TOWN OF HENRIETTA
ACTIVE TRANSPORTATION PLAN

JANUARY 2016

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Disclaimers: Financial assistance for the preparation of this report was provided by the Federal Highway Administration through the Genesee Transportation Council. The Town of Henrietta is solely responsible for its content and the views and opinions expressed herein do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

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El Consejo de Transporte de Genesee asegura completa implementación del Título VI de la Ley de Derechos Civiles de 1964, que prohibe la discriminación por motivo de raza, color de piel, origen nacional edad, género, discapacidad, o estado de ingresos, en la provisión de beneficios y servicios que sean resultado de programas y actividades que reciban asistencia financiera federal.

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

EXISTING CONDITIONS

RECOMMENDATIONS

1.0 EXECUTIVE SUMMARY

The Active Transportation Plan is a guide to accomplish the Town's vision for developing a network of sidewalks, on-road bicycle facilities, and trails that allow for safe and convenient travel in and around the Town of Henrietta. In addition, multiple driving forces support the need for active transportation planning within the Town:

1. increased population, especially of college students that rely on active transportation;
2. ongoing trail development in the Town which will benefit from coordinated planning and prioritization of improvements,
3. health related reasons, injuries, and inability to reach key desinations, and
4. developments external to the Town, including the adoption of Complete Streets Legislation by New York State as well as the completion of Active Transportation plans for many adjacent communities.

To support the vision and driving forces, the Plan examines existing conditions for on-street bicycling and the sidewalk network, identifies a series of specific facility needs, establishes design guidance for new such facilities, and recognizes existing and future opportunities for programmatic outreach and education activities that can lead to increased levels of bicycling and walking. The Plan's recommendations, when implemented, will help the Town of Henrietta achieve many public health, economic, and quality of life benefits that can be achieved through enhanced accommodation of active transportation. The following sections are included in the Active Transportation Plan:

All recommendations are "concept level planning and design" and intended as guidance for further consideration and/or development. As such, the programming, design, and implementation of the Plan's recommendations won't occur until all facility-owner concerns are addressed, whether the facilities are owned by the Town of Henrietta or other agencies. As the Town considers and implements these recommendations, it is committed to working with all stakeholders to ensure that their requirements and concerns are met.

INTRODUCTION AND SUMMARY: This section is an outline of the background and setting for the Plan. Summarized within this section are the many natural and planned characteristics that provide an ideal setting for the Plan's initiatives, as well as the variety of benefits that can be realized as a part of its eventual implementation. The Active Transportation Plan is based on stakeholder and public involvement, and is heavily based on input from an active Project Advisory Committee (PAC) and from feedback received from Henrietta's residents.

EXISTING CONDITIONS EVALUATIONS: An assessment of the conditions that the Town's roadway network provides for bicyclists, using the nationally implemented Bicycle Level of Service Model as the primary performance measure kicks off the existing conditions evaluation process. The results of this assessment indicate, at a Town-wide level, bicycling conditions are adequate (average bicycle level of

service "C"), with many roads presenting significant opportunities for improvement. Regarding pedestrian facilities, although there are more than 71 miles of public sidewalks in Henrietta, the pedestrian facilities earned a poor level of service rating (average pedestrian level of service of "D"), which results in the need for improving the walk-ability of Henrietta. In addition to these supply-based evaluations, the existing conditions components also includes a non-motorized demand assessment that identifies areas within Henrietta that have the greatest potential for increased levels of bicycling and walking based on the proximity of key trip origins and destinations. An evaluation of existing transit stops identified four stops, based on highest volume of ridership, for improvements.

FACILITY RECOMMENDATIONS: The Plan identifies numerous strategic, location-specific facility needs that will help complete the Town's bicycle and pedestrian network, based on existing conditions and public/stakeholder input. The recommendations include new bicycle facilities, important sidewalk connections or gaps, new or improved shared use paths and trails that tie into the region's extensive off-road network, and transit stop improvements. To help gain important momentum, several of the recommended facilities are identified for "early implementation." Initial implementation priorities, divided into facility types, are developed based on the demand analysis described above. In the meantime, the Town will continue to implement projects in accordance with capital improvement schedules and specific funding opportunities. Facility recommendations are summarized in the tables below as well as being presented later in the Plan.

Table 2: Sidewalk Network Priority Gaps

Roadway/Location	Recommended Facility Improvement	Coordinating Jurisdiction	Phase
Lehigh Station (Aleta to E Henrietta)	Complete sidewalk north side	NYSDOT, Town of Henrietta	Priority
Lehigh Station (E Henrietta to Green Clover)	Complete sidewalk north side	NYSDOT, Town of Henrietta	Priority
Jefferson Road (BHTL to Hylan)	Complete sidewalk north side	NYSDOT, Town of Henrietta	Priority
E Henrietta Road (Brentland Woods to LHVT)	Complete sidewalk west side	NYSDOT, Town of Henrietta	Recommended
E Henrietta Road (Lookup Park to LHVT)	Complete sidewalk east side	NYSDOT, Town of Henrietta	Recommended
E River Road (Farnum to Brooks)	Complete sidewalk east side	MCDOT, Town of Henrietta	Priority
E River Road (Farrell Ln Ext to River Meadow Drive)	Complete sidewalk west side	MCDOT, Town of Henrietta	Priority
Calkins Road (E Henrietta to Pinnacle)	Complete sidewalk both sides	MCDOT, Town of Henrietta	Recommended
Hylan Drive (Jefferson to Calkins)	Complete sidewalk both sides	MCDOT, Town of Henrietta	Priority
Telephone Road (School District Dr to W Henrietta)	Complete sidewalk south side	MCDOT, Town of Henrietta	Recommended
Erie Station Road (School District Dr to W Henrietta	Complete sidewalk north side	NYSDOT, Town of Henrietta	Recommended
Brighton Henrietta Townline Road existing sidewalk east of Rt 390 to Jefferson Rd)	Complete sidewalk south side. Coordinate with new RTS routes.	MCDOT, RTS, Town of Henrietta	Priority

Table 3: Transit Stop Improvements

Stop Location	Recommended Facility Improvement	Coordinating Jurisdiction	Phase
Marketplace Mall Food Court Entrance	Improve transit stop: overhead shelter on new concrete pad, digital display board, relocate closer to Mall entrance.	RTS, Town of Henrietta	Priority
Hylan and Wegmans Entrance	Improve transit stop: new sidewalks to Wegmans and Mall and from edge of curb to stop, seating and overhead shelter on new concrete pad.	RTS, Town of Henrietta, Wegmans, Wilmorite	Priority
Southtown Plaza Planet Fitness	Improve transit stop: more prominent signage, overhead shelter, more seating.	RTS, Town of Henrietta	Recommended
Jefferson and Frontier Commons Plaza	Improve transit stop: provide seating and overhead shelter on new concrete pad, new sidewalk connection to Frontier Commons Plaza.	RTS, Town of Henrietta	Recommended

Table 4: Bicycle Facility Improvements

Roadway/Location	Recommended Facility Improvement	Responsible Jurisdiction	Phase
Jefferson Road (E River to W Henrietta)	No existing shoulder with potential for restripe (both sides), Shoulder space between 0 and 4 feet (one or both sides) Potential restripe candidate to widen existing shoulders.	NYSDOT	Priority
Hylan Drive (Jefferson to Calkins)	Candidate for restripe, but would require one or more lanes to drop to 10 or 10.5 feet.	MCDOT	Priority
Calkins Road (Fair Ave to E Henrietta)	No existing shoulder with potential for restripe (both sides), Distinct candidate for restripe.	MCDOT, NYSDOT	Priority
Calkins Road (E Henrietta to Amsden)	No existing shoulder with potential for restripe (both sides), Candidate for restripe but would require one of more lanes to drop to 10 or 10.5 feet.	MCDOT, NYSDOT	Recommended
Lehigh Station (E River to east of Vollmer)	Paved shoulder of at least 4 feet (one side), No paved shoulder (opposite side), Reallocate pavement to create 4 foot shoulders on both sides.	MCDOT	Priority
E Henrietta (Erie Station to Temple)	Paved shoulder of at least 4 feet (one side), No paved shoulder (opposite side), Reallocate pavement to create 4 foot shoulders on both sides.	NYSDOT	Recommended
Erie Station (Thruway Park to W Henrietta)	No existing shoulder with potential for restripe (both sides), Shoulder space between 0 and 4 feet (one or both sides) Potential restripe candidate to widen existing shoulders.	NYSDOT	Recommended

Table 5: Shared Use Trail Improvements

Roadway/Location	Recommended Facility Improvement	Coordinating Jurisdiction	Phase
Lehigh Valley Trail (Bailey Rd to Veterans Memorial Park)	Expand 5' sidewalk to 10' shared use path where feasible	NYSDOT, Monroe County, Town of Henrietta	Recommended
Lehigh Valley Trail (Nevins Road south to Existing Stone Dust Trail)	Improve the temporary Lehigh Valley Trail from the end of Nevins Road across proposed Belfry Golf Course to the stone dust trail portion north of Erie Station Road - recommend securing permanent access agreement. (currently a temporary alignment)	Town of Henrietta	Priority
Lehigh Valley Trail (Veterans Memorial Park to Florendin)	Improve drainage and trail surface south of Veterans Memorial Park	Town of Henrietta	Priority
Lehigh Valley Trail (Veterans Memorial Park to Green Moor Way)	New 10' wide stone dust trail	Town of Henrietta	Priority

Table 6: Priority Intersection Improvements

Roadway/Location	Recommended Facility Improvement	Coordinating Jurisdiction	Phase
Jefferson Road and Winton Road	Pedestrian refuge islands, relocated stop bars, relocated high visibility crosswalks, install "sharks teeth' yield lines	NYSDOT, Monroe County	Priority
Jefferson Road and John Street	Pedestrian refuge islands, reduced radius, relocated stop bars, relocated and added high visibility crosswalks, install "sharks teeth' yield lines, relocate LHVT	NYSDOT, Monroe County	Priority
Bailey Road and East River Road	Consideration should be given to sidewalk installation, pedestrian signalization, No Turn on Red/Yield to Pedestrians on-demand blank-out signs, and a leading pedestrian interval on the westbound approach due to the right-turn lane.	Monroe County	Possible
Lehigh Station Road and West Henrietta Road	Pedestrian refuge islands, reduced radius relocated stop bars, relocated high visibility crosswalks, install "sharks teeth' yield lines	NYSDOT, Monroe County	Priority
Lehigh Station Road and Middle Road	Pedestrian refuge islands, reduced radius, relocated stop bars, relocated high visibility crosswalks	NYSDOT, Monroe County	Possible
Lehigh Station Road and East Henrietta Road	Reduced radius, install high visibility crosswalks	NYSDOT	Priority

FACILITY DESIGN GUIDANCE: This section is a valuable ongoing resource for the Town as new bicycle and pedestrian facilities are constructed, including many of those identified in the Plan. Based on relevant Federal and State of New York sources and standards, the Plan's design guidance covers many established and emerging facility types including sidewalks, curb ramps, bike lanes, Shared Lane Markings, bike boulevards, midblock crossings, and shared use paths.

ZONING AND DEVELOPMENT REGULATIONS ASSESSMENT: Henrietta's Active Transportation Plan recognizes the continuing role that zoning and subdivision policies will play in ensuring a complete and functional active transportation system, in addition to creating and improving in-the-ground facilities. The section analyzes Henrietta's existing codes, standard, policies, and practices as they relate to bicycling and walking. Among the associated recommendations are to adopt a town-wide Complete Streets policy and requiring all development documents to include ADA accessible sidewalks on all public roadways. This Plan section also includes sample bike parking requirements and potential incentives to private developers that can be used to leverage the Town's efforts.

GREEN ENERGY BENEFITS: This section describes a quantification of potential green energy benefits in Henrietta associated with increased bicycle facility provision. Benefits associated with increased bicycling and walking activity are numerous and well-documented. Some of these benefits, such as improved public health, strengthened local economies, and enhanced quality of life, are societal in nature. Others, such as fuel savings and emissions reductions resulting from less automobile travel, can be categorized as "green energy" benefits.

OUTREACH AND EDUCATION RECOMMENDATIONS: Conducting outreach and education programs is another important aspect of the active transportation planning process. The Plan's associated recommendations aim to increase the number of bicyclists and pedestrians while improving safe and appropriate behavior by bicyclists, motorists, and pedestrians. A highlight of this element is a recommended focus on reaching out to and connecting with the numerous local and regional partners who can collectively help maximize the effectiveness of existing resources, programs, and materials. An additional recommendation is to appoint and sustain a public bicycle/pedestrian committee to engage with various groups and promote bicycling and walking in the community.

FUNDING AND IMPLEMENTATION STRATEGY: The Active Transportation Plan finishes with recommendations to continue several ongoing strategies to construct new non-motorized facilities and to pursue the abundance of funding sources, both traditional and innovative, that are available to the Town as it seeks to implement this Plan. Each of these sources is described, including the programs contained in the new Federal transportation legislation, MAP-21, as administered through the New York State Department of Transportation, as well as many state, regional, and private sector sources that provide grants for facilities and programs alike.

FOLLOW-ON ACTIVITIES: The final report highlights a wide range of needed improvements that were identified by residents. Follow-on activities are elements that were not able to be examined within the Plan's scope/budget but should be addressed by the Town and/or stakeholders. As a master plan, the Henrietta Active Transportation Plan does not identify all of the specifics needed to construct every recommended project. Some work still remains to be done.

2.0 INTRODUCTION AND SUMMARY

2.1 BACKGROUND AND PURPOSE

This report summarizes the analysis, planning, and design recommendations efforts involved in the Town of Henrietta's Active Transportation Plan, representing the Town's approach to accommodating active transportation by providing a community based, data driven blueprint for guiding future decisions and infrastructure investment. The Plan is intended to guide growth as it relates to pedestrian and bicycle issues through developing a network of sidewalks, on-road bicycle facilities, and off-road trails that make it safer and easier to get around the Town of Henrietta by walking, biking, or transit. In addition to making the Town of Henrietta a more walkable and bike-friendly community, the Plan will help the Town of Henrietta become a more sustainable community and enhance the perception of Henrietta as a great place to live, work, play, and raise families.

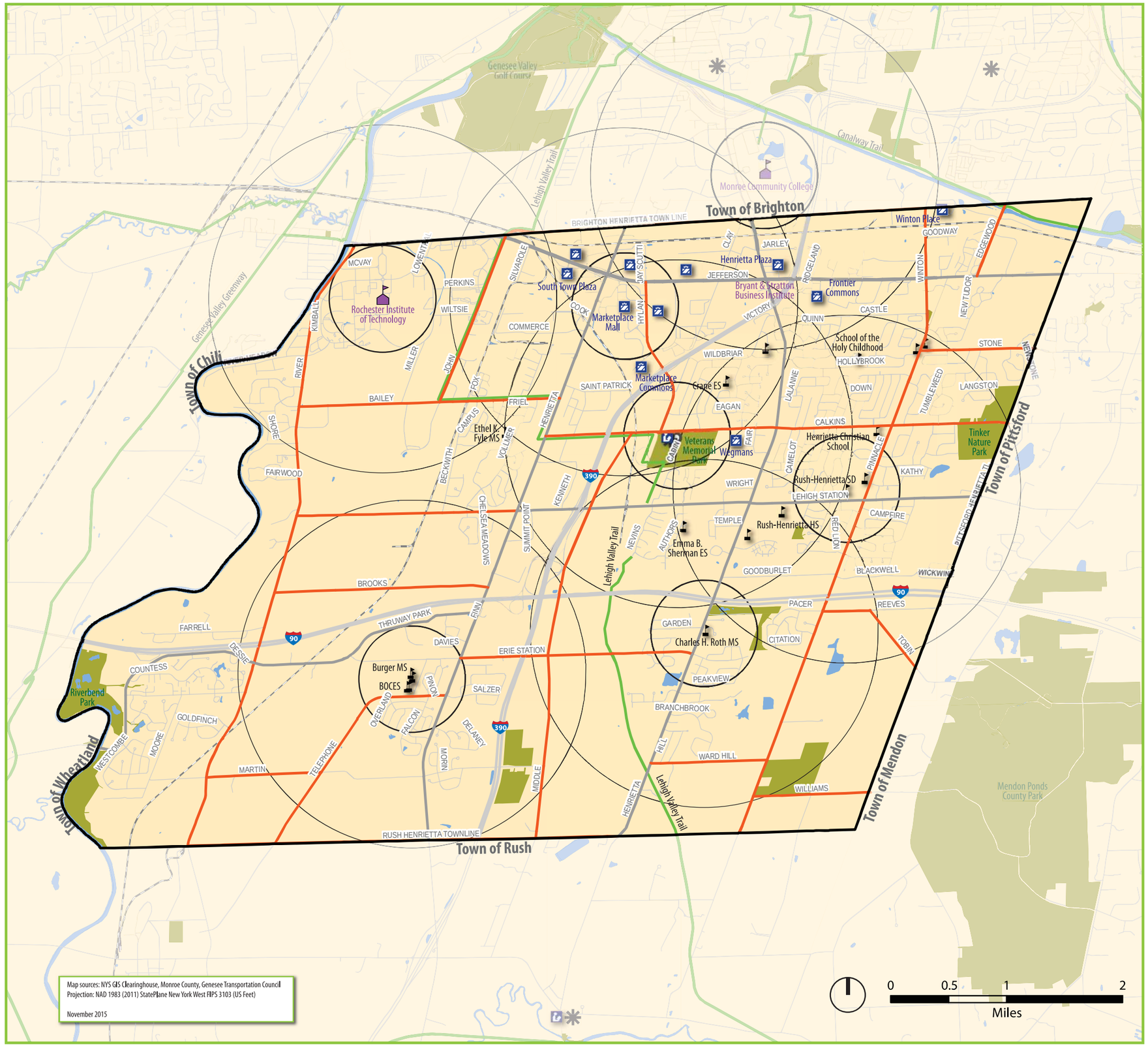
The goal of planning is to improve the welfare of people and their communities by creating more convenient, equitable, healthful, efficient, and attractive places for present and future generations. As such, planning is an orderly, open approach to determining a community's needs and goals, and developing strategies to address those needs and meet those goals. Transportation planning enables civic leaders, businesses, and citizens to play a meaningful role in creating communities that enrich people's lives.

The Town of Henrietta is gifted with a variety of characteristics, both natural and planned, which collectively make Henrietta a great place to live and provide a setting that is ripe for this important planning initiative. Refer to **Figure 1** for an existing conditions map.

- Home to 42,581 residents (according to the 2010 U.S. Census);
- A mix of mature and emerging suburban neighborhoods;
- A nationally significant university (Rochester Institute of Technology);
- Major employment areas / corporate business parks;
- One of the largest retail shopping districts in Monroe County;
- Community diversity in both age and income;
- The Erie Canalway Trail runs through the northeast corner of the Town;
- The Lehigh Valley Trail runs north-south connecting Henrietta with the regional trail network and providing off-road bike connections for Rochester and Brighton residents access; and
- Adjacent to the Towns of Brighton, Chili, Wheatland, Rush, Pittsford, and Mendon

TOWN OF HENRIETTA
ACTIVE TRANSPORTATION PLAN

EXISTING CONDITIONS ASSESSMENT



Map sources: NYS GIS Clearinghouse, Monroe County, Genesee Transportation Council
Projection: NAD 1983 (2011) StatePlane New York West FIPS 3103 (US Feet)

November 2015

Project Study Area
College
Library
Retail Center
School
Senior and Community Center
Town Hall
Rail
Trail
10-minute Walkshed
10-minute Bikeshed

Roadway Jurisdictions

Interstate
State
County
Local

Identified Priority Intersections

1. John St. / Jefferson Rd.
2. Jefferson Rd. / Winton Rd.
3. East Henrietta Rd. / Lehigh Station Rd.
4. Middle Rd. / Lehigh Station Rd.
5. West Henrietta Rd. / Lehigh Station Rd.
6. East River Rd. / Bailey Rd.

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2.2 BENEFITS OF ACTIVE TRANSPORTATION

The plan aims to increase the viability of biking and walking as transportation and recreation options for residents of and visitors to the Town of Henrietta. Bicycling and walking fulfill important functions in the overall transportation network and in people's everyday lives, in addition to being highly enjoyable activities in and of themselves. While pedestrian and bicycle improvements are important to meet the needs of Henrietta today, they are likely to be even more important in meeting the needs of tomorrow. With the development of this plan, the Town of Henrietta is taking a progressive stance in addressing important issues, such as rising fuel prices, environmental degradation, and health problems related to inactivity. The Plan will tie into other ongoing Town-wide sustainability efforts, and will help the Town to harvest the long-term economic, environmental, health and social benefits of active transportation.

Transportation accounts for more than 30 percent of the carbon dioxide emissions in the United States (West, 2007). In addition, transportation is a significant household expense for many people. However, there are other transportation options besides using a motorized vehicle, which include active transportation possibilities, such as transit use, walking and bicycling. Transit use, walking and bicycling as a means of transportation offer environmental, health, economic and social benefits.

Active transportation has benefits in each one of these categories, but the synergy between these varied and disparate benefits results in enhanced community sustainability:

- A local economy that is robust and balanced, with better access to jobs, education and health care.
- Increased health for persons engaging in active transportation, and increased safety for all.
- Ecosystems that thrive as a result of reduced air pollution and reduced greenhouse gas emissions.
- Infrastructure that encourages culturally and socially diverse groups to prosper and connect to the larger community.

Rochester is internationally recognized as a leading community for the deaf and hard-of-hearing. There are an estimated 19,400 deaf and hard-of-hearing individuals under the age of 65 in the greater Rochester area. The National Technical Institute for the Deaf (NTID), located at RIT, has over 1200 hearing impaired students. The Plan includes input from NTID as a key stakeholder as well as capturing other existing opportunities to provide a truly inclusive system that recognizes the needs of the Town's hearing impaired population. Active transportation is important at all stages of our lives. Improvements to pedestrian and bicycle infrastructure in Henrietta will support senior residents who choose to age in place. Walkability and access to transit can help provide supportive environments for citizens of all mobility levels.

ENVIRONMENTAL BENEFITS Switching to active transportation reduces emissions of greenhouse gases and other pollutants that contribute to global warming, smog, and acid rain. Choosing active transportation is an easy way to reduce our environmental impact – bicycling and walking create zero greenhouse gas emissions. Active transportation can reduce air pollution, minimize traffic congestion, and help to lessen our national dependence on petroleum. Bicycling and walking can also serve as the final leg of transit trips to and from other parts of the Rochester region, allowing riders to get between home and their boarding stop and between their disembarking stop and their final destination.

HEALTH BENEFITS Improved bicycling conditions add to the vitality and quality of life of the community and provide access to recreational destinations across the region. Despite the proven benefits, most people – including more than 50% of American adults – do not get enough physical activity to provide health benefits (CDC, 2012). With this in mind, opportunities for exercise and healthful outdoor activity are more than expendable extras. Parks, trails, and open space resources take on new meaning and value. Active transportation provides an opportunity to incorporate regular physical activity into the daily routine. Opportunities for recreation and active transportation support the health and wellness of local residents, and have significant and quantifiable economic impacts.

Land use and building patterns exacerbate health problems by providing new, disconnected neighborhoods that have few opportunities for walking or biking. In addition, our lifestyles have become increasingly sedentary in our post-industrial society. Walking and bicycling provide an opportunity to simultaneously obtain the benefits of transportation and physical exercise.

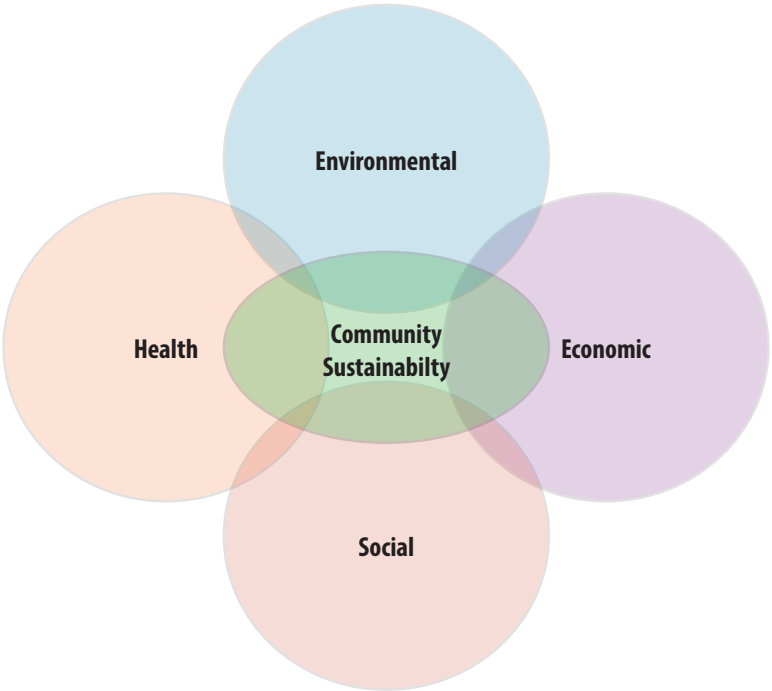
...studies have found that overweight and obese children have lowered academic achievement in standardized test scores...
(California Department of Education, 2005)

ECONOMIC BENEFITS Health care costs and insurance rates are escalating, causing serious impacts to the local economy. Lack of physical activity is a contributing factor to a growing number of serious illnesses and health problems among all age groups. In addition to health-related costs, operating a personal automobile is very expensive. With the money saved on a vehicle, or even just the additional parking, fuel and maintenance required to commute in a vehicle, an active commuter can pay for transit expenses, purchase a good quality bicycle, or buy new walking shoes, with money left over.

Better bicycling conditions will provide access to recreational and work destinations, schools, public transit, and local shops. This will, in turn, promote additional economic development in the vicinity of these destinations. The number of people bicycling can be a good indicator of a community's livability - a factor that has a profound impact on attracting new residents, businesses, workers, and tourists all which contribute towards stimulating the economy. By developing transportation programs and encouraging active transportation, the local economy would capture these potential savings and keep shoppers centrally located, resulting in increased community reinvestment.

SOCIAL BENEFITS Improving transportation equity by cultivating better walking and bicycling conditions provides mobility for the one-third of people in the United States who do not have cars. This improves access to jobs, education, and health care. Bicycling and walking can serve as appealing for families looking to engage in new recreational opportunities while increasing opportunities for social interaction and contributes to a sense of community. Communities across the county have embraced non-motorized transportation as a popular and beneficial option that residents increasingly expect and visitors actively seek when making choices about where to locate their families. Cities that promote bicycling tend to retain youth, attract young families, and increase social capital.

Active transportation can reduce stress and allow for more community interaction. Riding a bicycle allows a commuter to choose a less busy route and by-pass traffic lights. Walkers and cyclists see more of their community than stoplights, white lines and car bumpers, and benefit from the stress relief that accompanies physical exercise. It is easier and less expensive to park a bike than a car, which further reduces the stress of commuting. In addition, a culture dependent on cars encourages urban sprawl, which destroys communities and keeps people isolated from one another. With this Plan, the Town of Henrietta is taking important steps towards a future in which bicycling, walking and transit are experienced as viable options for trips of all purposes.



2.3 RELATIONSHIPS TO OTHER PLANS AND STUDIES

In developing new plans, it is important to refer to plans and studies that have already been completed to evaluate how the new plan relates to existing plans. A review of existing bicycle and multi-use trail plans, studies, and proposals, as well as other relevant Town planning documents, provides context for the development of this Active Transportation Plan. In addition, representatives from local schools and universities were consulted. The Plan builds on the following Plans, Studies, and Technical Memorandums:

- Bicycle and Pedestrian Action Plan for the Rochester Metropolitan Area, 1996
- BikeWalkBrighton, 2012
- Finger Lakes Regional Economic Development Council: Progress Report & Recommended Priority Projects, 2015
- Genesee-Finger Lakes Historic Transportation Gateway Inventory and Assessment, 2009
- Genesee-Finger lakes Regional Trails Initiative Update, 2014
- Long Range Transportation Plan for the Genesee Finger-Lakes Region 2035
- Regional Trails Initiative Final Report & Action Plan: Phase I - Rochester TMA, 2002
- Rochester Bike Sharing Program Study, currently underway
- Rochester Bicycle Master Plan, 2011
- Safe Routes to School Guidebook for the Genesee Finger-Lakes Region, 2009
- Town of Chili Bicycle and Pedestrian Master Plan, currently underway
- Town of Greece Bicycle and Pedestrian Master Plan, 2014
- Town of Penfield Bicycle Facilities Master Plan, 2008

2.4 PLAN SUMMARY

The Town of Henrietta Active Transportation Plan takes a wide-reaching approach to enhancing the Town's current accommodation and promotion of bicycling and walking. A significant number of the Plan's recommendations identify and describe specific infrastructure improvements that will improve pedestrian and bicycle travel in Henrietta. The Plan recognizes that there are other ways to promote walking and bicycling activity, specifically performing outreach and education initiatives that can make more Town residents aware of the existing and future opportunities available as well as engaging the private sector to increase its role in providing facilities. Following this background and purpose section, the Plan is divided into six parts:

- Existing conditions evaluations
- Facility recommendations
- Facility design guidance
- Zoning and development regulations assessment
- Green energy benefits
- Outreach and education recommendations
- Funding and implementation strategy

2.5 COMMUNITY OUTREACH AND PUBLIC INPUT

Planning of any kind cannot be done in a vacuum, and must be informed by local residents. GTC regularly identifies community participation as an objective in the Long Range Transportation Plan for the Genesee-Finger Lakes Region, which guides their planning efforts. The Plan states, "The transportation planning process should be conducted in as open and visible a manner as possible, encouraging community participation and interaction between and among citizens, professional staff, and elected officials." Public participation is not just a requirement, but a critical element of a successful plan. Refer to **Appendix A** for public comments received.

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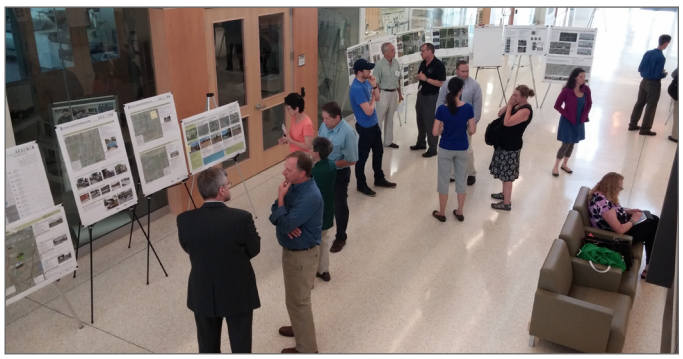
Brent Penwarden, Monroe County DOT
Robert Torzynski, GTC
Dan Kenyon, RTS
Elizabeth Murphy, FLHS
Rick Postl, NTID
Scott Wagner, Rochester Cycling Alliance

Public Informational Meeting #1,Henrietta Town Hall



Public Informational Meeting #2, RIT

Table 1: Chronology of Community Involvement

DATE	WHAT	PURPOSE
October 22, 2014	Meeting with Town Staff	Project Coordination
November 6, 2014	Project Advisory Committee Meeting	Project Kick-Off
December 18, 2014	Project Advisory Committee Meeting Van / Walking Tour (Refer to **Appendix D**)	Review Project Progress Site Visit
February 12, 2015	Meeting with Town Staff	Project Coordination
February 26, 2015	Stakeholder Meeting	Rush Henrietta Central School District (RHCSD)
March 17, 2015	Project Advisory Committee Meeting	Review Project Progress
March 19, 2015	Stakeholder Meeting	National Technical Institute for the Deaf (NTID)
March 26, 2015	Public Information Meeting #1 at the Henrietta Town Hall	Introduce Project, Present Inventory and Analysis, Solicit Input
May 6, 2015	Project Advisory Committee Meeting Bicycling Tour	Review Project Progress Site Visit
June 9, 2015	Public Information Meeting #2 at RIT	Present Draft Recommendations, Solicit Input
August 18, 2015	Project Advisory Committee Meeting	Review Project Progress

In addition, an active transportation survey was used to gather information reflecting the RIT community's current levels of walking and bicycling activity, their attitudes toward walking and bicycling, and their insight into barriers that exist. The content was developed in collaboration with the RIT and survey data was captured using a survey tool developed in-house at RIT. The survey received over 500 results from alumni (7), faculty and staff (176), and students (324). Refer to **Appendix A & B** for more information.

3.0 EXISTING CONDITIONS EVALUATIONS

3.1 COMMUNITY CHARACTERISTICS

Henrietta is a town in Monroe County, New York State, with a population of about 42,500. The western town line of Henrietta is defined by the Genesee River. On the west side of the river are the towns of Chili and Wheatland. To the north of Henrietta is the town of Brighton, to the east are the towns of Pittsford and Mendon, New York, and to the south is the town of Rush. Henrietta is south of the City of Rochester, but does not share a border with the city. Both the New York Thruway (Interstate 90) and Interstate 390 run through Henrietta. A short section of the Erie Canal passes through the northeastern side of the town.

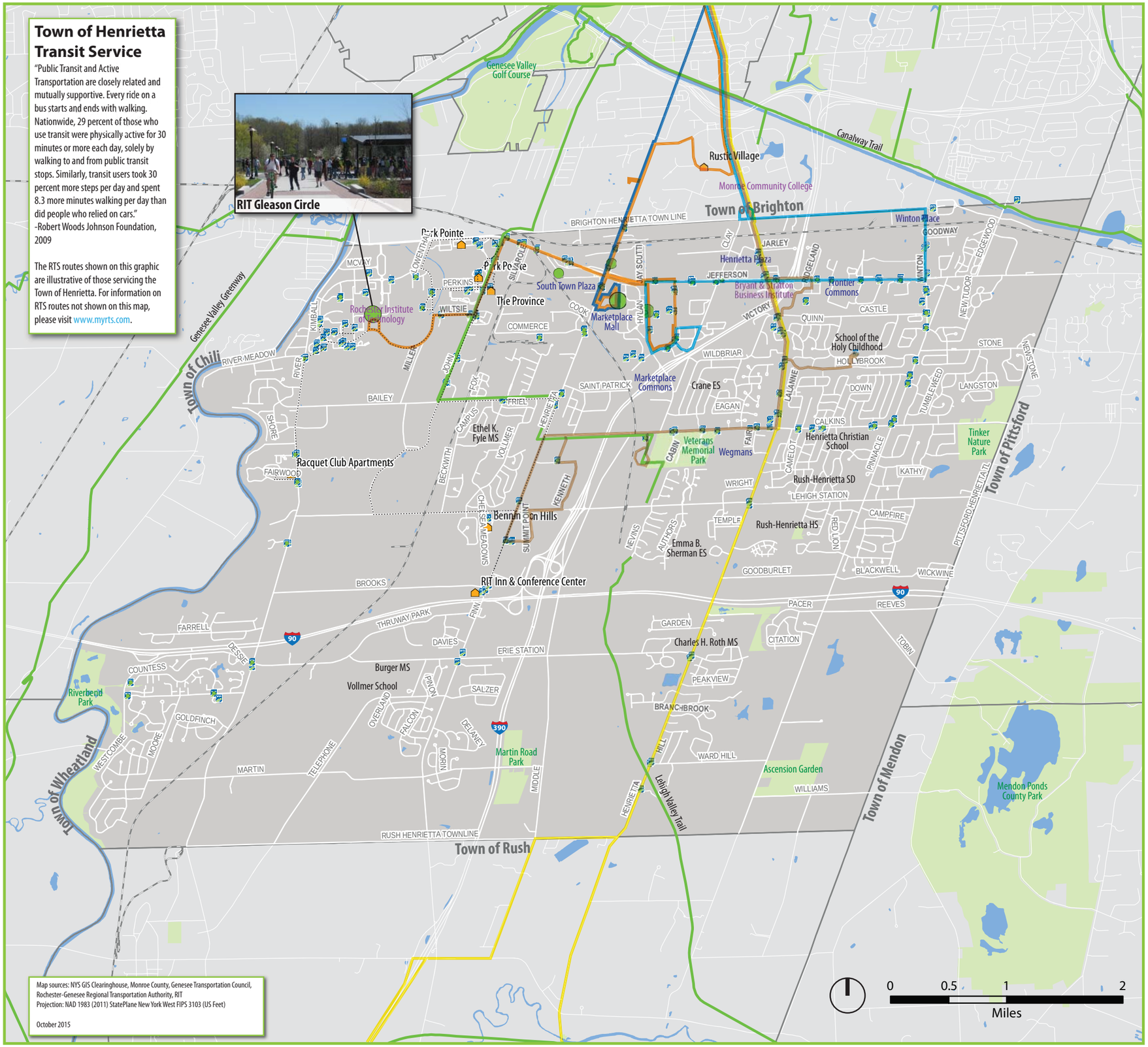
Henrietta has a total area of 35.6 square miles. Town boundaries form a rough rectangle, approximately 7 miles (east-west) by 5 miles (north-south). Topography is generally moderate, and the majority of development is concentrated north of the Thruway. Henrietta is home to the Rochester Institute of Technology (RIT) and to one of the largest retail shopping districts in Monroe County. Providing safe and convenient connectivity between The RIT campus, off campus housing developments and nearby commercial centers is an important objective of this Plan.

Henrietta has a growing economy, a strong business community, a solid residential base and a very good school district. However, there is a prevalent misperception of Henrietta as a heavily developed commercial suburban town without adequate green space. In fact, Henrietta offers a healthy balance of land use that provides a solid foundation for an economically and environmentally sustainable community. The Town includes a rich variety of environments, from vibrant retail centers, to college campuses, to pristine open spaces. Enhancements to active transportation can help re-connect residents to natural resources, enhance safety for all travel modes, and help Henrietta achieve its true potential as a healthy, attractive and sustainable 21st century town. A main purpose of this Plan will be to enhance both the perception and the reality of Henrietta as a safe, attractive and sustainable community. Refer to **Figure 2** for a map of the existing transit network.

The Lehigh Valley Trail (LHVT) is part of a developing system of multi-use trails in western New York. The trail connects on the western end with the Genesee Valley Greenway and on the east end to the Auburn Trail. It provides partial connectivity between RIT and the U of R, and linkages to destinations in Henrietta, Brighton, Rush, Mendon and Victor. The northern branch of the LHVT connects to the Erie Canalway Trail. This Plan will identify alternative enhancements to the trail segments in Henrietta, and strategies for integrating it with other on-road/off-road improvements. Recommendations provide direction for maximizing the value of The Lehigh Valley Trail as both a recreational asset and an active transportation facility.

TOWN OF HENRIETTA
ACTIVE TRANSPORTATION PLAN

EXISTING TRANSIT NETWORK



RTS Route 23

RTS Route 24

RTS Route 83

RTS Route 101

RTS Route 124 - Limited Stop Service

RIT Shuttle Routes

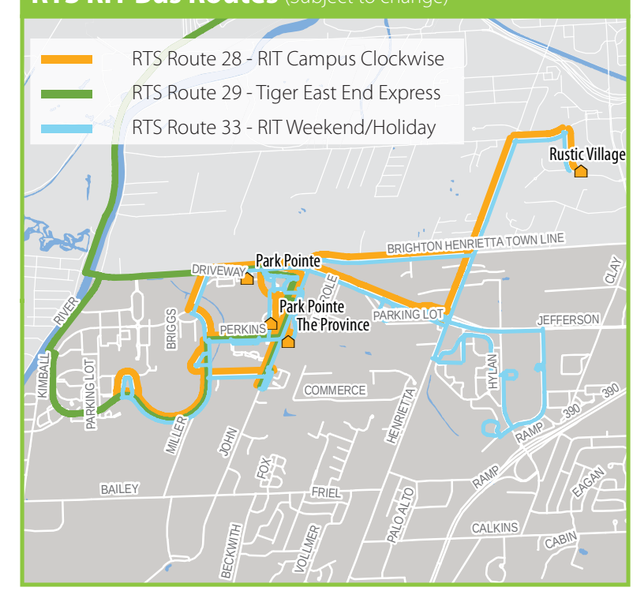
RIT Off-campus Housing

Transit Stops

Route 24 Average Daily Total Ridership (Boardings and Alightings)

- 0 - 5
- 6 - 10
- 10 - 50
- 50 - 100
- 100 - 233

RTS RIT Bus Routes (Subject to change)



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3.2 EXISTING BICYCLING AND PEDESTRIAN CONDITIONS

An important element of any bicycle and pedestrian planning initiative is to gauge how well or how poorly the area's roadways accommodate users of the transportation system. While much of this information has been gathered from input provided by the public through the processes described in the previous section, an objective and defensible system-wide evaluation is also useful in setting the stage for identifying and prioritizing facility improvements.

An evaluation of existing bicycling and pedestrians conditions was conducted for the Town's network of arterial and collector roads (approximately 221 segments totaling about 21 centerline miles) using the Bicycle & Pedestrian Level of Service Models, based on data collected. This model, which has been applied on hundreds of thousands of miles of roads throughout the United States, is a fundamental performance measure and design tool in the National *Highway Capacity Manual (HCM 2010)*. The following sections provide background information and data descriptions for this evaluation tool.

LEVEL OF SERVICE MODELS

The Bicycle Level of Service (BLOS) Model and Pedestrian Level of Service (PLOS) Model, existing conditions performance measure, are a "supply-side" criterion. The models are an objective measure of bicycling and walking conditions of a roadway which provides an evaluation of the users' perceived safety and comfort with respect to motor vehicle traffic and roadway conditions. This nationally adopted and widely used methodology quantifies the quality or level of service (accommodation) for bicyclists and pedestrians that currently exists within the roadway environment. A major benefit of incorporating the BLOS and PLOS is the indication it provides regarding which network segments have the greatest needs. It uses the same measurable traffic and roadway factors that transportation planners and engineers use for other travel modes. This method is not limited to merely assessing conditions, results can be used to provide a snapshot of existing bicycling and walking conditions, identify roadways that are candidates for reconfiguration for bicycle and pedestrian facility improvements, conduct a benefits comparison among proposed facilities and roadway cross-sections, and to prioritize and program roadways for such improvements. With statistical precision, the BLOS Model clearly reflects the effect on bicycling suitability or "compatibility" due to variations in the following primary factors:

- bike lane or paved shoulder width;
- traffic volume, speed, and type;
- outside lane width;
- presence of on-street parking; and
- pavement surface condition.

While the PLOS model, with statistical precision, clearly reflects the effect on pedestrian suitability or "compatibility" due to variations in the following primary factors:

- sidewalk presence, width;
- roadway width;
- traffic volume, speed, type;
- presence of buffer, width; and
- presence of barriers (on-street parking, street trees).

The level of service analysis produces, for each study network segment, an objective score and "grade" which measures accommodation on that section of roadway, as shown on the following page.

LEVEL OF SERVICE	NUMERICAL RANGE
A	≤ 1.5
B	> 1.5 and 2.5 ≤
C	> 2.5 and 3.5 ≤
D	> 3.5 and 4.5 ≤
E	> 4.5 and 5.5 ≤
F	> 5.5

EXISTING CONDITIONS ANALYSIS RESULTS

Bicycling conditions analysis were performed for more than 221 directional network segments based on the collected network data. The distribution of bicycle level of service grades is shown in **Figure 3.** At a distance-weighted network-wide level, the Town of Henrietta was found to currently provide bicycling conditions that correspond to a bicycle level of service 2.64 ("C"), which is generally favorable compared with many other metropolitan area municipalities. Most of the segments earned an A, B, C or D. A few earned E and only one segment earned F. **Appendix E** provides additional information about the BLOS Model, and **Appendix F** provides the BLOS data sheets for all roadways that were analyzed in the course of the study.

Pedestrian conditions analysis were performed for more than 221 directional network segments based on the collected network data. The distribution of pedestrian level of service grades is shown in **Figure 4**. At a distance-weighted network-wide level, the Town of Henrietta was found to currently provide pedestrian conditions that correspond to a pedestrian level of service 3.94 ("D"), which is poor compared with many other metropolitan area municipalities. None of the roadways earned an A or B, and only a few earned an F. Most segments earned a C, D, or E. **Appendix E** provides additional information about the PLOS Model, and **Appendix F** provides the PLOS data sheets for all roadways that were analyzed in the course of the study.

It should be noted that the study network did not include local neighborhood streets in Henrietta, many of which are safe and comfortable for pedestrians.

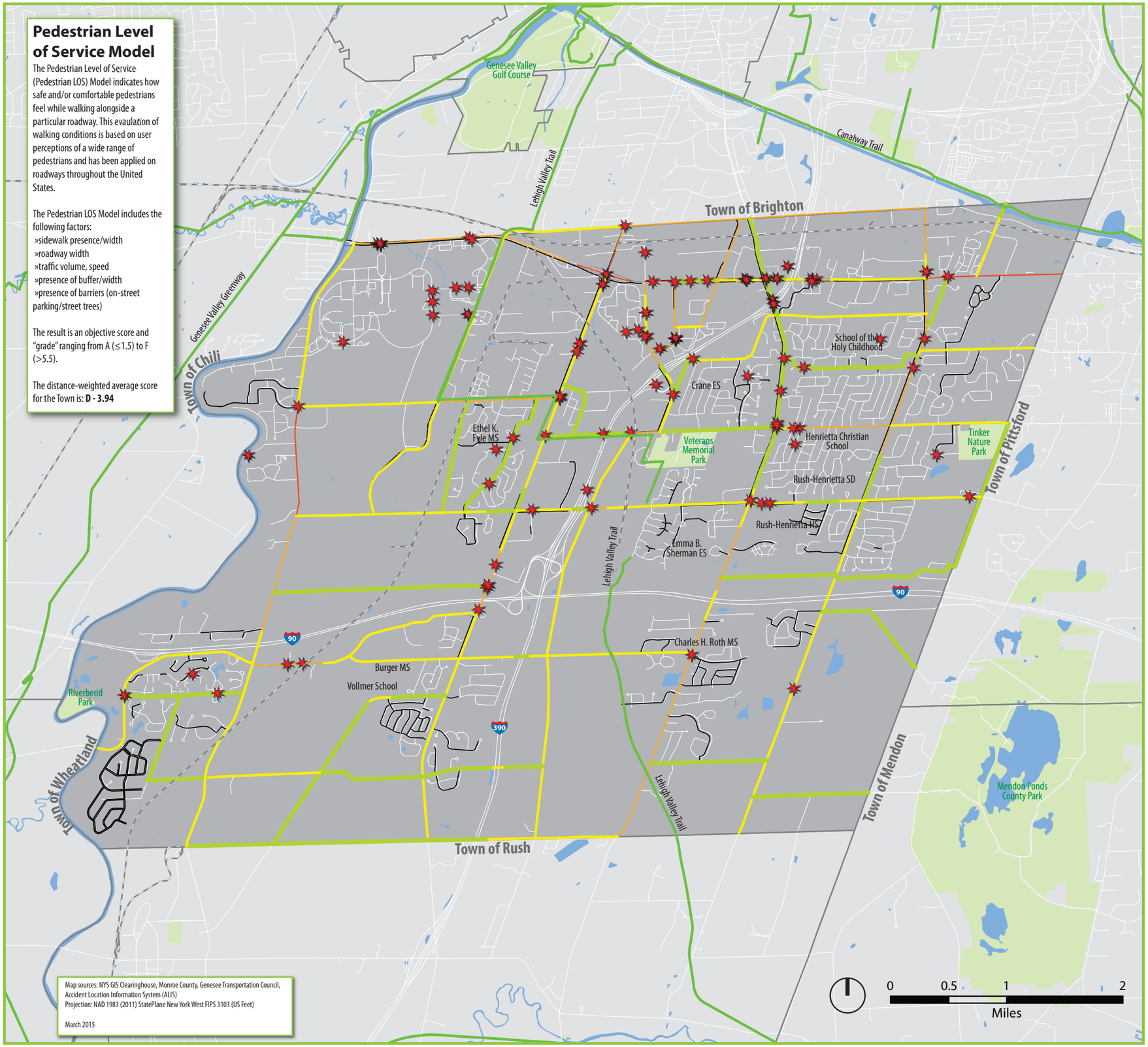
SIDEWALK FACILITIES

The presence of sidewalks was assessed along all streets within the Town of Henrietta. Existing sidewalk facility data was provided by the Town. There are over 72 miles of concrete public sidewalk in the Town of Henrietta. Public sidewalks contribute greatly to the residents' quality of life by providing safe opportunities for healthy activity and opportunities for social interaction. **Figure 8** (presented later in the plan in combination with facility recommendations) illustrates existing sidewalk locations and provides an analysis of the presence or absence of sidewalks throughout the system. It is recommended that Henrietta use **Figure 8** to identify where new sidewalks are needed during future development projects.

It should be noted that although NYSDOT and Monroe County DOT roadway projects may install sidewalks as part of those projects, the ownership and maintenance is the Town of Henrietta's responsibility. In addition, unless federal aid is available on Monroe County DOT projects, the cost of the sidewalk installtion is the Town's responsibility as well.

TOWN OF HENRIETTA
ACTIVE TRANSPORTATION PLAN

PEDESTRIAN LEVEL OF SERVICE CONDITIONS



Map sources: NYS GIS Clearinghouse, Monroe County, Genesee Transportation Council, Accident Location Information System (ALIS)
Projection: NAD 1983 (2011) StatePlane New York West FIPS 3103 (US Feet)

March 2015

Pedestrian Level of Service Model

The Pedestrian Level of Service (Pedestrian LOS) Model indicates how safe and/or comfortable pedestrians feel while walking alongside a particular roadway. This evaulation of walking conditions is based on user perceptions of a wide range of pedestrians and has been applied on roadways throughout the United States.

The Pedestrian LOS Model includes the following factors:
»sidewalk presence/width
»roadway width
»traffic volume, speed
»presence of buffer/width
»presence of barriers (on-street parking/street trees)

The result is an objective score and "grade" ranging from A (≤1.5) to F (>5.5).

The distance-weighted average score for the Town is: **D - 3.94**

Project Study Area

Trails/Sidewalks

Rail

Pedestrian Crash

Level of Service
- A
- B
- C
- D
- E
- F

Note:
1. Crashes as reported from 2004-2013. (GTC, ALIS)

LEVEL OF SERVICE "C"

LEVEL OF SERVICE "D"

LEVEL OF SERVICE "E"

LEVEL OF SERVICE "F"

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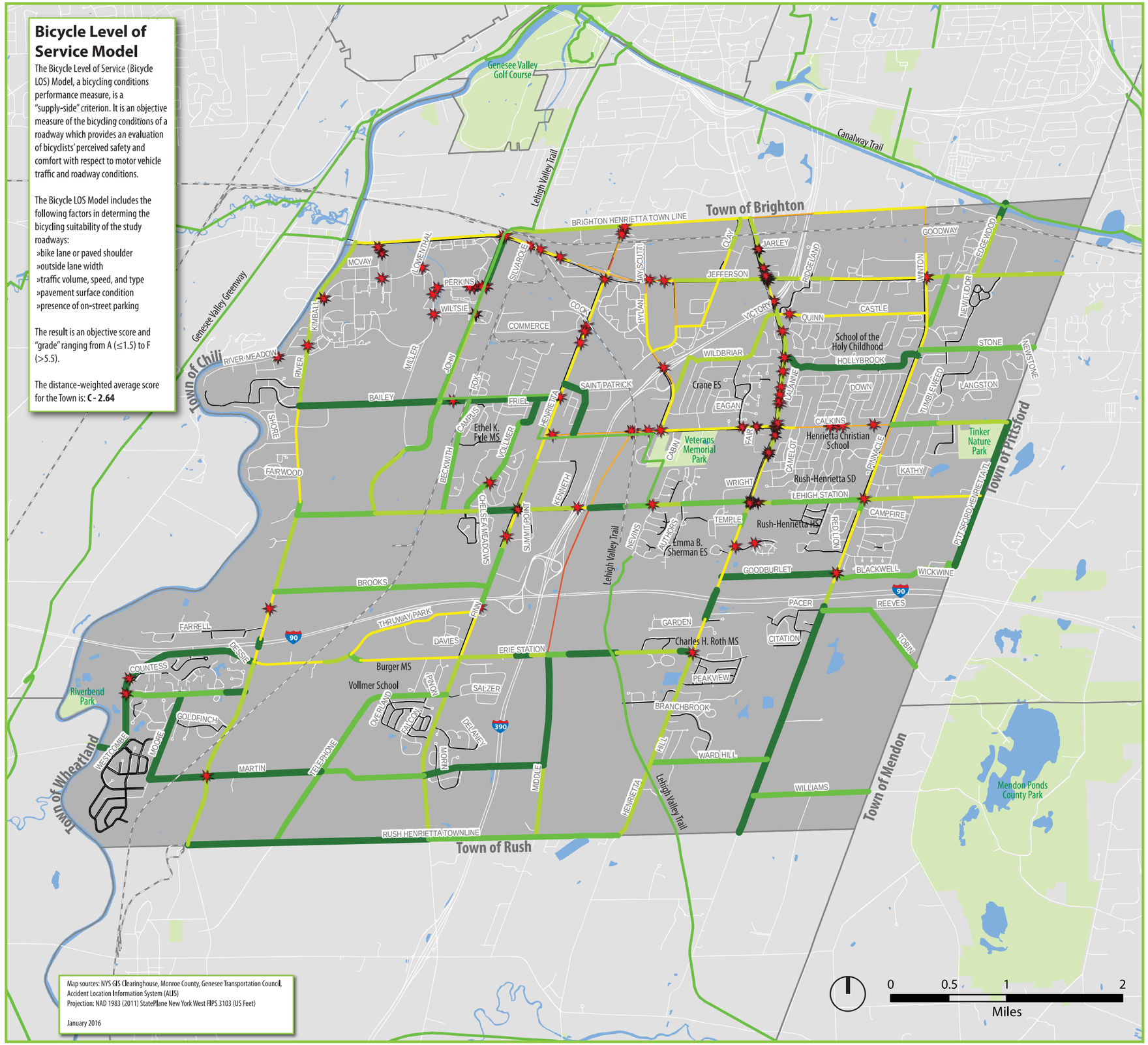
TOWN OF HENRIETTA
ACTIVE TRANSPORTATION PLAN

BICYCLE LEVEL OF SERVICE CONDITIONS



Map sources: NYS GIS Clearinghouse, Monroe County, Genesee Transportation Council, Accident Location Information System (ALIS)
Projection: NAD 1983 (2011) StatePlane New York West FIPS 3103 (US Feet)

January 2016

Bicycle Level of Service Model

The Bicycle Level of Service (Bicycle LOS) Model, a bicycling conditions performance measure, is a "supply-side" criterion. It is an objective measure of the bicycling conditions of a roadway which provides an evaluation of bicyclists' perceived safety and comfort with respect to motor vehicle traffic and roadway conditions.

The Bicycle LOS Model includes the following factors in determing the bicycling suitability of the study roadways:

- »bike lane or paved shoulder
- »outside lane width
- »traffic volume, speed, and type
- »pavement surface condition
- »presence of on-street parking

The result is an objective score and "grade" ranging from A (≤1.5) to F (>5.5).

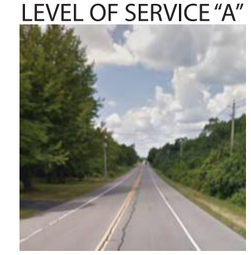
The distance-weighted average score for the Town is: **C - 2.64**

Project Study Area
Sidewalks
Trails
Rail
Bicycle Crash

Level of Service
- A
- B
- C
- D
- E
- F

Note:
1. Crashes as reported from 2004-2013. (GTC, ALIS)

LEVEL OF SERVICE "A"



LEVEL OF SERVICE "B"

LEVEL OF SERVICE "C"

LEVEL OF SERVICE "D"

LEVEL OF SERVICE "E"

LEVEL OF SERVICE "F"

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NON-MOTORIZED DEMAND EVALUATION

A pedestrian priority map was assembled using a variety of GIS variables. ArcGIS and its Spatial Analyst extension were used to analyze the combination of variables to produce a "heat map" identifying priority areas for pedestrian and bicycle improvements in the Town of Henrietta. The variables used for the analysis included:

- School/university locations;
- Parks/trails;
- Sidewalks;
- Population density/acre;
- Retail locations;
- Transit stops; and
- Other activity centers (places of worship, Town Hall, post offices, and library)

Buffers were placed around pedestrian generators/attractors at pre-determined distances (1/8 mile, 1/4 mile, 1/3 mile, and 1/2 mile). The result is a graphic that illustrates the potential demand from high (warm colors) to low (cool colors) where higher values represent areas closer to pedestrian attractors/generators. The map illustrates the relationship between pedestrian and bicycle priority areas and the presence of a unified sidewalk and trail network, ultimately showing areas within the Town where priority investments should be made to improve and enhance the pedestrian environmental. Refer to **Figure 5** for map.

3.3 SAFETY EVALUATION

A safety evaluation was conducted for the Town of Henrietta using 10-years of historical data from the Genesee Transportation Council. Pedestrian and bicycle crash locations were each mapped in order to identify areas that may present opportunities to improve bicyclist and pedestrian safety. This safety assessment was a key component in selecting the Priority Intersections, as well as making recommendations for Priority Sidewalk Additions.

A safety evaluation of existing pedestrian and bicycle crash locations using 10-year accident data information provided by GTC's Accident Location Information System (ALIS) was conducted for the Town of Henrietta. High accident crash locations have been identified in point format on the Bicycle and Pedestrian Level of Service Maps (**Figures 3 and 4**). Identifying crash locations help to determine how well streets actually meet the needs of bicyclists and pedestrians and identify where gaps truly exist.

3.4 SHARED-USE TRAILS

Multi-use trails in Henrietta function as both transportation facilities and destinations for recreation and fitness activities. The status of existing and planned trails in Henrietta and overall connectivity of the network was analyzed. Trail assessments were accomplished through desktop analysis of existing data bases and documents, inquiries to local trail managers and operators, input from residents, and field verification.

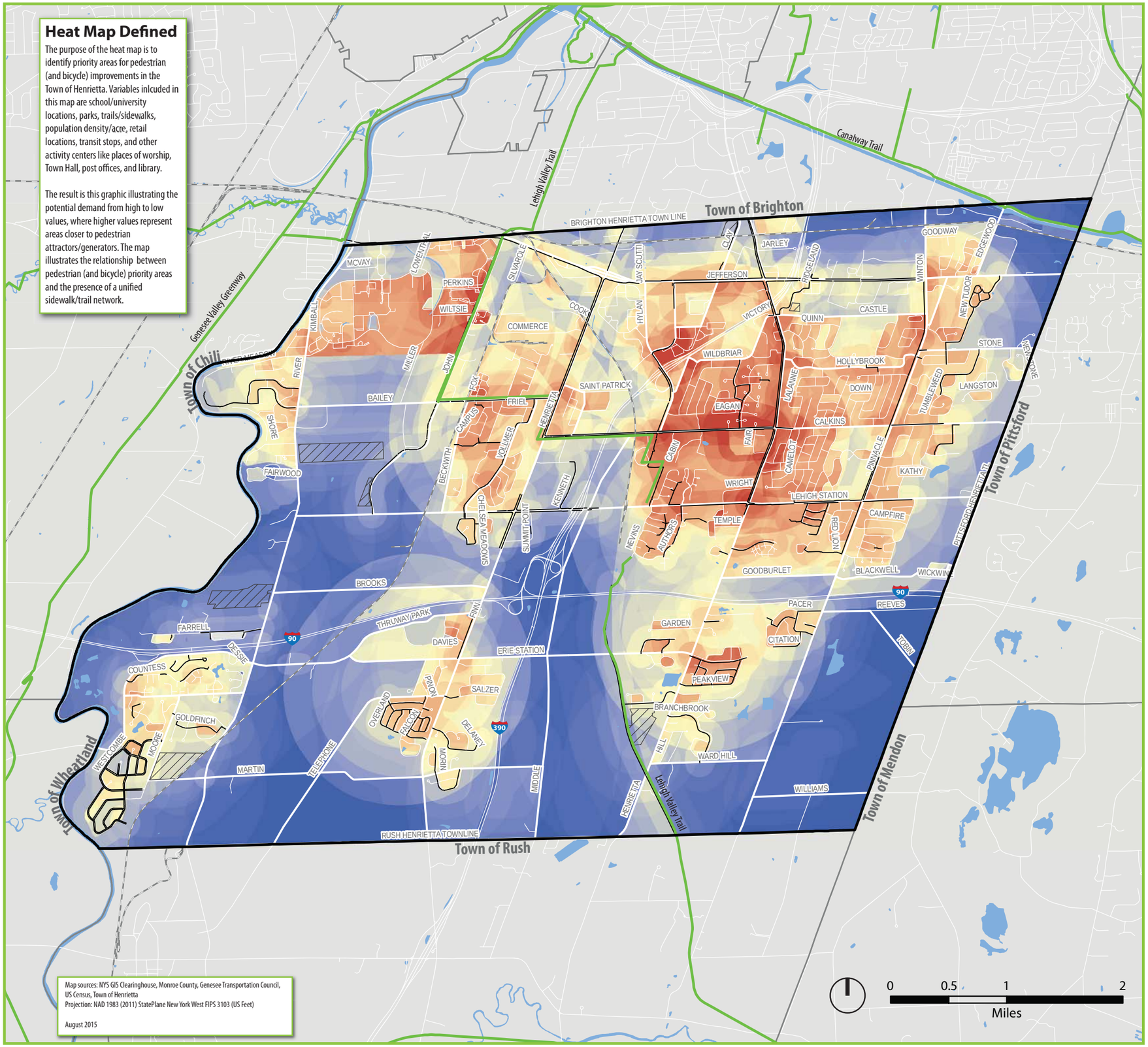
The Lehigh Valley Trail is part of a developing system of multi-use trails in western New York. The trail connects on the western end with the Genesee Valley Greenway and on the east end to the Auburn Trail. It provides partial connectivity between RIT and the U of R, and linkages to destinations in Henrietta, Brighton, Rush, Mendon and Victor. The northern branch of the LHVT connects to the Erie Canalway Trail.

Within the Town of Henrietta, the Lehigh Valley Trail travels north to south between Jefferson Road and the Rush Henrietta Townline. Between Jefferson Road and Bailey Road, along John Street the trail is a mix of 10 foot wide asphalt and concrete in good to fair condition with 2 signalized/striped road/driveway crossings and 2 non-signalized road/driveway crossings. Between Bailey Road and Veterans Memorial Park the trail follows the existing 5 foot wide concrete sidewalk in good condition with 2 signalized/striped road/driveway crossings and 7 non-signalized road/driveway crossings. Between Veterans Memorial Park and the Rush Henrietta Townline the trail is a mix of 5 foot wide concrete sidewalk and 10 foot wide stonedust in good to fair condition with 1 striped-only road crossing and 1 non-signalized road/driveway crossing. Wayfinding along the trail corridor exists but could be improved. Existing drainage, connectivity and access, and road/driveway crossings are critical areas for improvements. Currently a temporary alignment is used from Lehigh Station Road to Erie Station Road. Refer to **Figure 6**.

TOWN OF HENRIETTA
ACTIVE TRANSPORTATION PLAN

DEMAND "HEAT MAP" ASSESSMENT

FIGURE 5



Project Study Area

Sidewalks

Rail

New Development

Potential Demand

High

Medium

Low

Notes:
1. Population density has been calculated based on the US Census Block Group file from the 2010 Census. Population patterns may have changed in the years since the survey. More recent data (e.g., ACS 5-Year Estimates) are not available at this scale. Population data has been updated, where available.
2. New development has been identified to show areas that may affect the demand scores upon project completion. The project boundaries are approximate.

Identified Priority Intersections

1. John St. / Jefferson Rd.
2. Jefferson Rd. / Winton Rd.
3. East Henrietta Rd. / Lehigh Station Rd.
4. Middle Rd. / Lehigh Station Rd.
5. West Henrietta Rd. / Lehigh Station Rd.
6. East River Rd. / Bailey Rd.

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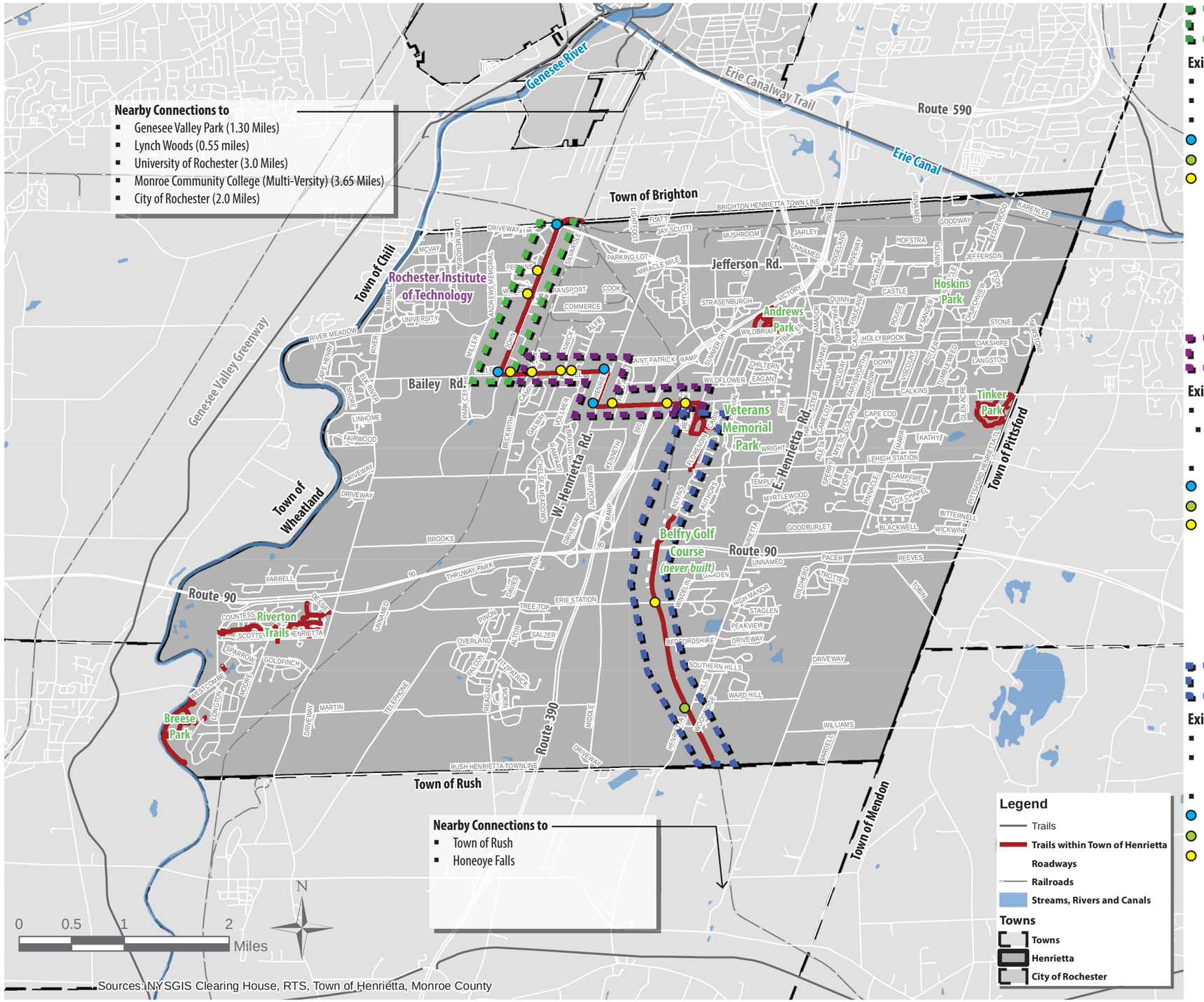
TRAIL ASSESSMENT **LEHIGH VALLEY TRAIL**



ZONE 1
Jefferson Road to Bailey Road Along John Street

Existing Conditions

- Approx. Length: 1.60 Miles
- Surface: Asphalt or Concrete Sidewalk
- Condition: Good/Fair
- Signalized/Striped Road Crossings: 2
- Striped-Only Road Crossings: 0
- Non Signalized Road Crossings: 2


Existing Conditions Photo

ZONE 2
Bailey Road to Veterans Memorial Park

Existing Conditions

- Approx. Length: 2.25 Miles
- Surface: Concrete Sidewalk (not ideal for bicyclists)
- Condition: Good/Fair
- Signalized/Striped Road Crossings: 2
- Striped-Only Road Crossings: 0
- Non Signalized Road Crossings: 7


Existing Conditions Photo

ZONE 3
Veterans Memorial Park to Rush-Henrietta Townline

Existing Conditions

- Approx. Length: 3.0 Miles
- Surface: Stonedust, natural surface, small portions of concrete sidewalk
- Condition: Fair
- Signalized/Striped Road Crossings: 0
- Striped-Only Road Crossings: 1
- Non Signalized Road Crossings: 1


Existing Conditions Photo
Karen Lankeshofer

3.5 SCHOOLS AND UNIVERSITIES

It is estimated that over 3,000 RIT students live off-campus in the Town of Henrietta. Many of these are international students who do not own cars and are accustomed to a more pedestrian-friendly environment. Complexes such as Bennington Hills and Westbrooke have significant numbers of RIT student tenants. Affordable apartments that are attractive to students also provide housing for lower income Henrietta residents. Therefore, strategically implemented active transportation improvements in Henrietta can provide benefits to both students and under-served resident populations. RIT students have the ability to file online petitions related to desired transportation and safety improvements; those petitions, received as of September 2014, can be found in **Appendix C**.

