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4.1. Issue Area

As stated in the SMTC's *Bicycle and Pedestrian Plan*, roads in urbanized areas should generally include some form of pedestrian accommodation. In the city of Syracuse, in villages, and frequently in hamlets, major streets typically have sidewalks.

Residential and commercial areas developed since the 1950s sometimes include sidewalks but frequently do not. Without facilities with which to connect, it may seem nonsensical for an individual project to include sidewalks. However, the Federal Highway Administration advises that "Lack of a seamless system is no excuse not to provide parts of the system." (Federal Highway Administration, 2004)

Retrofitting roads with sidewalks can be challenging, particularly when property owners have made improvements to the public right of way that would be used for pedestrians. Prioritizing sidewalk projects and making them part of a larger, planned system can help stakeholders understand the need for new facilities.

A critical first step in assessing the need for new sidewalks is to ensure that there is an up-to-date inventory of existing sidewalks. The amount of detail in the inventory can vary. Many municipalities are wary of inventories that could expose them to liability under prior written notice statutes (see the [Prior Written Notice](#) section in [Chapter 2](#)). In the case of the Sustainable Streets Project, a block-level rating was utilized for the inventory of sidewalks within the City of Syracuse in order to provide an overall assessment of the degree to which a block's sidewalks complied with the City's sidewalk ordinance.

Sidewalks are not equally important on every street. A side street in a residential subdivision may see more use from kids on skateboards and parents pushing strollers than from cars and trucks, whether or not there are sidewalks. Most rural roads see so little pedestrian activity in a year that sidewalks would be underutilized. At the other end of the spectrum, a road that connects an apartment complex to a nearby school or grocery store is a relatively high priority for pedestrian facilities. Planning processes and tools are available to help communities with the many different cases in between these extremes, where it can be difficult to prioritize among needed improvements.

4.1.1 Sidewalk Inventory

The SMTC's 2005 *Bicycle and Pedestrian Plan* included an inventory of sidewalks for towns and villages in the Metropolitan Planning Area. The Sustainable Streets Project updated this inventory and also

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added an inventory for the City of Syracuse. The inventory was based on aerial photos, supplemented by site visits and online mapping resources such as Google's Street View tool (www.google.com) and Bing map's Bird's Eye view (<http://www.bing.com/maps/>).

The inventory of city sidewalks included a block-level rating, based primarily on two factors: continuity and material. Rating criteria were assigned on a scale of 0 to 100 and were based on the degree to which the sidewalk segment complied with the City's regulations, which state that sidewalks should be made of concrete, not asphalt, and should be continuous along the length of a block. Based on these requirements, the rating criteria were as shown in Table 4.1.

Table 4.1 – Sidewalk Rating Criteria for City of Syracuse Sidewalks

Rating	Criteria
0	NO SIDEWALK. No signs of sidewalk being present or having been present.
25	POOR COMPLIANCE. Large segments of the block are missing sidewalks, but not the entire block.
50	MODERATE COMPLIANCE. Mix of concrete and asphalt or completely paved with asphalt; small sections of block missing; sidewalk broken up by most driveways.
75	VERY GOOD COMPLIANCE. No gaps in paved surface and majority of block is paved with concrete; sidewalk broken up by some driveways.
100	PERFECT COMPLIANCE. No gaps visible in concrete surface, including driveways.

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4.1.2 Sidewalk Inventory Results

City of Syracuse

As noted in the SMTC's *Bicycle and Pedestrian Plan*, most of the City's streets have sidewalks. Nearly 600 miles of sidewalk were evaluated, and an additional 204 miles of street were identified as not having sidewalks (including nearly nine miles of roads in parks that do not have, but probably do not need, sidewalks).

As shown in Table 3.1, the majority of sidewalks in the city are being maintained more or less according to City ordinances. Fifty-seven percent of blocks in the city have scores of 75 or 100, indicating that they are continuous the length of the block. Nearly 300 miles of roadway in the city lacks continuous, maintained sidewalks.

