Bicycle Commuter Corridor Study

"Connecting Cyclists to Work"

SMTC

June 12, 2013

Bicycle Commuter Corridor Study

Syracuse Metropolitan Transportation Council

Final Document

June 12, 2013

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For further information contact:

Michael D. Alexander, AICP, Project Manager
James D'Agostino, Director
Syracuse Metropolitan Transportation Council
126 N. Salina St., 100 Clinton Square, Suite 100, Syracuse, NY 13202
PHONE: (315) 422-5716 FAX: (315) 422-7753
www.smtcmpo.org

Executive Summary

Introduction

Developing a seamless, multi-jurisdictional bike corridor network that links residential areas with employment centers requires a cooperative and coordinated effort among multiple road owners.

This Study identifies suburban and urban corridors within the Metropolitan Planning Area that are most likely to maintain high average cycling speeds to encourage commuter cycling from the suburbs to the city. As a planning-level assessment, the Study informs road owners about cooperative opportunities to develop a seamless bicycle network based on a consistent set of treatments. Road owners may consider applying these treatments when designing and implementing roadway improvements along the identified corridors.

To accomplish study objectives, the Syracuse Metropolitan Transportation Council (SMTC) established a Study Advisory Committee (SAC) of SMTC member agencies and Working Groups comprised of local cyclists who commute to work by bike to provide guidance for the study.

Summary of Demographics, Legislation, Plans and Initiatives

Demographics: The target group for this study is "*experienced-confident riders*" who are comfortable riding with vehicles on streets at speeds up to 25 mph on level grades and up to 45 mph on steep descents and who may cycle distances of 5 or more miles.

Legislation: The 2012 NYS Smart Growth Public Infrastructure Policy Act (Act) requires consideration of smart growth principles as well as local government plans for development when investing public funds into infrastructure improvements. Smart growth principles advocate for multi-modal corridors, including bike facility infrastructure. Likewise, the 2012 Complete Streets legislation requires transportation projects undertaken, overseen, or funded by the state Department of Transportation consider various user needs.

Plans: The SMTC reviewed and summarized several current and ongoing plans to ensure that this study complements these efforts and identifies connections to existing and proposed bike corridors. The City of Syracuse Draft Bicycle Master Plan, for instance, was viewed as an extension of this plan as it identifies additional bike corridors within the city's municipal boundaries. Therefore, this study identifies major suburban/urban commuter corridors that could connect into the city's proposed bike network.

Identification of Preliminary Corridors

SMTC staff used the Travel Demand Model to identify major travel routes between residential areas and places of employment. Based on the Travel Demand Model results, SMTC staff determined that bike commuter corridors should connect downtown and University Hill with four suburban areas: west (Camillus), northwest (Baldwinsville), north (Clay), and east (Fayetteville/Manlius).

Staff identified initial bike commuter corridors based on this assessment and reviewed them with the SAC. The SAC suggested including additional corridors for consideration. Working Group participants also added or removed corridors based on their experience cycling to work. The SMTC staff traveled all of the corridors and made additional modifications

based on existing conditions and field observations.

Existing Conditions

The SMTC conducted an existing conditions assessment to confirm the issues and opportunities and provide additional input into the corridor selection process.

Environmental Justice: The SMTC reviewed its 2012 Environmental Justice Assessment that identified low, medium, and high-priority target areas. The suggested bike corridors appear to be well distributed across designated target populations for communities west, north, and east of the City of Syracuse.

Commercial Corridors: Working group participants suggested avoiding commercial corridors if possible to avoid high traffic volumes and the large number of driveways. Major suburban commercial corridors that were avoided include: West Genesee Street, Route 57, Route 11, Erie Boulevard East, and sections of Route 92 and Route 290.

Transit Service Routes: Connecting bicycle corridors with transit routes offers cyclists multi-modal commuting options as each bus can transport up to three bikes. This is beneficial during instances of inclement weather and/or to shorten the travel length/time. Many suggested bike corridors overlap with transit routes.

Bike Suitability and Accidents: The SMTC Bicycle Suitability Map shows that the region consists of a well-developed road network with varying levels of cycling suitability. SMTC staff compared the suitability and the number of accidents on roughly parallel roads that could provide alternative bike corridors between the same general origin and destination. The following corridors with higher suitability ratings and fewer accidents were given priority: Milton Ave and Howlett Hill Road from the west, Route 370 and Morgan Road from the northwest, South Bay Road from the north, and portions of Route 92 from the east.

Speed and Traffic Volumes: Cyclists who participated in the Working Group meetings encouraged the SMTC to select corridors that have lower posted speed limits and traffic volumes. The following table summarizes the posted speed and Annual Average Daily Traffic (AADT) for major corridors.

Speed / Traffic Volumes for Major Roadways

	Roadway	Posted Speed Limit (mph)	Approximate AADT* (vehicles per day)
From the West	Milton Ave	30	2,500-8,000
	West Genesee St	30-35	21,000-22,000
	Howlett Hill Road	35	3,000-5,000
From the Northwest	Route 370	45-55	8,000-13,000
	Route 57	45	14,000-29,000
	Morgan Road	45	10,000-14,000
	Old Liverpool Rd	40	13,000
	Onondaga Lake Pkwy	55	22,000
From the North	Route 11	35-40	8,000-26,000
	South Bay Rd	35-55	7,500-14,000
	Buckley Rd	35-45	11,000 -15,000
	Seventh North St	40	6,000-13,000
From the East	Route 5	40-55	11,000-29,000
	Route 92	45-50	8,000-23,000

***AADT** – Estimated average daily traffic volume (2010) on a route segment at a particular count station location. Actual daily volumes encountered on highways may vary from AADT.

Pavement Conditions: The SMTC reviewed the ratings for each road considered as a possible bike corridor and noted where below average conditions exist.

Topography: Syracuse is a region of hills, and completely avoiding steep slopes is unlikely along any corridor, but especially along roadways from the west and east. Northern corridors are mostly level with less than 5 percent slopes.

Developing a Bike Commuter Corridor Network

No single agency/owner has the authority or the resources to implement a multi-jurisdictional bike network. However, cooperative discussions among road owners to incorporate bike facilities into scheduled roadway resurfacing and reconstruction projects could lead to a cost effective bike network development strategy.

Suggested Corridors: Each corridor considered during the course of this study could be included as part of a cooperative and comprehensive bike commuter corridor network. Fiscal resource constraints, however, limit the ability of road owners to make necessary facility improvements for all considered corridors. As shown in the following map, this Study suggests these (major) bike commuter corridors:

- Milton Avenue and Howlett Hill Road from the west,
- Route 370 and Morgan Road from the northwest,
- South Bay Road to Buckley Road from the north, and
- Route 92 from the east.

Several network gaps exist along the priority roadways. To close these gaps, the SMTC identified roadway segments that serve as extensions and/or as critical connections to complete the network as shown in the map. The map also references where to find additional recommendation information within the report. Once a network is officially established, road owners may, at their own discretion and as resources permit, incorporate additional corridors.

Potential Corridor Treatments: Bike lanes are the preferred bike facility option since cyclists are accustomed to seeing them denoting a bikeway. Where bike lanes are not feasible to incorporate in the short term, shared-use-lanes (i.e., sharrows) could be used as a substitute if proper conditions exist. Other options such as bike boulevards, cycle tracks, and shared-use paths/side paths are also considered. Please see Table 5 for a description of bike facility treatments and typical applications.

Planning Level Treatment Options for Intersections, Bridge Overpasses/ Underpasses, and At-Grade Railroad Crossings: The SMTC staff observed similar issues with intersections, bridge under/overpasses, and at-grade railroad crossings, such as: no shoulders, curbing, right-of-way constraints, curbed center islands, high traffic volumes, complex lane configurations, and wide approaches. At-grade railroad crossings often overlap roadways at skewed angles. Bridges often lack shoulders, are narrow, have limited sight lines, and lack sufficient lighting.

Although similar issues exist, existing conditions vary and pose unique engineering and design challenges. In some cases, the simple option is to install signs notifying cyclists to dismount and walk their bikes along sidewalks. Other more costly options include: modifying vehicle travel lanes, installing bike signals or warning beacons, making traffic signal adjustments, develop median refuges and bike boxes, and intersection reconstruction. Please see Table 6 for a listing of possible mitigation measures for intersections, bridges, and railroad crossings.

Public Education: It is important to note that when riding in the road cyclists must follow the same road rules that regulate motor vehicles. The Onondaga County Traffic Safety Advisory Board (OCTSAB), Federal Highway Administration-produced materials, local police departments, and the New York State Department of Transportation (Region 3) Bicycle/Pedestrian Coordinator may all serve as resources to help with public education goals.

Maintenance and Operations: Working group participants suggest that bike facilities be accessible for year-round use. Road owners should ensure the execution of a good maintenance program that establishes standards and a schedule for inspections.

Wayfinding for Bicycles: Once a bike commuter corridor is established, road owners may consider the need to develop a wayfinding system that provides clear navigational instructions. Part 9 of the *Manual on Uniform Traffic Control Devices* (MUTCD) provides basic guidelines for designing wayfinding signage systems for bike routes.

Destination Facility Enhancements: Ensuring that there are adequate bike storage facilities and other cyclist accommodations such as showers and locker rooms helps encourage people to commute to work by bike. Some of these accommodations can be provided by the public sector, while others may be obtained through the private sector via collaborative partnerships.

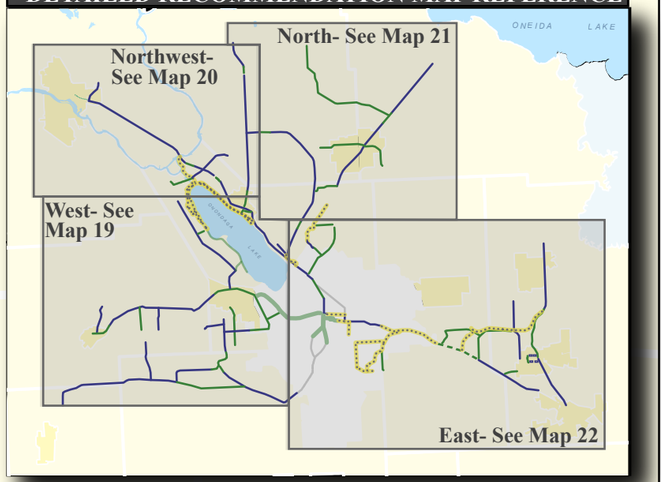
Conclusion: This study encourages cooperative discussions and agreements among road owners as a cost-effective implementation strategy to develop a successful bike commuter corridor network. Projects that involve non-priority corridors may also be considered for inclusion as an extension of the bike network as resources permit.

General Bike Commuter Corridor Recommendations

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

DETAILED RECOMMENDATION MAP REFERENCE



Note: See Legend

- Suggested Bike Lane Accompanied by "Bike Lane" Signs
- Shared Lane Markings (Sharrows) Accompanied by "Share the Road" Signs
- Bike Boulevard
- Cycle Track
- Bike Corridor to be Constructed/Currently Under Construction 2013
- Use Existing Trails/Bikeway
- The Syracuse Bicycle Plan Identifies Road as a Bikeway
- City of Syracuse
- Town
- Village
- Water Features

Note:

- The City of Syracuse Bike Infrastructure Master Plan identifies potential corridors throughout the city. Please refer to this plan for additional corridor recommendations within the city.
- See Section 5.2 for suggested treatment options.
- Please reference Table 5 for a description of bike facility treatments and typical applications.
- Please reference Table 6 for possible mitigaion measures for intersections, bridge & railroad crossings.

SMTC
100 Clinton Square
126 North Salina St, Suite 100
Syracuse, NY 13202
(315) 422-5716
Fax: (315) 422-7753
www.smtcmpo.org

Data Sources: SMTC, SOCPA
Prepared by SMTC, 06/2013

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1.0 Introduction

1.1 Overview

As part of the 2012-2013 Unified Planning Work Program (UPWP), the Syracuse Metropolitan Transportation Council (SMTC) agreed to complete the Bicycle Commuter Corridor Study (Bike Corridor Study) on behalf of the New York State Department of Transportation (NYSDOT).

Developing a seamless, multi-jurisdictional bike corridor network that links residential areas with employment centers requires a cooperative and coordinated effort among multiple road owners. As a planning-level assessment, the Bike Corridor Study informs road owners about cooperative opportunities to develop a seamless bicycle network based on a consistent set of treatment options.

This Study does not advocate one option over another since an engineering assessment may be required to determine appropriateness. Therefore, a road owner, at its own discretion, would determine the most appropriate option if it chooses to make bicycle facility improvements.

1.2 Accommodating Cyclists

According to the American Association of State and Highway Transportation Officials (AASHTO),

> *"All roads, streets, and highways, except those where bicycles are legally prohibited, should be designed and constructed under the assumption that they will be used by bicyclists. Therefore, bicyclists' needs should be addressed in all phases of transportation planning, design, construction, maintenance, and operations."* (AASHTO 2012)[1].

Therefore, roads that do not outright restrict the use of bicycles should accommodate cyclists as appropriate. This Study identifies roads within the Metropolitan Planning Area that are most likely to maintain high average cycling speeds to encourage commuter cycling from the suburbs to the city.

1.3 Bike Corridor Study Purpose, Goal & Objectives

The SMTC developed purpose, goal, and objective statements to guide the study and ensure compatibility with other initiatives.

Purpose Statement: The purpose is to identify opportunities to develop a seamless bicycle commuter corridor network that links residential areas outside of the City of Syracuse with major employment centers primarily located within the City of Syracuse. This will encourage people to bike to work, which can help reduce vehicle congestion and its associated environmental impacts.

Goal Statement: The goal is to establish options that road owners can assess, select, and apply cooperatively to ensure the development of a consistent multi-jurisdictional bike corridor network.

Objective Statement: The objective is to identify bike commuter corridors within the Metropolitan Planning Area (MPA) by identifying:

[1] American Association of State Highway and Transportation Officials. Guide for the Development of Bicycle Facilities, 4th Ed. AASHTO, 2012: 2-4.

- major origins (i.e., residential population centers) outside of the City of Syracuse;
- major destinations (i.e., places of employment) located primarily within the City of Syracuse;
- a reasonable number of bicycle corridors that directly link residential population centers (origins) with places of employment (destinations). Based on existing conditions preferred corridors, to the extent possible, should allow high average cycling speeds, be direct, have low traffic volumes and speed, and have fewer conflict points;
- network gaps and developing general planning-level treatment options for improvements along the identified corridors; and
- short to long-term treatment options for road owners interested in making improvements. The options may require additional assessment by the road owner prior to selection.

1.4 Target Group

Cyclists vary in their skill level, comfort level, and bicycling capabilities. The identification of a cyclist target group aids in the identification and selection of appropriate bike facilities and accommodations.

For the purpose of this study, the target group includes "*experienced-confident riders*" who commute to and from work. "Experienced-confident riders" are defined by AASHTO as cyclists who are comfortable riding with vehicles on streets, may ride at speeds up to 25 mph on level grades and up to 45 mph on steep descents, and may cycle distances of 5 miles or longer (AASHTO 2012).[2]

[2] American Association of State Highway and Transportation Officials. Guide for the Development of Bicycle Facilities, 4th Ed. AASHTO, 2012: 2-5.

The Federal Highway Administration classifies this type of bicycle user as Group A – an Advanced Cyclist. Advanced cyclists use their bicycles in traffic as they would a motor vehicle; they are riding for convenience and speed and want direct access to their destinations with a minimum of detour or delay.

1.5 Study Area

The study area consists of the SMTC Metropolitan Planning Area (MPA), which includes all of Onondaga County and portions of Oswego and Madison counties. Potential bicycle corridors include areas containing high population and employment densities within the MPA. Please see Map 1 – Study Area.

Map 1 – Study Area

1.6 Study Process

The SMTC developed the following process to achieve the Bike Corridor Study's purpose, goal, and objectives:

- The SMTC developed a Study Advisory Committee (SAC) to guide the study, provide oversight of deliverables, provide necessary support, and serve as a resource. The SMTC met with the SAC throughout the planning process.
- The SMTC collected, reviewed, and considered relevant plans, studies, and reference materials. These documents served as a foundation for this study and ensured that this effort complements other planning initiatives.
- The SMTC used a Travel Demand Model (Model) - a zone-based forecasting tool - to identify origin and destination pairs from clusters of transportation analysis zones (TAZs) within the MPA. The Model output helped guide the identification of initial corridors for consideration.
- The SMTC met with Working Group participants (WG) to refine the corridors linking origins and destinations. The Working Group included members from the Onondaga Cycling Club and others who commute to work by bike. The participants provided information about corridor conditions and connection opportunities.
- The SMTC staff conducted field observations of all of the corridors suggested by the Working Group participants, noted observations, and added and removed corridors as necessary.
- The SMTC utilized its Geographical Information System (GIS) to conduct an existing conditions assessment for all identified routes to help document corridor conditions and identify considerations when selecting possible treatment options.
- The SMTC identified primary commuter corridors and planning-level treatment options based on existing conditions and federal and state standards and guidelines. Identified treatment options may require additional analysis and assessment by an engineer to determine their appropriateness.

1.7 Stakeholder Engagement

During the scoping process, the New York State Department of Transportation and the SMTC determined that this Study would be developed as a technical assessment. This Study included the formation of a Study Advisory Committee (SAC) as well as Working Groups comprised of local cyclists who commute to work by bike.

Since this Study identifies corridors that cyclists use to commute to work, the SMTC determined that conducting Working Group discussions with experienced commuter cyclists would provide the most valuable information for this planning process, and would meet the public involvement needs for this study.

Public meetings were not held, and a project-specific Public Involvement Plan (PIP) was not prepared since public meetings or additional public outreach activities beyond the SAC and Working Group meetings were not deemed necessary. The public will have additional opportunities to comment if a road owner decides to analyze, design, and implement bicycle facility improvements.

Study Advisory Committee: Formed to provide technical and procedural guidance, the SAC consisted of representatives from the following public agencies:

- CenterState Corporation for Economic Opportunity – Downtown Committee

- New York State Department of Transportation
- Onondaga County Department of Transportation
- Syracuse-Onondaga County Planning Agency
- New York State Canal Corporation
- City of Syracuse
    - Bureau of Planning and Sustainability
    - Department of Public Works
    - Department of Engineering

In addition to providing technical guidance, the SAC confirmed origins, destinations, and potential corridors; provided input on potential bike facility treatments; and provided final review and oversight of the Draft Final Report.

The SMTC met with the SAC three times during the planning process. Meeting summaries are included in Appendix A.

Working Groups: The SMTC held five Working Group meetings to provide additional insight into the study. The Working Groups consisted of Onondaga Cycling Club members that bike to and from work, and different participants attended each meeting to provide a wide range of perspectives. The president of the Onondaga Cycling Club solicited members who wanted to provide information to the SMTC about their bike commute trip.

Working Group participants provided valuable information into the selection and refinement of potential bike corridors. Participants identified cycling and facility issues along the potential corridors and identified improvement opportunities. A summary of all Working Group meetings is included in Appendix A.

2.0 Summary of Demographics, Legislation, Plans, and Initiatives

2.1 Demographics

This study targets commuters who travel to work who are 16 years old and older. Table 1 indicates the mode of travel for workers in Onondaga County based on the 2000 and 2010 decennial census. However, data in the category entitled *Means of Transportation to Work* (for 2010) is from the 2006-2010 American Community Survey.

Table 1 – Demographic Overview

Onondaga County	2000	2010	Percent Change
Total Population	458,336	467,026	1.9%
Workers 16 years and older	211,646	216,202	2.2%
Means of Transportation to Work			
Drove alone	169,433	172,184*	1.6%
Other	42,213	44,018*	4.2%
Percent drive alone to work	80.1%	79.6%	-

***** Data is from 2006-2010 American Community Survey. (All other data are U.S. Census decennial (100%) data from 2000 and 2010.)

