Harrison Township

Bicycle + Pedestrian Plan

April 2013

Acknowledgements

MAYOR

Louis Manzo

TOWNSHIP COMMITTEE

Louis Manzo, Mayor
Dennis Clowney, Deputy Mayor
Don Heim
Robert Shearer
Matt Diggons

LAND USE BOARD

Joseph Pacera, Chairman
Nancy Kowalik, Vice Chair
Dennis Chambers, Municipal Official
Steve Dickson
John Williams
Dennis Bonanni
Louis Manzo, Mayor
Matt Diggons, Councilman
Bill Madara, Alternate No. 1
Paul Mattessich, Alternate No. 2
Paul Donahue, Alternate No. 3
Kristin Ross, Alternate No. 4

LAND USE BOARD SECRETARY

Susanne H. Rhudy

LAND USE BOARD SOLICITOR

Joan Adams, Esquire

LAND USE BOARD ENGINEER

Hugh Dougherty, PE

LAND USE BOARD PLANNER

Robert F. Melvin, PP/AICP

STEERING COMMITTEE

Susanne Rhudy
Luigi Lupo
Joseph Pacera
Nancy Kowalik
Dennis Chambers
Steven Dickson
John Williams
Dennis Bonanni
Louis Manzo
Matthew Diggons
Bill Madara
Paul Mattessich
Paul Donahue
Ron Moore
Chris Knisely
Kevin Riefenstahl

This project was funded in part by a grant from the Association of New Jersey Environmental Commissions (ANJEC). ANJEC is dedicated to providing practical resources to help New Jersey Communities protect their environment.

Table of Contents

Background + Analysis

Background + Purpose of the Plan

Harrison Township has a long rural history with Mullica Hill as a primary village surrounded largely by farmland. For a majority of its history, the Township's population held at approximately 2,000 people, yet began to see explosive population growth in the 1970's, and nearly doubled its population in the 1990's.

With this increase in population came the need to update the Township's infrastructure to serve the residents and to address increased traffic along Route 322, Route 45, and Route 77. These infrastructural projects have been successful in adding parkland and recreation areas, schools, widening roads, and most recently in building the Route 322 Bypass to address traffic issues in Mullica Hill.

Despite these projects, the Township is still primarily served by old farm routes as its transportation spines, and while improvements have been made to these roadways to ease the flow of traffic, pedestrian and bicycle routes along these roadways have only been installed in a piecemeal fashion.

The purpose of the Bicycle + Pedestrian Plan is to create a document to guide bicycle and pedestrian improvements to create a holistic system connecting residents and visitors of the Township to their desired destinations.

Typical suburban street network in Harrison Township outside of Mullica Hill.

Conceptual interpretation of the County-wide bicycle trail plan.

Regional map of "The Circuit", courtesy of connectthecircuit.org

Relationship to Regional Trail Planning Projects

The development of a local plan for pedestrian and bicycle circulation throughout Harrison Township precedes a potential on and off-road county-wide trail system being developed at the regional level. Current proposals for trail locations at this time are strictly at a conceptual phase, and as such, it is important to understand that the component of the trail system labeled "Proposed County System" in the maps that follow represent only a conceptual interpretation of the trail's general direction, and do not represent an actual proposal. The key takeaway of the County's plan in Harrison Township is to connect the Village of Mullica Hill to destinations to the east via a trail that may roughly follow Route 322, linking Harrison Township to Glassboro, Rowan University, and destinations further north in the County. In the future, the potential County system may become a part of a larger multi-state trail network currently referred to as "The Circuit", envisioned to cover the entire Delaware Valley Region with over 750 miles of on and off-road trails. Currently, 250 miles of this network have been completed with 50 miles of trails in the pipeline. The Circuit is made up not just of one trail, but of a composite of different trail networks throughout the region.

Through the process of developing a local plan for a pedestrian and bicycle network, Harrison Township has the opportunity to capitalize on the County's proposed system and potentially help define the path of the County's system within the Township. Additionally, the Township can proactively plan for the local connections necessary to maximize access to the County's system, and in doing so provide pedestrian and bicycle connections linking major destinations, residential areas, and parks and open space to serve members of the local community and draw in visitors from the region.

Issues

BICYCLE + PEDESTRIAN PATH USERS

A Family-Oriented Community: Harrison Township is a young community, characterized by families with school-aged children. This population makes heavy use of amenities within the Township, such as the area's schools, recreation/open space centers, employment centers, Mullica Hill, and other destinations within the Township. For young families and children, arriving by automobile may not always be the best, or even a viable option. For children without or teens without cars, access to recreation centers, schools, even to friends' homes is greatly restricted without access to an automobile, and without access to a safe pedestrian or bicycle route, even though they may be within an easy walking/biking distance of their destination.

An Active Community: Harrison additionally has a growing adult population and workforce that can benefit from enhanced access to recreational amenities, job centers, and that increasingly desires a walkable and bikeable community. Currently, there are few comprehensive and safe pathways for teens or adults to take a run, walk, or bicycle ride from their neighborhood, absent first driving to a park, gym, or recreation facility. Additionally, while many of these users might have access to a car, it may not be their preferred choice for reaching destinations that are relatively nearby, such as Mullica Hill, the Township's parks, Tomlin Station, Rowan University, and in the future, the Richwood Town Center and the Glassboro-Camden Light Rail.

Internal park path at the Wilson Wilt Soccer Complex.

Typical residential sidewalk and curb apron system within a subdivision.

Typical wide striped shoulder in the existing cartway.

Typical local country road with private farm fields on both sides.

ROADWAYS

Effects of Sustained Growth on Roadways: Over the last 10 to 15 years, Harrison Township has experienced substantial growth. This growth has occurred primarily along several arterial spines that for the most part converge at Mullica Hill. The majority of this growth has been residential in nature, and is characterized by suburban subdivisions that typically connect to the main road at one or two points, but are in and of themselves closed systems with low levels of traffic. This pattern has resulted in new subdivision streets that are largely safe for pedestrians and cyclists due to requirements for sidewalks and relatively low levels of traffic and speeds. However, this pattern has also forced an increase in traffic onto the arterial roadways, which were originally designed to serve farm vehicles and a low level of local traffic. These roadways have over time been improved to address automobile movement, and to adapt to inter-county and interstate trucking routes, most notably on Route 322, Route 45, and Route 77. However, while infrastructural projects have so far kept pace with increased automobile traffic, these same roadways and adjacent right-of-ways have not kept pace with the need to address an increase in bicycle and pedestrian movement, a purpose for which most roadways in the Township, with the exception of Main Street in Mullica Hill, were never originally designed for. Additionally, new developments have typically pushed further and further from the Township's historic center, adding additional miles needed to reach destinations for many of the Township's residents.

Specifically, issues affecting comprehensive bicycle and pedestrian mobility along Harrison Township's roadways include the following:

- Right-of-Way widths, cartway widths, and shoulder widths of both collector and arterial streets in Harrison Township do not uniformly provide adequate dimensions to provide either "on-road" bicycle lanes or off-road multi-purpose bicycle/pedestrian paths.
- Harrison Township's collector/arterial roadway network is multi-jurisdictional including Gloucester County, the State of New Jersey, and Harrison Township as stewards for various roadways. A comprehensive system will depend on coordination between the various agencies of Harrison Township, the County, and the State.
- Harrison Township's residential subdivisions developed along collectors and arterials were designed with reverse frontage and large landscape buffer areas. Unfortunately, multi-purpose paths were not required at the time of development. Adequate space exists in many of these buffers to provide multi-purpose paths parallel to Harrison's collector and arterial streets. However, issues of ownership and implementation will need to be resolved if this is to serve as a method for implementation of a comprehensive system.

Typical wide, landscaped setback from Route 45.

Typical intersection and crosswalk striping on Main Street in Mullica Hill.

In this photo, a sidewalk ends when the local subdivision road reaches Route 322.

These landscaped setbacks from the road are typically controlled by Home Owner's Associations.

CROSSINGS

Bicycle + Pedestrian Crossings at Intersections: In addition to the Township's roadways, key arterial intersections often do not provide adequate accommodations to allow for safe crossings on foot or bicycle. Many of these arterials, especially Route 322, are in high traffic areas with automobiles traveling at relatively high speeds. This presents a challenge and a dangerous condition to pedestrians crossing these roadways. Many of these intersections are also wider than a typical two-lane roadway, and may require additional time given to pedestrians at traffic lights.

Connectivity + the Environment: There are several stream corridors that run through the Township, forming lakes and natural greenways that pass through many parts of the community. These serve an important purpose in protecting and preserving natural resources and amenities, but also carry restrictions on development that can at times cut neighborhoods and activity centers off from one another. Harrison Township must balance the challenge of connecting the community in a way that is allowed under regulations enforced at the State level. In addition, many of the collectors and arterials address stormwater with open swales adjacent to the cartway. While this adequately addresses drainage issues, it presents challenges for providing sidewalks or multi-purpose bicycle/pedestrian paths parallel with these roadways.

NODES / DESTINATIONS

Mixed-Use Centers: Nodes are places where people tend to congregate for various purposes – such as places to work, play, shop or cultural associations. In Harrison those places include – Mullica Hill, Richwood, the Township's public parks, the school system, and the Tomlin Station office park among others. Currently, there are few safe pedestrian/bicycle connections linking residents

to these nodes and centers, making arriving by car the default option. This restricts the accessibility of mixed-use and employment amenities within the Township, such as Mullica Hill, Tomlin Station, and the planned Richwood Town Center.

Parks + Recreation: A lack of safe pathways also restricts access to the Township's many open space/recreational amenities and the school system, making it especially difficult for children, young adults, and families to access these resources without a car. On the roadways and right-of-ways of the Township, this is primarily due to poor intersections, arterial roadways without pedestrian accommodations, and natural features such as streams, valleys, and wetlands that carry state-regulated restrictions for development. These environmental restrictions protect natural resources, but also result in cutting off adjacent development and restricting connectivity within the Township.

Some environmental features create pinch points in the right-of-way where space outside of the cartway narrows.

Typical swale along the side of the roadway.