Table 3.1 – Sidewalk Inventory – City of Syracuse

Sidewalk Inventory - City of Syracuse			
Block-level Rating		Sidewalk Mileage	Percent
0	No sidewalk present	204 ²	26%
25	Partial sidewalk present	78	13%
50	Minor sidewalk gaps, mix of materials	174	30%
75	No gaps, mix of materials	206	35%
100	Continuous concrete sidewalk	128	22%
TOTAL:		586	100%

Towns and Villages

As shown in Table 3.2, there are 245 miles of sidewalk in the towns and villages in the Study Area. These sidewalks are primarily concentrated in villages (164 miles). Villages have historically had a combination of both dense housing and multiple destinations in a relatively small area, making them highly walkable. As seen in [Chapter 3](#), most of the villages in the Study Area have a sidewalk ordinance of some kind.

² "No sidewalk present" mileage not included in total sidewalk mileage.

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Table 3.2 – Sidewalk Inventory – Towns and Villages

<i>In order by total mileage in inventory</i>					
Municipality/Government	Sidewalk Mileage	Percent	Municipality/Government	Sidewalk Mileage	Percent
Village of Solvay	26	11%	Village of Elbridge	3	1%
Town of DeWitt	21	9%	Town of Camillus	3	1%
Town of Salina	19	8%	Village of Camillus	3	1%
Village of Baldwinsville	18	7%	Village of Tully	3	1%
Town of Lysander (Radisson)	17	7%	Town of Geddes	3	1%
Village of Liverpool	16	7%	Town of Cicero	3	1%
Village of East Syracuse	15	6%	Village of Fabius	3	1%
Village of Fayetteville	14	6%	Town of Van Buren	2	1%
Village of Skaneateles	13	5%	Town of Clay	1	1%
Village of Phoenix	10	4%	Town of Manlius	1	1%
Village of Manlius	9	4%	Town of Lafayette	<1	0%
Village of North Syracuse	9	3%	Town of Lysander	<1	0%
Town of Onondaga	8	3%	Town of Marcellus	<1	0%
Village of Marcellus	7	3%	Onondaga Nation	<1	0%
Village of Jordan	5	2%	Town of Fabius	<1	0%
Village of Minoa	5	2%	Town of Skaneateles	<1	0%
Village of Central Square	5	2%	Town of Elbridge	<1	0%
			TOTAL:	245	100%

Source: SMTc Sidewalk Inventory. Towns with zero sidewalk mileage in the Study Area are not included: Towns of Hastings, Otisco, Pompey, Schroepfel, Spafford, Sullivan, Tully and West Monroe.

Sidewalks in towns are frequently, but not exclusively, found either in hamlets or in areas adjacent to villages or the City of Syracuse. In the Town of DeWitt, for example, ten of its 21 miles of sidewalk are located either in the Dewittshire neighborhood, the hamlet of Jamesville, or in a neighborhood adjacent to the Village of East Syracuse. There are also six miles of sidewalk along major corridors: West Genesee Street, Jamesville Road, Erie Boulevard and Thompson Road. The other five miles are scattered throughout the town, in school campuses or in residential areas.

The 17 miles of sidewalk identified in the Town of Lysander are primarily comprised of walkways within the Radisson community. These walkways provide connections within a largely residential area, but also between homes, businesses, parks and playgrounds. Radisson's walkways are unusual in that they are maintained by a single private entity (the Radisson Community Association) rather than private homeowners, and they primarily serve a recreational purpose.

4.1.3 SMTC's Pedestrian Demand Model

In 2013, the SMTC developed a Pedestrian Demand Model for its Metropolitan Planning Area (MPA). This model uses a combination of factors, such as proximity to schools, parks and grocery stores, as well as population density, employment density and demographic characteristics, to identify places that are "walkable" and, therefore, would be considered Priority Zones. Walkable, in this context, means that homes, businesses and public areas (such as schools, parks and libraries) are situated near one another, within a relatively short walk – generally considered to be less than a half-mile.

