

IMPROVING BICYCLING AND PEDESTRIAN SAFETY

**A Problem-Solving Manual
for Advocates and
Transportation Professionals
in New York State**

A Community Safety Campaign Project of the
New York Bicycling Coalition

Made Possible by funding from the
Governors Traffic Safety Committee

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ACKNOWLEDGEMENTS

NYBC is greatly indebted to the Governor's Traffic Safety Committee for providing the funding and staff support that made this manual and the county pilot program possible. We would especially like to thank Jim Allen, Maureen Dinon, and Brad Swartz.

Paul Winkeller, of NYBC, conceptualized this manual and provided insight and oversight throughout the entire process. Nicole Farkas was the NYBC staff person responsible for the manual's production. Jannell Shaw, also of NYBC, provided much of the research. Karen Oh did the design and layout, and Virginia Eubanks made it eminently more readable. NYBC staff member Jesse Day not only coordinated the input of the entire NYBC Board into the final version of this document, he also worked very closely with Board President Bill Eisenreich to shepherd this manual through the printing and statewide distribution process. We thank former Board Members Louis Rossi and Ben Serotta for their vision in setting up and advancing this project.

The valuable input of the entire NYBC Board into the final version of this manual should not be understated, especially Richard Brustman, transportation analyst. Thanks also to **NYBC Board Members**, Lois Chaplin, Bill Eisenreich, Ivan Vamos, and Irene van Slyke, **and others** who helped to produce and review this manual, including: the Association of Pedestrian and Bicycle Professionals and consulting engineers; Noah Budnick, Transportation Alternatives; David Bulman, P.E.; Alison Church, P.E., formerly of Greenman-Pedersen, Inc.; Jim Ercolano, Pedestrian Specialist, NYS DOT; Lou Ferrone, NYS DOT; Katherine Forster, CDTC; Sharon Heyboer, Oneida County; Robert Limoges, NYS DOT; Jeff Olson, Trailblazer; Karen Nolan, NYS DMV; Mike Salatti, P.E., Greenman-Pedersen, Inc; Jay Schissell, Chemung County Transportation Committee; and Elaine Troy, Healthy Heart Program. We thank former Board members Louis Rossi and Ben Serotta for their vision in setting up and advancing this project.

Special thanks go to the county working group members who volunteered their time and expertise. Each group represented a broad array of public agencies and private advocacy interests—the core constituencies targeted in this manual. We will be relying on these work groups, and others, for the successful delivery of the next phase in this project—which is the design and delivery of regional workshops throughout 2002. The workshops will utilize this manual as a centerpiece in training advocates and professionals to solve difficult problems in local road systems for the benefit of cyclists, pedestrians and anyone else with a desire to move safely and efficiently through our state's varied transportation landscape.

Information about the Governor's Traffic Safety Committee and other traffic-related information can be found at:
www.nysgtsc.state.ny.us



Contact information for these groups can be found on our website at www.nybc.net

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Monroe County Working Group: Steve Beauvais, Richard DeSarra, Frank Dolan, David P. Hrankowski, and Robin Salsbury.

Suffolk County Working Group: Mario Carrera, Ed Cohen, Frank Dowling, Bill Eisenreich, Dave Glass, Karl Klug, Gene Murphy, Joseph Perillo, Mike Salatti, John Saraceno, and Tricia Waring.

We would also like to call attention to the **great work being done in New York State by other groups also concerned with bicycling and walking**, including more than a hundred local cycling clubs (for this study, we worked with members of Paumonok Bicycling of Long Island, the Rochester Bicycling Club, and the Mohawk Hudson Cycling Club), the Department of Health’s Healthy Heart Program, Transportation Alternatives, The Tri-State Transportation Campaign, The Neighborhood Open Space Coalition, and Right-of-Way.

Many **national organizations** are responsible for increasing awareness of bicycling and pedestrian issues, including, among many others, the League of American Bicyclists, the National Bicycle Safety Network, the National Center for Bicycling and Walking, and the Surface Transportation Policy Project.



INTRODUCTION

This manual provides suggestions and user-friendly information-gathering tools for “bridging the gap” between advocacy and engineering. The goal is to enable two important constituencies with a shared interest in bicyclist and pedestrian safety to understand each other’s unique needs and perspectives.

