

Locust Lane Sidewalk Feasibility Study



Town of Elkton, Maryland

July 2015

With **W&M** & **RK&K**

Locust Lane Sidewalk Feasibility Study

Prepared For:



Town of Elkton, Maryland
100 Railroad Avenue
Elkton, MD 21921
www.elkton.org

Prepared By:



Wilmington Area Planning Council
850 Library Avenue, Suite 100
Newark, Delaware 19711
www.wilmapco.org

With Assistance From:



Rummel, Klepper, & Kahl Engineers

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Section 1

1.1 Background

The Town of Elkton, Maryland is a vibrant and livable community that is walkable due to its medium to high density development and street grid. Demographic projections show that Elkton is growing, yet motor vehicles remain the primary mode of transport for the town. Lack of sidewalks can discourage walking, even to destinations that are in close proximity. Sidewalks provide the greatest degree of comfort for pedestrians and the presence of sidewalks has been associated with increased safety for pedestrians.

There are many continuous stretches of sidewalk in Elkton, photographed below. Areas such as the downtown and newer subdivisions are well served by sidewalks. However, not all neighborhoods have sidewalks and those that do may be underutilized, such as the sidewalk on Locust Lane. There is a need to enhance existing pedestrian infrastructure and create new connections where missing. The desired result is a robust, comprehensive pedestrian network connecting to numerous destinations.



1.2 Study Purpose

The purpose of the Locust Lane Sidewalk Feasibility Study is to develop conceptual alternatives that would achieve the project goals of improved pedestrian safety and mobility in the Town of Elkton. This project is needed to provide safe and accessible pedestrian access to commercial, community, and municipal centers for residents and visitors of the Town. This effort will evaluate the feasibility for future construction along a local road to establish a new and improved sidewalk facility for safe pedestrian activity. The Locust Lane Feasibility Study will determine if:

- (a) The location and design is economically justified.
- (b) The alternative considered is preferable from an environmental and/or social perspective.
- (c) There are any unusual construction and maintenance issues.

This work involves determining the most feasible alternative and to establish the groundwork needed to further develop this project for future phases of final design and construction.

This report includes documentation of existing conditions, including identification of right-of-way issues and utility conflicts, assessment of several conceptual sidewalk alternatives, preliminary cost estimates for planning purposes, recommended improvements, and recommendations. This study includes typical section displays for the purpose of assessment only. Community input and concerns are also documented. This study includes Elkton's Administration, Planning, and Public Works Departments, input from the State Highway Administration and KCI Technologies, and technical assistance from Rummel, Klepper & Kahl (RK&K) Engineers.

1.3. Related Plans and Reports

There are several plans and reports, summarized below, that are related to and support the potential re-construction of a sidewalk along Locust Lane.

Elkton Comprehensive Plan

The objectives of this study support Elkton's 2010 Comprehensive Plan by promoting accessibility, mobility, and transportation alternatives, protect public health, safety and welfare, support existing municipalities and communities and provide transportation opportunity and choice.

Elkton Walkable Community Report

Locust Lane and several streets in the vicinity were previously identified by the community for improvements and were documented in the 2008 Walkable Community Workshop (WCW) Report. The Elkton WCW, co-sponsored by the National Center for Walking and Bicycling, included an educational presentation on what makes a community walkable, a walking audit of central Elkton, and a mapping session. Recommendations were made regarding walkability: sidewalks, pathways, inviting streetscape, crosswalks, and destinations.

Elkton Downtown Master Plan

In 2003, the Town of Elkton and the Elkton Alliance identified goals and objectives for revitalizing the downtown area to make it more attractive. Several focal areas were identified, including access and circulation. Generally, improvements to enhance safety were noted including improving pedestrian linkages, installing pedestrian crossings, and reconfiguring challenging intersections. Recommendations included a sidewalk at Locust Lane and High Street and decreasing traffic on Locust Lane to improve safety in the vicinity.

Locust Lane/ East High Street Intersection Improvement Study

In 2003, the Town of Elkton commissioned KCI Technologies to evaluate the realignment of Locust Lane. While this project primarily focused on improvements to the directional movement of traffic, it engaged citizens in the process and uncovered community concerns within the study area. Speeding traffic along Locust Lane and excessive cut-through traffic has implications for the safety of pedestrians along this stretch. During this effort, residents were in favor of safety improvements.

Section 2

2.1. Study Area

The study area is located in the northeastern section of Elkton, near the intersection of MD 7/ Main Street and Delaware Avenue. The study area is illustrated below.

Figure 1: Aerial View of Study Area



Source: Google Maps

Within the study area there is an approved project funded via the Transportation Alternatives Program for the E. High Street and Locust Lane Sidewalk Improvements. This project will design and construct sidewalk improvements with nine crosswalk/curb ramp segments and roughly .15 miles of new sidewalk on E. High Street between South Street and Locust Lane and on Locust Lane between E. High Street and Booth Lane. Both projects will provide a pedestrian connection between residential neighborhoods and the downtown.

2.2 Existing Conditions

Existing conditions were determined based on pertinent and available data and a field study with RK&K consultants to examine the project setting, roadway features, and constraints.

Roadway

Locust Lane is a half-mile in length, and the study segment is approximately 500'. The narrow road is striped for two lanes, one in each direction, and controlled by a stop sign. The width of each travel lane varies throughout the stretch between Main Street and High Street. From High Street, the southbound lane begins at 9.5', expands to 15', and then narrows down to 13.5' at Main Street. From Main Street, the northbound lane is 13.5', decreases to 11.7' midblock, and is 9.5' at the intersection of High Street. There is a traffic calming speed hump mid-block.



Right-of-Way

Elkton maintains Locust Lane's right-of-way, which is 30' between Main and High Streets. There are utilities within the right-of-way that must be accommodated with any improvements. Due to existing constraints, there are potential encroachments outside the right-of-way. Any future work on Locust Lane will require surveying to specify right-of-way, easement locations and property acquisitions needed.



Utilities

There are four utility poles along the east side of Locust Lane, one of which is equipped with a mounted cobra head light fixture and another with guy wires. One utility pole is owned by Delmarva Power and three are owned by Verizon. There is a fire hydrant mid-block on the west side.





There is approximately 40' of missing sidewalk between the existing sidewalk and High Street.



Utility poles and guy wires impede pedestrian movement along the narrow sidewalk.



High Street intersection, Locust Lane southbound.



Looking northbound on Locust Lane, where southbound lane widens mid-block.



Obstacles impede pedestrian movement and force sidewalk users into the street.



Locust Lane at Main Street lacks striping for a pedestrian crosswalk.

Traffic and Speed

Pedestrians are affected by traffic volumes and speeds. Locust Lane has a posted speed limit of 25 miles per hour. Recent traffic counts and turning movement data is unavailable for Locust Lane and new data was not collected for this study. However, observed traffic is slow due to speed humps and narrow travel lanes. In 2009, Locust Lane between Main and High Streets had just over 4,200 vehicles daily and the adjoining section of Main Street, between MD 213 and MD 7, and MD 7, between Main Street and US 40, carried an average of 7,400 vehicles daily.