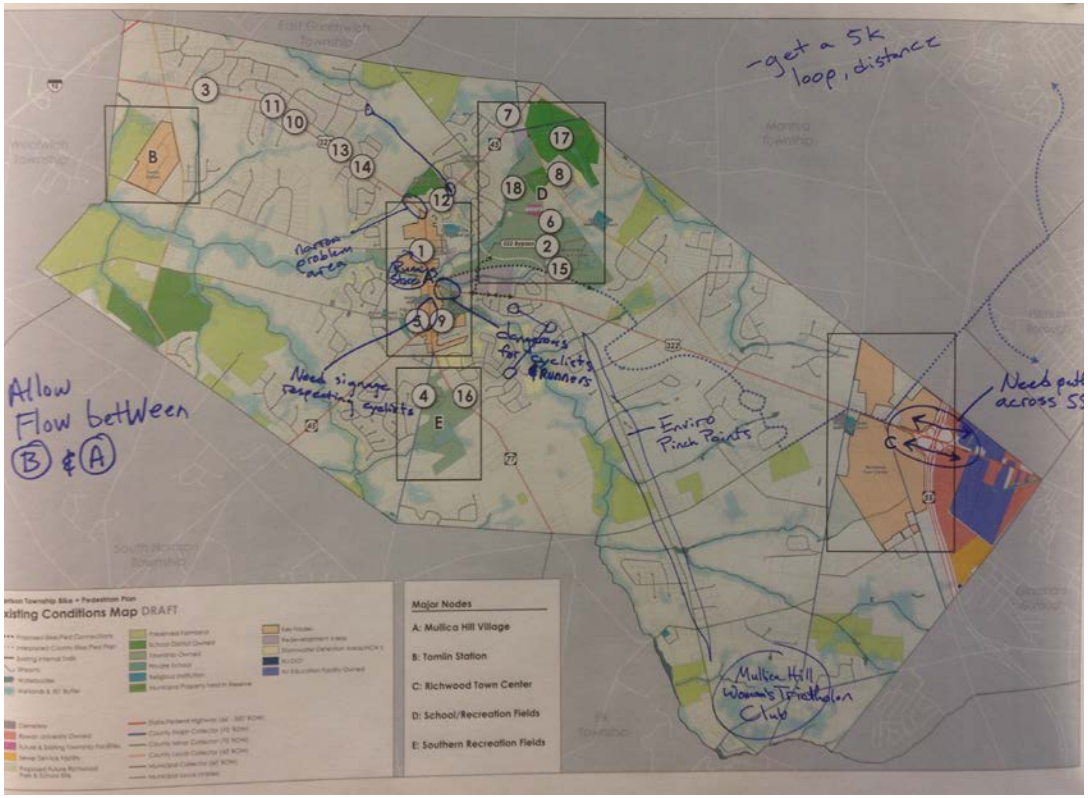
Images of community members discussing the Plan during the November Public Workshop.

Public Outreach

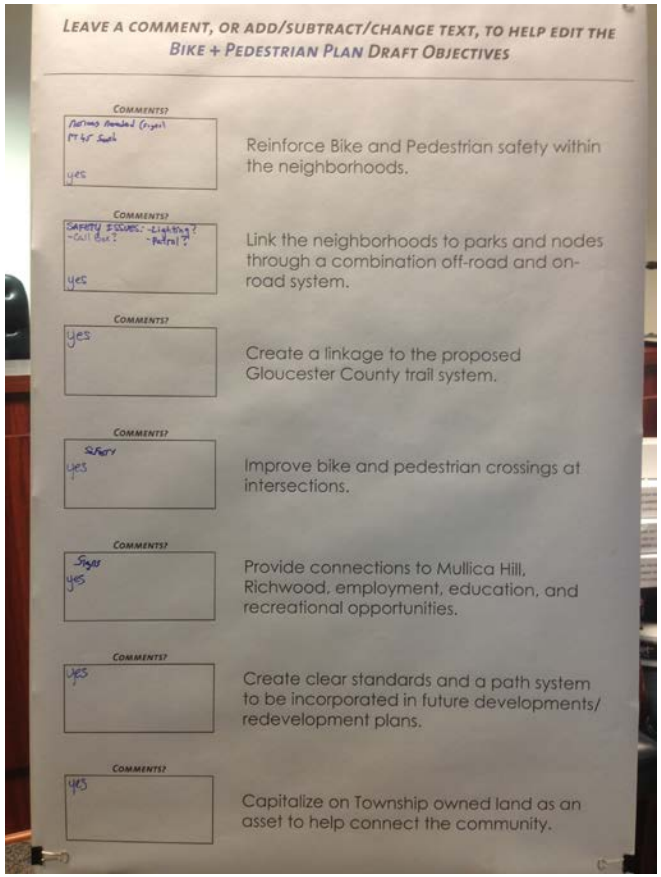
In October of 2012, Harrison Township posted an Existing Conditions Memo and corresponding map on the Township's website for review. The Existing Conditions Memo and map highlighted the work and findings to date of the review of the Township's existing issues related to bicycle and pedestrian use, and identified a list of opportunity areas for further exploration.

In early November of 2012, an interactive public open house was held in order to gain the insight, ideas, and recommendations from the local community to inform the goals and objectives of the Plan. The open house was held at the Township building on Saturday, November 3, and consisted of a series of 7 informational and interactive boards. The interactive boards were structured to receive comments and public input on the following topics:

- Goals + Objectives
- Existing conditions relevant to cyclists and pedestrians
- Issues and opportunities to be addressed in the Plan
- Potential destinations to be linked within to a bicycle and pedestrian system
- Identification of who would be the potential users of a bicycle and pedestrian system
- Potential types of pathways, and their appropriateness for different areas within the Township



Images from the November Public Workshop.



Draft Objectives review board from the November Public Workshop.

Goals + Objectives

GOALS

Based on an analysis of the existing conditions, a review of best practices used in New Jersey and other parts of the country, and input and feedback from the public workshop, the following draft goals and objectives of the Plan were developed. The **three goals** of the Plan are meant to reflect the broad values of the community in relation to the proposed Bicycle + Pedestrian Plan:

1. **Reduce necessary automobile trips by improving mobility options in the Township**
2. **Promote a healthy lifestyle for the entire community.**
3. **Improve community connectedness through enhanced access to destinations.**

OBJECTIVES

To accomplish these goals, **seven objectives** were developed that contribute to the realization of all three of the Plan's goals. The objectives are intended to provide a roadmap to realize the goals of the Plan and the vision of the community:

1. **Reinforce Bicycle and Pedestrian safety within the neighborhoods.**
2. **Link the neighborhoods to parks and nodes safely through a combination off-road and on-road system.**
3. **Create a linkage to the proposed Gloucester County trail system.**

4. **Improve bicycle and pedestrian crossings so users can safely navigate intersections.**

5. **Provide connections and a wayfinding system to Mullica Hill, Richwood, employment, education, and recreational opportunities.**

6. **Create clear standards and a path system to be incorporated in future developments and redevelopment plans.**

7. **Capitalize on Township owned land as an asset to help connect the community.**

Existing Conditions Analysis map from the November Public Workshop.

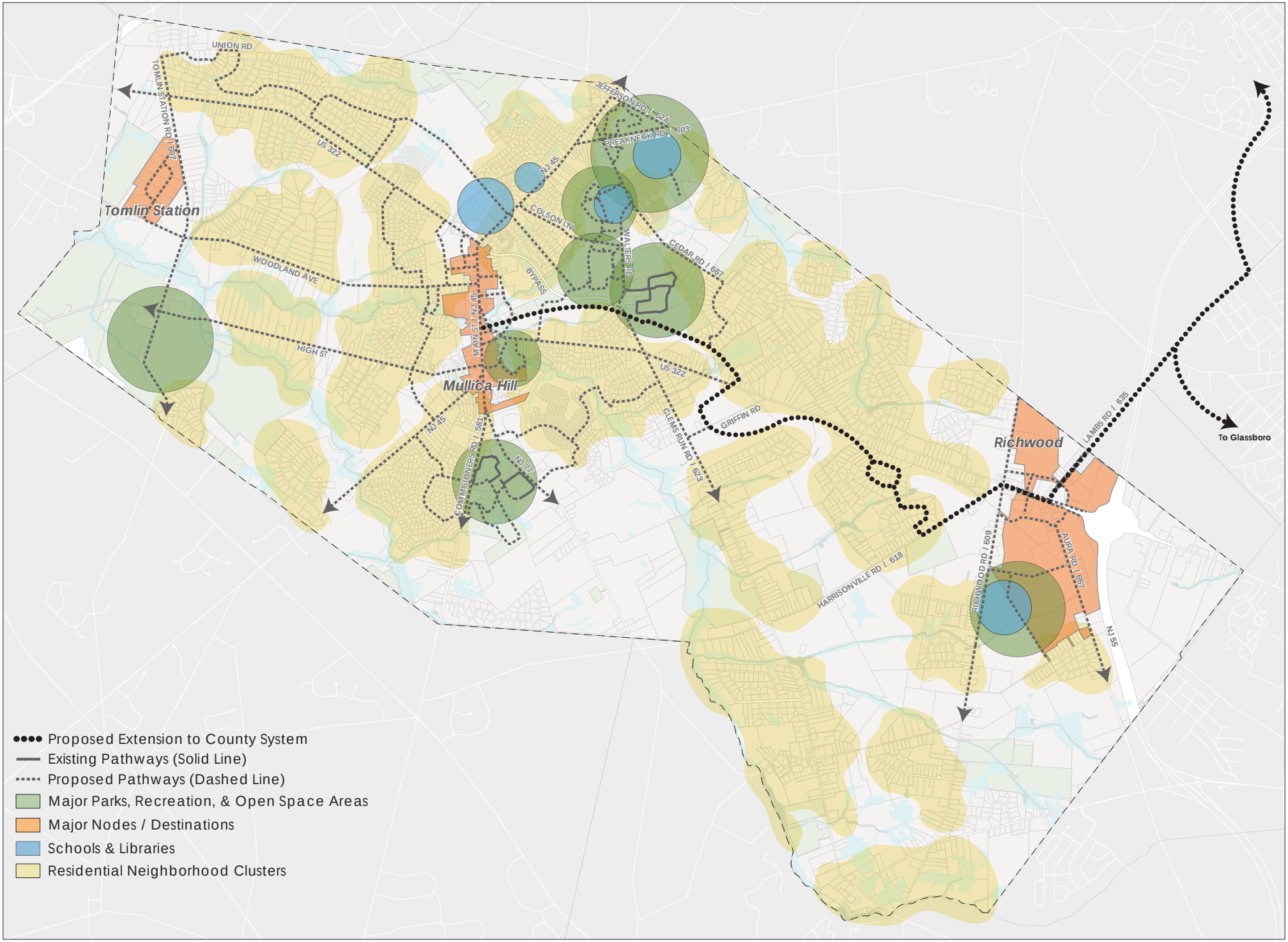
Plan + Recommendations

Key Components of the Plan

The primary strategies embedded within the proposed network are designed to meet the goals and objectives of the Plan. Harrison Township is composed of villages, residential neighborhoods and rural farmland. It has complex landscapes composed both of man-made and environmentally sensitive elements. As a result of these complexities, one solution is not enough to create a single system. By necessity, each stretch of the system will be a combination of solutions, whether that be portions of boardwalk imbedded within an otherwise homogenous section of bituminous multipurpose path to bridge environmental lands or that a portion of roadway provides bicycle access partially within the roadbed and partially off-road to address right-of-way or ownership limitations.

