

Lick Run Greenway Phase III Feasibility Study

*Adopted as part of Vision 2001-2020 and as an Addendum to the
2007 Update to the Roanoke Valley Conceptual Greenway Plan by*

The Council of the City of Roanoke, Virginia

and by

The Roanoke Planning Commission

As Submitted by

The City of Roanoke's Parks and Recreation Advisory Board

Roanoke Parks and Recreation

Adopted by City Council April 20, 2009

Acknowledgements

Preparation of this feasibility study would not have been possible without the support and input of the following:

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Introduction

Lick Run Greenway is a very successful and important component of the Roanoke Valley greenway system. Constructed in phases by the City of Roanoke and the Roanoke Valley Greenway Commission, the linear park is now over three miles in length, connecting downtown Roanoke with Valley View Mall and the neighborhoods and parks between these two important destinations. The extension of Lick Run Greenway north is identified as a Priority 2 greenway project in the 2007 Update to the Roanoke Valley Conceptual Greenway Plan.

This report will examine the planned extension of Lick Run Greenway north, from the point on the west side of I-581 where it currently connects to a bike/pedestrian trail to Valley View Mall, to Hershberger Road, and continuing to the city-county line. Alternative routings for the trail will be reviewed, and a preferred alignment for the greenway corridor will be presented. At the southern end of the corridor there are two large undeveloped properties where future commercial and residential development is anticipated. Important destinations in this corridor include neighborhoods and commercial development on both sides of Hershberger Road, Ruffner Middle School, William Fleming High School, Countryside Golf Course, and Northside High School (in Roanoke County). The City of Roanoke has purchased the golf course property and has continued to operate it as an 18-hole golf course.

This report also will review potential safe and attractive bicycle and pedestrian opportunities east of I-581 that could connect the Valley View Mall area, the Roanoke Regional Airport, the proposed county multi-generational center, and northeastern Roanoke to Lick Run Greenway. While not officially part of Lick Run Greenway, these connections are important to creating an interconnected system promoting active transportation in Roanoke and as such shall be reviewed for their inclusion in future neighborhood and livable streets efforts.

A Trail Action Plan is presented in this report. The plan addresses the potential benefits of the preferred trail alignment, presents design guidelines for the greenway/linear park corridor, and includes planning level cost projections.

Existing Conditions

The existing Lick Run Greenway has become a well used park and trail facility in the City of Roanoke for recreation, health and transportation purposes. The linear park connects downtown Roanoke with a number of parks, green spaces and Valley View Mall. The current northern terminus of the trail is located at the intersection of Valley View Boulevard and the entrance road for Valley View Mall on the east side of I-581. The existing greenway is approximately three miles in length and has varying character from an urban setting in downtown, or to a trail traveling through parks, to a more traditional greenway paralleling Lick Run, to a path adjacent to a busy street in the area around Valley View Mall. Conditions east and west of I-581 will be described separately.

West Corridor

West of I-581, the existing greenway/trail has a switchback that provides trail access to the bridge over I-581. The western corridor for the potential trail extension begins at this switchback and proceeds north, generally following Lick Run across Hershberger Road and ending at Peters Creek Road near Northside High School Road. The corridor has a mix of land uses: agricultural at the southern end of the corridor, predominately residential south of Hershberger Road, commercial north of Hershberger Road, and a golf course at the northern end of the corridor. This corridor possesses more linear park characteristics than the east corridor.

There is an informal stream crossing at the end of 19th Street that is used by neighbors west of the stream and could provide access to Kennedy Park and the Roanoke Academy of Math and Science. Near the switchback there is a stormwater management pond that was constructed to serve Valley View Mall and surrounding properties. The pond is a dry pond and is maintained by the city. A gravel access road, approximately ten feet in width, serves the stormwater pond and could be converted into a trail up to the point where Lick Run branches into two streams. Along both branches the area adjacent to the stream is covered in dense underbrush. A sanitary sewer parallels the eastern branch of Lick Run, and the Western Virginia Water Authority has a maintenance and access easement. Currently, agricultural uses are found on both sides of the eastern branch, largely outside of the floodplain.

There is speculation that this area will be developed. Vision 2001-2020 calls for mixed use development in this area. The city has been approached about potential development of these properties, but no formal applications have been submitted. Complicating development of these properties is a general lack of vehicular access. A study was recently completed by VDOT and the city that analyzed developing the existing partial interchange at I-581 and Valley View Boulevard into a full access interchange, including connecting the interchange to the west of I-581, and potential connections to local streets to the west and north to Hershberger Road.