The original concept for this manual came out of a desire to compile information that would promote better collaboration between experts and laypersons, but to do so using a hands-on approach. A working-group in each of four selected counties (Albany, Kings, Monroe, and Suffolk) helped choose locations in each county to serve as a baseline for understanding how one might go about creating project proposals for individual intersections. (See Chapter 8 for more background on selection of the county’s and individual intersections.) The advocates and transportation professionals who worked with us over the course of this manual’s development helped us understand and articulate some obstacles to communication, and some strategies for making improvements.

We realize the categories of “advocate” and “transportation professional” are somewhat problematic. For one thing, they are not mutually exclusive; many individuals may be both. The term “transportation professionals” refers to a wide range of engineers and planners, including consultants and government staff from the local, state, and national levels. “Advocates” is also a broad term, and one with which many people do not even identify; they may consider themselves nothing other than responsible, involved citizens.

Next Phase

This manual is the outcome of the first phase of the Community Safety Campaign. One important result is the understanding that an intersection-based approach does not lend well to solutions at the route-level. This is particularly evident in the case of bicycling infrastructure: the solutions presented in the intersection case studies in Chapter 8 are heavily weighted towards pedestrian solutions. Future studies should explore the application of good transportation design to longer routes in order to establish safe and comprehensive transportation networks.

Which brings us to Phase Two. This manual will serve as the basis for the next phase of the Community Safety Campaign, in which NYBC will hit the road, first in each of the four pilot counties and then around the entire state, to host training workshops with advocates and transportation professionals. These workshops will promote better communication between these two groups, centered around actual transportation projects in these communities. The need for route-level analysis will be an important part of this outreach phase.

Interested in taking part in a training workshop in your community?

We’d like to hear from you.

write us at
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PO Box 8868
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There are many sources for information about ISTEA and TEA-21.

See the DOT website
www.fhwa.dot.gov/teaz1/

BACKGROUND

Bicyclist and Pedestrian Crashes

Many bicyclist and pedestrian crashes are preventable. Better engineering, innovative and widespread education strategies, and enforcement of existing laws can make the difference.

The number of crashes involving cyclists and pedestrians is greater than generally recognized. In 1997, 383 pedestrians and 49 cyclists were killed in New York State. The number of injuries, over 30,000 in 1995, and the associated medical costs are equally astounding. On average, bicyclist and pedestrian-related crashes cause more serious injuries than those between automobiles.

Further, these crashes involve all age groups, and while the actual number of crashes may vary by population density, they occur in all areas—urban, suburban, and rural. These crashes represent great social tragedy to the individuals and families involved, and to society as a whole in terms of health-care costs and lost productivity.

Transportation Policy: ISTEA and TEA-21

Bicycling and pedestrian advocates are usually familiar with two pieces of legislation that have changed the course of transportation policy in the United States: the Inter-modal Surface Transportation Act (ISTEA), and its follow-up, the Transportation Equity Act (TEA-21). These acts made significant funds available for bicycling and pedestrian projects. Bicycling and pedestrian advocates should understand the basic outcomes of this legislation.

ISTEA changed transportation policy by specifying transportation planning be done for inter-modal transportation, that is, for diverse forms of transport not just motor vehicles. TEA-21 continued ISTEA's programs and provided additional funding for facilities.

Under ISTEA, Transportation Improvement Plans (TIPs) become the main vehicle for policy. Regional offices of state transportation departments develop lists of desired projects, TIPs, which the state compiles into a single list, called the Statewide Transportation Improvement Plan (STIP). Perhaps the surest way to get a project completed is to get it on one of these lists. Projects on the list will likely be funded and carried out.

But advocates must compete for limited space on the list. You can make a difference by participating in decision-making bodies, regional DOT offices, Metropolitan Planning Organizations (MPOs), and Bicycle and Pedestrian Advisory Committees that prepare TIPs and STIPs. Even a proposal is no guarantee work will actually be completed, as a variety of events may cause priorities to change.

And don't forget: advocates should not only work to get a project on the TIP, they should also be working to make sure that bike and pedestrian facilities are *integrated* into every highway and transit project on the TIP. This is how Seattle, Portland, Denver and other top cities are successful at getting results in the short term.

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chapter

1

HOW TO USE THIS MANUAL

Introduction

Successful Strategies

After the Proposal

The Value of Different
Approaches

This manual supplies strategies for transportation professionals and advocates to work more effectively together.

