Dewey Avenue Corridor Traffic Calming Study

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Monroe County, New York

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EXECUTIVE SUMMARY

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This report summarizes the analysis and preliminary design studies of the Dewey Avenue Corridor Traffic Calming Study. The Genesee Transportation Council (GTC) funded the preparation of the report under its Unified Planning Work Program (UPWP). The Town of Greece and the City of Rochester contracted with EDR and SRF Associates to conduct site analysis, assess feasibility, and produce concept-level planning and design for a traffic calming strategy along Dewey Avenue in the Town of Greece and the City of Rochester in Monroe County, New York. Guidelines for the design and implementation of the traffic calming improvements were prepared.

Background

The Town of Greece and the City of Rochester are located in north-central Monroe County. Dewey Avenue is an urban minor arterial that begins at Lyell Avenue in the City of Rochester and extends 8 miles to the Town of Greece's northern border near Lake Ontario. The study area consists of portions of Dewey Avenue located in the Town of Greece and the City of Rochester, and covers approximately 3.75 miles from the intersection with Ridge Road West to the intersection with Latta Road. In the Town of Greece, Dewey Avenue is a Monroe County highway and in the City of Rochester, the road is a city street.

In 2001, the Town of Greece completed an update of their Community Master Plan. In order to implement the recommendations contained in this update, the Greece Town Board adopted a new Zoning Ordinance and Official Zoning Map in 2003. However, no major changes were made in the Dewey Avenue area because the Master Plan Update recognized Dewey Avenue as an area with special characteristics that was in need of further study, and the Town Board did not want to delay the overall, town-wide zoning effort.

The Town of Greece initiated the Dewey Avenue Corridor Study in 2006 to ensure that any future development in the corridor strengthened community character. The Corridor Study, completed by EDR in 2007, was a planning effort designed to create a more comprehensive work plan for preserving and revitalizing this area. In 2008, the Town of Greece had started to implement some of the study's recommendations, and determined that the next step was a feasibility study of traffic calming methods to determine how best to improve the pedestrian experience and lessen reliance on vehicular travel.

In pursuit of this goal, the Town of Greece, in cooperation with Monroe County DOT, pursued funding to undertake a comprehensive feasibility study for the corridor. The City of Rochester suggested that the study area be expanded to include a portion of Dewey Avenue in the City of Rochester. The joint study was approved by the GTC for funding in 2008. The purpose of the traffic calming study was to evaluate the options for reducing the adverse impacts of vehicular traffic on pedestrian circulation within the sections of the Dewey Avenue Corridor included in the study area.

Vehicular Facility Analysis

The vehicular facilities in the Dewey Avenue Corridor were assessed to determine what traffic calming strategies would be most appropriate. The standard procedure for capacity analysis of signalized and unsignalized intersections is outlined in the *2000 Highway Capacity Manual* (HCM 2000). Traffic analysis software, SYNCHRO 7.0 (Build 761), which is based on procedures and methodologies contained in the HCM 2000, was used to analyze operating conditions at study area intersections. The procedure yields a LOS based on the HCM 2000 as an indicator of how well intersections operate. Existing operating conditions were documented in the field and modeled using traffic analysis software. The traffic analysis models were calibrated based on actual field observations, and included the 2009 lane changes near Latta Road.

The Intersection Capacity Utilization (ICU) can be thought of as an intersection wide volume-to-capacity ratio. ICU is well suited to the purpose of transportation planning studies. The intended applications for ICU are traffic impact studies, future roadway conceptual design, and congestion management programs. The primary output from ICU is analogous to the intersection volume-to-capacity ratio. The ICU does not provide a complete picture of intersection performance, but it does provide a clear view of the intersection's volume related to its capacity.

The capacity analysis data collected was used to assess the quality of vehicular traffic flow for the existing AM and PM commuter peak hour conditions at the signalized intersections in the study area. Analyses of the existing intersections indicate that all of the intersections studied are currently operating at level of service “C” or better on all approaches during the peak periods, with a few exceptions that currently operate at LOS “D”.

The ICU capacity analysis results indicate that all of the study intersections are currently operating at less than 65% of their capacity during both peak hours, except the Denise and Stone Road intersections during the PM peak hour and the West Ridge Road intersection during both peak hours, which are operating at approximately 75% of their capacity. These percentages indicate that there is excess capacity available at these intersections and throughout portions of the corridor. This suggests that opportunities may exist in many areas for pedestrian and bicycle enhancements without significantly compromising vehicular capacities.

In addition, historical traffic volume growth in the study area and planned developments in the corridor were reviewed and evaluated to determine a growth rate to account for normal increases in area-wide traffic growth. A twenty-year traffic forecast was derived and used for future traffic analyses. Analyses of the study intersections indicate that all of the intersections studied are operating at level of service “C” or better on all approaches during the peak periods under 2029 future no-build conditions with a few exceptions that are projected to operate at LOS “D”.

The ICU results indicate that virtually all of the study intersections are projected to operate at less than 65% of their capacity during the AM peak hour under future no-build conditions. During the PM peak hour, several intersections are projected to operate at 70% or greater. Based upon the operational analyses and local development patterns, an intersection with an ICU greater than 70% may not be capable of accommodating major traffic calming improvements. An intersection with an ICU below 70% has excess vehicular capacity available, suggesting that opportunities may exist for pedestrian and bicycle enhancements without significantly compromising vehicular capacity.

According to *Intersection Capacity Utilization Evaluation Procedures for Intersections and Interchanges 2003 Edition published by Trafficware*, an intersection with an ICU between 64% and 73% is characterized as “having no major congestion. The majority of traffic should be served on the first cycle.” In reviewing the ICU results at intersections throughout the Dewey Avenue corridor, 70% is used to differentiate between intersections that are potential candidates for a road diet. However, it is noted that detailed capacity analyses are required to determine the appropriate geometry at each intersection.

Bicycle and Pedestrian Facility Analysis

Bicycle infrastructure and facilities were also inventoried in the corridor. Bicycle safety was judged on the presence or absence of a dedicated bicycle facility, shared lane widths including the on-street parking lane, and the amount of space a cyclist needs to safely maneuver. Other considerations that affect bicycle safety are speed limit, average annual daily traffic (AADT) volumes, percent heavy

traffic, number of driveways, and any obstructions to the public realm, including overgrown landscaping and road grates.

The Dewey Avenue Corridor lacks dedicated bicycle facilities of any form. There are no road shoulders, and the widest outside lane is twelve feet wide, less than the fourteen-foot minimum recommended in the AASHTO Guide for the Development of Bicycle Facilities that is necessary to accommodate a bicycle traveling beside an automobile. Bicycle users must choose between (illegally) using the sidewalk, traveling a parallel street, or sharing the narrow outside lane of the road with automobiles traveling at higher speeds. There is an opportunity to improve the conditions that contribute to the safety and comfort experienced by bicyclists using the corridor.

Pedestrian safety was evaluated based on factors such as sidewalk width and quality, and the presence of a buffer zone (tree lawn). Pedestrian safety factors present in the travelway include crosswalk length and quality, presence or absence of medians, and the type of median. A pedestrian LOS was developed for the pedestrian realm on both sides of the roadway along the entire length of the corridor. Every zone of the Dewey Avenue pedestrian realm was scored based on a number of pedestrian realm variables. The quality of the pedestrian realm in the corridor ranges between a 'B' and a 'D', with most segments of the corridor performing at a LOS of 'C'. Generally, the LOS for corridor segments on the east side of Dewey Avenue was slightly better than those on the west side. Variables that negatively affected the LOS were: lack of sufficient buffer width, inadequate crossing opportunities, lack of support facilities, and poor sidewalk quality.

An inventory of all marked crosswalks that traverse Dewey Avenue at signalized intersections was performed for this study. Information was collected on the width, length, and presence of curb ramps and pedestrian signals at each signalized crosswalk location. This data was then analyzed to develop a LOS for each crosswalk that traverses Dewey Avenue at a signalized intersection. The results of this analysis indicate that there are no immediate safety concerns at crosswalk locations within the study area. On a grading scale of LOS 'A' through LOS 'F', the crosswalks on Dewey Avenue were rated with LOS 'B' or LOS 'C', meaning they provide an acceptable way for crossing the street in a reasonably safe and comfortable fashion. Although the results of the crosswalk assessment indicate that there are no apparent safety concerns, there are opportunities for crossing enhancements.

In general, there are pedestrian facilities currently in place along the Dewey Avenue Corridor, including sidewalks, marked crosswalks, and pedestrian signals. The LOS scores for most of the segments of the Dewey Avenue Corridor indicate that there is an opportunity to improve the conditions that contribute to the sense of safety and comfort experienced by pedestrians. Pedestrian LOS and Walk Score were analyzed side by side, which indicated segments of the pedestrian realm are deficient in quality, yet have a large number of pedestrian generators in close proximity. This important analysis provides a list of locations to be used to develop priorities for future pedestrian realm improvements.

Traffic Calming Alternatives and Recommendations

A number of traffic calming alternatives and their potential impacts were considered for the corridor. Multiple design, program and policy solutions can be used to solve each traffic calming issue. For each alternative, reviewing the design details, impacts, and viability for the Dewey Avenue Corridor was critical to selecting appropriate solution. Multi-modal transportation is very important, and the recommendations attempt to balance vehicular capacity with bicycle and pedestrian access in order to maximize corridor safety for all users.

The alternatives were categorized as on-street, off-street, or program and policy alternatives. On-street alternatives include all possible strategies within the roadway, such as bicycle lanes or a road diet. Off-street alternatives generally deal with the area from the curb to the front of a building with the main focus on the pedestrian experience. Program and policy alternatives provide strategies for zoning changes, educational programs, enforcement, maintenance, program effectiveness, and security. A brief summary of design details and benefits for each alternative is provided in the report. In addition, each alternative was evaluated in relationship to impacts on budget, various user groups, and sustainability to ensure a process that assessed the tradeoffs between each alternative.

From the list of all the possible alternatives, a set of strategies was recommended for the corridor. Committee and public comments, cost, user and sustainability impacts, and appropriateness for the Dewey Avenue Corridor informed the selection of recommendations. The issues addressed by the recommendations include:

- No bicycle facilities, outside lane too narrow and no shoulders
- Pedestrian Level of Service (LOS) C or D
  - Lack of sufficient buffer
  - Poor sidewalk quality
  - High number of access drives introduce conflict and a lack of continuity for pedestrians
  - Inadequate crossing opportunities
  - Existing crossing needs enhancement
  - Lack of resting areas
  - No sidewalk
- Lack of pedestrian-oriented, human scale environments in an area with high potential for walking
- Lack of bus stop comfort and safety amenities
  - Unsafe crossings
  - Lack of seating
  - No ADA access
- Resident/Pedestrian perception of high vehicle speed
- Concentration of bicyclist collisions with vehicles
- Concentration of pedestrian collisions with vehicles

The report provides a detailed description and illustrations for each strategy that is recommended. The following solutions are recommended for the Dewey Avenue Corridor:

On-street Recommendations
- Bicycle boulevards
- Bicycle boxes
- Bicycle lanes/space
- Curb extensions
- High visibility crosswalks
- Refuge islands
- Road diet
- Signage and signalization changes

Off-Street Recommendations
- ADA-accessible bus stops
- Bicycle lockers
- Bicycle racks
- Sidewalk improvements
- Buffer areas
- Building changes
- Pedestrian-scale lighting
- Shared-access driveways
- Sidewalk amenity zone
- Coordinate with EBP
- Ped/bike-oriented parking

Programs & Policies
- Access management overlay district
- Bike/ped supportive code language
- Education programs
- Maintenance programs
- Other pedestrians
- Program effectiveness measures
- Residential speed watch program
- Security enhancements

Phasing and Implementation

The implementation of the recommended traffic calming strategies should be phased based on priority areas. The priority areas to be targeted are those with a high walk score and a low pedestrian LOS. In addition, those areas with a high incidence of pedestrian- and bicyclist-injury crashes should also be a priority in implementation.

High Priority Areas

- Ridge to Eastman (east side)
- Eastman to Velox (east side)
- Barnard to Shady Way (east side)
- Latta to Rumson (west side)
- Rumson to McGuire (west side)
- Velox to Ridge (west side)

The following locations have lower walk scores but also have low pedestrian LOS and should be considered next in terms of priority:

- Winchester to Bennington (east side)
- McGuire to Brookridge (west side) – this stretch spans several blocks
- Briarcliff to Maiden (west side)
- Beaumont to Dalston (west side)

The phasing of some of the physical improvements is contingent on the implementation of the Road Diet. That is, changes within the travel lanes, such as a bicycle lane, cannot happen until the Road Diet is approved and implemented. In addition, some of the recommendations will be most effective in conjunction with educational programs (e.g. bicycle boulevards). The following lists identify the priorities and phasing of the recommended improvements. Table 10 is an implementation matrix that identifies the precise locations of each recommended corridor improvement.

On-Street Recommendations

High Priority, Short-Term

- Road Diet with bicycle lanes/shoulders
- High Visibility Crosswalks
- Share the Road signs
- Leading Pedestrian Intervals
- Pedestrian Countdown signals
- Bicycle Boulevards

High Priority, Long-Term

- High Visibility Crosswalk with curb bump-outs
- High Visibility Crosswalk with refuge island and curb bump-outs

Off-Street Recommendations

High Priority, Short-Term

- New Sidewalks and Sidewalk Improvements in high priority areas
- Bicycle Racks at Destinations
- Benches and Resting Points

High Priority, Long-Term

- Bicycle Lockers
- Pedestrian & Bicycle-Oriented Parking Lots

- Shared-Access Driveways
- Sidewalk Amenity Zone

Program and Policy Recommendations

High Priority, Short-Term

- Educational Programs
- Program Effectiveness Measures
- Maintenance Programs

High Priority, Long-Term

- Access Management Overlay District
- Pedestrian/Bicycle Supportive Code Language

The implementation matrix also details the priority, timing, location, regulatory approvals needed and the responsible parties for each of the recommended strategies.

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INTRODUCTION

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This report summarizes the analysis and preliminary design studies of the Dewey Avenue Corridor Traffic Calming Study. The Genesee Transportation Council (GTC) funded the preparation of the report under its Unified Planning Work Program (UPWP). The Town of Greece and the City of Rochester contracted with EDR and SRF Associates to conduct site analysis, assess feasibility, and produce concept-level planning and design for a traffic calming strategy along Dewey Avenue in the Town of Greece and the City of Rochester in Monroe County, New York. Guidelines for the design and implementation of the traffic calming improvements were prepared.

Financial assistance for the preparation of this report was provided in part by the Federal Highway Administration. The Town of Greece and the City of Rochester are solely responsible for its content and the views and opinions expressed herein do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

A. Background and Purpose of Study

The Town of Greece, over the past thirty years, has completed several studies of the Dewey Avenue corridor. The first corridor study, completed in 1980, focused on making the commercial districts more attractive to shoppers, and improving the relationship between the commercial areas and adjacent residential neighborhoods. Many of the recommendations of this study were implemented in the 1980s and 1990s.

In 2001, the Town completed an update of their Community Master Plan. In order to implement the recommendations contained in this update, the Greece Town Board adopted a new Zoning Ordinance and Official Zoning Map in 2003. However, no major changes were made in the Dewey Avenue area because the Master Plan Update recognized Dewey Avenue as an area with special characteristics that was in need of further study, and the Town Board did not want to delay the overall, town-wide zoning effort. As a result of recommendations made in the Master Plan Update, the Town Board formed a task force to examine the existing conditions in the Dewey Avenue area and recommend courses of action to take in order to preserve and enhance the corridor's vitality.

In the 2006 Interim Development Law, the Town Board identified the need to formulate new and unique zoning standards that would be particular to the Dewey-Stone Road Corridor. Such new standards would be intended to preserve the unique historical, developmental, and structural characteristics of this corridor and the Dewey Avenue area in general, and to encourage future development in the area that is sensitive to preserving these historical, developmental, and structural characteristics. In order to protect the public interest, the Town Board used this law for an interim period to limit non-single family residential construction on land in the Dewey-Stone Corridor.

During that time, the Dewey Avenue Corridor Study was initiated in 2006. The Town is experiencing development along the corridor that does not support the vision for this area that is held by local residents. The community anticipates further development, particularly in the commercial districts, and would like to ensure that any future development strengthens community character. Instead of an update of the earlier study, the Town wanted a much more comprehensive and in-depth effort to re-evaluate Dewey Avenue. The Dewey Avenue Corridor Study summarizes the planning efforts designed to create a more comprehensive work plan for preserving and revitalizing this area.

With the completion of the Dewey Avenue Corridor Study, the Town of Greece is eager to build upon the community support and public awareness that the Study now enjoys. To continue this momentum, the Town of Greece has already begun to implement some of the study's recommendations, including the installation of pedestrian amenities. The Town determined that the

next step was a feasibility study of traffic calming methods to determine how best to improve the pedestrian experience and lessen reliance on vehicular travel. In pursuit of this goal, Greece (in cooperation with Monroe County DOT) applied for and was awarded funding through the 2008-2009 UPWP to undertake a comprehensive feasibility study.

Subsequent to the submittal of Greece's UPWP application to the Genesee Transportation Council (GTC), the City of Rochester inquired whether the Town of Greece would consider an extension of the study area to include the portion of Dewey Avenue lying between Ridge Road West and the Greece town line. Recognizing the interconnectedness and similarities between its segment of Dewey Avenue and the segment proposed for inclusion by the City, the Town, with approval from the GTC, agreed to expand the traffic calming study's scope. With the City of Rochester as a project participant, the expanded version of the study was approved by the GTC for funding.

The purpose of the traffic calming study is to evaluate the options for reducing the adverse impacts of vehicular traffic on pedestrian circulation within the sections of the Dewey Avenue Corridor included in the study area. The study area consists of portions of the Dewey Avenue Corridor located in the Town of Greece and the City of Rochester, which includes properties on either side of Dewey Avenue from Latta Road on the north to Ridge Road West on the south.

B. Community Involvement

The planning process for this study included public outreach. Local residents and business owners served on the advisory committee, and the general public was invited to two public information meetings.

Committee Meetings:

August 27, 2008 – Representatives from the Town of Greece, the City of Rochester, EDR, SRF, GTC, and Monroe County DOT convened for a project kickoff meeting at the Town Hall in Greece. The group reviewed the consultant selection process, recent corridor developments, consultant contracts, GTC oversight, project timetable, stakeholders/committee membership, the scope of services, deliverables, and billing. The group also discussed existing relevant plans and studies, as well as locations where a road diet has been employed successfully in and around the study area.

December 5, 2008 – Representatives from the Town of Greece, the City of Rochester, EDR, SRF, GTC, Monroe County DOT, and NYSDOT met for the first Technical Committee meeting. The consultants gave a presentation that summarized the inventory of existing conditions. The corridor was discussed relating to: character zones, user groups, road width, traffic volumes, Level of Service for both sidewalks and crosswalks, and walk scores. The group discussed various issues, such as on-road bicycle facilities, snow storage and the formation of the Advisory Committee. The timing and content of the first public meeting was also discussed.

August 17, 2009 – Representatives from the Town of Greece, the City of Rochester, EDR, SRF, GTC, Monroe County DOT, NYSDOT, Town of Greece Planning Board, Northgate Neighbors, and Dewey Avenue Corridor businesses met for an Advisory Committee meeting. The consultants reviewed the preliminary inventory and analysis report, MCDOT's Road Diet, the issues summary, alternatives and recommendations, the public meeting agenda, and the project timeline. The group discussed various topics, such as senior access to transit, use of the corridor by youth, business parking requirements and curb cuts, and traffic speeds.

March 3, 2010 – Representatives from the Town of Greece, the City of Rochester, EDR, SRF, GTC, Monroe County DOT, NYSDOT, Town of Greece Planning Board, Northgate Neighbors, and Dewey Avenue Corridor businesses met to review the draft recommendations for the corridor. In advance of the public meeting, the consultants provided an overview of the inventory and analysis, the issues summary, and the alternatives and recommendations. The group discussed various topics, such as access management and the feasibility of recommended strategies that are new to this region, such as bicycle boxes.

Public Information Meetings:

September 28, 2009 – The first public information meeting was well attended by community members. The meeting provided information about the overall project, the inventory process, main issues, and next steps through the following tools: a handout, a looped PowerPoint presentation, and a series of display boards. Stations were set up displaying corridor maps and identified issues of concern. Community members were asked to provide feedback at the stations and via the handout. Appendix A provides a summary of the public comments compiled from the meeting. The consultants were available to answer questions, review material, and solicit input from the community members.

April 26, 2010 – The second public information meeting was also well attended by community members. The meeting provided information about the overall project, the inventory and analysis process, main issues, corridor recommendations, and implementation steps through the following tools: a handout, a looped PowerPoint presentation, and a series of display boards. Community members were asked to provide feedback on comment sheets. Appendix A provides a summary of the public comments compiled from the meeting. The consultants were available to answer questions, review material, and solicit input from the community members.

C. Relationship to Other Plans and Studies

The Dewey Avenue Corridor Traffic Calming Study builds on the following previously completed planning initiatives in the Town of Greece and the City of Rochester:

Dewey Avenue Mixed-Use Zoning District Planning Initiative

In 2009, the Town of Greece commenced an initiative to implement zoning modifications that were identified in the Dewey Avenue Corridor Study. The need for more mixed-use development within the Corridor's commercial districts is an essential part of the land use vision. To help achieve the desired corridor character, the Town intends to develop a new mixed-use zoning district for the Dewey-Latta, Northgate Plaza, and Dewey-Stone commercial nodes. The exact boundaries will be determined in the course of the planning process. Completion of this initiative is anticipated in 2010.

Dewey Avenue Corridor Study

In 2007, EDR completed a corridor study for Dewey Avenue in the Town of Greece. The study, designed to preserve and revitalize the corridor, involved site analysis, community visioning, design guidelines, illustrative examples, planning tools, and recommendations for implementation. The study envisions Dewey Avenue as a vibrant, safe, and active traditional mixed-use neighborhood. The objective was to attain a sustainable and attractive balance of residential, commercial, and institutional land uses. Automobile use is balanced with pedestrian accessibility and safety. The core strategies of the study addressed enhancing commercial vitality, establishing livable neighborhoods, and the preservation of local character. A key recommendation of the study was to study traffic and pedestrian access in the Dewey Avenue Corridor.

Dewey Avenue Community Design Charrette
In 2007, the Rochester Regional Community Design Center (RRCDC) and the Maplewood Neighborhood Association conducted a neighborhood design charrette. Based on the input received from neighborhood residents, the RRCDC prepared design recommendations for the segment of Dewey Avenue between Lexington Avenue and Eastman Avenue. Recommendations were prepared for the area surrounding the Dewey Avenue and Ridge Road intersection, which is included in the study area for the Dewey Avenue Corridor Traffic Calming Study.

Interim Development Law of the Town of Greece, New York
In 2006, pending studies of matters that relate to development or redevelopment of properties along or in the vicinity of Dewey Avenue, this law provided an interim measure to protect the public interest by limiting non-single-family residential construction on land located in the Dewey Avenue-Stone Road Corridor. The law established the Dewey Avenue Interim Overlay District for the purposes of enforcing this law.

Community Master Plan & Generic Environmental Impact Statement for the Town of Greece
This Plan, completed in 2001 by Clough, Harbour and Associates, revised the 1992 Community Master Plan. The plan provides an extensive inventory and analysis of the existing conditions in the Town of Greece, and describes the Town's vision, goals and objectives. The plan also includes recommendations, alternatives and an implementation plan for achieving the community vision.

Rochester 2010: The Renaissance Plan
The 2010 Renaissance Plan, completed in 1998, is Rochester's first citywide comprehensive plan since 1964. The plan incorporates the goals and visions of each of the ten sector plans that were prepared under the Neighbors Building Neighborhoods program. The plan uses three themes to articulate a renaissance of urban revitalization: renaissance of responsibility, renaissance of opportunity, and renaissance of community. The renaissance of responsibility theme seeks to renew Rochester's history of civic activism and philanthropy established by past famous residents, such as Frederick Douglass, Susan B. Anthony, and George Eastman. The renaissance of opportunity theme promotes Rochester as the economic, social, cultural, transportation and institutional center of the county and region. The renaissance of community theme seeks to identify Rochester's downtown as a place that will be redeveloped and perceived as the region's Center City with an exciting mix of housing, retail, services, cultural venues, entertainment and night life. Based on the three themes, the Renaissance Plan identifies eleven goals, or campaigns:

Campaign 1: Involved Citizens
Campaign 2: Educational Excellence
Campaign 3: Health, Safety, & Responsibility
Campaign 4: Environmental Stewardship
Campaign 5: Regional Partnerships
Campaign 6: Economic Vitality
Campaign 7: Quality Service
Campaign 8: Tourism Destination
Campaign 9: Healthy Urban Neighborhoods
Campaign 10: Center City
Campaign 11: Arts and Culture

Transportation Project Report: Design Report, Dewey Avenue, Phase II
This report, prepared in 1992 by the NYSDOT and Monroe County DOT, addresses safety and capacity improvements on a 3.3-mile section of Dewey Avenue in the Town of Greece. The report discusses deficiencies within the existing highway corridor and makes recommendations for improvements to existing pavement areas. Dewey Avenue was rebuilt with 4/5 lanes; the portion in Greece was rebuilt in 1993, and the City section was rebuilt in 1997. (Not addressed in this report,

but important to note: in 2009, the north end of Dewey Avenue, from Denise Road to Latta Road was reduced to 3 lanes with shoulders by restriping.)

Dewey Avenue Parking Facilities, Town of Greece
This study was prepared in 1992 by Erdman Anthony Consulting Engineers for the Monroe County Department of Engineering. The report addressed the existing parking problems on Dewey Avenue in the vicinity of the Dewey-Stone Road business district. The report discusses transportation deficiencies within the existing highway corridor and makes recommendations for improvements.

Dewey Avenue Revitalization Study
This study, prepared in 1980 by Erdman Anthony Associates and Architect John Fayko, was prepared for the Town of Greece. The purpose of this study was to make the three commercial districts located within the corridor more attractive to shoppers and encourage a better relationship between the business districts and the residential neighborhoods that abut them. The study resulted in recommendations for improving vehicular and pedestrian circulation systems, new off-street parking facilities, and the condition of commercial properties. Many of the recommendations were implemented in the 1980s and 1990s.

Regulations, Local Laws and Ordinances
Rules affecting land use and development in the Town of Greece and the City of Rochester, such as Zoning (Chapter 211) of the Town of Greece Code and Zoning (Chapter 120) of the City of Rochester Code.

D. Alternative Transportation Benefits
Transportation accounts for more than thirty percent of U.S. carbon dioxide emissions (West, 2007). Alternative transportation, such as walking, bicycling, and taking public transportation, can help alleviate this problem. According to the American Public Transportation Association (APTA), public transportation in the United States saves approximately 1.4 billion gallons of gasoline and about 1.5 million tons of carbon dioxide annually (APTA, 2007). Walking and bicycling as a means of transportation reduces carbon dioxide emissions even further. Walking, bicycling and public transportation benefit the environment as well as personal health, finances, time, and stress. (See Appendix B for more details on alternative transportation benefits.)

E. Complete Streets
In addition to understanding the opportunities and constraints specific to the study area, we can look to the complete streets concept for solutions. According to the National Complete Streets Coalition (NCSC), complete streets are roadways designed and operated to enable safe, attractive, and comfortable access and travel for all users (NCSC, 2008). Pedestrians, bicyclists, motorists and public transport users of all ages and abilities are able to safely and comfortably move along and across a complete street. Complete streets also create a sense of place, improve social interaction, and generally increase land values of adjacent property.

Complete streets look different in different places. They must fit with their context and to the transportation modes expected (Laplante & McCann, 2008). Although no singular formula exists for a complete street, an effective one includes at least some of the following features (NCSC, 2009):

- sidewalks
- bike lanes
- wide shoulders
- bus pullouts
- special bus lanes
- raised crosswalks

- plenty of crosswalks
- refuge medians
- audible pedestrian signals
- sidewalk bump-outs (bulb-outs)

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

F. Types of Users: Bicyclists and Pedestrians

The Dewey Avenue Corridor is used by bicyclists and pedestrians of all ages and skill levels. Both user groups are described briefly in this section, and in more detail in the next chapter.

Bicyclists

The Federal Highway Administration identifies the following types of bicycle users:

- Group A: Advanced Bicyclists
- Group B: Basic Bicyclists
- Group C: Children

Group A is comprised of advanced or experienced riders who are generally using their bicycles as they would a motor vehicle. Group B is comprised of basic adult and teenage riders who may also be using their bicycles for transportation purposes, but are less confident of their ability to operate in traffic without special provisions for bicycles. Group C bicyclists are children riding on their own or with their parents and require access to key destinations in their community, despite not traveling as fast as their adult counterparts.

Pedestrians

Types of pedestrians include the following:

- Children
- Elderly - generally slower walking speed
- Disabled - mobility, hearing, and visually impaired
- Fitness walkers/joggers
- Shoppers
- Pedestrian Commuters - walking to work or school

The design of pedestrian facilities must address the needs and preferences of each of these types. The pedestrian realm needs to be a place that all community members can use in a safe and convenient fashion.

Town of Greece and City of Rochester Bicyclists and Pedestrians

Bicycling is a growing mode of transportation for recreation and commuting in the Town of Greece and the City of Rochester. The 2000 U.S. Census recorded 94,141 residents living in the Town of Greece and 219,773 living in the City of Rochester.

In 2000, less than one percent of workers over sixteen in Greece biked to work, and approximately one percent of workers walked to work. Less than one percent of workers over sixteen in Rochester biked to work, and approximately six percent of workers walked to work. More than half of the workers over sixteen (23,828 residents in Greece and 52,442 in Rochester) worked within twenty minutes from home. This suggests an opportunity to increase walking and bicycle ridership to work with the proper facilities.

In addition, students are potential walkers and bicycle users. According to the 2000 U.S. Census, 6,263 residents of the Town of Greece, and 12,182 residents of the City of Rochester attended high school. Elementary and middle school students can also walk and bike to school, but may require supervision.

G. Goals and Objectives

The purpose of this traffic calming study is to evaluate the options for reducing the adverse impacts of vehicular traffic on pedestrian circulation within the sections of the Dewey Avenue Corridor included in the study area. The goals of the study, as identified by the Town of Greece and the City of Rochester, include:

- Upgrading pedestrian circulation within the corridor to an equal priority with vehicular movement.
- Minimizing pedestrian conflicts and driver confusion, thus optimizing safety for both.
- Improved livability and quality of life.

INVENTORY AND ANALYSIS

4

This section contains an inventory and analysis of existing conditions in the Dewey Avenue Corridor. The topics discussed in this section include a corridor description, analysis of vehicular and pedestrian conditions, and an assessment of walkability and bikability.

A. Corridor Description

The Town of Greece and the City of Rochester are located in north-central Monroe County. The City of Rochester was officially established in 1817, and Town of Greece in 1822. From the earliest days, the corridor functioned as a thoroughfare for farmers bringing their produce to market in Rochester (Greece Historical Society, 2007). Dewey Avenue begins at Lyell Avenue in the City of Rochester and extends 8 miles to the Town of Greece's northern border near Lake Ontario. The study area covers approximately 3.75 miles from the intersection of Dewey Avenue with Ridge Road West to the intersection of Dewey Avenue with Latta Road. Dewey Avenue is also known as New York State Route 18, a state touring route. However, in the Town of Greece, Dewey Avenue is a Monroe County highway and in the City of Rochester, the road is a city street.