During the decade between 2000 and 2010, the total population and the number of workers 16 years old and older both increased by approximately 2 percent and the number of workers who "drove alone" increased 1.6 percent during this period. The category "Other" includes modes such as biking, walking, motorcycle, carpooled, public transportation, worked at home, etc. In total, this category increased by 4 per cent, but it is not possible to determine how many trips were specifically generated by cyclists.

The demographics serve as a baseline to determine how many people commute to work. The results suggest that approximately 80 percent of commuters drove alone to work in 2000 and 2010, but that the number of people choosing other forms of transportation modes to work, such as cycling, is increasing.

2.2 Existing Legislation

2.2.1 New York State Smart Growth Public Infrastructure Policy Act

In 2010, Governor David Paterson signed the NYS Smart Growth Public Infrastructure Policy Act (Act) into law. The Act requires consideration of smart growth principles as well as local government plans for development when investing public funds into infrastructure improvements. Smart growth principles advocate for multi-modal corridors, including bike facility infrastructure.

2.2.2 Complete Street Legislation

In August 2011, Governor Andrew Cuomo signed Complete Streets legislation (S5411A-2011: *Enables safe access to public roads for all users by utilizing complete street design principles*). The new law, which took effect on February 11, 2012, requires transportation projects undertaken, overseen, or funded by the state Department of Transportation to consider the needs of various users (e.g., motorists, pedestrians, cyclists, transit riders, citizens of all ages and abilities, including children, the elderly, and the disabled, etc.). Although the law requires projects funded with state or federal funds to comply, it does not provide any additional funding for designing or incorporating complete street design features into a project. Currently, there is no national Complete Streets policy, and locally funded projects are exempt from this law in New York State.

2.3 Current Plans

2.3.1 Draft Bicycle Infrastructure Master Plan 2012 – City of Syracuse

Summary: The Draft Bicycle Infrastructure Master Plan outlines a vision for an interconnected cycling network, provides a guide for implementation, and ultimately, seeks to render Syracuse a "cycle city." This Bike Corridor Study complements the city's Bike Master Plan by identifying opportunities to connect suburban and urban bike corridors. The SMTC staff referenced the Bike Master Plan throughout the study process to ensure consistency and help the city prioritize which corridors will benefit commuter cyclists.

The City of Syracuse identified its bike network and possible bike treatments in the summer of 2011. Proposed bike infrastructure treatments within the City are included for 4.2 miles of priority bicycling areas throughout downtown, and over 64 miles of bike infrastructure in the Westside, Southside, Valley, Eastside, Eastwood, Northside, and Lakefront neighborhoods. Treatment strategies include: standard bike lanes, sharrows, curbside bike lanes, bike boulevards, cycle tracks, contraflow lanes, and multi-use paths.

Application to this Study: Since the City is developing a bike master plan for its roadways, the SMTC Bike Corridor Study will focus more on identifying suburban commuter corridors that link to the City's bike facilities.

2.3.2 Erie Canalway Trail – Syracuse Connector Route (Ongoing) – Syracuse Metropolitan Transportation Council

Summary: The *Erie Canalway Trail – Syracuse Connector Route* project, undertaken by the SMTC at the request of the City of Syracuse, began in the fall of 2011. This effort, which was underway at the time this Study was completed, will document a plan for how to implement the Erie Canalway Trail through the City of Syracuse with connections to DeWitt and Camillus.

Part I of the study aims to examine the existing un-signed, on-road Erie Canalway Trail route utilized each July for the Cycling the Erie Canal Bike Tour, to determine if, what, and where alternate roads or improvements to the route are recommended. The goal of Part I is to develop a short-term on-road, signed route that can be utilized until a permanent off-road (to the extent possible) route is implemented. Part II of the study will examine routing for the permanent Erie Canalway Trail between the Town of Camillus and the Town of DeWitt. The permanent route is intended to be off-road (to the extent possible and desired).

Application to this Study: The SMTC's Bike Corridor Study considered the initial routes identified for the Canalway Trail Study as potential corridors to connect those wishing to commute to and from work by bicycle.

2.3.3 University Hill Bike Network Project – 2008 – Syracuse Metropolitan Transportation Council

Summary: The 2008 University Hill Bike Network Project established a plan for a bike network, including segregated lanes and traffic calming measures that cover University Hill. The project also created a "tool" for evaluating city streets for inclusion in the bike network.

To determine which University Hill streets should be included in a bicycle network, the SMTC developed a series of metrics, or "appropriateness measures." The SMTC designed the appropriateness measures as an analytical tool for use at the planning level by city workers in the field – a process that could

be replicated throughout the remainder of the city in the future. The appropriateness measures, however, were not designed to be applied within a suburban context.

The appropriateness matrix includes three categories that reflect major criteria in site decisions for bike routes: safety, connectivity, and design potential. The SMTC assigned points, reflecting relative weights, to each of these categories.

Application to this Study: This Bike Corridor Study identifies commuter corridors that link suburban residential areas with employment centers for experienced-confident riders who are willing and able to travel longer distances. Unfortunately, the appropriateness measures from the University Hill Bike Network Study were not designed to accommodate this target audience and be applied to a suburban context. The SMTC considered and acknowledged the categories when conducting the existing conditions assessment and documenting field observations.

2.3.4 Bicycle and Pedestrian Plan – Syracuse Metropolitan Transportation Council, March 2005

Summary: SMTC's 2005 Bicycle and Pedestrian Plan was designed as a policy level plan that seeks to preserve and enhance the area's bicycling and pedestrian network and to improve the safety, attractiveness, and overall viability of cycling and walking as legitimate transportation alternatives.

The document puts forth policies and guidelines for future bicycle and pedestrian facilities and amenities within the SMTC area. The report is non-location specific so that it can be applied in the various municipalities represented within the MPO region.

Application to this Study: This Bike Corridor Study complements this plan by identifying where corridors exist that may be improved to accommodate cyclists who want to commute to work by bike. The policies identified in the Bicycle and Pedestrian Plan provided overarching guidelines for the Bike Corridor Study planning process.

2.4 Current Initiatives

2.4.1 Syracuse University Connective Corridor

Summary: The Connective Corridor is an initiative by Syracuse University, the City of Syracuse, and Centro to improve multi-modal linkages between University Hill and downtown Syracuse. The initiative began in 2005 as a collaborative vision to design inviting streets and pathways in a *"Connective Corridor"* and a pedestrian-oriented "*Civic Strip"*. Although ongoing at the time of this study, the initiative has completed many project phases.

The Connective Corridor follows University Ave, East Genesee Street and West Fayette Street. It serves as a multi-modal, pedestrian and bicycle-friendly transportation route between University Hill and downtown Syracuse. The Civic Strip is envisioned as a pedestrian-friendly area of downtown connecting civic institutions and cultural organizations with Armory Square.

Specific bicycle facilities implemented along the Connective Corridor include dedicated bike lanes along East Genesee Street and East Fayette Street, shared-use bicycle and vehicle lanes on West Fayette Street on University Hill to Armory Square in Downtown, and a cycle track on the east side of University Ave.

Application to this Study: This Bike Corridor Study identifies opportunities to link suburban commuter cycling corridors with the Connective

Corridor, which provides a major connection to University Hill and downtown Syracuse.

2.4.2 Loop-the-Lake Trail

Summary: Onondaga County maintains several miles of walking and biking trails and linear parkland along the northern half of Onondaga Lake. The southern half of the Lake contains extensive highway and railroad infrastructure and does not include dedicated cycling facilities.

Two paved multi-purpose trails skirt the Lake's northern shoreline. The 2.5-mile East Shore Recreational Trail consists of a twenty-foot wide paved multi-purpose trail that is ideal for cycling. The 2-mile long paved West Shore Trail (i.e., the John Haley Memorial Trail) extends from the East Shore Trail across the Seneca River outlet into Geddes. Access is provided to the Lakeland community via two pedestrian bridges over I-690.

The County continues to explore ways to incorporate bike and pedestrian facilities along the southern half of the Lake. At the time of this study, the County was in the process of extending the West Shore Trail 2.5 miles south along the Allied bluffs that overlook the lake. When finished, the County will have completed 7.5-miles of the planned total 12-mile Loop-the-Lake Trail.

In December 2012**,** Governor Andrew M. Cuomo announced that Onondaga County received a $75,000 Regional Economic Development Council Award to produce a Loop-the-Lake trail feasibility study that includes conceptual designs about how to connect to the Onondaga Creekwalk Trail via a bridge over the CSX railroad tracks.

Application to this Study: The current trail network and the ongoing efforts to complete the Loop-the-Lake trail could provide bike commuters with a direct connection to the City of Syracuse from the northern suburbs. Connections to the city from the north are limited to Seventh North Street and Park Street. A Loop-the-Lake trail would greatly enhance the ability for bike commuters to access the city, and according to working group participants, would be the preferred commuter route if such an option was provided in the future. The Bike Corridor Study considered these trails as potential commuter corridors and has identified on-road corridor connections.

3.0 Identification of Preliminary Corridors

The SMTC used its Travel Demand Model as an initial input to help staff identify initial corridors. Staff reviewed the initial corridors with the Study Advisory Committee (SAC), and the SAC added additional corridors. Working Group participants were afforded the opportunity to review and suggest adding or removing corridors based on their experience cycling to work. The SMTC staff traveled the corridors suggested by the Working Group and made additional modifications to corridors as necessary based on existing conditions and field observations. Analysis maps 2 through 9 can be found in Appendix B.

3.1 Existing Vehicular Commuting Patterns

Since a purpose of this study is to attract commuters from their cars to biking, SMTC staff examined vehicular commuting patterns to identify the most significant commuter flows in the region.

The SMTC used its Travel Demand Model in this assessment. A Travel Demand Model (Model) is a zone-based model that forecasts travel behavior given the spatial distribution of households and employment areas and the availability of transportation facilities and infrastructure. The SMTC's current model is based on 2007 household and employment data. The Model uses a geographic unit referred to as a Transportation Analysis Zone (TAZ). There are more than 1000 TAZs in the SMTC's Model. For the purpose of identifying major commuter corridors in the region, SMTC staff grouped the existing TAZs into "clusters" that share access to the same collector or arterial roadways. Once clustered, Model output data were examined to identify the "clusters" that generate or attract the greatest number of commuting trips each day. Map 2 (Appendix B) shows the top ten origins and destinations from this analysis, along with the number of daily work trips between these clusters.

As shown on Map 2 (Appendix B), the downtown and University Hill areas are the most significant commuter destinations within the region and areas west, northwest, north, and east of Syracuse generate the highest number of work trips.

Based on this analysis, SMTC staff determined that this study should focus on bicycle commuting corridors to downtown and University Hill from four suburban areas: west (Camillus), northwest (Baldwinsville), north (Clay), and east (Fayetteville/Manlius).

3.2 Corridor Considerations

SMTC staff considered initial corridors based on where the greatest number of trips existed between origins and destinations. The SMTC reviewed the corridors with the SAC, and their feedback is summarized on Map 3 (Appendix B).

In addition to soliciting SAC comments, the SMTC asked Working Group participants to provide additional feedback based on their experiences cycling along these corridors. As shown in Map 4 (Appendix B), the Working Group identified additional issues and opportunities and suggested several modifications, which included removing many corridors from consideration.

Working Group participants noted that most experienced cyclists are willing to travel 5 to 10 miles one way to work, while less experienced

cyclists will travel about half that distance. Participants felt that many cyclists are willing to ride up to 45 minutes, with an additional 15 minutes set aside to change at work.

According to the American Association of State Highway and Transportation Officials (AASHTO), an adult cyclist will ride at a speed of 8-15 miles-per-hour.[3] Thus, an 8 mile-per-hour average speed would allow a cyclist to travel about 6.0 miles within 45 minutes. Likewise, a 15 mile-per-hour average speed allows a cyclist to travel 11.25 miles.

To encourage cycling to work, the Working Group participants suggested that SMTC consider the following when selecting corridors:

- Prioritize corridors based on safety (i.e., fewer accidents, less traffic, lower speeds, etc.).
- Adding 10 minutes to a commute was considered reasonable if the detour is a more comfortable riding alternative.
- Use Shared-Use Paths whenever possible to reduce conflict points, maintain high average cycling speeds, and encourage ridership.
- Prioritize corridors that connect to existing trails and schools.
- Prioritize flat corridors.
- Prioritize corridors that are easily maintained so that they are free from debris and snow.

The SMTC conducted in-field observations of the corridors suggested by the Working Group participants. Staff added and removed corridors from consideration and noted additional issues, opportunities, and potential treatment options as documented in Maps 5-9 (Appendix B).

[3] American Association of State Highway and Transportation Officials. Guide for the Development of Bicycle Facilities, 4th Ed. AASHTO, 2012, p. 3-4.

4.0 Existing Conditions

The Syracuse Metropolitan Transportation Council (SMTC) conducted an existing conditions assessment to confirm the issues and opportunities identified by the Study Advisory Committee and the Working Group participants for all considered corridors. The assessment provided additional input into the corridor selection process.

The SMTC staff identified primary corridors by geographic area.

- **From the West:** Milton Avenue, West Genesee Street, and Howlett Hill Road.
- **From the Northwest:** Route 370, Route 57, Morgan Road, Onondaga Lake Parkway, and Old Liverpool Road.
- **From the North:** Route 11 and South Bay Road.
- **From the East:** Route 5 and Route 92.

Other roads are included on the existing conditions maps for information. These may be use as extensions or connector corridors. Appendix B contains existing condition analysis maps 10 to 16.

4.1 Environmental Justice

The Study Advisory Committee (SAC) suggested that a bike corridor network overlap with environmental justice target areas if possible. As such, the SMTC reviewed its 2012 Environmental Justice Assessment that identified low, medium, and high-priority target areas. Target areas are census tracts that include concentrations of minority persons, low income persons, senior citizens, and persons with Limited English proficiency (LEP).

Map 10 (Appendix B) shows target area locations within the Metropolitan Planning Area and the City of Syracuse. The suggested bike corridors appear to be well distributed across designated target populations for communities west, north, and east of the City of Syracuse. High-priority target areas also exist within the City of Syracuse along several of the suggested bike corridors.

4.2 Commercial Corridors

Working group participants suggested avoiding commercial corridors if possible to avoid high traffic volumes and the large number of driveways/turning movement conflicts that typically exist. Participants, however, recognized that some cyclists may have to cross commercial corridors to access adjacent bike corridors. If necessary, participants suggested that intersections within commercial areas be improved to allow cyclists to cross. In response to these comments, SMTC staff tried to avoid major commercial corridors when identifying potential bike corridors.

Map 11 (Appendix B) shows where business locations exist within Onondaga County. Based on this information it is apparent that the major suburban commercial corridors include: West Genesee Street, Route 57, Route 11, Route 5 (Erie Boulevard East and West), South Bay Road, and sections of Route 92 and Route 290.

4.3 Transit Service Routes

Centro provides transit services throughout the study area, and each bus can transport up to three bikes. Connecting bicycle corridors with transit routes offers cyclists multi-modal commuting options, which is beneficial during instances of inclement weather and/or to shorten the travel length/time of a cycling

corridor. As shown on Map 12 (Appendix B), several transit routes connect the suburbs to the city along primary corridors.

Suggested bike corridors in Camillus, North Syracuse, Fayetteville, and Manlius connect to, or overlap with, transit routes, which improve opportunities for multi-modal travel.

4.4 Bike Suitability & Accidents

The Syracuse Metropolitan Transportation Council's (SMTC) Bicycle Suitability Map shows that the Metropolitan Planning Area (MPA) consists of a well-developed road network with varying levels of cycling suitability. Map 13 (Appendix B) shows the bike suitability ratings from 2011 and number of bike/motor vehicle accidents (2007 to 2011). SMTC staff compared the suitability and the number of accidents on roughly parallel roads that could provide alternative bike corridors between the same general origin and destination.

From the western suburbs to the city, Milton Avenue, Howlett Hill Road, and West Genesee Street were considered. Milton Avenue and Howlett Hill Road are rated more suitable than West Genesee Street. Milton Avenue and West Genesee Street have a similar number of accidents. No bike accidents were reported for Howlett Hill Road.

From the northwestern suburbs, Route 370 and Morgan Road have higher suitability ratings than Route 57.

From the northern suburbs, South Bay Road has higher suitability ratings than Route 11.

From the east, portions of Route 92 have higher ratings than Erie Boulevard, and both corridors contain a similar number of accidents.

4.5 Speed and Traffic Volumes

The SMTC reviewed posted speed limits and traffic volumes along each roadway considered as a potential bike corridor. Cyclists who participated in the Working Group meetings encouraged the SMTC to select corridors that have lower posted speed limits and traffic volumes.

Map 14 (Appendix B) shows the posted speed limits and Annual Average Daily Traffic (AADT) for each considered corridor. AADT is defined as the total volume of vehicle traffic on a highway or road for a year divided by 365 days. AADT is typically estimated from shorter duration counts. Table 2 summarizes the posted speed and AADT for major corridors.

Table 2 – Speed and Traffic Volumes for Major Roadways

	Roadway	Posted Speed Limit (mph)	Approximate AADT* (vehicles per day)
From the West	Milton Ave	30	2,500-8,000
	West Genesee St	30-35	21,000-22,000
	Howlett Hill Road	35	3,000-5,000
From the Northwest	Route 370	45-55	8,000-13,000
	Route 57	45	14,000-29,000
	Morgan Road	45	10,000-14,000
	Old Liverpool Rd	40	13,000
	Onondaga Lake Pkwy	55	22,000
From the North	Route 11	35-40	8,000-26,000
	South Bay Rd	35-55	7,500-14,000
	Buckley Rd	35-45	11,000 -15,000
	Seventh North St	40	6,000-13,000
From the East	Route 5	40-55	11,000-29,000
	Route 92	45-50	8,000-23,000

***AADT** – Estimated average daily traffic volume (2010) on a route segment at a particular count station location. Actual daily volumes encountered on highways may vary from AADT.

According to the American Association of State Highway and Transportation Officials (AASHTO)4, "High traffic volumes and speeds

[4] American Association of State Highway and Transportation Officials. Guide for the Development of Bicycle Facilities, 4th Ed. AASHTO, 2012, p. 2-13.

should not be used as justification for not accommodating bicyclists because many of these roadways are the only ones that connect parts of communities." Therefore, the SMTC considered high traffic volumes and speeds in context to surrounding land uses when determining the appropriateness of a corridor.

4.6 Pavement Conditions

The City of Syracuse, Onondaga County, and New York State rate pavement conditions as excellent, good, average, fair, and poor. Town and village roads are rated only if they are federal-aid eligible. The SMTC reviewed the ratings for each road considered as a possible bike corridor and noted where below average conditions exist.

Map 15 (Appendix B) shows corridors that contain significant segments rated fair or poor, as well as the location of bridges along the considered corridors. In the short term, roadways with poor pavement conditions pose challenges to cyclists. However, roadways with poor pavement conditions present an opportunity in the future to improve conditions for cyclists and incorporate bike facilities (e.g., bike lanes) when the roadway is repaved.

4.7 Topography

According to the American Association of State Highway and Transportation Officials (AASHTO), corridors containing grades typically greater than 5 per cent should be avoided when considering bike corridors if possible. Areas with excessive slopes make it difficult to bike up a steep hillside, and cyclists may experience excessive speed on the descent. Map 16 (Appendix B) shows the location of grades above 5 per cent along each considered roadway.

Syracuse is a region of hills and drumlins, and completely avoiding steep slopes is unlikely along any corridor, but especially along roadways from the west and east. Northern corridors are mostly level with less than 5 percent slopes. Steep slopes must be considered within the context of its surroundings, the length of the slope, and the severity of the slope.