Roadway Signage

In addition to speed limit signage, there are speed hump warning signs, one in each direction. Truck restriction signs, except local deliveries, are posted at the intersections of Main and High Streets. No pedestrian-related signage or markings are present.

Pedestrian Crashes

The Maryland State Highway Administration releases state and county crash statistics annually, however, current crash data at a lower level geography is unavailable. The most recent crash data available from the Maryland Office of Traffic and Safety in GIS format at the local level is 2010. During this year, no crashes were reported on Locust Lane. However, there were a few crashes in the vicinity of the study area. Nine vehicle crashes occurred on surrounding roads: Main Street at the intersections of South Street, Church Street, Hermitage Drive, and Delaware Avenue; Howard Street at the intersections of Delaware Avenue and South Street; and High Street at Booth and South Streets. There were no recent pedestrian crashes reported in the area.

Land Use

Locust Lane is surrounded by medium and high density residential, commercial, and institutional land uses such as the Elkton Methodist Church property. There are five residential units on the east side of Locust Lane, and one on the west side. Just steps away from Locust Lane is the Main Street and Delaware Avenue gateway into Town from points east. Additionally, Locust Lane serves an important function for connectivity between neighborhoods and the downtown area. The street serves two neighborhoods: Hermitage and Friendship Heights. There is a housing complex owned by the Elkton Housing Authority at the northern terminus of Locust Lane. A variety of offices and retail uses are located nearby on Main, South, and High Streets. East Meadow, Eder, and West Meadow Parks are within walking distance.

Sidewalk Inventory/ Pedestrian Facilities

Elkton has a well connected existing base of sidewalks that includes Locust Lane. In the vicinity of the study area, there are some incomplete stretches of sidewalks through residential developments along Hermitage and Friendship Roads, and sections of High Street connecting to Locust Lane, and Booth and Clinton Streets. Also, sidewalks are very narrow through residential streets surrounding Locust Lane. Locust Lane is not striped for pedestrian crosswalks. Nearby crossings include South Street at Main and High Streets. Other pedestrian facilities are lacking in the study area.

Pedestrian Activity

There is a lack of information regarding pedestrian counts on Locust Lane and the immediate vicinity. Identifying pedestrian generators, or activity centers that people may walk to and from, in the study area help illuminate places likely to create walking trips. Pedestrian generators between a quarter- and one-half-mile, or a ten-minute walk, include:

- | | |
|-------------------------------------|-----------------------------------|
| 1. Elkton Methodist Church | 6. Elkton Town Hall |
| 2. Northern Chesapeake Hospice | 7. Cecil College |
| 3. Elkton Presbyterian Church | 8. Union Hospital |
| 4. Elkton Senior Apartments | 9. Main Street offices and retail |
| 5. Elkton Housing Authority Complex | |

Based on these locations, most pedestrian activity may be oriented towards destinations along Main and High Streets in the westbound direction, and residential areas in the northbound direction.

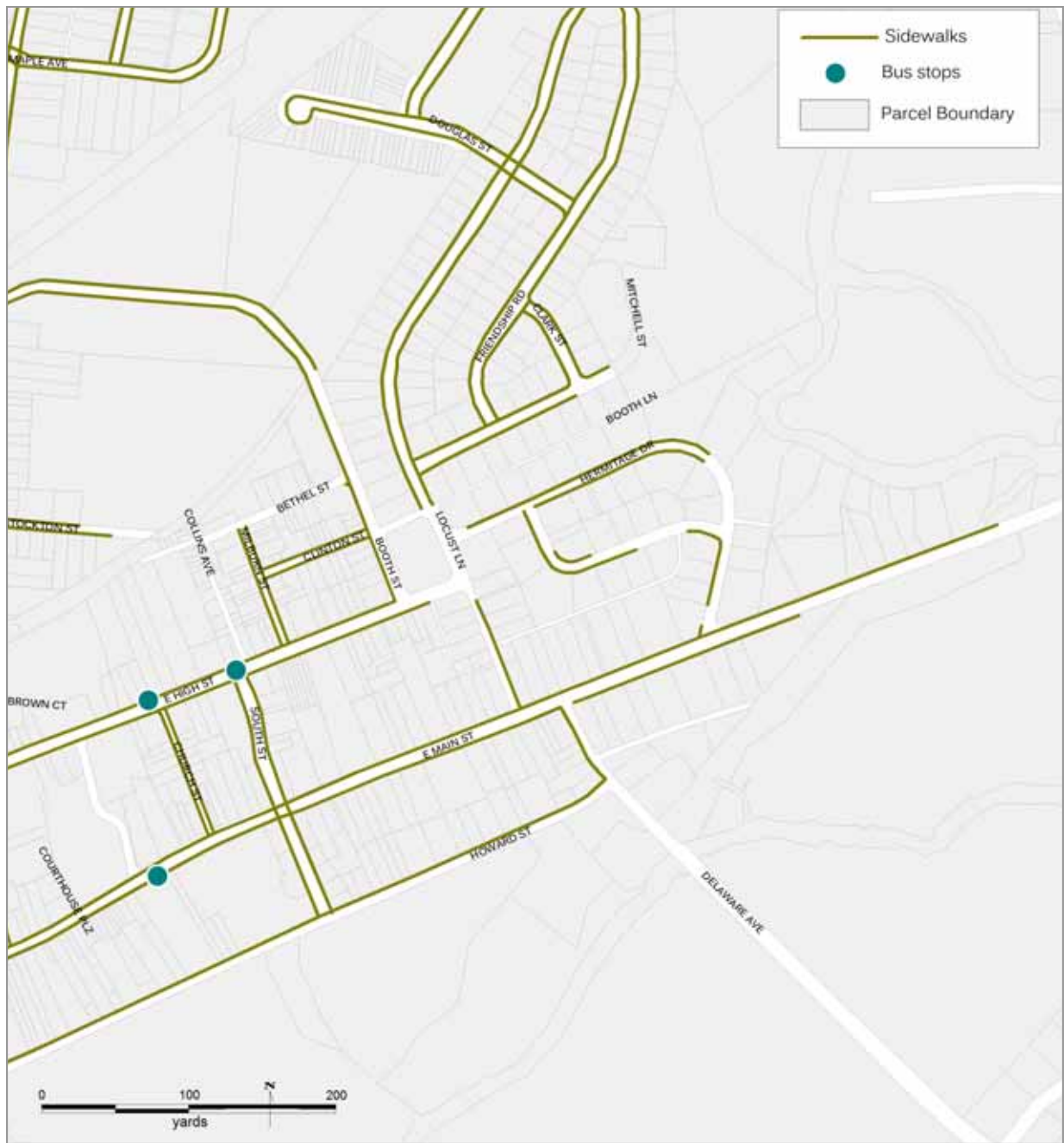
There are 49 dwelling units within 500 feet and 208 dwelling units within a half-mile of the proposed sidewalk reconstruction site. The census block containing the segment has a population of 938, and 1.4% of zero car households¹. These residents would benefit from an improved sidewalk along Locust Lane.