The model does not take into consideration whether or not there are existing pedestrian facilities, such as cross-walks, sidewalks and pedestrian signals. The Pedestrian Demand Model measures the degree to which land uses are clustered in such a way as to make them attractive to potential users. If a school, a park and a large apartment complex are all located within a half-mile of one another, this model will likely identify this area as a Priority Zone. This Priority Zone's geography can then be compared to the sidewalk inventory undertaken for this project, particularly along the roads with the highest speed limits and the most number of vehicles.

A detailed description of the Pedestrian Demand Model is provided in Appendix A. The model is based in geographic information systems (GIS) and uses a weighted overlay approach. The model was developed using GIS data layers, with each layer – such as a 1/4-mile buffer around all grocery stores – receiving a specific value. The entire study area was then split into "cells" (10 meter by 10 meter squares). When the values for all 18 of the layers in the model are added up for a specific cell, the total represents that cell's score on a scale of 0 to 100. See Table 4.3 for a list of the layers used in this analysis.

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Table 4.3 – Pedestrian Demand Model Input Layers	
Destinations	Neighborhood Characteristics
Schools	Population Density
Grocery Stores	Employee Density
Pharmacies	HHs w/o vehicles
Libraries/Community Centers	Percent Walking to Work
Post Offices	Percent Over Age 65
Town/Village/City Hall	Percent Under Age 18
Parks	Refugee Resettlement Areas
Convenience Stores	
Transit Stops	Pedestrian Detractors
Community Core	Pedestrian/Vehicle Collision Density

Based on the model's structure, farmland generally would receive a low score. A specific farm might get some points if it happened to be near a cluster of homes, but without other nearby destinations, such as schools or community centers, it would receive a score under 10 points, suggesting no significant demand for pedestrian facilities.

On the other hand, a cell in the middle of a village would likely receive a high score, because of proximity to destinations, housing and public spaces. With the exception of the Village of Jordan, every village in the study area has a Priority Zone associated with it.

The model's results can be displayed as a "heat map" (see Figure 4.1) that graphically represents the relative walkability of different places within the Study Area. The rural parts of the Study Area, such as the Towns of Otisco, Pompey and Spafford, have low scores and show as "cold" areas on the heat map: homes, businesses and other destinations are spread out. The City of Syracuse, particularly downtown Syracuse and the city's north side, are "hot". Scores are highest in these areas, in the high 80s and low 90s, indicating dense housing and destinations, such as schools and convenience stores, are clustered together.

Based on these outputs, the SMTC has identified Priority Zones, defined by the highest scores in the Study Area. The threshold for evaluating an area as a possible Priority Zone was a score of 40 points. To reach a score of 40, a cell had to have a combination of the items listed in Table 4.3, such as being near several destinations (a school, a pharmacy, a grocery store, etc.) and having certain demographic characteristics, such as a high population density and a higher than average proportion of households without vehicles.

The model identified most of the City of Syracuse as a single, large Priority Zone. In order to identify the areas in the City with the greatest potential for pedestrian activity, a secondary analysis was conducted using a threshold of 66 points. This threshold defines a core area within the city. This area is likely to already have sidewalks, and should be considered a focus area for maintenance activities.