This Plan will:

- Capitalize on the county plan that provides an east/west spine from Mullica Hill to Richwood and ultimately links into a broader county system.
- Provide a combination of on-road and off-road solutions along existing arterial corridors to link the neighborhoods to Mullica Hill, Richwood, Tomlin Station, and the municipal park system.
- Recommend improvements to bicycle and pedestrian mobility in Mullica Hill and capitalize on bicycle and pedestrian requirements in the Richwood General Development Plan (GDP).
- Provide a vocabulary of bicycle and pedestrian infrastructure to improve mobility.



Conceptual Bicycle + Pedestrian Network Diagram

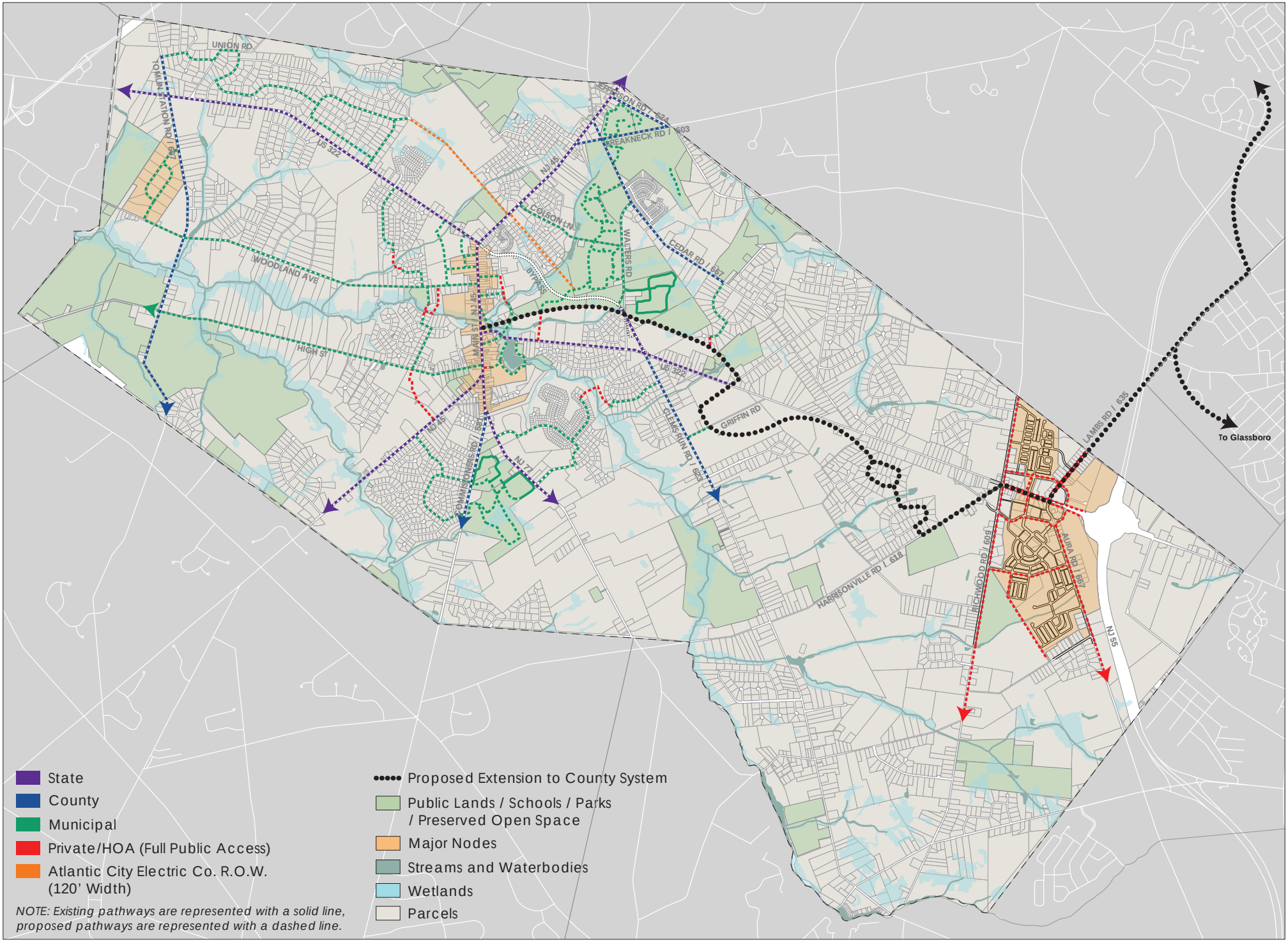
0 .25 .5 1 Miles

The Bicycle + Pedestrian Network

BICYCLE + PEDESTRIAN NETWORK CONCEPT PLAN

In addition to a map of the overall system, this Plan details several specific opportunities and constraints to the future development of this network, and outlines strategies on how to capitalize on and work with these topics when developing individuals pieces of the network. By creating a geographic-specific plan for the bicycle and pedestrian network, the Township can ensure that future private development and capital improvements contribute the individual pieces necessary to develop the network overtime.

The Conceptual Bicycle + Pedestrian Network Diagram illustrates how the proposed network improves connectivity throughout the Township and to the proposed County system. During the public workshops, residents expressed the desire for a future bicycle and pedestrian network to allow them to access Mullica Hill and Richwood, to provide safe pathways to access parks, recreation, and schools, and to enable neighbors to better visit friends without relying on a car. The proposed network was designed not only to achieve the goals and objectives of the plan, but also to ensure that the network would be usable to residents and visitors, and enhance overall quality of life in the Township.



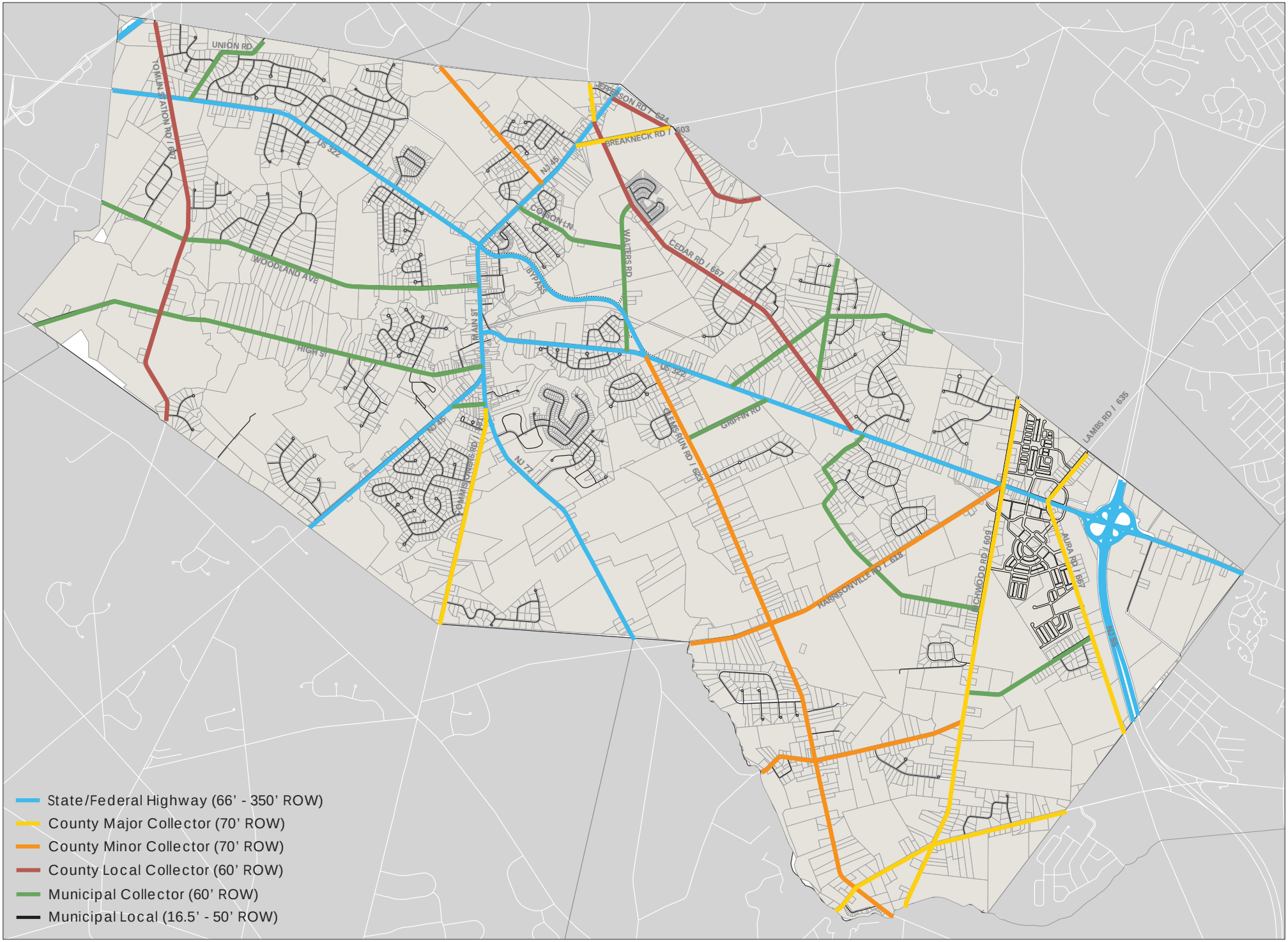
Bicycle + Pedestrian Jurisdiction Map

0 .25 .5 1 Miles

JURISDICTION

The proposed bicycle and pedestrian network stretches over both public and private lands, as well as street right-of-ways under the purview of several different governmental agencies. In planning for the network, it is important to understand jurisdictional geographies from the outset so that the Township can engage the appropriate entities and secure support early on in the planning process.

In addition to understanding the various entities with jurisdiction covering the bicycle and pedestrian network, it is also important to understand the typical dimensions of street right-of-ways that fall under the purview of State, County, local, and private entities. Depending on the specific requirements and regulations of these different entities, some solutions that may work on a County road, for example, may not be possible on a State road of the same physical dimensions. Generally, dimensional constraints would not be a factor when planning for multi-purpose paths, as these generally cross through broad areas of publicly owned lands. However, dimensional constraints are a factor when planning for bicycle and pedestrian paths in existing right-of-ways, and attribute themselves to a range of different potential solutions due to these constraints.