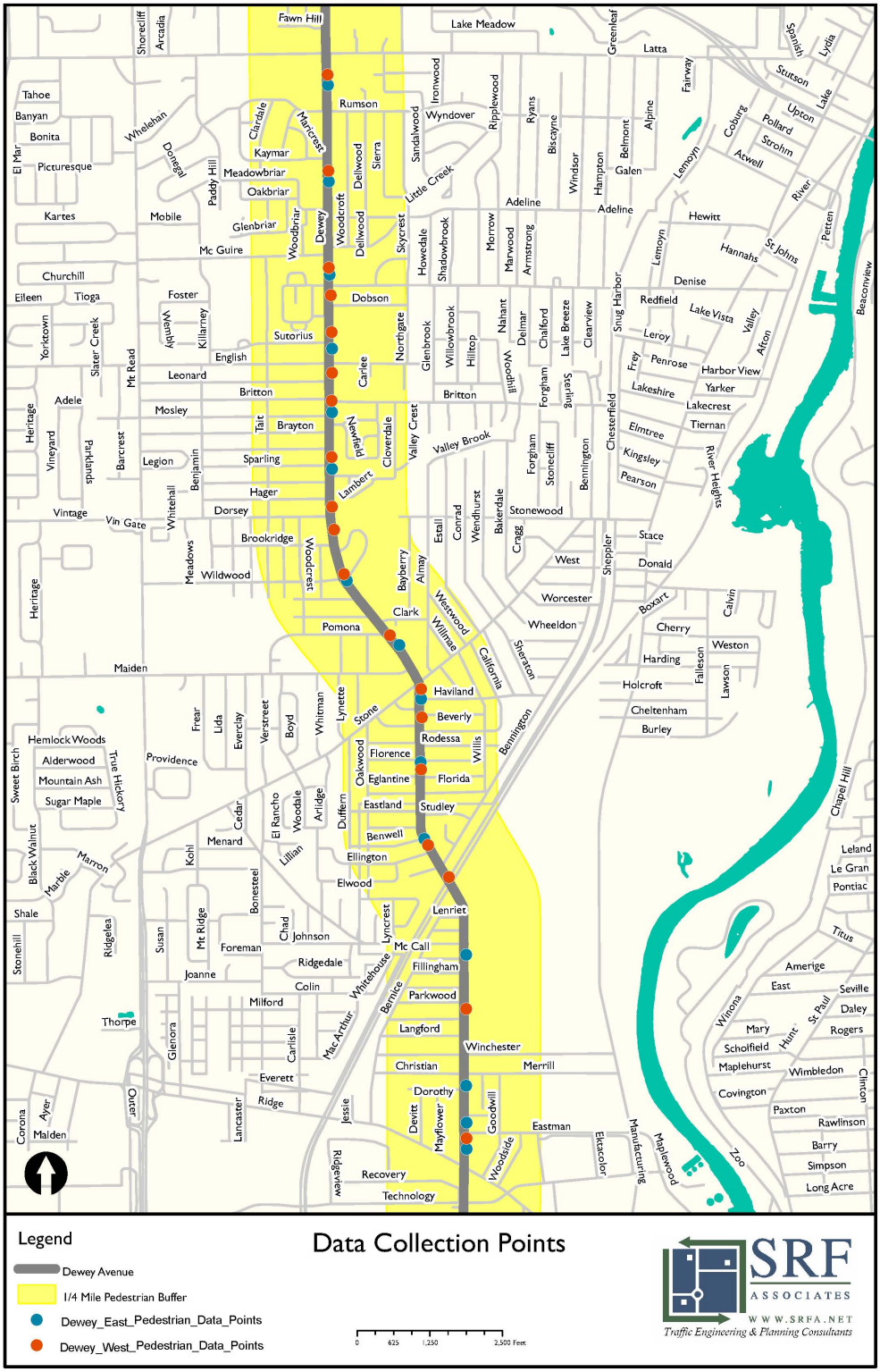
In general, the Dewey Avenue area consists of businesses and residential neighborhoods that are within about one half mile of the street. In the corridor segment within the Town of Greece, these areas contain some of the oldest commercial and residential development found in the Town. This area has special historical, developmental and structural characteristics that distinguish it from other areas of Greece that were developed more recently (Community Master Plan, 2001). The character is more similar in nature to that of the City of Rochester, mostly because it was developed in a similar era. The neighborhoods in the portion of the study area in the Town of Greece fall into the larger boundaries of planning district #2, as defined in the 2001 Town of Greece Community Master Plan. Planning districts are areas that share common problems, issues and opportunities.

Planning district #2 consists predominantly of high density, single-family residential parcels that were developed before World War II. During the late 1800's, Eastman Kodak developed a plant in the southeastern corner of the town, creating new job opportunities and an increase in housing demand (Tomkiewicz & Husted, 1984). In 1920, Sunrise Park was one of the first residential developments along Dewey Avenue, at the southeast corner of the Dewey-Stone intersection. The housing was advertised to potential buyers as the "tract with a thousand peach trees" (Greece Historical Society, 2006). This planning district is part of the early, urbanized part of Greece and is nearly fully developed in a largely grid-like pattern, with few vacant parcels (CMP, 2001).

Historically, most of the commercial development in this area of the Town and the City was concentrated along Dewey Avenue and Ridge Road. Today, Ridge Road is a more active commercial corridor, while Dewey Avenue primarily serves neighborhood and community markets. The Community Master Plan characterizes the area as one that faces the impact of commercial uses through increased traffic, increased runoff from large parking areas, and a lack of suitable pedestrian facilities. The plan suggests that land use conflicts contribute to the erosion of neighborhood character which, as recent studies show, have encouraged people to move out of established neighborhoods in search of less congested areas.

In the Dewey-Stone area, this commercial pressure has also resulted in the conversion of former residential buildings and lots to commercial uses. Residential uses often adjoin non-residential uses, typically with no transition or buffering between them. When most of the structures in the Dewey Avenue area were built, the standards pertaining to setbacks, parking, lot sizes, building sizes, infrastructure, and other similar elements of development were different than the current standards in the Town.

Figure 1: Data Collection Points



Dewey Avenue was reconstructed in the 1990's, upon completion of the 1992 Transportation Project Report. The section within the Town of Greece was reconstructed in 1993, and the section in the City of Rochester was reconstructed in 1997. During this time, the section of the corridor containing 4 (5) lanes was constructed. In 2009, a road diet occurred between McGuire and Rumson Roads.

1. Road Classification and Width

Dewey Avenue is functionally classified as an urban minor arterial. The posted speed limit is 35 MPH in the Town of Greece, and 30 MPH in the City of Rochester. The characteristics of the roadway, such as dimensions, signalization, and intersection geometry, were documented for the entire corridor. The roadway varies in lane configuration and width along the corridor. In the context zones that are within the City of Rochester, the pavement width varies between 38' and 48', depending on the presence of turn lanes at intersections. In the context zones that are within the Town of Greece, the pavement width alternates between 46' and 56' depending on the presence of turn lanes at intersections. In some segments there is also a two-way left turn lane between major intersections.

Figure 2: Pavement Width

The lane geometry along Dewey Avenue is fairly consistent, aside from the presence or absence of left turn lanes. Outside lane widths in the City portion of Dewey are 10' wide, while they are 12' wide in the Town of Greece. The wider outside lane in the Town of Greece provides extra maneuvering room; however, it is not wide enough to accommodate parked cars or bicyclists.

Generally, when motorists perceive a wide travel lane they tend to increase their speed. Roadway corridors that feature narrow building setbacks and elements such as trees or parallel parking tend to slow traffic, or at least make drivers more cautious. These elements are traffic-calming devices.

2. Character Zones

Dewey Avenue has a distinct variety of land uses and development characteristics along the corridor that can be categorized into ten different character zones. See Figure 3 for a corridor map and Appendix D for photos of existing conditions. (Please note – the character zone numbering corresponds to the *Dewey Avenue Corridor Study* completed in 2007 for the Town of Greece, which did not include the character zones located south of Zone 1 in the City of Rochester.)

Zone A

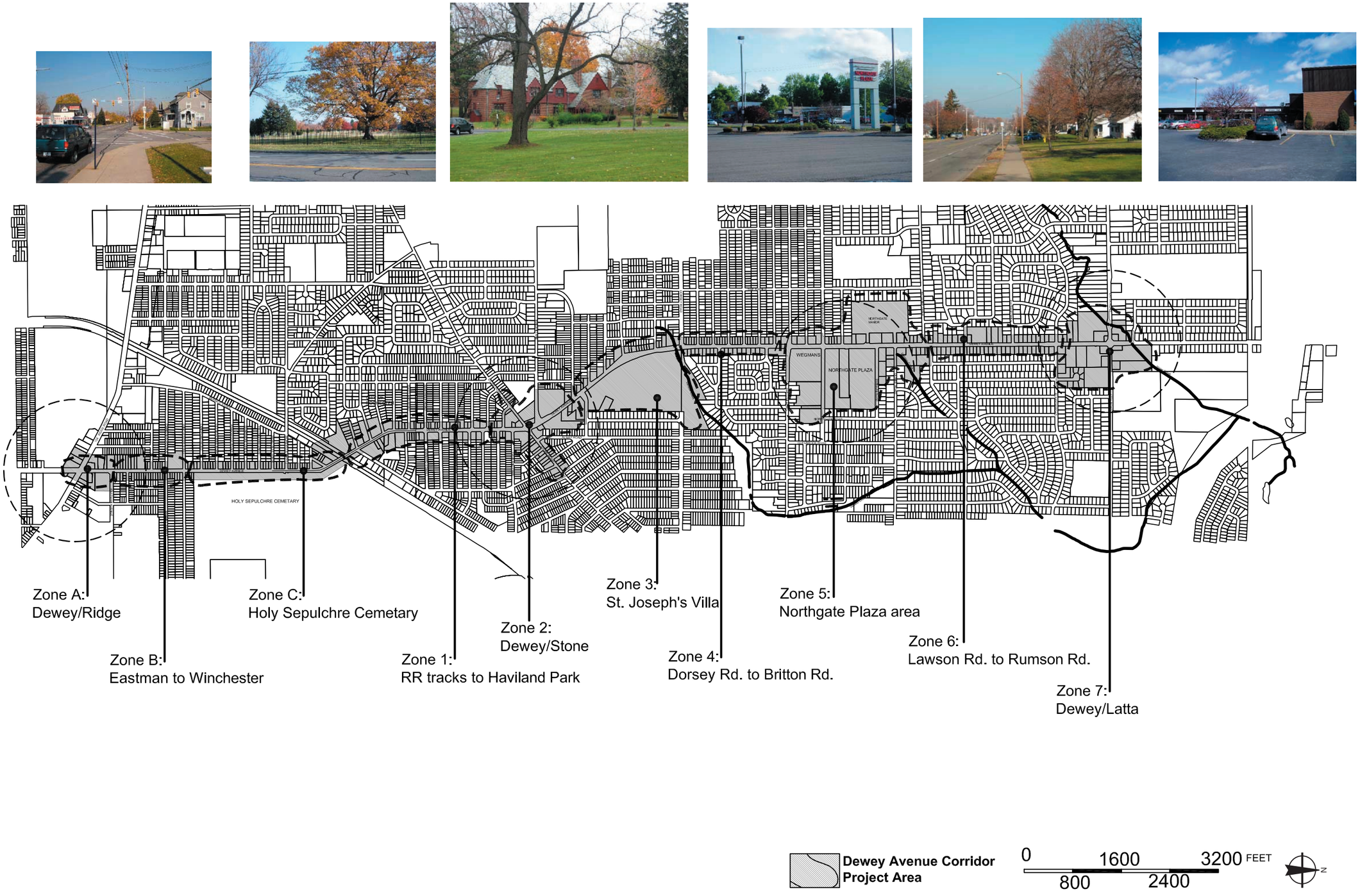
The most southern section of the study area, Zone A encompasses the Dewey Avenue and Ridge Road intersection. The zone ends one block to the north, at Eastman Avenue. The Dewey-Ridge intersection has 6 traffic lanes, narrowing to four lanes beyond the intersection. The area is dominated by commercial and industrial development, including restaurants, bars and shops within walking distance of the intersection. Much of the development in the adjacent areas is related to Eastman Kodak, with Eastman Business Park and Kodak Park nearby. Many Kodak buildings have been demolished in recent years, leaving vacant space and large empty parking lots in the vicinity. Sidewalks in this area are 10' wide and abut the curb.

Zone B

Zone B is located between Eastman Avenue and Winchester Street. The area is primarily residential use, consisting of mostly 2-story framed houses built at the beginning of the 20th century. Between Christian Avenue and Winchester Street, the United Methodist Wesleyan Church sits on a large, well-maintained property on the western side of Dewey. Small commercial properties exist at the north and south edges of the zone. To a pedestrian, the four lanes of traffic may appear to move quickly through this section of the corridor, despite being somewhat buffered by a tree lawn and a few street trees. The cross streets that connect to Dewey are pedestrian friendly, with sidewalks, street trees and attractive street lighting on both sides.

Zone C

Zone C is located between Winchester Street and the City/Town line. The area is dominated by Holy Sepulchre Cemetery. The trees and open space of the cemetery are situated on the eastern side of Dewey for virtually the entire stretch of this zone. Trees on the cemetery property add to the attractive character of this area. The cemetery side of the corridor does not have sidewalks, and a large iron fence bounds the cemetery perimeter. On the western side of Dewey is a mixture of single-family homes and small businesses. Cross streets in this area, such as Langford Road, are also fairly pleasant. The character changes somewhat when Dewey Avenue crosses the railroad tracks, and the cemetery ends. The character past the railroad tracks consists of a mix of residential and commercial buildings, similar to the character found in the adjacent sector, Zone 1.



EDR

SRF ASSOCIATES

DEWEY AVENUE CORRIDOR TRAFFIC CALMING STUDY

City of Rochester and Town of Greece, Monroe County, New York

Figure 3 - Character Zones

Note: The zone numbers in this figure correspond with Zones 1 - 7 that were identified in the *Town of Greece Dewey Avenue Corridor Study*. Zones A, B, and C, which are located in the City of Rochester, were added for the Traffic Calming Study. Their location south of Zone 1 necessitated a different identifier than a number, since the numbers would be out of order.

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Zone One
This section of Dewey Avenue can be found between the City/Town line and Haviland Park. Within this zone, a mix of residential and commercial uses exists. Commercial development is close to the street in comparison to other commercial development along Dewey Avenue. Many of the residential structures have been converted to commercial use.

Zone Two
Moving north along the corridor, the Dewey-Stone area is the next distinct zone, located at the intersection of Dewey Avenue, Stone Road and Maiden Lane. This area is almost exclusively small-scale commercial development, with drug stores, restaurants and gas stations. A significant landmark in this area is the St. Charles Borromeo Roman Catholic Church complex, which includes both the current church building and the old church structure, which is now used for a parish center. This intersection is now known as “Dewey-Stone”, but was formerly known as “Barnard”.

Zone Three
The open, graceful campus of St. Joseph’s Villa defines the next zone along the corridor. St. Joseph’s Villa helps at-risk youth overcome emotional and behavioral challenges, and is situated on a campus that was previously used as a vegetable and flower bulb farm by Vick Quality Seeds. St. Joseph’s Villa contains some of the oldest trees, most attractive architecture, and well-maintained grounds along the Dewey Avenue corridor. On the western side of the street are well-maintained residences fronted by a large tree lawn where the road curves.

Zone Four
Zone four begins near Veness Creek and Dorsey Road, and is comprised of a residential area that continues along Dewey up to Kyoto Japanese Restaurant and the HSBC bank at Britton Road. This residential area has a more varied collection of architectural styles than the other residential zones along the corridor, and the houses are situated closer to the street than in other residential sectors.

Zone Five
Zone five is located between Britton and Denise Road. This area contains a variety of large and small commercial uses, including a Wegman’s supermarket and Northgate Plaza. Discount retailer Big Lots currently anchors Northgate Plaza and is flanked by a number of smaller commercial spaces, several of which are currently vacant. (A Wal-Mart store is planned for Northgate Plaza, which will replace Big Lots and overhaul the plaza.) On the western side of Dewey Avenue, across from the Wegman’s supermarket and Northgate Plaza, are a number of smaller commercial businesses. These smaller businesses, which include Goodyear, Advance Auto Parts, Wendy’s, Kwik Fill, and Dunkin’ Donuts, are sited closer to the street than Wegman’s and Northgate Plaza, which are separated from the corridor by large parking areas.

Zone Six
North of this major commercial area, zone six contains another residential area. Near McGuire Road, a well-maintained residential zone begins and continues on to Rumson Road. The homes located in this area are small, and set back a bit further from the street than in other residential areas along Dewey Avenue. Aldersgate United Methodist Church is also located in this segment of the corridor. During the course of the traffic calming study, a road diet was implemented by the Monroe County DOT in this area of the corridor.

Zone Seven
The final zone along Dewey Avenue is the Dewey-Latta area. Between Rumson and Latta Roads, the uses along Dewey Avenue are exclusively commercial. Several plazas can be found in this sector, as well as some chain stores and restaurants, such as Rite Aid and Burger King. The plazas and businesses in this area are well maintained, but have deep setbacks and large amounts of asphalt. Rite Aid Pharmacy, which is situated on the southwest corner of the Dewey-Latta intersection, is particularly unfriendly to pedestrians because of the lack of windows on the sides of the building that face Dewey Avenue and Latta Road.

3. Pedestrian Generators
Many pedestrian generators (destinations that are frequented by pedestrians) exist along the Dewey Avenue Corridor. These pedestrian generators are a fairly typical mix for an urban-suburban arterial. They include, but are not limited to:

- Retail plazas of various sizes, which include Northgate Plaza, medium-sized strip retail plazas near Latta, Ridge, and Stone, as well as smaller ones throughout the corridor;
- Schools, including St. Joseph's Villa, and others within close proximity;
- The Barnard Crossing branch of the Greece Public Library;
- The post office north of Ridge Road;
- Churches, including Bethany Presbyterian Church, Covenant Presbyterian Church, Wesley United Methodist Church, Dewey Avenue Presbyterian Church, Church of Christ (Lawson Rd), and Aldersgate United Methodist Church
- Single- and multi-family residential

These land uses are prime examples of pedestrian generators. It is important that residents and visitors are able to walk to and between these corridor destinations. Figure 4 illustrates the existing linkages located along the Dewey Avenue Corridor. Recognizable linkages on the Dewey Avenue Corridor include the paths that connect:

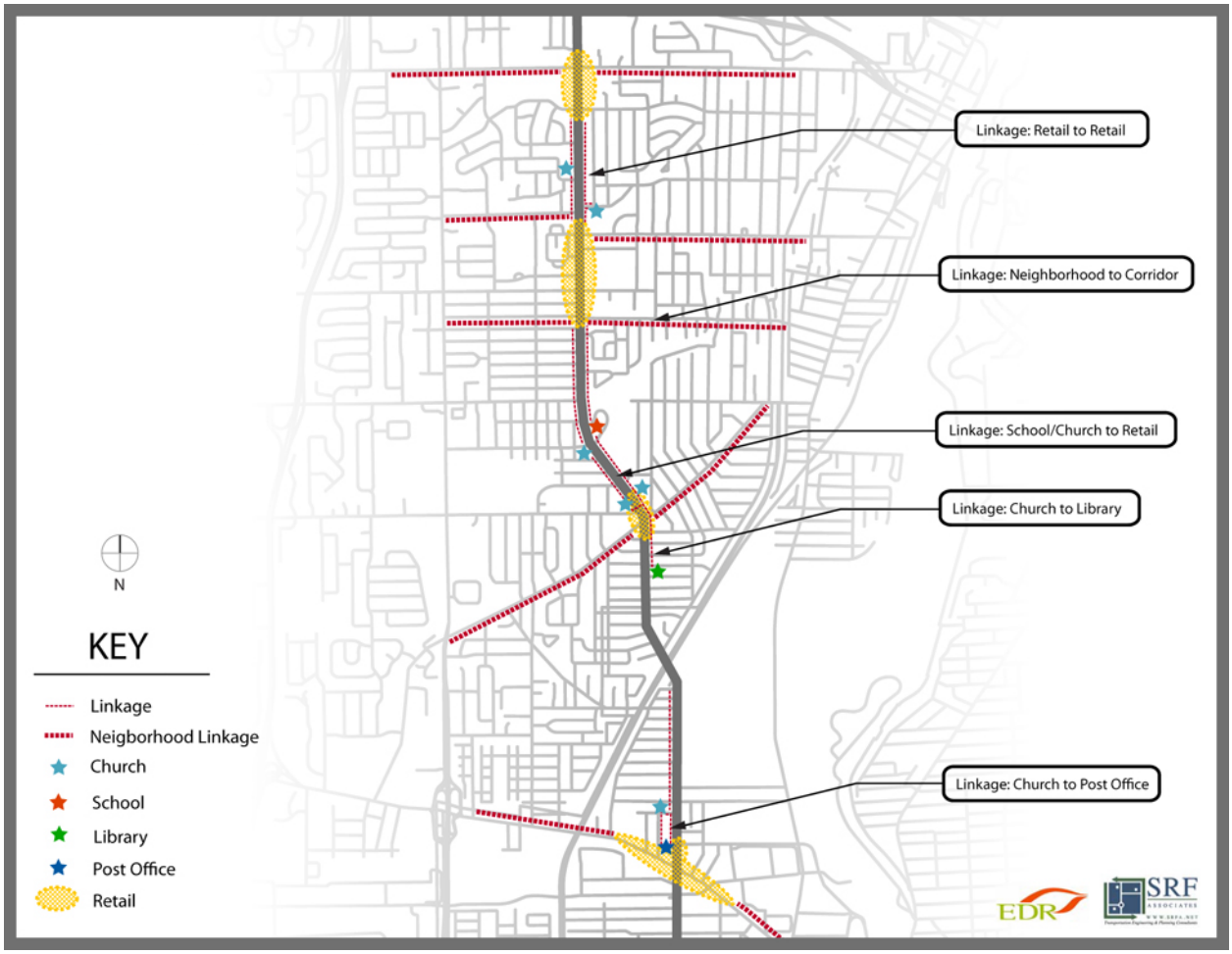
- Retail to Retail
- Schools to Churches
- Schools to the Library
- Churches to the Library
- Churches to the Post Office
- Neighborhoods to the Corridor
- Schools To Retail
- Churches to Retail
- Retail to the Library

Strong pedestrian connections between these neighborhood destinations are what sustain a thriving pedestrian environment. Priority should be given to the connective paths identified in the linkage assessment as prime locations for pedestrian realm and crossing facility improvements.

4. Public Transit
Public transit removes automobiles from the road, and accounts for a component of pedestrian traffic between bus stops and destinations. Three Regional Transit Service (RTS) bus routes serve the Dewey Avenue Corridor. Route 10 "Dewey", travels back and forth between downtown Rochester and the intersection of Dewey Avenue and Latta Road. The route follows Dewey for most of the way and also makes two loops onto side roads. Route 14 "Ridge Road" travels along Ridge Road between Greece and Irondequoit, with loops to downtown Rochester. This route provides an east-west connection to the southern end of Dewey Avenue. Route 15 "Latta" also travels between downtown Rochester and the Dewey/Latta intersection, but has a more complex series of loops than

Route 10. All three bus routes travel through the study area on a regular basis. Figure 5 shows the location of bus stops along the Dewey Avenue Corridor.

Figure 4: Destinations and Linkages

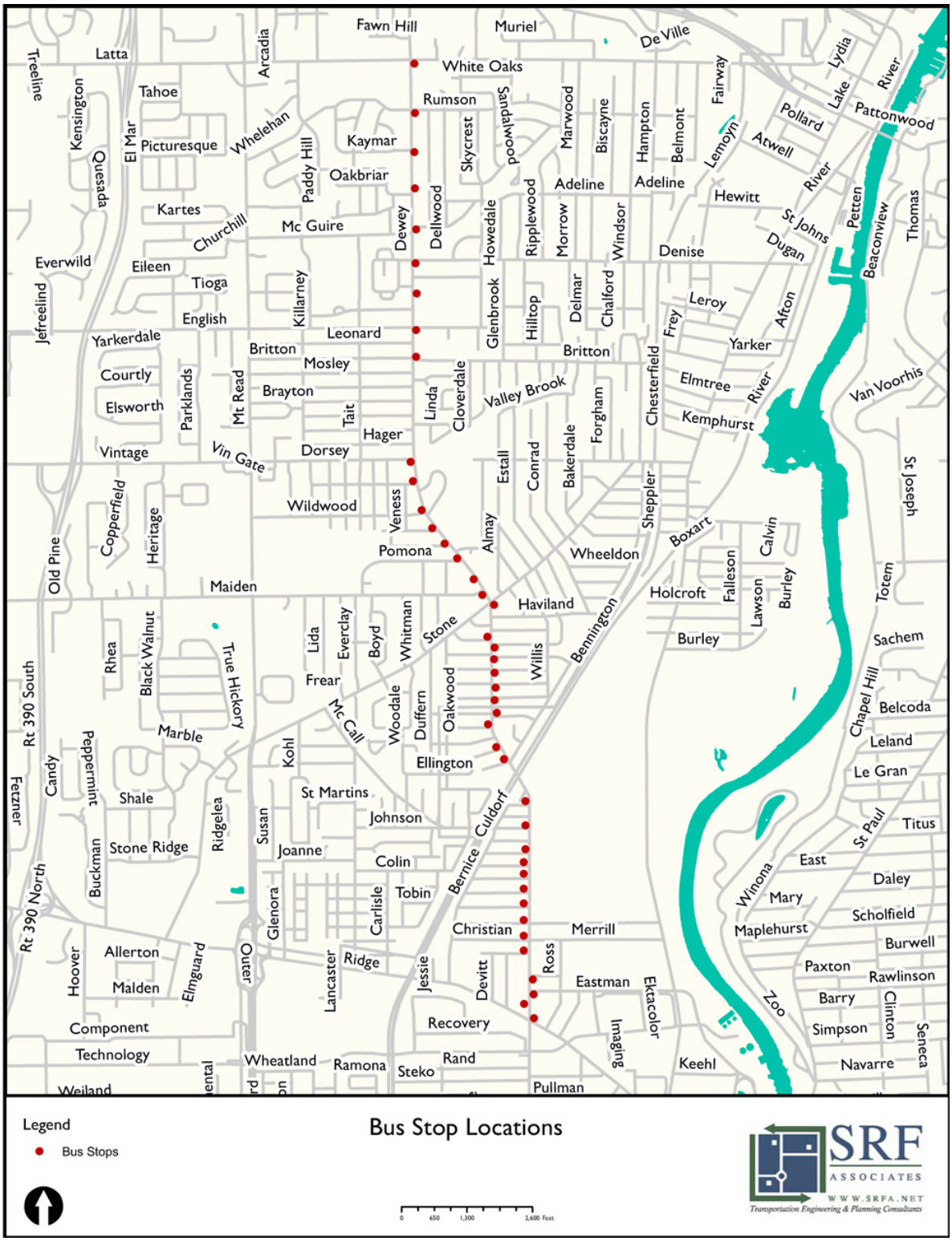


5. Historic and Scenic Features

Historic and scenic features along the corridor are varied. The southern end of the corridor offers distinctive views of Kodak Park, which is an important piece of the history of both the City of Rochester and the Town of Greece. Currently, the views to Kodak Park from Dewey Avenue occur across an expanse of underutilized parking areas, but the space, if redeveloped, offers interesting possibilities for improved views.

In other places along the corridor, Dewey Avenue runs adjacent to scenic open space areas. Two examples of this are St. Joseph's Villa and Holy Sepulchre Cemetery. The mature vegetation at these properties provides an attractive green edge in an otherwise fairly developed corridor.

Figure 5: Bus Stop Locations



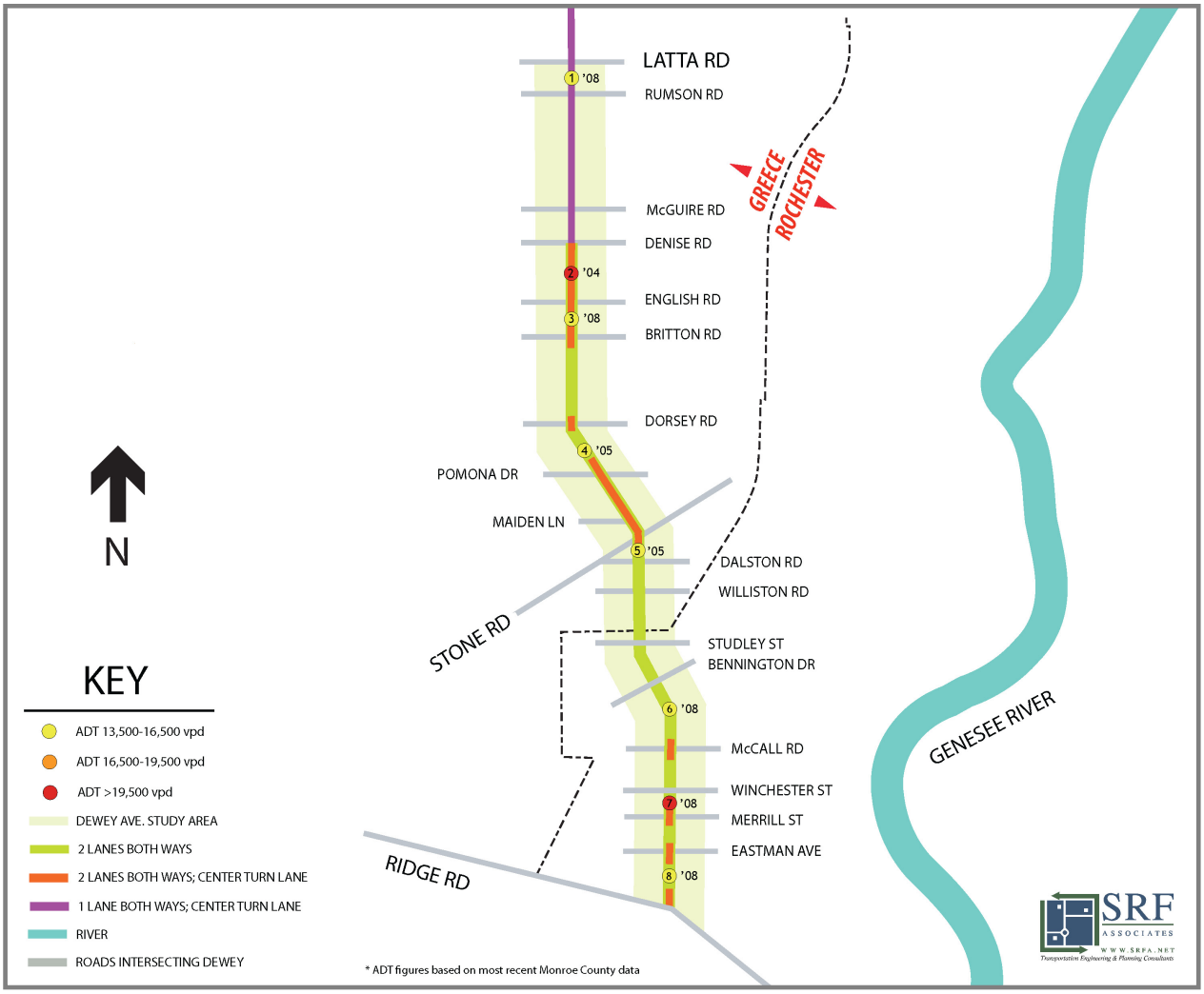
B. Vehicular Inventory and Analysis

The following section details the existing traffic volume, vehicular capacity analysis, projected traffic volume, and provides a safety evaluation for the Dewey Avenue Corridor.

1. Existing Traffic Volume

Weekday AM (7:00-9:00AM) and PM (4:00-6:00pm) vehicular turning movement count volumes and pedestrian crossing volumes, as well as hourly machine recorded vehicular counts at several locations throughout the study area were obtained from the Monroe County Department of Transportation (MCDOT). The data varied in age and where necessary, older data were updated. SRF collected updated turning movement count data at four intersections (Latta Road, Maiden Lane, Stone Road, and McCall Road) within the study area on December 11, 2008, January 21, 2009 and January 22, 2009. This data can be seen in Figure 7, Existing Traffic Volumes.

Figure 6: Average Daily Traffic Volume



Data was also collected on the signal timing and phasing at each of the signalized intersections along the Dewey Avenue Corridor. This information was necessary to calibrate the traffic operations model used for analysis of the study area. This data can be seen in Appendix E, *Collected Traffic Data*, available upon request.

2. Vehicular Capacity Analysis

The capacity analysis data collected was used to assess the quality of vehicular traffic flow for the existing AM and PM commuter peak hour conditions at the signalized intersections in the study area. Two measures of effectiveness are used, Level of Service (LOS) and Intersection Capacity Utilization (ICU). Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. A LOS is calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since motorists experience the most delay at intersections, the capacity analysis specifically focuses on intersections.

Six Levels of Service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing operating conditions with the least time delay. LOS “F” is the least desirable operating condition where longer delays are experienced by motorists. Suggested ranges of service capacity are included in Appendix E, *Collected Traffic Data*, available upon request.

The standard procedure for capacity analysis of signalized and unsignalized intersections is outlined in the *2000 Highway Capacity Manual* (HCM 2000). Traffic analysis software, SYNCHRO 7.0 (Build 761), which is based on procedures and methodologies contained in the HCM 2000, was used to analyze operating conditions at study area intersections. The procedure yields a LOS based on the HCM 2000 as an indicator of how well intersections operate. Existing operating conditions are documented in the field and modeled using traffic analysis software. The traffic analysis models are calibrated based on actual field observations, and included the 2009 lane changes near Latta Road.

The Intersection Capacity Utilization (ICU) can be thought of as an intersection wide volume-to-capacity ratio. ICU is well suited to the purpose of transportation planning studies. The intended applications for ICU are traffic impact studies, future roadway conceptual design, and congestion management programs. The ICU is not intended for operations or signal timing design. The primary output from ICU is analogous to the intersection volume-to-capacity ratio. The ICU does not provide a complete picture of intersection performance, but it does provide a clear view of the intersection's volume related to its capacity. A summary of LOS/ICU calculations for the signalized study area intersections is presented in Table 1.

