trail: Ada Drive to Adaridge Drive	58	112
6	Pedestrian Bridge: Grand River Drive to Watercrest Drive	40	96
7	Fulton Street Trail: Bronson Street to Kulross Avenue	40	94
8	Fulton Street Trail: Pettis Avenue to Longleaf Drive	42	92

Note: * 1st choice sticker = 3 pts; 2nd choice sticker = 2 pts; 3rd choice sticker = 1 pt

Trail Amenities and Enhancements

The following trail improvements were the most popular among those that attended the workshop:

Figure 9 Top-Voted Trail Improvements at the Workshop

Score	Improvement	Vote Tally	% of All Votes
1	Crossing Enhancement	37	52%
2	Trailhead Parking	7	10%
3	Bike Racks	6	8%
3	Pavement Repairs	6	8%
Total		71	100%

- Crossing enhancements were the most popular improvement by far. The most popular locations identified for crossing enhancements were:
 - Throughout Ada Village
 - Thornapple River Drive, south of the Village at Fase Street
 - Alta Dale Avenue, especially connecting to Central Woodlands 5/6 School
 - The interchange comprised of the intersections of Fulton Street, Vergennes Street, Bailey Drive, and Pettis Avenue
 - Knapp Street between Grand River Drive and Pettis Avenue
- Trailhead parking, while marked in several locations, only showed up on the Trail Committee's map. It was not marked by any members of the public.
 - Suggested trail parking enhancement locations included: Forest Hills Eastern and Central high schools, Seidman Park, Chief Hazy Cloud Park, Amway Headquarters, and the Forest Hills Community and Aquatic Center.
 - Based on the presence of existing parking at these locations, enhancements could include either securing shared parking agreements to formally designate and sign these locations for trail parking, expanded parking specifically for trails use, or both.
- Bike racks:
 - Two-thirds of the bike rack locations identified were in the Village.
 - Other locations identified for potential new bike racks were the Forest Hills Community and Aquatic Center and Roselle Park.
- Pavement repair:
 - McCabe Avenue, between Conservation Street and Bailey Drive, was the only location identified for pavement repair more than once.
 - Other locations identified were on trails along Honey Creek Avenue, Grand River Drive, and Ada Drive.

Challenges Getting to the Village

- Outside of map inputs, over a dozen participants wrote about locations of challenging barriers for getting to the village. Many of these were reflected in the list of candidate projects, especially projects 7, 19, and 22 (see Figure 3).
- Two additional barriers were also cited at a higher level: Ada Drive and Fulton Street
- Beyond these barriers, respondents also called for:
 - A trail along Fulton Street
 - Speed reductions, especially closer to and within the Village
 - A safer crossing on Thomapple River Drive at Fase Street



Challenges Getting Around the Village

- The most commonly cited challenges within the Village are crossing Fulton Street and Ada Drive.
- Through-traffic and speed were raised as challenges, especially on Fulton Street and Ada Drive, as both are connections to and through the Village.

Factors in Investment Decisions

When asked for open-ended suggestions on factors to consider in non-motorized investment decisions:

- All suggested factors written in by participants were factors covered in the project team's draft evaluation criteria.
- Safety was the most popular suggestion.
- The other factors suggested were:
 - Safety
 - Population Density
 - Connections to Schools
 - Connections to regional trails



Other Project Ideas

When asked for opened-ended additional ideas beyond potential projects, popular themes included:

- Lowering vehicle speed limits within and leading to the Village.
 - Using speed control cameras and a speed lottery to encourage safe driving behavior.⁴
- Planning pedestrian crossings with comfort for crossing with children as a central design priority.
 - Popular design elements participants cited included: zebra striped crosswalks and slower speed limits farther from Village along through roads.
 - Safe crossing design was a popular topic and concern, especially in locations throughout the Village, and crossing Fulton Street, Ada Drive, and Thomapple River Drive.

⁴ Some residents at the public workshop suggested a speed camera lottery system, based on the model of Stockholm's speed lottery, but with a giftcard to Ada Village businesses as the incentive, rather than cash. See: Haggarty, Elizabeth, "Speed Camera Lottery pays drivers for slowing down," The Toronto Star, December 9, 2010.

https://www.thestar.com/news/world/2010/12/09/speed_camera_lottery_pays_drivers_for_slowing_down.html

5 PRIORITIZATION EVALUATION

EVALUATION CRITERIA

The 26 non-motorized pathway candidate projects were prioritized based on six evaluation criteria. The intent of this prioritization is to identify which projects rise to the top as high priority projects to be supported by the Trail Fund in a subsequent millage cycle. With that, projects not included in the high priority list are still eligible for support from the Trail Fund, as well as external funding opportunities.

The evaluation criteria were drafted by the Trail Committee, with input from public participants at the November 2019 workshops, to assess how projects compare across key attributes.

Figure 9 describes the six evaluation criteria, along with their associated metrics and scoring. Each criterion is weighted with points based on input from the Trail Committee about Ada's vision and goals as they relate to community priorities. Evaluation scores are summarized in a table in the Appendix.

The highest scoring projects demonstrate the best potential to provide a safe and seamless walking and bicycling network in Ada that connects the places where people live, work, and visit.

Figure 10 Project Evaluation Criteria

CRITERIA	METRIC	SCORING
Connection to the Village	Is the project within ½ mile of Ada Village?	<ul style="list-style-type: none"> Yes = 3 No = 0
Overcomes a River or Roadway Barrier	<p>Does the project create or include an improved crossing of a high-stress street segment or river?</p> <p>These barriers include:</p> <ul style="list-style-type: none"> Grand River Thornapple River Fulton Street (M-21) Ada Drive Thornapple River Drive 	<ul style="list-style-type: none"> Yes = 3 No = 0
Safety	Project scored based on an ease of crossing safety index analysis. This analysis is based on road width, average annual traffic volume, presence of a traffic signal, and speed limit.	<ul style="list-style-type: none"> Less Challenging: 1 Moderately Challenging: 2 Challenging: 3 Very Challenging to Cross: 4
Fills a Trail Gap	Is it a trail segment connecting to at least one end of an existing trail?	<ul style="list-style-type: none"> Connects 2 Existing Trail Ends = 2 Connects to 2 Existing OR Planned Trail Ends = 1 No Connections = 0
Connects a Park	Is the project connecting directly or running adjacent to a park?	<ul style="list-style-type: none"> Yes = 2 No = 0
General Public Support	Measured by public votes	<ul style="list-style-type: none"> One of top 3 weighted choices in workshop = 2 Rated 4-8 in weighted choices in workshop = 1 Rated lower than 8 in weighted choices in workshop = 0




EVALUATION RESULTS

Based on the above criteria, the highest scoring projects are listed below. Complete project scores are detailed in Appendix A in Figure 12. The rating system developed for this plan is a tool. Practical considerations such as leveraging other funding, cost-efficiency, and geographical distribution can complement this analysis to create a final millage recommendation to the Board that will be supported by a wider public.




1. **Buttrick-Fase Connector Trail and Crossing:** Buttrick Avenue to the Village, via Fase Street
2. **Legacy Park Trail:** to M-21 Bridge
3. **Fulton Street Crossing:** Improved Crossing at Ada Drive
4. **Pettis Avenue Trail:** From Pedestrian Bridge to Fulton Street
5. **Fulton Street Trail:** Bronson Street to Kulross Avenue
6. **Pedestrian Bridge:** Grand River Drive to Watercrest Drive

TOP PROJECTS SPOTLIGHT

Buttrick-Fase Connector Trail and Crossing

	Level of Public Support	Type of Project	Overall Project Score
	 High	 Trail and Crossing	15 Numeric Score
	<p>The Buttrick-Fase Connector Trail and Crossing would fill the trail gap between Leonard Park and the Buttrick Avenue trail, south of the railroad. In addition, this project would add safety enhancements to the Thornapple River Drive and Fase Street pedestrian crossing.</p>		

Legacy Park Trail

	Level of Public Support	Type of Project	Overall Project Score
	 Low	 Trail	12 Numeric Score
	<p>The Legacy Park Trail would extend the Legacy Park trail, following the rivers from the Village to the trail on the northside of the M-21 bridge.</p>		

6 FUNDING

Non-motorized infrastructure in Ada Township is primarily supported through the Township's Trail Fund. There are some additional outside grant funds available to the township to apply for specific projects, especially if there is a significant local match and significant community support.

TRAIL FUND

In August 2006, Township voters approved a 15-year property tax millage of .5 mills (\$0.50 per \$1,000 of taxable value), to establish the Ada Township Trail Fund. The Fund supports the development and maintenance of Ada's non-motorized trail network. Since 2006, the millage has supported construction of 15.5 miles of trails. A millage renewal is needed in 2020 for the Township to continue maintaining its trail network.

The current millage was approved following two previous attempts in August and November 2002 (Figure 10). These previous millage attempts were proposed at 0.85 and 0.6 mills. Both failed attempts earned over 40% voter-approval. The second attempt in November 2002 was narrowly defeated by 7 votes. All previous trails millage votes took place during Michigan gubernatorial election years, and non-presidential election years.

Figure 11 shows estimated annual millage revenue and cost based on a \$500,000 home, for millage rates ranging from 0.50 to 1.00 mills. These rates are estimated to generate \$526,219 to \$1,052,438 in annual revenue for the Trail Fund, at an annual cost of \$125 to \$250 per household assessed at a \$500,000 property value. Assuming a renewal at the current millage rate, another 15-year trails millage cycle is estimated to cumulatively generate approximately \$9.5 million.⁵

Figure 11 Non-Motorized Trail Millage History

Millage Attempt Date	Mills	Yes Votes / %	No Votes / %	Vote Count Margin / %
August 2002	0.85	960 / 41.1%	1378 / 58.9%	-418 / -17.9%
November 2002	0.60	2411 / 49.9%	2418 / 50.1%	-7 / -0.1%
November 2006	0.50	3401 / 53.5%	2958 / 46.5%	443 / 7.0%

Source: April 2019 Ada Township Trail Committee Memo

Figure 12 Estimated Possible Millage Revenue by Rate, Based on 2019 Taxable Value

	Taxable Value	Sample Millage Rates			
		0.50	0.625	0.75	1.00
2019 Ad Valorem Taxable Value	\$1,040,715,643	\$520,358	\$650,447	\$780,537	\$1,040,716
2019 IFT Taxable Value	\$23,445,164	\$5,861	\$7,327	\$8,792	\$11,723

⁵ The cumulative amount generated reflects tax revenue generated. The actual revenue contributed to the Ada Township Trail fund would be less, after accounting for the Headlee Rollback. Based on 2019 taxable value, 15-year cumulative revenue contributed to the Trail Fund is estimated to be closer to \$8.6 million.