HOW TO USE THIS MANUAL

This manual debunks common myths about advocacy and engineering that impede progress toward making communities safer for walking and bicycling. For example, when advocates believe transportation engineering terms and principles are too complicated for them to understand, it constrains their ability to provide valuable input on design and policies. Similarly, when transportation professionals see advocates as purely emotional people who complicate their work, they miss out on a wealth of information and experience that may be used to improve transportation infrastructure. This manual supplies strategies for transportation professionals and advocates to work more effectively together.

We begin with an introduction to terms commonly used to talk about bicycling and pedestrian facilities. Gradually, the manual incorporates principles that can guide the process of designing bikeable and walkable communities. Some readers may want to skip directly to Chapters 7 and 8, which offer and illustrate a straightforward methodology designed to help non-professionals gather information, in a form they can use to illustrate problems and work for change. Traffic professionals may also find the later chapters useful for understanding how advocates' perspectives can enhance political and engineering processes.

Advocates and transportation professionals have similar goals: to create and maintain a safe, user-friendly, multi-modal road system. Advocates are often aware of dangerous areas, and may use some combination of technical information and an understanding of state agencies to implement improvements. Many transportation professionals and government officials are already advocates for bicyclists and pedestrians, though many others could be better informed on these issues (but then again, who couldn't?).

In either case, advocates are better equipped to present solutions if they understand the technical basics of bicycling and pedestrian infrastructure and the institutional basics of government agencies responsible for it. Further, transportation officials are better equipped to initiate engineering solutions when they are provided with certain types of information, including the unique perspective of users, in ways they can understand and deploy.

Successful Strategies

The central premise of this manual is the advocate's basic goal is to put proposals on the appropriate agency's agenda (e.g. the Transportation Improvement Plan) and the advocate's basic means is by favorably influencing agency decisions. There are many more skills and strategies one may use to accomplish such goals than what is covered by this document (e.g., using the media, and other marketing skills). This manual focuses on developing skills that will lead to



more favorable interactions with transportation professionals.

As seasoned advocates will tell you, for maximum, long-lasting impact, the most important focus areas are policy, education, engineering, and enforcement. Opinion differs on which area is most important, but it is generally accepted that policy and engineering solutions are longer-term, while enforcement is highly variable and hard to institutionalize. Education is on-going. As Chapter 4 on traffic calming suggests, good engineering can be self-enforcing, reducing the need for external policing.

Many advocates start out as laypersons, unfamiliar with transportation policy and engineering, and quickly become proficient in areas calling for a high degree of expertise. But make no mistake! Specialized vocabulary and protocols, constant references to acronyms, technical terms, and particular policies can be extremely daunting. The thoughtful advocate will become familiar with crucial terms, striking a difficult balance between demystifying expert language and respecting the expert's experience and knowledge. This manual seeks to foster empathy and better working relationships between advocates and transportation officials by suggesting communication strategies that balance and respect the different perspectives.

The thoughtful advocate will become familiar with crucial terms, striking a difficult balance between demystifying expert language and respecting the expert's experience and knowledge.

After the Proposal

The strength of this manual is it outlines—in broad strokes and specific strategies—steps leading up to a traffic engineering proposal. This is not, however, the whole story. Once designed, a proposal still must pass a series of hurdles before being built (“the ribbon cutting”). Agencies and transportation professionals further negotiate and change the proposal during design. Competing interests might try to put off the proposal for a few years, or table it altogether—not necessarily for any reason other than they have different priorities.

IMPLEMENTATION

The advocate has a continued role then, to be there to make sure the proposal follows the original goals. Instead of backing off after the proposal, follow-up to make sure it keeps moving ahead (with its original schedule, scope, and budget intact). Support the agency when it goes to defend the project against other ones. Keep the issue public, for example by placing stories in the media, to improve the project's chances for implementation.

MONITORING AND FEEDBACK

Even after the completion of a project, advocates and professionals face the task of determining how much the project succeeded in meeting the original goals (e.g., reducing the number/severity of accidents). Many transportation professionals become frustrated by

Please be sure to contact us with your feedback, so we can incorporate it into future versions of this manual.

Email us at
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what they view as a naïve assumption by advocates: once implemented, a project causes all previous problems to magically disappear. Most solutions, they note, mitigate problems rather than halt them. By monitoring the situation, advocates can help agencies gather feedback both can use for proposing future projects and designs.