Key issues include addressing existing safety concerns, identifying network gaps, and providing guidance for creating a "Complete Streets" environment that will be safe, attractive and supportive for pedestrians and bicyclists.

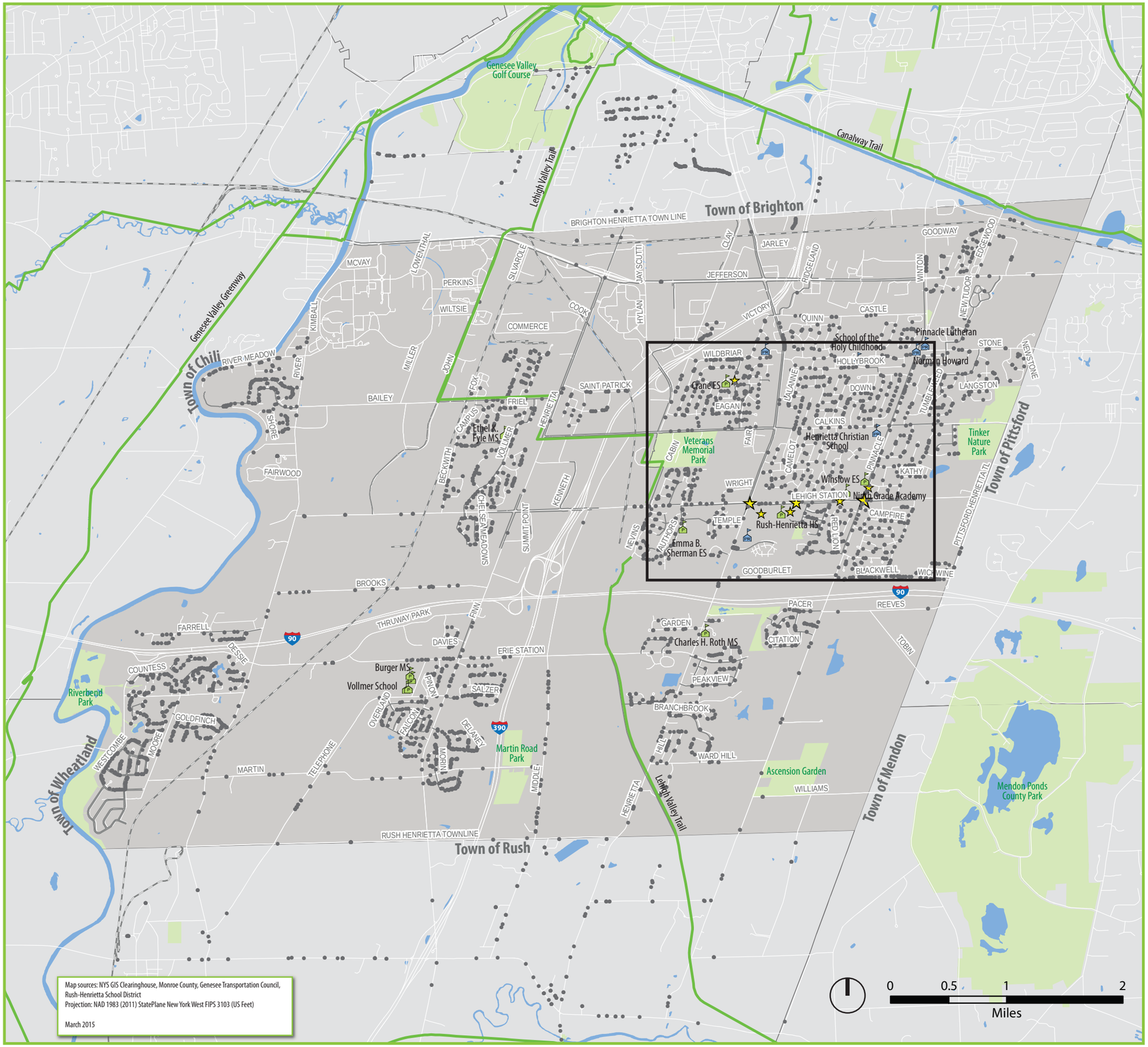
The Rush-Henrietta Central School District includes 10 schools and is one of the Town's prime assets. A strong school district supports a strong local economy, and helps create an environment for lifetime residency. Providing safe opportunities for walking and bicycling to the schools can have positive health impacts for school age children, and help reduce short-distance automobile trips. Refer to **Figure 7** for an existing school locations map.

Bike to School Day, photo credit Karen Lankeshofer

RIT Tiger Bike, On-Campus Bike Share

TOWN OF HENRIETTA
ACTIVE TRANSPORTATION PLAN

RUSH-HENRIETTA SCHOOL DISTRICT



Map sources: NYS GIS Clearinghouse, Monroe County, Genesee Transportation Council, Rush-Henrietta School District
Projection: NAD 1983 (2011) StatePlane New York West FIPS 3103 (US Feet)

March 2015

Student Locations

Public School

Private School

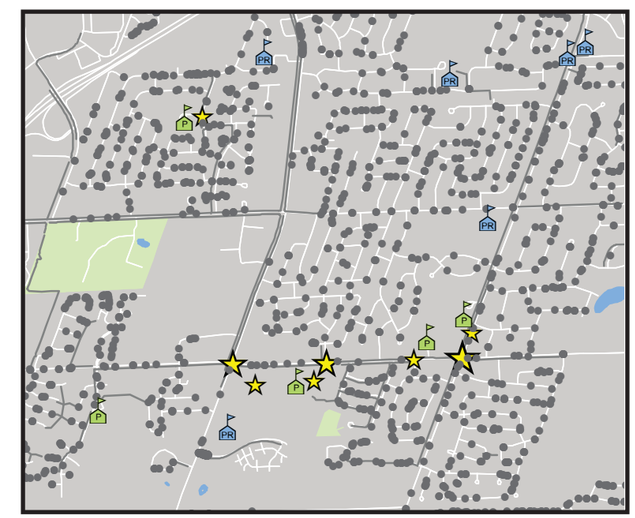
Sidewalks

Rail

1 Crossing Guard

2 Crossing Guards

3 Crossing Guards



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3.6 PRIORITY INTERSECTIONS

Six intersections in Henrietta were selected for further study and more detailed recommendations for improvements. The overall goals for the suggested intersection improvements are to improve pedestrian safety and support an increased number of trips by walking and bicycling. The conceptual improvements packages recommended for each intersection aim to achieve those goals. The six intersections selected for detailed analysis, in addition to the controlling jurisdiction, are listed below:

- Jefferson Road (NYSDOT) & Winton Road (MCDOT) = NYSDOT
- Jefferson Road (NYSDOT) & John Street (MCDOT) = NYSDOT
- Bailey Road (MCDOT) & East River Road (MCDOT) = MCDOT
- Lehigh Station Road (NYSDOT east of W Henrietta Rd, MCDOT west of W Henrietta Road) & West Henrietta Road (NYSDOT) = NYSDOT
- Lehigh Station Road (NYSDOT) & Middle Road (MCDOT) = NYSDOT
- Lehigh Station Road (NYSDOT) & East Henrietta Road (NYSDOT) = NYSDOT

Priority intersection selection was a collaborative effort involving Town staff, PAC members, and the consultant team. Criteria for selection included 10 year crash data, proximity to priority destinations, overall density of use, special needs populations, anecdotal information and perceived safety issues. The project team made site visits to observe conditions at all six Priority Intersections.

Intersection safety assessments involved field investigations that considered the physical and operational characteristics of each location, pertinent to pedestrian and bicycle safety in addition to desktop analysis using AutoTURN software to verify the layout. Elements that were investigated include, and are not limited to: sidewalks, crosswalks, crossing widths, intersection geometry and corner radii, traffic controls, lighting, sight lines and other physical conditions; signal operations, phasing and timing related to pedestrian safety, turning volumes, traffic operations, movements and speeds.

10 year crash data provided by GTC indicated fairly low numbers of documented pedestrian and bicycle accidents at the Priority Intersections. The New York State MV-104 accident report is the primary statistical evidence used to evaluate crash density for specific locations. While the MV-104 is one good source of data, it does not reflect the full range of conflicts between various travel modes. Dangerous interactions that do not result in injury or property damage usually do not trigger an MV-104 accident report.

As an additional layer of information, public input recorded during the year-long active transportation study was used to help evaluate the actual and perceived safety of the priority intersections in Henrietta. There were a significant number of anecdotal reports regarding problems for pedestrians and bicyclists at these intersections. Public input clearly indicated that many Henrietta residents do not feel safe walking or riding through these areas. The perceived lack of safety may be reducing the number of potential walking and cycling trips in Henrietta. An important goal of the project is to encourage more trips by walking and cycling, so addressing safety conditions at the intersections is a primary concern.

The specific details of each intersection assessment can be found on **Figures 16-21** presented later in the plan in combination with facility recommendations.

4.0 FACILITY RECOMMENDATIONS

Review and analysis of existing conditions, stakeholder involvement, and extensive public input collectively provides a broad picture of both general active transportation needs (i.e. facility types) in the Town of Henrietta, as well as specific projects that would most improve bicycle and pedestrian accommodation. General facility types include closure of sidewalk gaps, shared use paths and trails (primarily connections within the existing trail network), designated bike lanes, intersection improvements, and bicycle-specific signage and pavement markings (such as Shared Lane Markings and Share the Road signage). The projects range from those that can be implemented quickly and at very low costs to those that would be more costly and long-term because of the need for further study prior to design and implementation.

Identification of the facilities in this Plan represents a significant enhancement to the likelihood of their implementation as targets of opportunity arise. The established prioritization serves as a general guide to the Town of Henrietta in phasing implementation, but does not suggest a specific order in which projects will ultimately be constructed. Recommended improvements, regardless of their established priority, may be tied to capital improvement schedules and specific opportunities.

A list of the Plan's specific recommended facility improvements, many of which were directly derived from community member input, is shown in **Tables 2 through 6**, as separated by facility type. In addition, refer to the associated figures. The Recommendations section proposes significant number of recommended projects. **Tables 2 through 6** summarize all of these proposed projects and their associated phasing. Each project varies in priority based on the number of people served by the project, the Demand Map (**Figure 5**) and the feasibility construction and funding. Each project was ranked according to the following phasing options:

- Priority – Highly beneficial projects that are immediately feasible, or will have the most impact and should therefore be addressed first.
- Recommended – Very beneficial projects that will have a significant impact and should be addressed next.
- Possible – Beneficial projects that have a less critical time frame, or cannot begin until other projects are completed or issues are addressed.

4.1 PEDESTRIAN FACILITY IMPROVEMENTS

SIDEWALK NETWORK PRIORITY GAPS

One important task of Henrietta's Active Transportation Plan was to identify gaps in the existing sidewalk network, and recommend priority sidewalk additions to help close the gaps. The long-term goal of the Town is to have sidewalks on both sides of all arterial and collector roads. It is recognized that local streets with low traffic volumes can often provide a safe pedestrian environment without a full sidewalk system. In certain locations, new sidewalk construction can also serve as off-street neighborhood connections to enhance walkability.

The inventory of existing conditions mapped the current sidewalk system in Henrietta, and identified existing gaps. Priority sidewalk additions address gaps that are in close proximity to community destinations, show a history of pedestrian safety issues, and improve overall connectivity of the pedestrian network. The Plan recommends over 16.5 miles of Priority Sidewalk additions. Refer to **Figure 8**. It should be noted that although the Plan specifically recommends 16.5 miles of Priority Sidewalk additions, the overall goal for the Town should be to create a system of contiguous sidewalks, especially providing connections to nearby destinations such as schools.

It should be noted that in regards to sidewalks "NYSDOT supports and is aggreeable to the installation of sidewalks on State roads inlcuding those outlined in this study, on a prioritized basis based on demonstrated need and funding availability." Although NYSDOT and Monroe County DOT roadway projects may install sidewalks as part of those projects, the ownership and maintenance is the Town of Henrietta's responsibility. The Town will be required to coordinate and obtain necessary permits from NYSDOT and Monroe County DOT. In addition, unless federal aid is available on Monroe County DOT projects, the cost of the sidewalk installtion is the Town's responsibility as well.

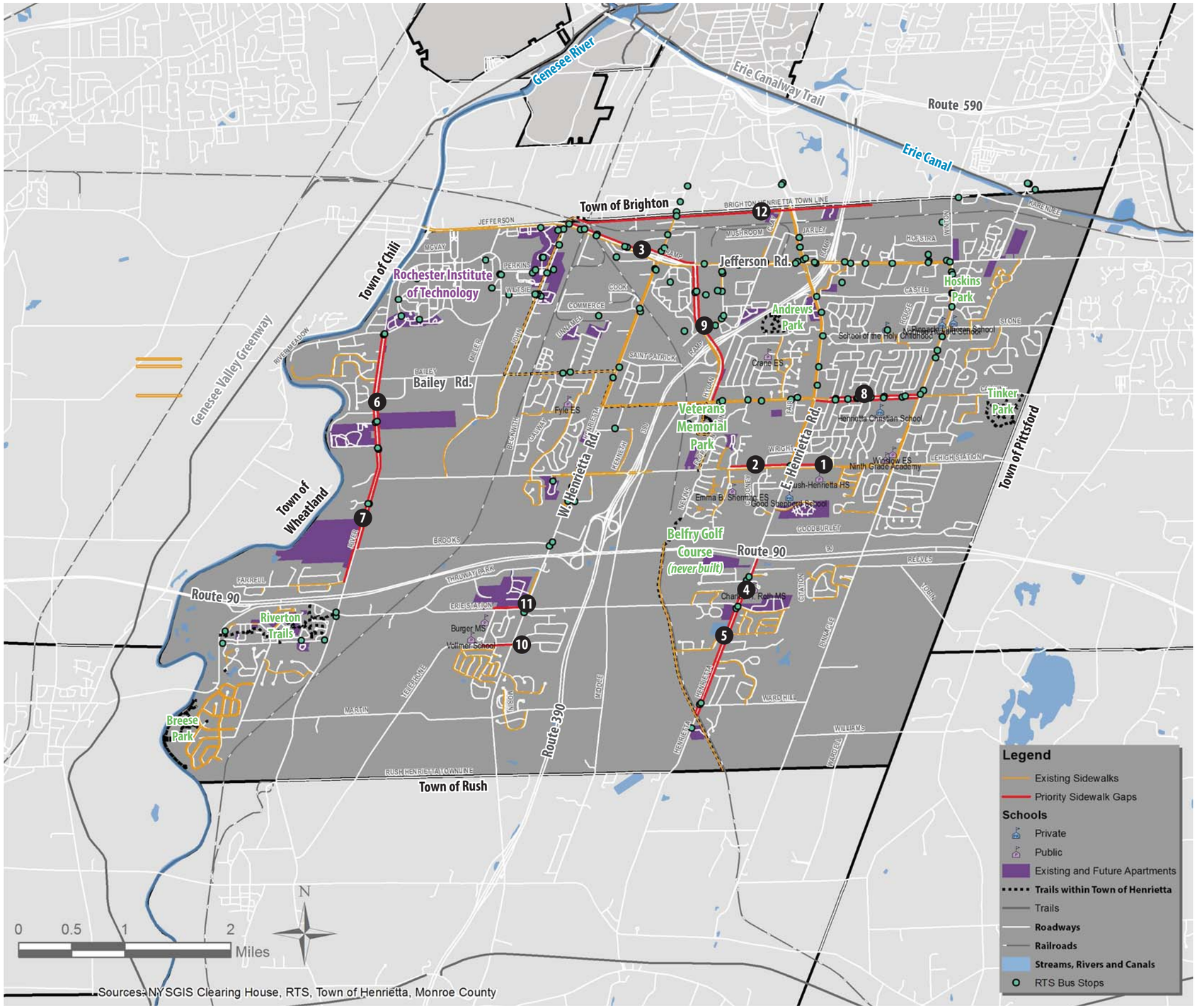
Table 2: Sidewalk Network Priority Gaps

Roadway/Location	Recommended Facility Improvement	Coordinating Jurisdiction	Phase
Lehigh Station (Aleta to E Henrietta)	Complete sidewalk north side	NYSDOT, Town of Henrietta	Priority
Lehigh Station (E Henrietta to Green Clover)	Complete sidewalk north side	NYSDOT, Town of Henrietta	Priority
Jefferson Road (BHTL to Hylan)	Complete sidewalk north side	NYSDOT, Town of Henrietta	Priority
E Henrietta Road (Brentland Woods to LHVT)	Complete sidewalk west side	NYSDOT, Town of Henrietta	Recommended
E Henrietta Road (Lookup Park to LHVT)	Complete sidewalk east side	NYSDOT, Town of Henrietta	Recommended
E River Road (Farnum to Brooks)	Complete sidewalk east side	MCDOT, Town of Henrietta	Priority
E River Road (Farrell Ln Ext to River Meadow Drive)	Complete sidewalk west side	MCDOT, Town of Henrietta	Priority
Calkins Road (E Henrietta to Pinnacle)	Complete sidewalk both sides	MCDOT, Town of Henrietta	Recommended
Hylan Drive (Jefferson to Calkins)	Complete sidewalk both sides	MCDOT, Town of Henrietta	Priority
Telephone Road (School District Dr to W Henrietta)	Complete sidewalk south side	MCDOT, Town of Henrietta	Recommended
Erie Station Road (School District Dr to W Henrietta	Complete sidewalk north side	NYSDOT, Town of Henrietta	Recommended
Brighton Henrietta Townline Road existing sidewalk east of Rt 390 to Jefferson Rd)	Complete sidewalk south side. Coordinate with new RTS routes.	MCDOT, RTS, Town of Henrietta	Priority

SIDEWALK NETWORK PRIORITY GAPS

THIS BOARD ADDRESSES SAFETY AND CONNECTIVITY IMPROVEMENTS FOR:

BICYCLIST · PEDESTRIAN · SIDEWALK GAPS · TRAILS · TRANSIT · INTERSECTIONS · SCHOOLS



	Roadway/Location	Recommended Facility Improvement	Coordinating Jurisdiction	Phase
1	Lehigh Station (Aleta to E Henrietta)	Complete sidewalk north side	NYSDOT, Town of Henrietta	Priority
2	Lehigh Station (E Henrietta to Green Clover)	Complete sidewalk north side	NYSDOT, Town of Henrietta	Priority
3	Jefferson Road (BHTL to Hylan)	Complete sidewalk north side	NYSDOT, Town of Henrietta	Priority
4	E Henrietta Road (Brentland Woods to LHVT)	Complete sidewalk west side	NYSDOT, Town of Henrietta	Recommended
5	E Henrietta Road (Lookup Park to LHVT)	Complete sidewalk east side	NYSDOT, Town of Henrietta	Recommended
6	E River Road (Farnum to Brooks)	Complete sidewalk east side	MCDOT, Town of Henrietta	Priority
7	E River Road (Farrell Ln Ext to River Meadow Drive)	Complete sidewalk west side	MCDOT, Town of Henrietta	Priority
8	Calkins Road (E Henrietta to Pinnacle)	Complete sidewalk both sides	MCDOT, Town of Henrietta	Recommended
9	Hylan Drive (Jefferson to Calkins)	Complete sidewalk both sides	MCDOT, Town of Henrietta	Priority
10	Telephone Road (School District Dr to W Henrietta)	Complete sidewalk south side	MCDOT, Town of Henrietta	Recommended
11	Erie Station Road (School District Dr to W Henrietta	Complete sidewalk north side	NYSDOT, Town of Henrietta	Recommended
12	Brighton Henrietta Townline Road existing sidewalk east of Rt 390 to Jefferson Rd)	Complete sidewalk south side. Coordinate with new RTS routes.	MCDOT, RTS, Town of Henrietta	Priority

TRANSIT STOP IMPROVEMENTS

Every trip on public transportation begins and ends with a walk or bicycle ride. It is recommended that existing and newly constructed transit stops shall be ADA accessible. The recommended transit stop improvements within the Town of Henrietta encourage the use of public transportation and act as a key element in enhancing active transportation throughout the Town. Refer to **Figure 2 and 9** for site specific recommendations and the Facility Design Guidelines section for the minimum design standards.

It should also be noted, RTS recently (August 2015) added service and improvements to the Henrietta-Jefferson Road corridor within the Town of Henrietta. Two designed routes and three new routes streamline the previous service and provide great access to key retail, business, and residential destinations.

Table 3: Transit Stop Improvements

Stop Location	Recommended Facility Improvement	Coordinating Jurisdiction	Phase
Marketplace Mall Food Court Entrance	Improve transit stop: overhead shelter on new concrete pad, digital display board, relocate closer to Mall entrance.	RTS, Town of Henrietta	Priority
Hylan and Wegmans Entrance	Improve transit stop: new sidewalks to Wegmans and Mall and from edge of curb to stop, seating and overhead shelter on new concrete pad. Explore the possibility of moving the stop closer to the Wegmans entrance. Refer to **Appendix I** for plans of a nearby transit stop improvement.	RTS, Town of Henrietta, Wegmans, Wilmorite	Priority
Southtown Plaza Planet Fitness	Improve transit stop: more prominent signage, overhead shelter, more seating.	RTS, Town of Henrietta	Recommended
Jefferson and Frontier Commons Plaza	Improve transit stop: provide seating and overhead shelter on new concrete pad, new sidewalk connection to Frontier Commons Plaza.	RTS, Town of Henrietta	Recommended

MASS TRANSIT RECOMMENDATIONS

THIS BOARD ADDRESSES SAFETY AND CONNECTIVITY IMPROVEMENTS FOR:

BICYCLIST · PEDESTRIAN · SIDEWALK GAPS · TRAILS · TRANSIT · INTERSECTIONS · SCHOOLS

RIT GLEASON CIRCLE

INBOUND & OUTBOUND

EXISTING RIDERSHIP DATA

RTS Data Only (RIT Shuttles are Additional)

- (Inbound) Average Daily Total: 125
- (Outbound) Average Daily Total: 151

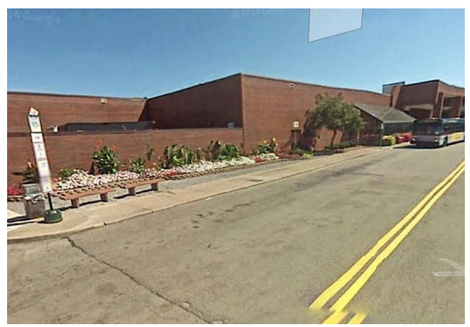
EXISTING FEATURES

- Enclosed and heated shelter, promoting year round transit use.
- Ample interior and exterior seating
- Green infrastructure: roof design and rain gardens capture and filter storm water runoff.
- Digital display board.
- Pedestrian lighting.
- Low winter maintenance.
- Nearby access to bicycle/pedestrian concourse.

***Note: Gleason Circle is owned and maintained by RIT*

MARKETPLACE MALL FOOD COURT ENTRANCE

INBOUND & OUTBOUND



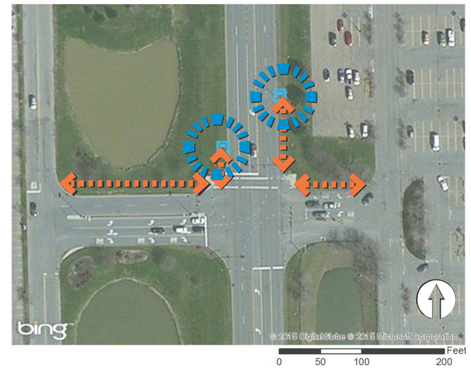
EXISTING RIDERSHIP DATA

- (Inbound) Average Daily Total: 233
- (Outbound) Average Daily Total: 263

RECOMMENDED IMPROVEMENTS

- Provide overhead shelter on new concrete pad
- Move stop location closer to Marketplace Mall entrance
- Provide digital display

HYLAN & WEGMANS ENTRANCE



INBOUND & OUTBOUND

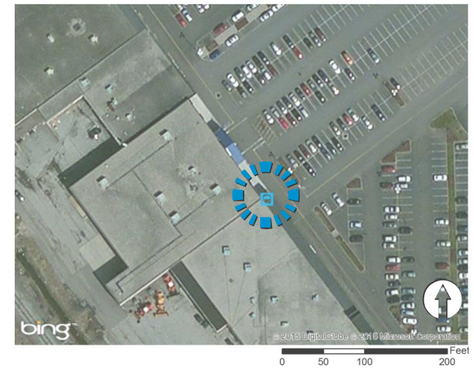
EXISTING RIDERSHIP DATA

- (Inbound) Average Daily Total: 63 (east)
- (Outbound) Average Daily Total: 37 (east), 5 (west)

RECOMMENDED IMPROVEMENTS

- East stop: Provide sidewalk access to Wegmans
- West stop: Provide sidewalk access to Mall
- Provide sidewalk connection from stop to edge of curb
- Provide seating & overhead shelter on new concrete pad

SOUTHTOWN PLAZA PLANET FITNESS



INBOUND

EXISTING RIDERSHIP DATA

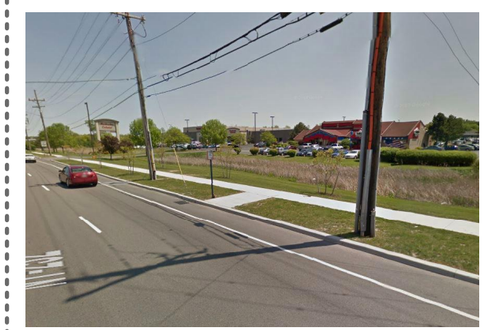
- Average Daily Total: 19

RECOMMENDED IMPROVEMENTS

- Provide more prominent signage
- Provide a separate bus stop overhead shelter
- Provide more seating

JEFFERSON & FRONTIER PLAZA

OUTBOUND



EXISTING RIDERSHIP DATA

- Average Daily Total: 41

RECOMMENDED IMPROVEMENTS

- Provide seating
- Provide overhead shelter on new concrete pad
- New sidewalk connection to Frontier Commons Plaza

**Note: Ridership data from RTS

PUBLIC TRANSIT AND ACTIVE TRANSPORTATION ARE CLOSELY RELATED & MUTUALLY SUPPORTIVE

- Every ride on a bus starts and ends with walking.
- Nationwide, 29 percent of those who use transit were physically active for 30 minutes or more each day, solely by walking to and from public transit stops.
- Similarly, transit users took 30 percent more steps per day and spent 8.3 more minutes walking per day than did people who relied on cars.
- Robert Wood Johnson Foundation 2009

PARK & RIDE

- Currently no operational park & ride in Henrietta.
- Park & Ride lots encourage and support both carpooling and transit use.
- Park & Ride lots help motorist to save on resources, including fuel, tolls, and parking costs, reduce vehicle wear and tear, reduce emissions into the environment, and decrease traffic congestion.

MAP LEGEND

Existing Transit Stop Location

Recommended Sidewalk Connection

4.2 BICYCLE FACILITY IMPROVEMENTS

Based on existing conditions and roadway geometries, each study network segment is classified into one of several recommended bicycle facility improvement categories. The recommendations are broken down first by identifying "Existing/Restripe" segments. They are coded as "existing if a paved shoulder of at least four feet is already present. Segments that do not have an existing shoulder but have at least some potential as a restripe candidate are marked as "restripe." That potential is based on having sufficient space to maintain 10-foot lanes and a 12-foot two-way left turn lane (if present) and still be able to create a 4-foot paved shoulder/bike lane.

A "Restripe Code" is used that subdivides those potential restripe candidates.

- Those with a 1 are the most obvious candidates.
- A 2 is a good candidate as well, but would require one or more lanes to drop to 10.5 or 11 feet.
- The next are segments with a shoulder space of greater than 0 feet but less than 4 feet, which would require restriping to widen those existing shoulders; such segments are coded with a 3.
- Finally, there are some roads with a wide shoulder on one side and a narrow or nonexistent shoulder on the other. These are coded using the latter side as a 4 to show that pavement could be reallocated to create a 4-foot minimum shoulder on both sides.

The final coding refers to the "APS Code" for identifying candidates for adding paved shoulders. These are segments without an existing facility that do not have a curbed cross section.

- A code of 1 is provided for those segments with a roadside profile of 1 (flat), which are the best such candidates.
- A code of 2 is tied to a roadside profile of 2, which may require more re-grading and have a higher cost.

Note that there is some overlap between the restripe and add paved shoulders candidates. Refer to **Figure 10**. Refer to **Appendix K** for a memorandum from FHWA expressing their support for taking a flexible approach to bicycle and pedestrian facility design and *"encouraging transportation agencies to go beyond the minimum requirements, and pro actively provide convenient, safe, and context-sensitive facilities that foster increased use by bicyclists and pedestrians of all abilities, and utilize universal design characteristics where appropriate."*

EXISTING BICYCLE FACILITIES

One of the primary purposes of this plan is to identify locations for new on-road bicycle facilities. Accordingly, the first step in the facility recommendation process is to identify and filter out those study network segments where a bicycle facility already exists. For the purposes of this analysis, an existing bicycle facility is constituted by any designated bike lane or paved shoulder at least four feet wide (with a striped edge line) that is not clearly intended for on-street parking. Segments meeting these criteria have been identified as having an existing bicycle facility for this plan's purposes; the analysis of all other segments continued into the next step.

ROADWAY RESTRIPE CANDIDATES

Among strategies commonly used to improve bicycling conditions, roadway restriping is frequently considered the most desirable solution. This is because of the very low (or effectively non-existent, if performed in concert with scheduled resurfacing) associated cost and the existence of excess lane width on many streets. For this reason, roadway restriping was the first option analyzed for the study network after those segments with existing bicycle facilities were filtered out of the process.

The analysis spreadsheet was programmed to reflect Henrietta's standards to determine whether the total pavement width (TPW) of each roadway segment is sufficient to leave space for four feet of bicycle facility in each direction of travel while preserving the minimum lane width for all other travel lanes, turn lanes, and on-street parking. Many of these segments already include a narrow paved shoulder on one or both sides of the road, such that the restriping would widen those shoulders to an appropriate width for bicycle travel.

ROAD DIET CANDIDATES

While the removal of travel lanes to create bicycle facilities (i.e., a road diet) is also relatively inexpensive to implement, restriping is typically a less noticeable change to a roadway and should generally be considered first. Road diets are frequently considered when a preliminary analysis indicates that sufficient capacity exists to effectively accommodate motor vehicle traffic for the foreseeable future with a reduced number of travel lanes. Such preliminary planning-level analyses have been performed for this project to identify road diet candidates. Significantly more detailed operational analyses should be carried out for individual sections , primarily intersections, before moving forward with any of the identified projects.

The Plan identifies Calkins Road as a potential road diet candidate. Two alternatives are provided on **Figures 11 and 12**. It should be noted that the Town of Henrietta is reviewing plans for possible new development located along Calkins Road. With this development, new traffic volumes may not allow for a road diet. If this is the case, it is recommended that the Town add a 10 ft. wide side path on the south side of Calkins Road, between West Henrietta Road and East Henrietta Road to allow for safe pedestrian and bicycle access to the proposed Community Campus. More information regarding road diets can be found in FHWA's ***Road Diet Informational Guide*** (*http://safety.fhwa.dot.gov/road_diets/info_guide/*).

EAST WEST MULTI MODAL CORRIDOR

Lehigh Station Road presents an opportunity to provide a contiguous east-west multi-modal corridor for Henrietta. This corridor traverses the geographic center of the Town, intersects with the Lehigh Valley Trail, and provides access to neighborhoods and schools. Strategies for the Lehigh Station corridor include phased improvements for bicycle and pedestrian facilities, as well as making best use of existing transportation infrastructure. Refer to **Figure 13**.

An asphalt rumble strip buffer is shown on **Figure 13**. This practice is not currently sanctioned by FHWA, AASHTO, or MUTCD as a Buffered Bike Lane practice. It is recommended as a possible safety measure to provide a visual and audible buffer for vehicles and bicycles. More information regarding Rumble Strips can be found on the FHWA website (*http://safety.fhwa.dot.gov/roadway_dept/pavement/rumble_strips/*). Lehigh Station Road may also be a corridor where the Town of Henrietta **Signs the Roadways with Paved Shoulders** (refer to Section 5: Facility Design Guidance).

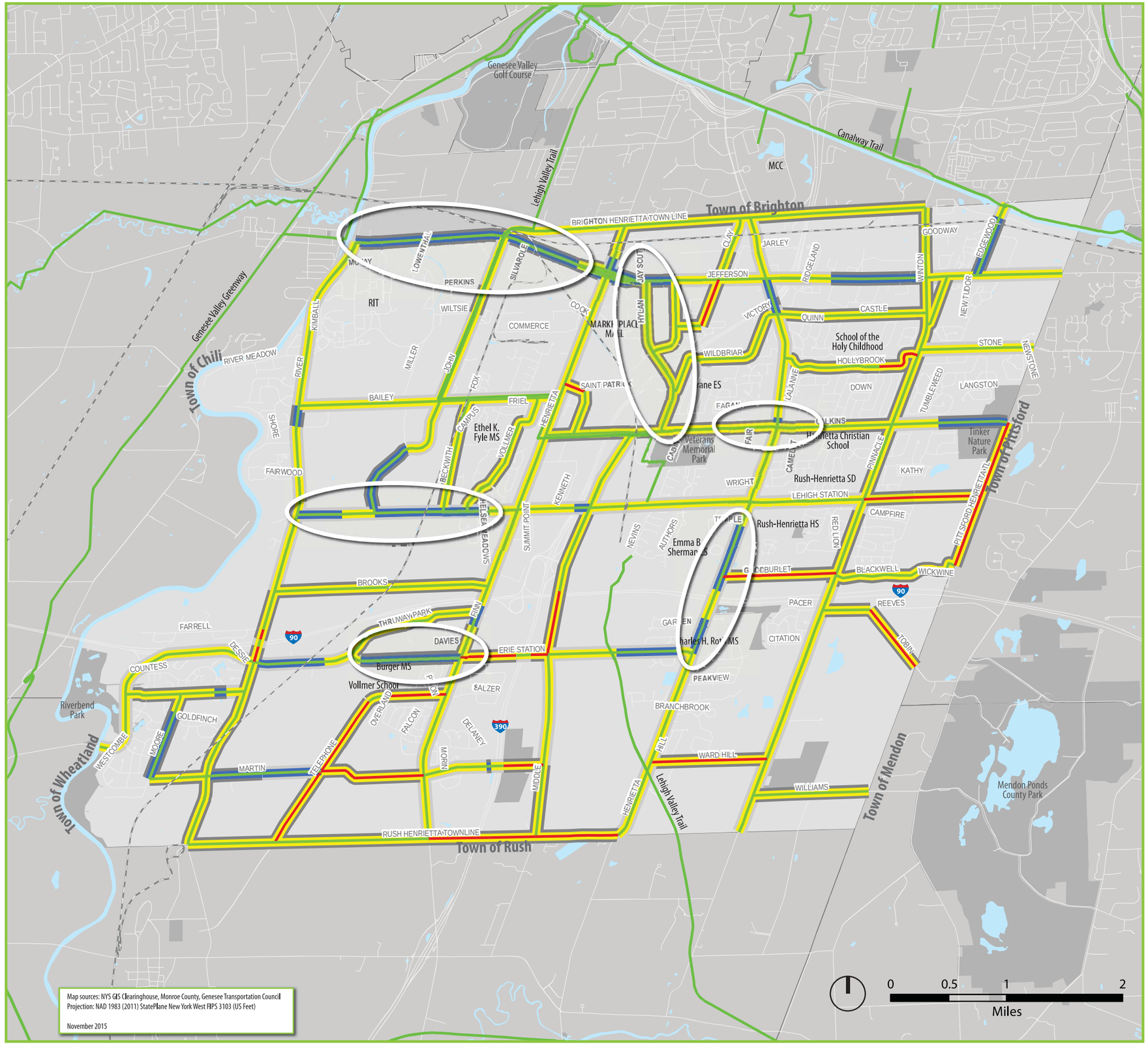
Many of the recommendations include the creation of space for paved shoulders or bike lanes. In terms of Bicycle Level of Service, designating bike lanes is secondary to simply providing delineated space that can be used by bicyclists. There are, however, many operational benefits to designating bike lanes including, but not limited to, their striping through most intersections (particularly those with exclusive right turn lanes) and their impact in reducing the incidence of wrong way riding. Decisions to designate paved shoulders as bike lanes will be at the discretion of the controlling jurisdictions of roads within Henrietta. It should be noted that Monroe County DOT currently prefers not to designate shoulders as bike lanes since this "prohibits all other uses of the space."

Table 4: Bicycle Facility Improvements

Roadway/Location	Recommended Facility Improvement	Responsible Jurisdiction	Phase
Jefferson Road (E River to W Henrietta)	No existing shoulder with potential for restripe (both sides), Shoulder space between 0 and 4 feet (one or both sides) Potential restripe candidate to widen existing shoulders.	NYSDOT	Priority
Hylan Drive (Jefferson to Calkins)	Candidate for restripe, but would require one or more lanes to drop to 10 or 10.5 feet.	MCDOT	Priority
Calkins Road (Fair Ave to E Henrietta)	No existing shoulder with potential for restripe (both sides), Distinct candidate for restripe.	MCDOT, NYSDOT	Priority
Calkins Road (E Henrietta to Amsden)	No existing shoulder with potential for restripe (both sides), Candidate for restripe but would require one of more lanes to drop to 10 or 10.5 feet.	MCDOT, NYSDOT	Recommended
Lehigh Station (E River to east of Vollmer)	Paved shoulder of at least 4 feet (one side), No paved shoulder (opposite side), Reallocate pavement to create 4 foot shoulders on both sides.	MCDOT	Priority
E Henrietta (Erie Station to Temple)	Paved shoulder of at least 4 feet (one side), No paved shoulder (opposite side), Reallocate pavement to create 4 foot shoulders on both sides.	NYSDOT	Recommended
Erie Station (Thruway Park to W Henrietta)	No existing shoulder with potential for restripe (both sides), Shoulder space between 0 and 4 feet (one or both sides) Potential restripe candidate to widen existing shoulders.	NYSDOT	Recommended

TOWN OF HENRIETTA
ACTIVE TRANSPORTATION PLAN

ROADWAY RESTRIPE CANDIDATES



Steps to Determining Suitability of Roadway Restriping

1. Presence of Paved Shoulder
   - Paved shoulder present (minimum of 4 foot shoulder)
   - Potential for restripe (little to no shoulder space)
2. Restripe Type
   - Restripe for shoulder/designated bike lane
   - Restripe for shoulder (maintain 10-10.5 foot travel lanes)
   - Restripe to widen existing shoulders
3. Level of Effort Needed to Restripe
   - Minor
   - Major

Restripe Priority Areas

Note: Refer to Figure 1, page 10 for roadway jurisdictions.

Barton & Loguidice
SRF Associates
Sprinkle Consulting
VANGUARD Engineering PC

CALKINS ROAD CONCEPTS: ROAD DIET - HYLAN DRIVE TO E. HENRIETTA ROAD

THIS BOARD ADDRESSES SAFETY AND CONNECTIVITY IMPROVEMENTS FOR:

WHAT IS A ROAD DIET?

- A road diet can be described as "removing travel lanes from a roadway and utilizing the space for other uses and travel modes. (FHWA, 2014)"
- **Benefits Include:**
  - Allows for new or wider shoulder space for cyclists and/or wider pedestrian area;
  - Reduces vehicular speeds and provides room for exclusive left-turn lanes;
  - Reduces frequency and severity of collisions, and may reduce traffic volumes;
  - Reduces crossing width and exposure for pedestrians; and
  - Can lead to a higher quality of life through pedestrian and bicycle improvements.
  - Provides traffic calming to enhance nearby intersections.
- **Operational Factors: What is considered when determining feasibility of a site for a Road Diet?**
  - De Facto Three-Lane Roadway Operation
  - Speed
  - Level of Service
  - Quality of Service
  - Average Daily Traffic
  - Peak Hour and Peak Direction
  - Turning Volumes and Patterns
  - Frequently Stopping and Slow-Moving Vehicles

Existing Conditions

CONCEPTUAL PERSPECTIVE RENDERING

Concept Rendering. Not to scale. Not for construction.

IMPROVEMENTS

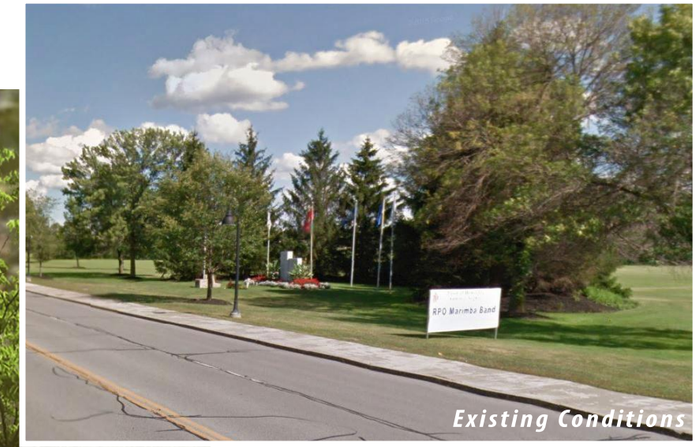
1 Existing Concrete Sidewalk 2 Tree Lawn 3 Bike Lane 4 Striped Buffer 5 Travel Lane 6 Center Turn Lane 7 Improved Signage

CALKINS ROAD CONCEPTS: SIDE PATH - HYLAN DRIVE TO E. HENRIETTA ROAD

THIS BOARD ADDRESSES SAFETY AND CONNECTIVITY IMPROVEMENTS FOR:

BICYCLIST PEDESTRIAN SIDEWALK GAPS TRAILS TRANSIT INTERSECTIONS SCHOOLS

CONCEPTUAL PERSPECTIVE RENDERING



WHAT IS A SIDE PATH?

- As describe by AASHTO, Side Paths (or Shared Use Path Adjacent to Roadways) are a specific type of shared use path that run adjacent to the roadway, where right-of-way and other physical constraints dictate.
- Children often prefer and/or are encouraged to ride on sidepaths because they provide an element of separation from motor vehicles.
- Refer to AASHTO's Guide for the Development of Bicycle Facilities (Version 2012, section 5.2.2) for more information.

IMPROVEMENTS

1. Expand existing 5' wide sidewalk to a 10' wide shared use side path
2. Tree lawn
3. Travel lanes remain

EAST/WEST MULTI-MODAL TRANSPORTATION CORRIDOR: LEHIGH STATION

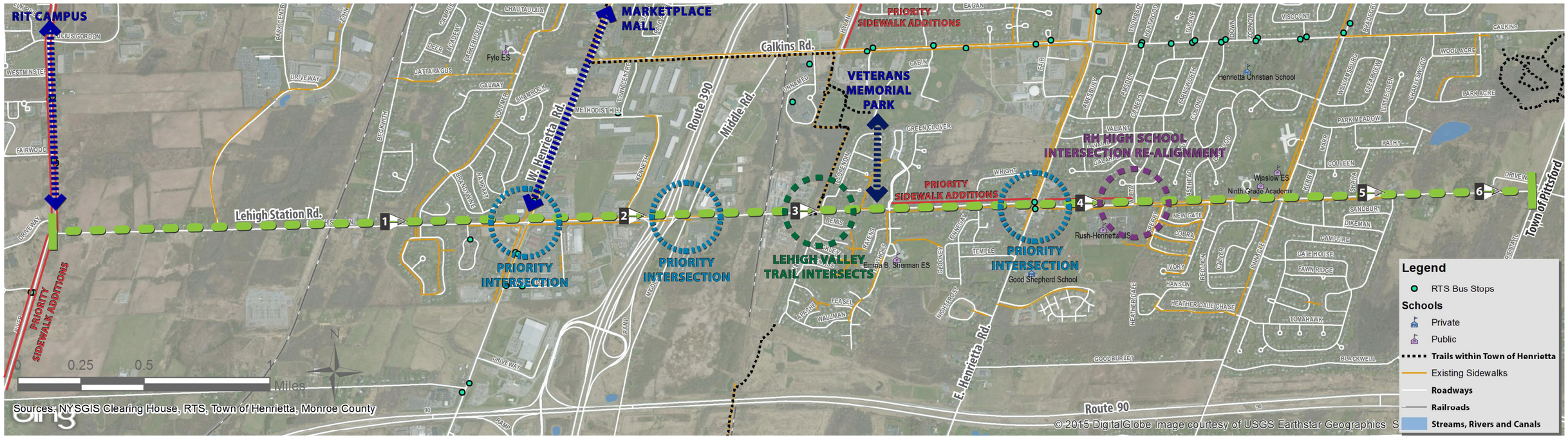
THIS BOARD ADDRESSES SAFETY AND CONNECTIVITY IMPROVEMENTS FOR:

CONCEPT

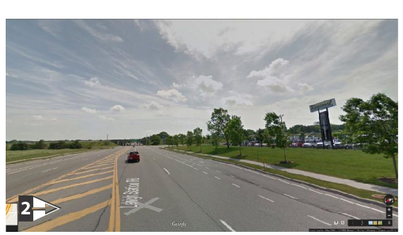
Lehigh Station Road presents an opportunity to provide a contiguous east-west multi-modal corridor for Henrietta. This corridor traverses the geographic center of the Town, intersects with the Lehigh Valley Trail, and provides access to neighborhoods and schools. Strategies for the Lehigh Station corridor include phased improvements for bicycle and pedestrian facilities, as well as making best use of existing transportation infrastructure.

RECOMMENDED IMPROVEMENTS

- Priority Intersections
- Intersection Re-Alignment with Pedestrian Safety Improvements (Refer to NYSDOT Commercial Driveway/ Access Permit Review requirements (PERM 33-COM application and checklist)
- Connectivity Improvements
- Priority Sidewalk Additions
- Installation of Bike Lanes, Buffered Bike Lanes, and Shared-Use Paths (side paths)



EXISTING CONDITIONS



EAST/WEST MULTI-MODAL TRANSPORTATION CORRIDOR: LEHIGH STATION

THIS BOARD ADDRESSES SAFETY AND CONNECTIVITY IMPROVEMENTS FOR:

BICYCLIST PEDESTRIAN SIDEWALK GAPS TRAILS TRANSIT INTERSECTIONS SCHOOLS

Note: An asphalt rumble strip buffer is shown on the rendering below. This practice is not currently sanctioned by FHWA, AASHTO, or MUTCD as a Buffered Bike Lane practice. It is recommended as a safety measure to provide a visual and audible buffer for bicycles.

CONCEPTUAL PERSPECTIVE RENDERING

IMPROVEMENTS

1. Existing Concrete Sidewalk
2. Priority Sidewalk Addition
3. Tree Lawn
4. Bike Lane
5. Asphalt Rumble Strip Safety Buffer
6. Travel Lane
7. Improved Signage

4.3 SHARED USE TRAIL IMPROVEMENTS

The Lehigh Valley Trail contains on and off road sections with some portions incomplete. The recommendations below help to integrate the Trail with other on-road/off-road improvements while also maximizing the value of The Lehigh Valley Trail as both a recreational asset and an active transportation facility. General improvements include upgraded signage, enhanced drainage, increased access, and trail surface improvements. Refer to **Figure 14** for recommended improvements.

Table 5: Shared Use Trail Improvements

Roadway/Location	Recommended Facility Improvement	Coordinating Jurisdiction	Phase
Lehigh Valley Trail (Bailey Rd to Veterans Memorial Park)	Expand 5' sidewalk to 10' shared use path where feasible	NYSDOT, Monroe County, Town of Henrietta	Recommended
Lehigh Valley Trail (Nevins Road south to Existing Stone Dust Trail)	Improve the temporary Lehigh Valley Trail from the end of Nevins Road across proposed Belfry Golf Course to the stone dust trail portion north of Erie Station Road - recommend securing permanent access agreement. (currently a temporary alignment)	Town of Henrietta	Priority
Lehigh Valley Trail (Veterans Memorial Park to Florendin)	Improve drainage and trail surface south of Veterans Memorial Park	Town of Henrietta	Priority
Lehigh Valley Trail (Veterans Memorial Park to Green Moor Way)	New 10' wide stone dust trail	Town of Henrietta	Priority


Lehigh Valley Trail within Henrietta

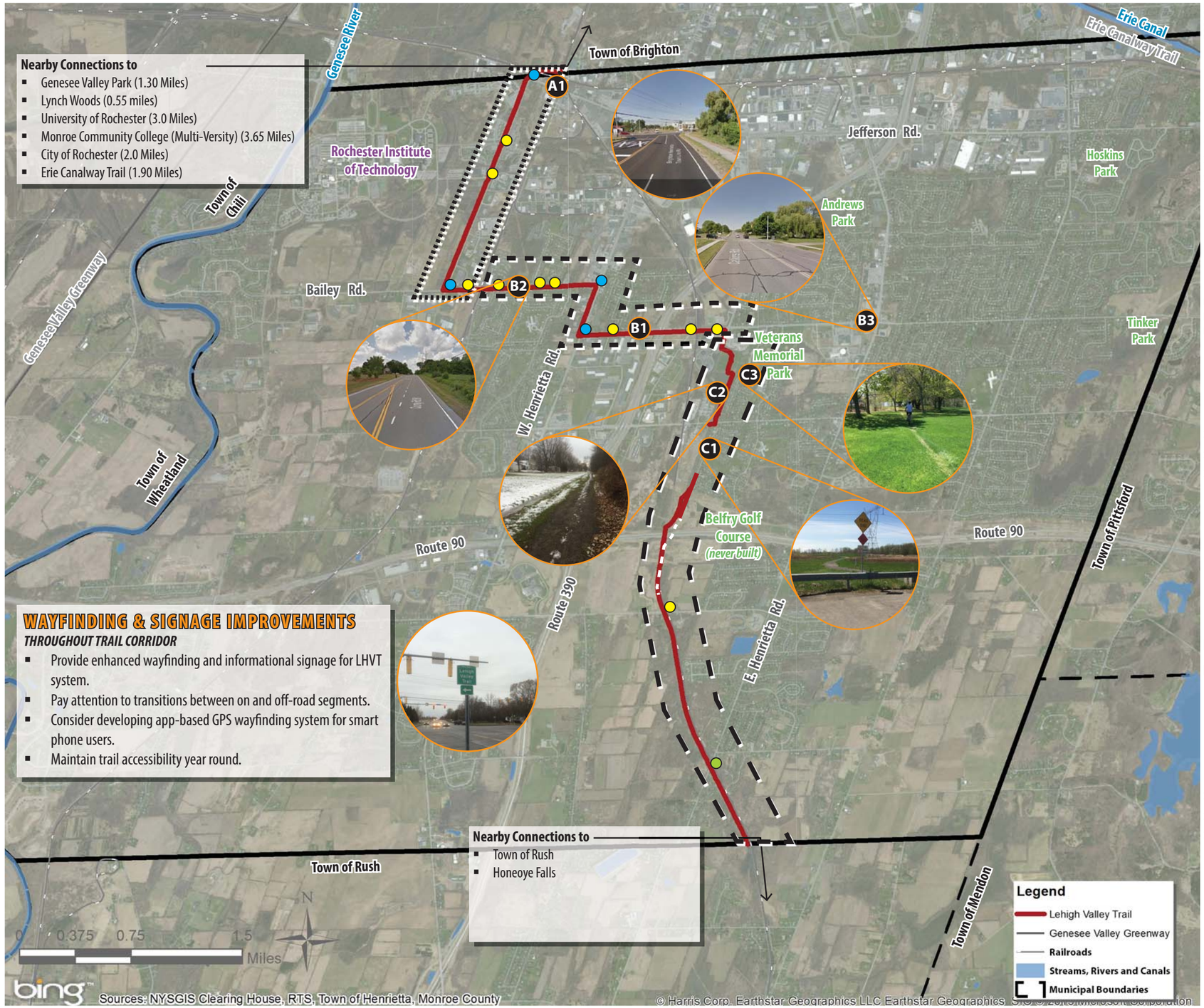
4.4 SCHOOL AND UNIVERSITY IMPROVEMENTS

A common goal shared by the Town and RIT is to provide safe passage for students from the campus to destinations such as South Town Plaza, Market Place Mall, and Wegmans. Students provide an important clientele for local merchants, and the short-distance trips are easily achievable by walking or riding. Specific site improvements have been provided for Rush Henrietta Senior High School, Roth Middle School, Burger Middle School, and Vollmer Learning Center. Refer to **Figure 15**. In addition to these recommendations, the overall goal for the Town should be to create a system of contiguous sidewalks, specifically providing connections between residential areas and schools. Improvements are recommended in several categories that will improve safety and connectivity between the RIT campus, off-campus housing locations and the Market Place/ South Town commercial zone. Infill of sidewalk gaps, new bicycle facilities and improvements to transit stops will enhance active mobility for the RIT community.

TRAIL RECOMMENDATIONS **LEHIGH VALLEY TRAIL**

THIS BOARD ADDRESSES SAFETY AND CONNECTIVITY IMPROVEMENTS FOR:

BICYCLIST · PEDESTRIAN · SIDEWALK GAPS · TRAILS · TRANSIT · INTERSECTIONS · SCHOOLS



ZONE 1
Jefferson Road to Bailey Road Along John Street

Existing Conditions
- Approx. Length: 1.60 Miles
- Surface: Asphalt or Concrete Sidewalk
- Condition: Good/Fair
- Signalized/Striped Road Crossings: 2
- Striped-Only Road Crossings: 0
- Non Signalized Road Crossings: 2


Existing Conditions Photo

RECOMMENDED IMPROVEMENTS

A1 Intersection of Jefferson Rd and John St (see priority intersections)

ZONE 2
Bailey Road to Veterans Memorial Park

Existing Conditions
- Approx. Length: 2.25 Miles
- Surface: Concrete Sidewalk
- Condition: Good/Fair
- Signalized/Striped Road Crossings: 2
- Striped-Only Road Crossings: 0
- Non Signalized Road Crossings: 7


Existing Conditions Photo

RECOMMENDED IMPROVEMENTS

B1 Expand 5' wide sidewalk to 10' wide shared use trail where feasible

B2 Provide on-street bicycle space on Bailey Rd.

B3 Calkins Rd is potential road diet candidate - refer to Calkins Rd Road Diet figure.

ZONE 3
Veterans Memorial Park to Rush-Henrietta Townline

Existing Conditions
- Approx. Length: 3.0 Miles
- Surface: Stonedust, natural surface, small portions of concrete sidewalk
- Condition: Fair
- Signalized/Striped Road Crossings: 1
- Striped-Only Road Crossings: 1
- Non Signalized Road Crossings: 1


Existing Conditions Photo
Karen Lankeshofer

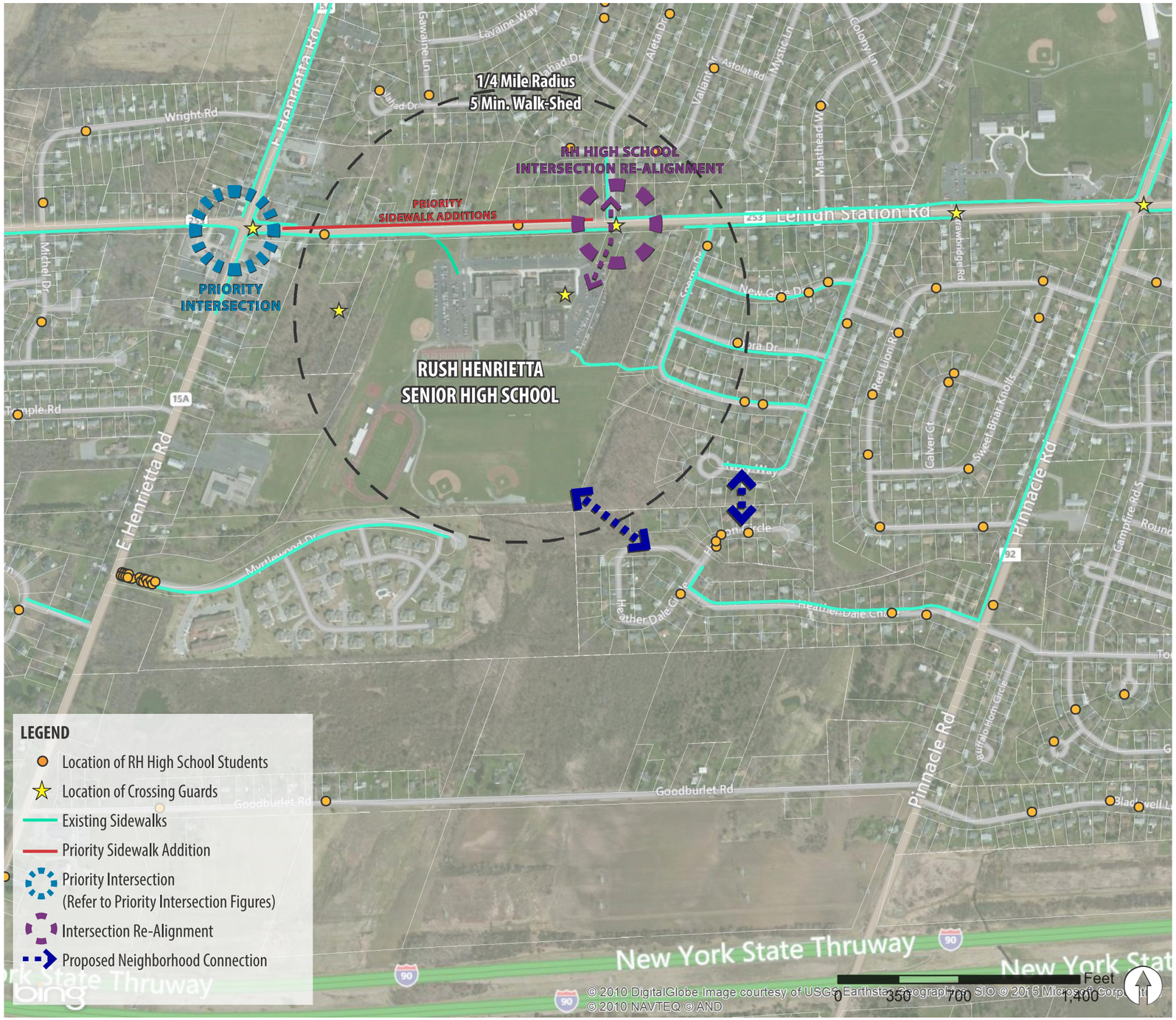
RECOMMENDED IMPROVEMENTS

C1 Improve the temporary Lehigh Valley Trail from the end of Nevins Road across proposed Belfry Golf Course to the stone dust trail portion north of Erie Station Road - recommend securing permanent access agreement.

C2 Improve drainage and trail surface from the southern border of Veterans Memorial Park along Florendin Road. Provide underdrains.

C3 Install trail surface at existing "Goat Path" from Veterans Memorial Park to Green Moor Way.

RUSH-HENRIETTA SCHOOL DISTRICT RECOMMENDATIONS **RUSH-HENRIETTA SENIOR HIGH SCHOOL**



EXISTING CONDITIONS

- Congestion and conflicts at arrival and departure times along Lehigh Station Road.
- Sidewalks lacking in some nearby neighborhoods.
- Pedestrian Level of Service (PLOS) rating along Lehigh Station Road is "C" and "D." PLOS rating along East Henrietta Road ranges from "C" to "E." (Refer to Pedestrian Level of Service Figure)

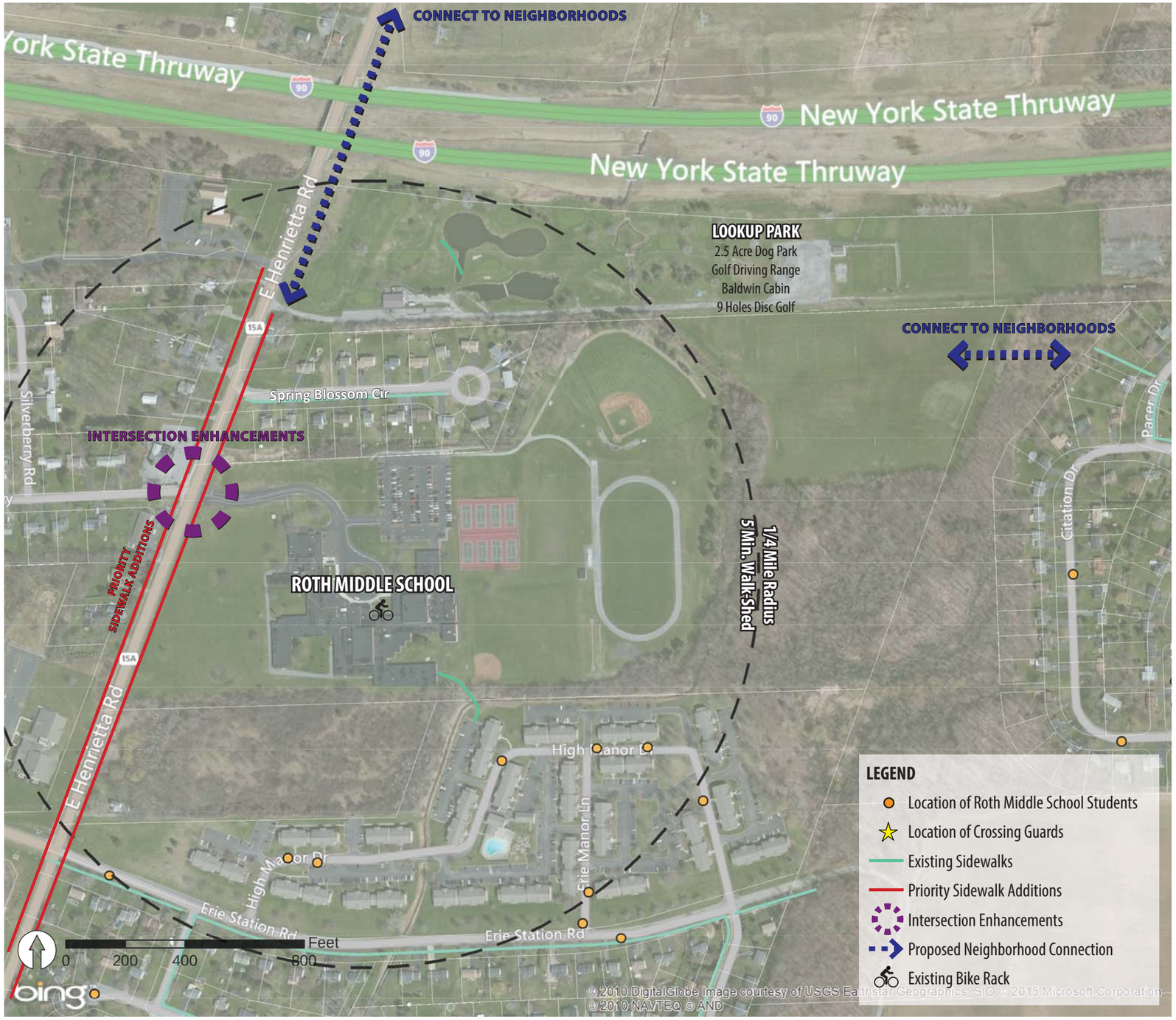
EXISTING BICYCLE INFRASTRUCTURE

- Bike racks are located on campus near main entrances.
- Bike racks are open shelters (no overhead canopy) on concrete pads with security cameras.
- Some bike racks lack a paved connection from the bike rack to the main entrance.
- Bicycle Level of Service (BLOS) rating along Lehigh Station Road is "C" and "B." BLOS rating along East Henrietta Road ranges from "B" to "D." (Refer to Bicycle Level of Service Figure)

RECOMMENDED IMPROVEMENTS

- Priority Sidewalk Additions along Lehigh Station.
- Priority Intersection: Refer to Priority Intersection Figures.
- Re-Align Intersection of Lehigh Station Road and Aleta Drive to create a signalized intersection (coordinate with NYSDOT regarding necessary steps and requirements - Refer to NYSDOT Commercial Driveway/Access Permit Review requirements (PERM 33-COM application and checklist).
- Pedestrian Safety Improvements as necessary:
  - Existing Signalized Intersections: Install high visibility crosswalks and count down pedestrian crossing signals.
  - Unsignalized Intersections: Install high visibility crosswalks (or colorful crosswalks per HealthiKids initiative) and signage (MUTCD S1-1 & W16-7PL). Coordinate with NYSDOT regarding necessary steps for installation of a pedestrian crossing signal.
- Utilize best practices for walk-ability and bike-ability at schools. Reference LEED and Safe Routes to School documentation.
- Connect nearby neighborhoods to school grounds, providing a safer off-road alternative for pedestrians and bicycles.
- Ensure crossing guards are present during arrival and departure.