Resources

Potential impacts to environmental, natural, and cultural resources were considered based on the site assessment and existing GIS resource maps. There are no apparent impacts to resources as a result of the re-construction or new construction of sidewalks in the project area. If proposed improvements proceed, resource impacts will be revisited during future stages of project implementation.

¹ 2008-12 ACS

Figure 2: Existing Sidewalks in the Project Vicinity



Section 3

3.1 Design Standards

Public rights-of-way and facilities are required to be accessible for all users based on the American with Disabilities Act (ADA) regardless of funding source. Both the federal and state design standards were reviewed and considered for the proposed Locust Lane sidewalk reconstruction project. Many localities find it beneficial to develop a local pedestrian design guide using a range of criteria and best practices, and to address conflicts between competing design needs. The Town of Elkton has local sidewalk design guidelines which meet or exceed the requirements of ADA, similar to state guidelines. In some cases, the federal standards and guidelines, which are incorporated into the state standards, may be noted below for comparison.

All proposed sidewalk alternatives presented are based on design according to the Maryland State Highway Administration's (MDSHA's) "Accessibility Policy & Guidelines for Pedestrian Facilities along State Highways," published in June 2010. According to the MDSHA standards for sidewalk design, the minimum sidewalk width of 36 inches, not including an eight inch curb, "represents the width of a wheelchair plus maneuvering room." It then states, "the minimum width for travel shall be 60", which does not include the top of curb dimension. A sidewalk width of 60" ensures enough room for two adults to walk side-by-side or two wheelchairs traveling in opposite directions to pass each other comfortably. The basis for utilizing less than 60" must be related to physical constraints or right-of-way limitations. The state's design standards require a design waiver request where these conditions cannot be met and may allow the absolute minimum width of 36" for travel. The design waiver must explain and prove why a design waiver is required at a particular location. Design waivers are not applicable to the Town because Locust Lane is not under state jurisdiction. However, the curb ramp design at the intersection of Locust Lane and Main Street may be reviewed by SHA for compliance.

While federal guidelines state that the minimum allowable sidewalk width is 4-feet, its guidelines state that a width of 5-feet is preferred. Sidewalks that promote access include several characteristics including wide clearance, minimal obstacles and protruding objects, and good lighting. The width of the sidewalk is one of the most significant factors in determining the type of pedestrian experience that the sidewalk provides (Section 3.7.1). The sidewalk on Locust Lane is narrow without curbing, and is adjacent to an active travel lane. The width of

a comfortable sidewalk ranges from 5 to 20-feet, depending on the context and frequency of pedestrian traffic. Guidelines recommend that a 5 to 6-foot wide sidewalk is provided along local and collector streets, compared to 6 to 8-feet on a major arterial road or within a central business district, if possible.

ADA sidewalk design guidance recommends a 2-foot buffer between the roadway and sidewalk. It is unlikely that these additional 2-feet can be added to the absolute minimum clear path width on Locust Lane to ensure that there is sufficient space between the roadway edge and the sidewalk. Considering the lack of buffer, a 5-foot wide sidewalk is recommended for the utmost pedestrian safety and comfort.

Additionally, the ADA Act and Section 504 of the Rehabilitation Act does not require public agencies to provide pedestrian facilities, but if they exist or are proposed they must:

- Meet accessibility requirements for persons with disabilities to the maximum extent feasible for alteration projects.
- Prove technical infeasibility and document it during the design of the project. Cost is not a trigger for technical infeasibility.

Typical road and sidewalk sections for the proposed concepts were prepared by RK&K. Both state and federal references also call for a curb, which is standard practice and should be included in the Locust Lane sidewalk redesign. Figure 3 shows a typical cross section of a sidewalk that follows the MDSHA standards. MDSHA Standard Type A curb dimension was assumed for this typical section. In addition to being part of the MDSHA standard, installing a curb would provide a clear demarcation between the pedestrian pathway (sidewalk) and the roadway.

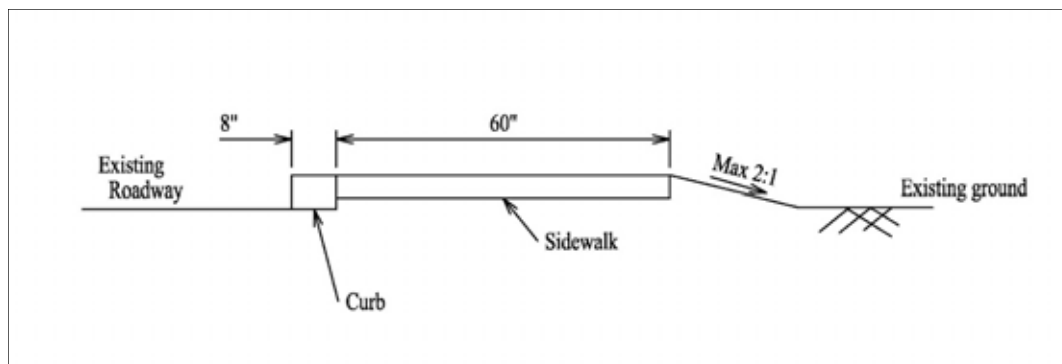


Figure 3: Typical section of a sidewalk designed to MDSHA standards

Sidewalk Improvement Measures

This section lists the measures that need to be implemented along various sections of the existing sidewalk in order to align with municipal, MDSHA, and ADA Standards.

1. Widen existing sidewalk to 60 inches:

The existing sidewalk within the study area has a width of 48 inches. However, the existing sidewalk does not have a curb section associated with it. When a MDSHA Standard Type A curb (8 inches wide) is installed, the resulting width of the sidewalk will be 40 inches. Therefore, the sidewalk in the study area needs to be widened by at least 20 inches in order to meet municipal and MDSHA standards. Since the existing right-of-way line is located at the edge of an existing sidewalk, a right of entry, a temporary/ permanent easement, or additional right-of-way would be required from the adjacent property owner(s) to widen the sidewalk. A portion of the sidewalk close to Main Street can also be upgraded by narrowing the existing roadway section from 26 feet to 24 feet. Roadway drainage may have to be redesigned and some inlets relocated to accommodate the new sidewalk section along the narrowed roadway section.

2. Upgrades to Sidewalk restricted by existing walls:

Installing a curb at sidewalk locations constricted by walls would reduce the available sidewalk width to 40 inches. At these locations, it would not be feasible to widen the existing sidewalk to 60 inches to comply with municipal and MDSHA standards. Figure 4 shows a typical section of an upgraded sidewalk section restricted by an existing brick/stone/concrete wall.