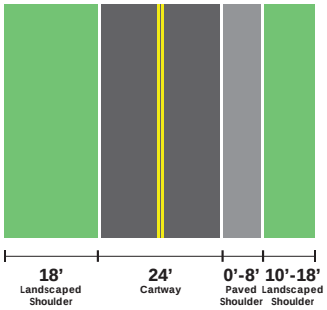


Roadway Type + Ownership Map

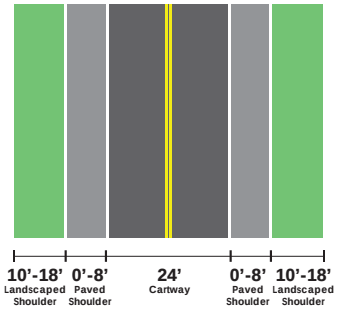
0 .25 .5 1 Miles

Typical R.O.W.'s and Proposed Solutions:

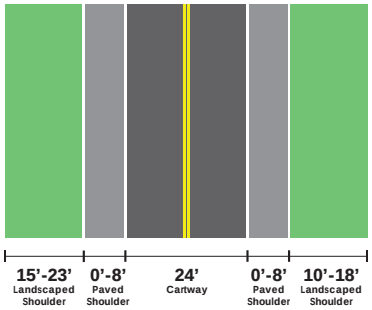
Typical Municipal Collector
60' R.O.W.



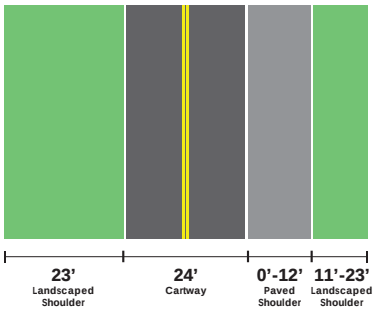
Typical Local County Collector
60' R.O.W.



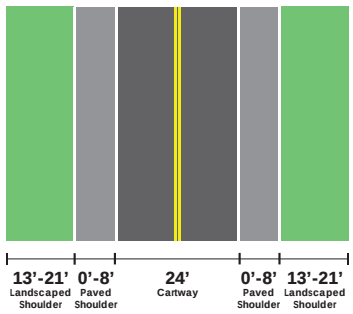
Typical Minor County Collector
70' R.O.W.



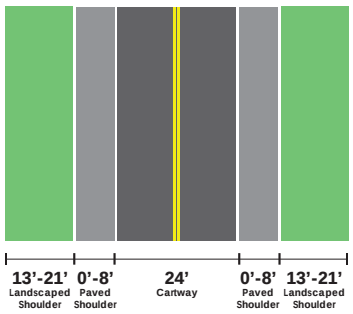
Typical Major County Collector
70' R.O.W.



NJ 45 & NJ 77
66'+ R.O.W.



US 322
66'+ R.O.W.

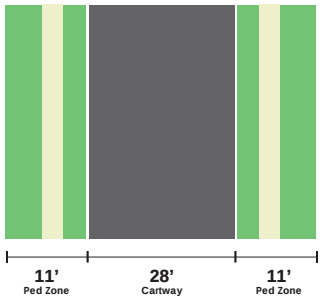


Proposed Solutions:

Multi-purpose path buffered from roadway, accommodates all users in two-direction off-road path.

On-road bike lane, accommodates more experienced riders (if space in the cartway allows).

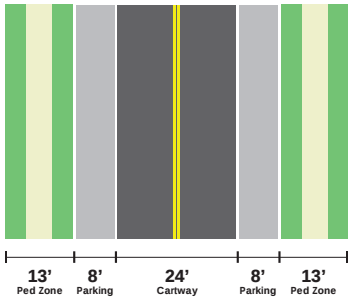
Typical Municipal Local
50' R.O.W.



Proposed Solution:

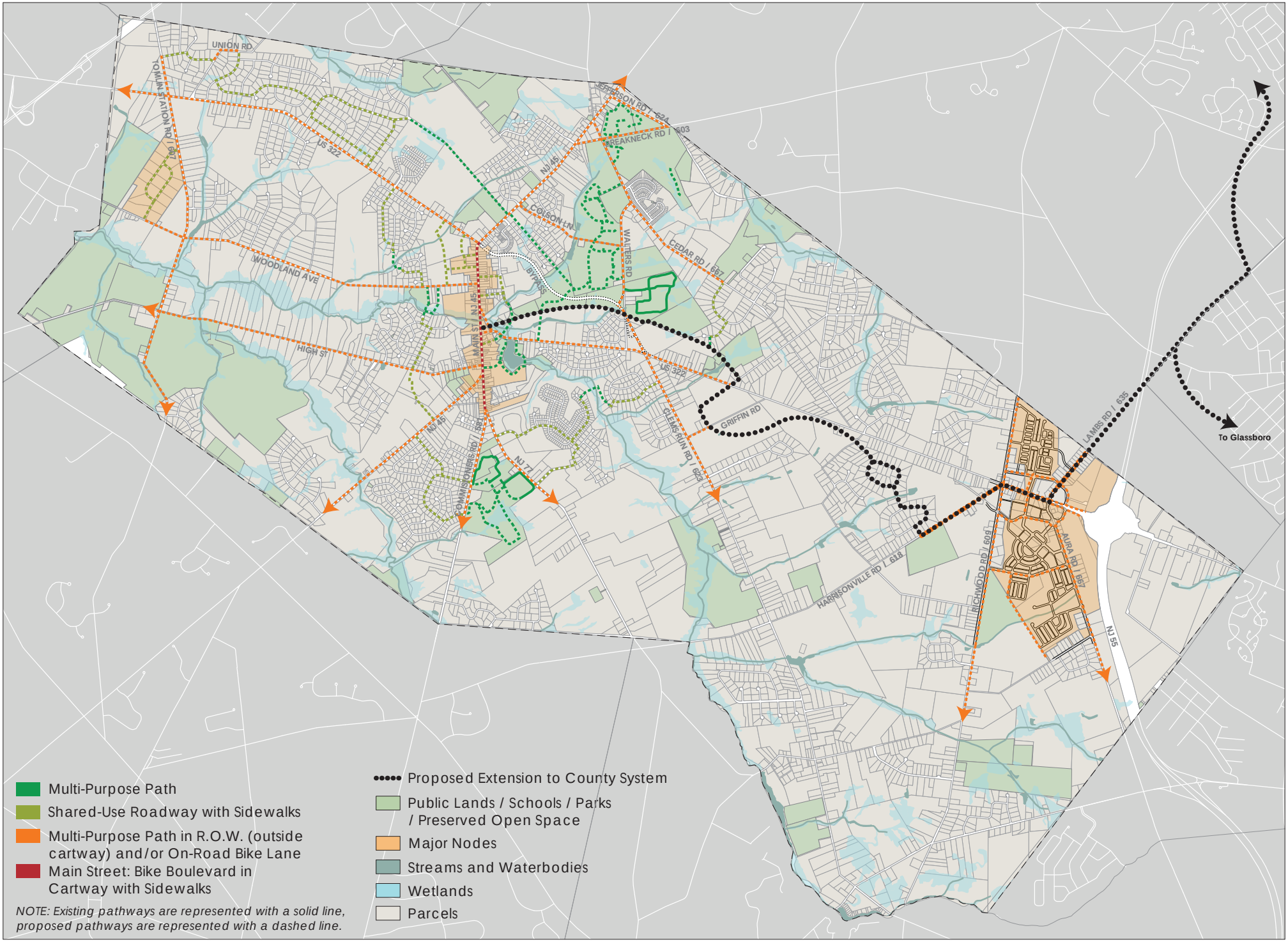
Shared-use roadway proposed for low volume, low traffic speed roadways in the residential neighborhoods.

NJ 45 / "Main Street"
66'+ R.O.W.



Proposed Solution:

Shared-use roadway variation proposed for high volume, moderate speed roadway with on-street parking.



Bicycle + Pedestrian Typology Map

TYPOLOGIES

MULTI-PURPOSE PATH

To develop the bicycle and pedestrian network, several different types of typical pathway typologies are proposed based on the physical limitations and opportunities present on site.

Multi-Purpose Path

Definition: A facility for non-motorized users (including pedestrians, dog walkers, joggers, cyclists of all skill levels, skateboarders and roller-bladders) that is physically separated from a roadway by an open space buffer or physical barrier.

Design Considerations:

- Multi-purpose paths should be designed to accommodate high-speed users in both directions. The width of shared-use or multi-purpose paths should be at least 10 feet in order to accommodate emergency vehicles. Removable bollards should be placed in the center of paths at path entrance points to guard against unauthorized motor vehicle use of path. A minimum of 8 feet may be used on paths that will have limited use. Multi-purpose paths should also have graded areas at least 2 feet on either side of the path.
- Landscaping in the form of shrubs and deciduous street trees should always be employed on the sides of paths to provide both regulation of the micro-climate and a physical and psychological separation between the path users and vehicular traffic.
- A minimum separation of 10 feet is recommended between a multi-purpose path and vehicular roadways.
- Path surfaces should be firm and smooth. Bituminous is recommended as the primary surface and short sections of boardwalk employed to bridge environmental barriers such as streams and wetlands. Stone dust is not generally recommended as it requires high maintenance and could limit usability for those in wheelchairs.
- Steep grades and sharp curves should be avoided.
- Signage should be provided to indicate permitted users, rules of conduct and approaching conflicts such as, steep slopes, sharp curves and approaching intersections with motorized vehicles. Similarly, entrances to paths should be identified by signage from approaching roadways.
- Other provisions should include: trash recepticles, lighting, trash bags for dog waste, and bicycle racks.

General Location: To be used along arterials and collector streets and through public parks.

On-Road Bike Lane

Painted Portion of Bike Lane at Intersection

On-Road Bicycle Lane

Definition: A portion of the roadway that has been designated by striping, pavement markings and/or change in pavement surface for the preferential or exclusive use of bicyclists. Bicycle lanes are one-way following the direction of traffic. Bicycle lanes may be present to the left of parking lanes when there is sufficient roadway width. Bicycle lanes tend to be appropriate for more seasoned bicycle riders and are not a universal solution for all age groups and skill levels. They may be combined and provided in addition to multi-purpose paths that follow roadways.

Design Considerations:

- On-road bicycle lanes should be a minimum of 5 feet wide, with at least 4 feet to the left of any gutter pan seam. They should be defined by on-road decal of bicycle symbol with directional arrow and white striping.
- Where bicycle lanes are provided in combination with on-street parking, a minimum width of 12 feet from face of curb should be provided.
- Bicycle lanes should be painted and marked (green is a standard color for such markings) to make bike lanes highly visible to cross traffic at intersections.
- Signage indicating that cyclists are on a designated bike trail, potentially with the distance in miles to the next nearest destination should be utilized along roadways with bike lanes.

General Location: Along arterial and collector roadways as defined in the Plan.

Shared-Use Roadway

Shared-Use Roadway Signage Example

Shared-Use Class III Roadway

Definition: A low speed street that has been optimized for bicycle traffic. Bicycle boulevards discourage cut-through motor vehicle traffic but allow local motor-vehicle traffic. They are designed to give priority to bicyclists and intended to improve bicyclist comfort and/or safety. Bicycle lanes are not designated. Bicyclists are free to use the middle of the street, sharing road space with cars. Motorists on these routes expect to see bicyclists and therefore travel with caution. For novices and younger riders, bicycle boulevards provide a transition between multi-purpose paths and high traffic on-road bicycle lanes. These are useful for experienced riders and provide reduced traffic and connectivity.