	Taxable Value	Sample Millage Rates			
		0.50	0.625	0.75	1.00
Potential Total Millage Revenue Generated / Year		\$526,219	\$657,774	\$789,329	\$1,052,438
Tax Burden on a Home Valued at \$500,000 (taxable value of \$250,000)		\$125.00	\$156.25	\$187.50	\$250.00

Source: Ada Township, January 2020

EXTERNAL FUNDING OPPORTUNITIES

The following external funding opportunities could be deployed to supplement local funds for walking and biking improvements.

Local Sources

- GVMC Transportation Alternatives Program: Transportation projects that support mobility beyond typical roadway infrastructure are often considered for the Transportation Alternatives Program (TAP). This federal grant program is administered through two different processes. One is a local TAP process for which projects are considered by the Grand Valley Metropolitan Council (GVMC) communities, competing with other GVMC community project requests. The other TAP process is a statewide competitive process evaluated against project submittals from across the state.
- West Michigan Trails and Greenways: WMTGC is a local non-profit dedicated to supporting West Michigan trails. They have a regional perspective that works to support trail projects by leveraging both public and private funding sources. Working directly with them may provide opportunities and access to unique funding sources and fund raising events.
- Philanthropy: Local donors, trails sponsorships, and friends groups are often another great resource for promoting, utilizing, and supporting community assets.

State Sources

- Highway Safety Improvement Program (HSIP): The MDOT HSIP is focused on transportation safety improvements on a statewide competitive process. Up to \$600,000 in federal funds can be available per selected project. Applications must come from an Act 51 agency (KCRC) and must be safety focused.
- Safe Routes to School: SRTS is a federal program that is focused on making it safe, convenient, and fun for people to bike and walk to school. This school based program can potential support trail improvements in areas that provide benefits and connections to schools.
- MDNR's Outdoor Recreation and Legacy Partnership Program: This program provides matching grants to states and local governments for the development of public outdoor recreation and facilities in urban areas. Applicants are required to have a DNR-approved community five-year plan to be eligible for grant funding ranging from \$250,000 to \$750,000.

- Land and Water Conservation Fund: This fund provides matching grants to governments planning to acquire and develop outdoor recreation facilities, in accordance to the plans for growth demand laid out in the 2018-2022 Statewide Comprehensive Outdoor Recreation Plan.
- Michigan Natural Resources Trust Fund: This program provides grants for outdoor recreation and natural resource protection largely used for acquisition projects given no more than 25 percent can be used for the development of facilities.
- Recreation Passport Grants: Townships can apply for grants to renovate existing recreational facilities if a 25% match is provided locally.

Appendix A Project Scoring

Figure 13 Project Scoring

Score	Candidate Project Location	Points Per Metric*						Sum Total Points	Estimated Project Cost (by Progressive AE, February 2020)
		Connection to Ada Village	Overcomes a River or Roadway Barrier	Safety	Fills a Key Trail Gap	Connects a Park	General Public Support**		
		3 = Yes 0 = No	3 = Yes 0 = No	Ease of Crossing Safety Index: Less Challenging: 1 Moderately Challenging: 2 Challenging: 3 Very Challenging to Cross: 4	2 = Connects 2 Existing Trail Ends 1 = Connects to 2 Existing OR Planned Trail Ends 0 = No Connections	2 = Yes 0 = No	2 = #1 -3 Rating 1 = # 4 - 8 Rating 0 = Below #8 Rating		
1	Buttrick-Fase Trail and Crossing: Buttrick Avenue to the Village, via Fase Street	3	3	3	2	2	2	15	\$891,000
2	Legacy Park Trail: to M-21 Bridge	3	3	4	0	2	0	12	\$1,584,000
3	Fulton Street Crossing: Improved Crossing at Ada Drive	3	3	4	2	0	0	12	<ul style="list-style-type: none"> Enhanced Crossing: \$34,000 Tunnel: \$2-3 million Bridge: \$3-4 million
4	Pettis Avenue Trail: From Pedestrian Bridge to Fulton Street	3	0	2	1	2	2	10	\$3,731,000
5	Fulton Street Trail: Bronson Street to Kulross Avenue	3	0	4	2	0	1	10	\$382,000

CONNECT ■ ADA

Score	Candidate Project Location	Points Per Metric*						Sum Total Points	Estimated Project Cost (by Progressive AE, February 2020)
		Connection to Ada Village	Overcomes a River or Roadway Barrier	Safety	Fills a Key Trail Gap	Connects a Park	General Public Support**		
		3 = Yes 0 = No	3 = Yes 0 = No	Ease of Crossing Safety Index: Less Challenging: 1 Moderately Challenging: 2 Challenging: 3 Very Challenging to Cross: 4	2 = Connects 2 Existing Trail Ends 1 = Connects to 2 Existing OR Planned Trail Ends 0 = No Connections	2 = Yes 0 = No	2 = #1 -3 Rating 1 = # 4 – 8 Rating 0 = Below #8 Rating		
6	Pedestrian Bridge: Grand River Drive to Watercrest Drive	0	3	4	2	0	1	10	\$5,406,000
7	Fulton Street Trail: Spaulding Avenue to Village	3	0	4	2	0	0	9	\$1,904,000
8	Pedestrian Bridge and Crossing: Roselle Park to Pettis Avenue	0	3	2	1	2	1	9	\$5,177,000
9	Pettis Avenue Trail and Crossing: Knapp Street to River Pedestrian Bridge	0	3	2	1	0	2	8	\$1,935,000
10	Fulton Street Trail: Pettis Avenue to Longleaf Drive	3	0	4	0	0	1	8	\$1,910,000
11	Fulton Street Trail: Spaulding Avenue to Carl Drive and Carl Drive: Fulton Street to Grand River Drive	0	0	4	2	0	0	6	\$885,000

CONNECT ■ ADA

Score	Candidate Project Location	Points Per Metric*						Sum Total Points	Estimated Project Cost (by Progressive AE, February 2020)
		Connection to Ada Village	Overcomes a River or Roadway Barrier	Safety	Fills a Key Trail Gap	Connects a Park	General Public Support**		
		3 = Yes 0 = No	3 = Yes 0 = No	Ease of Crossing Safety Index: Less Challenging: 1 Moderately Challenging: 2 Challenging: 3 Very Challenging to Cross: 4	2 = Connects 2 Existing Trail Ends 1 = Connects to 2 Existing OR Planned Trail Ends 0 = No Connections	2 = Yes 0 = No	2 = #1 -3 Rating 1 = # 4 – 8 Rating 0 = Below #8 Rating		
12	Cascade Road Trail: Spaulding Avenue to Hall Street	0	0	3	2	0	0	5	\$113,000
13	Rix Street Trail: Ada Drive to Adaridge Drive	3	0	1	0	0	1	5	\$580,000
14	Vergennes Street Trail: Bailey Drive to Boundary	3	0	2	0	0	0	5	\$3,916,000
15	Spaulding Avenue Trail: Ada Drive to Fulton Street	0	0	3.5	1	0	0	4.5	\$1,485,000
16	2 Mile Trail: Honey Creek Avenue to McCabe Avenue	0	0	1	1	2	0	4	\$1,588,000
17	Honey Creek Avenue Trail: Conservation Street to Cranecreek Drive	0	0	2	0	2	0	4	\$1,265,000
18	Fulton Street Trail: Spaulding Ave to Township Boundary	0	0	4	0	0	0	4	\$554,000

CONNECT ■ ADA

Score	Candidate Project Location	Points Per Metric*						Sum Total Points	Estimated Project Cost (by Progressive AE, February 2020)
		Connection to Ada Village	Overcomes a River or Roadway Barrier	Safety	Fills a Key Trail Gap	Connects a Park	General Public Support**		
		3 = Yes 0 = No	3 = Yes 0 = No	Ease of Crossing Safety Index: Less Challenging: 1 Moderately Challenging: 2 Challenging: 3 Very Challenging to Cross: 4	2 = Connects 2 Existing Trail Ends 1 = Connects to 2 Existing OR Planned Trail Ends 0 = No Connections	2 = Yes 0 = No	2 = #1 -3 Rating 1 = # 4 – 8 Rating 0 = Below #8 Rating		
19	Grand River Drive Trail: Knapp Street to Township Boundary	0	0	2	1	0	0	3	\$2,382,000
20	Honey Creek Avenue Trail: Knapp Street to 4 Mile Road	0	0	2	1	0	0	3	\$2,008,000
21	Egypt Valley Trail: Knapp Street to Pettis Avenue	0	0	1	1	0	0	2	\$2,388,000
22	Central Woodlands 5/6 Trail: Ada Drive to Fulton Street	0	0	1	1	0	0	2	\$1,502,000
23	Bailey Drive Trail: McCabe Ave to Township Boundary	0	0	1.5	0	0	0	1.5	\$1,322,000
24	McCabe Avenue Trail: Conservation Street to 2 Mile Road	0	0	1	0	0	0	1	\$1,791,000
25	Pettis Avenue Trail: Knapp to 3 Mile Road	0	0	1	0	0	0	1	\$683,000

CONNECT ■ ADA

Score	Candidate Project Location	Points Per Metric*						Sum Total Points	Estimated Project Cost (by Progressive AE, February 2020)
		Connection to Ada Village	Overcomes a River or Roadway Barrier	Safety	Fills a Key Trail Gap	Connects a Park	General Public Support**		
		3 = Yes 0 = No	3 = Yes 0 = No	Ease of Crossing Safety Index: Less Challenging: 1 Moderately Challenging: 2 Challenging: 3 Very Challenging to Cross: 4	2 = Connects 2 Existing Trail Ends 1 = Connects to 2 Existing OR Planned Trail Ends 0 = No Connections	2 = Yes 0 = No	2 = #1 -3 Rating 1 = # 4 – 8 Rating 0 = Below #8 Rating		
26	Argo Avenue Trail: Hall Street to Cascade Road	0	0	1	0	0	0	1	\$249,000

Note: Updated February 20, 2020.