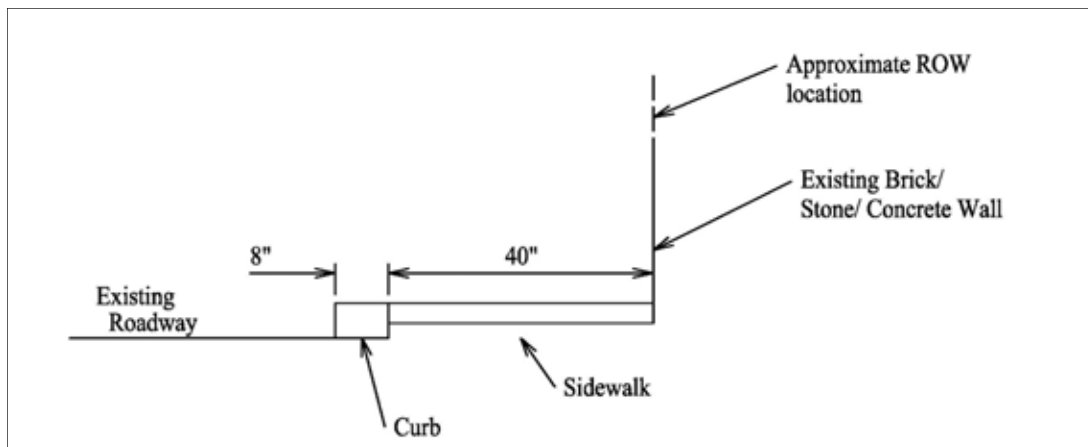


Figure 4: Typical section of an upgraded sidewalk restricted by existing walls

3. Upgrades to Sidewalk restricted by Utilities:

One of the following two alternatives need to be implemented at locations where existing sidewalk is restricted by utility poles in order to provide a sidewalk that complies with the state standards and federal recommendation:

- A. Provide a 60-inch sidewalk around the utility poles as shown in Figure 5.
- B. Upgrade the existing sidewalk to provide a 60-inch sidewalk, and relocate the existing overhead lines underground, or utility poles behind the widened sidewalk, as shown in Figure 6.

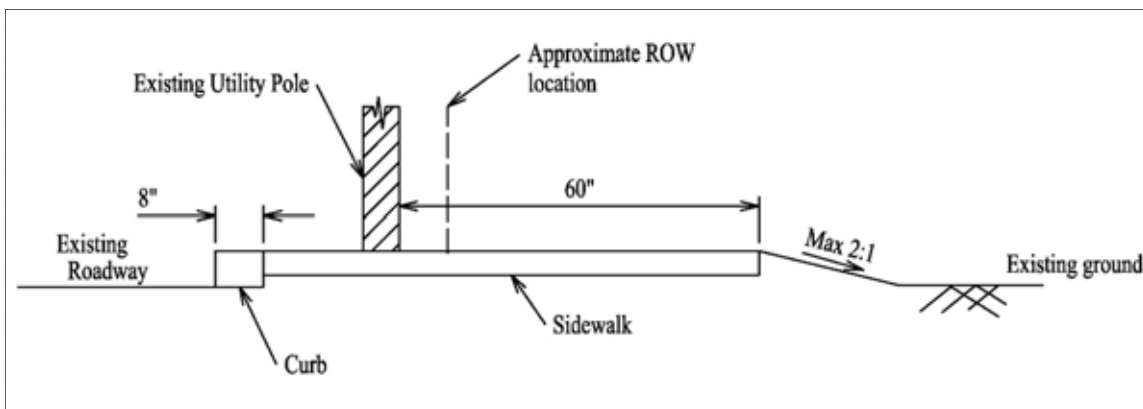


Figure 5: Typical Section – provide 60" sidewalk behind the utility pole

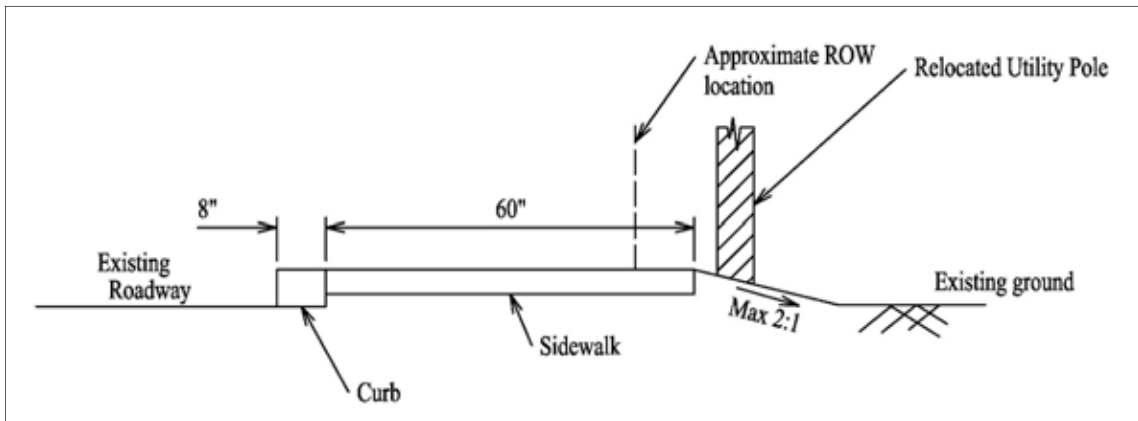


Figure 6: Typical Section – relocate utility poles beyond the new sidewalk

4. Upgrades to Sidewalk restricted by Utility Pole and Concrete Wall:

At the location where existing sidewalk is constrained by a utility pole and a concrete wall, the following three alternatives are possibilities for reaching a solution to address significant pedestrian impediments at this location:

- A. Relocate the utilities underground to provide a new 40-inch sidewalk at this location.
- B. Relocate the concrete wall at least 12 inches away from its current location, to provide a 36-inch sidewalk (federal and state minimum) beyond the existing utility pole.
- C. Relocate the utility pole and concrete wall to extend the existing sidewalk to 60 inches.

Passing Zones:

According to the MDSHA Standards for sidewalks, *"If the width of travel is less than 60 (inches), then use of a passing zone (60" width by 60" length) is required. Passing zones shall be provided at an interval no greater than 200'. Use of driveways and leader walks as passing zones is acceptable as long as cross slope requirements are still met."*

In addition to complying with the MDSHA and ADA Standards, providing passing zones would create enough sidewalk width for two wheelchairs traveling in opposite directions to safely pass each other.

Along the northern portion of the study area, the location of the existing walls restricts the sidewalk travel width to 40 inches or less. There are three (3) driveways located in this portion of the study area which need be converted into passing zones, by adjusting the cross slope to be less than or equal to 2 percent. Figure 7 below shows a typical section of a passing zone in the study area.