Design Considerations:

- Streets should be distinguished with uniformly colored signage and bold pavement markings in the center of travel lanes.
- Sidewalks for pedestrians should be provided on both sides of the R.O.W.
- "Share the Road" signage should be present on all associated roadways.

General Location: To be implemented throughout the residential neighborhoods to provide both internal mobility and connectivity to multi-purpose paths and on-road bicycle paths that follow arterial, collectors and public park land.

CONTINUOUS SIDEWALKS

Continuous Sidewalks

Definition: That portion of a roadway between the cartway and the adjacent property-line, typically constructed of concrete and used primarily for pedestrians. Sidewalk systems work best when they are continuous and uninterrupted.

Design Considerations:

- It is recommended that where possible, in residential areas, sidewalks should be a minimum of 5 feet wide and separated from the cartway by a minimum of 5 feet of landscape area.
- Street trees should be planted in the 5 foot minimum landscape area to help with the regulation of the micro-climate and to provide both a physical and psychological sense that the pedestrian is separated from auto traffic.
- In commercial areas sidewalks should be a minimum of 10 feet wide. Where sidewalk dining occurs, a minimum of 3 feet clear area should be maintained at all times.

General Location: To be implemented throughout the residential neighborhoods and the major nodes within the Township to promote and facilitate pedestrian movement.

Main Street Bike Boulevard Typical Markings

Shared-Use Concept along Route 9W in Albany, NY (Image courtesy of Google Earth)

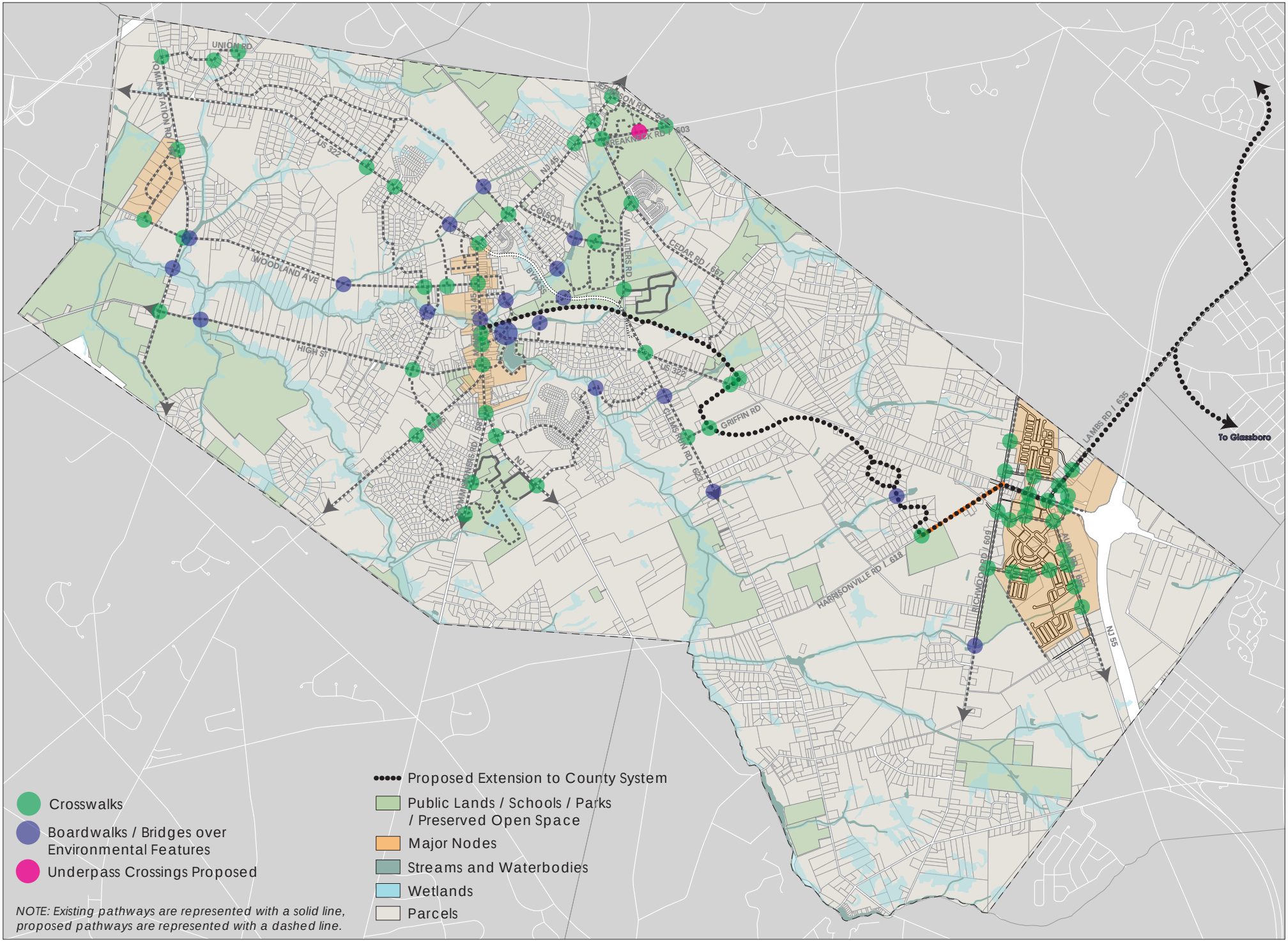
Main Street Shared-Use Class III Bicycle Boulevard

Definition: A variation of the Shared-Use Roadway or Bicycle Boulevard concept, tailored to specific conditions and restraints present on Main Street / Route 45 between the intersection of Route 322 / Swedesboro Road and Bridgeton Pike / Commissioners Road. Because the existing street cross section does not allow space to fit dedicated bicycle lanes within the cartway, a shared-use approach is recommended that allows for experienced cyclists to share the road with automobiles, taking into account the higher traffic volumes through Mullica Hill. This concept signals to drivers that cyclists will also be using the roadway, and suggests facility and design upgrades at intersections to slow traffic and improve the existing pedestrian circulation network.

Design Considerations:

- The street should be distinguished with bold "Share the Road" pavement markings in the center of both travel lanes.
- Sidewalks for pedestrians should be provided on both sides of the R.O.W.
- Because Mullica Hill is a destination, facilities should be provided for pedestrian rest and bicycle parking. This includes benches and bicycle racks for locking multiple bicycles at a location.
- Crosswalks with pavers or high-visibility ladder markings should be provided in place of painted crosswalks to convey the character of Mullica Hill, and to more visibly signal the pedestrian-oriented nature of the village.
- "Share the Road" signage should be present along the roadway.
- Bicycle lanes should be painted and marked (green is a standard color for such markings) to make bike path crossings and turning lanes highly visible to cross traffic at intersections.

General Location: Implemented along Main Street through the Village of Mullica Hill.



Bicycle + Pedestrian Barriers Map

0 .25 .5 1 Miles

Paved Crosswalks

BARRIERS

When the bicycle and pedestrian network intersects with certain areas, such as major intersections, streams/wetlands, and the US 322 Bypass, special solutions will need to be considered in order to ensure safe passage by users of the trail.

Paved Crosswalks

Design Considerations:

- Can be constructed of textured concrete, textured bituminous or brick paver.
- Crosswalks should be a minimum of 6 feet wide.
- Edges should be articulated with painted white stripe minimum 12 inches wide.

Use:

- Appropriate as a decorative element in a special location such as Mullica Hill and portions of Richwood.
- Appropriate as a traffic-calming element where traffic should transition from areas of higher speeds to lower speeds such as approaches to Mullica Hill and Richwood.

Crosswalk with Median + Signal

Crosswalks with Median and Signal

Design Considerations:

- Crosswalks should consist of bold zebra or ladder stripe paint or pavers.
- Bold, well-lit signage/signals should be employed on the approach on either side of the roadway to alert motorists of pedestrian crossing area.
- Optional median refuge island should be provided to aid crossing of wide streets or as a traffic-calming element. Island should be a minimum of 6 feet wide and ADA accessible.
- In-street pedestrian crossing signage should be provided in the street on the approach.

Use:

- Appropriate at wide intersections where it may take pedestrians more than one traffic signal cycle to cross. Typically this occurs at intersections that are not set at right angles.
- Appropriate as a solution for mid-block crosswalks. Most appropriate in Mullica Hill.

Painted Crosswalks

Painted Crosswalks

Design Considerations:

- Crosswalks should be a minimum 6 feet wide.
- For their high visibility, crosswalks should be painted in zebra or ladder stripes. Stripes should be 12 inches wide with 12 inch spacing.
- In situations where multi-purpose paths interface with vehicular streets, the approach to the crossing should be identified through signage.

Use:

- Appropriate at all signalized intersections where paths or sidewalks lead pedestrians.
- Appropriate as a component of a mid-block crosswalk.
- Appropriate where multi-purpose trails cross vehicular streets both within parks and where parks interface with public roads.

Bike Path Bridge over Stream

Boardwalk over Sensitive Environmental Area

Bicycle Path Bridge over Streams / Sensitive Environments

Design Considerations:

- Should be a minimum of 10 feet wide and designed to accommodate emergency vehicles.
- Should have appropriate guiderails and fencing to provide safety barrier for pedestrians and cyclists.
- Typically available as a prefabricated structure.

Use:

- To cross over small streams, drainage systems, ravines and wetlands.
- To be integrated with multi-purpose paths in parks and off-road green linkages for both pedestrians and bicyclists.

Underpass along Multi-Purpose Trail

Creative Underpass Lighting Example

Underpasses

Design Considerations:

- Tunnel length should be as short as possible and tunnel height should be as tall as possible (minimum 10 feet) order to maximize amount of natural light in the structure.
- Tunnel should be a minimum of 10 feet wide to allow two-way traffic as well as emergency vehicles.
- Tunnel should be augmented with artificial lighting to enhance safety.
- Signage should be employed at all approaches to warn users.

Use:

- Appropriate where grade changes allow and where separation of pedestrians and bicyclists from fast moving vehicular traffic warrants.
- To be integrated with multi-purpose paths in parks and off-road green linkages.
- Designed to meet the needs of both pedestrians and bicyclists.

Bike Rack

Trash Receptacle

Example images courtesy of the Richwood Amended General Development Plan - Revised January 16, 2012.

DESIGN ELEMENTS

In order for a bicycle and pedestrian network to meet the needs of all users, elements are needed that address real and perceived safety concerns, allow for places to rest, help people navigate the system, and create accommodations for users once they reach their destinations. The following specifications detail design considerations recommended for elements that are supportive of pedestrian and bicyclist use of the Township-wide system.