From Fairland Road the eastern branch goes north parallel to I-581 and through the interchange at Hershberger Road. The study area includes residential neighborhoods located between I-581 and Ferncliff Avenue. These residences are primarily single family homes, with the exception of the WW apartment complex at the southern end of the neighborhood. Adjacent to the south side of Hershberger Road, there is an assortment of commercial and retail uses.

The western branch continues for a short distance to the site of the former Fairland Lake where the dam was breached many years ago to alleviate potential downstream flooding. Fairland Road crosses the study area in this location and has a very steep grade to the west. North-south streets in this part of the corridor, except for Kirkland Road, are also very steep and are potential barriers to a greenway route. The WW apartment complex is in an area that avoids much of the change in elevation in this area and could provide a good alternative routing if an agreement could be reached to allow trail access across the property. There is an existing storm sewer that crosses the property, and the easement for this sewer could provide an opportunity to gain access for the trail.

North of Hershberger Road commercial development, big box retail and hotels occupy the first $\frac{1}{4}$ to $\frac{1}{2}$ mile of the study area. Beyond these uses are Ruffner Middle School and William Fleming High School. Countryside Golf Course occupies the majority of the northern section of the area, with a few single family houses located between the golf course and the I-581 frontage road. The City of Roanoke owns the golf course and currently operates it as an 18-hole public course. During public discussions of whether to develop the golf course property, there has been considerable comment that the trail alignment would be beneficial should it be routed through the golf course. Peters Creek Road forms the northern boundary of the study area and is a four lane divided road without sidewalks or bike facilities.

East Corridor

The existing Lick Run Greenway crosses over I-581 to access the Valley View Mall area. The greenway transitions from a linear park to a wide sidewalk parallel to Valley View Boulevard for approximately one quarter mile, ending at the entrance road to Valley View Mall. Valley View Boulevard continues north, passing other commercial properties to the west, and park, school and residential areas to the east. The road crosses under Hershberger Road and becomes Aviation Drive, ultimately connecting to the Roanoke Regional Airport.

Various retail establishments are included in Valley View Mall and the surrounding area. A number of hotels and restaurants are located north of the mall between the mall's ring road and Hershberger Road. There is a desire to provide connectivity between the hotels and the greenway.

East of Valley View Boulevard is Huff Lane Park and School and residential neighborhoods. There is no vehicular connection between the neighborhood and Valley View Boulevard. Pedestrian access is available either through Huff Lane Park or via a sidewalk connection near

Churchill Drive. The neighborhood is interested in better pedestrian access, particularly at the southern end of Valley View Boulevard near the movie theater.

North of Hershberger Road both Thirlane Road and Airport Road connect to Peters Creek Road. Neither road currently has shoulders or bike lanes and so neither road provides good bike access to Peters Creek Road or the Valleypointe area where the county multigenerational center is to be located.

Potential Projects Impacting the Alignment

There are a number of planned and potential projects within the study area that have an impact on the alignment of the proposed third phase of Lick Run Greenway. The projects are both public and private and their impact on the greenway is discussed below.

Two public sector projects influence the greenway alignment. The first is the I-581/Valley View Boulevard interchange project included in VDOT's latest Six Year Program for design only. The project's primary purpose is to develop the existing interchange into a full movement interchange by adding a southbound off-ramp, adding a northbound on-ramp, and potentially connecting the interchange to the west side of I-581. Depending on the options developed for this project and the option selected for final design, additional right-of-way could be needed adjacent to the interchange and north and south of the interchange along I-581. Additional details about this project's impact on the surrounding area will not be known until a final design option is selected.

The second improvement, planned by the City of Roanoke, is construction of a new sidewalk on the south side of Hershberger Road, from Ordway Drive to Rutgers Avenue. The sidewalk is currently being designed. The city is trying to construct a sidewalk that is at least eight feet in width for as much of the project as possible. If the walkway can be built eight feet wide, it could possibly serve as a good connector for the greenway to destinations east of I-581.

