

TOWN OF IRONDEQUOIT ACTIVE TRANSPORTATION PLAN



May 2017

PREPARED FOR

Town of Irondequoit

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TOWN OF IRONDEQUOIT
ACTIVE TRANSPORTATION PLAN

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1.0 EXECUTIVE SUMMARY



Image: Town of Irondequoit

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 Irondequoit. In addition, multiple driving forces support the need for active transportation planning within the Town:

- Ongoing trail development in the Town which will benefit from coordinated planning and prioritization of improvements;
- The Town’s focus on quality of life and preserving Irondequoit as “Town for a Lifetime;”
- Health related reasons, injuries, and inability to reach key destinations; and
- 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.

The study provides a plan to understand current and future needs and identify strategies to better accommodate bicycle, pedestrian, and transit-oriented travel to, from, and through the Town of Irondequoit. The Active Transportation Plan establishes a clear framework for the Town to: understand community preferences and needs related to active transportation; analyze current gaps in walking/biking/transit systems within the town; identify potential infrastructure improvements, programming and policy changes; outline a series of strategies and action items, including constructibility analysis and planning level cost estimates; and prioritize activities and projects that will result in improved community connectivity and enhanced mobility for residents of all ages and abilities. The Plan’s recommendations, when implemented, will help the Town of Irondequoit achieve many public health, economic, and quality of life benefits through enhanced accommodation of active transportation.



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 Irondequoit, Monroe County or other agencies. As the Town considers and works to implement these recommendations, it is committed to working with all stakeholders to ensure that their requirements and concerns are met.

The following sections are included in the Active Transportation Plan:

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, significant input from an active Project Advisory Committee (PAC) and from feedback received from Irondequoit’s residents.

EXISTING CONDITIONS EVALUATIONS: An assessment of the conditions that the Town’s roadway network provides for bicyclists, using the nationally implemented Bicycle and Pedestrian Level of Service Models as the primary performance measure kicks off the existing conditions evaluation process. The results of this assessment indicate, at a Town-wide level, bicycling and pedestrian conditions are both adequate (average level of service “C”), with many roads presenting significant opportunities for improvement. In addition to these supply-based evaluations, the existing conditions components also includes a non-motorized demand assessment that identifies areas within Irondequoit 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 as prototypes for potential improvements, based on highest volume of ridership. Other existing conditions evaluations included a review of safety related to crash locations, proximity and access to schools, and prototype intersections.

Public input was a major factor in guiding the planning efforts within this Plan. An online active transportation survey was used to gather information reflecting Irondequoit residents’ current levels of walking, bicycling and transit use, their attitudes toward walking, bicycling and transit use, and their insight to barriers that presently exist. The survey went live in January of 2016 and upon closure had received 258 responses. Additionally, a web based mapping tool that utilized crowdsourcing for data collection was available and allowed community members the ability to locate areas of concern, specifically related to pedestrian, bicycle, and shared use trail facilities. A variety of comments were received, ranging everywhere from a few very detailed lists of large numbers of potential improvement areas, to people who had issues with the way that dog waste was managed. A total of 185 survey respondents participated to generate 146 pedestrian concern points, 97 bicycle concern points and 105 trail concern points.



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 establish 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 interim, the Town will continue to implement projects in accordance with capital improvement schedules and specific funding opportunities. Facility recommendations are summarized within the tables below as well as being presented later in the Plan.

Table 3: Sidewalk Network Priority Gaps

Roadway/Location	Recommended Facility Improvement	Responsible Jurisdiction	Phase
Titus Avenue between Portland and Sea Breeze Drive	Complete sidewalk south side	MCDOT, Town of Irondequoit	Priority
Hudson Avenue between Brookview Dr and Seneca Manor	Complete sidewalk west side	MCDOT, Town of Irondequoit	Priority
Culver Road between Titus Ave and Durand	Complete sidewalk west side	MCDOT, Town of Irondequoit	Priority
Culver Road between Ridge Road and Titus Ave	Fix sidewalk gaps to create continuous sidewalk west side	MCDOT, Town of Irondequoit	Priority
Culver Road	Carry sidewalks through driveways	MCDOT, Town of Irondequoit	Recommended
Oak Ridge Drive	Complete sidewalks both sides	Town of Irondequoit	Recommended
Thomas between Van Voorhis and Pattonwood	Complete sidewalks both sides	MCDOT, Town of Irondequoit	Priority
Seneca Park	Complete sidewalk both sides	Town of Irondequoit	Recommended
Kings Highway	Complete sidewalk where topography allows, both sides	MCDOT, Town of Irondequoit	Recommended
Pine Grove	Complete sidewalk where topography allows, both sides	Town of Irondequoit	Possible
Portland	Complete sidewalk east side	MCDOT, Town of Irondequoit	Possible



Table 4: Transit Stop Improvements

Stop Location		Recommended Facility Improvement	Responsible Jurisdiction	Phase
Hudson and Titus (Irondequoit Plaza)	444	Pedestrian scale lighting, increase wayfinding and informational signage, improve pedestrian access, transit stop to building entrance and transit stop to existing sidewalk on Hudson Ave, bicycle parking	MCDOT, RTS, Town of Irondequoit	Priority
Portland and Buell	141	Pedestrian scale lighting, increase wayfinding and informational signage, bicycle parking	MCDOT, RTS, Town of Irondequoit	Priority
Goodman and (former) Tops Plaza (Future Rochester General Hospital location)	59	Pedestrian scale lighting, increase wayfinding and informational signage, bicycle parking	MCDOT, RTS, Town of Irondequoit	Priority
Portland and Staples	56	Pedestrian scale lighting, increase wayfinding and informational signage, improve pedestrian access, transit stop to building entrance, bicycle parking	MCDOT, RTS, Town of Irondequoit	Priority
Titus and Curtis	N/A	New concrete pad	MCDOT, RTS, Town of Irondequoit	Recommended
Goodman & Irondequoit Mall	N/A	New concrete pad	MCDOT, RTS, Town of Irondequoit	Recommended



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Table 5: Bicycle Facility Improvements

Roadway/Location	Recommended Facility Improvement	Responsible Jurisdiction	Phase
Titus Ave (Buckhart to Larkspur)	Roadway restripe candidate (reduction of existing lane widths to create space for bike lanes)	MCDOT	Priority
Titus Ave (Whipple to Culver)	Roadway restripe candidate (reduction of existing lane widths to create space for bike lanes)	MCDOT	Priority
Cooper Rd (Titus to Thorncliffe)	Roadway restripe candidate (reduction of existing lane widths to create space for bike lanes)	MCDOT	Priority
Goodman St (Ridge to Parker)	Roadway restripe candidate (reduction of existing lane widths to create space for bike lanes)	MCDOT	Priority
Clinton Ave (City line to Rogers)	Roadway restripe candidate (reduction of existing lane widths to create space for bike lanes)	MCDOT	Recommended
Empire Blvd (City Line to Helendale)	Road diet candidate (reduction of the number of lanes to create space for bike lanes)	NYS DOT	Recommended
Hudson Rd (Titus to Brookview)	Roadway restripe candidate (reduction of existing lane widths to create space for bike lanes)	MCDOT	Possible
Seneca Rd (Culver to Sea Breeze)	Add or widen paved shoulders	Town of Irondequoit	Recommended
Kings Hwy N (Cranbrook to Lakeshore)	Add or widen paved shoulders	MCDOT	Recommended
Pine Grove (St Paul to Lakeshore)	Add or widen paved shoulders	MCDOT / Town of Irondequoit	Possible
Seneca Park Ave (St Paul to St Joseph)	Add or widen paved shoulders	Town of Irondequoit	Recommended
St Joseph (Seneca Park to Thomas)	Add or widen paved shoulders	Town of Irondequoit	Possible
Colebrook (St Paul to Lakeshore)	Add or widen paved shoulders	Town of Irondequoit	Recommended



Table 6: Prototype Intersection Improvements

Note: While MCDOT owns and oversees permitting on county roadways, the Town of Irondequoit is responsible for the maintenance of sidewalks.

Roadway/ Location	Recommended Facility Improvement	Responsible Jurisdiction	Phase
Titus Avenue & Culver Road	<p>Add sidewalks on south side of Titus Avenue. Reconstruct ramps so that they are ADA compliant. Install two ramps per corner.</p> <p>Add 5-foot by 8-foot ADA compliant bus pads for stops on Culver Road on the southeast and northwest corners on the intersection.</p> <p><i>Note: RTS supports installing bus stop pads with sidewalk connections at each location.</i></p> <p>Potentially reduce northwest and southeast radii to reduce turning speeds.</p> <p>Pedestrian signal push buttons should be located on the poles serving the crossing. It appears is not the case on the northeast corner.</p> <p>While the stop line setback distances are significant, it appears they are required to allow for vehicle turning movements, so no major changes are recommended.</p>	MCDOT, Town of Irondequoit	Priority
Norton Street & Pardee Road	<p>Reduce radii to 30-foot.</p> <p>Reduces pedestrian crossing distance of Norton Street from 35-foot to 27-foot and of Pardee Road from 48-foot to 35'-foot.</p> <p>Replace the northbound NO TURN ON RED 7AM-9AM 2PM-4PM SCHOOL DAYS with a NO TURN ON RED WHEN FLASHING assembly. Although these signs provide more positive affirmation of when the prohibition is actually in place, MCDOT does not recommend the use of them since they compete with the traffic signal for the driver's attention.</p> <p>Install a second pedestrian ramp on the southeast corner</p> <p>Reconstruct curb ramps to be ADA compliant</p> <p>The junction of the crosswalks on the southwest corner is not ADA compliant. If only one ramp is used on this corner, then the crosswalks must have at least 4-foot of a receiving landing at the base (on the asphalt) of the curb ramp. This 4-foot landing must be located within the crosswalks.</p> <p>Provide a sidewalk separated from the roadway along the south side of Norton Street.</p> <p><i>Note: Traffic control at the Norton/Pardee intersection will be evaluated as part of MCDOT's upcoming Capital project to determine what, if any, changes are necessary.</i></p>	MCDOT, Town of Irondequoit	Priority



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Roadway/ Location	Recommended Facility Improvement	Responsible Jurisdiction	Phase
East Ridge Road & Kings Highway	<p>Add 5-foot by 8-foot ADA-compliant bus pads for stops on E Ridge Rd east of the intersection (north side) and Goodman St south of the intersection (east side).</p> <p><i>Note: RTS supports installing bus stop pads with sidewalk connections at the Goodman St stop. Sidewalk improvements were recently completed for the E Ridge Rd stop.</i></p> <p>There is also bus stop on the southwest corner of the intersection. Given that there does not appear to be sufficient space for an ADA-compliant bus pad at this location, consider relocating the stop to align with the existing pedestrian access to the parking lot.</p> <p><i>Note: RTS does not support relocating the bus stop further back from the intersection.</i></p> <p>Consider channelizing the northeast corner of this intersection. It would reduce pedestrian crossing distance</p> <p>Consider reducing radii on SE and NW corners</p> <p>SB approach: ~90-foot reduced to ~65-foot</p> <p>WB approach: ~83-foot reduced to ~55-foot</p>	MCDOT, Town of Irondequoit	Priority
Titus Avenue & Hudson Road (Alt 1)	<p>Consider channelizing the southeast corner of this intersection. Doing so would minimally reduce pedestrian crossing distance. More importantly, it would move the pedestrian crossings closer to the intersection where motorists are more focused on conflicts and moving slower.</p> <p>Looking at the eastbound Titus Ave movements, it appears there may be some potential for motorists' confusion – thus reduced attention to pedestrians. For the recently created second lane for the eastbound departure, consider making the inside lane a left turn only lane for Cooper Road. If this is done, appropriate pavement markings, a LEFT LANE MUST TURN LEFT (R3-7) sign, and a supplemental plaque for distance or specifying COOPER ROAD should be included to alert approaching motorists to the drop lane.</p> <p>Consider installing raised islands where there is currently painted median space.</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. An overhead left turn only sign does exist for east bound Titus at Cooper 2. While improvements were made during the recent MCDOT project, there may be a need for additional enhancements to improve driver awareness. 	MCDOT, Town of Irondequoit	Priority



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Roadway/ Location	Recommended Facility Improvement	Responsible Jurisdiction	Phase
St. Paul & Cooper (Alt 1)	<p>Consider reconstructing this intersection to make it more of a tee-connection</p> <ul style="list-style-type: none"> Extend the eastern curb line Relocate the sidewalk <p>Plant vegetation to screen the southbound and northbound movements from each other. Providing a visual screen will eliminate the impression that the north south is a through street.</p> <p>Prohibit RTOR, either with on demand blank-out signs, or if ped volumes merit, continuous prohibition.</p> <p><i>Note: MCDOT does not support full time no turn on red unless a sight distance issue exists.</i></p> <p>Relocate the pedestrian crossings</p>	MCDOT, Town of Irondequoit	Priority
Pattonwood Drive & St Paul Boulevard	<p>This intersection is quite compact and there seems to be little from a geometric, signing, striping standpoint that would improve it for pedestrians. There is right on red prohibition for the east to south turning movement from Pattonwood Drive; this should address the issue of limited southern visibility to pedestrians approaching on the sidewalk. Visibility from St. Paul to the crosswalk seems unrestricted.</p> <p>The field notes suggest that right and left turns onto Pattonwood Dr pose safety concerns.</p> <ul style="list-style-type: none"> Consider a leading pedestrian interval at for this crossing R10-15 signs reminding TURNING VEHICLES YIELD TO PEDS could be added next to the signal heads for the St. Paul Blvd approaches <p><i>Note: according to MCDOT, "the use of R10-15 signs will be considered in situations where there is a documented condition where vehicles are not yielding to pedestrians as required by law."</i></p> <p>Consider Shared Lane Markings and Bikes May Use Full Lane Signs throughout this section beginning north of the railroad crossing and ending south of the choke point south of the intersections</p>	MCDOT, Town of Irondequoit	Priority



FACILITY DESIGN GUIDANCE: This section will serve as 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: Irondequoit'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 on-the-ground facilities. The section analyzes Irondequoit's existing codes, standards, policies, and practices as they relate to bicycling and walking. Recommendations include the adoption of a town wide Complete Streets policy and requiring all development documents to incorporate 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 accomplish the Town's goals.

OUTREACH AND EDUCATION RECOMMENDATIONS: Conducting outreach and education programs is an important aspect of the active transportation planning process, serving to increase the number of bicyclists and pedestrians while concurrently improving safe and appropriate behavior. This can be accomplished by connecting with numerous local and regional partners. Collectively they can maximize the effectiveness of existing resources, programs, and materials. Appointing a public bicycle/pedestrian committee to engage with various groups on an ongoing basis in the promotion of bicycling and walking in the community can serve as a strong and sustainable complement to recommended outreach and education programs.

FUNDING AND IMPLEMENTATION STRATEGY: The Active Transportation Plan includes 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, FAST Act, 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.

PILOT PROJECTS & FOLLOW-ON ACTIVITIES: The final report highlights a wide range of needed improvements that were identified by residents during the planning process. However there are components that were not included within the Plan's original scope/budget. The Irondequoit Active Transportation Plan does not identify all of the specifics needed to construct every recommended project. These follow on activities can be addressed by the Town and/or stakeholders as implementation takes shape. Consequently, some work still remains to be done.



2.0 INTRODUCTION AND SUMMARY



Image: Town of Irondequoit

2.1 BACKGROUND AND PURPOSE

This report summarizes the analysis, planning, and design recommendations included in the Town of Irondequoit's Active Transportation Plan. They represent the Town's approach to active transportation by providing a community based, data driven blueprint guiding future decisions and associated infrastructure investment. The Plan is intended to guide pedestrian and bicycle development by establishing a network of sidewalks, on-road bicycle facilities, and off-road trails that make it safer and easier to walk, ride a bicycle or access public transit. As a result, the Town becomes a more sustainable community enhancing its reputation as a great place to live, work, play, and raise a family.

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 Irondequoit is surrounded by a rich inventory of natural resources that individually support the walking and cycling communities. Providing recommendations to link these resources is the basis for the Town's Active Transportation Plan. Connecting Lake Ontario, the Genesee River and Irondequoit Bay, the Town's extensive park system and the developing perimeter trail network will result in a progressive community that welcomes and safely accommodates non-motorized transportation. Adding key improvements along existing streets will further enhance access to destinations throughout the Town. Refer to [Figure 1](#), within the Existing Conditions Evaluation section, for an existing conditions map.



Some of Irondequoit's resources and assets include:

- Home to 51,692 residents (according to the 2010 U.S. Census);
- Proximity to Lake Ontario, Genesee River and Irondequoit Bay;
- Genesee Riverway Trail, Irondequoit Bay Trail, Seabreeze Trail and Irondequoit Lakeside Multi-Use Trail;
- Proximity to large areas of green space including Seneca Park, Durand-Eastman Park, and Irondequoit Bay Park West, as well as recreational activities including the Seneca Park Zoo and Seabreeze Amusement Park;
- Strong commercial areas, including I-Square and sections of Empire Boulevard and Ridge Road;
- A strong education system, featuring small neighborhood schools;
- Proximity to Rochester General Hospital and high quality health services;
- Adjacent to the City of Rochester and the towns of Webster, Penfield, and Brighton

2.2 BENEFITS OF ACTIVE TRANSPORTATION

The purpose of the plan is to increase the viability of biking and walking as transportation and recreation options for residents of and visitors to the Town of Irondequoit. 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 Irondequoit today, they are likely to be even more important in meeting the needs of tomorrow. With the development of this plan, the Town of Irondequoit is taking a progressive stance in addressing important issues such as rising fuel prices, environmental degradation, and community health problems related to inactivity. The Plan will tie into other ongoing Townwide sustainability efforts, and will help the Town to harvest long-term economic, environmental, health and social benefits of active transportation.

When asked how they would allocate transportation funding, Americans reported they would spend about 22 percent of transportation funding on biking and walking infrastructure – nearly 15 times what is currently spent. People want and need more transportation options. Not only will multiple mobility options make the transportation system more efficient but it will help to combat the growing obesity epidemic and reduce the oil dependency in the U.S.

-American Association of Retired Persons

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 transportation options above and beyond motorized vehicles, which include transit use, walking and bicycling. Transit use, walking and bicycling offer environmental, health, economic and social benefits. Refer to [Figure 4](#), within the Existing Conditions Evaluation section, for an existing transit map.



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.

Active transportation is important at all stages of our lives. Improvements to pedestrian and bicycle infrastructure in Irondequoit 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 environmental impact – bicycling and walking create zero greenhouse gas emissions. Active transportation reduces air pollution, minimizes traffic congestion, and decreases 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.

Active transport can provide relatively large energy savings because it tends to substitute for short urban trips that have high emission rates per mile due to cold starts (engines are inefficient during the first few minutes of operation) and congestion. As a result, each 1% shift from automobile to active travel typically reduces fuel consumption 2-4% - Victoria Transport Policy Institute, 2016

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.

Land use and building patterns exacerbate health problems by providing new, disconnected neighborhoods that have few opportunities for walking or biking. In addition, lifestyles have become increasingly sedentary in our post-industrial society. Walking and bicycling provide opportunities 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



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ECONOMIC BENEFITS Better bicycling conditions will provide access to recreational and work destinations, schools, public transit, and local shops. This in turn promotes 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 to economic growth. By developing transportation programs and encouraging active transportation, the local economy captures potential savings by keeping shoppers centrally located, resulting in increased community reinvestment.

Daily walking and biking to work and errands reduces promotes health, reduces wear on infrastructure and decreases safety/health care costs. For every \$1 Portland, Oregon spends on biking infrastructure, they save \$4 in health and fuel costs.

- Outdoor Industry Foundation.org

Health care costs and insurance rates continue to escalate, 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 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. This greater disposable income can be circulated into the local economy. Health care is a major employer and active transportation can connect to and support the health care industry.

Commercial bike industry & tourism: Produces \$4.8 Billion annually for NY, NJ & Penn combined generating 44,000 jobs and \$623 million in Fed and State taxes.

- OutdoorIndustryFoundation.Org

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 own cars. This improves access to jobs, education, and health care. Bicycling and walking is appealing to families looking for new recreational opportunities that increase social interaction and contribute 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 live. Cities that promote bicycling tend to retain youth, attract young families, and increase social capital.



Images: Town of Irondequoit

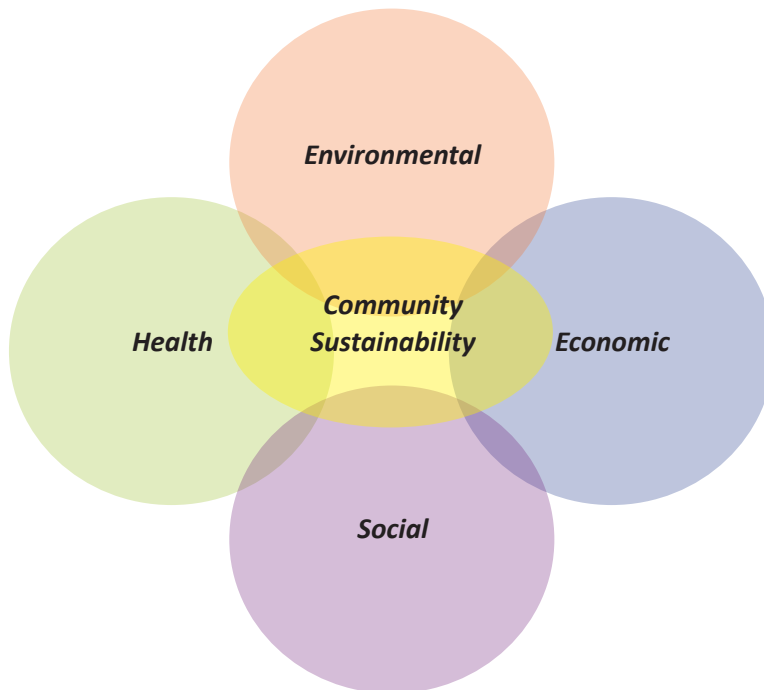


TOWN OF IRONDEQUOIT
ACTIVE TRANSPORTATION PLAN

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 Irondequoit is taking important steps towards a future where bicycling, walking and transit are recognized and acknowledged as viable options for trips of all purposes.

Five times the national average of college educated 24-34 year-olds millennials are moving to Portland.

- Walkable City, Jeff Speck





2.3 RELATIONSHIPS TO OTHER PLANS AND STUDIES

In developing new plans, it is important to refer to completed plans and studies 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 the local school districts were consulted. The Plan builds on the following local Plans, Studies, and Technical Memorandums:

- Bicycle and Pedestrian Action Plan for the Rochester Metropolitan Area, 1996
- Regional Trails Initiative Final Report & Action Plan: Phase I - Rochester TMA, 2002
- Town of Penfield Bicycle Facilities Master Plan, 2008
- Genesee-Finger Lakes Historic Transportation Gateway Inventory and Assessment, 2009
- Safe Routes to School Guidebook for the Genesee Finger-Lakes Region, 2009
- Rochester Bicycle Master Plan, 2011
- BikeWalkBrighton, 2012
- Genesee-Finger Lakes Regional Trails Initiative Update, 2014
- Town of Greece Bicycle and Pedestrian Master Plan, 2014
- Finger Lakes Regional Economic Development Council: Progress Report & Recommended Priority Projects, 2015
- Brockport Active Transportation Plan, 2015
- Rochester Area Bike Sharing Program Study, 2015
- Town of Chili Bicycle and Pedestrian Master Plan, 2015
- Henrietta Active Transportation Plan, 2016
- Long Range Transportation Plan for the Genesee Finger-Lakes Region 2035



2.4 PLAN SUMMARY

The Town of Irondequoit 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 Irondequoit. The Plan recognizes that there are other ways to promote walking and bicycling activity. Conducting outreach and education initiatives can increase awareness among Town residents of existing and future opportunities. Because Active Transportation initiatives are clearly connected to an improved economic development climate, outreach activities should also engage the private sector to encourage their participation in providing non-motorized 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
- Outreach and education recommendations
- Funding and implementation strategy
- Pilot projects and follow on activities

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.

PROJECT ADVISORY COMMITTEE

Douglas Averill	Irondequoit Police Department Community Services	Dan Kenyon Bob Kiley	Regional Transit Service (RTS) Town of Irondequoit
Lorie Barnum	Town Board	Jay Lambrix	Resident
Rochelle Bell	Monroe County Planning	Jeremy Morgante	Winona Woods
Dan Buerkle	Resident and Business Owner	Leslie Murphy	Resident
Kathy Callon	Resident and E. Irondequoit Central School District	Brent Penwarden Kimmie Romeo	Monroe County DOT Irondequoit Conservation Board (ICB)
Rich DeSarra	Rochester Bicycling Alliance	David Seeley	Town of Irondequoit
Rev. Patrina Freeman	Resident and League of Women Voters	James Stack Fred Squicciarini	Genesee Transportation Council (GTC) Irondequoit Chamber of Commerce
Bradley Huber	Winona Woods	Richard V. Tantalo	Irondequoit Police Department
Kerry Ivers	Town of Irondequoit	Chris Tortora	GTC
Lauren Kelly	Director of Development Services		



Table 1: Chronology of Community Involvement

DATE	WHAT	PURPOSE
September 30, 2015	Public Kick-off Meeting	The intent of this meeting was to introduce the Irondequoit community to the project background, overall purpose, planning process and project team.
October 08, 2015	Project Advisory Committee Meeting	At this first committee meeting, PAC members were given an opportunity to learn more about the planning process (timeline and deliverables) and asked for initial input and ideas that guided the project.
November 8, 2015	Project Advisory Committee Meeting Bike Tour	Site Visit: Consisted of a bicycle tour around Irondequoit with the PAC. Refer to Appendix B for bike tour map and comments.
November 17, 2015	Project Advisory Committee Meeting Walk Tour/Van Tour	Site Visit: Consisted of a walking tour, transported by vans, around key locations in Irondequoit with the PAC. Refer to Appendix B for walk/van tour map and comments.
December 08, 2015	Project Advisory Committee Meeting	Data collection and analysis including Level of Service.
March 15, 2016	Project Advisory Committee Meeting	Review of the existing conditions inventory and needs assessment. Preparation for the March 22, 2016 public meeting.
March 22, 2016	Public Meeting	The project team lead community members through an interactive public information meeting, which included an overview of the inventory and analysis conducted to date and public input/feedback on active transportation needs and priorities. Refer to Appendix A for meeting documents.
October 12, 2016	Public Meeting	The project team presented concepts for the alternatives and recommendations. Refer to Appendix A for meeting documents.



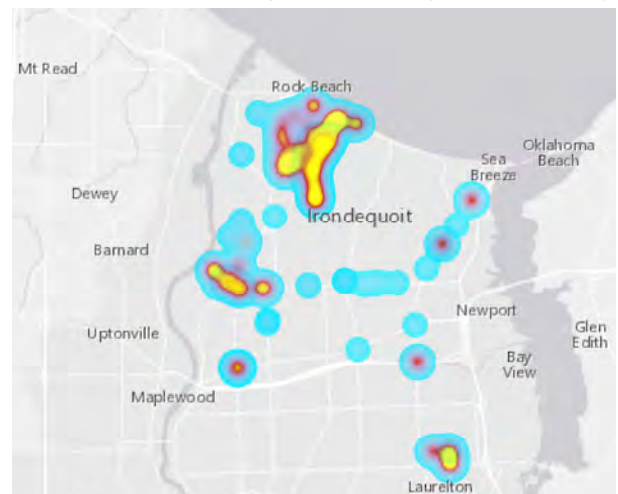
Images: Public meeting held on March 22, 2016

DATA GATHERING THROUGH LOCATION-BASED CROWDSOURCING

The Irondequoit Active Transportation Plan Feedback Map, viewed nearly 425 times throughout the planning process, is an interactive web based mapping tool that utilizes crowdsourcing for data collection. Crowdsourcing tools rely upon knowledge from the community who, in this instance, are the experts around Irondequoit. Members of the community had the ability to locate areas of concern, specifically related to pedestrian, bicycle, and shared use trail facilities.

Image: Crowdsourced feedback heat map

When joined with GIS technologies, Crowdsourcing enabled the Town to collect real-time, location-based information. This provided the Town with the data they needed to develop this Plan, providing real benefits to the community. In order to gather this information and identify areas for improvement from a multi-modal transportation perspective, a mobile, web-based crowdsourcing application was created. It was developed using Environmental Systems Research Institute's (ESRI) ArcGIS Online Crowdsourcer Reporter template. The information collected and analyzed helped identify practical and feasible recommendations arising from an objective and defensible planning process.



The responses were categorized by their concern type, between specific intersections that did not serve pedestrians well, roads that were lacking in adequate on-road space for bicycles or sidewalks for pedestrians, and other comments such as street lighting issues, suggestions for mixed-use trails, etc. A variety of comments were received, ranging everywhere from a few very detailed lists of large numbers of potential improvement areas, to people who had issues with the way that dog waste was managed. A total of 185 survey respondents participated to generate 146 pedestrian concern points, 97 bicycle concern points and 105 trail concern points. Refer to [Figure 8](#) within Facility Recommendations for priority input locations.



The nine roads with the highest number of comments about bicycle and pedestrian facilities (from greatest to least) were:

- Titus Ave
- St Paul Blvd
- Culver Rd, Ridge Rd
- Cooper Rd
- Hudson Ave
- Lakeshore Blvd
- Kings Highway/Goodman Rd
- Thomas Ave

The seven destinations that were noted would benefit most from bicycle/pedestrian improvements (from greatest to least) were:

- Library/Town Hall Complex
- I-square
- Irondequoit Plaza/Hudson Wegmans
- Durand Park and Beach
- Culver Ridge Plaza/Wegmans
- Seneca Park/El Camino Trail
- Seabreeze

Drawing from these recommendations, we are able to formulate a plan for which areas need improvement from an experiential viewpoint. This input can be combined with other data that we obtain about roadway usage and traffic volumes, pavement widths, and current lane striping, etc. in order to help us create a comprehensive set of infrastructure recommendations that address both the primary concerns of residents and traditional street data-based issues.

DATA GATHERING THROUGH AN ONLINE SURVEY

An active transportation survey was used to gather information reflecting Irondequoit residents' current levels of walking, bicycling and transit use, their attitudes toward walking, bicycling and transit use, and their insight to barriers that presently exist. The content was developed in collaboration with the Project Advisory Committee and Town officials. Survey data was captured through the use of Survey Monkey, a third party online survey tool. The survey went live in January of 2016 and upon closure had received 258 responses. Refer to [Appendix A](#) for summary information per question.



3.0 EXISTING CONDITIONS EVALUATIONS



Image: Bike tour held on November 8, 2015

3.1 COMMUNITY CHARACTERISTICS

Irondequoit is a town in Monroe County, New York State, with a population of about 51,000, and a total area of 15 square miles. The western boundary of Irondequoit is defined by the Genesee River, and the City of Rochester, which also serves as the southern boundary. Lake Ontario forms the northern boundary and to the east are the towns of Webster, Penfield and Brighton. New York State's Route 104 and Route 590 both traverse Irondequoit.

Irondequoit is a prime candidate for an active transportation plan, surrounded by natural resources which encourage walking and cycling. These include Lake Ontario, the Genesee River, Irondequoit Bay, an extensive park system, and a developing perimeter trail network. Making key improvements along existing streets will provide greater access to destinations throughout the Town of Irondequoit.

Irondequoit aptly means "where the land and waters meet" for the town is bordered by Lake Ontario, the Genesee River, Irondequoit Bay, the 1000-acre Durand-Eastman Park, and the City of Rochester.

- Town of Irondequoit



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 all 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 when identifying and prioritizing facility improvements.

An evaluation of existing bicycling and pedestrian conditions was conducted for the Town's network of arterial and collector roads (approximately 150 segments totaling about 55 centerline miles) using the Bicycle & Pedestrian Level of Service Models, based on data collected. These models, which have been applied to hundreds of thousands of miles of roads throughout the United States, are fundamental performance measures and design tools in the Highway Capacity Manual (HCM, 6th Edition). The following sections provide background information and data descriptions for these evaluation tools.

LEVEL OF SERVICE MODELS

The Bicycle Level of Service (BLOS) Model and Pedestrian Level of Service (PLOS) Model, existing conditions performance measures, are "supply-side" criteria. The models use a range of measures related to bicycling and walking conditions of a roadway to provide an evaluation of the users' safety and comfort with respect to motor vehicle traffic and roadway conditions. These nationally adopted and widely used methodologies quantify the quality or level of service (accommodation) for bicyclists and pedestrians that currently exist within the roadway environment. A major benefit of incorporating the BLOS and PLOS is the information they provide regarding network segments with the greatest needs. They utilize the same measurable traffic and roadway factors that transportation planners and engineers use for other travel modes. These methods are 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.



In a similar manner, the PLOS Model incorporates the following primary factors

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



Image: Walk tour/van tour held on November 17, 2015

The level of service analysis produces, for each study network segment, a relative score and “grade” which measures accommodation on that section of roadway , as shown in the following table.

Table 2: Level of Service

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 150 directional network segments based on the collected network data. The distribution of bicycle level of service grades is shown in [Figure 2](#). At a distance-weighted network-wide level, the current bicycling conditions in the Town of Irondequoit correspond to bicycle level of service 3.21 (“C”), which is generally favorable compared with many other municipalities nationwide. [Appendix C](#) 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 evaluated for the same study network. The distribution of pedestrian level of service grades is shown in [Figure 3](#). At a distance-weighted network-wide level, the Town of Irondequoit current pedestrian conditions correspond to a pedestrian level of service 3.24 (“C”), which is also generally favorable compared with many other municipalities nationwide. [Appendix C](#) provides additional information about the PLOS Model, and [Appendix D](#) 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 Irondequoit which generally provide comfortable conditions for bicyclists and pedestrians because of their low traffic volumes and speeds.

SIDEWALK FACILITIES

The presence of sidewalks was assessed throughout Irondequoit’s arterial and collector roads, which were identified during the Level of Service process. Public sidewalks contribute greatly to the residents’ quality of life by providing safe opportunities for healthy activity and opportunities for social interaction. [Figure 8](#), in the recommendation section of this report, illustrates existing sidewalk locations and provides an analysis of the presence or absence of sidewalks throughout the system. It is recommended that Irondequoit use [Figure 8](#) to identify where new sidewalks are needed for future development projects. Sidewalks were prioritized through fieldwork, , and location and in terms of proximity to key destinations and gaps within the existing sidewalk network.

Although sidewalks may be installed as part of NYSDOT and Monroe County DOT roadway projects, ownership and maintenance is the responsibility of the Town of Irondequoit. Unless federal aid is available through Monroe County DOT projects, the cost of sidewalk installation is the Town’s responsibility.

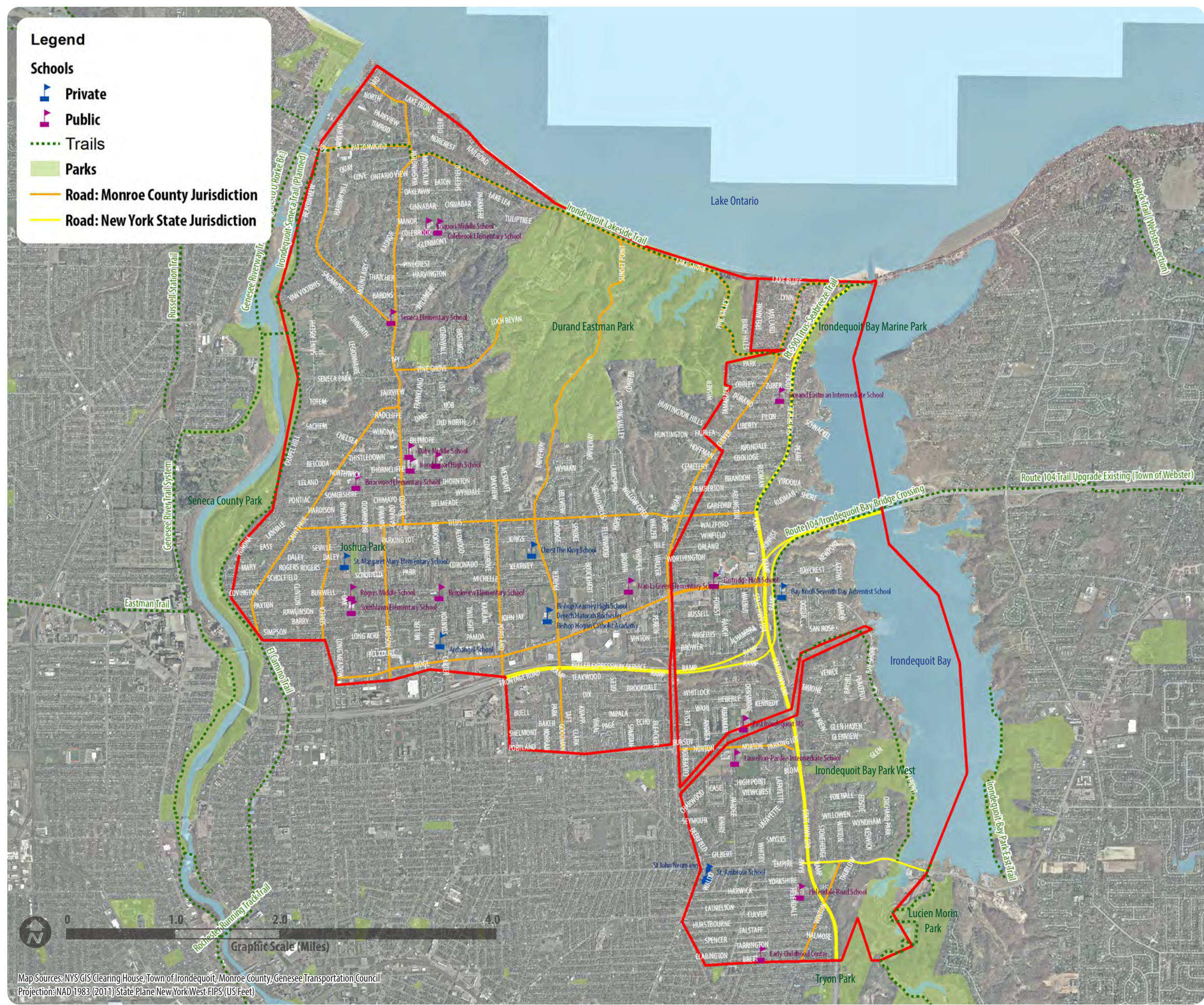


FIGURE 1
EXISTING CONDITIONS

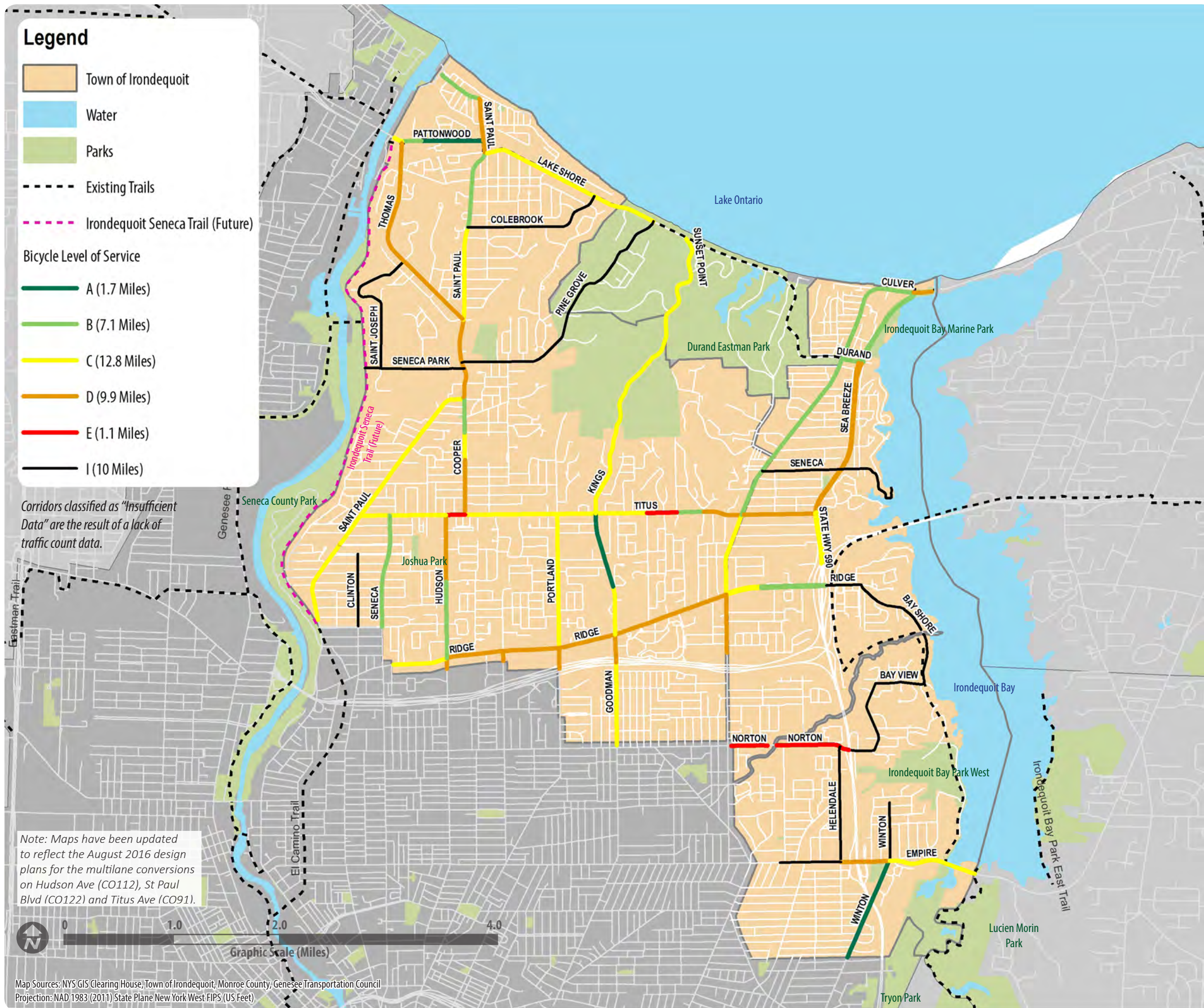


FIGURE 2
BICYCLE LEVEL OF SERVICE

EXAMPLE OF BICYCLING CONDITIONS



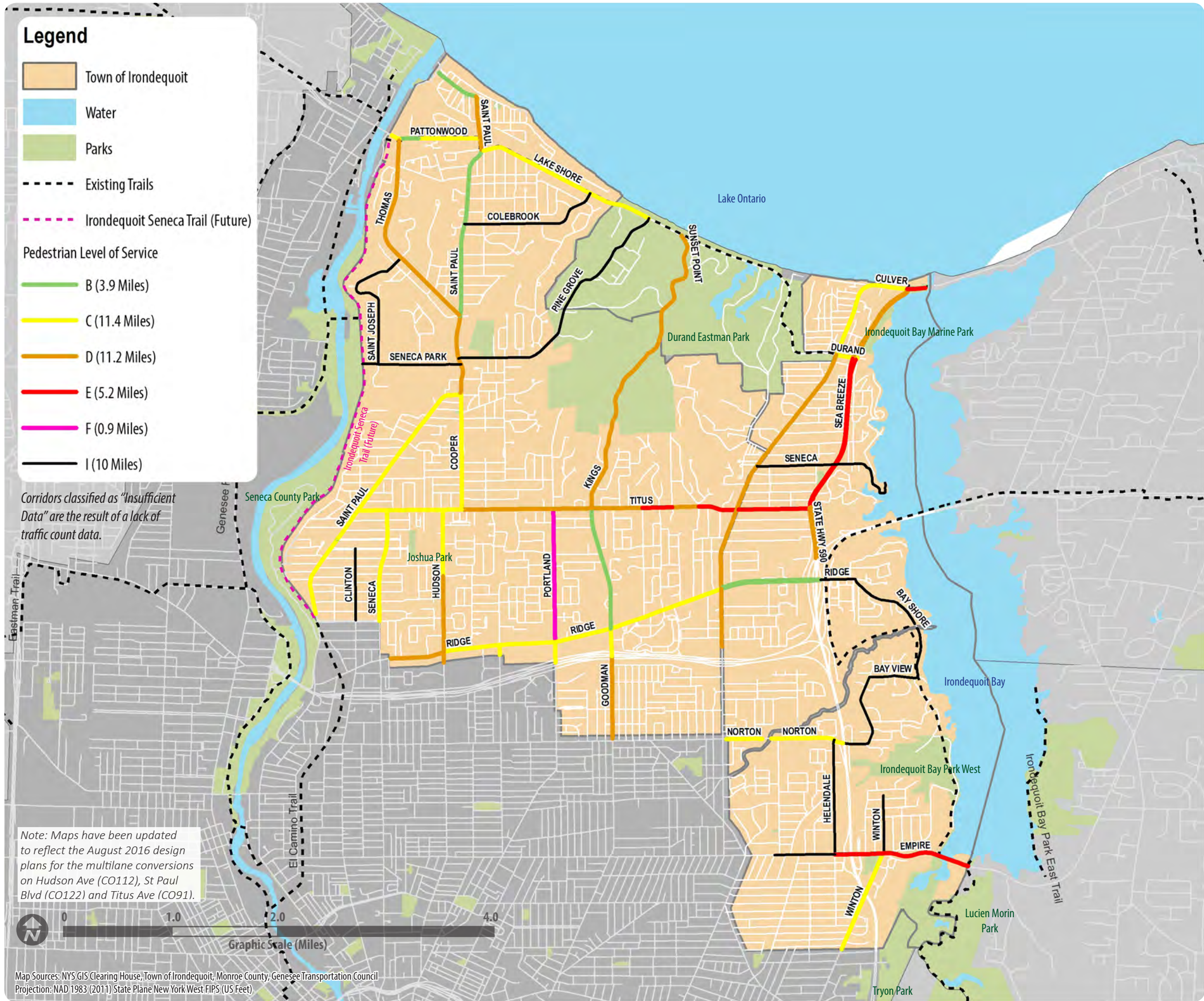


FIGURE 3
PEDESTRIAN LEVEL OF SERVICE

EXAMPLE OF WALKING CONDITIONS



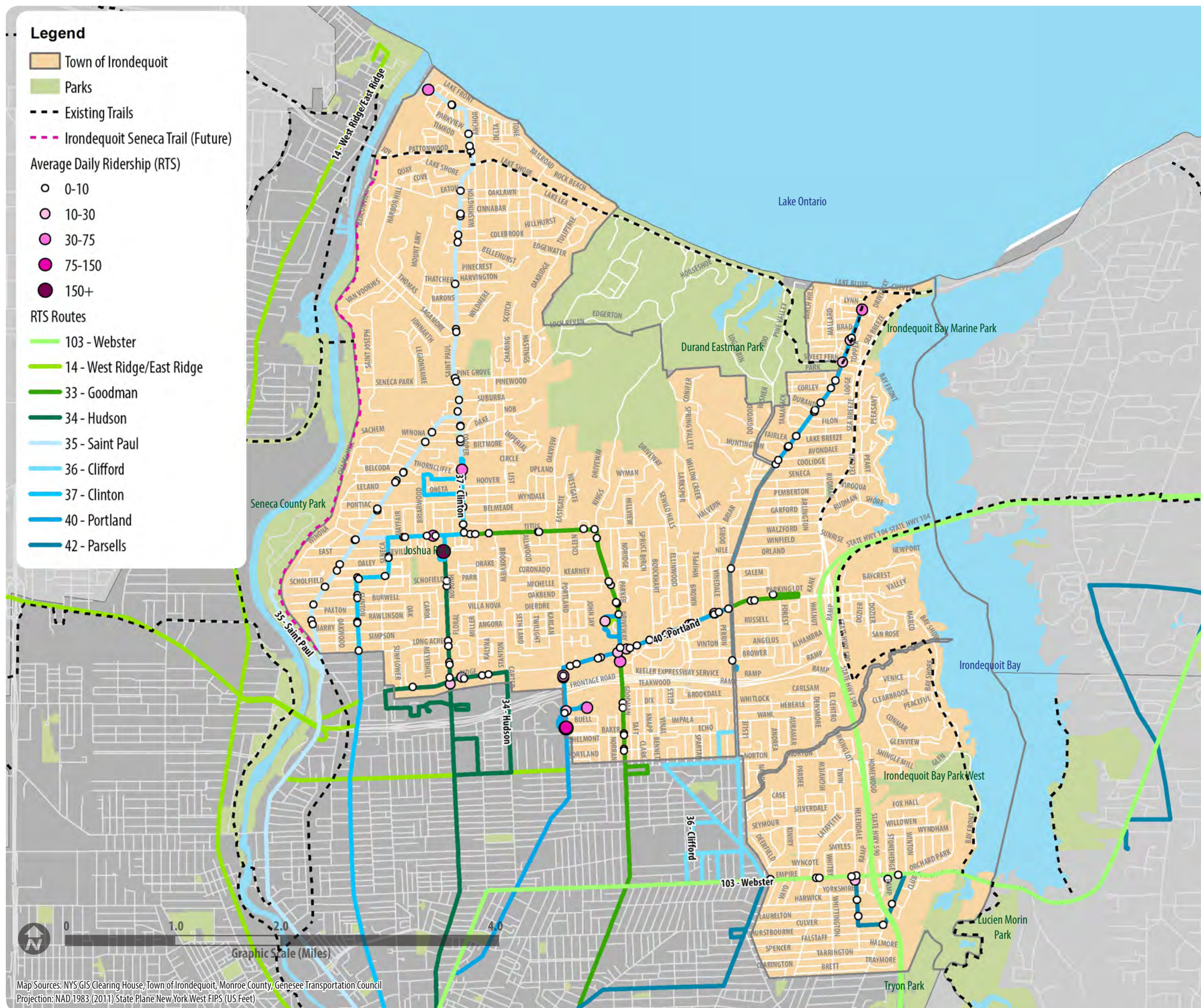


FIGURE 4
EXISTING TRANSIT

HIGHEST RIDERSHIP: EXISTING TRANSIT STOPS

- » **Irondequoit Plaza #1803**
Average Daily: 499
- » **Portland & Buell #3164**
Average Daily: 151
- » **Portland & Buell #3138**
Average Daily: 119
- » **Seabreeze Amusement Park #4216**
Average Daily: 71
- » **Titus & Curtice #3819**
Average Daily: 66
- » **Goodman & Tops Plaza #1622**
Average Daily: 53
- » **Goodman & Irondequoit Mall #1599**
Average Daily: 53
- » **Portland & Staples #4910**
Average Daily: 53
- » **St Ann's Main Ent #3621**
Average Daily: 50

Note: Information provided by RTS



3.3 SAFETY EVALUATION

A safety evaluation was conducted for the Town of Irondequoit using 10 years of historical accident data from the Genesee Transportation Council (Accident Location Information System - ALIS). Pedestrian and bicycle crash locations were each mapped in order to identify areas that may present opportunities to improve bicyclist and pedestrian safety. Identifying crash locations determined how well streets actually met the needs of bicyclists and pedestrians and helped to ascertain where gaps truly exist. This safety assessment was a key component in selecting the Prototype Intersections, as well as making recommendations for Priority Sidewalk Additions.

An additional safety evaluation relating to the existing road slopes was conducted to determine gradients, the results of which are illustrated on [Figure 5](#). Data used for the study consisted of LiDAR contours, which provided existing grades throughout the Town of Irondequoit. In cycling terms, “gradient” simply refers to the steepness of a section of road. Analyzing road gradient provides the data necessary when choosing the best roadways for bicycle facilities. This includes controlling downhill speeds to increase safety for riders, specifically related to reducing stopping times. The majority of roadways within the town fall in the 0-3% slope range, which provides fairly easy climbs for riders of all mobility levels. The following list provides a rough guide of the impact of various gradients on bicyclists

- 0%: A flat road
- 1-3%: Slightly uphill but not particularly challenging. A bit like riding into the wind.
- 4-6%: A manageable gradient that can cause fatigue over longer distances.
- 7-9%: Starting to become uncomfortable for seasoned riders, and very challenging for new climbers.
- 10%+: A painful gradient, especially if maintained for longer distances.

3.4 SHARED-USE TRAILS

EXISTING TRAILS

Irondequoit has an extensive collection of shared use trails, mostly around its periphery and along Lake Ontario, the Genesee River and Irondequoit Bay. This trail system is connected to the regional trail system and is a great active transportation asset both within Irondequoit and for the surrounding communities.

Seabreeze Trail is approximately two miles long and runs along Seabreeze Drive, near the eastern edge of Irondequoit. Both the Seabreeze Trail and Seabreeze Drive are located in the former right of way of New York 590. The trail connects the east end of Titus Avenue with the north end of Culver Road. The trail passes Durand Eastman Intermediate School, Seabreeze Amusement Park and Irondequoit Bay Marine Park. The northern most point of the Seabreeze Trail connects to the Irondequoit Lakeside Trail.

Irondequoit Lakeside Multi-use Trail is approximately five miles long and follows the shore of Lake Ontario from Irondequoit Bay to the Genesee River. The trail passes through Durand Eastman Park, and boasts spectacular views of all three of the area’s major water bodies. The trail was built on a former railroad bed known as the Hojack Line. There is a signed, on-street connection between the Irondequoit Lakeside Multi-use Trail and the Genesee Riverway Trail. Refer to [Figure 3](#).



The Genesee Riverway trail is an 18 mile trail that extends south along the Genesee River, mostly along the western bank. It begins in Ontario Beach Park in Irondequoit and travels south into downtown Rochester. A few scenic pull-outs offer stunning views of the high waterfalls along the river. Farther south the trail ends in the suburb of Brighton, where it meets the Erie Canalway Trail. The Genesee Riverway trail also connects with the Genesee Greenway, a 60 mile trail that connects with the Finger Lakes Trail system.

The El Camino Trail is a 2.25 mile trail that extends from Mill Street in Rochester to the Seneca Park pedestrian bridge. This trail, on a former railroad line, provides a connection from the southern boundary of Irondequoit into Downtown Rochester.

PLANNED TRAILS

The planned Irondequoit Seneca Trail would run along the eastern edge of the Genesee River, predominantly within Seneca Park, and connect the Irondequoit Lakeside Multi-use Trail and with the Genesee Riverway Trail. In addition to the Genesee Riverway Trail connection, the Irondequoit Seneca Trail also has the potential to connect with the El Camino Trail, which extends from the boundary of Seneca Park into downtown Rochester.

The upcoming Seneca Park Master Plan has the potential to clarify and develop the plans for the Irondequoit Seneca Trail, and a new funding source for purchasing the rail line right of way is being pursued. The Irondequoit Seneca Trail is also included the Regional Trails Initiative Update (2016).

MICROTRAILS

There are a number of informal microtrails throughout Irondequoit. These shortcuts have a high value as safe routes for cyclists and pedestrians, particularly those that are near schools, bus stops, or other important community destinations. Though small, they have the potential to have a large positive impact on the active transportation network within the town of Irondequoit.

A number of these microtrails have been identified as part of this Active Transportation Plan. This is not an exhaustive list, but can serve as a starting point for compiling a complete inventory. Refer to [Figure 6](#) within the Existing Conditions Evaluation section and [Figure 7](#) within the Facility Recommendations.

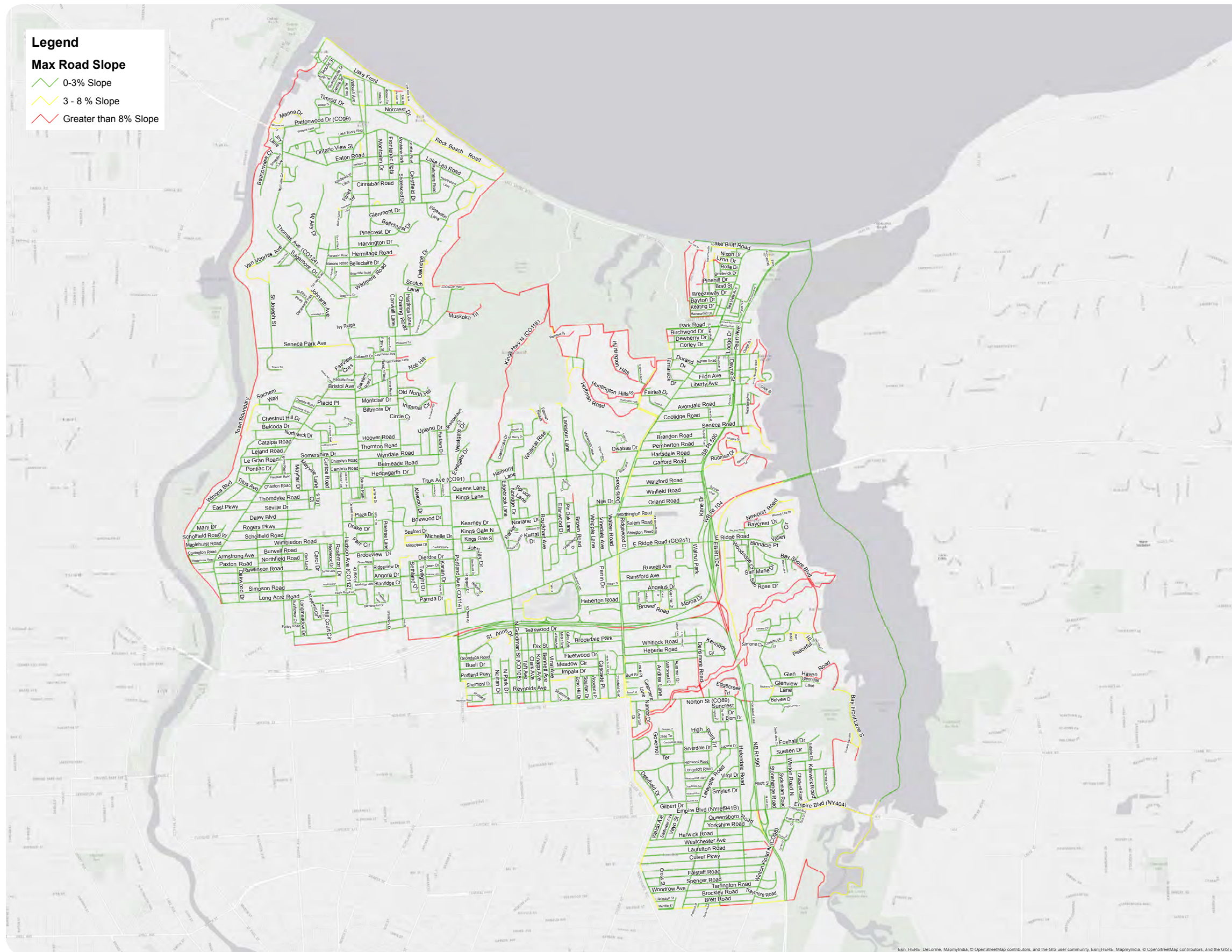


FIGURE 5
ROAD SLOPE

DATA SOURCE OVERVIEW

The road slope layer is created using the 2006 Monroe County LiDAR data derived slope data and the New York State Centerline file. To create this data the centerline file elevation was interpolated against the slope data creating slope for the z values. Then using the calculate geometry function in ArcGIS, we calculated the maximum slope value along each segment of centerline. This data was then symbolized to show roads with a low maximum slope as green and high maximum slopes in red.