* See Project Evaluation Criteria figure for full assumptions with respect to each criterion.

** Based on combined voting in-person at November 2019 workshops and the online survey in December 2019.

Appendix B Project Cost Estimation Memo

February 21, 2020

James Ferro
Planning Director
Ada Township
7330 Thornapple River Drive SE
Ada, MI 49301

Mr. Ferro:

The goal of this letter report is to layout the methods, differences, and results of this new cost estimation for the Ada Connect Non-Motorized Trail Projects.

Data provided by the old cost estimation is the basis of the new cost estimation. Items such as lengths of path, boardwalk, and retaining walls were not changed. There is a concern/possibility that some of the parts of the trails that were designated as boardwalk could be designed as a paved trail with extra backfill. While this could impact the estimates, reevaluating this was deemed too complex for this cost estimation, and without change, will offer more conservative estimates. The length of bridge needed for each proposed trail was reevaluated as the expense of installing a bridge greatly impacted the final estimates.

Layout of the paths was also retained from the old estimate, as the locations of the potential bridges were determined from them. These proposed paths were given a number designation for clarity in charts and figures. Please note, the trail map in the appendix has a trail designated as 9, and the rest of the cost estimate has 9.1 and 9.2 trails. This trail was broken into two in the original cost estimate and kept that way throughout the new estimate. See

Project Number	Project Name
1	Grand River Dr: Knapp to Twp Boundary
2	Pedestrian Bridge: Grand River Dr to Watercrest Dr
3	Pettis Ave: Knapp to 3 Mile
4	Honey Creek Ave: Knapp St to 4 Mile
5	McCabe Ave: Conservatin St to 2 Mile
6	Pettis Ave: Knapp to River Pedestrian Bridge
7	Pedestrian Bridge: Roselle Park to Pettis Ave
8	Fulton St: Spaulding to Twp Boundary
9.1	Fulton St: Spaulding Ave to Carl Dr
9.2	Carl Dr: Fulton to GR Dr
10	Fulton St: Bronson to Vitales
11	Honey Creek Ave: Conservation St to Crancreek Dr
12	Legacy Park to M-21 Bridge
13	Fulton St: Pettis Ave to Longleaf
14	Bailey Dr: McCabe Ave to Twp Boundary
15	Rix Street: Ada Dr to Ada Ridge
16	Spaulding Ave: Ada Dr to Fulton St
17	Cascade Ave: Spaulding to Hall
18	Argo Ave: Hall St to Cascade
19	Southtown Connector: Buttrick to the Village, via Fase St
20	Pettis Ave: Pedestrian Bridge to Fulton Street
21	Fulton St: Improved Crossing at Ada Drive
22	Fulton St: Spaulding to Village (Started at Carl Drive)
23	2 Mile: Honeycreek to McCabe
24	Vergennes St: Bailey to Boundary
25	Egypt Valley: Knapp to Pettis
26	Central Woodlands 5/6 Trail: Ada Dr to Fulton St
27	Fulton St Crossing: Tunnel
28	Fulton St Crossing: Bridge

Figure 1 Project Designation Numbers

Figure 1 and the attached map for the new number designations. Projects were generally numbered from north to south and west to east.

Remaining portions of the cost estimation was based upon new unit prices derived from new sources. The first source of information utilized was the paper, *“Cost for Pedestrian and Bicyclist Infrastructure Improvements”* by UNC Highway Safety Research Center for the Federal Highway Administration, which contained cost data from 77 projects and 1,700 cost observations from Ohio, California, Minnesota, Massachusetts, and Wisconsin. This large collection of data was analyzed by the researchers to give detailed price points and ranges for many of the typical features of a non-motorized trail.

Specifically, this paper was utilized for unit prices on paved paths and pedestrian hybrid beacon road crossings. All the unit prices in the paper were 2012 prices and were adjusted for two percent inflation to bring them to 2020 prices. The paved trail unit price was for a standard eight-foot wide path, and the unit prices were pulled from 42 sources. The pedestrian hybrid beacon for road crossing had nine data sources for its unit price.

The second source of information came from the presentation, *“CRTPO Bicycle & Pedestrian Project Costs Panel Discussion”* by Charlotte Regional Transportation Planning Organization (CRTPO). The CRTPO and its three counties have over 150 miles of non-motorized trails, making the historical data on pricing very strong. Their presentation laid out three boardwalk types, wood boardwalks, wood boardwalks with rails, and concrete boardwalks with rails, and their respective unit prices. Unit prices of these types of boardwalks were averaged, adjusted for inflation, and that value became the unit price. This unit price was also verified through other sources online, confirming that the prices CRTPO has historically paid were in line with the rest of the country.

"Cost for Pedestrian and Bicyclist Infrastructure Improvements" by UNC Highway Safety Research Center for Federal Highway Administration	<div data-bbox="915 659 1078 810"> Costs for Pedestrian and Bicyclist Infrastructure Improvements </div> <div data-bbox="915 821 1094 873"> A Resource for Researchers, Engineers, Planners, and the General Public </div> <div data-bbox="1135 659 1313 879">  </div>
"CRTPO Bicycle & Pedestrian Project Costs Panel Discussion" by Charlotte Regional Transportation Planning Organization	<div data-bbox="808 951 1435 1024"> CRTPO Bicycle & Pedestrian Project Costs Panel Discussion </div>
Grand River Riverfront Park Bridge in Lowell	<div data-bbox="873 1119 1378 1339">  </div>
Contech Engineered Solutions	<div data-bbox="984 1356 1273 1566">  </div>

Figure 2. Reference Sources

Bridges

For the unit price of bridges, two local non-motorized bridge projects were used to estimate the costs of the large-scale bridge crossings of the proposed Ada Connect trails. Grand River Riverfront Park Bridge in Lowell was the first local project utilized. This bridge, built in 2019, spans the Grand River connecting two parks, which is exactly what the Ada Connect bridges propose to do. This bridge was more expensive than the other project due to the higher end finishes chosen by the community.

The second project used to estimate bridge crossing expenses was an estimate from a proposed bridge in Newaygo that would cross the Muskegon River. This proposed bridge was a prefabricated steel bridge,

from Contech, which kept its cost lower than the Lowell bridge. Also, the river crossings called out in the Ada Connect plan would need at least one pier to be installed in the river. The Contech bridge estimate included a river pier, while the Lowell Bridge had a pier set on an island in the river. The Contech estimate had a lower unit cost, so it and the Lowell bridge unit price were averaged for use in new the estimate.

Retaining Walls

The retaining wall unit cost used in the old estimate was kept due to the high variability of retaining walls. Material, height, back fill, finish, etc. would all likely be trail-specific and would have great impacts on the unit cost.

Unit Prices

Figure 3 illustrates the final unit prices utilized in the new cost estimate compared to the old cost estimate. Comparing the values, the unit price for the paved trail increased by \$30 per linear foot or 38%. The boardwalk unit price dropped by \$260 per linear foot, or 33%. The degree these unit prices offset each other on the estimate depended on the quantities called out for each trail. As mentioned previously, the retaining wall unit price was left as-is. The bridge cost increased by \$1,500 per linear foot, or 50%. Traffic crossings were left on a case-by-case basis and were determined by engineering judgement.

Unit Prices		
Item	Old Unit Price (per ft)	New Unit Price (per ft)
Paved Trail	\$ 80.00	\$ 110.00
Boardwalk	\$ 800.00	\$ 540.00
Retaining Wall	\$ 350.00	\$ 350.00
Bridge	\$ 3,000.00	\$ 4,500.00
Traffic Crossing	N/A	Varies by Location

Figure 3. Unit Pricing Chart

The last significant change in the estimation is the inclusion of typical values for a complete project — not just the construction materials and installation. A 15% construction contingency was added to the materials and installation. This is important because projects of this length can run into numerous unforeseen issues such as poor soil, culvert/drainage issues, etc. Having this contingency is standard practice when estimating a project.

The other additional items were the engineering fee (7%), construction engineering fee (7%), and legal/easement contingency (2%). Engineering and construction engineering fees can be adjusted per project, but these are estimated percentages based upon common industry practice. From prior experience in trail design, the legal/easement contingency was added to provide for potential land or interest conflicts from residents. Both the old and new estimates had these additional items and the construction contingency added to them for fair comparison.

As shown in the following graphs, eight of the proposed trails were estimated to be more affordable. These proposed trails had a higher boardwalk-to-path ratio; they ranged from \$13,000 to \$385,000 in savings. Projects 2 and 7 included bridges. Project 2 had a bridge estimated in the old estimate and Project 7 did not. Project 2's cost was increased by \$335,000 and Project 7 had a \$1,459,000 increase. The rest of the nine projects had increases from \$24,000 to \$215,000, depending on the ratio of path to boardwalk.

Fulton Street Crossing

The last two projects are two alternatives for crossing Fulton. One is a tunnel under Fulton, which is the preferred option, and the other is a bridge. Both are estimates and shown with probable ranges. The average of the two projects is included in the total cost. See the appendix for diagrams of the proposed options.

Conclusion

In total, the new estimate shows a total increase of \$8,346,000 required for the 28 projects, bringing the total to \$48,599,000. This is a large increase from the old estimate of \$30,172,800 without fees or contingency. This shows the importance of including the expected engineering fees and contingencies to the estimate. (See Figures 4 and 5).