Table 1: Existing Level of Service and Intersection Capacity Utilization

INTERSECTION	EXISTING CONDITIONS	
	AM	PM
Dewey Avenue /Latta Road		
Eastbound – Latta Road	B	B
Westbound – Latta Road	A	A
Northbound - Dewey Avenue	C	C
Southbound - Dewey Avenue	D	C
Overall LOS (Delay in sec/veh) ICU	**C(21.2)/48.7%**	**C(21.4)/62.2%**

Dewey Avenue /Denise Road		
Eastbound – Denise Road	B	B
Westbound – Denise Road	B	C
Northbound - Dewey Avenue	A	A
Southbound - Dewey Avenue	A	A
Overall LOS (Delay in sec/veh) ICU	**A(5.7)/49.5%**	**A(9.3)/71.9%**
Dewey Avenue /Northgate Plaza		
Eastbound – Northgate Manor	A	B
Westbound – Northgate Plaza	B	C
Northbound - Dewey Avenue	A	A
Southbound - Dewey Avenue	A	A
Overall LOS (Delay in sec/veh) ICU	**A(2.0)/35.9%**	**A(4.0)/62.0%**
Dewey Avenue /English Road		
Eastbound – English Road	B	B
Westbound – English Road	B	C
Northbound - Dewey Avenue	A	B
Southbound - Dewey Avenue	A	B
Overall LOS (Delay in sec/veh) ICU	**A(8.2)/56.2%**	**B(15.4)/63.9%**
Dewey Avenue /Britton Road		
Eastbound – Britton Road	A	B
Westbound – Britton Road	B	C
Northbound - Dewey Avenue	A	B
Southbound - Dewey Avenue	A	A
Overall LOS (Delay in sec/veh) ICU	**A(7.0)/56.9%**	**B(15.6)/63.9%**
Dewey Avenue /Dorsey Road		
Eastbound – Dorsey Road	B	C
Northbound - Dewey Avenue	A	A
Southbound - Dewey Avenue	A	B
Overall LOS (Delay in sec/veh) ICU	**A(5.1)/56.5%**	**B(13.5)/57.0%**
Dewey Avenue /Maiden Lane		
Eastbound – Maiden Lane	B	B
Westbound – Maiden Lane	NA	NA
Northbound - Dewey Avenue	A	A
Southbound - Dewey Avenue	C	C
Overall LOS (Delay in sec/veh) ICU	**B(17.5)/38.3%**	**B(17.4)/42.7%**
Dewey Avenue /Stone Road		
Eastbound – Stone Road	C	D
Westbound – Stone Road	A	C
Northbound - Dewey Avenue	B	C
Southbound - Dewey Avenue	C	D
Overall LOS (Delay in sec/veh) ICU	**B(18.6)/61.5%**	**C(30.1)/71.0%**

Dewey Avenue /Dalston Road		
Eastbound – Dalston Road	C	C
Northbound - Dewey Avenue	A	A
Southbound - Dewey Avenue	A	A
Overall LOS (Delay in sec/veh) ICU	**A(0.6)/35.9%**	**A(1.7)/50.0%**
Dewey Avenue /Ellington Road		
Eastbound – Ellington Road	B	B
Westbound – Driveway	B	B
Northbound - Dewey Avenue	A	A
Southbound - Dewey Avenue	A	A
Overall LOS (Delay in sec/veh) ICU	**A(5.3)/31.6%**	**A(3.84)/45.4%**
Dewey Avenue /Banker Place-Bennington Drive		
Eastbound – Banker Place	B	B
Westbound – Bennington Drive	A	A
Northbound - Dewey Avenue	A	A
Southbound - Dewey Avenue	B	B
Overall LOS (Delay in sec/veh) ICU	**A(4.3)/45.8%**	**A(5.5)/47.0%**
Dewey Avenue /McCall Road		
Eastbound – McCall Road	B	B
Westbound – McCall Road	C	A
Northbound - Dewey Avenue	A	A
Southbound - Dewey Avenue	A	B
Overall LOS (Delay in sec/veh) ICU	**A(5.0)/35.7%**	**A(6.2)/46.5%**
Dewey Avenue /Christian Avenue-Merrill Street		
Eastbound – Christian Avenue	C	B
Westbound – Merrill Street	C	B
Northbound - Dewey Avenue	A	A
Southbound - Dewey Avenue	A	A
Overall LOS (Delay in sec/veh) ICU	**A(5.9)/52.3%**	**A(7.0)/49.8%**
Dewey Avenue /Eastman Avenue		
Eastbound – Eastman Avenue	A	A
Westbound – Eastman Avenue	B	B
Northbound - Dewey Avenue	A	A
Southbound - Dewey Avenue	A	B
Overall LOS (Delay in sec/veh) ICU	**A(4.5)/53.3%**	**B(11.4)/54.1%**
Dewey Avenue /West Ridge Road		
Eastbound – W. Ridge Road	B	B
Westbound – W. Ridge Road	C	B
Northbound - Dewey Avenue	D	D
Southbound - Dewey Avenue	D	C
Overall LOS (Delay in sec/veh) ICU	**C(28.8)/73.9%**	**C(25.0)/73.9%**

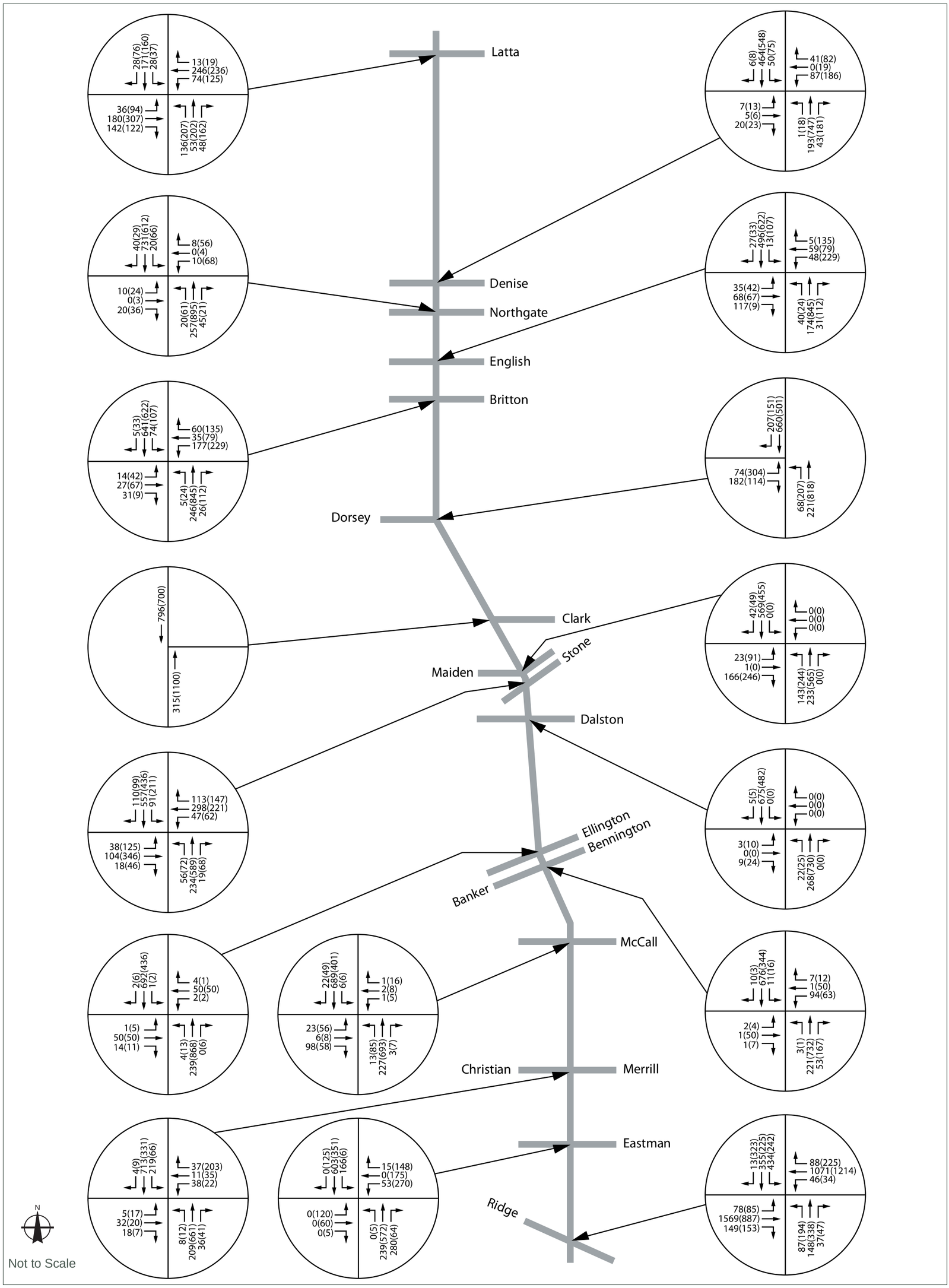


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Figure 7- Existing Traffic Volumes

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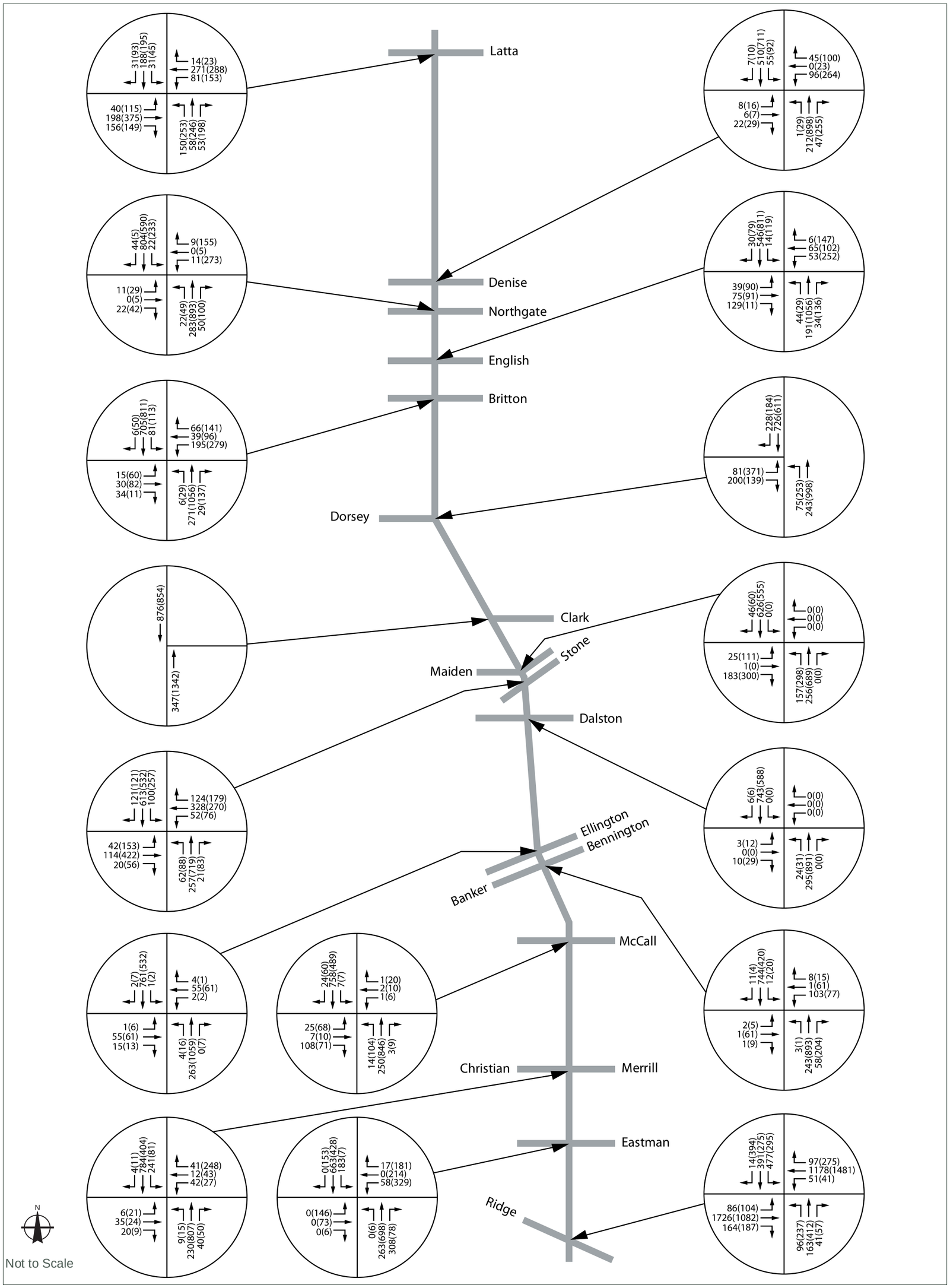

DEWEY AVENUE CORRIDOR TRAFFIC CALMING STUDY

City of Rochester and Town of Greece, Monroe County, New York

Figure 8 - Future Traffic Volumes

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Analyses of the existing intersections indicate that all of the intersections studied are currently operating at level of service "C" or better on all approaches during the peak periods, with the following exceptions that currently operate at LOS "D":

- Dewey Avenue southbound at Latta Road during the AM peak hour;
- Stone Road eastbound and Dewey Avenue southbound at Stone Road during the PM peak hour; and
- Dewey Avenue northbound and southbound during the AM peak hour and northbound during the PM peak hour at West Ridge Road.

The ICU results indicate that all of the study intersections are currently operating at less than 65% of their capacity during both peak hours except the Denise and Stone Road intersections during the PM peak hour and the West Ridge Road intersection during both peak hours which are operating at approximately 75% of their capacity. These percentages indicate that there is excess capacity available at these intersections and overall throughout the corridor. This suggests that opportunities may exist for pedestrian and bicycle enhancements without significantly compromising vehicular capacities. These ICU results are for planning level purposes only. Further analysis using the HCM method is necessary before reducing the number of lanes on Dewey Avenue.

3. Future Traffic Volumes

Historical traffic volume growth in the study area and planned developments in the corridor were reviewed and evaluated to determine a growth rate to account for normal increases in area-wide traffic growth. A twenty-year traffic forecast was derived and used for future traffic analyses. Re-development of Northgate Plaza will add approximately 250-300 vehicles per hour (vph) (total both directions) to the through traffic north of Denise Road and south of Britton Road during the PM peak hour. This equates to a growth rate of approximately 1% to 1.3% per year for 20 years.

The Northgate Plaza trip projections were added to the existing traffic at the immediate intersections (Britton to Denise) and a growth rate of 1% per year for 20 years was added to the remainder of the intersections in the Dewey Avenue corridor to account for future growth during the PM peak hour. During the AM peak hour, a growth rate of 0.5% per year for 20 years was added to the morning peak hour traffic to account for growth as the retail uses are not as active during this time period. These growth rates were reviewed and approved by Monroe County Department of Transportation for use in this analysis. Figure 8 shows the 2029 peak hour traffic volumes at the study intersections.

A summary of LOS/ICU calculations for the signalized study area intersections under existing and future (2029) no-build conditions is presented in Table 2.

Table 2: Future Level of Service and Intersection Capacity Utilization

INTERSECTION	EXISTING CONDITIONS		FUTURE NO-BUILD	
	AM	PM	AM	PM
Dewey Avenue /Latta Road				
Eastbound – Latta Road	B	B	B	C
Westbound – Latta Road	A	A	A	A
Northbound - Dewey Avenue	C	C	C	D
Southbound - Dewey Avenue	D	C	D	C

Overall LOS / Delay in sec/veh /ICU	**C(21.2)/48.7%**	**C(21.4)/62.2%**	**C(21.8)/52.3%**	**C(26.7)/73.0%**
Dewey Avenue /Denise Road				
Eastbound – Denise Road	B	B	B	B
Westbound – Denise Road	B	C	B	C
Northbound - Dewey Avenue	A	A	A	A
Southbound - Dewey Avenue	A	A	A	B
Overall LOS / Delay in sec/veh /ICU	**A(5.7)/49.5%**	**A(9.3)/71.9%**	**A(5.4)/48.8%**	**A(10.0)/79.3%**
Dewey Avenue /Northgate Plaza				
Eastbound – Northgate Manor	A	B	A	B
Westbound – Northgate Plaza	B	C	B	C
Northbound - Dewey Avenue	A	A	A	A
Southbound - Dewey Avenue	A	A	A	D
Overall LOS / Delay in sec/veh /ICU	**A(2.0)/35.9%**	**A(4.0)/62.0%**	**A(2.0)/37.6%**	**C(24.2)/74.2%**
Dewey Avenue /English Road				
Eastbound – English Road	B	B	B	C
Westbound – English Road	B	C	B	C
Northbound - Dewey Avenue	A	B	A	B
Southbound - Dewey Avenue	A	B	A	B
Overall LOS / Delay in sec/veh /ICU	**A(8.2)/56.2%**	**B(15.4)/63.9%**	**A(8.4)/58.7%**	**B(19.2)/72.9%**
Dewey Avenue /Britton Road				
Eastbound – Britton Road	A	B	A	B
Westbound – Britton Road	B	C	B	C
Northbound - Dewey Avenue	A	B	A	C
Southbound - Dewey Avenue	A	A	A	A
Overall LOS / Delay in sec/veh /ICU	**A(7.0)/56.9%**	**B(15.6)/63.9%**	**A(7.6)/59.6%**	**B(18.9)/73.6%**
Dewey Avenue /Dorsey Road				
Eastbound – Dorsey Road	B	C	B	C
Northbound - Dewey Avenue	A	A	A	B
Southbound - Dewey Avenue	A	B	A	B
Overall LOS / Delay in sec/veh /ICU	**A(5.1)/56.5%**	**B(13.5)/57.0%**	**B(6.1)/59.0%**	**B(15.9)/67.3%**
Dewey Avenue /Maiden Lane				
Eastbound – Maiden Lane	B	B	B	B
Westbound – Maiden Lane	NA	NA	NA	NA

Northbound - Dewey Avenue	A	A	A	B
Southbound - Dewey Avenue	C	C	C	D
Overall LOS / Delay in sec/veh /ICU	**B(17.5)/38.3%**	**B(17.4)/42.7%**	**C(20.2)/40.8%**	**C(22.0)/49.9%**
Dewey Avenue /Stone Road				
Eastbound – Stone Road	C	D	C	D
Westbound – Stone Road	A	C	B	E
Northbound - Dewey Avenue	B	C	B	B
Southbound - Dewey Avenue	C	D	C	D
Overall LOS / Delay in sec/veh /ICU	**B(18.6)/61.5%**	**C(30.1)/71.0%**	**B(19.6)/65.7%**	**D(44.0)/83.7%**
Dewey Avenue /Dalston Road				
Eastbound – Dalston Road	C	C	C	C
Northbound - Dewey Avenue	A	A	A	A
Southbound - Dewey Avenue	A	A	A	A
Overall LOS / Delay in sec/veh /ICU	**A(0.6)/35.9%**	**A(1.7)/50.0%**	**A(0.9)/38.3%**	**A(2.0)/57.2%**
Dewey Avenue /Ellington Road				
Eastbound – Ellington Road	B	B	B	B
Westbound – Driveway	B	B	B	B
Northbound - Dewey Avenue	A	A	A	A
Southbound - Dewey Avenue	A	A	A	A
Overall LOS / Delay in sec/veh /ICU	**A(5.3)/31.6%**	**A(3.84)/45.4%**	**A(5.5)/33.5%**	**A(4.0)/54.2%**
Dewey Avenue /Banker Place-Bennington Drive				
Eastbound – Banker Place	B	B	B	B
Westbound – Bennington Drive	A	A	A	A
Northbound - Dewey Avenue	A	A	A	A
Southbound - Dewey Avenue	B	B	B	B
Overall LOS / Delay in sec/veh /ICU	**A(4.3)/45.8%**	**A(5.5)/47.0%**	**A(4.4)/49.1%**	**A(6.3)/55.0%**
Dewey Avenue /McCall Road				
Eastbound – McCall Road	B	B	B	B
Westbound – McCall Road	C	A	C	A
Northbound - Dewey Avenue	A	A	A	A
Southbound - Dewey Avenue	A	B	A	B
Overall LOS / Delay in sec/veh /ICU	**A(5.0)/35.7%**	**A(6.2)/46.5%**	**A(5.2)/38.6%**	**A(7.4)/52.3%**

Dewey Avenue /Christian Avenue-Merrill Street				
Eastbound – Christian Avenue	C	B	C	B
Westbound – Merrill Street	C	B	C	B
Northbound - Dewey Avenue	A	A	A	B
Southbound - Dewey Avenue	A	A	A	A
Overall LOS / Delay in sec/veh /ICU	**A(5.9)/52.3%**	**A(7.0)/49.8%**	**A(6.3)/54.8%**	**A(8.8)/58.0%**
Dewey Avenue /Eastman Avenue				
Eastbound – Eastman Avenue	A	A	A	B
Westbound – Eastman Avenue	B	B	B	B
Northbound - Dewey Avenue	A	A	A	A
Southbound - Dewey Avenue	A	B	A	B
Overall LOS / Delay in sec/veh /ICU	**A(4.5)/ 53.3%**	**B(11.4)/54.1%**	**A(5.2)/ 53.3%**	**B(14.0)/ 62.2%**
Dewey Avenue /West Ridge Road				
Eastbound – W. Ridge Road	B	B	C	C
Westbound – W. Ridge Road	C	B	B	D
Northbound - Dewey Avenue	D	D	D	D
Southbound - Dewey Avenue	D	C	F	D
Overall LOS / Delay in sec/veh /ICU	**C(28.8)/73.9%**	**C(25.0)/73.9%**	**D(48.5)/90.1%**	**D(37.6)/87.3%**

Analyses of the study intersections indicate that all of the intersections studied are operating at level of service "C" or better on all approaches during the peak periods under 2029 future no-build conditions with the following exceptions that are projected to operate at LOS "D":

- Dewey Avenue southbound at Latta Road during the AM peak hour and northbound during the PM peak hour;
- Dewey Avenue southbound at the new Northgate Plaza Wal-Mart driveway during the PM peak hour;
- Dewey Avenue southbound at Maiden Lane during the PM peak hour;
- Stone Road eastbound and Dewey Avenue southbound at Stone Road during the PM peak hour; and
- Dewey Avenue at West Ridge Road: northbound Dewey Ave operates at LOS "D" and southbound Dewey Ave operates at LOS "F" during the AM peak hour, and the westbound, northbound and southbound approaches all operate at LOS "D" during the PM peak hour.

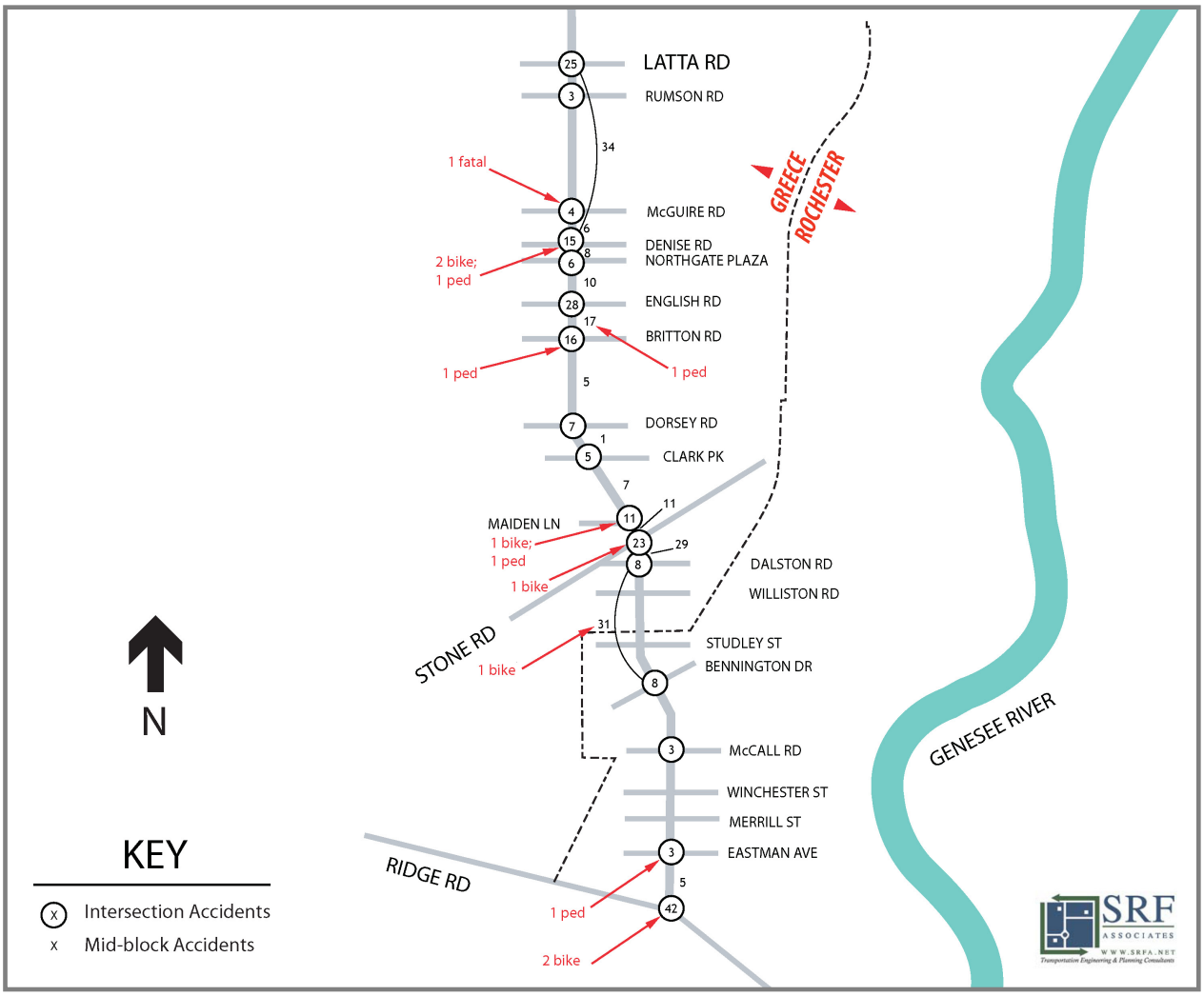
The ICU results indicate that all of the study intersections are projected to operate at less than 65% of their capacity during the AM peak hour except the Stone Road intersection, which is projected to operate at 65.7% under future no-build conditions. During the PM peak hour the intersections are divided into three categories as follows:

- ICU <70%: Dorsey Rd, Maiden Lane, Dalston Rd, Ellington Rd, Bennington Dr, McCall Rd, and Merrill St, and Eastman Ave.
- 70% < ICU < 80%: Latta Rd, Denise Rd, Northgate Plaza, English Rd, and Britton Rd.

- ICU > 80%: Stone Road and West Ridge Road

Based upon the operational analyses and local development patterns, intersections with ICU's greater than 70% may not be capable of accommodating major traffic calming improvements. Intersections with ICU's below 70% have excess vehicular capacity available suggesting that opportunities may exist for pedestrian and bicycle enhancements without significantly compromising vehicular capacities. According to Intersection Capacity Utilization Evaluation Procedures for Intersections and Interchanges 2003 Edition published by Trafficware, intersections with ICU's between 64% and 73% are characterized as "having no major congestion. The majority of traffic should be served on the first cycle." In reviewing the ICU's at intersections throughout the Dewey Avenue corridor, 70% is used to differentiate between intersections that are potential candidates for a road diet. However, it is noted that detailed capacity analyses are required to determine the appropriate geometry at each intersection.

Figure 9: Accidents in the Dewey Avenue Corridor



4. Safety Evaluation

Accident reports were investigated to assess the safety history within the study area. The accident reports reviewed covered a three-year time period from September 1, 2005 through August 31, 2008. During this period, 290 accidents were documented within the study area; comprised of 186 accidents at 15 intersections and 104 accidents in the segments between intersections. 5 accidents involved pedestrians and 7 accidents involved bicycles.

The intersections of Latta, English, Britton, Stone, and Ridge with Dewey Avenue had the greatest number of accidents. Several mid-block segments also had a high number of accidents including Latta to Rumson, Denise to English, English to Britton, Stone to Dalston, and Dalston to Bennington. Vehicular collisions with pedestrians and bicyclists occurred mostly within the Northgate area, Stone Road area, and at the intersection of Ridge Road with Dewey Avenue. Figure 9 identifies accident locations.

C. Pedestrian Inventory and Analysis

Providing safe routes of travel for cars, bicycles, and pedestrians is a responsibility and priority for all communities. Pedestrian safety was evaluated based on factors such as sidewalk width and quality, and the presence of a buffer zone, also referred to as the tree lawn or the furnishings and edge zones. Pedestrian safety factors present in the travelway include crosswalk length and quality, presence or absence of medians, and the type of median.

1. Pedestrian Realm Data

The pedestrian realm is defined as the area of the right-of-way between the roadway and the abutting building facade. The pedestrian realm can extend into private property if the facilities to support pedestrians, such as sidewalks or other amenities are present, and the property owner allows the use of the property for pedestrian use. Businesses often provide amenities for pedestrians to attract interest and enhance safety for pedestrian users. The pedestrian realm often includes:

- Sidewalks
- Buffers that create space between the pedestrian and vehicular traffic
- Plantings or other ornamental features on public or private property
- On-street parking (which also serves as a buffer)
- Street/Pedestrian lighting
- Signage
- Street furniture and amenities (e.g. benches, waste and recycling containers, public art)

Oftentimes, traffic control devices, road signage, and other objects are placed within the pedestrian realm, but may not be intended for the use of pedestrians. Oftentimes, these items are obstructions to the pedestrian. This can be particularly problematic when sidewalks abut the road, which occurs frequently along the corridor.

SRF & Associates (SRF) walked the entire length of the corridor, from Latta Road in the north to Ridge Road in the south, to collect data with the appropriate level of detail. The walk was performed on Thursday, September 25, 2008, between the hours of 9:00 a.m. and 4:30 p.m. SRF collected data pertaining to the pedestrian realm of both the east and west sides of the street on Dewey Avenue, and also measured and documented the conditions of the roadway. Critical variables, documented during the data collection process, were utilized to evaluate how well the Dewey Avenue Corridor serves non-motorized users.

The variables include:

- Sidewalk width/condition
- Buffer width
- Number of street trees
- Crossing facilities (crosswalk dimensions and pedestrian signal operation)
- Benches
- Newspaper and trash receptacles
- Bus stops/shelters
- Pedestrian generators
- Conflict points (i.e. locations where a pedestrian is in direct conflict with vehicular traffic)
- Personal security (the feeling of security from criminal activity)

In addition, an investigation of access driveways, or curb cuts, was performed during the walk of the corridor, and was used in the Pedestrian LOS analyses. Segments that contain numerous access driveways have a high number of conflict points between vehicles and pedestrians (i.e. pedestrians must cross several driveways as they walk along the sidewalk). The segment of roadway between Britton and Denise is of particular concern. Segments with a significant number of conflict points should be further evaluated to determine if access consolidation is feasible and/or appropriate.

2. Grading Scale – Pedestrian Path LOS

A pedestrian LOS was developed for the pedestrian realm on both sides of the roadway along the entire length of the corridor. Using a score rating of 1 to 5, every zone of the Dewey Avenue pedestrian realm was scored based on the pedestrian realm variables described above.

The Australian Method, developed by Nicole Gallin for calculating Pedestrian Levels of Service, was used for analysis purposes in this study. A research paper entitled "Application of Level of Service Methods for Evaluation of Operations at Pedestrian Facilities" published in the *Transportation Research Record* in 2002 compared five different pedestrian Level of Service methodologies. This method was chosen because of the critical pedestrian realm factors that are considered in calculating the LOS score. The Australian Method is focused on safety, as well as the relative comfort and convenience for pedestrians, which the Highway Capacity Manual (HCM) methodology neglects to measure. A national standard does not exist that ranks the quality of the pedestrian environment quite like the Australian Method.

The consultant team, in collaboration with the Advisory Committee, assigned weights to the Pedestrian LOS variables corresponding to their importance in the context of the Dewey Avenue corridor. The following scale of 1 to 5, was used for determining the weight of each variable:

Table 3: Weighting Scale

Weighting Scale	
1	Least important
2	Less important
3	Important
4	More Important
5	Most important

Variables were assigned a specific weight based on the following:

1 - Pedestrian Volume - For this assessment, high pedestrian volumes correlate to a decreased LOS due to congestion and user discomfort. Since the Dewey Avenue Corridor is low intensity urban/suburban in character, and not a bustling downtown core, the presence of other pedestrians will not significantly decrease a users comfort, therefore this variable was assigned a low weight.

1 - Mix of Users - Most of the users observed on the sidewalks of Dewey Avenue were walking (as opposed to skateboarding, rollerblading, etc.). The presence of other non-walking users will not significantly decrease a user's comfort; therefore, this variable was assigned a low weight.

3 - Path Width - Along the Dewey Avenue Corridor, the width of the sidewalk is important in terms of comfort and a perception of safety.

3 - Obstructions - Obstructions can be a problem for those users with mobility impairments; however, due to a lack of major obstructions along the corridor, this variable was assigned an average weight of importance.

3 - Connectivity - The degree to which the path provides a useful, direct and logical link between key departure points and destinations is an important measure of the walkability of the corridor and was weighted accordingly.

3 - Personal Safety - User comfort is diminished if there is any perception that criminal activities or violence is prevalent in the surrounding community; therefore, this variable was weighted as important.

4 - Crossing Opportunities - Concern was expressed that pedestrian crossing facilities should be given particular attention in this study; therefore, they were weighted more important in this assessment.

4 - Support Facilities - Pedestrian amenities and road characteristics suited to pedestrians are likely to contribute to users' desire to walk the corridor; therefore, support facilities were weighted more important in this assessment.