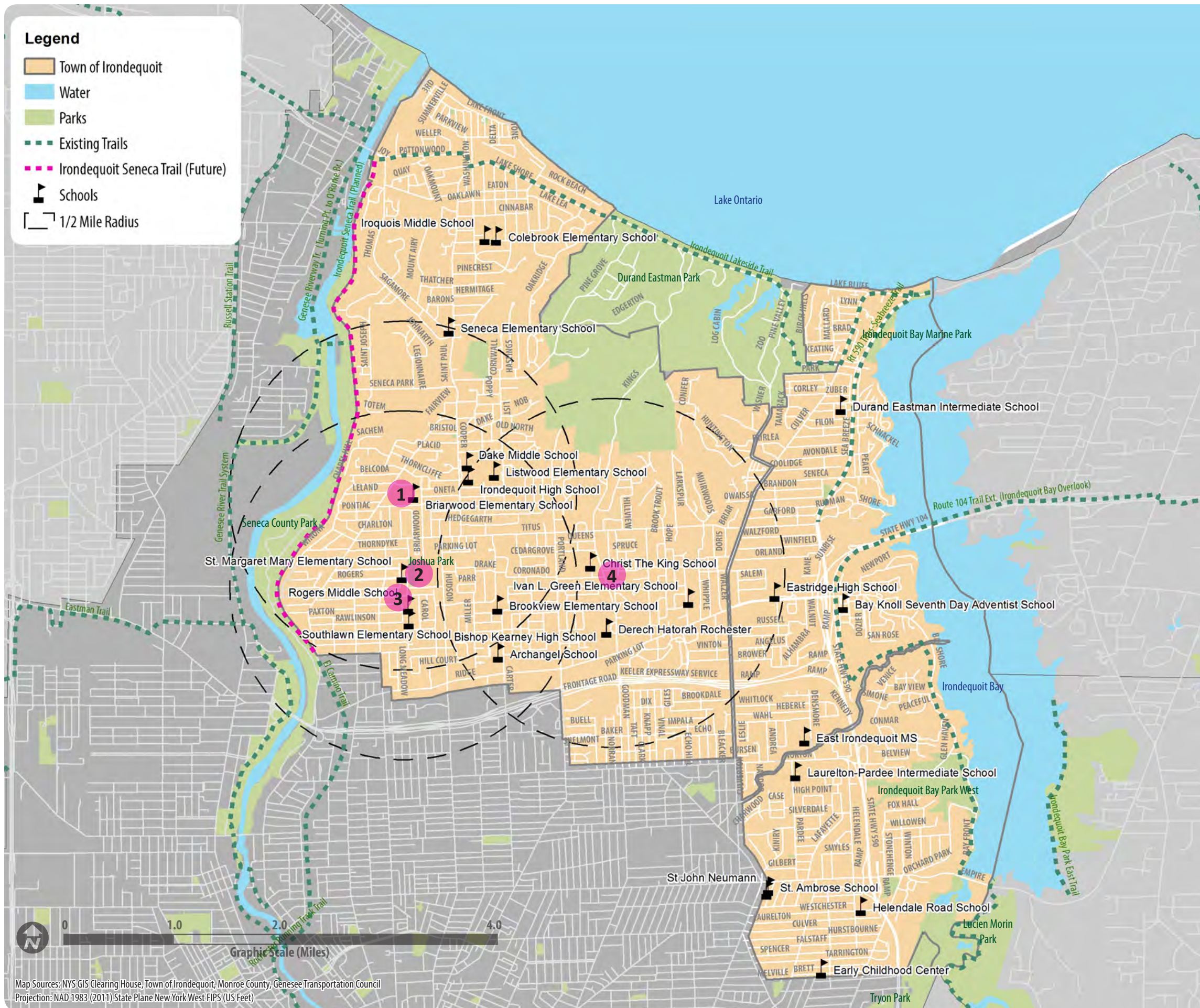


FIGURE 6
EXISTING TRAILS & MICROTRAILS

- MICROTRAIL 1: ST. PAUL TO NORTHWICK**
- MICROTRAIL 2: HUDSON TO SCHOFIELD/ROGERS/SEVILLE**
- MICROTRAIL 3: OAK TO WIMBLEDON**
- MICROTRAIL 4: NORIDGE TO KINGS HIGHWAY**



3.5 SCHOOLS

Irondequoit is served by two school districts, West Irondequoit and East Irondequoit, in addition to several private schools.

West Irondequoit serves approximately 4,000 students and has six elementary schools, two middle schools, and two high schools.

East Irondequoit serves approximately 3,600 students and has five elementary schools, one middle school, and one high school.

Promoting bicycling and walking for school age children can establish patterns of behavior that influence and define lifetime active transportation practices. Providing safe opportunities for walking and bicycling to schools will have positive health impacts for school age children, and help reduce short-distance automobile trips. Refer to [Figure 1](#) for an existing school locations map.

3.6 PROTOTYPE INTERSECTIONS

Six intersections in Irondequoit were selected for further study and more detailed recommendations for improvements. The primary goals for suggested intersection improvements are to improve pedestrian and bicycle safety and support increased walking and bicycling trips. The six intersections selected for detailed analysis, in addition to the controlling jurisdiction, are listed below:

- Titus Avenue (EB/WB) and Culver Road (NB/SB), Monroe County DOT
- Norton Street (EB/WB) and Pardee Road (NB/SB), Monroe County DOT, Town of Irondequoit
- East Ridge Road (EB/WB) and Kings Highway (NB/SB), Monroe County DOT
- Hudson Avenue (NB/SB) and Titus Avenue (EB/WB), Monroe County DOT
- Cooper Road (NB/SB) and St. Paul Boulevard (EB/WB), Monroe County DOT
- St. Paul Boulevard (NB/SB) and Pattonwood Drive (EB/WB), Monroe County DOT

Prototype 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, local anecdotal information and perceived safety issues. The project team made site visits to observe conditions at all six prototype intersections. The prototype intersections act as case studies that can be applied over time to other intersections as well.



Intersection safety assessments involved field investigations that considered the physical and operational characteristics of each location pertinent to pedestrian and bicycle safety. A desktop analysis using AutoTURN software was used to verify the layout. Elements that were investigated included, but were 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 crashes at the Prototype 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 a 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 will not trigger an MV-104 accident report.

As an additional layer of information, public input recorded to date was used to help evaluate the actual and perceived safety of the prototype intersections. There were a significant number of anecdotal reports regarding problems for pedestrians and bicyclists at these intersections. Public input clearly indicated that many Irondequoit 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 Irondequoit. 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 in the recommendations section of this report, in [Figure 12](#).



4.0 FACILITY RECOMMENDATIONS



Image: Town of Irondequoit

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 Irondequoit, 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. Refer to [Appendix E](#) for schematic costs for pedestrian and bicycle infrastructure.

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

Each project varies in priority based on the number of people served by the project and the feasibility of 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

MICROTRAILS

This Plan identifies alternative enhancements to the microtrail segments in Irondequoit, and strategies for integrating them with other on-road/off-road improvements. Recommendations provide direction for maximizing the value of the Irondequoit Trail System, both with recreational assets and active transportation facilities. Refer to [Figure 7](#).

SIDEWALK NETWORK PRIORITY GAPS

One important task of Irondequoit's Active Transportation Plan was to identify gaps in the existing sidewalk network and to 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. 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 Irondequoit along arterial and collector roads and identified existing gaps. Priority sidewalk additions address gaps along roads that were identified as problematic by community members, as well as gaps that are in close proximity to community destinations, show a history of pedestrian safety issues, and improve overall connectivity of the pedestrian network. In addition, site topography was utilized to select high priority gaps with few topography constraints. Although not identified as an arterial roadway, Oak Ridge Drive was included in this study due to significant community input. Refer to [Figure 8](#).

It should be noted that although the Plan specifically recommends focusing on key areas, the overall goal for the Town should be the creation of a system of contiguous sidewalks, especially providing connections to nearby destinations such as schools. The complete street framework can be used as a model for improving active transportation opportunities throughout Irondequoit. More information on complete streets can be found in the Facility Design Guidance section of this report.

Improvements to the sidewalk network will be implemented over an extended period of time and will require coordination between multiple agencies. Although sidewalks may be installed as part of NYSDOT and Monroe County DOT roadway projects, ownership and maintenance is the responsibility of the Town of Irondequoit. Unless federal aid is available through Monroe County DOT projects, the cost of sidewalk installation is the Town's responsibility.

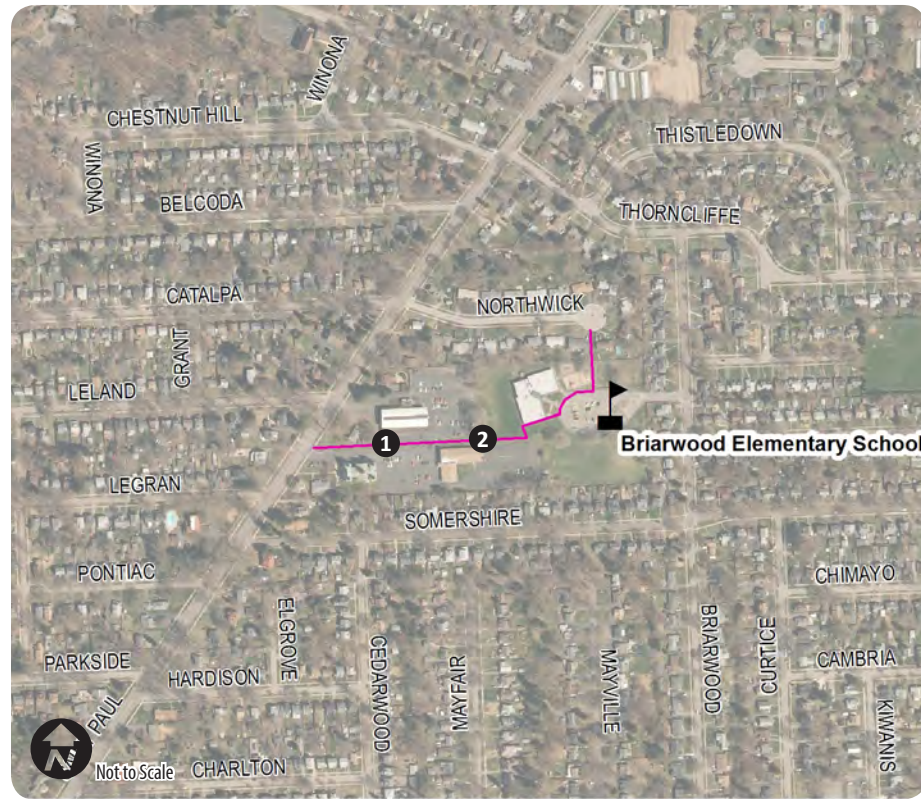


Table 3: Sidewalk Network Priority Gaps

Roadway/Location	Recommended Facility Improvement	Responsible Jurisdiction	Phase
Titus Avenue between Portland and Sea Breeze Drive	Complete sidewalk south side	MCDOT, Town of Irondequoit	Priority
Hudson Avenue between Brookview Dr and Seneca Manor	Complete sidewalk west side	MCDOT, Town of Irondequoit	Priority
Culver Road between Titus Ave and Durand	Complete sidewalk west side	MCDOT, Town of Irondequoit	Priority
Culver Road between Ridge Road and Titus Ave	Fix sidewalk gaps to create continuous sidewalk west side	MCDOT, Town of Irondequoit	Priority
Oak Ridge Drive	Complete sidewalks both sides	Town of Irondequoit	Recommended
Thomas between Van Voorhis and Pattonwood	Complete sidewalks both sides	MCDOT, Town of Irondequoit	Priority
Seneca Park	Complete sidewalk both sides	Town of Irondequoit	Recommended
Kings Highway	Complete sidewalk where topography allows, both sides	MCDOT, Town of Irondequoit	Recommended
Pine Grove	Complete sidewalk where topography allows, both sides	Town of Irondequoit	Possible
Portland	Complete sidewalk east side	MCDOT, Town of Irondequoit	Possible

1 MICROTRAIL 1: ST. PAUL TO NORTHWICK

- Existing Conditions: Asphalt surface, width varies from 3-foot to 10-foot.



1 Existing Conditions



2 Existing Conditions



RECOMMENDED IMPROVEMENTS

- Expand asphalt to 10-foot width throughout to allow shared-use, ADA accessible surface.
- Add directional and wayfinding signage.
- Maintain year-round to provide four-season access.

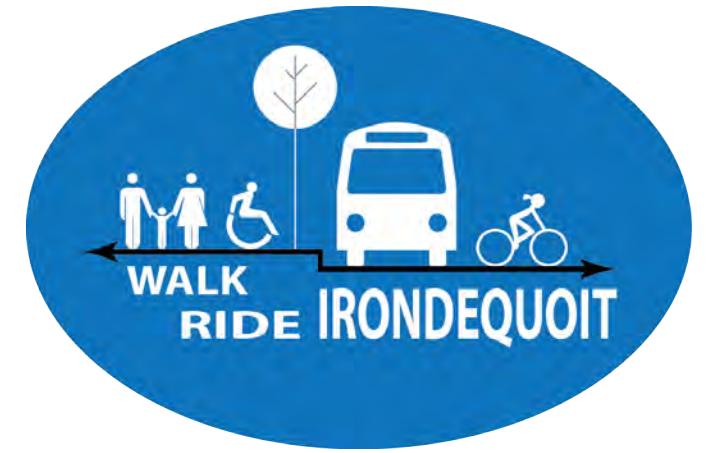
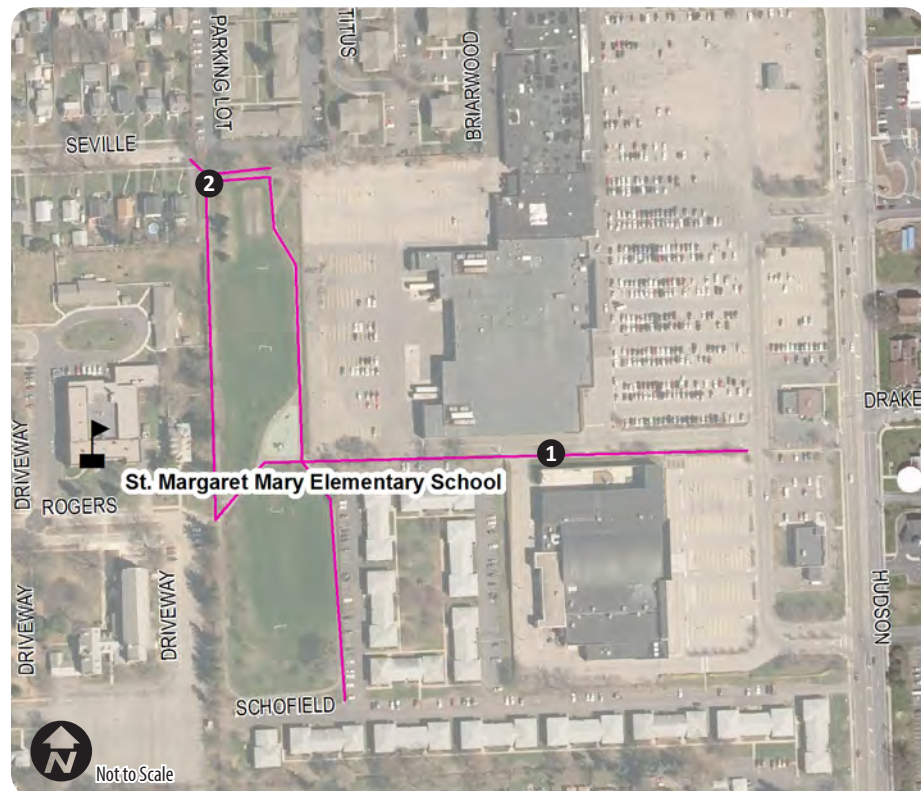


FIGURE 7
TRAIL & MICROTRAIL RECOMMENDATIONS
SHEET 1 OF 2

2 MICROTRAIL 2: HUDSON TO SCHOFIELD/ROGERS/SEVILLE

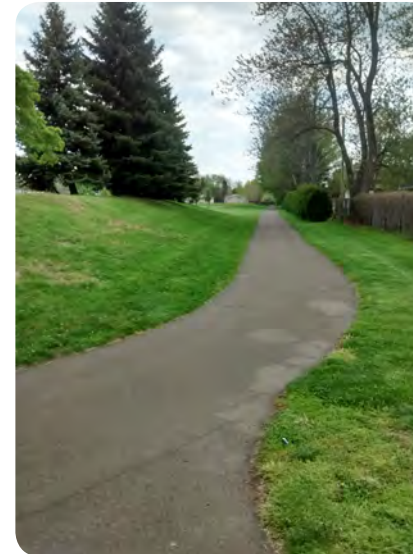
- Existing Conditions: Asphalt surface, 10-foot width within Joshua Park. Concrete surface, 5-foot width along Wegmans access drive.



1 Existing Conditions



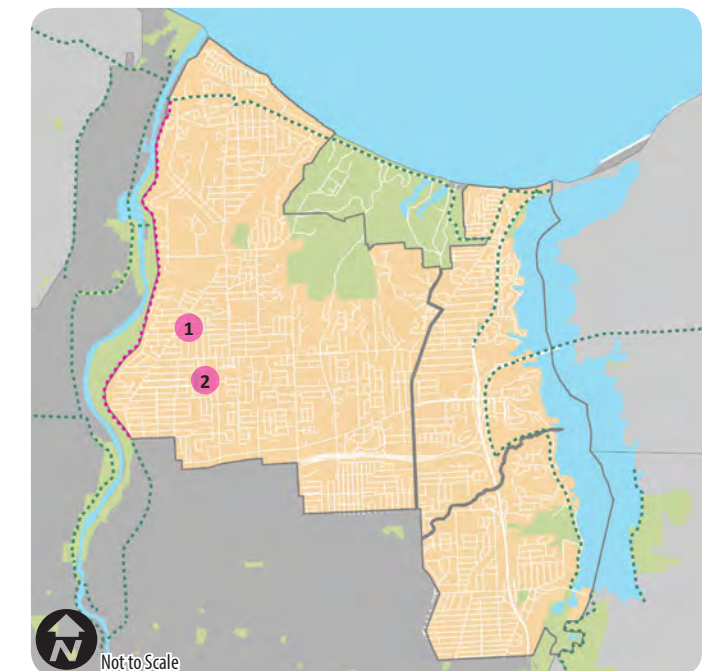
2 Existing Conditions



RECOMMENDED IMPROVEMENTS

- Expand 5-foot wide concrete sidewalk to 10-foot wide concrete sidepath to allow shared-use, ADA accessible.
- Add directional and wayfinding signage.
- Maintain year-round to provide four-season access.

MICROTRAIL LOCATION KEY MAP



3 MICROTRAIL 3: OAK TO WIMBLEDON

- Existing Conditions: Asphalt surface, 8-foot width.



1 Existing Conditions



2 Existing Conditions



RECOMMENDED IMPROVEMENTS

- Repair asphalt as necessary to provide an ADA accessible surface.
- Add directional and wayfinding signage.
- Maintain year-round to provide four-season access.



FIGURE 7
TRAIL & MICROTRAIL RECOMMENDATIONS
SHEET 2 OF 2

4 MICROTRAIL 4: NORIDGE TO KINGS HIGHWAY

- Existing Conditions: Concrete surface, 5-foot width.



1 Existing Conditions



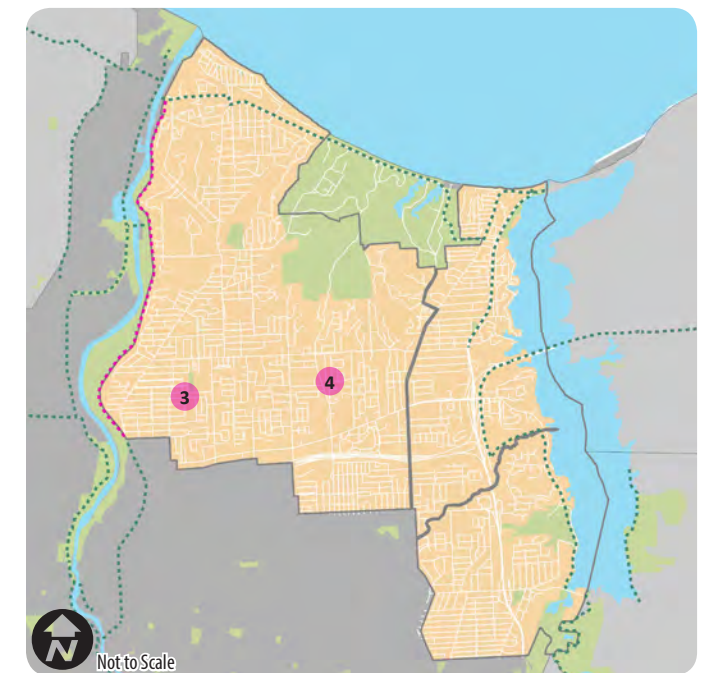
2 Existing Conditions



RECOMMENDED IMPROVEMENTS

- Repair concrete as necessary to provide an ADA accessible surface.
- Add directional and wayfinding signage.
- Maintain year-round to provide four-season access.

MICROTRAIL LOCATION KEY MAP



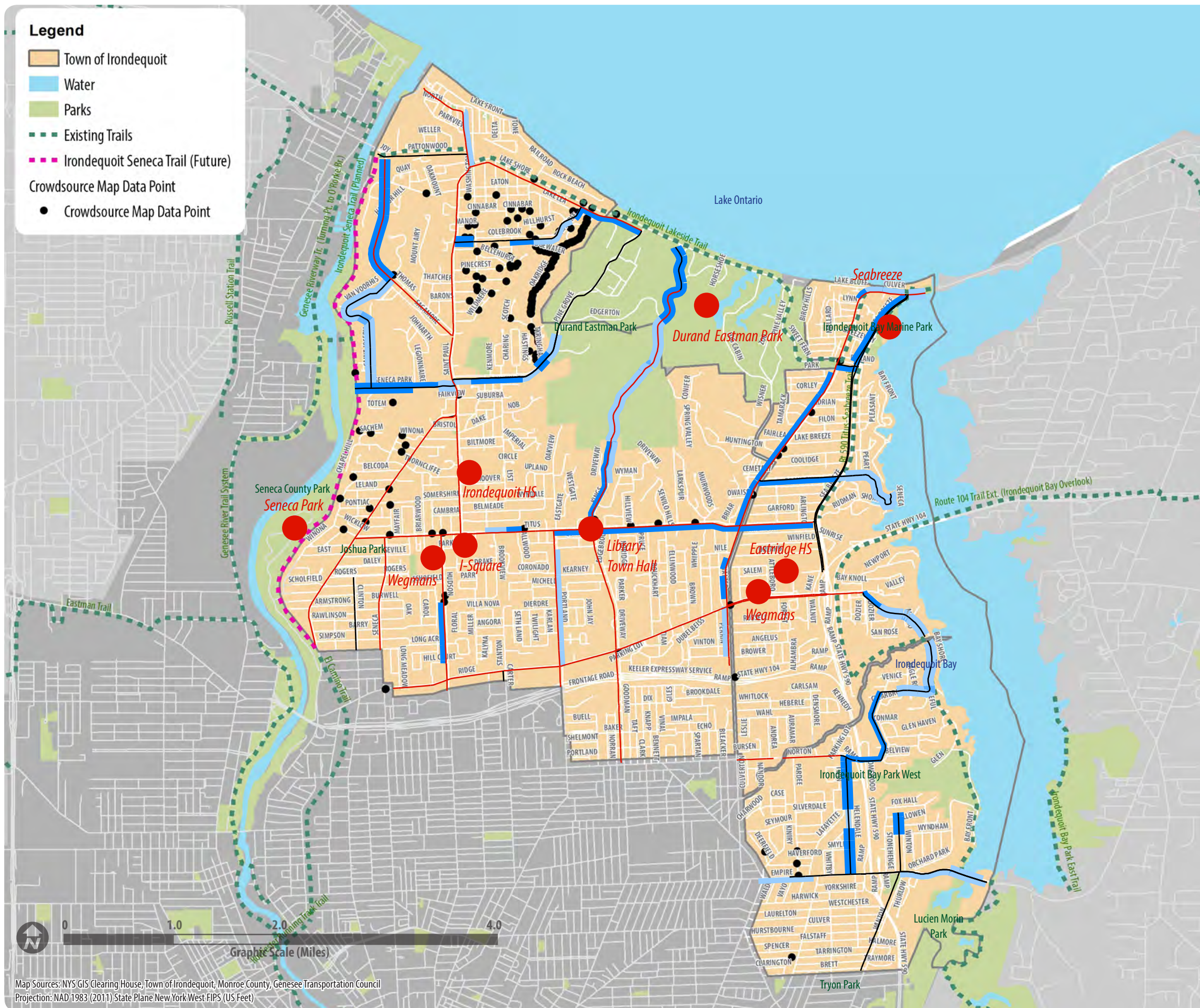


FIGURE 8
PUBLIC INPUT PRIORITIES

Sidewalks on LOS Map Roads

- █ Sidewalk Gaps
- █ Sidewalk Gaps (with Topographic Concerns)

Crowdsourced & Survey Data

- Crowdsourced Map Data Point
- Crowdsourced & Survey Priority Location
- Crowdsourced & Survey Priority Road

Map Sources: NYS GIS Clearing House, Town of Irondequoit, Monroe County, Genesee Transportation Council
Projection: NAD 1983 (2011) State Plane New York West FIPS (US Feet)



4.2 UNDERPASS AND OVERPASS IMPROVEMENTS

The Town of Irondequoit is divided by two major highways. Improving highway underpasses and overpasses would allow pedestrians and cyclists to move more freely between neighborhoods and destinations throughout the town. Potential improvements include upgraded lighting on underpasses and working with local artists to create visual installations for underpasses and overpasses.

Intersections that are candidates for overpass and underpass improvements include:

- 104/Goodman Street
- 590/Empire Boulevard
- 590/East Ridge Road



Example: City of Rochester historic wall murals on the Route 490 underpass along Main Street



Example: El Camino Trail, City of Rochester, colorful pavement murals on the Route 104, trail overpass



4.3 TRANSIT STOP IMPROVEMENTS

Public transportation and active transportation are mutually supportive. Every trip on public transportation begins and ends with a walk or bicycle ride.

In addition, public transportation has many of the same benefits as active transportation - including health benefits, environmental benefits, and social benefits.

- Public transit users spend more than 3 times as much time walking as non-public transit users (Besser and Dannenberg, 2005).
- Nearby Rochester could cut more than 10,000,000 lbs of CO2 emissions every day by using public transit (Reconnect Rochester, 2016).
- Increased walking, cycling and public transit tends to increase overall security and reduce crime rates by providing more monitoring of city streets (Sahbaz, 2006).

As part of this Active Transportation Plan, community members were surveyed about the Irondequoit transit system. The results from this survey revealed that transit users in Irondequoit have a strong interest in accessing the many destinations within the town more directly. Survey respondents stressed the need for the senior population to have access to services and amenities. Survey results and comments from public meetings indicated a significant desire for more point-to-point transit connections and more direct east-west routes across Irondequoit.

Four transit stops were selected as prototypes based on ridership. Refer to [Figure 9](#). The recommended transit stop improvements within the Town of Irondequoit will both encourage the use of public transportation and act as a key element in enhancing active transportation throughout the Town. Recommendations, which are provided by the consultant team, are conceptual in nature and subject to further study, review and approval from the Town of Irondequoit, Rochester Regional Transit Service (RTS) and private owners before advancing to design development and implementation. Maintenance of shelters and accompanying site improvements would be coordinated during design development. Refer to the Facility Design Guidelines section for the minimum design standards. Refer to [Appendix K](#) for RTS comments regarding recommendations.

When all impacts are considered, improving public transit can be one of the most cost effective ways to achieve public health objectives, and public health improvements are among the largest benefits provided by high quality public transit and transit-oriented development.

American Public Transit Association, 2010



TOWN OF IRONDEQUOIT
ACTIVE TRANSPORTATION PLAN

In addition to the recommendations specific to these stops, a few key improvements serve as recommendations for all stops.

- Installing level concrete pads
- Ensuring that all stops are ADA accessible, with an accessible route to business entrances
- Installing bike racks, lighting and trash receptacles where missing
- Implementing a snow removal plan

Table 4: Transit Stop Improvements

Stop Location		Recommended Facility Improvement	Responsible Jurisdiction	Phase
Hudson and Titus (Irondequoit Plaza)	444	Pedestrian scale lighting, increase wayfinding and informational signage, improve pedestrian access, transit stop to building entrance and transit stop to existing sidewalk on Hudson Ave, bicycle parking	MCDOT, RTS, Town of Irondequoit	Priority
Portland and Buell	141	Pedestrian scale lighting, increase wayfinding and informational signage, bicycle parking	MCDOT, RTS, Town of Irondequoit	Priority
Goodman and (former) Tops Plaza (Future Rochester General Hospital location)	59	Pedestrian scale lighting, increase wayfinding and informational signage, bicycle parking	MCDOT, RTS, Town of Irondequoit	Priority
Portland and Staples	56	Pedestrian scale lighting, increase wayfinding and informational signage, improve pedestrian access, transit stop to building entrance, bicycle parking	MCDOT, RTS, Town of Irondequoit	Priority
Titus and Curtis	N/A	New concrete pad	MCDOT, RTS, Town of Irondequoit	Recommended
Goodman & Irondequoit Mall	N/A	New concrete pad	MCDOT, RTS, Town of Irondequoit	Recommended

IRONDEQUOIT PLAZA



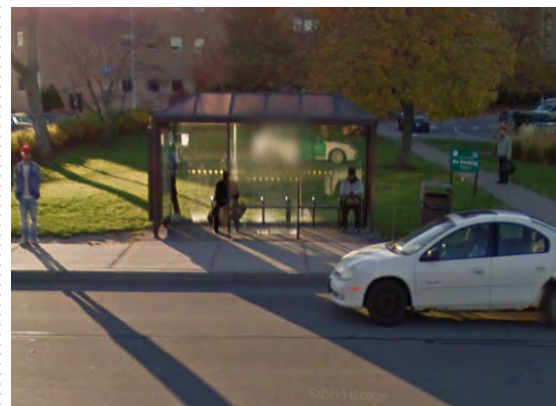
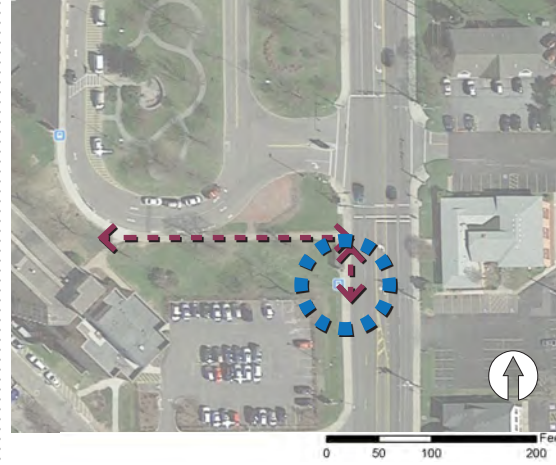
EXISTING RIDERSHIP DATA

- Average Daily Total: 499

RECOMMENDED IMPROVEMENTS

- Pedestrian scale lighting
- Increase wayfinding and informational signage
- Improve pedestrian access, transit stop to building entrance and transit stop to existing sidewalk on Hudson Ave
- Bicycle Parking

PORTLAND AND BUELL



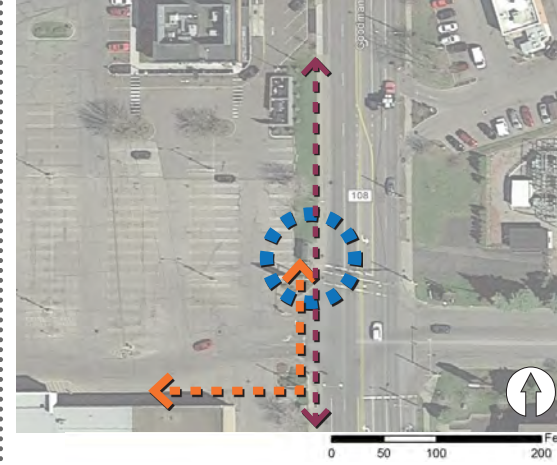
EXISTING RIDERSHIP DATA

- Average Daily Total: 151

RECOMMENDED IMPROVEMENTS

- Pedestrian scale lighting
- Increase wayfinding and informational signage
- Bicycle Parking

GOODMAN AND (FORMER) TOPS PLAZA



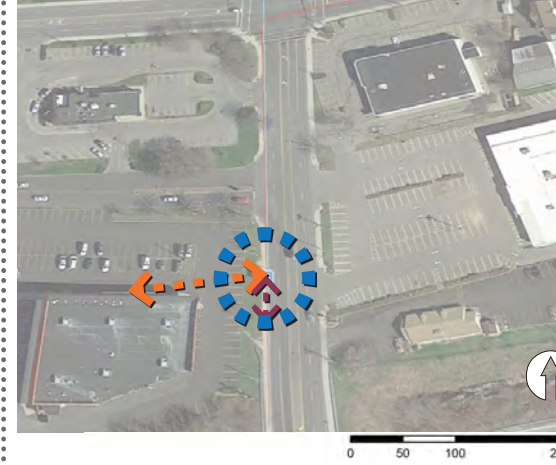
EXISTING RIDERSHIP DATA

- Average Daily Total: 53

RECOMMENDED IMPROVEMENTS

- Pedestrian scale lighting
- Increase wayfinding and informational signage
- Bicycle Parking

PORTLAND AND STAPLES



EXISTING RIDERSHIP DATA

- Average Daily Total: 53

RECOMMENDED IMPROVEMENTS

- Pedestrian scale lighting
- Increase wayfinding and informational signage
- Improve pedestrian access, transit stop to building entrance
- Bicycle Parking



FIGURE 9
TRANSIT RECOMMENDATIONS
SHEET 1 OF 3

RIT GLEASON CIRCLE MODEL TRANSIT STOP



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

****Note: Recommendations are provided by the consultant team. The recommendations are conceptual in nature and would be subject to further study, review and approvals from the Town of Irondequoit, RTS and private owners before advancing to design development and implementation. Maintenance of shelters and accompanying site improvements to be coordinated during design development.**

PUBLIC TRANSIT AND ACTIVE TRANSPORTATION ARE CLOSELY RELATED & MUTUALLY SUPPORTIVE

According to a study funded by Robert Wood Johnson Foundation (2009):

- 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.

RTS PARK & RIDE

- Currently no operational park & ride in Irondequoit.
- Park & Ride lots support both carpooling and transit use.
- Park & Ride lots help motorists 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
- Existing Pedestrian Connection
- Recommended Pedestrian Connection

IRONDEQUOIT PROTOTYPE TRANSIT STOP

EXAMPLE LOCATION: N. GOODMAN AND (FORMER) TOPS PLAZA

INITIAL PRELIMINARY RECOMMENDATIONS

- 1 Pedestrian crosswalks with contrasting pavement and ADA accessible ramps/detectable warnings
- 2 Install/upgrade Accessible Pedestrian Signals (audible and tactile) with countdown timer
- 3 10-foot wide concrete sidewalk
- 4 Flexi-Pave accent pavement (pervious surface)
- 5 Relocated transit stop (requiring less crosswalks to accommodate future RGH building in addition to existing buildings to the west)
 - » Captures and harvests stormwater runoff from the shelter roof into a bio-filtration planter.
 - » Simple, economical design. Provides shelter from weather elements.
 - » Seating provided at transit stop, both covered and uncovered
 - » Bike racks provided at transit stop, covered
 - » Free space provided at transit stop, covered to accommodate wheelchairs
- 6 Pedestrian scale lighting
- 7 Native street trees

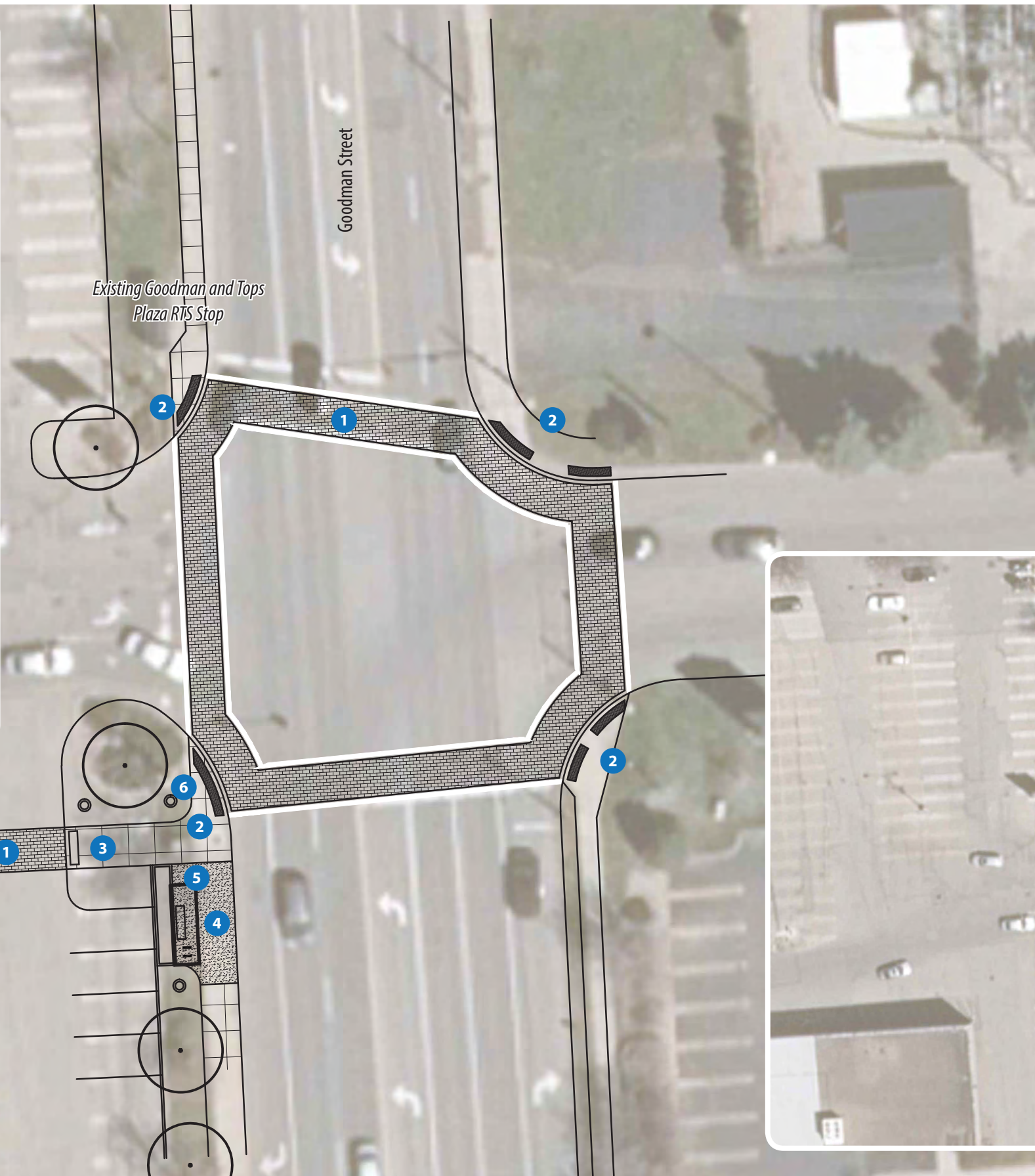


FIGURE 9
TRANSIT RECOMMENDATIONS
 SHEET 2 OF 3

***Note: Recommendations are provided by the consultant team. The recommendations are conceptual in nature and would be subject to further study, review and approvals from the Town of Irondequoit, RTS and private owners before advancing to design development and implementation. Maintenance of shelters and accompanying site improvements to be coordinated during design development.*

EXISTING CONDITIONS



Map Sources: NYS GIS Clearing House

IRONDEQUOIT PROTOTYPE TRANSIT STOP

EXAMPLE LOCATION: GOODMAN AND (FORMER) TOPS PLAZA

INITIAL PRELIMINARY RECOMMENDATIONS

- 1 Pedestrian crosswalks with contrasting pavement and ADA accessible ramps/detectable warnings
- 2 Install/upgrade Accessible Pedestrian Signals (audible and tactile) with countdown timer
- 3 10-foot wide concrete sidewalk
- 4 Flexi-Pave accent pavement (pervious surface)
- 5 Relocated transit stop (requiring less crosswalks to accommodate future RGH building in addition to existing buildings to the west)
 - » Captures and harvests stormwater runoff from the shelter roof into a bio-filtration planter.
 - » Simple, economical design. Provides shelter from weather elements.
 - » Seating provided at transit stop, both covered and uncovered
 - » Bike racks provided at transit stop, covered
 - » Free space provided at transit stop, covered to accommodate wheelchairs
- 6 Pedestrian scale lighting
- 7 Native street trees

***Note: Recommendations are provided by the consultant team. The recommendations are conceptual in nature and would be subject to further study, review and approvals from the Town of Irondequoit, RTS and private owners before advancing to design development and implementation. Maintenance of shelters and accompanying site improvements to be coordinated during design development.*

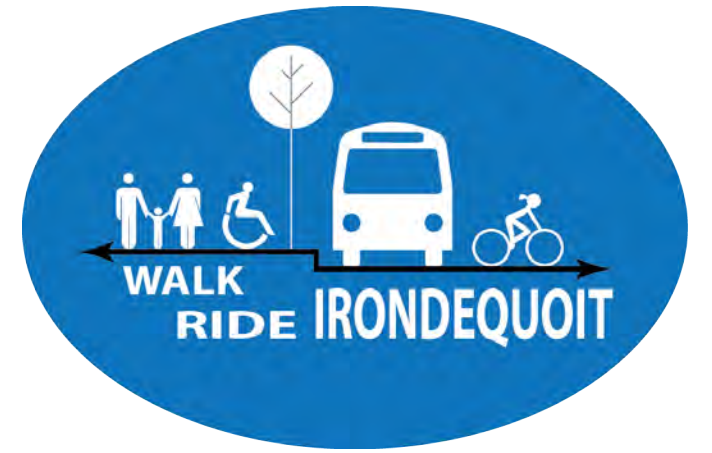
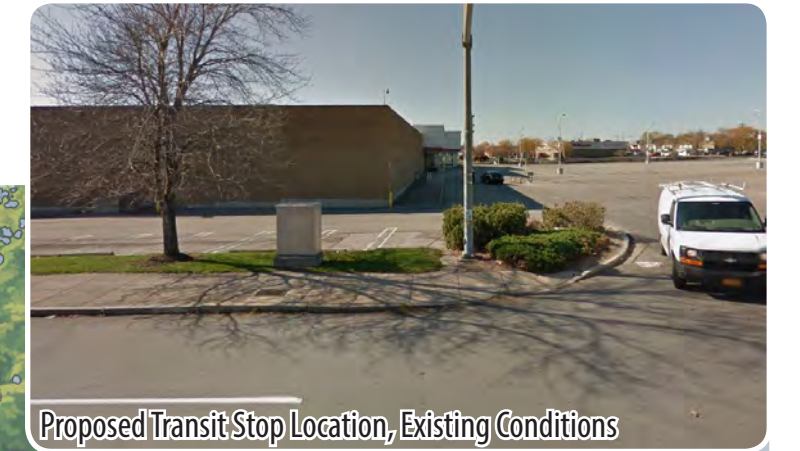


FIGURE 9
TRANSIT RECOMMENDATIONS
SHEET 3 OF 3



Concept Rendering. Not to Scale. Not for Construction.



4.4 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.

The “Restripe” terminology is used to categorize 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 or 10.5 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.

Refer to [Appendix H](#) 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.*”

There is some overlap between the restripe and add paved shoulders candidates. Refer to [Figure 10](#).

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 considered 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 continues into the next step. The City of Rochester has numerous existing bicycle facilities that end at the City/Town boundary. It is recommended to extend these facilities, specifically bicycle lanes, into the Town to create a continuous network.



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 Irondequoit'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.

More information regarding road diets can be found in FHWA's *Road Diet Informational Guide*
http://safety.fhwa.dot.gov/road_diets/info_guide/

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 Irondequoit.



Table 5: Bicycle Facility Improvements

Roadway/Location	Recommended Facility Improvement	Responsible Jurisdiction	Phase
Titus Ave (Buckhart to Larkspur)	Roadway restripe candidate (reduction of existing lane widths to create space for bike lanes)	MCDOT	Priority
Titus Ave (Whipple to Culver)	Roadway restripe candidate (reduction of existing lane widths to create space for bike lanes)	MCDOT	Priority
Cooper Rd (Titus to Thorncliffe)	Roadway restripe candidate (reduction of existing lane widths to create space for bike lanes)	MCDOT	Priority
Goodman St (Ridge to Parker)	Roadway restripe candidate (reduction of existing lane widths to create space for bike lanes)	MCDOT	Priority
Clinton Ave (City line to Rogers)	Roadway restripe candidate (reduction of existing lane widths to create space for bike lanes)	MCDOT	Recommended
Empire Blvd (City Line to Helendale)	Road diet candidate (reduction of the number of lanes to create space for bike lanes)	NYS DOT	Recommended
Hudson Rd (Titus to Brookview)	Roadway restripe candidate (reduction of existing lane widths to create space for bike lanes)	MCDOT	Possible
Seneca Rd (Culver to Sea Breeze)	Add or widen paved shoulders	Town of Irondequoit	Recommended
Kings Hwy N (Cranbrook to Lakeshore)	Add or widen paved shoulders	MCDOT	Recommended
Pine Grove (St Paul to Lakeshore)	Add or widen paved shoulders	MCDOT / Town of Irondequoit	Possible
Seneca Park Ave (St Paul to St Joseph)	Add or widen paved shoulders	Town of Irondequoit	Recommended
St Joseph (Seneca Park to Thomas)	Add or widen paved shoulders	Town of Irondequoit	Possible
Colebrook (St Paul to Lakeshore)	Add or widen paved shoulders	Town of Irondequoit	Recommended

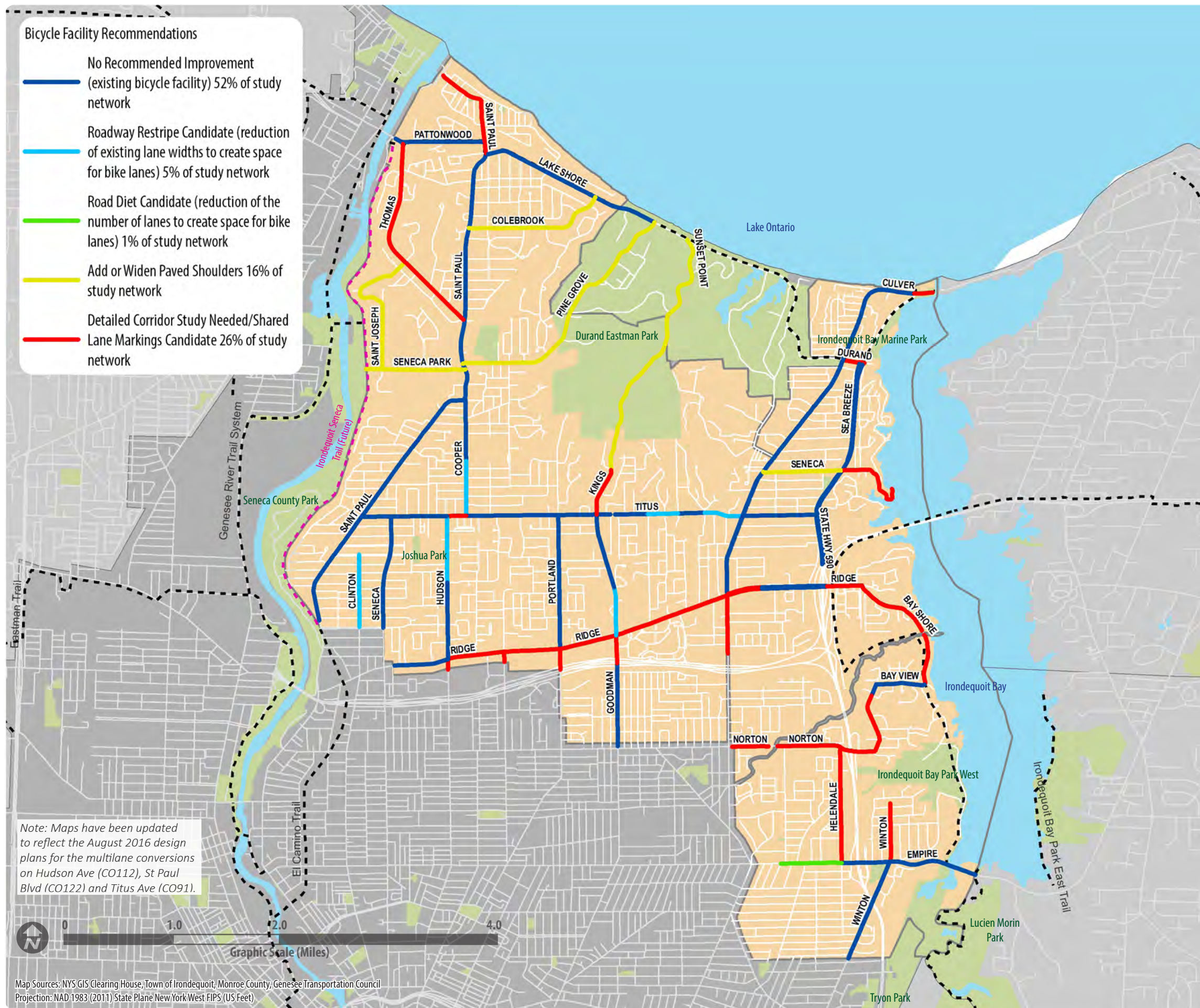


FIGURE 10
 ON-STREET BICYCLE FACILITY RECOMMENDATIONS

NOTE
 Streets where *Add or Widen Paved Shoulders* are recommended should be incorporated on a case-by-case basis depending on adjacent conditions (for example this may not be ideal or necessary on low-volume residential streets).



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. Eight bicycle boulevards are being proposed within the Town of Irondequoit. Refer to [Figure 11](#).

Bike boulevards usually make use of low volume, very low speed local streets. 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 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.

- Bicycle Boulevards are typically established on neighborhood streets with low traffic volumes that provide cyclists with safe and convenient alternatives to high-traffic corridors.
- Bicycle Boulevards should connect important community destinations, and provide routes that are reasonably direct and easy to navigate. Shared roadway intended for through-moving bicyclists.
- Bicycle boulevards are cost effective because they utilize existing infrastructure.
- Accessible for cyclists of all ages and abilities.
- Bicycle boulevards are especially valuable in school zones to promote safe routes for children. Additionally, the Safe Routes to School Program considers a 2 mile radius around K-8 schools to accommodate walkers and riders.
- Limited to local motorized traffic by geometric design.

SIGNAGE & SHARED ROAD MARKINGS

Implementation of a Bicycle Boulevard system can be as simple as selecting routes, distributing information, and identifying Bicycle Boulevards in the community with an integrated system of signage and pavement markings. Concurrence from the facility owner should be obtained prior to implementation. Any improvements outside of the Town of Irondequoit should be coordinated with the neighboring municipalities.