4.8 Summary of Major Corridors

Table 3 summarizes the results of comparing primary corridors that offer alternative route options within close proximity to each another. As shown in the existing conditions maps, the SMTC also considered attributes of minor corridors that fill network gaps between major corridors. However, the SMTC was not able to compare corridors in Table 3 that serve as extensions or connections due to the lack of available alternative options.

Table 3 – Existing Conditions Summary of Major Corridors

		Milton Ave	Howlett Hill Road	West Genesee St	Route 370	Morgan Road	Route 57	Onondaga Lake Pkwy	Old Liverpool Rd	South Bay Rd	Buckley Road	Route 11	Route 5	Route 92
		West			Northwest					North			East	
Environmental Justice	High to Medium-priority Environmental Justice Target Area (+), Low target area (N), Non-target area (-)	+	N	+	-	-	-	+	+	N	+	N	+	+
Commercial Corridors	Non-commercial corridor (+), Some commercial uses (N), Commercial Corridor (-)	+	+	-	+	N	-	+	N	N	+	-	-	N
Transit Service Routes	Bus service (+), Limited bus service (N), No bus service (-)	+	+	+	-	N	+	-	+	-	+	+	+	+
Bike Suitablity	Bike suitability rating average or above (+), Fair or Poor Bike Suitability (-)	+	+	-	+	+	-	-	-	+	+	-	-	-
Accidents	Were bike/vehicle accidents reported during 2007 to 2011? No accidents (+), One or more accidents (-).	-	+	-	-	-	-	-	-	-	-	-	-	-
Speed	35 MPH or less (+), 35-45 MPH (N), greater than 45 MPH (-)	+	+	+	-	N	N	-	N	-	+	N	-	-
Traffic Volumes	Less than 10k AADT (+), 10k to 20k AADT (N), greater than 20k AADT (-)	+	+	-	N	N	-	-	N	N	N	-	-	-
Pavement Conditions	Pavement Condition "Average or above rating" (+), Fair/Poor Rating (-)	+	+	-	+	+	+	+	+	+	+	+	+	-
Topography	Few to no hills (+), Some "bikeable" hills 0%-5%(N), Lot of hills or challenging hills >5% (-)	+	N	N	+	+	+	+	+	+	+	+	+	+

5.0 Developing a Bike Commuter Corridor Network

Realizing a successful bike commuter corridor network involves implementing a consistent set of options cooperatively across a multi-jurisdictional roadway network.

Road owners have sole discretion to consider suggested corridors and treatments and conduct any necessary engineering and/or safety assessments before deciding to select a final option to advance to design and construction. As illustrated in Map 17 (Appendix B), ownership varies for each considered corridor.

No one agency/owner has the authority or the resources to implement a multi-jurisdictional bike network. However, cooperative discussions among road owners to capitalize on the following projects may help champion the development of a successful bike commuter corridor network over time:

- roadway and bridge resurfacing and reconstruction projects
- permitting new residential, commercial, and mixed-use development projects
- state, county, city, town, and village (with trail) improvement projects, e.g., the Erie Canal Trail, Loop-the-Lake, rails-to-trails, etc., and
- college campus projects, e.g., Onondaga Community College provides bike facilities, the Connective Corridor, etc.

Transportation departments have opportunities to improve bicycling conditions as part of their routine roadway maintenance and "3R" (resurfacing, restoration, reconstruction) activities. Incorporating bike facilities into roadway improvement projects is a cost effective implementation strategy. As such, owners may cross reference upcoming projects with this study to identify opportunities for incorporating bike facilities.

Bike facility treatments fall into three categories, (i.e., Short-term, Medium-term, and Long-term) dictated by cost and ease of implementation. Examples are provided for clarification.

Short-term: Restripe road to allow for bike lanes or sharrows when it is resurfaced.

Mid-term: Incorporate bike lanes into the design of a capital project that reconstructs bridges or roadways.

Long-term: Complex and high-cost facility improvements such as constructing new cycle tracks or bike/pedestrian bridges.

As a planning-level assessment, this study identifies corridors that are most likely to incorporate short-term and medium-term treatment options to the greatest extent practicable. Long-term improvements were only identified if absolutely necessary to close an unresolved network gap.

5.1 Suggested Corridors

Roadways that do not legally prohibit bikes should accommodate cyclists whenever practicable. Each corridor considered during the course of this study permits bikes and thus could be included as part of a cooperative and comprehensive bike commuter corridor network. However, many of these roadways do not currently serve as viable corridors given their current design or condition absent of bike facility improvements. Fiscal resource constraints limit the ability of road owners to

make necessary facility improvements for all considered corridors. Therefore, this Study prioritizes the following corridors from the west, northwest, north, and east to establish as a bike commuter corridor network:

- Milton Avenue and Howlett Hill Road from the west,
- Route 370, Morgan Road, Onondaga Lake Parkway from the northwest,
- South Bay Road to Buckley Road from the north, and
- Route 92 from the east.

Several network gaps exist along the priority roadways. To close these gaps, the SMTC identified roadway segments that serve as extensions and/or as critical connections to complete the network. Map 18 shows the priority corridors and critical roadway segment connectors by ownership. Once a network is officially established, road owners may, at their own discretion and as resources permit, incorporate additional corridors into the network. Table 4 shows the number of feet, miles, and the percent of total ownership by road owner.

Road Owner	Feet	Miles	Percent of Total Ownership
City of Syracuse	71,000	13	12%
Towns and Villages	85,000	16	15%
NYSDOT	124,000	23	22%
OCDOT	289,000	55	50%
Private	2,200	0.5	1%
Total	**571,200**	**107.5**	**100%**

Table 4 – Ownership of Suggested Corridors

5.2 Potential Corridor Treatments

Bike lanes serve as the desired option since cyclists are accustomed to seeing them as the primary treatment denoting a bikeway. Where bike lanes are not feasible to incorporate in the short term via stenciling and restriping due to limited pavement width, shared-use-lanes (i.e., sharrows) could be used as a substitute if proper conditions exist. These treatments and other options such as bike boulevards, cycle tracks, and shared-use paths/side paths are identified in Maps 19-24. Map 25 serves as a general reference map that summarizes recommendations for all of the suggested bike corridors.

5.2.1 Treatment Options for Bike Corridors

Table 5 summarizes guidelines that suggest when it may be appropriate to apply various treatments as set forth by these entities:

- American Association of State and Highway Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities 4th Ed.*,
- the NYSDOT Highway Design Manual, Chapter 17 *Design of Bicycle Facilities,*
- *Selecting Roadway Treatments to Accommodate Bicycles,* FHWA, 1994, Publication No. FHWA–RD-920073
- the Federal Manual of Uniform Traffic Control Devices (MUTCD), and
- the National Association of City Transportation Officials (NACTO) *Urban Bikeway Design Guide*.

Map 18:
Road Ownership for Suggested Corridors

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

- NYSDOT
- OCDOT
- Town/Village
- City of Syracuse

- City of Syracuse
- Town
- Village

1 Warren Drive and portions of W. Pine Grove Drive are privately owned.

Existing Trails, Shared-Use Paths, Bike Lanes/Sharrows, and NYSDOT Bike routes 5 & 11

Bike Corridor to be Constructed/Currently Under Construction 2013

Suggested Erie Canalway Trail*

*See "Erie Canalway Trail (ECT)-Syracuse Commuter Route" study for more information.

Note:
The City of Syracuse Bike Infrastructure Master Plan identifies potential corridors throughout the city. Please refer to this plan for additional corridor recommendations.

SMTC
100 Clinton Square
126 North Salina St, Suite 100
Syracuse, NY 13202
(315) 422-5716
Fax: (315) 422-7753
www.smtcmpo.org

Data Sources: SMTC, SOCPA, NYSDOT
Prepared by SMTC, 06/2013

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West Detail

1. Possible shared-use path between Ulster Rd. and Erie Blvd.
2. Possible shared-use path connecting neighborhood to Milton Ave (from Blackstone Way).
3. Consider using contraflow bike lane along Grolier Road as connection from 173 to 175
4. Possible connection to future Bike Corridor in the City of Syracuse-See Syracuse Bike Infrastructure Master Plan
5. Bike lane begins at Oakridge Drive
6. Route 5 ramps may affect bike facility design and placement.
7. Future opening of shared use path along Onondaga Lake shoreline could provide an alternative corridor option from State Fair Blvd., especially during the NYS Fair. Road owners may want to consider signing it as a detour route during the NYS Fair.
8. Suggest connecting future shoreline trail to State Fair Blvd via existing pedestrian bridge.

Note: See Legend

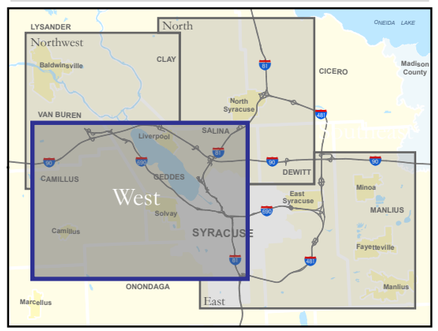
Map 19: Suggested Corridor Improvements: West Detail

0 0.5 1 2 Miles
0 0.5 1 2 Kilometers

- Suggested Bike Lane Accompanied by "Bike Lane" Signs
- Shared Lane Markings (Sharrows) Accompanied by "Share the Road" Signs
- Existing Trails, Shared-Use Paths, Bike Lanes/Sharrows, and NYSDOT Bike routes 5 & 11
- Use Existing Trails/Bikeway
- Bike Corridor to be Constructed/Currently Under Construction 2013
- ECT Route*
- ECT Route, Option A*
- ECT Route, Option B*
- Railroad
- Existing Pedestrian/Bike Bridge
- Challenging Intersection/Bridge (over- or underpass)/Railroad Track Crossing*
- City of Syracuse
- Town
- Village
- Water Features

*See "Erie Canalway Trail (ECT)-Syracuse Commuter Route" study for more information.
**See Section 5.2.2 in this report for suggested treatment options.

Note:
The City of Syracuse Bike Infrastructure Master Plan identifies potential corridors throughout the city. Please refer to this plan for additional corridor recommendations.



SMTC
100 Clinton Square
126 North Salina St, Suite 100
Syracuse, NY 13202
(315) 422-5716
Fax: (315) 422-7753
www.smtcmpo.org

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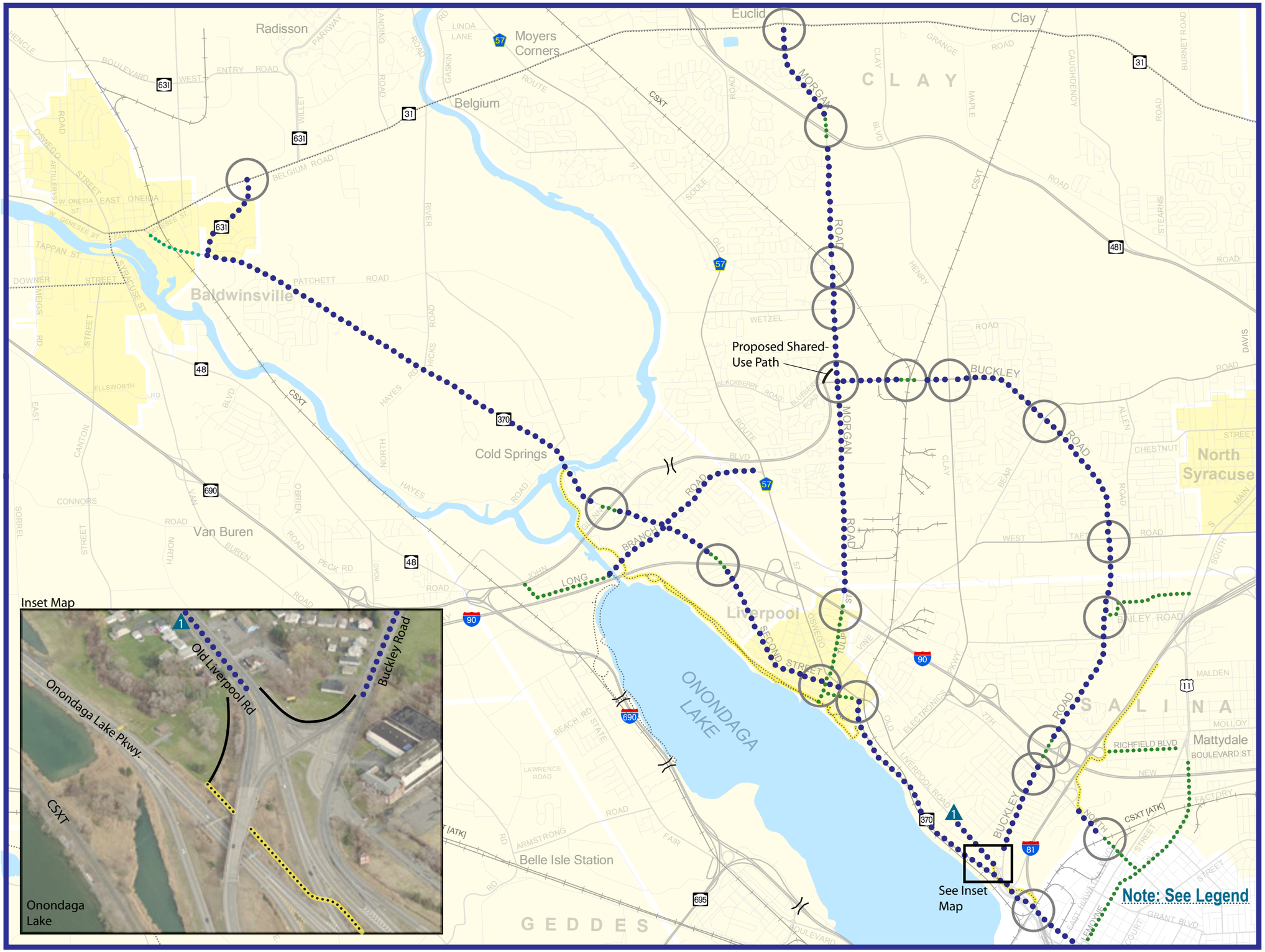
Northwest Detail



This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map.

Map 20: Suggested Corridor Improvements: Northwest Detail

0 0.5 1 2 Miles

0 0.5 1 2 Kilometers

- Suggested Bike Lane Accompanied by "Bike Lane" Signs
- Shared Lane Markings (Sharrows) Accompanied by "Share the Road" Signs
- Shared-Use Path
- Existing Trails, Shared-Use Paths, Bike Lanes/Sharrows, and NYSDOT Bike routes 5 & 11
- Use Existing Trails/Bikeway
- Railroad
- Existing Pedestrian/Bike Bridge
- Challenging Intersection/Bridge (over- or underpass)/Railroad Track Crossing*
- City of Syracuse
- Town
- Village
- Water Features
- 1 Continue bike lane to School Road intersection (cross at School Road intersection)

*See Section 5.2.2 in this report for suggested treatment options.

Note:
The City of Syracuse Bike Infrastructure Master Plan identifies potential corridors throughout the city. Please refer to this plan for additional corridor recommendations.

SMTC
100 Clinton Square
126 North Salina St, Suite 100
Syracuse, NY 13202
(315) 422-5716
Fax: (315) 422-7753
www.smtcmpo.org

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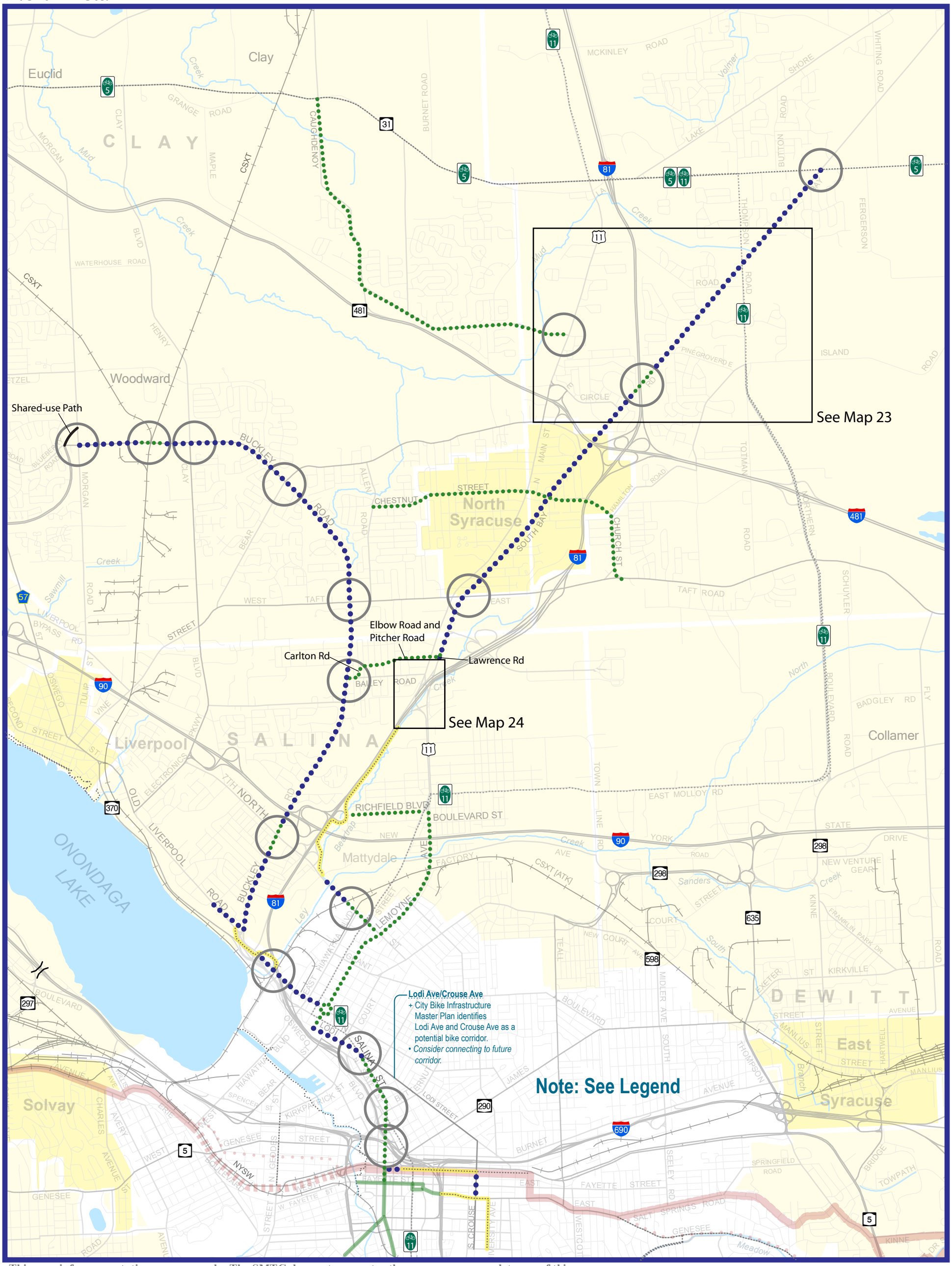
North Detail



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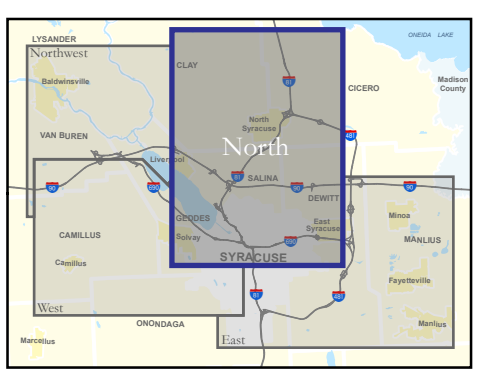
Map 21:
Suggested Corridor Improvements: North Detail