4 - Path Environment - The quality and width of buffer space between a pedestrian and vehicular traffic contributes positively to that pedestrian's level of comfort; hence, buffer space was weighted more important in this assessment.

5 - Potential for Conflict - Pedestrian/vehicle conflicts are a recognized issue along the Dewey Avenue Corridor, due to numerous driveways. This factor has been weighted heavily and most importantly for this assessment.

5 - Surface Quality - The quality of the sidewalk's surface is of great importance to users for safety and perception of the environment, and has been weighted accordingly for this assessment.

Based on the scale developed, the LOS was determined by the total point value accumulated. The total is calculated by multiplying the points awarded to each variable based on field data by the weight of that variable. The LOS for each segment is shown in Figure 10. A score of 180 is the highest score attainable. The LOS was determined by the point scale identified in Table 4.

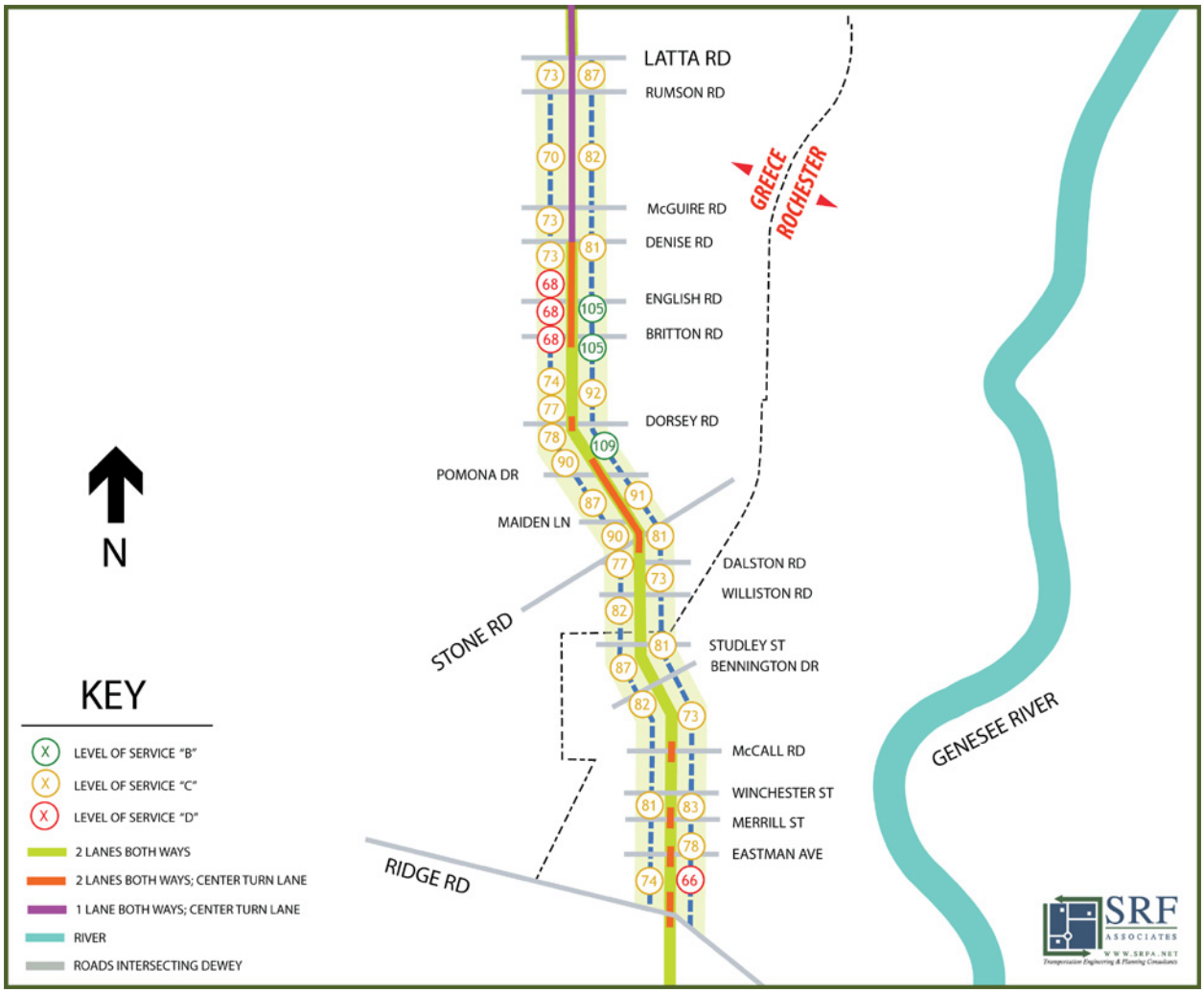
Level of Service Grading Scale

It should be noted that Pedestrian Level of Service differs greatly from Vehicular Levels of Service. A Level of Service of "C" is generally considered an acceptable vehicular level of service. Based on the Australian Method, a Level of Service of "C" or lower for a pedestrian level of service indicates that while basic pedestrian conditions exist, a significant number of factors impact the pedestrians' safety and comfort.

Table 4: Level of Service Scale

Level of Service Scale	
LOS A	180 -132 points
LOS B	101 -131 points
LOS C	69 -100 points
LOS D	37 - 68 points
LOS E	≤ 36 points

Figure 10: Pedestrian Level of Service



LOS A	A pedestrian environment where ideal pedestrian conditions exist and the factors that negatively affect pedestrian LOS are minimal.
LOS B	Reasonable pedestrian conditions exist but a small number of factors impact pedestrian safety and comfort. LOS A is the ideal but LOS B is an acceptable standard.
LOS C	Basic pedestrian conditions exist, but a significant number of factors impact pedestrian safety and comfort.
LOS D	Poor pedestrian conditions exist and the factors that negatively affect pedestrian LOS are wide-ranging or individually severe. Pedestrian comfort is minimal and safety concerns within the pedestrian environment are evident.
LOS E	The pedestrian environment is unsuitable. This situation occurs when all or almost all of the factors affecting pedestrian LOS are below acceptable standards.

3. Pedestrian Path LOS Examples

LOS 'D'

East side of Dewey Avenue, just north of Ridge Road. This is one of the worst performing segments of sidewalk in the entire corridor.

LOS 'B'

East side of Dewey Avenue, adjacent to Saint Joseph's Villa, between Clark Park and Dorsey Road. This is one of the best performing segments of sidewalk in the corridor.

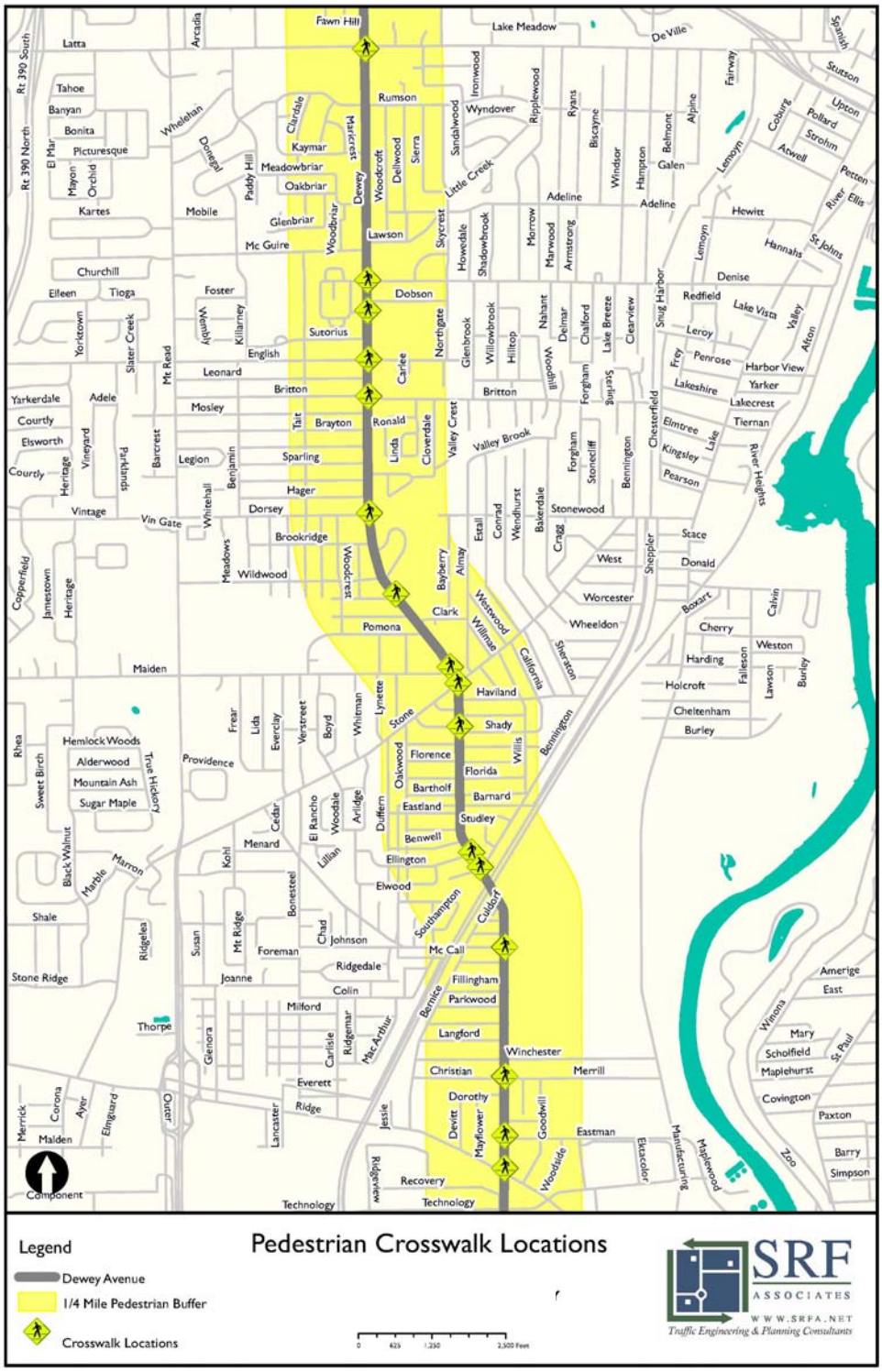
The quality of the pedestrian realm in other segments of the corridor falls somewhere in between the two examples given, most of them performing with a LOS of 'C'. Generally, the LOS for corridor segments on the east side of Dewey Avenue were slightly better than those on the west side. The segments of Dewey Avenue that operate at pedestrian level of service "C" are not necessarily substandard. However, there are a number of factors present that impact the pedestrians' comfort and perceived level of safety. Table 5 illustrates the pedestrian LOS for each segment analyzed. Variables that negatively affected the LOS were:

- Lack of sufficient buffer width
- Inadequate crossing opportunities
- Lack of support facilities
- Poor sidewalk quality

Table 5: Pedestrian LOS Assessment

Side of Dewey	Zone	Segment	Total Score	PED LOS
EAST	CITY	Ridge-Eastman	**66**	D
WEST	Zone 5	Dobson-English	**68**	D
WEST	Zone 5	English-Leonard	**68**	D
WEST	Zone 5	Leonard-Mosley	**68**	D
WEST	Zone 6	Rumson-McGuire	**70**	C
EAST	CITY	Winchester-Bennington	**73**	C
EAST	Zone 1	Barnard-Shady Way	**73**	C
WEST	Zone 7	Latta-Rumson	**73**	C
WEST	Zone 5	McGuire-Denise	**73**	C
WEST	Zone 5	Denise-Dobson	**73**	C
WEST	Zone 4	Mosley-Hagar	**74**	C
WEST	CITY	Velox-Ridge	**74**	C
WEST	Zone 4	Hagar-Dorsey	**77**	C
WEST	Zone 1	Beaumont-Dalston	**77**	C
EAST	CITY	Eastman-Velox	**78**	C
WEST	Zone 3	Dorsey-Brookridge	**78**	C
EAST	Zone 1	Bennington-Barnard	**81**	C
EAST	Zone 2	Shady Way-Maiden	**81**	C
EAST	Zone 5	Dobson-Lawson	**81**	C
WEST	CITY	Lenriet-Velox	**81**	C
EAST	Zone 6	Lawson-Rumson	**82**	C
WEST	Zone 1	Dalston-Eastland	**82**	C
WEST	CITY	Bennington-Lenriet	**82**	C
EAST	CITY	Velox-Winchester	**83**	C
WEST	Zone 3	Briarcliff-Maiden	**87**	C
WEST	CITY	Eastland-Bennington	**87**	C
EAST	Zone 7	Latta-Rumson	**87**	C
WEST	Zone 3	Brookridge-Briarcliff	**90**	C
WEST	Zone 2	Maiden-Beaumont	**90**	C
EAST	Zone 3	Maiden-Clark	**91**	C
EAST	Zone 4	Dorsey-Ronald	**92**	C
EAST	Zone 4	Ronald-Britton	**105**	B
EAST	Zone 5	Britton-Dobson	**105**	B
EAST	Zone 3	Clark-Dorsey	**109**	B

Figure 11: Pedestrian Crosswalk Locations



The pedestrian assessment concluded that there are several segments of the Dewey Avenue Corridor that have inadequate pedestrian facilities. The inadequate segments of the corridor do little to *encourage* pedestrians to utilize the public realm to the fullest extent possible. Safe, comfortable, and attractive pedestrian facilities often equate to increased pedestrian activity, which can have a positive impact on public health, the environment, and economic development.

4. Crosswalk Assessment

Well-defined pedestrian crossings are very important to the safety and comfort of pedestrians. An inventory of all marked crosswalks that traverse Dewey Avenue at signalized intersections was performed for this study. Information was collected on the width, length, and presence of curb ramps and pedestrian signals at each signalized crosswalk location. This data was then analyzed to develop a LOS for each crosswalk that traverses Dewey Avenue at a signalized intersection.

Table 6: Crossing Level of Service

Ranked Signalized Crossing Level of Service		
Crossing Dewey S. of Eastman	2.79	C
Crossing Dewey S. of English	2.76	C
Crossing Dewey S. of Britton	2.76	C
Crossing Dewey N. of Dorsey	2.73	C
Crossing Dewey S. of Denise	2.68	C
Crossing Dewey N. of Eastman	2.59	C
Crossing Dewey N. of Ridge	2.56	C
Crossing Dewey N. of Stone	2.51	C
Crossing Dewey N. of English	2.47	B
Crossing Dewey N. of Britton	2.47	B
Crossing Dewey N. of Merrill/Christian	2.45	B
Crossing Dewey S. of Stone	2.43	B
Crossing Dewey N. of Denise	2.37	B
Crossing Dewey N. of Northgate	2.37	B
Crossing Dewey N. of Maiden	2.33	B
Crossing Dewey S. of McCall	2.31	B
Crossing Dewey S. of Merrill/Christian	2.31	B
Crossing Dewey N. of Dalston	2.14	B
Crossing Dewey N. of Ellington	2.11	B
Crossing Dewey N. of Bennington/Banker	2.11	B

Based on documentation of the crossing facilities available on Dewey Avenue, an assessment was performed to determine how well the crosswalks serve pedestrians. The crosswalk assessment was based on the Level of Service Model for Signalized Intersections for Pedestrians (Petritsch and Landis). Several characteristics of the pedestrian crossing factored into the assessment, including:

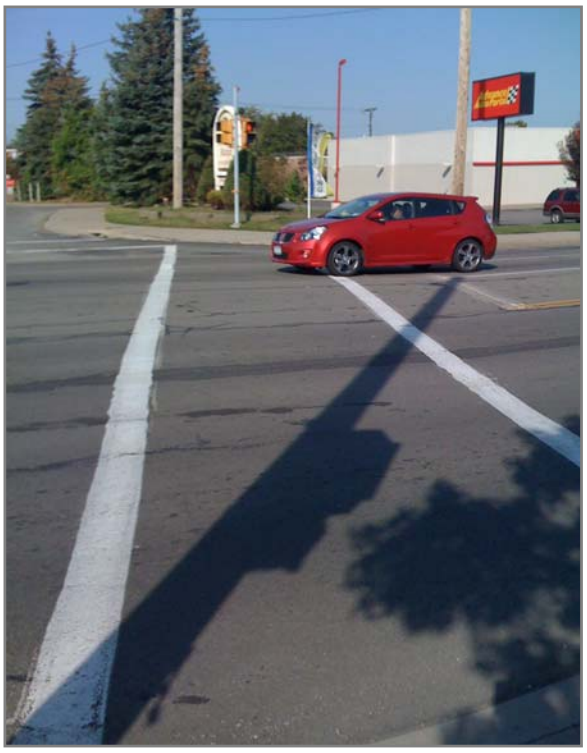
- number of potential conflicts between vehicles and pedestrians,
- perceived comfort of pedestrians,
- vehicle speed, and
- number of lanes being crossed.

These variables were used to analyze the level of service at each crosswalk. The results of this analysis indicate that there are no immediate safety concerns at crosswalk locations within the study area. On a grading scale of LOS 'A' through LOS 'F', the crosswalks on Dewey Avenue were rated with LOS 'B' or LOS 'C', meaning they provide an acceptable way for crossing the street in a reasonably safe and comfortable fashion (see Table 6). The only unsignalized marked crosswalk on the corridor is located just north of Briarcliff Road, across from St. Joseph's Villa.

Although the results of the crosswalk assessment indicate that there are no apparent safety concerns, it does not mean that the distance between marked crosswalks is convenient for pedestrians. Activity level and pedestrian need, not distance, drive the decisions about where a crosswalk is appropriate. However, it is important to note that there are several instances of great distances between signalized crosswalk locations. Some pedestrians will not use a crosswalk if one is not convenient, which can result in a safety issue.

V&T law permits pedestrians to cross at any unmarked, unsignalized intersection. Nevertheless, the provision of marked crosswalks can benefit the pedestrian by showing them the most appropriate places to cross, and the motorist by showing them where to expect pedestrians. Crosswalks can be problematic when they give a pedestrian a false sense of security, but by basing recommendations on activity levels and pedestrian needs, this potential problem will be avoided.

5. Examples of Crossing Facilities



Crossing facilities include the pavement markings, as well as the pedestrian crosswalk signals, which indicate to pedestrians where and when they should cross.

6. Summary

In general, there are pedestrian facilities currently in place along the Dewey Avenue Corridor, including sidewalks, marked crosswalks, and pedestrian signals. The LOS scores for most of the segments of the Dewey Avenue Corridor indicate that there is an opportunity to improve the conditions that contribute to the safety and comfort experienced by pedestrians.

D. Walkability

The following section discusses different types of pedestrians, walking speed, walk score and a comparison of the data derived from walk score and pedestrian level of service calculations. This section discusses the different issues that contribute to the Dewey Avenue Corridor's walkability.

1. Types of Pedestrians

On average, two people walking side-by-side or passing one another generally require 4.67 feet of space, while two people in wheelchairs need a minimum of 5 feet to pass one another. While the minimum operating space and pedestrian facility width are relatively the same between users, the skills, confidence and preferences of pedestrians vary. These variations are mostly a result of differences in age and differences in physical, cognitive and sensory abilities.

Although AASHTO does not classify pedestrians in the same manner that they do bicyclists, a similar hierarchy of ability levels is possible. Pedestrians can be described in the following groups:

- Group A: Advanced Pedestrians – highest mobility level
- Group B: Basic Pedestrians – moderate mobility level
- Group C: Limited Mobility Pedestrians – lowest mobility level

Group A: Advanced Pedestrians

Group A is comprised of advanced or experienced walkers or joggers who are generally using the sidewalks for exercise or to reach a destination. Advanced pedestrians are typically comfortable walking or jogging year round in all weather conditions, maneuvering around obstacles and other pedestrians, and crossing roads without adequate pedestrian crosswalk provisions. Sidewalks in disrepair or with minimal road buffers usually do not deter usage by Group A pedestrians. Group A pedestrians prefer:

- Direct and convenient access to destinations in a walk or jog of less than 45 minutes.
- The opportunity to walk or jog at varying speeds.
- Sufficient operating space on the sidewalk to reduce or eliminate the need to slow down when passing other pedestrians.
- Continuous sidewalks along the entire corridor.

Group B: Basic Pedestrians

Group B is comprised of basic adult and teenage walkers who use sidewalks for transportation purposes, such as getting to the store or visiting friends, and for moderate recreational use. Group B pedestrians typically walk from spring to fall, and will occasionally use well-plowed sidewalks during the wintertime. Group B pedestrians prefer:

- Comfortable access to destinations in a walk or jog of less than 20 minutes, preferably by a direct route.
- Well-maintained, well-lit, continuous sidewalks with a minimum width of five feet and adequate buffers from roads.

- Marked crosswalks at intersections.
- Resting areas at least every 1000 feet.
- Sidewalks linking key destinations and neighborhood areas.

Group C: Limited Mobility Pedestrians
Group C is comprised of young children, seniors, and those with disabilities. This user group is often walking with supervision and/or assistance. In addition, support equipment, such as children's bicycles, strollers, and wheelchairs, is often used. They are walking to access key destinations or for moderate recreational purposes. Group C pedestrians use sidewalks mainly in good weather from spring to fall. Group C pedestrians prefer the following:

- Access to key destinations surrounding residential areas, including schools, recreational or community facilities, shopping, or neighbors, within a five to ten minute walk.
- Well-maintained, well-lit, continuous sidewalks with a minimum width of five feet and with moderate to large buffers from roads.
- Crosswalks with pedestrian signal operation.
- Resting areas at least every 500 feet.
- Sidewalks linking key destinations and neighborhood areas.

2. Walking Speed
The New York State Supplement to the National Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways 2003 Edition mandates that crossings be designed to accommodate a walking speed of 3.5 feet per second. This walking speed should be used in the design of any crossing facility in the Dewey Avenue Corridor.

3. Walk Score Criteria
Walk Score is an online tool that allows users to determine the walkability of a certain address based on the number of pedestrian generators in close proximity to that address. Walk Score calculates the walkability of an address by locating pedestrian generators such as nearby stores, restaurants, schools, parks, etc. The walk score results can be used in conjunction with the pedestrian levels of service to determine priority locations for improvements throughout the corridor.

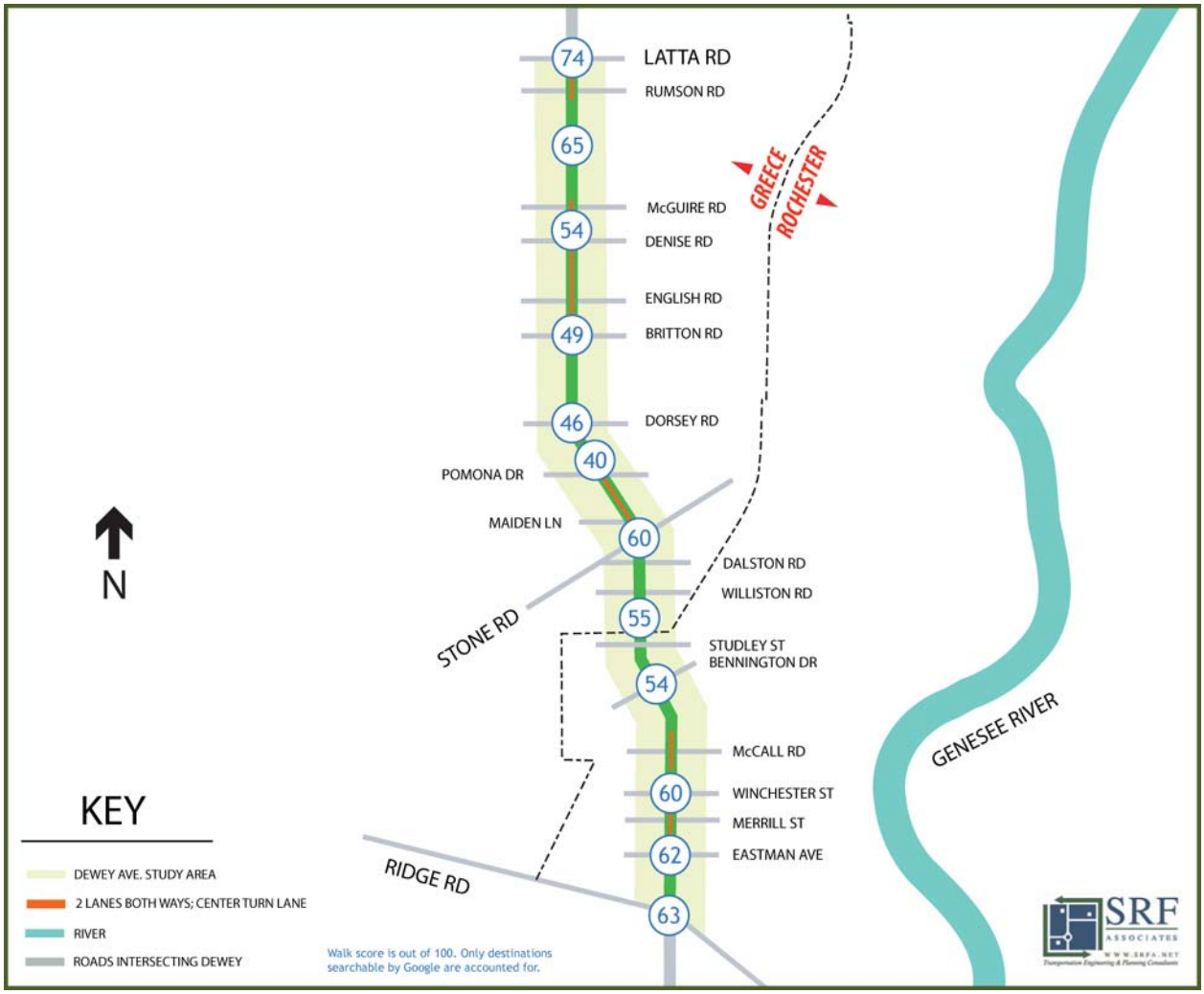
Table 7: Walk Score Scale

Walk Score Scale		
Walk Score	**Description**	**Explanation**
90–100	Walkers' Paradise	Daily errands do not require a car.
70–89	Very Walkable	Most errands can be accomplished on foot.
50–69	Somewhat Walkable	Some amenities within walking distance.
25–49	Car-Dependent	A few amenities within walking distance.
0–24	Car-Dependent (Driving Only)	Almost all errands require a car.

Generally, the tool measures how easy it is to live without the use of an automobile, not how attractive the area is for walking. There are a number of factors, such as street design and safety, which contribute to walkability but are difficult to measure with an algorithm.

The Walk Score algorithm awards points based on the distance to the closest amenity in each category. Categories include: transit, grocery stores, restaurants, schools, coffee shops, libraries, parks, bookstores, drug stores, hardware stores, bars, movie theaters, fitness, and clothing & music stores. If the closest amenity in a category is within .25 miles, the system assigns the maximum number of points. The number of points declines as the distance approaches 1 mile, and no points are awarded for amenities further than 1 mile. Each category is weighted equally and the points are summed and normalized to yield a score from 0 to 100. The number of nearby amenities is the leading predictor of whether people walk.

Figure 12: Walk Score

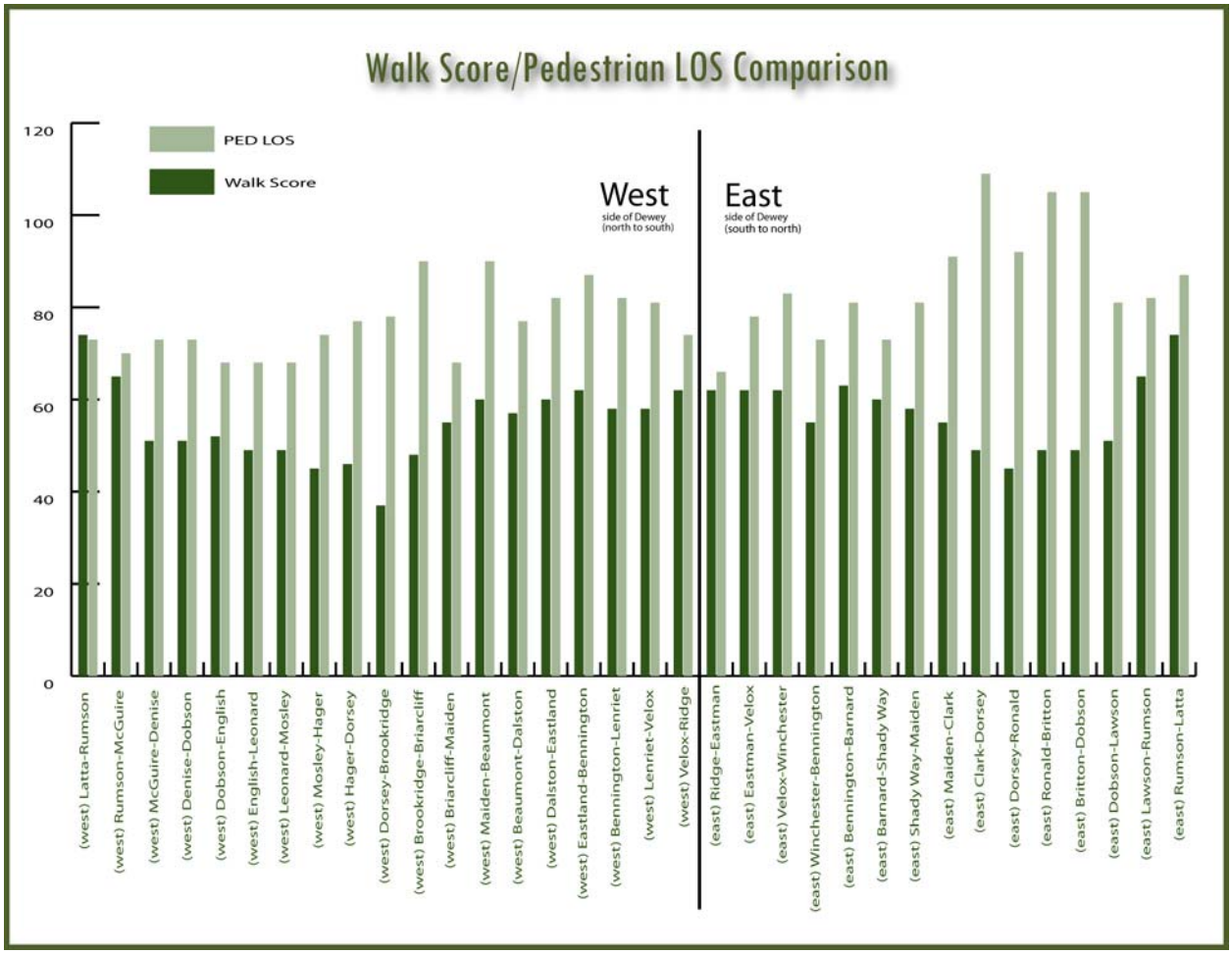


4. Comparison of LOS and Walk Score

Pedestrian LOS and Walk Score, when analyzed side by side, indicate segments of the pedestrian realm that are deficient in quality, yet have a large number of pedestrian generators in close proximity. Figures 13 and 14 are crucial illustrations that place these two sources of data side by side. This important analysis provides a list of locations that are used in the Implementation section of this report to develop priorities for future pedestrian realm improvements.

For example, the eastern side from Ridge to Eastman had a low pedestrian LOS calculation and a high walk score. This means that there are places to walk, but the pedestrian environment is not a comfortable place to do so. This location is a priority for improvements. Conversely, the western side of the McGuire to Denise segment had a low pedestrian LOS calculation and a low walk score. This suggests that even though the pedestrian environment is not comfortable, there are fewer places to walk nearby. This segment might be a lower priority for pedestrian improvements.