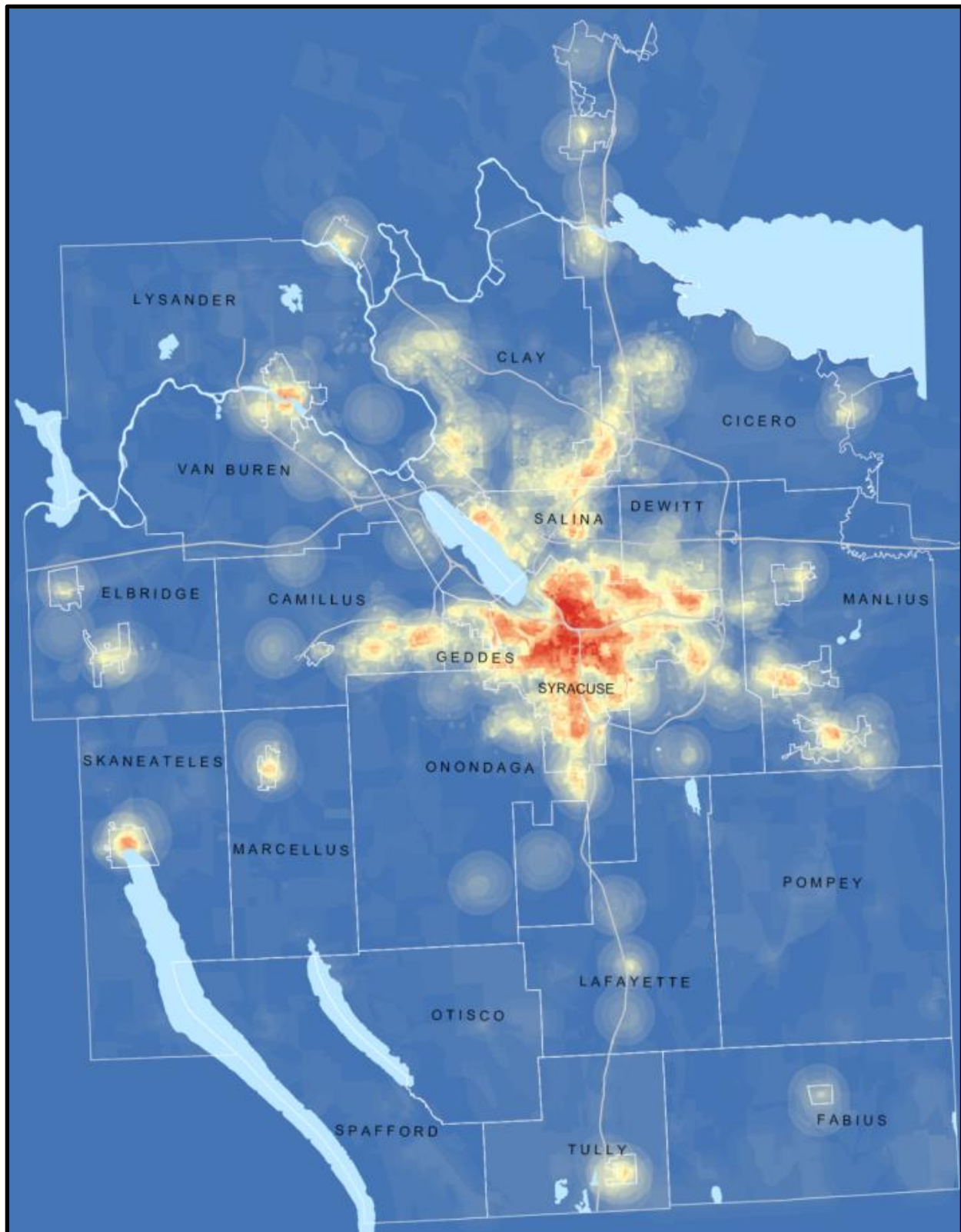


Figure 4.1 – Pedestrian Demand Model Results

Areas shown in dark red have the highest pedestrian demand scores, indicating the greatest potential for people to use sidewalks. Light yellow and blue areas have low pedestrian demand scores.

EVALUATION OF NEEDS

The Priority Zones identify road segments that are likely to see a substantial pedestrian demand and, therefore, warrant some type of accommodation for pedestrians. This does not necessarily mean that every segment in a Priority Zone requires sidewalks. The most appropriate pedestrian treatment for individual road segments within a Priority Zone may vary depending on the characteristics of the road.