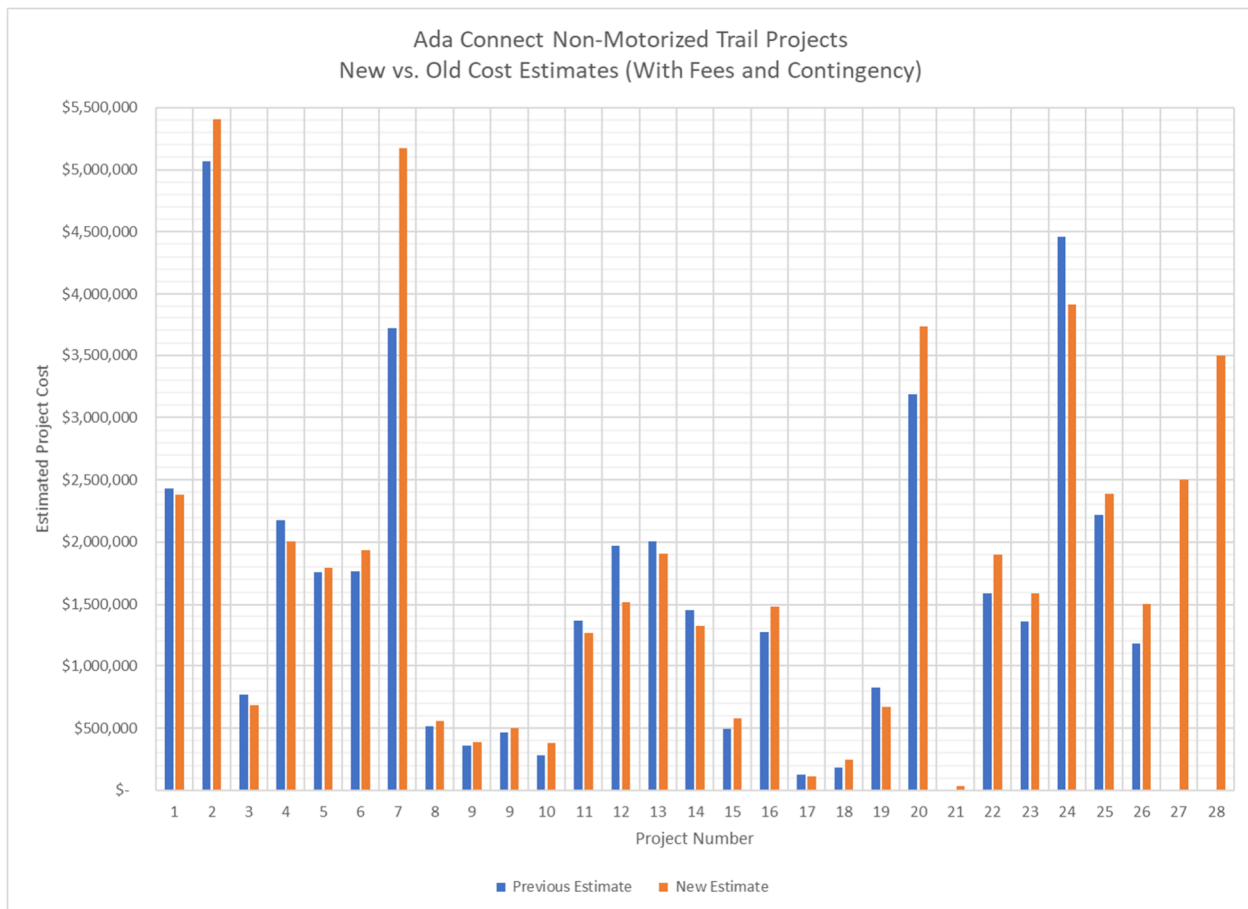


Figure 4. Current vs Revised Cost Estimate

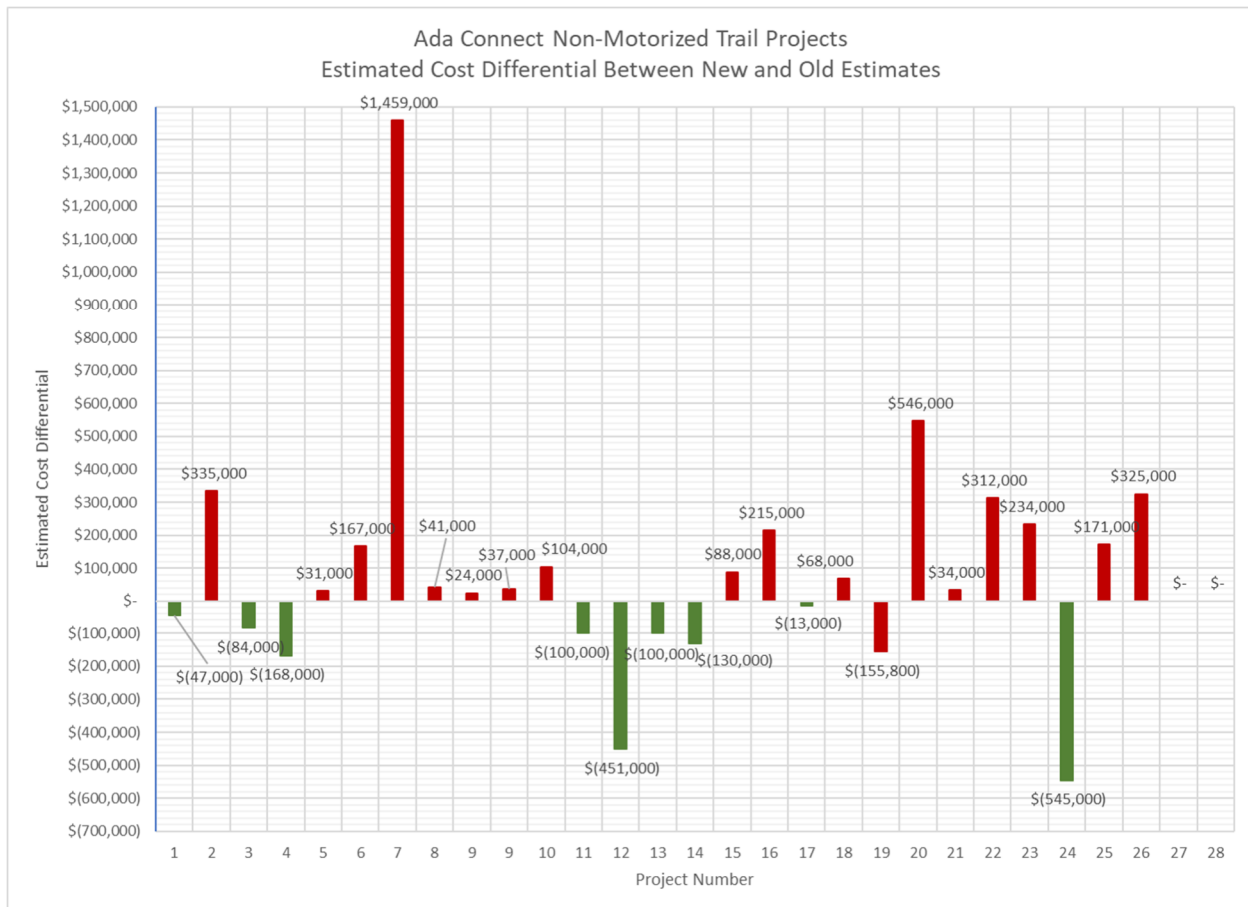


Figure 5. Change in Estimate

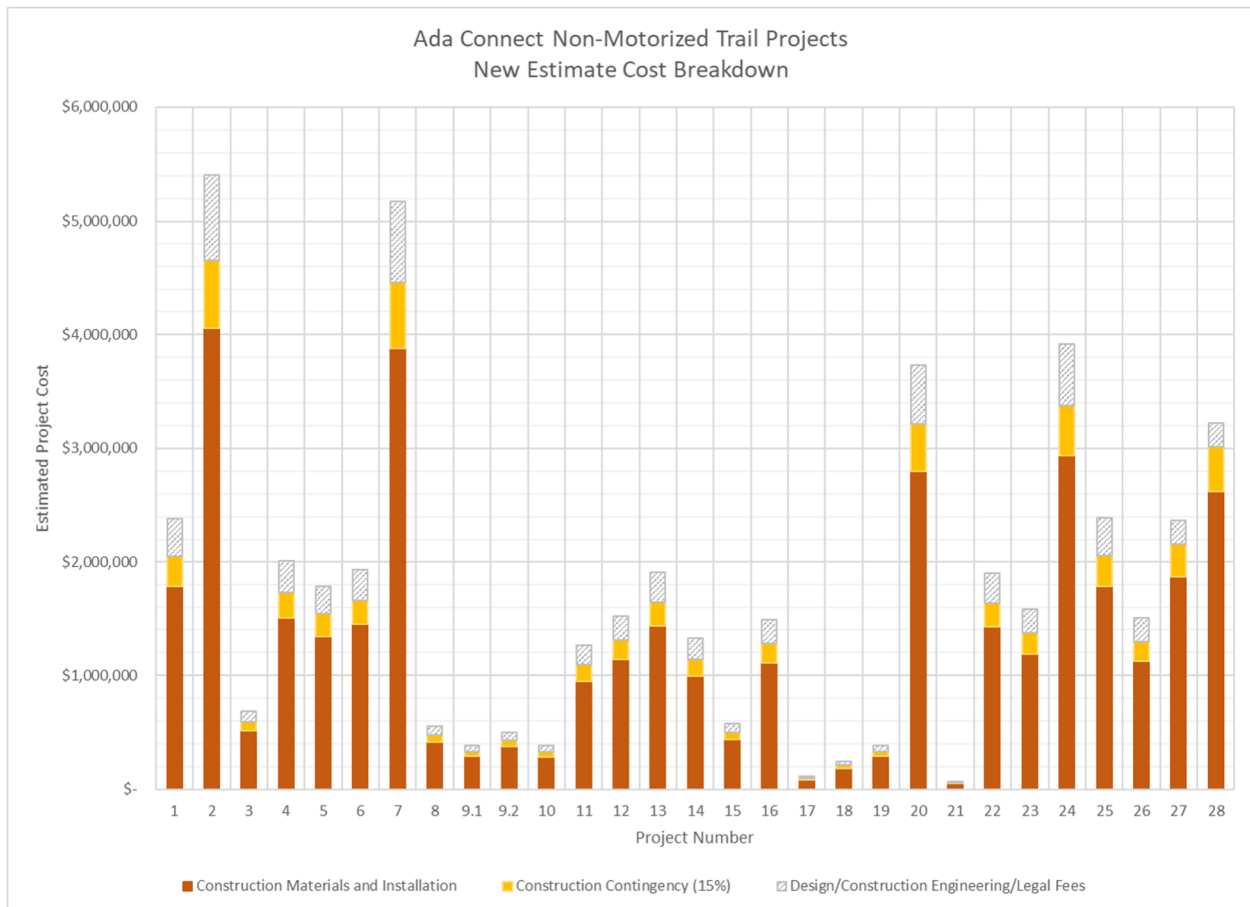



Figure 6. Revised Estimate Cost Breakdown

Pros and Cons of Ada Connect Fulton St Tunnel vs. Bridge			
Pros		Cons	
Tunnel	Bridge	Tunnel	Bridge
Grade separated crossing across Fulton	Grade separated crossing across Fulton	Will require more lane closures on Fulton than a Bridge	Will be a vertical obstruction
Limits the amount of vertical obstruction	Provides a unique and visible landmark for the community	Will require MDOT cooperation	Will require MDOT cooperation
South side of Fulton is already sloped downward, making a tunnel easier to accommodate	Provides an opportunity to have a welcome sign/gateway for the Village of Ada	Potentially will affect the capacity of the retention pond on the South side of Fulton, which may require additional permitting	Will require more ongoing maintenance
Lower maintenance costs	Better views of the Village of Ada	Potential for graffiti is higher than a bridge	Will have to be built sufficiently high to accommodate all truck traffic
Provides an opportunity for art work to be displayed (murals, plaques, etc.)		Will require lighting and stormwater solutions	Has a higher cost than a tunnel
Potential to provide cyclist shade or rain protection		Ice issues such as pooling and freezing	Longer path than the tunnel option required to meet grades
Lower cost than a bridge			Personal safety issues
			Nuisance issues such as things being thrown off of the bridge
			Ice issues such as falling ice

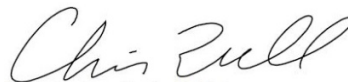
Figure 7. Revised Estimate Cost Breakdown

Attached are the maps with the new number designations along with tables detail the costs outlined in the report.

Sincerely,



Piotr C. Szczepanski, E.I.T.
Graduate Civil Engineer



Christopher E. Zull, PE
Transportation Practice Leader

PCS:smg
Enclosures
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18	Argo Ave: Hall St to Cascade	0.32	30	No	\$ 187,000	\$ 28,100	\$ 215,000	\$ 15,000	\$ 15,000	\$ 4,000	\$ 249,000
	Previous Estimate				\$ 136,000	\$ 20,400	\$ 156,000	\$ 11,000	\$ 11,000	\$ 3,000	\$ 181,000
19	Southtown Connector: Buttrick to the Village, via Fase St	0.36	20	Yes	\$ 667,400	\$ 100,100	\$ 768,000	\$ 54,000	\$ 54,000	\$ 15,000	\$ 891,000
	Previous Estimate				\$ 823,200	\$ 123,500	\$ 947,000	\$ 66,000	\$ 66,000	\$ 19,000	\$ 1,098,000
20	Pettis Ave: Pedestrian Bridge to Fulton Street	3.31	30	Yes Future	\$ 2,797,000	\$ 419,600	\$ 3,217,000	\$ 225,000	\$ 225,000	\$ 64,000	\$ 3,731,000
	Previous Estimate				\$ 2,388,000	\$ 358,200	\$ 2,746,000	\$ 192,000	\$ 192,000	\$ 55,000	\$ 3,185,000
21	Fulton St: Improved Crossing at Ada Drive	N/A	N/A	Yes	\$ 25,000.00	\$ 3,800	\$ 29,000	\$ 2,000	\$ 2,000	\$ 1,000	\$ 34,000
	Previous Estimate				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
22	Fulton St: Spaulding to Village (Started at Carl Drive)	1.74	60	Yes	\$ 1,426,500.00	\$ 214,000	\$ 1,641,000	\$ 115,000	\$ 115,000	\$ 33,000	\$ 1,904,000
	Previous Estimate				\$ 1,194,000.00	\$ 179,100	\$ 1,373,000	\$ 96,000	\$ 96,000	\$ 27,000	\$ 1,592,000
23	2 Mile: Honeycreek to McCabe	1.56	25	Yes Future	\$ 1,190,000	\$ 178,500	\$ 1,369,000	\$ 96,000	\$ 96,000	\$ 27,000	\$ 1,588,000
	Previous Estimate				\$ 1,015,000	\$ 152,300	\$ 1,167,000	\$ 82,000	\$ 82,000	\$ 23,000	\$ 1,354,000