Bicycle racks:

- ***Location:*** Should be provided at entrances to all multi-purpose paths, at major destinations such as Mullica Hill, Richwood, Tomlin Station, recreation facilities, public facilities, schools, and parks, and at trail intersections.
- ***Design:*** The recommended model of bicycle rack to be used is the BRWS-101, Cycle Sentry Series Bike Rack or approved alternative. Color to be black.

Trashcans & Pet Waste Disposal Stations:

- ***Location:*** should be provided at all multi-purpose path entrances and at minimum intervals of 1/4 mile along paths.
- ***Design:*** The recommended model of trash receptacle to be used is the A-36 Steelsites Series (36 gallon side-door opening litter receptacle) or approved alternative. Color to be black.

Lighting:

- ***Location:*** Should be located at the entrances to all multi-purpose paths and at street and intersection crossings. Lighting should also be provided at minimum intervals of 85 feet on center along on- and off-road paths.
- ***Design:*** Light fixtures along sidewalks and bicycle pathways should have a maximum height of 14 feet in order to ensure that lighting is scaled to pedestrians. A bollard lighting design should also be permitted. By way of example, an acceptable design should be the BOR80 Bollard manufactured by Philips Lumec, mounting to be flush with grade, color to be black. Lighting should be serviced by underground wiring and should be encouraged to be LED (light emitting diode) or equivalent energy saving technology. Lighting should be designed and installed to avoid off-site spillage, and should be shielded and/or mounting heights reduced where lights along lot lines will be visible from the interior of an adjacent building.

Pedestrian Scale Light Fixture

Example image courtesy of the Richwood Amended General Development Plan - Revised January 16, 2012.

Bollard Lighting Along Trail

Bench

Example image courtesy of the Richwood Amended General Development Plan - Revised January 16, 2012.

Traffic Regulation Signage

Benches:

- ***Location:*** Should be provided at entrances of all multi-purpose paths and at 1/4 mile intervals along paths.
- ***Design:*** The recommended model of bench to be used is the RB-28, Streetsites RB Series Bench (6 feet in width) or approved alternative. Color to be black.

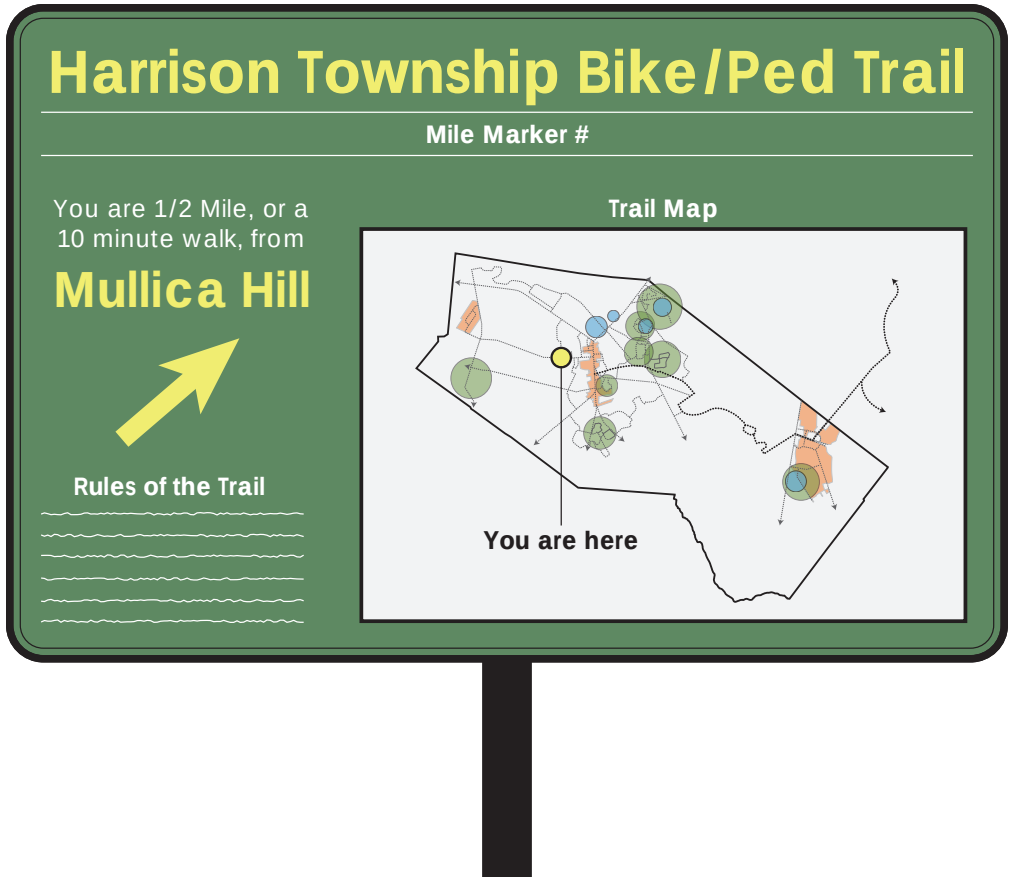
Signage (Traffic Regulation):

- ***Location:*** Should be provided at intersections, approaching mid-block crosswalks, and where multi-purpose paths approach vehicular roadways.
- ***Design:*** Traffic regulation signage can take the form of static sign faces, decals in the road surface or lighted signals (i.e. stop signs, yield signs, share the road signs).

Signage (Informational or Wayfinding):

- ***Location:*** Should be provided multi-purpose path entrances, at pathway intersections, and at minimum intervals of 1/4 mile along the path system.
- ***Design:*** Signs are recommended to be placed at a height that is easily visible to pedestrians and cyclists, and may consist of information to both designate the rules of the path and to help users navigate the system. Examples may include: “Slow Curve”, “Bridge Approach”, trail maps, mile markers, or “this way to the Soccer Fields” type informational signage. Signage should be uniform throughout the Township-wide system.

BELOW:
DIAGRAM OF ELEMENTS THAT MAY BE INCORPORATED INTO WAYFINDING & TRAIL BRANDING SIGNAGE



IN-PAVEMENT TRAIL SIGNAGE & MILE MARKER AT ENTRANCE

TRAIL BRANDING AND WAYFINDING SIGNAGE

TRAIL BRANDING AND "RULES OF THE PATH" SIGNAGE

Curb Ramp with Tread

Accessible Median Island

ADA ACCESS

Often, people with disabilities, physical limitations due to age, injuries, or other long-term ailments which restrict mobility are unable to rely on a private car for day-to-day needs. For this reason, creating a pedestrian and bicycle system throughout the Township that is accessible to all residents and visitors is of primary importance.

In 1990, the U.S. Government established the Americans with Disabilities Act (ADA), which requires that all new and altered facilities – including sidewalks, street crossings, and related pedestrian facilities in the public right-of-way – be accessible to and usable by people with disabilities. The Americans with Disabilities Act Accessibility Guidelines (ADAAG) provide guidance for the scoping and technical design requirements of accessible pedestrian facilities. As of the publication of this document, the United States Access Board is developing a draft of the Public Rights-of-Way Access Guidelines (PROWAG) that will provide improved guidance on how issues of accessibility should be addressed to meet the standards of the Americans with Disabilities Act.

The following resources are recommended to be consulted for the design and construction of ADA compliant elements of the bicycle and pedestrian system:

ADA Compliance Resources

Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way. United States Access Board, 2011.

http://www.access-board.gov/prowac/nprm.pdf

AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities. American Association of State Highway and Transportation Officials, 2004.

ADA Accessibility Guidelines for Buildings and Facilities. United States Access Board, 2002.

http://www.access-board.gov/adaag/html/adaag.htm.

Accessible Median Island with Plantings

THE VILLAGE OF MULLICA HILL

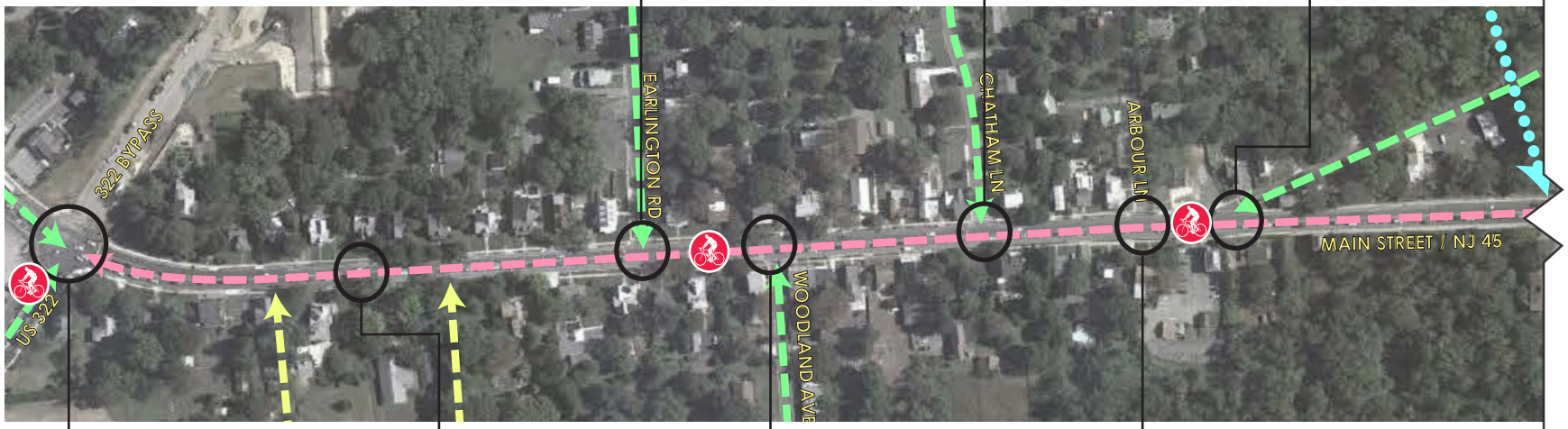
The Village of Mullica Hill sits at the intersection of the major paths, bicycle lanes, and pedestrian ways proposed in this Plan, and is located at the geographic center of the proposed network and the Township. Additionally, the Village of Mullica Hill is the historic core of Harrison Township, and should be reinforced as a unique pedestrian-oriented destination for visitors, shoppers, and members of the local community. The Village's proximity to other amenities, such as the Mullica Hill Pond, several parks and schools, the proposed County trail, and its proximity to a large share of the residential population make Mullica Hill's Main Street (Route 45) an area of special focus for the bicycle and pedestrian network. The following area specific recommendations are provided to enhance Mullica Hill's character and image as a destination for all users.