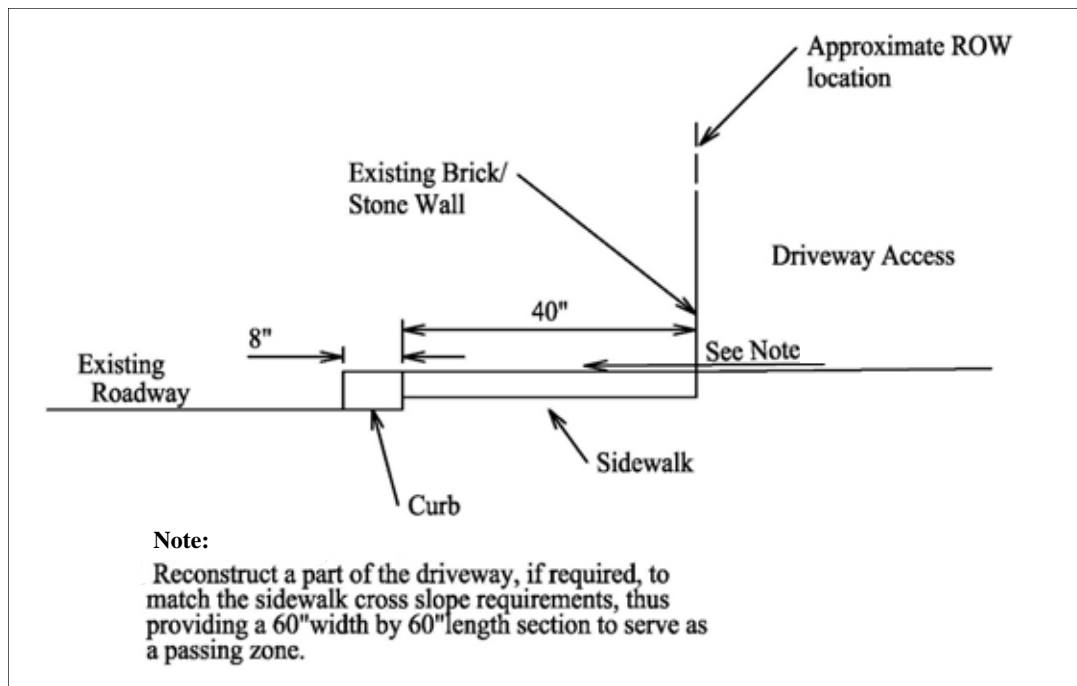


Figure 7: Typical Section – Passing Zone

Documentation

In terms of documentation, jurisdictions need to develop and maintain a "technically infeasible" form or documentation if the sidewalk standards do not comply with the Federal Standards. Generally, it is recognized that it is not always possible for "altered elements, spaces, or facilities to fully comply with new construction requirements because of existing physical constraints" and flexibility with altering existing facilities is permitted where needed. The documentation is not required by the U.S. Access Board. However, it would be in the Town's best interest to document the sections that were not updated and why in the event of a law suit.

Section 4

4.1 Feasible Sidewalk Alternatives

Using the sidewalk improvement measures from the previous report section, four alternatives were further evaluated and described below. Each addresses existing constraints in the project area, accessibility standards and guidelines, and considers connecting into the E. High Street and Locust Lane sidewalk project currently underway. All alternatives would include passing zones and upgraded curbs and crosswalks.

Option 1 – Roadway Narrowing

The roadway width along Locust Lane varies from 26' at the south end to 23' at the north end, at High Street. At areas where the roadway width is 26', existing sidewalk can be widened by 20 inches by narrowing the roadway width to accommodate the new sidewalk, shown in Figure 8. At areas where the roadway width is 24' or less, sidewalk improvement measures #2 (existing wall accommodation) and #3 (utility accommodation) need to be implemented in order to comply with the state and ADA standards. Re-aligned travel lanes would measure 10 to 12 feet. The pavement removal and reconstruction costs in addition to the sidewalk costs may result in a higher overall cost of this alternative when compared to other alternatives. This alternative would also cause disruption to existing traffic during construction and would require the redesign and relocation of existing drainage inlets and other facilities. A grade change is required at the northwest corner that would be accomplished either through a temporary easement or a retaining wall, but preferably without a wall to avoid additional costs. See Appendix A for additional map sheets.



Figure 8: Proposed Option #1

Option 2 - Upgrade Sidewalks without Utility Relocation

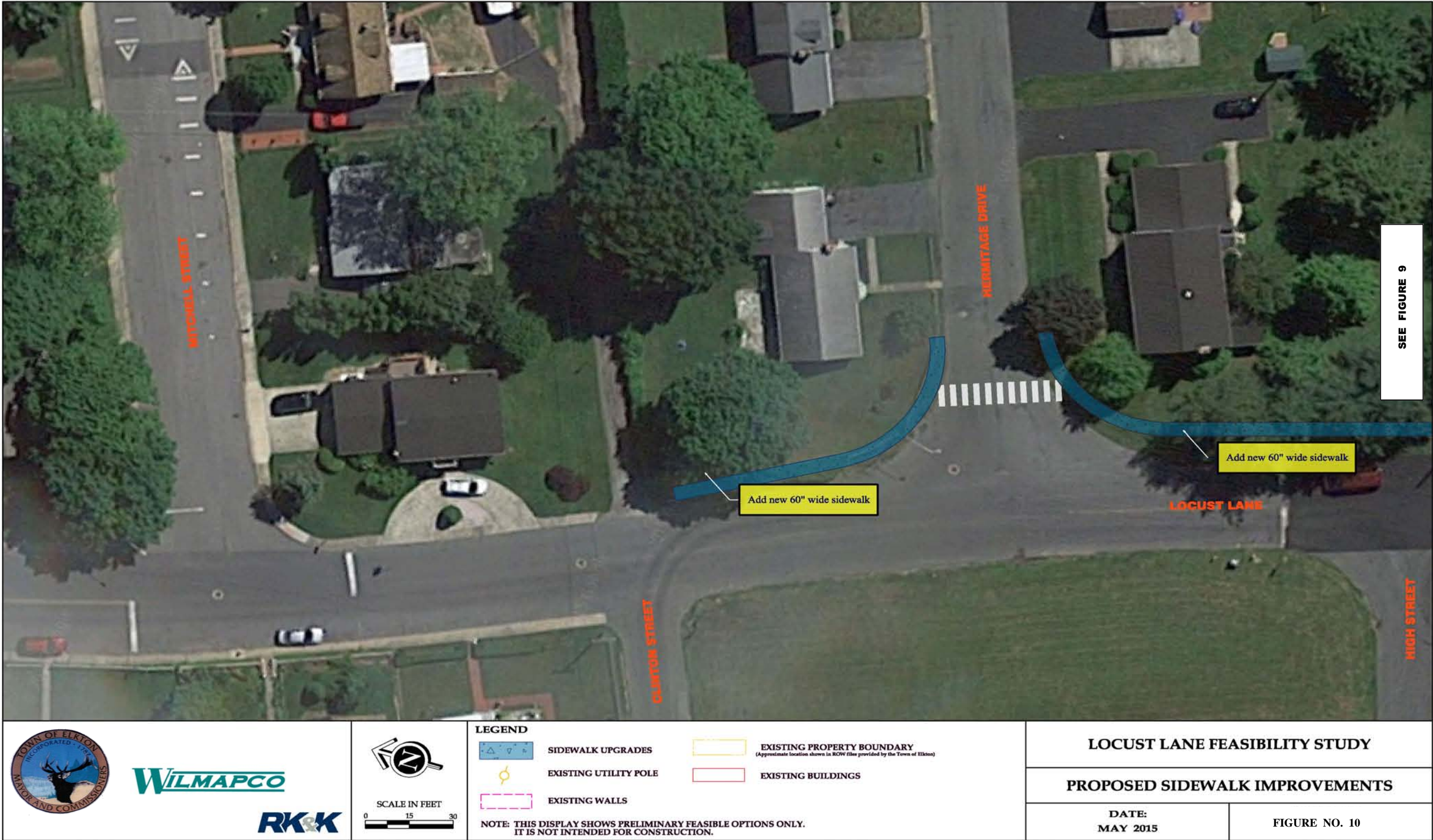
This option involves the replacement of the existing sidewalk with a new concrete, 60-inch sidewalk along the east side of Locust Lane. This would also provide the state's standard Type A curb between the existing roadway and the new sidewalk. At locations where the sidewalk is restricted by existing walls, provide MDSHA's standard Type A curb and 40-inch sidewalk to replace the existing 48-inch sidewalk. In order to use the driveways between the existing walls as passing zones, upgrade a 60-inch (minimum) section of all driveways to match the cross slope of the adjacent sidewalk section (maximum 2%). Utility poles would remain at their current location. A 60-inch sidewalk would be provided behind the utility poles. The traffic signs would be relocated beyond the new sidewalk.