24	Vergennes St: Bailey to Boundary	2.00	70	No	\$ 2,935,500	\$ 440,300	\$ 3,376,000	\$ 236,000	\$ 236,000	\$ 68,000	\$ 3,916,000
	Previous Estimate				\$ 3,344,000	\$ 501,600	\$ 3,846,000	\$ 269,000	\$ 269,000	\$ 77,000	\$ 4,461,000
25	Egypt Valley: Knapp to Pettis	2.00	35	Yes Future	\$ 1,790,000	\$ 268,500	\$ 2,059,000	\$ 144,000	\$ 144,000	\$ 41,000	\$ 2,388,000
	Previous Estimate				\$ 1,662,000	\$ 249,300	\$ 1,911,000	\$ 134,000	\$ 134,000	\$ 38,000	\$ 2,217,000
26	Central Woodlands 5/6 Trail: Ada Dr to Fulton St	1.04	45	Yes Future	\$ 1,125,000	\$ 168,800	\$ 1,294,000	\$ 91,000	\$ 91,000	\$ 26,000	\$ 1,502,000
	Previous Estimate				\$ 882,500	\$ 132,400	\$ 1,015,000	\$ 71,000	\$ 71,000	\$ 20,000	\$ 1,177,000
27	Fulton St Crossing: Tunnel	0.30	0	Yes	\$ 1,499,000	\$ 224,900	\$ 1,724,000	\$ 121,000	\$ 121,000	\$ 34,000	\$ 2,000,000
	High Estimate				\$ 2,249,000	\$ 337,400	\$ 2,586,000	\$ 181,000	\$ 181,000	\$ 52,000	\$ 3,000,000
28	Fulton St Crossing: Bridge	0.36	0	Yes	\$ 2,249,000	\$ 337,400	\$ 2,586,000	\$ 181,000	\$ 181,000	\$ 52,000	\$ 3,000,000
	High Estimate				\$ 2,999,000	\$ 449,900	\$ 3,449,000	\$ 241,000	\$ 241,000	\$ 69,000	\$ 4,000,000

New Construction Subtotal for All Projects	\$ 36,425,550.00
Old Construction Subtotal for All Projects	\$ 30,172,800.00

New Total for All Projects	\$ 48,599,000.00
Old Total for All Projects	\$ 40,253,000.00

1

Grand River Dr: Knapp to Twp Boundary			
Total Length	8500	Old Cost	New Cost
Path	7500	\$ 600,000.00	\$ 825,000.00
Boardwalk	1000	\$ 800,000.00	\$ 540,000.00
Retaining Walls	1200	\$ 420,000.00	\$ 420,000.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 1,820,000.00	\$ 1,785,000.00
Difference from Old to New		\$ 35,000.00	

2

Pedestrian Bridge: Grand River Dr to Watercrest Dr			
Total Length	3125	Old Cost	New Cost
Path	25	\$ 2,000.00	\$ 2,750.00
Boardwalk	2500	\$ 2,000,000.00	\$ 1,350,000.00
Retaining Walls		\$ -	\$ -
Bridge	600	\$ 1,800,000.00	\$ 2,700,000.00
Signalized Crossing		\$ -	\$ -
Totals		\$ 3,802,000.00	\$ 4,052,750.00
Difference from Old to New		\$ (250,750.00)	

3

Pettis Ave: Knapp to 3 Mile			
Total Length	2700	Old Cost	New Cost
Path	2200	\$ 176,000.00	\$ 242,000.00
Boardwalk	500	\$ 400,000.00	\$ 270,000.00
Retaining Walls		\$ -	\$ -
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 576,000.00	\$ 512,000.00
Difference from Old to New		\$ 64,000.00	

4

Honey Creek Ave: Knapp St to 4 Mile			
Total Length	7400	Old Cost	New Cost
Path	6200	\$ 496,000.00	\$ 682,000.00
Boardwalk	1200	\$ 960,000.00	\$ 648,000.00
Retaining Walls	500	\$ 175,000.00	\$ 175,000.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 1,631,000.00	\$ 1,505,000.00
Difference from Old to New		\$ 126,000.00	

5

McCabe Ave: Conservatin St to 2 Mile			
Total Length	8000	Old Cost	New Cost
Path	7250	\$ 580,000.00	\$ 797,500.00
Boardwalk	750	\$ 600,000.00	\$ 405,000.00
Retaining Walls	400	\$ 140,000.00	\$ 140,000.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 1,320,000.00	\$ 1,342,500.00
Difference from Old to New		\$ (22,500.00)	

6

Pettis Ave: Knapp to River Pedestrian Bridge			
Total Length	9000	Old Cost	New Cost
Path	8500	\$ 680,000.00	\$ 935,000.00
Boardwalk	500	\$ 400,000.00	\$ 270,000.00
Retaining Walls	700	\$ 245,000.00	\$ 245,000.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 1,325,000.00	\$ 1,450,000.00
Difference from Old to New		\$ (125,000.00)	