Figure 13: Walk Score/Pedestrian LOS Comparison

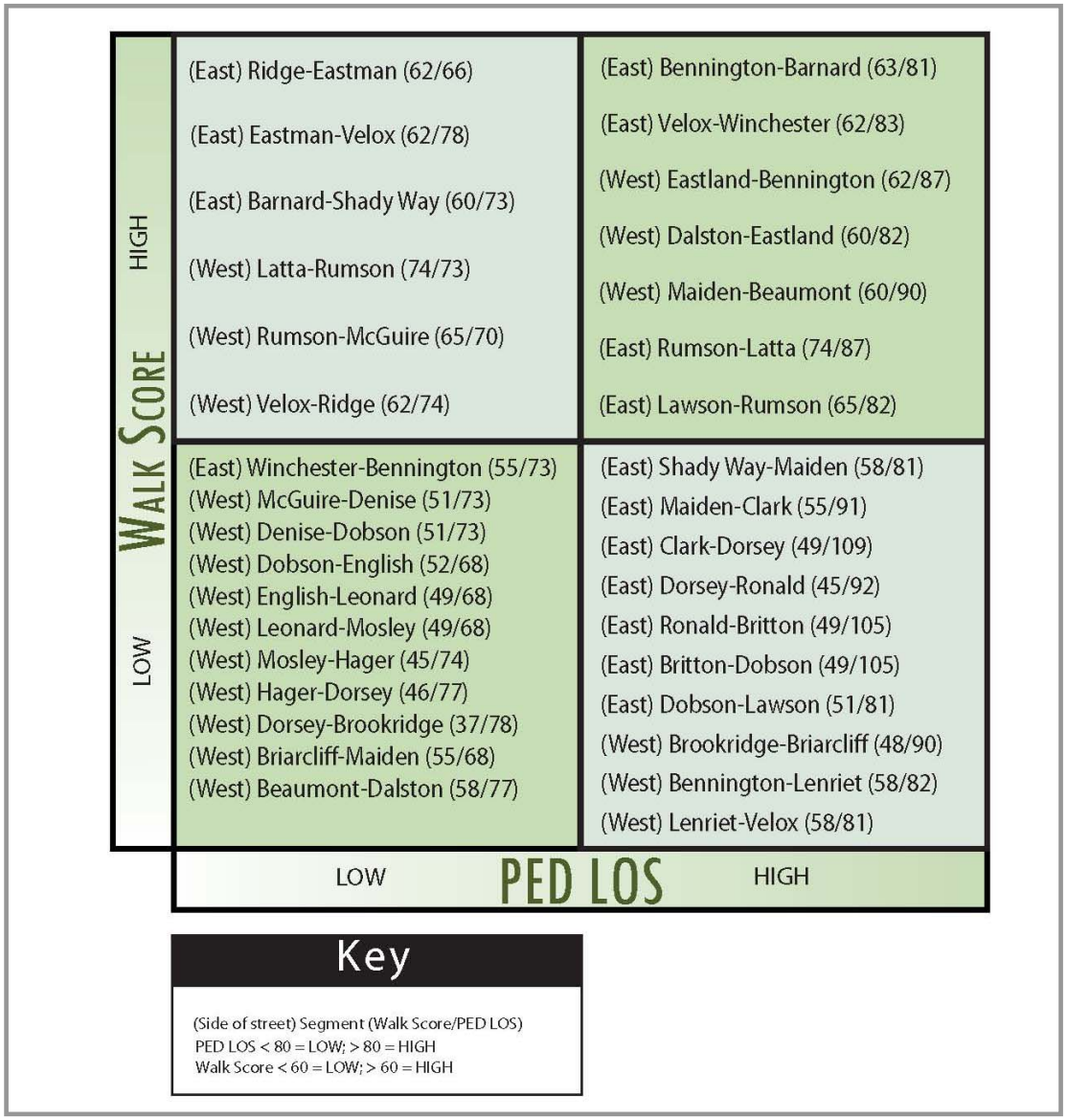


An important part of the pedestrian experience along Dewey Avenue is the transition from sidewalk to building entrance. Many businesses currently have parking lots located between the sidewalk and

the building, which presents a variety of safety and comfort issues that do not factor into the walk score or the pedestrian LOS calculations. Nonetheless, this space impacts the pedestrian experience, and should be considered when making recommendations to improve the pedestrian realm. In addition, it is important to note that increased pedestrian activity and reduced travel demand is best achieved by changing land use policies that bring destinations closer together. The City and Town may want to consider ways to encourage small-scale retail in neighborhoods, create neighborhood parks, and locate schools closer to residences and parks.

The following figure illustrates one of the key concepts of the study: where are pedestrians likely to walk, and where are the worst conditions for them to do so?

Figure 14: Walking Potential Vs. Deficiency



E. Bikability

The following section discusses different types of bicyclists, and assesses bicycle infrastructure. This section details the different issues that contribute to the Dewey Avenue Corridor's bikability.

1. Types of Bicyclists

On average, bicyclists require a minimum width of 40 inches to operate. A minimum width of four feet is necessary for any bicycle facility with exclusive or preferential use by bicyclists. When bicyclists are traveling alongside motor vehicles, a width of five feet or more is suggested for bicyclists.

While the minimum operating space and bicycle facility width remains relatively the same between users, the skills, confidence and preferences of bicyclists vary largely. The challenge in planning for bicycle facilities is designing for the diversity of user skills. According to the Federal Highway Administration (FHWA), the Federal policy goal for bicycling is "to accommodate current use and encourage increased use, while enhancing safety."

The FHWA identifies the following types of bicycle users:

- Group A: Advanced Bicyclists
- Group B: Basic Bicyclists
- Group C: Children

Defining the bicyclist skill level through three groups and designing for the specific groups helps to refine roadway and path treatments. A description of the three different types of bicycle users by the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities is provided below. Also, details of characteristics specific to the Town of Greece/City of Rochester Group A, B, C riders is described in each section that follows.

Group A: Advanced Bicyclists

Group A is comprised of advanced or experienced riders who are generally using their bicycles as they would a motor vehicle. They are riding for convenience and speed and want direct access to destinations with minimal detours and delays. Advanced riders are typically comfortable riding with motor vehicles in traffic. They comprise the majority of the current users of collector and arterial streets and are best served by the following:

1. Direct and convenient access to destinations usually via the existing street and highway system.
2. The opportunity to operate at maximum speed with minimum delays.
3. Sufficient operating space on the roadway or shoulder to reduce or preferably eliminate the need for either the bicyclist or the motor vehicle operator to change position when passing.

Ideally for Group A riders, all roads would be "bicycle friendly."

Group B: Basic Bicyclists

Group B is comprised of basic adult and teenage riders who may also be using their bicycles for transportation purposes, such as getting to the store or visiting friends. Group B bicyclists are less confident of their ability to operate in traffic without special provisions for bicycles. Basic riders prefer to avoid roads with fast and busy motor vehicle traffic unless there is ample roadway width to allow

easy overtaking by faster motor vehicles. Thus, basic riders are comfortable riding on neighborhood streets and shared use paths and prefer designated facilities such as bike lanes or wide shoulder lanes on busier streets. Some will develop greater skills and progress to the advanced level, but there will always be many millions of basic bicyclists. Group B bicyclists prefer:

1. Comfortable access to destinations, preferably by a direct route, using either low-speed, low traffic-volume streets or designated bicycle facilities, avoiding routes with high-volume or high traffic speeds.
2. Well-defined separation of bicycles and motor vehicles on arterial and collector streets (bike lanes or shoulders) or separate bike paths.

Group B bicyclists would be best served by designated bicycle facilities on key routes through main travel corridors with lower volume rates and similar travel times.

Group C: Children
Group C bicyclists are children riding on their own or with their parents. This group may not travel as fast as their adult counterparts, but still require access to key destinations in their community, such as schools, convenience stores and recreational facilities. It is important to make sure children do not develop a false sense of security if they are encouraged to ride on a busy street. Group C bicyclists prefer the following:

1. Access to key destinations surrounding residential areas, including schools, recreation facilities, shopping, or other residential areas.
2. Residential streets with low motor vehicle speed limits and volumes linked with shared use paths and busier streets with well-defined pavement markings between bicycle and motor vehicles.
3. Well-defined separation of bicycles and motor vehicles on arterial and collector streets linked with shared use paths and other bicycle facilities.

Group C bicyclists would be best served by routes that provide access to key destinations, but keep them off of busy roads, as safety is more important than travel time.

2. Assessment of Bicycle Infrastructure
Bicycle safety is judged on the presence or absence of a dedicated bicycle facility, shared lane widths including the on-street parking lane, and the amount of space a cyclist needs to safely maneuver. Other considerations that affect bicycle safety are speed limit, average annual daily traffic (AADT) volumes, percent heavy traffic, number of driveways, and any obstructions to the public realm, including overgrown landscaping and road grates. Bicycle infrastructure and facilities were also inventoried during the walk of the corridor.

The Dewey Avenue Corridor lacks dedicated bicycle facilities of any form. There are no road shoulders, and the widest outside lane is twelve feet wide, less than the fourteen-foot minimum recommended in the AASHTO Guide for the Development of Bicycle Facilities that is necessary to accommodate a bicycle traveling beside an automobile. Bicycle users must use the sidewalk, take a parallel route, or share the narrow outside lane of the road with automobiles traveling at much higher speeds along the corridor.

TRAFFIC CALMING ALTERNATIVES

5

This section describes the traffic calming alternatives considered for the Dewey Avenue Corridor and their potential impacts. Multiple design, program and policy solutions can be used to solve each traffic calming issue. Thus, for each traffic calming alternative, reviewing the design details, impacts, and viability for the Dewey Avenue Corridor is critical to selecting appropriate solution.

For this report, the traffic calming alternatives are categorized as on-street, off-street, or program and policy alternatives. On-street alternatives include all possible strategies within the roadway, such as bicycle lanes or a road diet. Off-street alternatives deal with the area from the curb to the front of a building with the main focus on the pedestrian experience. Program and policy alternatives provide strategies for zoning changes, educational programs, enforcement, maintenance, program effectiveness, and security. A summary of design details and benefits for each traffic calming alternative that was considered is found in the *Design Elements for Traffic Calming Matrix* (Table 8) that follows this section.

Also included in the *Design Elements for Traffic Calming Matrix* (Table 8) are different impacts for each alternative. In addition to the typical measure of impact to the bottom-line, each alternative should be assessed based on different user and sustainability impacts. The subsections below explain the impacts reviewed and the matrix shows how each alternative impacts the budget, different users, and social and environmental aspects. Evaluating each alternative's impacts on budget, users and sustainability ensures a selection process that clearly, consistently, and comprehensively assesses the tradeoffs between different pros and cons of each alternative.

Each alternative was evaluated based on these three categories, as well as their appropriateness for addressing the issues specific to the Dewey Avenue Corridor. Based on input from the advisory committee and the community, the consultants selected which alternatives were the most appropriate for the study area.

A. Cost Impacts

Impact to the bottom-line is a key consideration for selecting a traffic calming alternative for implementation. The cost of implementing alternatives can range depending on cost of material, labor and design. The *Design Elements for Traffic Calming Matrix* (Table 8) provides a cost estimate range for each alternative considered. Cost estimates are grouped in the following three subcategories:

$ - Low cost: under $10,000
$$ - Medium cost: $10-50,000
$$$ - High cost: > $50,000

For example, bicycle boxes cost approximately $200 each for striping. Maintenance would be an additional expense, but the cost impact would still be less than $10,000. Thus, the matrix shows a "$," which represents a low cost.

B. User Impacts

A key component to designing traffic calming elements is to understand that different users of the corridor will likely have different expectations. Some design elements may be beneficial for certain user groups and detrimental to others. For example, a traffic calming alternative, such as a refuge island, may improve safety for pedestrians or motorists, but may have a negative impact on bicyclists. The different user groups considered for each alternative include: pedestrians, bicyclists,

motorists, transit, neighbors, and emergency vehicles. The different user preferences for each traffic calming alternative are listed below.

- Pedestrians prefer:
  i. Buffering from moving vehicles
  ii. Aesthetically pleasing surroundings and amenities
  iii. Safe environment
  iv. Shorter walking distances
  v. Access to community facilities

- Bicyclists prefer:
  i. Well-connected network of bicycling facilities
  ii. Safe travel routes
  iii. Direct routes
  iv. Access to community facilities

- Motorists prefer:
  i. Minimal traffic delay and conflicts
  ii. Parking and access to businesses and community facilities
  iii. Consistently designed facilities

- Transit (drivers and passengers) prefers:
  i. Space to operate and maneuver vehicles
  ii. Minimal conflicts and delays
  iii. Multi-modal facilities
  iv. Bus stop access and facilities

- Neighbors prefer:
  i. Neighborhood connectivity
  ii. To feel safe and secure
  iii. Access to property, businesses, and community facilities

- Emergency vehicles prefer:
  i. Space to operate and maneuver vehicle
  ii. Minimal conflicts and delays
  iii. Safe travel routes

The *Design Elements for Traffic Calming Matrix* (Table 8) shows the review of each alternative's impact (positive, negative, mixed, or no impact) for each user group. For example, bicycle lanes provide bicyclists with their own lane, which has a positive impact on all user groups by reducing conflicts in the road between bicyclists and motorists, transit, or emergency vehicles, and on the sidewalk between bicyclists and pedestrians or neighbors.

C. Sustainability Impacts

Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs (Report, 2003). As a form of development, traffic calming measures can have a positive or negative impact on the community, quality of life, livability, and the

environment. Thus, each traffic calming alternative considered for the Dewey Avenue Corridor was evaluated by the following sustainability measures:

- Reduces Energy Consumption by:
  i. Supporting non-motorized travel,
  ii. Supporting energy efficient movement of people and goods, and/or
  iii. Using resources with lower operations and maintenance requirements.
- Reduces Consumption of Material Resources by:
  i. Using recycled materials in construction,
  ii. Requiring less infrastructure in design solution, and/or
  iii. Increasing durability and life of design solution.

- Reduces Impacts to Environmental Resources by:
  i. Minimizing impact on natural environment,
  ii. Improving outdoor air quality,
  iii. Encouraging and supporting biodiversity, and/or
  iv. Reflecting historical and cultural context.

- Supports Healthy Urban Communities by:
  i. Incorporating features that support community and livability,
  ii. Incorporating features that support public services and adjacent land uses, and/or
  iii. Incorporating features that enhance public health, safety, and security.

- Supports Sustainability During Implementation by:
  i. Supporting local economic, social, and resource management needs during construction, and/or
  ii. Reducing environmental and community impacts during construction. (Bevan, 2007)

The *Design Elements for Traffic Calming Matrix* (Table 8) lists whether an alternative has a positive, negative, mixed (positive and negative), or no impact for each sustainability measure.

DEWEY AVENUE CORRIDOR TRAFFIC CALMING STUDY

TABLE 8: DESIGN ELEMENTS FOR TRAFFIC CALMING SUMMARY

DESIGN ELEMENT	Cost	User Impacts	Sustainability	Recommended?
On-Street Alternatives				
Bicycle boulevards	$	+	+	Yes
Bicycle boxes	$	+/-	+	Yes
Bicycle lanes/space	$-$$$	+	+	Yes
Bus pullouts	$$	+/-	+	No
Crosswalks - high visibility	$-$$	+/-	+	Yes
Curb extensions	$$	+/-	+	Yes
Drop bicycle lane at intersection	$	+/-	+	No
Leading bicycle signal	$-$$	+/-	+	No
Leading pedestrian intervals	$	+/-	+	Yes
Mountable curbs on medians/corners	$$	+/-	+/-	No
Neckdowns or street narrowing	$$-$$$	+/-	+	No
No turn on red signs	$	+/-	+/-	Yes
On-street parking	$$-$$$	+/-	+/-	No
Refuge islands	$$	+/-	+/-	Yes
Road diet	$-$$	+/-	+	Yes
Share the road signage	$	+/-	+	Yes
Signals - bicycle demand actuated	$$-$$$	+/-	+	Yes
Signals - pedestrian countdowns	$	+/-	+/-	Yes
Signalization	$$$	+/-	+/-	No
Signal timing, phasing & progression	$	+/-	+	No
Small curb radii at intersections	$-$$	+/-	+	No
Smooth roadway surfaces	$-$$	+	+/-	No
Turn lanes	$-$$	+/-	+/-	No
Off-Street Alternatives				
ADA accessible bus stops	$-$$	+	+	Yes
Arcades	$$-$$$	+	+	No
Bicycle lockers	$	+	+	Yes
Bicycle racks	$	+	+	Yes
Buffer area	$-$$	+	+	Yes
Buildings oriented onto the street	$-$$$	+/-	+	Yes
Building awnings	$	+	+/-	Yes
Lighting - pedestrian-scale	$$	+	+/-	Yes
Lighting - street	$$	+	+/-	Yes
New or improved sidewalks	$$	+	+/-	Yes
Ped/bike-oriented parking lots	$$	+	+/-	Yes
Shared access driveways	$$	+	+	Yes
Shared use path	$$	+	+/-	No
Sidewalk amenity zone	$-$$	+	+/-	Yes
Programs and Policies				
Access management overlay district	$	+/-	+	Yes
Bike/ped supportive code language	$	+	+	Yes
Design overlay zone	$	+	+	No
Education programs	$-$$	+	+	Yes
Enforcement	$-$$	+	+	Yes
Maintenance program	$-$$	+	+	Yes
Other pedestrians	$	+	+	Yes
Program effectiveness measures	$-$$	+	+	Yes
Residential speed watch program	$	+	+	Yes
Security enhancements	$-$$	+	+	Yes

Cost: **$** Low **$$** Medium **$$$** High Impact: **+** Positive **-** Negative **+/-** Mixed **N** None

TABLE 8: DESIGN ELEMENTS FOR TRAFFIC CALMING

		Cost Impacts	User Impacts						Sustainability Impacts				
DESIGN ELEMENT	**DETAILS & BENEFITS**	**Estimated Costs** $-$$$	**Pedestrians**	**Bicyclists**	**Motorists**	**Transit**	**Neighbors**	**Emergency Vehicles**	**Reduces Energy Consumption**	**Reduces Consumption of Material Resources**	**Reduces Impacts to Environmental Resources**	**Supports Healthy Communities**	**Supports Sustainability During Implementation**
On-Street Alternatives													
Bicycle boulevards	• A shared roadway intended for through-moving bicyclists • Limited to local motorized traffic by their geometric design • Traffic control features assign right-of-way to the boulevard at intersections encourages unimpeded bicycle traffic • Most beneficial when serving as an alternate parallel route to a high traffic, less bicycle-friendly arterial	$	+	+	+	+	+	N	+	+	+	+	+
Bicycle boxes	• A pavement marking- green box on road with a white bicycle symbol at intersections between the motor-vehicle stop line and the crosswalk • Implement consistently for every intersection in corridor • Brings cyclists into driver's sight • Allows cyclists a head start • Use only in conjunction with a bicycle lane. If not possible, use with a bicycle lane on the intersection approach	$	+	+	+/-	+/-	N	+/-	+	+	+	+	+
Bicycle lanes/space	• 5' minimum, both sides • Provide extra buffering, in combination with other elements • Takes bicyclists out of travel lanes, easing motorists' confusion • Use in conjunction with road diet • Use Share the Road signage, marked shoulders, and bicycle boulevards where road diet and bicycle lanes not possible • Provide appropriate MUTCD signage • Provide smooth roadway surfaces	$-$$$	+	+	+/-	+	+	+	+	+	+	+	+
Bus pullouts	• Removes stopped buses from traffic • Bus drivers may find it difficult to re-merge into traffic	$$	+/-	+/-	+	+/-	+/-	+	+	+/-	N	+	+

$ = Low Cost $$ = Medium Cost $$$ = High Cost + = Positive Impact - = Negative Impact +/- = Mixed Impact N = No Impact

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On-Street Alternatives Cont'd													
Crosswalks – high visibility	• Include pedestrian sign with supplemental arrow plaque; in-street pedestrian signs: MUTCD R1-6 (yield); and advance stop/ yield line signs: MUTCD R1-5 & R1-5a • Use saw tooth pavement markings in advance and place longitudinal markings where wheel tracks can be avoided to reduce wear, maintenance • Maintenance costs • Unsignalized crossings need further study and coordination with the County	$-$$	+/-	+/-	+/-	+/-	+	+/-	+	+/-	N	+	+
Curb extensions	• Reduces crossing distances and may reduce vehicular speeds • Creates protected parallel parking	$$	+	-	+/-	+/-	+/-	+/-	+	+	+/-	N	+
Drop bicycle lane at intersection	• Achieves the same as bicycle box without the designated space • Casual cyclist may feel less comfortable, although safer to drop the lane and have cyclists merge earlier for left-turns if there is no bicycle box	$	+	+/-	+/-	+/-	N	N	+	+/-	N	+	+
Leading bicycle signal	• Allows cyclists a head start through intersection • Requires motorist and cyclist education • Requires bicyclists to be in own lane, which can be expensive to set up	$-$$	+/-	+	-	-	N	-	+/-	+	+	+	+
Leading pedestrian intervals	• Allows pedestrians a head start through crosswalk at intersection • WALK comes on 3 seconds prior to the vehicular green; pedestrians can enter crosswalk before turning vehicles arrive there • Requires motorist and pedestrian education	$	+	+/-	-	-	N	-	+/-	+	+	+	+

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On-Street Alternatives Cont'd													
Mountable curbs on medians or corners	• Allows bus drivers to maneuver around corners, if curb radius is too tight	$$	-	N	N	+	+/-	+	+	+/-	+/-	+	+
Neckdowns or street narrowing	• Helps pedestrians by having less pavement to cross	$$-$$$	+	+/-	+/-	+/-	+	+/-	+	+	+/-	+	+
No turn on red signs	• Bicyclist benefits • Needs further study to measure impact on vehicle LOS • Helps one crosswalk but hurts other	$	+/-	+/-	-	-	+	N	+/-	+	+/-	+	+
On-street parking	• Shields pedestrians from moving traffic • Opening car doors create potential hazard when used with bicycle lanes. Wide bicycle lanes help to alleviate this hazard. Reverse angle parking helps with bicyclist in driver's sightline, but requires more space and buffering than parallel parking.	$$-$$$	+	-	+/-	+/-	+	-	-	+/-	+/-	+/-	+/-
Refuge islands	• Also known as medians when >1 block • Use in conjunction with marked crosswalks with ADT > 12,000- allows pedestrians and cyclists to cross halfway and wait • Provides enhanced perception of safety for pedestrians and cyclists • Should be raised for increased visibility • Should be 6' min for pedestrians and 6-8' min for cyclists to provide sufficient space and separation from traffic lanes • Separate opposing traffic streams and minimize vehicle/vehicle and vehicle/pedestrian conflicts, but may increase traffic speeds • Need more right-of-way and can limit access to adjacent land	$$	+	+/-	+	+	+/-	+/-	+	+/-	+/-	+	+

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On-Street Alternatives Cont'd													
Road diet	• Allows for wider shoulder for cyclists or wider pedestrian area • Reduces vehicular speeds • Provides room for exclusive left turn lanes • Reduces frequency and severity of collisions • May reduce traffic volumes • Reduces crossing width and exposure for pedestrians • Can be used to provide on-street parking	$-$$	+	+	+/-	+/-	+/-	+/-	+	+	+	+	+
Share the road signage	• A "Share The Road" plaque is mounted below a bicycle warning sign (MUTCD W11-1 with W16-1), creating a sign assembly that advises drivers to watch for bicycle travel on the roadway	$	+	+	+/-	+/-	+/-	N	+	+	+	+	+
Signals-bicycle demand-actuated	• Allowing cyclists to trip the signal decreases unsafe movements	$$-$$$	+	+	+/-	+/-	+	+/-	+	N	N	+	+
Signals-pedestrian countdowns	• Informs pedestrians of how much "crossing time" is remaining • Use in combination with enhanced crosswalks and other features • Will become mandatory in next MUTCD standards	$	+	N	+/-	N	N	N	+	-	N	+	+
Signalization	• Signal controlled intersections help limit direct vehicle/vehicle and vehicle/pedestrian conflicts • Assigns right-of-way at intersections	$$$	+	+/-	+/-	+/-	N	+/-	+/-	-	N	+	+

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DESIGN ELEMENT	**DETAILS & BENEFITS**	**Estimated Costs** $-$$$	**Pedestrians**	**Bicyclists**	**Motorists**	**Transit**	**Neighbors**	**Emergency Vehicles**	**Reduces Energy Consumption**	**Reduces Consumption of Material Resources**	**Reduces Impacts to Environmental Resources**	**Supports Healthy Communities**	**Supports Sustainability During Implementation**
On-Street Alternatives Cont'd													
Signal timing, & phasing, progression	• Signals can be phased and timed to reduce vehicular delay overall or by approach • Progression may help reduce delay for higher-volume areas	$	+/-	+/-	+	+	+	N	+	+/-	N	+	+
Small curb radii at intersections	• Reduces crossing distance and vehicle turning speeds by creating tighter turns	$-$$	+	+/-	+/-	-	+/-	-	+	+	N	+/-	+
Smooth roadway surfaces	• Provide smooth seams between asphalt and gutter • Drainage grates should be bicycle friendly (no parallel-running grates)	$-$$	+	+	+	+	+	+	+/-	+/-	N	+/-	+
Turn lanes	• Left turn lanes, in particular, allow through traffic to continue to move and reduce the potential for rear-end collisions • Use in conjunction with road diet • At signalized intersections, creating separate phases along with turn lanes may increase overall delay	$-$$	+/-	+/-	+/-	+	+/-	+	+/-	-	N	+/-	+
Off-Street Alternatives													
ADA accessible bus stops	• Provide ADA grades, transitions and surfaces at bus stop • Provide connection to sidewalk • Provide smooth, stable, and slip resistant surface	$-$$	+	N	N	+	N	N	N	+/-	+	+	+
Arcades	• Ground floor "promenades" can create sheltered outdoor areas	$$-$$$	+	N	N	N	+	N	N	+/-	+	+	+

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		Cost Impacts	User Impacts						Sustainability Impacts				
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Off-Street Alternatives Cont'd													
Bicycle lockers	• Provides storage options at appropriate location and can determine whether a cyclist uses this mode or not • Needs to be accessible to surrounding land uses • See program section: Bicycle and Pedestrian supportive code language	$	N	+	N	+	+/-	N	+	+	+	+	N
Bicycle racks	• Provides storage options at appropriate location and can determine whether a cyclist uses this mode or not • Needs to be accessible to surrounding land uses • See program section: Bicycle and Pedestrian supportive code language	$	N	+	N	+	+/-	N	+	+	+	+	N
Buffer area	• Need a 6'-8' minimum planting strip or tree wells in amenity zone; 8' is the minimum for large maturing trees • Provides extra separation between pedestrians and cars • Provides a more attractive environment • Can serve as a windbreak, if evergreen • Provides shade if deciduous in summer, & reduces heat island effect • Can reduce motorist speed due to decreased sight distance • Utilities should be placed underground when possible	$-$$	+	+	+	N	+	N	+	+	+	+	+
Buildings oriented onto the street	• Must include windows and doors facing street for more "eyes on the street" • Reduce the "blank wall" effect and provide stopping opportunities	$-$$$	+	+	+/-	+	+/-	N	N	N	N	+	+
Building awnings	• Clusters of awnings can combine with trees to create shade and shelter • Provides human-scale elements	$	+	N	N	N	+	N	N	+/-	N	+	+

$ = Low Cost $$ = Medium Cost $$$ = High Cost + = Positive Impact - = Negative Impact +/- = Mixed Impact N = No Impact

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		Cost Impacts	User Impacts						Sustainability Impacts				
DESIGN ELEMENT	**DETAILS & BENEFITS**	**Estimated Costs** $-$$$	**Pedestrians**	**Bicyclists**	**Motorists**	**Transit**	**Neighbors**	**Emergency Vehicles**	**Reduces Energy Consumption**	**Reduces Consumption of Material Resources**	**Reduces Impacts to Environmental Resources**	**Supports Healthy Communities**	**Supports Sustainability During Implementation**
Off-Street Alternatives Cont'd													
Lighting-pedestrian scale	• Identifies a "pedestrian and cyclist area" and can fill gaps between street lights • Provides additional lighting • Use in conjunction with sidewalk amenity zone	$$	+	+	+	+	+/-	+	-	-	+/-	+	+
Lighting-street	• Use where pedestrian scale lighting is not provided • Increases visibility and potential reduces conflicts for pedestrians, cyclists and motorists	$$	+	+	+	+	+/-	+	-	-	+/-	+/-	+
New or improved sidewalks	• Provides a separate space for pedestrians and way from travel lanes, particularly when combined with other buffers • 5' wide minimum for two people to pass comfortably and ADA supported • 6' + preferred in higher volume locations and to create more of buffer • No utility poles, street furnishings, or other obstructions in sidewalk • Minimize grates and other uneven surfaces	$$	+	N	N	N	+	N	+	+/-	-	+	+
Pedestrian and bicycle-oriented parking lots	• Revise site plan review standards for commercial properties to provide for bicycle accommodations between the street and the storefront • Provides direct pedestrian paths • Provides covered, secure bike parking • Provides safe and comfortable access to commercial properties for bicyclists and pedestrians • Provides seating near transit stops and corners	$$	+	+	+/-	+	+	N	+/-	-	+/-	+	+/-

$ = Low Cost $$ = Medium Cost $$$ = High Cost + = Positive Impact - = Negative Impact +/- = Mixed Impact N = No Impact

TABLE 8: DESIGN ELEMENTS FOR TRAFFIC CALMING

		Cost Impacts	User Impacts						Sustainability Impacts				
DESIGN ELEMENT	**DETAILS & BENEFITS**	**Estimated Costs** $-$$$	**Pedestrians**	**Bicyclists**	**Motorists**	**Transit**	**Neighbors**	**Emergency Vehicles**	**Reduces Energy Consumption**	**Reduces Consumption of Material Resources**	**Reduces Impacts to Environmental Resources**	**Supports Healthy Communities**	**Supports Sustainability During Implementation**
Off-Street Alternatives Cont'd													
Shared access driveways	• Consolidate driveways by sharing access between users • Reduces potential conflicts between pedestrians and turning vehicles • Use in commercial & retail blocks • Provide incentives for driveway reductions, such as shared parking provisions, street trees or perennial planting programs • Maintain sidewalks as concrete, and separate from driveway	$$	+	+	+	+	+/-	N	+	+	+	+	+
Shared use path	• Use where high pedestrian volumes are likely, & bicycle lanes not possible • Allows for pedestrians and bicyclists to share an off-street path • 10' minimum • Shared use path signage needed	$$	+	N	+	+	+	N	+	+/-	+/-	+	+
Sidewalk amenity zone	• Use where high pedestrian volumes are likely, and when possible, in combination with on-street parking • Reduce monotony • 8' recommended (buffer area between road and sidewalk) not including sidewalk with amenities such as street trees, street lights, benches, fountains, kiosks, transit amenities, and trash receptacles (minimum size: 5' without trees or 6' with small mature trees) • Provide benches at bus stops- benches for bus passengers makes waiting for bus more comfortable • If necessary, locate utility poles in the amenity zone and avoid poles in the sidewalk • Use pedestrian scale lighting where possible	$-$$	+	N	+	+	+	N	+	+/-	+/-	+	+

$ = Low Cost $$ = Medium Cost $$$ = High Cost + = Positive Impact - = Negative Impact +/- = Mixed Impact N = No Impact

TABLE 8: DESIGN ELEMENTS FOR TRAFFIC CALMING

		Cost Impacts	User Impacts						Sustainability Impacts				
DESIGN ELEMENT	**DETAILS & BENEFITS**	**Estimated Costs** $-$$$	**Pedestrians**	**Bicyclists**	**Motorists**	**Transit**	**Neighbors**	**Emergency Vehicles**	**Reduces Energy Consumption**	**Reduces Consumption of Material Resources**	**Reduces Impacts to Environmental Resources**	**Supports Healthy Communities**	**Supports Sustainability During Implementation**
Program & Policy Alternatives													
Access Management Overlay District	• Develop an access management overlay district to encourage businesses to share driveways • Provide incentives such as street trees or inexpensive snow removal	$	+	+	+/-	+	+/-	N	+	+	+	+	N
Bicycle and Pedestrian supportive code language	• Develop/augment zoning code and site planning language and guidance that enhances accessibility and safety for bicyclists and pedestrians	$	+	+	+/-	+	+	N	+	+	+	+	N
Design Overlay Zone	• Develop overlay zone to supplement base zone standards • Include special requirements that move towards the successful integration of land use and pedestrian amenities	$	+	+	N	+	+	N	+/-	+	+	+	N
Education Programs	• Develop education programs for pedestrians, bicyclists and motorists • Design programs to cater to different age groups	$-$$	+	+	+	+	+	+	+	N	N	+	N
Enforcement	• Increase police enforcement for pedestrian, bicyclist and motorist actions • Respond to special needs (such as seniors or school areas)	$-$$	+	+	+	+	+	+	N	N	N	+	N
Maintenance Program	• Plow and sweep regularly • Engage residents and businesses to participate in clean-up days • Neighborhood plantings or gardens	$-$$	+	+	+	+	+	+	+	+	+	+	N
Other pedestrians	• Increases the number of "eyes on the street"; not a design element, but good street design encourages more pedestrian usage	$	+	+	N	+	+	N	+	N	N	+	N

$ = Low Cost $$ = Medium Cost $$$ = High Cost + = Positive Impact - = Negative Impact +/- = Mixed Impact N = No Impact

TABLE 8: DESIGN ELEMENTS FOR TRAFFIC CALMING

		Cost Impacts	User Impacts						Sustainability Impacts				
DESIGN ELEMENT	**DETAILS & BENEFITS**	**Estimated Costs** $-$$$	**Pedestrians**	**Bicyclists**	**Motorists**	**Transit**	**Neighbors**	**Emergency Vehicles**	**Reduces Energy Consumption**	**Reduces Consumption of Material Resources**	**Reduces Impacts to Environmental Resources**	**Supports Healthy Communities**	**Supports Sustainability During Implementation**
Program & Policy Alternatives Cont'd													
Program Effectiveness Measures	• Develop measurement tools to track success of implemented recommendations • Possible measurements include: 1. # of crashes, injuries, fatalities 2. Behaviors 3. # of citations issued 4. # of people walking 5. Knowledge, opinions & attitudes 6. Changes in organizational activity 7. Monitor traffic volumes 8. Monitor traffic speeds	$-$$	+	+	+	+	+	+	N	N	N	+	N
Residential Speed Watch Program	• Like neighborhood watch programs • Residents take active role in changing driver behavior • Residents borrow gun/trailer units to record speed data • Yard sign campaign, "Respect our neighborhood, drive responsibly, drive 25 mph"	$	+	+	+/-	+	+	+	N	N	N	+	N
Security Enhance-ments	• More building windows • Better lighting • Safer, more visible bus shelters	$-$$	+	+	+	+	+	+	+	N	N	+	N

$ = Low Cost $$ = Medium Cost $$$ = High Cost + = Positive Impact - = Negative Impact +/- = Mixed Impact N = No Impact

TRAFFIC CALMING RECOMMENDATIONS

6

This section reviews the recommendations selected for the Dewey Avenue Corridor. Committee and public comments, cost, user and sustainability impacts, and appropriateness for the Dewey Avenue Corridor informed the selection of recommendations. The *Traffic Calming Recommendations Matrix* lists the preferred on-street, off-street, and program and policy alternatives and the corresponding issues and locations. The issues addressed by the recommendations include:

- No bicycle facilities, outside lane too narrow and no shoulders
- Pedestrian Level of Service (LOS) C or D
  - Lack of sufficient buffer
  - Poor sidewalk quality
  - High number of access drives introduce conflict and a lack of continuity for pedestrians
  - Inadequate crossing opportunities
  - Existing crossing needs enhancement
  - Lack of resting areas
  - No sidewalk
- Lack of pedestrian oriented, human scale environments in an area with high potential for walking
- Lack of bus stop comfort and safety amenities
  - Unsafe crossings
  - Lack of seating
  - No ADA access
- Resident/Pedestrian perception of high vehicle speed
- Concentration of bicyclist collisions with vehicles
- Concentration of pedestrian collisions with vehicles

To address these issues, the *Traffic Calming Recommendations Matrix* identifies preferred solutions. The following pages provide a detailed description and illustrations for each alternative that is recommended. The following solutions are recommended for the Dewey Avenue Corridor:

On-street Recommendations
- Bicycle boulevards
- Bicycle boxes
- Bicycle lanes/space
- Curb extensions
- High visibility crosswalks
- Refuge islands
- Road diet
- Signage and signalization changes

Off-Street Recommendations
- ADA-accessible bus stops
- Bicycle lockers
- Bicycle racks
- Sidewalk improvements
- Buffer areas
- Building changes
- Pedestrian-scale lighting
- Shared-access driveways
- Sidewalk amenity zone
- Coordinate with EBP
- Ped/bike oriented parking

Programs & Policies
- Access management overlay district
- Bike/ped supportive code language
- Education programs
- Maintenance programs
- Other pedestrians
- Program effectiveness measures
- Residential speed watch program

Just as there are already repeated elements along the corridor, it is important to remember that corridor solutions are repeatable, too. In fact, many of these recommendations will need to be used in multiple places to be effective.