Potential private development also could impact the location and construction of the proposed greenway extension. There are two large tracts of land west of I-581 between Valley View Boulevard and Hershberger Road that are currently used for agriculture, where, as previously mentioned the city has been approached about potential development. Vision 2001-2020 and the pertinent neighborhood plans call for a mix of commercial, office and residential development in this area. The biggest issue with development of these sites is a lack of access. Options to provide access include using the proposed reconstructed I-581-Valley View Boulevard interchange for access from the south and east, and potential new connections along the west side of I-581 between Hershberger Road and a completed Valley View Boulevard interchange. The proposed corridor for Lick Run Greenway should be included with any development plans on these properties, including the recommended typical trail cross-sections in the following sections of this report. The trail should be constructed at the same time as other public improvements included with any new development.

Lick Run Phase III Alternatives

Alternatives for both the east and west corridors are presented in this section. The alternatives are illustrated on the **Phase III Alternatives Map** at the back of this report.

West Corridor

Alternatives 1A and 1B

Both alternatives begin at the existing Lick Run Greenway switchback that leads to the bridge over I-581. Alternative 1A travels on the east side of Lick Run toward the existing stormwater detention facility. At the stormwater facility the trail would follow the existing access road and then Lick Run to the point where Lick Run splits into two branches. At this point the two alternatives split and each follows a branch of the creek. A connection, via a culvert, is proposed to connect the existing greenway to 19th Street and ultimately Kennedy Park and the Roanoke Academy of Math and Science.

Alternative 1A

Alternative 1A follows the eastern branch of Lick Run, which at this point travels northeast toward I-581. Near I-581 the creek turns north and this alternative generally follows the creek on its western bank to the interchange at Hershberger Road. At this point the route would parallel the southwest quadrant of the interchange and then Hershberger Road until the intersection with Ferncliff Avenue, which is signalized. The route would cross Hershberger Road, travel on the school side of Ferncliff Avenue and follow Hoback Drive to Ordway Drive. The route would then follow Ordway Drive and turn onto the access road for the former Johnson & Johnson plant, connecting again to the eastern branch of Lick Run. From this point the route would head north either following Lick Run across the golf course or the I-581 frontage road, connecting to Peters Creek Road at the intersection with Northside High School Road.

Alternative 1B

Alternative 1B follows the western branch of Lick Run toward Fairland Road. At Fairland Road this alignment becomes primarily an on-road facility for bicyclists and a sidewalk facility for pedestrians until reaching Hershberger Road. This would not be as attractive to the more recreational trail users. The route would follow Fairland Road to Kirkwood Drive, then cross the WW apartment complex and connect to Ferncliff Avenue. After crossing Hershberger Road, the route would continue as a wide sidewalk/shared use path on the school side of Ferncliff Avenue, connecting to Ruffner Middle School and William Fleming High School. The route would continue around William Fleming High School, cross Highland Farm Road and continue north across the Countryside Golf Course property, cross Laurel Ridge Road and connect to the I-581 frontage road near Peters Creek Road, and continue to the traffic signal at Northside High School Road.

East Corridor

Alternative 2A

Alternative 2A begins at the end of the existing Lick Run Greenway at the intersection of Valley View Boulevard and the mall entrance road. The route crosses Valley View Boulevard and connects to the existing walkway/path across Huff Lane Park, connecting to Huff Lane. At this point the route would become primarily an on-road facility for bicyclists and a sidewalk facility for pedestrians, which would create a route that would be less inviting to more casual trail users, especially families and children. The route would go north on Huff Lane/Durham Road. Here the route would go east to Rutgers Avenue and then follow Rutgers Avenue across Hershberger Road to Town Square Boulevard. At this point the route would go west along Town Square Boulevard connecting to the airport and Aviation Drive, then go north on Aviation Drive to the BB&T facility where the route would cross to Airport Road. The route would continue north on Airport Road as an on-road bikeway to Peters Creek Road.

Alternative 2B

Alternative 2B begins at the end of the existing Lick Run Greenway. The route continues north on Valley View Boulevard through the interchange at Hershberger Road and connects to Thirlane Road. At this point the route follows Thirlane Road as an on-street bikeway, either on paved shoulders or as a shared roadway. The route continues on Thirlane Road to the intersection with Peters Creek Road. This alternative would be most appropriate for experienced cyclists.

Alternative 2C

Alternative 2C is a variation of 2B and provides direct access to hotels and restaurants located between Hershberger Road and Valley View Mall. The route begins at the end of the existing greenway and follows the ring road around Valley View Mall to near the intersection of Valley View Boulevard. At this point the route continues north toward Hershberger Road following property owned by the airport and connects to the proposed sidewalk/path on the south side of Hershberger Road. From this point the route would head east toward the Hershberger Road/Valley View Boulevard interchange and then follow the same alignment as Alternative 2B.