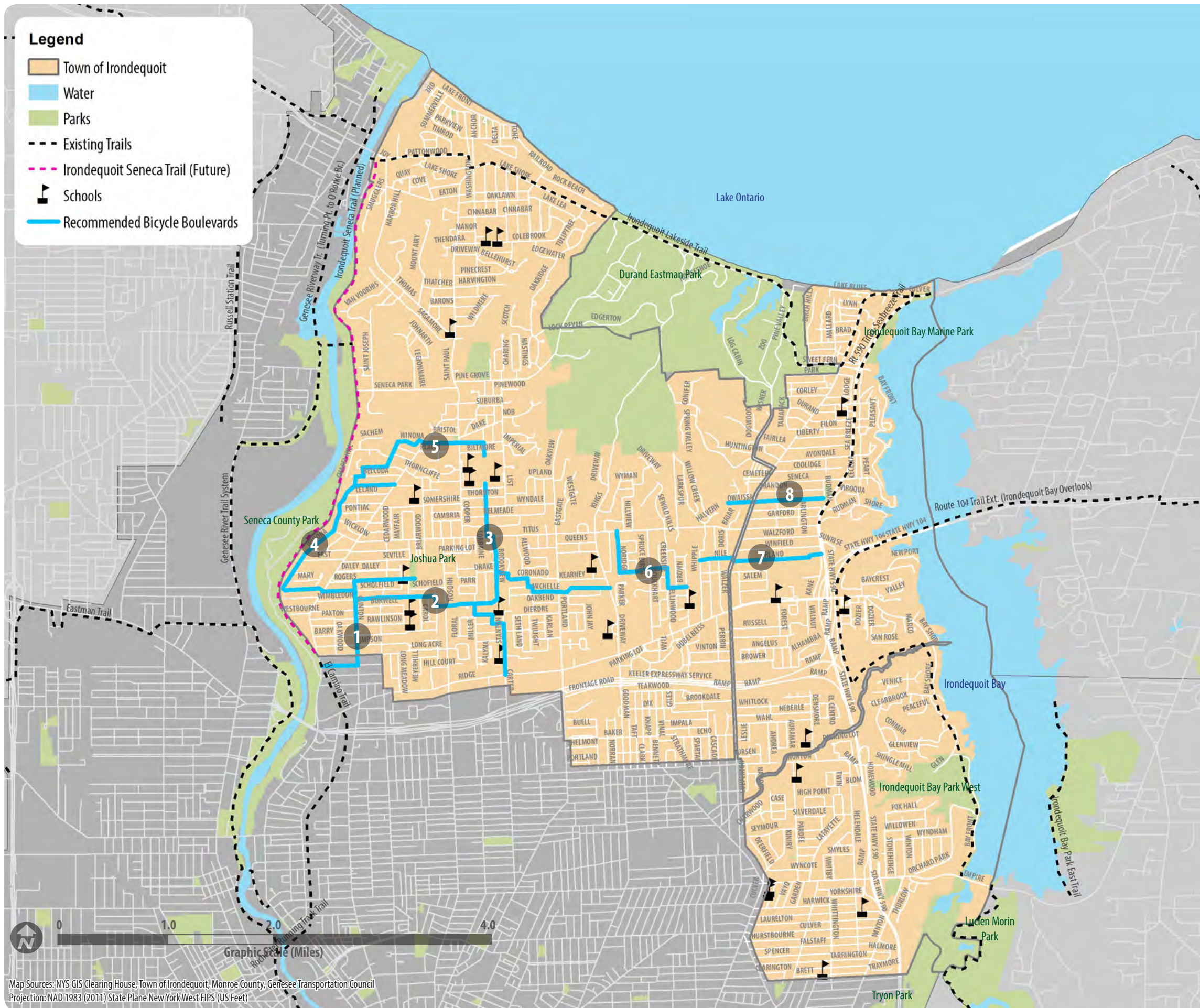


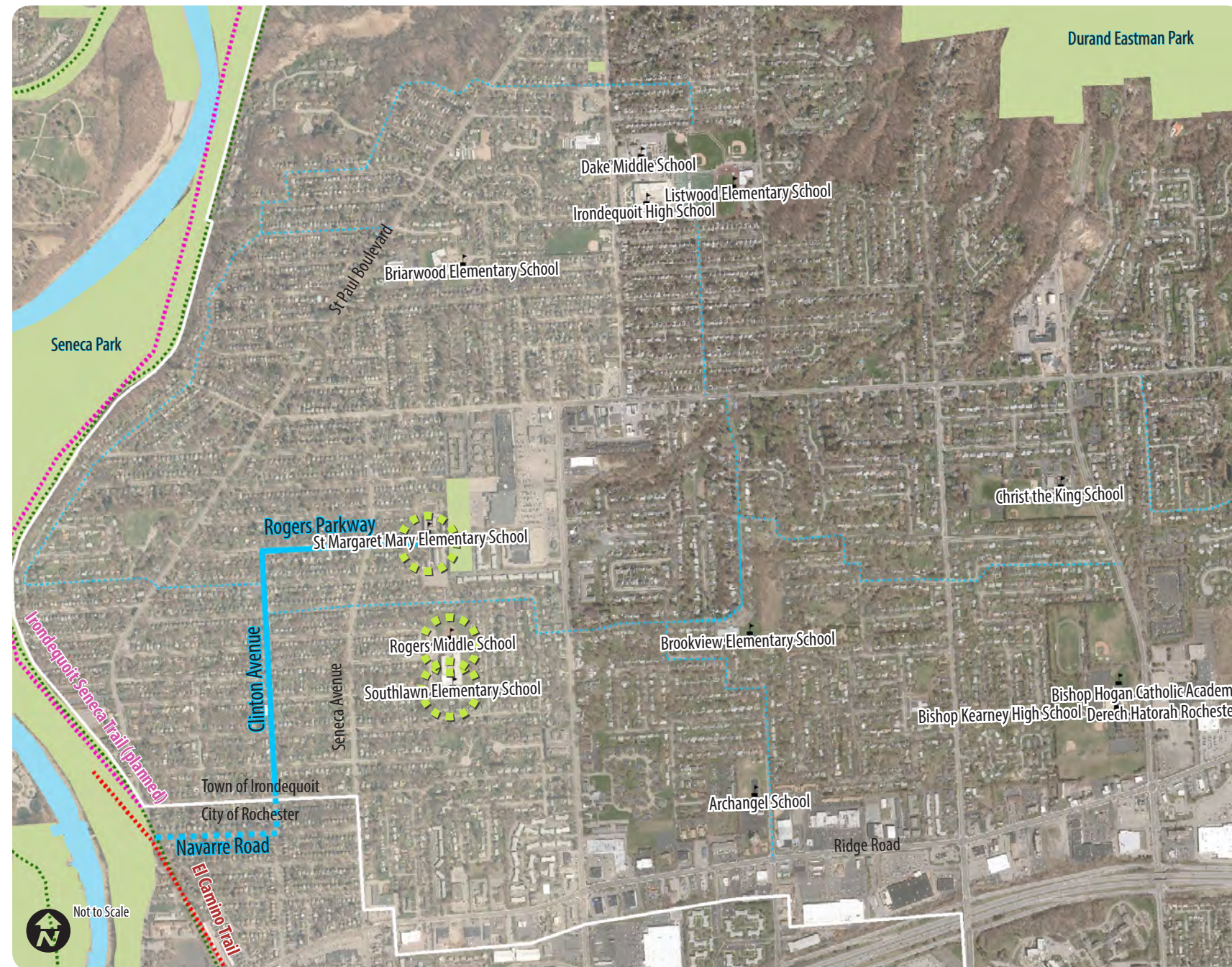
FIGURE 11
BICYCLE BOULEVARDS
 SHEET 1 OF 9

- LEGEND**
- 1 El Camino Trail to Joshua Park
 - 2 St Paul. Boulevard to Kings Highway
 - 3 Ridge Road to Titus Avenue
 - 4 Scholfield Road to Winona Boulevard (St. Paul Bypass)
 - 5 Gardham Road to St. Paul Boulevard & Titus Avenue
 - 6 Ivan L. Green Elementary to Titus Avenue
 - 7 Ivan L. Green Elementary to East Ridge High School
 - 8 Culver Road to Titus Sea Breeze Trail

Bicycle Boulevard 1

EL CAMINO TRAIL TO JOSHUA PARK

0.92 Miles
 0.33 Miles (Coordinate with adjacent municipalities)



Navarre Road



Clinton Avenue



Rogers Parkway



FIGURE: 11
BICYCLE BOULEVARDS
 SHEET 2 OF 9

MUTCD WAYFINDING SIGNAGE: D1-3C



PAVEMENT MARKING EXAMPLE



CUSTOM SIGNAGE EXAMPLES



Bicycle Boulevard 2

ST. PAUL BOULEVARD TO KINGS HIGHWAY

2.44 Miles



Destinations



Wimbledon Road



Brookview Drive



Kings Gate North

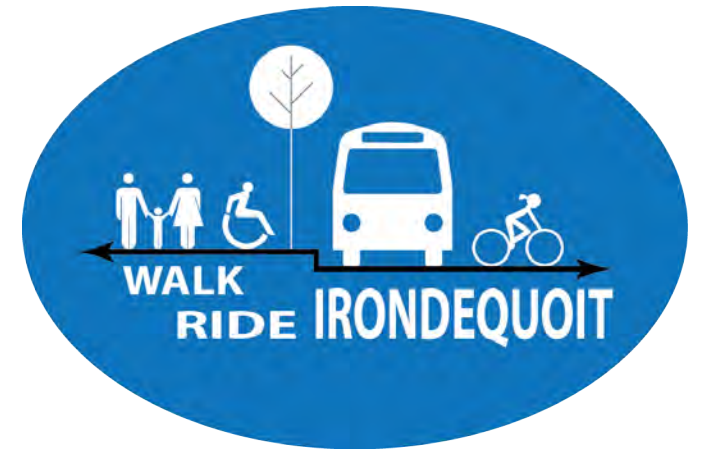


FIGURE: 11
BICYCLE BOULEVARDS
SHEET 3 OF 9

MUTCD WAYFINDING SIGNAGE: D1-3C



PAVEMENT MARKING EXAMPLE



CUSTOM SIGNAGE EXAMPLES

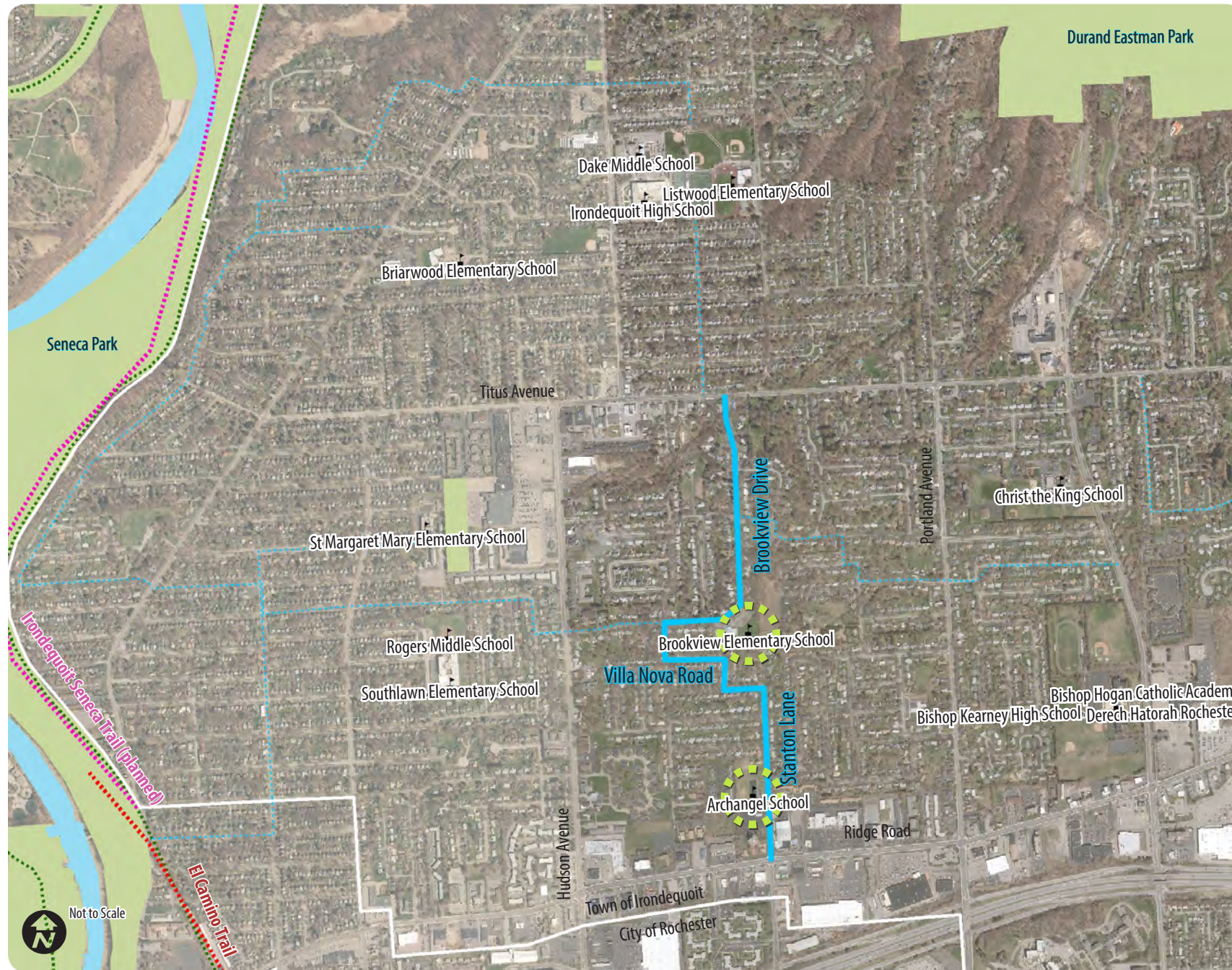


Bicycle Boulevard 3 RIDGE ROAD TO TITUS AVENUE

1.30 Miles



Destinations



Stanton Lane



Villa Nova Road



Brookview Drive

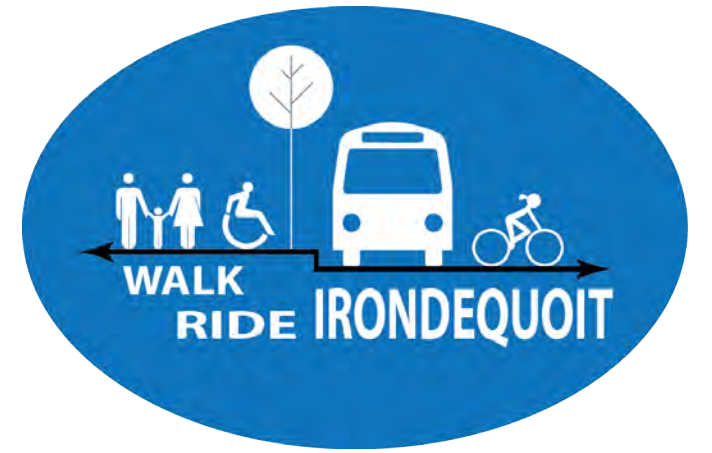


FIGURE: 11
BICYCLE BOULEVARDS
SHEET 4 OF 9

MUTCD WAYFINDING SIGNAGE: D1-3C



PAVEMENT MARKING EXAMPLE



CUSTOM SIGNAGE EXAMPLES



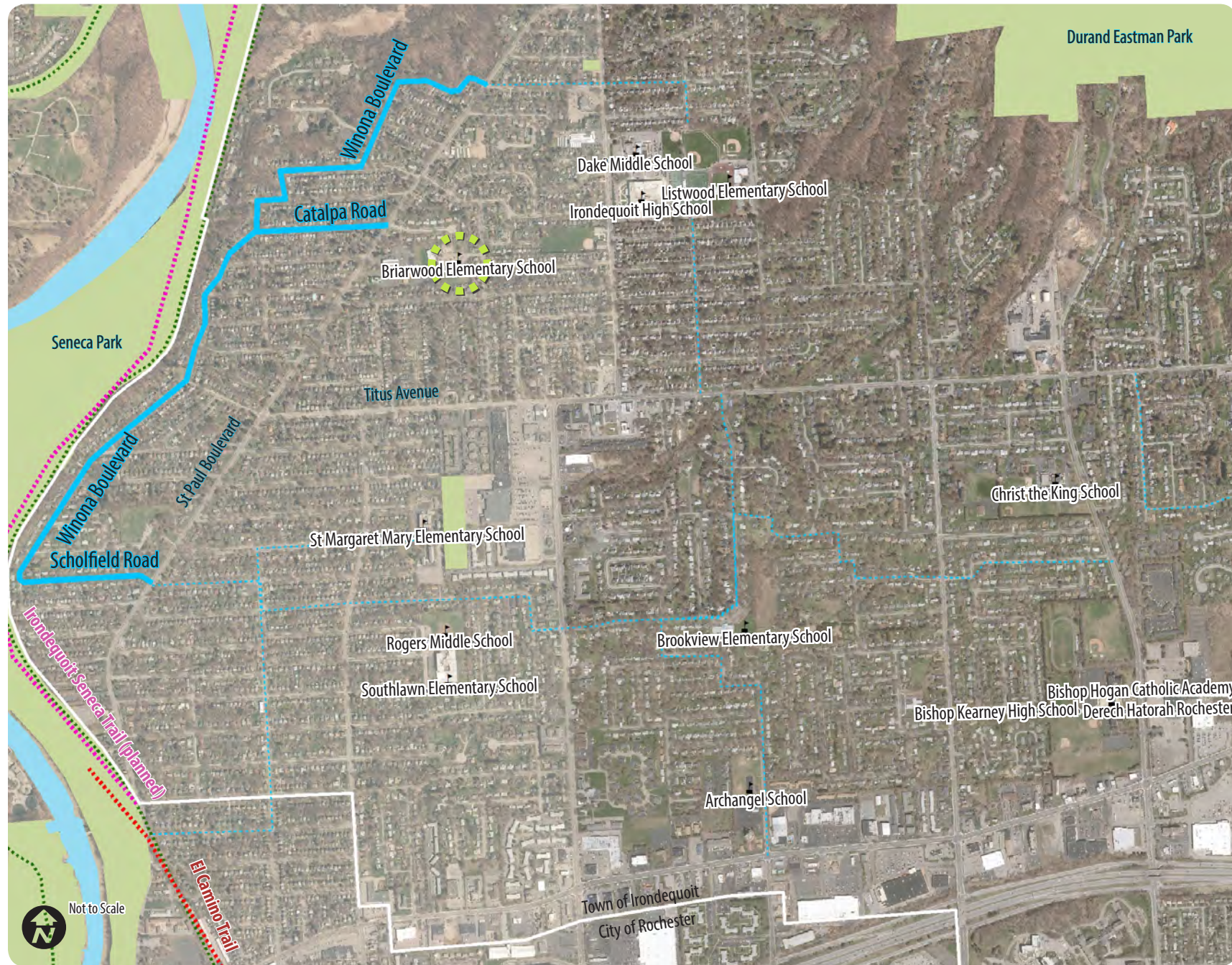
Bicycle Boulevard 4

SCHOLFIELD TO WINONA BLVD (ST. PAUL BYPASS)

2.18 Miles



Destinations



Scholfield Road



Winona Boulevard



Catalpa Road

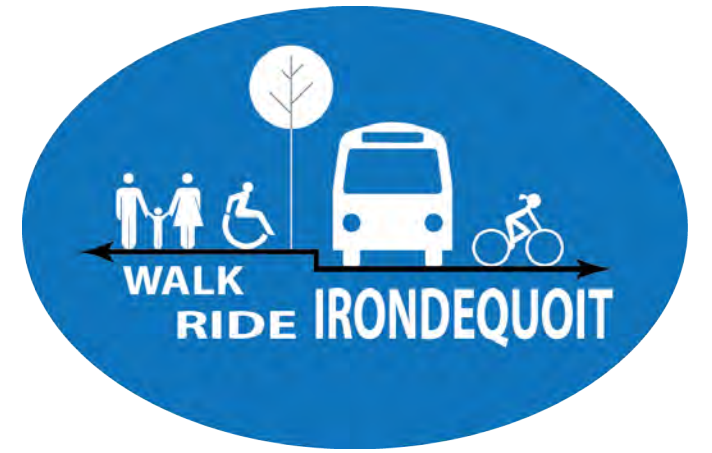


FIGURE 11
BICYCLE BOULEVARDS
SHEET 5 OF 9

MUTCD WAYFINDING SIGNAGE: D1-3C



PAVEMENT MARKING EXAMPLE



CUSTOM SIGNAGE EXAMPLES



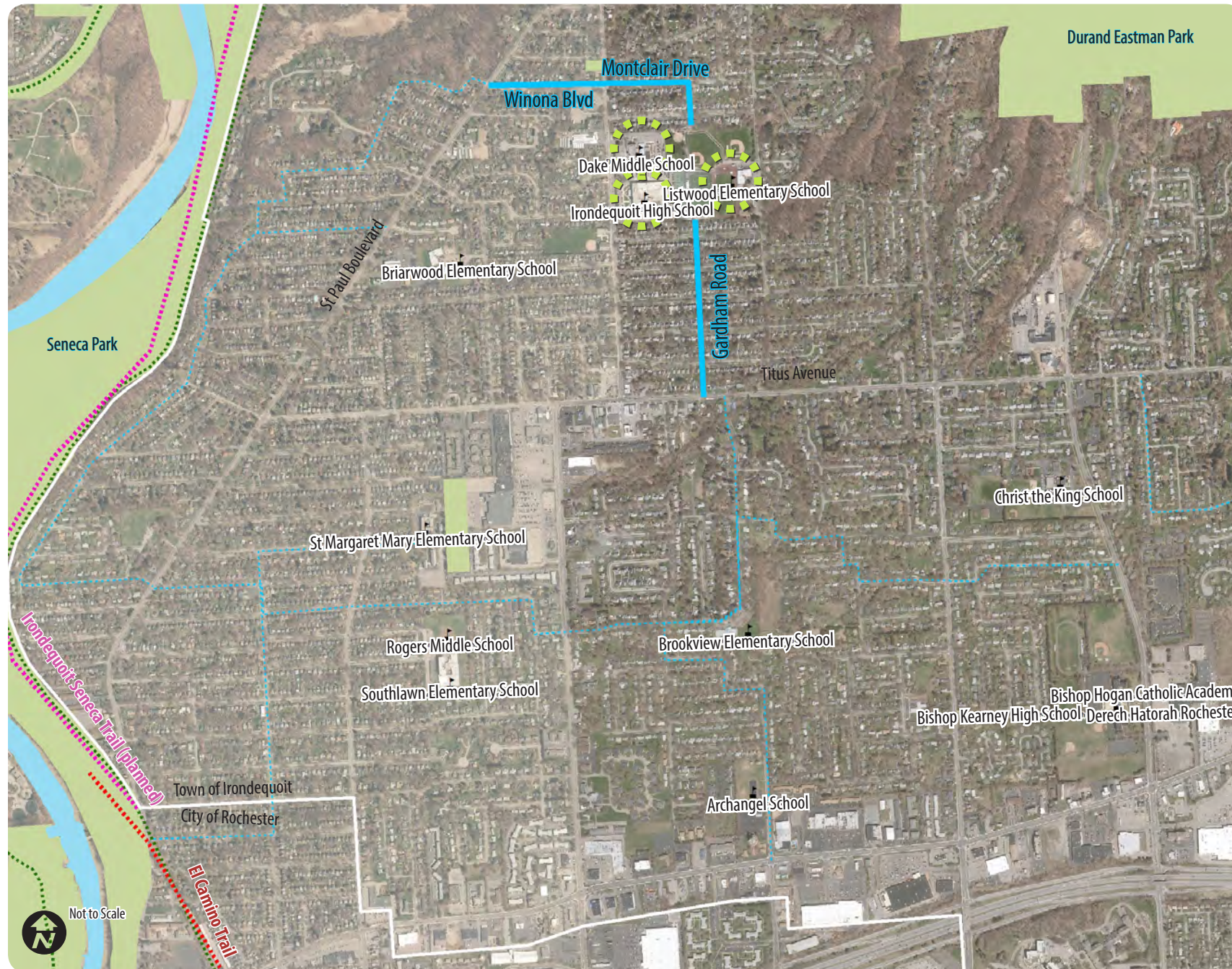
Bicycle Boulevard 5

GARDHAM ROAD TO ST. PAUL BOULEVARD & TITUS AVENUE

0.85 Miles



Destinations



Winona Boulevard



Montclair Drive



Gardham Road

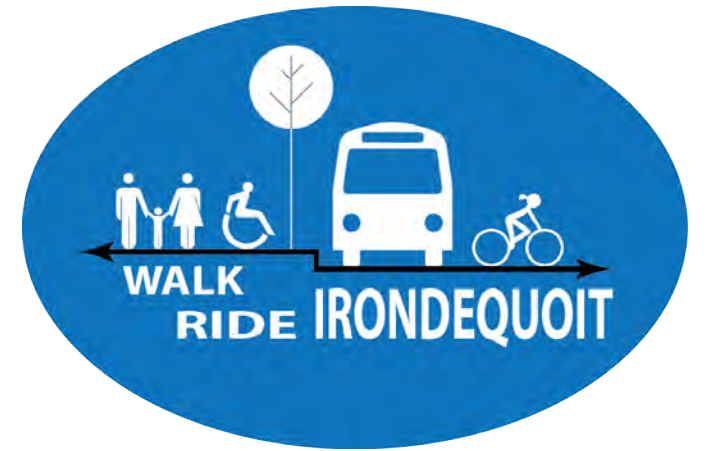


FIGURE 11
BICYCLE BOULEVARDS
SHEET 6 OF 9

MUTCD WAYFINDING SIGNAGE: D1-3C



PAVEMENT MARKING EXAMPLE



CUSTOM SIGNAGE EXAMPLES



Bicycle Boulevard 6

IVAN L. GREEN ELEMENTARY TO TITUS AVENUE

0.88 Miles



Destinations

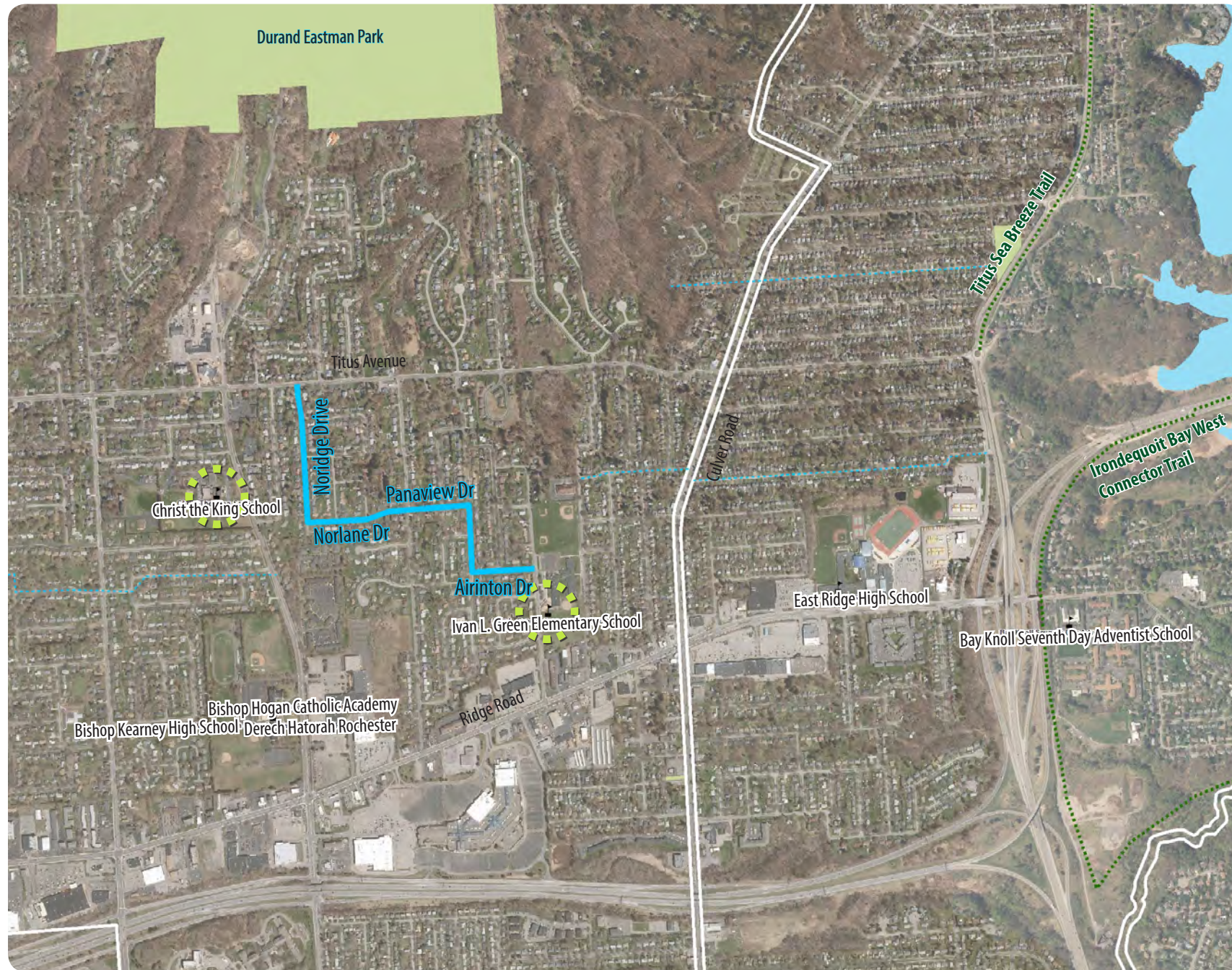


FIGURE: 11
BICYCLE BOULEVARDS
SHEET 7 OF 9

MUTCD WAYFINDING SIGNAGE: D1-3C



PAVEMENT MARKING EXAMPLE



CUSTOM SIGNAGE EXAMPLES



Norridge Drive



Panaview Drive



Airinton Drive



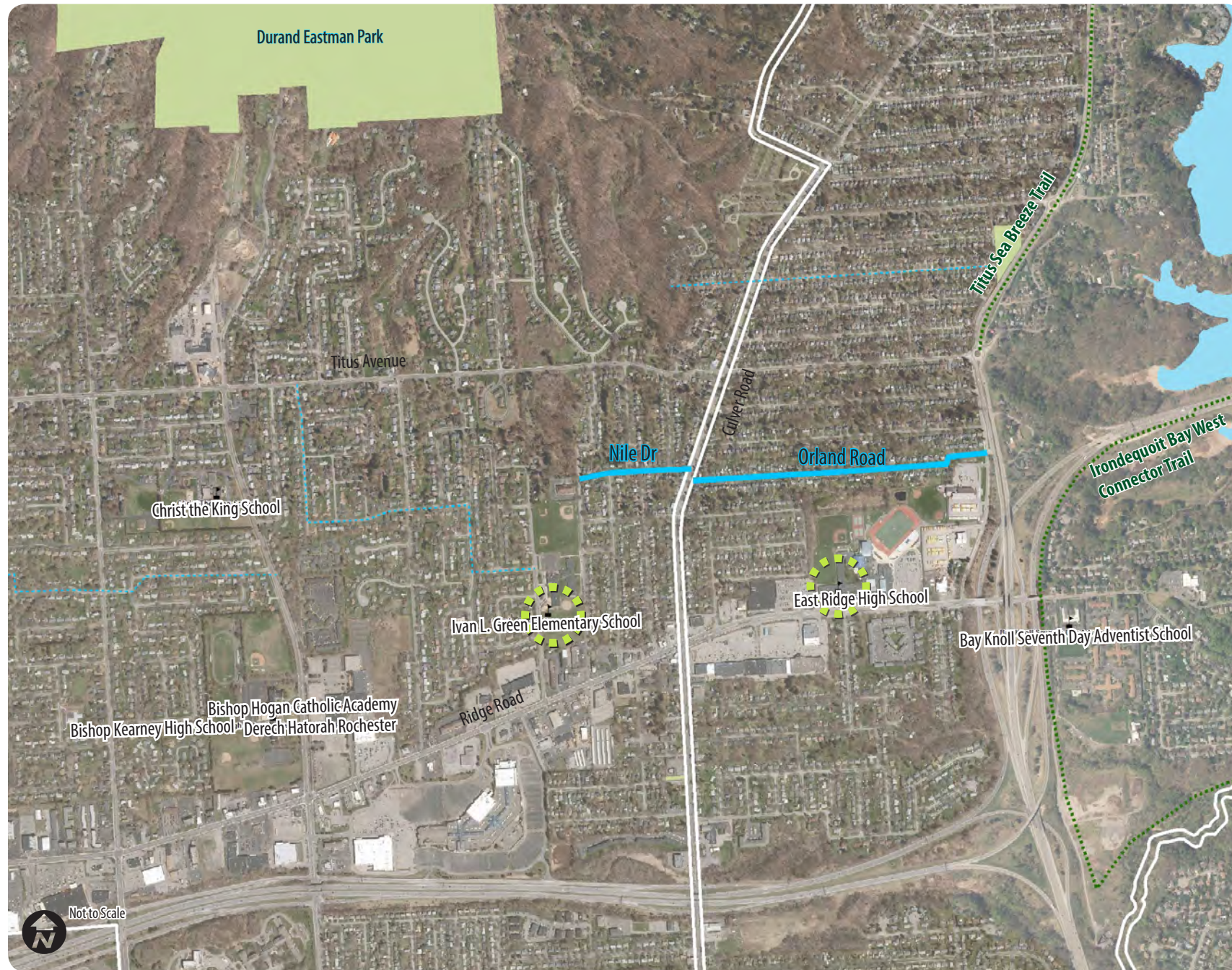
Bicycle Boulevard 7

IVAN L. GREEN ELEMENTARY TO EAST RIDGE HIGH SCHOOL

0.84 Miles



Destinations



Nile Drive



Orland Road



Orland Road

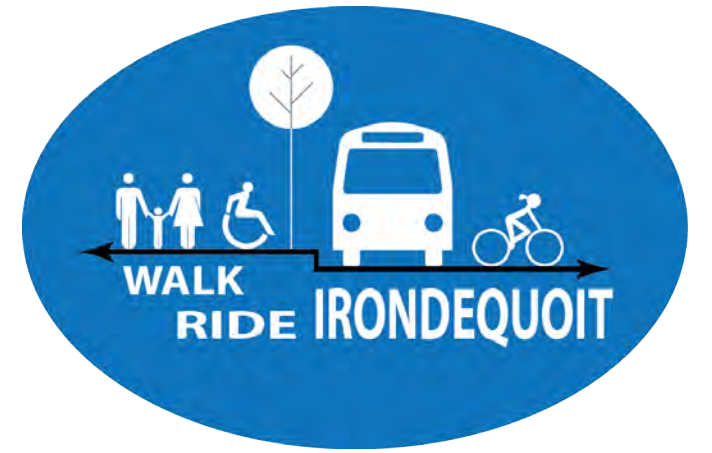


FIGURE: 11
BICYCLE BOULEVARDS
SHEET 8 OF 9

MUTCD WAYFINDING SIGNAGE: D1-3C



PAVEMENT MARKING EXAMPLE



CUSTOM SIGNAGE EXAMPLES



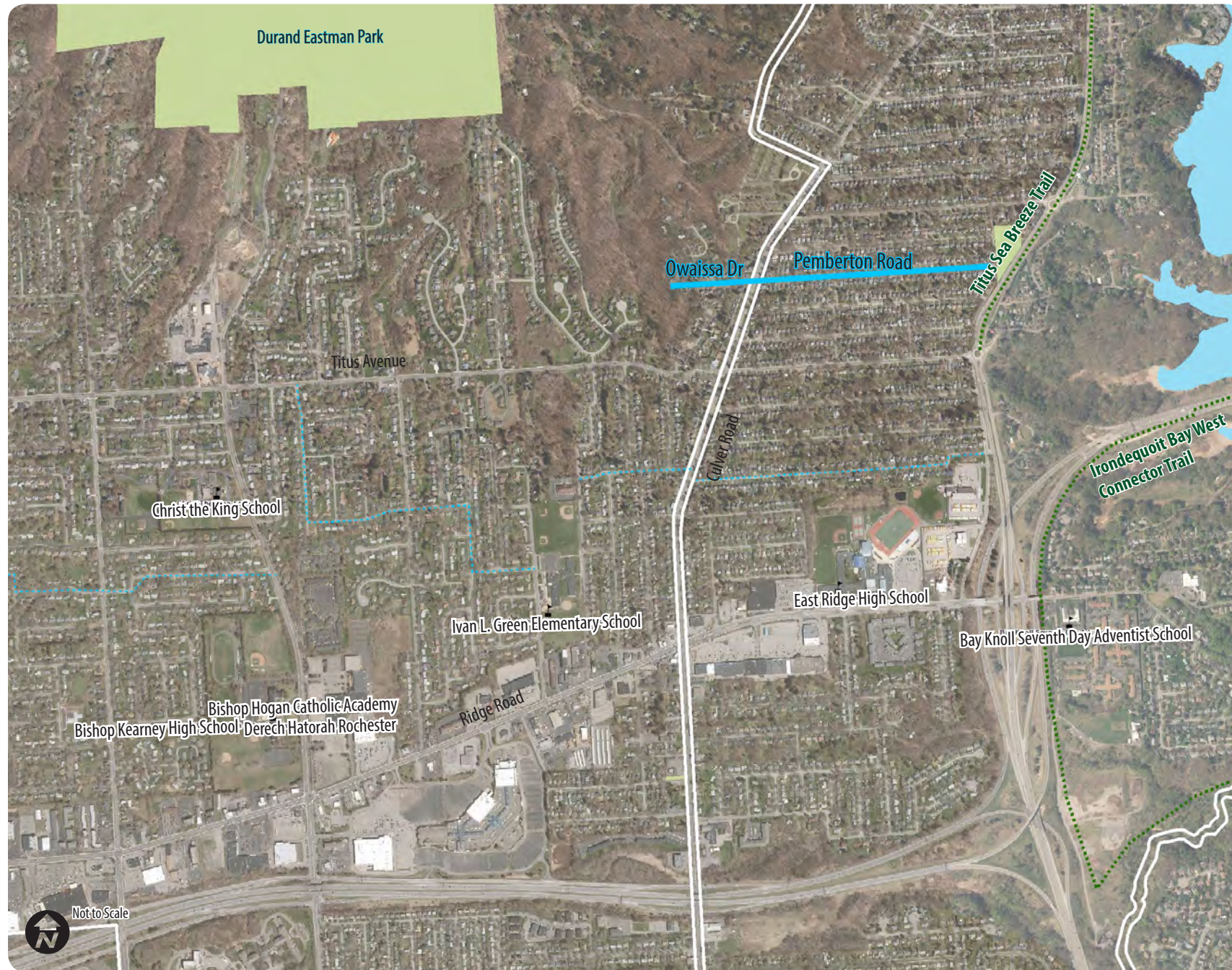
Bicycle Boulevard 8

CULVER ROAD TO TITUS SEA BREEZE TRAIL

0.65 Miles



Destinations



Owaissa Drive



Pemberton Road



Pemberton Road

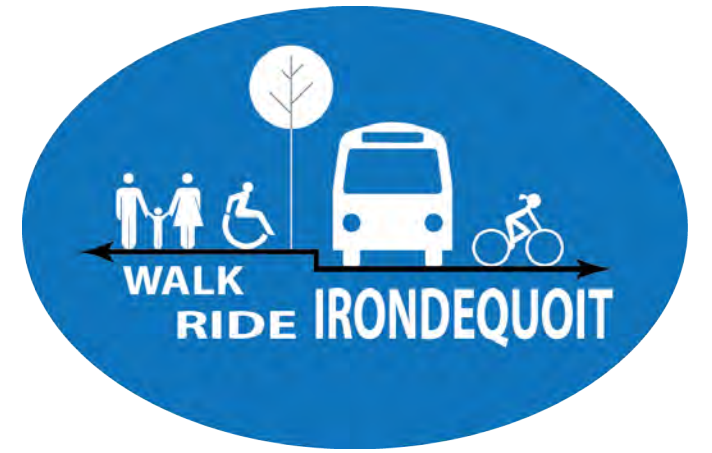


FIGURE: 11
BICYCLE BOULEVARDS
SHEET 9 OF 9

MUTCD WAYFINDING SIGNAGE: D1-3C



PAVEMENT MARKING EXAMPLE



CUSTOM SIGNAGE EXAMPLES





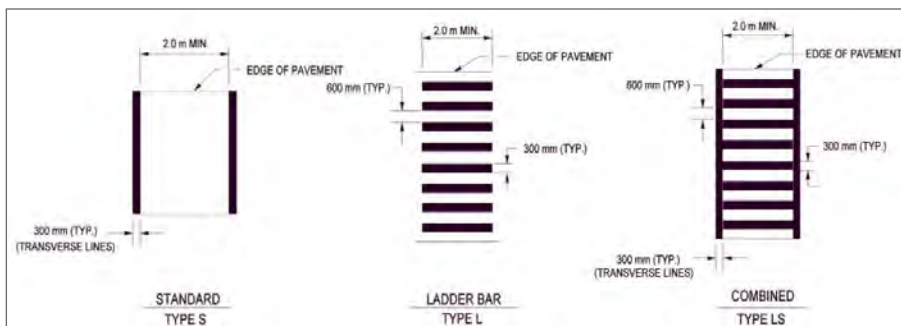
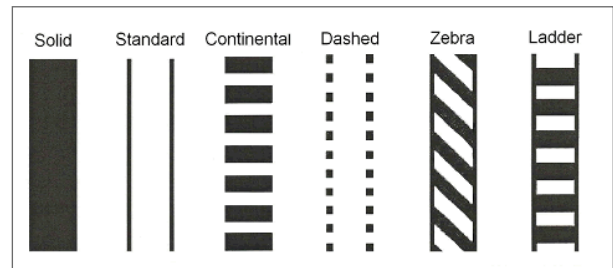
4.5 PROTOTYPE INTERSECTION IMPROVEMENTS

The Prototype Intersections serve as case studies which highlight improvement strategies that can be applied over time to other intersections in Irondequoit. Intersections were selected that could serve as examples for other intersections in the town that were not studied.

A combination of statistical data, field observation, and input from residents was used to evaluate existing conditions at the Prototype Intersections. 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. 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 unique active transportation needs especially regarding access to community services and health care providers. Bicycle and pedestrian facilities are particularly important to both of these groups.

Crosswalk Types, www.fhwa.dot.gov

Although none of the Irondequoit prototype intersections fall under the jurisdiction of NYSDOT, for future recommendations it should be noted that NYSDOT currently does not support use of high visibility crosswalks (typically ladder, continental or zebra style) at signalized intersections. Within NYSDOT's HDM, chapter 18, the ladder bar and combined style crosswalks are shown as "Typical Crosswalk Markings" and not differentiated as high visibility. 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 currently applies a standard crosswalk treatment. However, Monroe County DOT utilizes high visibility crosswalks at signalized intersections. A consistent and uniform approach to crosswalks in Irondequoit is recommended.



NYSDOT HDM Ch. 18, Exhibit 18-18 Typical Crosswalk Markings

According to MCDOT, they are following NYSDOT TSMI-14-01, Crosswalk Pavement Markings - Requirement for High Visibility Crosswalks at Marked Uncontrolled Pedestrian Crossings, which includes the following language:

"High Visibility crosswalks may be used at controlled crossings with justification through completion of an engineering study or recommendation by the Regional Traffic Engineer. Factors to be considered include vehicular volumes and speed; pedestrian crossing volumes; roadway width; configuration and grade; crash patterns and history; stopping and intersection sight distances; and night time visibility."



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.

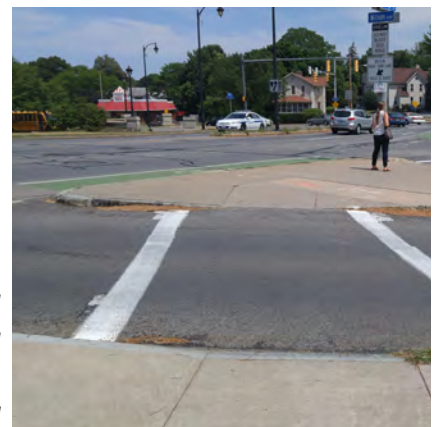
Six intersections in Irondequoit were selected for further study and more detailed recommendations for improvements. The overall goals for the suggested intersection improvements are to improve pedestrian safety and support an increased number of trips by walking and bicycling. The conceptual improvement packages recommended for each intersection are designed to make intersections function better for pedestrians and bicyclists while not adversely impacting other travel modes. The six intersections selected for detailed analysis, in addition to the controlling jurisdiction, are listed below and shown on [Figure 12](#):

- Titus Avenue (EB/WB) and Culver Road (NB/SB), Monroe County DOT
- Norton Street (EB/WB) and Pardee Road (NB/SB), Monroe County DOT, Town of Irondequoit
- East Ridge Road (EB/WB) and Kings Highway (NB/SB), Monroe County DOT
- Hudson Avenue (NB/SB) and Titus Avenue (EB/WB), Monroe County DOT
- Cooper Road (NB/SB) and St. Paul Boulevard (EB/WB), Monroe County DOT
- St. Paul Boulevard (NB/SB) and Pattonwood Drive (EB/WB), Monroe County DOT

A detailed analysis of the six identified intersections was completed considering in part notes from the Prototype Intersection Field Inspection completed on November 17, 2015. Field investigations considered the physical and operational characteristics of each location pertinent to pedestrian and bicycle safety. During the Walk Tour, MCDOT stated that “all MCDOT signalized intersections will have countdown pedestrian indications at existing marked crosswalks by the end of 2016.” Refer to [Appendix K](#) for MCDOT comments regarding recommendations. A desktop analysis using AutoTURN software verified the layout. For all intersections, consideration of the following is recommended for all approaches:

- Sidewalks;
- Curb ramps;
- Pedestrian Signals;
- Upgrading existing pedestrian push buttons and indications to most current NY State standards;
- No Turn on Red / Turning Vehicles Yield to Pedestrians; and
- Leading pedestrian intervals (LPI) where there are right turn lanes. MUTCD recommends use “*at intersections with high pedestrian volumes and high conflicting turning vehicle volumes, a brief leading pedestrian interval, during which an advance WALKING PERSON (symbolizing WALK) indication is displayed for the crosswalk while red indications continue to be displayed to parallel through and/or turning traffic, may be used to reduce conflicts between pedestrians and turning vehicles.*” LPI’s will be considered on a case by case basis.

*Images: Right turn slip lane island,
Ford Street, Rochester*





For two of the intersection concepts, a channelized right turn slip lane island is recommended. Conceptually, these slip lanes allow for more predictable interactions between motorists and pedestrians. There is no right turn on red for motorists to violate. However, they must be properly designed to discourage high speed motorist turns. They must also provide room for signal hardware on the islands without obstructing the motorist’s view of pedestrians. According to MCDOT, “based on past performance at other existing locations, MCDOT does not support the installation of these.”

MCDOT has indicated concerns for poor vehicle yielding behavior, higher maintenance and plowing costs. Additionally, MCDOT supports channelized islands under the following conditions: significantly skewed locations, high volume right turn movements (but not ped friendly) and to break up extremely long (>7 lanes) crossings).

Table 6: Prototype Intersection Improvements

Note: While MCDOT owns and oversees permitting on county roadways, the Town of Irondequoit is responsible for the maintenance of sidewalks.

Roadway/ Location	Recommended Facility Improvement	Responsible Jurisdiction	Phase
Titus Avenue & Culver Road	<p>Add sidewalks on south side of Titus Avenue.</p> <p>Reconstruct ramps so that they are ADA compliant. Install two ramps per corner.</p> <p>Add 5-foot by 8-foot ADA compliant bus pads for stops on Culver Road on the southeast and northwest corners on the intersection.</p> <p><i>Note: RTS supports installing bus stop pads with sidewalk connections at each location.</i></p> <p>Potentially reduce northwest and southeast radii to reduce turning speeds.</p> <p>Pedestrian signal push buttons should be located on the poles serving the crossing. It appears is not the case on the northeast corner.</p> <p>While the stop line setback distances are significant, it appears they are required to allow for vehicle turning movements, so no major changes are recommended.</p>	MCDOT, Town of Irondequoit	Priority



TOWN OF IRONDEQUOIT
ACTIVE TRANSPORTATION PLAN

Roadway/ Location	Recommended Facility Improvement	Responsible Jurisdiction	Phase
Norton Street & Pardee Road	<p>Reduce radii to 30-foot. Reduces pedestrian crossing distance of Norton Street from 35-foot to 27-foot and of Pardee Road from 48-foot to 35'-foot.</p> <p>Replace the northbound NO TURN ON RED 7AM-9AM 2PM-4PM SCHOOL DAYS with a NO TURN ON RED WHEN FLASHING assembly. Although these signs provide more positive affirmation of when the prohibition is actually in place, MCDOT does not recommend the use of them since they compete with the traffic signal for the driver's attention.</p> <p>Install a second pedestrian ramp on the southeast corner</p> <p>Reconstruct curb ramps to be ADA compliant</p> <p>The junction of the crosswalks on the southwest corner is not ADA compliant. If only one ramp is used on this corner, then the crosswalks must have at least 4-foot of a receiving landing at the base (on the asphalt) of the curb ramp. This 4-foot landing must be located within the crosswalks.</p> <p>Provide a sidewalk separated from the roadway along the south side of Norton Street.</p> <p><i>Note: Traffic control at the Norton/Pardee intersection will be evaluated as part of MCDOT's upcoming Capital project to determine what, if any, changes are necessary.</i></p>	MCDOT, Town of Irondequoit	Priority
East Ridge Road & Kings Highway	<p>Add 5-foot by 8-foot ADA-compliant bus pads for stops on E Ridge Rd east of the intersection (north side) and Goodman St south of the intersection (east side).</p> <p><i>Note: RTS supports installing bus stop pads with sidewalk connections at the Goodman St stop. Sidewalk improvements were recently completed for the E Ridge Rd stop.</i></p> <p>There is also bus stop on the southwest corner of the intersection. Given that there does not appear to be sufficient space for an ADA-compliant bus pad at this location, consider relocating the stop to align with the existing pedestrian access to the parking lot.</p> <p><i>Note: RTS does not support relocating the bus stop further back from the intersection.</i></p> <p>Consider channelizing the northeast corner of this intersection. It would reduce pedestrian crossing distance</p> <p>Consider reducing radii on SE and NW corners</p> <p>SB approach: ~90-foot reduced to ~65-foot</p> <p>WB approach: ~83-foot reduced to ~55-foot</p>	MCDOT, Town of Irondequoit	Priority



TOWN OF IRONDEQUOIT
ACTIVE TRANSPORTATION PLAN

Roadway/ Location	Recommended Facility Improvement	Responsible Jurisdiction	Phase
Titus Avenue & Hudson Road (Alt 1)	<p>Consider channelizing the southeast corner of this intersection. Doing so would minimally reduce pedestrian crossing distance. More importantly, it would move the pedestrian crossings closer to the intersection where motorists are more focused on conflicts and moving slower.</p> <p>Looking at the eastbound Titus Ave movements, it appears there may be some potential for motorists' confusion – thus reduced attention to pedestrians. For the recently created second lane for the eastbound departure, consider making the inside lane a left turn only lane for Cooper Road. If this is done, appropriate pavement markings, a LEFT LANE MUST TURN LEFT (R3-7) sign, and a supplemental plaque for distance or specifying COOPER ROAD should be included to alert approaching motorists to the drop lane.</p> <p>Consider installing raised islands where there is currently painted median space.</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. An overhead left turn only sign does exist for east bound Titus at Cooper 2. While improvements were made during the recent MCDOT project, there may be a need for additional enhancements to improve driver awareness. 	MCDOT, Town of Irondequoit	Priority
St. Paul & Cooper (Alt 1)	<p>Consider reconstructing this intersection to make it more of a tee-connection</p> <ul style="list-style-type: none"> Extend the eastern curb line Relocate the sidewalk <p>Plant vegetation to screen the southbound and northbound movements from each other. Providing a visual screen will eliminate the impression that the north south is a through street.</p> <p>Prohibit RTOR, either with on demand blank-out signs, or if ped volumes merit, continuous prohibition.</p> <p><i>Note: MCDOT does not support full time no turn on red unless a sight distance issue exists.</i></p> <p>Relocate the pedestrian crossings</p>	MCDOT, Town of Irondequoit	Priority



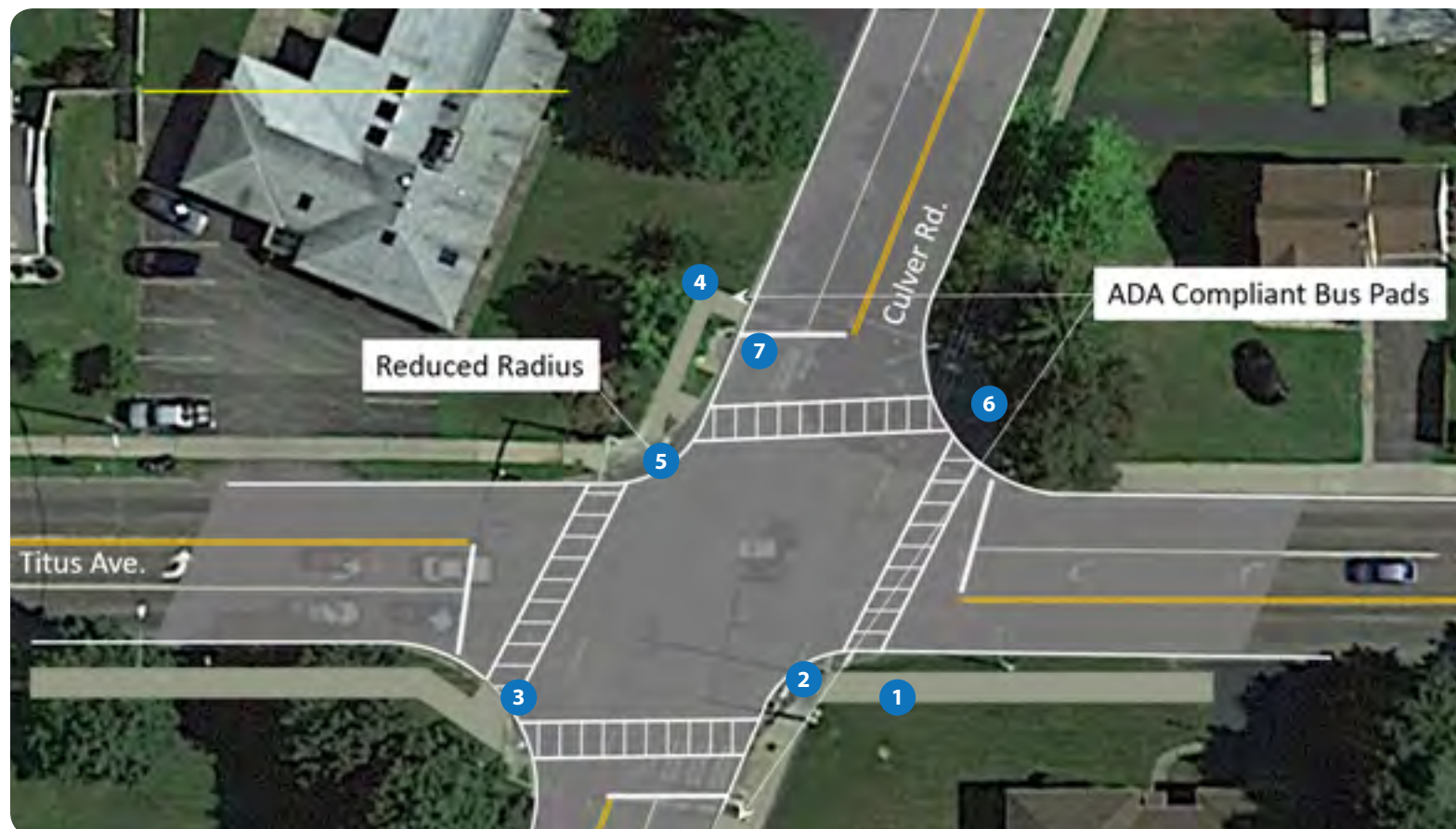
TOWN OF IRONDEQUOIT
ACTIVE TRANSPORTATION PLAN

Roadway/ Location	Recommended Facility Improvement	Responsible Jurisdiction	Phase
Pattonwood Drive & St Paul Boulevard	<p>This intersection is quite compact and there seems to be little from a geometric, signing, striping standpoint that would improve it for pedestrians. There is right on red prohibition for the east to south turning movement from Pattonwood Drive; this should address the issue of limited southern visibility to pedestrians approaching on the sidewalk. Visibility from St. Paul to the crosswalk seems unrestricted. The field notes suggest that right and left turns onto Pattonwood Dr pose safety concerns.</p> <p>Consider a leading pedestrian interval at for this crossing R10-15 signs reminding TURNING VEHICLES YIELD TO PEDS could be added next to the signal heads for the St. Paul Blvd approaches <i>Note: according to MCDOT, "the use of R10-15 signs will be considered in situations where there is a documented condition where vehicles are not yielding to pedestrians as required by law."</i></p> <p>Consider Shared Lane Markings and Bikes May Use Full Lane Signs throughout this section beginning north of the railroad crossing and ending south of the choke point south of the intersections</p>	MCDOT, Town of Irondequoit	Priority

EXISTING CONDITIONS



PRELIMINARY RECOMMENDATIONS



EXISTING CONDITIONS



PRELIMINARY RECOMMENDATIONS

- 1 Add sidewalks on south side of Titus Avenue
- 2 Reconstruct ramps so that they are ADA compliant
- 3 Install two ramps per corner
- 4 Add 5-foot by 8-foot ADA compliant bus pads for stops on Culver Road on the southeast and northwest corners on the intersection

Note: RTS supports installing bus stop pads with sidewalk connections at each location

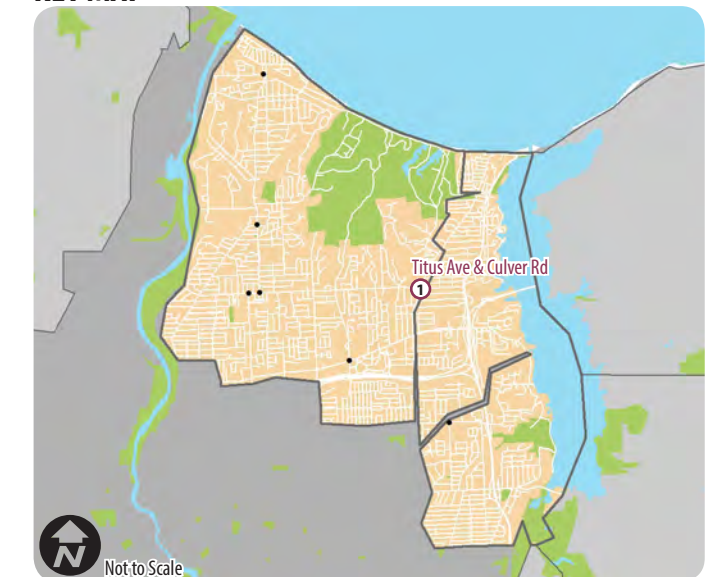
- 5 Potentially reduce northwest and southeast radii to reduce turning speeds
- 6 Pedestrian signal push buttons should be located on the poles serving the crossing. It appears is not the case on the northeast corner.
- 7 While the stop line setback distances are significant, it appears they are required to allow for vehicle turning movements, so no major changes are recommended.



FIGURE: 12
PROTOTYPE INTERSECTIONS
TITUS AVENUE AND CULVER ROAD
SHEET 1 OF 9

The Prototype Intersections fall under the jurisdiction of 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.

KEY MAP



EXISTING CONDITIONS



Map Sources: NYS GIS Clearing House, Monroe County, Genesee Transportation Council
Projection: NAD 1983 (2011) State Plane New York West FIPS (US Feet)

PRELIMINARY RECOMMENDATIONS



Prepared by Barton & Loguidice, DPC & Sprinkle Consulting, Inc.

EXISTING CONDITIONS



PRELIMINARY RECOMMENDATIONS

- 1 Reduce radii to 30-foot
- 2 Reduces pedestrian crossing distance of Norton Street from 35-foot to 27-foot and of Pardee Road from 48-foot to 35'-foot
- 3 Replace the northbound NO TURN ON RED 7AM-9AM 2PM-4PM SCHOOL DAYS with a NO TURN ON RED WHEN FLASHING assembly. Although these signs provide more positive affirmation of when the prohibition is actually in place, MCDOT does not recommend the use of them since they compete with the traffic signal for the driver's attention.
- 4 Install a second pedestrian ramp on the southeast corner
- 5 Reconstruct curb ramps to be ADA compliant
- 6 The junction of the crosswalks on the southwest corner is not ADA compliant. If only one ramp is used on this corner, then the crosswalks must have at least 4-foot of a receiving landing at the base (on the asphalt) of the curb ramp. This 4-foot landing must be located within the crosswalks.
- 7 Provide a sidewalk separated from the roadway along the south side of Norton Street.

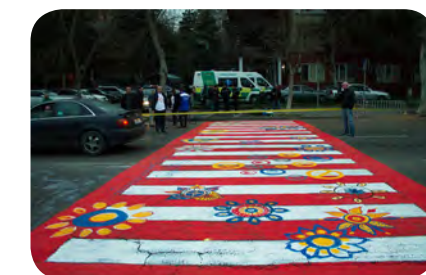
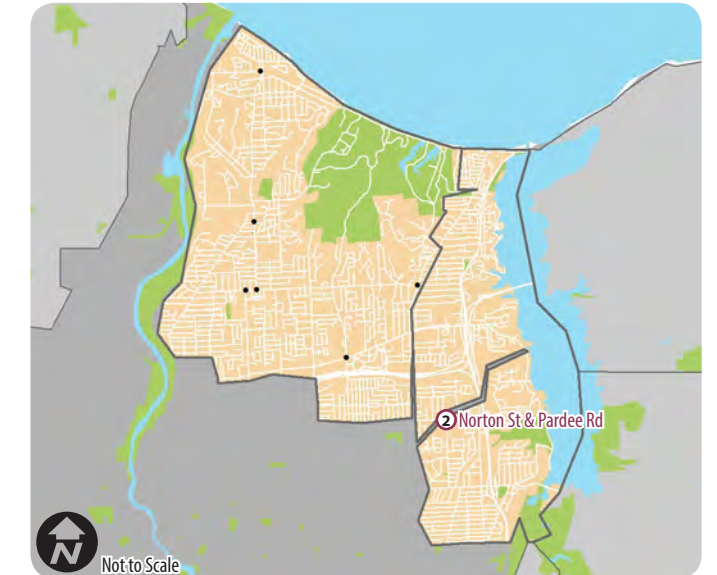


FIGURE: 12
PROTOTYPE INTERSECTIONS
NORTON STREET & PARDEE ROAD
SHEET 2 OF 9

The Prototype Intersections fall under the jurisdiction of 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.

MCDOT is in the planning stages of a capital project on Norton St between the City limits and I-590. As part of this project, this intersection will be studied to determine if the existing traffic signal is still justified. This will impact many of the recommendations for this location.

KEY MAP



Note: This intersection provides an opportunity to install a Colorful Crosswalk as part of the PlayROCS initiative through Healthi KIDS, an initiative of Finger Lakes Health Systems Agency.

EXISTING CONDITIONS



Map Sources: NYS GIS Clearing House, Monroe County, Genesee Transportation Council
 Projection: NAD 1983 (2011) State Plane New York West FIPS (US Feet)

EXISTING CONDITIONS



FIGURE 12
 PROTOTYPE INTERSECTIONS
 EAST RIDGE ROAD & KINGS HIGHWAY
 SHEET 3 OF 9

The Prototype Intersections fall under the jurisdiction of 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. Comments were received regarding pedestrian safety due to high traffic speeds of turning vehicles. Irondequoit Police Department has been made aware of this concern, and MCDOT will monitor this location to determine if additional traffic control measures are required.

PRELIMINARY RECOMMENDATIONS



PRELIMINARY RECOMMENDATIONS

- 1 Add 5-foot by 8-foot ADA-compliant bus pads for stops on E Ridge Rd east of the intersection (north side) and Goodman St south of the intersection (east side).

Note: RTS supports installing bus stop pads with sidewalk connections at the Goodman St stop. Sidewalk improvements were recently completed for the E Ridge Rd stop.

- 2 There is also bus stop on the southwest corner of the intersection. Given that there does not appear to be sufficient space for an ADA-compliant bus pad at this location, consider relocating the stop to align with the existing pedestrian access to the parking lot.

Note: RTS does not support relocating the bus stop further back from the intersection.

KEY MAP



- 3 Consider channelizing the northeast corner of this intersection. It would reduce pedestrian crossing distance

- 4 Consider reducing radii on SE and NW corners

SB approach: ~90-foot reduced to ~65-foot
 WB approach: ~83-foot reduced to ~55-foot

EXISTING CONDITIONS



Note: Aerial image reflects conditions prior to the MCDOT Multi-lane Conversion project

PRELIMINARY RECOMMENDATIONS



EXISTING CONDITIONS



PRELIMINARY RECOMMENDATIONS

- 1 Consider channelizing the southeast corner of this intersection. Doing so would minimally reduce pedestrian crossing distance. More importantly, it would move the pedestrian crossings closer to the intersection where motorists are more focused on conflicts and moving slower.
- 2 Looking at the eastbound Titus Ave movements, it appears there may be some potential for motorists' confusion – thus reduced attention to pedestrians. For the recently created second lane for the east-bound departure, consider making the inside lane a left turn only lane for Cooper Road. If this is done, appropriate pavement markings, a LEFT LANE MUST TURN LEFT (R3-7) sign, and a supplemental plaque for distance or specifying COOPER ROAD should be included to alert approaching motorists to the drop lane.
- 3 Consider installing raised islands where there is currently painted median space.

Notes:

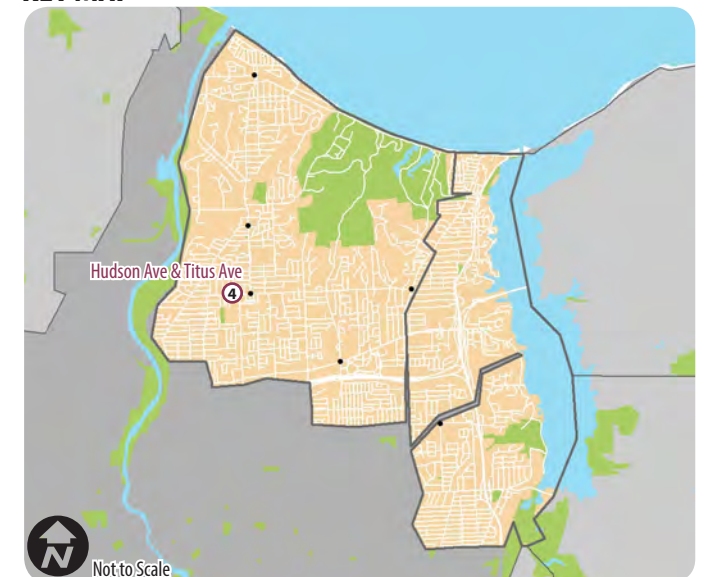
1. An overhead left turn only sign does exist for east bound Titus at Cooper.
2. While improvements were made during the recent MCDOT project, there may be a need for additional enhancements to improve driver awareness.