RUSH-HENRIETTA SCHOOL DISTRICT RECOMMENDATIONS **ROTH MIDDLE SCHOOL**



EXISTING CONDITIONS

- Sidewalks lacking in some nearby neighborhoods.
- No crossing guards during arrival and departure times.
- Pedestrian Level of Service (PLOS) rating along East Henrietta Road ranges from "D" to "E." (Refer to Pedestrian Level of Service Figure)

EXISTING BICYCLE INFRASTRUCTURE

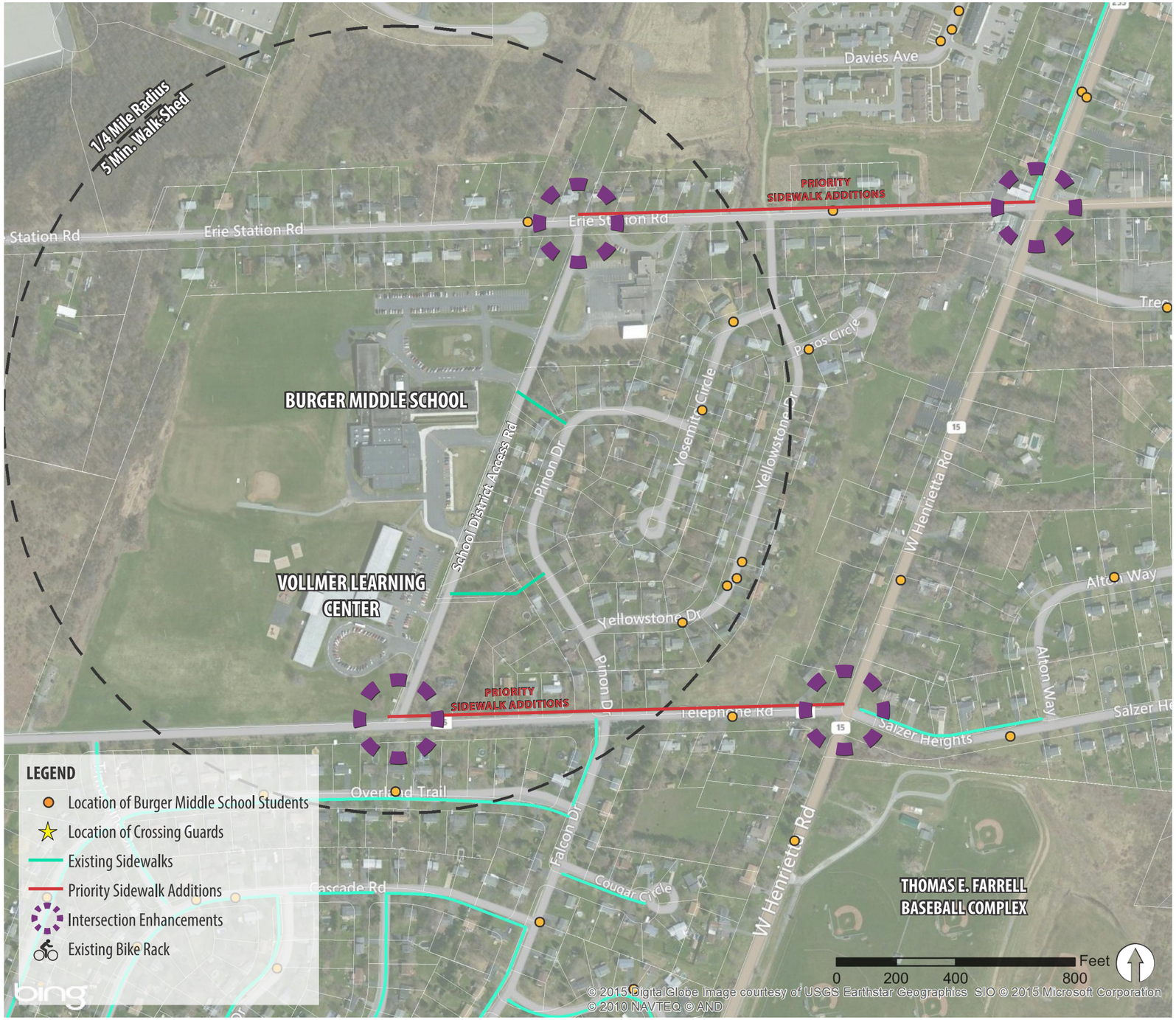
- Bike racks are located on campus near main entrances with security cameras.
- Bicycle Level of Service (BLOS) rating along East Henrietta Road is "B" and "D." (Refer to Bicycle Level of Service Figure)

**Note: Roth Middle School will be re-districted in 2017 from 6th-8th (11-14 years old) to 7th-9th (12-15 years old) grade students.

RECOMMENDED IMPROVEMENTS

- Priority Sidewalk Additions along East Henrietta Road.
- Pedestrian Safety Improvements as necessary:
  - Existing Signalized Intersections: Install high visibility crosswalks and count down pedestrian crossing signals.
  - Unsignalized Intersections: Install high visibility crosswalks (or colorful crosswalks per HealthiKids initiative) and signage (MUTCD S1-1 & W16-7PL). Coordinate with NYSDOT regarding necessary steps for installation of a pedestrian crossing signal.
- Utilize best practices for walk-ability and bike-ability at schools. Reference LEED and Safe Routes to School documentation.
- Connect nearby neighborhoods to school grounds, providing a safer off-road alternative for pedestrians and bicycles.
- Connection from Myrtlewood Drive to Middle School along East Henrietta Road is important.
- Provide overhead canopy on concrete pads.
- Install paved connection from the bike rack to the main entrance for all bike racks.

RUSH-HENRIETTA SCHOOL DISTRICT RECOMMENDATIONS **BURGER MIDDLE SCHOOL & VOLLMER LEARNING CENTER**



EXISTING CONDITIONS

- No sidewalks along West Henrietta Road, or Erie Station Road.
- Sidewalks lacking in some nearby neighborhoods.
- No crossing guards during arrival and departure times.
- Pedestrian Level of Service (PLOS) rating along West Henrietta Road is "D," along Erie Station Road is "D," and along Telephone Road is "C." (Refer to Pedestrian Level of Service Figure)
- Intersection of School District Access Road and Erie Station Road:
  - No connecting sidewalks.
  - No traffic signal, pedestrian crossing signal, crosswalk, or signage.

EXISTING BICYCLE INFRASTRUCTURE

- Bike racks are located on campus near main entrances.
- Bike racks are open shelters (no overhead canopy) on concrete pads with security cameras.
- Some bike racks lack a paved connection from the bike rack to the main entrance.
- Bicycle Level of Service (BLOS) rating along West Henrietta Road is "C," along Erie Station Road is "D," and along Telephone Road is "B." (Refer to Bicycle Level of Service Figure)

**Note: Burger Middle School will be re-districted in 2017 from 6th-8th (11-14 years old) to 7th-9th (12-15 years old) grade students. Vollmer Learning Center will be re-districted in 2017 from a learning center to a 4th-6th grade school.

RECOMMENDED IMPROVEMENTS

- Priority Sidewalks Additions along Telephone Road.
- Pedestrian Safety Improvements as necessary:
  - Existing Signalized Intersections: Install high visibility crosswalks and count down pedestrian crossing signals.
  - Unsignalized Intersections: Install high visibility crosswalks (or colorful crosswalks per HealthiKids initiative) and signage (MUTCD S1-1 & W16-7PL). Coordinate with NYSDOT regarding necessary steps for installation of a pedestrian crossing signal.
- Utilize best practices for walk-ability and bike-ability at schools. Reference LEED and Safe Routes to School documentation.
- Connect nearby neighborhoods to school grounds, providing a safer off-road alternative for pedestrians and bicycles.

FIGURE 15-3 | PAGE 45

RUSH-HENRIETTA SCHOOL DISTRICT RECOMMENDATIONS

WALK/BIKE TO SCHOOL @ CRANE ELEMENTARY SCHOOL

SUMMER BIKE TOUR @ VOLLMER LEARNING CENTER

Rush-Henrietta School-Age Child Care Program students exploring their community and learning bike safety on a bike tour of local trails

BIKE RACKS AROUND RUSH-HENRIETTA ELEMENTARY SCHOOLS

Crane Elementary
Near the front door but located on lawn.

Fyle Elementary
Located on a concrete pad but on the opposite side of the traffic circle from the front door.

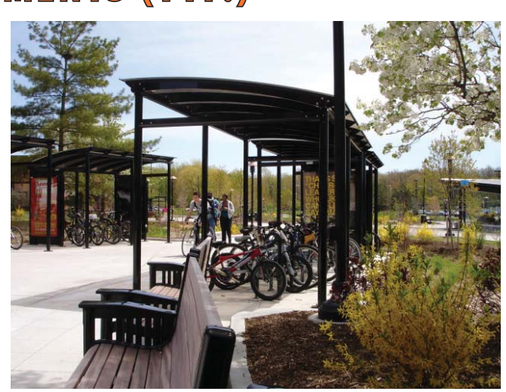
Emma B. Sherman Elementary
Located on a concrete pad near the front door.

Vollmer Learning Center

Floyd S. Winslow Elementary
NOTE: Picture depicts previous location. As of 10/09/2015 the bike rack has been moved onto the concrete near the flagpole.

BIKE RACKS: RECOMMENDED IMPROVEMENTS (TYP.)

- Locate near main entrance to school.
- Locate on concrete pad to provide easier accessibility.
- Provide overhead shelter to promote year round use.

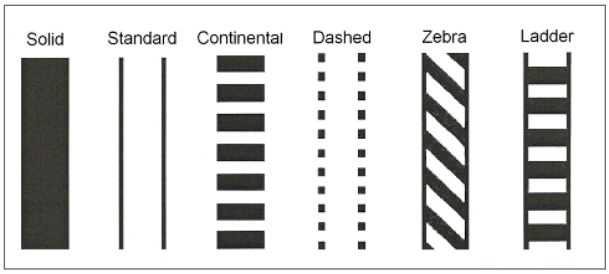


4.5 PRIORITY INTERSECTION IMPROVEMENTS

The Priority Intersections serve as prototypes, or case studies, which highlight imrpvement strategies that can be applied over time to other intersections in Henrietta. Intersections were selected that could serve as examples for other intersections in Henrietta that were not studied. It is important to note that in selecting intersections, consideration was given to students, who may be walking and bicycling to school facilities, as well as senior citizens, who have active transportation needs to get to community services and health care providers. Bicycle and pedestrian facilities are particularly important to both of these groups.

A combination of statistical data, field observation, and input from residents was used to evaluate existing conditions at the Priority Intersections. The overall goal of the recommended improvements is simply to make the intersections function better for pedestrians and bicyclists while not adversely impacting other travel modes.

Please note that currently, NYSDOT does not support use of high visibility crosswalks (typically ladder, continental or zebra style) at signalized intersections. NYSDOT's present standard applies high visibility crosswalks only at un-signalized intersections or mid-block crossings. For signalized intersections and stop controlled crossings, NYSDOT applies a standard crosswalk treatment. However, Monroe County DOT utilizes high visibility crosswalks at signalized intersections. A consistent and uniform approach to crosswalks in Henrietta is recommended.



Crosswalk Types, www.fhwa.dot.gov

The objectives of investigation and recommendations include the following:

- minimize conflicts between different modes of transportation;
- improve visibility between modes; and
- elevate motorist awareness of pedestrian and bicycle activity.

The intersections reviewed were evaluated to identify improvements that would improve pedestrians perceptions of the safety and comfort of the walking environment. This includes reducing exposure (to motor vehicle traffic) time, separating conflicts, and making motorist/pedestrian conflicts more visible to all roadway users. The recommendations also include accessibility enhancements to make the intersections more traversable for all pedestrians, particularly those with disabilities. Additionally, by reducing required clearance intervals for pedestrians, intersection delay for pedestrians and motorists alike can be reduced. Creating more compact intersections promotes lower vehicular speeds, provides more positive guidance to traffic, and reduces exposure of pedestrias to vehicular traffic. Thus, while specific design issues must be addressed with detailed designs during specific projects, the concepts shown in the plans support the objective of becoming more multimodal and should be considered during any intersection reconstruction projects. Refer to ***Strategy 17.2 B2: Provide or Improve Right-Turn Channelization (P)*** (*http://safety.transportation.org/htmlguides/sgn_int/description_of_strat.htm*).

The Priority Intersections fall under the jurisdiction of New York State Department of Transportation (NYSDOT) and Monroe County Department of Transportation (MCDOT). A representative from each agency was included on the project advisory committee, and there was productive dialogue regarding the priority intersections throughout the course of the study. The Plan acknowledges that there are some variations between the design guidelines of different transportation agencies. The recommendations for improvements presented in this plan are conceptual in nature, and would be subject to further study, review and approvals before advancing to design development and implementation. Refer to **Figures 16-21**.

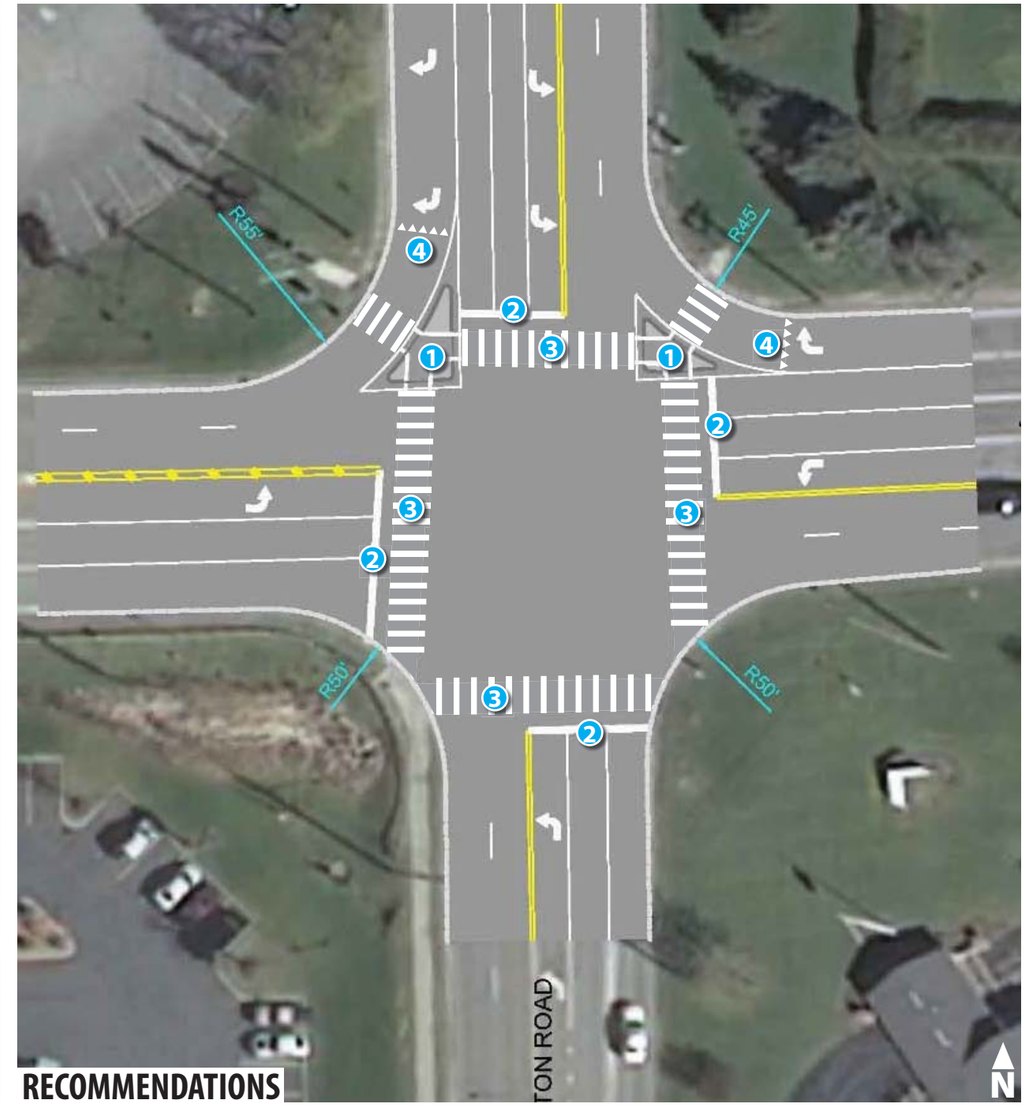
During the course of this study, NYSDOT was developing plans for the intersection of Jefferson Road and John Street (**Figure 17a**). *The NYSDOT shares the goal of improving safe travel options for all users, including non-motorized travel.* The planned NYSDOT improvements include lane changes, and signal and crosswalk upgrades. The recommendations made as a part of the Henrietta Active Transportation Plan build upon NYSDOT's current design plans and present additional improvement concepts that could be applied in the future to further enhance safety and mobility for all travel modes (**Figure 17**).

Table 6: Priority Intersection Improvements

Roadway/Location	Recommended Facility Improvement	Coordinating Jurisdiction	Phase
Jefferson Road and Winton Road	Pedestrian refuge islands, relocated stop bars, relocated high visibility crosswalks, install "sharks teeth' yield lines	NYSDOT, Monroe County	Priority
Jefferson Road and John Street	Pedestrian refuge islands, reduced radius, relocated stop bars, relocated and added high visibility crosswalks, install "sharks teeth' yield lines, relocate LHVT	NYSDOT, Monroe County	Priority
Bailey Road and East River Road	No infrastructure improvements are recommended at this time. As this area and the East River Road corridor continues to develop, future consideration should be given to sidewalk installation, pedestrian signalization, No Turn on Red/Yield to Pedestrians on-demand blank-out signs, and a leading pedestrian interval on the westbound approach due to the right-turn lane.	Monroe County	Possible
Lehigh Station Road and West Henrietta Road	Pedestrian refuge islands, reduced radius relocated stop bars, relocated high visibility crosswalks, install "sharks teeth' yield lines	NYSDOT, Monroe County	Priority
Lehigh Station Road and Middle Road	Pedestrian refuge islands, reduced radius, relocated stop bars, relocated high visibility crosswalks	NYSDOT, Monroe County	Possible
Lehigh Station Road and East Henrietta Road	Reduced radius, install high visibility crosswalks	NYSDOT	Priority

PRIORITY INTERSECTIONS **JEFFERSON ROAD & WINTON ROAD**

EXISTING CONDITIONS



RECOMMENDATIONS

Context

- Commercial land uses (Tim Hortons, First Niagara, spa, and nearby strip plaza), residential neighborhoods and apartments
- Jurisdiction: NYSDOT - Jefferson Road (NYSDOT), Winton Road (MCDOT)
- Walk Score: 40 (Car-dependent)
- Transit Score: 29 (Some transit)
- New sidewalk has been installed on the NE, NW, and SW corners of the intersection as a result of a corridor sidewalk installation project
- ADA pads are present
- Jefferson Road: 45 MPH
- Winton Road SB: 40 MPH
- Winton Road NB: 35 MPH
- Pedestrian countdown signals on all approaches

Issues & Concerns

- Crossing distances
  - SB approach: 83'
  - WB approach: 92'
  - NB approach: 76'
  - EB approach: 92'
- Asphalt transitions to existing sidewalk on NE and NW corners
- Turn radii consistent with heavy volume, large vehicle intersection
- Asphalt transitions to existing sidewalk on NE and NW corners

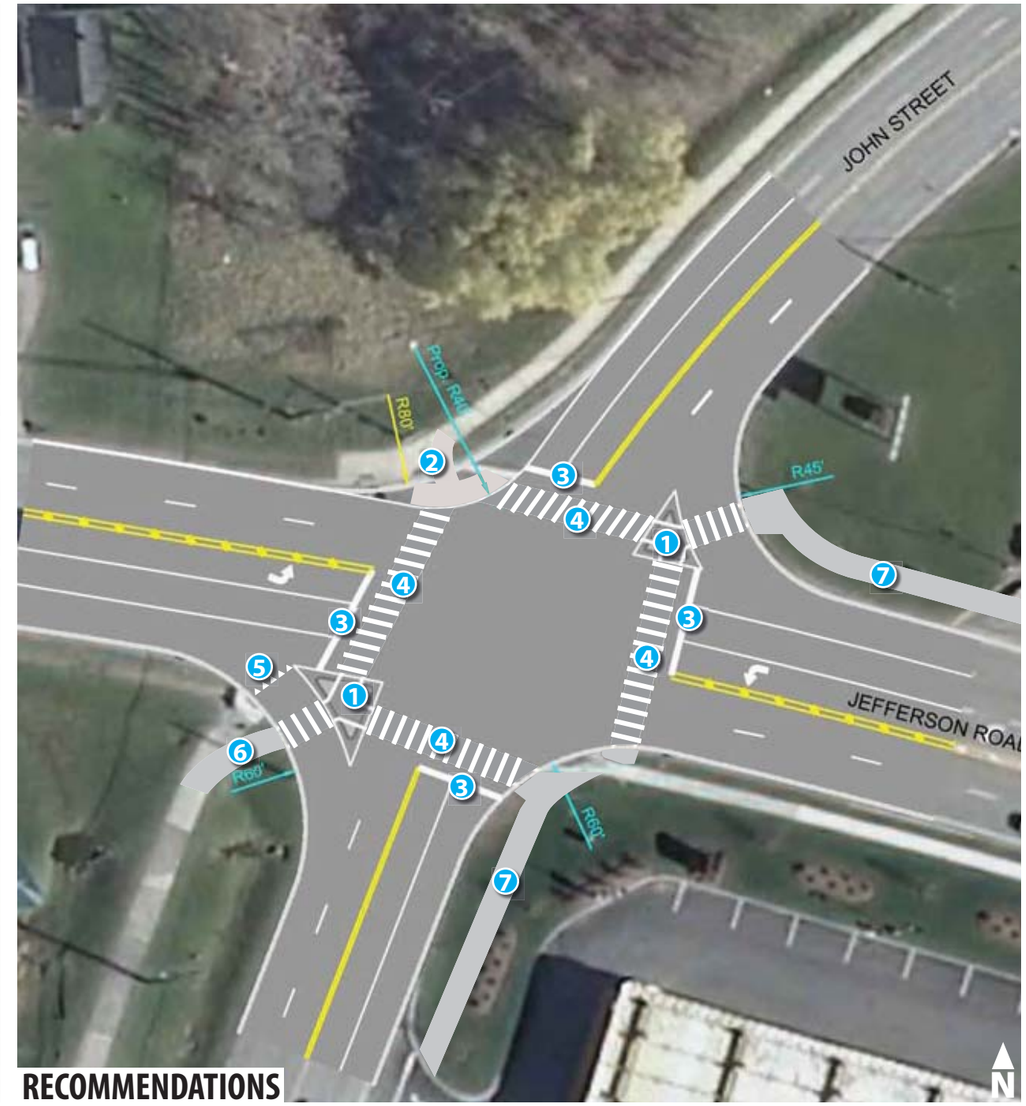
Recommendations

1. Pedestrian Refuge Islands (SB Winton Road and WB Jefferson Road)
   - Reduces pedestrian crossing time
     - SB approach: 83' reduced to ~55'
     - WB approach: 92' reduced to ~79'
     - NB approach: 76' reduced to ~65'
     - EB approach: 92' reduced to ~85'
2. Relocated stop bars
   - Reduces clearance intervals
   - Reduces left turn speeds
3. Relocated high visibility crosswalks
   - Increases visibility of pedestrian
4. Install "sharks teeth" yield lines

The Priority Intersections fall under the jurisdiction of the New York State Department of Transportation (NYSDOT) and the Monroe County Department of Transportation (MCDOT). The recommendations for improvements presented in this plan are conceptual in nature, and would be subject to further study, review and approvals before advancing to design development and implementation.

PRIORITY INTERSECTIONS **JEFFERSON ROAD & JOHN STREET**

EXISTING CONDITIONS



RECOMMENDATIONS

Context

- Commercial land uses (gas station, Park Point)
- Lehigh Valley Trail
- Nearby railroad crossing
- Jurisdiction: NYSDOT - Jefferson Road (NYSDOT), John Street (MCDOT), Brighton-Henrietta TL Road (MCDOT)
- Walk Score: 39 (Car-dependent)
- Transit Score: 38 (Some transit)

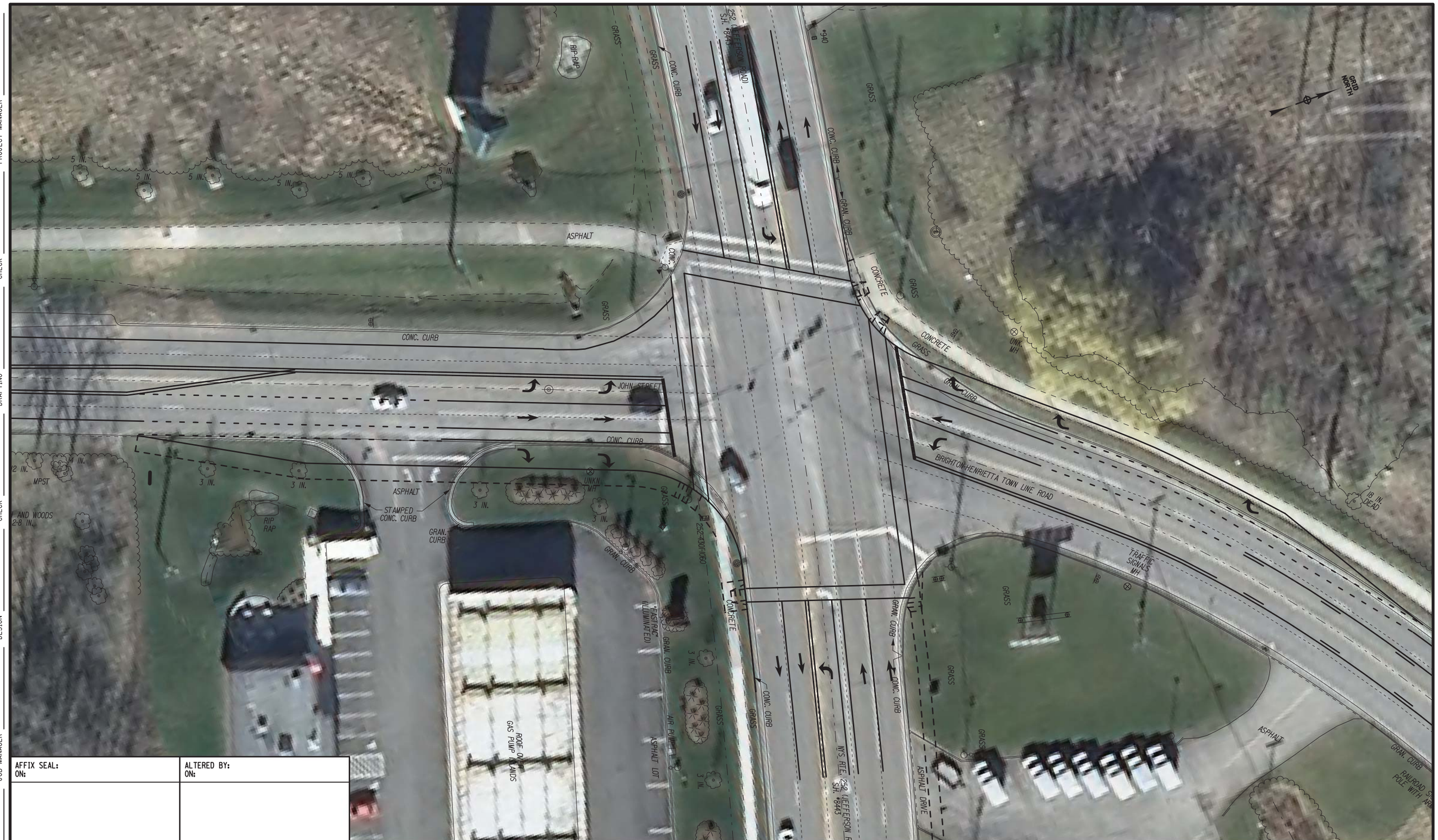
Issues & Concerns

- No pedestrian signals for NB, WB, and SB approaches
- No sidewalk on NE corner, degraded sidewalk on EB approach
- No distinct crossing design for Lehigh Valley Trail
- Skewed intersection creates large curb radii
- Degraded pavement quality in front of curb ramps
- Bus stop without waiting pad
- Worn walking path on NB side of northbound approach
- Pedestrian button may be difficult to reach for people in wheelchairs
- No shoulder space for bicyclists
- Crossing distances
  - SB approach: 107′ (no crosswalk)
  - WB approach: 80′ (no crosswalk)
  - NB approach: 101′
  - EB approach: 80′
- Jefferson Road: 45 MPH
- John Street: 35 MPH
- When gates are down for train crossing, NB approach has a red light that can create queues over 450′

Recommendations

1. Pedestrian Refuge Islands (EB/WB Jefferson Road)
   - Reduces pedestrian crossing time
     - SB approach: 107′ reduced to ~58′
     - WB approach: 80′ reduced to ~67′
     - NB approach: 101′ reduced to ~60′
     - EB approach: 80′ reduced to ~66′
2. Reduced Radius (SB John Street)
   - Reduces vehicle speeds
3. Relocated stop bars
   - Reduces clearance intervals
   - Reduces left turn speeds
4. Relocated and added high visibility crosswalks
   - Increases visibility of pedestrian
5. Install "sharks teeth" yield lines
6. Relocate Lehigh Valley Trail
   - Realigns the trail towards the new pedestrian refuge island
7. New sidewalk

The Priority Intersections fall under the jurisdiction of the New York State Department of Transportation (NYSDOT) and the Monroe County Department of Transportation (MCDOT). The recommendations for improvements presented in this plan are conceptual in nature, and would be subject to further study, review and approvals before advancing to design development and implementation.



PROJECT MANAGER
CHECK
DRAFTING
CHECK
DESIGN
JOB MANAGER
DESIGN SUPERVISOR

AFFIX SEAL: ON:	ALTERED BY: ON:

AS-BUILT REVISIONS
DESCRIPTION OF ALTERATIONS:

COUNTY: REGION:

PIN | BRIDGES | CULVERTS | ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED | CONTRACT NUMBER

DRAWING NO.
SHEET NO.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED, THE ALTERING ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NEW YORK STATE OF OPPORTUNITY. Department of Transportation

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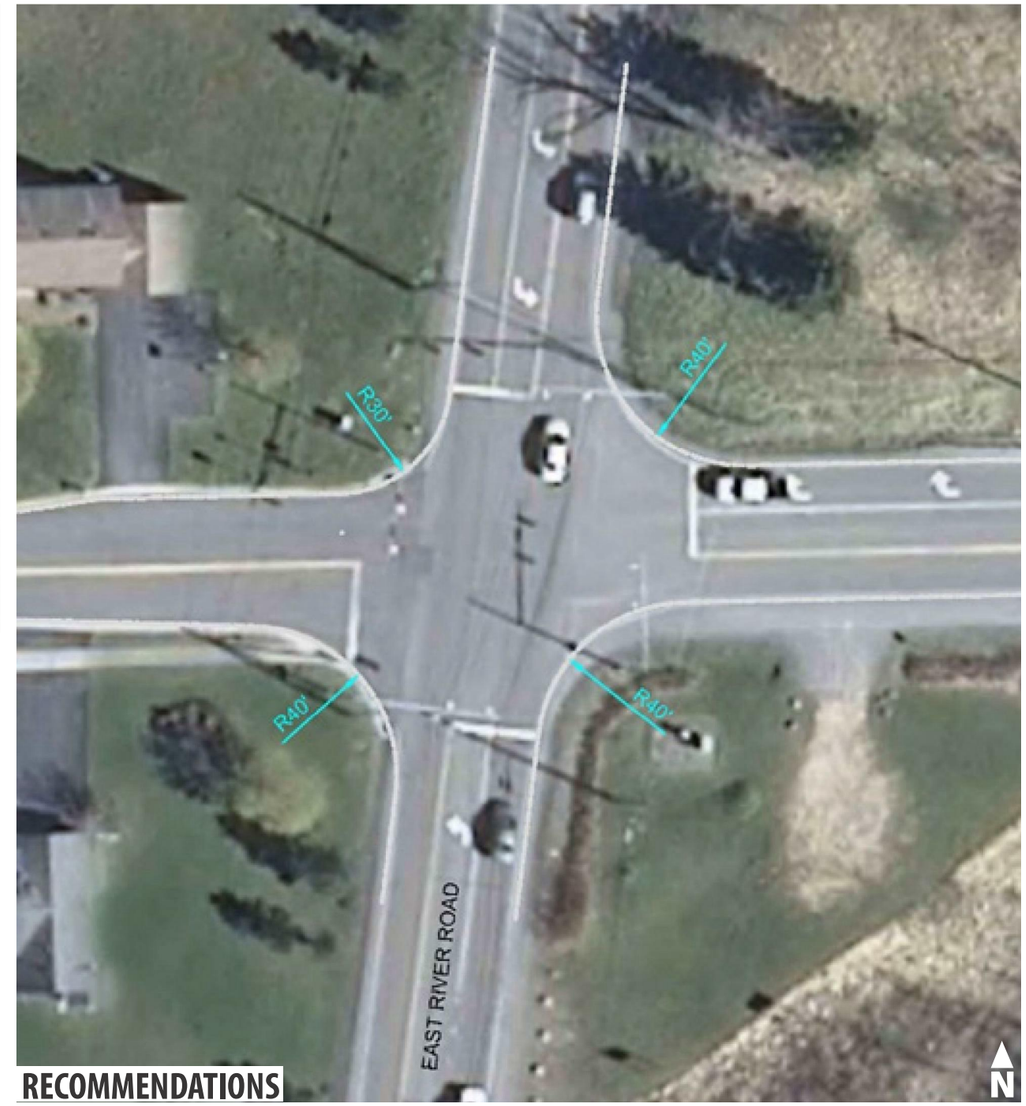
PRIORITY INTERSECTIONS **BAILEY ROAD & EAST RIVER ROAD**

EXISTING CONDITIONS



RECOMMENDATIONS

Context

- Nearby residential neighborhood
- Jurisdiction: MCDOT - Bailey Road (MCDOT), East River Road (MCDOT)
- Walk Score: 7 (Car-dependent)
- Adjacent expanding residential communities
- Student housing for RIT students south of intersection elevates the frequency of pedestrians/bicyclists

Issues & Concerns

- No sidewalk on WB, SB, and NB approaches
- No pedestrian signals
- Crossing distances
  - SB approach: 60' (no crosswalk)
  - WB approach: 54' (no crosswalk)
  - NB approach: 65' (no crosswalk)
  - EB approach: 44' (no crosswalk)
- Sidewalk approach intersection on EB approach on south side on roadway
- East River Road: 40 MPH
- Bailey Road: 35 MPH
- Shoulder space is present for bicyclists to ride on and stop on waiting for traffic signal

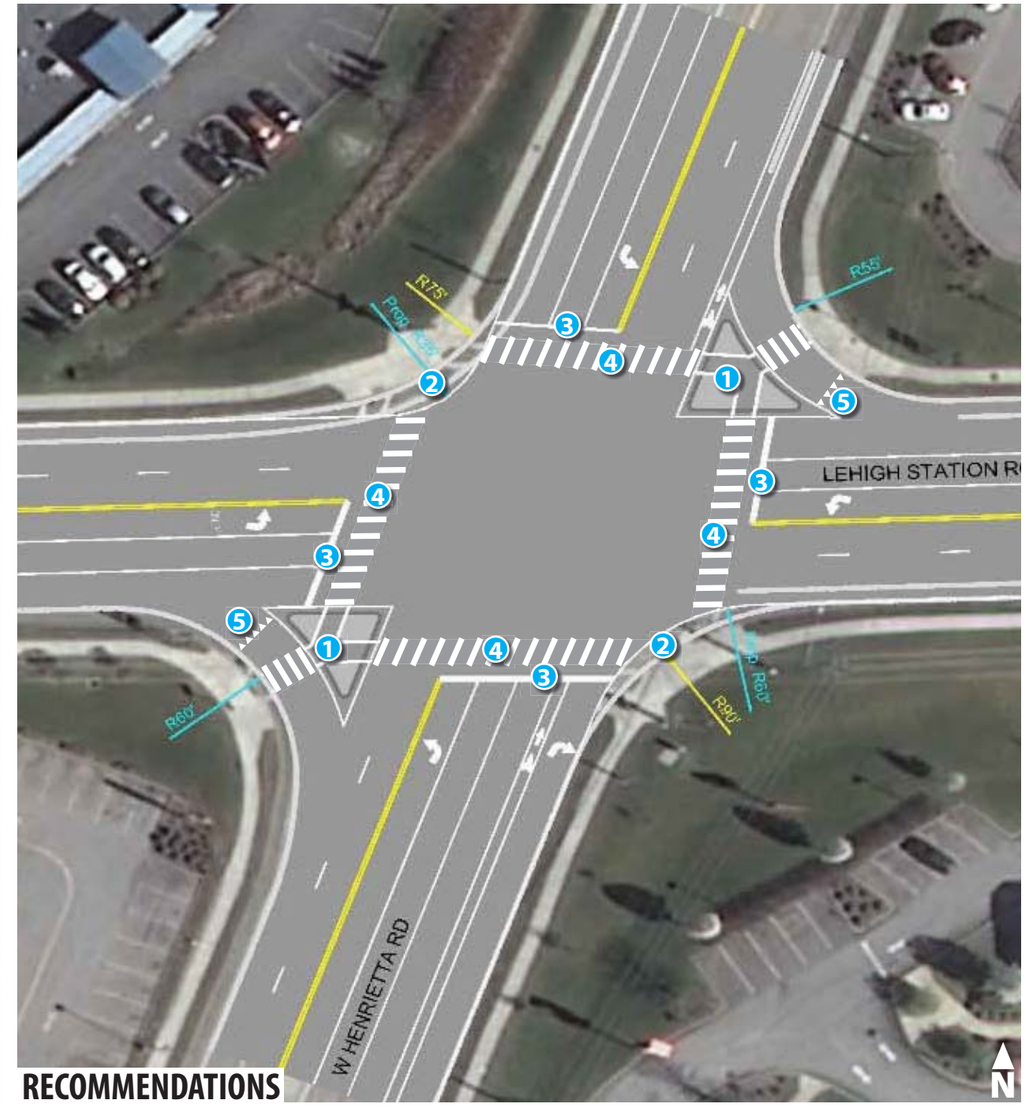
Recommendations

- No infrastructure improvements are recommended at this time. As this area and the East River Road corridor continues to develop, future consideration should be given to sidewalk installation, pedestrian signalization, No Turn on Red/ Yield to Pedestrians on-demand blank-out signs, and a leading pedestrian interval on the westbound approach due to the right-turn lane.

The Priority Intersections fall under the jurisdiction of the New York State Department of Transportation (NYSDOT) and the Monroe County Department of Transportation (MCDOT). The recommendations for improvements presented in this plan are conceptual in nature, and would be subject to further study, review and approvals before advancing to design development and implementation.

PRIORITY INTERSECTIONS **LEHIGH STATION ROAD & WEST HENRIETTA ROAD**

EXISTING CONDITIONS



RECOMMENDATIONS

Context

- Commercial land uses (Wendy's, Tim Hortons, Hertz, car dealerships, hotel)
- Residential neighborhoods 0.25mi to 0.5mi away
- Jurisdiction: NYSDOT - Lehigh Station Road (NYSDOT east of West Henrietta Road - MCDOT west of West Henrietta Road), West Henrietta Road (NYSDOT)
- Marked northbound bike lane approaching intersection
- Walk Score: 20 (Car-dependent)
- Pedestrian countdown signals
- Bus stops have waiting pads

Issues & Concerns

- Pedestrian button on NE corner crossing Lehigh Station Road is not working
- Lack of pedestrian connections to Wendy's/Tim Hortons
- Standard crosswalk design
- Crossing distances
  - SB approach: 118'
  - WB approach: 107'
  - NB approach: 124'
  - EB approach: 113'
- Skewed intersection creates large curb radii
- Northbound bike lane
- Lack of signage indicating lane to motorists and bicyclists
- Lehigh Station Road: 40 MPH
- West Henrietta Road: 45 MPH
- Can be challenging for bicyclists to cross travel lanes to turn left – wide approaches
- Shoulder space for bicyclists to ride on
- Snow piles in front of curb ramps

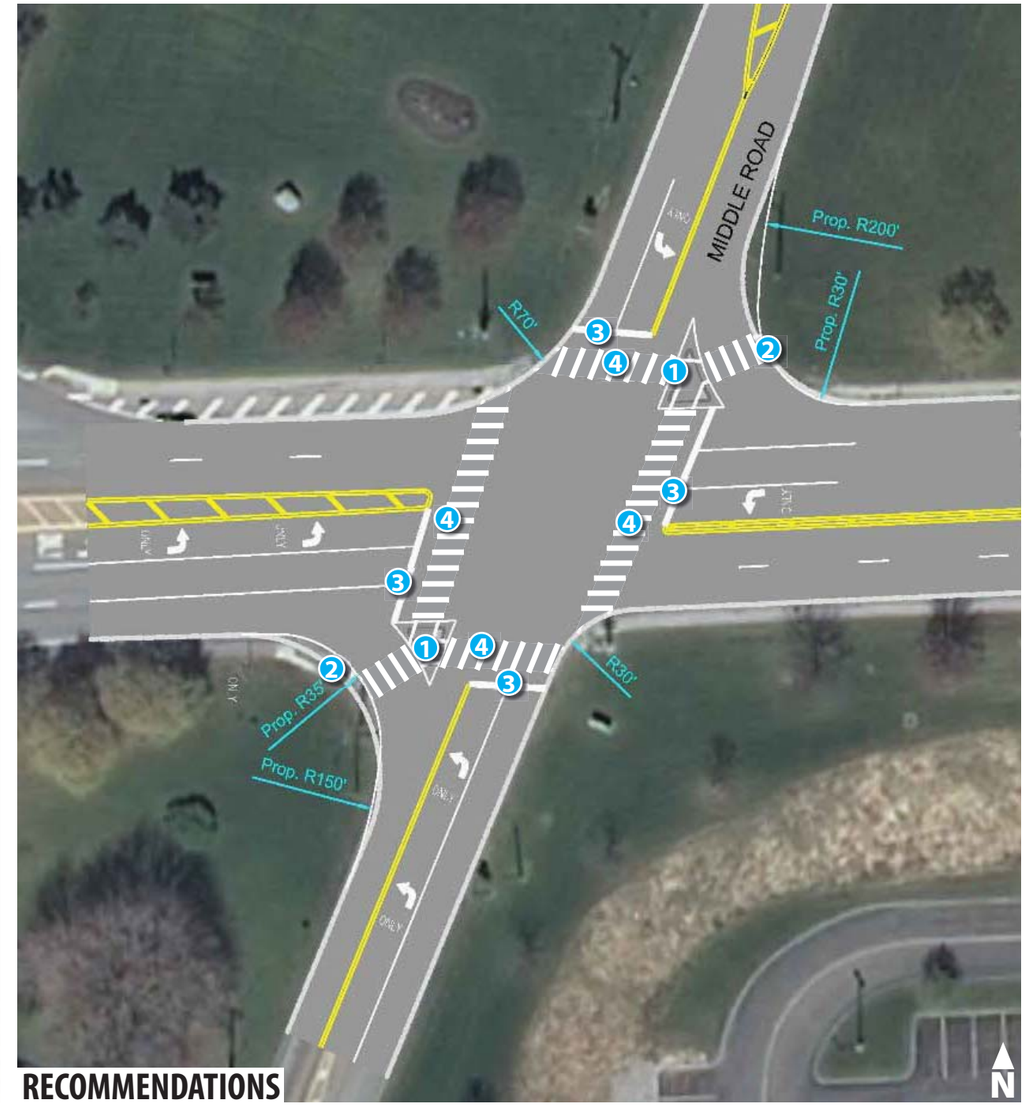
Recommendations

1. Pedestrian Refuge Islands (EB/WB Lehigh Station Road)
   - Reduces pedestrian crossing time
     - SB approach: 118' reduced to ~73'
     - WB approach: 107' reduced to ~72'
     - NB approach: 124' reduced to ~92'
     - EB approach: 113' reduced to ~78'
2. Reduced Radius (NB/SB West Henrietta Road)
   - Reduces vehicle speeds
3. Relocated stop bars
   - Reduces clearance intervals
   - Reduces left turn speeds
4. Relocated high visibility crosswalks
   - Increases visibility of pedestrian
5. Install "sharks teeth" yield lines

The Priority Intersections fall under the jurisdiction of the New York State Department of Transportation (NYSDOT) and the Monroe County Department of Transportation (MCDOT). The recommendations for improvements presented in this plan are conceptual in nature, and would be subject to further study, review and approvals before advancing to design development and implementation.

PRIORITY INTERSECTIONS **LEHIGH STATION ROAD & MIDDLE ROAD**

EXISTING CONDITIONS



RECOMMENDATIONS

Context

- Nearby commercial uses, NYS Police Station
- Adjacent I-390
- Jurisdiction: NYSDOT - Lehigh Station Road (NYSDOT), Middle Road (MCDOT)
- Walk Score: 16 (Car-dependent)

Issues & Concerns

- No pedestrian signals
- ADA pads at curb ramps, but are loose and degrading
- "Sidewalk to nowhere" on WB approach
- Worn walking paths slightly visible
- Adjacent I-390 ramps
- Atypical stop bar design on WB approach
  - Stop bar extends beyond curb ramp – pedestrians would essentially cross between vehicles
- No sidewalk on SB and NB approaches
- Crossing distances
  - SB approach: 72' (no crosswalk)
  - WB approach: 71'-94' (no crosswalk, depending on where pedestrian crosses)
  - NB approach: 83' (no crosswalk)
  - EB approach: 110' (no crosswalk)
- Skewed intersection creates large curb radii
- Lehigh Station Road: 40 MPH
- Middle Road: 45 MPH

Recommendations

1. Pedestrian Refuge Islands (EB/WB Lehigh Station Road)
   - Reduces pedestrian crossing time
     - SB approach: 72' reduced to ~47'
     - WB approach: 94' reduced to ~80'
     - NB approach: 83' reduced to ~42'
     - EB approach: 110' reduced to ~80'
2. Reduced Radius (NB/SB Middle Road)
   - Reduces vehicle speeds
3. Relocated stop bars
   - Reduces clearance intervals
   - Reduces left turn speeds
4. Relocated and added high visibility crosswalks
   - Increases visibility of pedestrian

The Priority Intersections fall under the jurisdiction of the New York State Department of Transportation (NYSDOT) and the Monroe County Department of Transportation (MCDOT). The recommendations for improvements presented in this plan are conceptual in nature, and would be subject to further study, review and approvals before advancing to design development and implementation.

PRIORITY INTERSECTIONS **LEHIGH STATION ROAD & EAST HENRIETTA ROAD**

EXISTING CONDITIONS

RECOMMENDATIONS

Context

- Commercial land uses (gas station with Dunkin Donuts, 7-Eleven, restaurant/bar)
- Nearby residential development
- Rush-Henrietta High School 0.25mi away
- Jurisdiction: NYSDOT - Lehigh Station Road (NYSDOT), East Henrietta Road (NYSDOT)
- Walk Score: 30 (Car-dependent)
- Red brick design next to sidewalk indicates an historically significant area
  - East Henrietta Village
- Old mile-marker posts half buried at the intersection corners

Issues & Concerns

- Pedestrian countdown signals
- Nearby Rush-Henrietta HS contributes to higher volumes of school related pedestrian crossings
- ADA pads are present
- No Turn On Red restrictions on EB, WB, and NB approaches
  - Time dependent
  - EB/WB right-turn overlap phasing
- No buffer space between sidewalk and roadway
- Crossing distances
  - SB approach: 70'
  - WB approach: 90'
  - NB approach: 76'
  - EB approach: 80'
- Lehigh Station Road: 35 MPH
- Middle Road: 35 MPH
- NE traffic signal pole located in middle of sidewalk and in middle of curb ramp landing pad

Recommendations

1. Reduced Radius (NB East Henrietta Road)
   - Reduces vehicle speed
2. Install new high visibility crosswalks

The Priority Intersections fall under the jurisdiction of the New York State Department of Transportation (NYSDOT) and the Monroe County Department of Transportation (MCDOT). The recommendations for improvements presented in this plan are conceptual in nature, and would be subject to further study, review and approvals before advancing to design development and implementation.

5.0 FACILITY DESIGN GUIDANCE

The previous section identifies numerous recommended infrastructure improvements that are comprised of a variety of facility types. The design guidelines contained in this section are intended to support the recommendations presented in this Plan, and to serve as an ongoing reference for the Town of Henrietta. They are not intended as comprehensive design standards. Rather, they reference existing design standards and provide clarification or supplemental information as necessary. There are eight primary sources of bicycle and pedestrian facility design information that were used to develop the guidelines provided in this section:

1. ***American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities*** – This document is intended to present information on how to accommodate bicycle travel and operations in most riding environments. It is the design guidance upon which most state and local design guidelines are based. In many jurisdictions this document is considered to set the minimum values for bicycle design.
2. ***AASHTO Guide for the Planning, Design, and Operations of Pedestrian Facilities –*** This document is intended to present information on how to accommodate pedestrian travel and operations in (primarily) roadway environments. It is the design guidance upon which most state and local design guidelines are based. In many jurisdictions this document is considered to set the minimum values for pedestrian design.
3. ***NY Department of Transportation Highway Design Manual Chapter 17 Bicycle Facilities Design –*** This document provides guidance for bicycle facilities that are included in Department of Transportation designs. Because of the scope of this document, its design criteria, while they are relevant to local projects, are not required to be met for local projects unless Federal Transportation Funds are used.
4. ***NY Department of Transportation Highway Design Manual Chapter 18 Pedestrian Facilities Design –*** This document provides guidance for pedestrian facilities that are included in Department of Transportation designs. Because of the scope of this document, its design criteria, while they are relevant to local projects, are not required to be met for local projects unless Federal Transportation Funds are used.
5. ***Institute of Transportation Engineers Designing Walkable Urban Thoroughfares: A Context Sensitive Approach –*** This document's development was supported by FHWA. Designing Walkable Thoroughfares helps designers understand the flexibility for roadway design that is inherent in the AASHTO guide A Policy on the Geometric Design of Highways and Streets with a focus on balancing the needs of all users.
6. ***Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) –*** The MUTCD is the national standard for signing, markings, signals, and other traffic control devices. New York State has also adopted a supplement to the MUTCD that provides

New York specific standards.

7. ***Federal Highway Administration Separated Bike Lane Planning and Design Guidance*** - Outlines planning considerations for separated bike lanes (also sometimes called "cycle tracks" or "protected bike lanes") and provides a menu of design options covering typical one-way and two-way scenarios. To encourage continued development and refinement of techniques, the guide identifies specific data elements to collect before and after implementation to enable future analysis across facilities in different communities. It identifies potential future research, highlights the importance of ongoing peer exchange and capacity building, and emphasizes the need to create holistic ways to evaluate the performance of a separated bike lane.
8. ***National Association of City Transportation Officials (NACTO) Urban Bike way Design Guide*** – FHWA has issued a memo supporting the use of this document to further develop non-motorized transportation networks, particularly in urban areas. Many of the designs in this document have been used successfully in urban areas. However, care should be exercised when applying the treatments described in this document to suburban or rural areas.

In this guidance section of the Town of Henrietta Active Transportation Plan the following facility types are discussed:

- bike lanes;
- shared lane markings;
- bike routes;
- bike boulevards;
- shared use paths;
- sidewalks;
- curb ramps; and
- mid-block crossings.

5.1 BIKE LANES

A bike lane is a portion of the roadway that has been designated for preferential or exclusive use by bicyclists by striping, signing and pavement markings (the MUTCD does not require signs, but in New York the legal definition of a bike lane requires signs). Bike lanes are intended for one-way travel, usually in the same direction as the adjacent travel lane. Bike lanes should be designed for the operation of bicycles as vehicles, encouraging bicyclists and motorists to interact in a safe, legal manner. Bike lanes should be designated with bike lane markings, arrows, and bike lane signs.

City of Rochester, New York

After review of Henrietta's codes and standards, it is noted that the roadway cross sections typically do not show bike lanes on any type of road. Shared lanes are probably appropriate for residential streets (drawings RD-01 and RD-01a). Consideration should be given to including bike lanes on residential collectors (RD-02 and RD-02a) and commercial or industrial streets (RD-03).

WIDTH

Wider pavement cross sections to allow for 4-foot bike lanes where gutter is provided (RD-02) and 5-foot bike lanes for the vertical curb without gutter (RD-02a) would be acceptable. Motor vehicle travel lanes could possibly be reduced to 11 feet on these cross sections.

In commercial or industrial areas (RD-03 and RD-04), buffered bike lanes should be considered. An 11'-2'-5' (lane-buffer-bike lane) section would be desirable, but at minimum a 5-foot bike lane should be provided.

The AASHTO Guide for the Development of Bicycle Facilities provides guidance on the width of bike lanes. The following points summarize this guidance:

- under most circumstances the recommended width for bike lanes is 5 feet;
- for roadways with no curb and gutter and no on-street parking, the minimum width of a bike lane is 4 feet;
- along sections of roadway with curb and gutter, a usable width of 4 feet measured from the longitudinal joint to the center of the bike lane line is recommended (this means that 4 feet of pavement is sufficient when coupled with the gutter pan; it is also conceivable to interpret the guidance as meaning that even narrower pavement can be used as long as a total of 5 feet of ride-able surface is maintained);
- additional width may be desirable on higher speed roadways.

INTERSECTIONS

At intersections, bike lanes must be designed to encourage legal movements at the intersection; this includes proper positioning of bicyclists and motorists. Bike lane stripes should be dashed on the approaches to intersections without right turn lanes. Where there are right-turn lanes, through bike lanes must be placed to the left of the right turn lane. Section 4.8 of the AASHTO Guide for the Development of Bicycle Facilities (2012) provides numerous graphics illustrating bike lane markings at intersections. Bike lanes should be continuous through intersections. For example, if a bike lane is provided to the intersection, a receiving bike lane should be provided on departure side of the intersection.

BUFFERED BIKE LANES

A buffered bike lane is a bike lane that is separated from adjacent through lanes by a striped out buffer area. In some locations it may be desirable to use less than the full space available for a bike lane. Such locations include sections of roadway where a wide bike lane might be perceived as on-street parking or another travel lane. In these locations a buffered bike lane may be considered. A buffered bike lane may also be considered where a bike lane of six or more feet is being provided to meet a minimum level of accommodation.

At mid-block locations the buffered bike lane is separated from the travel lanes by a chevroned buffer. The width of the buffer will vary depending upon such conditions as motor vehicle speed, percent heavy vehicles, roadway cross slopes, and desired level of accommodation of bicycles. At intersections, buffered bike lanes must be striped to allow for right turning motorists. Typically this is done by eliminating the buffer on the approach to intersections and striping the area as one would a regular bike lane.

5.2 MULTI-USE PAVED SHOULDERS

In terms of Bicycle Level of Service, designating bike lanes is secondary to simply providing delineated space that can be used by bicyclists. Roads with paved shoulders where no other active transportation facilities exist are shared by more than one type of user (bicyclists, pedestrians, in-line skaters and vehicles for emergency use). Design of new or retrofit of existing paved shoulders should comply with AASHTO standards; *"on uncurbed cross sections with no vertical obstructions immediately adjacent to the roadway, paved should be at least 4 ft wide to accommodate bicycle traffic. Shoulder width of 5 ft is recommended from the face of a guardrail, curb, or other roadside barrier to provide additional operating width…"* Areas with expected higher bicycle use should have increased shoulder widths as necessary in addition to areas where motor vehicle speeds exceed 50 mph or are used by trucks and buses.

SIGNING ROADWAYS WITH PAVED SHOULDERS

The Town of Henrietta may want to sign some roadways with paved shoulders to either guide bicyclists to destination or to alert motorists to the presence of bicyclists. The sign would be supplemental to simply providing space for bicyclists within the shoulder. If the subject roadway is along a designated bicycle route, then bike route guidance signs can be used to alert bicyclists to the presence of the interregional or state route.

If the Town, or others based on the jurisdiction of the road, determines it is appropriate to warn motorists of the potential presence of bicyclists along a section of roadway with paved shoulders, then special signing, if approved by NYSDOT, would be required. The Bicycle Warning sign (W11-1) alone could be used as it is to alert road users to locations where unexpected entries into the roadway by bicyclists could be expected.

The NYSDOT MUTCD section 1A.03 Design of Traffic Control Devices states:

Option 03A Highway agencies may develop word message signs to notify road users of special regulations or to warn road users of a situation that might not be readily apparent. Unlike symbol signs and colors, new word message signs may be used without the need for experimentation.

Standard 03B Any change to a word message sign that can be considered more than a minor modification (see next Option) shall be approved by the New York State Department of Transportation before it is implemented.

Option 03C With the exception of symbols and colors, minor modifications in the specific design elements of a device may be made provided the essential appearance characteristics are preserved. Such minor revisions may include making a word plural or singular; changing the hours listed on a sign; word deviations such as "road" for "street" on a sign; etc. Although the standard design of symbol signs cannot be modified, it may be appropriate to change the orientation of the symbol to better reflect the direction of travel.

5.3 SHARED LANE MARKINGS

Traffic lanes are often too narrow to be shared side by side by bicyclists and passing motorists. Where parking is present, bicyclists wishing to stay out of the way of motorists often ride too close to parked cars and risk being struck by a suddenly opened car door (being "doored"). Where no parking is present, as is the case throughout most of the Town of Henrietta, bicyclists wishing to stay out of the way of motorists often ride too close to the roadway edge, where they run the risks of:

- being run off the road;
- being clipped by motorists who do not see them off to the side or misjudge passing clearance; or
- encountering drainage structures, poor pavement, debris, and other hazards.

Riding further to the left avoids these problems, and is legally permitted where needed for safety (Consolidated Laws of New York, Vehicles and Traffic, § 1234 (a). However, this practice can run counter to motorist expectations. A Shared Lane Marking (SLM) is a pavement symbol that indicates it is legal and appropriate for bicyclists to ride away from the right hand edge of the roadway, and cues motorists to pass with sufficient clearance.

Research suggests that SLMs

1. alert motorists to the lateral location bicyclists are likely to occupy within the traveled way,
2. encourage safe passing of bicyclists by motorists,
3. assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane,
4. reduce the incidence of wrong-way bicycling, and
5. where on-street parking exists, to assist bicyclists with lateral positioning in a shared lane with on-street parallel parking to reduce the chances of a bicyclist impacting the open door of a parked vehicle.

SLMs are not to be used on shoulders or in designated bike lanes. MUTCD guidance suggests SLMs not be placed on roadways that have a speed limit above 35 mph. While this does not preclude the use of SLMs on higher speed roadways, no research is available as yet to suggest how effective they may be on such roadways.

SLMs encourage good lane positioning by bicyclists, and discourage them from riding too close to the pavement edge, curb, or parked cars. Riding away from the road edge allows bicyclists to avoid road edge hazards like drainage structures, poor pavement, and debris. It also places the bicyclist more directly in the motorist's field of vision which, along with proper SLM treatments, encourages the safe passing of bicyclists by motorists.

Consequently, on roadways with on-street parking, the MUTCD requires that SLMs be placed with the centers of the markings at least 11 feet from the face of curb. On other roadways, the centers of the markings are required to be placed at least four feet from the edge of pavement. On December 9, 2013, the New York State Department of Transportation's Office of Traffic Safety & Mobility approved a Shared Lane Marking (SLM) Policy (TSMI 13-07) which requires SLMs to be placed in the middle of the travel lane (see Appendix XX). According to the NYSDOT policy:

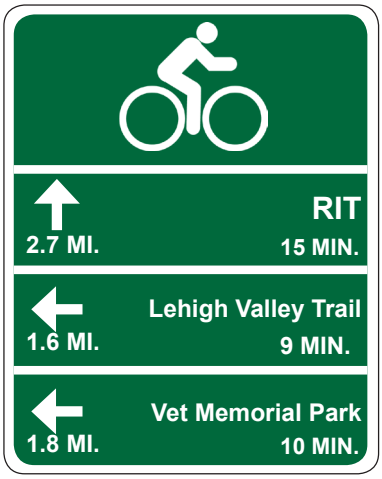
- SLMs should only be used to indicate the presence of a narrow lane; a narrow lane is a lane that is less than 14' wide… In a narrow lane, motorists and bicyclists must travel one after the other rather than side by side, and a motorist must leave the lane to safely pass the bicyclist.
- SLMs are sometimes used at the ends of bike lanes or shoulders to inform motorists that bicyclists no longer have a separate space and will be sharing the main travel lane.
- SLMs should be installed strategically and judiciously to ensure that their value is not reduced by overuse. When used, SLMs should be placed after each intersection and then periodically on spacings not exceeding 250 feet between markings.

The previously referenced NYSDOT Shared Lane Marking (SLM) Policy includes a Narrow Lane sign assembly. It is a Bicycle Warning sign (W11-1) and an "In Lane" plaque (NYW5-32P). When used, the Narrow Lane assembly should be placed with the first SLM, then repeated as deemed appropriate within the section. It is neither necessary nor desirable to supplement every SLM with a sign assembly.

5.4 BIKE ROUTES

Bike routes are not an actual facility type. A bike route is a designation of a facility, or collection of facilities, that links origins and destinations that have been improved for, or are considered preferable for, bicycle travel. Bike routes include a system of route signs that provide at least the following basic information:

- Destination of the route
- Distance to the route's destination, and
- Direction of the route.



Bike routes can be designated in two ways: General Routes and Number Routes. General Routes are links tying specific origins to specific destinations. Number Routes form a network of bike routes that do not necessarily connect specific destinations, but serve as general travel routes through an area.

General Routes connect users to destinations within a community. Typical destinations include the following:

- Attraction Areas (i.e. libraries, parks, etc.)
- Neighborhood Areas (i.e. RIT housing, historic neighborhoods, etc.)
- Trail Networks or Trailheads (i.e. Lehigh Valley Trail)

Bicycle Guide (the D11 series in the MUTCD) signs may be provided along designated bicycle routes to inform bicyclists of bicycle route direction changes and to confirm route direction, distance, and destination. Typical signs that convey the basic way-finding information for general routes can be designed for Henrietta. The MUTCD provides a number of different types of signs that can be used to provide guidance along bike routes. Some communities implement bike routes with unique designations (numbers or names). These routes should be designated using Bike Route signs.

5.5 BIKE BOULEVARDS

A bike boulevard is a local street or series of contiguous street segments that have been modified to provide enhanced accommodation as a through street for bicyclists while discouraging through automobile travel.

Bike boulevards usually make use of low volume, very low speed local streets. Often, streets are made more accommodating for bicyclists by significantly keeping motorists' speeds and volumes low. Often bike boulevards include bicycle friendly traffic calming treatments (speed pillows, mini traffic circles, chicanes with bike bypass lanes, etc.) to reduce speeds of motor vehicles along the roadway. While local motor vehicle traffic is maintained along the bike boulevard, motor vehicle traffic diverters may be installed at intersections to prevent through motor vehicle travel while having bypasses for bicyclists to continue on along the bike boulevard. Bike boulevards can be facilitated by connecting the ends of cul-de-sac roadways with shared use paths. At intersections the bicycle boulevard should be given priority over side streets.

Because of low motor vehicle speeds and volumes, bike lane markings are often not necessary along bike boulevards. SLMs may be used along bike boulevards. Alternatively, larger than normal bike symbols supplemented with the text **BIKE BLVD** have been used to designate bike boulevards.

In some communities, bike boulevard networks begin as a "one-off" system of bike ways. When a primary arterial roadway cannot be improved to a point where most cyclists feels safe and comfortable using the facility, a parallel roadway - often one street off the main road (or "one-off") - may be improved with bicycle facilities and traffic calming features to provide an enhanced cycling street. By paralleling the main road, the "one-off" network provides access to the businesses along the arterial using a pleasant cycling roadway. A "one-off" roadway can be improved in stages: initially with signage and shared lane markings and then into a bike boulevard by instituting more substantial features such as traffic calming and diverters.

Since bike boulevards typically serve as bike routes, wayfinding signage should be provided. This signage should include destination, direction,and distance (or travel time) information to attractors throughout Henrietta. Wayfinding adds to the utility of bike boulevards because it educates cyclists that there are safe, comfortable ways of accessing Henrietta by bike.

5.6 SHARED USE PATHS

Shared use paths are facilities separated from motor vehicle traffic by an open space or barrier and either within the highway right-of-way or an independent right-of-way. They are open to many different user types and are often used by bicyclists, pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. Motor vehicles are not allowed on shared use paths except for maintenance and emergency vehicles in specific circumstances. Most shared use paths are two-way facilities.

Shared use paths have design criteria for many of the same parameters as roadways. These include widths, horizontal clearances, design speed, horizontal alignment, stopping sight distance, cross slopes, grades, vertical clearance, drainage, and lighting. The AASHTO Guide for the Development of Bicycle Facilities should be consulted for design values.

The MUTCD provides the standards for signing, striping, and markings shared use paths. In most cases, the signs and markings use on shared use paths are smaller versions of those used on roadways. Many shared use paths are separated from the roadway network. Consequently, street name signs should be provided at intersecting roadways to help users orient themselves to the roadway network. Wayfinding signs should be used on paths and to potential destinations along the path such as locations where users can access water fountains and restrooms. At trailheads and rest areas, the distance and direction to the next trail head should be posted.

Most shared use path projects will be paved. Asphalt and Portland cement concrete are the two most common surfaces for shared use paths. In areas where path use is expected to be primarily recreational, unpaved surfaces may be acceptable for shared use paths. Materials should be chosen to ensure the ADA requirements for a firm, stable, slip resistant surface are met. Even when meeting ADA criteria, some users such as in-line skaters, kick scooters, and skateboarders may be unable to use unpaved shared use paths.

The geometric and operational design of shared use paths is quite similar to that of roadways. However, additional considerations such as aesthetics, rest areas, amenities, and personal security are also important ensure the maximum number of potential users are encouraged to use the path for both utilitarian and recreational purposes. Sometimes local resistance to implementing shared use paths and other trail facilities exists because of perceived potential negative impacts to neighboring communities, usually in terms of property values and crime/vandalism. A valuable resource in discussions of these matters is a summary of national research conducted for a state department of transportation. The studies cited collectively suggest that negative impacts are not an issue in either regard, and in fact suggests that property values frequently increase following the construction of shared use paths while crime rates are sometimes found to decrease.

5.7 SIDEWALKS

For the purposes of design, the term sidewalk means a smooth, paved, stable and slip-resistant, exterior pathway intended for pedestrian use along a vehicular way. All sidewalks constructed within the Town of Henrietta must be compliant with the Americans with Disabilities Act Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (July 26, 2001) or most recent ADA standards for public rights of way. Sidewalks should be provided on both sides of all public roadways.