7

Pedestrian Bridge: Roselle Park to Pettis Ave			
Total Length	1600	Old Cost	New Cost
Path	350	\$ 28,000.00	\$ 38,500.00
Boardwalk	450	\$ 360,000.00	\$ 243,000.00
Retaining Walls	0	\$ -	\$ -
Bridge	800	\$ 2,400,000.00	\$ 3,600,000.00
Signalized Crossing		\$ -	\$ -
Totals		\$ 2,788,000.00	\$ 3,881,500.00
Difference from Old to New		\$ (1,093,500.00)	

8

Fulton St: Spaulding to Twp Boundary			
Total Length	3000	Old Cost	New Cost
Path	2800	\$ 224,000.00	\$ 308,000.00
Boardwalk	200	\$ 160,000.00	\$ 108,000.00
Retaining Walls	0	\$ -	\$ -
Bridge	0	\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 384,000.00	\$ 416,000.00
Difference from Old to New		\$ (32,000.00)	

9.1

Fulton St: Spaulding Ave to Carl Dr			
Total Length	1600	Old Cost	New Cost
Path	1500	\$ 120,000.00	\$ 165,000.00
Boardwalk	100	\$ 80,000.00	\$ 54,000.00
Retaining Walls	200	\$ 70,000.00	\$ 70,000.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 270,000.00	\$ 289,000.00
Difference from Old to New		\$ (19,000.00)	

9.2

Carl Dr: Fulton to GR Dr			
Total Length	1900	Old Cost	New Cost
Path	1800	\$ 144,000.00	\$ 198,000.00
Boardwalk	100	\$ 80,000.00	\$ 54,000.00
Retaining Walls	350	\$ 122,500.00	\$ 122,500.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 346,500.00	\$ 374,500.00
Difference from Old to New		\$ (28,000.00)	

10

Fulton St: Bronson to Vitales			
Total Length	2600	Old Cost	New Cost
Path	2600	\$ 208,000.00	\$ 286,000.00
Boardwalk		\$ -	\$ -
Retaining Walls		\$ -	\$ -
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 208,000.00	\$ 286,000.00
Difference from Old to New		\$ (78,000.00)	

11

Honey Creek Ave: Conservation St to Crancreek Dr			
Total Length	4300	Old Cost	New Cost
Path	3600	\$ 288,000.00	\$ 396,000.00
Boardwalk	700	\$ 560,000.00	\$ 378,000.00
Retaining Walls	500	\$ 175,000.00	\$ 175,000.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 1,023,000.00	\$ 949,000.00
Difference from Old to New		\$ 74,000.00	

12

Legacy Park to M-21 Bridge			
Total Length	3200	Old Cost	New Cost
Path	1700	\$ 136,000.00	\$ 187,000.00
Boardwalk	1500	\$ 1,200,000.00	\$ 810,000.00
Retaining Walls	400	\$ 140,000.00	\$ 140,000.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 1,476,000.00	\$ 1,137,000.00
Difference from Old to New		\$ 339,000.00	

13

Fulton St: Pettis Ave to Longleaf			
Total Length	3800	Old Cost	New Cost
Path	3150	\$ 252,000.00	\$ 346,500.00
Boardwalk	650	\$ 520,000.00	\$ 351,000.00
Retaining Walls	2100	\$ 735,000.00	\$ 735,000.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 1,507,000.00	\$ 1,432,500.00
Difference from Old to New		\$ 74,500.00	

14

Bailey Dr: McCabe Ave to Twp Boundary			
Total Length	4000	Old Cost	New Cost
Path	3250	\$ 260,000.00	\$ 357,500.00
Boardwalk	750	\$ 600,000.00	\$ 405,000.00
Retaining Walls	650	\$ 227,500.00	\$ 227,500.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 1,087,500.00	\$ 990,000.00
Difference from Old to New		\$ 97,500.00	

15

Rix Street: Ada Dr to Ada Ridge			
Total Length	2200	Old Cost	New Cost
Path	2200	\$ 176,000.00	\$ 242,000.00
Boardwalk		\$ -	\$ -
Retaining Walls	550	\$ 192,500.00	\$ 192,500.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 368,500.00	\$ 434,500.00
Difference from Old to New		\$ (66,000.00)	

*Orange cells denote changes to quantities during review. Green cells denote lower new estimated costs compared to old estimates, red higher.

16

Spaulding Ave: Ada Dr to Fulton St			
Total Length	5200	Old Cost	New Cost
Path	4700	\$ 376,000.00	\$ 517,000.00
Boardwalk	500	\$ 400,000.00	\$ 270,000.00
Retaining Walls	500	\$ 175,000.00	\$ 175,000.00
Bridge		\$ -	\$ -
Signalized Crossing	1	\$ -	\$ 150,000.00
Totals		\$ 951,000.00	\$ 1,112,000.00
Difference from Old to New		\$ (161,000.00)	

17

Cascade Ave: Spaulding to Hall			
Total Length	450	Old Cost	New Cost
Path	370	\$ 29,600.00	\$ 40,700.00
Boardwalk	80	\$ 64,000.00	\$ 43,200.00
Retaining Walls		\$ -	\$ -
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 93,600.00	\$ 83,900.00
Difference from Old to New		\$ 9,700.00	

18

Argo Ave: Hall St to Cascade			
Total Length	1700	Old Cost	New Cost
Path	1700	\$ 136,000.00	\$ 187,000.00
Boardwalk		\$ -	\$ -
Retaining Walls		\$ -	\$ -
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 136,000.00	\$ 187,000.00
Difference from Old to New		\$ (51,000.00)	

19

Southtown Connector: Buttrick to the Village, via Fase St			
Total Length	1900	Old Cost	New Cost
Path	1240	\$ 99,200.00	\$ 136,400.00
Boardwalk	800	\$ 640,000.00	\$ 432,000.00
Retaining Walls	240	\$ 84,000.00	\$ 84,000.00
Bridge		\$ -	\$ -
Signalized Crossing	1	\$ -	\$ 15,000.00
Totals		\$ 823,200.00	\$ 667,400.00
Difference from Old to New		\$ 155,800.00	

20

Pettis Ave: Pedestrian Bridge to Fulton Street			
Total Length	17500	Old Cost	New Cost
Path	17100	\$ 1,368,000.00	\$ 1,881,000.00
Boardwalk	400	\$ 320,000.00	\$ 216,000.00
Retaining Walls	2000	\$ 700,000.00	\$ 700,000.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 2,388,000.00	\$ 2,797,000.00
Difference from Old to New		\$ (409,000.00)	

21

Fulton St: Improved Crossing at Ada Drive			
Total Length	0	Old Cost	New Cost
Path	0	\$ -	\$ -
Boardwalk	0	\$ -	\$ -
Retaining Walls	0	\$ -	\$ -
Bridge		\$ -	\$ -
Painted Crossings		\$ -	\$ 25,000.00
Totals		\$ -	\$ 25,000.00
Difference from Old to New		\$ (25,000.00)	

22

Fulton St: Spaulding to Village (Started at Carl Drive)			
Total Length	9200	Old Cost	New Cost
Path	9050	\$ 724,000.00	\$ 995,500.00
Boardwalk	150	\$ 120,000.00	\$ 81,000.00
Retaining Walls	1000	\$ 350,000.00	\$ 350,000.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 1,194,000.00	\$ 1,426,500.00
Difference from Old to New		\$ (232,500.00)	

23

2 Mile: Honeycreek to McCabe			
Total Length	8250	Old Cost	New Cost
Path	8000	\$ 640,000.00	\$ 880,000.00
Boardwalk	250	\$ 200,000.00	\$ 135,000.00
Retaining Walls	500	\$ 175,000.00	\$ 175,000.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 1,015,000.00	\$ 1,190,000.00
Difference from Old to New		\$ (175,000.00)	

24

Vergennes St: Bailey to Boundary			
Total Length	10550	Old Cost	New Cost
Path	8050	\$ 644,000.00	\$ 885,500.00
Boardwalk	2500	\$ 2,000,000.00	\$ 1,350,000.00
Retaining Walls	2000	\$ 700,000.00	\$ 700,000.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 3,344,000.00	\$ 2,935,500.00
Difference from Old to New		\$ 408,500.00	

25

Egypt Valley: Knapp to Pettis			
Total Length	10550	Old Cost	New Cost
Path	9900	\$ 792,000.00	\$ 1,089,000.00
Boardwalk	650	\$ 520,000.00	\$ 351,000.00
Retaining Walls	1000	\$ 350,000.00	\$ 350,000.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ -
Totals		\$ 1,662,000.00	\$ 1,790,000.00
Difference from Old to New		\$ (128,000.00)	

26

Central Woodlands 5/6 Trail: Ada Dr to Fulton St			
Total Length	5500	Old Cost	New Cost
Path	5250	\$ 420,000.00	\$ 577,500.00
Boardwalk	250	\$ 200,000.00	\$ 135,000.00
Retaining Walls	750	\$ 262,500.00	\$ 262,500.00
Bridge		\$ -	\$ -
Signalized Crossing		\$ -	\$ 150,000.00
Totals		\$ 882,500.00	\$ 1,125,000.00
Difference from Old to New		\$ (242,500.00)	