Two figures, Figures 15 and 16, are included to illustrate the locations and dimensions for the recommended road diet, bicycle boulevards and crosswalks. Figure 17 illustrates the depaving concept suggested for the Eastman Business Park area.

TABLE 9: TRAFFIC CALMING RECOMMENDATIONS

ISSUES	SPECIFIC LOCATION	ON-STREET PREFERRED ALTERNATIVES**	OFF-STREET PREFERRED ALTERNATIVES**	PROGRAM & POLICY PREFERRED ALTERNATIVES**
Pedestrian Level of Service (LOS)* C or D				
Lack of sufficient buffer	Zone A	--	Buffer area	Maintenance program
Poor sidewalk quality	Zone A (East side, just north of Ridge Rd.) Zone 1 from Barnard St. to Shady Way	--	Sidewalks - improved	Maintenance program
No sidewalk	Zone C (East side) continuing into Zone 1 (East side until 170' south of Bennington)	--	Sidewalks - new	Maintenance program
Inadequate crossing opportunities	Zone 1 Florence Ave. intersection Zone 1 Eastland Rd. intersection Zone 3 Clark Pk. Intersection (south side) Zone 4 Sparling Dr. intersection Zone 6 Kaymar Rd. intersection	New high visibility crosswalks with refuge island ***	--	Pedestrian/bicyclist/motorist education Program effectiveness measures
Existing crossing needs enhancement	Zone A Ridge Rd. intersection Zone B Eastman Ave., and Merrill St. intersections Zone 1 Dalston Rd. intersection Zone 2 Stone Rd., and Maiden Ln. intersections Zone 5 Britton Rd., and English Rd. intersections and Northgate crossing Zone 6 Denise Rd. intersection Zone 7 Latta Rd. intersection	Improved high visibility crosswalks	--	Pedestrian/bicyclist/motorist education Program effectiveness measures
	Zone C McCall Rd. intersection Zone 1 Bennington Dr., and Ellington Rd., intersections	Improved high visibility crosswalks with curb bumpouts ***		
	Zone 3 Wildwood Rd. intersection Zone 4 Dorsey Rd. intersection	Improved high visibility crosswalks with curb bumpouts and refuge islands ***		
Lack of resting areas	Entire corridor at existing bus stops and/or every 1500'	--	Sidewalk amenity zone- benches	--
High number of access drives introduce conflict and a lack of continuity for pedestrians	Zone 5 (West side Britton Rd. to between English Rd. and Denise Rd.) Zone 6 (Just north of Denise, both sides)	--	Shared access driveways Pedestrian & bicycle-oriented parking lots	Create an Access Management Overlay Zone to consolidate driveways Pedestrian/motorist education
Resident and Pedestrian perception of high vehicle speed	Entire corridor unless specified	Road Diet (See Figure 15)	Buffer area where possible Pedestrian & bicycle-oriented parking lots	Residential Speed Watch Program Enforcement

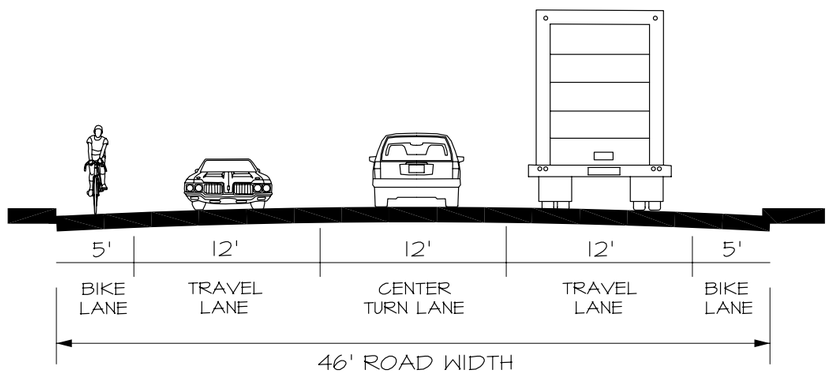
* Pedestrian LOS = Level of Service from "A" to "E," with "A" representing ideal pedestrian conditions, "C" representing an unacceptable score with a significant number of factors impacting pedestrian safety and comfort, and "E" representing unsuitable conditions. Common factors lowering the LOS included: lack of sufficient buffer width, inadequate crossing opportunities, lack of support facilities, and poor sidewalk quality.
** See Table 8: Design Elements for Traffic Calming for a description of all the alternatives that were considered.
*** May require road widening but will be determined with further analysis.

TABLE 9: TRAFFIC CALMING RECOMMENDATIONS

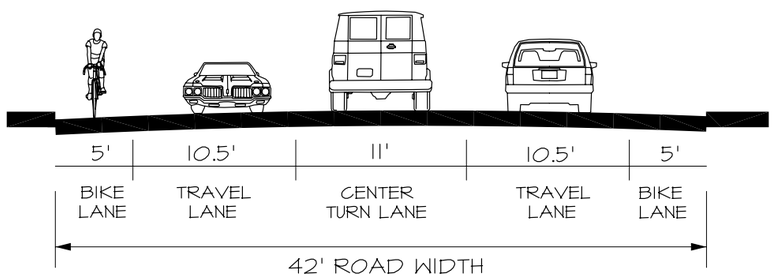
ISSUES	SPECIFIC LOCATION	ON-STREET PREFERRED ALTERNATIVES**	OFF-STREET PREFERRED ALTERNATIVES**	PROGRAM & POLICY PREFERRED ALTERNATIVES**
No bicycle facilities, outside lane too narrow and no shoulders	Zone C, 1 from north of Winchester Street to north of Williston Road Zone 3, 4 from Clark Park To Mosley Road Zone 6 from McGuire Road to Rumson Road	Road diet with bicycle lanes (or shoulders where width too narrow) and where volume and continuity allow. See Fig 15 Bicycle boxes at every signal	Bicycle racks and/or lockers at every commercial/retail establishment Pedestrian & bicycle-oriented parking lots	Bicyclist/motorist education Bicycle supportive code language Program effectiveness measures
	Zone A, B from Ridge Road to McCall Road with side road usage (Ridge Road to Bernice Street to McCall Road) Zone 1 from Bennington Drive to Clark Park with side road usage (Bennington Drive, Willis Ave, Stone Road, Willmae Road to Clark Park) Zone 5 from Sparling Drive to McGuire Road with side road usage (Sparling Drive, Tait Ave to McGuire Road)	Share the Road signage with Bicycle Boulevards on specified side roads Bicycle boxes at every signal	--	--
	Zone 7 from Rumson Road to Latta Road	Share the Road signage Bicycle boxes at every signal	--	--
Lack of pedestrian oriented, human scale environments in an area with high potential for walking	Zone A (East and west sides from Ridge Rd. to Eastman Ave.) Zone B (East and west sides from Eastman Ave. to Velox St. Zone C (East side) Zone 1 (East side from Barnard St. to Shady Way) Zone 6 (West side from McGuire Rd. to Rumson Rd.) Zone 7 (Rumson Rd. to Latta Rd.	Leading Pedestrian Intervals (LPI) *** Pedestrian Countdown Signals	Sidewalk amenity zone Sidewalks– improved Buffer area Buildings oriented onto street Building awnings Lighting- pedestrian scale Pedestrian & bicycle-oriented parking lots	Security enhancements Pedestrian supportive code language Other pedestrians
Lack of bus stop comfort and safety amenities				
Inadequate crossings	Entire corridor – see inadequate crossing opportunities and existing crossing needs enhancement above	See "inadequate crossing opportunities and existing crossing needs enhancement" on previous page	--	Pedestrian/bicyclist/motorist education
Lack of seating	Entire corridor at existing bus stops	--	Sidewalk amenity zone - benches	--
No ADA access	Zone C (East side)	--	ADA accessible bus stop	--
Concentration of bicyclist collisions with vehicles	Zone 2 (Stone Rd. intersection) Zone 5 (Northgate area) (See Figure 9)	Signals- bicycle demand-actuated Investigate no turn on red	Pedestrian & bicycle-oriented parking lots	Bicyclist/motorist education Program effectiveness measures
Concentration of pedestrian collisions with vehicles	Zone A (Ridge Rd. intersection) Zone 2 (Stone Rd. intersection) Zone 5 (Northgate area) (See Figure 9)	Crosswalks- high visibility Leading Pedestrian Intervals (LPI) *** Pedestrian Countdown Signals	Pedestrian & bicycle-oriented parking lots	Pedestrian/motorist education Program effectiveness measures

** See Table 8: Design Elements for Traffic Calming for a description of all the alternatives that were considered.
*** Recommendation will need to be further evaluated with HCM.

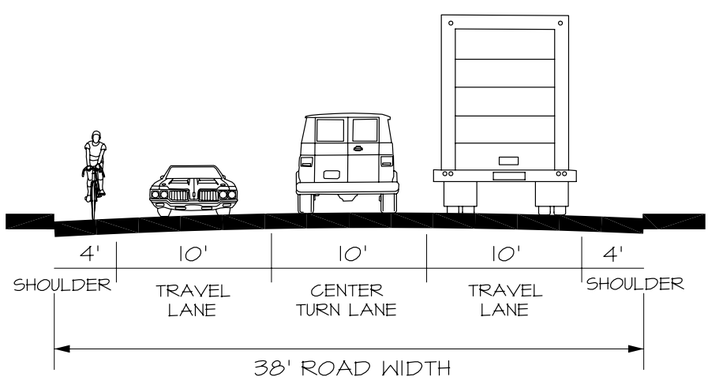
12' TRAVEL LANES, 12' CENTER TURN LANE, 5' BIKE LANES
46' WIDTH: BRITTON RD. TO DORSEY RD.
DORSEY RD. TO SOUTH OF BRIARCLIFF
NORTH OF WILLISTON TO STUDLEY ST.

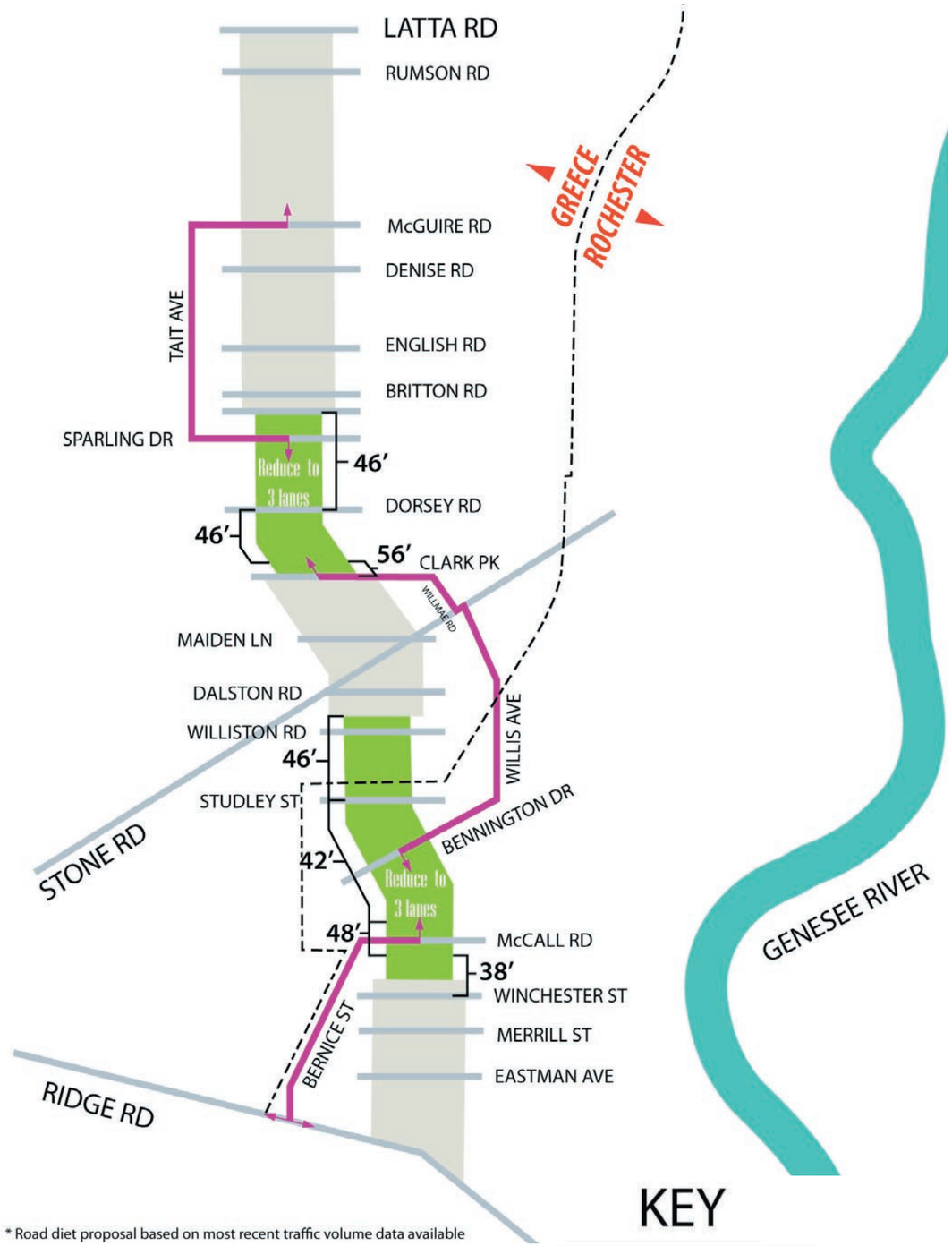


10.5' TRAVEL LANES, 11' CENTER TURN LANE, 5' BIKE LANES
42' WIDTH: STUDLEY ST. TO NORTH OF MCCALL RD.



10' TRAVEL LANES, 10' CENTER TURN LANE, 4' SHOULDERS
38' WIDTH: MCCALL RD. TO WINCHESTER ST.





* Road diet proposal based on most recent traffic volume data available

KEY

proposed road diet

unchanged roadway

proposed bike boulevard

N

Not to Scale

EDR

SRF ASSOCIATES

DEWEY AVENUE CORRIDOR TRAFFIC CALMING STUDY

City of Rochester and Town of Greece, Monroe County, New York

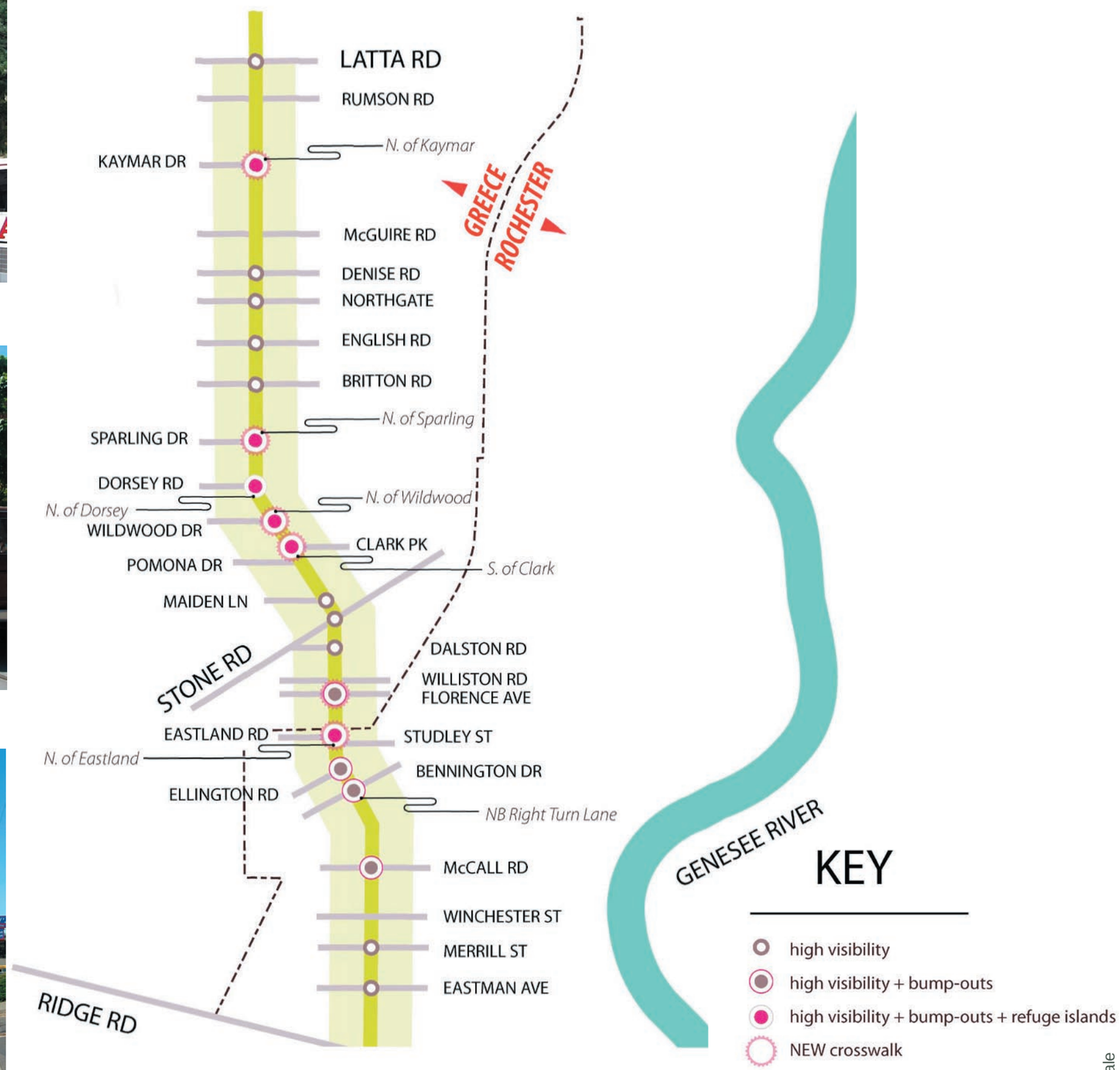
Figure 15 - Proposed Road Diets and Bicycle Boulevards

July 2010

HIGH VISIBILITY CROSSWALK

HIGH VISIBILITY CROSSWALK + CURB BUMP-OUTS

HIGH VISIBILITY CROSSWALK + CURBS + REFUGE ISLAND



EDR

SRF ASSOCIATES

DEWEY AVENUE CORRIDOR TRAFFIC CALMING STUDY

City of Rochester and Town of Greece, Monroe County, New York

Figure 16 - Proposed Crosswalk Upgrades

July 2010

RECOMMENDED ON – STREET ALTERNATIVES

DESIGN ELEMENT 1: BICYCLE BOULEVARDS

Description: Bicycle boulevards are low-volume streets that have been optimized for bicycle travel through traffic calming and diversion, signage and pavement markings, and intersection crossing treatments. Bicycle boulevards are shared roadway facilities that are comfortable and attractive to cyclists with a wide range of abilities and ages but are inconvenient as through routes for automobiles. Bicycle boulevards should be located on routes that serve major origins, destinations and travel corridors (often paralleling an arterial), and should be as direct and intuitive as possible. Residential roadways with already low vehicle volumes are often selected for bicycle boulevards.

Bicycle boulevards use a variety of traffic calming elements to achieve greater comfort and safety for bicyclists and pedestrians. For example, diverters can direct cars to main thoroughfares, while allowing bicycles and pedestrians to safely continue along the route. At some intersections, motorists may be restricted to a "right turn only", while pedestrians and bicyclists are allowed to travel straight. Barriers may restrict cars altogether, creating a cul-de-sac feel along part of the route. Traffic circles and speed humps can help to reduce vehicle speed through intersections.

At the very least, bike route signs could be used to indicate an alternative route that avoids the bottlenecks on Dewey Avenue. The signs would allow identification of the boulevards in a way that would be easily understood by bicyclists but that would not encourage motorists to use the boulevards as shortcuts even if the automobile discouragement features are not fully implemented.

Bicycle boulevards typically consist of one or more of the following conditions:

- low traffic volumes (or bike lanes where traffic volumes are medium);
- discouragement of non-local motor vehicle traffic;
- free-flow travel for bikes by assigning the right-of-way to the bicycle boulevard at intersections wherever possible;
- traffic control to help bicycles cross major arterial roads; and
- a distinctive look and/or ambiance such that cyclists become aware of the existence of the bike boulevard and motorists are alerted that the roadway is a priority route for bicyclists.

Illustrations:

Source: http://www.bicyclinginfo.org; http://www.livablestreets.com
Images: (L, R) David Baker & Partners Architects website, (C) City of Berkeley, CA website

RECOMMENDED ON – STREET ALTERNATIVES

DESIGN ELEMENT 2: BICYCLE BOXES

Description: A bicycle box is a colored area at a signalized intersection that allows bicyclists to pull in front of waiting traffic. Bicycle boxes are often used in conjunction with bike lanes, from which bicyclists pedal directly into the box. Designed for use only at red lights, bicycle boxes work best at intersections with a high volume of bicyclists. The boxes have no intended function when traffic is already in motion. Of particular concern is the "right hook" collision that can happen when drivers turn right as a bicycle starts straight through an intersection. Studies have found that bicycle boxes significantly reduce the number of crashes between right-turning motorists and bicyclists going straight. Bicycle boxes can be most effective when combined with a brightly colored lane continuing straight through the intersection to help alert right-turning motorists to the fact that bicycle riders may be traveling straight through the intersection along their right side.

A bicycle box is typically:

- A green 14-foot wide rectangular box on the road with a white bicycle symbol inside
- Marked in front of the stop line for motorists, but behind the pedestrian crosswalk
- Paired with a brightly colored (e.g. green) bike lane that extends through the intersection
- The width of one or more vehicular travel lanes and provides room for several bicyclists

A bicycle box has the following benefits:

- Improves bicyclists' visibility
- Enables bicyclists to get to the front of traffic at signalized intersections
- Allows a left-turning bicyclist to reach a better position for making a safe turn
- Reduces delay for bicyclists by providing space to "jump the queue" of waiting vehicles
- Thought to elevate the "status" of bicyclists relative to motor vehicles
- Distances motorists from crosswalks, providing a more pleasant crossing for pedestrians
- Allows bicyclists to reduce exposure to vehicle tailpipe emissions

While bicycle boxes are more common in other countries, it is still considered an experimental treatment in the United States, and has yet to be included in the MUTCD. Ideally, the controlling agency would apply for the use of bicycle boxes - at every signal on Dewey Avenue - as an experimental treatment through FHWA.

Illustrations:

Sources: Pedestrian & Bicycle Information Center; City of Portland Office of Transportation; www.livablestreets.com
Images: (L) www.spokesandbeans.wordpress.com, (C) www.bikeportland.org, (R) www.livablestreets.com

RECOMMENDED ON – STREET ALTERNATIVES

DESIGN ELEMENT 3: BICYCLE LANES/SPACE

Description: Bicycle lanes consist of a portion of the roadway that has been designated by striping, signing and pavement marking for the preferential or exclusive use by bicyclists. Striped bicycle lanes make the movements of both motorists and bicyclists more predictable. Bicycle-friendly cities such as Madison and Eugene have extensive bike lane networks. More recently, large cities such as Chicago, Philadelphia, and Seattle have begun to stripe bike lanes on their arterial and collector streets as a way of encouraging bicycle use. Dewey Avenue will have bicycle lanes further south in the City of Rochester, and would benefit from continuous striping. At the very minimum, edge line pavement markings with a four-foot curb offset could be provided in lieu of an identified bike lane.

In general, bicycle lanes should always be:

- one-way, carrying bicyclists in the same direction as the adjacent travel lane
- on the right side of the roadway
- located between the parking lane (if there is one) and the travel lane

Critical Dimensions - Bicycle lane width (AASHTO Guide):

- 4 feet: minimum width of bike lane on roadways with no curb and gutter
- 5 feet: minimum width of bike lane when adjacent to parking, with the bike lane located between the travel lane and the parking lane
- 11 feet: total width for shared bike lane and parking area, no curb face
- 12 feet: shared bike lane and parking area with a curb face

Critical Dimensions - Bicycle lane stripe width:

- 6-inch: solid white line separating bike lane from motor vehicle lane (possibly increased to 8-inches where emphasis is needed)
- 4-inch: optional solid white line separating the bike lane from parking spaces

Illustrations:

Source: Pedestrian and Bicycle Information Center <http://www.bicyclinginfo.org>
Images: (L) City of Richmond, BC, Canada website, (R) www.pedbikeimages.com - Dan Burden

RECOMMENDED ON – STREET ALTERNATIVES

DESIGN ELEMENT 4: CURB EXTENSIONS

Description: Curb extensions—also known as bumpouts or neckdowns—extend the sidewalk or curb line out into the parking lane, which reduces the effective street width. Curb extensions significantly improve pedestrian crossings by reducing the pedestrian crossing distance, visually and physically narrowing the roadway, improving the ability of pedestrians and motorists to see each other, and reducing the time that pedestrians are in the street. Curb extensions have been constructed throughout the area, including nearby on Lake Avenue in the City of Rochester.

Curb extensions placed at an intersection essentially prevent motorists from parking in or too close to a crosswalk or from blocking a curb ramp or crosswalk. Motor vehicles parked too close to corners present a threat to pedestrian safety because they block sightlines, obscure visibility of pedestrians and other vehicles, and make turning particularly difficult for emergency vehicles and trucks. Curb extensions also provide an excellent place to locate stop signs that will be more visible since they cannot be easily blocked by parked cars. The restricted street width created by curb extensions sends a visual cue to motorists to travel more slowly. Turning speeds at intersections can be reduced with curb extensions (curb radii should be as tight as is practicable).

Curb extensions must not extend into travel lanes, bicycle lanes, or shoulders (curb extensions should not extend more than 6 feet from the curb). The turning needs of larger vehicles, such as school buses, need to be considered in curb extension design.

A curb extension is designed to:

- Improve safety for pedestrians and motorists at intersections.
- Increase visibility and reduce speed of turning vehicles.
- Encourage pedestrians to cross at designated locations.
- Prevent motor vehicles from parking at corners.
- Shorten crossing distance and reduce pedestrian exposure.

Illustrations:

Source: www.walkinginfo.org
Images: www.pedbikeimages.org - Carl Sundstrom (L), Dan Burden (R)

RECOMMENDED ON – STREET ALTERNATIVES

DESIGN ELEMENT 5: HIGH VISIBILITY CROSSWALKS

Description: A crosswalk is (a) the part of the roadway at an intersection between the sidewalks on opposite sides of the highway, measured from the curbs or, in the absence of curbs, from the edges of the traversable roadway, or (b) any portion of a roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by lines or other markings on the surface. There are marked and unmarked crosswalks.

Marked crosswalks highlight the right-of-way where motorists can expect pedestrians to cross and designate a stopping location. They can also indicate optimal or preferred locations for pedestrians to cross. Marked crosswalks should be installed in conjunction with other enhancements that physically reinforce crosswalks and reduce vehicle speeds, particularly at uncontrolled locations and on major roads. Other enhancements include advance vehicle stop lines, curb extensions, and refuge (crossing) islands. An unmarked crosswalk is merely the part of a roadway that is included within the extensions of the sidewalk lines between opposite sides of the roadway at an intersection.

Although the MUTCD provides options for crosswalk markings, the continental design is recommended because research indicates that it is the most visible to drivers. The ladder design is created with white longitudinal lines at a 90-degree angle to the line of the crosswalk. The lines should be approximately 12 to 24 inches wide and spaced 12 to 24 inches apart. The continental design can also be installed so that the primary paths for vehicular tires are between the crosswalk markings, which helps to reduce wear and maintenance. Use of the continental design for crosswalk markings also improves crosswalk detection for people with low vision and cognitive impairments. It is important to note that crosswalks can also create a false sense of security for pedestrians.

Crosswalks should not be slippery, create tripping hazards, or be difficult to traverse. Tape is one of the best materials for marking crosswalks because it is highly reflective, long lasting, slip-resistant, and does not require a high level of maintenance if installed properly. Although initially more costly than paint, both inlay tape and thermoplastic are more cost-effective in the long run. Inlay tape is recommended for new and resurfaced pavement, while thermoplastic may be better on rougher pavement surfaces. Tape and thermoplastic are more visible and less slippery than paint when wet.

Illustrations:

Source: www.walkinginfo.org; http://www.fhwa.dot.gov/environment/sidewalk2/sidewalks208.htm
Images: (L) www.neighborhoodaccess.org, www.pedbikeimages.com - Dan Burden (C), Carl Sundstrom (R)

RECOMMENDED ON – STREET ALTERNATIVES

DESIGN ELEMENT 6: REFUGE ISLANDS

Description: A refuge island, also known as a crossing island, center island, median refuge area, pedestrian island, or median slow point, is a raised island placed in the street at an intersection or mid-block to separate crossing pedestrians from motor vehicles. Center refuge islands allow pedestrians to deal with only one direction of traffic at a time, enabling them to stop partway across the street to wait for an adequate gap in traffic before crossing the second half of the street.

Where mid-block or intersection crosswalks are installed at uncontrolled locations (i.e. where no traffic signals or stop signs exist), refuge islands should be considered as a supplement to the crosswalk. They are also appropriate at signalized crossings, though they should never be used to create a two-phased pedestrian crossing at a signalized intersection (don't leave pedestrian stuck on a crossing island between moving lanes of traffic). If there is enough width, center crossing islands and curb extensions can be used together to create a highly improved pedestrian crossing, but care should be taken to maintain bicycle access. Detectable warnings are needed at cut-throughs.

This kind of facility has been demonstrated to significantly decrease the percentage of pedestrian crashes. The factors contributing to pedestrian safety include reduced conflicts, reduced vehicle speeds approaching the island (the approach can be designed to force a greater slowing of cars, depending on how dramatic the curvature is), greater attention called to the existence of a pedestrian crossing, opportunities for additional signs in the middle of the road, and reduced exposure time for pedestrians. Refuge islands have been successfully used throughout the region.

The FHWA recommends raised medians (or pedestrian refuge islands) be considered in curbed sections of multi-lane urban roadways, particularly where pedestrians, high traffic volumes (exceeding 12,000 average daily trips per day), and intermediate or high travel speeds occur together. Medians/refuge islands should be at least 6 feet wide, but preferably 8 feet for pedestrian comfort and safety. They should also be of adequate length to allow the anticipated number of pedestrians to stand and wait for gaps in traffic before crossing the second half of the street. Maintenance concerns, such as snow removal, can be a concern.

Illustrations:

Sources: www.livablestreets.com, www.walkinginfo.org
Images: www.pedbikeimages.org / Dan Burden

RECOMMENDED ON – STREET ALTERNATIVES

DESIGN ELEMENT 7: ROAD DIET

Description: A road diet is a treatment given to an urban roadway in which the number of lanes is reduced, and the freed space converted to parking, bike lanes, landscaping, walkways, or medians. Road diets are implemented to provide additional pavement and safety for bicyclists and pedestrians, reduce speeding, and to make room for parking. Monroe County has successfully implemented other road diets in the vicinity, including one on Dewey Avenue. Recommended road cross-sections for Dewey Avenue are shown in Figure 15, although final design may differ slightly.