Legend

- *Main Street (Class III) Treatment*
- *County Trail*
- *Local Bike/Pedestrian Pathways*
- *Potential Pathways linking to future development*
- *Generalized Bike Parking Locations*

Design Recommendations:

- Paved brick crosswalk across East Ave
- Paved brick crosswalk across Chatham Lane
- Paved brick crosswalk across Mill Rd



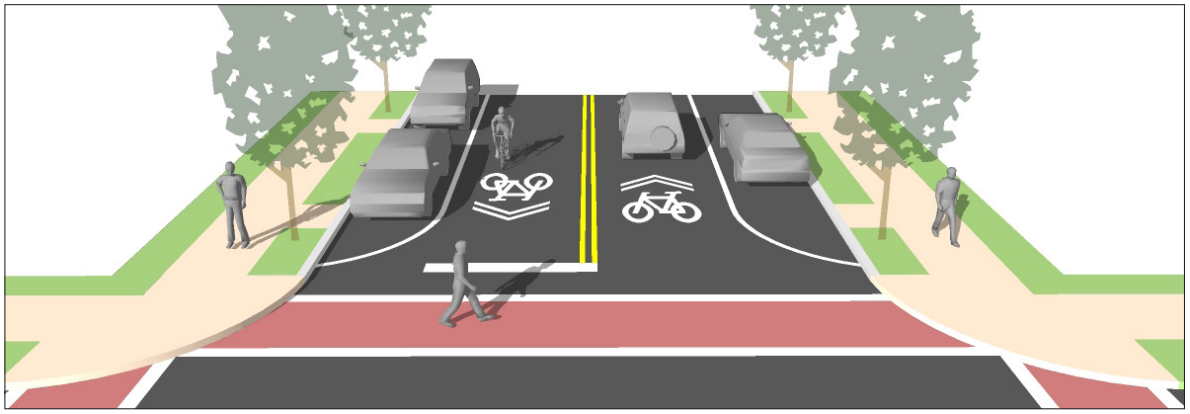
- Signalized intersection
- 4-way paved brick crosswalks
- Pedestrian countdown signals
- Mullica Hill wayfinding signage

- New pedestrian connection to future development on west side of Main Street
- Paved brick crosswalk across future street R.O.W.

- Paved brick crosswalk across Woodland Ave & Main St
- High visibility pedestrian crossing signage across Main St
- Mullica Hill wayfinding signage

- Paved brick crosswalk across Arbour Lane

Typical Main Street (Class III) Treatment:
Shared-use roadway variation proposed for Main Street / Route 45 in the Village of Mullica Hill, incorporating shared-use bike lane markings and paved brick crosswalks at intersections.



- Paved brick crosswalk across Church St, Eric St, & Main St
- High visibility pedestrian crossing signage across Main St

- Paved brick crosswalk with pedestrian refuge across Woodstown Rd
- Mullica Hill wayfinding signage

- Paved brick crosswalk across Folwell Ln & Spicer St

- Extend sidewalk system south of Folwell Ln to the Post Office on NJ 77

- Signalized intersection
- Paved brick crosswalk across Mullica Hill Rd & Main St
- Pedestrian countdown signals
- Mullica Hill wayfinding signage

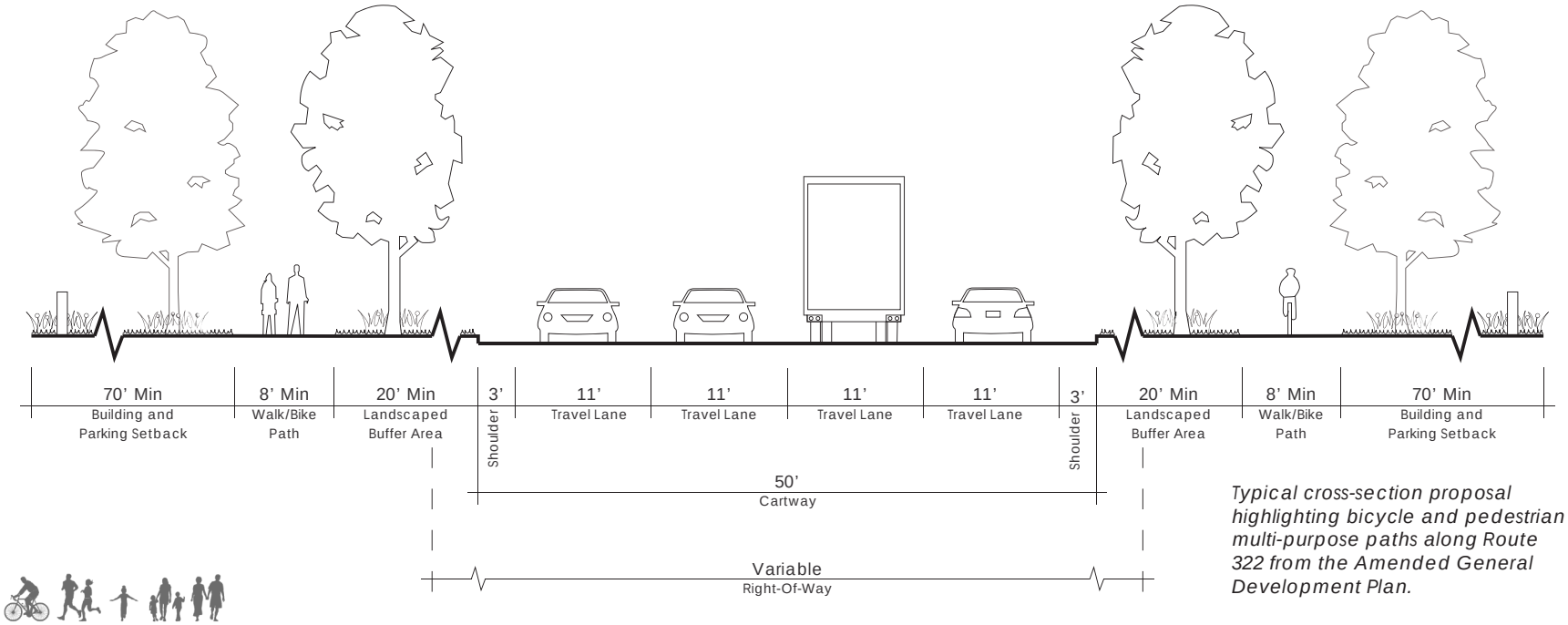
- Signalized intersection
- Paved brick crosswalk across High St & two paved crosswalks across Main St
- Mullica Hill wayfinding signage

- Paved brick crosswalk across Commissioners Rd & Bridgeton Pike
- Pedestrian refuge provided on existing green median
- Mullica Hill wayfinding signage

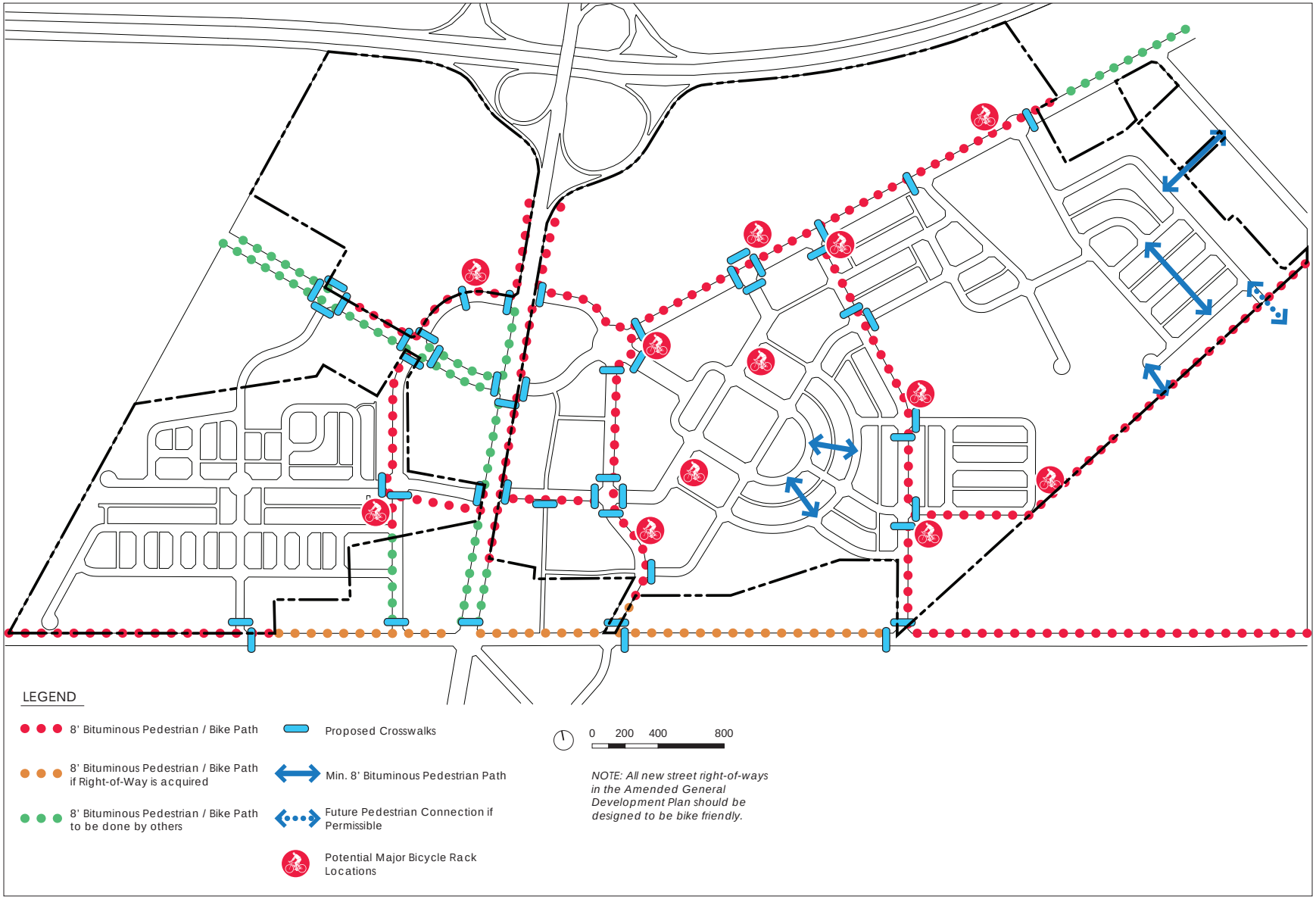
RICHWOOD

At the eastern end of Harrison Township, an Amended General Development Plan (GDP) has been prepared for the proposed community known as “Richwood”, a 350 acre development located adjacent to the intersection of Route 55 and Route 322. Richwood is envisioned to become a walkable, mixed-use community that integrates a variety of residential, retail, employment, and recreational opportunities for residents and visitors. The land use plan incorporates high quality parks, a proposed school, and several retail destinations that will make Richwood a primary destination within the Township.