Roads that carry more cars and that have higher speed limits often need additional design elements to secure a sense of safety for pedestrians. On local roads with lower traffic volumes and lower speeds, it is easier for pedestrians and drivers to avoid conflicts with one another, even if the only facility available for pedestrians is the roadway's shoulder.

The following evaluation is recommended for streets in Priority Zones:

- 1.) Is it currently safe and comfortable for pedestrians?

Major roads that lack sidewalks and have speed limits at or over 45 mph, and/or where there is no buffer between the curb and the sidewalk should be the top priority for a review.

- 2.) Are there sidewalks to schools, community centers, senior centers, medical facilities and libraries?

The pedestrian demand model takes numerous destinations into consideration, but the destinations that attract children, the disabled, and the elderly should receive special attention.

- 3.) Would a sidewalk and/or off-road path provide useful connections within or between zones?

The Priority Zone boundaries can be helpful in providing a geographic focus for analyzing possible connections on local roads, along abandoned rights of way, or through parks. Safe and attractive pedestrian connections within these Zones can link multiple origins and destinations. The roads that connect adjacent Zones should be evaluated to determine the probable level of pedestrian demand on critical connections.

Transportation planners classify roads into three broad categories: arterials, collectors and local roads. Local roads are spread throughout a community and frequently form a redundant network: several local roads may all lead to the same collector road. Collector roads, as the name suggests, collect local traffic and connect local roads to arterials. Arterials are the major thoroughfares in a community, providing connections from one side of a community to another, as well as between communities. Both arterials and collectors qualify as “major” roads in most cases and should be the first routes to be analyzed for gaps in the sidewalk network.

The Federal Highway Administration's online PEDSAFE Pedestrian Safety Guide and Countermeasure Selection System provides an excellent summary of pedestrian planning and sidewalk prioritization: http://www.pedbikesafe.org/PEDSAFE/guide_implementation.cfm.

MUNICIPAL SIDEWALK PLANNING

The Priority Zones should be considered a starting point for discussions related to sidewalk and pedestrian infrastructure planning. Municipal leaders, community groups, and transportation agencies should evaluate these Zones based on their own knowledge of the routes that residents use to access key destinations. Such scrutiny can serve as the basis for a long-term pedestrian plan at the town or village level that identifies gaps in the existing network and outlines a plan for improving both sidewalks and street crossings.

A pedestrian plan should address:

- The responsibility of new development or redevelopment to include pedestrian connections.
- The municipality's role in maintaining pedestrian facilities and in enforcing property owners' responsibility to maintain these facilities.
- Short-term improvements needed to close gaps.
- Long-term improvements needed to ensure safe pedestrian routes throughout the municipality.

Additional information will be needed to develop a thorough pedestrian plan for a community. Specifically, three important categories of information could not be included in the model and should be considered by any municipality interested in using the Priority Zones as the basis for planning:

- 1.) Detailed facility information: The SMTC's model uses functional class as a proxy for elements such as roadway width and vehicle speed, recommending that municipalities look first at making improvements to pedestrian facilities along arterials and collectors. Additional existing conditions information will help communities identify the locations where the greatest potential for pedestrian demand overlaps with the most critical gaps in the sidewalk network. Useful information might include: the presence, absence, and quality of amenities (such as street lights, curb ramps, and crosswalks), traffic volumes and traffic speeds.
- 2.) Local Plans and Proposed Development: Municipalities may have their own plans that identify locations for sidewalks or other pedestrian accommodations based on specific community goals, such as revitalization of a waterfront district or hamlet area. These existing plans should be incorporated into an overall pedestrian plan along with the Priority Zones. The pedestrian demand model identifies the locations likely to have the greatest pedestrian demand, but does not preclude the installation of pedestrian accommodations outside of the Priority Zones.