SIDEWALK WIDTH

The preferred minimum sidewalk width is 5 feet. After review of Henrietta's codes and standards, the following recommendation is provided. The standard 5-foot sidewalk cross section (RD-12a) of curb is appropriate for when there is a separation between the back of curb and the sidewalk. The cross section for sidewalk at curb (RD-12b) shows a 5-to-6-ft sidewalk. AASHTO's A Policy on the Geometric Design of Highways and Streets and the AASHTO Guide for the Planning, Design, and Operations of Pedestrian Facilities recommends sidewalks at the back of curb be at least 6 feet wide.

LOCATION OF SIDEWALKS

On roadways with curb and gutter, sidewalks should be located six feet from the back of curb. This minimizes the encroachment of curb ramps and driveway cuts into the sidewalk width. On roadways without curb and gutter sidewalks should be separated from the roadway as shown by the following criteria, which are given in a sequence of desirability:

- at or near the right-of-way line (ideally, 3 feet of width should be provided behind the sidewalk for access, construction, and maintenance),
- outside of the minimum required roadway clear zone, or
- as far from the edge of the driving lane as practical.

City of Rochester, New York

Sidewalk alignments, which are set back from the roadway, should taper for alignment closer to the roadway at intersections. This will allow for coordinated placement of crosswalks and stop bars.

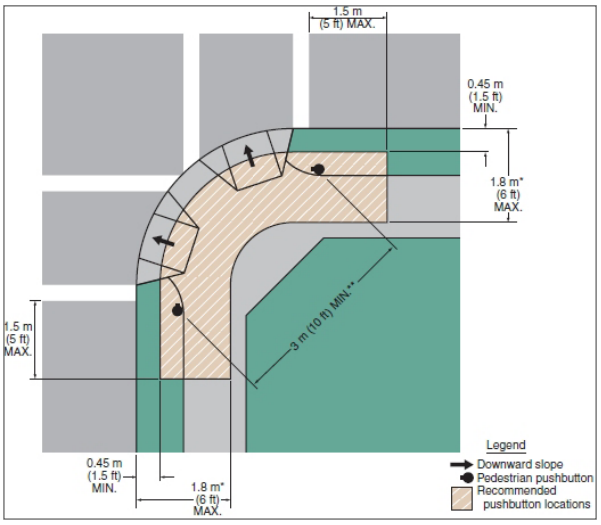
SIDEWALK SLOPES

The maximum cross slope on a sidewalk is 2%. This maximum cross slope must be maintained across driveways and crosswalks. Sidewalks may follow the grade of the adjacent roadway. However, on new structures the grade of the sidewalk cannot exceed 5%. If a grade of more than 5% is required on a new structure, an ADA compliant ramp must be provided.

5.8 CURB RAMPS

A curb ramp is a ramp that cuts through or is built up to the curb. A blended transition is a relatively flat area where a sidewalk meets a roadway. Curb ramps and blended transitions are primarily used where a sidewalk meets a roadway or driveway at a pedestrian crossing location. Blended transitions include raised pedestrian street crossings, depressed corners, or similar connections between pedestrian access routes at the level of the sidewalk and the level of the pedestrian street crossing that have a grade of 5%or less. Accessibility requirements for blended transitions serve two primary functions. First, they must alert pedestrians that have vision impairments to the fact that they are entering, or exiting, the vehicular area. Second, they must provide an accessible route for those using wheelchairs or other assistive devices. Ideally, a separate ramp should be provided for each crossing of the roadway.

MUTCD, Figure 4E-2



After review of Henrietta's codes and standards, the following recommendation is provided. Curb ramp comments are based upon the 2010 ADA Standards for Accessible Design. It is assumed that these are the standards adopted by the Town of Henrietta because the allowable cross slopes of 1:48; the 2011 Notice of Proposed Rule-making is more stringent requiring 1:50 (although it is our understanding that the as yet unpublished rule will allow 1:48). FHWA has suggested that either the 2010 ADA Standards for Accessible Design or the 2011 Notice of Proposed rule-making can be used by agencies. Whichever is chosen, the chosen standards must be applied in its entirety – no mixing and matching of standards. This is most important in terms of ramps. The 2010 ADA standards do not provide an exception allowing the running slope to follow the grade of an existing roadway. The following modifications should be considered for the Parallel Sidewalk Ramp Type 2B drawing (RD-13a).

- Clarify where the 18-in flare can be used. Where pedestrians might walk across the flare a 1:10 maximum slope should be used on the flare
- The 6-ft max length of the ramp is not appropriate. The slope of the ramp may not exceed 1:12 on new construction; 1:10 on alterations. This means that along non-flat section of roadway, the run would exceed 6-inches in the uphill direction, and a hand rail may be required.

5.9 MIDBLOCK CROSSINGS

Intersections are generally the best and most direct place for pedestrians to cross a roadway and are the most common pedestrian crossing locations. Still, more than 70 percent of pedestrian fatalities occur away from intersections, so it is critical to design midblock crossings that both increase drivers' awareness of the crossing and expectation of encountering pedestrians and encourage pedestrians to cross in the designated location. While drivers may not expect to encounter pedestrians at midblock locations as much as they do at intersections, midblock crossings have fewer conflict points between vehicles and pedestrians which is an important safety advantage over crossings at intersections.

Midblock crossings are different from intersection crossings in three important ways: there are many more potential crossing locations at midblock than at intersections, motorists are less likely to expect pedestrians crossing at midblock, and pedestrians with visual impairments have fewer audible clues for determining the best time to cross.

National Association of City Transportation Officials (NACTO)

Each of these differences leads to important design considerations for midblock crossings:

- Make the crossing location convenient for pedestrians - Midblock crossings are provided in locations where crossings at intersections are not available or are inconvenient for pedestrians to use. Midblock crossings must be placed in convenient locations to encourage pedestrians to use them rather than other, more convenient, unmarked midblock locations.
- Make pedestrians aware of the opportunity to cross - Provide aids for pedestrians with visual impairments to recognize the presence of a midblock crossing and the best opportunities for crossing. Auditory and tactile information should be provided for pedestrians with visual impairments since clues present at an intersection crossing are not always available at a midblock crossing (such as the sound of traffic stopping and starting).
- Make drivers and pedestrians aware of their responsibilities and obligations at the crossing and provide opportunities to meet these responsibilities/obligations - Use MUTCD guidance to establish a legal crossing. Vehicle approach, pedestrian approach, and traffic control design should provide pedestrians with clear messages about when to cross and drivers about where to yield. Where necessary, a refuge area should be provided for pedestrians to complete the crossing in stages. Traffic control devices can be used to create gaps in traffic for pedestrians to cross.
- Make drivers aware of the crossing as they approach it - Drivers should be warned of the pedestrian crossing in advance of the crossing location, and the midblock crossing should be highly visible to approaching drivers. Drivers should have clear lines of sight to the crossing so that pedestrians at the crossing are visible. The approach to the crossing should encourage drivers to reduce their speeds prior to the crossing. Drivers should be given plenty of time to recognize the presence of a pedestrian and stop in advance of the crossing.

PEDESTRIAN APPROACH (SIDEWALK/CURB LINE)

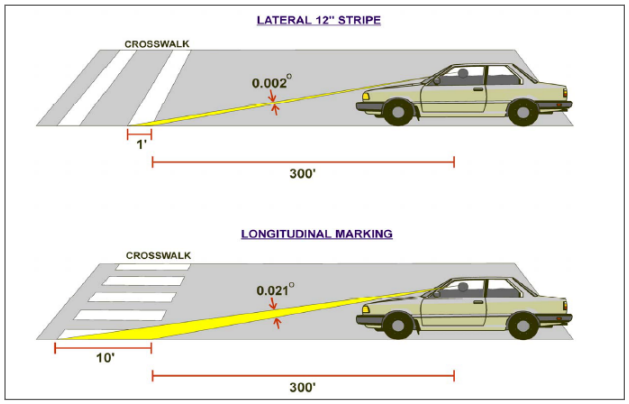
The pedestrian approach is the area near the crossing where pedestrians wait on the side of the roadway and away from traffic until they are able to cross. It is often part of the sidewalk, if the sidewalk is adjacent to the curb line, or an extension or spur of the sidewalk that provides a path from the sidewalk to the crossing, if the sidewalk is not immediately adjacent to the curb. The pedestrian approach design should accomplish the following:

- Encourage pedestrians to cross at the marked crossing. The approach design should discourage pedestrians from crossing away from the marked crossing to the extent possible. The path to the crossing should be as direct and easy to navigate as possible.
- Keep pedestrians visible to approaching drivers and oncoming vehicles visible to pedestrians. Pedestrian furniture, traffic control devices, planters, and other objects should be located so they do not block pedestrians from the site of approaching drivers. Also, on-street parking should be restricted near the crossing so that parked vehicles do not limit sight lines.
- In areas with high volumes of pedestrians, there should be sufficient space for pedestrians to queue as they wait for an appropriate time to cross. Pedestrian storage should be designed to prevent crowds of pedestrians from spilling onto the roadway. Pedestrian storage area design can be especially important at bus stops, and care should be taken so that children can wait a safe distance from the roadway while waiting for a school bus. Midblock curb extensions are a common and effective treatment at midblock locations and have many benefits.
- Make pedestrians, especially those with visual impairments, aware of the crossing location. In complex pedestrian environments, wayfinding signs may be appropriate to guide people to their desired destination. Auditory and tactile cues can be provided with traffic control devices adjacent to and in the sidewalk to direct pedestrians toward the crossing.
- Direct pedestrians to the proper location to activate a pedestrian signal (if present) and wait for an appropriate time to cross. Pedestrian-activated traffic control devices should be accessible to pedestrians with visual impairments and those using wheelchairs, scooters, and walkers. The approach design should make clear where pedestrians should stand while waiting to cross.

MOTORIST APPROACH

As noted in the discussion about locating a midblock crossing, care should be taken to avoid locations where horizontal or vertical alignment of the roadway limit drivers' sight distance, view of the pedestrian approach to the crossing, or view of the crossing itself. Consideration should be given to how trees, shrubs, poles, signs, and other objects along the roadside might limit a driver's view of the crossing. On-street parking should be prohibited near the crossing using either signs and markings or physical barriers such as a curb extension, since a pedestrian who steps out into the road between parked cars can be blocked from the view of oncoming drivers.

Umbs, R. (2010) Raised Right Turn Islands FHWA



Signing and markings on and along the motor vehicle approach to a midblock crossing should be designed in such a way as to make drivers aware of the crossing in time to notice and react to the presence of a pedestrian, and to enhance the visibility of the crossing. Advanced warning signs should indicate any special traffic control used at the pedestrian crossing. Refer to the AASHTO Guide for the Development of Bicycle Facilities for examples of midblock control treatments for shared use paths.

Traffic calming devices and other measures to prevent high vehicle speeds should be considered along routes with midblock pedestrian crossings. More than 80% of pedestrians die when struck by vehicles traveling at greater than 40 mph versus less than 10% when cars are traveling at 20 mph or slower. In addition, vehicles traveling at lower speeds require less distance to come to a complete stop when braking.

5.10 TRANSIT STOPS

Improving transit stops can increase convenience, comfort, and attractiveness, thus potentially increasing ridership and supporting transit oriented development. Transit stops provide opportunities to utilize sustainable design and construction strategies, improve storm water quality with green infrastructure, and improve the streetscape aesthetics by incorporating Complete Streets policies. Both new and existing bus stops need to be ADA accessible. To be accessible, the following details need to be considered during design and construction:

- A firm, stable surface when new bus stop pads are constructed at bus stops where a lift or ramp is to be deployed
- A minimum clear length of 96" (measured from the curb or vehicle roadway edge) and a minimum clear width of 60" (measured parallel to the vehicle roadway) to the maximum extent allowed by legal or site constraints
- Connections to streets, sidewalks or pedestrian paths by an accessible route
- The slope of the pad parallel to the roadway should be the same as the roadway, and for water drainage, a maximum slope of 1:50 (2%) perpendicular to the roadway
- New or replaced bus shelters should be installed or positioned so as to permit a wheelchair or mobility aid user to enter from the public way and to reach a location, having a minimum clear floor area of 30" x 48", entirely within the perimeter of the shelter
- Shelters should be connected by an accessible route to the boarding area
- All new bus route identification signs should be appropriate in finish and contrast, character height and proportion

Sources: http://www.adata.org/adaportal/Facility_Access/ADAAG/Special_Occupancies/ADAAG_10.html

Public Transit and Active Transportation are closely related and mutually supportive. Every ride on a bus starts and ends with walking. Nationwide, 29 percent of those who use transit were physically active for 30 minutes or more each day, solely by walking to and from public transit stops. Similarly, transit users took 30 percent more steps per day and spent 8.3 more minutes walking per day than did people who relied on cars.

- Robert Wood Johnson Foundation 2009

5.11 BIKE PARKING FACILITIES

It is recommended that bicycle parking is provided at major destinations throughout Henrietta. Bicycle parking, at its most basic level, encourages people to ride. Bicycle parking should be provided on a firm stable surface with convenient connections that are ADA accessible. Parking should be available throughout the RIT campus and Town in centralized parking clusters. Parking requirements should follow LEED design standards for Sustainable Sites. Refer to Zoning and Development of Regulations Assessment section for additional information.

Well designed and properly executed bicycle parking can provide the benefits below.

- Bicycle parking not only invites cyclists in, but shows the business values sustainability, which is an increasingly important factor in the decisions of consumers.
- Good bike parking benefits the disabled. By providing adequate, well-planned bike parking, business owners or property managers can ensure that hand rails and ramps intended for accessibility purposes are not clogged with bicycles looking for a bike parking spot.
- Pedestrians also benefit when orderly and aesthetic bike parking is provided. Not only does it improve the appearance of the area, it ensures that sidewalks and benches intended for pedestrians are not cluttered by bikes that do not have a designated parking space.
- In this way, bike parking can also prevent damage to other street furniture like garbage cans, posts, benches and trees.
- Covered shelters: provide protection from weather, promoting year round use.

Covered Bicycle Parking Shelters at RIT

6.0 ZONING AND DEVELOPMENT OF REGULATIONS ASSESSMENT

In addition to site-specific projects and improvements, the Town should also consider programs and policies that can be implemented on a Town-wide basis to improve the Active Transportation network. Existing programs and policies related to zoning, engineering standards, outreach and education, maintenance, and enforcement were assessed. The assessment of these programs and policies, where appropriate, can be found side-by-side with recommended improvements in the Recommendations chapter.

6.1 SUMMARY OF EXISTING CODE

While the Henrietta Town Code does not devote significant attention to bicycle- and pedestrian-related requirements and accommodation, it does include several references that are pertinent to this Active Transportation Plan. These relevant references include the following:

295-20, Planned Commercial Districts, mentions pedestrians as one of the groups intended to be served by such districts and prohibits uses or designs that would be detrimental to the orderly flow of pedestrian traffic.

295-30, Application and Approval Procedure for Development, reserves the right to attach requirements related to pedestrian circulation to zoning resolutions for planned unit developments.

295-32, Site Plan Approval, includes among specified factors for consideration of approval "the arrangement of pedestrian traffic access and circulation, including separation of pedestrian from vehicular traffic, walkway structures, control of intersections with vehicular traffic and pedestrian convenience."

295-52.1, Open Space Incentive Option, provides an incentive to provide public access to conservation areas, with a focus of linking existing and proposed trail corridors; to qualify, at least 10% of the conservation area must be used for pedestrian purposes.

245-4, Nonresidential Subdivision, mentions the Town board may require the installation of sidewalks, open areas, parking areas, drainage/flooding areas, buffer zones for noise or visual control, street trees, lot trees, streetlighting or other improvements to assure safe, orderly and sound development which will not adversely affect existing or future neighboring developments.

6.2 ENCOURAGING PUBLIC PRIVATE PARTNERSHIPS

These types of regulation standards stimulate private sector partnerships to provide end of trip provisions as well as increased choices of interesting and essential destinations for bicyclists and pedestrians. The two most influential end- of-trip provisions consistently cited by North Americans in nationally prominent opinion surveys as affecting their choice to bicycle for transportation are:

- Bicycle parking availability and convenience, and
- Lockers and workplace showers for commuters.

These uses are not frequently implemented throughout the Town of Henrietta. Thus, changes to applicable codes are recommended in the form of stronger incentives, rather than mandates. Recommended bicycle parking standards should formalize developers' ability to reduce the number of required motor vehicle parking spaces by the number of bicycle parking spaces required; this strategy will become more of an incentive as gas prices continue to rise in the future.

SAMPLE BIKE PARKING REQUIREMENTS

Bicycle parking shall be provided at multi-family developments on two (2) or more acres, parks and recreation facilities, and commercial establishments according to the following standards:

1. All bicycle parking facilities shall be located on the same building site as the use for which such facilities serve and as close to the building entrance as possible without interfering with the flow of pedestrian or motor vehicle traffic. Bicycle and auto parking areas shall be separated by a physical barrier which shall be at a minimum a two (2) foot high wall, fence or berm; a ten (10) foot wide buffer; or a six (6) inch curb with four feet of buffer width to protect parked bicycles from damage by cars.
2. All bicycle parking facilities shall be clearly identified as bicycle parking. Where bicycle parking areas are not clearly visible to approaching cyclists, signs shall clearly indicate the location of the facilities. When possible, this facility should protect the bike from inclement weather including wind-driven rain. Bike parking shall be consistent with the surroundings in color and design and be incorporated whenever possible into buildings or street furniture design.
3. The number of bicycle spaces required is as follows:

TYPE OF USE	MINIMUM NUMBER OF BICYCLE SPACES
Parks and recreation facilities	1 space per 10 require vehicle parking spaces
Commercial uses	1 space per 25 required vehicle parking spaces
Multi-family development	1 space per 20 required vehicle parking spaces

4. Bicycle parking spaces may be provided as either bicycle racks or other storage facilities, provided that the following standards are met:
   a. Facilities shall be designed to allow each bicycle to be secured against theft;
   b. Facilities shall support the bike in a stable position without damage to wheels, frames, or components; Facilities shall be installed to resist removal;
   c. Facilities shall be installed to resist damage by rust, corrosion, or vandalism;
   d. Facilities shall accommodate a range of bicycle shapes and sizes and allow easy locking without interfering with adjacent bicycles;
   e. Facilities shall be located in convenient, highly-visible, active, well-lighted areas;
   f. Facilities shall include an aisle or space for bicycles to enter and leave parking racks. This aisle shall have a width of at least four (4) feet to the front or rear of a standard six (6) foot bicycle parked in the facility;
   g. Facilities shall provide safe access from the parking spaces to the right-of-way or bicycle lane;
   h. Facilities shall be located not to interfere with pedestrian or vehicular movement;
   i. Bicycle parking spaces shall have a minimum width of two (2) feet and minimum length of six (6) feet, and
   j. The administrator shall be authorized to modify these standards where the facilities will be used predominately by bicycles having different space needs such as adult tricycles, or when another design (such as the provision of bike lockers) could serve the needs to an equal or greater degree

Furthermore, the design specification for bicycle parking should stipulate that the parking location be similar to that required for handicapped (motor vehicle) parking, and that the bicycle parking location be secure, covered, and at grade level.

DEVELOPMENT INCENTIVES FOR END OF TRIP FACILITIES

Workplace bicycle lockers, change and/or shower facilities are not generally being constructed in Henrietta. Thus, there are two options to be considered: increase the incentives or mandate the facilities. The first option of offering more effective incentives is recommended; outlined herein are several approaches to this strategy.

There are two phases in which the incentives can be effective: upon initial land development and during tenant build- out and/or remodeling or renovation. Among the compelling incentives for the construction of bicycle locker/changing/shower facilities at initial land development (or during site re-development) are:

- Trip generation (hence traffic impacts) reduction during traffic impact assessments (e.g., up to five percent of total trip generation, depending on land use);
- Floor area bonus (equal to the space taken up by the bicycle commuter facility) for those districts and uses that specify maximum square footage;
- Reductions to required yard/setbacks (e.g., up to 20 percent for providing shower and locker facilities with capacity of serving up to five percent of employees);
- Administrative variances (not currently authorized in Henrietta) for more compact parking lot dimension(s); and
- Greenspace for vehicle utilization area (VUA) requirement reduction, (e.g., up to twenty times the building square footage dedicated to the bicycle facility).

Incentives for actions subsequent to initial development (i.e., tenant build-outs and internal building renovations) include ad valorem tax exclusion of at least two times the square footage of the building dedicated to the locker/changing/shower facility. This exclusion could be increased if the tenant businesses participated in additional transportation demand management programs offered by the Town of Henrietta. Other incentives could include offsets to collected user fees.

As Henrietta transforms its transportation system in the public rights-of-way, a concomitant partnership by the private sector will ensure the effectiveness of the public initiative. The end result will be increased opportunities for the residents of the town to choose bicycling for, not only recreation, but also for commuting and travel. Their choice will enhance workplace productivity and employee health, which will in turn improve the economic well-being and overall quality of life in Henrietta.

Continued investment by the Town of Henrietta in public bicycle transportation infrastructure can be complemented by developers and commercial property owners providing on-site showers and locker facilities for employees. There are a number of incentives that can be offered to the private sector developing and managing commercial properties; many of these incentives can be offered at little or no actual expense to the Henrietta.

6.3 ZONING AND DEVELOPMENT REGULATIONS ASSESSMENT

While the specific bicycle and pedestrian infrastructure recommendations included in this Plan have the potential to go a long way in making the Town of Henrietta a more accommodating place to walk and ride, it is also important to consider the positive impact that zoning and subdivision policies can also contribute. A review of existing Town of Henrietta zoning provides a context for the development of this Active Transportation Plan. The following section includes summaries of existing zoning codes, details their relevance to bicycle and pedestrian issues, and makes recommendations to enhance active transportation.

In addition to site-specific projects and zoning improvements, the Town should consider educational, outreach, and maintenance programs that can be implemented on a Town-wide basis to improve utilization and safety of the Active Transportation network.

Significant portions of Henrietta already accommodate bicycling and walking in the public right-of-way. The use of the public right-of-way, however effective it may be, is not enough to increase walking and biking from occasional recreation to commuting and travel. This effort will fall short of its goals unless it is coupled with zoning, incentives, private sector partnerships and public education.

These partnerships can be stimulated through changes in Town regulations, as well as private sector incentives. The private sector's role in the encouragement of active transportation, particularly by providing end of trip facilities for commuting, can be incentivized by changes to zoning language that promote public-private sector partnerships where appropriate.

6.4 ASSOCIATED RECOMMENDATIONS

The consultants have the following recommendations:

1. Adopt a town-wide Complete Streets policy that would incorporate the Town Sidewalk Policy and Complete Streets guidelines throughout all Town districts. According to New York State Department of Transportation (DOT), "Complete Street roadway design features include sidewalks, lane striping, bicycle lanes, paved shoulders suitable for use by bicyclists, signage, crosswalks, pedestrian control signals, bus pull-outs, curb cuts, raised crosswalks, ramps and traffic calming measures."

2. All development documents should include requirements for sidewalks on all public roadways. These requirements should specifically state that sidewalks must be compliant with the ADA Public Rights of Way Accessibility Guidelines draft, or most recent ADA standards for public rights-of-way.

3. Enact local law based on the State of NY enabling legislation to reimburse consulatnts for review of subdivision site plans for active transportation consideration. Refer to the New York Department of State document, link below, for more information.
http://www.dos.ny.gov/lg/publications/Site_Development_Plan_review.pdf

WHAT IS A COMPLETE STREET?

A Complete Street is a roadway planned and designed to consider the safe, convenient access and mobility of all roadway users of all ages and abilities. This includes pedestrians, bicyclists, public transportation riders, and motorists; it includes children, the elderly, and persons with disabilities.

Complete Street roadway design features include sidewalks, lane striping, bicycle lanes, paved shoulders suitable for use by bicyclists, signage, crosswalks, pedestrian control signals, bus pull-outs, curb cuts, raised crosswalks, ramps and traffic calming measures.
www.dot.ny.gov/programs/completestreets

7.0 GREEN ENERGY BENEFITS

Benefits associated with increased bicycling and walking activity are numerous and well-documented. Some of these benefits, such as improved public health, strengthened local economies, and enhanced quality of life, are societal in nature. Others, such as fuel savings and emissions reductions resulting from less automobile travel, can be categorized as "green energy" benefits. This section describes a quantification of potential green energy benefits in Henrietta associated with increased bicycle facility provision.

The United States Census Bureau American Community Survey (ACS) commuting characteristics include statistics on mode share. According to the 2013 ACS, 0.8% of Henrietta's workers, or one out of every 125, currently commute primarily by bicycle (compared to a nationwide rate of 0.5%). Field data collected for this Henrietta plan indicate that 40% of the directional miles of the Town's arterial and collector roadway network include bicycle facilities, defined for this purpose as a paved shoulder or bike lane at least four feet wide. Nationwide research (conducted as part of Idaho's Statewide Bicycle and Pedestrian Plan) reveals a strong correlation between bicycle commute mode share and bicycle facility provision on major roads, with more than 50% of the variation in mode share being explained by the degree of facility provision. According to that research, 40% bicycle facility provision would be expected to be associated with a bicycle commute mode share of approximately 3.9%.

There are many reasons that Henrietta's bicycle commute mode share is lower than that value (cold climate, prevalence of paved shoulders relative to bike lanes, roadways with high traffic volumes, relative lack of a local bicycle culture, etc.), but the data nonetheless provides a way to estimate potential increases in bicycle commuting amongst Town residents. [It is worth noting that recreational bicycling or walking trips produce many benefits, including health benefits, they are generally not associated with green energy benefits because they typically do not replace an existing trip made by automobile. Also, while there are utilitarian trip purposes (errands, travel to school, etc.) other than commuting, commuting is a predominant trip purpose and represents a good surrogate for overall utilitarian travel.]

The bicycle facility recommendations including in this Plan, including opportunities to create new paved shoulders or bike lanes through road diets, roadway restriping, and adding paved shoulders, illustrate that it is feasible to increase bicycle facility provision on the study network to approximately 90%. The national data described previously indicate that a facility provision increase from 40% to 90% would be expected to increase bicycle commute mode share by a factor of 2.7 or, in Henrietta's case, from 0.8% to 2.2%, leading to an additional 290 Henrietta residents who would commute primarily by bicycle.

The Florida Department of Transportation (FDOT) "Conserve by Bicycling and Walking Study" provides a reliable methodology to quantify green energy benefit from these potential new bicycle commuters. If these people commute to and from work 130 days per year (or approximately 50%

of work days, which is a conservative estimate if bicycling is their primary commute mode) and their prior commute mode was by automobile, nearly 75,000 trips each year would be converted from the auto mode to a mode that does not use fuel and produces no emissions. The FDOT study indicates that the average bicycle commute trip length is three miles and that 0.18 gallons of fuel are used per mile on three-mile trips. This means that the 75,000 replaced trips represent 225,000 miles and more than 40,000 gallons of fuel saved (in addition to the green benefit of the fuel savings, those residents could also save more than $100,000 annually in fuel costs, much of which would be re-invested into the local/regional economy). Regarding air quality, the FDOT study indicates that each gallon of fuel used is associated with 19.4 pounds of carbon dioxide emissions. The potential 40,000 gallons of fuel savings would therefore conserve nearly 800,000 pounds of carbon dioxide emissions annually.

The example calculations described herein clearly demonstrate significant potential for green energy benefits associated with increased bicycle commuting resulting from better accommodation of bicycle travel in Henrietta. Eliminating existing sidewalk gaps would naturally add to these benefits by encouraging more utilitarian pedestrian travel, though average walking trip lengths are considerably shorter and the ACS walk commute mode share for Henrietta is an already high 6.8%. This analysis indicates that implementing the Plan's recommendations will not only enhance Henrietta residents' quality of life, but will also provide tangible environmental benefits.

8.0 OUTREACH AND EDUCATION RECOMMENDATIONS

A successful bicycle and pedestrian network depends on users being able to safely, appropriately and frequently utilize the network. To assist in creating an effective, safe bicycle and pedestrian network, outreach, education, and zoning enhancements will be necessary. Educating roadway users (both bicyclists and motorists) about the rules of the road and safe bicycling behavior is essential, while at the same time, encouraging more people to get out and ride their bikes.

The outreach and education recommendations in this section aim to increase the number of bicyclists and pedestrians while improving safe and appropriate behavior by bicyclists, motorists, and pedestrians. The network will attract users of different skill levels and ages, as well as provide opportunities for interaction with motorists and pedestrians. Education and outreach programs must consider all of these different user groups. The 1999 version of AASHTO's Guide for the Development of Bicycle Facilities recommended that an education plan address the following four groups:

- Young bicyclists;
- Adult bicyclists;
- Parents of young bicyclists; and
- Motorists.

This Plan recommends that the following groups be addressed as well:

- Senior pedestrians and bicyclists;
- Low income pedestrians and bicyclists;
- Visiting pedestrians and bicyclists; and
- School-age pedestrians and bicyclists.

IMPORTANT INFORMATIONAL ELEMENTS

It is important to make sure each group is addressed in multiple and suitable ways. For example, programs for young bicyclists should use age-appropriate curriculum and language to explain concepts and issues. In addition, the Town of Henrietta is home to people of many different ethnic backgrounds. Language barriers should be considered as educational materials are developed. The Town of Henrietta should seek partnerships that bridge cultural boundaries. Such partnerships would provide a valuable channel for distribution of educational materials

and for general promotion of bicycling in under-served communities. The Town should ensure that all parts of the Henrietta, not only geographically, but also demographically, have equal access to active transportation information and facilities. **Table 7** at the end of this Plan section provides a thorough summary of existing active transportation-related education and outreach programs and partnerships.

One of the key things to keep in mind when planning outreach and education efforts is not to "reinvent the wheel". Many successful programs, campaigns and resources are available. Locally, there are already many efforts underway. Other communities throughout the U.S. and Canada have already developed tools that can be adapted and modified for the Town of Henrietta. This adaptation is important in order to effectively localize the educational campaigns. Locally created campaigns that include materials with a local feel have been shown to have a more noticeable influence on motorist and bicyclist behaviors than generic FHWA-produced materials.

"Bicyclists and motorists together must better learn to Share the Road, to operate defensively, to understand each other's behaviors, and to be alert to any unanticipated actions or movements. By working together, we can achieve the joint goals to increase bicycle ridership while reducing the number of bicycle crashes, injuries and fatalities."

New York State Department of Transportation (NYSDOT)

Bike and pedestrian education and outreach are vitally important in light of the growing number of distracted pedestrians. Much attention has rightly been focused on distracted drivers. But a recent National Highway Traffic Safety Administration reported that pedestrian fatalities rose by 4.2 percent in 2010 over the previous year, and injuries were up 19 percent, even though overall traffic deaths declined.

As we look around us every day, pedestrians are being distracted by their handheld devices. Researchers believe that the number of injured pedestrians is actually much higher than these results suggest, since police don't always collect that data. A recent survey by Liberty Mutual suggests 60 percent of 1,000 people surveyed routinely read and send texts and emails, talk on their cell or smartphones, and listen to music while walking. Current trends, such as this, are important factors in designing bicycle/ pedestrian safety, education and outreach programs. The framework for these recommendations was crafted with all this in mind.

"1,152 pedestrians were treated in emergency rooms after being injured while using a cellphone or some other electronic device in 2010 — and the number had doubled since the year before."

US Consumer Product Safety Commission

8.1 RECOMMENDATION 1

Connect partners to maximize the effectiveness of existing resources, programs, and materials. A list of potential partners has been developed, and their existing programs and partnerships have been inventoried to identify opportunities for new partnerships and enhanced use of resources. Some of these partners are already working together, but there are new partnerships that can be nurtured and developed, and new ways for existing educational materials to be used. Not all of the potential partners are specifically focused on bicycle/ pedestrian-related issues, but may still be a useful partner for their ability to communicate with a certain part of the Rochester population. Some examples of education and outreach programs are suggested here:

1. Coordinate different organizations that offer **bicycle rodeos** for young bicyclists to see ways they can support each other and maximize existing resources. Organizations include Town of Henrietta, Injury Free Coalition for Kids, and Monroe County Office of Traffic Safety.
2. Utilize the **RocCity Coalition** to locate volunteers for bicycle rodeos and bicycle repair programs, and to distribute information about bicycling to young adults in Rochester.
3. Coordinate safety education with the **Rush Henrietta School District** (Crane Elementary, Fyle Elementary, Leary Elementary, Sherman Elementary, Winslow Elementary, Burger Middle School, Roth Middle School, Ninth Grade Academy, Senior High School, and Vollmer Learning Center).
4. Learn from successful outreach and education examples in other active transportation-friendly communities. Many successful programs, campaigns and resources are already available. Other communities throughout the U.S. and Canada have already developed tools that can be adapted and modified for the Town of Henrietta.

5. May is **National Bike Month** - Recognize those who commute by bike and encourage people to become new bicycle commuters or increase their trips by bike during the season when spring has sprung and new beginnings abound. This program features a month long calendar of events that offers organized rides for different ages and abilities, bike -handling skills and maintenance workshops, and a Bike to Work Day Commuter Challenge. The program is most successful when led by a community-based organization with financial support from the Town and greater business community.

6. **Bicycle Ambassadors** - A team of at least two ambassadors encourages an increase in bicycling by engaging the general public to answer questions about bicycling and teach bicycle skills and rules of the road. Ambassadors attend community-based events throughout peak cycling season to offer helmet fits, route planning, bike rodeos and commuting 101 workshops. Community members also may request an appearance by a team of ambassadors at businesses, schools or a conflict zone location along the bikeway system.

7. **Bike Light Campaign** - With shorter days, when it gets dark before commuters head home from the office, fall is a good time of year to remind cyclists that proper equipment is required when riding at night. A bike light campaign also offers the opportunity to introduce cyclists to bicycle shops and strengthen partnerships between the community and retailers. This program could offer discounts on bicycle headlights and rear red reflectors and lights. It is recommended that the campaign be rolled out in September with the return of university as well as K-12 students to school. The campaign should expire before peak holiday season when bike shops are busy and less interested in offering discounts.

8. League of American Bicyclists: Bicycle Friendly Community status - **The Bicycle Friendly Community (BFC)** program created by the League of American Bicyclists (LAB) offers the opportunity to be recognized for achievements in supporting bicycling for transportation and recreation. It also serves as a benchmark to identify improvements yet to be made.

9. League Certified Instructor training course scholarships - The League of American Bicyclists offers certification courses to train those interested in teaching others to ride their bike safely and legally as a form of transportation. **League Certified Instructors (LCIs)** are a valuable asset to the community and can offer a variety of workshops for adults lacking confidence to ride in traffic as well as children learning to ride for the first time. LCI training courses require a two and a half day commitment and are offered through the LAB. To facilitate a cadre of cyclists to become LCIs, this program coordinates with the LAB to schedule training course offerings in the community and provide scholarships.

10. Expand the **Safe Routes to School (SRTS)** program – SRTS is a national program that addresses barriers that inhibit students from walking and biking to school. The Genesee Transportation Council recently administered a regional study of the Safe Routes to School program. The Town should work with the different schools operating in Henrietta to consider how the program could be used to assess barriers at all local schools. Increasing the number of children that can safely walk and bicycle to school as well as protecting the safety of those that already do so requires a holistic approach. SRTS programs need to be cooperative efforts involving both the Town and the various schools or districts.

11. Conduct **public safety announcements** on following the rules of the road. For motorists, this campaign could address the need to look left prior to turning right, and provide clear passing space. For bicyclists, this campaign could address bicycle lights and lack of visibility when not riding in the road. For pedestrians, this campaign could address crossing at designated crossing facilities, and walking on the sidewalk in all seasons.

12. **Walk Friendly Communities** is a national recognition program developed to encourage towns and cities across the U.S. to establish or recommit to a high priority for supporting safer walking environments. The WFC program will recognize communities that are working to improve a wide range of conditions related to walking, including safety, mobility, access, and comfort. *www.walkfriendly.org/*

13. Distribute a **Bike Map** – The Genesee Transportation Council has created a regional bike map that includes bicycle suitability ratings, extensive safety information for bicyclists, a listing of area bicycle shops and repair services, location of bicycle lockers and how to obtain access to use them, information about how to use the bike racks that are provided on all RTS buses, and a listing of multi-use trails in the region. The map is free and can be provided upon request. If the Town published a map including only its corporate boundary, it could probably be produced in a smaller format than the GTC map, which covers a much larger area. An excellent example is the map and info guide produced by the City of Vancouver, British Columbia that illustrates bicycle/ pedestrian routes in the city, and utilizes a compact, folded-into-wallet-size (Z-card) format.

14. Institute a **"Sunday Parkways"** ride once per month - In Madison, WI, Sunday Parkways are times set aside on weekends and holidays for traffic-free biking and walking on a network of selected streets.

15. Create an **active transportation wayfinding** program that includes identification of routes and signing plans (destination, distance, direction) as well as assessments of potential improvements along the proposed routes.

16. **Monroe County Pedestrian Safety videos** review the rules of pedestrian safety utilizing age appropriate videos for PreK-1, Grade 2-3, Grade 3-6 and three adult safety review videos. www2.monroecounty.gov/safety-trafficsafety.php. These videos could be incorporated into school district curriculum and shown at town events.

17. Adapt Oregon program **"Bike Wheels to Steering Wheels."** The program helps youth better understand the relationship between bicycle/ pedestrian safety and motion, and ultimately gives students a better understanding of safety when traveling by all modes of transportation, in which the laws of physics are applied without exception. The concepts are learned through normal math, science, or physics curriculum in schools.

18. Consider Colorful Sidewalks and Crosswalks at unsignalized intersections around the Rush Henrietta Central School District per HealthiKids Coalition, an initiative of the Finger Lakes Health Systems Agency. *http://www.healthikids.org*

OTHER POSSIBLE EXAMPLES:

Commuter of the Year Contest - This contest recognizes those who choose to bike, walk, or ride transit. An aim is to encourage others to reduce their drive alone motor vehicle trips. Nominated by their peers, contestants may be employees, residents, or students in the community and could be asked to provide an inspirational story about their transportation choice and habits. Based on nominations, categories could recognize Youth, Student, Senior, and Family Commuters. Winners also should be encouraged to serve as role models and participate in events throughout the year to mentor others and help them set goals to reduce their drive alone trips

Business Pool Bike Program - Offering employees the opportunity to check out and ride a bike to meetings, lunch or run errands is a great benefit. Pool bikes are a form of bike sharing where an employer manages a fleet of bikes for this purpose. This program offers subsidies for the purchase and on-going maintenance of bikes as part of an agreement to track use and achieve the goal of reducing vehicle miles traveled and greenhouse gases. Employees sign up, make reservations and log their trips using a web-based management tool.

Conduct **pedestrian and bicycle counts** on a seasonal basis to track whether there is an increase in pedestrian and bicycle activity, exploring new methods as suggested by the public and the League of American Bicyclists. Refer to Follow-on Activities presented later in this plan for more information.

Bicycle Rodeo Kits - Children learning to ride should be confident with their bike-handling skills before riding in traffic. A Bike Rodeo is an interactive and controlled environment where cyclists practice a new skill at a series of stations. The number and difficulty of skills can be tailored based on attendance and number of instructors available to staff the event. This initiative will create a self-service bicycle rodeo kit that can be reserved by League Cycling Instructors (LCIs), Bike Ambassadors and community members. It contains instructions, diagrams and props necessary to host a bike rodeo. A programmatic collaboration with Monroe County Office of Traffic Safety should be explored.

Participate in an **annual meeting of all bicycle/pedestrian planners and engineers in Monroe County**. An annual meeting should be held to allow local communities and organizations to communicate their plans and programs, as well as share best practice information. Note: Town officials may not want to facilitate such a meeting, but it would be useful to participate if some other entity were to organize the event.

AARP Network of Age-Friendly Communities Toolkit can be adapted by municipal and local governments, non-profit organizations, community partners and volunteers to guide and support age-friendly initiatives that make 'Livable Communities" great places for all ages. www.aarp.org/livable-communities/network-age-friendly-communities

Identify proper **enhanced visibility clothing** for bicyclists and pedestrians, and advise the local active transportation community of the associated safety benefits.

As part of a larger roadway safety campaign, develop an educational campaign to eliminate bicycle and pedestrian fatalities. In Minnesota, **"Toward Zero Deaths"** is a statewide partnership involving federal, state, county and academic partners. The mission is to create a culture in which traffic fatalities and serious injuries are no longer acceptable through the integrated application of education, engineering, enforcement, and emergency medical and trauma services.

8.2 RECOMMENDATION 2

Appoint a **public bicycle/pedestrian committee** to promote non-motorized transportation and to actively engage with town citizens, planning committees, and boards to expand commuting and recreational paths for walkers and cyclists.

- Promote safe routes to school, greenways and connected corridors with adjacent towns,
- Publish and maintain cycling and walking maps,
- Review proposed development for active transportation considerations,
- Recommend amenities to enhance safe walking and cycling.

8.3 RECOMMENDATION 3

Coordinate an ongoing **public information and enforcement campaign** regarding safe sharing of the roadways for pedestrians, bicyclists and motorists.

Pedestrians - Law enforcement departments can take a leading role in improving public awareness of existing traffic laws and ordinances for motorists (e.g. obeying speed limits, yielding to pedestrians when turning, traffic signal compliance, and obeying drunk-driving laws) and pedestrians (e.g. crossing the street at legal crossings and obeying pedestrian signals). Many local law enforcement agencies have instituted annual pedestrian awareness weeks when they issue tickets to motorists who disregard pedestrian laws and warn pedestrians to follow the laws as well.

Bicyclists - A campaign should be designed keeping in mind the League of American Bicyclists' recommendation that communities make connections between the bicycling community and law enforcement. Sporadic enforcement will not result in significant improvements to bicyclist behavior and will likely result in resentment of law enforcement personnel. Those behaviors to be targeted should be determined at the outset of the law enforcement campaign. The following behaviors should be targeted consistently:

- Riding at night without lights;
- Violating traffic signals;
- Riding on sidewalks; and
- Riding against traffic on the roadway.

The **5 E's**: Essential elements for communities to become great places for bicycling:

1. **Engineering:** Creating safe and convenient places to ride and park
2. **Education:** Giving people of all ages and abilities the skills and confidence to ride
3. **Encouragement:** Creating a strong bike culture that welcomes and celebrates bicycling
4. **Enforcement:** Ensuring safe roads for all users
5. **Evaluation & Planning:** Planning for bicycling as a safe and viable transportation option (The League of American Bicyclists)

These four behaviors were chosen for two reasons. First, they represent particularly hazardous behaviors which result in many crashes. Secondly, and very importantly, the enforcement of these behaviors is easy to justify to the public. When coupled with (and in fact preceded by) a large-scale education campaign, the public will understand the importance of the campaign and consequently will accept the enforcement activity.

In addition to the need to educate bicyclists, pedestrians, and motorists, some targeted training of law enforcement may also be appropriate. Some questions that could be covered in this training include:

- When is it okay for bicyclists to 'claim the lane?'
- What width constitutes 'traffic lanes too narrow for a bicycle and a vehicle to travel safely side-by-side within the lane?'
- Why is it important for a bicyclist to use headlamps and tail lamps?
- Why is riding against traffic such a problem?

By answering these and other similar questions, and discussing what infractions are most likely to lead to bike crashes, cities can encourage law enforcement to help promote bike safety by targeting those behaviors most likely to result in crashes. Some communities educate local law enforcement through the enforcement agency's standing roll-call meetings, while others send officers to the League of American Bicyclists' Traffic Skills 101 courses.

8.4 RECOMMENDATION 4

Schedule regular maintenance and facility improvements to keep bike lanes and walkways well-marked and free of snow and debris. The availability of bicycle and pedestrian facilities is one of the components that can lead to increased riding and walking in a community. However, facility improvements do not end at construction; facilities also need to be maintained to be useful. Maintenance needs require planning and budgeting. Sample maintenance activities include keeping roadways and bike lanes clean and free of debris, identifying and correcting roadway surface hazards, keeping signs and pavement markings in good condition, maintaining adequate sight distance, and keeping shared-use trails in good condition. Maintenance is an area where planning and attention can provide significant benefits for bicyclists and pedestrians at relatively modest additional cost.

It should be noted that the Henrietta Department of Public Works efficiently maintains snow removal, pothole repairs and road resurfacing to a high level, scheduling an active multi-year calendar of road and sewer projects for planning and public informational purposes. Identification of maintenance needs for active transportation facilities, and institutionalization of good maintenance practices are key elements in providing safe facilities for bicyclists and pedestrians. Winter snow removal and year-round debris removal will be key maintenance concerns in the Town of Henrietta. The importance of good planning and initial design cannot be overstated with respect to long-term maintenance needs. It is easier to obtain outside funding for facilities construction than for on-going maintenance, so planning and building correctly at the outset will reduce future maintenance problems and expense. Residents and businesses can be engaged in clean-up days, or help with snow removal.

8.5 PROGRAM EFFECTIVENESS MEASURES

Program effectiveness measures can be used to determine if the recommended strategies meet their objectives, discover any areas that need change, justify funding, and provide guidance for similar programs. Baseline data is required prior to implementing recommendations. The Town could observe the outcomes or contract with a consultant to measure effectiveness on their behalf. Observable outcomes include: number of crashes, injuries, and fatalities; behaviors; number of citations issued; number of people walking or bicycling; knowledge, opinions and attitudes; changes in organizational activity; traffic volumes; and traffic speeds. The effort to enforce the traffic laws as they relate to bicycle and pedestrian safety should be addressed in an overall, countywide, coordinated enforcement campaign. Targeted enforcement initiatives result in everyone following the rules of the road.

Table 7: Existing Active Transportation Education and Outreach Programs and Partnerships

	Existing Programs					*Existing Partnerships*					*Highlights*
Partner Name	**Bicycle Safety**	**Community Health**	**Environmental Concerns**	**Transportation Equity**	**Neighborhood Livability**	**Bicycle Safety**	**Community Health**	**Environmental Concerns**	**Transportation Equity**	**Neighborhood Livability**	**Programs or Partnerships of Note**
AARP		+			+						Age Friendly Communities programs.
Boys & Girls Clubs of Rochester, NY	+	+		+		+	+				Cyclopedia - connects bicycling to online documentation.
Finger Lakes Health Systems Agency		+									Various health and wellness initiatives.
Genesee Land Trust			+		+		+	+		+	
Genesee Regional Off-Road Cyclists (GROC)	+	+				+	+				Singletrack Academy to teach bicycle handling skills.
Genesee Transportation Council	+	+	+	+	+	+	+	+	+	+	Funds studies addressing key issues. Helmet brochure, bike map.
Greater Rochester Health Foundation											
Injury Free Coalition for Kids	+	+									Kohl's Pedal Patrol provides bike rodeos and helmets.
Monroe County Health Department		+			+		+				Partnered with University of Rochester Center for Community Health.
Monroe County Office of Traffic Safety	+					+					Programs are free and available to any school in Monroe County.
Monroe County Planning Department			+	+	+			+	+	+	
Monroe County/Rochester Public Libraries					+						Venue for education/outreach programs and distribution of materials.
Monroe YMCA	+	+			+	+	+			+	
NYSDOT											
RGRTA									+		
R Community Bikes, Inc.	+			+					+		Bike helmet giveaways, bike repairs for underserved.
RocCity Coalition					+					+	Many partnerships, not specifically related to active transportation.
Rochester Area Community Foundation		+	+		+		+	+		+	Support community efforts through grants.
Rochester Bicyclig Club (RBC)	+					+					Dedicated to promoting cycling for health and well being.
Rochester Cycling Alliance	+	+				+	+				
Rochester General Hospital		+			+	+	+				
Rochester Institute of Technology (RIT)	+	+	+	+		+	+	+	+		
Rush Henrietta Central School District		+	+			+	+	+			
Unity Health Services		+			+	+	+				
Wegmans	+	+	+	+	+	+	+	+	+	+	Passport to Wellness.

9.0 FUNDING AND IMPLEMENTATION STRATEGY

Those responsible for implementing this Plan's recommendations should monitor capital improvement plans to identify specific opportunities, coordinate the available outreach and education programs identified in the previous section, coordinate improvements with adjoining municipalities, and identify and follow through on relevant grant opportunities. In addition to these strategies, the Town of Henrietta has historically funded, and will continue to fund, sidewalks and other active transportation projects using the following techniques:

- New development projects requesting incentive zoning may be required to install and/or fund sidewalks as an amenity.
- New developments or redevelopments may be required to provide sidewalk easements and/or construct sidewalks as a condition of Planning Board approval.
- In addition, the Town has established a sidewalk maintenance fund that annually funds sidewalk maintenance projects.

In general, however, most large sidewalk construction projects are funded by state and federal grants. In addition, the costs associated with constructing the bicycle and pedestrian facilities recommended in this Plan exceed available Town resources.

To help alleviate this deficiency, this section identifies and discusses the numerous sources which can be used to provide monetary assistance for bicycle and pedestrian facilities and programs. Many of these funding sources are available on the federal level, as dictated in the new transportation legislation, Moving Ahead for Progress for the 21st Century (MAP-21). Many of these federal programs are administered by the New York State Department of Transportation (NYSDOT). Additionally, there are other state and regional funding sources which can be used to help achieve the goals and objectives of this Plan. Finally, a number of private funding sources exist which can be used by local governments to implement bicycle- and pedestrian-related programs. The following quick-reference table (**Table 8**) includes all of the funding sources that are described subsequently in greater detail.

Table 8: Funding Sources

Funding Source	Category	Relevant Project Types
National Highway Performance Program	Federal	Bicycle transportation and pedestrian walkways (Section 207)
Surface Transportation Program	Federal	Bicycle transportation and pedestrian walkways; modification of sidewalks to comply with ADA; recreational trail projects; Scenic Byway projects; SRTS projects (Section 207)
Highway Safety Improvement Program	Federal	Intersection safety improvement, pavement and shoulder widening; bicycle/pedestrian/disabled person safety improvements; traffic calming; installation of yellow-green signs at pedestrian and bicycle crossings and in school zones; transportation safety planning; road safety audits; improvements consistent with FHWA publication "Highway Design Handbook for Older Drivers and Pedestrians"; safety improvements for publicly owned bicycle and pedestrian pathway or trail
Congestion Management and Air Quality (CMAQ)	Federal	Bicycle and pedestrian facilities (TA projects)
Transportation Alternatives (replaced TE, SRTS, Recreational Trails)	Federal	Bicycle and pedestrian facilities; Safe routes for non-drivers projects and systems; preservation of abandoned railway corridors including for pedestrian and bicycle trails; Safe Routes to School infrastructure and non-infrastructure projects: school-based facility, education, and enforcement projects/campaigns
State and Community Highway Safety Grants	Federal	Safety-related programs and projects (Section 402)
HUD Community Development Block Grants	Federal	Public facilities and improvements, such as streets, sidewalks, sewers, water systems, community and senior citizen centers, recreational facilities, and greenways
Urbanized Area Formula Grants, Capital Investment Grants and Loans, and Formula Program for Other than Urbanized Area	Federal (FTA)	Bicycle access to public transportation facilities, shelters and parking facilities, bus bicycle racks
CHIPS (Consolidated Local, State, and Highway Improvement Program) (www.dot.ny.gov/programs/chips)	State	Bike lanes and wide curb lanes
The Community Development Block Grant (CDBG)	Regional	Sidewalks
The Green Innovation Grant Program GIGP (http://www.efc.ny.gov/)	State	Projects that improve water quality and demonstrate green stormwater infrastructure in New York State.
The Greater Rochester Health Foundation	Regional	Community health and prevention projects and programs
Bikes Belong Coalition (www.bikesbelong.org/grants)	Private	Bicycle facilities; end-of-trip facilities; trails; advocacy projects such as Ciclovias

National Trails Fund (www.americanhiking.org/our-work/national-trails-fund)	Private	Hiking trails
Global ReLeaf Program (www.americanforests.org/our-programs/global-releaf-projects/global-releaf-grant-application/global-releaf-project-criteria)	Private	Trail tree plantings
Robert Wood Johnson Foundation (general) (www.rwjf.org/grants)	Private	Various
The Conservation Alliance Fund (www.conservationalliance.com/grants/grant_criteria)	Private	Land Use
Surdna Environment/Community Revitalization (www.surdna.org/grants/grants-overview.html)	Private	Community revitalization and environment, including greenway trail design

9.1 FEDERAL FUNDING SOURCES: MAP-21 FUNDED PROGRAMS

With the adoption of Moving Ahead for Progress for the 21 st Century (MAP-21), the funding landscape for bicycle and pedestrian projects changed radically. Whereas under SAFTEA-LU (MAP-21's legislative predecessor), non-motorized transportation facility projects had been eligible under dedicated funding categories that included the Transportation Enhancements Program (TEP), Safe Routes to School (SRTS) and recreational trails. These dedicated programs have been folded into is a new category, Transportation Alternatives which recasts, at reduced funding levels, the former TE program. [3]Transportation Alternatives includes TA projects (see list below), previously eligible Safe Routes to School Projects, [4] Recreational Trails projects, and boulevard projects in former Interstate Highway rights of way. Eliminated programs include Safe Routes to School, National Scenic Byways, and the Paul S. Sarbanes Transit in Parks program. The Land and Water Conservation Fund has been funded at a reduced amount through 2013. As before, non-motorized projects must be "principally for transportation, rather than recreation, purposes" and must be designed and located pursuant to the transportation plans required of States and Metropolitan Planning Organizations. The exception to this rule is the Recreational Trails Program (RTP), under which projects may be used for recreational purposes.

Whereas before there were different funding methods for each program, new MAP-21 TA funds will be distributed through grant programs. Fifty percent of the funding will be distributed according to population share. For areas over 200,000, the MPOs will manage the distribution of funds by grant competition. For areas under 200,000, the state will manage the distribution through a competitive grant program. These funds are limited to this use and are not transferable. The remaining fifty percent will be distributed by DOTs, and is transferable to other highway uses. The combination of reduced available funding and increased competition for funds due to the combining of programs may lead to a reduction in bicycle and pedestrian projects being funded.

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[3] Section 101 (29) Transportation Alternatives.--The term `transportation alternatives' means any of the following activities when carried out as part of any program or project authorized or funded under this title, or as an independent program or project related to surface transportation: (A) Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety- related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.)(B) Construction, planning, and design of infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs. (C) Conversion and use of abandoned railroad corridors for trails for pedestrians, bicyclists, or other non-motorized transportation users. (D) Construction of turnouts, overlooks, and viewing areas. (E) Community improvement activities, including--(i) inventory, control, or removal of outdoor advertising; (ii) historic preservation and rehabilitation of historic transportation facilities; (iii) vegetation management practices in transportation rights-

of-way to improve roadway safety, prevent against invasive species, and provide erosion control; and (iv) archaeological activities relating to impacts from implementation of a transportation project eligible under this title. (F) Any environmental mitigation activity, including pollution prevention and pollution abatement activities an mitigation to-- (i) address stormwater management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff, including activities described in sections 133(b)(11), 328(a), and 329; or (ii) reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats.

[4] Authorized in the 2005 SAFETEA-LU bill, Safe Routes to School projects include: (f) Eligible Projects and Activities.— (1) Infrastructure-related projects.-- (A) In general.-- Amounts apportioned to a State under this section may be used for the planning, design, and construction of infrastructure-related projects that will substantially improve the ability of students to walk and bicycle to school, including sidewalk improvements, traffic calming and speed reduction improvements, pedestrian and bicycle crossing improvements, on-street bicycle facilities, off-street bicycle and pedestrian facilities, secure bicycle parking facilities, and traffic diversion improvements in the vicinity of schools. (B) Location of projects.--Infrastructure-related projects under subparagraph (A) may be carried out on any public road or any bicycle or pedestrian pathway or trail in the vicinity of schools. (2) Non-infrastructure-related activities.--(A) In general.--In addition to projects described in paragraph (1), amounts apportioned to a State under this section may be used for non-infrastructure-related activities to encourage walking and bicycling to school, including public awareness campaigns and outreach to press and community leaders, traffic education and enforcement in the vicinity of schools, student sessions on bicycle and pedestrian safety, health, and environment, and funding for training, volunteers, and managers of safe routes to school programs.

National Highway Performance Program. Funds may be used to construct bicycle transportation facilities and pedestrian walkways on land adjacent to any highway in the National Highway System, including Interstate highways.

Surface Transportation Program (STP). Funds may be used for the construction of bicycle transportation facilities and pedestrian walkways, as well as many other related facilities (bicycle parking, bike-transit interface, etc.). Transportation Alternative projects are eligible for STP funds. Modifications of public sidewalks to comply with the Americans with Disabilities Act (ADA) are also covered.

Highway Safety Improvement Program. Funds may be used for bicycle and pedestrian-related highway safety improvement projects, strategies and activities on a public road that are consistent with a state strategic highway safety plan.

Congestion Mitigation and Air Quality (CMAQ) Improvement Program. Established in 1991 and continued in MAP-21, CMAQ will continue to provide funding for projects that help state and local governments meet the requirements of the Clean Air Act. Whether they include attainment or non-attainment areas, states may use CMAQ funds for CMAQ- or STP-eligible projects. Projects must be included in the MPO's current transportation plan and transportation improvement program (TIP) or state transportation program (STIP) in areas without an MPO.

It is important to note that future additional funding from this program is unlikely to be available in the Genesee-Finger Lakes region and there is a backlog of eligible projects in the region that makes funding for new bicycle and pedestrian projects unlikely within the MAP-21 timeframe (through 2014).

Transportation Alternatives. As mentioned earlier, this new program now provides funding for what used to be funded by three separate programs (Transportation Enhancements, Safe Routes to School, Recreational Trails). In addition to projects in these categories, TA money can be used to fund some road projects. Fifty percent of each state's funds will be distributed by the DOT, the remainder by the MPOs. There is an opt-out clause that allows up to fifty percent of the funds to be transferred to use in any program without restriction. NYSDOT's TAP Guidebook lists six eligible project categories and two sub-categories:

CATEGORIES

1. Construction, Planning and Design of On-road and Off-road Facilities for Pedestrians, Bicyclists and Other Non- motorized Forms of Transportation;
2. Construction, Planning and Design of Infrastructure-Related Projects to Provide Safe Routes for Non-drivers to Access Daily Needs;
3. Conversion and Use of Abandoned Railroad Corridors for Trails for Pedestrians, Bicyclists and Other Non-motorized Transportation Users;

4. Construction of Turnouts, Overlooks and Viewing Areas;
5. Safe Routes to School;
6. Construction, Planning and Design of Boulevards; and

SUB-CATEGORIES

A. Community Improvement Activities (including Landscaping and Streetscape Improvements), when integrated with work in another category;
B. Environmental Storm Water Management Activities, when integrated with work in another category

The Recreational Trails Program is now funded under the TA umbrella. Funds may be used for all kinds of trail projects. Of the funds apportioned to a state, 30 percent must be used for motorized trail uses, 30 percent for non-motorized trail uses, and 40 percent for diverse trail uses (any combination). Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or using other off-road motorized vehicles. The funding amount will remain the same as in 2009 ($2,204,556). An important provision of the new bill allows the Governor of a state to opt out the recreational trails program if the Governor notifies the U.S. Secretary of Transportation no later than 30 days prior to apportionments being made for any fiscal year.

Highway Safety Section 402 Grants. Generally unchanged from SAFETEA-LU. A State is eligible for these Section 402 grants by submitting a Performance Plan (establishing goals and performance measures for improving highway safety) and a Highway Safety Plan (describing activities to achieve those goals). Research, development, demonstrations, and training to improve highway safety (including bicycle and pedestrian safety) are carried out under the Highway Safety Research and Development (Section 403) Program.

Title 49 USC allows the **Urbanized Area Formula Grants(Section 5307), Capital Investment Grants and Loans (Section 5309), and Formula Program for Other than Urbanized Area (Section 5311)** transit funds to be used for improving bicycle and pedestrian access to transit facilities and vehicles. Eligible activities include investments in "pedestrian and bicycle access to a mass transportation facility" that establishes or enhances coordination between mass transportation and other transportation.

9.2 OTHER FEDERALLY FUNDED PROGRAMS

National Park Service Land and Water Conservation Fund (LWCF) Grants. This federal funding source was established in 1965 to provide "close-to-home" parks and recreation opportunities to residents throughout the United States. Money for the fund comes from the sale or lease of nonrenewable resources, primarily federal offshore oil and gas leases, and surplus federal land sales. LWCF grants can be used by communities to build a variety of parks and recreation facilities, including trails and greenways. LWCF funds are distributed by the National Park Service to the states annually. Communities must match LWCF grants with 50 percent of the local project costs through in-kind services or cash. All projects funded by LWCF grants must be used exclusively for recreation purposes, in perpetuity. Projects must be in accordance with each State's Comprehensive Outdoor Recreation Plan.

9.3 STATE AND REGIONAL FUNDING SOURCES

CHIPS (Consolidated Local, State, and Highway Improvement Program). Funds are administered by NYSDOT for local infrastructure projects. Eligible project activities include bike lanes and wide curb lanes (highway resurfacing category); sidewalks, shared use paths, and bike paths within highway right-of-way (highway reconstruction category), and traffic calming installations (traffic control devices category).

Community Development Block Grants (CDBG). Through the U.S. Department of Housing and Urban Development (HUD), the CDBG program provides eligible metropolitan cities and urban counties (called "entitlement communities") with annual direct grants that they can use to revitalize neighborhoods, expand affordable housing and economic opportunities, and/or improve community facilities and services, principally to benefit low- and moderate-income persons. Eligible activities include building public facilities and improvements, such as streets, sidewalks, sewers, water systems, community and senior citizen centers, and recreational facilities. Several communities have used HUD funds to develop greenways. *http://www.hud.gov/offices/cpd/communitydevelopment/programs/*

The Green Innovation Grant Program The Green Innovation Grant Program (GIGP) provides grants on a competitive basis to projects that improve water quality and demonstrate green stormwater infrastructure in New York State. Eligible projects include: permeable pavement, such as porous asphalt, concrete, or pavers; bioretention / bioinfiltration and rain gardens; green roofs or green walls; street trees or urban forestry programs designed to manage stormwater; construction or restoration of wetlands, floodplains, or riparian buffers; stream daylighting, which includes removing streams from pipes and restoring the natural morphology; Downspout disconnection which redirects stormwater from sewers to vegetated areas; and stormwater harvesting and reuse, for example rain barrel and cistern projects. *http://www.efc.ny.gov/*

The Greater Rochester Health Foundation administers a competitive grant program to implement community health and prevention projects. While grant focus topics and cycles may vary from year to year (the letter of intent deadline for 2013 grants was August 6, 2012), bicycle- and pedestrian-related projects and programs may frequently be well suited for these opportunity grants. *http://www.thegrhf.org/*

9.4 PRIVATE FUNDING SOURCES

There are a number of for and non-profit businesses that offer programs that can be used to fund bicycle and pedestrian related programs and projects. Nationally, groups like Bikes Belong fund projects ranging from facilities to safety programs. Locally, Wegmans and Excellus have a strong track record of supporting health-based initiatives and may be resources for partnership or sponsorship.

Bikes Belong Coalition. The Bikes Belong Grants Program strives to put more people on bicycles more often by funding important and influential projects that leverage federal funding and build momentum for bicycling in communities across the U.S." Most of the Bikes Belong grants awarded to government agencies are for trail projects. The program encourages government agencies to team with a local bicycle advocacy group for the application. Bikes Belong Coalition seeks to assist local organizations, agencies, and citizens in developing bicycle facilities projects that will be funded by MAP-21. Bikes Belong Coalition will accept applications for grants of up to $10,000 each (with potential local matches), and will consider successor grants for continuing projects. Grant applications are accepted quarterly. *http://www.bikesbelong.org/grants*

American Hiking Society National Trails Fund. The American Hiking Society's National Trails Fund is the only privately funded national grants program dedicated solely to hiking trails. National Trails Fund grants have been used for land acquisition, constituency building campaigns, and traditional trail work projects. Since the late 1990s, the American Hiking Society has granted nearly $200,000 to 42 different organizations across the US. Applications are accepted annually with a summer deadline. *http://www.americanhiking.org/NTF.aspx*

The Global ReLeaf Program. The Global ReLeaf Forest Program is American Forests' education and action program that helps individuals, organizations, agencies, and corporations improve the local and global environment by planting and caring for trees. The program provides funding for planting tree seedlings on public lands, including trailsides. Emphasis is placed on diversifying species, regenerating the optimal ecosystem for the site and implementing the best forest management practices. This grant is for planting tree seedlings on public lands, including along trail rights-of-way. *http://www.americanforests.org/global_releaf/grants/*

The Robert Wood Johnson Foundation. The Robert Wood Johnson Foundation seeks to improve the health and health care of all Americans. One of the primary goals of the Foundation is to "promote healthy communities and lifestyles." Specifically, the Foundation has an ongoing "Active Living by Design" grant program that promotes the principles of active living, including non-motorized transportation. Other related calls for grant proposals are issued as developed, and multiple communities nationwide have received grants related to promotion of trails and other non-motorized facilities. *http://www.rwjf.org/grants/*

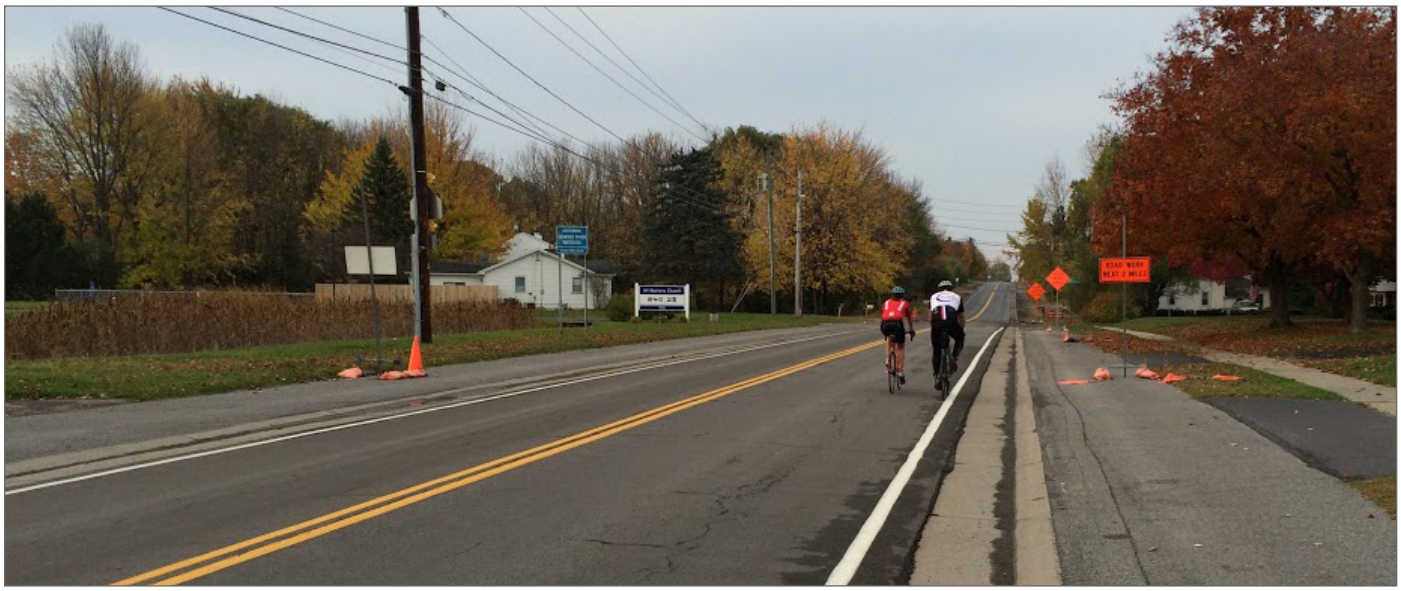
Conservation Alliance. The Conservation Alliance is a group of outdoor businesses that supports efforts to protect specific wild places for their habitat and recreation values. Before applying for funding, an organization must first be nominated by a member company. Members nominate organizations by completing and submitting a nomination form. Each nominated organization is then sent a request for proposal (RFP) instructing them how to submit a full request. Proposals from organizations that are not first nominated will not be accepted. The Conservation Alliance conducts two funding cycles annually. Grant requests should not exceed $35,000 annually. *http://www.conservationalliance.com/*

Surdna Foundation. The Surdna Foundation seeks to foster just and sustainable communities in the United States, communities guided by principles of social justice and distinguished by healthy environments, strong local economies and thriving cultures. *http://www.surdna.org/*

9.5 EXISTING RECONSTRUCTION PROJECTS

There are possible opportunities to collaborate with existing highway/street reconstruction projects to include upgrades to bicycle and pedestrian infrastructure. Coordination at the beginning of the reconstruction project will help to ensure bicycle and pedestrian facilities are studied as part of the inventory phase and carried through construction. Maintain regular communication with NYSDOT and MCDOT regarding implementation of plan recommendations. Examples of these types of projects include the Monroe County Highway Preventive Maintenance projects in addition to those projects identified through NYSDOT's Statewide Transportation Improvement Program (STIP) which lists all projects in NY state for which Federal funding is proposed to be used that are scheduled to begin within a designated time frame of four federal fiscal years. The most recent STIP is for October 1, 2013 to September 30, 2017 and can be found here: *https://www.dot.ny.gov/programs/stip/stip-project-rpt*

10.0 FOLLOW-ON ACTIVITIES



The Henrietta Active Transportation Plan helps chart a course toward a fully inclusive and accessible Active Transportation System for the community. The project was driven by a consistent and comprehensive flow of input from residents and stakeholders.