Key to the development of the plan for Richwood is a comprehensive Mobility Plan within the GDP that accommodates the needs of pedestrians, cyclists, and transit riders. This mobility system should be connected to both the County-wide system and Harrison Township’s own bicycle and pedestrian network which this Plan proposes. The system proposed in the Richwood GDP primarily consists of a series of multi-purpose paths, on-road bicycle lanes, and sidewalks on both new and existing roads with appropriate intersection accommodations and supportive street furniture provided where necessary.



Typical cross-section proposal highlighting bicycle and pedestrian multi-purpose paths along Route 322 from the Amended General Development Plan.



Mobility Plan from the Amended General Development Plan.

Implementation

The Bicycle + Pedestrian Plan will not be implemented in a single effort. Rather, the plan will likely be realized gradually over time as both private and public segments are constructed. Implementation will also be dependent on coordination and cooperation among various entities, and the plan may need to be adjusted or amended based on unforeseen regulatory limitations and/or the availability of funding.

The following presents the steps necessary for creating the foundation for implementation of the Bicycle + Pedestrian Plan:

LOCAL ACTIONS

The governing body of the Township should formally adopt the Bicycle + Pedestrian Plan as a component of the Open Space Element of the Township's Master Plan.

Following adoption, the Township should incorporate the recommendations of the Bicycle + Pedestrian Plan into its development regulations, amending local ordinances in the following sections. Currently, there are three sections of the Township's existing ordinance which are directly applicable to implementing this Plan:

- §225-86.I Parking Regulations, which states:
    - Bicycle parking areas shall be installed wherever significant attractors are established, including, but not limited to, food stores, educational uses, and shopping centers. The number of spaces for bicycles shall equal at least 10% of the total required number of parking spaces for the first 100 spaces and 2% thereafter. Bicycle parking areas shall have a minimum capacity

of six bicycles and shall be designed to provide secure anchoring for locking devices. If located in motorized vehicle parking lots, bicycle parking shall be primarily located in the one-third of the parking area closest to the building. If located on sidewalks, the parking should be adjacent to entrances. Bicycle parking shall be located outside of travel ways for motorized vehicles and pedestrians.

- §214-32 Bicycle Routes/Lanes, which states:
    - The lane locations described are hereby designated as bicycle lanes. Bicycle lanes shall be a minimum of four feet in width, pursuant to the Manual on Uniform Traffic Control Devices for Streets and Highways. (Note: Sections for 'Name of Street', 'Side', 'Lane', 'Width', 'Limits' are Reserved)
- §149-1 General Regulations, which states:
    - No person in a public park and recreation area shall:
        - N. Leave a bicycle in a place other than a bicycle rack when such is provided and there is space available.
        - O. Ride a bicycle without reasonable regard to the safety of others.
        - P. Leave a bicycle lying on the ground or paving or set against trees, or in any place or position where other persons may trip over or be injured by them.

With regards to revisions to existing ordinances suggested to implement the Bicycle + Pedestrian Plan, the following revisions are recommended:

- §225-86.I Parking Regulations, should be amended to include a broader list of 'significant attractors', including " Mullica Hill, Richwood, Tomlin Station, recreation facilities, public facilities, schools, and parks, and at trail/pathway/bike lane intersections".
- §214-32 Bicycle Routes/Lanes, should be amended to provide the following:
    - Off-road trails of a minimum of eight (8) feet in width, to accommodate emergency vehicles
    - Standards for each pathway proposed in this Plan where reserved, including cross section drawings to clearly indicate the nature of the proposed typical pathway for each right-of-way addressed.

Additionally, it is also recommended that the Township take the following actions:

- Zoning regulations should be revised to incorporate language that states that where high-density, multi-family units are being proposed, bicycle racks for visitors and bicycle storage for visitors should be required.
- Where possible, this Plan should guide requirements for private development as it occurs and should be codified through ordinance. Specifically, the pathway recommendations of the Bicycle + Pedestrian Plan should be adopted into the Township's Official Street Map, so that

future private development will contribute to the construction of the system as development occurs over time.

- With regards to site plan and subdivision review, the Bicycle + Pedestrian Plan should be incorporated into the development application review procedure for applicable minor and major site plan and subdivision applications. New development should contribute to pathways determined in this plan, and provide for appropriate infrastructure and facilities, including necessary easements or dedications.

- For large systems improvements within the public realm that the Township views as necessary to develop in one or more discrete phases, the Governing Body and Land Use Board should incorporate the recommendations of the Bicycle + Pedestrian Plan into the Township's Capital Improvement Program. This will ensure that appropriate pathways are incorporated during resurfacing and/or widening of applicable public right-of-ways.

- The Township should pursue strategic partnerships with the county, state agencies, and other major stakeholders as outlined in the Partnerships section of this document.

- The Township should monitor and apply to funding programs at the local, county, state, non-profit, and federal levels applicable to implementing the bicycle and pedestrian network as outlined in the Funding section of this document.

- The Township should pursue a phasing strategy to prioritize different components of the bicycle and pedestrian network, as outlined in the Phasing section of this document.

PARTNERSHIPS

To develop a comprehensive bicycle and pedestrian network, the Township will need to engage the County, associated State agencies, the schools, and local land owners to make the plan a reality. For geographic specific information on which stakeholders should be engaged for individual segments of the path system, users should refer to the Jurisdiction Map of this document.

The Township should engage the County at the outset of the process, in order to coordinate the County's implementation of the Harrison Township spur of the County's bicycle pathway system, and to work with the County to develop specific cross sections for multi-purpose paths and/or bike lanes along County owned right-of-ways.

Similarly, the Township should engage the New Jersey Department of Transportation (NJDOT) to develop acceptable cross sections for State owned right-of-ways. The New Jersey Department of Environmental Protection (NJDEP) should be engaged relative to pathways which cross over sensitive environmental areas, such as stream corridors and wetlands.

Several pathways within the bicycle and pedestrian network propose connections in lands owned by home owners' associations (HOAs) in order to establish improved inter-neighborhood connectivity and to enhance the opportunity for off-road pathways throughout the network. Additionally, some sections of the pathway cross over yet to be developed privately held land, that currently sits under private ownership and/or is within an adopted or proposed redevelopment plan area. Such segments in yet to be developed land should be implemented as part of the site improvements of future development. These property owners should be engaged early in the process to foster collaboration in implementing the bicycle and pedestrian network.

The school district should be engaged in the process as well, as some pathways suggest connecting to and crossing over district property and recreation fields. School district owned land and facilities are primary destinations referenced in this plan, so ensuring connections to these assets is recommended at the outset of the implementation phase of the network. The Township and school district may consider implementing a Safe Routes to Schools program as part of its efforts in implementing a safe and usable bicycle and pedestrian network.

FUNDING

Several programs exist to assist the Township in funding the design and construction of the bicycle and pedestrian system. A representative of the Township should be assigned to regularly monitor and apply to funding programs at the local, county, state, non-profit, and federal levels, applicable to implementing the bicycle and pedestrian network.

The New Jersey Department of Transportation's (NJDOT) Bikeway Grant program provides funding to counties and municipalities to promote bicycling as an alternative mode of transportation. Priority is given to construction of new bike paths, as a primary objective of the Bikeway Grant Program is to support the State's goal of constructing 1,000 new miles of dedicated bike paths which are regionally connected throughout the State. During Fiscal Year 2012, the Bikeway Grant Program awarded a total of 1 million dollars to six municipalities for bikeway construction, with individual award amounts ranging from $75,000 to $290,000 each. While the requirement of the application to show consistency with applicable planning documents should be aided by adoption of the Bicycle + Pedestrian Plan, the application for the Bikeway Grant program will also require an engineering description of the proposed transportation improvement, indicating existing and proposed right-of-way widths, paved

and graded widths, shoulder widths, type and depth of proposed pavement and an estimate of the cost of the proposed work.

The Regional Trails Program, administered by the Delaware Valley Regional Planning Commission (DVRPC), with funding from the William Penn Foundation, seeks to provide funding for targeted trail design, construction, and planning projects. The program is intended to help foster a regional network of multi-use trails with Philadelphia and Camden as its hubs. The program will also provide technical assistance to trail developers, counties, municipalities, and non-profit organizations. Previously, eighteen projects were awarded a total of $5.2 million during the first phase of the program for design and construction activities, and eleven projects were awarded $496,000 during the second phase of the program for planning and feasibility studies. The third phase of funding opportunities will begin shortly, with applications due on April 12, 2013. The third phase grant funds are intended to be used for the design and construction of multi-use trails. The application, and details on previously funded projects, can be found on DVRPC's website, or at the following address: www.dvrpc.org/RegionalTrailsProgram/.

The Safe Routes to School Program (SRTS) is a federally funded program that was initiated by the Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy for Users (SAFETEA-LU). This program provides federal-aid highway funds to State Departments of Transportation. The program provides funding for both infrastructure and non-infrastructure projects. Eligible types of infrastructure projects include the planning, design, and construction or installation of sidewalks, crosswalks, signals, traffic-calming, and bicycle facilities.

The objectives of the SRTS program are:

- to enable and encourage children in grades K-8, including those with disabilities, to walk and bicycle to school;
- to make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and,
- to facilitate the planning, development and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption and air pollution in the vicinity of schools.

County and municipal governments, school districts, schools, and non-profit organizations are eligible to apply to the program.

PHASING

While it is likely to many parts of the bicycle and pedestrian network will be developed as partnerships are established, funding sources are secured, and private development is initiated, the following suggests a general phasing schedule for implementing the network.

1. Work with the County to develop alignment and design details for the County-wide trail. The proposed County segment is a key catalyst for many of the suggested trails within the bicycle and pedestrian network, and links residents of the Township into a larger, regional system. During this collaboration, the Township will likely have the opportunity to begin working with County engineers on future cross-sections for pathways planned on County-owned right-of-ways.

2. Develop pathway systems within the municipality that are; 1) owned/ maintained by the Township, 2) under the school district's jurisdiction, 3) under the ownership of HOA's, 4) within the Atlantic City Electric Co. R.O.W., or 5) parcels likely to be developed in the future which are privately owned (See Jurisdiction Map). Design and construction of pathway segments controlled by Harrison Township, which include both pathways on publicly owned land and on locally maintained roadways, will allow the Township to develop a large amount of the multi-purpose path system and on-road/off-road system in proximity to the Village of Mullica Hill. This area contains the highest cluster of destinations and is the central convergence point of the Township-wide system. During this process, the Township will concurrently need to develop precedents for bridging sensitive environmental features.

3. Work with the County and State agencies to develop pathway systems within associated right-of-ways (See Jurisdiction Map). Many of the applicable right-of-ways are connectors that link to major destinations with the Township, and primarily serve the purpose of providing the longer, Township-wide connections into the major nodes and destinations of the bicycle and pedestrian system.

THIS PAGE INTENTIONALLY LEFT BLANK