The point of this discussion is not to deter anyone from working to improve safety for bicyclists and pedestrians, but rather to highlight the place of the project proposal in the overall process. Responsible advocates can stay involved with projects through stages of design, implementation, monitoring, and feedback.

The value of different approaches

We offer these materials as a guide for improving safety, not as dogma intended to discourage or displace all other approaches. Be ready to improvise and compromise. Discuss your problem with other advocates who have done similar things and talk with transportation professionals. Our hope is this manual helps you become conversant, but we do not expect you to instantaneously become an expert. We want to encourage and support your work, and we understand this is neither easy, nor straightforward (neither people nor systems are necessarily rational). Our broader goal is to initiate a dialogue between the people best equipped to improve bicycling and pedestrian infrastructure.



chapter

2

BICYCLING AND PEDESTRIAN ENGINEERING DESIGN VOCABULARY AND RELATED DESIGN PRINCIPLES

This chapter presents the basic vocabulary and general design principles of bicycling and pedestrian facilities in order to orient advocates regarding bicycling and pedestrian infrastructure.

MYTH

Only transportation officials can understand traffic engineering related to bicyclists and pedestrians.

REALITY

Most people can learn the basic concepts of traffic engineering, including those involving bicycling and pedestrian facilities.

NOTE

Under NYS Vehicle Code, bicycles are considered vehicles, and bicyclists are therefore subject to laws governing vehicular traffic.

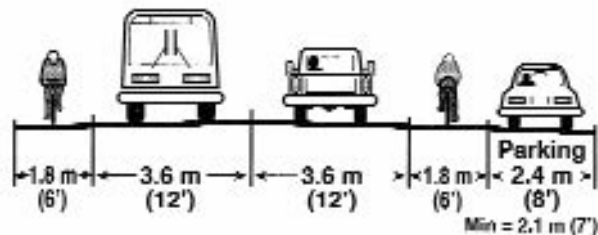
Consult the DOT website for additional explanation of laws that apply to bicyclists.
www.dot.state.ny.us/progs/bike/share.html

INTRODUCTION

Even for seasoned advocates, deciphering the terminology of the many varieties of bicycling and pedestrian facilities is difficult. Keep in mind different types of roads (e.g., highways, collectors, and residential streets) require different facilities, and urban areas tend to have a wider variety of infrastructure options than rural areas.

In addition, there is disagreement among advocates, especially regarding bicycling, about which facilities are most desirable. Some advocates feel striped, on-road bicycle lanes inhibit bicyclist safety by desensitizing motorists to the presence of bicyclists on roads without bicycle lanes. Other advocates, especially in urban areas like New York City, lobby for such bicycle lanes in the hopes of creating comprehensive transportation networks. Differences of opinion may be compounded by different goals—some advocates are primarily concerned with bicycling as a mode of transportation, others are recreational bicyclists who travel great distances on rural roads.

Differences notwithstanding, all advocates need to know basic vocabulary and engineering principles to understand different types of facilities, and their appropriateness to different road types. Chapters 3 and 4 build on this understanding by presenting some low-cost strategies for maintaining and implementing the different bicycling and pedestrian facilities appropriate to different areas.



General Bike Lane Standards

Minimum: 1.5 meters (5 feet) against curb, parking or guardrail; 1.2 meters (4 feet) open shoulder.

BASIC VOCABULARY

Bicycling Facilities

In engineering terms, there are several distinctions. A bikeway is a generic term for any road, street, path, or way which is specifically designated for bicycling travel in some manner, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

There are specialized terms for different types of bikeways: bicycle routes, bicycle lanes, and multi-use paths (often misunderstood to be exclusively bicycle paths).

On-Road Bicycle Routes

Bicycle routes are further differentiated into three types: shared lanes, wide outside lanes, and shoulders.

SHARED LANES (fig. 1)

Shared lanes are “standard width” travel lanes bicycles and motor vehicles share. These tend to be on residential and low-speed, low-traffic-volume streets.

WIDE OUTSIDE LANES (fig. 2)

Wide outside lanes have a width of at least 14 ft (4.2 m) to accommodate both bicyclists and motorized vehicles.