0 0.5 1 2 Miles

0 0.5 1 2 Kilometers

- Suggested Bike Lane Accompanied by "Bike Lane" Signs
- Shared Lane Markings (Sharrows) Accompanied by "Share the Road" Signs
- Shared Use Path
- Existing Trails, Shared-Use Paths, Bike Lanes/Sharrows, and NYSDOT Bike routes 5 & 11
- Use Existing Trails/Bikeway
- Bike Corridor to be Constructed/Currently Under Construction 2013
- Challenging Intersection/Bridge (over- or underpass)/Railroad Track Crossing*
- City of Syracuse
- Town
- Village
- Water Features
- Railroad
- Existing Pedestrian/ Bike Bridge
- ECT Route**
- ECT Route, Option A**
- ECT Route, Option B**



100 Clinton Square
126 North Salina St, Suite 100
Syracuse, NY 13202
(315) 422-5716
Fax: (315) 422-7753
www.smtcmpo.org

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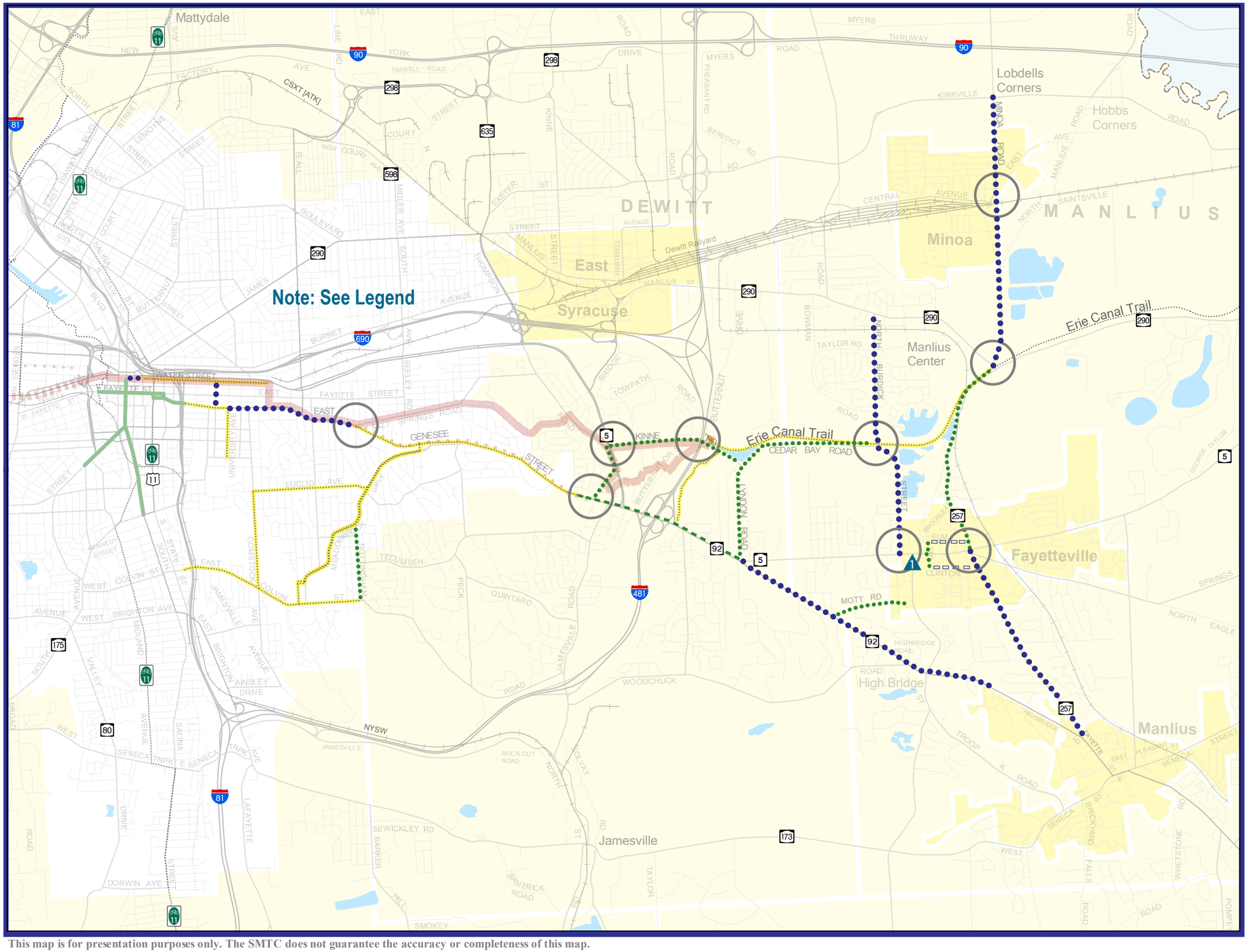
*See Section 5.2.2 in report for suggested treatment options.

**See "Erie Canalway Trail (ECT)-Syracuse Commuter Route" study for more

Note:
The City of Syracuse Bike Infrastructure Master Plan identifies potential corridors throughout the city. Please refer to this plan for additional corridor recommendations.

Southeast Detail



Note: See Legend

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Map 22: Suggested Corridor Improvements: East Detail

0 0.5 1 2 Miles

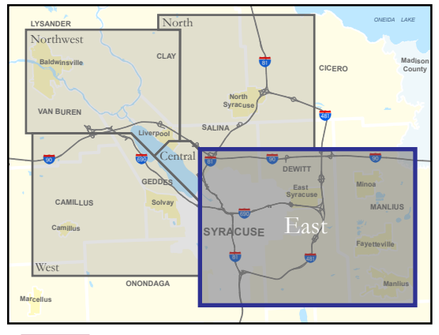
0 0.5 1 2 Kilometers

- Suggested Bike Lane Accompanied by "Bike Lane" Signs
- Shared Lane Markings (Sharrows) Accompanied by "Share the Road" Signs
- Bike Boulevard
- Cycle Track
- Existing Trails, Shared-Use Paths, Bike Lanes/Sharrows, and NYSDOT Bike routes 5 & 11
- Bike Corridor to be Constructed/Currently Under Construction 2013
- Use Existing Trails/Bikeway
- ECT Route*
- ECT Route, Option A*
- ECT Route, Option B*
- Railroad
- Challenging Intersection/Bridge (over- or underpass)/Railroad Track Crossing**
- City of Syracuse
- Town
- Village
- Water Features
- 1 Cyclists should dismount and walk their bikes along sidewalk following Limestone Plaza and Genessee Street

*See "Erie Canalway Trail (ECT)-Syracuse Commuter Route" study for more information.

**See Section 5.2.2 in this report for suggested treatment options.

Note:
The City of Syracuse Bike Infrastructure Master Plan identifies potential corridors throughout the city. Please refer to this plan for additional corridor recommendations.



SMTC
100 Clinton Square
126 North Salina St, Suite 100
Syracuse, NY 13202
(315) 422-5716
Fax: (315) 422-7753
www.smtcmpo.org

Data Sources: SMTC, SOCPA
Prepared by SMTC, 01/2013

Map 23:
Driver's Village Detail

0 .25 Miles

- Suggested Bike Lane Accompanied by "Bike Lane" Signs
- Shared Lane Markings (Sharrows) Accompanied by "Share the Road" Signs
- Side Path (Two-Way)
- Challenging Intersection/Bridge (over- or underpass)/Railroad Track Crossing*

*See Section 5.2.2 in report for suggested treatment options.

SMTC

Data Sources: SMTC, SOCPA
Prepared by SMTC, 06/2013

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Map 24: Mattydale Detail

0 500 Feet

- Suggested Bike Lane Accompanied by "Bike Lane" Signs
- Shared Lane Markings (Sharrows) Accompanied by "Share the Road" Signs
- Side Path (Two-Way)- Optional consideration for connecting Mattydale (Rt. 11) and North Syracuse (South Bay Road). However, there does not appear to be enough existing right-of-way to accommodate a Side Path.
- Challenging Intersection/Bridge (over- or underpass)/Railroad Track Crossing*
- Use Existing Trails/Bikeway

*See Section 5.2.2 in report for suggested treatment options.

SMTC
100 Clinton Square
126 North Salina St, Suite 100
Syracuse, NY 13202
(315) 422-5716
Fax: (315) 422-7753
www.smtcmpo.org

Data Sources: SMTC, SOCPA
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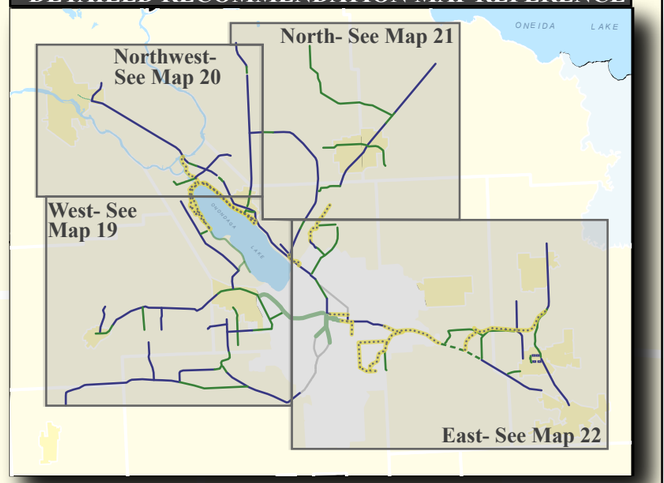
Map 25:
General Bike Commuter Corridor Recommendations

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

DETAILED RECOMMENDATION MAP REFERENCE



Suggested Bike Lane Accompanied by "Bike Lane" Signs

Shared Lane Markings (Sharrows) Accompanied by "Share the Road" Signs

Bike Boulevard

Cycle Track

Bike Corridor to be Constructed/Currently Under Construction 2013

Use Existing Trails/Bikeway

The Syracuse Bicycle Plan Identifies Road as a Bikeway

City of Syracuse

Town

Village

Water Features

Note:

- The City of Syracuse Bike Infrastructure Master Plan identifies potential corridors throughout the city. Please refer to this plan for additional corridor recommendations within the city.
- See Section 5.2 for suggested treatment options.
- Please reference Table 5 for a description of bike facility treatments and typical applications.
- Please reference Table 6 for possible mitigaion measures for intersections, bridge & railroad crossings.

SMTC
100 Clinton Square
126 North Salina St, Suite 100
Syracuse, NY 13202
(315) 422-5716
Fax: (315) 422-7753
www.smtcmpo.org

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Table 5 – Bike Facility Treatment Options

Treatment Option	Treatment Description and Typical Application
Bike Lanes	Description: A portion of a roadway that has been designated for preferential or exclusive use for bicyclists delineated by pavement markings and, if used, signs. It is intended for one-way travel, usually in the same direction of travel as the adjacent traffic lane, unless designed as a contra-flow lane. Used along arterials and collectors >25 MPH that provide direct access to major land uses. Speed differential is generally a more important factor than traffic volumes. Typical Application: Bike lanes are the appropriate and preferred bicycle facility for thoroughfares in both urban and suburban areas. Paved shoulders that meet the criteria of a bike lane may be designated as a bike lane by installing bike lane symbol markings. Under such conditions this is a short-term, cost effective solution. If a paved shoulder is not wide enough, then an engineer could determine if the travel lanes could be narrowed to allow sufficient shoulder space. Bike lanes may also be also be incorporated in the mid-to-long term if the roadway is widened during resurfacing or reconstruction activities. Lane widths should be determined by context and anticipated use, but are typically 5 feet wide. Lanes may be 5-7 feet wide adjacent to parked cars. For roadways with no curb and gutter and no on-street parking, minimum bike lane width is 4 feet. Additional width may be necessary if a roadway has excessive speeds >50 MPH, lots of truck traffic, etc. The MUTCD provides guidelines and standards for colors and markings to use when delineating a bike lane. "BIKE LANE" signs should be used in conjunction with bike lane lines and markings. Signs should be used in areas where there is not excessive sign clutter or on-street parking. The sign may be paired with an AHEAD plaque or with an ENDS plaque. Note: the BIKE LANE ENDS plaque sign should not be used where a bike lane changes to an unmarked shoulder or at temporary interruptions in a bike lane.
Bike Boulevard	Description: A modified street segment that accommodates through bicycle traffic and minimizes through motor traffic. This is a mid-term solution. Typical Application: Appropriate on grid-based residential roadways with < 3000 vehicles per day (VPD) and speeds <25 MPH. Typically used where differential between motorist and cyclists are less than 15 MPH.
Cycle Track	Description: Cycle tracks fall into three categories - one-way, two-way, or raised. A cycle track is distinguished from a bike lane in that it has a physical barrier (bollards, medians, raised curbs, etc.) that restricts the encroachment of motorized vehicles. Typical Application: Cycle tracks are appropriate in urban/developed areas with high traffic volumes, speed, and on-street parking. Cycle tracks are expensive long-term solutions.
Shared-Lane Marking (Sharrow)	Description: A pavement marking symbol that indicates an appropriate bicycle positioning in a shared lane where both bicycle and motor vehicles travel. Typical Application: Appropriate for collectors or minor arterials that are < 35 MPH with variable traffic volumes. Where motor vehicles are allowed to park along shared lanes, place stenciling in a location away from the parked vehicles to reduce potential conflicts with opening doors. Corridor should be designed with bike guide signs and shared-lane markings. Shared-lane markings may also be appropriate to use to fill a gap between two sections of roadway that contain bike lanes. Under such conditions this is a short-term, cost effective solution. A "SHARE THE ROAD" sign assembly is intended to alert motorists that cyclists may be encountered and that they should be mindful and respectful of bicyclists. However, the sign is not a substitute for appropriate geometric design measures that can improve the quality of service for cyclists. This sign may be used at the end of a bike lane, or where a shared-use path ends and cyclists must share a lane with other traffic. This sign should not be used to indicate a bike route.
Shared-Use Paths	Description: A 10-to-14-foot–wide paved path physically separated from motor vehicle traffic by open space or a barrier. (An 8-foot minimum is permitted for short distances where constraints exist.) Shared-use paths are used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. Most shared-use paths are designed for two-way travel. Typical Application: The paths are often applied in areas to help close bikeway network gaps. Shared-use paths are sometimes referred to as "trails." However, a shared-use path is an improved facility, whereas a trail is an unimproved recreational facility. A Shared-Use Path is a mid-to-long term solution.
Side Path	Description: A shared-use path located immediately adjacent and parallel to a high-speed and high-volume roadway with no or very few intersections or driveways. Typical Application: Often applied in areas to help close bikeway network gaps. There should be at least 5 feet between the side path and the road; less distance is permitted if a physical barrier (e.g., vertical fencing) is provided. A Side Path is a mid-to-long term solution.

The SMTC considered the following additional options as supplemental treatments that could be incorporated as needed into a bike network. Some of these treatments, (e.g., rails-with-trails, etc.) may also be very relevant for the non-priority corridors.

- "BICYCLES MAY USE FULL LANE" sign is used in shared-lane conditions on roadways without bike lanes or usable shoulders where travel lanes are too narrow for cyclists and motorists to operate side by side within a lane.
- RAILS TO TRAILS: A shared-use path, either paved or unpaved, built within the right-of-way of a former railroad.
- RAILS WITH TRAILS: A shared-use path, either paved or unpaved, built within the right-of-way of an active railroad.
- WIDE SHOULDER: Shoulders, where paved, are often used by bicyclists along rural highways with variable traffic volumes and speeds up to 55 MPH. Shoulder width should be dependent on characteristics of the adjacent motor vehicle traffic. Undesignated paved shoulders where obtaining the preferred shoulder width is not practicable should be at least 3 feet wide. Designated paved shoulders for signed rural bike routes should be at least 4 feet wide on uncurbed cross sections with no obstructions immediately adjacent to or within the roadway (e.g., vertical fences, guiderails, mailboxes, constraints resulting from catch basins, etc). When obstructions exist, shoulder width of at least 5 feet is recommended. Additional shoulder width may be necessary if a roadway has excessive speeds > 55 MPH, a large amount of truck traffic, etc. Wherever road owners question a roadway's ability to accommodate bike facilities, transportation planners and engineers may consider applying strategies such as "road diets". Such strategies typically require a separate corridor study and/or an engineering assessment to determine appropriateness.
- LIGHTING – Consider corridor lighting needs, especially above or below bridges, or where limited sight lines may exist.

5.2.2. Planning Level Treatment Options for Intersections, Bridge Overpasses/ Underpasses, and At-Grade Railroad Crossings

The SMTC staff observed similar issues with intersections, bridge under/overpasses, and at-grade railroad crossings, such as: no shoulders, curbing, right-of-way constraints, curbed center islands, high traffic volumes, complex lane configurations, and wide approaches. At-grade railroad crossings often overlap roadways at skewed angles. Bridge over and underpasses often lack shoulders, may include curbed sidewalks, offer limited widening opportunities, have limited sight lines, and lack sufficient lighting. Although similar issues exist, existing conditions vary and pose unique design challenges that make it difficult to identify improvements without conducting a detailed assessment. In some cases, the simple option is to install signs notifying cyclists to dismount and walk their bikes along sidewalks. Table 6 summarizes other applicable mitigation measures to consider when designing potential solutions. These locations are indicated on Maps 19-24.

Table 6. Possible Mitigation Measures for Intersections, Bridges, and Railroad Crossings

LEGEND: **$ = short-term, cost-effective solution,** **$$ = mid-term solution,** **$$$ = long-term, costly solution**	**Intersection**	**Bridge Overpass/ Underpass**	**Railroad Crossing**
Modify Vehicle Travel Lanes - Narrow travel lanes, reduce the number of travel lanes, or widen under and overpasses to accommodate bike facilities.	$$$	$$$	
Traffic Signals & Beacons – Install bicycle-sensitive loop detectors (i.e., inductive, microwave, video, and magnetometers) or push-buttons that do not require bicyclists to dismount. Along underpasses where cyclists share travel lanes with motor vehicles to provide a warning sign and beacon at the tunnel entrance that can be activated by a bicyclist. The beacon should be designed to flash for the length of time that it will take for a typical cyclist to travel underneath. Alternatively, a regulatory sign BICYCLES MAY USE FULL LANE may be provided without a beacon. Also ensure adequate lighting during the day and evening. If possible, extend bike lanes, but if necessary, consider using sharrows.	$$	$$	$$
Signal Adjustment Needs - Adjust a traffic signal's minimum green interval, all red interval, and extension time interval to accommodate cyclists.	$		
Median Refuges - Where cyclists have to cross wide intersections, install wide median refuge areas (i.e., crossing islands) with wide openings to allow them to pass through.	$$	$$	
Roundabouts - At skewed or multi-leg intersections, consider alternative designs such as roundabouts.	$$$		
Perpendicular Crossings - At skewed crossings, especially at grade railroad crossings, design a bikeway to deviate away from the road and cross at a 60-to-90 degree angle.	$		$
Warning Signs & Markings - Install regulatory, warning, and bike guide sign needs as well as intersection crossing markings.	$	$	$
Through Bike Lanes and Bike Boxes - On streets with right-side bike lanes and right-turn-only lanes at intersections, use "through bike lanes." Also consider the need to develop a "bike box," which is a designated area at the head of a signalized intersection that provides a cyclist with a way to get ahead of queuing traffic during the red signal phase.	$		
Two-Stage Turn Queue Boxes - At multi-lane signalized intersections where a cyclist needs to make a left turn, develop "two-stage turn queue boxes." The same principles for two-stage turns apply to both bike lanes and cycle tracks.	$		
Combined Bike Lane/Turn Lane - At intersections where there is a right turn lane but not enough space to maintain a standard-width bicycle lane at the intersection, consider using a "combined bike lane/turn lane." A dashed line can delineate the space for a cyclist and motorist within the shared lane or indicate the intended path for through cyclists. This treatment includes signs advising proper placement within the lane.	$		
Dismount and Walk Bike – Where existing pedestrian facilities exist between network gaps, a cost-effective short term solution may be to notify cyclists that they should dismount and walk their bike.	$	$	$

References: American Association of State and Highway Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities 4th Ed.*; the NYSDOT Highway Design Manual, Chapter 17 *Design of Bicycle Facilities, Selecting Roadway Treatments to Accommodate Bicycles,* FHWA, 1994, Publication No. FHWA–RD-920073; the Federal Manual of Uniform Traffic Control Devices (MUTCD), and the National Association of City Transportation Officials (NACTO) *Urban Bikeway Design Guide*.