Also, the model does not capture proposed future development. The addition of a high-density residential subdivision or apartment complex can dramatically increase the number of people walking or interested in walking in a given area. Future projects should be considered in sidewalk planning decisions.

- 3.) Pedestrian habits or destinations that are unique to a community or a destination. Sites that regularly draw large crowds, like Paper Mill Island in Baldwinsville or the Regional Market in Syracuse, may have a greater need for well-developed pedestrian facilities than the model is capable of predicting. Municipalities should identify special use sites such as these and develop appropriate pedestrian circulation plans for them.

SIDEWALKS IN STATE OR COUNTY PROJECTS

The New York State Department of Transportation and county highway departments can use this set of Priority Zones to evaluate the need for pedestrian facilities in given projects. Under New York State's Complete Streets law, pedestrian access and mobility must be considered in the planning and design of highway projects that reconstruct or rehabilitate a roadway, unless one of four criteria are met:

- 1.) Pedestrians are not allowed on the roadway.
- 2.) The cost would be disproportionate to the need.
- 3.) There is a "demonstrated lack of need" based on land use, current and projected traffic volumes, population density, or a lack of community support.
- 4.) Use of the design features would adversely impact public safety.

The set of Priority Zones can be used to identify places in which the second and third of these criteria will not be true. However, as with municipal sidewalk planning, the Priority Zones are an evaluation done at the macro level; projects located outside of Priority Zones should be evaluated for specific pedestrian needs, such as access to a school or other destination.

4.2. Resources & Best Practices

4.2.1 Pedestrian Demand Models

The SMTC's model was based on similar models from around the country. Information on these plans and models can be found below.

Pedestrian Master Plan, City of Sacramento

http://www.cityofsacramento.org/transportation/dot_media/street_media/sac-ped-plan_9-06.pdf

Pedestrian Mobility Planning, City of San Diego

<http://www.sandiego.gov/planning/programs/transportation/mobility/pedestrian.shtml>

Pedestrian Planning, Duluth-Superior Metropolitan Interstate Council

<http://www.dsmic.org/default.asp?PageID=334>

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Pedestrian Master Plan, City of Seattle

http://www.seattle.gov/transportation/pedestrian_masterplan/

4.2.2 Planning

Bicycle and Pedestrian Plan, Syracuse Metropolitan Transportation Council

See the [Section 1.3](#) for a description of the SMTC's 2005 *Bicycle and Pedestrian Plan*.

PEDSAFE Pedestrian Safety Guide and Countermeasure Selection System, FHWA

The FHWA's PEDSAFE resource available online provides a wealth of information on both solving specific technical problems related to pedestrian safety and getting a pedestrian plan started.

- PEDSAFE
<http://www.pedbikesafe.org/PEDSAFE/>

Complete Streets Planning Checklist, NYSDOT

New York State's Complete Streets Law (S5411A-2011) requires that appropriate pedestrian accommodation be included in the design of all roadway projects that receive state and federal funding. In order to determine the need for pedestrian facilities in projects, NYSDOT has developed the "Complete Streets Planning Checklist".

- Complete Streets Planning Checklist (Draft)
[https://www.dot.ny.gov/programs/completestreets/repository/DRAFT_Complete Streets Checklist 9-20-13.pdf](https://www.dot.ny.gov/programs/completestreets/repository/DRAFT_Complete_Streets_Checklist_9-20-13.pdf)

Creating Walkable + Bikeable Communities, Initiative for Bicycle and Pedestrian Innovation, Portland State University

A comprehensive guide to developing neighborhood-level pedestrian and bicycle facility plans. This guidance provides an overview of the steps to be taken, including data collection, inventorying opportunities and constraints, developing goals and a vision, and coming up with recommendations and an implementation plan.