The final report highlights a wide range of needed improvements that were identified by residents. Follow-on activities are future endeavors that will help advance the overall objectives of the Henrietta Active Transportation Plan.

Follow-on activities can be placed into 3 general categories

- Next steps to advance infrastructure improvements recommended in the Plan
- On-going coordination and communication to support Active Transportation
- Additional plans and studies to advance community objectives.

As a master plan, the Henrietta Active Transportation Plan does not identify all of the specifics needed to construct every recommended project. Some work still remains to be done. This includes, but is not limited to:

- Additional study and operational analysis is required for each recommended project prior to implementation.
- Consultation with - and agreement from - facility owners is required prior to implementation.
- Access agreements from landowners and/or property acquisition are necessary prior to implementation. (Please see **Appendix G**, Economic Impact of Trails for useful information in talking with landowners.)
- Detailed corridor studies are needed in order to provide on-street bicycle facilities in select corridors. Please see **Table 4** and **Figures 10-13** for more details.
- Design development and construction documentation will be necessary for any construction-related projects, such as trails, side paths, and other infrastructure improvements.
- Regulatory approvals and permitting will be necessary for many of the recommended projects.
- Environmental permits will be required for trail projects. Some of the program and policy recommendations do not require regulatory approvals. However, changes to Town code will need review and approval by the appropriate municipal boards and would be subject to the SEQR process.

During the planning process, several possible projects emerged that would be beneficial follow-on activities:

1. **RIT: BICYCLE FRIENDLY UNIVERSITY APPLICATION (UPDATE)**

   With the goal to build healthy, sustainable and livable institutions of higher education, The League of American Bicyclists created the Bicycle Friendly University program (BFU).
   http://www.bikeleague.org/university

   The program recognizes institutions of higher education for promoting and providing a more bike-able campus for students, staff and visitors. Currently RIT holds a bronze;level recognition. Follow-on activities should include future campus upgrades and re-applications to eventually achieve the Platinum level of BFU award.

2. **PEDESTRIAN AND BICYCLE COUNTS**

   Collecting reliable data on pedestrian and bicycle usage and travel patterns will provide an important tool for advancing Active Transportation in Henrietta. Without accurate and consistent demand and usage figures, it is difficult to measure the positive benefits of investments in these modes, especially when compared to the other transportation modes such as the private automobile. RIT would be a logical partner for the project, and students could potentially be volunteers to collect and manage the data.

   A good follow-on project would be to implement bike and pedestrian counts in selected locations, based on protocols provided by the National Bicycle and Pedestrian Documentation Project (NBPD).
   http://bikepeddocumentation.org/

3. **BICYCLE FRIENDLY COMMUNITY APPLICATION**

   The Bicycle Friendly Community (BFC℠) program provides a roadmap to improve conditions for bicycling and the guidance to make your distinct vision for a better, bike-able community a reality. Applying to be a BFC would support Henrietta's principles of welcoming bicyclists by providing safe accommodations for bicycling and encouraging people to bike for transportation and recreation. Making bicycling safe and convenient are keys to improving public health, reducing traffic congestion, improving air quality and improving quality of life. Additional follow-on activities should include future infrastructure upgrades and re-applications to eventually achieve the Platinum level of BFC award.
   http://www.bikeleague.org/community

4. **WALK FRIENDLY COMMUNITY APPLICATION**

   Walk Friendly Communities (WFC) is a national recognition program developed to encourage towns and cities across the U.S. to establish or recommit to a high priority for supporting safer walking environments. The WFC program recognizes communities that are working to improve a wide range of conditions related to walking, including safety, mobility, access, and comfort. Applying for and receiving the "Walk Friendly" title would mean the Town is being recognized for its success in working to improve a wide range of conditions related to walking, including safety, mobility, access, and comfort.
   www.walkfriendly.org/

5. **RE-EVALUATE PEDESTRIAN SIGNAL CROSSING TIMES AT INTERSECTIONS**

   Check the signal timing to ensure that the maximum walk time is allowed for the crossings. Pedestrian signals are designed to direct and protect the pedestrian at street crossings. The MUTCD provides both mandatory and permissive warrants. When applying the warrants, consideration should be given to any significant concentrations of young, elderly, or persons with disabilities using the project site. Pedestrian-activated signals should be considered when vehicular signal timing is not sufficient to properly accommodate pedestrians. Coordination with MCDOT on-going signal updates. Refer to ***NYSDOT Highway Design Manual, sections 18.7.9 and 18.7.10***.
   https://www.dot.ny.gov/divisions/engineering/design/dqab/hdm

6. ON-GOING COORDINATION WITH NYSDOT AND MCDOT

There are possible opportunities to collaborate with existing highway/street reconstruction projects to include upgrades to bicycle and pedestrian infrastructure. Coordination at the beginning of the reconstruction project will help to ensure bicycle and pedestrian facilities are studied as part of the inventory phase and carried through construction. Maintain regular communication with NYSDOT and MCDOT regarding implementation of plan recommendations.

7. ON-GOING COORDINATION WITH RIT

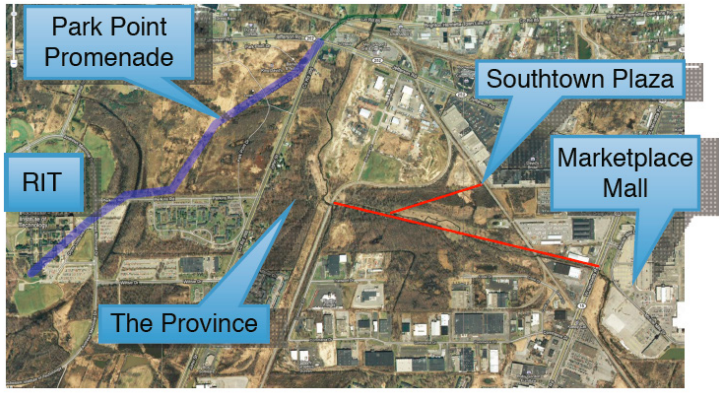
There are possible opportunities to collaborate with RIT regarding changes and/or additions to off-campus housing locations. Coordination at the beginning of projects will help to ensure bicycle and pedestrian facilities are studied as part of the inventory phase and carried through construction conforming to best practices for active transportation facilities.

8. HENRIETTA PARK & RIDE

The Town currently no operational park & ride. Park & Ride lots encourage and support both carpooling and transit use while helping motorist to save on resources, including fuel, tolls, and parking costs, reduce vehicle wear and tear, reduce emissions into the environment, and decrease traffic congestion. Implementing a Park & Ride is encouraged for the Town and it should be noted that publically owned land is preferred to simplifly opertational and maintenance requirements. Coordination between the Town and RTS and other necessary stakeholders would need to occur.

9. MARSH TO MALL TRAIL FEASIBILITY STUDY

A 2010 white paper organized by RIT professor Jon Schull outlined several proposals for active transportation improvements in the vicinity of the RIT campus. Of particular interest was the concept of a "Marsh to Malls Trail" that would provide an off-road connection from John Street to Southtown Plaza and Marketplace Mall. A low-impact multi-use trail could provide safe passage to major retail destinations from Park Point, the Province, and the RIT campus. A feasibility study could provide assessment of ownership/access issues, environmental conditions, and construction alternatives. Refer to **Appendix H**.



10. COORDINATE WITH BIKE SHARING PROGRAMS

1. RIT Bikeshare: The RIT Bikeshare is a collaborative effort between RIT's Student Government, The Center for Residence Life, Facilities Management Services, Parking and Transportation and many more. Bikeshare maintains a fleet of twenty beautiful orange bikes. While they don't come equipped with stunt pegs or gears, they do have everything you need to get around campus comfortably. The RIT Bikeshare program is administered using custom-built software. This software is available open source as part of Student Government's effort to contribute to the free and open source software community on campus. The RIT Bikeshare program has been a huge success. With constant demand for bikes, it is clear that there is need to expand the program to include a larger fleet and more convenient rental locations. *https://bikeshare.rit.edu/*
2. Rochester Bike Sharing Program Study: RIT was identified as a potential satellite system. *https://www.nyserda.ny.gov/-/media/Files/Publications/Research/Transportation/Rochester-Bike-Sharing-Program-Study.pdf*

APPENDIX A
PUBLIC INPUT SUMMARY

PUBLIC INFORMATION MEETING 1

This appendix summarizes public comments received as of May 13, 2015, including comments received at the first public information meeting held on March 26, 2015 at the Henrietta Town Hall.

MEETING FORMAT

The first public information meeting was held as an open house format with no formal presentation. Seven display stations were set up at the March 26th public information meeting to collect comments and information regarding the Active Transportation Plan.

STATION #1: WELCOME & BENEFITS OF ACTIVE TRANSPORTATION

The welcome station provided an area for attendees to sign in to the meeting as well as receive a brief description of the project background. 29 attendees signed into the meeting. The attendees were asked to rank their preferences related to the Benefits of Active Transportation (health, environmental, social, economic).

- Most support was received for benefits related to Social factors (28%).
- An equal amount of support was received for the benefits related to Health, Environmental, and Economic factors (24% each).

#2: INVENTORY OF EXISTING CONDITIONS MAPS

A large size map of the Town of Henrietta was provided with sticker dots, post-it notes, and pens to receive input on the existing issues, specific problem areas, and recommended improvements. The following comments were received:

- John Street at Jefferson Road - crossing beacon across John Street.
- Connecting to neighboring or adjacent space would be awesome - example Clover Road.
- Protected bike lane where asphalt exists - example Pinnacle near the thruway would be nice.
- More bike lanes throughout town – Calkins and Lehigh Station going east-west is particularly problematic.
- "Being comfortable on my bike, possibly shopping (recumbent bike) –afraid of not being seen."
- Lehigh Valley North Trail is a crucial connecting corridor between West Henrietta/RIT and U of R /city. This corridor should be improved and maintained in winter!
- Narrow bridges - have to move into (near) traffic when passing through.
- The trail needs to go behind the houses not down the residential street.
- Need to have sidewalk or shoulder expanded at Bailey/John Street intersection.
- Very narrow shoulder on Beckwith.
- Walking on Rt. 15 near 1-90 there are no sidewalks, walking can get dicey, what also makes it dangerous is walking near Brooks Rd and over I -90 is on the left side going north is that there is a right turn bleeder lane on the left side so "the shoulder" is a lane.

- I need a safe path on Brighton –Henrietta Town Line Road to get me from 15A to B.H.T.L. Rd to South Clinton – very dangerous.
- Lack of sidewalks universally - need more sidewalks - gaps in sidewalk network.
- Internal connections between stores. Sears and Best Buy are pretty close, but no way to safely walk. Same thing with Target and Lowes.
- Walking/biking route between center of RIT and Park Point is unnecessarily long and circuitous. More direct pathway is needed. I don't care about wetlands.
- Son wants to bike from Wildflower Dr. to Ruth Middle School safely!
- Wider shoulders and traffic calming on Castle Rd, busy road with pedestrians don't mix well.
- Drivers use shoulder as passing lane to get around cars turning left (all along Calkins) from Pinnacle to Henrietta to Pittsford Town Line Rd this puts bikers/cyclists/walkers/runners at risk.
- Drivers use sidewalks on Pinnacle and Calkins to pass cars turning left into neighborhoods.
- Would be good idea to make an active transportation friendly corridor from Pinnacle to Tinker Nature Center.
- Need for more sidewalks to promote walk-ability and increase access to parks and common spaces of Wegmans.
- "I want to go to but I can't because I don't feel safe , so I use a car (most frequently heard comment!)
- No little shoulder – Henrietta has an inherent advantage: many trips are entirely within the town (town resident traveling to town business or town facility), so active transportation infrastructure to facilitate that here makes sense. (although connectivity to the north with Brighton/Rochester and to the east to Pittsford
- Cyclists are more prone to ride on road than paved buffer (Pinnacle), possibly widen for dedicated infrastructure.
- Improve vehicle traffic/ride safety.
- Need universal bike lanes.
- This is a newfound off road bike/hike/nature path connecting RIT (and student shoppers) to the mall.
- Put in N/S sidewalk from St. – Patrick to Calkins
- Bicycles need a lane both sides of Hyland Dr. if RIT path goes through
- Castle Rd – busy cut through road to Pinnacle or E. Henrietta. Shoulders are narrow and there are no sidewalks
- Edgewood Ave access to JCC: no sidewalks and riskiness with train tracks
- Access to parks with more sidewalks available, save on gas if able to walk to parks
- Are neighborhoods prominent in Henrietta? What effect would more organized neighborhoods have on space utilization?

STATION #3: PEDESTRIAN AND BICYCLE LEVEL OF SERVICE & PRIORITY INTERSECTIONS

Pedestrian and Bicycle Level of Service Maps were provided. These maps showed the level of service on major roads within the Town of Henrietta. The Pedestrian Level of Service Model indicates how safe and/or comfortable pedestrians feel while walking alongside a particular roadway (the evaluation is based on user perceptions of a wide range of factors). The Bicycle Level of Service Model provides an evaluation of bicyclists' perceived safety and comfort with respect to motor vehicle traffic and roadway conditions. The following comments were received regarding these maps.

- Narrow shoulders, rolling hills, degraded shoulder.
- Need sidewalk connections(Stonewood Village).

STATION #4: MULTI-USE TRAIL ASSESSMENTS & RUSH HENRIETTA CENTRAL SCHOOLS

Three separate boards were provided for Roth Middle School, Burger Middle School and Vollmer Learning Center, and Rush Henrietta Senior High School. The boards depicted existing safety and connectivity issues, existing bicycling infrastructure, and best practices for walk-ability and bike-ability at schools. The following comments were received:

- Vollmer Learning Center becoming grades 4, 5, and 6.
- Connect neighborhoods west of Roth Access Road.
- Side walk gaps (Tinker Park).
- Sidewalk at Davies @ Finn, thruway Park.
- Children are walking to/from Roth Middle School.

One board/map was provided as an assessment of the Lehigh Valley Trail. The board depicted the limits of the trail within the Town of Henrietta and broke it down into three segments. Zone 1 encompasses the trail between Jefferson Road to Bailey Road along John Street, Zone 2 encompasses the trail between Bailey Road and Veterans Memorial Park, and Zone 3 encompasses the trail from Veterans Memorial Park to the Rush-Henrietta Townline.

- Mall road used by R.I.T. students.
- Lehigh Valley Trail: Reasonable Ratings.
- Agreement between Town and Belfry to block off trail access north of Rt. 90.

STATION #5: PUBLIC TRANSIT & PEDESTRIAN AND BICYCLE DEMAND ASSESSMENT

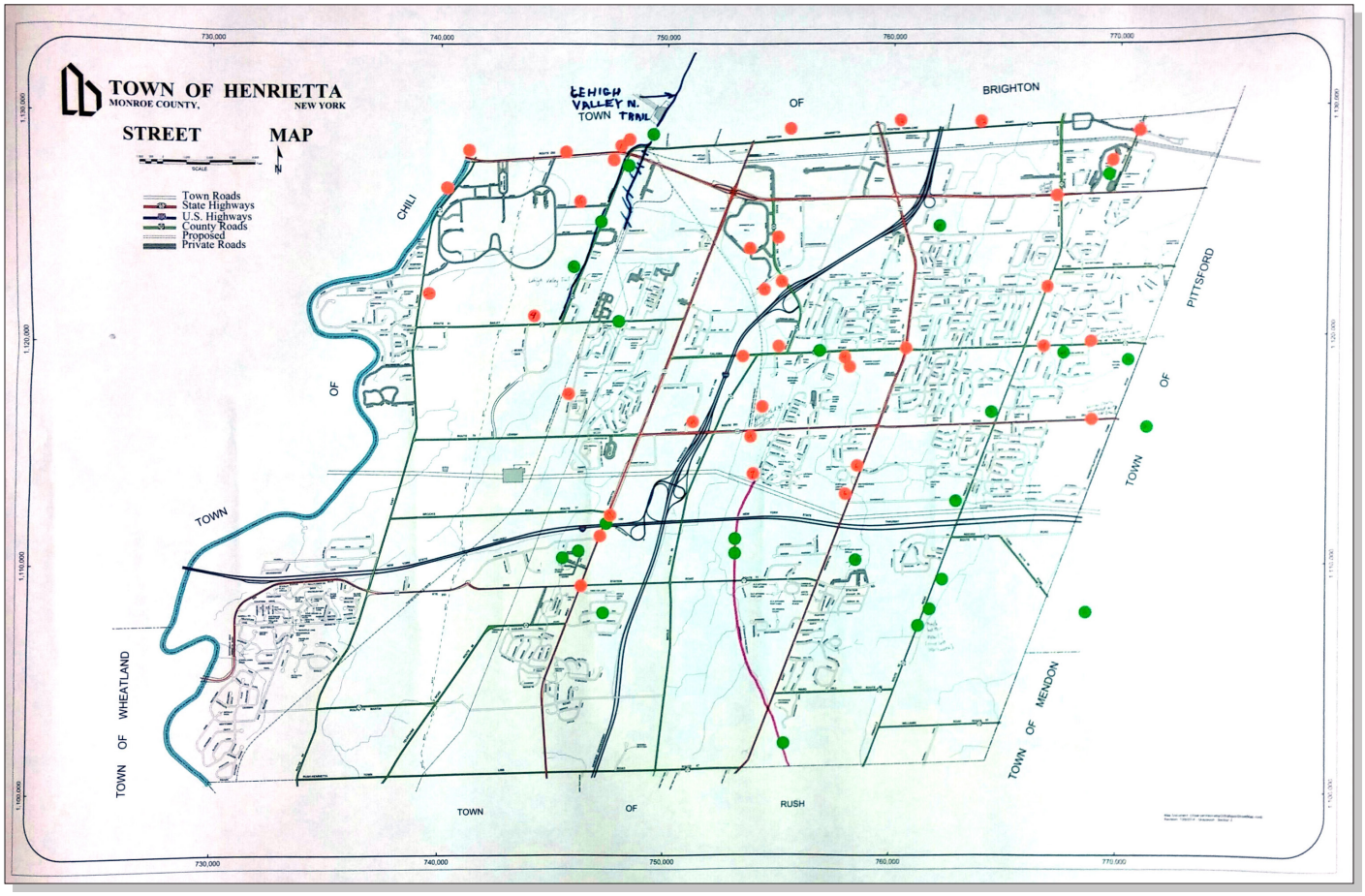
- Demand map Sams Club high, but mall is low, connections between RIT and Mall/Sams Club
- Lack of E/W bike lanes (Lehigh Station?)
- Transit stop improvement
- Transit different routes of frequency (times to certain locations)

STATION #6: ACTIVE TRANSPORTATION TOOLBOX

An active transportation toolbox was provided to show graphic representation of possible improvement options, including: pedestrian infrastructure, bicycle infrastructure, on-road improvements, and off-road improvements.

STATION #7: PARALLEL PROJECTS AND INITIATIVES

Graphics from parallel projects and initiatives were provided for the attendees to review relevant materials. Parallel projects include Town of Brighton Active Transportation Plan, Town of Chili Active Transportation Plan, Regional Bike Share Plan, Regional Trails Initiative Update, and Rochester Multi-Versity Concept.



PUBLIC INFORMATION MEETING 2

The following is a summary of public comments received as of June 11, 2015, including comments received at the second public information meeting held on June 09, 2015 at the Rochester Institute of Technology Golisano Institute for Sustainability. Comments heard outside of the second public meeting have been noted.

MEETING FORMAT

The second public information meeting was held as an open house format with no formal presentation. Preliminary recommendations, as well as existing conditions, were presented as a gallery display of figures at the June 9th public information meeting. The team welcomed feedback and comments regarding the Active Transportation Plan.

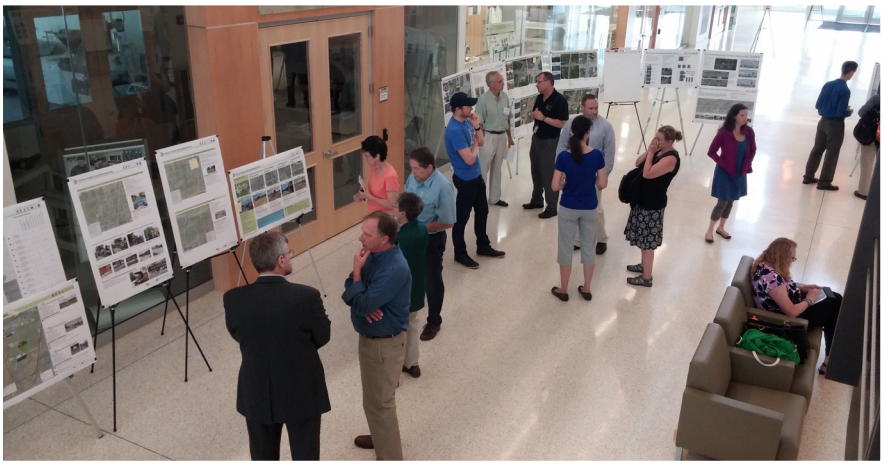
WELCOME AREA

The welcome area provided an area for attendees to sign in to the meeting as well as receive a brief description of the project background. Comment cards were provided to solicit input as well as flip charts strategically located throughout the gallery space. Over 30 attendees signed in and were directed to peruse and interact with the gallery of figures.

EXISTING CONDITIONS FIGURES

The following existing conditions figures were provided. Any recorded comments received during the meeting regarding the associated figures have been documented below.

- Benefits of Active Transportation
- Compilation of Public Information Meeting #1
- RIT Active Transportation Survey & Student Housing Connectivity
- Existing Transit Network
- Demand "Heat Map" Assessment
- Rush-Henrietta School District
- Pedestrian Level of Service Conditions
- Existing Conditions Assessment



Results

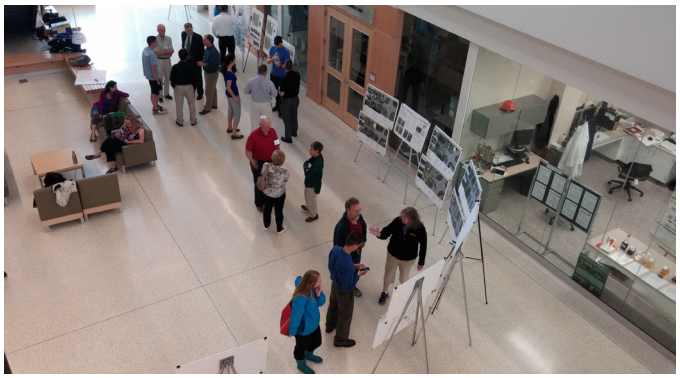
PRELIMINARY RECOMMENDATIONS FIGURES

The following preliminary recommendations figures were provided. Any recorded comments received during the meeting regarding the associated figures have been documented below.

- Priority Sidewalk Gaps
  - *Lack of sidewalks –East Henrietta near Brighton.*
  - *Look at sidewalks directly adjacent to roads (no shoulder) – how to make drivers stay off.*
  - *Badly needed – sidewalk on E. Henrietta Rd from trail to Lehigh St. Road. Neighborhoods have no choice - must bike and walk on E. Henrietta Rd (very dangerous).*
- Lehigh Valley Trail Recommendations

- *Work with Recreation Office and town to create programs/events (running and biking) to promote trails/routes in our town.*
- *Lehigh Valley Trails need to be made passable in winter, being impassable forces bicyclist to ride on Mt. Hope (dicey!).*
- *Winter maintenance LHVT (at least RIT – City) so it is a reliable route year round.*
- *Need to work with other towns/agencies to ensure LHVT is clear, for students and faculty to use.*
- *Utilize green epoxy paint to delineate LHVT- make it more prominent – contact the city.*

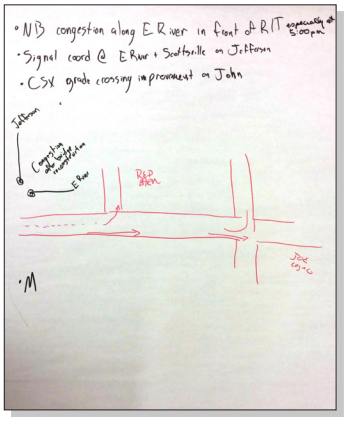
- Mass Transit Recommendations
  - *Bus Route from RIT to INN and Conference Center needs to be modified so students living in Hotel/motel north of there have a stop. So many students walking back up 15 – it's not safe especially at night without lights or sidewalk.*
  - *Bus stop (lack of) at Mt. Hope and Calkins.*
  - ***There are several RTS bus stops around the area of West Henrietta and Marketplace Mall that do not have a sidewalk or even a cement pad (let alone a shelter) where riders can stand while waiting for their bus, so on rainy days they are left to stand in the mud where the grass has been worn away. And worse, in the winter, the snow builds up on the grass, there is no sidewalk that has been cleared, and so riders have no choice but to stand in the busy road to await their bus.*
- East/West Multi-Modal Transportation Corridor: Lehigh Station
- School District Recommendations
  - *Increase amount of sidewalks around schools to encourage walking. At Sherman, many students take the bus even though they live within a 5 minute walking distance because no sidewalk to Lehigh.*
  - *Talk with Rush Henrietta Athletic Association (RHAA) and parents up at baseball fields to see how to reduce congestion and encourage walking/biking.*
  - *How to connect Eagle Ridge neighborhood to ball fields so kids can cross 15 safely?*
  - *Sherman will be redistricted to grades 4-6 in 2017.*
  - *Connect Myrtlewood to RH High School.*
- Priority Intersection Recommendations
- Calkins Road Road Diet
- North/South bike facilities need to be recommended also to connect to Rochester.
- FHWA Separated Bike Lanes
  - ***Some highways have rumble strips along their edge that make a lot of noise when one's car drifts onto the shoulder. I believe the main purpose is to wake up sleepy drivers before they go completely off the road. However, I imagine another benefit would be to alert drivers if they accidentally drifted into a designated biking/walking lane before they hit someone. Even better (though I'm sure more costly) would be little reflector bumps that divide the bike lane as I've seen in parts of Europe. These provide a visual as well as a sound cue to drivers who drift over.*
- Slip Lanes

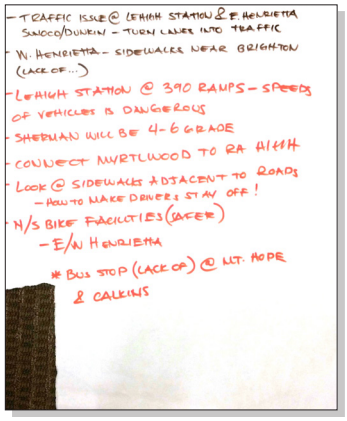


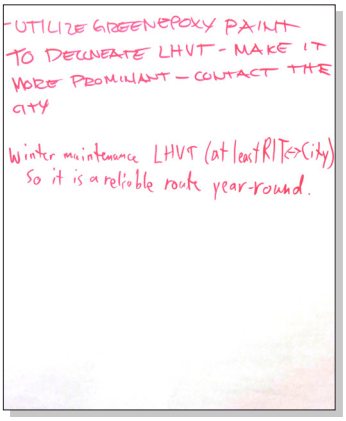
GENERAL COMMENTS

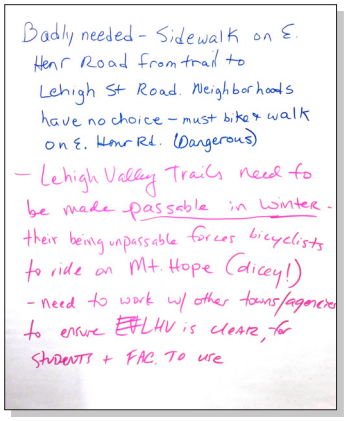
- *This is awesome keep the momentum going.*
- *Traffic issue at Lehigh Station and East Henrietta Sunoco/Dunkin – turn lanes into traffic.*
- *Lehigh Station at 390 ramps speeds of vehicles are dangerous.*
- *NB congestion along E. River in front of RIT especially at 5:00pm.*
- *Signal coordination at E. River and Scottsville on Jefferson.*
- *CSX grade crossing in pavement on John.*
- ***At Erie Station Road (Route 253) and East River Road, create a pedestrian plan that connects folks walking from Riverton to the 7-11/ER Veterinary Hospital mall and to the RTS bus stop on East River Road.*
- ***Create a pedestrian plan that helps people cross the roads at Calkins and Lehigh Station Road. This is a major intersection that links residential folks to commercial enterprise on both roads.*
- ***Collaborate with the Town of Brighton, the City of Rochester, the U of R, RIT, and Monroe County to create a dedicated, safe bicycle and pedestrian path along the Genesee River and, where the riverside is not nearby, along East River Road. This would be as much of a community, business, recreational, and tourist asset as the Erie Canal Path.*
- ***If a dedicated path is not possible, then at least create a bike lane that would be safer than the current, very dangerous route on the non-existent shoulder that bicyclists are forced to ride in the Rochester/Brighton section of East River Road.*
- ***Every city with a major river is taking advantage of their river front for pedestrian and bicycle traffic. Rochester should do the same and allow this natural, scenic beauty be an economic driver, just as Philadelphia, Cincinnati, and other cities are doing.*

** Denotes a comment made outside of the second public meeting









APPENDIX B

RIT ACTIVE TRANSPORTATION SURVEY & RESULTS

In addition, an active transportation survey was used to gather information reflecting the RIT community's current levels of walking and bicycling activity, their attitudes toward walking and bicycling, and their insight into barriers that exist. The content was developed in collaboration with the RIT and survey data was captured using a survey tool developed in-house at RIT. The survey received over 500 results from alumni (7), faculty and staff (176), and students (324). Refer to **Appendix C** for more information.

Town of Henrietta Active Transportation Plan

RIT Community Active Transportation Survey

Introduction

The Town of Henrietta is currently in the early stages of developing an Active Transportation Plan. This survey is designed to gather information reflecting current levels of bicycling and walking activity among RIT students/faculty/staff, their attitudes toward bicycling and walking, and their insight into barriers that presently exist. Thank you for helping shape Henrietta's efforts to become a more accommodating place to walk and ride!

1. Do you live on or off campus?

- ☐ On
- ☐ Off

2. If you live off campus, where do you live?

- ☐ Park Point/Province
- ☐ Racquet Club Apartments
- ☐ Rustic Village
- ☐ Bennington Hills
- ☐ RIT Inn & Conference Center
- ☐ Rochester 19th Ward
- ☐ Rochester East End
- ☐ Other (please specify) _____

3. Do you own an automobile?

- ☐ Yes
- ☐ No

4. Do you own a bicycle?

□ Yes

□ No

5. If you do not own a bicycle, would you be interested in an affordable semester bike rental?

□ Yes

□ No

6. Do you use the bus to get to and from the RIT campus?

□ Yes

□ No

7. If you ride the bus, how convenient do you find the bus service?

___ Very convenient

___ Somewhat convenient

___ Convenient

___ Somewhat inconvenient

___ Very inconvenient

8. Are you aware that you can take a bicycle on RTS busses?

□ Yes

□ No

9. Are you aware of the Erie Canalway Trail near the RIT campus?

□ Yes

□ No

10. Are you aware of the Lehigh Valley Trail near the RIT campus that connects with the Erie Canalway Trail?

□ Yes

□ No

11. Indicate which of the following best describes your personal bicycling experience level?

□ Advanced (you use a bicycle as you would a motor vehicle)

□ Basic (you prefer not to ride on roads with busy and fast motor vehicle traffic)

□ Child or novice

12. Tell us about how often and why you ride a bike:

In a typical week of the past year, how often have you ridden a bicycle for the following reasons? Choose all that apply.

	1 day/wk	**2 days/wk**	**3 days/wk**	**4 days/wk**	**5 days/wk**	**6 days/wk**	**7 days/wk**	**Average distance (round trip)**
Travel to Work	□	□	□	□	□	□	□	
Travel to Shopping	□	□	□	□	□	□	□	
Travel to School	□	□	□	□	□	□	□	
Physical Exercise	□	□	□	□	□	□	□	
Travel to Event / Social Destination	□	□	□	□	□	□	□	
Leisure (no specific destination)	□	□	□	□	□	□	□	

13. To what degree does your bicycling vary by season?

- ☐ None
- ☐ Somewhat
- ☐ Significantly

14. Tell us about how often and why you walk:

In a typical week of the past year, how often have you walked for the following reasons?

Choose all that apply.

	1 day/wk	**2 days/wk**	**3 days/wk**	**4 days/wk**	**5 days/wk**	**6 days/wk**	**7 days/wk**	**Average distance (round trip)**
Travel to Work	☐	☐	☐	☐	☐	☐	☐	
Travel to Shopping	☐	☐	☐	☐	☐	☐	☐	
Travel to School	☐	☐	☐	☐	☐	☐	☐	
Physical Exercise	☐	☐	☐	☐	☐	☐	☐	
Travel to Event / Social Destination	☐	☐	☐	☐	☐	☐	☐	
Leisure (no specific destination)	☐	☐	☐	☐	☐	☐	☐	

15. To what degree does your walking activity vary by season?

- ☐ None
- ☐ Somewhat
- ☐ Significantly

16. For which of the following reasons do you choose to ride a bicycle:

Choose all that apply.

- ☐ Exercise/Personal Health
- ☐ Fuel Cost Savings
- ☐ Environmental Consciousness
- ☐ Convenience
- ☐ Cannot or Choose Not to Drive a Car
- ☐ Other (please specify) _____

17. For which of the following reasons do you choose to walk:

Choose all that apply.

- ☐ Exercise/Personal Health
- ☐ Fuel Cost Savings
- ☐ Environmental Consciousness
- ☐ Convenience
- ☐ Cannot or Choose Not to Drive a Car
- ☐ Other (please specify) _____

18. What do you consider to be the primary barriers to bicycling to in Henrietta that keeps you from bicycling more often (please rank as many as apply, with "1" representing the most significant barrier):

___ Travel time

___ Travel flexibility

___ Safety (with respect to motor vehicle traffic)

___ Personal security

___ Availability of secure, weather-protected bicycle parking

___ Availability of end-of-trip amenities (showers, lockers, etc.)

___ Winter surface conditions

___ Other (specify) _____

19. What do you consider to be the primary barriers to walking in Henrietta that prevent you from walking more often (please rank as many as apply, with "1" representing the most significant barrier):

___ Travel time

___ Travel flexibility

___ Safety (with respect to motor vehicle traffic)

___ Personal security

___ Availability of end-of-trip amenities (showers, lockers, etc.)

___ Winter surface conditions

___ Other (specify) _____

20. The provision of which facility types or amenities would be most likely to increase your current level of bicycling and/or walking activity (please rank as many as apply, with "1" representing the most desired facility/amenity type):

___ Signed bicycle routes

___ Bicycle boulevards (low-volume and low-speed streets that have been optimized for bicycle travel through treatments such as traffic calming and traffic reduction, signage and pavement markings, and intersection crossing treatments)

___ Designated (signed and marked) on-street bike lanes

___ Sidewalks

___ Improved sidewalk maintenance

___ Shared use paths (adjacent to road)

___ Shared use paths (not adjacent to road)

___ Pedestrian signals and crosswalks at intersections

___ Availability of secure, weather-protected bicycle parking

___ Availability of end-of-trip amenities (showers, lockers, etc.)

___ Availability of a bike share program

___ Other (specify) _____

21. Please list up to five roadway segments (name-from-to format - e.g., Jefferson Rd between Marketplace Mall and Park Point) within the Town of Henrietta which you feel would most benefit from a bicycle and/or pedestrian facility (sidewalk, bike lane, or shared use path) and indicate the needed facility type.

1.

2.

3.

4.

5.

22. Please list up to five specific locations in Henrietta where a spot-specific improvement (intersection improvement, mid-block crossing, maintenance issue, hazard, etc.) is needed to improve bicycling and/or walking conditions and specify the needed improvement type.

1.

2.

3.

4.

5.

23. Do you have any special needs that you would like to see addressed in the Town of Henrietta Active Transportation Plan?

_____

_____

_____

_____

_____

_____

_____

_____

_____

24. Other Comments

Please use the space below to provide any other comments you may have regarding bicycling and walking in Henrietta

_____

_____

_____

_____

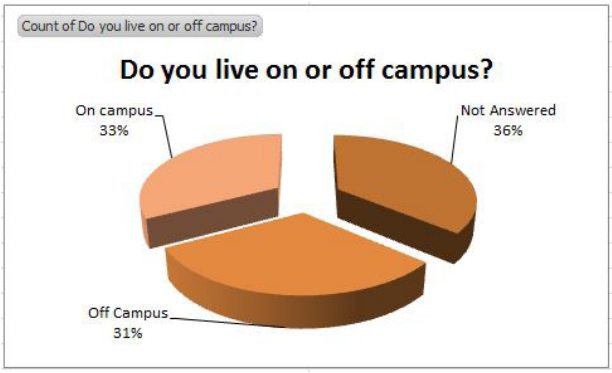
_____

_____

_____

RIT ACTIVE TRANSPORTATION SURVEY RESULTS

Q.1



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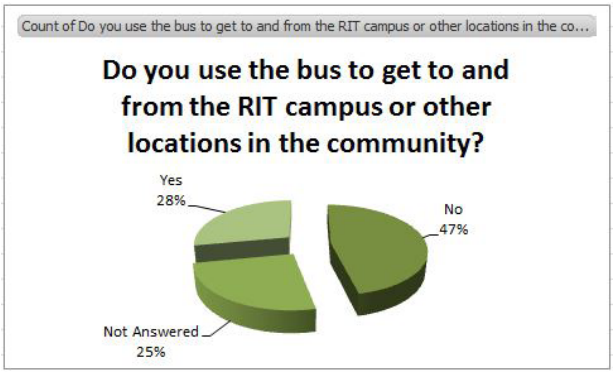

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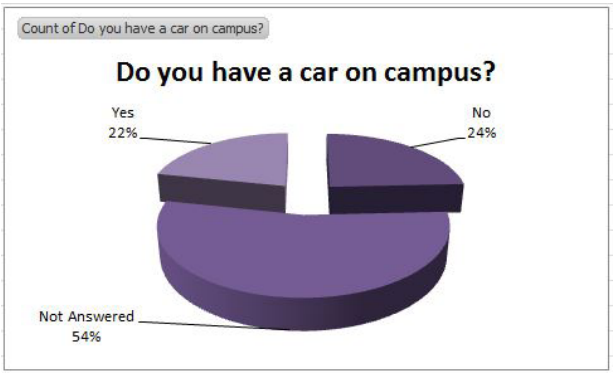

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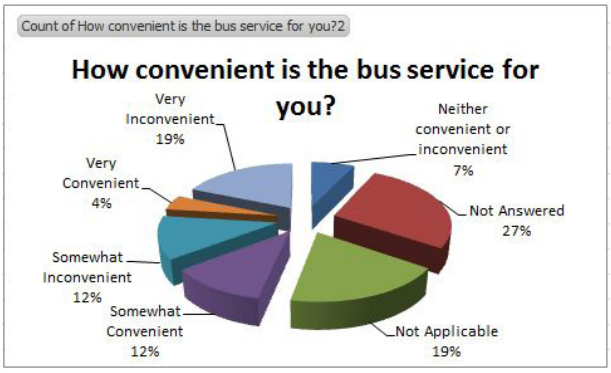

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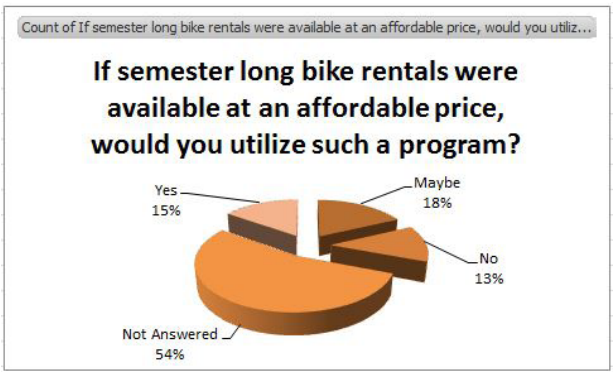
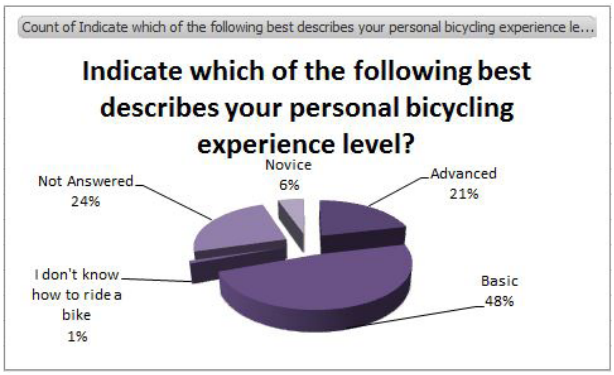
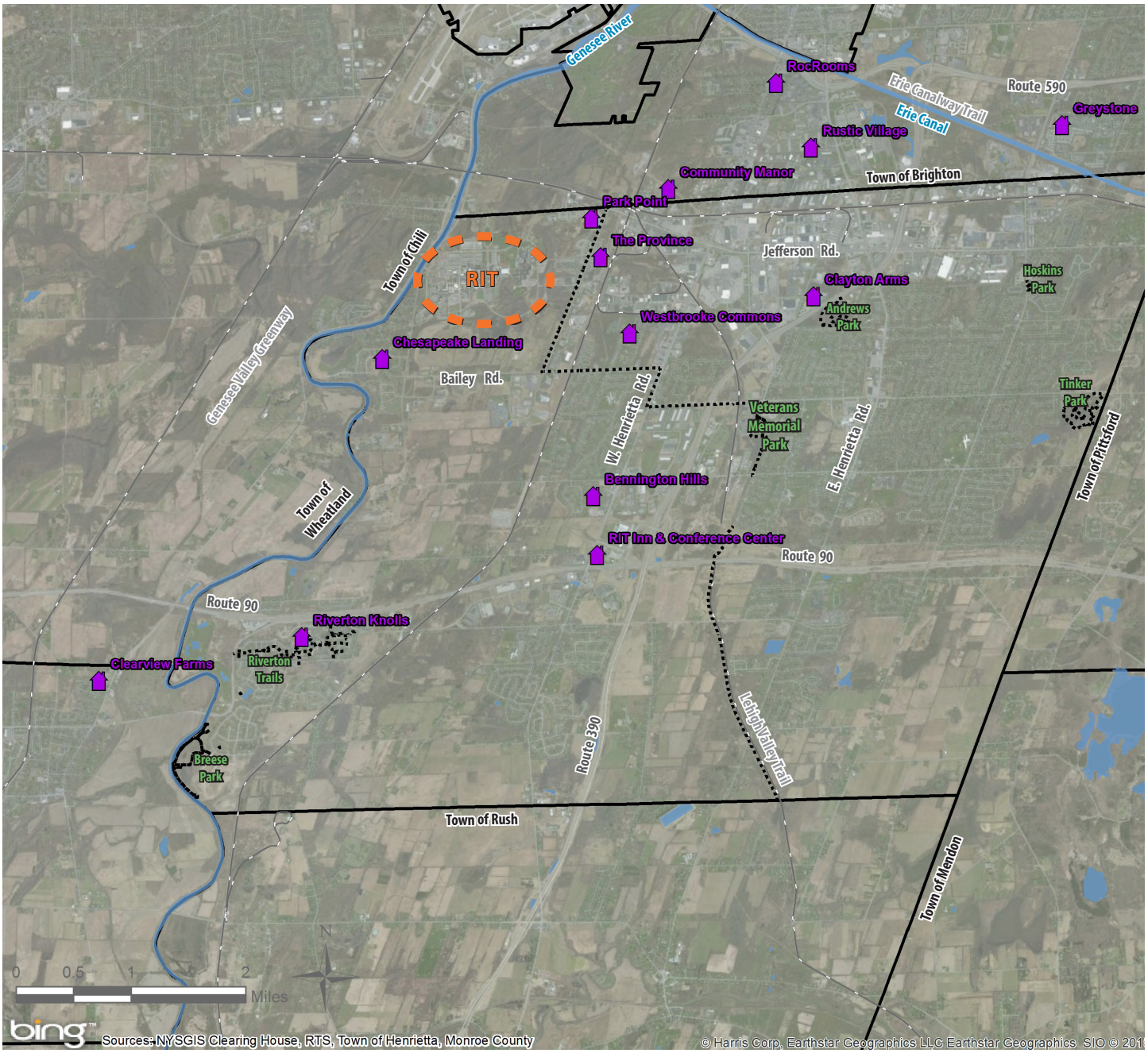


Q.11



RIT OFF CAMPUS HOUSING

LOCATIONS BASED ON SURVEY DATA RECEIVED FROM QUESTION #2



APPENDIX C
RIT TRANSPORTATION PETITIONS

From: Nicholas V. Giordano (Student Employee) [mailto:sgpres@rit.edu]
Sent: Wednesday, June 10, 2015 1:31 PM
Subject: RIT SG: Follow-Up from Open House

Hello,

This is Nick, the RIT Student Government President. Thanks for taking a few minutes to chat with me yesterday at the Open House! Glad to see the efforts underway to improve walking and bicycling infrastructure, it'll be a huge improvement in quality of life for RIT students.

Below is a list of petitions created by RIT students related to Parking, bicycling, pedestrians and Transportation that may be of use to you throughout your consulting and plan-making. Let me know if you have any questions or want to chat.

Regards,

Nick Giordano
President, Student Government
Rochester Institute of Technology
Email: sgpres@rit.edu
call/text: 585-402-3799

List of some of the Parking/Transportation Petitions from RIT Students (from Sept 2014):

Buses/Shuttles:

- Buses #68, #67, #73
- Bus to Downtown
- RIT bus stop to U of R College Town
- Renew contract with RTS
- Late bus to RIT INN on weekends
- Send Another RIT Inn/Racquet Club Weekend Shuttle
- Send More RIT Weekend Shuttles
- Bus stop at the Gym/Field House
- Colony needs double buses in the morning
- Add early morning Rustic Village only shuttle
- A better Weekend Shuttle
- Early Morning Bus
- Bring Back the 9AM Bus
- Add bus stops in Bennington Hills
- Early Morning Bus Services.
- Add a Bus Stop near UC (Blue complexes)
- Shovel the sidewalks before 5AM or get a shuttle to run before 6
- Keep the RIT INN and Racquet Club Bus Routes Separate Unitl 10:00PM
- Free shuttle between 7.19pm and 8.33pm
- Regulate the RIT Bus System so that it is true to schedule
- Extended normal bus service to Colony and Province
- Extend the Night Shuttle for Commuters
- Two Express RIT INN Busses
- Revamp Shuttle service
- RIT and UoR Bus Shuttle Services Collaborates to Expand Travel Options

- Add stop for free buses at Crittenden
- Additional RIT shuttle/rideshare program

Pedestrian/Bicycles:

- Winter Bicycle Housing
- More Bike Racks
- Safer Conditions for Cyclists and Pedestrians

Parking/Facilities:

- Parking Passes for Student Employees
- Build Parking Garage
- Please fill the potholes that destroy our cars!
- Resurfacing loop around Perkins
- Repaving and Resurfacing of Roads and Parking Lots
- Make Crosswalks on campus more visible to Drivers

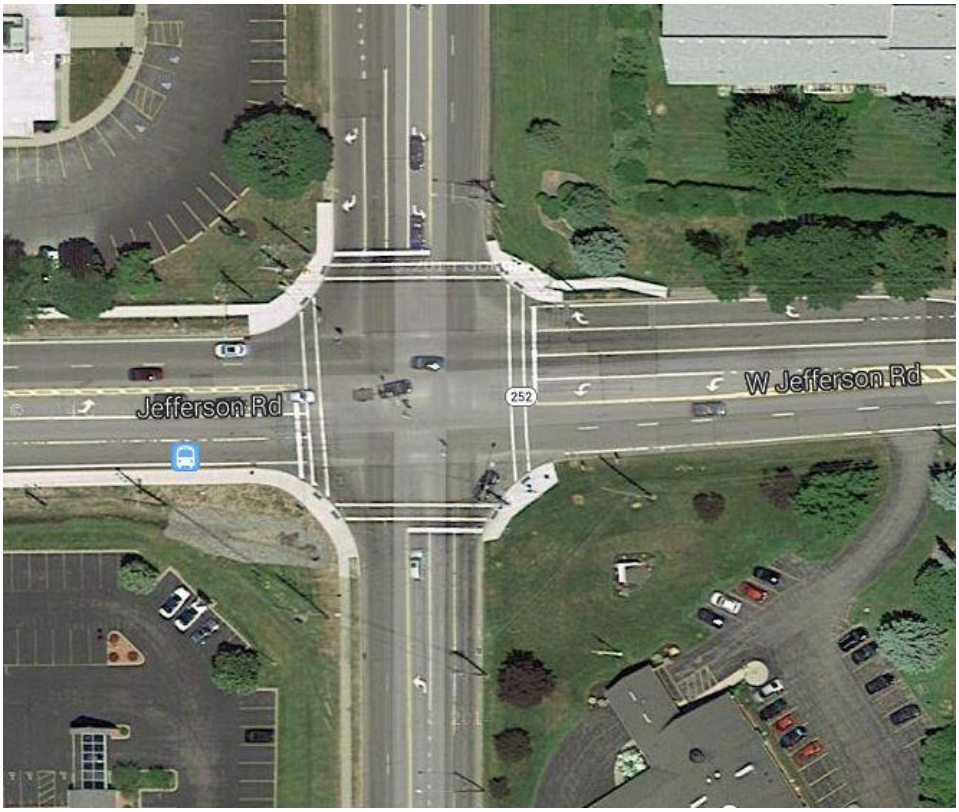
Taxi/Other Transport:

- End ties with "Apple Transportation" taxi service
- ZipCars on Campus (completed!)
- Provide New/Additional Cab Company
- Make a deal with a different taxi company

Priority Intersection Field Inspection – December 19, 2014

Winton Road (NB/SB)/Jefferson Road (EB/WB)
Photos (https://drive.google.com/folderview?id=0By7QCNWvtrsgcnM2WmtuTXhuakE&usp=sharing)

- New sidewalk has been installed on the NE, NW, and SW corners of the intersection as a result of a corridor sidewalk installation project
- ADA pads are present
- Right-turn overlap signal phase for SB right traffic
- 7 second green + 22 second countdown for crosswalk timing
    - Pedestrian feedback when button has been activated
    - Pedestrian countdown signals on all approaches
- Crossing distances
    - SB approach: 83’
    - WB approach: 92’
    - NB approach: 76’
    - EB approach: 92’
- Standard crosswalk design
- High-volume intersection
- Jefferson Road: 45 MPH
- Winton Road SB: 40 MPH
- Winton Road NB: 35 MPH
- Turn radii consistent with heavy volume, large vehicle intersection
- Asphalt transitions to existing sidewalk on NE and NW corners



Jefferson Road (EB/WB)/John Street (NB/SB)
Photos (https://drive.google.com/folderview?id=0By7QCNWvtrsgWVlyVHhqcU9Gbmc&usp=sharing)

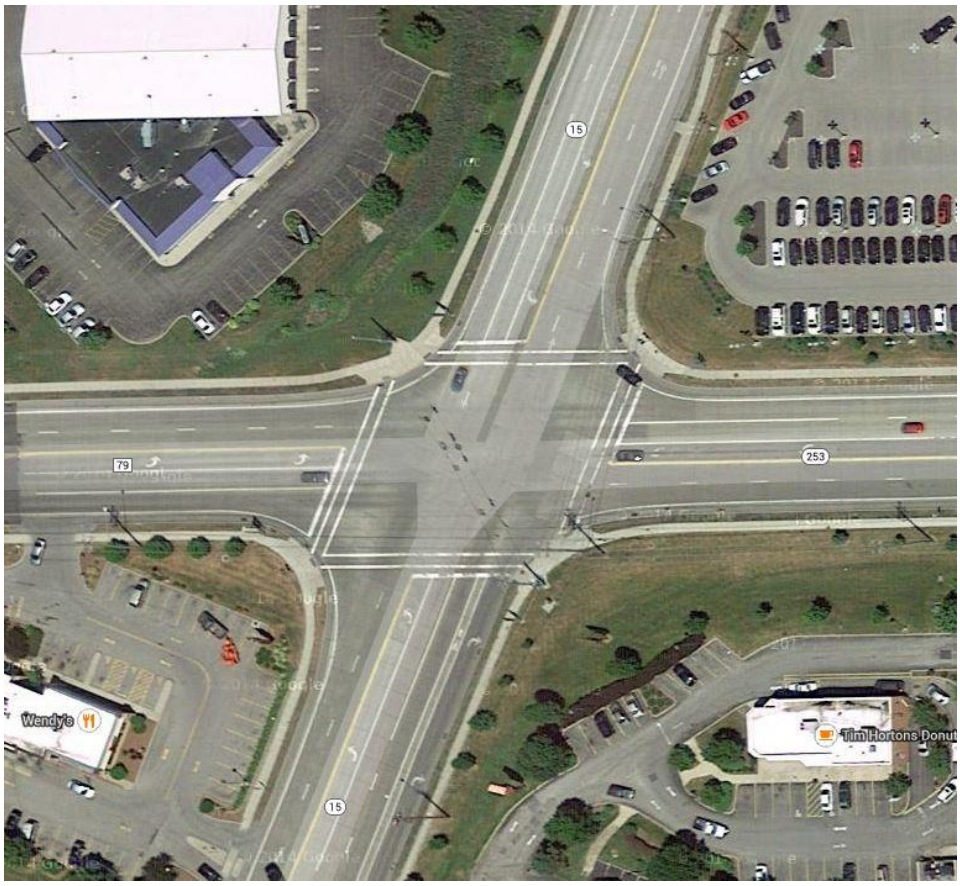
- No pedestrian signals for NB, WB, and SB approaches
- No sidewalk on NE corner
- ADA pads are present
- No distinct crossing design for Lehigh Valley Trail
- Skewed intersection creates large curb radii
- 7 second green + 20 second countdown for crosswalk timing
- Degraded pavement quality in front of curb ramps
- Bus stop without waiting pad
- Worn walking path on NB side of northbound approach
- Degraded sidewalk on EB approach
- Pedestrian actuation button location on NW corner may be tough to reach for people in wheelchairs
- Crossing distances
    - SB approach: 107’ (no crosswalk)
    - WB approach: 80’ (no crosswalk)
    - NB approach: 101’
    - EB approach: 80’
- Jefferson Road: 45 MPH
- John Street: 35 MPH
- When gates are down for train crossing, NB approach has a red light
    - Can creates NB queues over 450’
- No shoulder space for bicyclists

Bailey Road (EB/WB)/East River Road (NB/SB)
Photos (https://drive.google.com/folderview?id=0By7QCNWvtrsgYXZHdnRuY1VGRGs&usp=sharing)

- No sidewalk on WB, SB, and NB approaches
- No pedestrian signals (signalized intersection)
- Adjacent expanding residential community
- Crossing distances
    - SB approach: 60’ (no crosswalk)
    - WB approach: 54’ (no crosswalk)
    - NB approach: 65’ (no crosswalk)
    - EB approach: 44’ (no crosswalk)
- Sidewalk approach intersection on EB approach on south side on roadway
- East River Road: 40 MPH
- Bailey Road: 35 MPH
- Student housing for RIT students south of intersection elevates the frequency of pedestrians/bicyclists
- Shoulder space is present for bicyclists to ride on and stop on waiting for traffic signal

Lehigh Station Road (EB/WB)/West Henrietta Road (NB/SB)
Photos (https://drive.google.com/folderview?id=0By7QCNWvtrsgQTJseTJfeFdaX28&usp=sharing)

- Pedestrian countdown signals
    - East/West crosswalks: 7 seconds + 20 seconds
    - North/South crosswalks: 7 seconds + 18 seconds
- Pedestrian button on NE corner crossing Lehigh Station Road is not working
- Lack of pedestrian connections to Wendy's/Tim Hortons
- Standard crosswalk design
- Bus stops have waiting pads
- Crossing distances
    - SB approach: 118'
    - WB approach: 107'
    - NB approach: 124'
    - EB approach: 113'
- Skewed intersection creates large curb radii
    - May increase speeds of motorists turning onto approaches – must be aware of pedestrians/wheelchair users in crosswalks
- Northbound bike lane
    - Lack of signage indicating lane to motorists and bicyclists
- Lehigh Station Road: 40 MPH
- West Henrietta Road: 45 MPH
- Can be challenging for bicyclists to cross travel lanes to turn left – wide approaches
- Shoulder space for bicyclists to ride on
- Snow piles in front of curb ramps



Lehigh Station Road (EB/WB)/Middle Road (NB/SB)
Photos (https://drive.google.com/folderview?id=0By7QCNWvtrsgYURnUHNlc0NpNjQ&usp=sharing)

- No pedestrian signals
- ADA pads at curb ramps
    - ADA pads are loose and degrading
- Sidewalk to nowhere on WB approach
- Worn walking paths slightly visible
- Adjacent I-390 ramps
- Atypical stop bar design on WB approach
    - Stop bar extends beyond curb ramp – pedestrians would essentially cross between vehicles
- No sidewalk on SB and NB approaches
- Crossing distances
    - SB approach: 72’ (no crosswalk)
    - WB approach: 71’-94’ (no crosswalk, depending on where pedestrian crosses)
    - NB approach: 83’ (no crosswalk)
    - EB approach: 110’ (no crosswalk)
- Skewed intersection creates large curb radii
- Lehigh Station Road: 40 MPH
- Middle Road: 45 MPH

Lehigh Station Road (EB/WB)/East Henrietta Road (NB/SB)
Photos (https://drive.google.com/folderview?id=0By7QCNWvtrsgVzFHYmFYX0FRQ0k&usp=sharing)

- Pedestrian countdown signals
    - East/West crosswalks: 10 seconds + 18 seconds
    - North/South crosswalks: 7 seconds + 18 seconds
- Nearby Rush-Henrietta HS contributes to higher volumes of school related pedestrian crossings
    - Pedestrian generators adjacent intersection may increase frequency for pedestrians
- ADA pads are present
- Red brick design next to sidewalk indicates an historically significant area
    - East Henrietta Village
- No Turn On Red restrictions on EB, WB, and NB approaches
    - Time dependent
    - EB/WB right-turn overlap phasing
- Old mile-marker posts half buried at the intersection corners
- No buffer space between sidewalk and roadway
- Opportunity to enhance the area's sense of place?
- Crossing distances
    - SB approach: 70'
    - WB approach: 90'
    - NB approach: 76'
    - EB approach: 80'
- Lehigh Station Road: 35 MPH
- Middle Road: 35 MPH
- NE traffic signal pole located in middle of sidewalk and in middle of curb ramp landing pad
- ADA pads are present

APPENDIX E

PEDESTRIAN AND BICYCLE LEVEL OF SERVICE MODELS

APPENDIX C: BICYCLE AND PEDESTRIAN LEVEL OF SERVICE MODELS

Bicycle Level of Service Model. The statistically-calibrated mathematical equation entitled the *Bicycle Level of Service*[1] *Model (Version 2.0)* was used as the foundation of Henrietta's existing bicycling conditions evaluation. This *Model* is the most accurate method of evaluating the bicycling conditions of shared roadway environments. It uses the same measurable traffic and roadway factors that transportation planners and engineers use for other travel modes. With statistical precision, the *Model* clearly reflects the effect on bicycling suitability or "compatibility" due to factors such as roadway width, bike lane widths and striping combinations, traffic volume, pavement surface conditions, motor vehicles speed and type, and on-street parking.

The *Bicycle LOS Model* is based on the proven research documented in *Transportation Research Record 1578* published by the Transportation Research Board of the National Academy of Sciences. It was developed with a background of over 100,000 miles of evaluated urban, suburban, and rural roads and streets across North America. It now forms the basis for the bicycle level of service methodology contained in the *Highway Capacity Manual*. Many urbanized area planning agencies and state highway departments are using this established method of evaluating their roadway networks. These include metropolitan areas across North America such as Atlanta GA, Baltimore MD, Birmingham AL, Philadelphia PA, San Antonio TX, Houston TX, Buffalo NY, Anchorage AK, Lexington KY, and Tampa FL as well as state departments of transportation such as, Delaware Department of Transportation (DelDOT), New York State Department of Transportation (NYDOT), Maine Department of Transportation (MeDOT) and others.

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[1] Landis, Bruce W. "Real-Time Human Perceptions: Toward a Bicycle Level of Service" *Transportation Research Record 1578*, Transportation Research Board, Washington DC 1997 (see Appendix A).

Widespread application of the original form of the *Bicycle LOS Model* has provided several refinements. Application of the *Bicycle LOS Model* in the metropolitan area of Philadelphia resulted in the final definition of the three effective width cases for evaluating roadways with on-street parking. Application of the *Bicycle LOS Model* in the rural areas surrounding the greater Buffalo region resulted in refinements to the "low traffic volume roadway width adjustment". A 1997 statistical enhancement to the *Model* (during statewide application in Delaware) resulted in better quantification of the effects of high-speed truck traffic [see the $SP_t(1+10.38HV)^2$ term]. As a result, *Version 2.0* (now with FDOT-approved truck volume adjustment factor included) has the highest correlation coefficient ($R^2 = 0.77$) of any form of the *Bicycle LOS Model*.

Version 2.0 of the *Bicycle LOS Model* has been employed to evaluate the roads and streets that comprise the TPO's study network. Its form is shown below:

$$\text{Bicycle LOS} = a_1 \ln (Vol_{15}/L_n) + a_2 SP_t(1+10.38HV)^2 + a_3(1/PR_5)^2 + a_4 (W_e)^2 + C$$

Where:

Vol_{15} = Volume of directional traffic in 15 minute time period

$$Vol_{15} = (ADT \times D \times K_d) / (4 \times PHF)$$

where:
ADT = Average Daily Traffic on the segment or link
D = Directional Factor
K_d = Peak to Daily Factor
PHF = Peak Hour Factor

L_n = Total number of directional *through* lanes
SP_t = Effective speed limit

$$SP_t = 1.1199 \ln(SP_p - 20) + 0.8103$$

where:
SP_p = Posted speed limit (a surrogate for average running speed)

HV = percentage of heavy vehicles (as defined in the *Highway Capacity Manual*)

PR_5 = FHWA's five point pavement surface condition rating

W_e = Average effective width of outside through lane:

where:

$W_e = W_v - (10\text{ ft} \times \%\text{ OSPA})$ and $W_l = 0$

$W_e = W_v + W_l\ (1 - 2 \times \%\text{ OSPA})$ and $W_l > 0$ & $W_{ps} = 0$

$W_e = W_v + W_l - 2\ (10 \times \%\text{ OSPA})$ and $W_l > 0$ & $W_{ps} > 0$ and a bikelane exists

where:

W_t = total width of outside lane (and shoulder) pavement

OSPA = percentage of segment with occupied on-street parking

W_l = width of paving between the outside lane stripe and the edge of pavement

W_{ps} = width of pavement striped for on-street parking

W_v = Effective width as a function of traffic volume

and:

$W_v = W_t$ if ADT > 4,000veh/day

$W_v = W_t(2-0.00025 \times \text{ADT})$ if ADT $\leq$ 4,000veh/day, and if the street/road is undivided and unstriped

a_1: 0.507 a_2: 0.199 a_3: 7.066 a_4: - 0.005 C: 0.760

(a_1 - a_4) are coefficients established by multi-variate regression analysis.

The *Bicycle LOS* score resulting from the final equation is stratified into service categories A, B, C, D, E, and F (according to the ranges shown in Table D1) to reflect users' perception of the road segment's level of service for bicycle travel.

TABLE D1 Bicycle Level of Service Categories

LEVEL OF SERVICE	BLOS SCORE
A	≤ 1.5
B	> 1.5 and ≤ 2.5
C	> 2.5 and ≤ 3.5
D	> 3.5 and ≤ 4.5
E	> 4.5 and ≤ 5.5
F	> 5.5

This stratification is in accordance with the linear scale established during the referenced research (i.e., the research project bicycle participants' aggregate response to roadway and traffic stimuli).

Data Collection/Inventory Guidelines

Following is the list of data required for computation of the *Bicycle LOS* scores as well as the associated guidelines for their collection and compilation into the programmed database.

Average Daily Traffic (ADT)

ADT is the average daily traffic volume on the segment or link. The programmed database will convert these volumes to Vol_{15} (volume of directional traffic every fifteen minutes) using the Directional Factor (D), Peak to Daily Factor (K_d) and Peak Hour Factor (PHF) for the road segment.

Percent Heavy Vehicles (HV)

Percent HV is the percentage of heavy vehicles (as defined in the *Highway Capacity Manual*).

Number of lanes of traffic (L)

L reflects the total number of *through* traffic lanes of the road segment and its configuration (D = Divided, U = Undivided, OW = One-Way, S = Two-Way Left Turn Lane). The programmed database converts these lanes into directional lanes.