Preferred Alignment

The preferred alignment for the extension of Lick Run Greenway is a combination of alignments 1A and 1B as illustrated on the **Phase III Preferred Alternative Map** at the back of this report. The exact location of the trail within the highlighted areas will be determined during the future design phases for the greenway. Where possible the corridor is envisioned as a shared use path 10 feet in width within the riparian area of Lick Run. There are three areas that will require further study as to the exact alignment of the trail during future design stages for construction of Lick Run Greenway Phase III. These three areas are identified on the Preferred Alternative Map. The identified preferred alignment would most closely follow the existing Lick Run stream corridor, which was identified as the highest priority during the public workshops. It would connect the key destinations, particularly William Fleming High School, and would be the easiest to construct. This alignment would avoid the topographic challenges of Alternative 1B and could be implemented in phases, with on-road facilities creating a connected greenway/trail in the interim until the full greenway could be constructed.

The preferred alignment will take advantage of potential new development in the corridor and provide the opportunity for these developments to construct portions of the trail as conditions for rezoning of the properties. The two agricultural properties and the property in the southwest quadrant of the Hershberger Road/I581 interchange provide the best opportunities to take advantage of new development. This alignment also minimizes the potential impact on operation of Countryside Golf Course by proposing the greenway at the edge of property, away from golf activities.

As mentioned previously, the majority of the trail corridor is envisioned to be constructed with an asphalt surface. However, the segment of the trail parallel to Ferncliff Avenue and connecting to the William Fleming High School area is proposed to be concrete. The section of the trail can be built as a wide sidewalk by narrowing Ferncliff Road to 28 or 30 feet and incorporating the same design and cross-section into the reconstruction of the high school. Any new construction of sidewalks or trails in this area, within the right-of-way, should be designed in conformance with Roanoke's Street Design Guidelines and Complete Streets Policy.

The preferred alignment recommends that the greenway cross Hershberger Road at the Ferncliff Avenue intersection. This is recommended because the intersection is signalized and this alignment would provide a direct connection to William Fleming High School. The Ordway Drive intersection could also be used. However, VDOT has indicated it would not support a crossing at this intersection and that modifications to the Hershberger Road interchange at I-581 will lead to the elimination of the signal at Ordway Drive.

East Connections for Active Transportation Connections

The recommendation for the east corridor is to improve the curb ramp and pedestrian connection on the Huff Lane Park side of Valley View Boulevard opposite from where the Lick Run Greenway currently ends. From that point, the route would follow alignment 2B to Hershberger Road and Rutgers Avenue with on-street bike facilities. Consideration should be given to improving the pedestrian/bike crossing of Hershberger Road at this intersection, including the possible installation of medians and countdown pedestrian signals. From this point, the route would continue on the recommended alignment 2B until Town Square Boulevard and then turn toward the airport. From this point a combination of routes 2B and 2C is recommended. The city and the Roanoke Regional Airport Authority are considering the installation of a traffic signal at the intersection of Aviation Drive, Town Square Boulevard and Thirlane Road. From this point, the route would use Thirlane Road as a designated bikeway to connect to Peters Creek Road. As the city progresses to a design function in these areas within the right-of-way, this plan would recommend that such active transportation facilities be designed for a diverse array of users so that varying degrees of pedestrian and bicycle users have equitable access. Many people attending the public meetings indicated that Thirlane Road is a much preferred bike route over Airport Road due to lower traffic volumes and a little more width.

Trail Action Plan

Lick Run Greenway is more than just a trail. It is an important linear park, conservation area and alternative transportation resource. It traverses the Lick Run stream corridor and as such is part of a critical natural resource in Roanoke. Lick Run Greenway functions as a linear park, and the preferred alignment for Phase III should enhance this function. This Action Plan will discuss the benefits of the proposed greenway extension and present recommended design guidelines and planning level cost projections for the trail.

Trail and Community Connections

Lick Run Greenway already provides connections to many neighborhoods, parks and other destinations, such as Valley View Mall, the Civic Center, downtown, and Washington and Brown-Robertson Parks. The preferred alignment for the Phase III extension will enhance this connectivity. A stream crossing is proposed near the existing trail switchback that will connect to 19th Street, the Melrose-Rugby neighborhood and Kennedy Park. The proposed corridor will also connect through the Fairland neighborhood. After crossing Hershberger Road, the corridor passes through commercial areas and past a number of hotels, then past Countryside Golf Course and ultimately connecting to Peters Creek Road at Northside High School Road.