Road diets are anathema to traditional traffic engineering principles because they tend to reduce roadway capacity. However, in practice, road diets can cause vehicle speeds to readjust to a more optimal speed, increasing the throughput of vehicles per lane. For this reason, road diets sometimes reduce congestion, and generally always increase safety for all users of the roadway. The need for road diets comes from the fact that multi-lane urban roads are built to handle large volumes of traffic during the morning and evening rush hours. Generally, during the other 22 hours of the day, the road is larger than necessary. This abundance of pavement encourages speeding, and places bicyclists and pedestrians at far higher risk than a typical two-lane road.

The most frequent type of conversion is from four lanes to three, with the middle lane serving as a two-way turn lane (TWTL). Alternatively, the middle “lane” can be a raised median with breaks or left turn pockets for turns. Road diets involving streets serving up to 20,000 vehicles per day can substantially improve safety without significantly reducing roadway capacity. Most road diet projects result in the same or greater traffic volumes, but at a slower speed.

Dependent on the number of turning movements, the capacity of a three-lane road can be almost equivalent to that of a four-lane road, because it operates more efficiently, and because left-turning vehicles are removed from the flow of traffic, reducing delay. Three-lane roads are inherently safer because the most prudent driver sets the speed, there is only a single lane of on-coming traffic to monitor when turning left, and the two directions are separated by the TWTL or median.

Illustrations:

Sources: www.livablestreets.com, www.walkinginfo.org
Images: www.pedbikeimages.org / Dan Burden

RECOMMENDED ON – STREET ALTERNATIVES

DESIGN ELEMENT 8: SIGNAGE AND SIGNALIZATION PRIORITIES

	Leading Pedestrian Interval (LPI) - A pedestrian safety measure used at roadway intersections with traffic signals. Intersections with pedestrian and car traffic often experience conflict between these two groups, with potentially dangerous consequences for the pedestrians. The term LPI refers to when the 'walk' signal appears three or more seconds before the green traffic signal. The 'walk' signal then remains active for the duration of the green signal. This brief timing adjustment allows pedestrians more time to cross the street, and increases their visibility to drivers, especially those making turns. This does, however, reduce the intersection's capacity. LPIs are relatively simple and inexpensive to set up in intersections that already have traffic signals, requiring only a change in the phasing of the lights.
	'No Turn on Red' Signage – The Right-Turn-on-Red (RTOR) law requires motorists to come to a full stop and yield to cross-street traffic and pedestrians prior to turning right on red, but many motorists do not fully comply with the regulations. Prohibiting RTOR should be considered where and/or when there are high pedestrian volumes, where there is a proven problem with motorists conflicting with pedestrians, or where bicycle boxes are implemented. This can be just a simple sign posting, or there are some options that are more effective. For areas where a RTOR restriction is needed only during certain times, time-of-day restrictions may be appropriate. Prohibiting RTOR is simple and low-cost. However, it can help one crosswalk and hurt the other, for all right turns must occur while the light is green, at the same time pedestrians are crossing.
	'Share the Road' Signage – AASHTO describes signed shared roadways as "those that have been identified by signing as preferred bike routes" and recommends signing a shared signed roadway every 1/4 mile and at every turn (both to mark the turn and to confirm that the rider has made the correct turn). A "Share the Road" plaque is mounted below a bicycle warning sign, creating a sign assembly that advises drivers to watch for bicycle travel on the roadway.
	Bicycle Demand Actuated Signals - Demand-actuated traffic signals consist of an electrified loop of wire buried in the traffic lane approaches to the intersection, which sense the presence of traffic before changing signal phases in order to optimize traffic flow. Some loop configurations are more sensitive to bicycles than other configurations that are specifically designed for motorized traffic. Special pavement markings telling bicyclists where to stop can optimize the functioning of the demand-actuated signal. Requires dedicated bike space.
	Pedestrian Countdown Signals – Now required by MUTCD for all new installations, countdown signals provide pedestrians with information about the amount of time remaining in a crossing interval. Signals may be designed to begin counting down at the beginning of the walk phase (preferred) or at the beginning of the clearance (flashing DON'T WALK) interval. Countdown signals can be on fixed-time or pushbutton operation.

Sources: www.bicyclinginfo.org, www.walkinginfo.org, www.livablestreets.com, www.bikeplan.com/signal.html
Images: www.bicyclinginfo.org, www.pedbikeimages.org, www.colbyandstacy.files.wordpress.com

RECOMMENDED OFF – STREET ALTERNATIVES

DESIGN ELEMENT 1: ADA ACCESSIBLE BUS STOPS

Description: Both new and existing bus stops need to be ADA accessible. To be accessible, the following details need to be considered during design and construction:

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

Sources: http://www.adata.org/adaportal/Facility_Access/ADAAG/Special_Occupancies/ADAAG_10.html
Images: http://www.fhwa.dot.gov, http://dotlibrary.dot.gov

DESIGN ELEMENT 2: BICYCLE PARKING

Description: More than 1.5 million bicycles are reported stolen every year in the United States, and fear of bicycle theft is recognized as a significant deterrent to bicycle use. The availability of safe and convenient parking is as critical to bicyclists as it is for motorists and yet it is frequently overlooked in the design and operation of shops, offices, schools, and other buildings.

Bicycle parking needs to be visible, accessible, easy to use, convenient, and plentiful. Racks need to support the whole bike (not just one wheel) and enable the user to lock the frame and wheels of the bike with a cable or U-shaped lock. Parking should preferably be covered, well lit, and in plain view without being in the way of pedestrians or motor vehicles. And if any of these criteria aren't met, there's a good chance cyclists won't use what is provided and will park wherever they think their bicycle will be safe.

Bicycle parking facilities are sometimes classified into Class 1 and Class 2 facilities; Class One being lockers or racks in enclosed areas (providing protection from theft), and Class Two being stands or racks in unsupervised areas. However, most communities divide parking facilities into those that provide acceptable long-term or short-term parking. Short-term bicycle parking is usually

defined as being two hours or less, such as might be necessary outside a store, or for visitors to an office building or park. Long term parking usually suggests that the bicyclist is leaving the bike all day, or overnight, or for an even longer duration.

Visibility to bicyclists is critical, and when there is bicycle parking, it should be publicized. The racks can be painted in bright colors so that pedestrians and bicyclists can see them easily. Signs can be used to direct cyclists to the parking area. A bicycle logo can be painted on the rack or on the ground. The availability and location of bicycle parking can be publicized in marketing, advertising and informational pamphlets.

Wherever possible, bicycle parking should be covered to protect the bike from rain, snow and other elements, particularly with the weather patterns of Western New York. Covered parking areas should have at least six or seven feet of clearance, but not so high as to allow rain and snow to easily blow under the roof.

2A. BICYCLE LOCKERS

Obviously the level of security and protection from the elements needs to be greater, but the immediate convenience of the parking facility may not be as important. For secure, all-day or overnight parking, for instance, the Portland guide assumes that riders will be willing to walk a short distance (e.g.750 feet) to or from their destination.

Long-term parking options include:

- Lockers, individual lockers for one or two bicycles
- Racks in an enclosed, lockable room
- Racks in an area that is monitored by security cameras or guards (within 100 feet)
- Racks or lockers in an area always visible to employees

Perhaps the easiest solution is the bicycle locker. Generally they are as strong as the locks on the door. They are designed to be secure for individual bikes with panniers, computers, lights, etc, left on the bike. Some bike lockers are designed to be stacked so there is twice as much parking density. Good protection from the weather is another benefit. Bike lockers tend to be used most for long-term parking in areas without a lot of continuous oversight. On the downside, if lockers have coin-operated locks, they can be a target of theft, and may attract various non-intended uses.

Bicycle lockers are currently provided at several City of Rochester garages outside the study area.

Illustrations:

Images: http://www.transport.wa.gov.au/cycling/images/cycling_lockers.jpg, http://www.mcclellanparktma.org

2B. BICYCLE RACKS

Racks need to be sited and installed appropriately for them to be well used. Racks that are too close to the wall, or which don't have enough room between them, will end up sitting empty while nearby railings, trees and light poles continue to be used by bicyclists. Racks need to be clearly visible and accessible, yet shouldn't interfere with pedestrians or street furniture. Here are some considerations that have been identified by other municipalities. Racks should be:

- Installed in public space within municipal limits, usually on a wide sidewalk (ten feet wide or more) with five or more feet of clear sidewalk space remaining.
- Placed to avoid conflicts with pedestrians. They are usually installed near the curb and away from building entrances, crosswalks, fire hydrants, curb ramps, etc.
- Installed in bus stops or loading zones only if they do not interfere with boarding or loading patterns and there are no alternative sites.
- Visible to the cyclist.
- Only installed in concrete, as they cannot be securely anchored in asphalt. Racks cannot be installed on heated, vaulted, or architectural sidewalks.
- Within 50 feet of the main entrance to the building, or entrances that are used by cyclists.
- Well distributed (i.e., it is typically better to have four or five racks spread out along one city block rather than a group of four or five racks mid-block).
- Located in areas of high pedestrian activity to discourage would-be thieves.

Racks offer an opportunity for public art, but first and foremost must be functional for cyclists. Some municipalities specify that the inverted U-type bike rack is the required bicycle rack, although other racks may be proposed if they meet certain performance requirements. Every other current publication on bicycle parking follows essentially the same approach. Racks should:

- Support the frame of the bicycle and not just one wheel
- Allow the frame and one wheel to be locked to the rack when both wheels are left on the bike
- Allow the frame and both wheels to be locked to the rack if the front wheel is removed
- Allow the use of either a cable or U-shaped lock
- Be securely anchored
- Be usable by bikes with no kickstand
- Be usable by bikes with water bottle cages
- Be usable by a wide variety of sizes and types of bicycle

Illustrations:

Sources: http://www.ibike.org/engineering/parking.htm, http://www.bicyclinginfo.org
Images: (L) http://www.cyclesafe.com, (C) http://gothamist.com, (R) http://www.bikeride.com

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DESIGN ELEMENTS 3 & 4: SIDEWALKS AND BUFFER AREAS

Description: Sidewalks are pedestrian lanes that provide people with space to travel within the public right-of-way that is separated from vehicles in the roadway. They also provide places for children to walk, run, skate, ride bikes, and play. Sidewalks are associated with significant reductions in pedestrian collisions with motor vehicles. Such facilities also improve mobility for pedestrians and provide access for all types of pedestrian travel: to and from home, work, parks, schools, shopping areas, transit stops, etc. Buffer areas can be developed in association with sidewalks to provide a pleasant and inviting walking area, and make sidewalks safer.

FHWA recommends a minimum width of 5 feet for a sidewalk, which allows two people to pass comfortably or to walk side-by-side. Wider sidewalks of six feet or more should be installed near schools, at bus stops, in commercial areas, or anywhere high concentrations of pedestrians exist. Sidewalks should be continuous along both sides of a street and sidewalks should be fully accessible to all pedestrians, including those in wheelchairs. Utility poles, street furnishings or other obstructions should not be placed in the sidewalk, and uneven surfaces, such as grates, should be minimized. New or improved sidewalks are recommended in corridor zones where there is a high potential for walking but a pedestrian-oriented human scale environment is lacking.

A buffer area of six to eight feet is desirable for Dewey Avenue and should be provided to separate pedestrians from the street. Eight feet is the minimum for large mature street trees. The buffer area will vary somewhat depending on the character zone of the corridor. In commercial districts, a sidewalk amenity zone is more appropriate. Parked cars and/or bicycle lanes can provide a functional buffer area, but neither offers the aesthetic improvements provided by vegetation. In residential areas, a landscape strip is more suitable. Careful planning of sidewalks is important in order to provide adequate safety and mobility. For example, there should be a flat sidewalk provided in areas where driveways slope to the roadway.

Illustrations:

Sources: http://www.walkinginfo.org
Images: Town of Greece Dewey Avenue Corridor Study, 2007

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DESIGN ELEMENT 5: BUILDINGS

Architectural proposals for any physical changes to a building or site should first begin with the issues of massing, scale and spatial definitions, and end with the development and refinement of architectural details. Special attention should be paid to adjacent buildings and the context of the project site with its surroundings. In general, commercial and institutional structures should be oriented to the sidewalk, pedestrians and the street. In certain locations, however, institutional buildings may be located in a campus setting with open space near the street. Saint Joseph's Villa is one such location where these recommendations don't apply.

5A. BUILDINGS ORIENTED ONTO THE STREET

Appropriate siting and visual elements create attractive commercial centers that reflect the desired neighborhood character. New buildings should be located close to the public street. Small parking areas may be located in front of commercial buildings, but any additional parking should be located behind the businesses. Buildings and plantings should form an attractive visual edge to the roadway instead of a dominance of pavement and parking lots. Variety in building types, massing and small variations in setbacks should be encouraged, yet the general consistency of a building edge at a consistent setback from the curb should be maintained in commercial areas.

Building design should creatively reflect appropriate elements of the neighborhood. Main entrance doors should face the main streets. Retail and other active uses should be incorporated on the first floor. Diversity that is in tune with the massing, proportion, decorative design elements, and street relationships of traditional buildings should be encouraged. Clusters of buildings with internal open spaces are desired, rather than single buildings separated by vast expanses of parking lots. Old and new structures should appear as a consistent sequence in size and shape. Architectural detailing can be used to create variety and interest on new buildings.

5B. BUILDING AWNINGS

When buildings are located adjacent to the street, building awnings can be combined with street trees to provide shade and shelter for pedestrians. Buildings that are located closer to the street make for a pedestrian-scaled environment, and the awnings can make a streetscape even more human in scale.

Source: Town of Greece Dewey Avenue Corridor Study, 2007
Images: http://www.rochestercitynewspaper.com

RECOMMENDED OFF – STREET ALTERNATIVES

DESIGN ELEMENT 6: PEDESTRIAN-SCALE LIGHTING

Description: Good quality and placement of lighting can enhance an environment as well as increase comfort and safety. Pedestrians often assume that motorists can see them at night; they are deceived by their own ability to see the oncoming headlights. Without sufficient overhead lighting, motorists may not be able to see pedestrians in time to stop.

In commercial areas with nighttime pedestrian activity, streetlights and building lights can enhance the ambiance of the area and the visibility of pedestrians by motorists. Lighting can signify a pedestrian and cyclist area and fill gaps between streetlights. It is best to place streetlights along both sides of arterial streets and to provide a consistent level of lighting along a roadway. Nighttime pedestrian crossing areas may be supplemented with brighter or additional lighting. This includes lighting pedestrian crosswalks and approaches to the crosswalks.

In commercial areas, specialty pedestrian-level lighting may be placed over the sidewalks to improve pedestrian comfort, security, and safety. Mercury vapor, incandescent, or less expensive high-pressure sodium lighting is often preferred as pedestrian-level lighting. Low-pressure sodium lights are low energy, but have a high level of color distortion. Pedestrian-scale lighting in the Dewey Avenue Corridor should be implemented in conjunction with the sidewalk amenity zones.

Purpose:

- Enhance safety of all roadway users, particularly pedestrians
- Enhance commercial districts
- Improve nighttime security

Considerations:

- Ensure that pedestrian walkways and crosswalks are well lit.
- Install lighting on both sides of wide streets and streets in commercial districts.
- Use uniform lighting levels.

Illustrations:

Source: http://www.walkinginfo.org
Images: http://www.pedbikeimages.org / Dan Burden

RECOMMENDED OFF – STREET ALTERNATIVES

DESIGN ELEMENT 7: SHARED ACCESS DRIVEWAYS

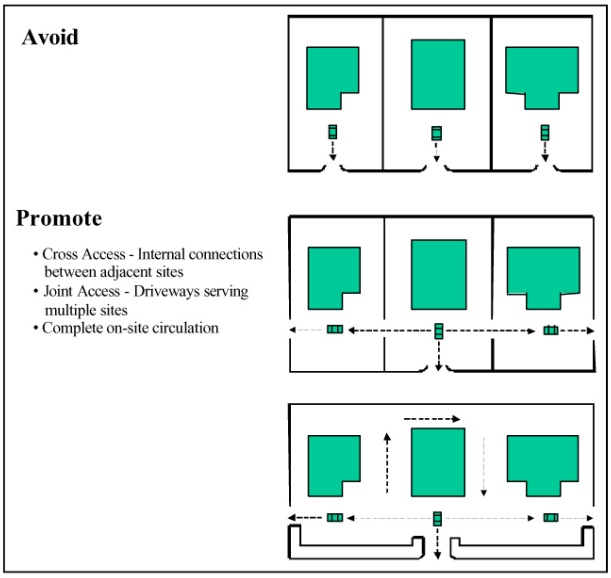
Description: Driveway spacing and driveway density are important considerations in managing access. When driveways are spaced too closely together or the number of driveways per block or mile becomes too large, a significant increase in traffic accident rates occurs. Traffic also tends to become congested more quickly in such situations. This is a concern on Dewey Avenue in Zones 5 and 6 in the Town of Greece, where a high number of access drives introduce conflict and a lack of continuity for pedestrians.

A shared driveway is when two or more adjacent properties use the same driveway for ingress and/or egress. Shared driveways are very common in newer commercial areas, for instance at strip malls, regional shopping centers, and office parks. Sharing driveways is good design practice since conflict points caused by motorists entering and leaving the businesses are reduced. This will, in turn, tend to reduce traffic accidents associated with turning traffic and improve the traffic flow on the main road.

Joint and cross access are formal, legal methods of ensuring that adjacent properties can share driveways. In the case of joint access, two adjacent property owners share a driveway along their common property line. In the case of cross access, one property owner has the legal right to access and use a driveway that is on the adjacent property owner's land. Joint and cross access can be built into private real estate titles through easements. They can also be encouraged or required in local planning or design standards or in municipal and county ordinances.

Sharing driveways is most valuable as an access management strategy when property frontages are short. For example, when the number of commercial properties along a typical 400 to 500 foot block face is more than three or four. A rule of thumb on driveway sharing in an urban or suburban area might be that properties with less than 50 to 60 feet of frontage along an arterial street should not have individual driveways. These properties would share driveways with neighboring properties. Three to four commercial driveways per block face is a desirable maximum standard for an urban or suburban arterial street. This means that when there are more than three or four parcels or commercial buildings on a block face, driveway sharing and cross access should be strongly encouraged. When the number of parcels and potential driveways along a block face is small, driveway sharing and joint and cross access are not needed.

Illustration:



Source: http://www.ctre.iastate.edu/research/access/toolkit/14.pdf
Images: http://www.ctre.iastate.edu/research/access/toolkit/14.pdf

RECOMMENDED OFF – STREET ALTERNATIVES

DESIGN ELEMENT 8: SIDEWALK AMENITY ZONE

Description: The beauty and livability of a community depends greatly on the design of its streets. The character and quality of the space between the curb and the face of a building has a lot to do with the way people walking in the community feel about it. Creating comfort for the pedestrian is an important way to generate positive economic activity on the streets.

Streetscape is composed of two elements: the clear walking area - the pedestrian zone - and the area between the curb and the sidewalk – the amenity zone. These zones are typically distinguished by a change in materials, from hard materials to greenery, though in areas of high pedestrian traffic the amenity zone may include less planting and more paving.

The purpose of the amenity zone is to ensure that the pedestrian zone will be free of obstacles. Depending on the design of the sidewalk corridor, the amenity zone may or may not be paved. On sidewalk corridors where the sidewalk is set back from the street, such as when a planting strip is provided, the amenity zone consists of the width of the unpaved area. On sidewalks that are paved from the curb to the property line, the amenity zone is not as clearly defined.

Elements that should be located in the amenity zone include: street trees, streetlights, street furniture (benches, fountains, etc), trash receptacles, kiosks, utility poles, and parking meters. The size recommended for the sidewalk amenity zone along the Dewey Avenue Corridor is eight feet wide, not including the sidewalk.

Sidewalk amenity zones should be used where high pedestrian volumes are likely, and when possible, in combination with on-street parking. Benches, in particular, are recommended to address some of the issues found along the corridor. The Town of Greece has already started to develop attractive resting areas along the corridor, and this should be continued.

Illustrations:

Sources: Downtown Jacksonville, FL Master Plan, http://www.fhwa.dot.gov/environment/sidewalk2/sidewalks204.htm
Images: http://www.pedbikeimages.org / Dan Burden

RECOMMENDED OFF – STREET ALTERNATIVES

SOLUTION 9: COORDINATE WITH EASTMAN BUSINESS PARK

Description: Eastman Business Park (EBP) is the redevelopment of portions of Kodak Park, Eastman Kodak Company's facilities near Ridge Road and Dewey Avenue. EBP is a self-sufficient manufacturing facility that consists of approximately 171 acres of land bounded by West Ridge Road, Dewey Avenue and Merrill Street. Roughly 50% of the buildings in the EBP have been demolished, and nearly 72 acres of land remain to be developed. The City of Rochester has been working with Eastman Kodak to identify action steps critical to redevelopment, including the re-zoning of many parcels as a planned development district. This district will have flexible land use regulations, streamlined review processes, and prohibitions on non-profit and certain non-conforming businesses. The planned development district will have three sub areas: 1) heavy industrial/corporate headquarters, 2) lighter industrial/commercial, and 3) commercial/residential. Opportunities exist that overlap with the improvements planned for Eastman Kodak's property.

1. Eastman Trail
The Genesee Land Trust has proposed the "Eastman Trail" through the EBP representing a significant east/west connection between the City's Genesee Riverway Trail at Kings Landing and the State's Route 390 Trail in the Town of Greece.

- The Genesee Riverway Trail is an urban multi-use trail adjacent to the Genesee River, used primarily by bicyclists, pedestrians, and cross-country skiers, that runs through more than 16 miles of land in the City of Rochester.
- The Route 390 Trail is 4.7 miles long and runs parallel and separate from the Route 390 highway between Route 104 and the Lake Ontario State Parkway in the Town of Greece, with other sections being planned.

The Eastman Trail is proposed to begin at Kings Landing (Lake Avenue & Maplewood Drive), proceed west along Eastman Avenue, continue westerly through Eastman Business Park and eventually connect to the planned Route 390 Trail in the Town of Greece, just north of Ridgeway Avenue. This project, if realized, would support the regional and citywide trail and alternative transportation efforts as well as the ongoing marketing efforts of the Eastman Business Park to lure new employers to their park and the region. The trail would cross Dewey Avenue at Eastman Avenue, and provide connections from the corridor to the regional trail network.

Trail planners anticipate that this connection will require a new pedestrian bridge spanning Mt. Read Blvd, serving both trail users and Eastman Business Park employees. This trail would establish two significant urban/suburban loops: the north utilizing the Eastman Trail, Route 390 Trail, Lake Ontario State Parkway Trail and the Genesee Riverway Trail; and to the south utilizing the Eastman Trail, planned Route 390 Trail, Canalway Trail and the Genesee Riverway Trail.

The Genesee Land Trust, with the support of the Eastman Business Park, approached the City and the Town of Greece to spearhead a conceptual study of the trail. Although the conceptual study was not funded in the most recent version of the Unified Planning Work Program, funding opportunities will be sought in the future.

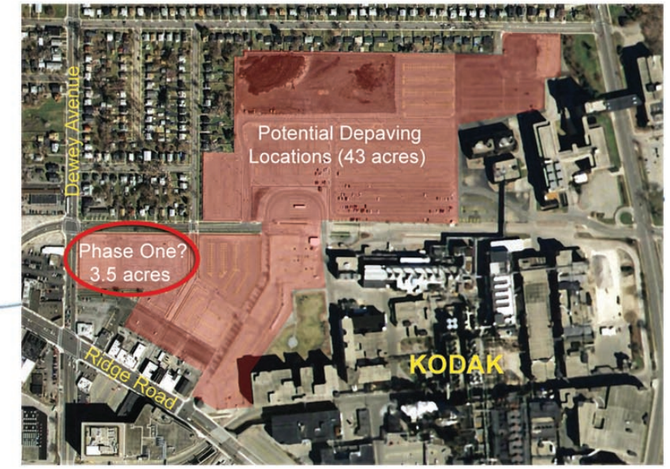
2. Depaving
Kodak has more than 43 acres of paved or unused areas that present opportunities for depaving excess parking capacity. Depaving is a relatively new term that denotes the act of removing asphalt

or concrete pavement and reclaiming the space for recreational or aesthetic uses such as a park or community garden. City Repair, a Portland, Oregon, nonprofit organization pioneered the concept in 2007, and it has spread to other U.S. communities. See Figure 17 for more information.

The benefits of depaving existing parking lots and adding urban vegetation include:

- Reduces "heat island effect" of increased summertime temperatures from heat generated off pavement
- Reduces pollutants entering watershed from stormwater runoff
- Adds aesthetic enhancement to areas and psychosocial benefits associated with green space
- Enhances air quality by removing particulate pollutants and carbon dioxide from the air while producing oxygen
- Restores habitat for birds, insects, and other wildlife
- Provides traffic calming effects when trees are planted along urban streets
- Provides ambient cooling from evapotranspiration of rain on the leaves

Existing Conditions (North of Ridge Road)



Depaving Opportunities

Kodak has approximately 43 acres of paved or unused areas that present opportunities to depave excess parking capacity. Any changes would need to be coordinated with plans for the Eastman Business Park.

Benefits of depaving existing parking lot and adding urban vegetation:

- Reduces "heat island effect" of increased summertime temperatures from heat generated off pavement
- Reduces pollutants entering watershed from stormwater runoff
- Aesthetic enhancement to areas and psychosocial benefits associated with green space
- Enhances air quality by removing particulate pollutants and carbon dioxide from the air while producing oxygen
- Restores habitat for birds, insects, and other wildlife
- Traffic calming effects when trees are planted along urban streets
- Ambient cooling from evapotranspiration of rain on the leaves

Proposed Conditions

EDR

SRF ASSOCIATES

DEWEY AVENUE CORRIDOR TRAFFIC CALMING STUDY

City of Rochester and Town of Greece, Monroe County, New York

Figure 17- Depaving Opportunities

July 2010

RECOMMENDED OFF – STREET ALTERNATIVES

DESIGN ELEMENT 10: PEDESTRIAN AND BICYCLE-ORIENTED PARKING LOTS

Description:
The physical layout of a development, particularly the parking lot, can often make the difference in a person's choice to walk between stores or to adjacent developments. Careful attention should be given to the location of buildings as well as the configuration of parking lots. Site plan review standards should be developed for commercial properties to accommodate bicycles and pedestrians between the street and the storefront. Figure 18: Pedestrian and Bicycle Oriented Parking Lot provides a diagram of good parking lot practices. Several provisions can ensure a better walking environment in commercial and office developments.

Building Setbacks. Buildings should not automatically be separated from the street by parking lots—this discourages pedestrian access and primarily serves those who arrive by automobile. A maximum setback requirement of 15 to 25 feet can help to encourage pedestrian activity. Parking, driving, and maneuvering areas should not be located between the main building entrance and the street. Parking lots should be located on the side and rear yards of the property whenever possible.

Building Orientation and Facades. Main building entrances should be oriented to face the street designated as a bus route. Entrances and paved walkways should lead directly to a bus stop. Visual interest is very important to pedestrians—long, blank walls with no openings onto the street discourage walking. Building facades should maintain continuity of design elements such as windows, entries, storefronts, rooflines, materials, pedestrian spaces and amenities, and landscaping. Parking garages on streets with bus service should have ground-floor street frontage developed for office, retail, or other pedestrian-oriented uses.

Onsite Walkways. For developments with multiple buildings and/or outparcels, all building entrances on the site should be connected by walkways to encourage walking between buildings and to provide a safe means of travel for pedestrians. Sidewalks between the building edge and parking lots should allow pedestrians safe and convenient access to building entrances without having to walk within driving aisles of parking lots.

Pedestrian Access Between Adjacent Developments. To encourage walking instead of driving between uses, sidewalks should connect those uses to adjacent activity centers. Barriers such as fences or vegetation should not be placed so as to hinder access between developments.

Lighting. Pedestrian-scale lighting should be designed to light the walkway, thereby increasing pedestrian safety. Pedestrian lighting should be used in addition to lighting provided for motorists' safety. Time-Saver Standards for Landscape Architecture includes an excellent chapter on desirable lighting levels for pedestrian facilities.

Improvements Between the Building and the Street. Design elements in the area between the building and the street are critical to successful pedestrian spaces. The streetscape should provide visual interest for the pedestrian. The area should be landscaped if project budgets allow.

Bicycle Parking. Provision of bicycle parking at destinations is crucial—without it, bicycling becomes far less convenient. Bicycle parking ordinances can help to improve the situation.

Parking Lot Design. Parking lots with 50 or more spaces should be divided into separate areas with walkways and landscaped areas in between that are at least 10 feet in width. Pedestrian paths should be designed with minimal direct contact with traffic. Where pedestrian paths cross the traffic stream, raised speed tables that slow cars while providing an elevated pedestrian walkway should be provided. Additional recommendations for pedestrian-oriented parking lots include:

1. Location. Keep parking on one or two sides of the shopping center, away from the side that will generate the most pedestrian access. This pedestrian access point could be an office park, outparcel shopping or restaurant, or a residential area.

2. Direct Pedestrian Paths. Provide a direct pedestrian path from parking lots and parking decks to the buildings they serve. Clearly delineate this path by striping, using different paving materials, or situating the path through the center of a series of strategically placed parking islands.

3. Use of Landscaping. Landscaping can be used to channel and organize the traffic flow in parking lots as well as to provide pedestrian refuge areas. Avoid open parking lots that allow cars to move in any direction.

Illustrations:

Source: U.S. DOT Federal Highway Administration http://www.tfhrc.gov/safety/pedbike/pubs/05085/chapt5.htm
Images: http://www.pedbikeimages.org / Dan Burden

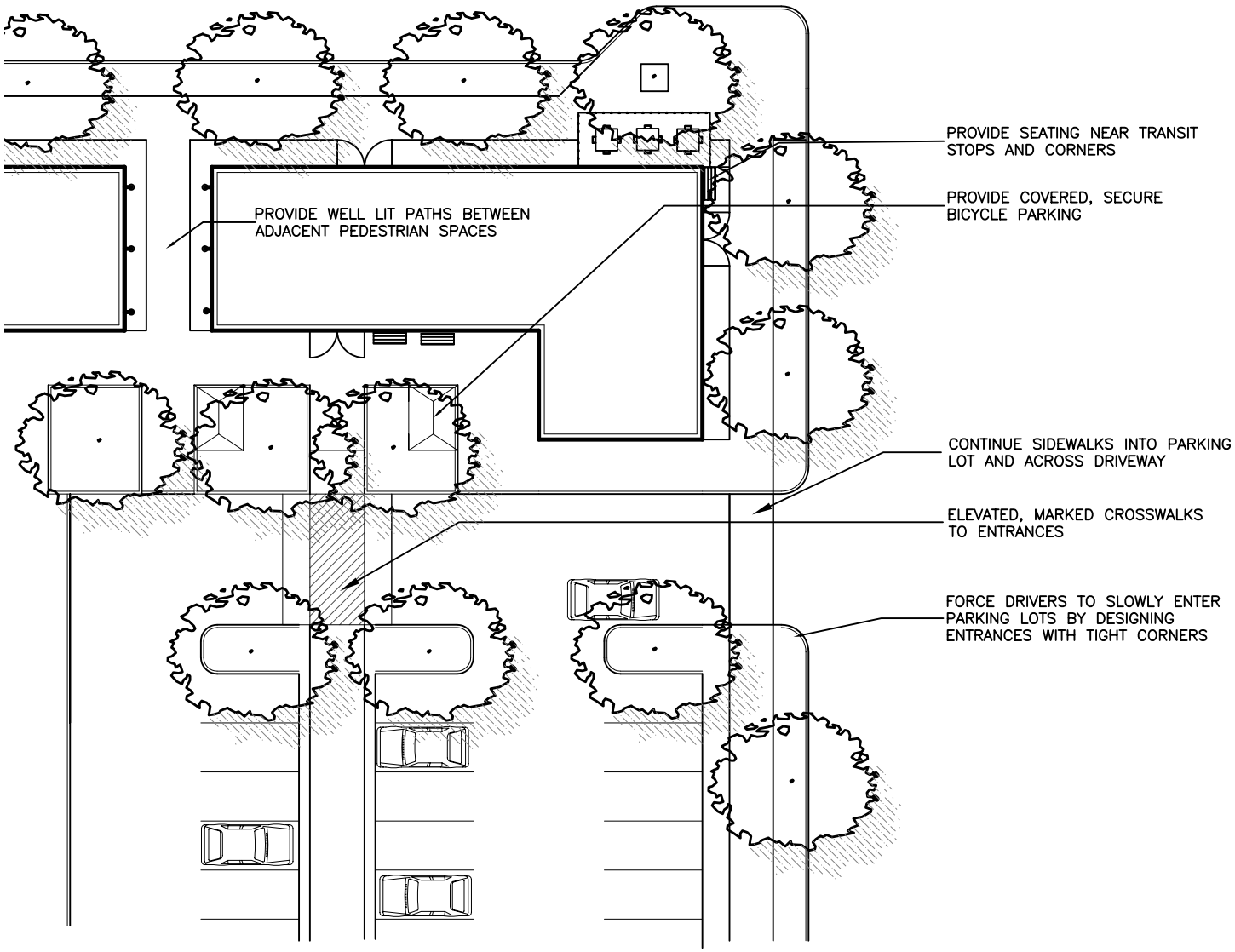
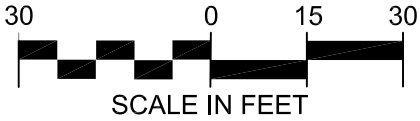


Table 5.2. Levels of Illumination for Sidewalks		
Location of Lighting	Lux (lx)	Footcandles (fc)
Sidewalks along Roadsides:		
Commercial Areas	10	0.9
Intermediate Areas	6	0.6
Residential Areas	2	0.2
Sidewalks distant from Roadsides	5	0.5
Pedestrian Tunnels	40	4.0

From "Timesaver Standards for Landscape Architects"

Notes:
–Parking should be confined to one or two sides of a shopping center or restaurant, away from the sides which generate the most pedestrian access.
–Provide direct pedestrian paths from parking areas to the buildings they serve, clearly delineating the path with paving or a raised bed.
–Adequate bicycle parking must be included – bicycling is inconvenient without it.