Further, the curb ramps at Main Street would need to be upgraded to match state and ADA standards. Because this section is adjoined to a state highway, MDSHA may review the curb ramp design for compliance. However, there are no unusual circumstances that would prevent the curb ramps from achieving compliance. Details of the preliminary cost estimate are shown in the next section, not including additional expenses related to right-of-way and roadway drainage. Figure 9 shows all sidewalk improvements without relocating any of the utility poles.

Figure 9: Proposed Option #2



Figure 10: Proposed Option #2A & #3A



Option 3 – Upgrade Sidewalks with Utility Relocation

Similar to Option #2, the existing sidewalk would be replaced with a new concrete, 60-inch sidewalk along the east side of Locust Lane, and a standard Type A curb would be provided between the existing roadway and the new sidewalk. At locations where the sidewalk is restricted by existing walls, a standard Type A curb would be provided and 40-inch sidewalk would replace the existing 48-inch sidewalk. In order to use the driveways between the stone/brick walls as passing zones, a 60-inch (minimum) section of all driveways needs upgrading to match the cross slope of the adjacent sidewalk section (maximum 2%). The curb ramps at Main Street would be upgraded to match state and ADA standards. However, unlike Option #2, traffic signs and utility poles/ facilities would be relocated beyond the new sidewalk, or underground. This alternative is associated with additional costs related to utility relocation, right-of-way and roadway drainage, which are not estimated at this time. If the utilities are relocated, it is expected that all utility poles along Locust Lane would have to be relocated, either away from the sidewalk or underground. This will result in a significant increase in project cost and duration of construction.

Option 2A & 3A – Sidewalk Upgrades and Extension

In addition to implementing Option #2 or 3, this design (shown in Figure 10) would extend the existing sidewalk on the east side of Locust Lane by approximately 350' to provide a continuous sidewalk between Main Street and Friendship Heights community. This estimated costs for this extension includes expenses related to utility relocation, right-of-way, and drainage work.

Option 4 – Upgrade Sidewalks, West and Eastbound

In addition to implementing Option #2 and 2A or #3 and 3A, this would also include a full width sidewalk along the western side on Locust Lane. While there are fewer affected properties on this side of the roadway, notable right-of-way would be required near E. High Street. Furthermore, there is less flexibility in designing the sidewalk on the westbound side of Locust Lane near Main Street. This improvement is estimated to cost significantly more in comparison and less desirable to pursue any further. It also may not add additional value in terms of walkability for this area once the eastbound sidewalk is improved.

4.2. Preliminary Cost Estimates

Cost estimates were developed for the proposed alternatives outlined in the previous section of this report. The table shown below summarizes the estimated costs of the feasible improvement options, not including Option #4 to add sidewalks on the westbound side. Option #1 does not reflect the potential cost of a retaining wall if re-grading is not accomplished via an easement. Options #2 and #3 are similar to upgrade the existing sidewalk, not including utility relocation, which is where the two options differ. These planning level estimates do not include utility relocations and right-of-way easements, so actual construction costs will vary. Typically right-of-way or rights-of-entry details are provided during the preliminary design phase. Overhead to underground utility relocation for Option #3 will bear significant costs, which are unknown at this time. Utility relocation is complicated and the associated costs may outweigh the benefits within this particular project limit. Public utility providers were contacted for cost estimates to relocate utility poles in the project area; however, estimates could not be obtained. Additionally, drainage is included in the estimates, which is an important component of each feasible option to ensure that the new and upgraded sidewalk does not negatively impact the existing drainage facilities. If the project moves forward, estimates will need to be refined. If the project proceeds several years into the future, appropriate inflation adjustments should be applied.

Table 1: Preliminary Cost Estimates

	Proposed Options	Preliminary Estimate*
#1	Narrow Roadway	\$139,000
#2	Accommodate Utilities	\$57,000
#3	Relocate Utilities	\$57,000*
#2A & #3A	Sidewalk Extension north of High Street	\$102,000
#4	Sidewalk on westside of Locust Lane	N/A

* Right-of-way, utility relocation and final design is NOT included.

Source: RK&K

A detailed breakdown of these estimates are found in Appendix B.

Maintenance

Sidewalk maintenance, consisting of snow removal, sweeping and landscaping care, tends to be a significant issue for many communities. Property owners would be responsible for sidewalk maintenance. Generally, sidewalks can have a significant lifespan and can be maintained without replacement for decades, depending on the context. The nearby sidewalk project on E. High Street that is being designed for construction is estimated to last 30 years.

Funding

Sidewalks projects can range in average costs, but typically are feasible through several state and federal programs and municipal funds. It is uncertain at this time what source of funding will design and construct this proposed project. For example, this project is eligible for federal funds via the Transportation Alternative Program (TAP) that is administered through the Maryland Department of Transportation. This source is competitive and requires a 20% match. If this funding source is pursued, the Town may not be required to reconstruct the sidewalk to 5-feet. Under TAP, meeting the minimum federal requirements is permitted. However, applying the recommended 5-foot standard should be used for this project for a variety of reasons previously covered, regardless of funding source.

Section 5

5.1 Public Input

Community input was sought to help understand the concerns of residents regarding this potential project. Prior to an Elkton Mayor and Commissioners meeting, a public workshop was held to allow residents to learn about the study, review proposed feasible alternatives, and provide comments. A direct mailing was sent to affected residents within and around the study limits, and local media was used to inform the general public.

Comments received included concerns about traffic and pedestrian issues within the study vicinity. Traffic issues included the potential difficulty of turning right from High Street onto Locust Lane in the southbound direction, due to the roadway narrowing suggested by Option #1. However, providing an adequate corner curb radius would be taken into consideration during the design phase in the future. Attendees also felt that Locust Lane is a dangerous, heavily travelled road, and that motorists should use South Street, which has wider travel lanes. Pedestrian issues included the lack of sidewalk continuity between the neighborhoods to the north of the study limits and points south of Main Street. Convenience and safety along Locust Lane are desired from pedestrians that use the facilities frequently.