- Creating Walkable + Bikeable Communities
[http://www.pdx.edu/ibpi/sites/www.pdx.edu/ibpi/files/IBPI%20Master%20Plan%20Handbook%20FINAL%20\(7.27.12\).pdf](http://www.pdx.edu/ibpi/sites/www.pdx.edu/ibpi/files/IBPI%20Master%20Plan%20Handbook%20FINAL%20(7.27.12).pdf)

Urban Street Design Guidelines, City of Charlotte

Like New York State's Complete Streets policy, the policy of the City of Charlotte, North Carolina is to apply its Urban Street Design Guidelines to new and modified streets in the city. The City's Urban Street Design Guidelines provide criteria for assigning a given street segment to a specific category: Main Street, Avenue, Boulevard, Parkway, or one of several categories of Local Street. The Guidelines provide a cross-section for each type of roadway, as well as a six-step decision-making process to be followed.

- Urban Street Design Guidelines
<http://charmeck.org/city/charlotte/transportation/plansprojects/pages/urban%20street%20design%20guidelines.aspx>
- Policy Document
<http://charmeck.org/city/charlotte/Transportation/PlansProjects/Documents/USDGPolicyRecommendationsOctober2607.pdf>

Evaluation Process for New Pathway Investment, Town of Bethlehem

The Town of Bethlehem has developed an "Evaluation Process for New Pathway Investment" to rate possible sidewalk investments. This tool compares the anticipated benefit of the sidewalk to its anticipated costs and gives each proposed investment a letter grade (A through F) depending on the cost-benefit ratio. A relatively expensive project (over \$1 million) has to provide a substantial benefit (grade C or better) in order to "pass" this evaluation.

Elements used to rate a project's benefits include:

- Inclusion in a previously prepared plan or study
- Roadway functional class and average annual daily traffic volume
- Existing roadway speed
- Number of intersections and roadway crossings included
- Number of driveways crossed
- Presence or absence of existing bicycle and pedestrian accommodation
- Nearby destinations (within ½ mile)
- Residential population density
- Potential users nearby (schools, parks, etc.)
- Record of investment in bike and pedestrian facilities in an area

The documentation for this approach provides a detailed explanation of how the Town came up with its scoring system for each criteria.

- Evaluation Process for New Pathway Investment
<http://www.townofbethlehem.org/DocumentCenter/Home/View/3728>

Worth Walking, Village of Rhinebeck Pedestrian Task Force

The Village of Rhinebeck's Pedestrian Task Force prepared a comprehensive report on the state of its sidewalks and steps that could be taken to improve them. In addition to providing an excellent look at sidewalk maintenance funding issues at the village level, this study is valuable for its treatment of a frequently vexing issue: conflicts between tree roots and sidewalk slabs. The Task Force conducted an inventory of existing tree-sidewalk conflict points, including an evaluation of both the tree (its health and attractiveness) and the adjacent sidewalk. This helped clarify the set of alternatives being considered in each case to resolve the conflict.

- Worth Walking
<http://www.rhinebecknyvillage.org/PDF/Documents/2011/02-28-11SidewalkWorthWalkingReport.pdf>

A Citizen's Guide to Better Streets, Project for Public Spaces

This guide developed by the Project for Public Spaces is subtitled "How to engage your transportation agency." Its purpose is to act as a guide "to help citizens interact collaboratively and productively with their DOT." It serves primarily to provide the layman with the vocabulary and knowledge of planning and engineering processes needed to get involved with the transportation planning process. It also includes information on the role of MPOs in the planning process.

- A Citizen's Guide to Better Streets, Project for Public Spaces
http://www.pps.org/pdf/bookstore/How_to_Engage_Your_Transportation_Agency_AA_RP.pdf

Case Study Compendium, Pedestrian and Bicycling Information Center

Brief summaries of 100 different case studies are included in this resource. Case studies are split up according to major issue addressed: education, engineering, planning, or encouragement of non-motorized transportation. Each case study provides an overview of a problem, relevant background information, the solutions the community implemented and the results.

- Case Study Compendium
http://www.walkinginfo.org/case_studies/