Posted Speed Limit (S_p)

S_p is recorded as posted.

W_t - Total width of pavement

W_t is measured from the center of the road, yellow stripe, or (in the case of a multilane configuration) the lane separation striping to the edge of pavement or to the gutter pan of the curb.

W_l - Width of pavement between the outside lane stripe and the edge of pavement

W_l is measured from the outside lane stripe to the edge of pavement or to the gutter pan of the curb. When there is angled parking adjacent to the outside lane, W_l is measured from the outside lane stripe to the traffic-side end of the parking stall stripes.

Width of pavement is the pavement striped for on-street parking (W_{ps})

W_{ps} is recorded only if there is parking to the right of a striped bike lane (not if the striped parking area is immediately adjacent to the outside lane).

OSPA %

OSPA% is the estimated percentage of the segment (excluding driveways) along which there is occupied on-street parking at the time of survey.

Pavement Condition (PC)

PC is the pavement condition of the motor vehicle travel lane according to the FHWA's five-point pavement surface condition rating shown below in Figure D1.

Designated Bike Lane

A "Y" is coded if there is a signed and marked bike lane on the segment; otherwise "N" is entered.

RATING	PAVEMENT CONDITION
5.0 (Very Good)	Only new or nearly new pavements are likely to be smooth enough and free of cracks and patches to qualify for this category.
4.0 (Good)	Pavement, although not as smooth as described above, gives a first class ride and exhibits signs of surface deterioration
3.0 (Fair)	Riding qualities are noticeably inferior to those above; may be barely tolerable for high-speed traffic. Defects may include rutting, map cracking, and extensive patching.
2.0 (Poor)	Pavements have deteriorated to such an extent that they affect the speed of free-flow traffic. Flexible pavement has distress over 50 percent or more of the surface. Rigid pavement distress includes joint spalling, patching, etc.
1.0 (Very Poor)	Pavements that are in an extremely deteriorated condition. Distress occurs over 75 percent or more of the surface.

Source: U.S. Department of Transportation. Highway Performance Monitoring System-Field Manual. Federal Highway Administration. Washington, DC, 1987.

Figure D1 Pavement Condition Descriptions

The *Pedestrian Level of Service (Pedestrian LOS) Model*[1] will be used for the evaluation of walking conditions. This model is the most accurate method of evaluating the walking conditions within shared roadway environments. It uses the same measurable traffic and roadway factors that transportation planners and engineers use for other travel modes. With statistical precision, the *Model* clearly reflects the effect on walking suitability or "compatibility" due to factors such as roadway width, presence of sidewalks and intervening buffers, barriers within those buffers, traffic volume, motor vehicles speed, and on-street parking. The form of the *Pedestrian Level of Service Model*, and the definition of its terms are as follows:

$$\text{Ped LOS} = -1.2276 \ln (W_{ol} + W_l + f_p \times \%OSP + f_b \times W_b + f_{sw} \times W_s) + 0.0091 (Vol_{15}/L) + 0.0004\, SPD^2 + 6.0468$$

Where:

W_{ol} = Width of outside lane (feet)
W_l = Width of shoulder or bike lane (feet)
f_p = On-street parking effect coefficient (=0.20)
%OSP = Percent of segment with on-street parking
f_b = Buffer area barrier coefficient (=5.37 for trees spaced 20 feet on center)
W_b = Buffer width (distance between edge of pavement and sidewalk, feet)

f_{sw} = Sidewalk presence coefficient
$= 6 - 0.3W_s$
W_s = Width of sidewalk (feet)
Vol_{15} = average traffic during a fifteen (15) minute period
L = total number of (through) lanes (for road or street)
SPD = Average running speed of motor vehicle traffic (mi/hr)

The Pedestrian LOS score resulting from the final equation is pre-stratified into service categories "A, B, C, D, E, and F", according to the ranges shown below, which reflect users' perception of the road segments level of service for pedestrian travel. This stratification is in accordance with the linear scale established during the research (i.e., the research project participants' aggregate response to roadway and traffic stimuli).

[1] Landis, B.W., V.R. Vattikitti, R.M. Ottenberg, D.S. McLeod, M. Guttenplan, Modeling the Roadside Walking Environment: Pedestrian LOS, *Transportation Research Record 1773*, Transportation Research Board, National Research Council, Washington, DC, 2001.

Pedestrian Level-of-Service Categories

LEVEL-OF-SERVICE	Pedestrian LOS Score
A	≤ 1.5
B	> 1.5 and ≤ 2.5
C	> 2.5 and ≤ 3.5
D	> 3.5 and ≤ 4.5
E	> 4.5 and ≤ 5.5
F	> 5.5

The *Pedestrian LOS Model* is used by planners and engineers throughout the United States in a variety of planning and design applications. The *Pedestrian LOS Model* can be used to conduct a benefits comparison among proposed sidewalk/roadway cross-sections, identify roadways that are candidates for reconfiguration for sidewalk improvements, and to prioritize and program roadways for sidewalk improvements.

Additional Data Collection and Inventory Guidelines

Following is the additional list of data used in the computation of the Pedestrian LOS scores (beyond those previously described for the bicycle mode). Also described are the associated guidelines for their collection and compilation into the database.

Width of Buffer (W_b) – is the width of a grass buffer. The width of the buffer is measured from the edge of pavement or back of curb to the beginning edge of the sidewalk. If a sidewalk has trees planted within its surface, then the horizontal width of the sidewalk occupied by the trees is considered the buffer width.

Width of Sidewalk (W_s) – is the width of the sidewalk, measured from either the edge of pavement, if a grass buffer is not present. If a grass buffer is present, the width is measured from the edge of the buffer to the back side of the sidewalk.

Sidewalk Percentage – is the percentage of sidewalk coverage (estimated in increments of 25%) of the segment; this is to be collected directionally

Tree Spacing in Buffer – is the spacing of trees within a buffer, measured from the center (width of spacing between trees). Trees can either be in a grass buffer or in sidewalk islands.

Cross-section – a “C” is recorded if there is a curb and gutter on the segment, an “S” if there is an open shoulder. Note: Indicate any ditches or swales adjacent to the edge of pavement of the segment in the comments field.

Roadside Profile Condition – This data item is collected to assist in determining the lateral area available for bicycle lane or paved shoulder and sidewalk construction. It is the area between the outside edge of the pavement and the right-of-way line. The profile condition assists in determining the type of facility, hence its cost [i.e., bicycle lane or paved shoulder or bike path]. Roadside profiles were classified as one of the three types illustrated below. Condition 1, buildable shoulder, is defined as an area adjoining the edge of pavement with a minimum width of seven feet and a maximum cross-slope of 6%. Condition 2 is a swale. Condition 3 is a ditch or canal. The ARC is to provide total right-of-way width.

APPENDIX F

PEDESTRIAN AND BICYCLE LEVEL OF SERVICE DATA SHEETS

Town of Henrietta Bicycle and Pedestrian Level of Service Data Sheets

Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L) Th #	Lanes (L) Con	ADT	Tks. (HV) (%)	Post. Spd. (SP_p) mph	Width of Pavement W_t (ft)	Width of Pavement W_l (ft)	Width of Pavement W_{ps} (ft)	Occ. Park. (OSPA) (%)	Pavecon PC_t (1..5)	Pavecon PC_l (1..5)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Bicycle LOS Score (0...7)	Bicycle LOS Grade (A...F)	Pedestrian LOS Value (0...7)	Pedestrian LOS Grade (A...F)
1.0	Brighton-Henrietta Town Line Rd	Winton Rd	Clinton Ave	0.97	EB	4	U	15,752	3	35	11.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.34	D	4.61	E
1.0				0.97	WB	4	U	15,752	3	35	11.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.24	D	4.61	E
2.0	Brighton-Henrietta Town Line Rd	Clinton Ave	E Henrietta Rd	0.54	EB	4	U	26,069	3	35	11.0	0.0	0.0	0	4.0	-	8.0	0	50	5.0	4.60	E	4.47	D
2.0				0.54	WB	4	U	26,069	3	35	11.0	0.0	0.0	0	4.0	-	0.0	0	50	7.0	4.50	D	4.52	E
3.0	Brighton-Henrietta Town Line Rd	E Henrietta Rd	W Henrietta Rd	1.07	EB	4	S	16,792	3	35	11.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.38	D	4.68	E
3.0				1.07	WB	4	S	16,792	3	35	11.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.28	D	4.68	E
4.0	Brighton-Henrietta Town Line Rd	W Henrietta Rd	Jefferson Rd	1.05	EB	2	S	9,141	3	35	16.0	5.0	0.0	0	4.0	3.5	0.0	0	0	0.0	2.95	C	4.32	D
4.0				1.05	WB	2	S	9,141	3	35	16.0	5.0	0.0	0	4.0	3.5	0.0	0	100	6.0	2.85	C	3.15	C
5.0	Brighton Henrietta TL Rd/Jefferson Rd	John St	East River Rd	1.28	EB	4	S	27,404	3	45	14.0	2.0	0.0	0	3.5	3.5	3.0	0	100	4.0	4.31	D	4.23	D
5.0				1.28	WB	4	S	27,404	3	45	14.0	2.0	0.0	0	3.5	3.5	3.0	0	50	4.0	4.19	D	4.82	E
6.0	Jefferson Rd	John St	RR Crossing	0.27	EB	4	S	24,338	*4*	45	14.0	2.0	0.0	0	3.5	3.5	4.0	0	100	5.0	4.45	D	3.90	D
6.0				0.27	WB	4	S	24,338	*4*	45	14.0	2.0	0.0	0	3.5	3.5	0.0	0	0	0.0	4.45	D	5.20	E
7.0	Jefferson Rd	RR Crossing	South Town Plaza	0.32	EB	4	S	24,338	*4*	45	14.0	2.0	0.0	0	3.5	3.5	0.0	0	100	5.0	4.45	D	4.02	D
7.0				0.32	WB	4	S	24,338	*4*	45	14.0	2.0	0.0	0	3.5	3.5	0.0	0	0	0.0	4.45	D	5.20	E
8.0	Jefferson Rd (Eastbound Ramps)	South Town Plaza	W Henrietta Rd	0.34	EB	2	OW		*4*	45	17.0	3.0	0.0	0	4.0	4.0	5.0	0	100	5.0	err	err	err	err
8.0				0.34	WB								0.0					0			err	err	err	err
9.0	Jefferson Rd (Westbound Ramps)	South Town Plaza	W Henrietta Rd	0.34	EB								0.0					0			err	err	err	err
9.0				0.34	WB	2	OW			45	13.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	err	err	err	err
10.0	Jefferson Rd (Eastbound Ramps)	W Henrietta Rd	Split	0.22	EB	2	OW			45	13.0	3.0	0.0	0	4.0	4.0	3.0	0	100	5.0	err	err	err	err
10.0				0.22	WB								0.0					0			err	err	err	err
11.0	Jefferson Rd	Split in Ramps	Split in Ramps	0.50	EB	4	D	32,158	*4*	45	12.5	2.0	0.0	0	4.0	4.0	0.0	0	0	0.0	4.66	E	5.83	F
11.0				0.50	WB	4	D	32,158	*4*	45	12.5	2.0	0.0	0	4.0	4.0	0.0	0	0	0.0	4.66	E	5.83	F
12.0	Jefferson Rd (Westbound Ramps)	W Henrietta Rd	Split	0.20	EB								0.0					0			err	err	err	err
12.0				0.20	WB	2	OW			45	13.0	2.0	0.0	0	3.0	3.0	0.0	0	0	0.0	err	err	err	err
13.0	Jefferson Rd (Eastbound Ramps)	Split	Hylan Drive	0.13	EB	2	OW			45	13.0	0.0	0.0	0	3.0	-	0.0	0	0	0.0	err	err	err	err
13.0				0.13	WB								0.0					0			err	err	err	err
14.0	Jefferson Rd (Westbound Ramps)	Split	Hylan Drive	0.13	EB								0.0					0			err	err	err	err
14.0				0.13	WB	2	OW			45	15.0	3.0	0.0	0	3.0	3.0	5.0	0	100	5.0	err	err	err	err
15.0	Jefferson Rd	Hylan Drive	Sidewalk Buffer	0.16	EB	4	S	30,072	4	45	14.0	2.0	0.0	0	4.0	4.0	0.0	0	0	0.0	4.28	D	5.57	F
15.0				0.16	WB	4	S	30,072	4	45	14.0	2.0	0.0	0	4.0	4.0	0.0	0	100	7.0	4.51	E	4.25	D
16.0	Jefferson Rd	Sidewalk Buffer	Marketplace Drive	0.10	EB	4	S	30,072	4	45	13.0	2.0	0.0	0	4.0	4.0	0.0	0	0	0.0	4.43	D	5.67	F
16.0				0.10	WB	4	S	30,072	4	45	16.0	5.0	0.0	0	4.0	4.0	22.0	0	100	5.0	3.59	D	3.78	D
17.0	Jefferson Rd	Marketplace Drive	Clay Rd	0.36	EB	6	D	30,072	4	45	16.5	5.0	0.0	0	4.0	4.0	9.5	0	100	5.0	3.04	C	3.40	C
17.0				0.36	WB	6	D	30,072	4	45	16.5	5.0	0.0	0	4.0	4.0	9.5	0	100	5.0	3.27	C	3.40	C
18.0	Jefferson Rd	Clay Rd	Traffic Signal	0.16	EB	6	D	37,254	5	45	17.0	5.0	0.0	0	4.5	4.5	7.5	0	100	5.0	3.31	C	3.74	D
18.0				0.16	WB	6	D	37,254	4	45	17.0	5.0	0.0	0	4.5	4.5	0.0	0	100	7.0	3.15	C	3.81	D
19.0	Jefferson Rd	Traffic Signal	E Henrietta Rd	0.22	EB	6	D	37,254	5	45	17.5	5.0	0.0	0	4.5	4.5	7.5	0	100	7.0	3.20	C	3.61	D

Town of Henrietta Bicycle and Pedestrian Level of Service Data Sheets

Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L) Th #	Lanes (L) Con	ADT	Tks. (HV) (%)	Post. Spd. (SP_p) mph	Width of Pavement W_t (ft)	Width of Pavement W_l (ft)	Width of Pavement W_{ps} (ft)	Occ. Park. (OSPA) (%)	Pavecon PC_t (1..5)	Pavecon PC_l (1..5)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Bicycle LOS Score (0...7)	Bicycle LOS Grade (A...F)	Pedestrian LOS Value (0...7)	Pedestrian LOS Grade (A...F)
19.0				0.22	WB	6	D	37,254	4	45	17.5	5.0	0.0	0	4.5	4.5	5.0	0	100	5.0	3.04	C	3.79	D
20.0	Jefferson Rd	E Henrietta Rd	Double Tree Driveway	0.09	EB	6	D	31,590	4	45	17.0	4.5	0.0	0	4.5	4.5	9.0	0	100	5.0	3.09	C	3.46	C
20.0				0.09	WB	6	D	31,590	4	45	16.0	4.5	0.0	0	4.5	4.5	8.5	0	100	5.0	3.30	C	3.50	C
21.0	Jefferson Rd	Double Tree Driveway	SB 390 Ramp	0.06	EB	6	D	31,590	4	45	17.5	5.5	0.0	0	4.5	4.5	9.5	0	100	5.0	2.76	C	3.43	C
21.0				0.06	WB	6	D	31,590	4	45	16.0	4.5	0.0	0	4.5	4.5	9.0	0	100	5.0	3.30	C	3.48	C
22.0	Jefferson Rd	SB 390 Ramp	NB 390 Ramp	0.11	EB	4	U	31,590	4	45	17.5	4.5	0.0	0	4.0	4.0	0.0	0	100	10.0	3.29	C	4.17	D
22.0				0.11	WB	6	U	31,590	4	45	17.5	5.0	0.0	0	4.0	4.0	0.0	0	100	10.0	2.97	C	3.48	C
23.0	Jefferson Rd	NB 390 Ramp	Ridgeland Rd	0.10	EB	4	U	29,999	5	45	16.0	4.5	0.0	0	4.5	4.5	10.0	0	100	4.5	3.73	D	4.08	D
23.0				0.10	WB	6	U	29,999	5	45	17.0	5.0	0.0	0	4.5	4.5	4.0	0	100	5.5	3.28	C	3.48	C
24.0	Jefferson Rd	Ridgeland Rd	Uncle Bob's Storage	0.13	EB	4	S	29,999	5	45	17.5	5.5	0.0	0	4.5	4.5	9.5	0	50	5.0	3.18	C	4.65	E
24.0				0.13	WB	6	S	29,999	5	45	17.0	5.5	0.0	0	4.5	4.5	9.0	0	100	5.0	3.17	C	3.39	C
25.0	Jefferson Rd	Uncle Bob's Storage	NYSDOT Offices	0.62	EB	4	S	29,999	4	45	14.0	2.0	0.0	0	4.0	4.0	4.5	0	100	5.0	4.41	D	4.25	D
25.0				0.62	WB	4	S	29,999	4	45	14.0	2.0	0.0	0	4.0	4.0	4.0	0	100	5.0	4.41	D	4.26	D
26.0	Jefferson Rd	NYSDOT Offices	Eagle Landing Exit-only	0.09	EB	4	S	27,467	4	45	14.0	2.0	0.0	0	4.0	4.0	5.0	0	100	5.0	4.36	D	4.06	D
26.0				0.09	WB	4	S	27,467	4	45	14.0	2.0	0.0	0	4.0	4.0	9.0	0	100	5.0	4.36	D	3.95	D
27.0	Jefferson Rd	Eagle Landing Exit-only	Winton Rd	0.13	EB	4	S	27,467	4	45	14.0	2.0	0.0	0	4.0	4.0	0.0	0	100	7.5	4.36	D	4.05	D
27.0				0.13	WB	4	S	27,467	4	45	14.0	2.0	0.0	0	4.0	4.0	9.0	0	100	5.0	4.36	D	3.95	D
28.0	Jefferson Rd	Winton Rd	Henrietta Town Line	1.16	EB	2	U	18,690	4	45	18.0	6.0	0.0	0	3.5	3.5	0.0	0	0	0.0	3.06	C	5.73	F
28.0				1.16	WB	2	U	18,690	4	45	18.0	6.0	0.0	0	3.5	3.5	0.0	0	0	0.0	3.06	C	5.73	F
29.0	Edgewood Ave	Henrietta Town Line	Winton Place	0.08	NB	2	U	4,447	2	35	19.5	7.5	0.0	0	4.0	4.0	0.0	0	100	4.0	0.54	A	2.60	C
29.0				0.08	SB	2	U	4,447	2	35	19.5	7.5	0.0	0	4.0	4.0	0.0	0	100	4.0	0.54	A	2.60	C
30.0	Edgewood Ave	Winton Place	Jefferson Rd	0.53	NB	2	U	4,447	2	35	14.5	3.5	0.0	0	4.0	4.0	0.0	0	0	0.0	2.56	C	3.81	D
30.0				0.53	SB	2	U	4,447	2	35	14.5	3.5	0.0	0	4.0	4.0	0.0	0	0	0.0	2.56	C	3.81	D
31.0	Pinnacle Rd	Jefferson Rd	Winton Rd	0.45	NB	2	U	1,100	2	30	11.0	1.0	0.0	0	3.5	3.5	0.0	0	0	0.0	1.97	B	3.05	C
31.0				0.45	SB	2	U	1,100	2	30	11.0	1.0	0.0	0	3.5	3.5	0.0	0	0	0.0	1.97	B	3.05	C
32.0	Winton Rd	Winton Place	Southbound Taper	0.39	NB	4	S	23,041	4	40	12.0	0.0	0.0	0	4.5	-	0.0	0	100	4.5	4.52	E	3.60	D
32.0				0.39	SB	4	S	23,041	4	40	13.0	0.0	0.0	0	4.5	-	0.0	0	0	0.0	4.39	D	4.75	E
33.0	Winton Rd	Southbound Taper	Jefferson Rd	0.20	NB	4	S	23,041	4	40	14.0	0.0	0.0	0	4.5	-	0.0	0	100	4.5	4.26	D	3.53	D
33.0				0.20	SB	4	S	23,041	4	40	14.0	0.0	0.0	0	4.5	-	0.0	0	80	4.5	4.26	D	3.75	D
34.0	Winton Rd	Jefferson Rd	Stone Rd	0.62	NB	4	U	16,531	3	35	12.5	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.26	D	4.77	E
34.0				0.62	SB	4	U	16,531	3	35	12.5	0.0	0.0	0	4.0	-	4.5	0	100	5.0	4.26	D	3.36	C
35.0	Pinnacle Rd	Stone Rd	Hollybrook Rd	0.05	NB	4	U	9,872	2	35	13.0	0.0	0.0	0	3.5	-	0.0	0	0	0.0	3.64	D	4.09	D
35.0				0.05	SB	4	U	9,872	2	35	11.0	0.0	0.0	0	3.5	-	4.5	0	100	4.5	3.88	D	2.81	C
36.0	Pinnacle Rd	Hollybrook Rd	Calkins Rd	0.64	NB	2	U	9,872	2	35	12.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	4.14	D	4.88	E
36.0				0.64	SB	2	U	9,872	2	35	12.0	1.0	0.0	0	4.0	4.0	14.0	0	100	5.0	4.14	D	3.16	C
37.0	Pinnacle Rd	Calkins Rd	Clearview Dr	0.27	NB	2	U	10,365	3	35	12.0	0.0	0.0	0	2.5	-	0.0	0	0	0.0	5.02	E	4.84	E
37.0				0.27	SB	2	U	10,365	3	35	12.0	0.0	0.0	0	3.0	-	14.0	0	100	5.0	4.66	E	3.12	C

Town of Henrietta Bicycle and Pedestrian Level of Service Data Sheets

Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L) Th #	Lanes (L) Con	ADT	Tks. (HV) (%)	Post. Spd. (SP_p) mph	Width of Pavement W_t (ft)	Width of Pavement W_l (ft)	Width of Pavement W_{ps} (ft)	Occ. Park. (OSPA) (%)	Pavecon PC_t (1..5)	Pavecon PC_l (1..5)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Bicycle LOS Score (0...7)	Bicycle LOS Grade (A...F)	Pedestrian LOS Value (0...7)	Pedestrian LOS Grade (A...F)
38.0	Pinnacle Rd	Clearview Dr	Lehigh Station Rd	0.41	NB	2	U	10,365	*3*	35	12.0	1.0	0.0	0	4.0	4.0	14.0	0	100	4.0	4.33	D	3.21	C
38.0				0.41	SB	2	U	10,365	*3*	35	12.0	1.0	0.0	0	4.0	4.0	14.0	0	100	4.0	4.33	D	3.21	C
39.0	Pinnacle Rd	Lehigh Station Rd	Red Lion Rd	0.37	NB	2	S	4,484	*2*	35	17.6	5.4	0.0	0	4.0	4.0	5.0	0	100	4.0	1.66	B	2.62	C
39.0				0.37	SB	2	S	4,484	*2*	35	17.6	5.4	0.0	0	4.0	4.0	5.0	0	100	4.0	1.66	B	2.62	C
40.0	Pinnacle Rd	Red Lion Rd	Heather Dale Chase	0.12	NB	2	U	4,484	*2*	35	12.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.58	D	4.16	D
40.0				0.12	SB	2	U	4,484	*2*	35	12.0	1.0	0.0	0	4.0	4.0	14.0	0	100	4.0	3.58	D	2.52	C
41.0	Pinnacle Rd	Heather Dale Chase	Utility Lines	0.28	NB	2	U	4,484	*2*	35	12.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	3.58	D	4.16	D
41.0				0.28	SB	2	U	4,484	*2*	35	12.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	3.58	D	4.16	D
42.0	Pinnacle Rd	Utility Lines	South Side of Bridge	0.16	NB	2	U	4,484	*3*	40	16.0	4.0	0.0	0	5.0	4.0	0.0	0	0	0.0	2.62	C	3.95	D
42.0				0.16	SB	2	U	4,484	*3*	40	16.0	4.0	0.0	0	5.0	4.0	0.0	0	0	0.0	2.62	C	3.95	D
43.0	Pinnacle Rd	South Side of Bridge	Henrietta Town Line	2.03	NB	2	U	1,966	*3*	40	16.0	4.0	0.0	0	5.0	5.0	0.0	0	0	0.0	0.44	A	3.60	D
43.0				2.03	SB	2	U	1,966	*3*	40	16.0	4.0	0.0	0	5.0	5.0	0.0	0	0	0.0	0.44	A	3.60	D
44.0	Williams Rd	Pinnacle Rd	Henrietta Town Line	0.99	EB	2	U	827	*3*	45	11.0	0.0	0.0	0	3.5	-	0.0	0	0	0.0	1.57	B	3.30	C
44.0				0.99	WB	2	U	827	*3*	45	11.0	0.0	0.0	0	3.5	-	0.0	0	0	0.0	1.57	B	3.30	C
45.0	Ward Hill Rd	Pinnacle Rd	E Henrietta Rd	0.99	EB	2	U	888	*3*	40	11.3	1.0	0.0	0	3.5	3.0	0.0	0	0	0.0	1.88	B	3.23	C
45.0				0.99	WB	2	U	888	*3*	40	11.3	1.0	0.0	0	3.5	3.0	0.0	0	0	0.0	1.88	B	3.23	C
46.0	Reeves Rd	Pinnacle Rd	Tobin Rd	0.40	EB	2	U	1,319	*2*	35	11.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.16	B	3.27	C
46.0				0.40	WB	2	U	1,319	*2*	35	11.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.16	B	3.27	C
47.0	Tobin Rd	Reeves Rd	Henrietta Town Line	0.56	NB	2	U	893	*3*	40	11.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	1.94	B	3.30	C
47.0				0.56	SB	2	U	893	*3*	40	11.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	1.94	B	3.30	C
48.0	Blackwell Ln	Pinnacle Rd	Pittsford-Henrietta TL Rd	1.08	EB	2	U	*1,100*	*2*	30	10.0	0.0	0.0	0	5.0	-	0.0	0	0	0.0	1.66	B	3.05	C
48.0				1.08	WB	2	U	*1,100*	*2*	30	10.0	0.0	0.0	0	5.0	-	0.0	0	0	0.0	1.66	B	3.05	C
49.0	Pittsford-Henrietta TL Rd	Blackwell Ln	Lehigh Station Rd	0.76	NB	2	U	*1,100*	*2*	30	13.7	2.7	0.0	0	4.0	4.0	0.0	0	0	0.0	0.33	A	3.34	C
49.0				0.76	SB	2	U	*1,100*	*2*	30	13.7	2.7	0.0	0	4.0	4.0	0.0	0	0	0.0	0.33	A	3.34	C
50.0	Pittsford-Henrietta TL Rd	Lehigh Station Rd	Calkins Rd	0.67	NB	2	U	*1,100*	*3*	40	13.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	1.38	A	3.11	C
50.0				0.67	SB	2	U	*1,100*	*3*	40	13.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	1.38	A	3.11	C
51.0	Stone Rd	Pinnacle Rd	Henrietta Town Line	0.98	EB	2	U	4,975	*3*	40	17.0	5.0	0.0	0	5.0	5.0	0.0	0	0	0.0	2.26	B	4.03	D
51.0				0.98	WB	2	U	4,975	*3*	40	17.0	5.0	0.0	0	5.0	5.0	0.0	0	0	0.0	2.26	B	4.03	D
52.0	Hollybrook Rd	Pinnacle Rd	Pedestrian Crossing	0.40	EB	2	U	*1,500*	*2*	30	13.5	2.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.84	A	3.41	C
52.0				0.40	WB	2	U	*1,500*	*2*	30	13.5	2.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.84	A	3.41	C
53.0	Hollybrook Rd	Pedestrian Crossing	Faircrest Rd	0.10	EB	2	U	*1,500*	*2*	30	13.5	2.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.84	A	3.41	C
53.0				0.10	WB	2	U	*1,500*	*2*	30	13.5	2.5	0.0	0	4.0	4.0	4.0	0	100	5.0	0.84	A	2.07	B
54.0	Hollybrook Rd	Faircrest Rd	E Henrietta Rd	0.75	EB	2	U	*1,500*	*2*	30	13.5	2.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.84	A	3.41	C
54.0				0.75	WB	2	U	*1,500*	*2*	30	13.5	2.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.84	A	3.41	C
55.0	Castle Rd	Winton Rd	E Henrietta Rd	1.28	EB	2	U	*4,000*	*2*	30	11.5	1.5	0.0	0	4.0	3.0	0.0	0	0	0.0	3.54	D	4.10	D
55.0				1.28	WB	2	U	*4,000*	*2*	30	11.5	1.5	0.0	0	4.0	3.0	0.0	0	0	0.0	3.54	D	4.10	D
56.0	Wildbriar Rd	E Henrietta Rd	Summer Sky Dr	0.90	EB	2	U	*2,500*	*2*	30	11.7	1.6	0.0	0	4.0	3.0	0.0	0	0	0.0	2.79	C	3.51	D

Town of Henrietta Bicycle and Pedestrian Level of Service Data Sheets

Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L) Th #	Lanes (L) Con	ADT	Tks. (HV) (%)	Post. Spd. (SP_p) mph	Width of Pavement W_t (ft)	Width of Pavement W_l (ft)	Width of Pavement W_{ps} (ft)	Occ. Park. (OSPA) (%)	Pavecon PC_t (1..5)	Pavecon PC_l (1..5)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Bicycle LOS Score (0...7)	Bicycle LOS Grade (A...F)	Pedestrian LOS Value (0...7)	Pedestrian LOS Grade (A...F)
56.0				0.90	WB	2	U	*2,500*	*2*	30	11.7	1.6	0.0	0	4.0	3.0	0.0	0	0	0.0	2.79	C	3.51	D
57.0	Summer Sky Dr	Wildbriar Rd	Hylan Drive	0.40	NB	2	U	*2,500*	*2*	30	11.8	1.1	0.0	0	3.0	3.0	0.0	0	0	0.0	3.01	C	3.43	C
57.0				0.40	SB	2	U	*2,500*	*2*	30	11.8	1.1	0.0	0	3.0	3.0	0.0	0	0	0.0	3.01	C	3.43	C
58.0	Goodburlet Rd	E Henrietta Rd	Pinnacle Rd	0.98	EB	2	U	*500*	*2*	35	12.5	2.0	0.0	0	3.0	3.0	0.0	0	0	0.0	0.49	A	3.49	C
58.0				0.98	WB	2	U	*500*	*2*	35	12.5	2.0	0.0	0	3.0	3.0	0.0	0	0	0.0	0.49	A	3.49	C
59.0	E Henrietta Rd	Brighton-Henrietta TL Rd	Alliance Dr	0.29	NB	4	U	18,166	*4*	40	15.0	5.0	0.0	0	4.0	4.0	0.0	0	100	7.0	3.33	C	3.28	C
59.0				0.29	SB	4	U	18,166	*4*	40	15.0	5.0	0.0	0	4.0	4.0	0.0	0	100	7.0	3.33	C	3.28	C
60.0	E Henrietta Rd	Alliance Dr	Henrietta Plaza Driveway	0.14	NB	4	S	18,166	*4*	40	15.0	4.5	0.0	0	4.0	4.0	0.0	0	100	7.0	3.43	C	3.28	C
60.0				0.14	SB	4	S	18,166	*4*	40	15.0	4.5	0.0	0	4.0	4.0	0.0	0	100	7.0	3.43	C	3.28	C
61.0	E Henrietta Rd	Henrietta Plaza Driveway	Jefferson Rd	0.10	NB	4	D	18,166	*4*	40	15.5	5.0	0.0	0	4.0	4.0	0.0	0	100	7.5	3.23	C	3.23	C
61.0				0.10	SB	6	D	18,166	*4*	40	15.5	5.0	0.0	0	4.0	4.0	0.0	0	100	7.5	3.02	C	2.83	C
62.0	E Henrietta Rd	Jefferson Rd	SB 390 Ramp	0.17	NB	4	D	20,229	*4*	40	17.0	5.0	0.0	0	4.5	4.5	0.0	0	100	7.5	2.86	C	3.32	C
62.0				0.17	SB	6	D	20,229	*4*	40	16.0	0.0	0.0	0	4.5	-	0.0	0	100	7.5	3.80	D	2.91	C
63.0	E Henrietta Rd	SB 390 Ramp	NB 390 Ramp	0.08	NB	4	S	20,229	4	40	15.0	2.5	0.0	0	3.0	3.0	0.0	0	100	6.0	4.06	D	3.47	C
63.0				0.08	SB	4	S	20,229	3	40	15.0	2.5	0.0	0	3.0	3.0	0.0	0	100	6.0	3.92	D	3.47	C
64.0	E Henrietta Rd	NB 390 Ramp	Castle Rd	0.06	NB	4	U	19,808	4	40	19.0	2.0	0.0	0	3.0	3.0	0.0	0	100	5.5	3.38	C	3.35	C
64.0				0.06	SB	4	U	19,808	3	40	17.0	4.0	0.0	0	3.0	3.0	0.0	0	100	7.0	3.24	C	3.32	C
65.0	E Henrietta Rd	Castle Rd	Beers of the World Dwy	0.90	NB	4	S	19,808	4	40	16.0	4.0	0.0	0	3.5	3.5	0.0	0	100	7.0	3.41	C	3.34	C
65.0				0.90	SB	4	S	19,808	3	40	16.0	4.0	0.0	0	3.5	3.5	0.0	0	100	7.0	3.27	C	3.34	C
66.0	E Henrietta Rd	Beers of the World Dwy	Calkins Rd	0.08	NB	4	S	19,808	4	40	16.0	4.0	0.0	0	3.5	3.5	0.0	0	100	8.0	3.41	C	3.31	C
66.0				0.08	SB	4	S	19,808	3	40	14.0	2.0	0.0	0	3.5	3.5	0.0	0	100	8.0	3.99	D	3.35	C
67.0	E Henrietta Rd	Calkins Rd	Fair Ave	0.22	NB	4	S	15,292	*4*	40	16.0	4.0	0.0	0	3.5	3.5	0.0	0	100	7.0	3.39	C	3.05	C
67.0				0.22	SB	4	S	15,292	*4*	40	16.0	4.0	0.0	0	3.5	3.5	0.0	0	100	7.0	3.39	C	3.05	C
68.0	E Henrietta Rd	Fair Ave	Wright Rd	0.33	NB	4	U	15,292	*4*	40	14.0	4.0	0.0	0	3.5	3.5	0.0	0	100	8.0	3.77	D	3.06	C
68.0				0.33	SB	4	U	15,292	*4*	40	15.0	5.0	0.0	0	3.5	3.5	0.0	0	100	7.0	3.39	C	3.09	C
69.0	E Henrietta Rd	Wright Rd	Lehigh Station Rd	0.12	NB	2	U	15,292	*3*	35	14.0	4.0	0.0	0	4.0	4.0	0.0	0	100	8.0	3.62	D	3.90	D
69.0				0.12	SB	4	U	15,292	*3*	35	15.0	4.0	0.0	0	4.0	4.0	0.0	0	100	8.0	3.09	C	2.89	C
70.0	E Henrietta Rd	Lehigh Station Rd	Taper	0.12	NB	2	U	10,532	*3*	35	15.0	4.0	0.0	0	3.5	3.5	0.0	0	80	7.0	3.40	C	3.56	D
70.0				0.12	SB	4	U	10,532	*3*	35	15.0	4.0	0.0	0	3.5	3.5	0.0	0	20	7.0	2.90	C	3.64	D
71.0	E Henrietta Rd	Taper	Temple Rd	0.08	NB	2	U	10,532	*3*	35	19.0	7.0	0.0	0	3.0	3.0	0.0	0	0	0.0	2.00	B	4.29	D
71.0				0.08	SB	2	U	10,532	*3*	35	19.0	7.0	0.0	0	3.0	3.0	0.0	0	0	0.0	2.00	B	4.29	D
72.0	E Henrietta Rd	Temple Rd	Utility Lines	0.53	NB	2	U	10,532	*3*	35	16.0	4.0	0.0	0	3.5	2.5	0.0	0	0	0.0	3.43	C	4.50	D
72.0				0.53	SB	2	U	10,532	*3*	35	15.5	3.5	0.0	0	3.5	2.5	0.0	0	0	0.0	3.59	D	4.54	E
73.0	E Henrietta Rd	Utility Lines	Bridge Deck	0.07	NB	2	U	10,532	*3*	35	22.0	10.0	0.0	0	3.5	2.0	0.0	0	0	0.0	1.37	A	4.11	D
73.0				0.07	SB	2	U	10,532	*3*	35	22.0	10.0	0.0	0	3.5	2.0	0.0	0	0	0.0	1.37	A	4.11	D
74.0	E Henrietta Rd	Bridge Deck	Bridge Deck	0.12	NB	2	U	10,532	*4*	45	21.0	10.0	0.0	0	3.5	4.0	0.0	0	0	0.0	0.85	A	4.49	D
74.0				0.12	SB	2	U	10,532	*4*	45	21.0	10.0	0.0	0	3.5	4.0	0.0	0	0	0.0	0.85	A	4.49	D

Town of Henrietta Bicycle and Pedestrian Level of Service Data Sheets

Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L) Th #	Lanes (L) Con	ADT	Tks. (HV) (%)	Post. Spd. (SP_p) mph	Width of Pavement W_t (ft)	Width of Pavement W_l (ft)	Width of Pavement W_{ps} (ft)	Occ. Park. (OSPA) (%)	Pavecon PC_t (1..5)	Pavecon PC_l (1..5)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Bicycle LOS Score (0...7)	Bicycle LOS Grade (A...F)	Pedestrian LOS Value (0...7)	Pedestrian LOS Grade (A...F)
75.0	E Henrietta Rd	Bridge Deck	Spring Blossom Cir	0.11	NB	2	U	10,532	*4*	45	22.0	10.0	0.0	0	4.0	4.0	0.0	0	0	0.0	0.38	A	4.43	D
75.0				0.11	SB	2	U	10,532	*4*	45	22.0	10.0	0.0	0	4.0	4.0	0.0	0	0	0.0	0.38	A	4.43	D
76.0	E Henrietta Rd	Spring Blossom Cir	Erie Station Rd	0.32	NB	2	U	10,532	*4*	45	16.0	4.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.50	C	4.82	E
76.0				0.32	SB	2	U	10,532	*4*	45	15.0	3.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.88	D	4.90	E
77.0	E Henrietta Rd	Erie Station Rd	Henrietta Town Line	1.70	NB	2	U	10,532	*4*	45	16.0	4.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.50	C	4.82	E
77.0				1.70	SB	2	U	10,532	*4*	45	16.0	4.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.50	C	4.82	E
78.0	Middle Rd	Calkins Rd	Lehigh Station Rd	0.74	NB	2	U	5,004	12	45	18.0	6.0	0.0	0	4.0	4.0	0.0	0	0	0.0	4.87	E	3.90	D
78.0				0.74	SB	2	U	5,004	5	45	18.0	6.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.47	B	3.90	D
79.0	Middle Rd	Lehigh Station Rd	North of Thruway	0.75	NB	2	U	4,401	12	45	13.0	2.0	0.0	0	4.0	3.0	0.0	0	0	0.0	6.81	F	4.45	D
79.0				0.75	SB	2	U	4,401	5	45	13.5	2.5	0.0	0	4.0	3.0	0.0	0	0	0.0	4.28	D	4.40	D
80.0	Middle Rd	North of Thruway	South of Thruway	0.17	NB	2	U	4,401	12	45	13.0	2.0	0.0	0	4.0	3.0	0.0	0	0	0.0	6.81	F	4.45	D
80.0				0.17	SB	2	U	4,401	5	45	13.0	2.0	0.0	0	4.0	3.0	0.0	0	0	0.0	4.41	D	4.45	D
81.0	Middle Rd	South of Thruway	Erie Station Rd	0.43	NB	2	U	4,401	12	45	13.0	2.0	0.0	0	4.0	3.0	0.0	0	0	0.0	6.81	F	4.45	D
81.0				0.43	SB	2	U	4,401	5	45	13.0	2.0	0.0	0	4.0	3.0	0.0	0	0	0.0	4.41	D	4.45	D
82.0	Middle Rd	Erie Station Rd	Martin Rd	0.95	NB	2	U	1,930	*3*	40	14.5	4.0	0.0	0	4.0	4.0	0.0	0	0	0.0	1.21	A	3.75	D
82.0				0.95	SB	2	U	1,930	*3*	40	15.0	4.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.96	A	3.70	D
83.0	Middle Rd	Martin Rd	Henrietta Town Line	0.62	NB	2	U	1,930	*3*	40	11.5	1.0	0.0	0	4.0	3.0	0.0	0	0	0.0	2.80	C	3.62	D
83.0				0.62	SB	2	U	1,930	*3*	40	12.0	1.5	0.0	0	4.0	3.0	0.0	0	0	0.0	2.80	C	3.62	D
84.0	W Henrietta Rd	Brighton-Henrietta TL Road	Namaste	0.24	NB	4	S	34,072	4	40	12.0	0.0	0.0	0	3.5	-	0.0	0	100	5.0	4.98	E	4.55	E
84.0				0.24	SB	4	S	34,072	5	40	12.0	0.0	0.0	0	3.5	-	0.0	0	70	5.0	5.41	E	4.94	E
85.0	W Henrietta Rd	Namaste	Kohl's Driveway	0.05	NB	4	S	34,072	4	40	12.0	0.0	0.0	0	3.5	-	0.0	0	100	5.0	4.98	E	4.55	E
85.0				0.05	SB	4	S	34,072	5	40	12.0	0.0	0.0	0	3.5	-	0.0	0	0	0.0	5.41	E	5.85	F
86.0	W Henrietta Rd	Kohl's Driveway	Jefferson Rd (Westbound Ramps)	0.05	NB	4	S	34,072	4	40	21.0	10.0	0.0	0	3.5	3.5	0.0	0	100	5.0	0.90	A	4.27	D
86.0				0.05	SB	4	S	34,072	5	40	11.0	0.0	0.0	0	3.5	-	0.0	0	0	0.0	5.53	F	5.95	F
87.0	W Henrietta Rd	Jefferson Rd (Westbound Ramps)	Jefferson Rd (Eastbound Ramps)	0.07	NB	4	S	34,072	5	40	15.0	3.0	0.0	0	3.5	3.5	0.0	0	100	7.0	4.30	D	4.31	D
87.0				0.07	SB	4	S	34,072	4	40	15.0	3.0	0.0	0	3.5	3.5	0.0	0	100	7.0	4.25	D	4.31	D
88.0	W Henrietta Rd	Jefferson Rd (Eastbound Ramps)	Marketplace Mall	0.21	NB	4	S	23,073	5	40	16.0	4.0	0.0	0	4.0	4.0	0.0	0	100	7.0	3.58	D	3.56	D
88.0				0.21	SB	4	S	23,073	4	40	16.0	4.0	0.0	0	4.0	4.0	0.0	0	100	7.0	3.53	D	3.56	D
89.0	W Henrietta Rd	Marketplace Mall	Bailey Rd	0.90	NB	4	S	23,073	5	40	15.0	4.0	0.0	0	3.5	3.5	0.0	0	100	7.0	3.93	D	3.60	D
89.0				0.90	SB	4	S	23,073	4	40	15.0	4.0	0.0	0	3.5	3.5	0.0	0	100	7.0	3.88	D	3.60	D
90.0	W Henrietta Rd	Bailey Rd	Calkins Rd	0.34	NB	4	S	23,073	5	40	16.0	4.5	0.0	0	3.5	3.5	0.0	0	100	7.0	3.63	D	3.56	D
90.0				0.34	SB	4	S	23,073	4	40	16.0	4.5	0.0	0	3.5	3.5	0.0	0	100	7.0	3.58	D	3.56	D
91.0	W Henrietta Rd	Calkins Rd	Methodist Hill Dr	0.23	NB	4	S	15,386	6	45	17.5	5.5	0.0	0	4.0	3.0	0.0	0	0	0.0	3.68	D	4.35	D
91.0				0.23	SB	4	S	15,386	6	45	17.0	5.5	0.0	0	4.0	3.0	0.0	0	0	0.0	3.58	D	4.38	D
92.0	W Henrietta Rd	Methodist Hill Dr	Taper	0.23	NB	4	U	15,386	6	45	18.0	7.0	0.0	0	4.0	3.0	0.0	0	0	0.0	3.32	C	4.31	D
92.0				0.23	SB	4	U	15,386	6	45	18.0	6.0	0.0	0	4.0	3.0	0.0	0	0	0.0	3.28	C	4.31	D
93.0	W Henrietta Rd	Taper	Lehigh Station Rd	0.22	NB	4	S	15,386	6	45	17.0	6.0	0.0	0	4.0	4.0	4.5	0	100	5.0	3.38	C	3.22	C

Town of Henrietta Bicycle and Pedestrian Level of Service Data Sheets

Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L) Th #	Lanes (L) Con	ADT	Tks. (HV) (%)	Post. Spd. (SP_p) mph	Width of Pavement W_t (ft)	Width of Pavement W_l (ft)	Width of Pavement W_{ps} (ft)	Occ. Park. (OSPA) (%)	Pavecon PC_t (1..5)	Pavecon PC_l (1..5)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Bicycle LOS Score (0...7)	Bicycle LOS Grade (A...F)	Pedestrian LOS Value (0...7)	Pedestrian LOS Grade (A...F)
93.0				0.22	SB	4	S	15,386	6	45	17.0	6.0	0.0	0	4.0	4.0	4.5	0	100	5.0	3.17	C	3.22	C
94.0	W Henrietta Rd	Lehigh Station Rd	End of RT Lane (McDonalds)	0.18	NB	4	S	20,731	6	45	16.5	5.0	0.0	0	4.0	4.0	5.0	0	100	5.0	3.65	D	3.56	D
94.0				0.18	SB	4	S	20,731	6	45	17.5	5.5	0.0	0	4.0	4.0	5.0	0	100	5.0	3.38	C	3.53	D
95.0	W Henrietta Rd	End of RT Lane (McDonalds)	Utility Lines	0.17	NB	4	S	20,731	6	45	17.5	5.5	0.0	0	4.0	4.0	5.0	0	100	5.0	3.32	C	3.53	D
95.0				0.17	SB	4	S	20,731	6	45	17.5	5.5	0.0	0	4.0	4.0	5.0	0	100	5.0	3.38	C	3.53	D
96.0	W Henrietta Rd	Utility Lines	North of Thruway	0.38	NB	4	U	20,731	6	45	20.0	8.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.05	B	4.52	E
96.0				0.38	SB	4	U	20,731	6	45	20.0	8.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.10	B	4.52	E
97.0	W Henrietta Rd	North of Thruway	South of Thruway	0.11	NB	4	U	20,731	6	45	19.5	7.5	0.0	0	4.0	4.0	0.0	0	0	0.0	2.32	B	4.56	E
97.0				0.11	SB	4	U	20,731	6	45	19.5	7.5	0.0	0	4.0	4.0	0.0	0	0	0.0	2.38	B	4.56	E
98.0	W Henrietta Rd	South of Thruway	Thruway Park Dr	0.09	NB	4	U	10,121	6	40	20.0	9.0	0.0	0	4.0	3.0	0.0	0	0	0.0	1.90	B	3.66	D
98.0				0.09	SB	4	U	10,121	6	40	12.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.81	E	4.30	D
99.0	W Henrietta Rd	Thruway Park Dr	Taper	0.10	NB	4	U	10,121	4	40	14.5	2.5	0.0	0	4.0	4.0	0.0	0	0	0.0	3.66	D	4.06	D
99.0				0.10	SB	4	U	10,121	5	40	16.0	4.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.21	C	3.94	D
100.0	W Henrietta Rd	Taper	Erie Station Rd	0.31	NB	2	S	10,121	4	40	14.0	2.0	0.0	0	4.0	4.0	5.0	0	100	5.0	4.18	D	3.42	C
100.0				0.31	SB	4	S	10,121	5	40	13.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	4.36	D	4.20	D
101.0	W Henrietta Rd	Erie Station Rd	Rush-Henrietta TL Road	1.62	NB	2	U	5,476	*3*	40	16.0	4.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.69	C	4.00	D
101.0				1.62	SB	2	U	5,476	*3*	40	17.0	5.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.27	B	3.92	D
102.0	Telephone Rd	W Henrietta Rd	Timberline Dr	0.47	EB	2	U	707	*3*	40	11.5	1.5	0.0	0	4.0	3.0	0.0	0	0	0.0	1.70	B	3.24	C
102.0				0.47	WB	2	U	707	*3*	40	11.5	1.5	0.0	0	4.0	3.0	0.0	0	0	0.0	1.70	B	3.24	C
103.0	Telephone Rd	Timberline Dr	End of Bend	0.24	EB	2	U	707	*3*	40	12.0	2.0	0.0	0	4.0	3.0	0.0	0	0	0.0	1.00	A	3.75	D
103.0				0.24	WB	2	U	707	*3*	40	11.5	1.5	0.0	0	4.0	3.0	0.0	0	0	0.0	1.70	B	3.24	C
104.0	Telephone Rd	End of Bend	End of Gutter	0.04	NB	2	U	707	*3*	40	12.0	2.0	0.0	0	4.0	3.0	0.0	0	0	0.0	1.00	A	3.75	D
104.0				0.04	SB	2	U	707	*3*	40	11.5	1.5	0.0	0	4.0	3.0	0.0	0	0	0.0	1.70	B	3.24	C
105.0	Telephone Rd	End of Gutter	Martin Rd	0.65	NB	2	U	707	*3*	40	11.0	1.0	0.0	0	4.0	3.0	0.0	0	0	0.0	1.70	B	3.24	C
105.0				0.65	SB	2	U	707	*3*	40	11.0	1.0	0.0	0	4.0	3.0	0.0	0	0	0.0	1.70	B	3.24	C
106.0	Telephone Rd	Martin Rd	Rush-Henrietta TL Road	0.73	NB	2	U	707	*3*	45	10.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	1.75	B	3.41	C
106.0				0.73	SB	2	U	707	*3*	45	10.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	1.75	B	3.41	C
107.0	Rush-Henrietta TL Road	E River Rd	W Henrietta Rd	2.07	EB	2	U	140	*3*	40	11.0	0.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.63	A	3.00	C
107.0				2.07	WB	2	U	140	*3*	40	11.0	0.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.63	A	3.00	C
108.0	Rush-Henrietta TL Road	W Henrietta Rd	.54 miles east of W. Hen	0.54	EB	2	U	1,167	*3*	40	13.0	3.0	0.0	0	4.0	3.5	0.0	0	0	0.0	1.16	A	3.75	D
108.0				0.54	WB	2	U	1,167	*3*	40	11.0	1.0	0.0	0	4.0	3.5	0.0	0	0	0.0	2.28	B	3.41	C
109.0	Rush-Henrietta TL Road	.54 miles east of W. Hen	Middle Rd	0.37	EB	2	U	1,167	*3*	40	13.0	3.0	0.0	0	4.0	3.5	0.0	0	0	0.0	1.16	A	3.75	D
109.0				0.37	WB	2	U	1,167	*3*	40	11.0	1.0	0.0	0	4.0	3.5	0.0	0	0	0.0	2.28	B	3.41	C
110.0	Rush-Henrietta TL Road	Middle Rd	E Henrietta Rd	0.70	EB	2	U	941	*3*	40	11.0	1.0	0.0	0	4.0	3.0	0.0	0	0	0.0	1.85	B	3.28	C
110.0				0.70	WB	2	U	941	*3*	40	11.0	1.0	0.0	0	4.0	3.0	0.0	0	0	0.0	1.85	B	3.28	C
111.0	Martin Rd	Middle Rd	I-390 Bridge	0.26	EB	2	U	368	*2*	35	11.5	1.5	0.0	0	4.0	3.0	0.0	0	0	0.0	1.06	A	2.97	C
111.0				0.26	WB	2	U	368	*2*	35	12.0	2.0	0.0	0	4.0	3.0	0.0	0	0	0.0	0.33	A	3.55	D

Town of Henrietta Bicycle and Pedestrian Level of Service Data Sheets

Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L) Th #	Lanes (L) Con	ADT	Tks. (HV) (%)	Post. Spd. (SP_p) mph	Width of Pavement W_t (ft)	Width of Pavement W_l (ft)	Width of Pavement W_{ps} (ft)	Occ. Park. (OSPA) (%)	Pavecon PC_t (1..5)	Pavecon PC_l (1..5)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Bicycle LOS Score (0...7)	Bicycle LOS Grade (A...F)	Pedestrian LOS Value (0...7)	Pedestrian LOS Grade (A...F)
112.0	Martin Rd	I-390 Bridge	I-390 Bridge	0.12	EB	2	U	368	2	35	24.5	13.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	2.66	C
112.0				0.12	WB	2	U	368	2	35	24.5	13.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	2.66	C
113.0	Martin Rd	I-390 Bridge	Start of Bridge Incline	0.03	EB	2	U	368	2	35	13.5	3.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	3.40	C
113.0				0.03	WB	2	U	368	2	35	13.5	3.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	3.40	C
114.0	Martin Rd	Start of Bridge Incline	Caitlin Trail	0.43	EB	2	U	368	2	35	14.5	4.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	3.31	C
114.0				0.43	WB	2	U	368	2	35	14.5	4.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	3.31	C
115.0	Martin Rd	Caitlin Trail	W Henrietta Rd	0.12	EB	2	U	400	2	35	14.5	4.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	3.31	C
115.0				0.12	WB	2	U	400	2	35	14.5	4.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	3.31	C
116.0	Martin Rd	W Henrietta Rd	Telephone Rd	0.90	EB	2	U	400	12	35	10.5	0.0	0.0	0	3.0	-	0.0	0	0	0.0	1.70	B	2.91	C
116.0				0.90	WB	2	U	400	15	35	10.5	0.0	0.0	0	3.0	-	0.0	0	0	0.0	2.08	B	2.91	C
117.0	Martin Rd	Telephone Rd	.54miles west of Telephone	0.54	EB	2	U	447	3	40	14.5	4.5	0.0	0	3.0	3.0	0.0	0	0	0.0	0.00	A	3.46	C
117.0				0.54	WB	2	U	447	3	40	13.5	3.5	0.0	0	3.0	3.0	0.0	0	0	0.0	0.00	A	3.55	D
118.0	Martin Rd	.54miles west of Telephone	E River Rd	0.44	EB	2	U	447	3	40	13.5	3.5	0.0	0	3.0	3.0	0.0	0	0	0.0	0.00	A	3.55	D
118.0				0.44	WB	2	U	447	3	40	13.5	3.5	0.0	0	3.0	3.0	0.0	0	0	0.0	0.00	A	3.55	D
119.0	Martin Rd	E River Rd	Moore Rd	0.49	EB	2	U	113	2	35	11.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	0.00	A	2.77	C
119.0				0.49	WB	2	U	113	2	35	11.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	0.00	A	2.77	C
120.0	Moore Rd	Martin Rd	Egret Dr	0.61	NB	2	U	460	2	35	14.0	3.0	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	3.36	C
120.0				0.61	SB	2	U	460	2	35	14.0	3.0	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	3.36	C
121.0	Moore Rd	Egret Dr	Scottsville-W Henrietta Rd	0.16	NB	2	U	460	2	35	13.0	3.0	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	3.46	C
121.0				0.16	SB	2	U	460	2	35	13.0	3.0	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	3.46	C
122.0	Scottsville-W Henrietta Rd	NY 253 (Erie Station Rd)	Farrell Rd	0.17	EB	2	U	1,060	2	30	11.0	1.0	0.0	0	3.5	3.5	0.0	0	0	0.0	1.92	B	3.03	C
122.0				0.17	WB	2	U	1,060	2	30	11.0	1.0	0.0	0	3.5	3.5	0.0	0	0	0.0	1.92	B	3.03	C
123.0	Scottsville-W Henrietta Rd	Farrell Rd	Countess Dr	0.59	EB	2	U	1,060	2	35	11.0	1.0	0.0	0	3.5	3.5	0.0	0	0	0.0	2.01	B	3.16	C
123.0				0.59	WB	2	U	1,060	2	35	11.0	1.0	0.0	0	3.5	3.5	0.0	0	0	0.0	2.01	B	3.16	C
124.0	Scottsville-W Henrietta Rd	Countess Dr	Creek	0.09	EB	2	U	1,060	2	35	11.0	1.0	0.0	0	3.5	3.5	0.0	0	0	0.0	2.01	B	3.16	C
124.0				0.09	WB	2	U	1,060	2	35	11.0	1.0	0.0	0	3.5	3.5	0.0	0	0	0.0	2.01	B	3.16	C
125.0	Scottsville-W Henrietta Rd	Creek	E River Rd	0.16	EB	2	U	1,060	2	35	18.0	7.0	0.0	0	3.5	3.5	0.0	0	0	0.0	0.00	A	3.13	C
125.0				0.16	WB	2	U	1,060	2	35	18.0	7.0	0.0	0	3.5	3.5	0.0	0	0	0.0	0.00	A	3.13	C
126.0	NY 253 (Erie Station Rd)	River	Harrogate Cr	0.18	EB	2	U	5,631	5	50	23.0	12.0	0.0	0	3.5	3.0	0.0	0	0	0.0	0.19	A	3.92	D
126.0				0.18	WB	2	U	5,631	5	50	23.0	12.0	0.0	0	3.5	3.0	0.0	0	0	0.0	0.19	A	3.92	D
127.0	NY 253 (Erie Station Rd)	Harrogate Cr	End of Taper	0.21	NB	2	S	5,631	5	50	23.0	11.0	0.0	0	3.5	3.5	0.0	0	0	0.0	0.00	A	3.92	D
127.0				0.21	SB	2	S	5,631	5	50	23.0	11.0	0.0	0	3.5	3.5	0.0	0	0	0.0	0.00	A	3.92	D
128.0	NY 253 (Erie Station Rd)	End of Taper	Rest stop Parking Lot	0.50	NB	2	U	5,631	5	50	21.0	10.0	0.0	0	3.5	3.0	0.0	0	0	0.0	1.35	A	4.04	D
128.0				0.50	SB	2	U	5,631	5	50	21.0	10.0	0.0	0	3.5	3.0	0.0	0	0	0.0	1.35	A	4.04	D
129.0	NY 253 (Erie Station Rd)	Rest stop Parking Lot	E River Rd	1.00	EB	2	U	5,631	5	50	21.8	10.5	0.0	0	3.5	3.5	0.0	0	0	0.0	0.51	A	3.99	D
129.0				1.00	WB	2	U	5,631	5	50	21.8	10.5	0.0	0	3.5	3.5	0.0	0	0	0.0	0.51	A	3.99	D
130.0	NY 253 (Erie Station Rd)	E River Rd	.6miles east of E River Rd	0.60	EB	2	U	6,756	5	50	15.5	4.5	0.0	0	3.5	3.5	0.0	0	0	0.0	3.82	D	4.56	E

Town of Henrietta Bicycle and Pedestrian Level of Service Data Sheets

Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L) Th #	Lanes (L) Con	ADT	Tks. (HV) (%)	Post. Spd. (SP_p) mph	Width of Pavement W_t (ft)	Width of Pavement W_l (ft)	Width of Pavement W_{ps} (ft)	Occ. Park. (OSPA) (%)	Pavecon PC_t (1..5)	Pavecon PC_l (1..5)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Bicycle LOS Score (0...7)	Bicycle LOS Grade (A...F)	Pedestrian LOS Value (0...7)	Pedestrian LOS Grade (A...F)
130.0				0.60	WB	2	U	6,756	5	50	14.5	3.5	0.0	0	3.5	3.5	0.0	0	0	0.0	4.20	D	4.64	E
131.0	NY 253 (Erie Station Rd)	.6miles east of E River Rd	Erie Station Rd	0.24	EB	2	U	6,756	5	50	17.5	5.5	0.0	0	4.0	4.0	0.0	0	0	0.0	3.02	C	4.41	D
131.0				0.24	WB	2	U	6,756	5	50	19.0	7.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.28	B	4.31	D
132.0	Erie Station Rd	NY 253 (Erie Station Rd)	Begin of Turn Lanes	0.09	EB	2	U	4,291	4	40	18.5	6.5	0.0	0	3.5	3.5	0.0	0	0	0.0	2.01	B	3.71	D
132.0				0.09	WB	4	U	4,291	3	40	19.0	6.5	0.0	0	3.5	3.5	0.0	0	0	0.0	0.00	A	3.39	C
133.0	Erie Station Rd	Begin of Turn Lanes	W Henrietta Rd	0.87	EB	2	U	4,291	4	40	14.0	3.0	0.0	0	3.0	3.0	0.0	0	0	0.0	3.86	D	4.06	D
133.0				0.87	WB	2	U	4,291	3	40	14.5	3.5	0.0	0	3.0	3.0	0.0	0	0	0.0	3.31	C	4.02	D
134.0	Erie Station Rd	W Henrietta Rd	I-390 Bridge	0.50	EB	2	U	4,291	*2*	35	13.5	2.5	0.0	0	4.5	4.5	0.0	0	0	0.0	2.86	C	3.95	D
134.0				0.50	WB	2	U	4,291	*2*	35	12.0	1.0	0.0	0	4.5	4.5	0.0	0	0	0.0	3.42	C	4.10	D
135.0	Erie Station Rd	I-390 Bridge	I-390 Bridge	0.06	EB	2	U	4,516	*2*	35	21.5	7.0	0.0	0	4.0	4.0	0.0	0	0	0.0	0.15	A	3.35	C
135.0				0.06	WB	2	U	4,516	*2*	35	23.0	12.0	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	3.26	C
136.0	Erie Station Rd	I-390 Bridge	Middle Rd	0.17	EB	2	U	4,741	*2*	35	13.5	2.5	0.0	0	4.5	4.5	0.0	0	0	0.0	2.92	C	4.01	D
136.0				0.17	WB	2	U	4,741	*2*	35	13.5	2.5	0.0	0	4.5	4.5	0.0	0	0	0.0	2.92	C	4.01	D
137.0	Erie Station Rd	Middle Rd	Start/End of Gutter	0.18	EB	2	U	3,733	*2*	35	17.5	6.5	0.0	0	4.5	4.5	0.0	0	0	0.0	0.94	A	3.51	D
137.0				0.18	WB	2	U	3,733	*2*	35	16.0	5.0	0.0	0	4.5	4.5	0.0	0	0	0.0	1.64	B	3.62	D
138.0	Erie Station Rd	Start/End of Gutter	Start/End of Gutter	0.41	EB	2	U	3,733	*2*	35	17.0	6.0	0.0	0	4.5	4.5	0.0	0	0	0.0	1.19	A	3.54	D
138.0				0.41	WB	2	U	3,733	*2*	35	17.0	6.0	0.0	0	4.5	4.5	0.0	0	0	0.0	1.19	A	3.54	D
139.0	Erie Station Rd	Start/End of Gutter	Windelin Dr	0.22	EB	2	U	3,733	*2*	35	16.5	6.0	0.0	0	4.5	4.5	0.0	0	0	0.0	1.30	A	3.58	D
139.0				0.22	WB	2	U	3,733	*2*	35	12.5	2.0	0.0	0	4.5	4.5	0.0	0	0	0.0	2.84	C	3.91	D
140.0	Erie Station Rd	Windelin Dr	Tradition Place	0.32	EB	2	U	3,733	*2*	35	13.5	3.0	0.0	0	4.5	4.5	0.0	0	0	0.0	2.52	C	3.83	D
140.0				0.32	WB	2	U	3,733	*2*	35	15.5	5.0	0.0	0	4.5	4.5	0.0	0	0	0.0	1.75	B	3.66	D
141.0	Erie Station Rd	Tradition Place	E Henrietta Rd	0.10	EB	2	U	3,733	*2*	35	16.5	6.0	0.0	0	4.5	4.5	0.0	0	0	0.0	1.30	A	3.58	D
141.0				0.10	WB	2	U	3,733	*2*	35	18.5	8.0	0.0	0	4.5	4.5	0.0	0	0	0.0	0.30	A	3.43	C
142.0	Thruway Park Dr	Erie Station Rd	W Henrietta Rd	1.18	EB	2	U	7,322	5	35	15.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.22	D	4.16	D
142.0				1.18	WB	2	U	7,322	5	35	15.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.22	D	4.16	D
143.0	E River Rd	Rush-Henrietta TL Rd	Erie Station Rd	1.42	NB	2	U	2,141	*3*	40	12.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.96	C	3.71	D
143.0				1.42	SB	2	U	2,141	*3*	40	12.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.96	C	3.71	D
144.0	E River Rd	Erie Station Rd	Start of Bridge Incline	0.07	NB	2	U	4,408	*3*	40	12.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.77	D	4.22	D
144.0				0.07	SB	4	U	4,408	*3*	40	12.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.70	C	3.58	D
145.0	E River Rd	Start of Bridge Incline	I-390 Bridge	0.04	NB	2	U	4,408	*3*	40	12.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.77	D	4.22	D
145.0				0.04	SB	2	U	4,408	*3*	40	12.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.77	D	4.22	D
146.0	E River Rd	I-390 Bridge	I-390 Bridge	0.08	NB	2	U	4,408	*3*	40	19.0	7.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.98	A	3.65	D
146.0				0.08	SB	2	U	4,408	*3*	40	19.0	7.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.98	A	3.65	D
147.0	E River Rd	I-390 Bridge	Start of Bridge Incline	0.08	NB	2	U	4,408	*3*	40	12.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.77	D	4.22	D
147.0				0.08	SB	2	U	4,408	*3*	40	12.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.77	D	4.22	D
148.0	E River Rd	Start of Bridge Incline	Brooks Rd	0.35	NB	2	U	7,764	*3*	40	12.5	1.5	0.0	0	4.0	4.0	0.0	0	0	0.0	4.41	D	5.00	E
148.0				0.35	SB	2	U	7,764	*3*	40	12.5	1.5	0.0	0	4.0	4.0	0.0	0	0	0.0	4.41	D	5.00	E