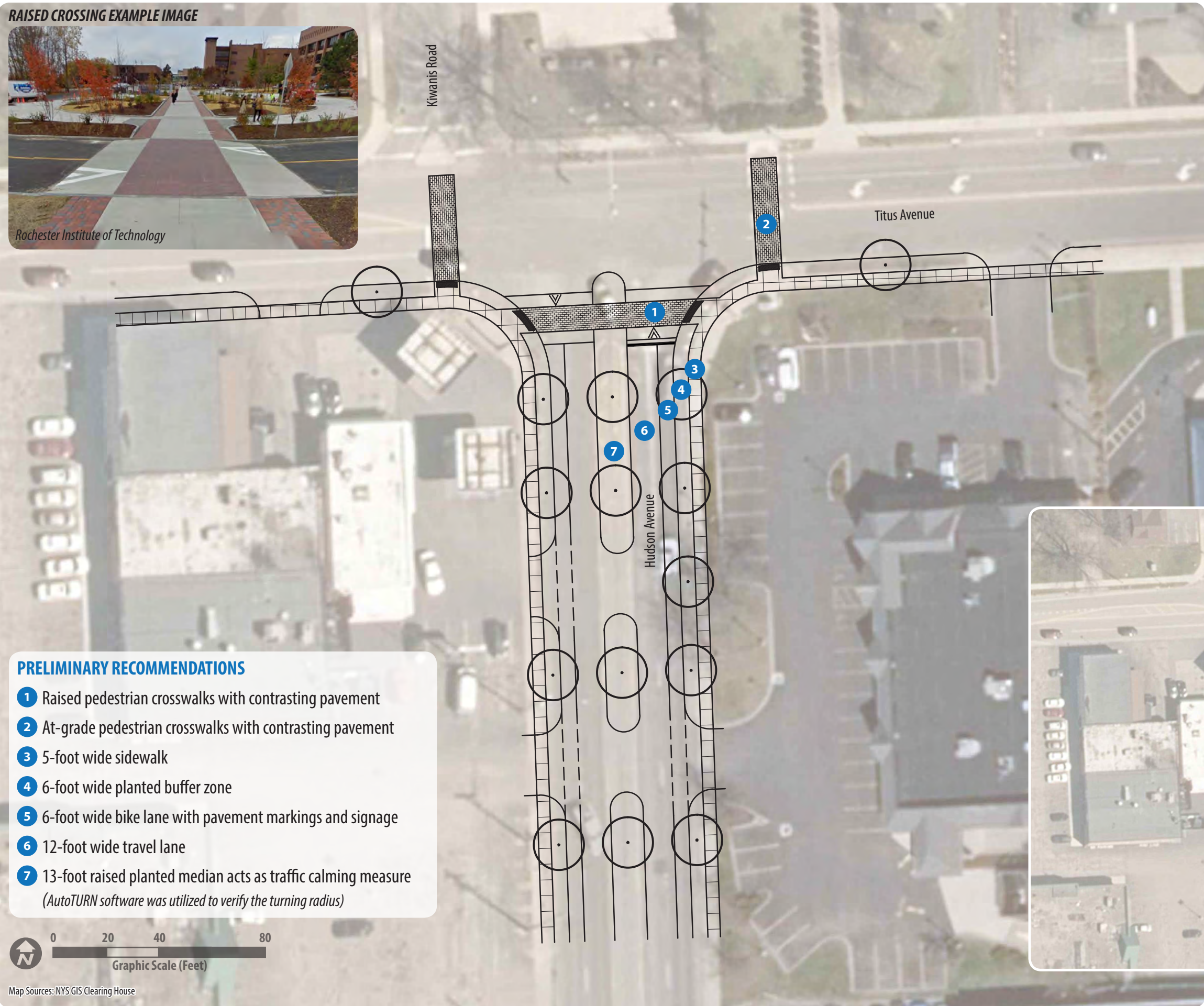
FIGURE: 12
**PROTOTYPE INTERSECTIONS
 TITUS AVE & HUDSON AVE (ALT 1)**
 SHEET 4 OF 9

The Prototype Intersections fall under the jurisdiction of 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. Comments were received regarding pedestrian safety due to high traffic speeds of turning vehicles. Irondequoit Police Department has been made aware of this concern, and MCDOT will monitor this location to determine if additional traffic control measures are required.

KEY MAP



RAISED CROSSING EXAMPLE IMAGE



PRELIMINARY RECOMMENDATIONS

- 1 Raised pedestrian crosswalks with contrasting pavement
- 2 At-grade pedestrian crosswalks with contrasting pavement
- 3 5-foot wide sidewalk
- 4 6-foot wide planted buffer zone
- 5 6-foot wide bike lane with pavement markings and signage
- 6 12-foot wide travel lane
- 7 13-foot raised planted median acts as traffic calming measure
(AutoTURN software was utilized to verify the turning radius)



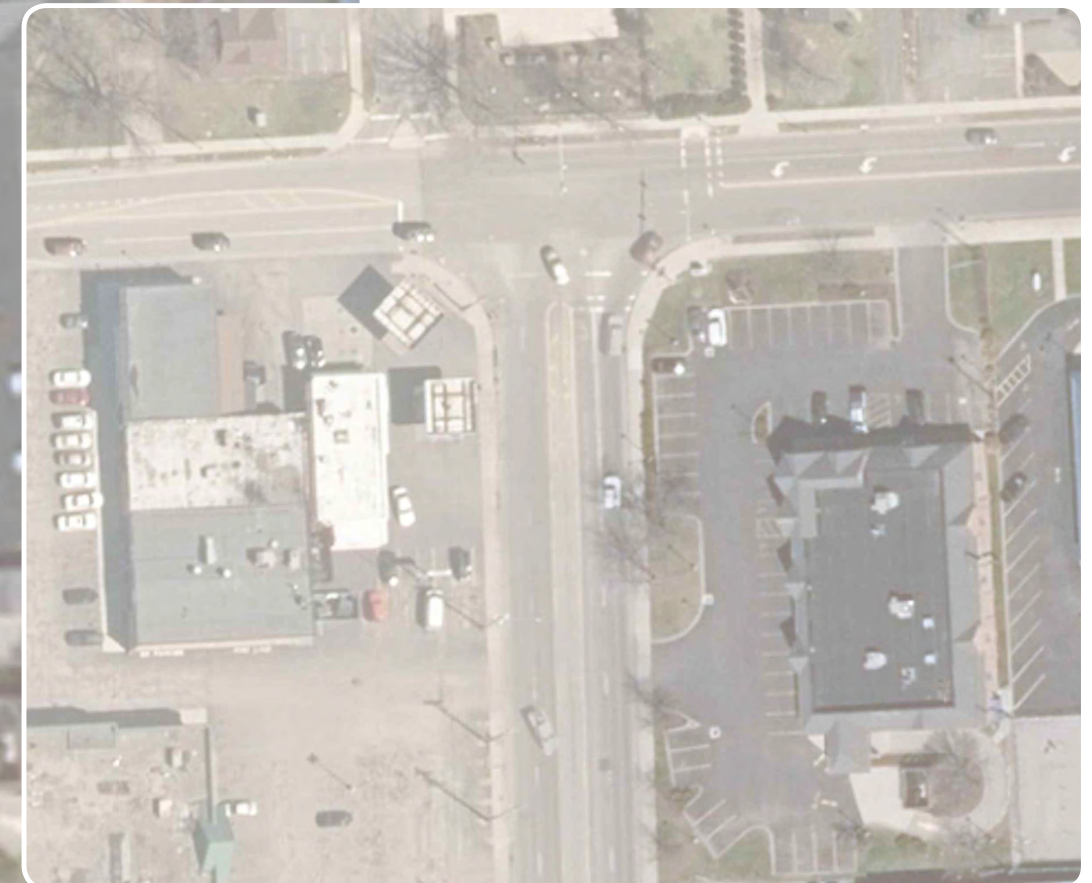
Map Sources: NYS GIS Clearing House



FIGURE: 12
PROTOTYPE INTERSECTIONS
TITUS AVE & HUDSON AVE (ALT 2)
 SHEET 5 OF 9

The Prototype Intersections fall under the jurisdiction of 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. Comments were received regarding pedestrian safety due to high traffic speeds of turning vehicles. Irondequoit Police Department has been made aware of this concern, and MCDOT will monitor this location to determine if additional traffic control measures are required.

EXISTING CONDITIONS

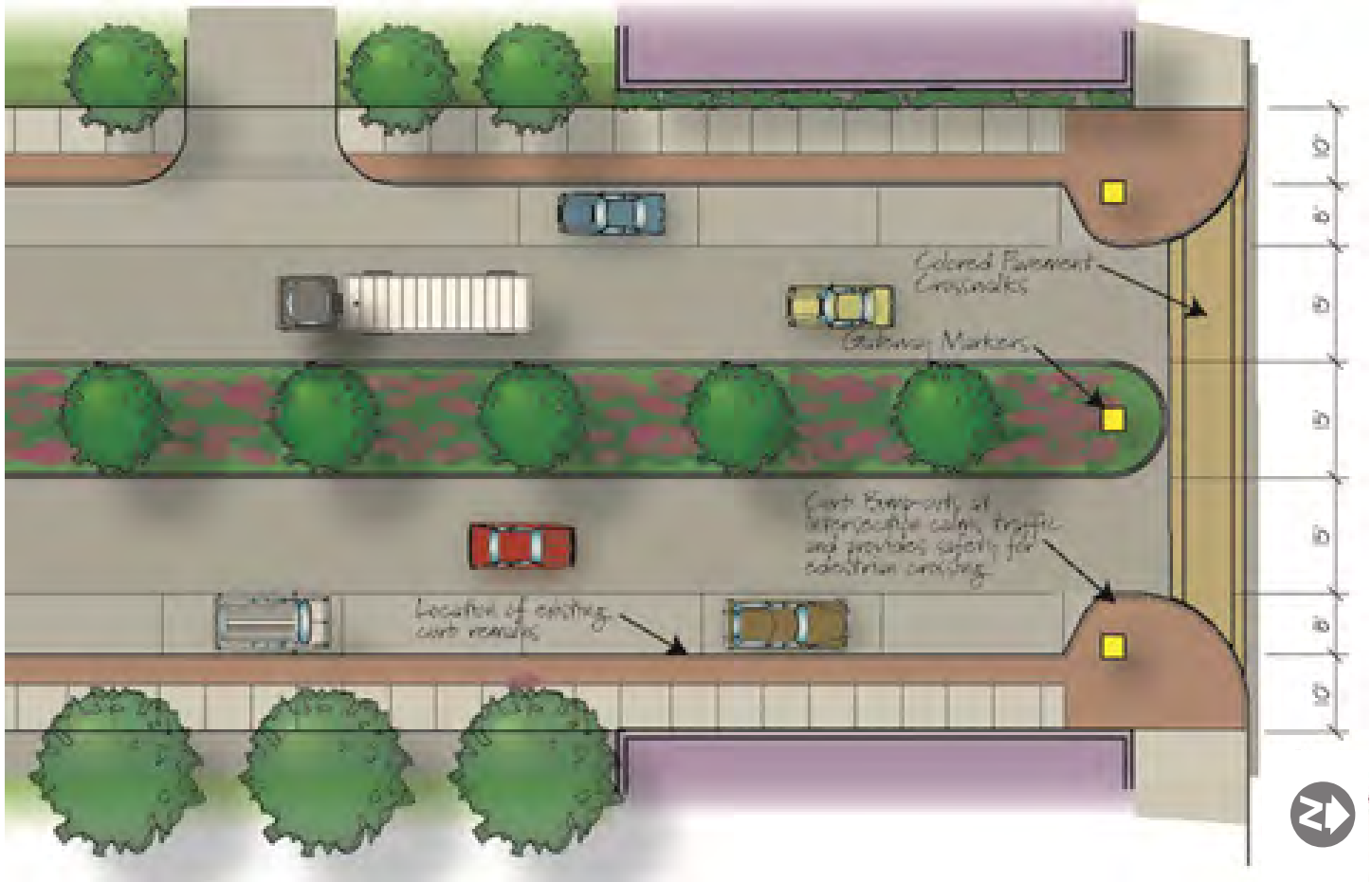


ALT 3: POTENTIAL MEDIAN RENDERING FOR HUDSON AT TITUS

TITUS/COOPER/HUDSON MASTER PLAN, 2003

SOURCE: *Helping Irondequoit Plan for Progress (HIPPP) community group*

SHEET 6 OF 9



EXISTING CONDITIONS



EXISTING CONDITIONS



FIGURE: 12
PROTOTYPE INTERSECTIONS
COOPER RD & ST PAUL BOULEVARD (ALT 1)
 SHEET 7 OF 9

The Prototype Intersections fall under the jurisdiction of 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.

PRELIMINARY RECOMMENDATIONS



Note: Maps have been updated to reflect the August 2016 design plans for the multilane conversions on Hudson Ave (CO112), St Paul Blvd (CO122) and Titus Ave (CO91).

PRELIMINARY RECOMMENDATIONS

- 1 Consider reconstructing this intersection to make it more of a tee-connection
- 2 Extend the eastern curb line
- 3 Relocate the sidewalk
- 4 Plant vegetation to screen the southbound and northbound movements from each other. Providing a visual screen will eliminate the impression that the north south is a through street.
- 5 Prohibit RTOR, either with on demand blank-out signs, or if ped volumes merit, continuous prohibition.
Note: MCDOT does not support full time no turn on red unless a sight distance issue exists.
- 6 Relocate the pedestrian crossings

KEY MAP



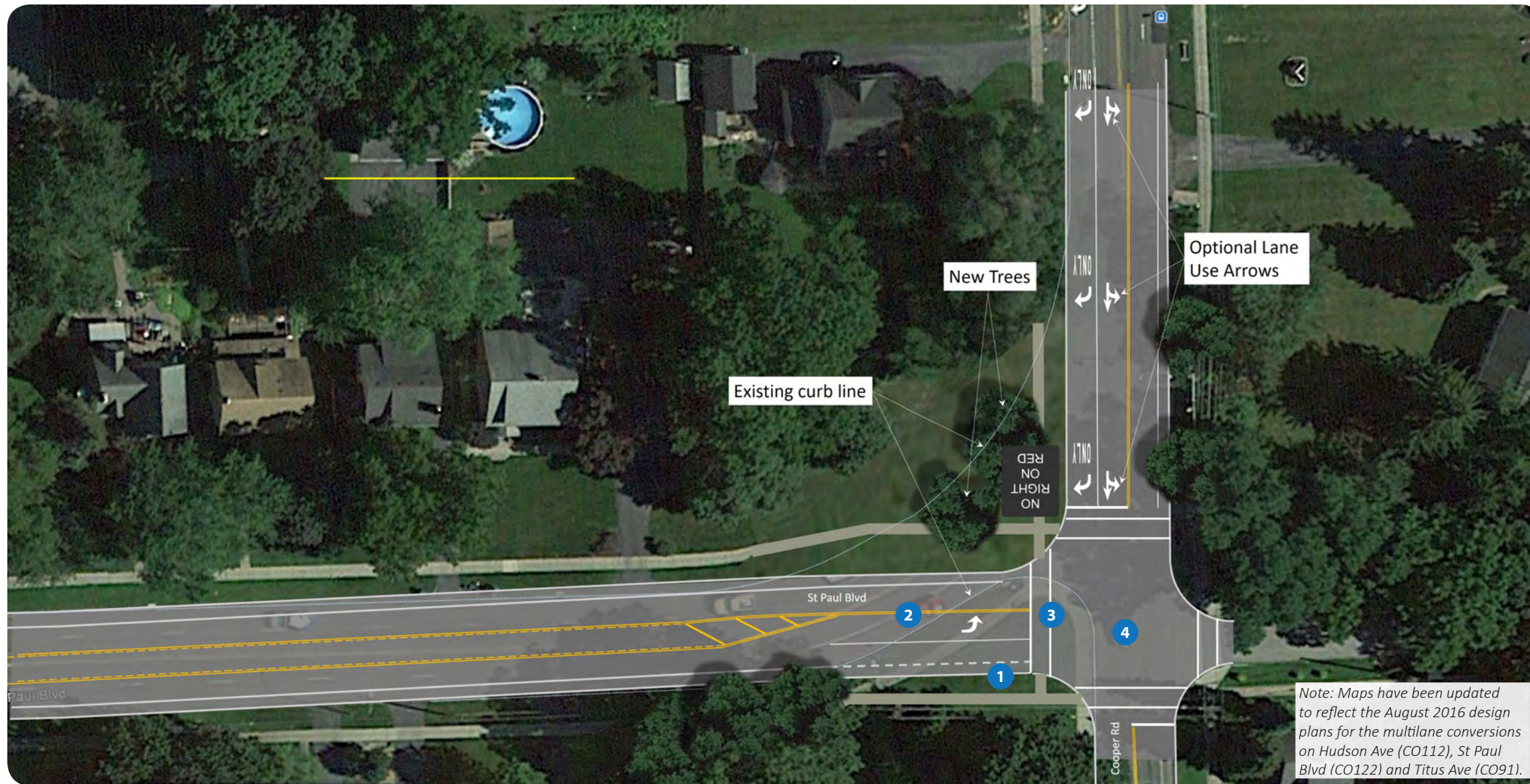
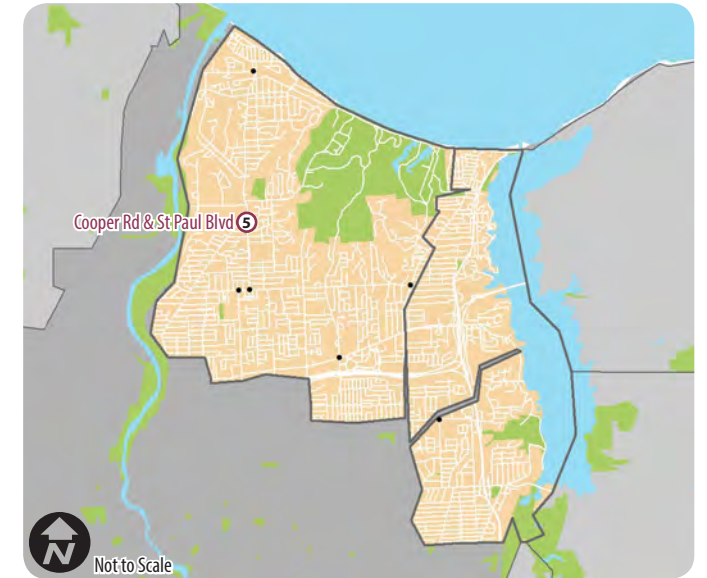


FIGURE: 12
 PROTOTYPE INTERSECTIONS
 COOPER RD AND ST PAUL BOULEVARD (ALT 2)
 SHEET 8 OF 9

KEY MAP



PRELIMINARY RECOMMENDATIONS - ALTERNATIVE APPROACH

An alternative approach to the St. Paul Blvd / Cooper Rd intersection would be to realign St. Paul Blvd to be create a four-legged intersection with Hartford Rd (a one-way eastbound street) on the east side of the intersection. While this could work, it has several disadvantages over the previous option:

- 1 This option requires realignment of St. Paul Blvd. This will impact the property owner in the southwest quadrant by significantly reducing the green space in front of the house.
- 2 To align the eastbound St. Paul Blvd approach with the Hartford Road departure, St. Paul could be shifted north. Alternatively, the eastbound movement would need to be shifted more than a lane width north across the intersection. Realigning St. Paul to the north, however, reduces green space directly in front of the house in the northeast quadrant; it increases the green space closer to the intersection.
- 3 To safely accommodate pedestrians, the pedestrians should be given an exclusive phase with right turns across the western crosswalk prohibited.
- 4 The four legged intersection would likely increase traffic on both Cooper and Hartford Roads.

The Prototype Intersections fall under the jurisdiction of 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.

EXISTING CONDITIONS

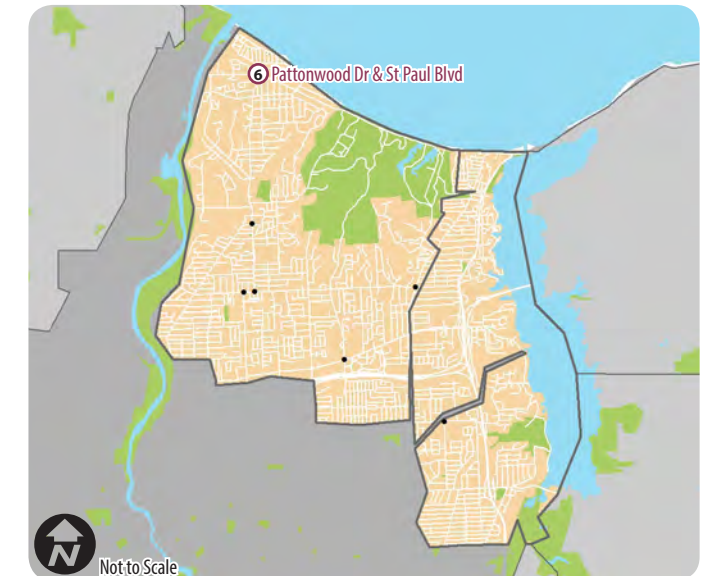


EXISTING CONDITIONS



FIGURE: 12
PROTOTYPE INTERSECTIONS
PATTONWOOD DR & ST PAUL BOULEVARD
SHEET 9 OF 9

KEY MAP



PRELIMINARY RECOMMENDATIONS

- » This intersection is quite compact and there seems to be little from a geometric, signing, striping standpoint that would improve it for pedestrians. There is right on red prohibition for the east to south turning movement from Pattonwood Drive; this should address the issue of limited southern visibility to pedestrians approaching on the sidewalk. Visibility from St. Paul to the crosswalk seems unrestricted.
- » The field notes suggest that right and left turns onto Pattonwood Dr pose safety concerns.
 - Consider a leading pedestrian interval at for this crossing
 - R10-15 signs reminding TURNING VEHICLES YIELD TO PEDS could be added next to the signal heads for the St. Paul Blvd approaches (according to MCDOT, "the use of R10-15 signs will be considered in situations where there is a documented condition where vehicles are not yielding to pedestrians as required by law.")
- » Consider Shared Lane Markings and Bikes May Use Full Lane Signs throughout this section beginning north of the railroad crossing and ending south of the choke point south of the intersections

The Prototype Intersections fall under the jurisdiction of 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. Comments were received regarding pedestrian safety due to high traffic speeds of turning vehicles. Irondequoit Police Department has been made aware of this concern, and MCDOT will monitor this location to determine if additional traffic control measures are required.



4.6 SEABREEZE NEIGHBORHOOD

The Seabreeze Neighborhood is a unique area in the northern part of the town along Irondequoit Bay. The area has residential communities situated in close proximity to the Irondequoit Bay and Lake Ontario waterfronts. Both residential and commercial land uses have evolved over time primarily based on the Lake Ontario tourism economy, which tends to be strongest during summer months. Additionally, Seabreeze is a regional destination that attracts visitors from communities outside of Irondequoit. Seasonal bicycle tourism gravitates to the Seabreeze area and supports local commerce. Providing infrastructure that accommodates both existing and future pedestrian and bicycle uses is essential to the continued growth of this area. Refer to [Figure 13](#) for recommended improvements.



Images: Google images of the Town of Irondequoit near Lake Ontario and Irondequoit Bay











Opportunities for improvements to the Irondequoit Bay Outlet Bridge include providing all season access and fully accommodating bicycles and pedestrians. The Town of Irondequoit, with funding from the Genesee Transportation Council, will be completing an Alternative Analysis Study to investigate improvement options.



FIGURE 13
SEABREEZE NEIGHBORHOOD

Recommended Improvements

-  Consider hatching shoulder on approach to roundabouts on Seabreeze Drive to encourage bicyclists to claim the lane or move onto the trail through the roundabout.
-  Consider installing diagonal warning stripes on the approach to drainage grates along Seabreeze Dr. and Culver.
-  Make all curbs ramps along Seabreeze Dr. and Culver ADA compliant.
-  Crosswalks at Durand/Culver intersection need re striping.
-  Along Culver, where sidewalks are flush with the driveway surface, carry the sidewalk through the driveways to better delineate and provide hierarchy for pedestrian travel.
-  Add designated signed and marked pedestrian crossings.
-  Trees have been planted on the inside of northbound to eastbound curve of Culver. Selective pruning of lower branches to ensure adequate sight-lines should be performed as needed.
-  Vegetation on the west end of Broderick Ave. is encroaching on the roadway. Prune selectively to maintain visibility.

Remove signs from sidewalk along the south side of Culver (east of See Breeze) or add warning markers.



Several drainage grates and manholes in neighborhood require repairs to be flush with road surface.



Remove weeds between sidewalk and back of curb throughout neighborhood roads.



Map Sources: NYS GIS Clearing House, Town of Irondequoit, Monroe County, Genesee Transportation Council
Projection: NAD 1983 (2011) State Plane New York West FIPS (US Feet)



5.0 FACILITY DESIGN GUIDANCE



Image: Town of Irondequoit

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 Irondequoit. 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 presents information on how to accommodate bicycle travel and operations in most riding environments. It is the guidance document upon which most state and local design guidelines are based. In many jurisdictions this document is considered when establishing minimum values for bicycle design.
2. ***AASHTO Guide for the Planning, Design, and Operations of Pedestrian Facilities*** – This document presents 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 when establishing 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 criterion, while relevant to local projects, are not required for local projects unless Federal Transportation Funds are involved.



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 criterion, while relevant to local projects, are not required for local projects unless Federal Transportation Funds are involved.
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 entitled “A Policy on the Geometric Design of Highways and Streets” with an emphasis 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 Irondequoit Active Transportation Plan the following facility types are discussed:

- Bike Lanes;
- Multi-Use Paved Shoulders;
- Shared Lane Markings;
- Bike Routes;
- Bike Boulevards;
- Shared Use Paths;
- Sidewalks;
- Curb Ramps;
- Midblock Crossings;
- Transit;
- Bicycle Parking;
- Complete Streets



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. 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 the 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 shoulders 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 Irondequoit may wish to sign some roadways with paved shoulders to either guide bicyclists to a 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 its function 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

Image: Shared lane marking

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 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:

- alert motorists to the lateral location bicyclists are likely to occupy within the traveled way;
- encourage safe passing of bicyclists by motorists;
- 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;
- reduce the incidence of wrong-way bicycling; and
- 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 K](#)). 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; and
- 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.



Image: SLM signage



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.

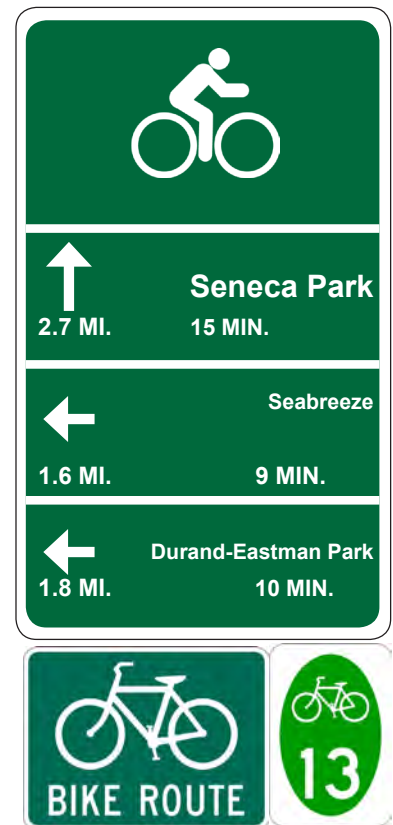
Bike routes can be designated in two ways: General Routes and Number Routes. General Routes are links tying specific origins to specific destinations. Number Routes form a network of bike routes that do not necessarily connect specific destinations, but serve as general travel routes through an area.

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. historic neighborhoods, etc.)
- Trail Networks or Trailheads (i.e. Irondequoit-Seneca 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 Irondequoit. 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.

Image: Bike route signage examples





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. Bike boulevards frequently 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 where bypasses allow 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.

Image: Bike boulevard pavement graphics



Because of low motor vehicle speeds and volumes, bike lane markings are often not necessary along bike boulevards, however SLMs may still 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 feel 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 Irondequoit. Wayfinding adds to the utility of bike boulevards because it educates cyclists that there are safe, comfortable ways of accessing Irondequoit 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 many of the design criteria and 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 marking 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 find 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 that 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. This ensures the maximum number of potential users 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 demonstrate that property values frequently increase following the construction of shared use paths while crime rates are sometimes found to decrease. See [Appendix G](#) Community Impacts of Trails.

Image: Town of Irondequoit, Lakeside Trail





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 Irondequoit 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.

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.



Image: City of Rochester

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 1.5%. 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.

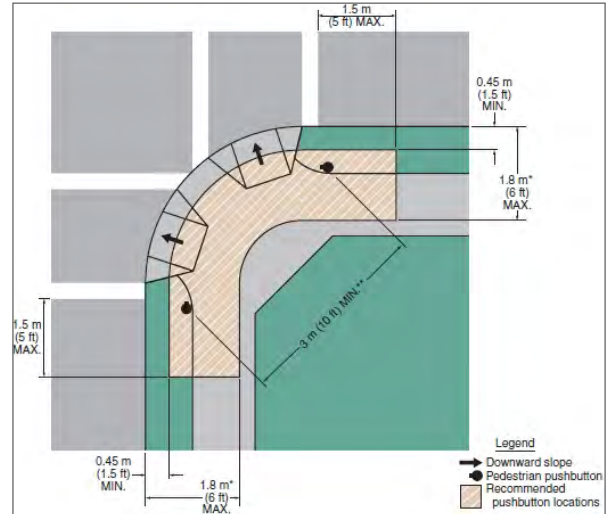


Image: MUTCD, Figure 4E-2

After review of Irondequoit'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 Irondequoit 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 standard must be applied in its entirety – no mixing and matching of standards is allowed. 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.



Image: Curb Ramp

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 driver awareness of the crossing and the expectation of encountering pedestrians. Pedestrians must be encouraged to cross in the designated location.



While drivers may not expect to encounter pedestrians at midblock locations as much as 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.

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).



National Association of City Transportation Officials (NACTO)

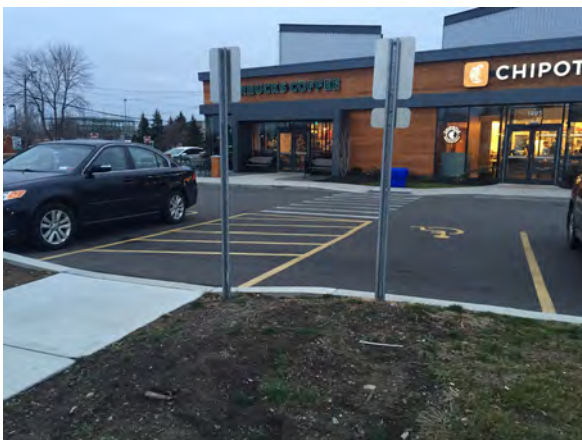
- Make drivers and pedestrians aware of their responsibilities and obligations at the crossing and provide opportunities to meet these responsibilities/obligations - Use MUTCD guidance to establish a legal crossing. Vehicle approach, pedestrian approach, and traffic control design should provide pedestrians 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.

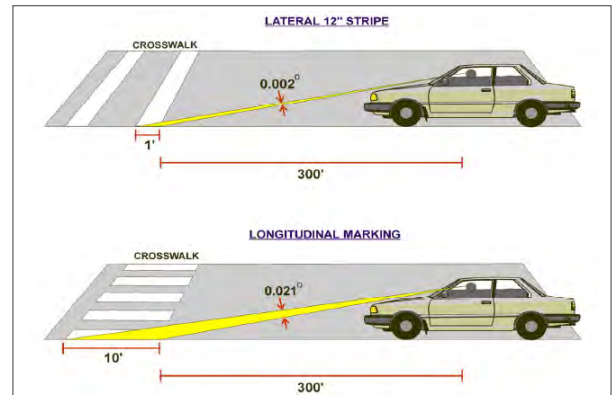


Images: Town of Irondequoit, recently constructed pedestrian accommodations



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 streetscape aesthetics by incorporating Complete Streets policies. Both new and existing bus stops must 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

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

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



5.11 BIKE PARKING FACILITIES

It is recommended that bicycle parking is provided at major destinations throughout Irondequoit. Even at its most basic level, bicycle parking 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 Town in centralized parking clusters and should follow LEED design standards for Sustainable Sites. Refer to the Zoning and Development of Regulations Assessment section for additional information and [Appendix H](#).

Image: Town of Irondequoit



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.



Image: Covered Bicycle Parking Shelters at RIT



5.12 COMPLETE STREETS

According to the National Complete Streets Coalition (NCSC), complete streets are roadways designed and operated to enable safe, attractive, and comfortable access and travel for all users (NCSC, 2008). Pedestrians, bicyclists, motorists and public transport users of all ages and abilities are able to safely and comfortably move along and across a complete street. Complete streets also create a sense of place, improve social interaction, and generally increase land values of adjacent properties.

Complete streets look different in different places. They must fit with their context and to the transportation modes expected (Laplante & McCann, 2008). Although no singular formula exists for a complete street, an effective one includes at least some of the following features:

- sidewalks
- bus pullouts
- bike lanes
- special bus lanes
- wide shoulders
- pedestrian scale lighting
- raised crosswalks
- plenty of crosswalks
- audible pedestrian signals
- refuge medians
- sidewalk bump-outs (bulb-outs)

These features make a street safer and more pleasant for pedestrians and vehicles. A Federal Highway Administration safety review found that designing a street for pedestrian travel by installing raised medians and redesigning intersections and sidewalks reduced pedestrian risk by 28% (NCSC, 2009). The practice of complete streets is not only about allocation of street space, but also about selecting a design speed that is appropriate to the street typology and location, and that allows for safe movements by all road users (Laplante & McCann, 2008).

Incomplete streets – those designed with only cars in mind – limit transportation choices by making walking, bicycling, and taking public transportation inconvenient, unattractive, and, too often, dangerous. Changing policy to routinely include the needs of people on foot, public transportation, and bicycles would make walking, riding bikes, riding buses and trains safer and easier. People of all ages and abilities would have more options when traveling to work, to school, to the grocery store, and to visit family.

Smart Growth America, 2016





6.0 ZONING AND DEVELOPMENT OF REGULATIONS ASSESSMENT



Image: Bike tour held on November 8, 2015

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

The Irondequoit Town Code and associated design standards were reviewed for existing material relevant to active transportation. This material is found in numerous chapters:

- **Chapter 198:** Streets and Sidewalks (extensive details regarding sidewalks, including construction specifications, maintenance duties, and definition of terms)
- **Chapter 199:** Rights-of-Way (reference to Town standards)
- **Chapter 204:** Subdivision of Land (specifies standard roadway pavement width, intersection radii, and sidewalk width and material)
- **Chapter 214:** Trees (discouraged species relative to sidewalks)
- **Chapter 222:** Vehicles and Traffic (reference to pedestrian right-of-way at signalized intersections)
- **Chapter 235:** Zoning (describes pedestrian and bicycle environment and requirements within Mixed-Use Commercial Zoning Districts, the River Harbor District, and townhouse developments)

Several observations and some associated recommendations have been made that have the potential to further promote active transportation in Irondequoit and bring the Town into better alignment with common practice:

- **Americans with Disabilities Act:** The Town Code has not been updated with respect to the Americans with Disabilities Act (ADA). For instance, Section 198:C.3 states that any obstructions or grade in excess of $\frac{1}{2}$ inch per foot shall be marked with warning devices barriers or warning lights. This and the definitions of cracked slabs, hazardous sidewalk, and heaved walk at trees seem to be contrary to the ADA requirements that vertical changes in elevation shall be less than $\frac{1}{4}$ inch, and can be beveled at 2:1 up to $\frac{1}{2}$ inch and then must be repaired or treated as ramps.
- **Sidewalks:** While criteria exist for how to install sidewalks, the Town Code does not appear to mandate sidewalks. In fact, it indicates that sidewalks shall only be constructed if approved.
- **Bikeways:** No mention is made of building bikeways or the appropriate standards for doing so. Such language should be considered for inclusion, with a general reference to refer to the AASHTO Guide for the Development of Bicycle Facilities as a primary resource.
- **Land Development Policy:** Consideration should be given to land development regulations and policies that promote the provision of two common end-of-trip facilities that encourage bicycle use: bicycle parking and workplace lockers/showers. Bicycle parking could be required (as a ratio of bicycle parking spaces to motor vehicle parking spaces) at larger multi-family developments, parks and recreation facilities, and commercial establishments. Developers and commercial property owners can be encouraged to provide showers and lockers through incentives such as trip generation reduction, floor area bonuses, and reductions to required setbacks. See [Section 6.2, Encouraging Public Private Partnerships](#), for more information.



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 for 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 influencing their choice to bicycle for transportation are:

- bicycle parking availability and convenience; and
- lockers and workplace showers for commuters.

These uses are not frequently found within the Town of Irondequoit. Thus, changes to applicable codes are recommended in the form of stronger incentives, rather than mandates. Recommended bicycle parking standards should formalize a developer’s 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:

Table 7: Minimum Number of Bicycle Spaces

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 Irondequoit. Thus, there are two options to consider to address this deficiency: increase incentives or mandate the facilities. The first option offering more effective incentives is preferred. 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 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 Irondequoit. Other incentives could include offsets to collected user fees.

As Irondequoit 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 Irondequoit.

Continued investment by the Town of Irondequoit in public bicycle transportation infrastructure can be complemented by developers and commercial property owners that provide on-site showers and locker facilities for employees. There are a number of incentives available to private sector developers that construct and manage commercial properties. Many of these incentives can be offered at little or no actual expense to the town.



6.3 ZONING AND DEVELOPMENT REGULATIONS ASSESSMENT

While the implementation of bicycle and pedestrian infrastructure recommendations included in this Plan will transform the Town of Irondequoit into a more accommodating place to walk and ride, it is also important to consider the concurrent positive impacts that zoning and subdivision policies can contribute. A review of existing Town of Irondequoit 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 within the Active Transportation network.

Significant portions of Irondequoit 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 elevate 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 catalyzed by incorporating changes to zoning language promoting public-private sector partnerships where appropriate.



6.4 ASSOCIATED RECOMMENDATIONS

The following recommendations are being put forth:

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 a local law based on the State of NY enabling legislation to reimburse consultants for review of subdivision site plans for active transportation consideration. Refer to the New York Department of State document, found by clicking on the 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 OUTREACH AND EDUCATION RECOMMENDATIONS



Image: Bike tour held on November 8, 2015

A successful bicycle and pedestrian network allows users 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 (bicyclists, pedestrians and motorists) about the rules of the road and safe bicycling and walking behavior is essential, while at the same time, encouraging more people to get outside and walk and ride their bikes.

The goals of the outreach and education recommendations in this section are 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 that 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 Irondequoit is home to people of many different ethnic backgrounds. Language barriers should be considered as educational materials are developed. The Town should explore partnerships that bridge cultural boundaries, providing 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 Irondequoit, 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.

Planning, outreach and education efforts need not “reinvent the wheel”. Many successful programs, campaigns and resources are readily available. Locally, there are already many efforts underway. Other communities throughout the U.S. and Canada have developed tools that can be adapted and modified for use by the Town of Irondequoit. This adaptation is important in order to effectively localize the educational campaigns. Locally created campaigns and materials 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 within the context of growing numbers 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.

Pedestrians are increasingly distracted by their hand-held 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 smart phones, and listen to music while walking. These are critical factors to consider when designing bicycle/ pedestrian safety, education and outreach programs. The framework for these recommendations was crafted with these considerations 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




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 segment of the population. Some examples of education and outreach programs are suggested here:

1. Coordinate different organizations, such as the Irondequoit Police Department, that offer **bicycle rodeos** for young bicyclists to see ways they can support each other and maximize existing resources. Organizations include Town of Irondequoit, 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 Irondequoit.
3. Coordinate with the **East Irondequoit School District** (Helendale Road Primary School, Ivan L. Green Primary School and Early Childhood Center, Durand Eastman Intermediate School, Laurelton-Pardee Intermediate School, East Irondequoit Middle School, and Eastridge High School), and **West Irondequoit School District** (Briarwood Elementary School, Brookview Elementary School, Colebrook Elementary School, Listwood Elementary School, Seneca Elementary School, Southlawn Elementary School, Iroquois Middle School, Rogers Middle School, Dake Junior High School, Irondequoit High School). Projects could include bike safety and maintenance workshops, bike fix-it stations at schools, field trips using the public transit system.
4. Create a Walking School Bus Program. A Walking School Bus is a parent guided walking route with specific stops at specific times. Walking School Bus routes help families who live nearby to feel confident about letting their kids walk to school.
5. 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 use by the Town of Irondequoit.





6. 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 offering 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 the greater business community.
7. **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 teaching 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.
8. **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.
9. 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 
10. 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.



11. 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 Irondequoit 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.

SafeRoutes

National Center for Safe Routes to School



12. 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.

13. *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/

14. 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 likely 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.



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15. 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.
16. 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.
17. **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. These videos could be incorporated into school district curriculum and shown at town events. www2.monroecounty.gov/safety-trafficafety.php.
18. 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.
19. Consider Colorful Sidewalks and Crosswalks at unsignalized intersections around the Irondequoit School Districts, and incorporate opportunities for play into street network 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, FHWA and the League of American Bicyclists. Refer to Follow-on Activities presented later in this plan for more information.



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.

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.

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)



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 where 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.

These four behaviors identified above 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 acceptable 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.



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.

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 Irondequoit. 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.

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, county-wide, coordinated enforcement campaign. Targeted enforcement initiatives result in everyone following the rules of the road.



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Table 8: Existing Active Transportation Education and Outreach Programs and Partnerships

Partner Name	Existing Programs					Existing Partnerships					Highlights
	Bicycle Safety	Community	Environmental	Transportation	Neighborhood	Bicycle Safety	Community	Environmental	Transportation	Neighborhood	
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.



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Monroe YMCA	+	+			+	+	+			+	
NYSDOT		+		+		+			+		Online resources. Maps and safety information.
RGRTA									+		
R Community Bikes, Inc.	+			+					+		Bike helmet giveaways, bike repairs for under-served.
RocCity Coalition					+					+	Many partnerships, not specifically related to active transportation.
Rochester Area Community Foundation		+	+		+	+	+			+	Support community efforts through grants.
Rochester Bicycling Club (RBC)	+					+					Dedicated to promoting cycling for health and well being.
Rochester Cycling Alliance	+	+				+	+				
Rochester General Hospital		+			+	+	+				
Unity Health Services		+			+	+	+				
Wegmans	+	+	+	+	+	+	+	+	+	+	Passport to Wellness.



8.0 FUNDING AND IMPLEMENTATION STRATEGY



Image: Bike tour held on November 8, 2015

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 Irondequoit 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 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, Fixing America’s Surface Transportation Act, or the “FAST” Act. 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 9](#)) includes all of the funding sources that are described subsequently in greater detail.

Table 9: Funding Sources

Funding Source	Category	Relevant Project Types
National Highway Performance Program	Federal	Bicycle transportation facilities and pedestrian walkways adjacent to highways in the National Highway System, including interstates (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	Funding to reduce vehicle emissions and traffic congestion in areas where air quality does not meet National Ambient Air Quality Standards. Eligible projects include bicycle and pedestrian facility improvements; transit improvements; rideshare programs; alternative fueling facilities/clean vehicle deployment



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Transportation Alternatives	Federal funding administered by NYS DOT	On and off road bicycle and pedestrian facilities; projects that improve non-driver safety, access to transportation and enhanced mobility; conversion of abandoned railroad corridors into non-motorized trails; projects that enable/encourage children to walk/bike to school (Safe Routes to School); construction of turnouts, overlooks and viewing areas; planning, designing or constructing boulevards in former divided highway right-of-ways
Recreational Trails Program	Federal funding administered by NYS OPRHP	Develop and maintain trails for both motorized and non-motorized uses, including hiking, bicycling, in-line skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or other off-road motorized vehicles; develop trailhead facilities; purchase/ lease of maintenance equipment; acquisition of easements/property
State and Community Highway Safety Grants	Federal	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; sidewalks



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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



8.1 FEDERAL FUNDING SOURCES: FAST FUNDED PROGRAMS

The adoption of the FAST Act generally continues the bicycle and pedestrian funding mechanisms of its legislative predecessor, Moving Ahead for Progress for the 21st Century (MAP-21) with minor modifications and at slightly higher funding levels. The most significant structural change, which does not equate to a significant practical difference, is that the MAP-21 Transportation Alternatives Program (host to many of the Federal non-motorized transportation funding opportunities), is eliminated. Instead, transportation alternatives funding is a set-aside component of the Surface Transportation Block Grant (STBG) program, which is the successor to prior legislations' Surface Transportation Program (STP). Safe routes to school projects and recreational trail projects are among the activities that now fall under this program set-aside. These and other funding opportunities governed by the FAST Act are briefly described in this section. It is worth noting that some FAST Act changes related to transportation alternatives funding apply only to urbanized areas with populations greater than 200,000, and therefore may not be applicable to the Town of Irondequoit as an individual applicant. It is also worth noting that the FAST Act introduces some non-motorized transportation changes, such as language related to Complete Streets concepts, which are not strictly related to funding.

Several of the following resources provide additional information on relevant aspects of the FAST Act:

http://www.fhwa.dot.gov/environment/bicycle_pedestrian/legislation/sec217.cfm

<http://www.fhwa.dot.gov/fastact/factsheets/transportationalternativesfs.pdf>

<http://www.bikeleague.org/content/what-know-about-fast-act>

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.

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



Congestion Mitigation and Air Quality (CMAQ) Improvement Program. Established in 1991 and continued in the FAST Act, CMAQ provides funding for transportation projects that help State and local governments reduce vehicle emissions and traffic congestion in areas where air quality does not meet or did not previously attain the National Ambient Air Quality Standards. Projects require a 20 percent local match and the minimum grant amount is \$250,000. For the 2016 funding round, Monroe County is one of only 19 counties eligible to apply for CMAQ funding.

Transportation Alternatives (TAP). This program helps communities deliver safe, transformative and innovative projects of value to the public that contribute to the revitalization of local and regional economies by funding programs and projects defined as transportation alternatives. Projects are expected to improve mobility, accessibility, and the community's transportation character such that the street network is more vibrant, walkable and safer for all transportation mode users, in particular pedestrians, bicyclists, transit users and drivers. Originally established under MAP-21, TAP now includes funding for what previously comprised three separate programs (Transportation Enhancements, Safe Routes to School, and Recreational Trails). Projects require a 20 percent local match and the minimum grant amount is \$250,000. Eligible activities include:

- On and off Road bicycle and pedestrian facilities;
- Safety related infrastructure projects for improving non-driver access to public transportation and enhanced mobility
- Conversion and use of abandoned railroad corridors for trails for non-motorized transportation users
- Safe routes to school projects
- Projects for planning, designing or constructing boulevards or other roadways largely in the right of way of former divided highways
- Eligible secondary project activities include community improvement and environmental mitigation
- Construction of turnouts, overlooks and viewing areas;
- Community improvement activities and environmental mitigation are eligible only if they are part of a project that is eligible under one of the above categories

The Recreational Trails Program, funded under the TA umbrella, is administered separately by the NYS Office of Parks, Recreation and Historic Preservation. 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.

Highway Safety Section 402 Grants. 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.



Highway Safety Section 405 Grants. Under this new NHTSA program, states in which more than 15% of traffic fatalities are bicyclists and pedestrians (including New York) are eligible for nonmotorized safety funding. Eligible activities include safety education and awareness activities and programs, safety enforcement (including police patrols), and training for law enforcement on pedestrian- and bicycle-related safety laws.

8.2 OTHER FEDERALLY FUNDED PROGRAMS

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://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs

Transportation Investment Generating Economic Recovery (TIGER). The highly competitive TIGER grant program was created in 2009 and has funded numerous multi-modal and multi-jurisdictional projects since its inception. This is an annually administered discretionary grant program distinct from the FAST Act and typically provides grants to projects difficult to fund through traditional federal programs. Awards focus on capital projects that generate economic development and improve access to reliable, safe and affordable transportation for communities, both urban and rural.

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.

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.



8.3 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). CHIPS funds can be used for TAP grant program local match requirements.

New York State's Consolidated Funding Application (CFA) is a streamlined resource through which applicants can access multiple financial assistance programs made available through various state agencies. The CFA offers the opportunity for local governments (and other eligible applicants) to submit a single grant application to state agencies that may have resources available to help finance a given proposal. All submitted CFAs are also reviewed by the applicant's Regional Economic Development Council, which may elect to endorse the proposal as a regional priority project. Several grant resources have been made available that may be appropriate funding opportunities for implementation of active transportation efforts, including the following:

- Environmental Protection Fund's (EPF) Municipal Grant Program
- EPF Recreational Trails Program
- Department of State's Local Waterfront Revitalization Program
- Environmental Facilities Corporation's Green Innovation Grant Program.

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 2016 grants is July 15, 2016), bicycle- and pedestrian-related projects and programs may frequently be well suited for these opportunity grants.

<http://www.thegrhf.org/>

8.4 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.

PeopleForBikes. The PeopleForBikes Community Grant 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 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. Applications for accepted bi-annually for grants of up to \$10,000 each (with potential local matches).

<http://www.peopleforbikes.org/pages/community-grants>



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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>



9.0 PILOT PROJECTS & FOLLOW-ON ACTIVITIES



Image: Walk tour/van tour held on November 17, 2015

The Irondequoit 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 Irondequoit 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; and
- Additional plans and studies to advance community objectives.



As a master plan, the Irondequoit 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](#), Community 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 5](#) for more details.
- Design development and construction documentation will be necessary for any construction-related projects, such as trails, sidepaths, 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. 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 Irondequoit. 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.

A good follow-on project would be to implement bike and pedestrian counts in selected locations, based on protocols provided by the FHWA Traffic Monitoring Guide and the National Bicycle and Pedestrian Documentation Project (NBPD).

<http://bikepeddocumentation.org/>

2. BICYCLE FRIENDLY COMMUNITY APPLICATION

The Bicycle Friendly Community (BFCSM) 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 Irondequoit'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 gradually improve the Town's BFC award level.

<http://www.bikeleague.org/community>



3. **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/

4. **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. Coordinate with MCDOT during on-going signal updates. Refer to *NYS DOT Highway Design Manual, sections 18.7.9 and 18.7.10.*

<https://www.dot.ny.gov/divisions/engineering/design/dqab/hdm>

5. **ON-GOING COORDINATION WITH NYS DOT AND MCDOT**

There are possible opportunities to collaborate with agencies conducting 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 NYS DOT and MCDOT regarding implementation of plan recommendations.

6. **IRONDEQUOIT PARK & RIDE**

The Town currently has no operational Park & Ride. Park & Ride lots encourage and support both carpooling and transit use while helping motorists 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 publicly owned land is preferred to simplify operational and maintenance requirements. Coordination between the Town and RTS and other necessary stakeholders would need to occur.

7. **COORDINATE WITH BIKE SHARING PROGRAMS**

The City of Rochester recognizes that bicycling is an efficient, healthy, viable means of transportation, and is committed to helping to facilitate cycling as a transportation choice through our bike-share program. The City through its vendor, Zagster, will be launching the first phase of the bike-share network in the spring of 2017. The initial phase will primarily be concentrated in downtown and surrounding neighborhoods and aims to include approximately 25 docking stations with 250 bicycles available for residents and visitors. Additional phases will expand the reach of the bike-share network throughout the city and beyond.

<https://www.nyserda.ny.gov/-/media/Files/Publications/Research/Transportation/Rochester-Bike-Sharing-Program-Study.pdf>



8. IDENTIFY MICROTRAILS

Crowdsharing or other community survey techniques could be used to identify additional microtrails. A complete map of existing microtrails could be a valuable tool for Irondequoit in encouraging active transportation and non-motorized travel. In addition, the Town could use knowledge of the existing bicycle and pedestrian network from this report, and information about the existing microtrails, to predict other potential microtrail locations, and work with landowners to improve and benefit from these community assets.

9. COORDINATE ZONING UPDATES

Zoning updates to achieve active transportation recommendations, especially along major corridors and commercial corridors within the Town, may be necessary to enforce proposed improvements shown within this Plan. The Zoning and Development Regulations Assessment discusses some of the changes in addition to the Planning Board Checklist included as [Appendix J](#). Additional resources can be found in [Appendix I](#), the Genesee Transportation Council Bicycle and Pedestrian Supportive Code Language document.



APPENDIX A:

PUBLIC INPUT SUMMARY

**IRONDEQUOIT ACTIVE TRANSPORTATION PLAN
PUBLIC KICK-OFF MEETING**

Irondequoit Public Library
1290 Titus Avenue, Irondequoit, New York
September 30, 2015
7:00pm-8:30 pm

The intent of this meeting was to introduce the Irondequoit community to the project background, overall purpose, planning process and project team.

Meeting Format

1. Irondequoit Town Supervisor Adam Bello gave an introduction including background, overall purpose, and project funding.
2. Tom Robinson (Barton & Loguidice) and Peyton McLeod (Sprinkle Consulting) gave a brief presentation explaining the planning process, project tasks, public input opportunities, and preliminary schedule.
3. The meeting concluded with an Open Discussion period. Below are the comments and questions that were received.

Comments and Questions Received

1. New library is a key asset for the community. Bicycle, pedestrian, and bus connections to the library/Town Hall campus all need improvement.
 - a. Some segments of Titus Avenue are lacking sidewalks.
 - b. Titus Avenue east of Town Hall is difficult for bicyclists.
 - c. There are transit stops at Town Hall, but current routing system does not provide convenient access.
2. Bicycle parking is lacking at many destinations in Town. Safe, convenient, and weather-protected bike parking will encourage bicycle trips.
 - a. In general, many local businesses do not recognize bicycles as legitimate transportation.
 - b. Bicycle-Friendly Business certification, offered by the League of American Bicyclists, should be encouraged.
3. Lack of bicycle facilities on Rt. 104 and Bay Bridge limit connectivity to Webster.
4. RTS "hub and spoke" transit routing system is not providing good connectivity between destinations in Irondequoit.
 - a. Need improved cross-town transit connections.
 - b. As an example, it is difficult to get from Irondequoit Plaza to Town Hall/Library by bus.
 - c. An in-town bus loop, or localized bus circulator might be an improvement option.
 - d. Van pooling may be another option to be studied.
 - e. Minimum standards for all transit stops should be a concrete pad, and a system for clearing snow in the winter.
 - f. Preferred standard would also include seating and some level of weather protection.
 - g. 2-bike carriers now installed on busses sometimes get maxed out.
5. Need safe and convenient pedestrian connections from the sidewalk, thru the parking lots, to the building entrance.
6. Active Transportation Plan should be coordinated with upcoming Monroe County DOT projects on St. Paul and Hudson Ave.
7. Family-friendly routes (aka bicycle boulevards) may offer good opportunities in Irondequoit.
 - a. Winona Blvd. may offer an alternative route to St. Paul.
 - b. Identification and formalization of alternative routes is especially important in school zones.
8. Several comments were received regarding St. Paul, especially north of Cooper. St. Paul was identified as having "serious safety issues" and being "a North-South bottleneck". Problems mentioned included:

PUBLIC KICK-OFF MEETING SIGN IN

Wednesday September 30, 2015 from 7:00pm-8:30 pm
Irondequoit Public Library 1290 Titus Avenue

NAME	ORGANIZATION	EMAIL
Bob + Carol Otto		b-33_otto33@hotmail
David Frenzel		frenzel david@gmail.com
Ted Paterson	Paterson	
LYNNE BLACKMER		LEBLACKMER@gmail.com
Bradley Huber		bradleyhuber@gmail.com
Kenneth Cronin		ken_cronin@hotmail.com
NANCY KAZMAEK		NANCYKAZ@Rochester.RR.com
NORMAN KAZMAEK		
Bob Torzynski		rtorzynski@gtcncpa.org
Chris Quinlan		cmq924@gmail.com

W
W
W

Prepared By Barton & Loguidice

PUBLIC KICK-OFF MEETING SIGN IN

Wednesday September 30, 2015 from 7:00pm-8:30 pm
Irondequoit Public Library 1290 Titus Avenue

NAME	ORGANIZATION	EMAIL
Doris Perkhoff	95 Mayville 1967 Lane	dorispbillp@hotmail.com
Jay Lambrix	Student	jlambl@u.brockport.edu
MORGAN RICE		ricemv@yahoo.com
Carol Thiell	-	cthiell@rochester.rr.com
Micah Schmidt	bicyclist	schmidt micahschmidt@vetri.com
Alma + Ruth Leusch		leusch@Frontierone.net
Kevin Branch		kevin.branch@gmail.com
Pat Patridge		
Elizabeth Murphy	FLHSA	elizabeth.murphy@flhsa.org
AL FINK		alcycle@hotmail.com

Prepared By Barton & Loguidice

PROJECT STEERING COMMITTEE MEETING

Irondequoit Town Hall
1280 Titus Avenue
October 8, 2015
12:00pm - 1:00pm

Attendees:

- Adam Bello *Town of Irondequoit*
- Sarah Culp *Town of Irondequoit*
- Kerry Ivers *Town of Irondequoit*
- Bob Kiley *Town of Irondequoit*
- Jeff McCann *Town of Irondequoit*
- Rochelle Bell *MC Planning*
- Brent Penwarden *MCDOT*
- Bob Torzynski *GTC*
- Douglas Averill *IPD Comm. Services*
- Lorie Barnum *Town Board*
- Dan Buerkle *Resident and Business Owner*
- Kathy Callon *Resident and East Irondequoit CSD*
- Rev. Patrina Freeman *Resident and LWV*
- Jay Lambrix
- Jeremy Morgante *Winonia Woods*
- Leslie Murphy *Resident*
- Kimmie Romeo *ICB*
- Fred Squicciarini *ICC*
- Nicole Cleary *Barton & Loguidice (B&L)*
- Tom Robinson *Barton & Loguidice (B&L)*

Meeting Format

1. The Town of Irondequoit kicked off the meeting welcoming the committee members.
2. Barton & Loguidice began the presentation with an overall summary of the project. Committee members were asked to introduce themselves.
3. Following the project summary was an overview of the process for the Active Transportation Plan. Below are talking points and comments received.

Comments and Questions Received

1. The project will have two committees. The Project Advisory Committee (PAC) will consist of Irondequoit Residents and staff. The Technical Advisory Committee (TAC) will consist of knowledgeable and connected citizens outside the Town to assist with regional connectivity.
2. Future meeting times will be held after 4:00 to try and accommodate most PAC members.
3. Dan B offered to assist with laying out the Bicycle Tour
4. B&L plans to provide a draft Active Transportation survey to the Town for review. Digital distribution of this survey could go to local neighborhood associations/groups, project email list (developed by B&L and the Town), and posted on the Town of Irondequoit website. Paper copies should also be provided around the Town Hall, Library, and other community destinations.
5. Lifespan is currently working with the Town to develop a survey geared toward senior citizens. Could we coordinate with Lifespan to include some Active Transportation related questions?
6. Be sure to engage all age groups as part of the plan.
7. We will be identifying six (6) priority intersections as part of this Plan. Initial thoughts were:
 - a. Culver and Titus

- b. Cooper and Titus
 - c. Titus and Hudson
 - d. St Paul and Cooper
 - e. Lakeshore and St Paul
 - f. Norton and Culver
 - g. Norton and Densmore
8. The consultant teams will review intersections (configuration, crash data, etc.) and make recommendations to the Town for the final six locations.
 9. Currently a lot of issues with 4-way and 2-way stops. Distracted drivers failing to stop – behavior issues. How can this be improved?
 10. Crosswalks/and signals near Eastridge High School pose safety concerns. Can the light at Forest be moved to the School entrance? Check data and requirements for this to happen.
 11. Investigate the possibility of round-abouts at some intersections. Have theses already been investigated? Check with NYSDOT and MCDOT. Specifically at St Paul and Cooper.

Next Steps

- B&L will be contacting committee members to acquire their feedback and goals for the project. Specifically related to the areas of concern.
- B&L will work with the Town to select dates for the Walking and Bicycling tours.
- The Town will distribute a list of PAC members.

These meeting minutes were prepared by Nicole Cleary of Barton & Loguidice. Please contact with any discrepancies.