Wide outside lanes tend to be on low-speed/low-traffic-volume streets, and are most crucial in areas with severe right-of-way limitations where bicycle lanes cannot be provided. They may be installed by re-striping lanes or paving gravel shoulders. A wide lane must be between 14 ft (4.2 m) and 16 ft (4.8 m) wide to provide easy passage without allowing two cars to move in one lane. Wide lanes reduce bicycling on sidewalks and may also reduce car-door collisions, since bicyclists can ride far enough to the left of parked cars to avoid conflicts with adjacent vehicular traffic.

SHOULDERS (fig. 3)

Shoulders are paved portions of the roadway to the right of the travel way. They can serve bicyclists, pedestrians and others. This type of facility is common in rural areas.

On-Road Bicycle Lanes

Bicycle lanes are designated by striping, signage, and/or pavement markings for preferential or exclusive use by bicycles (and often by other non-motorized vehicles such as motorized wheelchairs, etc).

Bicycle lanes are more easily installed on residential streets than in commercial areas, where parking is a premium.

For more information about pedestrian and bicycling facilities, see publications such as the **Manual for Uniform Traffic Control Devices (MUTCD)** from the American Association of State Highway and Transportation Officials (AASHTO).

Government and non-government groups have produced thorough guide books on engineering facilities, for example, see the **Transportation Alternatives Bicycle Blueprint** at www.transalt.org.



fig. 1 Shared roadway

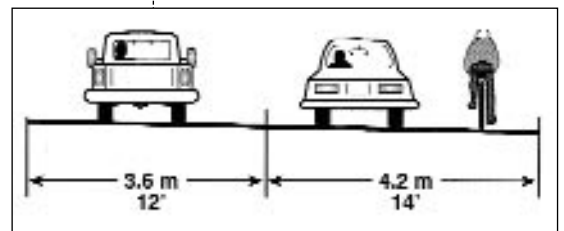


fig. 2 Wide outside lanes

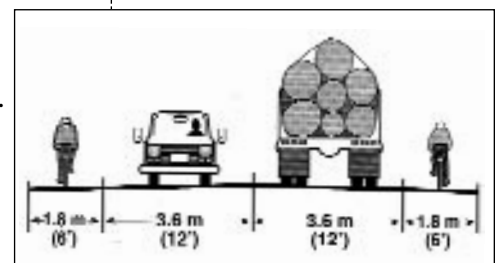


Fig. 3 Shoulder bikeway

In urban areas, bicycle lanes reduce conflict between passing motorists and bicyclists. In rural areas, pedestrian facilities can sometimes be cost-prohibitive, but are always a preferable safety measure. A paved shoulder with adequate sight-distances is a cost-effective way to accommodate the needs of both bicyclists and pedestrians. In dense and mixed-use suburban areas, pedestrian facilities can increase pedestrian volumes, reduce auto traffic, and even increase the number of transit riders [Hess 1999: 17].



fig. 4 Sidewalk clearances

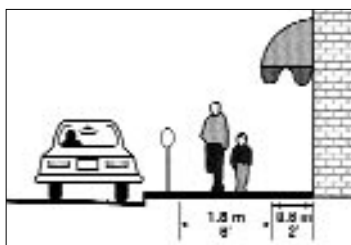


fig. 5 Sidewalk against a wall

Off-Road Multi-use paths

A multi-use path is a shared use path, physically separated from motorized vehicular traffic by an open space barrier, either within the highway right-of-way or within an independent right-of-way. Multi-use paths are intended for use by bicyclists, pedestrians and others (in-line skaters, equestrians, people in wheelchairs, strollers). Though primarily recreational, they can also afford transportation—provided they are well-designed and wide enough to separate modes (e.g., pedestrians from bicyclists) [FHWA/USDOT 1997: 87]. Narrow paths create numerous user conflicts, especially in high-traffic volume areas, and are unsafe for high-speed cycling.

Walking Facilities

Terminology for walking facilities is simpler; there are only three types of walkways: sidewalks, shoulders, and multi-use paths.

WALKWAYS

Walkways are built to standards that accommodate people in wheelchairs (which also aids elderly pedestrians and persons pushing carriages or shopping carts).

SIDEWALKS (figs. 4, 5)

Sidewalks are located along roadways, differentiated by a curb and/or planting strip with a hard, smooth surface.