Linear Park Aesthetics and Landscape Buffers

As with the existing Lick Run Greenway, portions of the preferred alignment are ideally situated to take advantage of the stream corridor and riparian area surrounding Lick Run. Due to constraints, some sections will have to be located outside the stream corridor. The southern end of the proposed alignment, south of Hershberger Road, and portions of the northern end are recommended to be located within the stream corridor. For these areas, it is recommended that the trail be located within the floodway fringe, as allowed by the city's floodplain regulations, but outside the floodway. This width varies depending on the stream hydrology, and a landscaped buffer is recommended, as shown in Figure 1, between the trail and the edge of the stream. The riparian area or buffer should be a minimum of 30 feet (30') as recommended in Virginia's Riparian Buffer Implementation Plan. Where feasible a wider buffer should be provided.

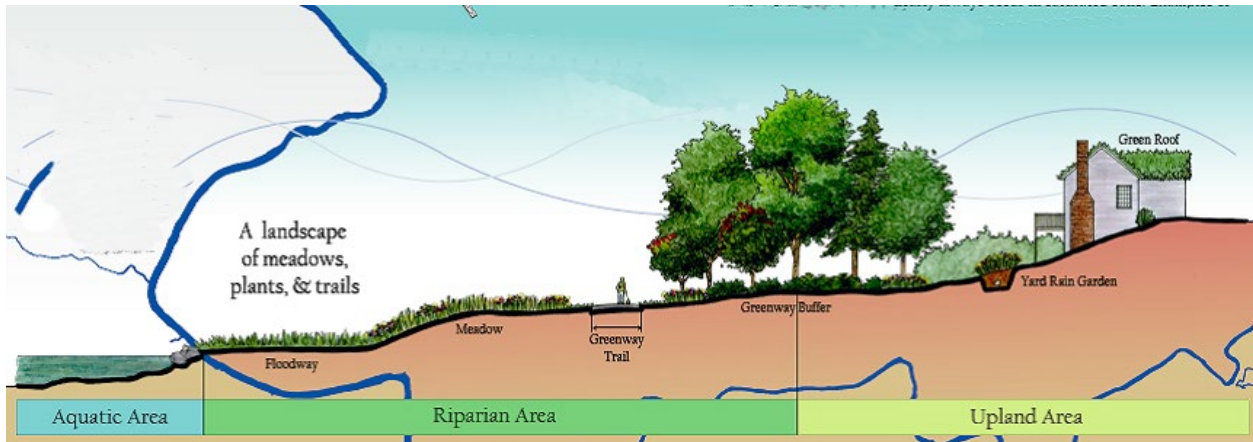


Figure 1

Environmental Impacts and Benefits

Trails, by their very existence, are arguably an environmental benefit. Trails provide people with the option to walk or ride a bike to destinations instead of driving. These trips by means other than an automobile reduce air pollution and congestion and provide the community with the option for active and healthy transportation. The extension of the greenway into riparian areas will give Roanoke residents the opportunity to visit and enjoy these areas. Protection and improvement of the riparian area will help to maintain Roanoke’s urban tree canopy.

But, trail construction can have a negative impact on the environment if steps to minimize and/or eliminate these potential impacts are not taken. Locating the trail outside of the floodway is important to maintain adequate stream flow during storm events. Providing a landscaped buffer between the trail and the edge of the stream helps prevent runoff and debris from entering the stream. Erosion control measures will be required during the construction of the trail to control runoff and minimize potential impacts on the stream.

Stormwater Management

Locating the trail within the existing floodway fringe for Lick Run should have minimal impact on the ability of the stream to accommodate significant storm events. While the trail will add a small amount of impervious surface within the Lick Run watershed, it will put in place a facility that will not allow other uses to encroach within the floodway, thereby preserving the stormwater management attributes of the floodway.

Transportation Connections and Benefits

Lick Run Greenway is an important active transportation resource in Roanoke. The trail provides access to key destinations and is an important link in the Roanoke Valley greenway system. The preferred alignment for Phase III will connect to the destinations presented earlier in this plan and will enable more Roanoke residents to walk and bike to school, to work, to run errands or to visit friends. With the increased price of gasoline and with more people becoming

interested in active transportation, extension of the Lick Run Greenway is an important component of Roanoke's transportation infrastructure.