5.3 Public Education

It is important to note that when riding in the road, cyclists are considered vehicle operators in New York State, so they must follow the same road rules that regulate motor vehicles. Cyclists are regulated by the same traffic signs, signals, and lane markings as motorists and must ride in the same direction of traffic. Moreover, motor vehicle operators must share the road with cyclists.

However, many bicyclists and motorists are unaware of these basic rules. Thus, a well-marketed public service announcement campaign and engaging educational programs for cyclists and motorists would benefit everyone. The goal of both educational outreach and a regional network of consistent bike facilities is to increase the predictability of vehicular and cyclist behavior on shared roadways. Educational outreach should also teach people about opportunities to bike and ride with transit providers to encourage multi-modal travel.

The Onondaga County Traffic Safety Advisory Board (OCTSAB), Federal Highway Administration-produced materials, local police departments, and the New York State Department of Transportation (Region 3) Bicycle/Pedestrian Coordinator may all serve as resources to help with public education goals.

5.4 Maintenance & Operations

Working group participants suggest that bike facilities be accessible for year-round use. This includes repairing cracks and joints, pot holes, and maintaining unobstructed travel surfaces. Maintaining unobstructed travel services includes preventing the accumulation of debris such as glass, stones, leaves, branches, snow, and overgrown vegetation.

Similar to maintaining roadways for vehicular traffic, road owners should ensure the execution of a good maintenance program that establishes standards and a schedule for inspections. Inspections should include testing of traffic signals, beacons, and detectors. Signs and drainage grates/catch basins should also be inspected. (Drainage grates should be bike-friendly.) Road owners could coordinate with each other to share resources and establish a shared phone/online complaint service that allows cyclists to report maintenance problems. Policies should be established to address reported issues.

5.5 Wayfinding for Bicycles Corridors

Once a bike commuter corridor is established, road owners may consider the need to develop a consistent bike wayfinding system that provides clear user information and navigational instructions. Part 9 of the *Manual on Uniform Traffic Control Devices* (MUTCD) provides basic guidelines for designing wayfinding signage systems for bike routes.

A bike route is a roadway designated by the jurisdiction having authority, either with a unique route designation or with Bike Route signs, along which bicycle guide signs may provide directional and distance information. Bike routes can be developed as individual routes or as a network. Signs that provide directional, distance, and destination information for bicyclists do not necessarily establish a bicycle route.

5.6 Destination Facility Enhancements

Ensuring that there are adequate bike storage facilities and other cyclist accommodations such as showers and locker rooms helps encourage

people to commute to work by bike. Some of these accommodations are provided by the public sector, while others may be obtained through the private sector via collaborative partnerships.

Public sector spaces such as within road right-of-ways, municipal parking lots and garages, and other municipal facilities may include bicycle-related accommodations such as:

- bike racks, bike lockers, etc.;
- shower and locker room facilities;
- design facilities with bicycle use in mind – for example – incorporate wheel channels on public stairways within public spaces to allow people to walk their bikes between different level; and
- bus stops and shelters could also be designed to accommodate cyclists by incorporating bike racks (including sheltered racks to protect against inclement weather), space for patrons to stand and wait with their bike, display bike corridor maps at bus stops, etc.

The public and private-sector partnerships may also yield additional bicycle amenities. The public sector could encourage developers to seek *Leadership in Energy and Environmental Design* (LEED) certification, which encourages the private sector to incorporate cycling-support amenities such as those listed above as a means of obtaining points towards certification.

5.7 Conclusion

During the course of this study, the Syracuse Metropolitan Transportation Council considered output data from a Travel Demand Model, Study Advisory Committee and Working Group input, findings from an assessment of existing conditions, direct field observations, professional judgment, and established federal and state standards and guidelines to identify: 1) major priority bicycle commuter corridors across a multi-jurisdictional roadway network for the greater Syracuse region, and 2) potential bike facility treatment options along the primary corridors. This study encourages cooperative discussions and agreements among road owners as a cost-effective implementation strategy to develop a successful bike commuter corridor network. Projects that involve non-priority corridors may also be considered for inclusion as an extension of the bike network as resources permit.

Bicycle Commuter Corridor Study
Appendices A & B

"Connecting Cyclists to Work"

SMTC

June 12, 2013

Appendix A

Meeting Summaries

- SAC Meeting #1, November 10, 2011
- SAC Meeting #2, October 22, 2012
- Working Group Meetings Spring/Summer 2012
- SAC Meeting #3, April 13

Syracuse Metropolitan Transportation Council
100 Clinton Square
126 North Salina Street, Suite 100
Syracuse, New York 13202

Phone (315) 422-5716
Fax (315) 422-7753
www.smtcmpo.org

Bike Corridor Study
Study Advisory Committee #1 Meeting Summary
SMTC Lower Level Conference Room
Thursday, November 10, 2011
9:00 to 10:30

Attending:
Mike Alexander, SMTC
Danielle Kroll, SMTC
Meghan Vitale, SMTC
John Reichert, NYSDOT
Julie Bednar, NYSDOT
Andy Maxwell, City of Syracuse
Russ Houck, City of Syracuse Engineering
Chris Rauber, OCDOT
Tim Frasier, NYS Canal Corporation

Meeting Summary:

A. Introduction

The meeting began at 9:00 a.m. with a welcome by Mr. Alexander, project manager, and participant introductions.

B. Purpose, Scope, and Schedule

Mr. Alexander reviewed the purpose and goal of the study:

Purpose Statement: The purpose of this project is to identify existing and potential bicycle routes that link residential population centers (origins) with places of employment (destinations).
Goal Statement: The goal of the study is to improve the bicycle network within the SMTC Metropolitan Planning Area (MPA) by identifying network gaps and developing general recommendations for improvements along the identified routes.

The following SAC participants raised several questions:

- Mr. Reichert asked if the SMTC has received any feedback from FOCUS's brainstorming and mapping sessions for the City's Bike Master Plan. Mr. Alexander explained that this study will complement and not duplicate the City's efforts and that Mr. Mercurio (project manager for the City's Bike Plan) is a member of our SAC and has been in touch with and provided comments to the SMTC. He could not be at today's meeting. Mr. Alexander shared the notes and comments provided by Mr. Mercurio and indicated that the SMTC is reviewing copies of the City's documents as they become available.

- Mr. Rauber asked how this study relates to the Suitability Map. Ms. Kroll said that the Suitability Map just reflects existing suitability of roads for cycling and that this study is meant to improve identified routes.
- Mr. Rauber asked if the study should include recommendations to officially classify the bike routes as "Designated Bike Routes", and indicated that the County has never done an official designation before. Mr. Alexander and Ms. Krol indicated that it is too early to tell what the recommendations will be at this point.

C. Potential Origins, Destinations, and Routes

Mr. Alexander reviewed the Origin, Destination, and Route Maps and methodology for their development. Ms. Vitale noted that no field work has been completed. Mr. Alexander explained that the SMTC used its Travel Demand Model (Model) to identify top origin and top destination pairs within the Metropolitan Planning Area. SMTC staff then identified potential routes for cyclists connecting the top origin and destination pairs.

D. Work Session

Mr. Alexander asked the SAC to 1) review and comment on the identified routes, origins, and destinations, 2) indicate if additional routes should be included, and 3) indicate what routes could be removed from further consideration. The SAC identified the following additional routes:

From the south/west

- Jamesville Road from Woodchuck Hill Road to Route 173
- 173 from Jamesville Road to East Brighton
- Brighton from Route 173 to Route 175
- Route 175 from OCC to and including South Ave
- Route 173 from Route 175 to Milton Ave
- West Onondaga Street from Route 173 to Warren

From the north

- Route 370 from John Glenn to Route 31
- Route 631 from Route 370 to Route 31
- Willet Parkway from Route 31 to West Entry Road
- West Entry Road from Willet Parkway to 60 Road
- 60 Road from West Entry Road to Route 31
- River Road from Route 370 to Route 31
- Soule Road from Route 57 to Route 31
- Morgan Road from Route 481 to Route 31
- Wetzel Road
- Henry Clay Blvd from Wetzel Road to 7th North Street
- Vine Street from Route 57 to West Taft Road
- Bear Road from West Taft Road to Buckley Road
- Buckley Road from 7th North Street to Park Street
- West Taft Road from Bear Road to I-81

From the east

- East Malloy Road from Route 11 to Route 298
- Kinne Street from East Malloy Road to Manlius Street
- Kirkville Road from Route 298 to Lobdells Corners
- Franklin Park Drive
- North Central Avenue

- Fremont Road from Kirkville Avenue to Route 290
- Burnet Ave
- Route 257 from Route 5 to Route 290
- Route 5 from Route 257 to Duguid Road
- Kinne to Thompson Road to Orvilton Drive

Discussion supporting the decisions include:

- Mr. Reichert suggested we add Kirkville Road – it has wide shoulders and connects schools and villages.
- Ms. Bednar asked if there are any routes we could include in the southern portion of the county. Mr. Alexander said that the residential densities in this area are very low and that the model suggested the most important route connections are to the West, North and East based on the top origin and destination pairs from the model. The southern portion of the county is much less densely populated than the suburbs to the West, North and East. However, Mr. Alexander indicated that Mr. Mercurio suggested we add connections to Onondaga Community College as well as to a few other areas along Route 173 in and around Jamesville (i.e., Southwood Area – neighborhoods are developing there). These limited areas will be included on the map.
- Mr. Frasier asked if all of the numbers indicated on the analysis maps were current. It was noted that they are existing (2007) model values.
- Mr. Houck suggested extending the Route 370 route to the Village of Baldwinsville. He also asked to make sure we consider connections to the Budweiser plant in Radisson, the Radisson Industrial Park, and the Radisson Residential Community. This could be achieved by extending the potential Route 370 bike route to the Route 5 Bike Route that currently exists along Route 31. Radisson has a well developed trail network and industrial park. It was noted that all of these areas should be interconnected.
- Mr. Reichert asked if we could investigate if there are socioeconomic factors we should consider when identifying routes that may indicate which population segments/cohorts may be more likely to use bicycle infrastructure.
- Ms. Kroll indicated that an 8 to 15 mile round trip for commuters is reasonable based on some preliminary, unofficial internet searches.
- Mr. Rauber asked about connecting Carrier/GM Circle and Airport Area. Mr. Alexander indicated that the Model suggested that the first two areas generate a lot of employment; however, major employers have recently left these areas (e.g., Carrier, New Venture Gear, etc.). The Airport also is identified as a major employment area. Therefore, an additional route along Molloy Rd. could be considered.
- Ms. Vitale asked the SAC if the goal of this study should be to just identify connections from suburban origins to the city line at points connecting to the city's identified bike routes. Mr. Maxwell agreed, but asked that we coordinate with Mr. Mercurio. Mr. Alexander indicated that Mr. Mercurio asked us to review routes within the city and compare them with routes he is proposing in his plan. He wants to discuss the pros and cons of different routes if any are identified. Therefore, our primary objective is to identify the connection points while also reviewing potential direct routes to our desired destinations within the city.
- Ms. Kroll asked Mr. Maxwell if the City's Bike Plan needs to be approved by the Common Council. Mr. Maxwell said it is not required, but that the City may request some sort of formal endorsement by the Common Council.
- Ms. Bednar said that Route 57 near Wegmans is difficult to bike and walk due to high traffic volumes and speed.
- It was suggested that Morgan Road be considered over Route 57 for a northern route connection.

- Mr. Rauber said he will get us pedestrian crossing locations.

Priority Routes identified by the SAC include:

- From the West – Milton Ave with applicable cross streets
- From the North – Morgan Road, Route 370, Buckley, sections of Route 11/South Bay Road, and applicable cross streets (with connections to 7th North Street and Old Liverpool Road)
- From the East – Route 290, Kirkville Road, Route 5, and Route 92
- From the South – there are no priority routes from the south

E. Next Steps

Mr. Alexander indicated that the next steps involve forming a Working Group (WG) consisting of bike commuters and going through similar exercises with them to further reduce the number of routes for consideration. A second SAC meeting will be scheduled after the WG meetings have reduced and summarized the routes. Once the number of routes are reduced based on WG and SAC input, SMTC staff will conduct any necessary fieldwork on the identified routes and will work to develop recommendations for the routes.

Syracuse Metropolitan Transportation Council
100 Clinton Square
126 North Salina Street, Suite 100
Syracuse, New York 13202

Phone (315) 422-5716
Fax (315) 422-7753
www.smtcmpo.org

Bike Corridor Study
Study Advisory Committee #2 Meeting Summary
SMTC Lower Level Conference Room
Monday, October 22, 2012
2:00 to 3:30

Attending:
Mike Alexander, SMTC
Danielle Krol, SMTC
Russ Houck, City of Syracuse Engineering
Paul Mercurio, City of Syracuse DPW
Chris Rauber, OCDOT
Julie Bednar, NYSDOT
Merike Treier, Downtown Committee
Megan Costa, SOCPA

Meeting Summary:

A. Meeting Purpose

The identification of potential bicycle routes that transverse municipal boundaries and may include multiple facility owners poses an opportunity for inter-agency cooperation. To achieve successful results leading to the development of a seamless network of interconnected routes requires member agencies and facility owners to agree on a consistent set of potential facility treatments. As such, the purpose of the meeting is to build consensus on the routes and potential treatment options among multiple facility owners.

B. Project Purpose

Mr. Alexander reviewed the purpose of the study:

Purpose Statement: The purpose of this project is to identify existing and potential bicycle routes that link residential population centers (origins) with places of employment (destinations) to encourage commuter cycling to work.

C. Project Update

Mr. Alexander reviewed the milestones achieved since the first Study Advisory Committee (SAC) meeting.

- Conducted a Travel Demand Model (TDM) analysis to determine where most people commute to and from work.

- Incorporated SAC feedback that suggested the consideration of various routes, issues and opportunities to be reviewed with Working Group members.

- Assembled and conducted five (5) Working Group meetings with members from the Onondaga Cycling Club who have experience commuting between the origins and destinations identified in the TDM.

- Prepared a summary Issue and Opportunity Map that refines potential bicycle routes based on Working Group and SAC feedback.

- Conducted in-field visits to all the routes during the summer of 2012 to observe feasibility and identify additional issues and opportunities.

- Prepared detailed Observation Maps that refined routes based on observations and noted potential facility treatment considerations.

- Began the review of the recently released AASHTO Bicycle Facility Guidebook.

D. Work Session

Mr. Alexander highlighted key points illustrated on the Observation Maps and asked the SAC if they have any concerns with the identified routes or potential treatment considerations. Meeting participants offered the following comments:

- Mr. Alexander identified the routes preferred by the working groups and explained that they were further refined based on field observation. Additional feedback from the Working Group participants included:

    - Maintain high average cycling speeds (10 mph or greater)
    - Cyclists tend to commute for 45 minutes and need 15 additional minutes to secure their bike and get changed for work. At 10 mph, a cyclist can commute 7.5 miles in 45 minutes.
    - Safety is the most important factor for cyclists of all ages and experiences.
    - A cyclist will tolerate up to 10 additional minutes of commute time if the detour is safer than the direct route.

- Ms. Costa asked why West Genesee Street was not identified as the preferred route. She expressed an interest in retrofitting commercial routes throughout the county with bike facilities. Mr. Alexander explained that the scope of this study focuses on connecting safe, direct routes that maintain high average cycling speeds to encourage commuter cycling. Working Group participants confirmed this objective and suggested that they would not commute to work via commercial corridors that have high traffic volumes, multiple conflict points caused by curb cuts and lack of access management, numerous intersections and traffic lights, and high traffic speeds. To obtain the objective of this study, commuting cyclists suggest using alternative routes. As such, routes such as West Genesee Street and Route 57 were removed from consideration in favor of Milton Avenue and Morgan Road, respectively. Mr. Mercurio suggested that this trend is consistent in places like Portland, Oregon where cyclists often have dedicated facilities one block away from commercial corridors. Mr. Alexander reminded the SAC that all roadways must accommodate cyclists. Everyone recognized that commercial corridors should contain bike lanes and accepted that commercial corridors do not permit high average travel speeds for

cyclists. Thus, the identified routes will continue to be considered the preferred routes. The report should mention that commercial corridors with cycling facilities are desired, but they do not meet the intent of this particular study.

- Mr. Mercurio mentioned that the City is considering improvements to Erie Boulevard West, which include improvements for cyclists. Moreover, as part of this, the City is considering improvements to the Erie Blvd/W Genesee St. intersection. This intersection was identified as an intersection in need of improvement to accommodate cyclists along the desired route.
- Mr. Alexander said that future improvements to intersections will be general considerations that will identify potential treatments that will require detailed engineering analysis to determine the preferred treatment. He noted that conducting detailed engineering analysis for intersections and other route segments is beyond the scope of this study.
- Mr. Rauber said that the County is pleased with the selection of routes. He acknowledged concerns regarding liability and maintenance. He acknowledged and supported the identified considerations and suggested that the SMTC continue exploring these opportunities. He also suggested that the SMTC consider the need for addressing liability and maintenance concerns.
- Mr. Alexander pointed out network gaps throughout the system and said that in some cases the SMTC has identified local or private roads as routes for consideration. The SAC acknowledged that this may be the only viable option in some cases and suggested that the final report recognize local and private roads as potential connections to close network gaps.
- Mr. Alexander asked NYSDOT to help provide access to a few key areas (e.g., the right-of-way under I-81 in Mattydale, etc.) Ms. Bednar said she will help arrange a site visit(s).
- Mr. Mercurio and other SAC members support the development of off road facilities in areas such as I-81 in Mattydale through the right-of-way if a route can be identified.
- Mr. Mercurio suggested that the SMTC consider design alternatives for Route 92 in DeWitt at the I-481 interchange. He suggested that roundabouts with slip ramps could help facilitate cycling. Mr. Alexander noted that this area was recently redesigned and that it may be a while before new designs are considered for implementation. He suggested noting this concept as a long-term option. Other SAC members suggested that cyclists dismount their bikes and use the designated sidewalks.
- Mr. Alexander reviewed opportunities discovered along the Onondaga Lake Parkway. The CSX railroad bridge is designed as a double track with only one side in active use. The inactive right-of-way could potentially be used as a rail-with-trail and continue down the lakeshore using the existing bridge abutment at Ley Creek. The SAC supported the acknowledgement of this opportunity in the final report. Mr. Mercurio suggested that the SMTC contact Maarten Jacobs to learn more about rails-with-trails.
- Mr. Houck said that the City was conducting a redesign of the Park Street Railroad Bridge.
- The SAC supported the idea of conducting a road diet for the Onondaga Lake Parkway that would incorporate bike facilities.
- The SAC supported the idea of an off-road bike trail along the utility right-of-way connecting Buckley Road to the existing trail segment at the Onondaga Lake Parkway.

E. Next Steps

The SMTC will conduct additional fieldwork at NYSDOT facilities. The SMTC will draft treatment options maps and review them at the final SAC meeting.