- a. No bicycle space on the road.
 - b. Some cyclists ride on sidewalks because they do not feel safe on the road.
 - c. Lanes seem too narrow.
 - d. Traffic speeds seem too fast.
 - e. Large vehicles straying out of lanes is common.
9. Topography in some parts of Irondequoit impacts bicycle access and safety.
- a. Ascending Thomas Avenue was mentioned as an example of a challenging route for cyclists.
10. Local cyclists commented that striped shoulders give more sense of safety that shared use lanes with sharrows.
- a. Sharrow markings can be confusing in terms of where the cyclist is supposed to ride.
11. Several comments made regarding the importance of outreach and education:
- a. Education is primarily important for drivers, but all travel modes need to learn and practice safe behavior.
12. Irondequoit-Seneca Trail corridor has strong potential as a north-south active transportation corridor.
- a. Neighborhood connectivity and access to the trail is important.
13. Unplowed sidewalks and bus stops are a problem for pedestrians in winter.
14. Ridge Road is a very difficult environment for pedestrians and cyclists.
- a. Numerous driveways and poor access management are major problems on Ridge Road.
15. Bicycle space on Hudson Ave. is lacking.
16. Some opportunities for possible bike/ped connectors along existing ROW's were identified.
- a. West end of Small Ridge lane, to Hudson
 - b. Pathway between Briarwood School and St. Paul.
 - c. South end of Noridge Drive, west to Kings Highway.
 - d. Rogers Middle School, north to Wimbledon Road
 - e. Wegmans to Rogers Parkway and Seville Drive
17. Several intersections were mentioned as needing detailed study:
- a. Titus and Seneca
 - b. Titus and St. Paul
 - c. Titus and Hudson
 - d. St. Paul and Cooper
 - e. St. Paul and Thomas
 - f. E. Ridge and Hudson
 - g. E. Ridge and Portland
 - h. E. Ridge and Goodman

Next Steps

- Town is finalizing the project steering committee, and the technical advisory committee.
- On 10/6/2015, MCDOT will be holding a public open house forum to discuss Highway Preventative Maintenance Project for St. Paul Blvd. (City line to N. end) & Hudson Ave. (City Line to Titus Ave.).
- First meeting with project steering committee is tentatively scheduled for Thursday October 8.
- Consultant team has begun inventory of existing conditions and needs assessment, which will continue until the end of November.

These meeting minutes were prepared by Barton & Loguidice, DPC

PROJECT STEERING COMMITTEE MEETING

Irondequoit Town Library
Lake Ontario Meeting Room
December 8, 2015
4:00pm – 5:30pm

Attendees:

- | | |
|----------------------|---|
| ▪ Kerry Ivers | <i>Town of Irondequoit</i> |
| ▪ Rochelle Bell | <i>MC Planning</i> |
| ▪ Brent Penwarden | <i>MCDOT</i> |
| ▪ Richard V. Tantalo | <i>IPD</i> |
| ▪ Chris Tortora | <i>GTC</i> |
| ▪ Rich DeSarra | <i>Rochester Bicycling Alliance</i> |
| ▪ Douglas Averill | <i>IPD Comm. Services</i> |
| ▪ Kimmie Romeo | <i>ICB</i> |
| ▪ Bradley Huber | <i>Winona Woods</i> |
| ▪ Dan Kenyon | <i>RTS</i> |
| ▪ Nicole Cleary | <i>Barton & Loguidice (B&L)</i> |
| ▪ Tom Robinson | <i>Barton & Loguidice (B&L)</i> |
| ▪ Peyton Mcleod | <i>Sprinkle Consulting (phoned-in)</i> |

Meeting Format

1. The Town of Irondequoit kicked off the meeting welcoming the committee members.
2. Barton & Loguidice began the presentation with an overall summary of the project status. The focus of the meeting was to review the draft Level of Service data. Sprinkle Consulting gave an overview of the Level of Service process and explained the graphics that were provided at the meeting.
3. Meeting deliverables included: Pedestrian Level of Service Map, Bicycle Level of Service Map, Example Walking Conditions exhibit, Example Bicycling Conditions exhibit

Comments and Questions Received

1. Priority intersections will be “Prototype” intersections. Perhaps rename them?
2. There may be some additional information to incorporate into the preliminary project mapping (i.e. Rich DeSarra performed a sidewalk survey for GTC)
3. Currently there is a metal gate blocking pedestrian/bicycle access into Durand Eastman Park – will need to be investigated.
4. Some Level of Service (LOS) calculations will be verified by consultants (i.e. along Hudson and Portland).
5. Along Hudson, just inside the City limits, is a high rise housing building creating mobility-challenged traffic (pedestrians, bicyclists, motorized scooters and wheelchairs).
6. Drain grates on some roadways were factored into the LOS calculations. Monroe County DOT noted that the County replaces all grates with bicycle friendly grates. Naturally, bicyclists tend to still stay away from grates, therefore moving into the vehicular travel lane.
7. LOS calculations, for the most part, did not factor in neighborhood streets since those are often thought to be pedestrian and bicycle friendly. There are some cut-through streets around Irondequoit that are thought to be unsafe – identify these segments.
8. Should we be factoring in seasonal traffic for Sea Breeze?
9. Truck volumes along some routes may need to be re-evaluated. Consultants will perform field investigations of high traffic corridors (i.e. East Ridge Road, north/south corridors with Rt 104 on/off ramps. Some data may be available in previous studies – Town to provide.
10. It should be noted; in general gutters are not good for cyclists. Often these are only present on neighborhood streets, but Portland (north of Ridge) has sections of this.

11. Although practices have improved significantly over the years, fresh oil and stone pavement provides hazardous conditions for bicyclists. Are there other measures that can be performed to improve safety and reduce debris?
12. Monroe County DOT noted that currently, NYSDOT does not support use of high visibility crosswalks (typically ladder, continental or zebra style) at signalized intersections. NYSDOT's present standard for high visibility crosswalks is for uncontrolled crossings or mid-block crossings, for signalized intersections and stop controlled crossings a standard crossing is used. However, Monroe County DOT utilizes high visibility crosswalks at signalized intersections.
13. Education and outreach will be an important aspect of the project. There may be opportunities to work with the local schools to create "Public Service Announcements" related to multi-modal safety.
14. Possible items for the implementation plan include: multi-modal safety pamphlet, continued steering committee meetings after project "end," and PSAs.

Next Steps

- Project consulting team will continue the inventory, analysis, and needs assessment phases of the project.
- Team will continue to review the draft online survey. Goal is to be live with the survey in January 2016.
- Team will work to develop an interactive map for the online survey.
- The Town will work on initiatives for distributing the survey (i.e. paper copies disbursed around the Town facilities, social media, website, Library computer homepages, etc.)
- The Town will set up a Doodle-Poll for the first public meeting (aiming for mid-March).

These meeting minutes were prepared by Nicole Cleary of Barton & Loguidice. Please contact with any discrepancies.

found about's at end... unable to walk down to water in winter - NO snow removal

- need sidewalks going West towards Town Hall on Titus ^{at} South side - We then could cross Titus at Light at Kings Highway

- Bus service stops maybe a few more? Many seniors in the town won't be able to bike or walk long distances. Connection on Titus to Culver?

- Intersection of Seneca + Titus very dangerous for both pedestrians and traffic - Motor bikes + bicyclan

- THE INTERSECTION @ TITUS/HUDSON IS VERY DANGEROUS TO WALKERS/CYCLISTS

PLEASE MAKE SURE YOU GET A COPY OF THE OAKRIDGE DR APPLICATION REQUESTING THE INSTALLATION OF A SIDEWALK ON ONE SIDE OF OUR ST. 104 SIGNATURES ON A PETITION OF SUPPORT. SCHOOL DATA TOO!
THANKS!

IN THE WINTER IT IS VERY COMMON FOR THE CONTRACTORS PLOWING DRIVEWAYS TO BLOCK THE SIDEWALK DURING THE PROCESS. NO ONE REMOVES THAT ACCUMULATED SNOW & THE SIDEWALKS ARE RENDERED IMPASSABLE.
STREET

Provides a greater space section of bicycle users.
Provides space for bicyclists to pass another bicyclist without encroaching into the adjacent motor vehicle travel lane.
**SEE ACTIVE TRANSPORTATION TOOLBOX: PROTECTED BIKE LANES

SHARED USE PATHS
Increase existing width to a minimum of 10'.
Enhance existing surface / pavement condition
Utilize certain materials and plants to improve sense of place.

Protected bike lanes would be great on Culver between Titus + Lakeshore + on Titus!

Culver-Durand until Titus - white line shoulder goes away at cross streets
Culver - white line shoulder runs outside of cross streets. Bikes should be in light, and no sidewalk (west side)
Titus-Culver to Hudson lack of white line shoulder and no sidewalk in many areas.

WALK RIDE IRONDEQUOIT

Reduce to 2-lane bike lane in particular from end of Cooper to Thomas/Sagamore

NO SIDEWALKS IN THIS AREA
NO SIDEWALKS IN THIS AREA
SIDEWALK GRAPS

MAY BE MEDIAN?

PEDES SIGNALS
AT INTERSE
Pedestrian signals provide pedestrians with information about the crossing interval.
can be on fixed-time intervals or operated by push buttons.
Accessible signals communicate information about the crossing interval to pedestrians who are blind or have low vision.
DONT WALK intervals at signalized intersections in the form of audible tones and vibrotactile surface signals.
A pedestrian interval is a safety measure for pedestrians who are blind or have low vision.
The 'walk' interval is a safety measure for pedestrians who are blind or have low vision.
The 'walk' interval is a safety measure for pedestrians who are blind or have low vision.

WALK RIDE IRONDEQUOIT

APPENDIX A
PUBLIC MEETING COMMENTS
MARCH 22, 2016

GASPS SIDEWALKS

QUESTIONS FOR PEDESTRIAN TRAFFIC

IRONDEQUOIT ACTIVE TRANSPORTATION PLAN
PUBLIC MEETING

Irondequoit Town Hall
Broderick Room
1280 Titus Avenue, Irondequoit, New York
October 12, 2016
7:00pm-8:30 pm

The intent of this meeting was to present the final draft recommendations for Irondequoit's Active Transportation Plan.

Meeting Format

1. Irondequoit Town Planner Kerry Ivers gave an introduction including background, overall purpose, and project funding.
2. Tom Robinson and Nicole Cleary (Barton & Loguidice) gave a brief presentation explaining the planning process, existing conditions evaluations, and concepts for facility alternatives and recommendations.
3. The meeting concluded with an Open Discussion period around the printed display boards. Below are the comments and questions that were received.
4. The presentation was video-recorded for those unable to attend the meeting.

Comments and Questions Received

- Online survey: for future reference, perhaps we could include a "0 Days/Week" option where applicable.
- These micro trails are wonderful! Some more are located south of 104.
- Continue bicycle boulevard #4 north through Winona Boulevard-Belcoda Drive-Winona Boulevard-Chestnut Hill Drive-Winona Boulevard.
- Look into bicycle boulevards on the east side of Irondequoit.
- Investigate the old trolley line on the east side of Irondequoit. Private ownership or public? Possible trail option?
- Show connections to City bicycle infrastructure.
- Is Irondequoit identified as a satellite location for Roc Bike Share?
- Possible road diet on Kings Highway, south of Titus?

These meeting minutes were prepared by Barton & Loguidice, DPC

Nicole M. Cleary

From: Lonthair, Jerry <Jerry_Lonthair@eastiron.monroe.edu>
Sent: Monday, September 12, 2016 11:54 AM
To: June, Jan; Abbott, Bill; Neu, Sandra
Cc: Callon, Kathy
Subject: Re: Irondequoit Active Transportation and Schools

Follow Up Flag: Follow up
Flag Status: Flagged

A traffic light at the entrance to the high school. We have had one serious injury pedestrian incident, a number of auto accidents and I can't tell you how many close calls at that location.

At minimum a flashing red, stop and go during school hours and highly attended special events that switches to flashing amber during non school hours would be better than the present uncontrolled access.

Jerry

Gerald G. Lonthair

Director of Security Services

East Irondequoit School District

2350 East Ridge Road

Rochester, New York 14622

Off. 585.339.1515 Fax. 585.339.1459

"A good leader inspires people to have confidence in the leader, a great leader inspires people to have confidence in themselves" eleanor roosevelt

From: June, Jan
Sent: Monday, September 12, 2016 11:40 AM
To: Abbott, Bill; Lonthair, Jerry; Neu, Sandra
Subject: FW: Irondequoit Active Transportation and Schools

Do any of you have anything to bring to the attention of this issue? Is there an issue?

Jan

From: Nicole M. Cleary [mailto:nccleary@bartonandloguidice.com]
Sent: Friday, September 09, 2016 2:08 PM
To: June, Jan <Jan_June@eastiron.monroe.edu>
Subject: RE: Irondequoit Active Transportation and Schools

Hi Jan,

I am sure it has been a bit crazy around the schools this past week. I wanted to check in on possibly meeting to discuss any pedestrian/bicycle concerns around the east Irondequoit Schools. If you aren't able to meet and want to share comments, email will work just fine.

Specifically we are interested in:

- Any existing safety concerns related to biking/walking to school, especially accidents

- Location of crossing guards
- Nearby crosswalk improvements
- Possible signage improvements that would help safety
- Any "goat paths" that students have created in need of paving or improvements
- Any other issues you know of related to bike/walking

Thanks,

Nicole M. Cleary, RLA, ASLA
Barton & Loguidice, D.P.C.

From: June, Jan [mailto:Jan_June@eastiron.monroe.edu]
Sent: Friday, August 19, 2016 10:30 AM
To: Nicole M. Cleary
Subject: RE: Irondequoit Active Transportation and Schools

Can we meet in September? If not, give me some dates to work with and I can work something out.

Jan

From: Nicole M. Cleary [<mailto:ncleary@bartonandloguidice.com>]
Sent: Monday, August 15, 2016 1:50 PM
To: June, Jan <Jan_June@eastiron.monroe.edu>
Subject: RE: Irondequoit Active Transportation and Schools

Hello Jan

I just wanted to follow up regarding the email below. Please let me know your thoughts. Thank you!

Nicole M. Cleary, RLA, ASLA
Barton & Loguidice, D.P.C.

From: Nicole M. Cleary
Sent: Monday, August 08, 2016 11:41 AM
To: 'Jan_June@eastiron.monroe.edu'
Subject: Irondequoit Active Transportation and Schools

Good Morning Jan,

I am one of the consultants involved with Irondequoit's Active Transportation Plan (ATP). We are working through recommended improvements and I wanted to reach out to you regarding the relationship between the ATP and schools. One of the goals of the plan is to identify gaps within the existing bicycle and pedestrian infrastructure (i.e. gaps in the sidewalk system, neighborhood connections that should be established, crosswalk safety improvements and on-road bicycle facilities such as bike lanes). These gaps often effect students that walk or ride to school.

From our desktop analysis, there seem to be a decent amount of neighborhoods within walking/riding distance to the schools. Please let me know if you are interested in sitting down to discuss any concerns or improvements that would be beneficial to the school system. I also reached out to Jeff Rahn regarding the West Irondequoit School District.

There is a project description on the Town's website if you need more background information.

<http://www.irondequoit.org/community/active-transportation-plan>

Thank you!

Nicole M. Cleary, RLA, ASLA

Landscape Architect III

Barton & Loguidice, D.P.C.

Engineers, Environmental Scientists, Planners, Landscape Architects

11 Centre Park s Suite 203 s Rochester, NY 14614 s Phone: (585) 325-7190 x. 2229

www.bartonandloguidice.com

 Please consider the environment before printing this e-mail.

Connect with us!



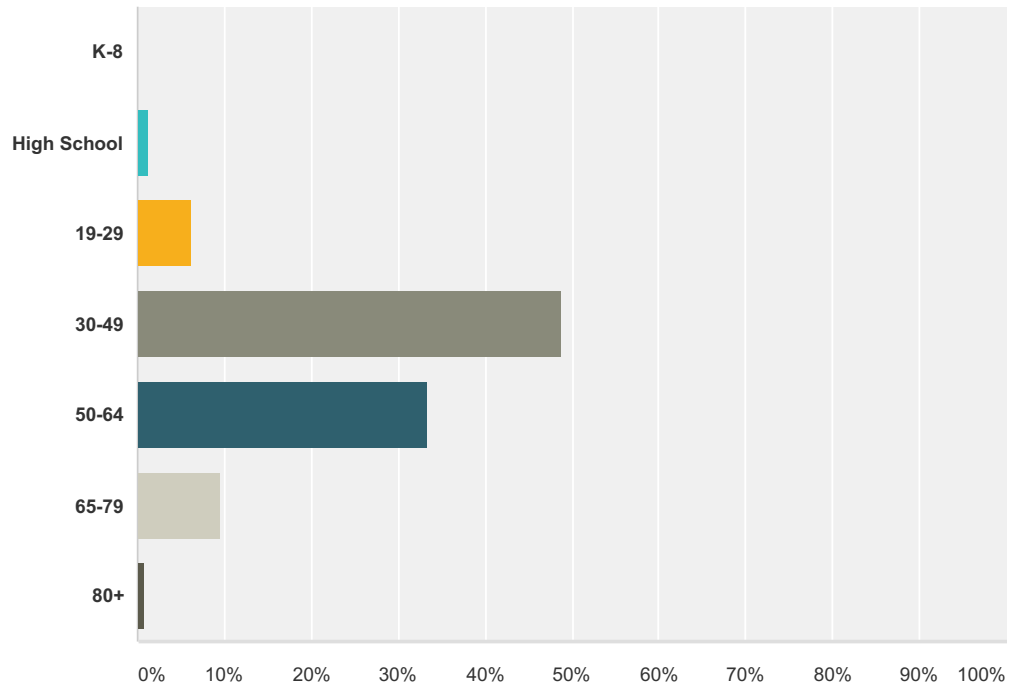
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Q1 Age Group (select one)

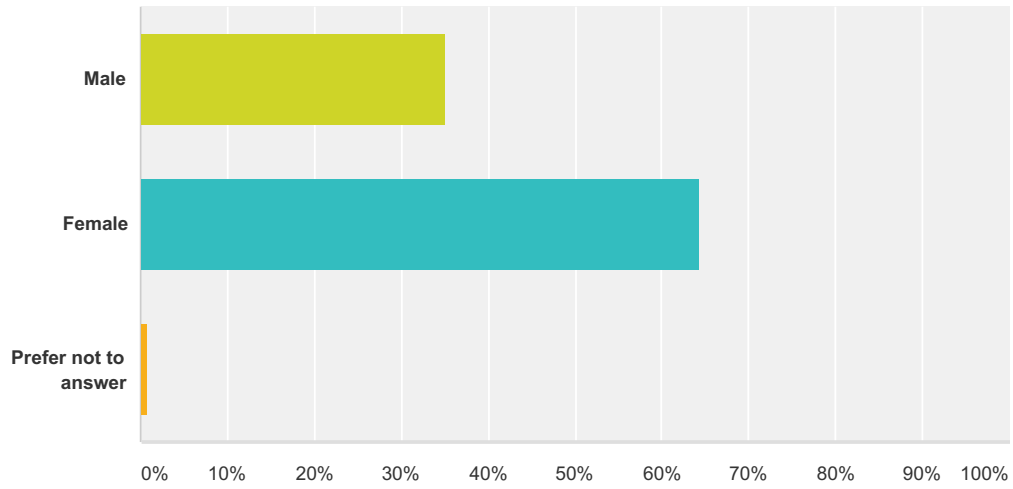
Answered: 258 Skipped: 0



Answer Choices	Responses
K-8	0.00% 0
High School	1.16% 3
19-29	6.20% 16
30-49	48.84% 126
50-64	33.33% 86
65-79	9.69% 25
80+	0.78% 2
Total	258

Q2 Gender

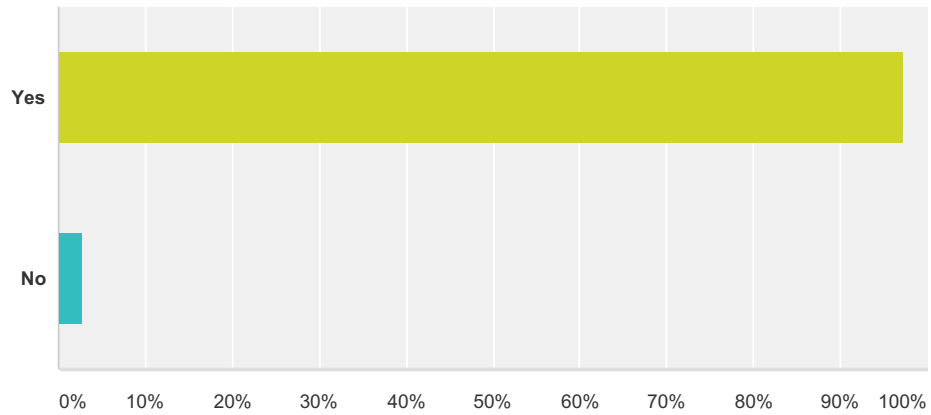
Answered: 257 Skipped: 1



Answer Choices	Responses	Count
Male	35.02%	90
Female	64.20%	165
Prefer not to answer	0.78%	2
Total		257

Q3 Are you an Irondequoit resident?

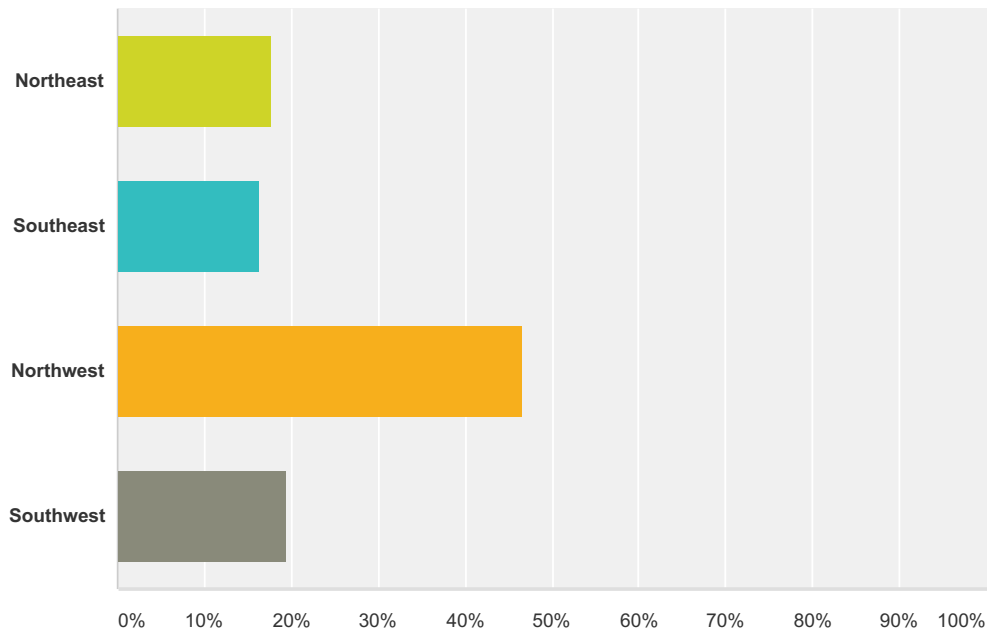
Answered: 257 Skipped: 1



Answer Choices	Responses
Yes	97.28% 250
No	2.72% 7
Total	257

Q4 Where do you live in relationship to the Town Hall?

Answered: 253 Skipped: 5



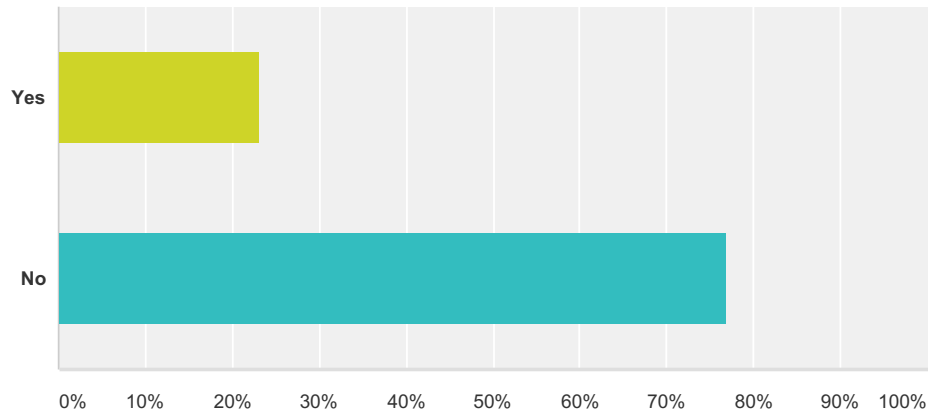
Answer Choices	Responses	Count
Northeast	17.79%	45
Southeast	16.21%	41
Northwest	46.64%	118
Southwest	19.37%	49
Total		253

Q5 For how many years have you lived in the Irondequoit (or the Rochester region)?

Answered: 256 Skipped: 2

Q6 Do you work in Irondequoit?

Answered: 250 Skipped: 8



Answer Choices	Responses
Yes	23.20% 58
No	76.80% 192
Total	250

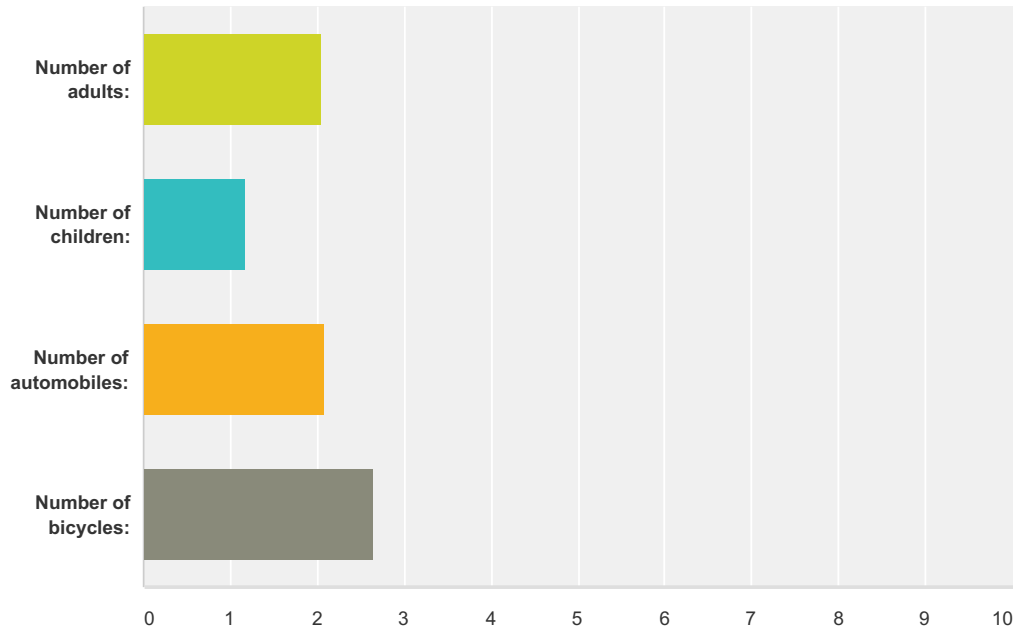
Q7 Email address (if you would like to be informed of upcoming plan meetings and other activities):

Answered: 118 Skipped: 140

Answer Choices	Responses
Name	0.00% 0
Company	0.00% 0
Address	0.00% 0
Address 2	0.00% 0
City/Town	0.00% 0
State/Province	0.00% 0
ZIP/Postal Code	0.00% 0
Country	0.00% 0
Email Address	100.00% 118
Phone Number	0.00% 0

Q8 Please tell us about your household:

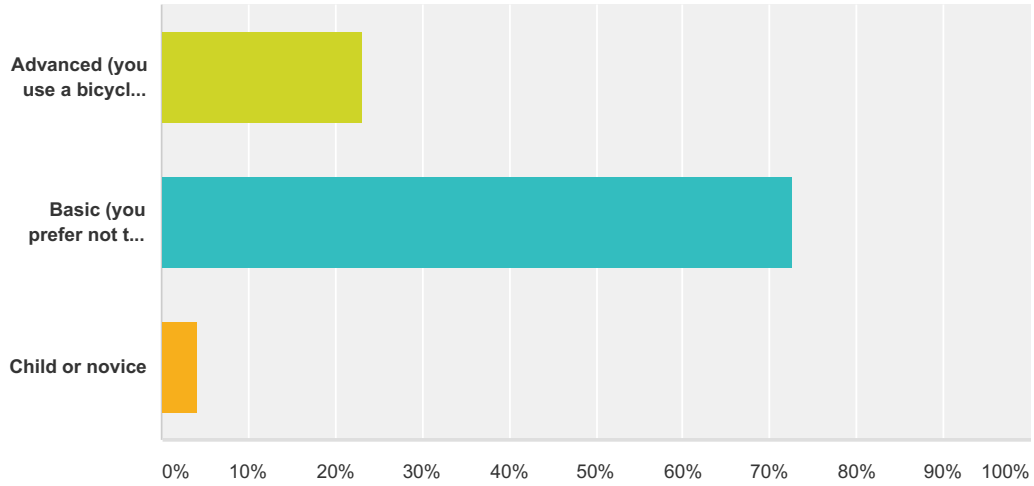
Answered: 252 Skipped: 6



Answer Choices	Average Number	Total Number	Responses
Number of adults:	2	518	252
Number of children:	1	250	212
Number of automobiles:	2	514	247
Number of bicycles:	3	646	243
Total Respondents: 252			

Q9 Indicate which of the following best describes your personal bicycling experience level:

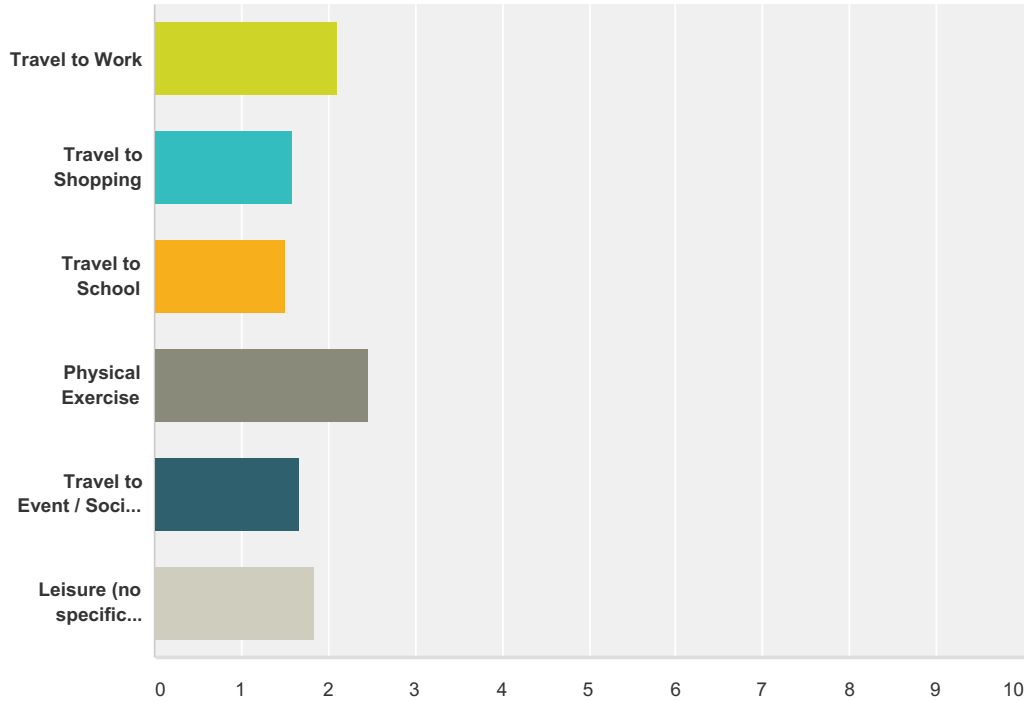
Answered: 194 Skipped: 64



Answer Choices	Responses
Advanced (you use a bicycle as you would a motor vehicle)	23.20% 45
Basic (you prefer not to ride on roads with busy and fast motor vehicle traffic)	72.68% 141
Child or novice	4.12% 8
Total	194

Q10 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?

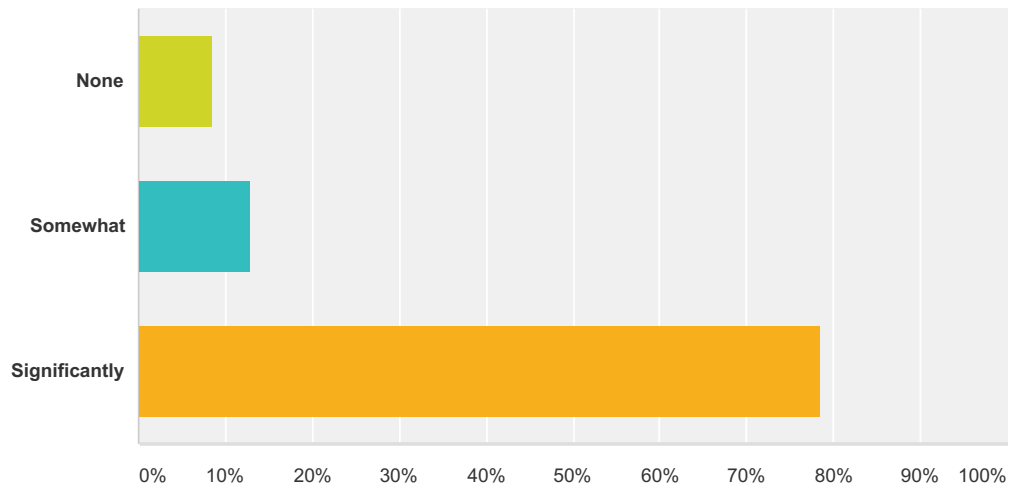
Answered: 148 Skipped: 110



	1 day/week	2 days/week	3 days/week	4 days/week	5 days/week	6 days/week	7 days/week	Total	Weighted Average
Travel to Work	51.35% 19	18.92% 7	16.22% 6	0.00% 0	10.81% 4	0.00% 0	2.70% 1	37	2.11
Travel to Shopping	66.67% 30	22.22% 10	4.44% 2	2.22% 1	2.22% 1	2.22% 1	0.00% 0	45	1.58
Travel to School	65.00% 13	25.00% 5	5.00% 1	5.00% 1	0.00% 0	0.00% 0	0.00% 0	20	1.50
Physical Exercise	35.43% 45	22.83% 29	21.26% 27	9.45% 12	4.72% 6	3.15% 4	3.15% 4	127	2.47
Travel to Event / Social Destination	61.82% 34	23.64% 13	3.64% 2	9.09% 5	0.00% 0	1.82% 1	0.00% 0	55	1.67
Leisure (no specific destination)	56.25% 63	20.54% 23	13.39% 15	6.25% 7	1.79% 2	0.89% 1	0.89% 1	112	1.83

Q11 To what degree does your bicycling activity vary by season:

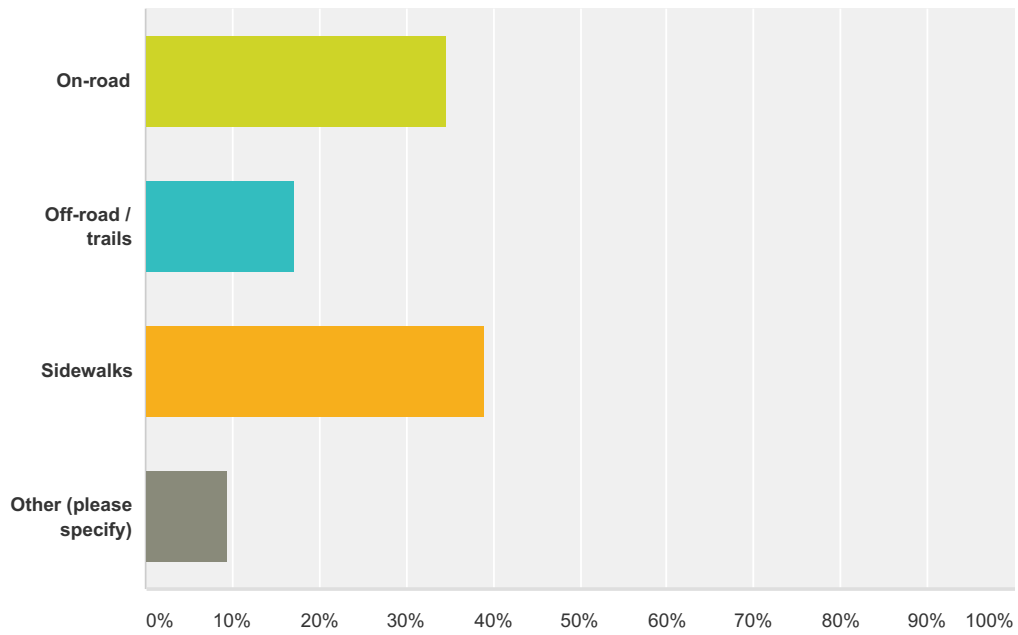
Answered: 186 Skipped: 72



Answer Choices	Responses	
None	8.60%	16
Somewhat	12.90%	24
Significantly	78.49%	146
Total		186

Q12 What is your current preferred bicycle facility?

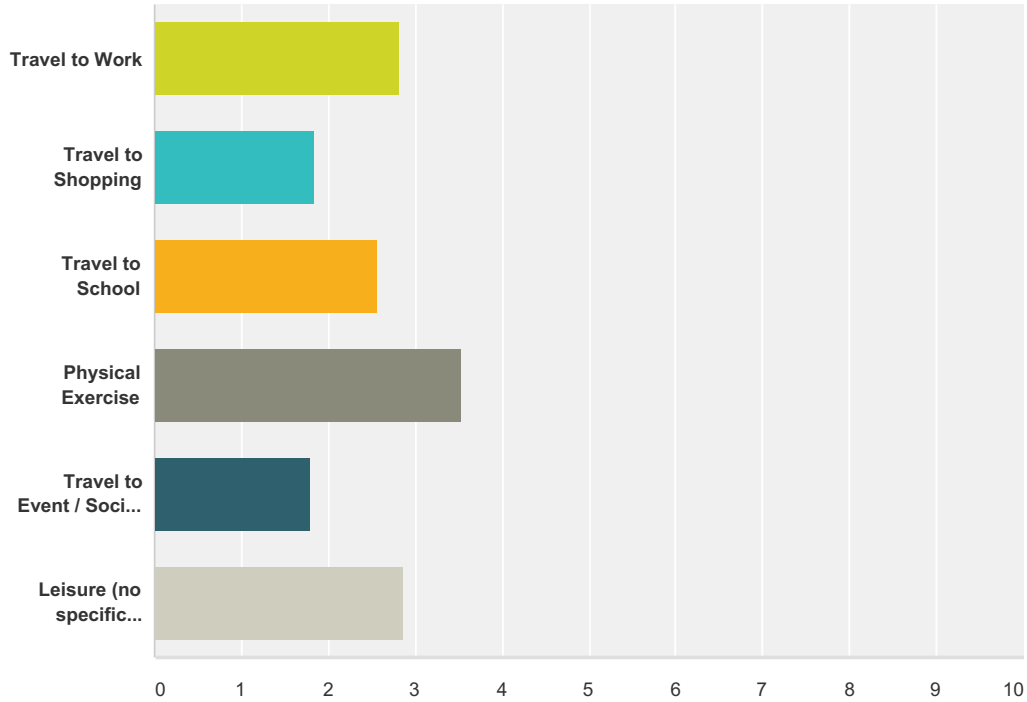
Answered: 182 Skipped: 76



Answer Choices	Responses	Count
On-road	34.62%	63
Off-road / trails	17.03%	31
Sidewalks	39.01%	71
Other (please specify)	9.34%	17
Total		182

Q13 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?

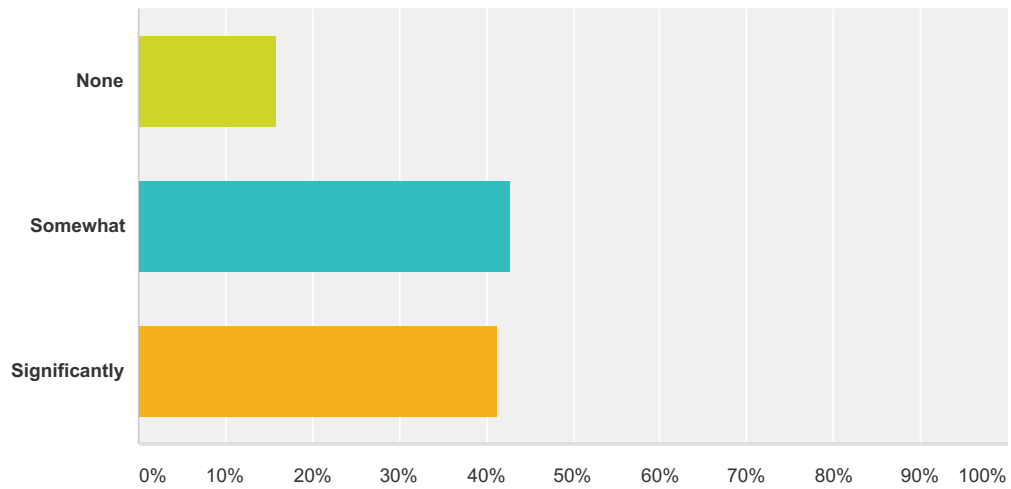
Answered: 195 Skipped: 63



	1 day/week	2 days/week	3 days/week	4 days/week	5 days/week	6 days/week	7 days/week	Total	Weighted Average
Travel to Work	43.75% 14	9.38% 3	18.75% 6	0.00% 0	15.63% 5	3.13% 1	9.38% 3	32	2.81
Travel to Shopping	58.73% 37	20.63% 13	9.52% 6	4.76% 3	3.17% 2	1.59% 1	1.59% 1	63	1.84
Travel to School	43.48% 10	13.04% 3	13.04% 3	4.35% 1	26.09% 6	0.00% 0	0.00% 0	23	2.57
Physical Exercise	16.97% 28	16.36% 27	24.24% 40	10.91% 18	14.55% 24	4.85% 8	12.12% 20	165	3.53
Travel to Event / Social Destination	54.93% 39	23.94% 17	12.68% 9	4.23% 3	4.23% 3	0.00% 0	0.00% 0	71	1.79
Leisure (no specific destination)	29.63% 40	23.70% 32	17.04% 23	8.89% 12	9.63% 13	2.96% 4	8.15% 11	135	2.87

Q14 To what degree does your walking activity vary by season:

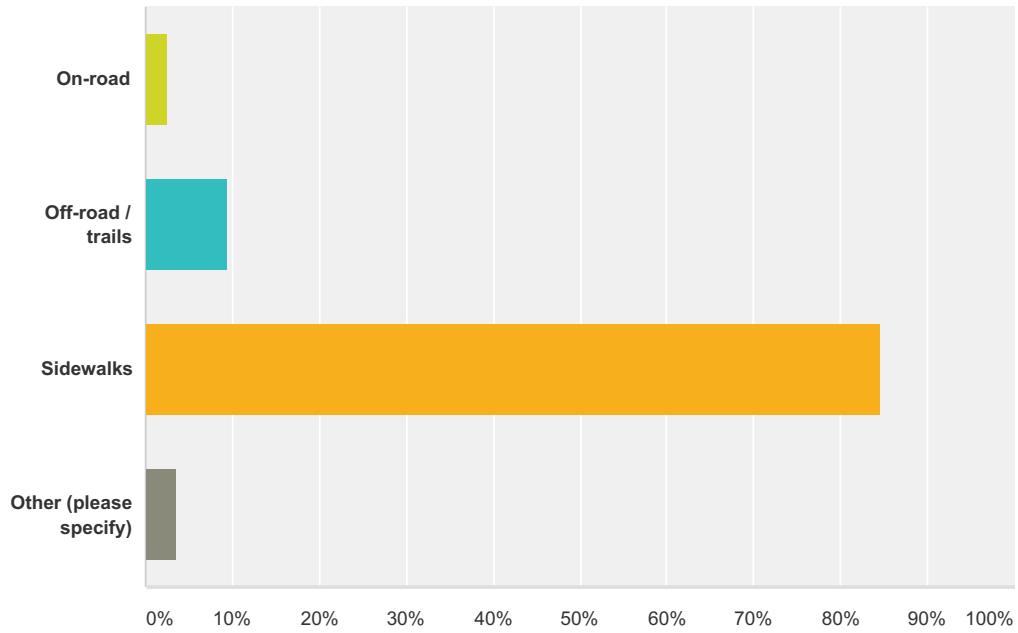
Answered: 203 Skipped: 55



Answer Choices	Responses
None	15.76% 32
Somewhat	42.86% 87
Significantly	41.38% 84
Total	203

Q15 What is your current preferred walking facility?

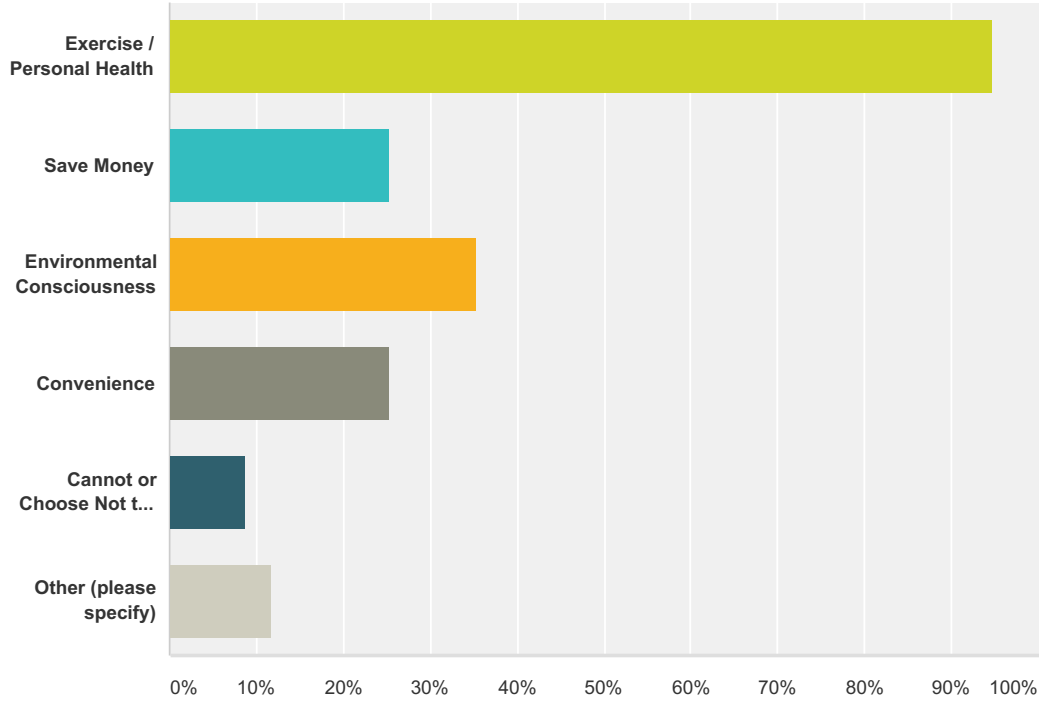
Answered: 202 Skipped: 56



Answer Choices	Responses
On-road	2.48% 5
Off-road / trails	9.41% 19
Sidewalks	84.65% 171
Other (please specify)	3.47% 7
Total	202

Q16 For which of the following reasons do you choose to ride a bicycle (choose all that apply):

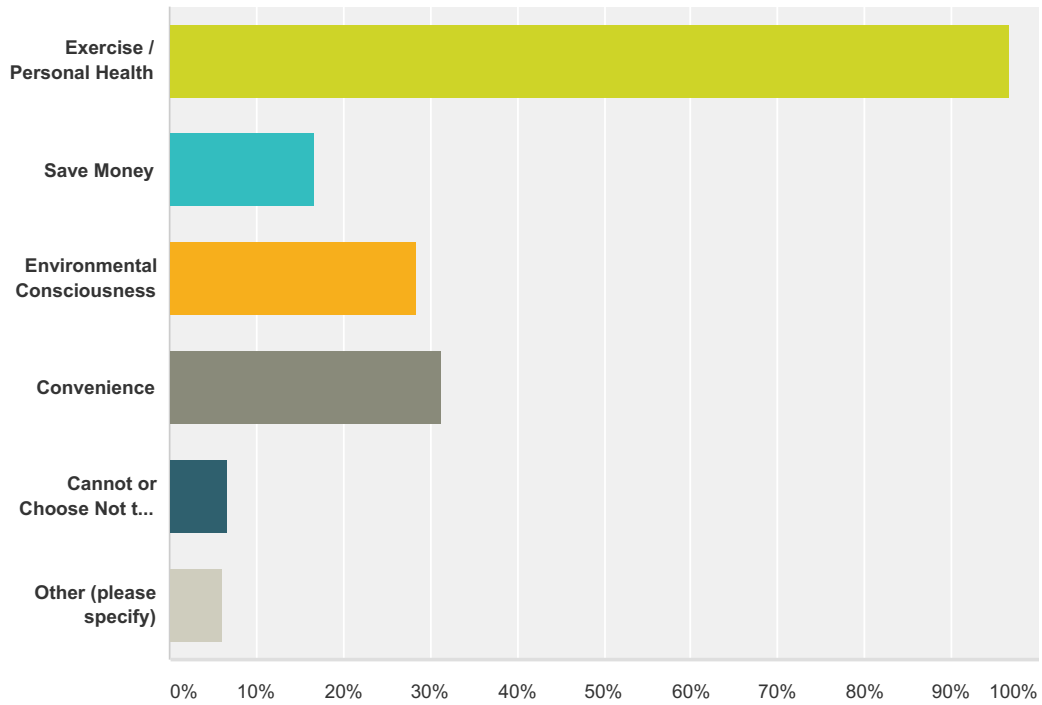
Answered: 170 Skipped: 88



Answer Choices	Responses
Exercise / Personal Health	94.71% 161
Save Money	25.29% 43
Environmental Consciousness	35.29% 60
Convenience	25.29% 43
Cannot or Choose Not to Drive a Car	8.82% 15
Other (please specify)	11.76% 20
Total Respondents: 170	

Q17 For which of the following reasons do you choose to walk (choose all that apply):

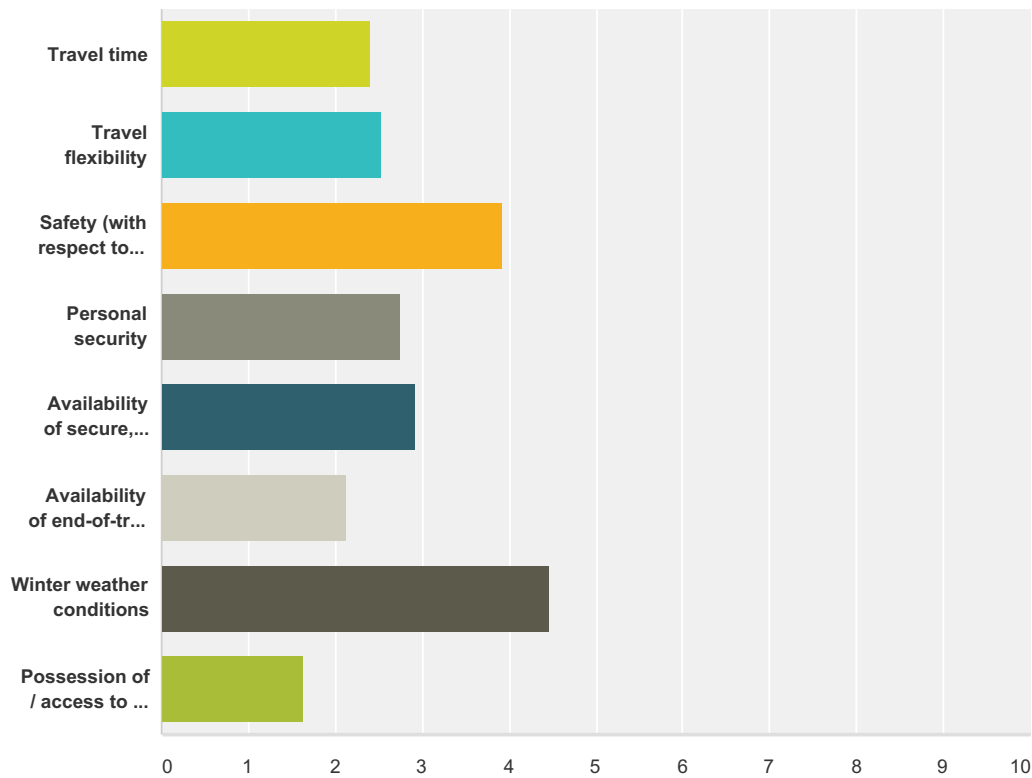
Answered: 179 Skipped: 79



Answer Choices	Responses	
Exercise / Personal Health	96.65%	173
Save Money	16.76%	30
Environmental Consciousness	28.49%	51
Convenience	31.28%	56
Cannot or Choose Not to Drive a Car	6.70%	12
Other (please specify)	6.15%	11
Total Respondents: 179		

Q18 What do you consider to be the primary barriers to bicycling in Irondequoit that keep you from bicycling more often? On a scale of 1 to 5, with 1 meaning no barrier and 5 meaning significant barrier, rate the following issues that could affect your ability and / or willingness to bike in Irondequoit.

Answered: 171 Skipped: 87



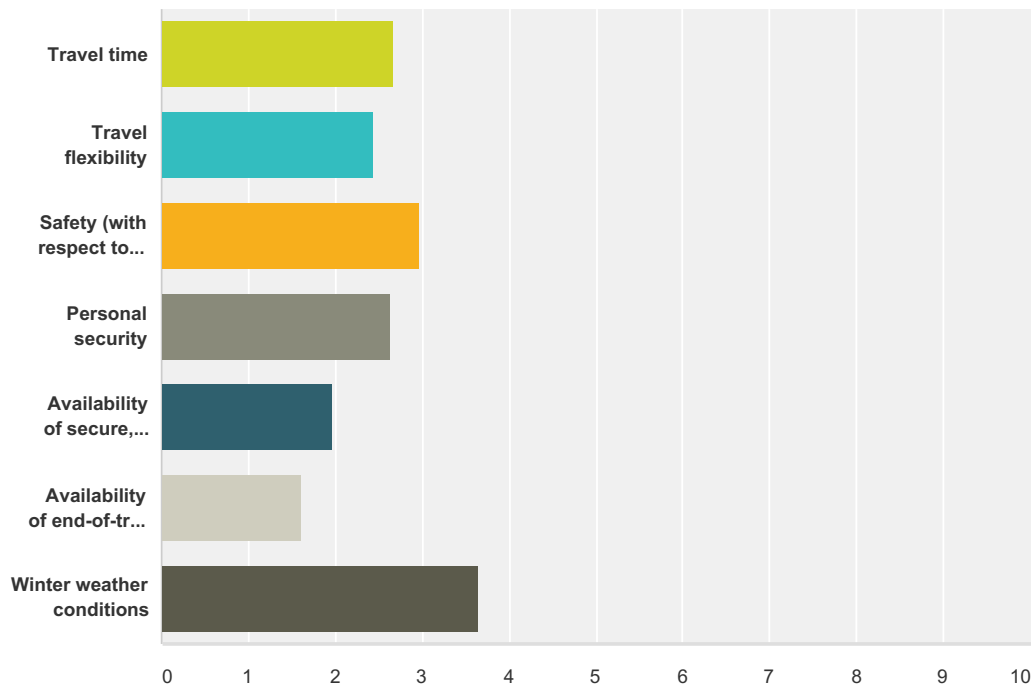
	1	2	3	4	5	N/A	Total	Weighted Average
Travel time	26.14% 40	11.11% 17	11.11% 17	12.42% 19	5.88% 9	33.33% 51	153	2.41
Travel flexibility	23.29% 34	12.33% 18	18.49% 27	10.96% 16	6.85% 10	28.08% 41	146	2.52
Safety (with respect to motor vehicle traffic)	5.99% 10	7.78% 13	14.97% 25	25.15% 42	41.32% 69	4.79% 8	167	3.92
Personal security	29.68% 46	10.97% 17	14.84% 23	18.06% 28	15.48% 24	10.97% 17	155	2.76
Availability of secure, weather-protected bicycle parking	21.66% 34	12.74% 20	19.75% 31	12.10% 19	19.11% 30	14.65% 23	157	2.93
Availability of end-of-trip amenities (showers, lockers, etc.)	34.44% 52	13.25% 20	11.92% 18	7.95% 12	5.30% 8	27.15% 41	151	2.13

Irondequoit Active Transportation Plan: Public Survey

Winter weather conditions	1.84% 3	3.68% 6	7.98% 13	12.88% 21	61.35% 100	12.27% 20	163	4.46
Possession of / access to a bicycle	51.01% 76	2.01% 3	6.71% 10	0.67% 1	6.04% 9	33.56% 50	149	1.63

Q19 What do you consider to be the primary barriers to walking in Irondequoit that keep you from walking more often? On a scale of 1 to 5, with 1 meaning no barrier and 5 meaning significant barrier, rate the following issues that could affect your ability and / or willingness to walk in Irondequoit.

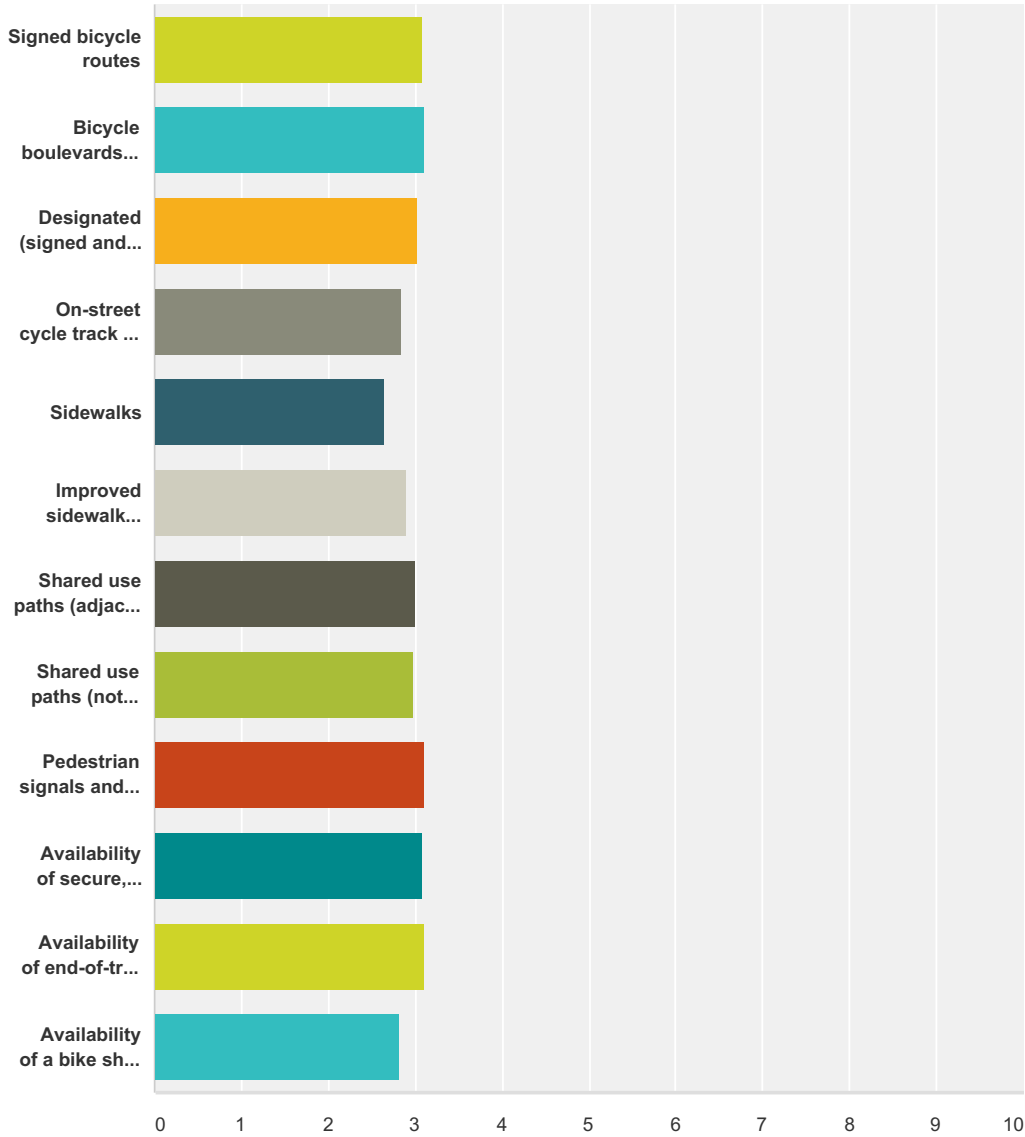
Answered: 172 Skipped: 86



	1	2	3	4	5	N/A	Total	Weighted Average
Travel time	29.56% 47	6.92% 11	15.72% 25	13.84% 22	13.21% 21	20.75% 33	159	2.67
Travel flexibility	34.19% 53	5.81% 9	18.06% 28	7.10% 11	12.26% 19	22.58% 35	155	2.45
Safety (with respect to motor vehicle traffic)	20.83% 35	18.45% 31	19.05% 32	14.88% 25	20.83% 35	5.95% 10	168	2.96
Personal security	26.95% 45	16.17% 27	23.35% 39	13.17% 22	11.38% 19	8.98% 15	167	2.63
Availability of secure, weather-protected bicycle parking	24.60% 31	2.38% 3	3.97% 5	0.00% 0	6.35% 8	62.70% 79	126	1.96
Availability of end-of-trip amenities (showers, lockers, etc.)	39.07% 59	5.96% 9	4.64% 7	0.66% 1	3.97% 6	45.70% 69	151	1.61
Winter weather conditions	9.64% 16	10.84% 18	17.47% 29	16.27% 27	37.35% 62	8.43% 14	166	3.66

Q20 Of the following facilities or amenities, which would most likely increase your current level of biking and / or walking. Select and rank your top 5, with 1 representing the most desired.