Economic Benefits

As evidenced by the heavy use of the existing Lick Run Greenway and by the strong public support of greenways in the Roanoke Valley, people in the area realize that greenways and trails create economic value in the community. There are direct economic benefits, such as trail users stopping to eat at a restaurant or get a drink at a store located on or near trails. There is also an increase in the purchase of bicycles and bicycle-related items due to a desire to use trails and greenways. Many studies from across the country have shown that trails are viewed generally as a positive amenity by homeowners and that homes located adjacent to or near trails have a higher value than similar homes without easy trail access. Additionally, more companies are realizing that to attract and keep employees, their businesses need to be located in communities that have amenities like trails and greenways. Companies looking to expand or relocate their operations often cite the presence of trails and greenways and transportation options as key criteria in their decision process.

Design Guidelines

The existing Lick Run Greenway is a well designed facility and it is recommended that the same designs be carried forward in Phase III. A hard surface trail is recommended given the variety of user types, such as walkers, runners, cyclists and people with strollers. In stream corridor areas, a 10 foot (10') wide asphalt surface is recommended. For sections of the trail where it will be located adjacent to streets, as a wide sidewalk, an eight to ten foot (8'-10') wide concrete surface is recommended. Significant landscape buffering is recommended to shield the trail from adjacent land uses and to maintain a more natural setting for an enhanced trail experience. The recommended width for the landscape buffer is ten feet (10'), with a minimum recommended width of five feet (5') in areas where right-of-way may be limited. Figures 2 and 3 illustrate in cross-section these two trail types.

**Shared Use Path:
Separate Right-of-Way**

Provides a completely separated right-of-way for the exclusive use of bicycles and pedestrians with crossflow minimized.

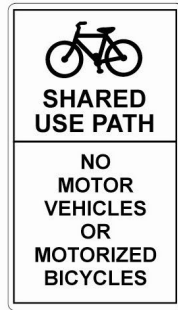


Figure 2

**Urban Trail:
Road Right-of-Way**



Multi-use trail within road right-of-way.

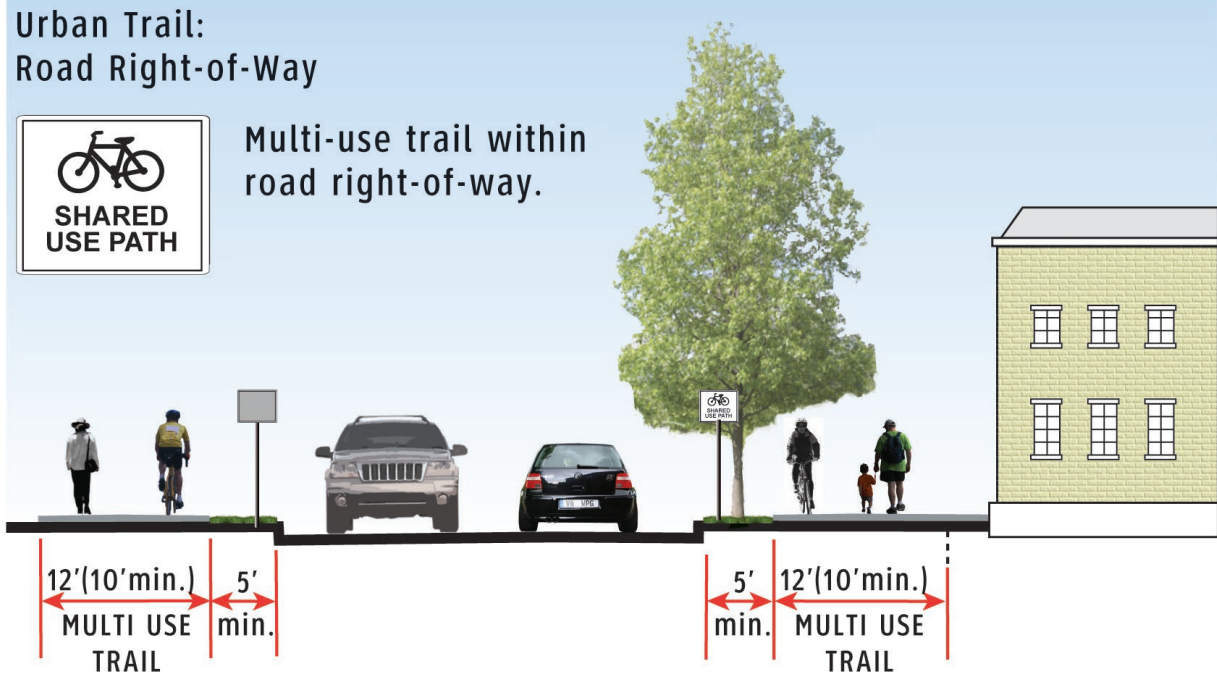
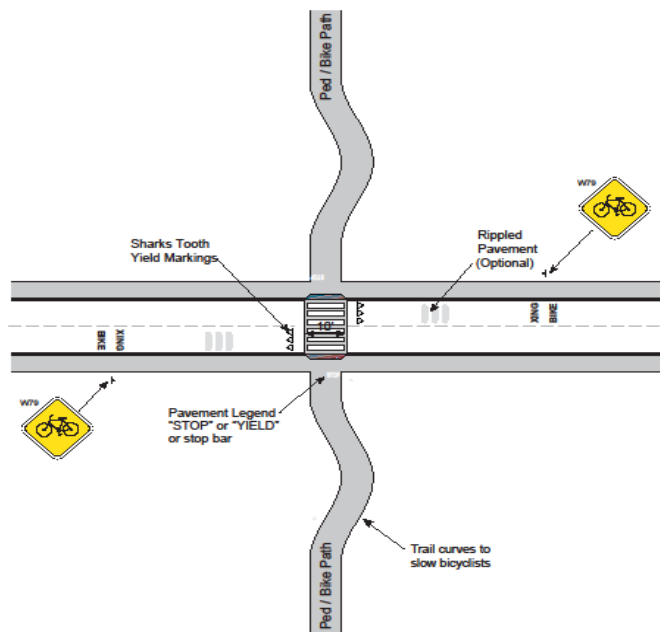