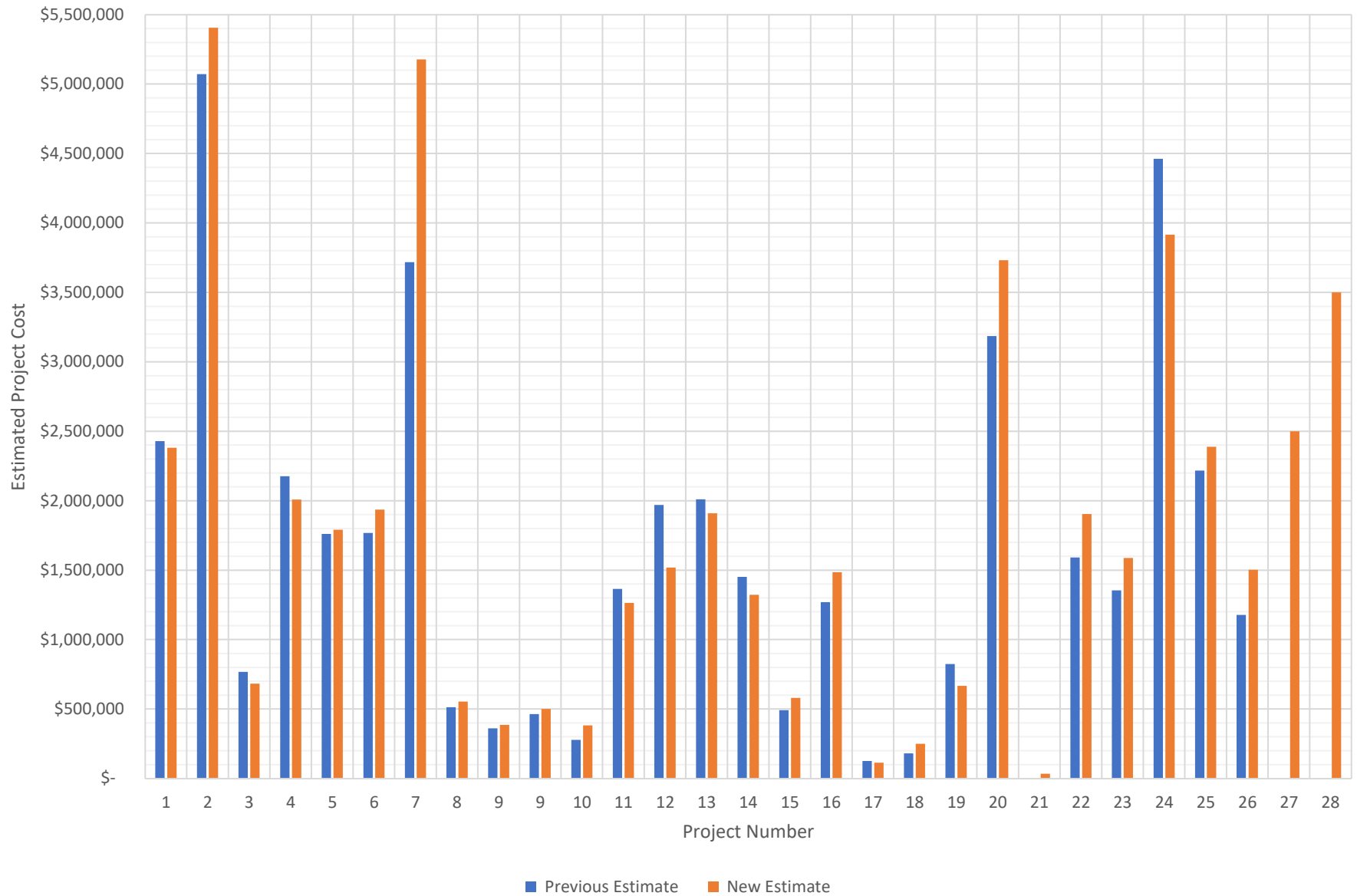
27 &
28

Fulton St Crossing: Tunnel & Bridge	
Proposed Crossing Type	Proposed Projected Cost
Tunnel	2 million to 3 million
Bridge	3 million to 4 million
Existing Project For Reference	Project Cost Year of Construction
Walker Lake Michigan Tunnel	3.3 million
Ionia Fred Meijer Bridge	1.6 million

*Orange cells denote changes to quantities during review. Green cells denote lower new estimated costs compared to old estimates, red higher.

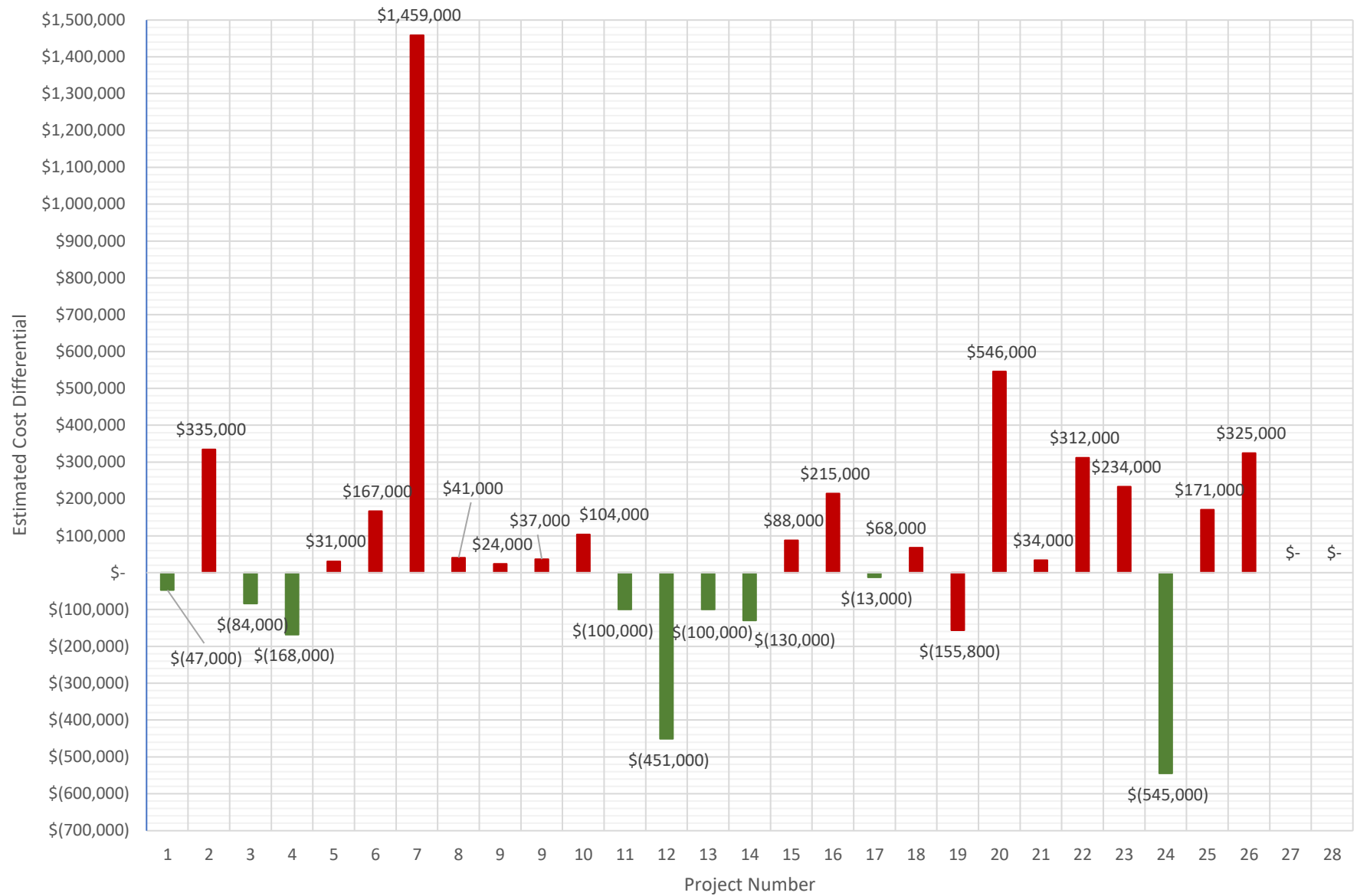
Ada Connect Non-Motorized Trail Projects

New vs. Old Cost Estimates (With Fees and Contingency)