Answered: 176 Skipped: 82



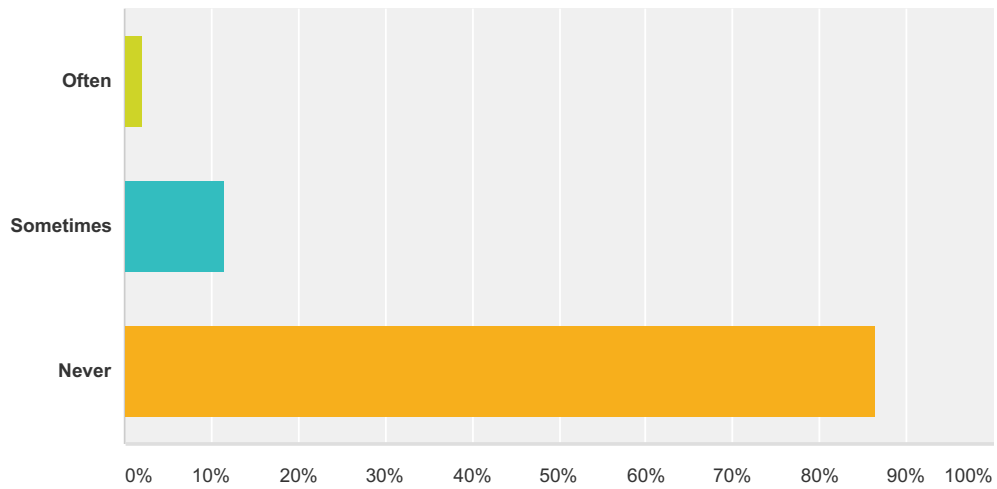
	1	2	3	4	5	N/A	Total	Weighted Average
Signed bicycle routes	18.37% 9	16.33% 8	20.41% 10	20.41% 10	20.41% 10	4.08% 2	49	3.09
Bicycle boulevards (low-volume and low-speed streets that have been optimized for bicycle travel through treatments such as traffic calming and traffic reduction, signage and pavement markings, and intersection crossing treatments)	20.88% 19	14.29% 13	17.58% 16	15.38% 14	25.27% 23	6.59% 6	91	3.11

Irondequoit Active Transportation Plan: Public Survey

Designated (signed and marked) on-street bike lanes	10.11% 9	24.72% 22	29.21% 26	22.47% 20	12.36% 11	1.12% 1	89	3.02
On-street cycle track / buffered bike lane	18.67% 14	18.67% 14	26.67% 20	17.33% 13	12.00% 9	6.67% 5	75	2.84
Sidewalks	28.79% 19	25.76% 17	12.12% 8	10.61% 7	19.70% 13	3.03% 2	66	2.66
Improved sidewalk maintenance	21.13% 15	25.35% 18	9.86% 7	23.94% 17	16.90% 12	2.82% 2	71	2.90
Shared use paths (adjacent to road)	22.06% 15	22.06% 15	10.29% 7	19.12% 13	23.53% 16	2.94% 2	68	3.00
Shared use paths (not adjacent to road)	25.00% 18	12.50% 9	18.06% 13	19.44% 14	20.83% 15	4.17% 3	72	2.99
Pedestrian signals and crosswalks at intersections	13.33% 6	17.78% 8	28.89% 13	11.11% 5	22.22% 10	6.67% 3	45	3.12
Availability of secure, weather-protected bicycle parking	12.50% 4	18.75% 6	25.00% 8	21.88% 7	15.63% 5	6.25% 2	32	3.10
Availability of end-of-trip amenities (showers, lockers, etc.)	15.38% 4	7.69% 2	11.54% 3	23.08% 6	11.54% 3	30.77% 8	26	3.11
Availability of a bike share program	23.68% 9	13.16% 5	15.79% 6	13.16% 5	15.79% 6	18.42% 7	38	2.81

Q21 In the last year, how often have you used RTS bus service?

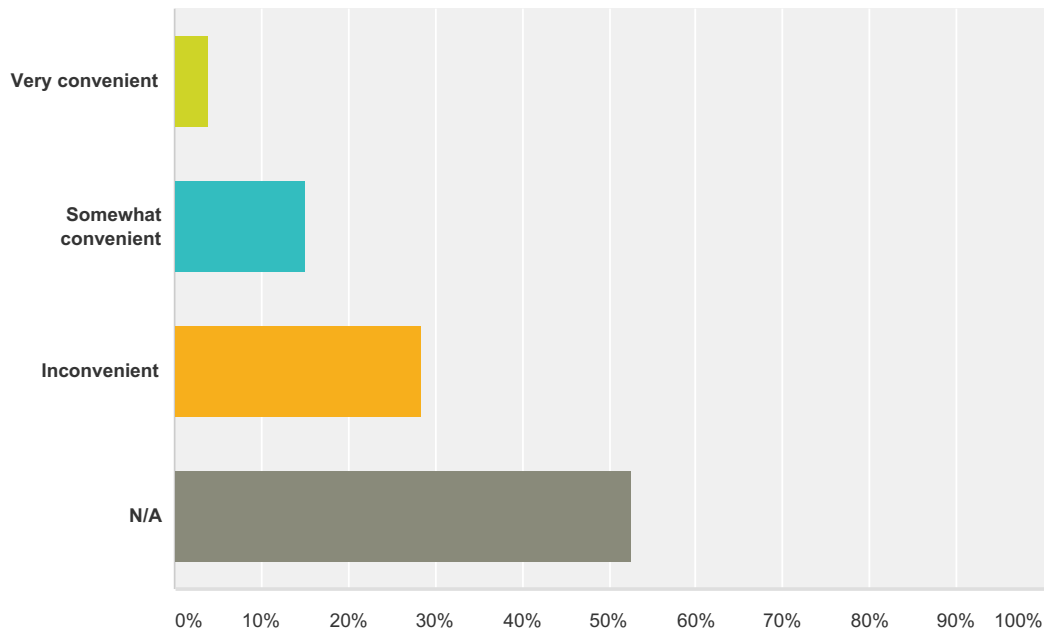
Answered: 183 Skipped: 75



Answer Choices	Responses	
Often	2.19%	4
Sometimes	11.48%	21
Never	86.34%	158
Total		183

Q22 How convenient do you find the bus service?

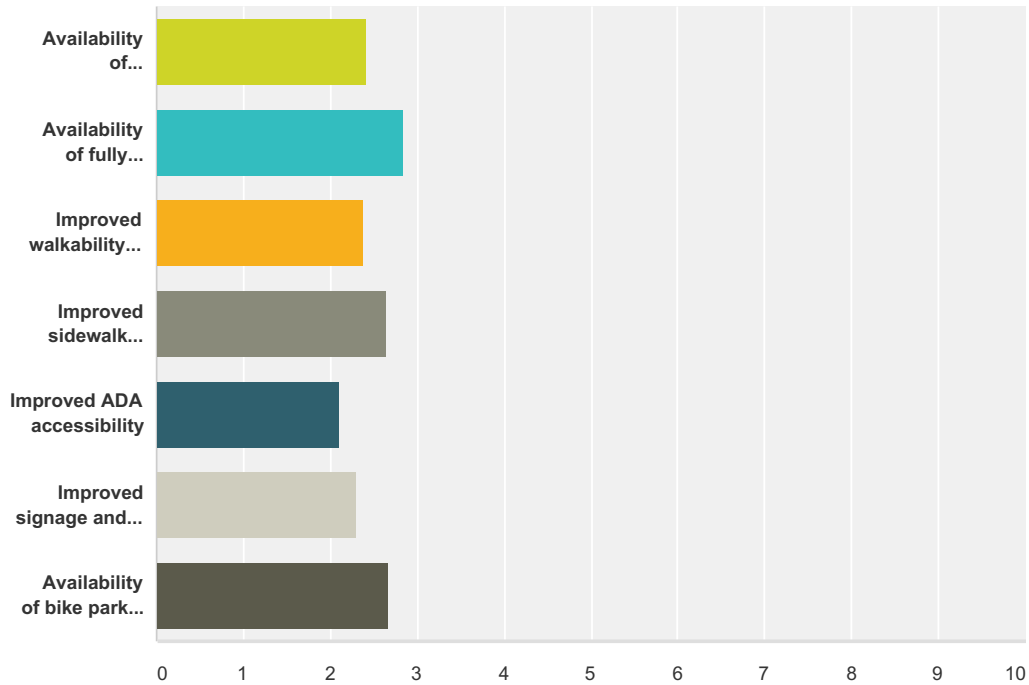
Answered: 179 Skipped: 79



Answer Choices	Responses
Very convenient	3.91% 7
Somewhat convenient	15.08% 27
Inconvenient	28.49% 51
N/A	52.51% 94
Total	179

Q23 Of the following facilities or amenities, which would most likely increase your transit use. Select and rank your top 4, with 1 representing the most desired.

Answered: 112 Skipped: 146



	1	2	3	4	Total	Weighted Average
Availability of weather-protected transit stops (protection from rain and wind)	23.61% 17	27.78% 20	31.94% 23	16.67% 12	72	2.42
Availability of fully enclosed transit stops (heating in the winter, cooling in the summer)	16.00% 8	26.00% 13	16.00% 8	42.00% 21	50	2.84
Improved walkability around transit stops (between stop and destinations)	26.87% 18	23.88% 16	32.84% 22	16.42% 11	67	2.39
Improved sidewalk maintenance	29.79% 14	10.64% 5	23.40% 11	36.17% 17	47	2.66
Improved ADA accessibility	44.44% 4	22.22% 2	11.11% 1	22.22% 2	9	2.11
Improved signage and way-finding	28.85% 15	32.69% 17	19.23% 10	19.23% 10	52	2.29
Availability of bike parking at stops	19.51% 8	24.39% 10	24.39% 10	31.71% 13	41	2.68

Q24 Please list up to five roadway segments (name-from-to format - e.g., Titus Ave. between Seneca and Hudson) within the Town of Irondequoit 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.

Answered: 108 Skipped: 150

Answer Choices	Responses	
1.	100.00%	108
2.	85.19%	92
3.	61.11%	66
4.	42.59%	46
5.	29.63%	32

Q25 Please list up to five key destinations (schools, parks, shopping areas, transit, other) within the Town of Irondequoit that would benefit from improved bicycle and/or pedestrian access.

Answered: 96 Skipped: 162

Answer Choices	Responses	
1.	100.00%	96
2.	85.42%	82
3.	63.54%	61
4.	36.46%	35
5.	23.96%	23

Q26 Please list up to five specific locations 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.

Answered: 63 Skipped: 195

Answer Choices	Responses	
1.	100.00%	63
2.	60.32%	38
3.	46.03%	29
4.	34.92%	22
5.	20.63%	13

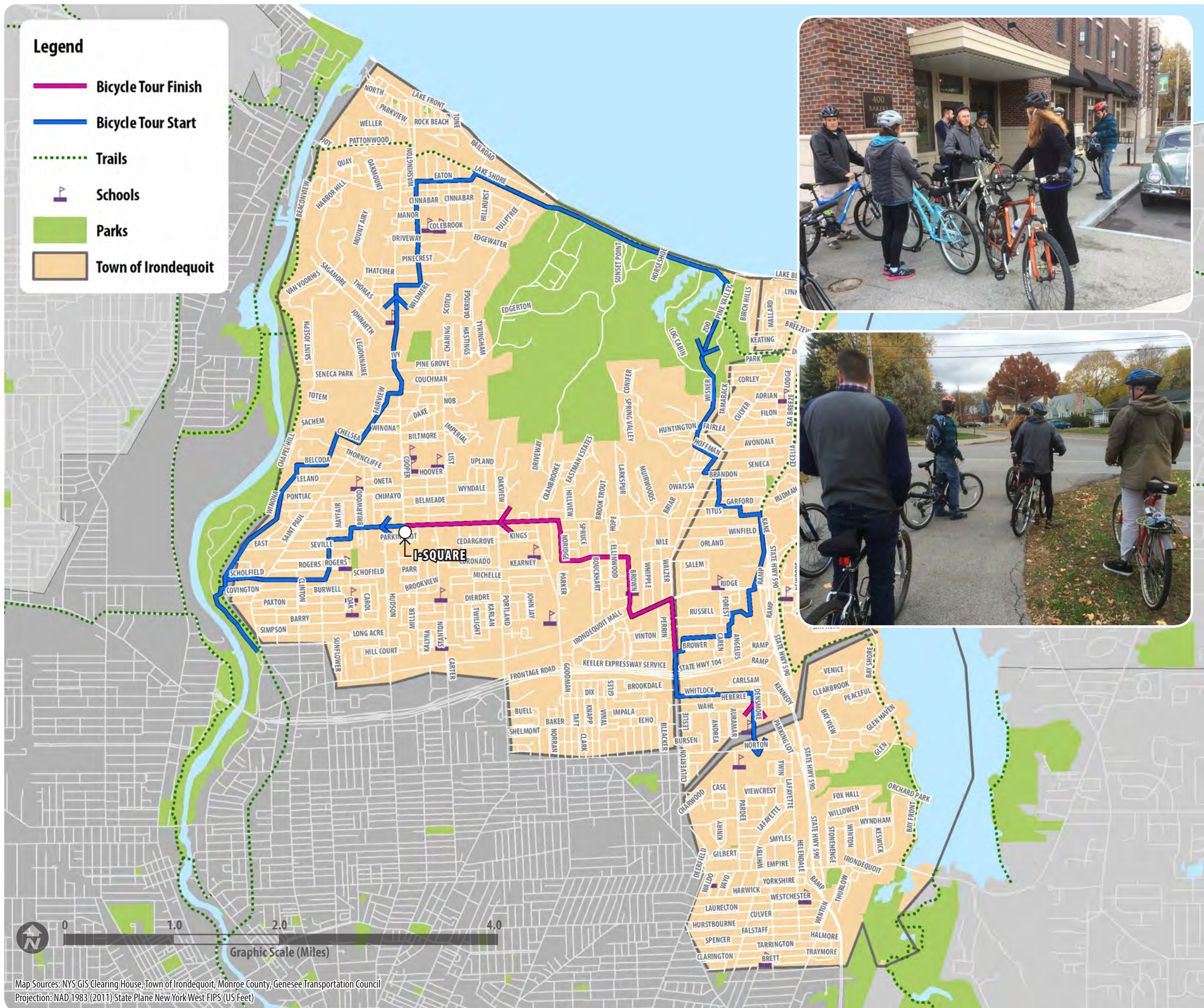
Q27 Other Comments Please use the space below to provide any other comments you may have regarding bicycling and walking in Irondequoit.

Answered: 59 Skipped: 199



APPENDIX B:

SUMMARY OF PROJECT ADVISORY COMMITTEE (PAC) WALK/VAN AND BIKE TOURS



APPENDIX: B
11.08.2015 BICYCLE TOUR MAP

COME RIDE WITH US!

Sunday, November 08, 2015
10:00am-12:00pm
Start/Finish: I-Square Parking Lot (400 Baker Park)

Come participate in the Irondequoit Active Transportation Plan.

Biking the town road and trail network will answer questions about access and existing bike conditions. Steering committee members will have the opportunity to test out our online data collection tools during the tour.

Town of Irondequoit Active Transportation Plan

UPWP Task No. 8766

Steering Committee Bicycle Tour

November 8, 2015

Field Notes



The intent of the Bicycle Tour was to experience and discuss a variety of bicycling conditions in the Town of Irondequoit.

The bicycle tour started at 10 AM at I-Square.

Weather was cool and partly sunny.

Ten riders attended the tour.

The tour covered approximately 12 miles.



A number of observations were made by participants during and after the tour:

● Bicycle Parking Facilities

Good quality bicycle parking at destinations is an important feature. Bike racks should be strategically located close to building entrances, and covered whenever possible. Bicycle parking facilities are important to support and encourage cycling.

Covered bike parking can increase bicycle trips during inclement weather



● Bicycle network space

Available bicycle space includes more than the formal public roadway network. Urban cyclists will utilize sidewalks, private access roads, trails and parking lots to create safe routes between destinations.



● **“Micro-trails” and neighborhood connectors** were observed on the tour. These are important connectivity assets that should be mapped and integrated into the Active Transportation Plan.



Town of Irondequoit Active Transportation Plan

UPWP Task No. 8766

Steering Committee Bicycle Tour

November 8, 2015

Field Notes



- **Seneca Avenue**, at Schofield road, had surprisingly high traffic volumes and was somewhat difficult for the group to cross.



- **“Multi-purpose shoulders”** are the on-road bicycle facility type usually preferred by Monroe County DOT. Riders on the tour expressed a preference for bicycle lanes with appropriate pavement markings and signage.



- **Drainage grates** in the shoulder can influence the comfort and safety of bicyclists. Problems are usually not the grates themselves, but issues with installation and degradation of surrounding pavement.

- **Wider sidewalks** are desirable, where ROW and buffer space is adequate. Sidewalks are often used by children and less confident bicyclists. Wider sidewalks are especially important along roadways lacking good on-road bicycle facilities.



- **Inactive railroad beds** may present opportunities for development of future multi-use trails. These opportunities should be mapped and assessed for connectivity potential and overall feasibility



Town of Irondequoit Active Transportation Plan

UPWP Task No. 8766

Steering Committee Bicycle Tour

November 8, 2015

Field Notes



- **Neighborhood streets** in Irondequoit are well-connected and in many cases provide a safe environment for bicyclists. Identification of “family-friendly routes” will be an important part of the Active Transportation Plan. Winona Blvd., for example, was identified as a good alternative to riding on St. Paul.



- **Multi-use trails** in Irondequoit are both transportation facilities and recreational destinations. The existing Lakeside Trail provides safe off-road travel for cyclists of all ability levels. Development of the Irondequoit-Seneca trail would make a strong addition to the active transportation system in the Town.



- **Monroe County parkland** provides significant open space and important destinations in Irondequoit. Some park roads may provide alternatives to high traffic roadways. It is important to provide good connections to the parks, and safe bike travel within the parks.



- **Irondequoit Cemetery access road** is an example of an informal alternative route that is useful for local cyclists. The access road parallels a segment of Culver Road.



- As a general note, the group felt that increasing the number of cyclists on the road will be a positive influence on driver behavior.

WALKING TOUR FIELD NOTES

Town of Irondequoit Active Transportation Plan

November 17, 2015 from 3:30-5:00pm

ATTENDEES

- Adam Bello, Town of Irondequoit
- Kerry Ivers, Town of Irondequoit
- Jeff McCann, Town of Irondequoit
- Pat Meredith, Town of Irondequoit
- Brent Penwarden, Monroe County DOT
- Mike Governale, Resident / Reconnect Rochester
- Jay Lambrix, Resident
- Dan Buerkle, Resident and Business Owner
- Fred Squicciarini, Resident, Irondequoit Chamber of Commerce
- Nicole Cleary, Barton & Loguidice (B&L)
- Tom Robinson, Barton & Loguidice (B&L)

1. TITUS AVE & CULVER RD

- Nearby destinations: residential, dentist office.
- Sidewalks are not present along south side of Titus Ave and east side of Culver Rd (north of Titus).
- Sidewalks east of Culver Rd, along north side of Titus Ave are up against curb, no buffer.
- Pedestrian signal issues (north west corner).
- Check signal crossing times, seems short here.
- Continental crosswalks on Culver Road, visible fading.
- Standard crosswalks on Titus Ave, visible fading.
- Pavement condition is uneven across Titus Ave, east of Culver Rd.
- Leading pedestrian interval is desirable to assist pedestrian crossing

2. NORTON ST & PARDEE RD

- Nearby destinations: residential, Laurelton-Pardee Intermediate School, E Irondequoit Middle School.
- Concern for pedestrian conditions along Norton St between Pardee Rd and Densmore Rd (E Irondequoit Middle School).
- Asphalt shoulder exists between concrete gutter and sidewalk, safety concerns.
- High amount of activity due to close proximity to schools.
- Fatal accident involving skateboarder occurred on Norton
- Pavement condition is uneven across Titus Ave, east of Culver Rd.
- Standard crosswalks across Pardee Rd and Norton St, east of Pardee Rd.
- No sidewalk on the school side of Norton
- Additional pedestrian lighting in school zones is desirable
- *Investigate 10' wide sidepaths and "Colorful Sidewalk" initiative.*

3. E RIDGE RD & KINGS HWY

- Nearby destinations: Bishop Kearney High School, retail and commercial facilities.
- Pedestrian connections from existing sidewalks to existing destinations (retail/commercial facilities) are lacking.
- Standard crosswalks across E Ridge Rd and Kings Hwy.
- Right turn poses safety concerns for pedestrians crossing.
- Observed fixtures on utility poles for banners but no banners present.
- *Investigate high visibility crosswalks, leading pedestrian intervals, improve pedestrian connections to destinations.*

4. COOPER RD & TITUS AVE

- Nearby destinations: Irondequoit High School, retail and commercial facilities.
- Discontinued sidewalk across driveways and varying pavement materials (i.e. between Union Pk and Grange Pl).
- Pedestrians crossing Titus Ave at Kiwanis Rd (no crosswalk present, safety concerns).
- Right turn poses safety concerns for pedestrians crossing.
- *Investigate high visibility crosswalks, leading pedestrian intervals, improve pedestrian connections to destinations.*

5. HUDSON AVE & TITUS AVE

- Nearby destinations: Irondequoit High School, retail and commercial facilities.
- Standard crossing on Cooper Dr and Titus Ave, east of Cooper Dr.
- Thermoplastic crosswalk on Bakers Pk.
- No crosswalk on Titus Ave, west of Cooper Dr.
- Discontinued sidewalk across driveways and varying pavement materials (i.e. Titus Tavern)
- Right turn poses safety concerns for pedestrians crossing.
- Crossing distance of Hudson is very long for pedestrians
- Very large turn radii encourage unsafe driving speeds
- *Investigate high visibility crosswalks, possible median on Hudson, channelized turns with raised pedestrian island, leading pedestrian intervals, improve pedestrian connections to destinations., improve traffic calming*

6. COOPER RD & ST PAUL BLVD

- Nearby destinations: Residential.
- Standard crossing on St Paul Blvd, north of traffic signal, visible fading. Standard crossing on Cooper Dr, visible fading, skewed angle.
- No crosswalk on St Paul Blvd, west of traffic signal.
- Green right turn arrow often on for vehicles traveling south west on St Paul Blvd, only changes if pedestrian pushes button to cross. Right turn poses safety concerns for pedestrians crossing.
- Very large turn radii encourage unsafe driving speeds
- *Investigate high visibility crosswalks, leading pedestrian intervals, and traffic signal options, improve traffic calming, possible round-about opportunity.*

7. PATTONWOOD DR & ST PAUL BLVD

- Nearby destinations: Residential and retail.
- Standard crossing on Pattonwood Dr, visible fading.
- No crosswalk on St Paul Blvd, no sidewalk on east side (existing topography and structures prohibit this).
- Existing wall and vegetation, south west corner of intersection, creates sight-line issues.
- Right and left turns onto Pattonwood Dr poses safety concerns for pedestrians crossing.
- Existing overpasses to the north and south of intersection present safety concerns for pedestrians and bicyclists. Sidewalk width is narrow - is this route plow-able during winter?
- Check signal crossing times, seems short here.
- *Investigate high visibility crosswalks, leading pedestrian intervals, and traffic signal options, improve traffic calming, possible round-about opportunity.*

OTHER COMMENTS

- Pedestrian safety concerns along Empire Boulevard, near the intersection of Helendale Rd. - unsafe and unwelcoming atmosphere for pedestrians. Roadway pavement in poor condition, minimal shoulder space for bicyclists.
- Pedestrian environment is poor under Route 104 along Goodman St.
- Pedestrian safety concerns along E Ridge Rd - sidewalk up against curb in some locations, no buffer. Poor access management and too many curb cuts
- Wide curb cuts for retail/commercial driveways - presents safety issues for all users.
- Refer to Comprehensive Plan - sidewalk gaps are identified.
- Note: Areas of sidewalks have been removed along Portland Ave - public was involved in project.
- Investigate roundabouts where feasible. Refer to Village of Hamburg as example.
- Investigate existing path through Durand Eastman Park as alternate bicycle/pedestrian route to Kings Hwy.
- Opportunities to create more east/west bus routes through the Town.
- Commercial parking lots need to be designed for safe movement of pedestrians and bicycles.
- Stop bars need to be placed an adequate distance from crosswalks.
- Unsafe driver behavior is a big issue; example-not yielding to pedestrians in crosswalks during walk phase. (observed during Walk Tour)
- More walkers and riders on the streets will help improve driver behavior
- Good bicycle parking in commercial areas is important
- *Investigate form based code for future retail/commercial development - different uses need different zoning requirements. Education and outreach is important. Enforcements are important. Consider raised crosswalks at key intersections.*



APPENDIX C:

PEDESTRIAN AND BICYCLE LEVEL OF SERVICE MODELS

APPENDIX C: PEDESTRIAN AND BICYCLE LEVEL OF SERVICE MODELS

Bicycle Level of Service Model. The statistically-calibrated mathematical equation entitled the *Bicycle Level of Service¹ Model (Version 2.0)* was used as the foundation of Irondequoit’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.

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:

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

Where:

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

$$\text{Vol}_{15} = (\text{ADT} \times D \times K_d) / (4 \times \text{PHF})$$

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 *throughlanes*

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*)

PR₅ = FHWA's five point pavement surface condition rating
 W_e = Average effective width of outside through lane:

where:

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

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

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

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:

$$W_v = W_t \text{ if } ADT > 4,000 \text{ veh/day}$$

$$W_v = W_t(2 - 0.00025 \times ADT) \text{ if}$$

ADT ≤ 4,000 veh/day, and if the street/road is undivided and unstriped

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

(a₁ - a₄) 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:

$$\text{Ped LOS} = - 1.2276 \ln (W_{ol} + W_1 + f_p \times \%OSP + f_b \times W_b + f_{sw} \times W_s) + 0.0091 (Vol_{15}/L) + 0.0004 SPD^2 + 6.0468$$

Where:

W_{ol} = Width of outside lane (feet)

W_1 = 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 D:

PEDESTRIAN AND BICYCLE LEVEL OF SERVICE DATA SHEETS



DRAFT Town of Irondequoit Bicycle and Pedestrian Level of Service Results



Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L)		ADT	Tks. (HV) (%)	Post. Spd. (SP _p) mph	Width of Pavement			Total Pvmt Width (TPW) (ft)	Occ. Park. (OSPA) (%)	Pavecon		Cross Sec. (C/S)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Grates	Bicycle LOS		Pedestrian LOS	
						Th #	Con				W _t (ft)	W _l (ft)	W _{ps} (ft)			PC _t (1..5)	PC _l (1..5)							Score (0..7)	Grade (A..F)	Value (0..7)	Grade (A..F)
						1.0	St. Paul Blvd				Long Acre Rd	Titus Ave	0.83			NB	2							S	7,580	2	35
1.0	St. Paul Blvd	Long Acre Rd	Titus Ave	0.83	SB	2	S	7,580	2	35	15.0	4.0	0.0	41.0	0	3.0	-	C	9.5	0	100	5.0	N	3.11	C	2.79	C
2.0	St. Paul Blvd	Titus Ave	Cooper Rd	1.13	NB	2	S	7,580	2	35	15.0	4.0	0.0	41.0	0	3.0	-	C	12.0	0	100	5.0	N	3.11	C	2.73	C
2.0	St. Paul Blvd	Titus Ave	Cooper Rd	1.13	SB	2	S	7,580	2	35	15.0	4.0	0.0	41.0	0	3.0	-	C	10.5	0	100	5.0	N	3.11	C	2.77	C
3.0	St. Paul Blvd	Cooper Rd	Thomas Ave	0.54	NB	2	S	20,472	2	35	15.0	4.0	0.0	41.0	0	3.5	-	C	8.0	0	100	5.0	N	3.54	D	4.50	D
3.0	St. Paul Blvd	Cooper Rd	Thomas Ave	0.54	SB	2	S	20,472	2	35	15.0	4.0	0.0	41.0	0	3.5	-	C	10.0	0	100	5.0	N	3.54	D	4.46	D
4.0	St. Paul Blvd	Thomas Ave	Colebrook Dr	0.65	NB	2	S	4,701	2	35	14.5	4.0	0.0	40.0	0	3.0	3.0	C	10.0	0	100	5.0	Y	3.00	C	2.42	B
4.0	St. Paul Blvd	Thomas Ave	Colebrook Dr	0.65	SB	2	S	4,701	2	35	14.5	4.0	0.0	40.0	0	3.0	3.0	C	10.0	0	100	5.0	Y	3.00	C	2.42	B
5.0	St. Paul Blvd	Colebrook Dr	Lakeshore Blvd	0.54	NB	2	S	4,701	2	35	17.0	6.0	0.0	44.0	0	3.5	3.5	C	6.5	0	100	5.0	Y	1.93	B	2.44	B
5.0	St. Paul Blvd	Colebrook Dr	Lakeshore Blvd	0.54	SB	2	S	4,701	2	35	17.0	6.0	0.0	44.0	0	3.5	3.5	C	9.5	0	100	5.0	Y	1.93	B	2.37	B
6.0	St. Paul Blvd	Lake Shore Blvd	Pattonwood Dr	0.08	NB	2	U	4,701	2	35	11.5	0.0	0.0	23.0	0	2.5	2.5	C	0.0	0	0	0.0	N	4.27	D	4.15	D
6.0	St. Paul Blvd	Lake Shore Blvd	Pattonwood Dr	0.08	SB	2	U	4,701	2	35	11.5	0.0	0.0	23.0	0	2.5	2.5	C	0.0	0	100	4.5	N	4.27	D	2.87	C
7.0	St. Paul Blvd	Pattonwood Dr	Beach Ave	0.30	NB	2	U	4,701	2	35	11.0	0.0	0.0	22.0	0	3.0	3.0	C	0.0	0	0	0.0	N	3.97	D	4.20	D
7.0	St. Paul Blvd	Pattonwood Dr	Beach Ave	0.30	SB	2	U	4,701	2	35	11.0	0.0	0.0	22.0	0	3.0	3.0	C	0.0	0	100	5.0	N	3.97	D	2.84	C
8.0	St. Paul Blvd	Beach Ave	end	0.31	EB	2	U	4,701	2	35	18.0	7.0	0.0	36.0	25	3.0	2.5	C	6.5	0	100	5.0	N	2.38	B	2.13	B
8.0	St. Paul Blvd	Beach Ave	end	0.31	WB	2	U	4,701	2	35	18.0	7.0	0.0	36.0	25	3.0	2.5	C	6.5	0	100	5.0	N	2.38	B	2.13	B
9.0	St. Joseph St	Seneca Park Ave	Van Voorhis Ave	0.46	NB	2	U		2	35	11.5	0.0	0.0	23.0	0	4.0	-	S	0.0	0	0	0.0	N	err	err	err	err
9.0	St. Joseph St	Seneca Park Ave	Van Voorhis Ave	0.46	SB	2	U		2	35	11.5	0.0	0.0	23.0	0	4.0	-	S	0.0	0	0	0.0	N	err	err	err	err
10.0	Van Voorhis Ave	St. Joseph St	Thomas Ave	0.59	NB	2	U		2	35	10.0	0.0	0.0	20.0	0	3.0	-	S	0.0	0	0	0.0	N	err	err	err	err
10.0	Van Voorhis Ave	St. Joseph St	Thomas Ave	0.59	SB	2	U		2	35	10.0	0.0	0.0	20.0	0	3.0	-	S	0.0	0	0	0.0	N	err	err	err	err
11.0	Thomas Ave	St. Paul Blvd	Pattonwood Dr	1.45	NB	2	U	6,345	2	35	12.0	0.0	0.0	24.0	0	3.5	-	C	14.0	0	25	6.0	N	3.88	D	3.86	D
11.0	Thomas Ave	St. Paul Blvd	Pattonwood Dr	1.45	SB	2	U	3,645	2	35	12.0	0.0	0.0	24.0	0	3.5	-	C	0.0	0	0	0.0	N	3.38	C	3.86	D
12.0	Clinton Ave	Long Acre Rd	Rogers Pkwy	0.50	NB	2	U		2	35	16.0	0.0	0.0	32.0	0	2.5	2.5	C	9.0	0	100	5.0	N	err	err	err	err
12.0	Clinton Ave	Long Acre Rd	Rogers Pkwy	0.50	SB	2	U		2	35	16.0	0.0	0.0	32.0	0	2.5	2.5	C	9.0	0	100	5.0	N	err	err	err	err
13.0	Seneca Ave	Long Acre Rd	Titus Ave	0.78	NB	2	U	5,874	2	35	18.0	6.0	0.0	36.0	0	3.5	3.5	C	8.0	0	100	5.0	Y	1.86	B	2.54	C
13.0	Seneca Ave	Long Acre Rd	Titus Ave	0.78	SB	2	U	5,874	2	35	18.0	6.0	0.0	36.0	0	3.5	3.5	C	8.0	0	100	5.0	Y	1.86	B	2.54	C
14.0	Hudson Ave	City Line	Ridge Rd	0.07	NB	2	S	13,240	5	35	10.5	0.0	0.0	53.0	0	4.0	-	C	0.0	0	100	7.0	N	5.07	E	3.80	D
14.0	Hudson Ave	City Line	Ridge Rd	0.07	SB	2	S	13,240	5	35	10.5	0.0	0.0	53.0	0	4.0	-	C	0.0	0	100	5.0	N	5.07	E	3.96	D
15.0	Hudson Ave	Ridge Rd	Brookview Dr	0.53	NB	2	S	11,704	2	35	18.5	6.5	0.0	48.0	0	3.0	-	C	5.0	0	100	5.0	Y	2.31	B	3.35	C
15.0	Hudson Ave	Ridge Rd	Brookview Dr	0.53	SB	2	S	11,704	2	35	18.5	6.5	0.0	48.0	0	3.0	-	C	0.0	0	0	0.0	Y	2.31	B	4.47	D
16.0	Hudson Ave	Brookview Dr	Titus Ave	0.47	NB	4	S	11,704	2	35	13.5	0.0	0.0	60.5	0	3.0	-	C	3.5	0	100	5.0	Y	3.92	D	2.78	C
16.0	Hudson Ave	Brookview Dr	Titus Ave	0.47	SB	4	S	11,704	2	35	13.5	0.0	0.0	60.5	0	3.0	-	C	3.5	0	100	5.0	Y	3.92	D	2.78	C



DRAFT Town of Irondequoit Bicycle and Pedestrian Level of Service Results



Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L)		ADT	Tks. (HV) (%)	Post. Spd. (SP _p) mph	Width of Pavement			Total Pvmt Width (TPW) (ft)	Occ. Park. (OSPA) (%)	Pavecon		Cross Sec. (C/S)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Grates	Bicycle LOS		Pedestrian LOS	
						Th #	Con				W _t (ft)	W _i (ft)	W _{ps} (ft)			PC _t (1..5)	PC _i (1..5)							Score (0..7)	Grade (A..F)	Value (0..7)	Grade (A..F)
						17.0	Cooper Rd				Titus Ave	Thornccliffe Dr	0.38			NB	2							S	5,714	2	35
17.0	Cooper Rd	Titus Ave	Thornccliffe Dr	0.38	SB	2	S	5,714	2	35	13.5	0.0	0.0	39.0	0	3.5	-	C	8.0	0	100	5.0	Y	3.72	D	2.63	C
18.0	Cooper Rd	Thornccliffe Dr	Biltmore Dr	0.19	NB	2	U	5,714	2	35	16.5	5.5	0.0	33.0	0	4.0	4.0	C	4.0	0	100	5.0	Y	2.12	B	2.66	C
18.0	Cooper Rd	Thornccliffe Dr	Biltmore Dr	0.19	SB	2	U	5,714	2	35	15.5	4.5	0.0	33.0	0	4.0	4.0	C	4.0	0	100	5.0	Y	2.53	C	2.68	C
19.0	Cooper Rd	Biltmore Dr	St. Paul Blvd	0.25	NB	2	U	5,714	2	35	16.0	5.5	0.0	32.0	0	3.5	3.5	C	4.0	0	100	5.0	Y	2.38	B	2.67	C
19.0	Cooper Rd	Biltmore Dr	St. Paul Blvd	0.25	SB	2	U	5,714	2	35	16.0	5.5	0.0	32.0	0	3.5	3.5	C	8.5	0	100	5.0	Y	2.38	B	2.55	C
20.0	Carter St	City Line	Ridge Rd	0.07	NB	2	U	9,729	2	35	11.5	0.0	0.0	23.0	0	3.5	-	C	0.0	0	100	5.0	N	4.28	D	3.47	C
20.0	Carter St	City Line	Ridge Rd	0.07	SB	2	U	9,729	2	35	11.5	0.0	0.0	23.0	0	3.5	-	C	0.0	0	100	5.0	N	4.28	D	3.47	C
21.0	Portland Ave	City Line (Portland Pkwy)	Ridge Rd	0.14	NB	4	S	20,557	2	35	12.0	0.0	0.0	56.0	0	3.5	-	C	0.0	0	100	7.0	N	4.27	D	3.37	C
21.0	Portland Ave	City Line (Portland Pkwy)	Ridge Rd	0.14	SB	4	S	20,557	2	35	12.0	0.0	0.0	56.0	0	3.5	-	C	0.0	0	100	7.0	N	4.27	D	3.37	C
22.0	Portland Ave	Ridge Rd	Titus Ave	0.94	NB	2	U	20,557	2	35	15.5	4.0	0.0	31.0	0	4.5	4.5	C	5.0	0	10	5.0	N	3.19	C	5.71	F
22.0	Portland Ave	Ridge Rd	Titus Ave	0.94	SB	2	U	20,557	2	35	15.5	4.0	0.0	31.0	0	4.5	4.5	C	11.0	0	100	5.0	N	3.19	C	4.43	D
23.0	Goodman St	Norton St	NY 104	0.56	NB	2	S	14,599	2	35	15.5	4.0	0.0	44.5	0	3.5	3.5	C	8.0	0	100	5.0	N	3.27	C	3.73	D
23.0	Goodman St	Norton St	NY 104	0.56	SB	2	S	14,599	2	35	15.5	4.0	0.0	44.5	0	3.5	3.5	C	8.0	0	100	5.0	N	3.27	C	3.73	D
24.0	Goodman St	NY 104	Ridge Rd	0.20	NB	4	S	14,599	2	35	11.0	0.0	0.0	56.5	0	4.0	-	C	4.0	0	100	5.0	N	3.95	D	3.04	C
24.0	Goodman St	NY 104	Ridge Rd	0.20	SB	4	S	14,599	2	35	11.0	0.0	0.0	56.5	0	4.0	-	C	4.0	0	100	5.0	N	3.95	D	3.04	C
25.0	Kings Hwy	Ridge Rd	Parker Ln	0.33	NB	4	S	3,478	2	35	12.0	0.0	0.0	62.0	0	3.5	-	C	20.0	25	100	5.0	Y	3.18	C	0.82	A
25.0	Kings Hwy	Ridge Rd	Parker Ln	0.33	SB	4	S	3,478	2	35	12.0	0.0	0.0	62.0	0	3.5	-	C	7.0	0	100	5.0	Y	3.18	C	2.19	B
26.0	Kings Hwy	Parker Ln	Titus Ave	0.52	NB	2	U	3,478	2	35	21.0	9.0	0.0	42.0	0	3.0	3.0	C	15.0	0	100	5.0	N	0.00	A	2.00	B
26.0	Kings Hwy	Parker Ln	Titus Ave	0.52	SB	2	U	3,478	2	35	21.0	9.0	0.0	42.0	0	3.0	3.0	C	15.0	0	100	5.0	N	0.00	A	2.00	B
27.0	Kings Hwy	Titus Ave	fire station	0.34	NB	2	U	2,370	2	35	10.5	0.0	0.0	21.0	0	2.5	-	C	6.0	0	100	5.0	N	3.42	C	2.35	B
27.0	Kings Hwy	Titus Ave	fire station	0.34	SB	2	U	2,370	2	35	10.5	0.0	0.0	21.0	0	2.5	-	C	0.0	0	0	0.0	N	3.42	C	3.54	D
28.0	Kings Hwy	fire station	Town Line	1.25	NB	2	U	2,370	2	35	11.5	1.5	0.0	23.0	0	3.0	3.0	S	0.0	0	0	0.0	N	3.16	C	3.59	D
28.0	Kings Hwy	fire station	Town Line	1.25	SB	2	U	2,370	2	35	11.5	1.5	0.0	23.0	0	3.0	3.0	S	0.0	0	0	0.0	N	3.16	C	3.59	D
29.0	Culver Rd	Norton St	NY 104	1.25	NB	4	U	14,980	2	35	11.0	0.0	0.0	44.0	0	4.5	-	C	7.0	0	100	5.0	N	3.84	D	2.93	C
29.0	Culver Rd	Norton St	NY 104	1.25	SB	4	U	14,980	2	35	11.0	0.0	0.0	44.0	0	4.5	-	C	7.0	0	100	5.0	N	3.84	D	2.93	C
30.0	Culver Rd	NY 104	Ridge Rd	0.41	NB	4	U	14,980	2	35	11.0	0.0	0.0	44.0	0	3.5	-	C	7.0	0	10	5.0	N	4.09	D	4.37	D
30.0	Culver Rd	NY 104	Ridge Rd	0.41	SB	4	U	14,980	2	35	11.0	0.0	0.0	44.0	0	3.5	-	C	7.0	0	100	5.0	N	4.09	D	2.93	C
31.0	Culver Rd	Ridge Rd	Titus Ave	0.57	NB	2	U	15,569	2	35	17.5	5.5	0.0	35.0	0	3.5	3.5	C	7.0	0	100	5.0	Y	2.74	C	3.83	D
31.0	Culver Rd	Ridge Rd	Titus Ave	0.57	SB	2	U	15,569	2	35	17.5	5.5	0.0	35.0	0	3.5	3.5	C	7.0	0	50	5.0	Y	2.74	C	4.44	D
32.0	Culver Rd	Titus Ave	Durand Blvd	1.30	NB	2	U	7,416	2	35	17.5	6.5	0.0	35.0	0	4.0	4.0	C	3.0	0	100	5.0	Y	1.70	B	2.69	C
32.0	Culver Rd	Titus Ave	Durand Blvd	1.30	SB	2	U	7,416	2	35	17.5	6.5	0.0	35.0	0	4.0	4.0	C	3.0	0	10	5.0	Y	1.70	B	3.68	D



DRAFT Town of Irondequoit Bicycle and Pedestrian Level of Service Results



Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L)		ADT	Tks. (HV) (%)	Post. Spd. (SP _p) mph	Width of Pavement			Total Pvmt Width (TPW) (ft)	Occ. Park. (OSPA) (%)	Pavecon		Cross Sec. (C/S)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Grates	Bicycle LOS		Pedestrian LOS	
						Th #	Con				W _t (ft)	W _i (ft)	W _{ps} (ft)			PC _t (1..5)	PC _i (1..5)							Score (0...7)	Grade (A...F)	Value (0...7)	Grade (A...F)
						33.0	Culver Rd				Durand Blvd	Seabreeze Dr	0.82			NB	2							U	7,416	2	35
33.0	Culver Rd	Durand Blvd	Seabreeze Dr	0.82	SB	2	U	7,416	2	35	18.0	7.0	0.0	34.0	0	3.5	3.5	C	0.0	0	70	5.0	N	1.43	A	3.06	C
34.0	Culver Rd	Seabreeze Dr	Town Line	0.13	EB	2	U	7,416	2	30	11.0	0.0	0.0	22.0	0	3.5	-	C	0.0	0	100	11.0	N	4.17	D	2.97	C
34.0	Culver Rd	Seabreeze Dr	Town Line	0.13	WB	2	U	7,416	2	30	11.0	0.0	0.0	22.0	0	3.5	-	C	0.0	0	0	0.0	N	4.17	D	4.66	E
35.0	Helendale Rd	Empire Blvd	Norton St	0.81	NB	2	U		2	35	11.0	0.0	0.0	22.0	0	3.5	-	C	0.0	0	0	0.0	N	err	err	err	err
35.0	Helendale Rd	Empire Blvd	Norton St	0.81	SB	2	U		2	35	11.0	0.0	0.0	22.0	0	3.5	-	C	7.0	0	100	5.0	N	err	err	err	err
36.0	Winton Rd	City Line (Colebourne Rd)	Empire Blvd	0.73	NB	2	U	6,797	2	35	18.0	7.0	0.0	36.0	0	5.0	5.0	C	6.0	0	100	5.0	Y	1.47	A	2.78	C
36.0	Winton Rd	City Line (Colebourne Rd)	Empire Blvd	0.73	SB	2	U	6,797	2	35	18.0	7.0	0.0	36.0	0	5.0	5.0	C	6.0	0	70	5.0	Y	1.47	A	3.13	C
37.0	Winton Rd	Empire Blvd	end	0.41	NB	2	U		2	35	13.0	0.0	0.0	26.0	0	3.0	-	C	9.5	0	60	5.0	N	err	err	err	err
37.0	Winton Rd	Empire Blvd	end	0.41	SB	2	U		2	35	13.0	0.0	0.0	26.0	0	3.0	-	C	9.5	0	60	5.0	N	err	err	err	err
38.0	NY 590	NY 104	Titus Ave	0.70	NB	4	D	16,027	2	45	16.0	4.0	0.0	32.0	0	4.5	4.5	S	0.0	0	0	0.0	N	2.68	C	4.49	D
38.0	NY 590	NY 104	Titus Ave	0.70	SB	4	D	16,027	2	45	16.0	4.0	0.0	32.0	0	4.5	4.5	S	0.0	0	0	0.0	N	2.68	C	4.49	D
39.0	Seabreeze Dr	Titus Ave	Durand Blvd	0.71	NB	2	D	16,027	2	45	15.5	3.5	0.0	17.5	0	4.0	4.0	C	10.0	0	100	10.0	Y	3.65	D	4.28	D
39.0	Seabreeze Dr	Titus Ave	Durand Blvd	0.71	SB	2	D	16,027	2	45	15.5	3.5	0.0	17.5	0	4.0	4.0	C	6.0	0	100	5.0	Y	3.65	D	4.57	E
40.0	Seabreeze Dr	Durand Blvd	Culver Rd	1.44	NB	2	D	688	2	45	15.5	3.5	0.0	17.5	0	4.0	4.0	C	100.0	0	100	13.0	Y	1.67	B	0.77	A
40.0	Seabreeze Dr	Durand Blvd	Culver Rd	1.44	SB	2	D	688	2	45	15.5	3.5	0.0	17.5	0	4.0	4.0	C	0.0	0	0	0.0	Y	1.67	B	3.59	D
41.0	Bayshore Blvd	Bay View Rd	Ridge Rd	0.91	NB	2	U		2	35	11.0	1.0	0.0	21.0	0	3.0	3.0	C	0.0	0	0	0.0	N	err	err	err	err
41.0	Bayshore Blvd	Bay View Rd	Ridge Rd	0.91	SB	2	U		2	35	10.0	0.0	0.0	21.0	0	3.0	-	C	17.0	0	20	4.5	N	err	err	err	err
42.0	Empire Blvd	City Line	Helendale Rd	0.42	EB	4	U	13,199	2	40	10.0	0.0	0.0	41.0	0	2.0	-	S	4.0	0	50	5.0	N	err	err	err	err
42.0	Empire Blvd	City Line	Helendale Rd	0.42	WB	4	U	13,199	2	40	10.0	0.0	0.0	41.0	0	2.0	-	S	4.0	0	100	5.0	N	err	err	err	err
43.0	Empire Blvd	Helendale Rd	Winton Rd	0.59	EB	4	S	36,882	2	40	16.0	4.5	0.0	76.0	0	3.0	3.0	C	4.0	0	100	5.0	Y	3.72	D	5.00	E
43.0	Empire Blvd	Helendale Rd	Winton Rd	0.59	WB	4	S	36,882	2	40	16.0	4.5	0.0	76.0	0	3.0	3.0	C	4.0	0	100	5.0	Y	3.72	D	5.00	E
44.0	Empire Blvd	Winton Rd	Town Line	1.24	EB	4	U	36,882	2	40	17.5	5.5	0.0	59.0	0	2.5	2.5	C	0.0	0	90	6.0	Y	3.44	C	4.51	E
44.0	Empire Blvd	Winton Rd	Town Line	1.24	WB	4	U	36,882	2	40	17.5	5.5	0.0	59.0	0	2.5	2.5	C	0.0	0	0	0.0	Y	3.44	C	5.50	E
45.0	Norton St	Culver Rd	NY 590	0.74	EB	2	U	9,903	2	35	11.5	0.0	0.0	23.0	0	2.5	-	C	0.0	0	100	5.5	N	4.87	E	3.50	C
45.0	Norton St	Culver Rd	NY 590	0.74	WB	2	U	9,903	2	35	11.5	0.0	0.0	23.0	0	2.5	-	C	12.0	0	100	5.0	N	4.87	E	3.18	C
46.0	Bayview Rd	NY 590	Clearbrook Dr	0.58	EB	2	U		2	35	10.5	0.0	0.0	21.0	0	4.0	-	C	5.0	0	100	5.0	N	err	err	err	err
46.0	Bayview Rd	NY 590	Clearbrook Dr	0.58	WB	2	U		2	35	10.5	0.0	0.0	21.0	0	4.0	-	C	10.0	0	25	5.0	N	err	err	err	err
47.0	Bayview Rd	Clearbrook Dr	Bayshore Blvd	0.42	EB	2	U		2	35	14.0	4.0	0.0	28.0	0	3.0	3.0	C	0.0	0	0	0.0	N	err	err	err	err
47.0	Bayview Rd	Clearbrook Dr	Bayshore Blvd	0.42	WB	2	U		2	35	14.0	4.0	0.0	28.0	0	3.0	3.0	C	0.0	0	0	0.0	N	err	err	err	err
48.0	Ridge Rd	Seneca Ave	W of Hudson Ave	0.38	EB	2	S	14,861	2	35	16.0	4.0	0.0	43.5	0	3.5	3.5	C	0.0	0	100	5.0	Y	3.34	C	3.99	D
48.0	Ridge Rd	Seneca Ave	W of Hudson Ave	0.38	WB	2	S	14,861	2	35	16.0	4.0	0.0	43.5	0	3.5	3.5	C	0.0	0	100	5.0	Y	3.34	C	3.99	D



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Seg_ID	Road Name	From	To	Length (Ls) (mi)	Dir. of Sur.	Lanes (L)		ADT	Tks. (HV) (%)	Post. Spd. (SP _p) mph	Width of Pavement			Total Pvmt Width (TPW) (ft)	Occ. Park. (OSPA) (%)	Pavecon		Cross Sec. (C/S)	Buff. Width (BW) (ft)	Tree Spcg. in Buffer (ft/ctr)	% with Sidewalk	Swalk Width (Ws) (ft)	Grates	Bicycle LOS		Pedestrian LOS	
						Th #	Con				W _t (ft)	W _i (ft)	W _{ps} (ft)			PC _t (1..5)	PC _i (1..5)							Score (0...7)	Grade (A...F)	Value (0...7)	Grade (A...F)
						49.0	Ridge Rd				W of Hudson Ave	Carter St	0.39			EB	4							S	14,861	2	35
49.0	Ridge Rd	W of Hudson Ave	Carter St	0.39	WB	4	S	14,861	2	35	11.0	0.0	0.0	52.0	0	3.5	-	C	0.0	0	100	5.5	Y	4.20	D	3.14	C
50.0	Ridge Rd	Carter St	Portland Ave	0.39	EB	4	S	14,861	2	35	11.0	0.0	0.0	52.0	0	3.5	-	C	0.0	0	100	5.5	Y	4.20	D	3.14	C
50.0	Ridge Rd	Carter St	Portland Ave	0.39	WB	4	S	14,861	2	35	11.0	0.0	0.0	52.0	0	3.5	-	C	3.0	0	100	5.5	Y	4.20	D	3.03	C
51.0	Ridge Rd	Portland Ave	Kings Hwy	0.40	EB	4	S	14,861	2	35	11.0	0.0	0.0	52.0	0	3.5	-	C	0.0	0	100	5.5	Y	4.40	D	3.41	C
51.0	Ridge Rd	Portland Ave	Kings Hwy	0.40	WB	4	S	14,861	2	35	11.0	0.0	0.0	52.0	0	3.5	-	C	0.0	0	100	5.5	Y	4.40	D	3.41	C
52.0	Ridge Rd	Kings Hwy	Culver Rd	0.82	EB	4	S	14,861	3	35	11.0	0.0	0.0	52.0	0	3.5	-	C	0.0	0	100	5.5	Y	4.51	E	3.14	C
52.0	Ridge Rd	Kings Hwy	Culver Rd	0.82	WB	4	S	14,861	3	35	11.0	0.0	0.0	52.0	0	3.5	-	C	0.0	0	100	5.5	Y	4.51	E	3.14	C
53.0	Ridge Rd	Culver Rd	Wegmans	0.50	EB	4	D	4,518	2	35	10.0	0.0	0.0	22.0	0	3.0	-	C	7.0	0	100	5.0	N	3.09	C	2.31	B
53.0	Ridge Rd	Culver Rd	Wegmans	0.50	WB	4	D	4,518	2	35	11.5	0.0	0.0	23.0	0	3.0	-	C	15.0	0	100	5.0	N	2.76	C	2.05	B
54.0	Ridge Rd	Wegmans	NY 590	0.91	EB	2	D	4,518	2	35	19.0	5.0	0.0	19.0	0	3.0	3.0	C	7.0	0	100	5.0	N	1.66	B	2.36	B
54.0	Ridge Rd	Wegmans	NY 590	0.91	WB	2	D	4,518	2	35	22.0	6.0	0.0	22.0	0	3.0	3.0	C	7.0	0	100	5.5	N	0.62	A	2.25	B
55.0	Ridge Rd	NY 104	Bayshore Blvd	0.00	EB	2	U		2	35	12.0	0.0	0.0	24.0	0	5.0	-	C	10.0	0	100	5.0	N	err	err	err	err
55.0	Ridge Rd	NY 104	Bayshore Blvd	0.00	WB	2	U		2	35	12.0	0.0	0.0	24.0	0	5.0	-	C	10.0	0	100	5.0	N	err	err	err	err
56.0	Titus Ave	St. Paul Blvd	Seneca Ave	0.20	EB	2	S	10,254	2	35	14.5	4.0	0.0	40.0	0	3.5	3.5	C	5.5	0	100	5.0	Y	3.41	C	3.26	C
56.0	Titus Ave	St. Paul Blvd	Seneca Ave	0.20	WB	2	S	10,254	2	35	14.5	4.0	0.0	40.0	0	3.5	3.5	C	5.5	0	100	5.0	Y	3.41	C	3.26	C
57.0	Titus Ave	Seneca Ave	Hudson Ave	0.39	EB	2	S	10,254	2	35	16.5	6.0	0.0	44.0	0	3.5	3.5	C	4.0	0	100	5.0	Y	2.63	C	3.25	C
57.0	Titus Ave	Seneca Ave	Hudson Ave	0.39	WB	2	S	10,254	2	35	16.5	6.0	0.0	44.0	0	3.5	3.5	C	5.0	0	100	5.0	Y	2.63	C	3.23	C
58.0	Titus Ave	Hudson Ave	Cooper Rd	0.13	EB	2	S	10,254	2	35	10.0	0.0	0.0	44.0	0	3.5	-	C	4.0	0	100	5.0	Y	4.56	E	3.45	C
58.0	Titus Ave	Hudson Ave	Cooper Rd	0.13	WB	2	S	10,254	2	35	10.0	0.0	0.0	44.0	0	3.5	-	C	4.0	0	100	7.0	Y	4.56	E	3.30	C
59.0	Titus Ave	Cooper Rd	Portland Ave	0.64	EB	2	S	10,254	2	35	16.0	5.0	0.0	44.5	0	3.5	3.5	C	3.5	0	100	5.0	Y	2.94	C	3.27	C
59.0	Titus Ave	Cooper Rd	Portland Ave	0.64	WB	2	S	10,254	2	35	16.0	5.0	0.0	44.5	0	3.5	3.5	C	3.5	0	70	5.0	Y	2.94	C	3.63	D
60.0	Titus Ave	Portland Ave	Kings Hwy	0.27	EB	2	S	10,254	2	35	16.0	5.0	0.0	44.5	0	3.5	3.5	C	20.0	75	100	5.0	Y	2.94	C	2.45	B
60.0	Titus Ave	Portland Ave	Kings Hwy	0.27	WB	2	S	10,254	2	35	16.0	5.0	0.0	44.5	0	3.5	3.5	C	0.0	0	0	0.0	Y	2.94	C	4.46	D
61.0	Titus Ave	Kings Hwy	Bouckhart Ave	0.36	EB	2	U	10,254	2	35	18.0	7.0	0.0	36.0	0	2.5	2.5	C	0.0	0	0	0.0	Y	2.59	C	4.32	D
61.0	Titus Ave	Kings Hwy	Bouckhart Ave	0.36	WB	2	U	10,254	2	35	18.0	7.0	0.0	36.0	0	2.5	2.5	C	4.5	0	100	5.0	Y	2.59	C	3.19	C
62.0	Titus Ave	Bouckhart Ave	Larkspur Ln	0.21	EB	2	S	10,254	2	35	14.0	0.0	0.0	40.0	0	2.5	-	C	0.0	0	0	0.0	Y	4.65	E	4.62	E
62.0	Titus Ave	Bouckhart Ave	Larkspur Ln	0.21	WB	2	S	10,254	2	35	14.0	0.0	0.0	40.0	0	2.5	-	C	4.0	0	100	5.0	Y	4.65	E	3.32	C
63.0	Titus Ave	Larkspur Ln	Whipple Ln	0.19	EB	2	U	10,254	2	35	18.0	7.0	0.0	36.0	0	3.0	3.0	C	0.0	0	0	0.0	Y	2.23	B	4.32	D
63.0	Titus Ave	Larkspur Ln	Whipple Ln	0.19	WB	2	U	10,254	2	35	18.0	7.0	0.0	36.0	0	3.0	3.0	C	4.0	0	100	5.0	Y	2.23	B	3.20	C
64.0	Titus Ave	Whipple Ln	Culver Rd	0.27	EB	2	S	10,254	2	35	13.5	0.0	0.0	39.0	0	3.0	-	C	0.0	0	0	0.0	Y	4.35	D	4.67	E
64.0	Titus Ave	Whipple Ln	Culver Rd	0.27	WB	2	S	10,254	2	35	13.5	0.0	0.0	39.0	0	3.0	-	C	4.5	0	100	5.0	Y	4.35	D	3.32	C



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						Th #	Con				W _t (ft)	W _i (ft)	W _{ps} (ft)			PC _t (1..5)	PC _i (1..5)							Score (0...7)	Grade (A...F)	Value (0...7)	Grade (A...F)
						65.0	Titus Ave				Culver Rd	Seabreeze Dr	0.53			EB	2							U	10,254	2	35
65.0	Titus Ave	Culver Rd	Seabreeze Dr	0.53	WB	2	U	10,254	2	35	13.5	3.0	0.0	27.5	0	2.5	2.5	C	3.0	0	100	5.0	Y	4.29	D	3.37	C
66.0	Seneca Rd	Culver St	Seabreeze Dr	0.55	EB	2	U		2	35	12.5	2.0	0.0	25.0	0	3.5	3.5	S	0.0	0	0	0.0	N	err	err	err	err
66.0	Seneca Rd	Culver St	Seabreeze Dr	0.55	WB	2	U		2	35	12.5	2.0	0.0	25.0	0	3.5	3.5	S	4.0	0	100	5.0	N	err	err	err	err
67.0	Seneca Rd	Seabreeze Dr	end	0.53	EB	2	U		2	35	12.5	0.0	0.0	25.0	0	4.0	-	S	0.0	0	0	0.0	N	err	err	err	err
67.0	Seneca Rd	Seabreeze Dr	end	0.53	WB	2	U		2	35	12.5	0.0	0.0	25.0	0	4.0	-	S	0.0	0	0	0.0	N	err	err	err	err
68.0	Seneca Park Ave	St. Joseph St	St. Paul Ave	0.00	EB	2	U		2	35	10.0	0.0	0.0	20.0	0	3.5	-	S	0.0	0	0	0.0	N	err	err	err	err
68.0	Seneca Park Ave	St. Joseph St	St. Paul Ave	0.00	WB	2	U		2	35	10.0	0.0	0.0	20.0	0	3.5	-	S	0.0	0	0	0.0	N	err	err	err	err
69.0	Pinegrove Ave	St. Paul Blvd	Town Line	2.80	EB	2	U		2	30	10.0	0.0	0.0	20.0	0	3.5	-	S	0.0	0	0	0.0	N	err	err	err	err
69.0	Pinegrove Ave	St. Paul Blvd	Town Line	2.80	WB	2	U		2	30	10.0	0.0	0.0	20.0	0	3.5	-	S	5.0	0	75	4.5	N	err	err	err	err
70.0	Colebrook Dr	St. Paul Blvd	Lakeshore Blvd	0.98	EB	2	U		2	35	13.0	0.0	0.0	26.0	0	3.0	-	S	9.5	0	30	5.0	N	err	err	err	err
70.0	Colebrook Dr	St. Paul Blvd	Lakeshore Blvd	0.98	WB	2	U		2	35	13.0	0.0	0.0	26.0	0	3.0	-	S	6.0	0	90	5.0	N	err	err	err	err
71.0	Pattonwood Dr	City Line	Thomas Ave	0.06	EB	4	U	16,440	2	35	15.5	5.0	0.0	53.0	0	4.0	4.0	C	0.0	0	100	6.5	N	2.54	C	3.02	C
71.0	Pattonwood Dr	City Line	Thomas Ave	0.06	WB	4	U	16,440	2	35	15.5	5.0	0.0	53.0	0	4.0	4.0	C	0.0	0	100	6.5	N	2.54	C	3.02	C
72.0	Pattonwood Dr	Thomas Ave	Marina Dr	0.14	EB	4	S	8,812	2	35	16.0	5.0	0.0	64.0	0	4.0	4.0	C	4.5	0	100	5.0	Y	2.16	B	2.49	B
72.0	Pattonwood Dr	Thomas Ave	Marina Dr	0.14	WB	4	S	8,812	2	35	16.0	5.0	0.0	64.0	0	4.0	4.0	C	4.5	0	100	5.0	Y	2.16	B	2.49	B
73.0	Pattonwood Dr	Marina Dr	St. Paul Blvd	0.43	EB	2	U	8,812	2	35	19.0	8.0	0.0	38.0	0	3.5	3.5	C	8.0	0	100	5.0	Y	1.43	A	2.90	C
73.0	Pattonwood Dr	Marina Dr	St. Paul Blvd	0.43	WB	2	U	8,812	2	35	19.0	8.0	0.0	38.0	0	3.5	3.5	C	8.0	0	100	5.0	Y	1.43	A	2.90	C
74.0	Lakeshore Blvd	St. Paul Blvd	Town Line	1.30	EB	2	S	7,132	2	35	15.5	4.5	0.0	43.0	0	4.0	3.0	S	22.0	0	90	5.0	N	2.76	C	2.61	C
74.0	Lakeshore Blvd	St. Paul Blvd	Town Line	1.30	WB	2	S	7,132	2	35	15.5	4.5	0.0	43.0	0	4.0	3.0	S	15.0	0	100	5.0	N	2.76	C	2.59	C
75.0	Durand Blvd	Culver Rd	NY 590	0.15	EB	2	U	1,399	2	35	12.0	0.0	0.0	24.0	0	3.0	-	C	0.0	0	0	0.0	N	1.90	B	3.05	C
75.0	Durand Blvd	Culver Rd	NY 590	0.15	WB	2	U	1,399	2	35	12.0	0.0	0.0	24.0	0	3.0	-	C	2.0	0	100	5.0	N	1.90	B	2.30	B



APPENDIX E:

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	\$2,340	\$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 budgeting purposes only. Unit costs should be checked prior to estimating.