Figure 3

Roadway and Stream Crossings

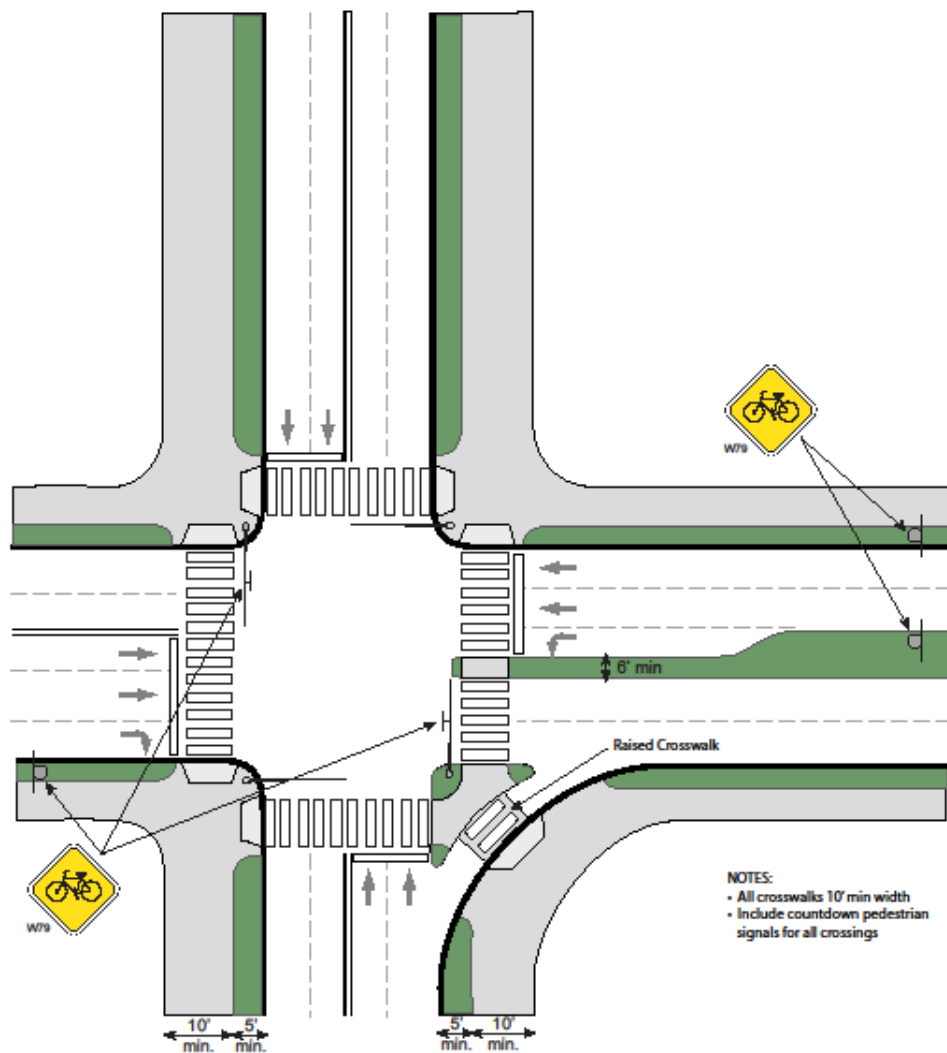
The preferred alignment for Phase III will have two or three crossings of Lick Run, two crossings of major streets (Hershberger Road and Peters Creek Road) and a few minor street crossings. Preliminary review of the potential stream crossings indicates that all of the crossings can be accomplished using culverts, as opposed to bridges. The city's engineer responsible for reviewing these types of facilities indicated that culverts would have less potential impact on the flood water capacity of Lick Run and that it would be easier to gain the necessary permits and approvals for culverts than bridges. Culverts are also less expensive.