Town of Henrietta Bicycle and Pedestrian Level of Service Data Sheets

Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L) Th #	Lanes (L) Con	ADT	Tks. (HV) (%)	Post. Spd. (SP_p) mph	Width of Pavement W_t (ft)	Width of Pavement W_l (ft)	Width of Pavement W_{ps} (ft)	Occ. Park. (OSPA) (%)	Pavecon PC_t (1..5)	Pavecon PC_l (1..5)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Bicycle LOS Score (0...7)	Bicycle LOS Grade (A...F)	Pedestrian LOS Value (0...7)	Pedestrian LOS Grade (A...F)
149.0	E River Rd	Brooks Rd	Lehigh Station Rd	0.69	NB	2	U	7,764	3	40	16.0	5.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.98	C	4.71	E
149.0				0.69	SB	2	U	7,764	3	40	16.0	5.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.98	C	4.71	E
150.0	E River Rd	Lehigh Station Rd	Bend in Road	0.13	NB	2	S	11,085	4	40	19.0	8.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.05	B	5.51	F
150.0				0.13	SB	2	S	11,085	4	40	19.0	11.0	0.0	0	4.0	4.0	0.0	0	0	0.0	1.20	A	5.51	F
151.0	E River Rd	Bend in Road	Westminster Rd	0.50	NB	2	U	11,084	4	40	15.0	4.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.89	D	5.79	F
151.0				0.50	SB	2	U	11,084	4	40	15.0	4.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.89	D	5.79	F
152.0	E River Rd	Westminster Rd	Lucius Gordon Dr	0.14	NB	2	U	11,084	4	40	15.0	4.0	0.0	0	4.5	4.5	0.0	0	0	0.0	3.79	D	5.79	F
152.0				0.14	SB	2	U	11,084	4	40	15.0	4.0	0.0	0	4.5	4.5	0.0	0	0	0.0	3.79	D	5.79	F
153.0	E River Rd	Lucius Gordon Dr	Bailey Rd	0.18	NB	2	S	11,084	4	40	14.0	3.0	0.0	0	4.0	4.0	0.0	0	0	0.0	4.25	D	5.88	F
153.0				0.18	SB	2	S	11,084	4	40	14.0	3.0	0.0	0	4.0	4.0	0.0	0	0	0.0	4.25	D	5.88	F
154.0	E River Rd	Bailey Rd	Andrews Memorial Dr	0.84	NB	2	U	10,778	4	40	15.0	4.0	0.0	0	5.0	5.0	0.0	0	0	0.0	3.22	C	4.25	D
154.0				0.84	SB	2	U	10,778	4	40	15.0	4.0	0.0	0	5.0	5.0	0.0	0	0	0.0	3.22	C	4.25	D
155.0	E River Rd	Andrews Memorial Dr	Ward Rd	0.43	NB	2	U	10,778	4	40	15.0	4.0	0.0	0	5.0	5.0	0.0	0	0	0.0	3.22	C	4.25	D
155.0				0.43	SB	2	U	10,778	4	40	15.0	4.0	0.0	0	5.0	5.0	0.0	0	0	0.0	3.22	C	4.25	D
156.0	E River Rd	Ward Rd	Transition from 2 to 1 Lane	0.13	NB	2	S	10,778	4	40	16.0	5.5	0.0	0	4.0	4.0	0.0	0	0	0.0	2.87	C	4.18	D
156.0				0.13	SB	2	S	10,778	4	40	16.0	5.5	0.0	0	4.0	4.0	0.0	0	0	0.0	2.87	C	4.18	D
157.0	E River Rd	Transition from 2 to 1 Lane	Jefferson Rd	0.12	NB	2	U	10,778	4	40	17.0	6.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.54	C	4.10	D
157.0				0.12	SB	4	U	10,778	4	40	16.0	5.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.31	B	3.73	D
158.0	Brooks Rd	E River Rd	W Henrietta Rd	1.83	EB	2	U	1,076	3	40	11.0	1.0	0.0	0	4.5	4.5	0.0	0	0	0.0	1.85	B	3.32	C
158.0				1.83	WB	2	U	1,076	3	40	11.0	1.0	0.0	0	4.5	4.5	0.0	0	0	0.0	1.85	B	3.32	C
159.0	Bailey Rd	E River Rd	John St	1.20	EB	2	U	4,942	2	35	19.0	8.0	0.0	0	4.0	4.0	0.0	0	0	0.0	0.96	A	3.94	D
159.0				1.20	WB	2	U	4,942	2	35	19.0	8.0	0.0	0	4.0	4.0	0.0	0	0	0.0	0.96	A	3.94	D
160.0	Bailey Rd	John St	W Henrietta Rd	1.02	EB	2	U	10,924	3	35	19.5	8.0	0.0	0	4.0	4.0	0.0	0	0	0.0	1.48	A	4.95	E
160.0				1.02	WB	2	U	10,924	3	35	19.5	8.0	0.0	0	4.0	4.0	3.5	0	100	4.5	1.48	A	3.95	D
161.0	Calkins Rd	W Henrietta Rd	Verizon	0.34	EB	4	U	16,532	4	40	12.0	0.0	0.0	0	3.5	-	3.0	0	100	7.0	4.71	E	3.17	C
161.0				0.34	WB	4	U	16,532	4	40	12.0	0.0	0.0	0	3.5	-	0.0	0	100	7.0	4.71	E	3.26	C
162.0	Calkins Rd	Verizon	Middle Rd	0.34	EB	4	U	16,532	4	40	12.0	0.0	0.0	0	3.5	-	3.5	0	100	4.0	4.71	E	3.40	C
162.0				0.34	WB	4	U	16,532	4	40	12.0	0.0	0.0	0	3.5	-	3.5	0	100	4.0	4.71	E	3.40	C
163.0	Calkins Rd	Middle Rd	Red Creek Dr	0.15	EB	4	S	18,950	4	40	13.0	0.0	0.0	0	4.0	-	0.0	0	100	7.0	4.51	E	3.37	C
163.0				0.15	WB	4	S	18,950	4	40	13.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.51	E	4.77	E
164.0	Calkins Rd	Red Creek Dr	Hylan Drive	0.10	EB	4	S	18,468	4	40	13.0	0.0	0.0	0	4.0	-	7.0	0	100	7.0	4.54	E	3.28	C
164.0				0.10	WB	4	S	18,468	4	40	13.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.54	E	4.87	E
165.0	Calkins Rd	Hylan Drive	.07miles east of Town Hall	0.19	EB	4	U	14,276	3	35	13.0	0.0	0.0	0	3.0	-	5.0	0	100	5.0	4.24	D	2.83	C
165.0				0.19	WB	4	U	14,276	3	35	13.0	0.0	0.0	0	3.0	-	4.0	0	100	5.0	4.24	D	2.86	C
166.0	Calkins Rd	.07miles east of Town Hall	Lavender Cir	0.39	EB	4	U	14,276	3	35	13.0	0.0	0.0	0	4.0	-	0.0	0	100	7.0	3.91	D	2.83	C
166.0				0.39	WB	4	U	14,276	3	35	12.0	0.0	0.0	0	4.0	-	5.0	0	100	5.0	4.04	D	2.86	C
167.0	Calkins Rd	Lavender Cir	E Henrietta Rd	0.40	EB	4	S	14,276	3	35	13.8	0.0	0.0	0	4.0	-	11.5	0	100	5.0	3.81	D	2.62	C

Town of Henrietta Bicycle and Pedestrian Level of Service Data Sheets

Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L) Th #	Lanes (L) Con	ADT	Tks. (HV) (%)	Post. Spd. (SP_p) mph	Width of Pavement W_t (ft)	Width of Pavement W_l (ft)	Width of Pavement W_{ps} (ft)	Occ. Park. (OSPA) (%)	Pavecon PC_t (1..5)	Pavecon PC_l (1..5)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Bicycle LOS Score (0...7)	Bicycle LOS Grade (A...F)	Pedestrian LOS Value (0...7)	Pedestrian LOS Grade (A...F)
167.0				0.40	WB	4	S	14,276	*3*	35	13.8	0.0	0.0	0	4.0	-	5.0	0	100	5.0	3.81	D	2.81	C
168.0	Calkins Rd	E Henrietta Rd	Thompson Rd	0.16	EB	4	U	11,840	3	35	14.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	3.54	D	4.07	D
168.0				0.16	WB	2	U	11,840	4	35	14.0	0.0	0.0	0	4.0	-	0.0	0	100	7.0	4.33	D	3.51	D
169.0	Calkins Rd	Thompson Rd	Pinnacle Rd	0.83	EB	2	U	10,348	3	35	12.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	4.27	D	4.95	E
169.0				0.83	WB	2	U	10,348	4	35	12.0	1.0	0.0	0	4.0	4.0	0.0	0	0	0.0	4.57	E	4.95	E
170.0	Calkins Rd	Pinnacle Rd	Tumbleweed Dr	0.46	EB	2	U	5,500	*2*	35	16.7	5.7	0.0	0	4.0	4.0	0.0	0	0	0.0	1.84	B	3.78	D
170.0				0.46	WB	2	U	5,500	*2*	35	17.7	6.7	0.0	0	4.0	4.0	10.0	0	100	5.0	1.37	A	2.43	B
171.0	Calkins Rd	Tumbleweed Dr	Henrietta Town Line	0.54	EB	2	U	5,500	*2*	35	15.0	3.8	0.0	0	4.0	4.0	0.0	0	0	0.0	2.58	C	3.92	D
171.0				0.54	WB	2	U	5,500	*2*	35	15.0	3.8	0.0	0	4.0	4.0	0.0	0	0	0.0	2.58	C	3.92	D
172.0	John St	Lehigh Station Rd	Park Centre Dr	0.61	NB	2	U	3,417	*2*	35	15.0	3.2	0.0	0	5.0	5.0	0.0	0	0	0.0	2.63	C	4.45	D
172.0				0.61	SB	2	U	3,417	*2*	35	15.0	3.2	0.0	0	5.0	5.0	3.6	0	100	5.0	2.63	C	3.21	C
173.0	John St	Park Centre Dr	Bailey Rd	0.63	NB	2	U	3,417	*2*	35	16.8	5.4	0.0	0	5.0	5.0	0.0	0	0	0.0	1.75	B	4.31	D
173.0				0.63	SB	2	U	3,417	*2*	35	16.8	5.4	0.0	0	5.0	5.0	4.3	0	100	5.0	1.75	B	3.13	C
174.0	John St	Bailey Rd	Wilstie Dr	0.81	NB	2	U	8,787	*3*	40	16.0	4.0	0.0	0	3.0	3.0	0.0	0	0	0.0	3.37	C	4.35	D
174.0				0.81	SB	2	U	8,787	*3*	40	16.0	4.0	0.0	0	3.0	3.0	0.0	0	0	0.0	3.37	C	4.35	D
175.0	John St	Wilstie Dr	Perkins Rd	0.24	NB	2	U	11,242	*4*	40	12.5	1.5	0.0	0	4.0	4.0	0.0	0	0	0.0	4.59	E	4.86	E
175.0				0.24	SB	2	U	11,242	*4*	40	12.5	1.5	0.0	0	4.0	4.0	0.0	0	0	0.0	4.59	E	4.86	E
176.0	John St	Perkins Rd	Jefferson Rd	0.45	NB	2	U	11,242	*4*	40	20.0	9.0	0.0	0	4.0	4.0	0.0	0	0	0.0	1.17	A	4.29	D
176.0				0.45	SB	2	U	11,242	*4*	40	20.0	9.0	0.0	0	4.0	4.0	0.0	0	0	0.0	1.17	A	4.29	D
177.0	Beckwith Rd	Lehigh Station Rd	Bailey Rd	0.98	NB	2	U	1,875	*2*	30	11.8	1.8	0.0	0	5.0	5.0	0.0	0	0	0.0	2.45	B	3.39	C
177.0				0.98	SB	2	U	1,875	*2*	30	11.8	1.8	0.0	0	5.0	5.0	0.0	0	0	0.0	2.45	B	3.39	C
178.0	Vollmer Pkwy	Lehigh Station Rd	Rampart St	0.32	NB	2	U	*1,500*	*2*	30	10.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	2.13	B	3.17	C
178.0				0.32	SB	2	U	*1,500*	*2*	30	10.0	0.0	0.0	0	4.0	-	9.4	0	100	5.0	2.13	B	2.01	B
179.0	Vollmer Pkwy	Rampart St	Coachwood Ln	0.62	NB	2	U	*1,500*	*2*	30	10.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	2.13	B	3.17	C
179.0				0.62	SB	2	U	*1,500*	*2*	30	10.0	0.0	0.0	0	4.0	-	5.3	0	100	5.0	2.13	B	2.14	B
180.0	Vollmer Pkwy	Coachwood Ln	Bailey Rd	0.27	NB	2	U	*1,500*	*2*	30	15.5	4.5	0.0	0	4.0	4.0	0.0	0	0	0.0	0.00	A	3.23	C
180.0				0.27	SB	2	U	*1,500*	*2*	30	15.5	4.5	0.0	0	4.0	4.0	5.0	0	100	5.0	0.00	A	1.98	B
181.0	Lehigh Station Rd	E River Rd	Substation Driveway	0.38	EB	2	U	3,297	*3*	40	17.5	6.5	0.0	0	4.0	4.0	0.0	0	0	0.0	1.05	A	3.69	D
181.0				0.38	WB	2	U	3,297	*3*	40	14.5	3.5	0.0	0	4.0	4.0	0.0	0	0	0.0	2.42	B	3.93	D
182.0	Lehigh Station Rd	Substation Driveway	John St	0.29	EB	2	U	3,297	*3*	40	15.0	4.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.22	B	3.88	D
182.0				0.29	WB	2	U	3,297	*3*	40	15.0	4.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.22	B	3.88	D
183.0	Lehigh Station Rd	John St	Beckwith Rd	0.57	EB	2	U	5,347	*3*	40	16.0	5.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.51	C	4.01	D
183.0				0.57	WB	2	U	5,347	*3*	40	14.0	3.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.27	C	4.17	D
184.0	Lehigh Station Rd	Beckwith Rd	Bennington Hills Ct	0.40	EB	2	U	5,347	*3*	40	16.0	5.0	0.0	0	4.0	4.0	0.0	0	0	0.0	2.51	C	4.01	D
184.0				0.40	WB	2	U	5,347	*3*	40	14.0	3.0	0.0	0	4.0	4.0	0.0	0	0	0.0	3.27	C	4.17	D
185.0	Lehigh Station Rd	Bennington Hills Ct	W Henrietta Rd	0.24	EB	4	U	5,347	*3*	40	17.0	6.0	0.0	0	4.0	4.0	5.0	0	100	5.0	0.58	A	2.39	B
185.0				0.24	WB	4	U	5,347	*3*	40	17.0	6.0	0.0	0	4.0	4.0	4.0	0	60	5.0	0.58	A	2.88	C

Town of Henrietta Bicycle and Pedestrian Level of Service Data Sheets

Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L) Th #	Lanes (L) Con	ADT	Tks. (HV) (%)	Post. Spd. (SP_p) mph	Width of Pavement W_t (ft)	Width of Pavement W_l (ft)	Width of Pavement W_{ps} (ft)	Occ. Park. (OSPA) (%)	Pavecon PC_t (1..5)	Pavecon PC_l (1..5)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Bicycle LOS Score (0...7)	Bicycle LOS Grade (A...F)	Pedestrian LOS Value (0...7)	Pedestrian LOS Grade (A...F)
186.0	Lehigh Station Rd	W Henrietta Rd	Kenneth Dr	0.39	EB	4	S	23,577	*4*	40	17.0	7.0	0.0	0	4.0	4.0	5.0	0	100	4.0	2.58	C	3.65	D
186.0				0.39	WB	4	S	23,577	*4*	40	17.0	7.0	0.0	0	4.0	4.0	5.0	0	100	4.0	2.58	C	3.65	D
187.0	Lehigh Station Rd	Kenneth Dr	SB 390 Ramp	0.10	EB	4	S	23,577	*4*	40	16.5	4.5	0.0	0	4.0	4.0	4.0	0	100	5.0	3.25	C	3.60	D
187.0				0.10	WB	4	S	23,577	*4*	40	16.5	4.5	0.0	0	4.0	4.0	4.0	0	100	5.0	3.25	C	3.60	D
188.0	Lehigh Station Rd	SB 390 Ramp	Middle Rd	0.13	EB	4	S	13,653	*4*	40	16.0	2.0	0.0	0	4.0	4.0	0.0	0	100	5.0	3.57	D	3.10	C
188.0				0.13	WB	4	S	13,653	*4*	40	20.0	7.0	0.0	0	4.0	4.0	0.0	0	100	5.0	1.54	B	2.98	C
189.0	Lehigh Station Rd	Middle Rd	NYS Police Driveway	0.16	EB	2	U	13,653	*4*	40	24.0	12.0	0.0	0	4.0	4.0	0.0	0	0	4.0	0.00	A	4.56	E
189.0				0.16	WB	2	U	13,653	*4*	40	24.0	12.0	0.0	0	4.0	4.0	0.0	0	0	4.0	0.00	A	4.56	E
190.0	Lehigh Station Rd	NYS Police Driveway	RR Crossing	0.15	EB	2	U	9,213	*3*	40	24.0	12.0	0.0	0	4.0	3.5	0.0	0	0	0.0	0.00	A	3.98	D
190.0				0.15	WB	2	U	9,213	*3*	40	24.0	12.0	0.0	0	4.0	3.5	0.0	0	0	0.0	0.00	A	3.98	D
191.0	Lehigh Station Rd	RR Crossing	Nevins Rd	0.23	EB	2	U	9,213	*2*	35	18.0	6.0	0.0	0	3.5	3.5	0.0	0	10	7.5	2.02	B	4.07	D
191.0				0.23	WB	2	U	9,213	*2*	35	17.0	5.0	0.0	0	3.5	3.5	0.0	0	0	0.0	2.48	B	4.25	D
192.0	Lehigh Station Rd	Nevins Rd	Green Clover Dr	0.26	EB	2	U	9,213	*2*	35	16.0	5.0	0.0	0	3.5	3.5	0.0	0	0	0.0	2.69	C	4.33	D
192.0				0.26	WB	2	U	9,213	*2*	35	16.0	5.0	0.0	0	3.5	3.5	0.0	0	40	5.0	2.69	C	3.90	D
193.0	Lehigh Station Rd	Green Clover Dr	.07miles east of Michel Dr	0.42	EB	2	U	9,213	*2*	35	18.0	6.5	0.0	0	3.5	3.5	15.0	0	100	5.0	1.89	B	2.79	C
193.0				0.42	WB	2	U	9,213	*2*	35	17.5	6.0	0.0	0	3.5	3.5	0.0	0	0	0.0	2.13	B	4.22	D
194.0	Lehigh Station Rd	.07miles east of Michel Dr	E Henrietta Rd	0.15	EB	2	U	9,213	*2*	35	19.5	7.5	0.0	0	3.5	3.5	0.0	0	100	7.5	1.25	A	2.99	C
194.0				0.15	WB	2	U	9,213	*2*	35	18.5	6.5	0.0	0	3.5	3.5	0.0	0	0	0.0	1.77	B	4.14	D
195.0	Lehigh Station Rd	E Henrietta Rd	Rush-Henrietta Senior HS	0.24	EB	2	U	9,127	*2*	35	19.0	9.0	0.0	0	3.5	3.5	0.0	0	100	7.0	0.97	A	3.01	C
195.0				0.24	WB	4	U	9,127	*2*	35	14.0	4.0	0.0	0	3.5	3.5	0.0	0	0	0.0	2.76	C	3.89	D
196.0	Lehigh Station Rd	Rush-Henrietta Senior HS	Aleta Dr	0.16	EB	2	U	9,127	*2*	35	20.0	9.0	0.0	0	3.0	3.0	15.0	0	100	5.0	0.86	A	2.75	C
196.0				0.16	WB	2	U	9,127	*2*	35	18.0	7.0	0.0	0	3.0	3.0	0.0	0	0	0.0	1.94	B	4.17	D
197.0	Lehigh Station Rd	Aleta Dr	Sperry Dr	0.10	EB	2	U	9,127	*2*	35	20.0	9.0	0.0	0	3.0	3.0	15.0	0	30	5.0	0.86	A	3.65	D
197.0				0.10	WB	2	U	9,127	*2*	35	18.0	7.0	0.0	0	3.0	3.0	7.0	0	100	5.0	1.94	B	2.98	C
198.0	Lehigh Station Rd	Sperry Dr	Masthead Way	0.13	EB	2	U	9,127	*2*	35	20.0	9.0	0.0	0	3.0	3.0	14.0	0	100	5.0	0.86	A	2.77	C
198.0				0.13	WB	2	U	9,127	*2*	35	18.0	7.0	0.0	0	3.0	3.0	7.0	0	100	5.0	1.94	B	2.98	C
199.0	Lehigh Station Rd	Masthead Way	Strawbridge Rd	0.15	EB	2	U	9,127	*2*	35	20.5	10.5	0.0	0	3.0	3.0	14.0	0	100	5.0	0.26	A	2.76	C
199.0				0.15	WB	2	U	9,127	*2*	35	17.5	6.5	0.0	0	3.0	3.0	17.0	0	100	5.0	2.18	B	2.76	C
200.0	Lehigh Station Rd	Strawbridge Rd	Pinnacle Rd	0.20	EB	2	U	9,127	*2*	35	20.0	10.0	0.0	0	3.0	3.0	0.0	0	0	0.0	0.56	A	4.04	D
200.0				0.20	WB	2	U	9,127	*2*	35	18.0	7.0	0.0	0	3.0	3.0	13.0	0	100	5.0	1.94	B	2.83	C
201.0	Lehigh Station Rd	Pinnacle Rd	Fox Chapel Rd	0.43	EB	2	U	3,745	*3*	40	14.0	2.0	0.0	0	3.0	3.0	12.0	0	100	5.0	3.26	C	2.41	B
201.0				0.43	WB	2	U	3,745	*3*	40	14.0	2.0	0.0	0	3.0	3.0	0.0	0	0	0.0	3.26	C	3.93	D
202.0	Lehigh Station Rd	Fox Chapel Rd	Henrietta Town Line	0.57	EB	2	U	3,745	*3*	40	12.0	0.0	0.0	0	3.0	-	0.0	0	0	0.0	3.85	D	4.04	D
202.0				0.57	WB	2	U	3,745	*3*	40	12.0	0.0	0.0	0	3.0	-	0.0	0	0	0.0	3.85	D	4.04	D
203.0	St Patrick Dr	W Henrietta Rd	Palo Alto Dr	0.18	EB	2	U	*600*	*2*	30	12.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	0.54	A	2.68	C
203.0				0.18	WB	2	U	*600*	*2*	30	12.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	0.54	A	2.68	C
204.0	Palo Alto Dr	St Patrick Dr	Calkins Rd	0.38	NB	2	U	*600*	*2*	30	12.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	0.54	A	2.68	C

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Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L) Th #	Lanes (L) Con	ADT	Tks. (HV) (%)	Post. Spd. (SP_p) mph	Width of Pavement W_t (ft)	Width of Pavement W_l (ft)	Width of Pavement W_{ps} (ft)	Occ. Park. (OSPA) (%)	Pavecon PC_t (1..5)	Pavecon PC_l (1..5)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Bicycle LOS Score (0...7)	Bicycle LOS Grade (A...F)	Pedestrian LOS Value (0...7)	Pedestrian LOS Grade (A...F)
204.0				0.38	SB	2	U	*600*	*2*	30	12.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	0.54	A	2.68	C
205.0	Hylan Dr	Jefferson Rd	Marketplace Mall (north Dwy)	0.11	NB	4	S	20,338	*4*	35	12.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.44	D	4.58	E
205.0				0.11	SB	4	S	20,338	*4*	35	11.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.55	E	4.67	E
206.0	Hylan Dr	Marketplace Mall (north Dwy)	Marketplace Mall (mdl Dwy)	0.16	NB	4	S	*15,000*	*3*	35	12.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.16	D	4.47	D
206.0				0.16	SB	4	S	*15,000*	*3*	35	12.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.16	D	4.47	D
207.0	Hylan Dr	Marketplace Mall (mdl Dwy)	Marketplace Mall (south Dwy)	0.20	NB	4	S	12,956	*3*	35	12.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	3.94	D	4.26	D
207.0				0.20	SB	4	S	12,956	*3*	35	12.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	3.94	D	4.26	D
208.0	Hylan Dr	Marketplace Mall (south Dwy)	Marketplace Dr	0.14	NB	4	S	23,020	*4*	35	13.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.47	D	4.89	E
208.0				0.14	SB	6	S	23,020	*4*	35	13.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.26	D	4.39	D
209.0	Hylan Dr	Marketplace Dr	SB 390 Ramp	0.14	NB	4	S	32,280	*4*	40	12.0	0.0	0.0	0	3.5	-	0.0	0	90	5.0	5.01	E	4.38	D
209.0				0.14	SB	4	S	32,280	*4*	40	13.0	0.0	0.0	0	3.5	-	0.0	0	0	0.0	4.88	E	5.46	E
210.0	Hylan Dr	SB 390 Ramp	NB 390 Ramp (on)	0.08	NB	4	S	19,560	*4*	40	12.0	0.0	0.0	0	4.0	-	0.0	0	100	7.0	4.65	E	3.46	C
210.0				0.08	SB	4	S	19,560	*4*	40	12.0	0.0	0.0	0	4.0	-	0.0	0	100	7.0	4.65	E	3.46	C
211.0	Hylan Dr	NB 390 Ramp (on)	NB 390 Ramp (on/off)	0.11	NB	4	S	28,511	*4*	40	13.0	0.0	0.0	0	4.0	-	0.0	0	100	7.0	4.71	E	3.99	D
211.0				0.11	SB	4	S	28,511	*4*	40	14.0	0.0	0.0	0	4.0	-	0.0	0	100	7.0	4.58	E	3.97	D
212.0	Hylan Dr	NB 390 Ramp (on/off)	Summer Sky Dr	0.05	NB	4	S	11,653	*4*	40	13.0	0.0	0.0	0	4.0	-	0.0	0	100	6.5	4.25	D	2.93	C
212.0				0.05	SB	4	S	11,653	*4*	40	13.0	0.0	0.0	0	4.0	-	0.0	0	100	6.5	4.25	D	2.93	C
213.0	Hylan Dr	Summer Sky Dr	Calkins Rd	0.36	NB	4	S	11,653	*4*	40	13.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.25	D	4.29	D
213.0				0.36	SB	4	S	11,653	*4*	40	13.0	0.0	0.0	0	4.0	-	0.0	0	100	6.5	4.25	D	2.93	C
214.0	Clay Rd	Brighton-Henrietta TL Road	Mushroom Blvd	0.28	NB	2	U	13,484	*3*	35	17.5	5.5	0.0	0	4.0	4.0	0.0	0	0	0.0	2.54	C	4.77	E
214.0				0.28	SB	2	U	13,484	*3*	35	16.5	4.5	0.0	0	4.0	4.0	0.0	0	100	7.0	2.98	C	3.64	D
215.0	Clay Rd	Mushroom Blvd	Home Depot Svc Access	0.11	NB	2	U	13,484	*3*	35	15.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.06	D	4.96	E
215.0				0.11	SB	2	U	13,484	*3*	35	15.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.06	D	4.96	E
216.0	Clay Rd	Home Depot Svc Access	Jefferson Rd	0.15	NB	2	U	13,484	*3*	35	13.5	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.27	D	5.09	E
216.0				0.15	SB	2	U	13,484	*3*	35	13.5	0.0	0.0	0	4.0	-	10.5	0	100	5.0	4.27	D	3.57	D
217.0	Clay Rd	Jefferson Rd	Strasenburgh Dr	0.40	NB	2	U	13,484	*3*	35	14.5	3.5	0.0	0	4.0	0.0	0.0	0	0	0.0	3.56	D	5.01	E
217.0				0.40	SB	2	U	13,484	*3*	35	13.5	2.5	0.0	0	4.0	0.0	0.0	0	0	0.0	3.90	D	5.09	E
218.0	Strasenburgh Dr	Clay Rd	Marketplace Dr	0.21	EB	2	S	*8,000*	*2*	35	13.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	3.78	D	4.43	D
218.0				0.21	WB	2	S	*8,000*	*2*	35	13.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	3.78	D	4.43	D
219.0	Marketplace Dr	Jefferson Rd	Strasenburgh Dr	0.39	NB	2	S	13,730	*3*	35	13.0	0.0	0.0	0	3.0	-	0.0	0	0	0.0	4.67	E	5.18	E
219.0				0.39	SB	2	S	13,730	*3*	35	12.0	0.0	0.0	0	3.0	-	0.0	0	0	0.0	4.80	E	5.28	E
220.0	Marketplace Dr	Strasenburgh Dr	Clay Rd	0.13	NB	2	S	13,730	*3*	35	13.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.35	D	5.18	E
220.0				0.13	SB	2	S	13,730	*3*	35	12.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.47	D	5.28	E
221.0	Marketplace Dr	Clay Rd	Hylan Drive	0.20	NE	2	S	13,730	*3*	35	13.0	0.0	0.0	0	4.0	-	0.0	0	0	0.0	4.35	D	5.18	E
221.0				0.20	SW	2	S	13,730	*3*	35	12.0	0.0	0.0	0	4.0	-	0.0	0	100	6.5	4.47	D	3.84	D

APPENDIX G

SCHEMATIC COSTS FOR PEDESTRIAN AND BICYCLE INFRASTRUCTURE

Costs for Pedestrian and Bicycle Infrastructure Improvements

Source: Costs for Pedestrian and Bicycle Infrastructure Improvements *(http://www.pedbikeinfo.org/cms/downloads/Countermeasure%20Costs_Report_Nov2013.pdf)*

Infrastructure	Description	Median	Average	Minimum Low	Maximum High	Cost Unit	Number of Sources (Observations)
Bicycle Parking	Bicycle Locker	$2,140	$2,090	$1,280	$2,680	Each	4 (5)
Bicycle Parking	Bicycle Rack	$540	$660	$64	$3,610	Each	19 (21)
Bikeway	Bicycle Lane	$89,470	$133,170	$5,360	$536,680	Mile	6 (6)
Bikeway	Signed Bicycle Route	$27,240	$25,070	$5,360	$64,330	Mile	3 (6)
Bikeway	Signed Bicycle Route with Improvements	$241,230	$239,440	$42,890	$536,070	Mile	1 (6)
Crosswalk	High Visibility Crosswalk	$3,070	$2,540	$600	$5,710	Each	4(4)
Crosswalk	Striped Crosswalk	$340	$770	$110	$2,090	Each	8 (8)
Crosswalk	Striped Crosswalk	$5.87	$8.51	$1.03	$26	Linear Foot	12 (48)
Crosswalk	Striped Crosswalk	$6.32	$7.38	$1.06	$31	Square Foot	5 (15)
Curb/Gutter	Curb	$18	$21	$1.05	$110	Linear Foot	16 (68)
Curb/Gutter	Curb and Gutter	$20	$21	$1.05	$120	Linear Foot	16 (108)
Curb/Gutter	Gutter	$23	$23	$10	$78	Linear Foot	4 (4)
Curb Ramp	Truncated Dome/Detectable Warning	$37	$42	$6.18	$260	Square Foot	9 (15)
Curb Ramp	Wheelchair Ramp	$740	$810	$89	$3,600	Each	16 (31)
Curb Ramp	Wheelchair Ramp	$12	$12	$3.37	$76	Square Foot	10 (43)
Flashing Beacon	Flashing Beacon	$5,170	$10,010	$360	$59,100	Each	16 (25)
Flashing Beacon	RRFB	$14,160	$22,250	$4,520	$52,310	Each	3 (4)
Gateway	Gateway Sign	$350	$340	$130	$520	Each	3 (4)
Island	Median Island	$10,460	$13,520	$2,140	$41,170	Each	17 (19)
Island	Median Island	$9.80	$10	$2.28	$26	Square Foot	6 (15)
Median	Median	$6.00	$7.26	$1.86	$44	Square Foot	9 (30)
Path	Multi-Use Trail - Paved	$261,000	$481,140	$64,710	$4,288,520	Mile	11 (42)
Path	Multi-Use Trail - Unpaved	$83,870	$121,390	$29,520	$412,720	Mile	3 (7)
Pavement Marking	Advance Stop/Yield Line	$380	$320	$77	$570	Each	3 (5)
Pavement Marking	Advance Stop/Yield Line	$10	$10	$4.46	$100	Square Foot	1 (4)
Pavement Marking	Island Marking	$1.49	$1.94	$0.41	$11	Square Foot	1 (4)
Pavement Marking Symbol	Pedestrian Crossing	$310	$360	$240	$1,240	Each	4 (6)
Pavement Marking Symbol	Shared Lane/Bicycle Marking	$160	$180	$22	$600	Each	15 (39)
Pavement Marking Symbol	School Crossing	$520	$470	$100	$1,150	Each	4 (18)
Signal	Audible Pedestrian Signal	$810	$800	$550	$990	Each	4 (4)
Signal	Countdown Timer Module	$600	$740	$190	$1,930	Each	14 (18)
Signal	Pedestrian Signal	$980	$1,480	$130	$10,000	Each	22 (33)
Signal	Signal Face	$490	$430	$130	$800	Each	3 (6)
Signal	Signal Head	$570	$550	$100	$1,450	Each	12 (26)
Signal	Signal Pedestal	$640	$800	$490	$1,160	Each	3 (5)
Pedestrian/Bike Detection	Furnish and Install Pedestrian Detector	$180	$390	$68	$1,330	Each	7 (14)
Pedestrian/Bike Detection	Push Button	$230	$350	$61	$2,510	Each	22 (34)
Raised Crossing	Raised Crosswalk	$7,110	$8,170	$1,290	$30,880	Each	14 (14)
Roundabout/ Traffic Circle	Roundabout/ Traffic Circle	$27,190	$85,370	$5,000	$523,080	Each	11 (14)
Sidewalk	Asphalt Paved Shoulder	$5.81	$5.56	$2.96	$7.65	Square Foot	1 (4)
Sidewalk	Asphalt Sidewalk	$16	$35	$6.02	$150	Linear Foot	7 (11)
Sidewalk	Concrete Sidewalk	$27	$32	$2.09	$410	Linear Foot	46 (164)
Sidewalk	Concrete Sidewalk - Patterned	$38	$36	$11	$170	Linear Foot	4 (5)
Sidewalk	Concrete Sidewalk - Stamped	$45	$45	$4.66	$160	Linear Foot	12 (17)
Sidewalk	Concrete Sidewalk + Curb	$170	$150	$23	$230	Linear Foot	4 (7)
Sidewalk	Sidewalk	$34	$45	$14	$150	Linear Foot	17 (24)
Sign	Stop/Yield Signs	$220	$300	$210	$560	Each	4 (4)
Speed Bump/Hump	Speed Table	$2,090	$2,400	$2,000	$4,180	Each	5 (5)
Street Furniture	Street Trees	$460	$430	$54	$940	Each	7(7)
Street Furniture	Bench	$1,660	$1,550	$220	$5,750	Each	15 (17)
Street Furniture	Bus Shelter	$11,490	$11,560	$5,230	$41,850	Each	4 (4)

Note: Costs for Pedestrian and Bicycle Infrastructure Improvements is for conceptual budgetting purposes only. Unit costs should be checked prior to estimating.

NYSDOT Quick Estimator Reference - Calculations - Upstate

Item	Unit	Unit Price	Included NYSDOT item numbers	Breakdown	Note
4' wide sidewalk	LF	33.00	608.0101 - CONCRETE SIDEWALKS AND DRIVEWAYS 203.02 - UNCLASSIFIED EXCAVATION AND DISPOSAL 304.12 - SUBBASE COURSE TYPE II	ITEM 608.0101 **$23/LF** ITEM 203.02 **$5/LF** ITEM 304.12 **$5/LF**	Includes excavation, disposal, subbase material, compaction, construction of sidewalk and finish work. Does not include, sawcutting driveways, excavation to additional depth for driveways, curbing, grading, or turf establishment.
5' wide sidewalk	LF	39.00	608.0101 - CONCRETE SIDEWALKS AND DRIVEWAYS 203.02 - UNCLASSIFIED EXCAVATION AND DISPOSAL 304.12 - SUBBASE COURSE TYPE II	ITEM 608.0101 **$27/LF** ITEM 203.02 **$6/LF** ITEM 304.12 **$6/LF**	Includes excavation, disposal, subbase material, compaction, construction of sidewalk and finish work. Does not include, sawcutting driveways, excavation to additional depth for driveways, curbing, grading, or turf establishment.
10' multiuse asphalt path	LF	74.00	608.020102 - HMA SIDEWALKS DRIVEWAYS AND BICYCLE PATHS	ITEM 608. 020102 **$74/LF**	Includes all prep of subgrade, sawcutting and tack coat. Doesn't include curbing, grading or turf establishment. NOTE: Prices have been volatile over the past 3 years.
ADA curb ramp	EA	1,250.00	608.0105nn15 - CONCRETE SIDEWALKS AND DRIVEWAYS	ITEM 608.0105nn15 **$1250/ EA**	Includes site survey, demolition, saw cutting, excavation, disposal, fill, subbase material, compaction, construction of ramp, landings and associated curbing, detectable warning units, repairs to affected asphaltm topsoil, establishing turf (to disturbed areas), and finish work. NOTE: Limited price history data in PIC: Ramp Types 1-13 not all reported .
LS Type crosswalk	EA	770.00	685.04 - WHITE EPOXY REFLECTORIZED PAVEMENT SYMBOLS - 15 MILS 635.0103-CLEANING AND PREPARATION OF PAVEMENT SURFACES	ITEM 685.04 **$0.42/LF** ITEM 635.0103 **$0.68/LF**	Assume 700 LF of 4" striping per crosswalk
Concrete Curbing	LF	53.00	609.04 CAST IN PLACE CONCRETE CURB 520.5014--08 SAW CUTTING (EDGE OF PAVEMENT PARALLEL TO CURB) 203.02 - UNCLASSIFIED EXCAVATION AND DISPOSAL 203.03 - EMBANKMENT IN PLACE 304.12 -SUBBASE TYPE II 402.128102 - TOP COURSE 503.1010 - FOUNDATION CONCRETE	ITEM 609.04 **$ 32/LF** ITEM 520.5014--08 **$ 4/LF** ITEM 203.02 **$ 5/LF** ITEM 203.03 **$ 0.60/LF** ITEM 304.12 **$6 /LF** ITEM 402.128102 **$ 3.8 /LF** ITEM 503.1010 **$7.2/LF**	Includes excavation for curb, subbase, removing asphalt from existing roadway adjacen to proposed curb, patching asphalt adjacent to curb.
Asphalt Paved Snow Storage Area	SF	8.00	608.020102 - HMA SIDEWALKS DRIVEWAYS AND VEGETATION CONTROL STRIPS	ITEM 608.020102 **8/SF**	
Raised crosswalk	EA	15,000.00			
Mini roundabout	EA	175,000.00			
Small Single Post-Mounted Signs	EA	130.00	645.5201 or 645.5202 - GROUND MOUNTED SIGN PANELS 645.81 or 645.830502 - SIGN POST	ITEM 645.52xx **$ 30/EA** ITEM 645.8* **$ 100/EA**	Includes the cost of excavation and backfill and furnishing all labor, materials, and equipment necessary to complete the work
Solar powered radar speed sign	EA	7,000.00	645.80000001		Limited price data
Wooden Bollard - Fixed	EA	200.00	615.75 - TIMBER BOLLARDS FIXED	ITEM 615.75 **$ 200/EA**	Includes the cost of excavation and backfill and furnishing all labor, materials, and equipment necessary to complete the work
Wooden Bollard - Moveable	EA	500.00	615.76 TIMBER BOLLARDS MOVEABLE	ITEM 615.76 **$ 500/EA**	Includes the cost of excavation and backfill and furnishing all labor, materials, and equipment necessary to complete the work
Pedestrian push button on existing signal	EA	2,005.00	680.520108 - CONDUIT, METAL STEEL, ZINC COATED, 3 NPS 680.8142- PEDESTRIAN SIGNAL POST TOP MOUNTED ASSEMBLY 680.8225--10 PEDESTRIAN PUSHBUTTON AND SIGN-WITHOUT POST 680.730514 - SIGNAL CABLE, 5 CONDUCTOR, 14 AWG 680.8131 AUDIBLE PEDESTRIAN SIGNAL 680.813103 PEDESTRIAN SIGNAL SECTION, TYPE I, 1 ft 680.813104 INSTALL LED PEDESTRIAN SIGNAL MODULE	ITEM 680.520108 **$ 600/EA** ITEM 680.8142 **$150 /EA** ITEM 680.8225--10 **$190/EA** ITEM 680.730514 **$200 /EA** ITEM 680.8131 **$ 650/EA** ITEM 680.813103 **$ 165/EA** ITEM 680.813104 **$ 50/EA**	Includes demolition, saw cutting, excavation, disposal, fill, topsoil, establishing turf (to disturbed areas), repairs to affected asphalt and/or concrete as necessary, Pedestrian Signal Systems and components, (removed and or supplied / installed), Pedestrian Signal Systems wiring (removed and or supplied / installed), furnishing electrical service, finish work, and any required adjustments to utilities.
New signal with ped push buttons	EA	6,580.00	680.510501- PULLBOX, RECTANGULAR 680.520108 - CONDUIT, METAL STEEL, ZINC COATED, 3 NPS 680.8142- PEDESTRIAN SIGNAL POST TOP MOUNTED ASSEMBLY 680.8225--10 PEDESTRIAN PUSHBUTTON AND SIGN-WITHOUT POST 680.730514 - SIGNAL CABLE, 5 CONDUCTOR, 14 AWG 206.03 - CONDUIT EXCAVATION AND BACKFILL, INCLUDING SURFACE RESTORATION 680.6724-TRAFFIC SIGNAL POLE-TOP MOUNTED 8FT HIGH 680.8131 AUDIBLE PEDESTRIAN SIGNAL 680.813103 PEDESTRIAN SIGNAL SECTION, TYPE I, 1 ft 680.813104 INSTALL LED PEDESTRIAN SIGNAL MODULE	ITEM 680.510501 **$ 1100/EA** ITEM 680.520108 **$ 600/EA** ITEM 680.8142 **$ 150/EA** ITEM 680.8225--10 **$190/EA** ITEM 680.730514 **$ 200/EA** ITEM 206.03 **$ 2500/EA** ITEM 680.6724 **$ 975/EA** ITEM 680.8131 **$650 /EA** ITEM 680.813103 **$ 165/EA** ITEM 680.813104 **$ 50/EA**	Includes demolition, saw cutting, excavation, disposal, fill, topsoil, establishing turf (to disturbed areas), repairs to affected asphalt and/or concrete as necessary, Traffic Signal Systems, and components (removed and or supplied / installed), Traffic Signal Systems wiring, including vehicle detection (removed and or supplied / installed), furnishing electrical service, finish work, and any required adjustments to utilities.
Establish turf	SY	4.75	613.03-TOPSOIL- TYPE B 610.0203-ESTABLISH TURF	ITEM 613.03 **$ 4/SY** ITEM 610.0203 **$ 0.75/SY**	Assume 3" topsoil depth
Segmental block retaining wall	SF	40.00			Include the cost of furnishing the leveling pad, segmental precast concrete block units, backfill, unit fill, cap units, underdrain and geotextile and all labor,materials, and equipment necessary to satisfactorily complete the work. Does NOT include excavation. Very limited price data.
Alter Drainage Structure	EA	1,000.00			Ajust elevation of structure, alter structure to accept pipe.
% WZTC based on project complexity	5%	Percentage			
% for Incidentals, Inflation and Contingencies	20%	Percentage			
Total Construction Cost =					
% for Survey	10%	Percentage			
% for Design based on project complexity	5-15%	Percentage			
% for Construction Inspection	9%	Percentage			
Total Project Cost =					

Note: NYSDOT Quick Estimator Reference is for conceptual budgetting purposes only. Unit costs should be checked prior to estimating. Last updated: 06/11/2012

APPENDIX H

RIT ACTIVE TRANSPORTATION WHITE PAPER (JON SCHULL)

To: Bill Destler, President, RIT
From: Jon Schull, interim Director, Center for Student Innovation
Date: August 21, 2010

Dear Bill,

Last January you asked me to help "plan [bicycle] connections to off-campus apartment complexes and the two Greenway trails."

We now have some recommendations that could put RIT, UR, and downtown Rochester on a scenic and functional 6-mile "linear park" that would link the Genesee Valley Greenway to the Rochester Greenway. This would make Global Village and Park Point more attractive destinations, bolster property values, and increase quality of life for the neighborhood, on campus and off. It could also catalyze an alternative transportation network--*for pedestrians, joggers, and wheelchair users as well as cyclists*--that would benefit the Institute, the region, and the planet.

There are internal and external issues yet to explore, but prospects are good, and students, faculty, and collaborators on and off campus are pursuing them vigorously. ***So it would be a good time for you to provide guidance, cautions, and assistance.***

This whitepaper will provide background for the following ***recommendations***.

- ***Seek DEC and other permissions for River Meadow Crossing, Park Point promenade, and to explore a possible Marsh to Malls Nature Trail.***
- ***Reach out to Reidman Associates, real estate developers at River Meadow Crossing (perhaps via a Riedman family member on our Board of Trustees).***
- ***Help ensure that ongoing construction creates and preserves options for active transportation behind The Province.***
- ***Endorse and participate in "Town/Gown" discussions with UR, MCC, Brighton, Henrietta, and the City of Rochester regarding the development of inter-campus bikeways.***
- ***Endorse the Greater Rochester Active Transportation System brochure.***
- ***Endorse HR4722, the Active Community Transportation Act and help persuade our congressional representatives to co-sponsor it.***
- ***Make 2010-2011 RIT's Year of Active Transportation, celebrating (among other things) emerging on-campus bikeways and cross-country ski paths, and stimulating support for inter-campus bikeways.***

Glossary of Names and Acronyms

CSI Center for Student Innovation

DEC New York State Department of Environmental Conservation

RCA Rochester Cycling Alliance

NYSDOT New York State Department of Transportation

GTC Genesee Transportation Council

Scott Jones, Region 8 Department of Environmental Conservation

David Armanini, RIT's liaison to DEC

Steve Macintrye, Engineering Inspector, Henrietta Township

David Reidman, real estate developer at River Meadow Crossing

Brian Slack, Genesee/Finger Lakes Regional Planning Council's

Tom Robinson, trail planning consultant to RIT, UR, the City, and Brighton

Carl Lundgren, CSI Lead Faculty

Amanda Pardee, RIT Student Environmental Action League

Peter Robinson, VP and COO of Strong Medical Center and Strong Health

Scott Macrae, M.D. UR refractive surgeon, and RCA leader.

Sandra Frankel, Brighton Town Supervisor

Connecting the Genesee Valley Greenway with the "Rochester Greenway"

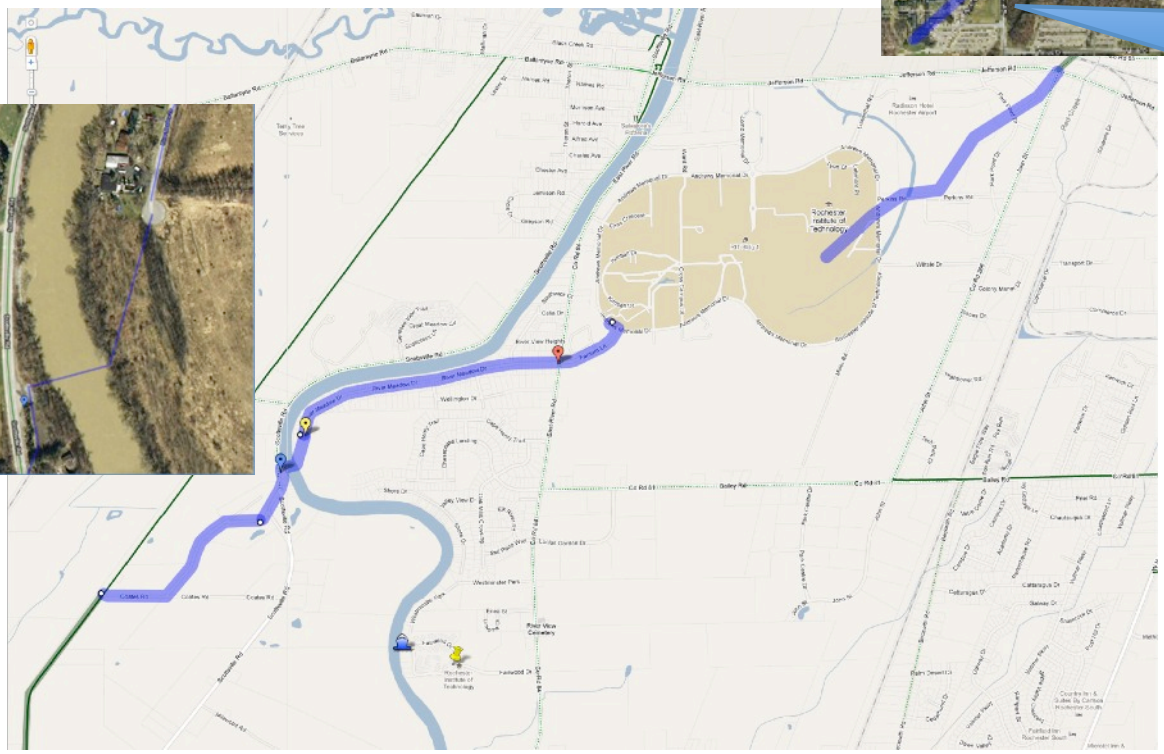
This whitepaper focuses first on our neck of the woods and our immediate opportunity to do well by doing good. Then we broaden our perspective to show how RIT's leadership could help achieve a healthier, sustainable future.

The "RIT Tweenway" would build on existing assets to creating two scenic bikeways: "River Meadow Crossing" and "Park Point Promenade wodl linkthe Genesee Valley Greenway to the south with the Lehigh Valley North Trail to the north.

River Meadow Crossing would connect Farnum Lane with the Genesee Valley Greenway by way of River Meadow Drive.

Park Point Promenade would let dorm and apartment residents walk or bike from campus and Perkins Lane to Park Point without trekking on Jefferson or John St..
Park Point would then become a gateway to downtown, U of R, and MCC via the "Rochester Greenway".

Park Point Promenade



River Meadow Crossing

"River Meadow Crossing (RMC)
is mapped here and discussed here.

It would create a low-traffic, tree lined route...

- from Farnum Lane
- across East River Dr
- down River Meadow Dr...
- ...to the end...
- across the river (*bridge needed!*)
- across Scottsville Rd
- down the road to the Genesee Valley Greenway (GVG)

Here are the most significant issues to address next.

- **Permissions and cooperation.**
  - DEC permissions. **Scott Jones** of the Region 8 DEC has offered to facilitate a meeting with relevant DEC officials and with the Corps of Engineers. David Armanini is RIT's official liaison to DEC and is eager to help. ***We request your authorization.***

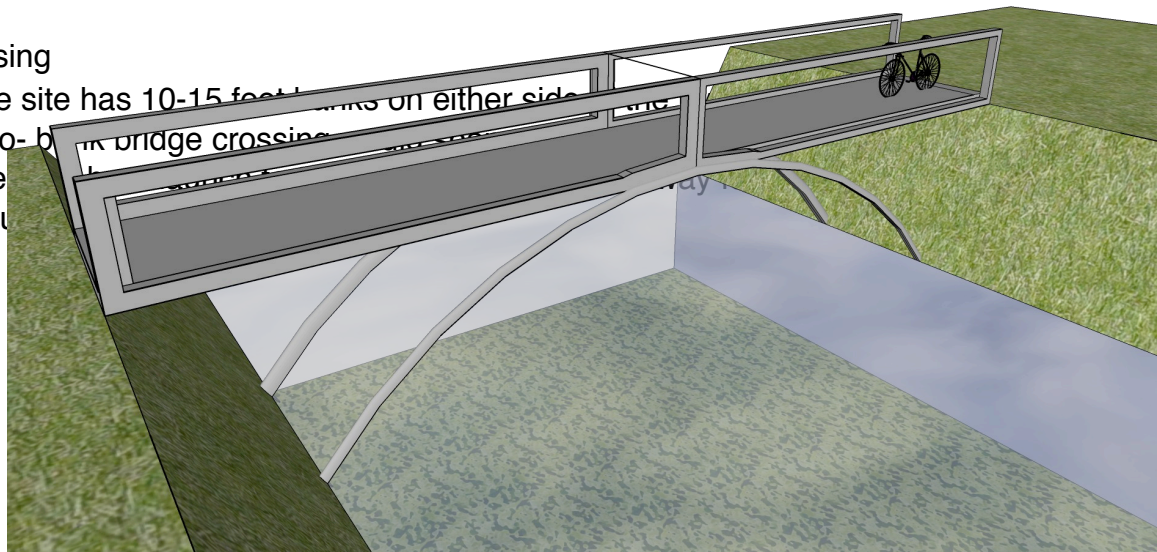
  - **Steve Macintyre**, Engineering Inspector at Henrietta Township is supportive of this plan and has forwarded it to the township Planning Board and to real estate developer **David Riedman** who owns the land adjacent to the crossing.

  - River Meadow Rd currently terminates at an open field that Riedman Associates is turning into a pond and nature preserve in connection with some new home development. ***We need help engaging Mr. Riedman who has not yet responded to voicemail or a proposal forwarded by Steve Macintyre, Engineering Inspector at Henrietta Township. Marge Bricks tells me a member of the Riedman family is an RIT alum and trustee.***

  - At the west side of the crossing is an asphalted turn-around that used to be a water testing facility owned by New York State. A residential lane angles conveniently from there to Coates Road and the Genessee Valley Greenway. **Brian Slack**, author of the Genesee/Finger Lakes Regional Planning Council's recent Blueway Analysis Report will help us assess zoning and ownership issues when he returns from a trip at the end of July. (Blueways are multi-use recreational waterways, analogous to greenways.)

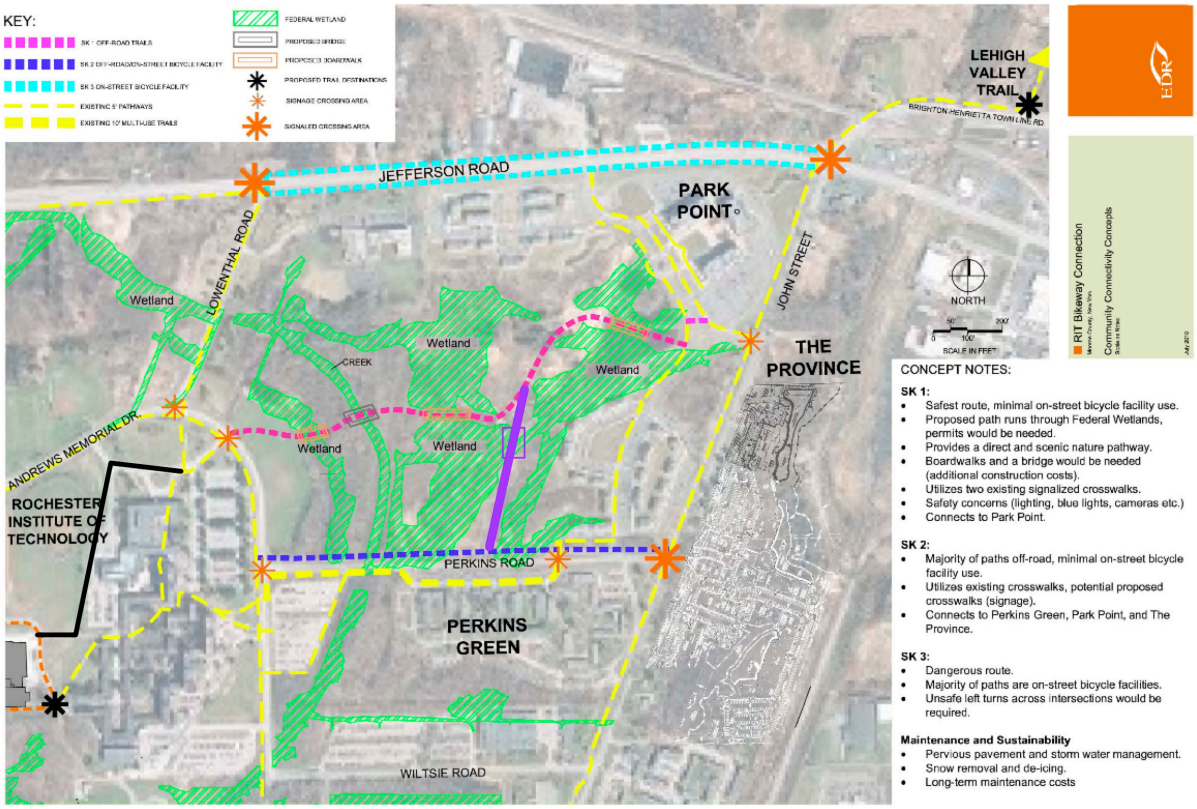
  - Using existing and planned low-traffic lanes and utility roads, it should be relatively easy to create bikeways from **River Run and RIT's Gosnell Boat House** to both River Meadow Crossing, and to RIT

- The Crossing
  - The site has 10-15 feet [illegible] on either side [illegible] bank-to-b[illegible] bridge crossing [illegible] rudime[illegible] opportu[illegible]



Park Point Promenade

- The northeast corner of campus is the gateway to Park Point, the Dorms, The Province, and the Lehigh Valley North Branch Trail to UofR and downtown Rochester. Current by-ways are well-designed for driving and parking, not walking or biking. ***We can establish scenic, direct, and traffic-free biking and walking routes from the dorms and Perkins Green to Park Point. Tom Robinson,*** one of the architects involved with our on-campus bikeway sketched some possible paths (below left; I added the solid purple line, which might be the most beneficial single-improvement option.) Robinson has designed and implement other DEC-approved board-walk style multi-use wetland trails.

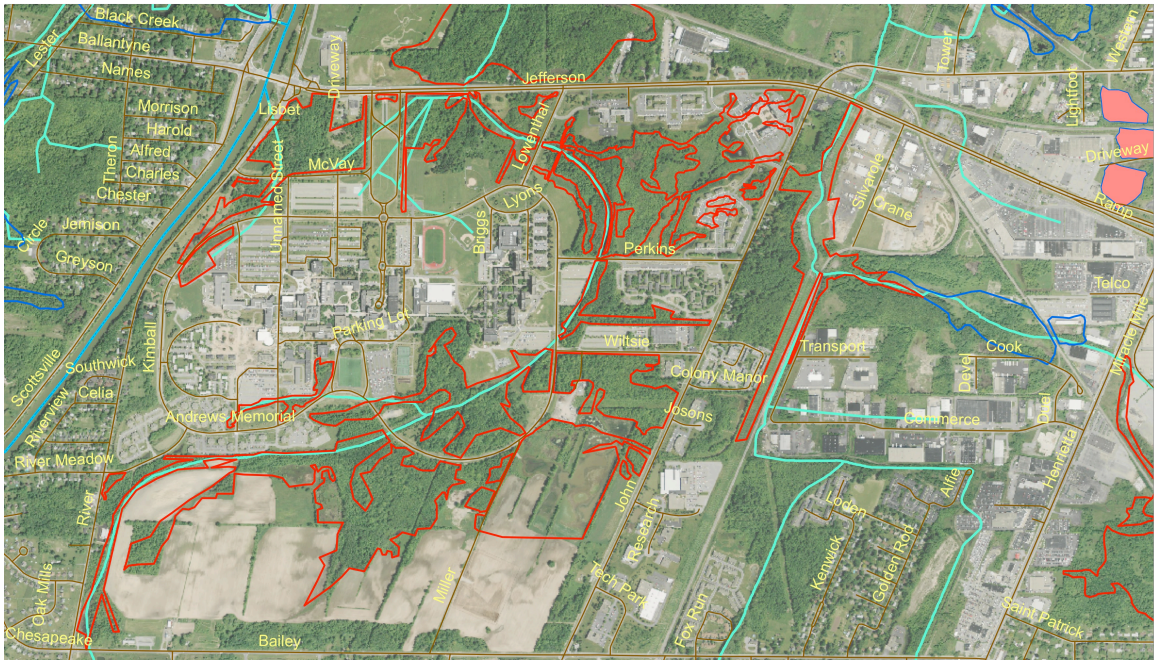


North of Park point, the current route to the Lehigh Valley North Branch Trail is via Brighton Henrietta Town Line Rd. This is is an acceptable and already-marked trail**, but RIT-owned property directly across Jefferson Avenue from Park Point might make a more scenic and appealing connection**.

We're investigating.

Key Issues to address next.

- Permissions. These trails traverse wetlands protected by the DEC. **Scott Jones** tells me that trails through these wetlands were near approval when Wilmorite took over Park Point. He provided the map below, and indicated that he thought pedestrian and bike trails could be approved.
  We seek your authorization for permitting requests.

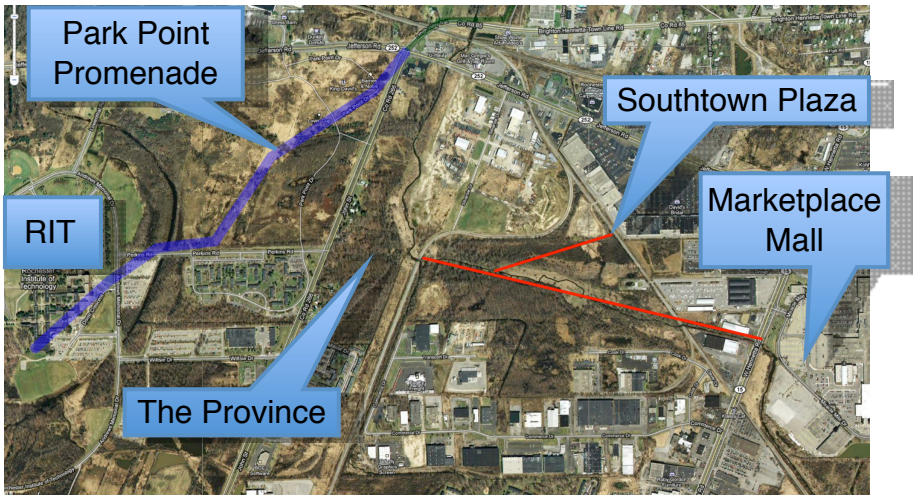


A possible Marsh-to-Malls Nature Trail

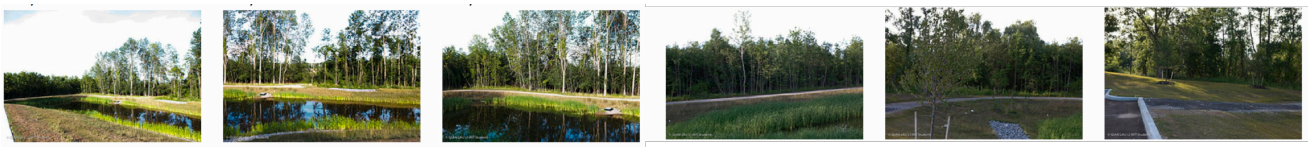
One of the students working on this project (**Amanda Pardee** of the Student Environmental Action League) points out that there are potential nature trails and bikeways from The Province to the Market Place Mall(!). She writes,

> By starting from within, and reaching out to the immediate community, RIT can begin to spread its message and philosophy. The Province, Park Point, the RIT residence halls, and Colony Manor house a huge portion of RIT's students. Currently, the majority of destinations ideal for students off of campus are more conveniently gotten to by car. Jefferson Rd is a very busy road and the sidewalks in many places are virtually non-existent. If RIT were to invest in a path from John Street to Market Place Mall, somewhat parallel to Jefferson Road, the RIT campus community would have the privilege of being have the most efficient and clean means of transportation to major areas of interest.

Preliminary investigation suggests that much of the land behind The Province is owned by Rokel Development. **Scott Jones** (DEC) tells me landowners may be amenable because their development options are limited.



There is already a lovely North-South trail and pond along the eastern boundary of The Province.

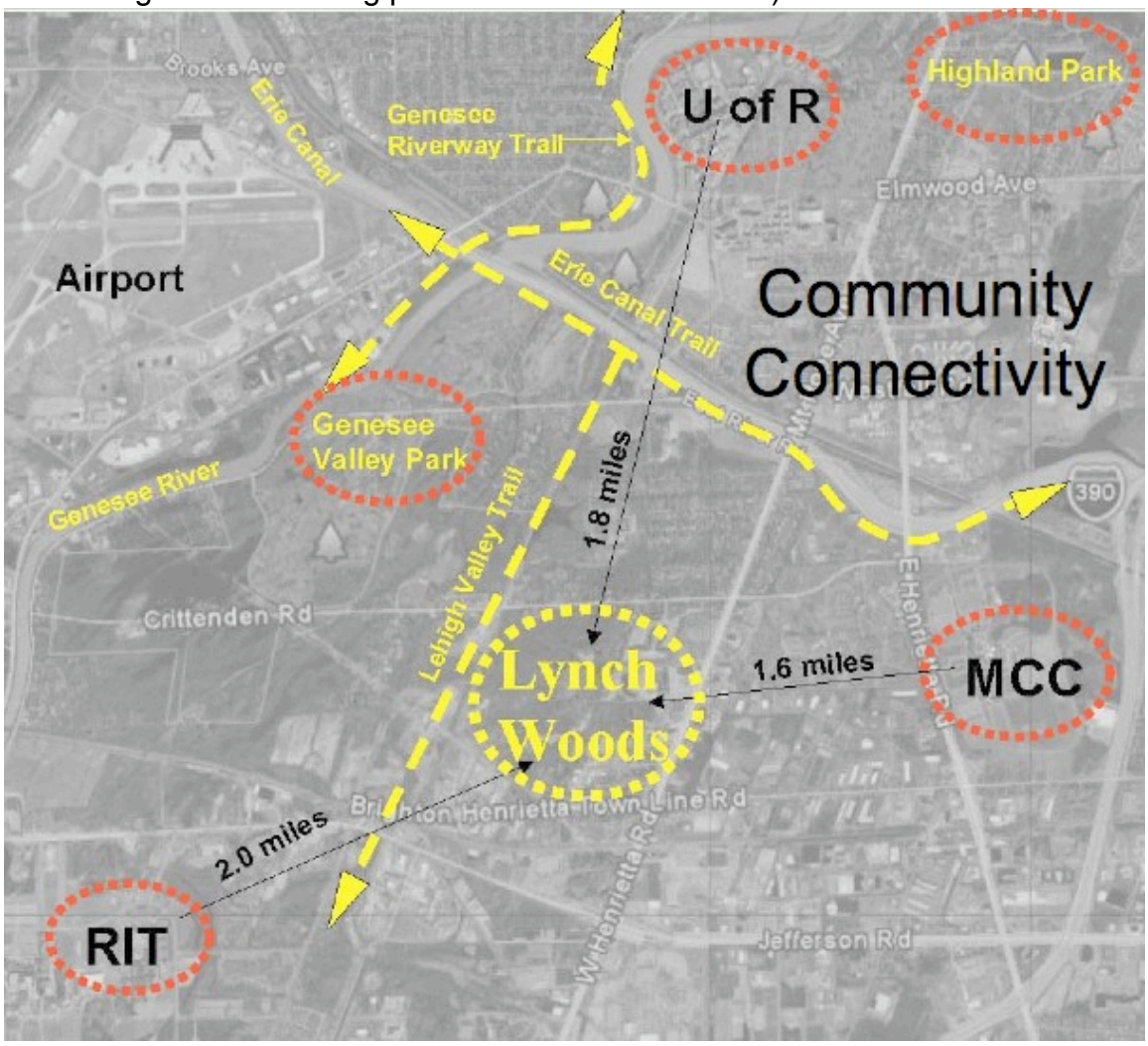


The surface is too rough for biking, but it is still under construction.

This path should be made bike-friendly while construction is underway, for ways of preserving active transportation options.