NYS DOT Quick Estimator Reference - Calculations - Upstate

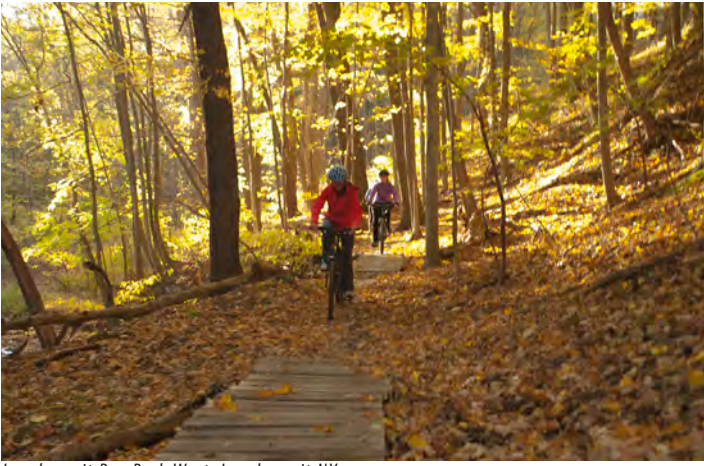
Item	Unit	Unit Price	Included NYS DOT item numbers	Breakdown	Note
4' wide sidewalk	LF	33.00	608.0101 - CONCRETE SIDEWALKS AND DRIVEWAYS 203.02 - UNCLASSIFIED EXCAVATION AND DISPOSAL 304.12 - SUBBASE COURSE TYPE II	ITEM 608.0101 \$23/LF ITEM 203.02 \$5/LF ITEM 304.12 \$5/LF	Includes excavation, disposal, 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 adjacent 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: NYS DOT Quick Estimator Reference is for conceptual budgeting purposes only. Unit costs should be checked prior to estimating. Last updated: 06/11/2012



APPENDIX F:

COMMUNITY IMPACTS OF TRAILS



Irondequoit Bay Park West, Irondequoit NY



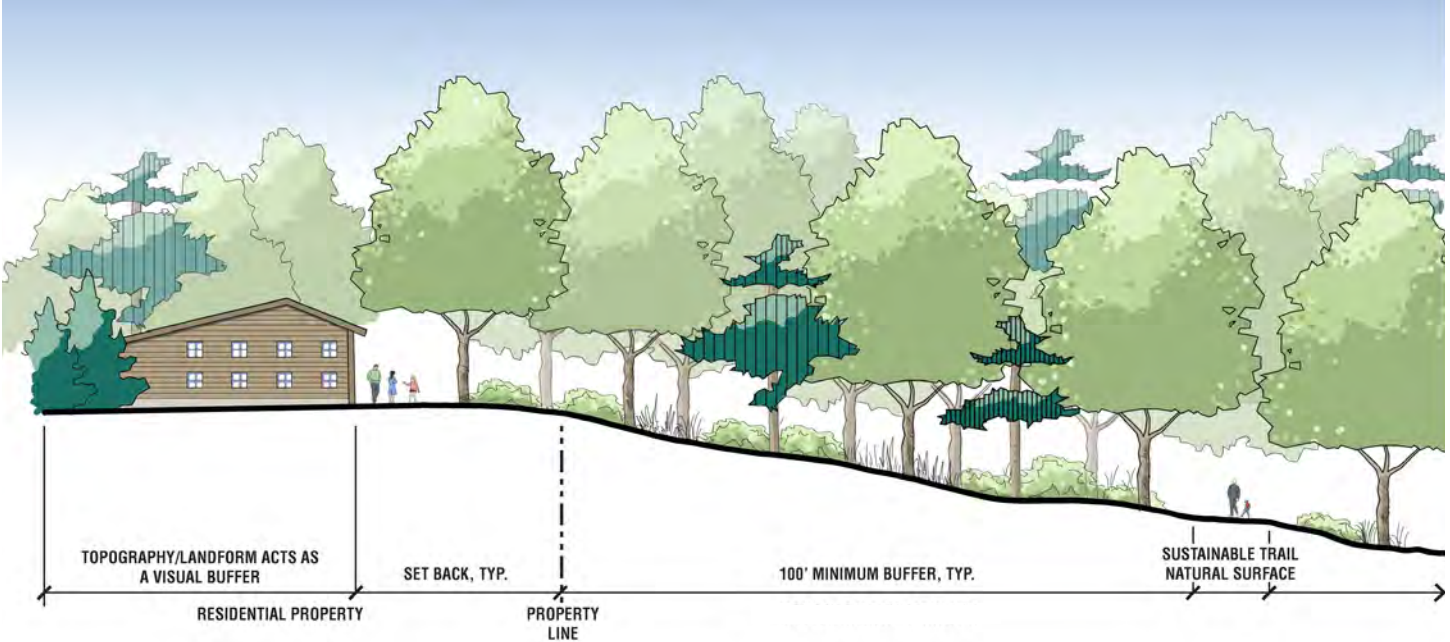
Erie Canalway Trail, Brighton NY



El Camino Trail, Rochester NY



Corbetts Glen, Brighton NY



COMMUNITY IMPACT OF TRAILS

Understanding the impact of public trails

Prepared by Barton & Loguidice, DPC

STUDIES OF EXISTING TRAILS AND SHARED USE PATHS

<https://linkingtheloop.files.wordpress.com/2014/08/studies-of-existing-trails-crime-and-properties-value.pdf>

Source: Multiple

Subject: Trail Safety and Real Estate Values

Findings: "There are many misconceptions about the safety of bicycle paths/trails and their relationship to property values/the real estate market. Below is a collection of excerpts from various resources that provide information on the often-misunderstood nature of bicycle paths/trails and their effect on the community."

Figure 1: Comparison of Major Crime Rates between Rail Trails and the Nation (rates per 100,000 population, Source: Rails to Trails Conservancy

CRIME	URBAN		SUBURBAN		RURAL	
	1995 National ¹	Rail-Trails ²	1995 National ¹	Rail-Trails ²	1995 National ¹	Rail-Trails ²
Mugging	335	0.53	102	0.00	19	0.00
Assault	531	0.58	293	0.02	203	0.01
Forcible Rape	43	0.04	29	0.00	26	0.01
Murder	11	0.04	4	0.01	5	9.01

1. Rates per 100,000 Population. FBI Uniform Crime Reports for 1995.

2. Rates per 100,000 users, RTC survey results.

THE CORRELATION OF NATURE TRAILS AND CRIME

<http://www.parkpride.org/get-involved/community-programs/park-visioning/content/correlationbetweennaturetrailsandcrime.pdf>

Source: Multiple

Subject: Trail Safety and Real Estate Values

Findings:

- "The results showed that in most incidences the trails were perceived to be positive to both quality of life and property value.
- Single family home residents adjacent to a trail: 29% believed that the location of the trail would increase selling price, 7% felt that the trail would make the home easier to sell, 57% of these residents lived in their homes prior to construction of the trail, 29% of those surveyed were positively influenced by the trail in their decision to buy the home
- Town homes, apartments, and condominium residents: 0% thought the trail would decrease selling price, 42% thought it would increase the selling price.

NEIGHBORHOODS AND TRAILS: WHY TRAILS?

<http://www.sfct.org/trails/neighborhoods>

Source: Santa Fe Conservation Trust

Subject: Crime, Privacy and Noise, Property Values, Ecological Destruction, Habitat Degradation, Land Acquisition and Property Rights

Findings:

- "Burglary near trails was extremely rare, more so than other crimes. Only 4 burglaries were reported in homes adjacent to 7,000 miles of rail trails in 1996 and 3 of those 4 were reported in rural areas. There's no evidence that these 4 crimes were a result of the nearby trail."
- "In Santa Rosa (California), a similar survey found that 64% of the residents near a trail felt their quality of life had improved; 33% said their home would be easier to sell while the remainder felt the trail had no effect on values." [Webel, 2007 using data collected in 1992]
- "A careful count of bird species along urban and rural rail trails showed no significant difference. Generally, there were more birds in woody urban and rural areas in spring and summer and more birds near urban trails in the fall and winter. [Poague, 2000]
- "For example, a release from liability can be useful, but homeowners and agency administrators may be reluctant to sign anything. Municipal "umbrella" policies are helpful and claims virtually unknown." [Eyler, 2008, p. 423]

RAIL-TRAILS AND SAFE COMMUNITIES

http://safety.fhwa.dot.gov/ped_bike/docs/rt_safecomm.pdf

Source: Rails-to-Trails Conservancy

Subject: Economic Impacts of Trails

Findings: "The trail has not caused any increase in the amount of crimes reported and the few reported incidents are minor in nature...We have found that the trail brings in so many people that it has actually led to a decrease in problems we formerly encountered such as underage drinking along the river banks. The increased presence of people on the trail has contributed to this problem being reduced." [Charles R. Tennant, Chief of Police, Elizabeth Township, Buena Vista, PA]

Figure 2: Comparison of Incidence Rate of Minor Crimes on Rail-Trails to U.S. Crime Rates & Percentages of Trails Reporting Types of Crime in 1995

CRIME	URBAN		SUBURBAN		RURAL	
	National ¹	Rail-Trails ²	National ¹	Rail-Trails ²	National ¹	Rail-Trails ²
Burglary	1,117	0.00%	820	0.01%	687	0.01%
Trespassing	N/A	5%	N/A	3%	N/A	4%
Graffiti	N/A	26%	N/A	17%	N/A	12%
Littering	N/A	24%	N/A	24%	N/A	25%
Sign Damage	N/A	22%	N/A	22%	N/A	23%
Motorized Use	N/A	18%	N/A	14%	N/A	23%

1. Rates per 100,000 Population. FBI Uniform Crime Reports for 1995 for burglary.

2. Rates per 100,000 users, RTC survey results for burglary. Results for other crime types reported as percentage of trails experiencing that type of crime.

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:

- “Home sales were examined in the seven Massachusetts towns through which the Minuteman Bike way 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 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 NEAR RAIL TRAILS

TOWN	NO. OF PROPERTIES SOLD	AVERAGE LIST PRICE	AVERAGE SALE PRICE	RATIO OF SALE TO LIST	DAYS ON 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	8.1%	50.4

- “Realizing the selling power of greenways, developers of the Sheperd’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 sale price was 11 percent higher than for all homes that sold in 1999,” [Public Choices and Property Values: Evidence from Greenways 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 neighborhoods 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.]



APPENDIX G:

BICYCLE AND PEDESTRIAN FACILITY DESIGN FLEXIBILITY (FEDERAL HIGHWAY ADMINISTRATION - FHWA)

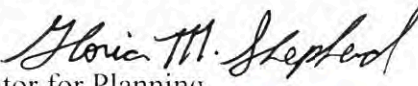


U.S. Department
of Transportation
**Federal Highway
Administration**

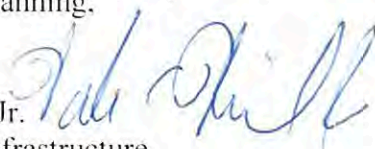
Memorandum


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 
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



APPENDIX H:

BICYCLE AND PEDESTRIAN SUPPORTIVE CODE LANGUAGE

TECHNICAL MEMORANDUM

TO: Interested Parties
FROM: Robert Torzynski, AICP
Program Manager – Bicycle & Pedestrian Planning
DATE: July 27, 2007
RE: Bicycle & Pedestrian Supportive Code Language (UPWP Task 5510)

Introduction

Local zoning codes, community design guidelines, and site planning requirements (local codes) can significantly affect the accessibility, safety, and attractiveness of development for bicyclists and pedestrians. Site plan elements, presence of sidewalks, building orientation, parking supply, and parking layout can affect the attractiveness of bicycling and walking as modes of travel. Likewise, connectivity between adjacent properties can also be influenced through local code requirements.

The objective of the Bicycle and Pedestrian Supportive Code Language project was to develop information on and identify examples of noteworthy zoning code and site planning language and guidance that enhances accessibility and safety for bicyclists and pedestrians. The project is a joint effort between the Genesee Transportation Council (GTC) and the Genesee/Finger Lakes Regional Planning Council (G/FLRPC). Staff researched and assessed materials previously compiled by G/FLRPC including, but not limited to, comprehensive plans, zoning regulations, and site planning guidance. Project research also assessed codes and associated materials available from national- and state-level agencies and associations such as the Federal Highway Administration, New York State Department of State, the American Planning Association, and municipalities located within New York State.

Project Methodology

GTC staff surveyed county planning departments in the nine-county Genesee-Finger Lakes region to identify those topics related to supporting bicyclists and pedestrians that could be addressed within the scope of the project. The survey identified the following key areas: 1) sidewalk requirements adjacent to new and existing development, 2) bicycle parking requirements, and 3) automobile parking design. Within the identified key areas, research was conducted and relevant codes obtained through the G/FLRPC library and internet-based resources. Fact sheets and presentation materials were developed to provide examples that may be considered by jurisdictions that seek to improve bicycle and pedestrian safety, access, and attractiveness within the community.

Background

In New York State, land use is regulated predominantly at the local level pursuant to the State's Consolidated Laws. These include the General City Law, General Municipal Law, Municipal Home Rule Law, Town Law, and Village Law. The Consolidated Laws provides a wide variety of tools

that local governments can utilize to improve the transportation system for pedestrians and bicyclists.

The study scope is limited to code language such as local zoning ordinances, site plan review guidelines, and subdivision ordinances. Many communities include bicycle and pedestrian related policies within local comprehensive plans; however, specific code examples are less often available although essential to implementing policy. One town's formally-adopted sidewalk policy has been included because it provides a direct link between exemplary policy and the implementing code. Study examples are limited to New York State jurisdictions to ensure consistency with the enabling provisions included in the State's Consolidated Laws. The study is not presented as legal analysis however; it is instead intended to provide a resource for communities that may wish to assess suitability toward local conditions and needs.

Key Findings

Based on the survey results and project research, five key findings emerge as areas where communities might consider revisions to land use codes to support bicycle and pedestrian travel. These include:

- Require that developers include sidewalks within residential subdivisions;
- Work to infill gaps in the existing sidewalk network within each community;
- Ensure that bicycle parking is provided within new commercial development;
- Improve the integration of pedestrian facilities within automobile parking lots; and
- Locate buildings to the front of lot lines and parking toward the rear in order to support pedestrian access to the site.

None of the measures are a panacea, and few if any of the communities studied include all the measures throughout their land use regulations. However, each approach has been used by municipalities within New York State and the implementation of one or all of the measures described below could provide tangible benefits to local communities seeking to improve conditions for motorists, bicyclists, and pedestrians.

A. Sidewalks Adjacent to New Residential Development

1. Background

Every trip begins and ends with a walking trip. Providing sidewalks adjacent to new development is one way that communities can improve mobility for all users including the elderly, the young, people with disabilities, and others without access to an automobile. Sidewalks can improve pedestrian safety and convenience by providing a firm, stable, and slip resistant surface separate from the roadway.

The determination of whether or not sidewalks should be provided adjacent to new development depends on the roadway classification and the proposed land use which influences the number of pedestrian trips that will occur. The Federal Highway Administration (FHWA) recommendations range from paved shoulders (typically, three-foot minimum width for rural highways with less than 400 average daily vehicle trips) to sidewalks on both sides of the street (typically, five-foot minimum width) for commercial urban streets.

FHWA guidelines represent standard practice where high intensity land use warrants sidewalks as a safety measure and in low density rural areas where paved roadway shoulders comprise adequate facilities. However, at medium residential densities near FHWA's threshold of four dwelling units per acre there appear to be opportunities for communities that may wish to improve local pedestrian facilities by requiring that sidewalks be provided adjacent to new residential development regardless of roadway classification and the proposed land use.

Residential subdivisions comprise a significant land use in many communities and have the potential to generate a considerable number of pedestrian trips. In addition to improved pedestrian safety, providing sidewalks to serve residential neighborhoods facilitates access to nearby parks, schools, and commercial activity centers and promotes public health through daily physical activity.

2. How it's done

Communities that seek to provide sidewalks adjacent to new residential development can utilize several approaches, including:

- Sidewalk requirements based on residential density (i.e., per FHWA Guidelines);
- Requirements based on the roadway's functional classification;
- Sidewalk requirements based on adjacent land use; and
- Policy-based requirements.

3. Examples

Requirements based on residential density: the Town of Malta (Code Chapter 143-13.1, Subdivision of Land) requires sidewalks to be provided within all new residential and commercial projects within the Town. The code specifies that the sidewalk shall have a minimum width of five feet and be constructed of concrete designed to serve pedestrians. The code's requirements go on to state that for residential development with more than four units per acre sidewalks shall be required on both sides of the roadway and are required on one side only when the density of development is less than four units per acre. These density-based requirements are consistent with FHWA guidelines.

Requirements based on the roadway's functional classification: the Town of Rhinebeck (Land Subdivision Regulations Article VI, Section 2, Subdivision Design Standards) requires that all streets designated as through roads shall be provided a pedestrian path, sidewalk, or bikeway on at least one side of the street. Sidewalks, if provided, must include a four-foot buffer between the sidewalk and the street. Bikeways (combined bicyclist/pedestrian paths) must also meet this buffer requirement and be at least four-feet in width. Similar requirements apply within the Town of Bethel (applicable to collectors and arterial roads). Sidewalks can also be required based on the ownership of the road. This approach is followed by the Town of Guilderland which requires sidewalks on both sides of all state and county roads wherever properties abutting such roads have access to municipal waterlines (unless adjacent to agriculturally zoned property).

Sidewalk requirements based on nearby land use: the Town of Perinton (Code Section 208-28) requires that sidewalks or pedestrian ways shall be constructed along lands fronting both sides of collector or arterial street(s), within Pedestrian (PED) Zones as shown on the

Town of Perinton's Official PED Map. A "PED Zone" is defined as land within a 4,000-foot radius of the central point of a public school, public park, or active commercial area.

Policy-based requirements: the Town of Penfield has adopted a Sidewalk Policy that requires all new development approved by the Town to include sidewalks along both sides of all local roads. Developers may seek a waiver from the policy subject to the payment of a \$500 per dwelling unit fee placed in the sidewalk capital account specifically for the installation of sidewalks in locations identified by the Town Board.

4. Summary

There are several options available to communities that wish to provide sidewalks adjacent to new residential development and/or support the development of "complete streets" within these areas. Code language linked to roadway classification and adjacent land use may support pedestrian travel between neighborhoods (along collector roads to and from schools and local shopping centers, etc.) but is unlikely to support improved pedestrian facilities along local streets unless local streets are included in the requirements.

Two options that might also be considered by jurisdictions seeking to improve pedestrian accessibility include providing between-lot pedestrian easements to connect residences with parks, schools, neighborhood shopping facilities, and similar destinations and limiting the length of cul-de-sacs to provide more direct pedestrian access between destinations.

B. Sidewalks Adjacent to Existing Development

1. Background

In many communities there are gaps within the existing sidewalk network. These result when new development includes sidewalks but the development site is not located adjacent to the existing sidewalk network with the number of gaps increasing over time. Communities have several options to consider if they wish to complete the existing sidewalk network for residents and visitors.

2. How it's done

Local communities can provide sidewalks adjacent to existing development using the following techniques:

- Sidewalks constructed at the property owner's expense;
- Sidewalks constructed at the municipality's expense;
- Sidewalks constructed following petition by the affected property owners; and
- Comprehensive sidewalk policy.

3. Examples

Sidewalks constructed at the property owner's expense: the Town of Ithaca (Code Section 230-8, Streets & Sidewalks) provides that the Town Board may require that sidewalks be constructed along streets and highways at the owner's expense. The code includes language to authorize the Town to construct the facility and then to assess the owner for the cost, plus any interest. The code allows but does not require the Town to pay some portion of the cost pursuant to an adopted local law.

Sidewalks constructed at the municipality's expense: the Town of Mamaroneck (Code Section 187-2, Streets & Sidewalks) authorizes the Town Board to direct the Town

Superintendent to construct sidewalks along county roads and state highways (with permission from county or state officials) at Town expense. Sidewalks along town roads are the responsibility of, and must be voluntarily constructed by, the property owner at their own expense.

Sidewalks constructed following petition by affected property owners: the Town of Union (Code Chapter 178-1, Streets and Sidewalks) adopted a regulation in 1946 that creates a mechanism for property owners to request sidewalks along their side of the street. When 51 percent of the property owners request the sidewalk, its construction becomes mandatory. The Town acts as agent for the construction and the property owners are required to pay all costs.

Comprehensive sidewalk policy: The Town of Penfield Sidewalk Policy applies to new development and also to existing development. This policy articulates the Town's intent to "Install sidewalks along all Minor Arterial, Major Collector and Minor Collector roads to develop safe pedestrian mobility and enjoyment." These roadways comprise what is referred to as the primary sidewalk system. The installation of sidewalks along the primary sidewalk system is supported by the allocation of funds from the Town's General Fund, by grants, and by the sidewalk waiver fees paid when an exemption to the sidewalk requirement for new development is granted.

This policy is further supported by an officially adopted "Primary Sidewalk System Map" that identifies the improvements that will be made on an annual basis, as resources permit.

4. Summary

Local jurisdictions may wish to consider developing specific codes and/or policies that address the process and financial details that will apply if they seek to improve the existing sidewalk system.

Mandating that property owners pay for the installation of sidewalks may not be well received, and even a petition-based process could create hard feelings between neighbors depending on individual positions on the issue.

For these reasons, a policy-based approach that identifies and funds specific sidewalk improvements adjacent to existing development linked to a requirement that new development provide sidewalks or pay a fee that can be allocated for the construction of sidewalks adjacent to existing development (such as the Penfield example cited above) may represent a workable approach to improving the existing sidewalk system.

C. Bicycle Parking

1. Background

Bicyclists need places to park and secure their bicycles upon reaching their destination. Lacking designated facilities, bicyclists will use trees, utility poles, parking meters, railings, and street furniture to secure their bicycles. Doing so may cause damage to the bike or to the ad-hoc bike racks and may also result in inconvenience and potential danger (such as tripping hazards) to non-cyclists. Lack of bicycle parking facilities discourages bicycling by cyclists who may feel uncomfortable locking bicycles to non-designated facilities.

In order to avoid the undesirable effects associated with ad-hoc bike racks, bicycle parking facilities can be provided at activity centers that are accessible by bike. Bicycle parking facilities should be convenient, safe, secure, and protected from inclement weather. At a

minimum, well-designed racks should be provided and, depending on the need, enclosed bike lockers located within covered parking structures may be considered.

2. How it's done

Communities can provide adequate bicycle parking in the following ways:

- Allocate an identified percentage of off-street parking for bicycle parking;
- Incorporate general bicycle parking provisions in the off-street parking regulations; and
- Implement flexible bicycle parking requirements via the Planning Board.

3. Examples

Allocate an identified percentage of off-street parking for bicycle parking: the City of Rochester Charter and Code (Chapter 120-173, Off-Street Parking) requires that bicycle parking equal to 10 percent of the vehicle parking requirements for the property (for a minimum of two bicycles) be provided at all multifamily housing (over 10 units), commercial, and industrial uses. An additional requirement is that bicycle parking be located and clearly designated in a safe and convenient location, at least as convenient as the majority of auto spaces provided and that facilities are designed to accommodate U-shaped locking devices and support bicycles in a stable position without damage to wheels, frame, or other components. The facilities are required to be securely anchored and of sufficient strength to resist vandalism and theft.

Incorporate general bicycle parking provisions in the off-street parking regulations: the Town of Warwick (Zoning Ordinance Section 164.43.2, Off-Street Parking and Loading Requirements) requires that pedestrian and bicycle amenities such as benches, shade, human-scale lighting, and bicycle racks be provided for parking lots meeting specific requirements.

Implement flexible requirements via the Planning Board: the Town of Red Hook (Zoning Ordinance Section 143-116) includes a provision in its site plan design criteria that facilities be provided, where deemed applicable by the Planning Board, for the short-term parking of bicycles.

4. Summary

In communities with ongoing commercial, multi-family, and industrial development, a percentage-based approach could be considered to ensure that bicycle accommodations are provided for new development. Those communities that prefer additional flexibility or wish to defer the decision to the Planning Board and/or site plan review process may want to consider more general code language that would allow but not require the provision of bicycle facilities on a case-by-case basis.

D. Automobile Parking to Include Pedestrian Accommodations

1. Background

Providing convenient parking for motorists adjacent to retail and other establishments is typically addressed through a municipality's off-street parking requirements. These requirements, within the zoning code, provide dimensions for automobile parking spaces and specify the number of automobile parking spaces required for each land use. In some

cases, a general acknowledgement that pedestrians be considered during the design review for the parking facility is included within the off-street parking requirements. In other cases, however, pedestrians are not considered during the design review for parking lots and the resulting facilities are difficult to cross, creating barriers to pedestrian travel that could be resolved with improved design.

2. How it's done

Local jurisdictions may consider the following options if they wish to include pedestrian accommodations within off-street parking facilities:

- Specific requirements within off-street parking code language; and
- Flexible requirements based on the Planning Board's determination.

3. Examples

Specific requirements within off-street parking code language: the Town of Warwick (Zoning Ordinance Section 164.43.2, Off-Street Parking and Loading Requirements) includes specific requirements for parking lot design that improve the environment for pedestrians by: 1) breaking up large parking lots into smaller parking groves and parking courts with a significant number of shade trees and surrounded by low hedges, stone walls, or attractive fencing; 2) encouraging designs that avoid placing more than 15 parking spaces in a continuous row and more than 60 spaces in any single parking area as defined by landscaping; 3) promoting landscaping that delineates vehicular and pedestrian patterns; 4) providing clear and legible signs, different color and texture paving materials, raised or inverted areas, and other techniques to direct the flow of both vehicular and pedestrian traffic within the lot; and 5) providing separate pedestrian walkways in large parking lots to allow safe movement within the lots.

Additional design criteria specify that: 1) One walkway can serve as a collector for up to four bays of parked cars; 2) the walkway should be a minimum of four-feet wide, allowing an additional 30 inches on each side for overhanging of automobiles; 3) all walkways should be raised to a standard sidewalk height and should be constructed of different paving material than the parking lot; and 4) pedestrian and bicycle amenities such as benches, shade, human-scale lighting, and bicycle racks should be provided.

Flexible requirements based on the Planning Board's determination: the Town of Malta (Zoning Ordinance Chapter 167, Site Plan) provides that the Planning Board shall consider the maximum adequacy of interior circulation in parking and loading facilities with particular attention to vehicular and pedestrian safety.

4. Summary

Communities that wish to promote pedestrian and bicycle-sensitive parking lot design can do so by including the desired design elements within their off-street parking code language. Doing so will provide developers with examples of expected design features at an early stage in the site planning process. For communities that prefer a more flexible approach, the Planning Board can be directed and/or authorized to consider pedestrian safety within the design/site plan review process.

E. Automobile Parking Site Location

1. Background

The location of automobile parking facilities with respect to buildings on a commercial development site can have a significant effect on the viability of pedestrian access to and from the site. When the buildings are located near the rear lot line and the parking facilities are located between the front of the building and the street, pedestrians may be forced to walk through the parking lot to access the buildings from the public right of way. This creates a potential for conflict between motorists and pedestrians that can be reduced by locating parking lots to the rear of buildings and locating buildings adjacent to the street with minimal setback.

Additionally, locating buildings near the street provides a sense of enclosure to the streetscape and provides merchants the opportunity for exposure to passersby that is lost when buildings are set behind parking facilities.

2. How it's done

The location of parking facilities on a site can be controlled directly by:

- Parking to the side or rear of the primary use included within design criteria; and
- Parking to the side or rear of the primary use and on the same lot.

3. Example

Parking to the side or rear of the primary use included within design criteria: the City of Batavia (Code Section 190-39, Parking requirements) "seeks to balance the need for adequate parking with the need to minimize harm resulting from the provision of parking and to avoid the negative impacts of excessive parking requirements." In seeking that balance, the code requires that all off-street parking be located behind or to the side of the principal building. In order to provide limited amounts of parking in front of buildings, a maximum of two rows of parking may be located in the front of a principal building in a C-2 District. The code language also specifies that parking areas shall be designed and landscaped to avoid long, uninterrupted rows of vehicles.

Parking to the side or rear of the primary use and on the same lot: the City of Lackawanna (Code Section 230-36, Parking, loading and stacking) requires that off-street parking be located on the same lot as the building to which it is an accessory use. The code further requires that all off-street parking facilities shall be located to the side or rear of the principal use building except in the Central Business District, where off-street parking shall be restricted to the rear yard.

4. Summary

Communities can direct parking to the rear of development sites and thereby support pedestrian utilization of commercial facilities located within their jurisdiction. Since parking lot and building location are closely interrelated, jurisdictions could also address this issue by revised building setback requirements. However, including the location criteria for the parking lot within the parking regulations allows a more unified approach to managing the

facilities by including criteria related to parking lot internal design within the same section of the zoning ordinance as parking lot location criteria.

Summary and Conclusion

This report shows that within New York State and the Genesee-Finger Lakes Region there are numerous examples of noteworthy zoning code and site planning language and guidance that enhance accessibility and safety for bicyclists and pedestrians. Exemplary codes and policies demonstrate that:

- Sidewalks can be provided adjacent to new residential developments utilizing a code-based approach (within the jurisdiction's subdivision regulations) or based on a comprehensive sidewalk policy that guides the implementation of the subdivision, site planning, and zoning ordinance.
- Providing sidewalks adjacent to existing development is challenging due to the cost and the difficulty in obtaining consensus from the affected parties. An approach based on a comprehensive sidewalk policy supported by an officially-adopted Sidewalk System Map, including a dedicated funding source and prioritization strategy, may be preferable to mandated construction at the property owners' expense adjacent to existing development.
- Bicycle facilities can be provided by including the requirements to do so within the jurisdiction's off-street parking requirements. A ratio of required automobile parking can be used, and the ordinance should include appropriate design criteria to ensure that damage to bicycles does not occur and that bicycle parking is properly located on the site.
- Designing parking lots to incorporate pedestrian-friendly features can be accomplished by "breaking up" the lot with bays and islands and by providing identifiable separation between vehicles and pedestrians on the site. These strategies should be combined with appropriate location on the site (parking lots located to the rear of the site) and can be addressed within the jurisdictions off-street parking requirements.
- The siting of parking lots toward the rear of the development site can be controlled within a jurisdiction's off-street parking requirements and should be combined with requirements to include pedestrian-friendly features within the lot to maximize the quality of the site design.

Resources:

1. Federal Highway Administration, Pedestrian Facilities Users Guide, FHWA-RD-01-102, March 2002.
2. New York State Department of State, Creating the Community You Want: Municipal Options for Land Use Control, June 1998.
3. Office of the New York State Comptroller, Division of Local Government Services & Economic Development, Smart Growth in New York State: A Discussion Paper, May 2004.
4. The Rockefeller Institute of Government, Local Governments in New York State, May 2003.

5. State of New York, Local Government Handbook, 5th Edition, January 2000.
6. Codes and Policies, as provided in Appendix A.

Appendix A

Bicycle and Pedestrian Supportive Codes and Policies Representative Examples

Sidewalks Adjacent to New Development

1. Town of Malta, New York, Code Chapter 143-13.1, Subdivision of Land:

Sidewalks.

A. General. Sidewalks shall be provided within all new residential and commercial projects within the Town.

B. Definitions. As used in this section, the following terms shall have the meanings indicated:

SIDEWALK — A walking surface with a minimum width of five feet and constructed of concrete designed to service pedestrians.

C. Requirements. (1) Sidewalks shall be required within all residential and commercial projects within the Downtown District (as defined herein) and all residential and commercial Planned Development Districts. "Downtown" shall be defined as ... (2) Sidewalks shall be installed within all residential projects under the following criteria: (a) Residential development with more than four units per acre: sidewalks shall be required on both sides of the roadway.

(b) Residential developments with fewer than four units per acre: sidewalks shall be required on one side of the roadways.

2. Town of Rhinebeck, New York, Land Subdivision Regulations Article VI, Section 2, Subdivision Design Standards:

Pedestrian Ways: Adequate provision shall be made for convenient and safe movement of pedestrians and bicyclists in any subdivision of land for residential purposes throughout the Town of Rhinebeck. All streets designated as through roads shall have an improved pedestrian path, sidewalk or bikeway provided on at least one (1) side of the street. Any such sidewalk or pedestrian path shall be so placed that there will be a distance of not less than four (4) feet between the sidewalk and the street pavement. A bikeway, or combined bicyclist/pedestrian path, not less than four (4) feet in width, may be alternatively situated adjacent the street pavement and be visually separated there from by striping on both its inner and outer edges.

To the extent considered practicable by the Planning Board, and in consideration of Public Health, safety and convenience, the Planning Board may require that additional or alternatively-located pedestrian ways be provided within a residential subdivision to provide access to parks or public spaces, school sites, neighborhood shopping facilities, or similar destination. Any such pedestrian way may be situated within either a public right-of-way or established within a suitable easement.

3. Town of Bethel, New York, Land Subdivision Regulations Chapter 116-11, Design Standards, Streets:

Streets shall be graded and improved with pavements in accordance with the minimum road specifications of the Town of Bethel, New York, as amended. Curbs and provision for sidewalks shall be required for all arterial and collector streets in accordance with the graphic standards included in this chapter.

4. Town of Guilderland, New York, Code Chapter 227-2, Sidewalks:

Required sidewalk locations.

A. Sidewalks shall be required on both sides of all state and county roads wherever properties abutting such roads have access to municipal water lines, except such roads abutting agricultural zoned property, and shall be required on any other Town road, or part thereof, by resolution of the Town Board after a public hearing, or by provision of state law.

B. On all roads other than those enumerated in § 227-2A, the Planning Board and the Zoning Board of Appeals are authorized, in their discretion, to require the installation of sidewalks, bike paths, or other pedestrian facilities as a condition of approval for property under review. The Planning Board and the Zoning Board of Appeals shall consider sidewalks, bike paths, or other pedestrian facilities as a condition of approval for property under review when said property is in proximity to schools, parks, businesses, religious institutions, existing neighborhoods, undeveloped land zoned for residential or commercial construction, existing sidewalks, or roads with the potential for high traffic volumes.

5. Town of Perinton, New York, Code Section 208-28:

Sidewalks.

A. Intent. The Town of Perinton recognizes the need to encourage and facilitate the development of a system of sidewalks for the safety of its residents along its collector and arterial streets.

B. Requirements. Sidewalks or pedestrian ways shall be constructed and an easement for maintenance of such shall be provided along lands fronting both sides of collector or arterial street(s), as defined in Chapter 182, Subdivision of Land, within Pedestrian (PED) Zones as shown on the Town of Perinton's Official PED Map, adopted July 8, 1981, and as amended. A "PED Zone" is defined as land within a four-thousand-foot radius of the central point of a public school, public park or active commercial area. The central point shall be determined by the intersection of two roads or a driveway and a road. If the four-thousand-foot radius intersects any portion of a given property, then that lot in total becomes subject to sidewalk installation. Pedestrian zones may also be linear, with the bounds of the zones set forth on the Official Town of Perinton PED Map.

The Planning Board may require the construction of sidewalks along streets not within PED Zones at its discretion, after considering the policies set forth in § 182-6 of this Code. Sidewalks defined under this section shall be constructed in conformance with the Design Criteria of the Town of Perinton. In cases where a sidewalk has been previously constructed by the Town, county or state along frontage proposed for development or subdivision approval, the applicant shall be required to make a contribution to the Sidewalk Fund as described in § 208-28E. The Planning Board may require a sidewalk contribution in lieu of construction when it determines that a constructed sidewalk will not connect with an existing sidewalk and that the contribution may be used to link or extend existing sidewalks within the Town. [Amended 6-8-1994 by L.L. No. 2-1994; 6-27-2001 by L.L. No. 5-2001]

6. Town of Penfield, New York, Sidewalk Policy:

All new development approved by the Town of Penfield is required to install sidewalks along both sides of all local roads.

Sidewalks Adjacent to Existing Development

1. Town of Ithaca, New York, Code Section 230-8, Streets & Sidewalks:

Duty to construct and maintain sidewalks. The Town Board may adopt orders from time to time, directing the owners of the respective lots and parcels of land abutting on any Town street or highway, or, with the consent of the County Superintendent of Highways or the State Commissioner of Transportation, as the case may be, abutting on a county or state highway within the Town of Ithaca, along which it is desired that sidewalks be built, relaid or repaired, to

construct the same to conform the terms of this article, and specifying the time within which the same shall be done...

Notwithstanding the foregoing, the Town Board may adopt a local law apportioning the expense of building, relaying or repairing any sidewalk within such Town between the Town and owners of the respective lots and parcels of land abutting any street or county or state highway within the Town along which it is desired that sidewalks be built, relaid or repaired.

2. Town of Mamaroneck, New York, Code Section 187-2, Streets & Sidewalks:

Construction of sidewalks along county roads or state highways.

A. The Town Board of the Town of Mamaroneck may, by resolution, direct the Town Superintendent to construct a sidewalk along a described portion of any county road or state highway in the manner and not exceeding an expense to be specified in the resolution, and the expense of constructing such sidewalk shall be a town charge and shall be paid in the same manner as other town charges.

B. No such sidewalks shall be built along any state highway until the State Superintendent of Public Works shall have given his consent thereto, pursuant to § 54 of the Highway Law, and no such sidewalk shall be built along any county road until the County Superintendent of Highways shall have given his consent thereto, pursuant to § 136 of the Highway Law.

§ 187-3. Construction of sidewalks by property owner. Editor's Note: Amended at time of adoption of Code; see Ch. 1, General Provisions, Art. I.

Any property owner, after applying for and receiving a permit, may construct a sidewalk or curb on town property or may build a drain from any structure, enclosure or lot of ground at his own expense. Before the owner may proceed with the work, the Town Engineer shall establish proper grades and the same shall be followed in laying such sidewalk, curb or drain. The width, materials and construction of such sidewalks, curbs and drains shall fully conform to standard specifications for such work. No drainage piping shall be allowed to discharge onto the surface of any public right-of-way.

3. Town of Union, New York, Code Chapter 178-1, Streets and Sidewalks:

Sidewalk Construction Rules and regulations. All sidewalks constructed within the Town of Union outside the corporate limits of the Villages of Endicott and Johnson City shall be constructed in accordance with the following rules and regulations:

A. All sidewalks shall be built in accordance with standard sidewalk specifications, copies of which are on file with the Town Clerk and Director of Planning at the Town Office Building, 3111 East Main Street, Endwell, New York.

B. Any property owner may request a sidewalk along his premises.

C. When 51% of the property owners on the same side of the street request sidewalks, the construction of sidewalks for the entire block shall be mandatory. When requested, the Town shall act as agent for this construction, supplying the specifications, engineering and inspection services, engaging the contractor and acting as the collecting and remitting agent, which services may be chargeable to the property owners.

D. Engineering and inspection services relative to any new sidewalk construction shall be mandatory and such services shall be furnished by the Town of Union, which service may be chargeable to the property owner.

E. All requests for engineering service shall be in writing to the Town Board at least 10 days previous to the anticipated starting date, and in special cases where a complete block of sidewalk is being constructed the request for construction should be filed with the Town Clerk previous to May 1.

F. Property owners shall engage only responsible contractors who have the necessary machinery and equipment for such purpose.

G. Inspection during construction shall be made by the Town Engineer.

H. Payment shall be made by the property owner direct to the contractor, except in special cases the Town may act as receiving agent for the contractor.

4. Town of Penfield, New York, Sidewalk Policy:

It is the intent of the Town of Penfield to install sidewalks along all Minor Arterial, Major Collector and Minor Collector roads to develop safe pedestrian mobility and enjoyment. This policy encourages the installation of sidewalks along all local streets, including but not limited to new subdivisions. This network of sidewalks is intended to provide a safe linkage of major residential developments to commercial, civic, recreational, educational, and employment centers for residents and visitors.

Bicycle Parking

1. City of Rochester, New York, Charter and Code Chapter 120-173, Zoning, Off-Street Parking:

C. (3) Bicycle parking. Bicycle parking shall be provided equal to 10% of the vehicle parking requirements for the property, for a minimum of two bicycles, for all multifamily housing (over 10 units), commercial and industrial uses. [Amended 7-27-2004 by Ord. No. 2004-240]

G. Design of bicycle parking. (1) Bicycle parking shall be located and clearly designated in a safe and convenient location, at least as convenient as the majority of auto spaces provided. (2) Facilities shall be designed to accommodate U-shaped locking devices and shall support bicycles in a stable position without damage to wheels, frame or other components and shall be securely anchored and of sufficient strength to resist vandalism and theft.

2. Town of Warwick, New York, Zoning Ordinance Section 164.43.2, Off-Street Parking and Loading Requirements:

[Requirements for large parking lots] Provide pedestrian and bicycle amenities, such as benches, shade, human-scale lighting, and bicycle racks.

3. Town of Red Hook, New York, Zoning Ordinance Section 143-116:

Site plan design criteria.

(L)(3) Facilities shall be provided, where deemed applicable by the Planning Board, for bicycle travel within the site and to adjacent areas and for the short-term parking of bicycles.

Automobile Parking to Include Pedestrian Accommodations

1. Town of Malta, New York, Zoning Ordinance Chapter 167, Site Plan:

The Planning Board may approve, approve with modifications or disapprove such site plan review application and, in doing so, shall consider the following objectives: ... (c) The maximum adequacy of interior circulation in parking and loading facilities with particular attention to vehicular and pedestrian safety.

2. Town of Warwick, New York, Zoning Ordinance Section 164.43.2, Off-Street Parking and Loading Requirements:

Reduce visual impacts by breaking up large parking lots into smaller parking groves and parking courts with a significant number of shade trees and surrounded by low hedges, stone walls, or attractive fencing. Avoid more than 15 parking spaces in a continuous row and more than 60

spaces in any single parking area defined by landscaping...(i) Landscaping should be used to delineate vehicular and pedestrian patterns. Clear and legible signs, different color and texture paving materials, raised or inverted areas, and other techniques should be used to further direct the flow of both vehicular and pedestrian traffic within the lot... (n) In large parking lots, separate pedestrian walkways should be provided to allow safe movement within the lots. These facilities should generally be oriented perpendicular to and between parking bays. Adjacent to the walks, trees should be planted. Coordinate pedestrian walkways with access for public transit if available or planned. The following walkway guidelines also apply: [1] One walkway can serve as a collector for up to four bays of parked cars. [2] The walkway should be a minimum of four feet wide, allowing an additional 30 inches on each side for overhanging of automobiles. [3] All walkways should be raised to a standard sidewalk height and should be constructed of different paving material than the parking lot. [4] Provide pedestrian and bicycle amenities, such as benches, shade, human-scale lighting, and bicycle racks.

Automobile Parking Site Location

1. City of Batavia, New York, Code Section 190-39, Parking requirements:

Purpose: The City finds that large and highly visible parking areas represent one of the most objectionable aspects of commercial development. Such parking lots may damage the historic layout and architectural fabric of historic areas, harm the natural environment and visual character of the community, interfere with pedestrian safety and accessibility and reduce the quality of life in developed areas, as measured by the City's Visual Preference SurveyTM. However, the City also recognizes that inadequate parking can diminish quality of life by creating traffic congestion, safety hazards and inconvenience. The City therefore seeks to balance the need for adequate parking with the need to minimize harm resulting from the provision of parking and to avoid the negative impacts of excessive parking requirements....

Design, layout and construction of parking areas.

(1) Location and screening. (a) All off-street parking shall be located behind or to the side of the principal building. Parking spaces located in a side yard shall, if possible, be screened from public view. Adjoining parking areas shall be connected directly to one another or to a service road or alley wherever feasible to reduce turning movements onto roads. (b) Within the C-2 District only, a maximum of two rows of parking may be located in the front of the principal building. Such parking shall be set back from the front lot line by a landscaped buffer at least 10 feet in width. Any green space or landscaping can be included in the percentage calculation of § 190-34, Landscaping and buffering, of this chapter. (c) Parking areas shall be designed and landscaped to avoid long, uninterrupted rows of vehicles.

2. City of Lackawanna, New York, Code Section 230-36, Parking, loading and stacking:

Location.

(1) Required off-street parking shall be located on the same lot as the building to which it is an accessory use, except as herein provided.

(2) All off-street parking facilities shall be located to the side or rear of the principal use building except in the Central Business District, where off-street parking shall be restricted to the rear yard.

(3) Off-street parking facilities shall not be located within the required setback areas.

(4) Permanent front and rear yard parking areas in residential zones, other than driveways accessing a garage or designated parking area, are prohibited.

GENESEE TRANSPORTATION COUNCIL

Bicycle and Pedestrian Supportive Code Language

Sidewalks Adjacent to New Residential Development

Providing sidewalks adjacent to new residential development is one way that communities can improve mobility for all users including the elderly, the young, people with disabilities, and others without access to an automobile. Sidewalks improve pedestrian safety and convenience by providing a firm, stable, and slip resistant surface separate from the roadway.

Benefits of Providing Sidewalks

In addition to improved pedestrian safety, providing sidewalks to serve residential neighborhoods facilitates access to nearby parks, schools, and commercial activity centers and promotes public health through daily physical activity.

How It's Done

Communities that seek to provide sidewalks adjacent to new residential development can utilize several approaches, including:

- Requirements based on residential density.
- Requirements based on the roadway's functional classification.
- Sidewalk requirements based on nearby land use.
- Policy-based requirements.

Examples

Requirements based on residential density

The Town of Malta, New York requires sidewalks to be provided within all new residential and commercial projects within the Town. The code specifies that the sidewalk shall have a minimum width of five feet and be constructed of concrete designed to serve pedestrians.

For residential development with more than four dwelling units per acre sidewalks are required on



Sidewalks in new developments can improve safety, mobility, and convenience for all users.

both sides of the roadway. Sidewalks are required on one side only when the density of development is less than four units per acre.

Requirements based on the roadway's functional classification

The Town of Rhinebeck, New York requires that all streets designated as through roads shall be provided a pedestrian path, sidewalk, or bikeway on at least one side of the street.

Sidewalks must include a four-foot buffer between the sidewalk and the street. Bikeways (combined bicyclist/pedestrian paths) must also meet this buffer requirement and be at least four feet in width.

Sidewalks can also be required based on the ownership of the road. This approach is followed by the Town of Guilderland, New York which requires sidewalks on both sides of all state and county roads wherever properties abutting such roads have access to municipal waterlines (unless adjacent to agriculturally zoned property).

Sidewalk requirements based on nearby land use

The Town of Perinton, New York requires that sidewalks or pedestrian ways be constructed along

GENESEE TRANSPORTATION COUNCIL

Sidewalks Adjacent to New Residential Development

lands fronting both sides of collector or arterial street(s), within Pedestrian (PED) Zones as shown on the Town's Official PED Map.

A "PED Zone" is defined as land within a 4,000-foot radius of the central point of a public school, public park, or active commercial area.

Policy-based requirements

The Town of Penfield, New York Sidewalk Policy requires all new development approved by the Town to include sidewalks along both sides of all local roads.

Developers may seek a waiver from the policy subject to the payment of a \$500 per dwelling unit fee placed in the sidewalk capital account specifically for the installation of sidewalks in locations identified by the Town Board.

Summary

There are several options available to communities that wish to provide sidewalks adjacent to new residential development and/or support the development of "complete streets" within these areas.

Code language linked to roadway classification and adjacent land use may support pedestrian travel between neighborhoods (along collector roads to and from schools and local shopping centers, etc.) but is unlikely to support improved pedestrian facilities along local streets unless local streets are included in the requirements.

Two options that might also be considered by jurisdictions seeking to improve pedestrian accessibility include providing between-lot pedestrian easements to connect residences with parks, schools, neighborhood shopping facilities, and similar destinations and limiting the length of cul-de-sacs to provide more direct pedestrian access between destinations.

Resources

Federal Highway Administration, *Pedestrian Facilities Users Guide*, FHWA-RD-01-102, March 2002.

New York State Department of State, *Creating the Community You Want: Municipal Options for Land Use Control*, June 1998.

Office of the New York State Comptroller, Division of Local Government Services & Economic Development, *Smart Growth in New York State: A Discussion Paper*, May 2004.

The Rockefeller Institute of Government, *Local Governments in New York State*, May 2003.

State of New York, *Local Government Handbook*, 5th Edition, January 2000.

About the Project

The objective of the Bicycle and Pedestrian Supportive Code Language project was to develop information on and identify examples of noteworthy zoning code and site planning language and guidance that enhance access and safety for bicyclists and pedestrians.

The project is a joint effort between the Genesee Transportation Council (GTC) and the Genesee/Finger Lakes Regional Planning Council (G/FLRPC).

GTC staff surveyed county planning departments in the nine-county GTC region to identify those topics related to supporting bicyclists and pedestrians that could be addressed within the scope of the project. The survey identified the following key areas: (1) sidewalk requirements adjacent to new and existing development; (2) bicycle parking requirements; and (3) automobile parking design.

Within the identified key areas, research was conducted and relevant codes obtained through the G/FLRPC library and internet-based resources. Fact sheets and presentation materials were developed to provide examples that may be considered by jurisdictions that seek to improve bicycle and pedestrian safety, accessibility, and attractiveness within the community.

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Bicycle and Pedestrian Supportive Code Language

Sidewalks Adjacent to Existing Development

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In many communities there are gaps within the existing sidewalk network. These result when new development includes sidewalks but the development site is not located adjacent to the existing sidewalk network with the number of gaps increasing over time. Communities have several options to consider if they wish to complete the existing sidewalk network for residents and visitors.

Benefits of Providing Sidewalks

In addition to improved pedestrian safety, providing sidewalks adjacent to existing development facilitates access between residential neighborhoods, parks, schools, and commercial activity centers and promotes public health through daily physical activity.

How It's Done

Local communities can provide sidewalks adjacent to existing development using the following techniques:

- Sidewalks constructed at the property owner's expense.
- Sidewalks constructed at the municipality's expense.
- Sidewalks constructed following petition by the affected property owners.
- Comprehensive sidewalk policy.

Examples

Sidewalks constructed at the property owner's expense

The Town of Ithaca, New York provides that the Town Board may require that sidewalks be constructed along streets and highways at the owner's expense. The code includes language to authorize the Town to construct the facility and then to assess the owner for the cost, plus any interest. The code allows but does not require the Town to pay some portion of the cost pursuant to an adopted local law.



A complete sidewalk network benefits individuals and communities.

Sidewalks constructed at the municipality's expense

The Town of Mamaroneck, New York authorizes the Town Board to direct the Town Superintendent to construct sidewalks along county roads and state highways (with permission) at Town expense. Sidewalks along town roads are the responsibility of, and must be voluntarily constructed by, the property owner at their own expense.

Sidewalks constructed following petition by the affected property owners

The Town of Union, New York adopted a regulation in 1946 that creates a mechanism for property owners to request sidewalks along their side of the street. When 51 percent of the property owners request the sidewalk, its construction becomes mandatory. The Town acts as agent for the construction and the property owners are required to pay all costs.

Comprehensive sidewalk policy

The Town of Penfield, New York's Sidewalk Policy applies to new development and also to existing development. This policy articulates the Town's intent to "Install sidewalks along all Minor Arterial, Major Collector and Minor Collector roads to develop safe pedestrian mobility and enjoyment."

GENESEE TRANSPORTATION COUNCIL

Sidewalks Adjacent to Existing Development

These roadways comprise what is referred to as the primary sidewalk system.

The installation of sidewalks along the primary sidewalk system is supported by the allocation of funds from the Town's General Fund, by grants, and by the sidewalk waiver fees paid when an exemption to the sidewalk requirement for new development is granted.

This policy is further supported by an officially adopted "Primary Sidewalk System Map" that identifies the improvements that will be made on an annual basis, as resources permit.

Summary

Local jurisdictions may wish to consider developing specific codes and/or policies that address the process and financial details that will apply if they seek to improve the existing sidewalk system.

Mandating that property owners pay for the installation of sidewalks may not be well received, and even a petition-based process could create hard feelings between neighbors depending on individual positions on the issue.

For these reasons, a policy-based approach that identifies and funds specific sidewalk improvements adjacent to existing development linked to a requirement that new development provide sidewalks or pay a fee that can be allocated for the construction of sidewalks adjacent to existing development (such as the Penfield example cited above) may represent a workable approach to improving the existing sidewalk system.

Resources

Federal Highway Administration, *Pedestrian Facilities Users Guide*, FHWA-RD-01-102, March 2002.

New York State Department of State, *Creating the Community You Want: Municipal Options for Land Use Control*, June 1998.

Office of the New York State Comptroller, Division of Local Government Services & Economic Development, *Smart Growth in New York State: A Discussion Paper*, May 2004.

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GTC staff surveyed county planning departments in the nine-county GTC region to identify those topics related to supporting bicyclists and pedestrians that could be addressed within the scope of the project. The survey identified the following key areas: (1) sidewalk requirements adjacent to new and existing development; (2) bicycle parking requirements; and (3) automobile parking design.

Within the identified key areas, research was conducted and relevant codes obtained through the G/FLRPC library and internet-based resources. Fact sheets and presentation materials were developed to provide examples that may be considered by jurisdictions that seek to improve bicycle and pedestrian safety, accessibility, and attractiveness within the community.

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Bicycle and Pedestrian Supportive Code Language

Bicycle Parking

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Bicyclists need places to park and secure their bicycles upon reaching their destination. Lacking designated facilities, bicyclists will use trees, utility poles, parking meters, railings, and street furniture to secure their bicycles.