Two workshop attendees also suggested converting Locust Lane to a one-way street. That option was discussed earlier in the planning phase, but not explored. The main reason is that a one-way travel lane was presented as a proposed option in a previous study at the same location and it was strongly opposed by residents in the surrounding neighborhoods. Additionally, the project goals can be achieved without the travel lane conversion. Overall, the proposed alternatives to narrow Locust Lane to provide sidewalks without utility relocation (Option #1) and maintain the existing travel lanes and provide sidewalks around the utility poles (Option #2 & 2A) were both supported.

5.2. Summary

Overall, this study aims to identify if the design and reconstruction of a portion of sidewalk along Locust Lane is justifiable and feasible. The existing sidewalk along the east side of the roadway needs to be upgraded in order to overcome existing physical constraints and to provide a 5-foot wide safe and accessible pedestrian travel way. It was determined that this proposed project is justified on the basis of need and physically feasible. It is important to note that decisions on whether to provide a sidewalk typically should not be solely based on existing pedestrian volumes because they are not a reliable indication of pedestrian demand. Pedestrians tend to walk in locations where continuous connections are provided. Therefore, a lack of pedestrian activity in a location with discontinuous sidewalks is not necessarily an indication of a lack of pedestrian demand.

While cost estimates are important, assessment of a proposed project considers more than construction costs alone. Below are several factors that were considered, mainly qualitatively, to help determine the best preferred option:

- Satisfies project goals
- Construction complexity
- Financial considerations
- Public input
- Easements
- Environmental/ cultural impacts

This feasibility study identifies four sidewalk upgrade options that meet municipal, MDSHA, and ADA standards. Each option meets the project goals and none were opposed by residents. In general, relocating utilities and reconstructing the roadway are more complex solutions. Additionally, easements add to this project's final cost and complexity, but are required with or without utility work. It is difficult during a feasibility study to determine the full financial impacts of easements. None of the proposed options pose any environmental impacts, such as potentially uprooting healthy trees.

The location of existing utility poles and walls on residential properties on the east side of Locust Lane results in design challenges for installing a full-width, 60-inch sidewalk along the project area, with an 8-inch curb. While parts of Option #1 can be built within the existing right-of-way, the removal and possible reconstruction of the roadway pavement will likely result in high design and construction costs. If a retaining wall is required later in the design phase, the costs will climb higher.

The main difference between Option #2 and #3 is the relocation of existing utility poles that are currently located in the middle of the sidewalk. In general, the process of relocating utilities can be lengthy and expensive. If the four utility poles in the study area are relocated, it is possible that other utility poles north of the study area would need to be relocated. This could further lengthen the process and increase the overall cost of the project. Timing the project with the replacement of the utility poles will be useful to avoid additional costs.

The existing sidewalk along the east side of Locust Lane only provides access to five residential properties. Extending the existing sidewalk farther north (Option #2A & #3A), and connecting the Friendship Heights community to Main Street would provide a safe pathway for the pedestrians in the area, and would enable pedestrians from Friendship Heights community to access the upgraded sidewalk in the study area. This option is considered a long-term solution in the area, and fully responds to the goals of the proposed sidewalk project.

Finally, Option #4 is deemed unnecessary nor viable. Due to the close proximity of residential properties and the location of embankments, providing a new sidewalk is not an economic or efficient option along the west side of Locust Lane. If additional sidewalk in this study area is required, a pedestrian study could be conducted to verify the need for a sidewalk along the west side of Locust Lane.

Path Forward

Due to higher costs and traffic disruption to either reconstruct the roadway pavement or relocate utilities, it is recommended to reconstruct the sidewalk to 60" according to Option #2 (Accommodate Utilities) and Option #2A (Sidewalk Extension north of High Street), noted in the table below. Additionally, all four improvement measures should be incorporated to address existing constraints, as described in Section 3 beginning on page 13. In particular, an existing wall should be shifted 12" where there is an adjacent utility pole (Improvement Measure #4B on page 15). The project should also include pedestrian signage which is currently lacking in the area.

This project will improve the Town's pedestrian network through enhanced connectivity and make walking an inviting and viable mode choice. It is further recommended that the Town provide a 5-foot wide sidewalk to better address the significant impediments and pedestrian safety concerns along the existing sidewalk. Sidewalk width is a key characteristic that influences the pedestrian environment.

Table 2: Summary of Recommendations

	Proposed Options	Recommendation
#1	Narrow Roadway	Not recommended
#2	Accommodate Utilities	Recommended with #2A
#3	Relocate Utilities	Not recommended
#2A & #3A	Sidewalk Extension north of High Street	Recommended with #2
#4	Sidewalk on westside of Locust Lane	Not recommended

Much of Elkton's existing sidewalks only meet minimum ADA standards of 4-feet. There are a number of examples around the Town where 4-foot wide sidewalks do not create an inviting pedestrian environment or provide an adequate buffer between vehicular traffic. The Town should consider providing better facilities to the maximum extent possible with new or reconstructed sidewalks. The key next step for the Town is to identify and pursue funding source (s) to implement the project.

References:

1. "Accessibility Policy & Guidelines for Pedestrian Facilities along State Highways", published by the Maryland State Highway Administration (MDSHA), www.roads.maryland.gov/ohd/adafinal.pdf
2. "Designing Sidewalks and Trails for Access – Best Practices Design Guide, Parts 1 & 2", Federal Highway Administration (FHWA)
3. Thompson, Ford, et al. "NCHRP Report 713: Estimating Life Expectancies of Highway Assets." (Transportation Research Board, 2012).
4. www.pedbikesafe.org/PEDSAFE/resources_guidelines_sidwalkswalkways.cfm

Appendix A

Proposed Option #1, Sheets 2-4





Figure A2: Proposed Option #1, Sheet 3



Figure A3: Proposed Option #1, Sheet 4

Appendix B

Detailed Preliminary Cost Estimates

Locust Lane Sidewalk Feasibility Study

Table A1

Locust Lane - Sidewalk Feasibility Study - Preliminary Cost Estimate Option #1							
Item Description	Item #	Quantity	Unit	Quantity	Unit	Unit Price	Total Estimate
<i>Maintenance of Traffic (see % below)</i>							
Re-grading/ Topsoil (6" Depth)	701365	100	SY	100	SY	\$35.00	\$3,500.00
Turf Establishment (Seed and Mulch)	705500	100	SY	100	SY	\$4.00	\$400.00
Removal of Exist. Concrete Sidewalk <i>(assume 6"depth)</i>	210026	200	SY	100	CY	\$67.75	\$6,775.00
Removal of Exist. Asphalt <i>(pavement) (assume 2"depth)</i>	210025	70	SY	12	CY	\$42.00	\$490.00
Adjust/Repair Catch Basin	380201	1	EA	1	EA	\$1,250.00	\$1,250.00
Roadway Patching <i>[assume Hot Mix Asphalt Superpave 12.5MM, PG64-22, for Patching up to 3inches (assume 34TONS)]</i>	599115	100	SY	34	SY	\$50.00	\$1,700.00
8" PCC for Driveways	561116	11	SY	11	SY	\$139.50	\$1,550.00
Perm. Pavement Striping - 4" Yellow Thermo <i>(assume 5")</i>	585407	852	LF	852	LF	\$1.73	\$1,473.96
Perm. Pavement Striping -16" White Thermo	585408	22	LF	22	LF	\$1.50	\$33.00
Perm. Pavement Striping - 24" White Thermo	585424	60	LF	60	LF	\$5.20	\$312.00
4" Thick P.C.C. Sidewalk	655104	2224	SF	2224	SF	\$4.40	\$9,785.60
6" Thick P.C.C. Sidewalk <i>(assume 5")</i>	655105	294	SF	294	SF	\$9.50	\$2,793.00
Modified Type "A" Curb (6"UprightCurb) <i>(assume Standard Type A Curb (8"x16") for price)</i>	634100	1600	LF	1600	LF	\$28.20	\$45,120.00
Handicap Ramp <i>(assume detectable warning surface for curb ramps)</i>	655120	70	SF	70	SF	\$35.00	\$2,450.00
Hydrant Relocation	812120	1	LS	1	LS	\$8,310.75	\$8,310.75
					Sub-total		\$85,943.31
Drainage (10%)							\$13,147.91
Maintenance of Traffic (5%)							\$6,573.96
Construction Engineering (10%)							\$13,147.91
Contingency (15%)							\$19,721.87
						Total	\$138,534.96
						Preliminary Estimate:	\$139,000.00