Local Connections to the Rochester Greenway, UR, and MCC

North of Park Point, the the Lehigh Valley Trail crosses the Erie Canal and divides Genesee Valley Park from Brighton-owned parkland known as Lynch Woods, now under development with **Tom Robinson's** assistance. (Lynch Woods is roughly equidistant from UR, MCC, and RIT, and could become an interchange and a meeting place for the three schools.)



Peter Robinson (VP and COO of Strong Medical Center and Strong Health) has expressed enthusiasm in augmenting bikeable connections between our two campuses. NYSDOT has just written a TIGER grant application to improve the bridge that connects the northern end of the Lehigh Valley North Branch to UofR's Intercampus Drive. They solicited letters of support from RIT, UR, Brighton, and the Rochester Cycling Alliance (RCA).

With RIT (hopefully) enhancing the Southern end of the North Branch and Brighton developing Lynch Woods to the East, it is a perfect time to smooth a few rough spots in the middle and declare the Rochester Greenway a reality. ***As explained in the next section, it's time to get all parties to the table.***

Metropolitan connections

Since organizing last October's Rochester Cycling Summit, the Center for Student Innovation has become a regional thought leader in sustainable and active transportation. We helped found the Rochester Cycling Alliance (RCA), hosted the RCA's meetings, and the May 8 Sustainable Mobility Fair on May 8, and demonstrated some radical bicycle designs at ImagineRIT. I served on the City's citizen advisory board for Erie Harbor Park, and serve as an alternate on the City of Rochester's Bicycle Master Plan Advisory Committee.

The City's Bicycle Master Plan is bounded by the city limits, and it is focusing on on-street paths. However, the region's bicycle and pedestrian byways are not multi-modal and transcend the city limits. This creates a pressing opportunity to help neighboring municipalities and institutions develop plans that will complement and shape the City's deliberations. My RCA colleagues and I have been meeting officials of Monroe County, the Genesee Transportation Council (GTC), the Finger Lakes Planning Council, and the New York State Dept. of Transportation (NYSDOT), and the Brighton Town Supervisor Sandy Frankel to encourage planning that can complement the City's deliberations. Several promising developments have already ensued.

- Frankel is interested in contracting with the CSI for help with Brighton's Bicycle Planning process.

- With support and enthusiasm from Monroe County Health Director **Andrew Doneger,** and county planner **Rochelle Bell**, the GTC may sponsor a regional bicycle planning workshop in April or May.

- When it approved the Mortimer Street Bus Station in downtown Rochester, City Council stipulated that the facility accommodate bicyclists.

To help focus these activites, we are now promoting the concept of a Greater Rochester Active Transportation System (GRATS) ***and seek RIT's endorsement and logo to add to the brochure on the next page.***

Greater Rochester
Active Transportation System

Efficient, affordable, ecological, accessible, healthy transportation alternatives for humans.

Rochester has an enviable network of bikeable and walkable trails and boulevards that connect neighborhoods, campuses, and natural attractions.

Connect the dots and fill a few gaps, and give Rochesterians, visitors and businesses new options for local travel, regional recreation, and economic development.

With intermodal links to bus stations, train stations, waterways and airports, GRATS gives us a sustainable transportation system.

Over half of our trips are under 5 Miles.

Why not bike?

Why not walk?

HELP MAKE GRATS A REALITY.

Greater
Rochester
Active
Transportation
System

ROCHESTER CYCLING ALLIANCE

www.rochestercyclingalliance.org
jon.schull@rit.edu

CEI Center for Environmental Information

RochesterEnvironment.com

R·I·T Center For Student Innovation innovation.rit.edu

Major car-free greenways follow our waterways.
Low traffic, family-friendly bicycle boulevards put major destinations within biking distance.

Major Features

Car-Free trails and low-traffic bicycle boulevards:

Genesee Riverway Trail
Lehigh North Trail
Genesee Valley Greenway
U of R Intercampus Drive
El Camino
What's in your neighborhood?

Destinations for work and play:

Downtown Rochester
University of Rochester
Rochester Institute of Technology
Public Market
Art Walk / University Avenue
Seneca Park Zoo
Upper Falls
Blue Cross Arena
Frontier Field
Lake Ontario
Turning Point Park
Museums, Restaurants, Parks, Hotels

Call to Action:

Endorse GRATS!

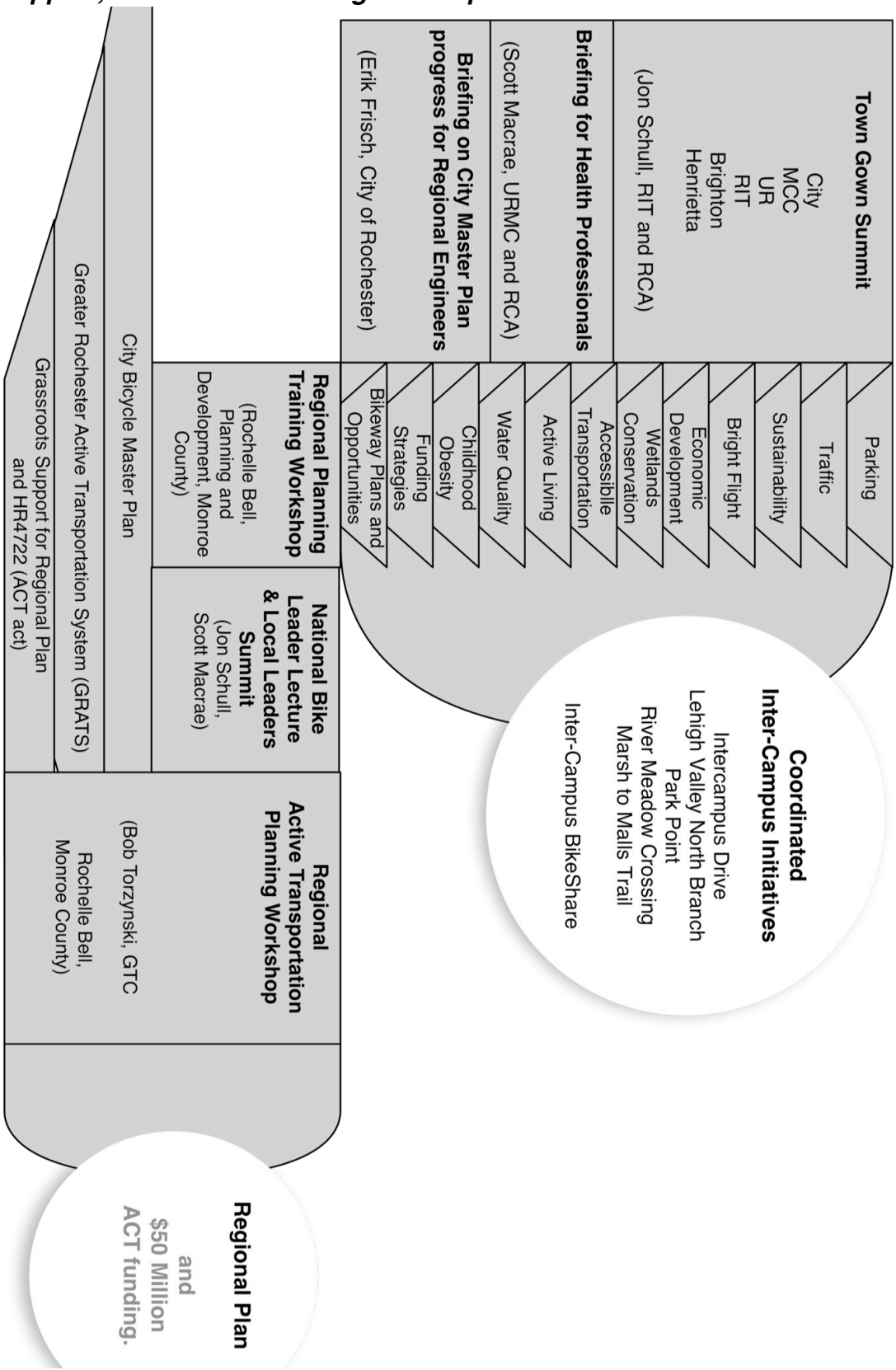
Identify, mark, or create bike-friendly critical routes.

Resurface a few trails, polish a few intersections,
Connect critical links.
-- Lehigh Valley Trail to the Genessee Valley Greenway
-- Erie Harbor Park to High Falls

Put racks, lockers and showers at strategic destinations.

Celebrate and publicize our regional resources!

An action plan is thus developing which could, ***with RIT leadership and support, have substantial regional impact.***



Three preliminary meetings in September-October would identify local and regional challenges and opportunities that can be addressed by developing active transportation alternatives.

- **A Town Gown Summit**, organized by **RIT and the CSI**, aimed at coordinating active transportation initiatives spanning the three campuse and the Town of Brighton. Town Supervisor Sandy Frankel has agreed to support this initiative. ***We seek RIT endorsement at this time.***

- **A Briefing for Health Professionals, organized by Scott Macrae** to raise professional awareness and garner support for active transportation initatives that can address numerous health issues.

- **A Briefing for Regional Engineers** on the City of Rochester's developing Bicycle Master Plan, that will allow them to anticipate and coordinate emerging connectivity options.

Each of these meetings would in turn inform a February

- **County-sponsored Training workshop** for regional planners in the winter that will show the remarkable convergence of challenges for which regional active transportation planning is a solution.

In the winter, RIT and UofR would also co-sponsor

- **a lecture by a visiting national Bike leader** (Cong. Earl Blumeauer, Cong. Jim Oberstar, or the Mayors of Minneapolis or Madison)

- **a Local Leaders Roundtable** with our guest, that will educate leaders of municipalities, universities, and organizations about extraordinary near term funding opportunities and long-term economic benefits that would come from development of a regional active transportation plan.

In parallel with all of this, bicycle advocates would be seeking endorsements for GRATS as a way of building grassroots support for a regional cooperation on a regional plan the consensus for which would hopefully be the outcome of a March-April

- **GTC-sponsored Regional Active Transportation Planning Workshop**.

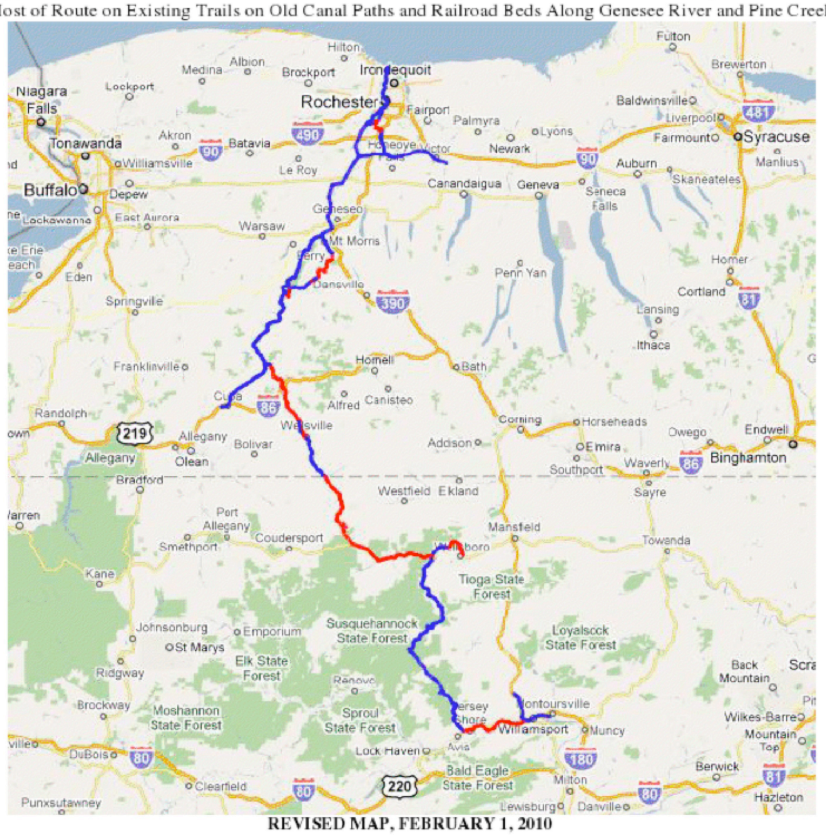
RIT students will have a unique opportunity to participate in all of these activities, through Fall and Winter quarter courses that will help organize and monitor these socio-political activities. The students will also study trail-creation activities so prominent on our campus this Fall, and help with conceptual planning and prototyping of the proposed Park Point trail. The course is being organized by the CSI and the Center for Multi-Disciplinary Studies, and would be taught by landscape architect ***Tom Robinson****.*

Regional Connections

RIT's near-campus initiatives would not only develop a greater Rochester active transportation system, they would also help build the propossed Triple Divide Trail System now getting serious attention from trail planners in both NY and PA. As reported in RochesterEnvironment.com,

> "An official in the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) in Albany recently stated that the proposal for a greenway trail stretching ca. 230 miles from Rochester, NY, to Williamsport, PA, along the Genesee River and Pine Creek will be incorporated into the next draft of the statewide master plan for recreational trail development in New York State. This complements similar developments in Pennsylvania, where this proposed trail system has already entered into state, regional, and county planning efforts. Officials in the NYSOPRHP office in Albany are already in dialogue with their counterparts in the Pennsylvania Department of Conservation and Natural Resources (PA DCNR) in Harrisburg. Both agencies were attracted to this proposal because of its massive scale and the connections that it establishes between recreational systems in two states. Developing the trail system now enters a new phase because it has finally achieved the status of a broad interstate planning goal formally supported by the relevant agencies in two states. Given that many sections of this trail system are already completed or currently being developed, this adds increased momentum for further progress in this trail system."

Rochester to Williamsport Greenway
(Lake Ontario to Chesapeake Bay Trail and Waterway System, Northern Section)
Economic Revitalization by Integrating Biking Trails, Flood Control, and Waterway Conservation
Approx. distance from Lake Ontario to connection with Susquehanna River Trail in Williamsport, 230 Miles
Most of Route on Existing Trails on Old Canal Paths and Railroad Beds Along Genesee River and Pine Creek



REVISED MAP, FEBRUARY 1, 2010

Blue: Existing trails (completed or under development), including Genesee Valley Greenway (NY), Park Road in Letchworth State Park (NY), WAG Trail (trail on Wellsville-Addison-Galeton Railroad bed, from Wellsville, NY, to NY/PA state line), Pine Creek Trail (PA), Lycoming County Trail and Bikeway (PA).

Red: Planned linking trails (currently requires temporary detours onto roads): Out of ca. 110 miles on NY side, only missing 20 miles between Belfast and Wellsville in Allegany County, NY. Out of ca. 120 miles on PA side, only missing ca. 40 miles from NY/PA state line through Potter County and Tioga County, PA, to the Pine Creek Trail and ca. 15 miles from southern end of Pine Creek Trail to Lycoming County Trail and Bikeway in Williamsport.

Revised with aid of state agencies, regional and county planning commissions, academic institutions, and other groups in NY and PA.

National Connections

Federal Transportation Secretary Ray Lahood has become a serious advocate for a US Bicycle Route System.

> This system will connect urban, suburban, and rural areas. And it will lead to stronger regional connections as neighboring states coordinate their trails into routes. ... It will facilitate travel between communities and to historic and cultural landmarks. It will give people living in more rural areas a way to travel into a nearby urban area by bicycle. Urban and suburban residents will have better access to rural recreation areas. And--like our interstate highway system--it will facilitate long-distance travel by bicycle, whether across one's state or across the country.
>
> The USBRS will generate economic activity, reduce greenhouse gas emissions, and promote a healthier America. And because bicycle infrastructure is relatively inexpensive, the USBRS can achieve these benefits cost-effectively. It's a win for states, a win for local communities, and a win for America.

If HR 4722, the Active Community Transportation Act of 2010 becomes law, 40 American Cities will receive $50 million dollars *each* for the development of bicycle infrastructures. We are currently working with the GTC and the Rails to Trails Conservancy to submit a case statement for Rochester. The initiatives outlined here would strengthen our case, and help establish RIT as thought leaders who can also bring home the bacon.

We recommend that RIT should endorse and help lobby for HR4722.

RIT, Rochester, Earth.

This whitepaper focuses on an immediate geo-political opportunity in our region, but the initiative is clearly part of a national and global trend. There is an active sustainable transportation revolution underway worldwide, and the wave is sweeping across American cities right now. In June, bicycle lanes were inaugurated on Pennsylvania Avenue. In April, Denver launched the nation's first full-scale bikeshare program. In two years, New York put 200 miles of bikeways on the ground.

RIT can help advance this important movement and burnish our reputation for sustainability and innovation. Our geography, demographics and climate make us a particularly attractive laboratory for the exploration of winterized bikeways dedicated to human- and electric-powered ultralight vehicles. Our greenways are also recreational waterways, sourced by watersheds imperiled by the possibility of hydrofracking. We are in a good position to frame the debate and help evaluate alternative regional development models.

2010-2011 The Year of Active Transportation.

CSI's Faculty Lead Carl Lundgren suggests that the converging opportunities here are so promising we should **declare academic year 2010-11 RIT's "Year of Active Transportation"** and roll out a number of curricular and extra-curricular initiatives that would become major themes for CSI and ImagineRIT 2011 (see Appendix).

- Sponsor bridge design and bike design competitions.
- Develop cross country ski trails to set the stage for summer bike trails
- Establish a bike repair and refurbishing, facility at Global Village. (Global Village managers Patty Spinelli and Mary Niedermaier point out that the bicycle trade might well compensate for reduced student populations in the summer.)
- Develop a grassroots bikeshare system based on refurbished bicycles along lines proposed by one of our FYE innovators in the innovation center this past Spring.
- Participate in all of the activities described above.

Your help tying the initiatives outlined in this whitepaper to other strategic initiatives at RIT such as the Golisano Institute of Sustainability and the new Architecture Program would be greatly appreciated.

Appendix

Center for Student Innovation
2010-2011 Academic Year

The CSI is becoming an integral part of RIT. After a full year of operation the Center has begun to be recognized by students and faculty as both a physical facility for innovation activities and a virtual hub that supports and facilitates innovation activities elsewhere. The next step is to construct a plan with measurable goals for the coming academic year and a vision going forward. In a real way the campus has tipped toward the CSI with the opening of Global Village. But also in other ways, the collocation of entrepreneurial and prototyping facilities close by both the CSI and student residential areas has physically embedded innovation in daily student life and the CSI is at the heart.

Fundamentally, the mission of the CSI is nourishing student creative activities, supporting ideas springing from students but also creating innovation opportunities from initiatives sponsored by the CSI. Common exploration of possible solutions to problems provides an opportunity to engage many more students and subsequently celebrating their technical or whimsical solutions further empowers students to pursue novel innovations. It is proposed that the CSI establish an annual theme (actually this is an original charge) collaborating with ImagineRIT. With the campus renovations for people movement, the increasing interest in alternative energy and virtually all things “green”; an overall theme of “human scale power” is proposed for 2010-2011. In addition quarterly design challenges around that theme will focus interest in the Center and provide an opportunity for incorporation into academic programming.

Without the support of diverse faculty and staff from around the University the CSI might be a significant, but much diminished, contributor to innovation initiatives around the campus. With the CSI collaborating with innovation activities around RIT, the CSI may fully achieve leadership in the University’s efforts. There are two additional constituencies to engage in Center activities; the alumni and the greater community. The CSI should provide leadership and mechanisms to achieve those connections.

Initiatives

A growing list of initiatives with metrics (where appropriate) for 2010-2011:

1. 100 projects involving 300 RIT students

2. 50 poster presentations associated with courses across the curriculum

3. 50 student/faculty collaborative scholarship disseminations

4. Develop an inventory and information access portal for innovation activities and capabilities on campus

5. Create a credit bearing option for students using the CSI for their innovation activities, within or in addition to Innovation or Entrepreneurship minors

6. Develop a “social media” tool to communicate innovation activities in the CSI in addition to formal methods (see #3)

7. Celebrate innovation and creativity through a variety of thematic activities, from design to completion

8. Forge a relationship with the prototyping and entrepreneurial initiatives in global village, supporting those activities by connecting students

Proposed Additional Student Programming 2010-2011

Fall quarter, to celebrate our rapidly evolving campus and its outdoors beauty three programming initiatives are proposed in an effort to bring students into the CSI activities:

1. Sponsor a “bicycle built for two” themed design/build challenge culminating operating trials

2. Layout possible bike/hike/cross country ski trails to Park Point

3. Start an RIT geo-caching effort around students’ “hidden gem” locations around campus

Winter quarter, the themes will attempt to reduce the winter “drag” and also go beyond boundaries with these activities:

1. Adaptive technology; identify opportunities, conceive and create solutions

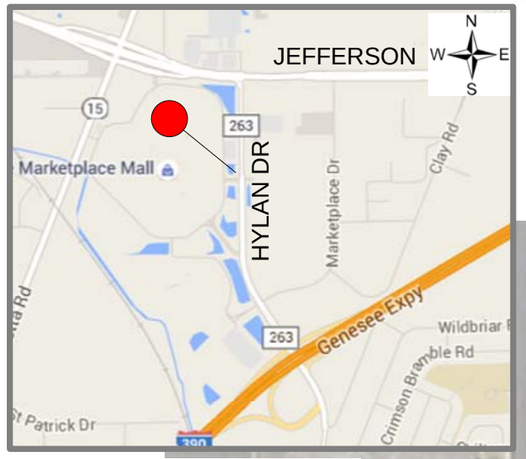
2. Winter and indoor gardens

3. Safety first winter personal transportation

Spring quarter, the focus is on assisting ImagineRIT student teams complete presentations plus creation of a Rube Goldberg style “machine” around the Innovation Center to celebrate the whimsical side of innovation for ImagineRIT

Summer quarter is once again centered on summer research fellows

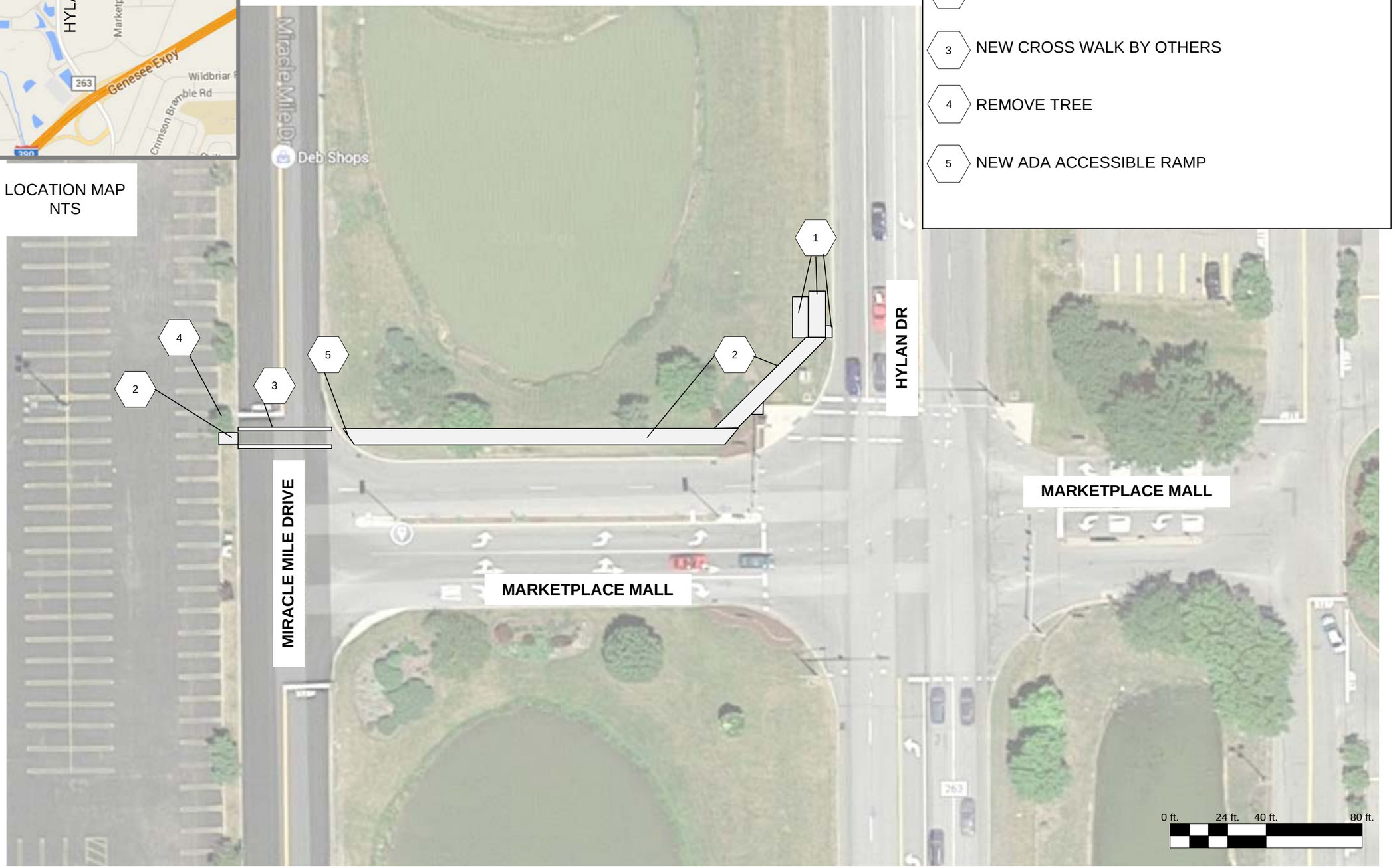
APPENDIX I
MARKETPLACE MALL SHELTER PLANS



LOCATION MAP
NTS

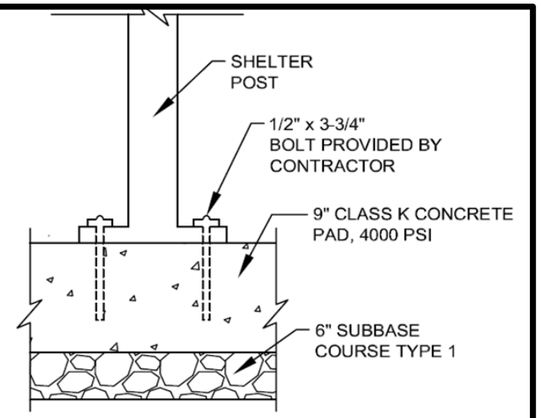
NOTES

1. NEW RTS SHELTER AND LANDING PADS
2. NEW ACCESSIBLE SIDEWALK BY OTHERS
3. NEW CROSS WALK BY OTHERS
4. REMOVE TREE
5. NEW ADA ACCESSIBLE RAMP



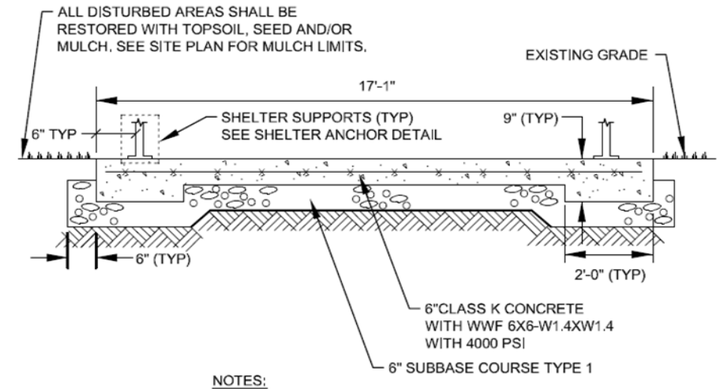
FILENAME	2015-07-20 MARKETPLACE SHELTER PLANS.VSD
DATE	July 2015
DRAWN BY	EKM
DESCRIPTION	RGRTA MARKETPLACE MALL SHELTER
TITLE	SITE PLAN

RTS



SHELTER ANCHOR DETAIL

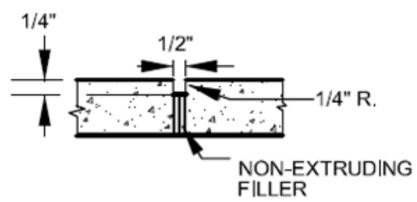
N.T.S.



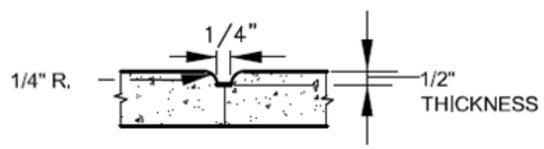
NOTES:
1. CONTROL JOINTS SHALL BE SPACED EVERY 10'.

SECTION AA - SHELTER PAD DETAIL

N.T.S.



EXPANSION JOINT

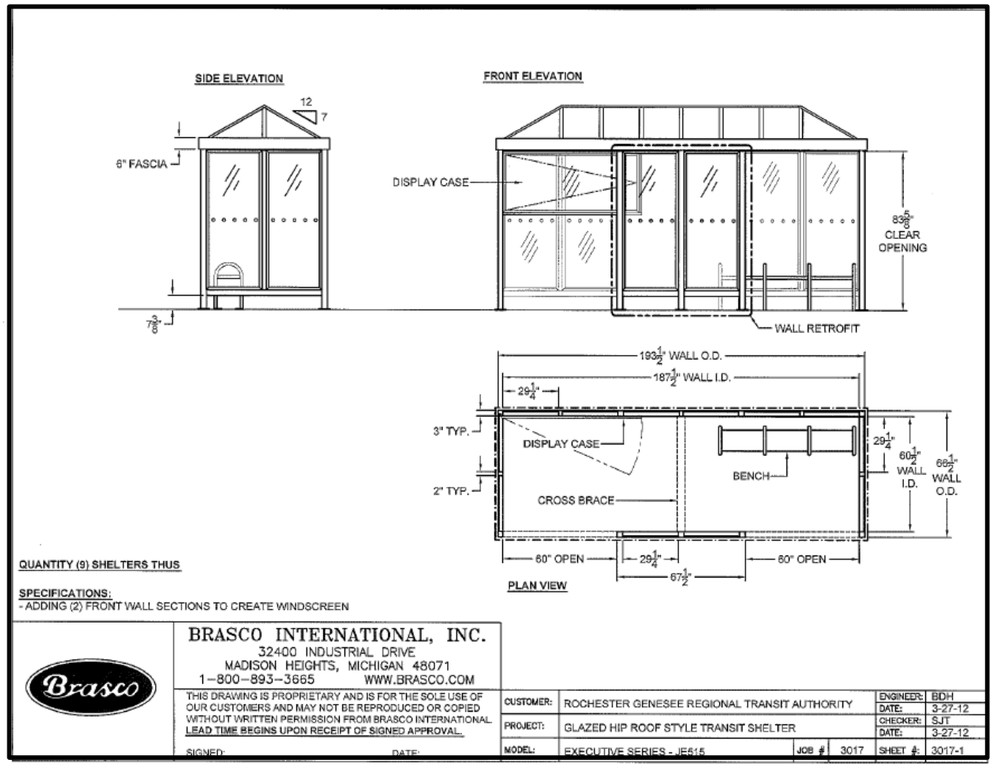


CONTRACTION JOINT

NOTE;
TOOLED JOINTS SHALL BE EMPLOYED.

JOINT DETAILS

N.T.S.



QUANTITY (9) SHELTERS THUS

SPECIFICATIONS:
- ADDING (2) FRONT WALL SECTIONS TO CREATE WINDSCREEN

BRASCO INTERNATIONAL, INC.
32400 INDUSTRIAL DRIVE
MADISON HEIGHTS, MICHIGAN 48071
1-800-893-3665 WWW.BRASCO.COM

LEAD TIME BEGINS UPON RECEIPT OF SIGNED APPROVAL.

SIGNED: DATE:

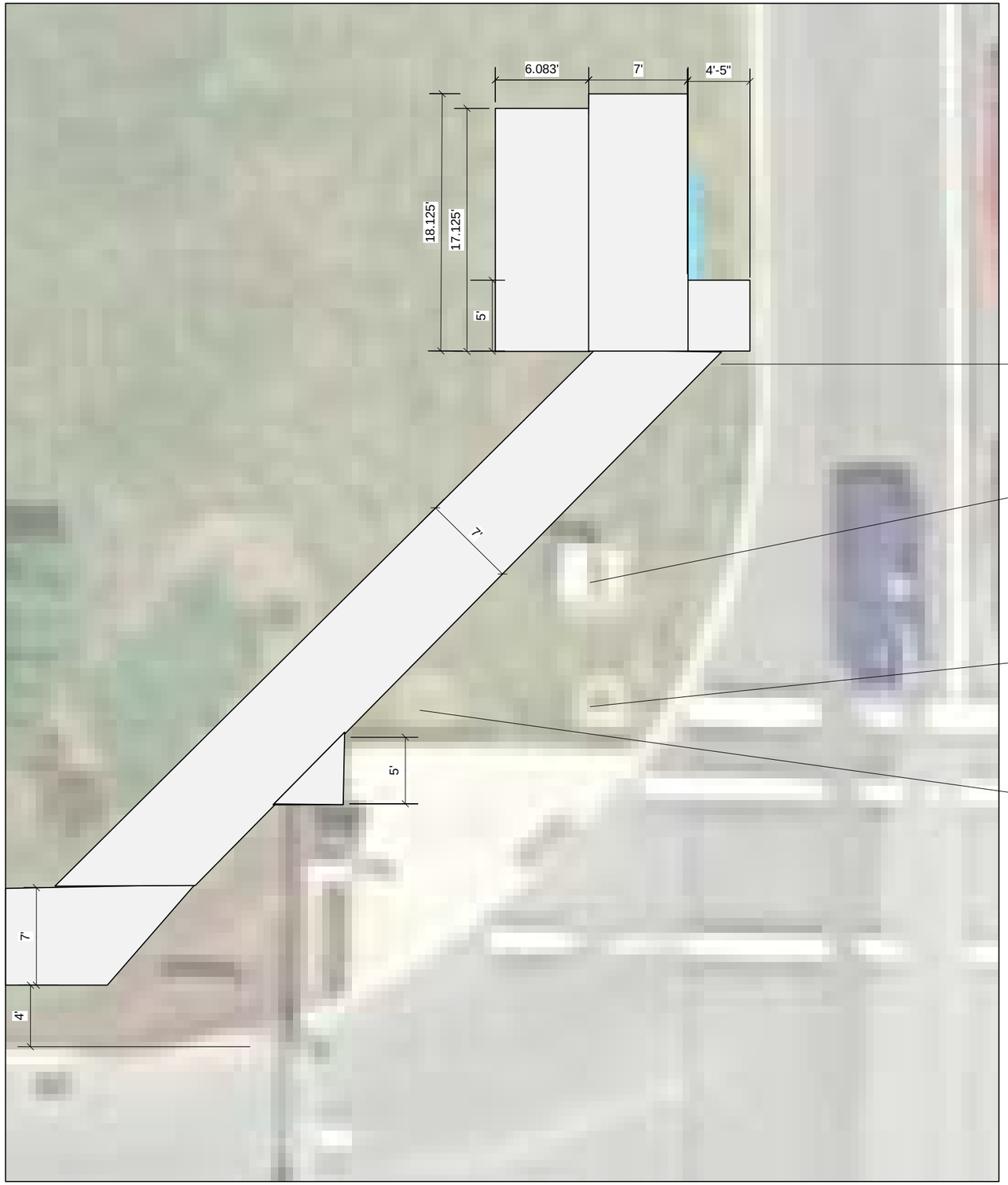
CUSTOMER:	ROCHESTER GENESEE REGIONAL TRANSIT AUTHORITY	ENGINEER:	BDH
		DATE:	3-27-12
PROJECT:	GLAZED HIP ROOF STYLE TRANSIT SHELTER	CHECKER:	SJT
		DATE:	3-27-12
MODEL:	EXECUTIVE SERIES - JE515	JOB #: 3017	SHEET #: 3017-1

SHELTER DETAIL (FOR FUTURE INSTALLATION)

N.T.S.

FILENAME	2015-07-20 MARKETPLACE SHELTER PLANS.VSD
DATE	July 2015
DRAWN BY	EKM
DESCRIPTION	RGRTA MARKETPLACE MALL SHELTER
TITLE	DETAILS

RTS



BUS STOP SIGN

MONROE COUNTY
TRAFFIC CONTROL
CABINET

MONROE COUNTY
TRAFFIC COVER

RTC

0 ft. 4 ft. 9.6 in. 8 ft. 16 ft.

FILENAME	2015-07-20 MARKETPLACE SHELTER PLANS.VSD
DATE	July 2015
DRAWN BY	EKM
DESCRIPTION	RGRTA MARKETPLACE MALL SHELTER
TITLE	DETAIL PLAN

RTS

GENERAL NOTES

1) ALL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE EQUIPMENT INSTALLATION DRAWINGS AND SPECIFICATIONS.
2) CONTRACTOR SHALL PAY FOR AND SECURE ALL PERMITS AND UNDERWRITERS CERTIFICATES.
3) THE DRAWINGS ARE INTENDED TO REQUIRE AND TO INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY FOR THE WORK AND REQUIRED BY CODE. ALL WORK AND SYSTEMS TO BE FURNISHED AND INSTALLED READY FOR OPERATION AND SERVICE. THE TERM "PROVIDE" DENOTES TO FURNISH AND INSTALL.
4) ALL WORK SHALL COMPLY WITH ALL LOCAL, STATE AND NATIONAL CODES AND REQUIREMENTS.
5) THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND SAFETY PROCEDURES. THE ARCHITECT/ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS OR THEIR AGENTS OR EMPLOYEES OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK.
6) OBSERVE ALL OSHA AND OTHER APPLICABLE SAFETY REQUIREMENTS INCLUDING THE USE OF SAFETY GLASSES, HARD HATS, AND PROTECTION OF AREA. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR CONSTRUCTION SAFETY AT ALL TIMES.
7) COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND RECOMMENDATIONS FOR INSTALLING PRODUCTS IN APPLICATIONS INDICATED.
8) INSTALL PRODUCTS AT THE TIME AND UNDER CONDITIONS THAT WILL ENSURE THE BEST POSSIBLE RESULTS. MAINTAIN CONDITIONS REQUIRED FOR PRODUCT PERFORMANCE UNTIL SUBSTANTIAL COMPLETION.
9) RECORD DRAWINGS: CONTRACTOR SHALL PROVIDE RED LINE DRAWINGS AT THE COMPLETION OF THE PROJECT INDICATING SHELTER AND CONCRETE SIDEWALK PAD LOCATION.
10) CAUTION- NOTICE TO CONTRACTOR: THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. THE CONTRACTOR SHALL MAKE EXPLORATION EXCAVATIONS TO LOCATE EXISTING UNDERGROUND UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS AS REQUIRED TO MEET EXISTING CONDITIONS. CONTRACTOR SHALL CONTACT DIG SAFELY NY AT 1-800-962-7962 OR 811.
11) PROTECT ALL EXISTING ABOVE GROUND AND BELOW GROUND SITE FEATURES AND UTILITIES UNLESS OTHERWISE NOTED.
12) MAINTENANCE AND PROTECTION OF TRAFFIC ALONG WITH SECURING THE WORK AREA SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
13) ALL CONES, DRUMS, CONCRETE BARRIERS AND MARKERS ARE TO BE PLACED SO AS TO PROVIDE A MINIMUM 2' CLEARANCE TO THE TRAVELED WAY UNLESS OTHERWISE SHOWN ON THE PLANS AND/OR DIRECTED BY THE OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL MAKE CERTAIN PLACEMENT OF CONES, DRUMS AND MARKERS OR BARRICADES SHALL NOT INTERFERE WITH SIGHT DISTANCE.
14) ALL DEBRIS AND SOILS DERIVED FROM THE CONTRACTOR'S OPERATIONS FOUND IN THE PUBLIC RIGHT-OF-WAY OR CAUSING NUISANCE TO OPERATIONS SHALL BE REMOVED ON A DAILY BASIS OR WHEN NOTIFIED BY THE OWNER'S REPRESENTATIVE AND DISPOSED OF OFFSITE IN ACCORDANCE WITH ALL APPLICABLE LAWS, RULES AND REGULATIONS REGARDING DISPOSAL.

CONCRETE NOTES

1) SUBMITTALS
   a) SUBMIT CONCRETE MIX PROPORTIONS WITH SUPPORTING TEST DATA, MATERIAL CERTIFICATIONS AND PRODUCT DATA, TO DEMONSTRATE COMPLIANCE WITH THE REQUIREMENTS BELOW AND THE PROJECT SPECIFICATIONS.
2) COMPLY WITH THE FOLLOWING CODES AND STANDARDS:
   a) ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR SITE WORK".
   b) ACI 305, ACI 306, ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".
   c) ACI DETAILING MANUAL, LATEST EDITION.
   d) ACI 347 "RECOMMENDED PRACTICE FOR CONCRETE FORM WORK".
   e) CONCRETE REINFORCING STEEL INSTITUTE (CRSI), "MANUAL OF STANDARD PRACTICE".
   f) ACI 304 "RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE".
3) MATERIALS:
   a) WELDED WIRE FABRIC (WWF) - ASTM A185, FLAT SHEETS.
   b) SUPPORTS FOR REINFORCEMENT:
      i) FOR SLABS-ON-GRADE USE CONCRETE BRICKS OR CHAIRS TO SUPPORT AND MAINTAIN PROPER LOCATION OF WWF AND REINFORCING BARS.
      ii) BOLSTERS, CHAIRS, SPACERS, ETC. SHALL BE WIRE BAR TYPE SUPPORTS COMPLYING WITH CRSI SPECS. FOR EXPOSED SURFACES WHERE SUPPORTS ARE IN CONTACT WITH FORMS, PROVIDE SUPPORTS WITH LEGS WHICH ARE PROTECTED BY PLASTIC OR STAINLESS STEEL.
   c) PORTLAND CEMENT – ASTM C150, TYPE II.
   d) AGGREGATES – ASTM C33.
   e) AIR ENTRAINING ADMIXTURE – ASTM C260, CERTIFIED BY MANUFACTURER TO BE COMPATIBLE WITH OTHER REQUIRED ADMIXTURES.
   f) PROHIBITED ADMIXTURES – CALCIUM CHLORIDE THIOCYANATES OR ADMIXTURES CONTAINING MORE THAN 0.1% CHLORIDE IONS ARE NOT PERMITTED.
4) PROPORTIONING AND DESIGN OF MIXES:
   a) PREPARE DESIGN MIXES OF CONCRETE BY EITHER LABORATORY TRIAL BATCH OR FIELD EXPERIENCE METHODS AS SPECIFIED IN ACI 318.
   b) NORMAL WEIGHT CONCRETE – MINIMUM 28 DAY COMPRESSIVE STRENGTH 4000 PSI.
5) CONCRETE SHALL BE READY MIXED PER ASTM C94. JOB SITE MIXING SHALL NOT BE PERMITTED.
6) CONCRETE PLACEMENT:
   a) THE ADDITION OF WATER TO THE CONCRETE MIX AT THE JOB SITE IS
      i) NOT PERMITTED UNLESS SPECIFICALLY ALLOWED BY THE OWNER'S REPRESENTATIVE/RGRTA.
   b) PROTECT CONCRETE WORK FROM THE DETRIMENTAL EFFECTS OF COLD TEMPERATURES IN COMPLIANCE WITH ACI 306.
   c) PROTECT CONCRETE WORK FROM THE DETRIMENTAL EFFECTS OF HOT WEATHER OR WINDY CONDITIONS IN COMPLIANCE WITH ACI 305.
7) CONCRETE FINISHES:
   a) FORMED SURFACES EXPOSED TO VIEW- BROOM FINISH.
8) PROVIDE MOISTURE CURE TO SLAB SURFACES FOR 7 DAYS BY EITHER COVERING THE CONCRETE WITH WATER, APPLYING A CONTINUOUS WATER-FOG SPRAY, OR COVERING WITH AN ABSORPTIVE COVER.
9) THE OWNER WILL EMPLOY A TESTING AGENCY TO PERFORM SAMPLING AND TESTING AND SUBMIT TEST REPORTS.

DEMOLITION AND EARTHWORK

1) SEED ALL LAWN AREAS DISTURBED BY CONSTRUCTION OPERATIONS.
2) PERMANENT SEEDING (5 LBS./1000 SF)
   a) 25% MANHATTAN 4 PERENNIAL RYEGRASS
   b) 25% KENTUCKY BLUEGRASS (BARON)
   c) 25% JASPER II RED FESCUE
   d) 25% PIZZAZZ PERENNIAL RYEGRASS
   e) FERTILIZER: 25 LBS. PER 1000 SF
   f) MULCH: STRAW AT 75 LBS, PER 1000 SF
3) ALL AREAS OF LAWN REPAIR TO RECEIVE A MINIMUM OF 6" OF TOPSOIL (MODERATELY COMPACTED TO ENSURE THAT SETTLING DOES NOT OCCUR IN THE FUTURE), FINE RAKE, SEED AND MULCH WATER UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
4) REMOVE GRASS, IMPROVEMENTS OR OBSTRUCTIONS AS REQUIRED PERMITTING INSTALLATION OF NEW CONSTRUCTION AND LEGALLY DISPOSING OF DEMOLISHED MATERIAL OFFSITE.
5) MATERIALS
   a) ENGINEERED FILL, BACKFILL AND SUBBASE MATERIAL SHALL BE A SOIL GRANULAR MATERIAL CONFIRMING NYSDOT ITEM 302.02.'
   b) SUBMIT TEST RESULTS VERIFYING MATERIALS TO BE USED MEET THE ABOVE REQUIREMENTS.
   c) STRIP TOPSOIL, ORGANIC MATERIAL, AND LOOSE SOILS INSIDE THE PROJECT AREA, DISPOSE OF EXCESS MATERIAL OFFSITE IN A LEGAL MANNER.
   d) MATERIALS EXCAVATED BELOW INDICATED SUBGRADE ELEVATIONS AND FOUNDATION BASES SHALL BE BACKFILLED WITH AUTHORIZED MATERIALS.
   e) EXCAVATIONS SHALL BE KEPT FREE OF WATER AND ANY UNDESIRABLE MATERIALS WHILE WORK IS IN PROGRESS. NOTIFY OWNER'S REPRESENTATIVE/RGRTA WHEN EXCAVATIONS HAS BEEN RECOMPACTED AND REINFORCING PLACED. DO NOT PLACE CONCRETE UNTIL DIRECTED TO DO SO.
   f) PLACE ENGINEERED FILL IN LIFTS NOT EXCEEDING 6 INCHES, COMPACT EACH LIFT TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST (ASTM D1557).
   g) COMPACT BACKFILL AFTER PLACING BELOW GRADE COMPONENTS TO 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST (ASTM D1557).
   h) PROTECT BOTTOM OF EXCAVATIONS AGAINST FREEZING WHEN TEMPERATURE IS LESS THAN 35°F.
   i) MAINTAIN EXISTING GRADE AND DRAINAGE PATTERNS.

FILENAME: 2015-07-20 MARKETPLACE SHELTER PLANS.VSD
DATE: July 2015
DRAWN BY: EKM
DESCRIPTION: RGRTA MARKETPLACE MALL SHELTER
TITLE: NOTES
RTS

APPENDIX J
ECONOMIC IMPACT OF TRAILS

Economic Impacts of Trails

http://www.americantrails.org/resources/economics/GreenwaySumEcon.html

Source: American Trails
Subject: Economic Impacts of Trails
Findings:

- "In the vicinity of Philadelphia's 1,300 acre Pennypack Park, property values correlate significantly with proximity to the park. In 1974, the park accounted for 33 percent of the value of land 40 feet away from the park, nine percent when located 1,000 feet away, and 4.2 percent at a distance of 2,500 feet." [Hammer, Coughlin and Horn, 1974]

Impacts of Trails and Trail Use

http://www.americantrails.org/resources/adjacent/sumadjacent.html

Source: American Trails
Subject: Impacts of Trails and Trail Use
Findings:

- "A 1978 study of property values in Boulder, Colorado, noted that housing prices declined an average of $4.20 for each foot of distance from a greenbelt up to 3,200 feet. In one neighborhood, this figure was $10.20 for each foot of distance. The same study determined that, other variables being equal, the average value of property adjacent to the greenbelt would be 32% higher than those 3,200 feet away."

Property Value/Desirability Effects of Bike Paths Adjacent to Residential Areas

http://128.175.63.72/projects/DOCUMENTS/bikepathfinal.pdf

Source: University of Delaware
Subject: Property Value Near Bike Paths
Findings:

- "The analysis indicates that the impact of proximity to a bike path on property prices is positive, controlling for the number of bedrooms, years since sale, acres, land, buildings, total number of rooms, total assessment. The properties within 50m of the bike paths show a positive significance of at least $8,800 and even higher when controlled for specific variables."

Bicycle Paths: Safety Concerns and Property Values

http://www.greenway.org/pdf/la_bikepath_safety.pdf

Source: Los Angeles County, Metropolitan Transportation Authority
Subject: Home sales near trails
Findings:

- "Homes sales were examined in the seven Massachusetts towns through which the Minuteman Bikeway and Nashua River Rail Trail run. Statistics on list and selling prices and on days on the market were analyzed. The analysis shows that homes near these rail trails sold at 99.3% of the list price as compared to 98.1% of the list price for other homes sold in these towns. The most significant feature of home sales near rail trails is that these homes sold in an average of 29.3 days as compared to

50.4 days for other homes." [*Home Sales Near Two Massachusetts Trails,* Jan. 25, 2006. Craig Della Penna]

Table 1. Home Sales near Rail Trails

Town	No. of Properties Sold	Average List Price	Average Sale Price	Ratio of Sale to List	Days on the Market
Arlington	10	$513,750	$509,690	99.2%	27.1
Lexington	10	$906,090	$907,040	100.1%	18.5
Bedford	3	$511,600	$500,833	97.9%	55.3
Ayer	1	$329,900	$317,500	96.2%	47.0
Groton	2	$689,900	$675,000	97.8%	22.0
Dunstable	1	$695,000	$685,000	98.6%	20.0
Pepperell	3	$385,833	$376,333	97.5%	48.3
Average		$643,180	$638,377	99.3%	29.3

Table 2. Home Sales not near Rail Trails

Town	No. of Properties Sold	Average List Price	Average Sale Price	Ratio of Sale to List	Days on the Market
Arlington	119	$558,775	$556,327	99.6%	28.3
Lexington	166	$871,533	$849,470	97.5%	54.4
Bedford	38	$633,912	$624,289	98.5%	42.4
Ayer	30	$344,677	$340,155	98.7%	73.0
Groton	53	$605,198	$584,689	96.6%	80.4
Dunstable	12	$587,946	$578,965	98.5%	83.2
Pepperell	57	$384,818	$379,482	98.6%	80.2
Average		$645,607	$633,072	98.1%	50.4

[*Home Sales Near Two Massachusetts Trails,* Jan. 25, 2006. Craig Della Penna]

- "Realizing the selling power of greenways, developers of the Shepherd's Vineyard housing development in Apex, North Carolina added $5,000 to the price of 40 homes adjacent to the regional greenway, Those homes were still the first to sell." [*Economic Benefits of Trails and Greenways,* Rails-to-Trails Conservancy, 2004]
- "The average price for all homes sold in greenway corridors was nearly 10 percent higher than the average price for all homes. Similarly, the average prices for all homes near greenways with trails and in conservation corridors were higher than the overall average sale price. For homes near the Monon Trail, the average sale price was 11 percent higher than for all homes that sold in 1999." [*Public Choices and Property Values: Evidence from Greenways in Indianapolis*, Center for Urban Policy and the Environment, December 2003]
- "A study of property values near greenbelts in Boulder, Colorado, noted that…other variables being equal, the average value of property adjacent to the greenbelt would be 32 percent higher than those 3,200 feet away." [*Economic Impacts of Rivers, Trails and Greenways: Property Values.* Resource Guide published by the National Parks Service, 1995]
- "A study completed by the Office of Planning in Seattle, Washington, for the 12 mile Burke-Gilman trail was based upon surveys of homeowners and real estate agents. The survey of real estate agents revealed that property near, but not immediately adjacent to the trail, sells for an average of 6 percent more." [*Economic Impacts of*

Rivers, Trails and Greenways: Property Values. Resource Guide published by the National Parks Service, 1995]

- "In a survey of adjacent landowners along the Luce Line rail-trail in Minnesota, 61 percent of the suburban residential owners noted an increase in their property value as a result of the trail. New owners felt the trail had a more positive effect on adjacent property values than did continuing owners. Appraisers and real estate agents claimed that trails were a positive selling point for suburban residential property." [*Economic Impacts of Rivers, Trails and Greenways: Property Values.* Resource Guide published by the National Parks Service, 1995]
- "A survey of Denver residential neighborhoods by the Rocky Mountain Research Institute shows the public's increasing interest in greenways and trails. From 1980 to 1990, those who said they would pay extra for greenbelts and parks in their neighborhood rose from 16 percent to 48 percent." [*Economic Impacts of Rivers, Trails and Greenways: Property Values.* Resource Guide published by the National Parks Service, 1995]
- "Recognizing what had happened, the realty companies decided to restructure the pricing of future lots located along the Mountain-Bay Trail. thus, in the addition of Highridge Estates, the average lot located along the rail was priced 26 percent higher than slightly larger lots not located along the trail." [*Perceptions of How the Presence of Greenway Trails Affects the Value of Proximate Properties.* Journal of Park and Recreation Administration, Fall 2001. John L. Crompton.]

A Study of Trail Impacts on Property Values, Noise and Crime

http://library.michigantrails.org/education-and-advocacy/a-study-of-trail-impacts-on-property-values-noise-andcrime/

Source: Michigan Trails
Subject: Trail Impacts on Property Values, Noise and Crime
Findings:

- For all trail segments studied, the median home sale prices adjacent to the trail are escalating faster than countywide. The rate of increase was particularly high in certain areas. The results indicated that the trail does not negatively impact property values and suggested that it may help increase property values by roughly 2 percent to 3 percent annually over inflation.
- Realtors were surveyed as well, and 90 percent said that home sales had increased significantly or increased somewhat in areas near the trail versus other areas in the market.

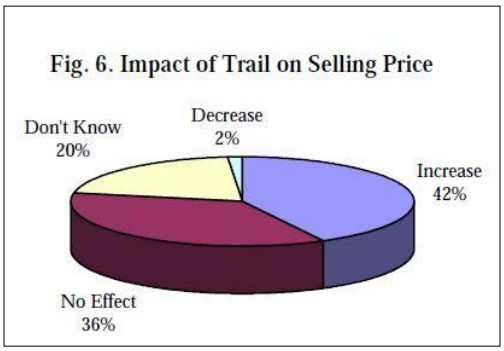
A Study of Trail Impacts on Property Values, Noise and Crime

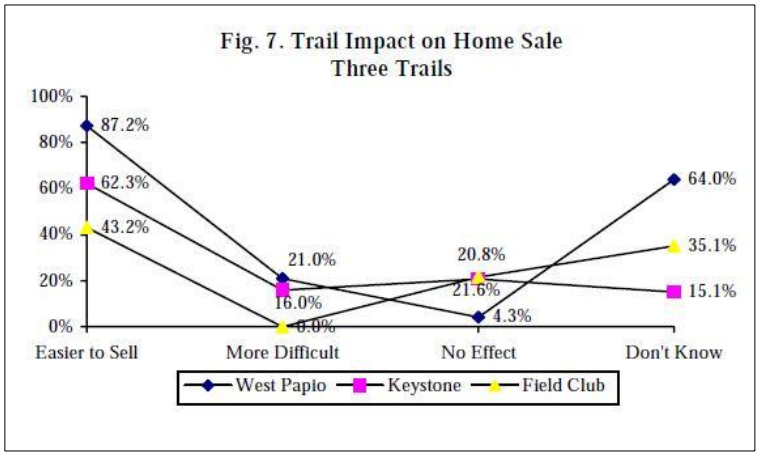
http://library.michigantrails.org/education-and-advocacy/a-study-of-trail-impacts-on-property-values-noise-andcrime/

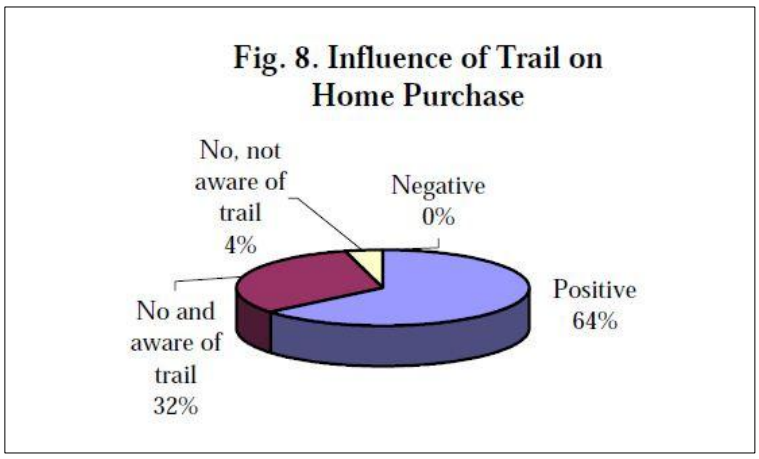
Source: Michigan Trails
Subject: Trail Impacts on Property Values, Noise and Crime
Findings:

- "81% surveyed felt that the nearby trail's presence would have a positive effect or effect on the ease of sale of their homes." (Fig. 5)

- “The clear majority of residents (63.8%) who bought their homes after construction of the trails reported that the trail had positively influenced their purchase decision.” (Fig. 6)
- “West Papio showed stronger results than the other two trails on property values, ease of home sale, and quality of life. The differences may possibly be due to neighborhood demographics and characteristics of the trail themselves” (Fig. 7.)
- “Of the respondents who purchased their home after the trail existed, 63.8% indicated that the trail had positively influenced their purchase decision.







APPENDIX K

BICYCLE AND PEDESTRIAN FACILITY DESIGN FLEXIBILITY

FEDERAL HIGHWAY ADMINISTRATION - FHWA

U.S. Department of Transportation
Federal Highway Administration

Memorandum

SENT BY ELECTRONIC MAIL

Subject: **GUIDANCE:** Bicycle and Pedestrian Facility Design Flexibility Date: August 20, 2013

From: Gloria M. Shepherd
Associate Administrator for Planning, Environment and Realty

In Reply Refer To:
HEPH-10

Walter C. (Butch) Waidelich, Jr.
Associate Administrator for Infrastructure

Jeffrey A. Lindley for
Associate Administrator for Operations

Tony T. Furst
Associate Administrator for Safety

To: Division Administrators
cc: Directors of Field Services

This memorandum expresses the Federal Highway Administration's (FHWA) support for taking a flexible approach to bicycle and pedestrian facility design. The American Association of State Highway and Transportation Officials (AASHTO) bicycle and pedestrian design guides are the primary national resources for planning, designing, and operating bicycle and pedestrian facilities. The National Association of City Transportation Officials (NACTO) *Urban Bikeway Design Guide* and the Institute of Transportation Engineers (ITE) *Designing Urban Walkable Thoroughfares* guide builds upon the flexibilities provided in the AASHTO guides, which can help communities plan and design safe and convenient facilities for pedestrian and bicyclists. FHWA supports the use of these resources to further develop nonmotorized transportation networks, particularly in urban areas.

AASHTO Guides

AASHTO publishes two guides that address pedestrian and bicycle facilities:

- *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, July 2004, (AASHTO Pedestrian Guide) provides guidelines for the planning, design, operation, and maintenance of pedestrian facilities, including signals and signing. The guide recommends methods for accommodating pedestrians, which vary among roadway and facility types, and addresses the effects of land use planning and site design on pedestrian mobility.

- *Guide for the Development of Bicycle Facilities 2012, Fourth Edition* (AASHTO Bike Guide) provides detailed planning and design guidelines on how to accommodate bicycle travel and operation in most riding environments. It covers the planning, design, operation,

maintenance, and safety of on-road facilities, shared use paths, and parking facilities. Flexibility is provided through ranges in design values to encourage facilities that are sensitive to local context and incorporate the needs of bicyclists, pedestrians, and motorists.

NACTO Guide

NACTO first released the *Urban Bikeway Design Guide* (NACTO Guide) in 2010 to address more recently developed bicycle design treatments and techniques. It provides options that can help create "complete streets" that better accommodate bicyclists. While not directly referenced in the AASHTO Bike Guide, many of the treatments in the NACTO Guide are compatible with the AASHTO Bike Guide and demonstrate new and innovative solutions for the varied urban settings across the country.

The vast majority of treatments illustrated in the NACTO Guide are either allowed or not precluded by the Manual on Uniform Traffic Control Devices (MUTCD). In addition, non-compliant traffic control devices may be piloted through the MUTCD experimentation process. That process is described in Section 1A.10 of the MUTCD and a table on the FHWA's bicycle and pedestrian design guidance Web page is regularly updated (FHWA Bicycle and Pedestrian Design Guidance), and explains what bicycle facilities, signs, and markings are allowed in accordance with the MUTCD. Other elements of the NACTO Guide's new and revised provisions will be considered in the rulemaking cycle for the next edition of the MUTCD.

ITE Guide

In 2010, FHWA supported production of the ITE Guide *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*. This guide is useful in gaining an understanding of the flexibility that is inherent in the AASHTO "Green Book," *A Policy on Geometric Design of Highways and Streets*. The chapters emphasize thoroughfares in "walkable communities" – compact, pedestrian-scaled villages, neighborhoods, town centers, urban centers, urban cores and other areas where walking, bicycling and transit are encouraged. It describes the relationship, compatibility and trade-offs that may be appropriate when balancing the needs of all users, adjoining land uses, environment and community interests when making decisions in the project development process.

Summary

FHWA encourages agencies to appropriately use these guides and other resources to help fulfill the aims of the *2010 US DOT Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations* – "...DOT encourages transportation agencies to go beyond the minimum requirements, and proactively provide convenient, safe, and context-sensitive facilities that foster increased use by bicyclists and pedestrians of all ages and abilities, and utilize universal design characteristics when appropriate."

Accompanying this memo are the latest versions of the: 1) AASHTO Bike Guide, 2) NACTO Bike Guide; and 3) the ITE *Designing Walkable Urban Thoroughfares* Guide.

The attachments provide two examples that demonstrate the use of treatments illustrated in the NACTO Guide (i.e., buffered bike lanes and green colored pavement for bicycle lanes) by State or local DOTs, and a list of FHWA staff that can help with questions about pedestrian and bicycle design issues.

Attachments

Attachment 1 – Example 1 & 2

Example 1: Michigan DOT's Buffered Bike Lanes

One of the innovative bicycle facilities discussed in the NACTO *Urban Bikeway Design Guide* is buffered bike lanes. Buffered bike lanes create more space between motor vehicles and bicycles by delineating extra space between the bike lane and parked cars and/or a motor vehicle lane. Buffered bike lanes can be implemented if the pavement markings and channelizing devices are compliant with the MUTCD (see Bicycle Facilities and the Manual on Uniform Traffic Control Devices). Michigan DOT developed a video that describes their efforts to install buffered bike lanes in Oakland County (see Northwestern Highway Bicycle Lane: A Safer Place to Ride). Michigan DOT also developed a brochure that explains buffered bike lanes to the public (see What Every Michigan Driver Should Know About Bike Lanes).

Example 2: Missoula's Colored Bike Lanes

MUTCD experimentation is a methodology that analyzes innovative traffic control devices through field deployment for the purpose of testing or evaluating its application or manner of use. An approved request to experiment numbered and titled as Official Ruling "3(09)-3(E) – Colored Bike Lanes – Missoula, MT" illustrates a successful experiment. The City of Missoula submitted a request to experiment in January 2010 in accordance with all Items in Paragraph 11 of Section 1A.10 in the 2009 MUTCD.

The experiment was conducted for one year and revealed that approximately 70 percent of motorists noticed the color conspicuity enhancement to the bike lane. This was interpreted as an increased awareness by motorists of the potential presence of bicyclists at intersections where those motorists would be making a right turn.

The City also reported ancillary findings that were not anticipated in the original Evaluation Plan of the request to experiment. This included psychological discomfort of the cyclist with the lateral locations of the colored bicycle lane with respect to door zones in parallel parking corridors. In addition, the experiment revealed an unintended design weakness where colored bike lanes that achieve high compliance of little or no occupation of motorized vehicles can also be attractive to pedestrians who wish to use them to facilitate their travel in lieu of crowded sidewalks or to patronize parking meters. For these reasons, a successful experiment can reveal unanticipated findings, further demonstrating the value of official experimentation.

This particular experiment provided two conclusions that supported FHWA's decision to issue Interim Approval for green colored pavement for bicycle lanes in April 2011.

For more information see http://mutcd.fhwa.dot.gov/reqdetails.asp?id=1135.

Attachment 2

FHWA Bicycle and Pedestrian Staff Resources

Human Environment —Livability and Bicycle and Pedestrian Programs

- Shana Baker, Livability Team Leader, 202-366-4649, shana.baker@dot.gov: Livability, Context Sensitive Solutions
- Christopher Douwes, Trails and Enhancements Program Manager 202-366-5013, christopher.douwes@dot.gov: Transportation Alternatives Program/Enhancement Activities; Recreational Trails Program related activities; Bicycle and pedestrian policy and guidance
- Daniel Goodman, Transportation Specialist, 202-366-9064, daniel.goodman@dot.gov: Bicycle and pedestrian activities; Livability
- Wesley Blount, Program Manager, 202-366-0799, wesley.blount@dot.gov: Safe Routes to School, Discretionary programs

Planning

- Brian Gardner, 202-366-4061, brian.gardner@dot.gov: Modeling
- Jeremy Raw, 202-366-0986, jeremy.raw@dot.gov: Modeling
- Harlan Miller, 202-366-0847, harlan.miller@dot.gov: Planning Oversight
- Kenneth Petty, 202-366-6654 kenneth.petty@dot.gov: Planning Capacity Building

Policy

- Steven Jessberger, 202-366-5052, steven.jessberger@dot.gov, Traffic Monitoring Guide

Infrastructure — Design (including accessible design)

- Michael Matzke, 202-366-4658, michael.matzke@dot.gov

Resource Center— Design (including accessible design)

- Brooke Struve, Safety and Design Team, 720-963-3270, brooke.struve@dot.gov
- Peter Eun, Safety and Design Team, 360-753-9551, peter.eun@dot.gov

Operations — Manual on Uniform Traffic Control Devices

- Kevin Dunn, Transportation Specialist, 202-366-6054, kevin.dunn@dot.gov: MUTCD Team

Pedestrian and Bicycle Safety

- Gabe Rousseau, Safety Operations Team Leader, 202-366-8044, gabe.rousseau@dot.gov: Bicycle and pedestrian safety programs
- Tamara Redmon, Pedestrian Safety Program Manager, 202-366-4077, tamara.redmon@dot.gov: Pedestrian safety

Pedestrian and Bicyclist Safety Research

- Ann Do, 202-493-3319, ann.do@dot.gov
- Jim Shurbutt, 202-493-3420, jimmy.shurbutt@dot.gov

Civil Rights — Accessibility Policy and Compliance

- Patrick Gomez, Resource Center Civil Rights Team, 720-963-3269, patrick.gomez@dot.gov
- Candace Groudine, Director of External Civil Rights Programs, 202-366-4634, candace.groudine@dot.gov