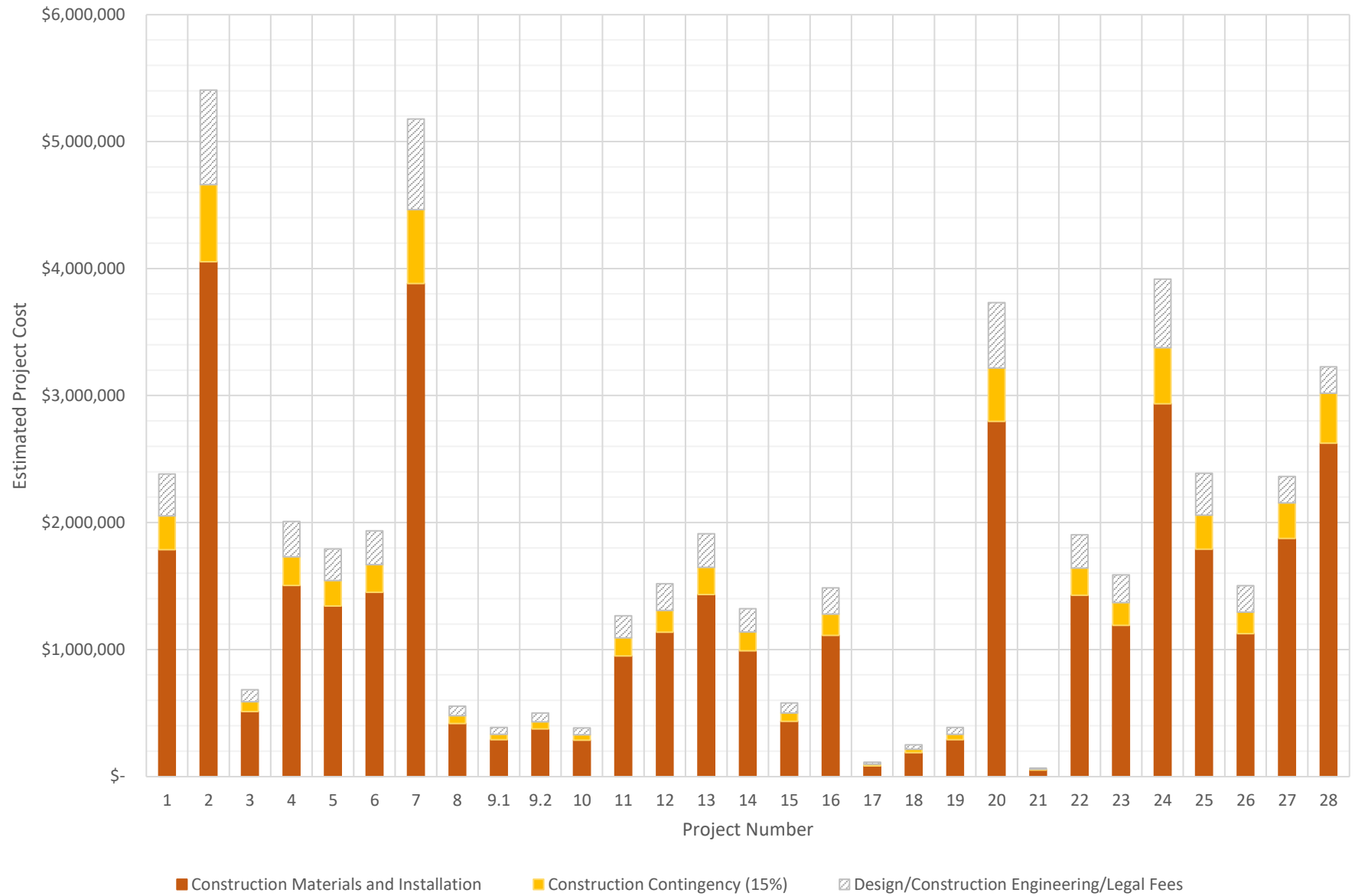


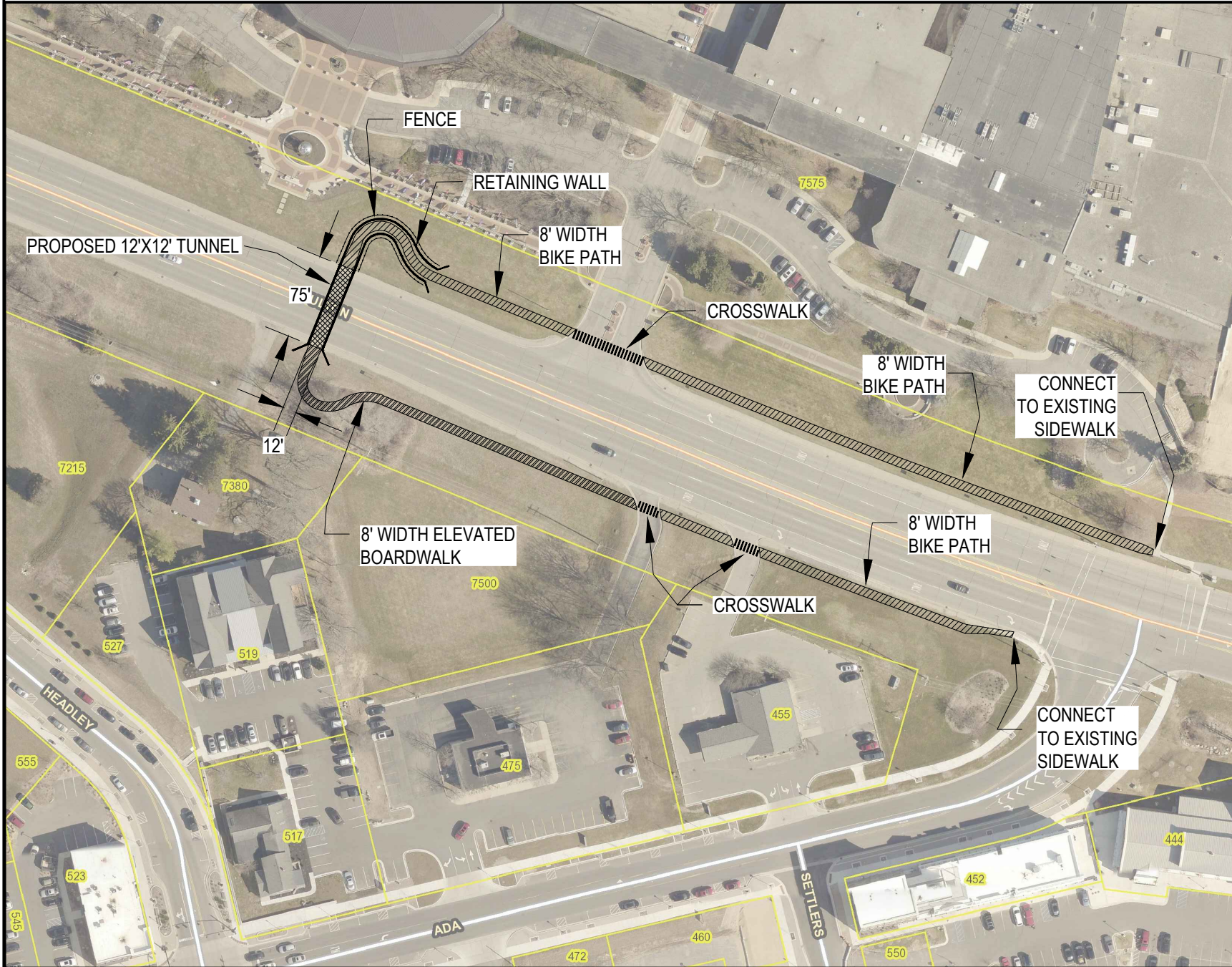
Ada Connect Non-Motorized Trail Projects

Estimated Cost Differential Between New and Old Estimates



Ada Connect Non-Motorized Trail Projects New Estimate Cost Breakdown





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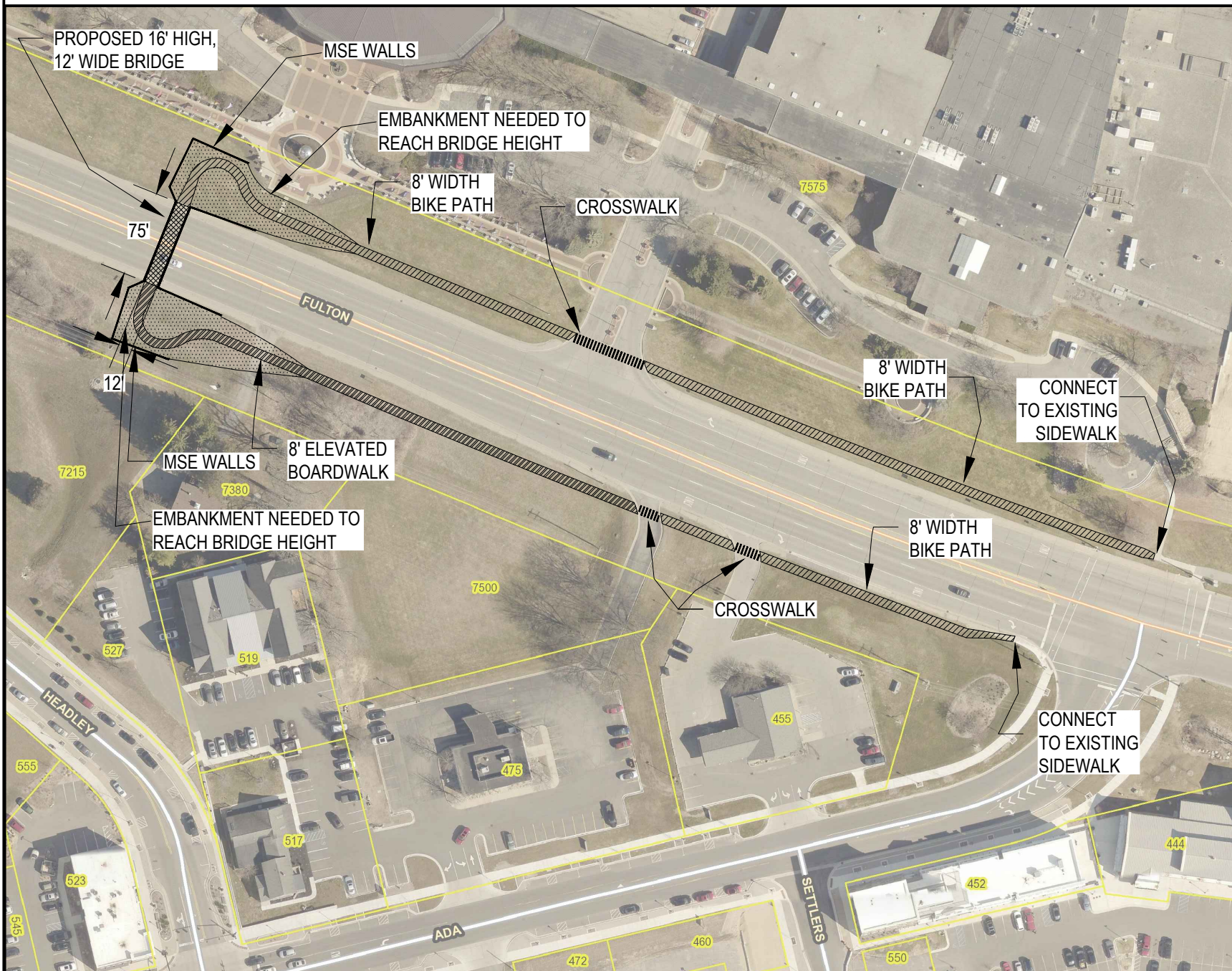
1811 4 Mile Rd N.E., Grand Rapids, MI 49525
616 361 2664 OFFICE 616 361 1493 FAX
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PAE Project No.: 72230014

Project:
ADA CONNECT
PROPOSED TUNNEL LAYOUT



CLIENT:
ADA
TOWNSHIP
7330 THORNAPPLE RIVER DR
ADA, MI 49301



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616 361 2664 OFFICE 616 361 1493 FAX
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PAE Project No.: 72230014

Project:
ADA CONNECT
PROPOSED BRIDGE LAYOUT



CLIENT:
ADA
TOWNSHIP
7330 THORNAPPLE RIVER DR
ADA, MI 49301