Crossings of minor streets, such as Fairland Road and Aspen Drive, can be accomplished with pavement markings and signs as shown in Figure 4. The crossings at Hershberger Road and Peters Creek Road will require further study and design. In addition to signs and pavement markings, signalization improvements, such as countdown pedestrian signals, and other improvements such as refuge islands should be considered. Figure 5 illustrates many options that should be considered at major road crossings.



Shared Use Path Minor Road Intersection

Figure 4



Urban Trail Major Road Intersection

Figure 5

Trail Security

Trail safety is a major concern for both trail users and those whose property is adjacent to a trail. Creating a safe trail environment goes beyond design and law enforcement and should involve the entire community. The most effective and most visible deterrent to illegal activity

on the trail will be the presence of legitimate trail users. Getting as many “eyes on the corridor” as possible is a key deterrent to undesirable activity.

Safety can be addressed on the Lick Run Greenway in the following manner:

1. Adhere to the established design, operation, and maintenance standards presented in this document.
2. Supplement these standards with the sound judgment of professional engineers.
3. Maintain adequate recording and response mechanisms for reported safety and maintenance problems.
4. Thoroughly research the causes of each reported accident on Lick Run Greenway. Respond to accident investigations by appropriate design or operation improvements.
5. Design the path, structures and access points to be accessible by emergency vehicles. Bollards at the path entries should be removable by the appropriate fire, ambulance, and police agencies, or flexible to allow easy access.
6. Provide regular police patrols to the extent needed, and consider the addition of seasonal park rangers on bikes and/or a citizens trail watch organization.
7. A well-maintained trail sends a message that the community cares about the public space. This message alone will discourage undesirable activity along the trail.

Cost Estimate

The following cost projections are provided for planning purposes only and are for the west corridor. Cost ranges for the two types of trails are provided to aid in future planning and budgeting for trail construction. The cost projections are for construction only and do not include land acquisition costs. All of the trail areas shown as being in the preferred corridor are assumed to be asphalt surfaces for the purposes of this estimate except the segment of the trail shown on Ferncliff Avenue, which is assumed to be concrete. Trail surfaces in the areas identified for further study are not yet determined, but for preparing this cost estimate it is assumed that the trail in the Ferncliff/Ordway and the William Fleming High School areas will be a mix of concrete and asphalt surfaces and that the Countryside North area will most likely be asphalt. Cost estimates for the asphalt portion of the trail are higher because construction will likely require more clearing and grading, drainage structures and stream crossings.

A total of approximately 2.5 miles of asphalt trail is estimated in the preferred alternative. Construction costs of \$1,000,000 per mile for asphalt trails result in an estimated total of \$2,500,000 to \$3,000,000 dependent upon utility and civil relocations and right-of-way acquisition.

Approximately one mile of concrete urban trail is estimated in the preferred alternative. Construction costs of \$800,000 per mile for concrete trails result in an estimated total of \$800,000.

The estimated construction cost for completion of the preferred alternative is \$4,000,000, including professional design, engineering, and landscape architecture services. This planning level cost estimate is for construction only and does not include any right-of-way costs, major utility relocations or unforeseen hazardous materials mitigation.