Notes

- All items and quantities are taken from KCI's estimate for Option 1 provided by Wilmapco via email dated 4/20/2015.
- Unit prices were taken from MDSHA Price Index - January 2015.
Unit prices closest to the quantities on this sheet were considered for the cost estimate.
- Unit costs of Item numbers that closely matched the Item description were used for this estimate.
- KCI's initial estimate was \$94,094 for Option 1. The unit prices assumed for the above estimate are based on prevailing rates provided by MDSHA's price index.
- Drainage, Maintenance of Traffic, Construction Engineering and Contingency percentages used in this estimate are consistent with the percentages assumed for Options 2 and 3.
- Final Design costs are not included in this estimate

Table A2

Locust Lane - Sidewalk Feasibility Study - Preliminary Cost Estimate Option 2- Sidewalk Upgrade - no utility relocation					
Item Description	Item #	Quantity	Unit	Unit Price*	Total Estimate
Excavation	201030	42	CY	\$59.00	\$2,452.87
8" PCC for Driveways	561116	11	SY	\$139.50	\$1,550.00
Combination Curb and Gutter	634300	420	LF	\$33.00	\$13,860.00
5" Concrete Sidewalk	655105	2245	SF	\$9.50	\$21,327.50
Detectable Warning Surface for curb ramps	655120	70	SF	\$35.00	\$2,450.00
			Sub-total		\$41,640.37
Drainage (5%)					\$2,082.02
Maintenance of Traffic (5%)					\$2,082.02
Construction Engineering (10%)					\$4,164.04
Contingency (15%)					\$6,246.06
				Total	\$56,214.50
			Preliminary Estimate:		\$57,000.00

Notes

- 1 Unit prices were taken from MDSHA Price Index - January 2015
Unit prices closest to the quantities on this sheet were considered for the cost estimate
- 2 Utility adjustment/ relocation costs are not included in this estimate
- 3 Right-of-way costs are not included in this estimate
- 4 Final Design costs are not included in this estimate

Table A3

Locust Lane - Sidewalk Feasibility Study - Preliminary Cost Estimate Option 2A - Sidewalk upgrade + extension to Friendship Heights (no utility relocation)					
Item Description	Item #	Quantity	Unit	Unit Price	Total Estimate
Excavation	201030	73	CY	\$59.00	\$4,299.35
8" PCC for Driveways	561116	13	SY	\$139.50	\$1,860.00
Combination Curb and Gutter	634300	770	LF	\$33.00	\$25,410.00
5" Concrete Sidewalk	655105	3825	SF	\$9.50	\$36,337.50
Detectable Warning Surface for curb ramps	655120	130	SF	\$35.00	\$4,550.00
			Sub-total		\$72,456.85
Drainage (10%)					\$7,245.69
Maintenance of Traffic (5%)					\$3,622.84
Construction Engineering (10%)					\$7,245.69
Contingency (15%)					\$10,868.53
			Total		\$101,439.59
			Preliminary Estimate:		\$102,000.00

Notes

- 1 Unit prices were taken from MDSHA Price Index - January 2015
Unit prices closest to the quantities on this sheet were considered for the cost estimate
- 2 Utility adjustment/ relocation costs are not included in this estimate
- 3 Right-of-way costs are not included in this estimate
- 4 Final Design costs are not included in this estimate

Table A4

Locust Lane - Sidewalk Feasibility Study - Preliminary Cost Estimate Option 3- Sidewalk Upgrade - with utility relocation					
Item Description	Item #	Quantity	Unit	Unit Price*	Total Estimate
Excavation	201030	42	CY	\$59.00	\$2,452.87
8" PCC for Driveways	561116	11	SY	\$139.50	\$1,550.00
Combination Curb and Gutter	634300	420	LF	\$33.00	\$13,860.00
5" Concrete Sidewalk	655105	2245	SF	\$9.50	\$21,327.50
Detectable Warning Surface for curb ramps	655120	70	SF	\$35.00	\$2,450.00
			Sub-total		\$41,640.37
Drainage (5%)					\$2,082.02
Maintenance of Traffic (5%)					\$2,082.02
Construction Engineering (10%)					\$4,164.04
Contingency (15%)					\$6,246.06
			Total		\$56,214.50
			Preliminary Estimate:		\$57,000.00

Notes

- 1 Unit prices were taken from MDSHA Price Index - January 2015
Unit prices closest to the quantities on this sheet were considered for the cost estimate
- 2 Utility adjustment/ relocation costs are not included in this estimate
- 3 Right-of-way costs are not included in this estimate
- 4 Final Design costs are not included in this estimate

Table A5

Locust Lane - Sidewalk Feasibility Study - Preliminary Cost Estimate Option 3A - Sidewalk upgrade + extension to Friendship Heights (with utility relocation)					
Item Description	Item #	Quantity	Unit	Unit Price	Total Estimate
Excavation	201030	73	CY	\$59.00	\$4,299.35
8" PCC for Driveways	561116	13	SY	\$139.50	\$1,860.00
Combination Curb and Gutter	634300	770	LF	\$33.00	\$25,410.00
5" Concrete Sidewalk	655105	3825	SF	\$9.50	\$36,337.50
Detectable Warning Surface for curb ramps	655120	130	SF	\$35.00	\$4,550.00
			Sub-total		\$72,456.85
Drainage (10%)					\$7,245.69
Maintenance of Traffic (5%)					\$3,622.84
Construction Engineering (10%)					\$7,245.69
Contingency (15%)					\$10,868.53
				Total	\$101,439.59
			Preliminary Estimate:		\$102,000.00

Notes

- 1 Unit prices were taken from MDSHA Price Index - January 2015
Unit prices closest to the quantities on this sheet were considered for the cost estimate
- 2 Utility adjustment/ relocation costs are not included in this estimate
- 3 Right-of-way costs are not included in this estimate
- 4 Final Design costs are not included in this estimate