Doing so may cause damage to the bike or to the ad-hoc bike racks and may also result in inconvenience and potential danger (such as tripping hazards) to non-cyclists. Lack of bicycle parking facilities discourages bicycling by cyclists who may feel uncomfortable locking bicycles to non-designated facilities.

In order to avoid the undesirable effects associated with ad-hoc bike racks, bicycle parking facilities can be provided at activity centers that are accessible by bike. Bicycle parking facilities should be convenient, safe, secure, and protected from inclement weather.

At a minimum, well-designed racks should be provided and, depending on the need, enclosed bike lockers located within covered parking structures may be considered.

Benefits of Providing Bicycle Parking

Bicycle parking provides an assurance that convenient, safe, and secure parking will be available to cyclists at their preferred destination. In addition, bicycle parking reduces the potential that damage will occur to the bicycle and/or the trees, poles, or other fixtures that the bicycle would otherwise be locked to. Finally, providing bicycle parking can improve safety by reducing the likelihood that bicycles will be locked in such a way that they impede pedestrians creating tripping hazards.

How It's Done

Communities can provide adequate bicycle parking in the following ways:

- Allocate an identified percentage of off-street parking for bicycle parking.



Bicycle parking helps create a safe environment for bicyclists and pedestrians.

- Incorporate general bicycle parking provisions in the off-street parking regulations.
- Implement flexible bicycle parking requirements via the Planning Board.

Examples

Allocate an identified percentage of off-street parking for bicycle parking

The City of Rochester, New York requires that bicycle parking equal to 10 percent of the vehicle parking requirements for the property (for a minimum of two bicycles) be provided at all multifamily housing (over 10 units), commercial, and industrial uses.

An additional requirement is that bicycle parking be located and clearly designated in a safe and convenient location, at least as convenient as the majority of auto spaces provided and that facilities are designed to accommodate U-shaped locking devices and support bicycles in a stable position without damage to wheels, frame, or other components.

The facilities are required to be securely anchored and of sufficient strength to resist vandalism and theft.

Bicycle Parking

Incorporate general bicycle parking provisions in the off-street parking regulations

The Town of Warwick, New York requires that pedestrian and bicycle amenities such as benches, shade, human-scale lighting, and bicycle racks be provided for parking lots meeting specified requirements.

Implement flexible bicycle parking requirements via the Planning Board

The Town of Red Hook, New York includes a provision in its site plan design criteria that facilities be provided, where deemed applicable by the Planning Board, for the short-term parking of bicycles.

Summary

In communities with ongoing commercial, multi-family, and industrial development, a percentage-based approach could be considered to ensure that bicycle accommodations are provided for new development.

Those communities that prefer additional flexibility or to defer the decision to the Planning Board and/or site plan review process may wish to consider more general code language that would allow but not require the provision of bicycle facilities on a case-by-case basis.

Resources

Federal Highway Administration, *Pedestrian Facilities Users Guide*, FHWA-RD-01-102, March 2002.

New York State Department of State, *Creating the Community You Want: Municipal Options for Land Use Control*, June 1998.

Office of the New York State Comptroller, Division of Local Government Services & Economic Development, *Smart Growth in New York State: A Discussion Paper*, May 2004.

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The project is a joint effort between the Genesee Transportation Council (GTC) and the Genesee/Finger Lakes Regional Planning Council (G/FLRPC).

GTC staff surveyed county planning departments in the nine-county GTC region to identify those topics related to supporting bicyclists and pedestrians that could be addressed within the scope of the project. The survey identified the following key areas: (1) sidewalk requirements adjacent to new and existing development; (2) bicycle parking requirements; and (3) automobile parking design.

Within the identified key areas, research was conducted and relevant codes obtained through the G/FLRPC library and internet-based resources. Fact sheets and presentation materials were developed to provide examples that may be considered by jurisdictions that seek to improve bicycle and pedestrian safety, accessibility, and attractiveness within the community.

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Bicycle and Pedestrian Supportive Code Language

Automobile Parking to Include Pedestrian Accommodations

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Providing convenient parking for motorists adjacent to retail and other establishments is typically addressed through a municipality's off-street parking requirements.

These requirements, within the zoning code, provide dimensions for automobile parking spaces and specify the number of automobile parking spaces required for each land use.

In some cases, a general acknowledgement that pedestrians be considered during the design review for the parking facility is included within the off-street parking requirements.

In other cases, however, pedestrians appear not to be considered during the design review for parking lots and the resulting facilities are difficult to cross, creating barriers to pedestrian travel that could be resolved with improved design.

Benefits of Designing Automobile Parking to Include Pedestrian Accommodations

In addition to improved pedestrian safety, providing pedestrian accommodations within automobile parking facilities can provide increased aesthetic value to the site.

How It's Done

Local jurisdictions may consider the following options if they wish to include pedestrian accommodations within off-street parking facilities:

- Specific requirements within off-street parking code language.
- Flexible requirements based on the Planning Board's determination.



Off-street parking lots can be designed with pedestrians and aesthetics in mind.

Examples

Specific requirements within off-street parking code language

The Town of Warwick, New York includes specific requirement for parking lot design that improve the environment for pedestrians by: 1) breaking up large parking lots into smaller parking groves and parking courts with a significant number of shade trees surrounded by low hedges, stone walls, or attractive fencing; 2) encouraging designs that avoid placing more than 15 parking spaces in a continuous row and more than 60 spaces in any single parking area as defined by landscaping; 3) promoting landscaping that delineates vehicular and pedestrian patterns; 4) providing clear and legible signs, different color and texture paving materials, raised or inverted areas, and other techniques to direct the flow of both vehicular and pedestrian traffic within the lot; and 5) providing separate pedestrian walkways in large parking lots to allow safe movement within the lots.

GENESEE TRANSPORTATION COUNCIL

Automobile Parking to Include Pedestrian Accommodations

Additional design criteria specify that: 1) One walkway can serve as a collector for up to four bays of parked cars; 2) the walkway should be a minimum of four-feet wide, allowing an additional 30 inches on each side for overhanging of automobiles; 3) all walkways should be raised to a standard sidewalk height and should be constructed of different paving material than the parking lot; and 4) pedestrian and bicycle amenities such as benches, shade, human-scale lighting, and bicycle racks should be provided.

Flexible requirements based on the Planning Board's determination

The Town of Malta, New York provides that the Planning Board shall consider the maximum adequacy of interior circulation in parking and loading facilities with particular attention to vehicular and pedestrian safety.

Summary

Communities that wish to promote pedestrian and bicycle-sensitive parking lot design can do so by including the desired design elements within their off-street parking code language. Doing so will provide developers with examples of expected design features at an early stage in the site planning process.

For communities that prefer a more flexible approach, the Planning Board can be directed and/or authorized to consider pedestrian safety within the design/site plan review process.

Resources

Federal Highway Administration, *Pedestrian Facilities Users Guide*, FHWA-RD-01-102, March 2002.

New York State Department of State, *Creating the Community You Want: Municipal Options for Land Use Control*, June 1998.

The Rockefeller Institute of Government, *Local Governments in New York State*, May 2003.

Office of the New York State Comptroller, Division of Local Government Services & Economic Development, *Smart Growth in New York State: A Discussion Paper*, May 2004.

State of New York, *Local Government Handbook*, 5th Edition, January 2000.

About the Project

The objective of the Bicycle and Pedestrian Supportive Code Language project was to develop information on and identify examples of noteworthy zoning code and site planning language and guidance that enhance access and safety for bicyclists and pedestrians.

The project is a joint effort between the Genesee Transportation Council (GTC) and the Genesee/Finger Lakes Regional Planning Council (G/LRPC).

GTC staff surveyed county planning departments in the nine-county GTC region to identify those topics related to supporting bicyclists and pedestrians that could be addressed within the scope of the project. The survey identified the following key areas: (1) sidewalk requirements adjacent to new and existing development; (2) bicycle parking requirements; and (3) automobile parking design.

Within the identified key areas, research was conducted and relevant codes obtained through the G/FLRPC library and internet-based resources. Fact sheets and presentation materials were developed to provide examples that may be considered by jurisdictions that seek to improve bicycle and pedestrian safety, accessibility, and attractiveness within the community.

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GENESEE TRANSPORTATION COUNCIL

Bicycle and Pedestrian Supportive Code Language

Automobile Parking Site Location

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The location of automobile parking facilities with respect to buildings on a commercial development site can have a significant effect on the viability of pedestrian access to and from the site.

When the buildings are located near the rear lot line and the parking facilities are located between the front of the building and the street, pedestrians may be forced to walk through the parking lot to access the buildings from the public right of way.

This creates a potential for conflict between motorists and pedestrians that can be reduced by locating parking lots to the rear of buildings and locating buildings adjacent to the street with minimal setback.

Additionally, locating buildings near the street provides a sense of enclosure to the streetscape and provides merchants the opportunity for exposure to passersby that is lost when buildings are set behind parking facilities.

Benefits of Pedestrian-Friendly Automobile Parking Site Location

In addition to improved pedestrian safety, locating buildings near the street can provide improved urban design and increase pedestrian traffic at local businesses.

How It's Done

The location of parking facilities on a site can be controlled directly by:



Buildings can serve both drivers and pedestrians when facades are close to the sidewalk and on-site parking is located at the sides or rear—and possibly supplemented with on-street parking.

- Parking to the side or rear of the primary use included within design criteria.

- Parking to the side or rear of the primary use and on the same lot.

Parking to the side or rear of the primary use included within design criteria

The City of Batavia, New York “seeks to balance the need for adequate parking with the need to minimize harm resulting from the provision of parking and to avoid the negative impacts of excessive parking requirements.”

In seeking that balance, the code requires that all off-street parking be located behind or to the side of the principal building. In order to provide limited amounts of parking in front of buildings, a maximum of two rows of parking may be located in the front of a principal building in a C-2 District.

Automobile Parking Site Location

The code language also specifies that parking areas shall be designed and landscaped to avoid long, uninterrupted rows of vehicles.

Parking to the side or rear of the primary use and on the same lot

The City of Lackawanna, New York requires off-street parking to be located on the same lot as the building to which it is an accessory use and that all off-street parking facilities be located to the side or rear of the principal use building.

Summary

Communities can direct parking to the rear of development sites and thereby support pedestrian utilization of commercial facilities located within their jurisdiction. Since parking lot and building location are closely interrelated, jurisdictions could also address this issue by revised building setback requirements.

However, including the location criteria for the parking lot within the parking regulations allows a more unified approach to managing the facilities by including criteria related to parking lot internal design within the same section of the zoning ordinance as parking lot location criteria.

Resources

Federal Highway Administration, *Pedestrian Facilities Users Guide*, FHWA-RD-01-102, March 2002.

New York State Department of State, *Creating the Community You Want: Municipal Options for Land Use Control*, June 1998.

Office of the New York State Comptroller, Division of Local Government Services & Economic Development, *Smart Growth in New York State: A Discussion Paper*, May 2004.

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Within the identified key areas, research was conducted and relevant codes obtained through the G/FLRPC library and internet-based resources. Fact sheets and presentation materials were developed to provide examples that may be considered by jurisdictions that seek to improve bicycle and pedestrian safety, accessibility, and attractiveness within the community.

- Genesee Transportation Council - August 2007



APPENDIX I:

PLANNING BOARD CHECKLIST

PLANNING FOR ACTIVE MOBILITY

Planning for active mobility requires thinking about many different facets of design. Beyond providing facilities such as sidewalks and bike parking, the best designs will make people feel safe and welcome in the landscape. Planning for active mobility creates user friendly designs that benefit residents and visitors, making the site a popular destination for years to come.

	Planning For Active Mobility Checklist	Yes	No	N/A	Comments
1	Pedestrians				
1.1	Have sidewalks been provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.2	Are sidewalks built to current standards for safety and accessibility?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.3	Is there a buffer strip between the curb and sidewalk?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.4	Are sidewalks expanded near buildings to highlight building entrances, link streets with parking lots, and provide safe and obvious pedestrian routes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.5	Are crosswalks highlighted by use of materials or prominent stripes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.6	Is the pedestrian route between the street and building entrances clear and continuous?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.7	Have resting points for pedestrians equipped with benches been provided at reasonable intervals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.8	Are benches placed in well lit, public areas, near activity and pedestrian flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.9	Are there benches near amenities such as bus shelters, kiosks, news stands, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.10	Is site location identified in the municipal Active Transportation Plan or other community planning documents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2	Bicyclists				
2.1	Is there bicycle parking within 100 feet of the main entrance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.2	Is bicycle parking easy to find, in plain sight, and out of the way of cars?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.3	Are there 5-10% as many bicycle parking spaces as spaces for cars?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.4	Is bicycle parking compatible with U-Locks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.5	Is there covered bicycle parking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.6	Does the roadway have an existing bicycle facility including bike lanes or shoulder 4' or greater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.7	Is the site location identified in the municipal Active Transportation Plan or other community planning documents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	Planning For Active Mobility Checklist	Yes	No	N/A	Comments
3	Transit				
3.1	Is the proposed project along an existing transit route?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.2	Does the proposed project include a transit stop?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.3	Are transit stops ADA accessible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.4	Do transit stops incorporate a concrete pad and benches?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.5	Are transit stops connected to building entrances by an ADA accessible pedestrian route such as sidewalks & marked crosswalks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.6	Are transit stops as near building entrances as possible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.7	Are transit stops covered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.8	Are Park&Ride lots, bus shelters, or other commuter services included in the construction & rebuilding of large commercial areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.9	Is the site location identified in the municipal Active Transportation Plan or other community planning documents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	Access and Parking				
4.1	Is the parking lot designed for average parking demand, not peak demand? Is the parking area as small as possible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.2	Are there clear vehicular movement patterns?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.3	Will landscaping be included in parking areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.4	Will planting islands be provided at a minimum of every 20 spaces?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.5	Are parking lanes oriented to building entrances?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.6	Are commercial areas planning to share parking areas and curb cuts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.7	Is back street access available as an alternative for vehicular traffic?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.8	Is parking located A) behind buildings, B) within the required set-back, or C) along the side of the building?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.9	Are there additional side and back entrances, or alleyways to front entrances to make back parking lots more attractive to customers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.10	Do parking bays and driveways meet minimum and maximum widths to ensure safety and flow while avoiding excessive paving?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.11	Have curb cuts been consolidated to simplify access and reduce conflicts with pedestrians?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.12	Is internal circulation logically configured to serve the buildings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.13	Have green infrastructure practices been incorporated into the parking design for stormwater management?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	Planning For Active Mobility Checklist	Yes	No	N/A	Comments
5	Landscape and Open Space				
5.1	Will landscaping be included in parking areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.2	Were street tree species selected from a list approved by the municipality or from a list of trees appropriate for street use such as the Cornell Urban Street Tree list?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.3	Were plants selected that are tolerant of site conditions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.4	Are planting islands large enough to support mature plantings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.5	Are large canopy trees incorporated into the site design?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.6	Does the proposed development take advantage of opportunities to link new and existing open spaces?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.7	In existing commercial strips, will green space and plantings be used to improve site aesthetics?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.8	Are plazas, outdoor dining areas, fountains, sculptures or other amenities provided to create an attractive human scale sense of place for users in commercial projects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.9	Will planting islands be provided at a minimum of every 20 parking spaces?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.10	Do plantings incorporate many species, including native species, in order to create habitat for birds and pollinators?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.11	Is there a maintenance plan for plantings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.12	Will existing shade trees be preserved?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.13	Will street trees be planted in the space between sidewalks and the street?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.14	Is their adequate soil volume for the trees to thrive (approx. 300 ft ³ for a 14' canopy tree, 600 ft ³ for a 24' canopy tree, 1000 ft ³ for a 32' canopy tree)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.15	Were permeable pavings, structural soil, or other Green Infrastructure practices incorporated in the site design to maximize the water and soil available to the trees?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	Planning For Active Mobility Checklist	Yes	No	N/A	Comments
6	Lighting				
6.1	Is pedestrian scale lighting being provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.2	Are smaller light fixtures used in higher quantities to reduce the intensity of individual fixtures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.3	Does the pedestrian level lighting consist of free-standing fixtures located along the sidewalks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.4	Are parking lot fixtures between 15-25 feet in height?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.5	Are the parking and circulation light fixtures a cutoff type luminaire that prevents spillage of light above the fixture?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.6	Do shields or hoods screen outdoor light and prevent glare on adjacent premises?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.7	Are lights energy efficient LED lights (100+ lumens/Watt)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.8	Is light color temperature 4,000K or less?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.9	Is light color rendering index 75 or above?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.10	Does plan avoid high pressure sodium lighting and metal halide lighting?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7	Buildings				
7.1	Are all entrances fully ADA compliant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.2	Do the buildings and plantings form an attractive edge to the roadway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.3	Is there a variety of building types, massing, and small variations in set-back?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.4	Does the proposed building respect the common setback distance of the neighboring buildings or work with the desired setback?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.5	Are distances between buildings minimized to connect uses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.6	Is an interesting facade or window scheme used to create a pleasant pedestrian experience?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.7	Are buildings facing the street and located appropriately within the setback?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.8	Are rear parking and vacant spaces screened?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.9	Are new buildings scaled down into smaller, human-scale environments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.10	Are there strategic openings in building lines to allow access to important vistas and public spaces?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



APPENDIX J:

NYSDOT SHARED LANE MARKING POLICY

<p align="center">New York State Department of Transportation</p> <p align="center">OFFICE of TRAFFIC SAFETY & MOBILITY</p>		<p align="center">TRAFFIC SAFETY & MOBILITY</p> <p align="center">INSTRUCTION</p>	<p align="center">TSMI</p> <p align="center">13-07</p> <p align="center">Code: TO</p>								
<p>Title: SHARED LANE MARKING (SLM) POLICY</p>											
<p>Target Audience:</p> <table border="0"> <tr> <td><input checked="" type="checkbox"/> Regional Traffic Engineer</td> <td><input type="checkbox"/> Construction</td> </tr> <tr> <td><input type="checkbox"/> Operations & Asset Mgt. Div.</td> <td><input checked="" type="checkbox"/> Design</td> </tr> <tr> <td><input checked="" type="checkbox"/> Regional Dir. of Operations</td> <td><input checked="" type="checkbox"/> Maintenance</td> </tr> <tr> <td><input checked="" type="checkbox"/> Regional Director</td> <td><input checked="" type="checkbox"/> Policy & Planning Div.</td> </tr> </table>		<input checked="" type="checkbox"/> Regional Traffic Engineer	<input type="checkbox"/> Construction	<input type="checkbox"/> Operations & Asset Mgt. Div.	<input checked="" type="checkbox"/> Design	<input checked="" type="checkbox"/> Regional Dir. of Operations	<input checked="" type="checkbox"/> Maintenance	<input checked="" type="checkbox"/> Regional Director	<input checked="" type="checkbox"/> Policy & Planning Div.	<p>Approved:</p>  <p>Todd B. Westhuis, P.E., Acting Director Office of Traffic Safety & Mobility</p> <p align="right"><u>12/09/2013</u> Date</p>	
<input checked="" type="checkbox"/> Regional Traffic Engineer	<input type="checkbox"/> Construction										
<input type="checkbox"/> Operations & Asset Mgt. Div.	<input checked="" type="checkbox"/> Design										
<input checked="" type="checkbox"/> Regional Dir. of Operations	<input checked="" type="checkbox"/> Maintenance										
<input checked="" type="checkbox"/> Regional Director	<input checked="" type="checkbox"/> Policy & Planning Div.										

ADMINISTRATIVE INFORMATION:

- This Office of Traffic Safety & Mobility Instruction (TSMI) is effective immediately.

PURPOSE: The purpose of this TSMI is to transmit NYSDOT's Shared Lane Marking (SLM) policy.

TECHNICAL INFORMATION:

- This policy discontinues the use of the SHARE THE ROAD (W16-1P) plaque, and creates a new IN LANE (NYW5-32P) plaque.
- This policy will be incorporated into the next NYS Supplement revision.

TRANSMITTED MATERIALS: *NYSDOT Shared Lane Marking (SLM) Policy.*

BACKGROUND: The 2009 MUTCD added a new pavement marking called a *shared lane marking* (sometimes informally called a *sharrow*) as an optional traffic control device to be used as deemed appropriate. Anticipating requests from the public to use this device, the Office of Traffic Safety & Mobility held a meeting in February 2012 with public stakeholders and key Department personnel to craft a draft policy. The policy was finalized in December 2012 after incorporating comments submitted by citizens, public agencies, and Department personnel.

CONTACT: Direct questions regarding this issuance to Barbara S. Abrahamer, PE, PTOE of the Office of Traffic Safety and Mobility at (518) 457-1795 or via e-mail at barbara.abrahamer@dot.ny.gov.

NYS DOT Shared Lane Marking (SLM) Policy



Purpose

The purpose of this policy is to explain how Shared Lane Markings (SLMs, sometimes referred to as “sharrows”) will be used on highways under the jurisdiction of the New York State Department of Transportation. Information about this traffic control device can be found in Section 9C.07 of the *Manual on Uniform Traffic Control Devices* (MUTCD). It is expected that this guidance will ultimately be incorporated into the NYS Supplement, thereby making the policy applicable to all highways in New York State open to public travel.

Background

In determining when SLMs should be used, general MUTCD guidance regarding traffic control devices should be kept in mind:

The purpose of traffic control devices, as well as the principles for their use, is to promote highway safety and efficiency by providing for the orderly movement of all road users on streets, highways, bikeways, and private roads open to public travel throughout the Nation.

Traffic control devices notify road users of regulations and provide warning and guidance needed for the uniform and efficient operation of all elements of the traffic stream in a manner intended to minimize the occurrences of crashes.

To be effective, a traffic control device should meet five basic requirements:

- A. Fulfill a need;*
- B. Command attention;*
- C. Convey a clear, simple meaning;*
- D. Command respect from road users; and*
- E. Give adequate time for proper response.*

SLM use should also correctly reflect the legal rights/obligations of bicyclists and motorists, and promote safe and effective bicycling techniques. See Figure 1 for an illustration that summarizes these principles.

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 and does not allow motorists and bicyclists to safely travel side-by-side within the lane. 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 should not be used to indicate the desired position for a bicyclist, as the optimal position can change depending on a number of varying factors.

In conjunction with the SLM policy, the SHARE THE ROAD plaque will be eliminated from use due to misconceptions about its meaning to both motorists and bicyclists. Instead, the following signing policy shall be used:

- On any facility (both low-speed and high-speed), the Bicycle (W11-1) warning sign may be used alone to warn motorists of the presence of bicyclists, either on the shoulder or in a wide ($\geq 14'$) outside lane.
- A new Narrow Lane assembly, consisting of the Bicycle sign + a new IN LANE plaque (NYW5-32P), should be used with SLMs in the manner described in the Implementation section. (See Figure 2 for layout of the IN LANE plaque.)
- The Narrow Lane assembly may be used on any facility (both low-speed and high-speed), where side-by-side travel within the outside lane is not possible. SLMs do not need to be present to use this assembly.



Implementation

Table 1 shall be used to determine the need for SLMs.

Table 2 shall be used to determine the placement of SLMs. On a facility with on-street parking, SLMs shall be placed in the center of the *effective lane*, which is the lane width between the left edge shy zone and the door zone. (See Figure 1 for a graphic explanation of the term *effective lane*.) On a facility without on-street parking, SLMs shall be placed in the center of the actual lane.

Where used, SLMs should be placed approximately 250' apart. In addition to regular interval spacing, SLMs should be placed immediately before and immediately after intersections, and at other strategic locations dependent upon specific needs (e.g., conflict points).

Where SLMs are used, the Bicycle sign + IN LANE plaque assembly should be placed at the location of the first SLM, and may be repeated as deemed appropriate within the section. It is neither necessary nor desirable to supplement every SLM with the sign assembly.

Where the Bicycle sign, or the Bicycle sign + IN LANE plaque assembly, is used without accompanying SLMs, its need and placement should be in accordance with Section 2C.49 of the MUTCD. The advance posting distance for the first sign should be determined using Condition C in Table NY2C-4 of the NYS Supplement. Additional signs should be placed at suitable locations, and at appropriate intervals, within the section of highway where the bicycle activity occurs.

TABLE 1 – When to use SLMs

A. SLMs SHALL NOT be used where:	Notes
The usable width of the right lane is equal to or greater than 14' where parking is not allowed.	14' is the minimum acceptable width to allow for side-by-side travel. When determining the usual width of the lane, the presence of deteriorated pavement, drainage structures, and other obstacles to bicycle operation should be considered. A wide lane containing such obstacles may actually function as a narrow lane in terms of usable width, and may be considered for SLMs.
The usable width of the right lane + a marked parking lane is equal to or greater than 26'.	26' allows for side-by-side travel with a bicyclist out of the door zone. When determining the usual width of the lane, the presence of deteriorated pavement, drainage structures, and other obstacles to bicycle operation should be considered. A wide lane containing such obstacles may actually function as a narrow lane in terms of usable width, and may be considered for SLMs.
B. SLMs SHOULD NOT be used where:	
The speed limit is 40 mph or greater.	This is an explicit MUTCD provision.
A shoulder exists.	The key here is whether or not a motorist would have to leave the lane in order to pass the bicyclist. While a bicyclist is not legally obligated to use the shoulder, it is often most practical to use a shoulder. NYSDOT does not want to disadvantage bicyclists who choose either option. Generally, the presence of a shoulder should disqualify a location for an SLM. If both a narrow lane and narrow shoulder exist, however, or an existing shoulder is not usable, an SLM could be considered subject to the other restrictions of this policy.
The condition upon which the SLM need is based does not exist during most of the daylight hours.	An example is on-street parking that only occurs during limited hours.
A reasonable level of bicycle usage (actual & potential) does not exist.	A lack of bicycle usage reduces the conflict potential and the need for countermeasures. Some reasons for potential increases in bicycle usage include planned local development, and a public perception of the highway being safer for bicyclists with SLMs.
A reasonable level of motor vehicle usage (actual & potential) does not exist.	A lack of motor vehicle volume reduces the conflict potential and the need for countermeasures. One reason for a potential increase in vehicular usage is a change in land use.
C. SLMs MAY be used where:	
There's a wrong-way biking problem.	SHALL and SHOULD restrictions in A & B of this table still apply.
There's a sidewalk biking problem.	SHALL and SHOULD restrictions in A & B of this table still apply.
An actual or potential conflict exists between bikes and motor vehicles.	Examples include parked cars, driveways, and intersections; SHALL and SHOULD restrictions in A & B of this table still apply.
It's unclear (either to motorists or bicyclists) what lane a bicyclist should be using.	Examples are dedicated turning lanes; SHALL and SHOULD restrictions in A & B of this table still apply.

TABLE 2 – SLM Placement	
A. With On-Street Parking	
Width of Outside Lane + Parking	Distance from Curb/Edge of Pavement
17'	13.5'
18'	14'
19'	14.5'
20'	15'
21'	15.5'
22'	16'
23'	16.5'
24'	17'
25'	17.5'
B. Without On-Street Parking	
All widths < 14'	Center of Lane

Figure 1 – Bicyclist Positioning

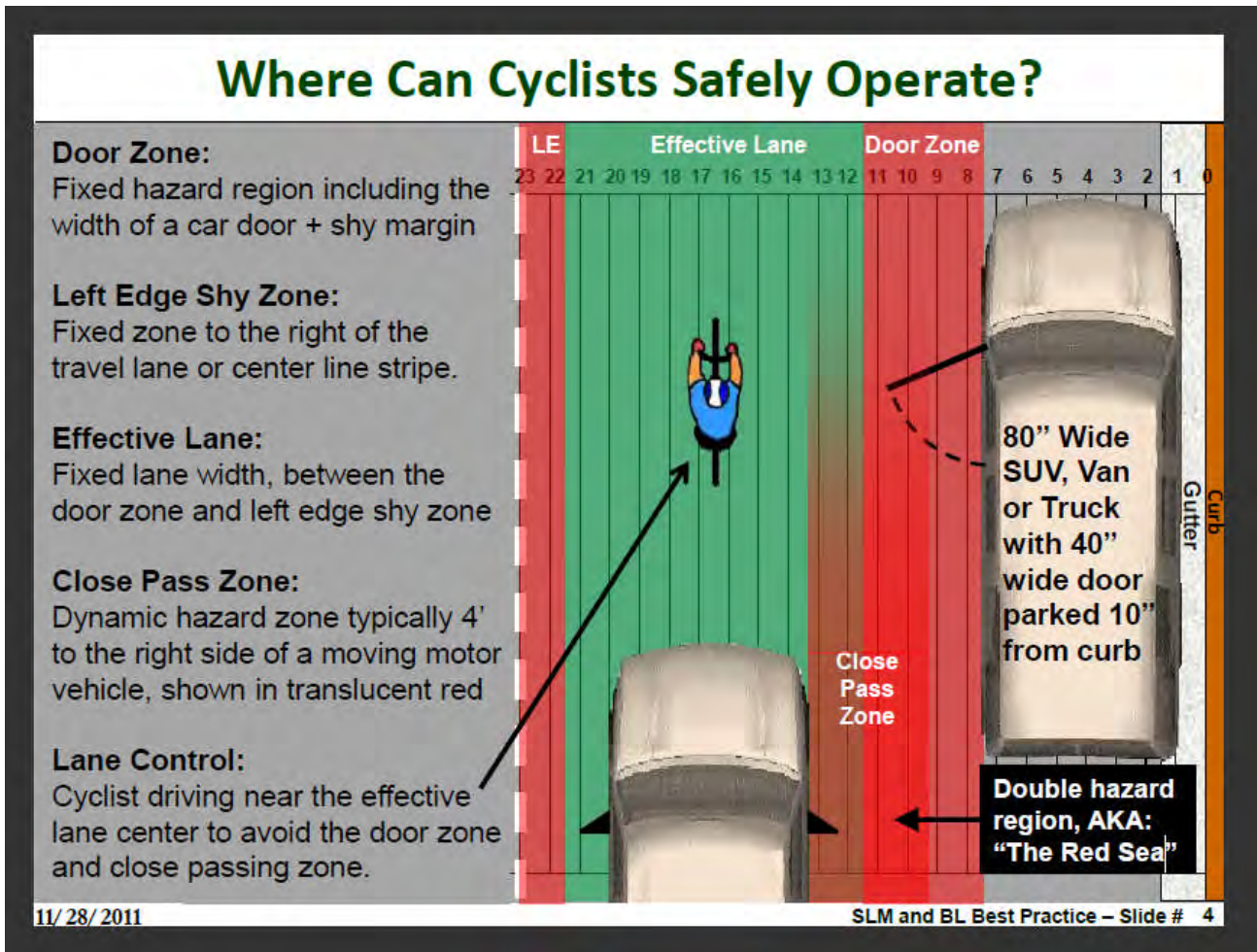


Figure 2 - IN LANE Plaque (NYW5-32P)



BORDER
R=1.5"
TH=0.63"
IN=0.38"



APPENDIX K:

AGENCY COMMENT RESPONSE LETTERS

March 9, 2017

Mr. Brent H. Penwarden III, P.E.
Chief of Traffic Operations & Permits
Monroe County Department of Transportation
6100 City Place
50 W. Main St.
Rochester, NY 14614

RE: MCDOT comments on Irondequoit Active Transportation Plan

Dear Brent,

Barton & Loguidice, D.P.C. appreciates your comments and has addressed them for the above-referenced project from your email letter dated August 30, 2016. Comments are followed by responses typed in bold faced font. This letter showing comments from MCDOT and responses is being included as Appendix K within the report document.

1. *(Typ) – NYSDOT has provided guidance relative to marked crosswalks. A copy is attached. Essentially, they recommend the use of high visibility crosswalks (other than standard 2 white lines) at uncontrolled (not stop sign or signal) approaches, and only at controlled locations where unusually high pedestrian volumes are present or expected, or high volumes of school children cross unassisted. These guidelines should be applied to all of the locations in this study.*

No attachment. We did not find language within the NYS Vehicle and Traffic Law or the NYS supplement to the MUTCD. The Highway Design Manual Chapter 18 does not prohibit their use anywhere and specifically recommends their use “in areas where there are nursing homes, senior citizen housing, medical facilities, etc.”. We found a DOT Office of Traffic Safety and Mobility Instruction (TSMI-14-01) titled Crosswalk Pavement Markings-Requirement for High Visibility Crosswalk at Marked Uncontrolled Crossings which includes the text “High Visibility crosswalks may be used at controlled crossings with justification...” We do already have language within the report, page 59 “Although none of the Irondequoit prototype intersections fall under the jurisdiction of NYSDOT, for future recommendations it should be noted that 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.”





2. *(Typ)With the reduced radius proposed, will buses and large trucks be able to make the movement without crossing the double yellow line?*

AutoTURN software was used to analyze all intersection recommendations.

3. *(Typ)As noted at previous meetings and field visits, all of the MCDOT signalized intersections will have countdown pedestrian indications at existing marked crosswalks by the end of 2016.*

Noted. Page # 60.

4. *(Typ)LPI – leading pedestrian interval – the study is recommending them for all locations that have a right turn lane. We would like to see the data supporting the need for these.*

Added language on Page #60. MUTCD recommends use “at intersections with high pedestrian volumes and high conflicting turning vehicle volumes, a brief leading pedestrian interval, during which an advance WALKING PERSON (symbolizing WALK) indication is displayed for the crosswalk while red indications continue to be displayed to parallel through and/or turning traffic, may be used to reduce conflicts between pedestrians and turning vehicles.”

5. *(Typ)No Turn on Red / Yield to pedestrians on-demand blank-out signs – we feel that using a fixed sign is much better than the electronic blank out signs. They are very high maintenance, and not needed when the times are known. Additionally, adding NTOR at all approaches would mean that all right turns are made during the green which creates extra conflicts for through bicyclists.*

Revised to show fixed R10-15 signs. Language revised page 63 and 72.

6. *(Typ)Channelized right turn slip lanes – We would need to review the individual locations and specific designs, however, our experience does not show them helping, since they are not signal controlled.*

The following language is included within the report in multiple locations: “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.”



7. *(Titus/Culver) Is there any evidence of a problem with pedestrians not being able to cross any of these approaches? At only 3 total lanes, this is one of the easier locations for pedestrians to navigate.*

We received public comments specifically related to pedestrian safety concerns for the priority intersections due to high traffic speeds of turning vehicles. Consideration should be given to any significant concentrations of young, elderly, or persons with disabilities using the project site.

8. *(Norton/Pardee) We are in the planning stages of a capital project on Norton St between the City limits and I-590. As part of this project, this intersection will be studied to determine if the existing traffic signal is still justified. This will impact many of the recommendations for this location.*

Noted. Language has been added to page #65.

9. *(Norton/Pardee)The report implies that the intersection is not used as a school crossing, however, the NTOR signs have wording that indicates that school children do use these crosswalks. The school should be consulted.*

We had input from the community that this is used as a secondary crossing, with the primary crossing being further east. Both Irondequoit school districts were consulted during the development of this plan.

10. *(Norton/Pardee)NTOR when flashing – these signs compete with the traffic signal for driver’s attention.*

These types of signals provide more positive affirmation of when the prohibition is actually in place. They would be flashing during peak student travel time to enhance safety for the students between 7-9am and 2-4pm.

11. *(Norton/Pardee)Note that “School Crossing” signs (S1-1) are not permitted at a signalized approach.*

Noted. The S1-1 signs would be recommended on the approach to the intersection not at the actual signalized intersection. MUTCD states “The In-Street Pedestrian Crossing sign, the In-Street Schoolchildren Crossing sign, the Overhead Pedestrian Crossing sign, and the reduced size in-street School (S1-1) sign shall not be used at signalized locations.”

12. *(Typ) Please use the term “handicapped ramps” rather than “curb ramps”, since some locations do not have curb, but have gutters.*

NYSDOT, FHWA and MUTCD refer to them as curb ramps.



13. *(Norton/Pardee) Once again, is there a documented concern crossing at these locations? This is a relatively easy location to cross.*

We received public comments specifically related to pedestrian safety concerns for the priority intersections due to high traffic speeds of turning vehicles. Consideration should be given to any significant concentrations of young, elderly, or persons with disabilities using the project site.

14. *(E Ridge/Kings/Goodman) Note the google image is old. There is now a 2016 image.*

Noted. All basemaps on the prototype intersection pages have been updated to the most recent NYS GIS Ortho imagery.

15. *(E. Ridge/Kings/Goodman) This intersection was recently reconstructed. We will not likely be doing any major work here for at least 20 years. Was there a documented accident or safety problem, or trouble crossing complaints here? These small islands present issues with being too small to provide refuge, as well as the fact that we would have to place a pedestrian pole in it where it would be very vulnerable to being struck by a vehicle.*

We received public comments specifically related to pedestrian safety concerns for the priority intersections due to high traffic speeds of turning vehicles. Consideration should be given to any significant concentrations of young, elderly, or persons with disabilities using the project site.

16. *(Titus/Hudson) Current Google image is 2016, but is still not accurate since it was re-paved and re-stripped this summer. This location must be re-visited since the pavement markings have changed.*

Noted.

17. *(Titus/Hudson) We have the same comment as above for E Ridge/Kings/Goodman. Essentially, the median would only serve to facilitate NB right turns.*

We received public comments specifically related to pedestrian safety concerns for the priority intersections due to high traffic speeds of turning vehicles. Consideration should be given to any significant concentrations of young, elderly, or persons with disabilities using the project site.

18. *(Titus/Hudson) Note that an overhead left turn only sign does exist for EB Titus at Cooper.*

Noted.

19. *(St Paul/Cooper) Again, we just completed a milling & resurfacing project here, including a road diet, and significant striping changes. We do not foresee major changes in the near future.*

The following language has been added to the corresponding figures: “Following fieldwork for the LOS, Monroe County DOT completed a milling and resurfacing project along portions of St Paul Blvd, Titus Ave, and Hudson Ave, which included road diet and re-striping. The LOS maps may not reflect these changes.”

20. *(St Paul/Cooper) We do not support full time no turn on red unless a sight distance issue exists.*

Language has been added to Page #62 and #70.

21. *(St Paul/Cooper) We do not see how allowing dual EB lefts and SB rights will make it safer for pedestrians? We recently reduced NB St Paul to one lane.*

This was observed during fieldwork in addition to receiving public input regarding the matter.

22. *(St Paul/Pattonwood) How are the right and left turns from Pattonwood onto St Paul posing a safety problem?*

This was observed during fieldwork in addition to receiving public input regarding the matter.

23. *(St Paul/Pattonwood) With regard to the pedestrian movements, is there a documented problem now? Please provide any accident data for our review.*

Although crashes are a major driver for improvements, we are taking more into consideration to ensure this is a comprehensive document that recommends best practice design. We include the following language in numerous locations throughout the document: “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.”

24. *(St Paul/Pattonwood) With regard to shared lane markings, if significant bicycle presence is noted, the shared lane markings and signs could be considered. The signs are .*



Noted. The following language is in the report: “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).”



25. *(On Street Bike Facilities) Please update based on our recent shoulder additions on St Paul, Hudson & Titus.*

The following language has been added to the corresponding figures: “Following fieldwork for the LOS, Monroe County DOT completed a milling and resurfacing project along portions of St Paul Blvd, Titus Ave, and Hudson Ave, which included road diet and re-striping. The LOS maps may not reflect these changes.”

26. *(Islands/Slip Lanes) Note that at Mt Hope/Ford, we have had many neighborhood complaints regarding vehicles not yielding to peds.*

Noted. We have the following language within the report: “conceptually, these slip lanes allow for more predictable interactions between motorists and pedestrians. There is no right turn on red for motorists to violate. However, they must be properly designed to discourage high speed motorist turns. They must also provide room for signal hardware on the islands without obstructing the motorist’s view of pedestrians.”

27. *(Islands/Slip Lanes) Add to “-“ Poor vehicle yielding behavior; higher maintenance and plowing costs.*

The following language has been added in the report, Page #60/61 “MCDOT has indicated concerns for poor vehicle yielding behavior, higher maintenance and plowing costs. Additionally, MCDOT supports channelized islands under the following conditions: significantly skewed locations, high volume right turn movements (but not ped friendly) and to break up extremely long (>7 lanes crossings).”

28. *MCDOT supports these channelized islands only under the following conditions: significantly skewed locations; high volume right turn movements (but not ped friendly); to break up extremely long (> 7 lanes) crossings.*

See item #27.

29. *Under ped & bike enhancements – ped actuated signal or beacon is not recommended, since it would compete with the adjacent traffic signal, and would be confusing to motorists who are obeying the adjacent signal.*

These elements were public meeting supplies only and are not included within the final report since they were deemed un-feasible for Irondequoit.

30. *Sound/rumble strips are not generally recommended in residential areas.*

These elements were public meeting supplies only and are not included within the final report since they were deemed un-feasible for Irondequoit.



31. *The use of the ladder/continental (enhanced) crosswalks should generally be reserved for mid-block or uncontrolled locations per current NYSDOT policy, which MCDOT has adopted.*

See item #1.

Please call should you have any questions.

Very truly yours,

BARTON & LOGUIDICE, D.P.C.

A handwritten signature in black ink that reads 'Nicole Cleary'.

Nicole Cleary, RLA
Project Landscape Architect

Copy: Thomas M. Robinson, RLA, Project Manager

March 9, 2017

Mr. Dan Kenyon
Transportation Planner II
Regional Transit Service
1372 East Main Street
Rochester, NY 14609

RE: RTS comments on Irondequoit Active Transportation Plan

Dear Dan,

Barton & Loguidice, D.P.C. appreciates your comments and has addressed them for the above-referenced project from your email letter dated September 01, 2016 and October 12, 2016. Comments are followed by responses, where they are requested, typed in bold faced font. This letter showing comments from RTS and responses is being included as Appendix K within the report document.

1. *Add text somewhere in document stating that transit recommendations are from consultant team.*

The following note has been added within the report in multiple locations: Recommendations are provided by the consultant team. The recommendations are conceptual in nature and would be subject to further study, review and approvals from the Town of Irondequoit, RTS and private owners before advancing to design development and implementation. Maintenance of shelters and accompanying site improvements to be coordinated during design development.

2. *Consider adding the following bus stops (from map): Titus & Curtis #3819 - needs bus pad, Goodman & Irondequoit Mall #1599 - needs bus pad*

Two transit stops have been added for recommended improvements to Table 4, Page #41.

3. No need to recommend shelters at these locations as all of them already have shelters. (All 4 stops on Transit Recommendations figure)

Language has been revised accordingly, Page #42.





4. Making pedestrian connection from shelter to public sidewalk on Hudson Ave is important and recommended. (Irondequoit Plaza stop)

Language has been added, Page #42.

5. RTS does not recommend labeling or promoting bus stops as a children's play area.

Play features have been removed from figure and language, Page #43.

Titus Avenue & Culver Road (page 2):

1. *RTS supports installing bus stop pads with sidewalk connections at each location; NW corner (Bus stop ID# 815) & SE corner (ID# 814).*

RTS support language has been included, Page #64.

2. *Regarding the NW corner:*
 - a. The last bullet item under the preliminary recommendations refers to stop line setbacks and states that "...no changes are recommended".*
 - b. However, the recommended stop line setback distance (in relation to the crosswalk) appears to be much farther away than the existing condition image.*
 - c. Although the document states that the setbacks are required to allow for vehicle turning movements, this particular one seems significantly larger and different compared to the other corners.*
 - d. This design can potentially impact the sight distance for the operator as they are farther back from the intersection.*
 - e. I also bring this up because the stop line (at intersections) determines the location of the bus stop and it appears to create an unnecessary gap between the bus stop and the corner.*

The stop lines shown on the rendering are in close proximity to the existing locations. The NW corner was angled to enhance the safety for pedestrians crossing the intersection.

East Ridge Road & Kings Highway (page 4):

- *The first bullet under preliminary recommendations refers to adding bus stop pads for the stops located on E. Ridge Rd (north side east of Kings Hwy – ID#3265) & Goodman St (east side south of Ridge Rd - ID#1599).*
- *RTS is in favor of installing a new concrete pad at the Goodman St bus stop (ID# 1599).*

Language has been added to Page # 66

- *The bus stop location on E. Ridge Rd (ID#3265) had sidewalk improvements done as part of the East Ridge Rd construction project.*

Language has been added to Page # 66



- *The current sidewalk extends from the curb line back to a guard rail (grade drops off to RGH campus parking lot), which is where the approximate ROW boundary is.*
- *Therefore, the sidewalk in essence is the bus pad. Unfortunately some of our customers use the guard rail as a “bench”, however, there is no room to add any additional bus stop pad or amenities.*
- *The second bullet item refers to the bus stop at the SW corner (ID# 3263). Per the draft recommendation, RTS is not supportive of relocating the bus stop to align with the existing pedestrian access to the parking lot (Starbucks / Chipotle).*

Language has been added to Page # 66

- *Relocating the bus stop farther back from the intersection creates a space in front of the bus that allows vehicles to pull in front of the bus.*
- *Vehicle drivers will attempt to go around the bus and this can create an unsafe situation.*
- *There is just enough room at the stop to deploy a wheelchair lift from the bus.*

Please call should you have any questions.

Very truly yours,

BARTON & LOGUIDICE, D.P.C.

A handwritten signature in black ink, appearing to read 'Nicole Cleary', is positioned below the typed name.

Nicole Cleary, RLA
Project Landscape Architect

Copy: Thomas M. Robinson, RLA, Project Manager

May 02, 2017

Mr. Brent H. Penwarden III, P.E.
Chief of Traffic Operations & Permits
Monroe County Department of Transportation
6100 City Place
50 W. Main St.
Rochester, NY 14614

RE: 04/07/2017 MCDOT comments on Irondequoit Active Transportation Plan

Dear Brent,

Barton & Loguidice, D.P.C. appreciates your comments and has addressed them for the above-referenced project from your email letter dated April 07, 2017. We have left the original comments from August 30, 2016 in italics followed by responses typed in bold faced font. We added the more recent additional comments in red (MCDOT) and blue (B&L and Sprinkle Consulting). This letter showing comments from MCDOT and responses is being included as Appendix K within the report document.

1. *(Typ) – NYSDOT has provided guidance relative to marked crosswalks. A copy is attached. Essentially, they recommend the use of high visibility crosswalks (other than standard 2 white lines) at uncontrolled (not stop sign or signal) approaches, and only at controlled locations where unusually high pedestrian volumes are present or expected, or high volumes of school children cross unassisted. These guidelines should be applied to all of the locations in this study.*

No attachment. We did not find language within the NYS Vehicle and Traffic Law or the NYS supplement to the MUTCD. The Highway Design Manual Chapter 18 does not prohibit their use anywhere and specifically recommends their use “in areas where there are nursing homes, senior citizen housing, medical facilities, etc.”. We found a DOT Office of Traffic Safety and Mobility Instruction (TSMI-14-01) titled Crosswalk Pavement Markings-Requirement for High Visibility Crosswalk at Marked Uncontrolled Crossings which includes the text “High Visibility crosswalks may be used at controlled crossings with justification...” We do already have language within the report, page 59 “Although none of the Irondequoit prototype intersections fall under the jurisdiction of NYSDOT, for future recommendations it should be noted that 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.”





The attachment was TSM-14-01, which we are following.

Understood. We have added language directly from TSMI-14-01.

2. (Typ) *With the reduced radius proposed, will buses and large trucks be able to make the movement without crossing the double yellow line?*

AutoTURN software was used to analyze all intersection recommendations.

So noted.

3. (Typ) *As noted at previous meetings and field visits, all of the MCDOT signalized intersections will have countdown pedestrian indications at existing marked crosswalks by the end of 2016.*

Noted. Page # 60.

OK

4. (Typ) *LPI – leading pedestrian interval – the study is recommending them for all locations that have a right turn lane. We would like to see the data supporting the need for these.*

Added language on Page #60. MUTCD recommends use “at intersections with high pedestrian volumes and high conflicting turning vehicle volumes, a brief leading pedestrian interval, during which an advance WALKING PERSON (symbolizing WALK) indication is displayed for the crosswalk while red indications continue to be displayed to parallel through and/or turning traffic, may be used to reduce conflicts between pedestrians and turning vehicles.”

Please add a sentence indicating that LPI's will be considered on a case by case basis.

Language added to Page 66.

5. (Typ) *No Turn on Red / Yield to pedestrians on-demand blank-out signs – we feel that using a fixed sign is much better than the electronic blank out signs. They are very high maintenance, and not needed when the times are known. Additionally, adding NTOR at all approaches would mean that all right turns are made during the green which creates extra conflicts for through bicyclists.*

Revised to show fixed R10-15 signs. Language revised page 63 and 72.

The report is recommending the use of R10-15 signs, which, again are unnecessary, and simply reinforce existing law. Please indicate something like this “The use of R10-15 signs will be considered in situations where there is documented condition where vehicles are not yielding to pedestrians as required by law.



Language added to Figure 12, 9.

6. *(Typ)Channelized right turn slip lanes – We would need to review the individual locations and specific designs, however, our experience does not show them helping, since they are not signal controlled.*

The following language is included within the report in multiple locations: “*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.*”

OK

7. *(Titus/Culver) Is there any evidence of a problem with pedestrians not being able to cross any of these approaches? At only 3 total lanes, this is one of the easier locations for pedestrians to navigate.*

We received public comments specifically related to pedestrian safety concerns for the priority intersections due to high traffic speeds of turning vehicles. Consideration should be given to any significant concentrations of young, elderly, or persons with disabilities using the project site.

Since these comments are unsubstantiated, they only serve to be inflammatory in nature. We have not received any complaints or concerns at this location. I understand you should show the public comments, but only up front and not in the recommendations section. I suggest adding something like this "Comments were received regarding pedestrian safety due to high traffic speeds of turning vehicles. Irondequoit Police Dept. has been made aware of this concern, and MCDOT will monitor this location to determine if additional traffic measures are required."

Language added to Figure 12, sheets 3-5.

8. *(Norton/Pardee) We are in the planning stages of a capital project on Norton St between the City limits and I-590. As part of this project, this intersection will be studied to determine if the existing traffic signal is still justified. This will impact many of the recommendations for this location.*

Noted. Language has been added to page #65.

OK

9. *(Norton/Pardee)The report implies that the intersection is not used as a school crossing, however, the NTOR signs have wording that indicates that school children do use these crosswalks. The school should be consulted.*



We had input from the community that this is used as a secondary crossing, with the primary crossing being further east. Both Irondequoit school districts were consulted during the development of this plan.

What was the school district's response to your questions?

We received the following comment "A traffic light at the entrance to the high school. We have had one serious injury pedestrian incident, a number of auto accidents and I can't tell you how many close calls at that location. At minimum a flashing red, stop and go during school hours and highly attended special events that switches to flashing amber during non school hours would be better than the present uncontrolled access.

Jerry

Gerald G. Lonthair

Director of Security Services

East Irondequoit School District"

10. (Norton/Pardee)NTOR when flashing – these signs compete with the traffic signal for driver's attention.

These types of signals provide more positive affirmation of when the prohibition is actually in place. They would be flashing during peak student travel time to enhance safety for the students between 7-9am and 2-4pm.

MCDOT does not recommend the use of the No Turn on Red When Flashing signs, since they compete with traffic signal for the driver's attention.

Language added to Page 68.

11. (Norton/Pardee)Note that "School Crossing" signs (S1-1) are not permitted at a signalized approach.

Noted. The S1-1 signs would be recommended on the approach to the intersection not at the actual signalized intersection. MUTCD states "The In-Street Pedestrian Crossing sign, the In-Street Schoolchildren Crossing sign, the Overhead Pedestrian Crossing sign, and the reduced size in-street School (S1-1) sign shall not be used at signalized locations."

Note that the MUTCD does not allow the use of the S1-1 signs at signalized intersections, nor the approaches to the signalized intersections, since the signs are warning the driver of a marked crosswalk at the signalized intersection.

Language has been removed.

12. (Typ) Please use the term "handicapped ramps" rather than "curb ramps", since some locations do not have curb, but have gutters.

NYSDOT, FHWA and MUTCD refer to them as curb ramps.

OK, but it is still confusing.

13. *(Norton/Pardee) Once again, is there a documented concern crossing at these locations? This is a relatively easy location to cross.*

We received public comments specifically related to pedestrian safety concerns for the priority intersections due to high traffic speeds of turning vehicles. Consideration should be given to any significant concentrations of young, elderly, or persons with disabilities using the project site.

See comments/response to #7 above.

Language added.

14. *(E Ridge/Kings/Goodman) Note the google image is old. There is now a 2016 image.*

Noted. All basemaps on the prototype intersection pages have been updated to the most recent NYS GIS Ortho imagery.

OK

15. *(E. Ridge/Kings/Goodman) This intersection was recently reconstructed. We will not likely be doing any major work here for at least 20 years. Was there a documented accident or safety problem, or trouble crossing complaints here? These small islands present issues with being too small to provide refuge, as well as the fact that we would have to place a pedestrian pole in it where it would be very vulnerable to being struck by a vehicle.*

We received public comments specifically related to pedestrian safety concerns for the priority intersections due to high traffic speeds of turning vehicles. Consideration should be given to any significant concentrations of young, elderly, or persons with disabilities using the project site.

See comments/response to #7 above.

Language added.

16. *(Titus/Hudson) Current Google image is 2016, but is still not accurate since it was re-paved and re-striped this summer. This location must be re-visited since the pavement markings have changed.*

Noted.



So was the report revised to reflect the recent improvements?

We have updated the aerial image to the most recent version available. We understand the recent improvements and the benefits of them. As a planning document, we are showing future recommendations. We have updated the BLOS, PLOS, and on-street recommendations figures to reflect the August 2016 design plans of the multi-lane conversions. Language has been revised to reflect the August 2016 design plans for the Prototype Intersection.

17. *(Titus/Hudson) We have the same comment as above for E Ridge/Kings/Goodman. Essentially, the median would only serve to facilitate NB right turns.*

We received public comments specifically related to pedestrian safety concerns for the priority intersections due to high traffic speeds of turning vehicles. Consideration should be given to any significant concentrations of young, elderly, or persons with disabilities using the project site.

See comments/response to #7 above.

Language added.

18. *(Titus/Hudson) Note that an overhead left turn only sign does exist for EB Titus at Cooper.*

Noted.

So was the report revised to reflect such?

Language added to Figure 12, sheet 4.

19. *(St Paul/Cooper) Again, we just completed a milling & resurfacing project here, including a road diet, and significant striping changes. We do not foresee major changes in the near future.*

The following language has been added to the corresponding figures: “Following fieldwork for the LOS, Monroe County DOT completed a milling and resurfacing project along portions of St Paul Blvd, Titus Ave, and Hudson Ave, which included road diet and re-striping. The LOS maps may not reflect these changes.”

So maps/report was not revised to reflect these improvements.

Due to not seeing the as-builts for these projects, the maps/report had not been updated. We requested as-builts from Tom Frys at MCDOT and received the August 2016 design plans since as-builts have not yet been produced. We have updated the report language and maps (figures 2, 3 and 10) according to these design plans for Titus Ave (CO91), St

Paul Blvd (CO122), and Hudson Ave (CO112). Language has been revised to reflect the August 2016 design plans for the Prototype Intersection.

20. (St Paul/Cooper) *We do not support full time no turn on red unless a sight distance issue exists.*

Language has been added to Page #62 and #70.

I assume you meant page 63 & 70.

21. (St Paul/Cooper) *We do not see how allowing dual EB lefts and SB rights will make it safer for pedestrians? We recently reduced NB St Paul to one lane.*

Figure has been revised to reflect the August 2016 design plans. This comment does not apply to the current recommendations.

22. (St Paul/Pattonwood) *How are the right and left turns from Pattonwood onto St Paul posing a safety problem?*

This was observed during fieldwork in addition to receiving public input regarding the matter.

I suggest a comment similar to that recommended in #7. Again, we've never received any complaints here, or requests to study this intersection. There is no data to suggest any kind of a safety problem exists.

Language added.

23. (St Paul/Pattonwood) *With regard to the pedestrian movements, is there a documented problem now? Please provide any accident data for our review.*

Although crashes are a major driver for improvements, we are taking more into consideration to ensure this is a comprehensive document that recommends best practice design. We include the following language in numerous locations throughout the document: “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.”

See comment #22 above.

24. (St Paul/Pattonwood) *With regard to shared lane markings, if significant bicycle presence is noted, the shared lane markings and signs could be considered. The signs are .*





Noted. The following language is in the report: *“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).”*

OK

25. *(On Street Bike Facilities) Please update based on our recent shoulder additions on St Paul, Hudson & Titus.*

The following language has been added to the corresponding figures: *“Following fieldwork for the LOS, Monroe County DOT completed a milling and resurfacing project along portions of St Paul Blvd, Titus Ave, and Hudson Ave, which included road diet and re-striping. The LOS maps may not reflect these changes.”*

So maps/report was not revised to reflect these improvements?

See comment #19.

26. *(Islands/Slip Lanes) Note that at Mt Hope/Ford, we have had many neighborhood complaints regarding vehicles not yielding to peds.*

Noted. We have the following language within the report: *“conceptually, these slip lanes allow for more predictable interactions between motorists and pedestrians. There is no right turn on red for motorists to violate. However, they must be properly designed to discourage high speed motorist turns. They must also provide room for signal hardware on the islands without obstructing the motorist’s view of pedestrians.”*

Please add something like “However, based on past performance at other existing locations, MCDOT does not support the installation of these.

Language added to Page 67.

27. *(Islands/Slip Lanes)Add to “-“ Poor vehicle yielding behavior; higher maintenance and plowing costs.*

The following language has been added in the report, Page #60/61 *“MCDOT has indicated concerns for poor vehicle yielding behavior, higher maintenance and plowing costs. Additionally, MCDOT supports channelized islands under the following conditions: significantly skewed locations, high volume right turn movements (but not ped friendly) and to break up extremely long (>7 lanes crossings).”*

OK

28. *MCDOT supports these channelized islands only under the following conditions: significantly skewed locations; high volume right turn movements (but not ped friendly); to break up extremely long (> 7 lanes) crossings.*



See item #27.

OK

29. *Under ped & bike enhancements – ped actuated signal or beacon is not recommended, since it would compete with the adjacent traffic signal, and would be confusing to motorists who are obeying the adjacent signal.*

These elements were public meeting supplies only and are not included within the final report since they were deemed un-feasible for Irondequoit.

OK

30. *Sound/rumble strips are not generally recommended in residential areas.*

These elements were public meeting supplies only and are not included within the final report since they were deemed un-feasible for Irondequoit.

OK

31. *The use of the ladder/continental (enhanced) crosswalks should generally be reserved for mid-block or uncontrolled locations per current NYSDOT policy, which MCDOT has adopted.*

See item #1.

OK

32. *Table 6 and possibly elsewhere as well, note that sidewalks at the responsibility of the Tow, and not MCDOT. The Town owns and maintains all sidewalks. ADA ramps and sidewalk may be required to be added, adjusted etc. as part of a federal aid roadway project, but the ownership and maintenance remains with the Town.*

We have the following language within the report already in 2 locations:

“Improvements to the sidewalk network will be implemented over an extended period of time and will require coordination between multiple agencies. Although sidewalks may be installed as part of NYSDOT and Monroe County DOT roadway projects, ownership and maintenance is the responsibility of the Town of Irondequoit. Unless federal aid is available through Monroe County DOT projects, the cost of sidewalk installation is the Town’s responsibility.”



Please call should you have any questions.

Very truly yours,

BARTON & LOGUIDICE, D.P.C.

A handwritten signature in black ink, appearing to read 'Nicole Cleary'. The signature is written in a cursive, flowing style.

Nicole Cleary, RLA
Project Landscape Architect
Copy: Thomas M. Robinson, RLA, Project Manager