Adapted from FHWA Publication No. FHWA–HRT–05–133



Dewey Avenue Corridor Traffic Calming Study

City of Rochester and Town of Greece, Monroe County, New York

Figure 18: Pedestrian and Bicycle-Oriented Parking Lots

July 2010

EDR

RECOMMENDED PROGRAMS AND POLICIES

An **Access Management Overlay District** adds special requirements to existing zoning districts in a corridor, intersection or interchange. The requirements of the underlying districts are retained. Overlay districts can be developed to fit the unique characteristics of a particular area or corridor. If overlay districts are not developed properly, they can lead to complex regulations and significant administrative costs. The overlay district must be adopted by the governing body of the municipality (e.g. the Town of Greece) and incorporated in the existing zoning ordinance. The affected area must be designated on a map and the limits described in the ordinance. The district must be large enough to ensure adequate separation of driveways from an intersection or interchange. The requirements of the overlay district are not restricted to properties with frontage along a particular roadway. The zoning overlay district can also contain provisions for safe and convenient pedestrian, bicycle and public transportation access to commercial uses. (This solution is recommended to address issues in the Town of Greece that are not a problem in the southern end of the corridor in the City of Rochester. In addition, access management is a concern in other areas of the Town of Greece, and the issue may warrant a town-wide approach instead of creating a corridor-specific overlay district.) *Any changes in zoning should be coordinated with the Town of Greece's Mixed-Use Zoning District Planning Initiative.*

Source: http://www.smart-transportation.com/assets/download/BestPracticesinAccessManagement.pdf

Bicycle and Pedestrian Supportive Code Language - The Genesee Transportation Council completed a study in 2007 regarding bicycle and pedestrian supportive code language. The project identified examples of noteworthy zoning code and site planning language and guidance that enhance accessibility and safety for bicyclists and pedestrians. Five key findings emerged as areas where revisions to land use codes could be considered in support of bicycle and pedestrian travel: 1) require that developers include sidewalks within residential subdivisions, 2) work to infill gaps in the existing sidewalk network within each community; 3) ensure that bicycle parking is provided within new commercial development; 4) improve the integration of pedestrian facilities within automobile parking lots; and 5) locate buildings to the front of lot lines and parking toward the rear in order to support pedestrian access to the site. Examples were identified that should be considered by the Town of Greece and the City of Rochester as they seek to improve bicycle and pedestrian safety, access and attractiveness along Dewey Avenue. The technical memorandum and fact sheets provide additional details regarding each of these key findings and examples from various communities. *Any changes in zoning should be coordinated with the Town of Greece's Mixed-Use Zoning District Planning Initiative.*

It is important to note that some of the code language recommendations may apply to both municipalities, while some may apply to one, but not the other. In addition, the recommendation will need to be tailored to the specific municipality. One example is the recommendation that bicycle parking be required by the municipal code. The City of Rochester code already includes such a provision, but the Town of Greece might need to strike a middle ground that is flexible but ensures a comprehensive review. The Town should consider requiring its Site Plan Review Committee to specifically evaluate the impacts to pedestrians and bicyclists when it undertakes development review and consider mitigations such as appropriate design for parking lots and the provision of bicycle racks.

http://www.gtcmpo.org/Docs/PlansStudies.htm

Education Programs – Some of the recommendations for the Dewey Avenue Corridor will require outreach to, and education of, pedestrians, bicyclists and motorists. Educational programs should address the following objectives: 1) improving safety for bicyclists, pedestrians and motorists; 2) promoting awareness and usage of the bicycle and pedestrian network and amenities; 3) increasing community partnerships in providing resources for bicyclists and pedestrians; and 4) measuring and communicating user benefits and community impact. Many education programs already exist, and could be tailored to address the improvements planned for Dewey Avenue, or for different age groups. Educational programs should be specific, measurable, and address identified problems.

Maintenance Programs – The availability of bicycle and pedestrian facilities is one of the components that can lead to increased riding and walking in a community. However, if you build something, it will also need to be maintained. Maintenance needs require planning and budgeting. Sample maintenance activities include keeping roadways and bike lanes clean and free of debris, identifying and correcting roadway surface hazards, keeping signs and pavement markings in good condition, maintaining adequate sight distance, and keeping separate shared-use paths in good condition. Maintenance is an area where planning and attention can provide significant benefits for bicyclists and pedestrians at relatively modest additional cost. Identification of maintenance needs for roadways, bicycle facilities, and pedestrian amenities, and institutionalization of good maintenance practices are key elements in providing safe facilities for bicyclists and pedestrians. Winter snow removal and year-round debris removal will be key maintenance concerns along the Dewey Avenue Corridor. The importance of good planning and initial design cannot be overstated with respect to long-term maintenance needs. It is easier to obtain outside funding for facilities construction than for on-going maintenance, so planning and building correctly at the outset will reduce future maintenance problems and expense. Residents and businesses can be engaged in clean-up days, or maintaining neighborhood plantings or gardens.

http://www.bicyclinginfo.org/bikesafe/countermeasure.cfm?CM_NUM=-4

Other Pedestrians – The term 'eyes on the street' was coined by urban sociologist Jane Jacobs in her book, *Death and Life of Great American Cities*. The term is used by neighborhood watch programs across the country and is familiar to law enforcement officials as well. She wrote, "There must be eyes on the street, eyes belonging to those we might call the natural proprietors of the street. The buildings on a street equipped to handle strangers and to insure the safety of both residents and strangers, must be oriented to the street. They cannot turn their backs or blank sides on it and leave it blind. The sidewalk must have users on it fairly continuously, both to add to the number of effective eyes on the street and to induce a sufficient number of people in buildings along the street to watch the sidewalks."

http://www.cooltownstudios.com/2005/06/30/eyes-on-the-street

Program Effectiveness Measures can be used to determine if the recommended strategies have met their objectives, discover any areas that need change, justify funding, and provide guidance for similar programs. Baseline data is required prior to implementing recommendations. The Town or City could observe the outcomes or contract with a consultant to measure effectiveness on their behalf. Observable outcomes include: number of crashes, injuries, and fatalities; behaviors; number of citations issued; number of people walking or bicycling; knowledge, opinions and attitudes; changes in organizational activity; traffic volumes; and traffic speeds.

Residential Speed Watch Program - a public awareness program in which concerned citizens can take an active role in solving the problem of speeders in their own neighborhoods. Town/City residents can borrow radar guns or trailer units to record speeds and license numbers of cars traveling in excess of speed designations on neighborhood streets. Notification is sent from the Town/City to the registered owners of those vehicles. Often, drivers who speed through neighborhoods are unaware of the effect their actions have on the peace and safety of neighborhood streets. Notification from the Town or City encourages drivers to slow down. A Residential (or Neighborhood) Speed Watch Program encourages safe and prudent driving by motorists traveling on neighborhood streets.

An example of a speed watch program can be found at: http://www.rockvillemd.gov/police/programs/speedwatch.html

Security Enhancements – Based on the concepts of ”defensible space” or “crime prevention through environmental design”, enhancements can be made to the Dewey Avenue Corridor that will improve security and address the lack of pedestrian-oriented, human-scale environments in areas with a high potential for walking. Crime prevention through environmental design (CPTED) is a multi-disciplinary approach to reducing crime and increasing perceived safety. CPTED strategies depend upon the ability to influence offender decisions that precede criminal acts. These strategies seek to dissuade offenders from committing crimes by manipulating the physical environment in which those crimes occur, often using natural opportunities presented by the environment. Research into criminal behavior shows that the decision to commit a crime is more influenced by cues to the perceived risk of being caught than by cues to reward or ease of entry. Consistent with this research, CPTED-based strategies emphasize enhancing the perceived risk of detection and apprehension and require an understanding of what about the environment influences offenders. CPTED relies upon five overlapping strategies: surveillance, access control, territoriality, image/maintenance and activity support. Possible strategies might include: more building windows, better lighting, and safer, more visible bus shelters.

IMPLEMENTATION

7

This chapter discusses phasing, funding sources, and regulatory approvals needed to implement the recommended actions. An implementation matrix, Table 10, follows this section.

A. Phasing

The implementation of the recommended traffic calming strategies should be phased based on priority areas. The priority areas to be targeted are those with a high walk score and a low pedestrian LOS as shown in Figure 14: Walking Potential Vs. Deficiency. In addition, areas with a high incidence of pedestrian- and bicyclist-injury crashes should also be a priority in implementation.

High Priority Areas

- Ridge to Eastman (east side)
- Eastman to Velox (east side)
- Barnard to Shady Way (east side)
- Latta to Rumson (west side)
- Rumson to McGuire (west side)
- Velox to Ridge (west side)

The following locations have lower walk scores but also have low pedestrian LOS and should be considered next in terms of priority:

- Winchester to Bennington (east side)
- McGuire to Brookridge (west side) – this stretch spans several blocks
- Briarcliff to Maiden (west side)
- Beaumont to Dalston (west side)

The phasing of some of the physical improvements is contingent on the implementation of the Road Diet. That is, changes within the travel lanes, such as a bicycle lane, cannot happen until the Road Diet is approved and implemented. In addition, some of the recommendations will be most effective in conjunction with educational programs (e.g. bicycle boulevards).

The following distinctions have been made to identify appropriate timing:

- Short-term: Projects that will commence and be completed within 0-4 years.
- Long-term: Projects that will commence and be completed within 4-10 years.

The following lists identify the priorities and phasing of the recommended improvements.

On-Street Recommendations

High Priority, Short-Term

- Road Diet with bicycle lanes/shoulders *(see Figure 15)*
- High Visibility Crosswalks *(see Figure 16)*
- Share the Road signs
- Leading Pedestrian Intervals
- Pedestrian Countdown signals
- Bicycle Boulevards *(see Figure 15)*

High Priority, Long-Term

- High Visibility Crosswalk with curb bump-outs *(see Figure 16)*
- High Visibility Crosswalk with refuge island and curb bump-outs *(see Figure 16)*

Off-Street Recommendations

High Priority, Short-Term

- New Sidewalks and Sidewalk Improvements in high priority areas
- Bicycle Racks at Destinations
- Benches and Resting Points

High Priority, Long-Term

- Bicycle Lockers
- Pedestrian & Bicycle-Oriented Parking Lots
- Shared-Access Driveways
- Sidewalk Amenity Zones and Buffer Areas

Program and Policy Recommendations

High Priority, Short-Term

- Educational Programs
- Program Effectiveness Measures
- Maintenance Programs

High Priority, Long-Term

- Access Management Overlay District
- Bicycle and Pedestrian Supportive Code Language

Additional improvements are recommended in each category, but are of a lower priority and not listed above. All of the recommended actions are listed in Table 10.

B. Parking Concerns

On-street parking was discussed as a possibility for the Dewey Avenue Corridor. Several segments are not well suited to on-street parking. Much of the Corridor features single-family homes or other low-density residential and commercial uses, for which parking is adequately provided by private driveways or off-street lots. On-street parking in these areas would be underutilized and a poor use of vital right-of-way space.

There are two locations along the corridor where on-street parking would be desirable. These include the areas around Stone Road and Northgate Plaza, where there are several businesses, and many of the building setbacks are conducive to on-street parking. However, an analysis of roadway capacity has indicated that the existing and future traffic volumes are too high to reduce travel lanes in these segments of Dewey Avenue. Therefore, the roadway width is insufficient to provide a parking lane in these segments without physically widening the width of the travel way.

Access management, however, is still a concern and may require additional analysis. There is not a lack of parking; in fact, in areas, there is too much parking and excess pavement. However, as changes are made to the corridor, there may be a need to re-structure parking. Many of the small, existing parking lots are inefficient, creating sections of the corridor that are riddled with curb cuts. These areas are less safe for pedestrians and bicyclists, as well as vehicles.

The *Dewey Avenue Corridor Study* identified a number of issues and recommended strategies for the Town of Greece to consider in relationship to access management. These recommendations included shared parking strategies, municipal parking lots, codifying changes to minimum/maximum

parking requirements, and researching parking strategies in other successful mixed-use areas. Some of these recommendations may be pertinent to the section of the corridor in the City of Rochester, too. This study recommends an access management overlay district and pedestrian & bicycle-oriented parking lots to address some of the access management and safety concerns. The Town of Greece may want to address access management zoning issues on a town-wide basis, rather than on a corridor basis. Any changes to zoning in the Town of Greece should be coordinated with the mixed-use zoning revisions that are currently underway (at the time of printing).

C. Potential Funding Sources

1. Federal Sources

SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, formerly TEA-21 and ISTEA) – This program, which has been extended until December 31, 2010, is the latest multi-year, federal transportation legislation with many different funding programs for bicycle and pedestrian improvements. The following table shows a brief summary of the areas funded within the various programs. Please note that program requirements are likely to change when Congress takes action on the next surface transportation authorization. Additional information may be found at: http://www.fhwa.dot.gov/environment/bikeped/bp-guid.htm#bp4.

	NHS	STP	HSIP	SRTS	TEA	CMAQ	RTP	FTA	TE	BRI	402	PLA	TCSP	JOBS	FLH	BYW
Bicycle and pedestrian plan		*				*						*	*			
Paved Shoulders	*	*	*	*	*	*				*					*	*
Signed bike route	*	*		*	*	*									*	*
Shared use path/trail	*	*		*	*	*	*			*					*	*
Single track hike/bike trail							*									
Spot improvement program		*	*	*	*	*										
Bicycle lanes on roadway	*	*	*	*	*	*		*	*	*					*	*
Bike racks on buses		*			*	*		*	*							
Bicycle parking facilities		*		*	*	*		*	*							*
Trail/highway intersection	*	*	*	*	*	*	*								*	*
Bike storage/ service center		*		*	*	*		*	*				*	*		
Sidewalks, new or retrofit	*	*	*	*	*	*		*	*	*					*	*
Crosswalks, new or retrofit	*	*	*	*	*	*		*	*						*	*

	NHS	STP	HSIP	SRTS	TEA	CMAQ	RTP	FTA	TE	BRI	402	PLA	TCSP	JOBS	FLH	BYW
Maps		*		*		*					*					
Signal improvements	*	*	*	*	*	*										
Curb cuts and ramps	*	*	*	*	*	*										
Traffic calming		*	*	*									*			
Coordinator position		*		*		*							*			
Safety/ edu position		*		*		*					*					
Police Patrol		*		*							*					
Helmet Promotion		*		*	*						*					
Safety brochure/book		*		*	*	*	*				*					
Training		*		*	*	*	*				*					

KEY

NHS	National Highway System	BRI	Highway Bridge Program
STP	Surface Transportation Program	402	State and Community Traffic Safety Program
HSIP	Highway Safety Improvement Program	PLA	State/Metropolitan Planning Funds
SRTS	Safe Routes to School Program	TCSP	Transportation and Community and System Preservation Pilot Program
TEA	Transportation Enhancement Activities	JOBS	Access to Jobs/Reverse Commute Program
CMAQ	Congestion Mitigation/Air Quality Program	RTP	Recreational Trails Program
FLH	Federal Lands Highway Program	FTA	Federal Transit Capital, Urban & Rural Funds
BYW	Scenic Byways	TE	Transit Enhancements

An example of one of these programs is the Congestion Mitigation and Air Quality (CMAQ) program. CMAQ is a Federal-Aid reimbursement program that provides funding for surface transportation and other related projects that contribute to air quality improvements and reduce congestion. Funding is available for areas that do not meet the National Ambient Air Quality Standards (non-attainment areas) as well as former non-attainment areas that are now in compliance (maintenance areas).

Examples of transportation control measures that qualify for funding include:

- improved public transit,
- traffic flow improvements and high-occupancy vehicle lanes,
- shared-ride services,
- bicycle/pedestrian facilities, and
- flexible work schedules.

2. State Sources

Recreational Trails Program – The Recreational Trails Program is a State-administered, Federal assistance program to provide and maintain recreational trails for both motorized and non-motorized recreational trail use. This program is administered by the New York State Office of Parks, Recreation and Historic Preservation, but funds for the Recreational Trails Program are provided by SAFETEA-LU. The RTP legislation requires that States use 40% of their funds apportioned in a fiscal year for diverse recreational trail use, 30% for motorized recreation, and 30% for non-motorized recreation. This grant requires a 20% matching fund commitment from the applicant at the time of application. http://nysparks.state.ny.us/grants/programs/recreation.asp.

3. Local & Private Sources

Bonding – Bonds generate immediate financing and are appropriate for large-scale, permanent types of capital projects. General obligation bonds involve the taxing power of a municipality as it is pledged to pay the interest and principal to retire the debt.

Donations – Local clubs, interest groups, private developers and individuals should all be viewed as potential sources of money, services and labor for the development of new facilities and/or programs. The donor(s) determine what the funds would be used for. Property owners may also wish to donate land for public use/access.

Real Estate Taxes – The acquisition, development, operation and maintenance of the facilities may be partially supported by real estate tax revenue. Local tax revenues are the primary sources of maintenance and operating funds.

Sales Tax Increase – Municipalities may consider establishing a sales tax increase to generate general revenue for the acquisition and development of the facilities. In most areas, a tax increase for this purpose would require a public referendum and voter approval. This increase could be short-term or permanent.

The Foundation Center – The Foundation Center is the primary source of information on private funding sources, with information on over 40,000 foundations offering private monies. Grant information is delineated by geography, types of support, affiliations to facilitate research. Corporate giving and government funding sources can also be researched through the Foundation Center. For more information, please go to http://foundationcenter.org.

D. Regulatory Approvals

Many of the recommendations for the Dewey Avenue Corridor require the approval of different agencies and municipal boards. For on-street recommendations, any reduction in pavement width or changes to curb lines on Dewey Avenue within the City limits requires Traffic Control Board review and approval by City Council. Dewey Avenue is under the jurisdiction of Monroe County Department of Transportation (DOT) in the Town of Greece, and those same changes to the pavement in the Town portions of the corridor would need Monroe County DOT approval. All of the on-street recommendations may, in fact, require approval by the Monroe County DOT. New York State DOT approval is needed for improvements at intersections with State Roads.

Changes to adjacent streets in the Town of Greece, such as those that would be required for the bicycle boulevards, would require the approval of the Town of Greece Traffic Advisory Council and

the Greece Town Board. Any changes to public and private utilities may require review and/or approval by the utility provider. Review and approval by NYS Department of Environmental Conservation may also be required for certain recommendations, depending on the manner in which the recommendation is implemented.

For off-street recommendations, many of the actions do not require agency or municipal review and approval. Some may require review by the Town of Greece Planning Board or the City of Rochester Planning Commission. Most of the program and policy recommendations do not require regulatory approvals. However, code-related changes would need review and approval by the appropriate municipal boards and would be subject to the SEQR process. Regulatory approvals for each recommended action are specified in Table 10. Please note that the regulatory approvals specified is subject to change based on timing, municipal procedures, and the approach that each municipality takes to implement the recommended action.

E. Responsible Parties

The actions recommended by this planning study will involve a number of responsible parties. All of the on-street improvements are under the jurisdiction of the Monroe County DOT and/or the municipality. Off-street improvements related to sidewalks fall under the jurisdiction of the Town of Greece Department of Public Works, or the City of Rochester Department of Environmental Services. Most of the other off-street improvements and program/policy recommendations, however, provide opportunities for a number of partners to be involved in corridor improvements.

The *Dewey Avenue Corridor Study* (2007) recommended that corridor improvements be implemented through public-private partnerships coordinated by a business association or a business improvement district. Many of the off-street and program/policy recommendations identified in this study could also be implemented in this way. A business improvement district (BID) is a formal public/private partnership in which property and business owners elect to make a collective contribution to the maintenance, development, and promotion of their commercial district. A BID is typically formed to improve business conditions in a specific area, attract and retain businesses, generate jobs, and improve the quality of life for those who use the district. A BID enables stakeholders to decide which services to provide in order to meet the district's unique needs. BID programs and services are funded by a special assessment collected from property owners in the district, and would require the agreement of these property owners.

The *Dewey Avenue Corridor Study* recommended in 2007 that prior to the creation of a BID, a less formal business association could be established as an offshoot of the Chamber of Commerce or a neighborhood association. By partnering the business expertise of the Chamber with the local knowledge of the neighborhood association(s), an effective organization that is specifically focused on corridor revitalization could be developed. Over time, a business association would be able to communicate the usefulness of a business improvement district, and slowly transition into a more formal BID arrangement if the desire is present to do so. A basic business association was recommended in 2007 to get momentum started in the corridor.

Responsible parties for each recommended action are specified in Table 10. A few of the recommendations are the responsibility of the municipality and could be accomplished by representatives of the municipality, or by hiring a consultant to perform the tasks for them. Please note that the responsible parties identified in Table 10 are subject to change based on timing, municipal procedures, and the approach that each municipality takes to implement the recommended action.

TABLE 10: IMPLEMENTATION MATRIX - ON-STREET RECOMMENDATIONS

Recommended Action	Priority	Timing	Municipality	Location	Regulatory Approvals Needed*	Responsible Parties*
Road Diet with bike lanes/shoulders	High	Long	Greece	Mosley Road to Clark Park	MCDOT	MCDOT
Road Diet with bike lanes/shoulders	High	Short	Greece	North of Williston Road to Studley Street	MCDOT	MCDOT
Road Diet with bike lanes/shoulders	High	Short	Rochester	Studley Street to North of Winchester Street	City of Rochester, MCDOT	City of Rochester, MCDOT
High Visibility Crosswalks (5 are new crosswalk locations)**	High	Short	Greece	14 intersections	Town of Greece	Town of Greece
High Visibility Crosswalks (1 is a new crosswalk location)**	High	Short	Rochester	6 intersections	City of Rochester, MCDOT	City of Rochester, MCDOT
Share the Road signs	High	Short	Greece	Various locations	MCDOT	MCDOT
Share the Road signs	High	Short	Rochester	Various locations	MCDOT	MCDOT
Leading Pedestrian Intervals and Pedestrian Countdown Signals	High	Short	Greece	East side, Barnard Street to Shady Way	MCDOT	MCDOT
Leading Pedestrian Intervals and Pedestrian Countdown Signals	High	Short	Greece	Stone Road intersection	MCDOT	MCDOT
Leading Pedestrian Intervals and Pedestrian Countdown Signals	High	Short	Greece	Northgate Plaza area	MCDOT	MCDOT
Leading Pedestrian Intervals and Pedestrian Countdown Signals	High	Short	Greece	Both sides, Rumson Road to Latta Road	MCDOT, NYSDOT (at Latta Road)	MCDOT, NYSDOT
Leading Pedestrian Intervals and Pedestrian Countdown Signals	High	Short	Rochester	Both sides, Ridge Road to Velox Street	MCDOT, NYSDOT (at Ridge Road)	City of Rochester, MCDOT, NYSDOT
Bicycle Boulevard**	High	Short	Greece	McGuire Road to Tait Ave to Sparling Drive	Town of Greece	Town of Greece
Bicycle Boulevard**	High	Short	Greece	Clark Park to Willmae Rd to Stone Rd to Willis Ave	Town of Greece	Town of Greece
Bicycle Boulevard**	High	Short	Rochester	Willis Ave to Bennington Drive	City of Rochester	City of Rochester, MCDOT
Bicycle Boulevard**	High	Short	Rochester	McCall Road to Bernice Street	City of Rochester	City of Rochester, MCDOT
Curb Bumpouts**	High	Long	Greece	6 intersections (see Figure 16)	MCDOT	MCDOT
Curb Bumpouts**	High	Long	Rochester	4 intersections (see Figure 16)	City of Rochester, MCDOT	City of Rochester
Refuge Islands**	High	Long	Greece	5 intersections (see Figure 16)	MCDOT	MCDOT
Refuge Islands**	High	Long	Rochester	1 intersection (see Figure 16)	City of Rochester, MCDOT	City of Rochester
Investigate no turn on red	Low	Short	Greece	Stone Road intersection	MCDOT	MCDOT
Investigate no turn on red	Low	Short	Greece	Northgate Plaza intersection	MCDOT	MCDOT
Bicycle Boxes**	Low	Long	Greece	All traffic signals in corridor	MCDOT, NYSDOT (at State intersections)	MCDOT, NYSDOT
Bicycle Boxes**	Low	Long	Rochester	All traffic signals in corridor	City of Rochester, MCDOT	City of Rochester, MCDOT

On-Street Recommendations

Timing: Short-term - Projects that will commence and be completed within 0-4 years, and Long-term - Projects that will commence and be completed within 4-10 years.
* Subject to change based on timing, municipal procedures, and the approach that each municipality takes to implement the recommendation.
** These particular measures may require additional planning, design review, and community input prior to implementation.

TABLE 10: IMPLEMENTATION MATRIX - OFF-STREET RECOMMENDATIONS

Recommended Action	Priority	Timing	Municipality	Location	Regulatory Approvals Needed*	Responsible Parties*
Sidewalk improvements in area of poor sidewalk quality	High	Short	Greece	Barnard Street to Shady Way	None	Town Department of Public Works
Sidewalk improvements in area of poor sidewalk quality	High	Short	Rochester	East side, just north of Ridge Road	None	City Department of Environmental Services
New sidewalk	High	Short	Greece	East side, Town line until 170' south of Bennington Drive	Town Planning Board	Town Department of Public Works
New sidewalk	High	Short	Rochester	East side, along Holy Sepulchre Cemetery	City Planning Commission	City Department of Environmental Services
Bicycle racks	High	Short	Greece	Commercial and retail establishments	None	Public-private partnership
Bicycle racks	High	Short	Rochester	Commercial and retail establishments	None	Public-private partnership
Benches and resting points	High	Short	Greece	Entire corridor at existing bus stops and/or every 1500'	None (if located in ROW)	Town or Public-private partnership
Benches and resting points	High	Short	Rochester	Entire corridor at existing bus stops and/or every 1500'	None (if located in ROW)	City or Public-private partnership
Bicycle lockers	High	Long	Greece	Commercial and retail establishments	None	Public-private partnership
Bicycle lockers	High	Long	Rochester	Commercial and retail establishments	None	Public-private partnership
Pedestrian & bicycle-oriented parking lots	High	Long	Greece	Commercial and retail establishments	Town Planning Board	Public-private partnership
Pedestrian & bicycle-oriented parking lots	High	Long	Rochester	Commercial and retail establishments	City Planning Commission	Public-private partnership
Sidewalk amenity zone and buffer area	High	Long	Greece	East side, Barnard Street to Shady Way	Town Planning Board	Public-private partnership
Sidewalk amenity zone and buffer area	High	Long	Greece	West side, McGuire Road to Rumson Road	Town Planning Board	Public-private partnership
Sidewalk amenity zone and buffer area	High	Long	Greece	Both sides, Rumson Road to Latta Road	Town Planning Board	Public-private partnership
Sidewalk amenity zone and buffer area	High	Long	Rochester	Both sides, Ridge Road to Velox Street	City Planning Commission	Public-private partnership
Sidewalk amenity zone and buffer area	High	Long	Rochester	East side, Velox Street to City line	City Planning Commission	Public-private partnership
Shared access driveways	High	Long	Greece	West side, Britton Road to between English and Denise	Town Planning Board	Public-private partnership
Shared access driveways	High	Long	Greece	Both sides, Just north of Denise Road	Town Planning Board	Public-private partnership
ADA accessible bus stop	Low	Short	Rochester	East side, along Holy Sepulchre Cemetery	City Planning Commission	RGRTA
Sidewalk improvements	Low	Long	Greece	West side, McGuire Road to Rumson Road	None	Town Department of Public Works
Sidewalk improvements	Low	Long	Greece	Both sides, Rumson Road to Latta Road	None	Town Department of Public Works
Sidewalk improvements	Low	Long	Rochester	Both sides, Ridge Road to Velox Street	None	City Department of Environmental Services
Buildings oriented to street, building awnings, pedestrian scale lighting	Low	Long	Greece	East side, Barnard Street to Shady Way	Town Planning Board	Public-private partnership
Buildings oriented to street, building awnings, pedestrian scale lighting	Low	Long	Greece	West side, McGuire Road to Rumson Road	Town Planning Board	Public-private partnership
Buildings oriented to street, building awnings, pedestrian scale lighting	Low	Long	Greece	Both sides, Rumson Road to Latta Road	Town Planning Board	Public-private partnership
Buildings oriented to street, building awnings, pedestrian scale lighting	Low	Long	Rochester	Both sides, Ridge Road to Velox Street	City Planning Commission	Public-private partnership
Pedestrian scale lighting	Low	Long	Rochester	East side, Velox Street to City line	City Planning Commission	Public-private partnership
Buffer area	Low	Long	Greece	Entire corridor unless otherwise specified	Town Planning Board	Public-private partnership
Buffer area	Low	Long	Rochester	Entire corridor unless otherwise specified	City Planning Commission	Public-private partnership

Off-Street Recommendations

Timing: Short-term - Projects that will commence and be completed within 0-4 years, and Long-term - Projects that will commence and be completed within 4-10 years.
* Subject to change based on timing, municipal procedures, and the approach that each municipality takes to implement the recommendation.
** These particular measures may require additional planning, design review, and community input prior to implementation.

TABLE 10: IMPLEMENTATION MATRIX - PROGRAM AND POLICY RECOMMENDATIONS

Recommended Action	Priority	Timing	Municipality	Location	Regulatory Approvals Needed*	Responsible Parties*
Educational Programs	High	Short	Greece	Related to corridor improvements and safety issues	None	Public-Private Partnership
Educational Programs	High	Short	Rochester	Related to corridor improvements and safety issues	None	Public-Private Partnership
Program Effectiveness Measures	High	Short	Greece	Related to corridor changes and improvements	None	Municipality/Hire Consultant
Program Effectiveness Measures	High	Short	Rochester	Related to corridor changes and improvements	None	Municipality/Hire Consultant
Maintenance Programs	High	Short	Greece	Entire corridor, particularly Zone 1	None	Public-Private Partnership
Maintenance Programs	High	Short	Rochester	Entire corridor, particularly Zones A and C	None	Public-Private Partnership
Access Management Overlay District**	High	Long	Greece	West side, Britton Road to between English and Denise	Planning, Zoning & Town Boards, NYSDEC	Municipality/Hire Consultant
Access Management Overlay District**	High	Long	Greece	Both sides, Just north of Denise Road	Planning, Zoning & Town Boards, NYSDEC	Municipality/Hire Consultant
Bicycle and Pedestrian Supportive Code Language	High	Long	Greece	Entire corridor	Planning, Zoning & Town Boards, NYSDEC	Municipality/Hire Consultant
Bicycle and Pedestrian Supportive Code Language	High	Long	Rochester	Entire corridor	City Planning Commission, City Council, NYSDEC	Municipality/Hire Consultant
Security enhancements, other pedestrians	Low	Long	Greece	East side, Barnard Street to Shady Way	None	Public-Private Partnership
Security enhancements, other pedestrians	Low	Long	Greece	West side, McGuire Road to Rumson Road	None	Public-Private Partnership
Security enhancements, other pedestrians	Low	Long	Greece	Both sides, Rumson Road to Latta Road	None	Public-Private Partnership
Security enhancements, other pedestrians	Low	Long	Rochester	Both sides, Ridge Road to Velox Street	None	Public-Private Partnership
Security enhancements, other pedestrians	Low	Long	Rochester	East side, Velox Street to City line	None	Public-Private Partnership
Residential Speed Watch Program	Low	Long	Greece	Entire corridor unless otherwise specified	None	Public-Private Partnership
Residential Speed Watch Program	Low	Long	Rochester	Entire corridor unless otherwise specified	None	Public-Private Partnership

Program and Policy Recommendations

Timing: Short-term - Projects that will commence and be completed within 0-4 years, and Long-term - Projects that will commence and be completed within 4-10 years.
* Subject to change based on timing, municipal procedures, and the approach that each municipality takes to implement the recommendation.
** These particular measures may require additional planning, design review, and community input prior to implementation.

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