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100 Clinton Square
126 North Salina Street, Suite 100
Syracuse, New York 13202

Phone (315) 422-5716
Fax (315) 422-7753
www.smtcmpo.org

Bike Corridor Study
Summary of Working Group Meetings

Monday, March 12, 2012; 9:00 to 10:30 (Lobby Conference Room):
Mike Alexander, SMTC
Danielle Kroll, SMTC
Meghan Vitale, SMTC
Jeanie Gleisner, SMTC
Mike Godfrey, SMTC
Helene Schmid, Onondaga Cycling Club
Mike Lyon, Onondaga Cycling Club President
John Allen, Onondaga Cycling Club
James Trevvett, Onondaga Cycling Club

Tuesday, March 20, 2012; 6:00 to 7:30 (First Floor Conference Room):
Mike Alexander, SMTC
Danielle Krol, SMTC
Jeanie Gleisner, SMTC
Michael P. O'Connor, Onondaga Cycling Club

Monday, March 26, 2012; 6:00 to 7:30 (First Floor Conference Room):
Mike Alexander, SMTC
Danielle Krol, SMTC
Jeanie Gleisner, SMTC
Larry Weiskirch, Onondaga Cycling Club
Dan Wnorowski, Onondaga Cycling Club
John Cico, Onondaga Cycling Club

Tuesday, March 27, 2012; 3:00 to 3:45 (First Floor Conference Room):
Mike Alexander, SMTC
Sam Sampere, Onondaga Cycling Club

Friday, June 1, 2012; 2:00 to 3:00 (First Floor Conference Room):
Mike Alexander, SMTC
John Sexton, NYSDOT

Meeting Summary:

The SMTC conducted five Working Group meetings with cyclists from the Onondaga Cycling Club. The participants have commuted to work on their bikes. Each meeting was conducted using the same general work session format. The summary below includes the comments from all of the meetings. Issues and opportunities identified by the Working Group participants were also summarized on a map entitled "*Compilation of Issues and Opportunities Identified by Working Group Participants".*

A. Introduction

Mr. Alexander welcomed everyone and thanked them for coming. He introduced himself and asked everyone to introduce themselves. Mr. Alexander explained that the SMTC used its Travel Demand Model to identify origins, destinations, and potential routes.

B. Working Group Meeting Purpose

Mr. Alexander stated that the purpose of the working group meetings is to identify issues and opportunities with each route and prioritize routes.

C. Work Session

Meeting participants discussed issues and opportunities with the identified routes and helped identify priority routes. The Issues and Opportunities Map documents substantive comments that were discussed by the participants. Please reference the issues and opportunities map for more information. Participants also offered the following additional comments:

Commuter Cyclist Participants

- One commuter rides from Memphis to downtown via Warners to Milton to Erie Boulevard West
- One commuter rides to SU from Fayetteville along Genesee Street then into Meadowbrook Road to Colvin.
- One commuter rides from Jamesville via Rock Cut Road to Brighton on/off ramps and along Nottingham
- One commuter rides from DeWitt to East Syracuse
- One commuter rides from Westvale to downtown and will take bus part of the way
- One commuter rides from west side of the city to downtown

Route Considerations and Trouble Spots

- Erie Boulevard West contains less traffic and fewer lights. It should be considered a preferred route over Genesee Street.
- Fayetteville to SU is difficult
- Bus routes can expand options for bikers willing to bike and ride, but bus routes in Fayetteville are limited.
- The bike route on Euclid is very steep
- Commuter routes should avoid steep hills
- Fayetteville Town Center – adjacent roads are narrow, have narrow shoulders, and several roads are deteriorated
- Width and condition of shoulders are an issue when selecting routes
- Towpath Road is confusing because it contains path on only one side of road, and the bike path is not marked. Cyclists typically expect lanes on both sides of the road
- Wide shoulders can help off-set high-volume traffic
- People from East Syracuse to Erie Boulevard have a very difficult time because there are few pedestrian facilities
- Erie Boulevard East and under the I-81 viaduct is difficult to cross
- Colvin is not bad when crossing I-81
- Hills, drumlins and blind spots should be considered
- Court/Spencer/Butternut Street bridges okay to cross over I-81
- Experienced cyclists are even uncomfortable by I-81, Buckley Road, and Onondaga Lake Parkway
- Howlett Hill Road is often used by cyclists as it is level with wide shoulders and a 35mph speed limit
- Communities need to maintain their shoulders to keep them free of glass and debris

- Fayette Street from West Street to Geddes Street have wide travel lanes and could be a good bike commuter route
- There is an issue with a drainage grate with wide cross members going the direction of travel at South Ave and Brighton
- Fremont Bridge over rail yard is a difficult route
- Taft Road from Northern Blvd to Route 11 is a difficult section
- South Ave has lots of traffic, illegal parking and buses at elementary school get in cyclist lanes, so cut through by taking the "canal path" (i.e., trail over Onondaga Creek) to Brighton
- Seneca Turnpike hill is an issue and Brighton/South Ave is difficult route
- South Ave is a good direct route to OCC. An alternative route is to take McDonald Road.
- Velasko Road is too narrow with too much traffic and a hill
- Milton to Tipp Hill to Fayette is a good route

Bicyclist Behavior and Preferences

- Some bikers don't mind riding in traffic
- Bikers prefer to be removed from traffic, this will also increase number of bikers
- High traffic volume roads intimidate cyclists
- Commuter cyclists are willing to tolerate up to 10 minutes additional travel time to use a less direct route if that route is safer.
- Cyclists are typically willing to commute up to one hour each way to work (45 minutes to ride, 13.5 miles at 18 mph; 15 minutes to change)
- Average cyclists will commute 5 to 10 miles to work
- Beginner cyclists will commute half of an average cyclist
- Maximum 15 mile commute one way (average cycling time is 18mph) Jamesville Road intersection is not designed for cyclists
- The worst thing you can do is have a cyclist "put their foot down at an intersection."
- Cyclists will need to be educated about bike boxes and participants fear that motorists will pull into a bike box anyways
- Fixed gear bikes, winter (studded) tires, etc allow for seasonal riding
- Marked bike lanes could help encourage new cyclists
- A good cyclist can travel 15 miles max (10-12 of the miles must be flat).
- 10 miles is a very long commute
- Average speed is 18 mph (for seasoned cyclists with no stops); 14 mph for average cyclists with few stops; 10 mph with lots of stops
- 5 miles is a reasonable commute; most people willing to do 3 miles

Educational Needs for Drivers

- Drivers are not always considerate and should be educated to "share the road"
- Lack of awareness of cyclists and rules about sharing the road were a common theme
- CNY should encourage people to cycle to work one day a week

Syracuse Metropolitan Transportation Council
100 Clinton Square
126 North Salina Street, Suite 100
Syracuse, New York 13202

Phone (315) 422-5716
Fax (315) 422-7753
www.smtcmpo.org

Bike Corridor Study
Study Advisory Committee #3 Meeting Summary
SMTC Lower Level Conference Room
Thursday, April 18, 2013
2:00 to 3:30

Attending:

Mike Alexander, SMTC
Danielle Krol, SMTC
Kevan Busa, SMTC
Russ Houck, City of Syracuse Engineering
Paul Mercurio, City of Syracuse DPW
John Reichert, NYSDOT
Chris Rauber, OCDOT
Megan Costa, SOCPA
Tim Frasier, NYSTA
Ike Achufusi, NYSDOT
Julie Bednar, NYSDOT

Meeting Summary:

I. Welcome

Mr. Alexander welcomed the Study Advisory Committee (SAC) members, thanked everyone for coming, and introduced the SMTC's intern, Kevan Busa. He then asked if anyone had any comments or changes to the previous SAC meeting minutes. None were provided.

II. Review Process

Mr. Alexander gave a brief overview of the study purpose, the planning process, and the objectives of today's meeting.

Study Purpose: The purpose of this study is to identify opportunities to develop a seamless multi-jurisdictional bicycle commuter corridor network that links dense suburban residential areas with urban employment centers.

Planning Process: The planning process involved the following:

- utilized a Travel Demand Model to identify origins and destinations,
- the SMTC identified initial corridors and reviewed them with the SAC,
- the SAC added additional corridors for consideration,
- the SMTC conducted Working Group meetings to add and remove corridors,
- SMTC staff visited the corridors and added/removed routes based on field observations,
- the SMTC conducted a "desktop" existing conditions assessment
- the SMTC identified "suggested corridors" and "suggested facility treatments" based on standards and guidelines established by: AASHTO, NACTO, MUTCD, HDM, and FHWA.

Today's Objectives: The objective of this meeting is to: 1) review the suggested corridors and the suggested facility treatments with the Study Advisory Committee, and 2) to obtain a final set of comments to incorporate into the draft report prior to presenting it to the SMTC Planning and Policy Committees.

III. Work Session

Mr. Alexander reviewed all of the Suggested Corridor Maps and identified unique challenges and opportunities along each corridor. He encouraged discussion as he reviewed each map and received the following comments/questions:

- Q: Why was a slope of 5% chosen? R: AASHTO suggests travel distance and slope thresholds. This study considers corridors across a wide region, so a detailed breakdown of slopes/distances is not feasible at this scale. Available literature suggests 5% as a reasonable rule-of-thumb threshold. The SMTC found that using a 5% slope threshold worked very well for mapping purposes, identifying slopes when conducting corridor visits, and for conducting a region-wide, planning-level assessment.

Map 19 – According to Mr. Mercurio, the City of Syracuse Bike Infrastructure Master Plan is no longer emphasizing West Fayette Street as a bike corridor. Instead, the Master Plan emphasizes Erie Boulevard West as preferred alternative. Mr. Mercurio suggested removing West Fayette Street as a suggested corridor from Map 19 and use Erie Boulevard West as the suggested corridor. He said if West Fayette Street remains as a corridor to include a caveat that the City of Syracuse prefers Erie Boulevard West. Mr. Alexander indicated that the SMTC identified West Fayette Street to be consistent with the City's Master Plan. He said that the SMTC will remove West Fayette Street as a suggested corridor from Map 19.

Mr. Mercurio asked why Avery Ave was selected instead of Willis Ave. Mr. Alexander said that the SMTC received feedback from the Working Group about these routes and visited the site. Avery Ave appeared to be the more intuitive route from a connection standpoint and it provides more space in the travel lanes for cyclists. The narrow travel lanes and on-street parking along portions of Willis Avenue may increase bicycle/vehicle conflicts. Mr. Alexander said that the SMTC will discuss these issues and opportunities more with the City to determine the best possible corridor. The City also expressed interest to discuss Belleview to West Onondaga; Lodi Street from North Salina to University Hill; and South Avenue as possible bike corridors that may or may not need to be identified as suggested corridors in the SMTC study.

Mr. Mercurio had to leave the meeting early and left some written comments. Mr. Alexander will contact Mr. Mercurio to address any additional comments and questions.

It was noted that Ulster is a street (Ulster Street) and is not a "road".

Ms. Costa asked if there is consistency between the west-east corridors in the Bike Corridor Study and the Erie Canal Trail study. Ms. Kroll said yes. Both suggest using the same corridors such as Milton Ave. Mr. Alexander clarified the differences between the target groups in both studies (i.e., experienced cyclists verses families with children that are walking and biking.) Therefore, there will be differences to some level in route selection due to these target groups and due to the different purposes of each project.

Ms. Costa asked if the Working Group participants expressed any desire to use Erie Boulevard East as a corridor into the city. Mr. Alexander replied that the participants had no desire to use

Erie Boulevard East as it is currently designed and that they prefer other routes. They acknowledged it as a direct connection into the city that would require significant resources to improve and thus was beyond the scope of this study. Mr. Alexander said that the Erie Canal Trail project will consider using this corridor in greater detail than this study.

Mr. Mercurio and Mr. Houck said that the City plans to make improvements to the Park Street Bridge. Design has not yet commenced, and Mr. Houck is not the lead engineer on this project. Mr. Alexander noted that this is the only connection point linking the northern suburbs to the City. He suggested that the City DPW (Mr. Mercurio) and City Engineering (Mr. Houck) coordinate to ensure that project designers consider incorporating bicycle accommodations.

Q: Why were the bike corridors identified along the southern half of the City eliminated from consideration? R: The purpose of the Bike Corridor Study is to connect suburbs to the City. The Travel Demand Model indicated that the greatest number of suburban residents live to the west, northwest, north and east of the city. Corridors to points further south were considered, but were removed from further consideration for three primary reasons: 1) lack of a dense suburban population, 2) lack of a centralized urban core area, and 3) areas of extreme topography (i.e., slope). Additionally, the City of Syracuse Master Plan identifies opportunities for bike corridors in this area. Therefore, the SMTC did not suggest corridors to the south to prevent redundancy and to maintain consistency with the purpose and intent of the Bike Corridor Study.

A suggestion was made to place a note on relevant Suggested Route Maps that the City of Syracuse Bike Infrastructure Master Plan has identified bike corridors within the southern half of the city. Mr. Alexander agreed with that suggestion and said that the SMTC will update the maps accordingly.

Comment: Please double check map scale bars.

Comment: As bike facilities get developed, there will be a need for “universal signage/wayfinding.”

The NYSDOT asked if the SMTC could include a brief summary table that presents a hierarchy of routes that identifies applicable maps (e.g., see Map 19) to review and where to locate applicable recommendations in the report (e.g., see page 6). This will make the report recommendations easier to cross reference for the public, planners, engineers, landscape architects, etc. Ms. Kroll asked the NYSDOT if this is a required element for the SMTC to do before bringing the draft study to the Planning and Policy Committees. The NYSDOT did not think it was necessary and said it could be done after the study makes it through the committees. Ms. Kroll said that the SMTC will consider the feasibility of preparing this table beforehand, but that it may be developed following committee presentation.

Comment: Ms. Costa encouraged the SMTC and others to reach out to towns and villages to educate them about this study and seek their support for its implementation.

Comment: Change the orientation of Map 24 so that north is up.

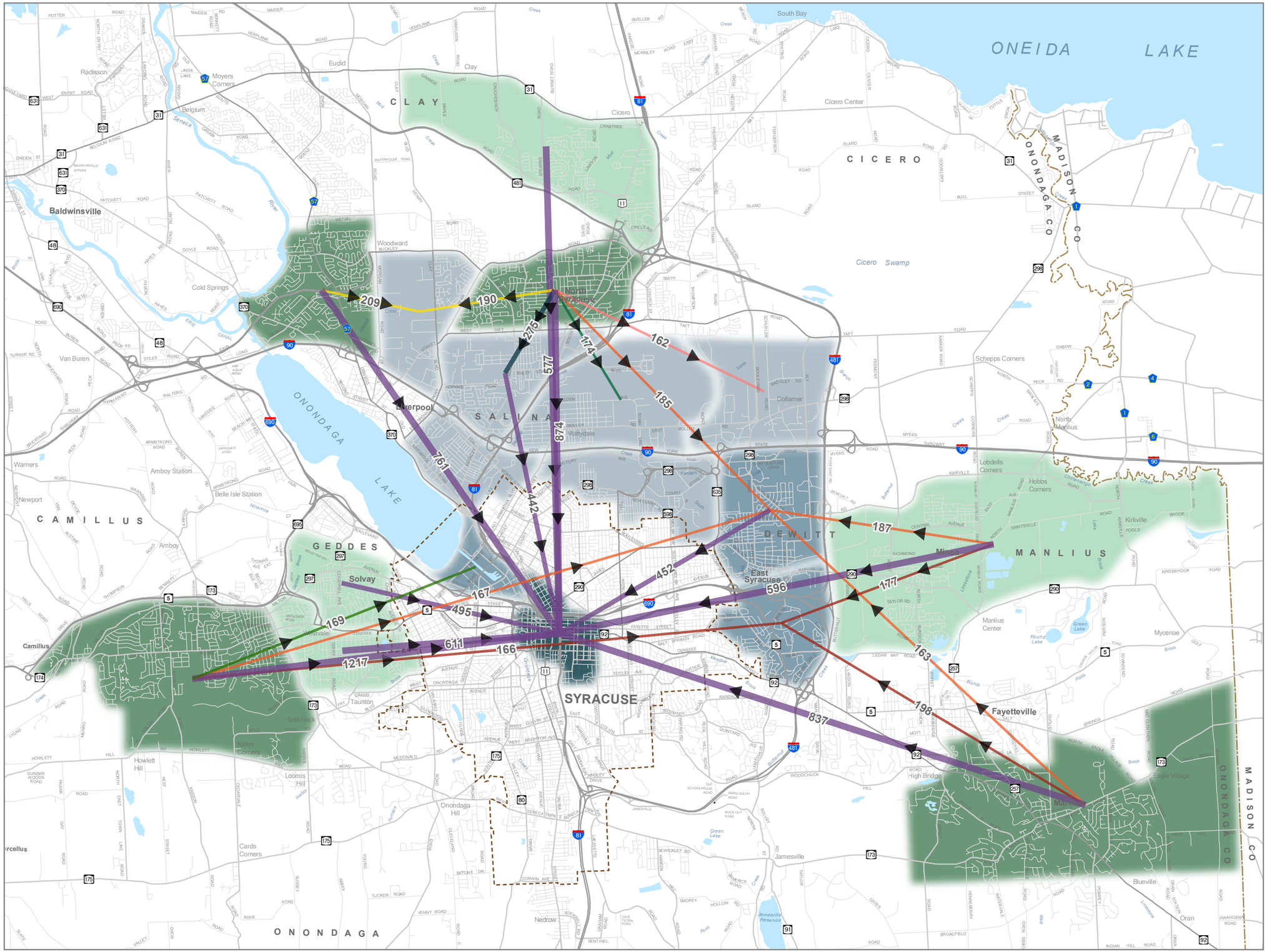
IV. Next steps

SAC provides comments by Thursday, May 2, 2013. SMTC presents to the Planning Committee on June 3 and the Policy Committee on June 12.

Appendix B

Analysis Maps

Map 2 – Travel Demand Model Assessment
Map 3 – Issues, Opportunities and Corridors Identified by the Study Advisory Committee
Map 4 – Issues, Opportunities and Corridors Identified by the Working Group
Map 5 – Field Observations, Notes, and New Corridors – West Detail
Map 6 – Field Observations, Notes, and New Corridors – Northwest Detail
Map 7 – Field Observations, Notes, and New Corridors – North Detail
Map 8 – Field Observations, Notes, and New Corridors – East Detail
Map 9 – Field Observations, Notes, and New Corridors – Central Detail
Map 10 – Environmental Justice Assessment
Map 11 – Business Locations
Map 12 – Transit Service
Map 13 – Bike Suitability Ratings with Accident Locations
Map 14 – Speed Limit and Annual Average Daily Traffic (2010)
Map 15 – Pavement Condition Ratings and Bridges
Map 16 – Slope
Map 17 – Road Ownership for all Considered Corridors



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Map 2: Travel Demand Model Assessment

Total Home-Based Work Trips/Day by Destination

- 150 - 250*
- 251 - 500*
- 500 +*
- * Line Color Represents Destination

Destinations (# of Work Trips Received)

- 6,001+
- 4,001 - 6,000
- 2,000 - 4,000

Origins (# of Work Trips Produced)

- 3,001+
- 2,000 - 3,000

- City of Syracuse
- County Line

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

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100 Clinton Square
126 North Salina St, Suite 100
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Map 3:
Issues, Opportunities, and Corridors Identified by the Study Advisory Committee (SAC)

Bike Corridor for Consideration

- Initial Corridor Suggested by SMTC Staff Based on Travel Demand Model Assessment
- Additional Corridors Suggested by SAC Members

- ..... Existing Trails, Shared-Use Paths, Bike Lanes/Sharrows, and NYSDOT Bike routes 5 & 11
- Current unsigned on-road sections of the Erie Canal Trail route.

- City of Syracuse
- Town
- Village

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

Route 57
- High speeds
- Difficult to cross

Shoulder width?

Remove?
Make secondary?

Morgan Rd
- Wide shoulders

Prefer South Bay Road

Possible preferred corridor:
Bailey Rd to Buckley Rd to 7th North St

Prefer 370 over Old Liverpool Road

High volume road

Choke Point

- Railroad crossing
- Steep hill

Tie in to Loop-the-Lake?

Solvay
Milton Ave
- On-street Parking
- Narrow Shoulders
- Lower Speed

Use bypass right-of-way?

Railroad crossing

- Many driveways
- Narrow shoulders

County Road- diet considered

Link to existing paths by school

Remove?
Make secondary?

Future Town of DeWitt Trail?

- Adequate shoulders
- High speed ramps

Update bike route signs to also say: "Share the Road"

Erie Canal Trail

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Map 4:
Issues, Opportunities, and Corridors Identified by Working Group Participants

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

- Corridors Considered
- Existing Trails, Shared-Use Paths, Bike Lanes/Sharrows, and NYSDOT Bike routes 5 & 11
- Current unsigned on-road sections of the Erie Canal Trail route.
- Existing Pedestrian/Bike Bridge
- Improve Crossing for Cyclists
- City of Syracuse
- Town
- Village
- \+ Opportunity
- \- Issue
- • Consideration

Lawton Rd
- Narrow shoulders by pond.

CR-57
- Difficult to cross
- Improve intersections for cyclists.
- High speeds.

Caughdenoy Rd
+ Good shoulders.

Stearns Rd
+ Good shoulders.

Morgan Rd
- Preferred corridor.
- Wide shoulders.

Wetzel Rd
- Variable shoulder width.

Buckley Rd
+ Secondary corridor.

South Bay Road
+ Preferred over N. Main St (US-11).

E. Taft Rd
- Narrow shoulders.
- High traffic volumes.

Bailey Rd/Buckley Rd
+ Possible preferred corridor to 7th North St.

I-81 & US-11 Interchange
- Bikes must cross traffic at interchange ramps.

Northern Blvd
+ Used by cyclists.

Fremont Rd
+ Used by cyclists.

Old Liverpool Rd
- High traffic volumes.

Warners Rd (NY-173)
+ Used by Cyclists.

Onondaga Lake Parkway (NY-370)
+ Riders prefer over Old Liverpool Rd.
- No shoulders under RR bridge.
- High traffic volumes.
- Choke point.
- High speeds.

7th North St
- RR crossing.
- Steep Grade.

Manlius Center Rd (NY-290)
- Less preferred corridor.

Salt Springs Rd
- Potholes.
- Uneven shoulder.

N. State St
+ Preferred route.
+ Calm traffic.

Kirkville Rd
+ Link to existing paths by ESM HS.

Towpath Rd
- Bike lane on 1 side.
- Center road in R.O.W.

NY-5 Bypass
+ Possible shared-use path.

Milton Ave (NY-297)
+ Preferred corridor.
+ Lower speed.
- On-street parking.
- Narrow shoulders.

Onondaga Rd
- Narrow shoulders.
- Steep grade.

Erie Blvd West
+ Preferred corridor.
- Rough road surface (RR Bridge)
- Drainage grate issues.

W. Fayette St
+ Wide shoulders.

Euclid Ave
- Steep grade.

S. State St
+ Used by cyclists.

Cedar Bay Rd
+ Less direct but preferred over NY-5.
- Limited sightlines.
- High speeds.
- No shoulders.

Connect for winter use.

Feeder Canal Trails
+ Could be reclaimed for cyclists.
- Maintenance required.

Behind Wegmans
+ Path & bridge maintained by Town

I-481 & NY-5/92 Interchange
+ Adequate shoulders.
- Bikes must cross traffic at interchange ramps.

Meadowbrook Dr
+ Used by cyclists.
- Potholes.

Nottingham Rd
- Steep grade.

Butternut Creek
+ Future Town of DeWitt Trail?

S. Manlius Rd (NY-257)
- Update bike corridor signs to say: "Share the Road."

W. Genesee St (Old NY-5)
- Narrow shoulders, some areas without.
- High traffic volumes.
- Difficult to cross.
- Driveways entering road.
- Road diet previously considered by Count.
- Improve intersections for cyclists.

W. Onondaga St
+ Used by cyclists.
+ Wide road.
• Use similar treatment to Euclid Ave.

Geddes St
- Narrow shoulders under RR bridge.

McDonald Rd
+ Used by cyclists.
- Steep grade.

Howlett Hill Rd
+ Used by cyclists.

Velasko Rd
- Used by cyclists.
- Narrow shoulders.
- Steep grade.

W.Colvin St
+ Contraflow bike lane.

Jamesville Ave
+ Used by cyclists.

E. Brighton Ave
- Drainage grate issue.
- Dangerous traffic.

Jamesville Rd
- Potholes.
- No shoulders.
- Narrow at RR crossing.
- No "Share the Road" signs.

Woodchuck Hill Rd
- No shoulders.
- Limited sightlines.

I-481
- Barrier road.

Rock Cut Rd
+ Used by cyclists.

Lafayette Rd
+ Used by cyclists.

I-481 to Rock Cut Rd
+ Possible connection under I-481 bridge to SU South Campus.

North Rd
+ Used by cyclists.

E. Seneca Turnpike (NY-173)
+ Used by cyclists.

E. Genesee St
+ Preferred over NY-92
+ Most direct corridor.
- Improve intersections for cyclists.
- Narrow shoulders.

W. Seneca Turnpike (NY-173)
- High traffic volumes.
- Narrow shoulders.
- Steep grade.

Highbridge Rd/Cazenovia Rd (NY-92)
- Underutilized, Rt 5 preferred.

To Onondaga Community College Campus

To Route 175

RR Crossing

Erie Canal Trail

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100 Clinton Square
126 North Salina St, Suite 100
Syracuse, NY 13202
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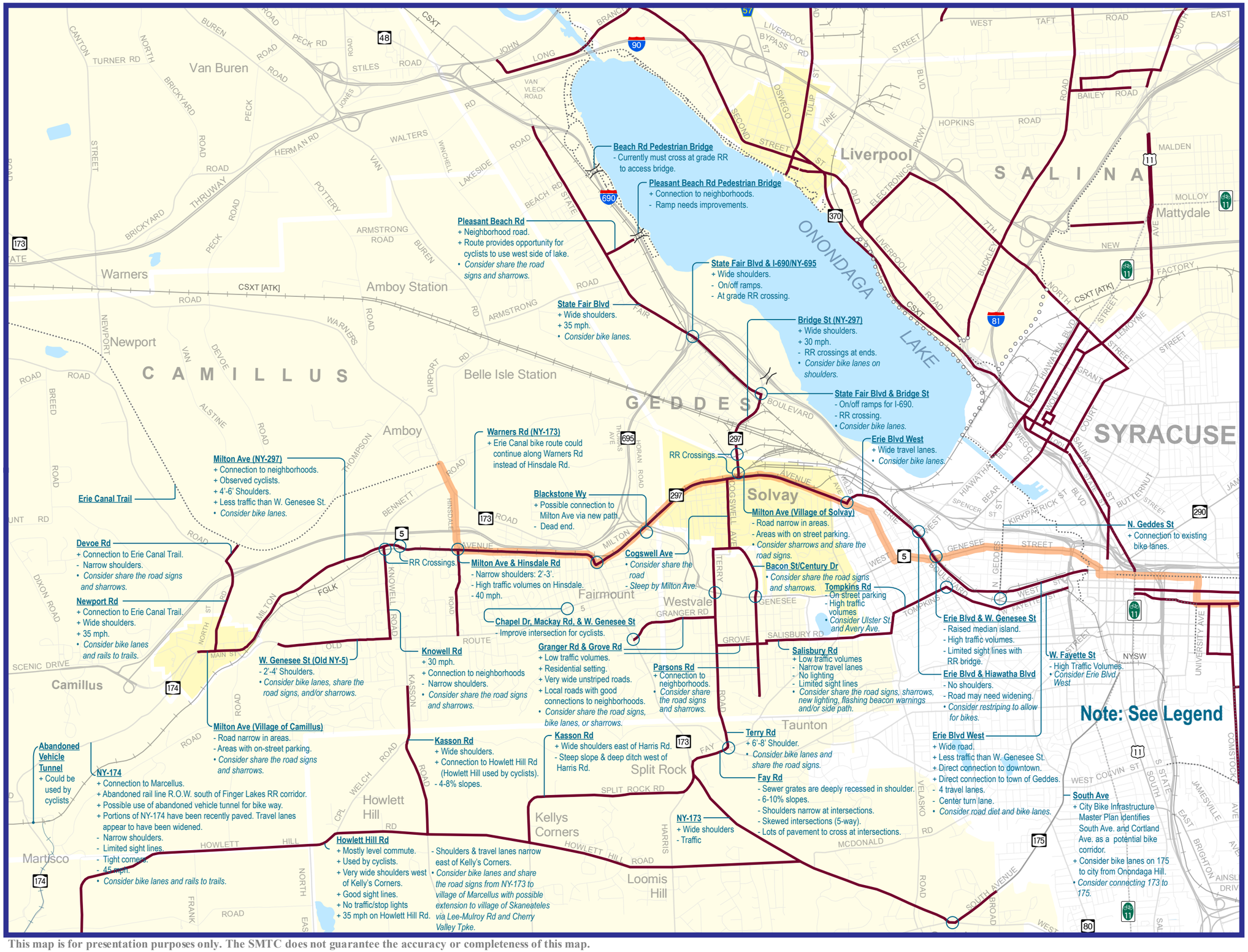
West Detail



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Map 5:
Field Observations, Notes, and New Corridors: West Detail

0 0.5 1 2 Miles
0 0.5 1 2 Kilometers

- Possible Bike Corridor
- Existing Trails, Shared-Use Paths, Bike Lanes/Sharrows, and NYSDOT Bike routes 5 & 11
- Current unsigned on-road sections of the Erie Canal Trail route.
- Possible Shared-Use Path/Corridor
- Railroad
- Abandonded Rail Corridor Could be used for Rails to Trails
- Existing Pedestrian/Bike Bridge
- Improve for Cyclists
- City of Syracuse
- Town
- Village
- \+ Opportunity
- \- Issue
- • Consideration

Note:
The City of Syracuse Bike Infrastructure Master Plan identifies potential corridors throughout the city. Please refer to this plan for additional corridor recommendations.

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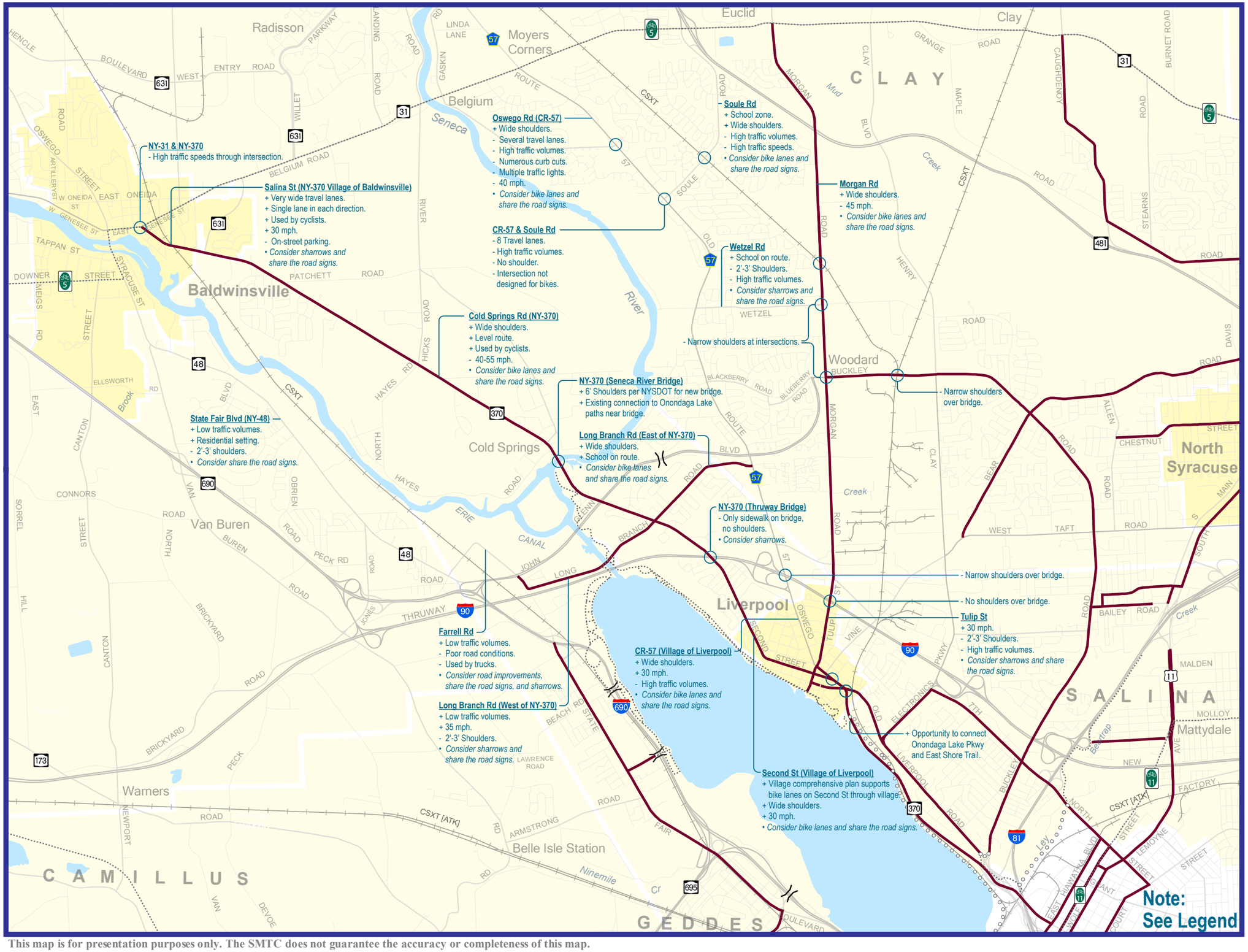
Northwest Detail



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Map 6:
Field Obsevations, Notes, and New Corridors: Northwest Detail

0 0.5 1 2 Miles
0 0.5 1 2 Kilometers

- Possible Bike Corridor
- Existing Trails, Shared-Use Path, Bike Lanes/Sharrows, and Bike Routes
- Possible Shared-Use Path/Corridor
- Railroad
- Existing Pedestrian/Bike Bridge
- Improve Crossing for Cyclists
- City of Syracuse
- Town
- Village
- \+ Opportunity
- \- Issue
- • Consideration

Note:
The City of Syracuse Bike Infrastructure Master Plan identifies potential corridors throughout the city. Please refer to this plan for additional corridor recommendations.

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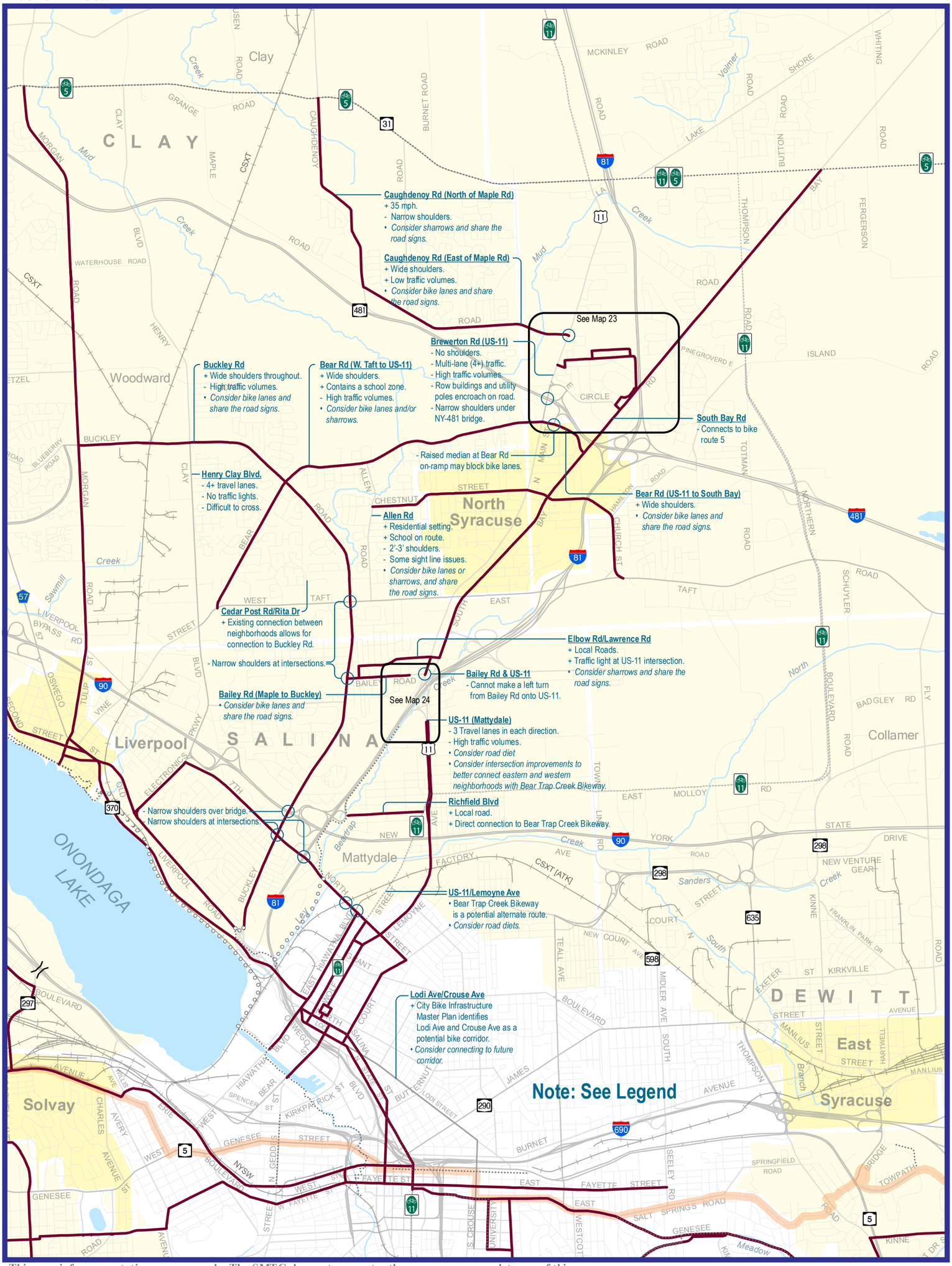
North Detail



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Map 7:
Field Obsevations, Notes, and New Corridors: North Detail

0 0.5 1 2 Miles

0 0.5 1 2 Kilometers

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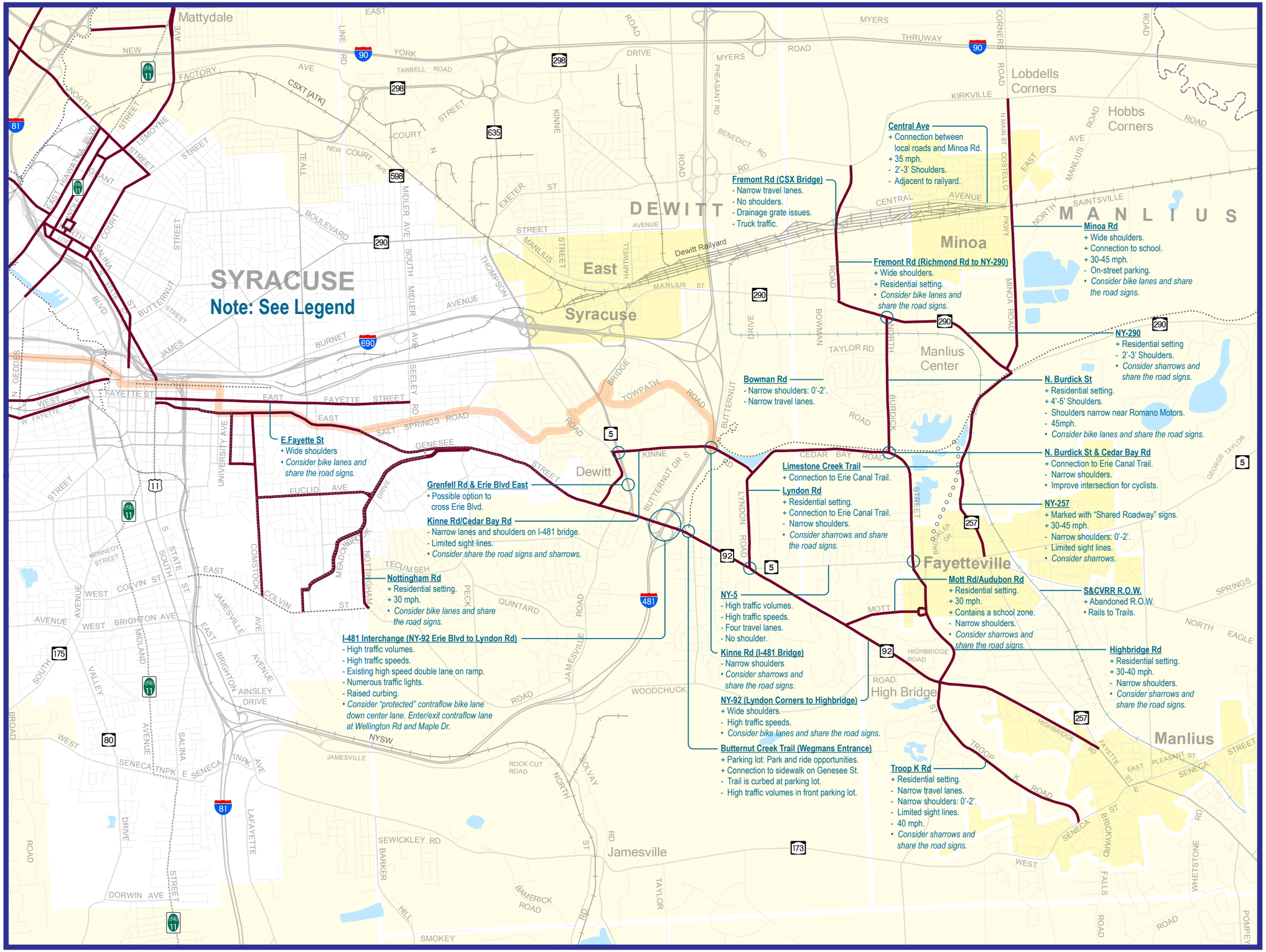
Note:
The City of Syracuse Bike Infrastructure Master Plan identifies potential corridors throughout the city. Please refer to this plan for additional corridor recommendations.

- Possible Bike Corridor
- Existing Trails, Shared-Use Paths, Bike Lanes/Sharrows, and NYSDOT Bike routes 5 & 11
- Current unsigned on-road sections of the Erie Canal Trail route.
- Possible Shared-Use Path/Corridor
- Railroad
- Existing Pedestrian/Bike Bridge
- Improve for Cyclists

City of Syracuse
Town
Village

\+ Opportunity
\- Issue
• Consideration

East Detail



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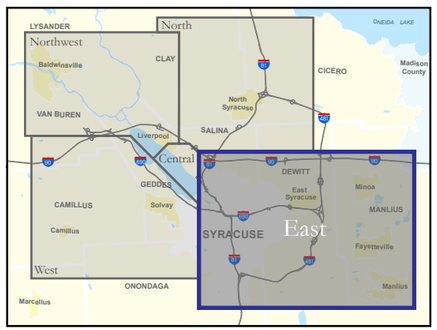
Map 8:
Field Observations, Notes, and New Corridors: East Detail

0 0.5 1 2 Miles
0 0.5 1 2 Kilometers

- Possible Bike Corridor
- Existing Trails, Shared-Use Paths, Bike Lanes/Sharrows, and NYSDOT Bike routes 5 & 11
- Current unsigned on-road sections of the Erie Canal Trail route.
- Possible Shared-Use Path/Corridor
- Railroad
- Abandonded Rail Corridor could be used as Rails to Trails
- Needs Detailed Study
- City of Syracuse
- Town
- Village
- \+ Opportunity
- \- Issue
- • Consideration

Note:
The City of Syracuse Bike Infrastructure Master Plan identifies potential corridors throughout the city. Please refer to this plan for additional corridor recommendations.



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Central Detail

1 CSX Bridge at Onondaga Lake Pkwy
+ Access from Saint Marie among the Iroquois.
+ West side of bridge is unused.
- No shoulders under RR bridge.
• Potential use as a crossing point.

2 CSX Bridge over Ley Creek
+ Possible multi-use trail route.
+ Existing bridge foundation; possible crossing point.

3 Connection to Onondaga Creekwalk under CSX Line
+ Access to the city from northwestern suburbs by connecting the Onondaga Creekwalk Trail.

4 Onondaga Lake Pkwy and Old Liverpool Rd
+ Possible opportunity to connect Old Liverpool Rd and Buckley Rd to Ley Creek Trail at Onondaga Lake Pkwy.
• Consider multi-use off road trail along utility pole right of way along the roadways.

5 Bridge over Ley Creek
+ Existing bridge is potential option for crossing Ley Creek.
+ Path is signed.
- Path crosses on and off ramps.
- Debris in trail.
- Bridge needs maintenence.
- Path is in poor condition.

6 Park Street Access Point
+ Point of access from Ley Creek Bridge to Park St with a possible path extension to 7th North St.
- Curbed 1' shoulders.
- 3 travel lanes.
• Consider road diet and curb removal.

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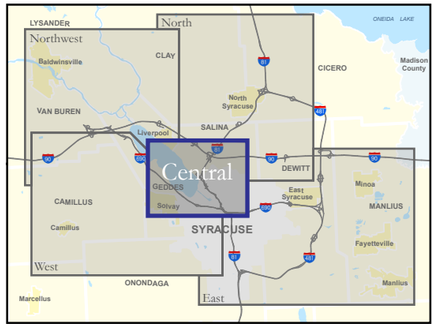
Map 9:
Field Obsevations, Notes, and New Corridors: Central Detail

0 0.5 1 2 Miles
0 0.5 1 2 Kilometers

- Possible Bike Corridor
- Existing Trails, Shared-Use Paths, Bike Lanes/Sharrows, and NYSDOT Bike routes 5 & 11
- Current unsigned on-road sections of the Erie Canal Trail route.
- Possible Shared-Use Path/Corridor
- Railroad
- Locaion in need of Improvement
- City of Syracuse
- Town
- Village
- Onondaga Lake
- \+ Opportunity
- \- Issue
- • Possible bike accomidation

Note:
The City of Syracuse Bike Infrastructure Master Plan identifies potential corridors throughout the city. Please refer to this plan for additional corridor recommendations.



100 Clinton Square
126 North Salina St, Suite 100
Syracuse, NY 13202
(315) 422-5716
Fax: (315) 422-7753
www.smtcmpo.org

Data Sources: SMTC, SOCPA
Prepared by SMTC, 06/2013

Map 10:
Environmental Justice Assessment

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

N

Routes Considered

Town

Village

City of Syracuse

Low-Priority Target Areas

Medium-Priority Target Areas

High-Priority Target Areas

Non-Target Areas

100 Clinton Square
126 North Salina St, Suite 100
Syracuse, NY 13202
(315) 422-5716
Fax: (315) 422-7753
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Data Sources: SMTC Environmental Justice Report 2012 , SOCPA
Prepared by SMTC, 6/2013

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Map 11:
Business Locations

2009 Business Location Analysis Tool (BLAT)

- Possible Bike Corridor
- One Business
- Fewer Businesses
- Greater Businesses

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

- City of Syracuse
- County Line
- Town
- Village

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Map 12:
Transit Service

CENTRO Route

Park-n-Ride

City of Syracuse

Town

Village

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

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Map 13:
Bike Suitability Ratings and Accident Locations
January 2007- December 2011

Number of Accidents on Alternative Commuting Routes

	Routes	Accidents		
West	Milton Ave. vs Old Route 5/W. Genesee St. Village of Camillus to Milton Ave./W. Genesee St. intersection.	Milton Ave. 5	NY-5 6	Howlett Hill 0
North west	NY-370 vs CR-57 vs Morgan Rd. NY-31 to Second St./Oswego St. intersection.	NY-370 5	CR-57 11	Morgan Rd. 4
North	US-11 vs South Bay Rd. NY-31 to US-11/South Bay Rd. intersection.	NY-11 15	South Bay Rd. 12	
East	NY-92 vs NY-5 Pompey Town Line (NY-92) and NY-5/NY-257 intersection (NY-5) to City of Syracuse.	NY-92 3	NY-5 4	

Howlett Hill Road
- *No accidents along roadway*

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

Excellent: Highly recommended.
Slow moving, low volume traffic and some separation from vehicles.

Good: Recommended.
Slightly more vehicular traffic than "Excellent" roads with some separation from vehicles.* Vehicles typically moving faster than on "Excellent " rated roads.

Average: Acceptable.
Moderately traveled with some separation from vehicles* traveling at slower speeds, or roads with lower volumes of traffic and no separation from vehicles.*

Fair: Marginally Suitable.
Heavily traveled with little to no separation from vehicles* moving at speeds faster than on roads rated "Average". Terrain may be rough and/or pavement may be poor.

Poor: Not Suitable.
Heavily traveled by fast moving traffic, little to no separation from vehicles,* and/or rough cycling conditions.

Considered corridor was not rated

City of Syracuse

Town

Village

Bike/Vehicle Accident Location

**Separation from vehicles is defined as a shoulder, a shoulder stripe, designated bike lane, wide travel lane, and/or similar type of buffered area.*

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Map 14:
Speed Limit and Annual Average Daily Traffic (2010)

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

- Routes Considered
- City of Syracuse
- Town
- Village
- 5164 Annual Average Daily Traffic (AADT)*
- Speed Limit 30

*AADT: Estimated average daily traffic volume on a route segment at a particular count station location. Actual daily volumes encountered on highways may vary from the AADT. Considerably higher or lower values often result in areas of seasonal activities and when comparing weekend versus weekday traffic. Federal Highway Administration (FHWA) guidelines published in the Traffic Monitoring Guide indicate that the expansion of 'short' counts to AADT with properly designed adjustment factors will enable the user to be 95% confident that the estimated AADT is within +/-10% of the actual value.

New York State Department of Transportation. Traffic Data Viewer Definitions. 9 Nov. 2012; <https://www.dot.ny.gov/divisions/engineering/applications/traffic-data-viewer/tdv-definitions>

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100 Clinton Square
126 North Salina St, Suite 100
Syracuse, NY 13202
(315) 422-5716
Fax: (315) 422-7753
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Map 15:
Pavement Condition Ratings and Bridges

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

Excellent Pavement Rating
Pavement is not distressed. A single crack or defect per .1 mile is allowed. May have been recently reconstructed or rehabilitated. Dark black or gray with no visible cracks.

Good Pavement Rating
Pavement is infrequently distressed to minimal severity. Cracks are tight, widely spaced, unconnected. Cracking is noticable but minor.

Average Pavement Rating
Occasional to frequent distress of moderate severity. Cracks are wide and interconnected. Pieces of surface may be missing.

Fair Pavement Rating
Pavement distress is frequent and severe. Wide, interconnected cracks with potholes and/or patches. Surface is mostly cracked.

Poor Pavement Rating
Distress is severe and continuous. Potholes and layers of patches inhibit vehicle speed. Travel is impaired by pavement condition.

Non-Federal Aid Eligible Roads (Possible Bike Corridor)

Bridge

City of Syracuse

Town

Village

Date of City of Syracuse and Onondaga County ratings: 2011
Date of Town/Village Road and NYSDOT ratings: 2010

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Syracuse, NY 13202
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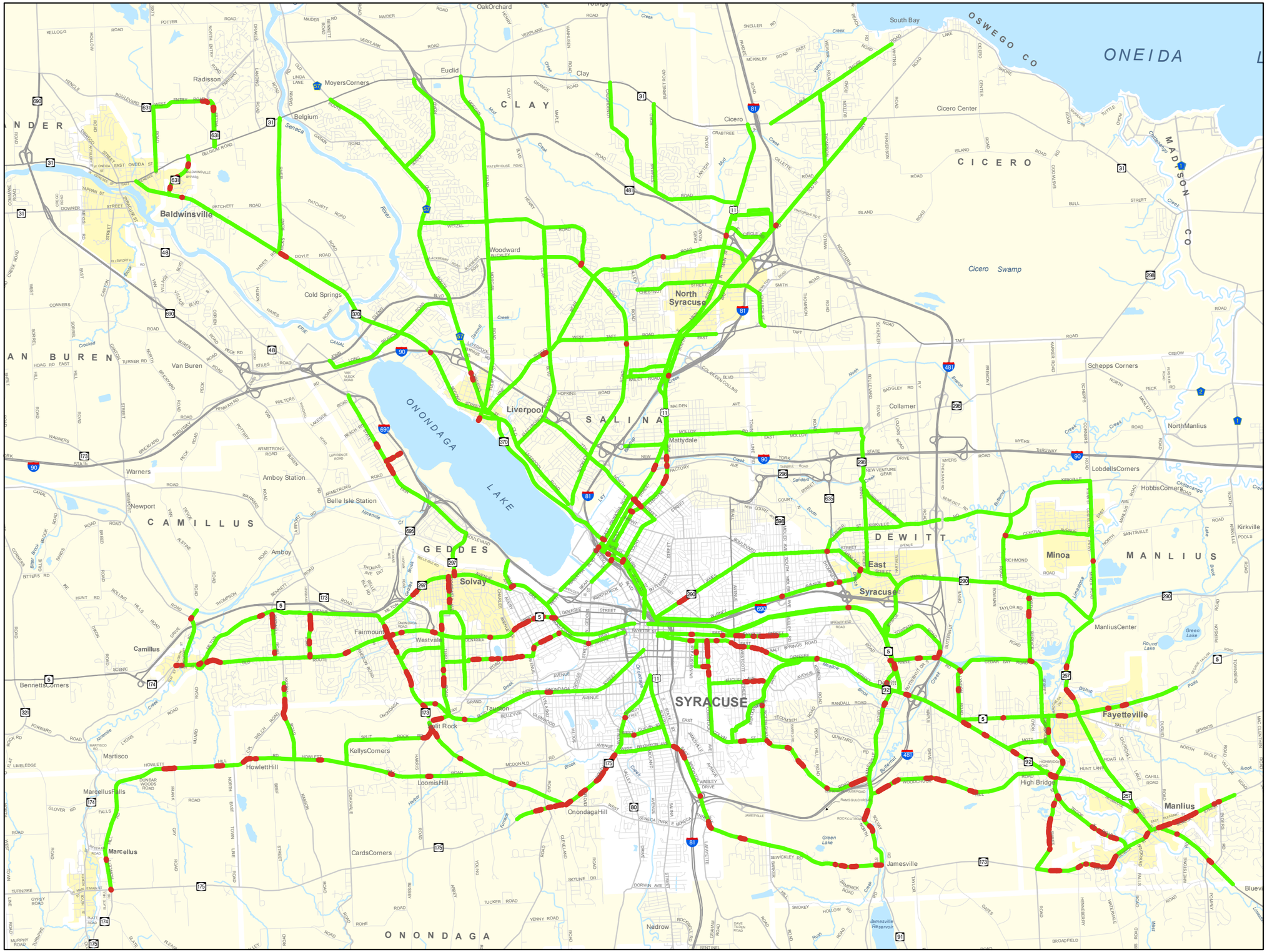

Map 16:
Slope

Percent Slope

- 0-5%
- >5%

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

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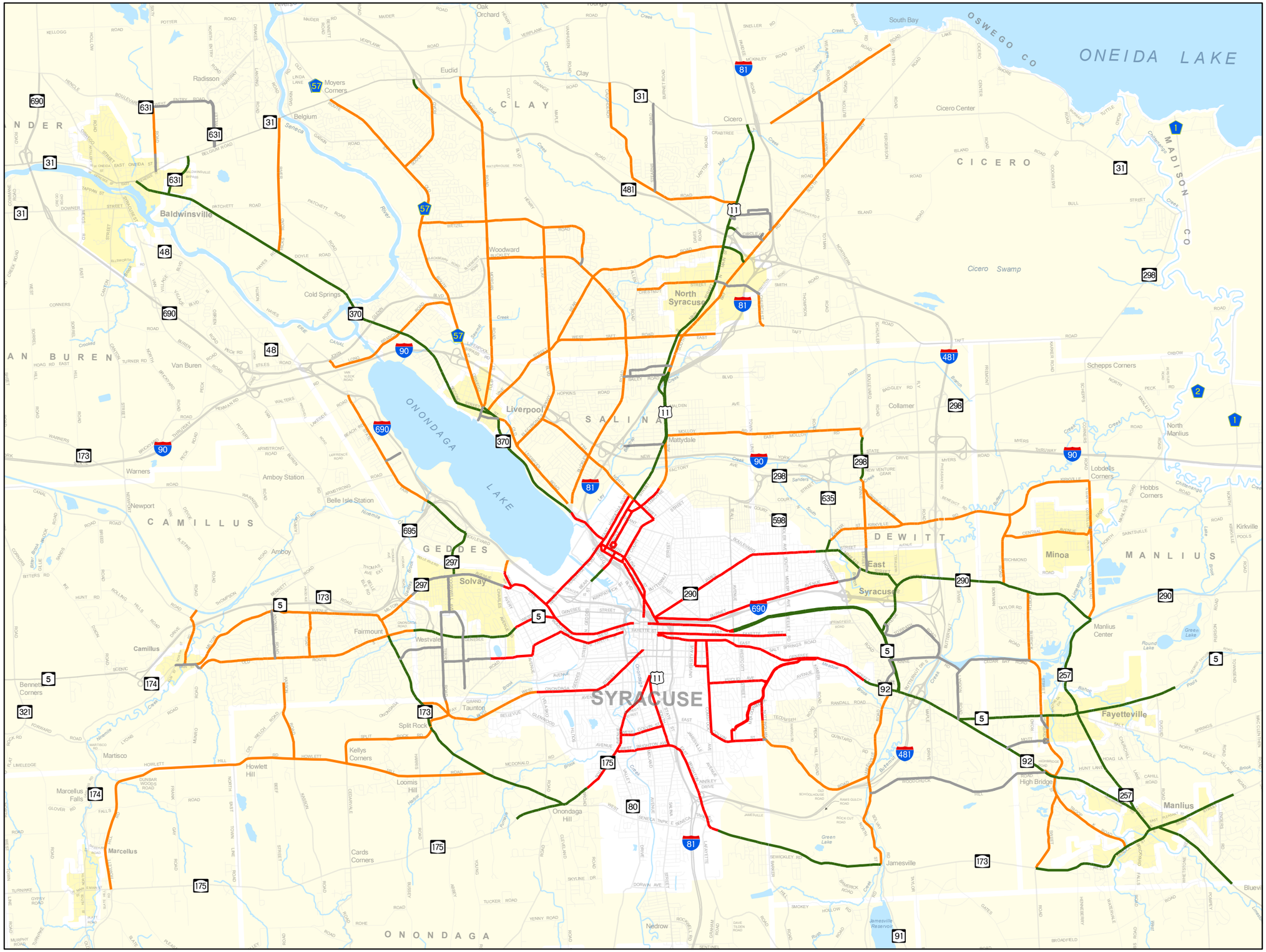

Map 17:
Road Ownership for All Considered Corridors

0 1/2 1 2 4 Miles

0 1 1/4 2 1/2 5 Kilometers

- NYSDOT
- OCDOT
- Town/Village
- City of Syracuse

- City of Syracuse
- Town
- Village

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