Sidewalks are an essential safety requirement for pedestrians, especially along arterials and streets in and around commercial centers. Buffers such as street furniture (lights, refuse bins) or foliage (trees, bushes, planters) separate the sidewalk from the roadway. Such separation is especially beneficial to children (because of limited attention span and unpredictability) and the elderly (reduced vision and limited mobility). Buffers between sidewalks and roadways improve the quality of walking as well as safety; it is nicer to walk next to a row of trees or bushes than an open roadway. Sidewalks should have curb cuts for wheelchair accessibility. Curb cuts help all kinds of users by easing general movement [Templer 1980].

SHOULDERS

In many rural areas, pedestrians use shoulders rather than sidewalks. Shoulders should be wide enough to accommodate bicycles.

MULTI-USE PATHS (fig. 6)

Multi-use paths can be used simultaneously by pedestrians, bicyclists, wheelchairs, skaters, and joggers. Paths may be unpaved or constructed with packed gravel, stone dust or asphalt grindings, and should be smooth and firm enough to meet Americans with Disabilities Act (ADA) requirements.

Multi-use paths are useful as short connectors or where automo-

tive traffic is undesirable or where roadway widths are limited. For example, they may be used to connect cul-de-sac neighborhood pods or can often be used in parks. The paths allow non-motorized traffic to get through without allowing automobile access. Another use is on bridges where bicyclists and pedestrians are sometimes separated from automobile traffic due to high speed narrow car lanes. Again it is often desirable to separate “wheels from heels” with good design to prevent unsafe user conflicts.

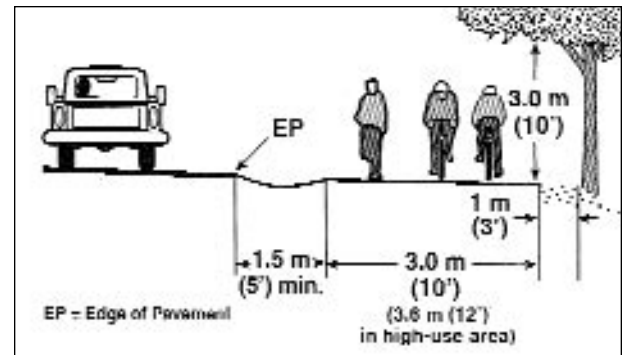


fig. 6 Multi-user path standards

DESIGN PRINCIPLES

Design principles guide the construction of bicycling and pedestrian facilities. When advocates are aware of these principles, they can better evaluate current facilities and provide effective input for the construction of new facilities.

The following is a general list of principles, and may have many valid exceptions.

1. Avoid conflicts between different uses. This may mean providing adequate space for each type of user, providing clear signage to alert various users to each other, or timing traffic signals to accommodate different uses. In general, facilities designed to limit conflicts between different users protect the safety of all users. For example, traffic signal timing should not impede bicyclist and pedestrian traffic. Slow and elderly people need 60 seconds to cross four lanes of car traffic.
2. Restrict free-flowing movements with compact intersections. For example, unregulated right-turn lanes often cause bicycle-car and pedestrian-car crashes.
3. Comprise intersections of as many simple right angles as possible. Skewed and multiple intersections increase the probability for conflict. (fig. 7)
4. Clearly mark all lanes. For example, on multilane roadways, mark the destination of each (left, straight through, or right) with overhead signs and/or pavement markings.
5. Construct pedestrian facilities with special attention to the needs of the elderly and children, who do the most walking and bicycling and are also the most vulnerable users on the road system. The elderly are much more vulnerable to injury, and so, not surprisingly, they have the highest pedestrian fatality rate of any age group [Zeeger 1993: 63]. The Americans with Disabilities Act (ADA) Guidelines have eased transportation for a variety of other users. As it turns out, modifications that assist people in wheelchairs—like curb cuts—also improve accessibility for the



Fig. 7 Simple right angles

elderly, people with baby carriages, shopping carts and luggage, and so on.

6. Create bikeways that are direct, logical and aligned with motor vehicle traffic. Do not route bicycling traffic with pedestrian traffic.
7. Bicyclists and pedestrians should be visible and move predictably.
8. Form a contiguous transportation network with striped bicycle lanes. For example, continue them right up to intersections, then resume immediately on the other side.
9. Open all legs of an intersection to pedestrians.
10. Allow pedestrians to travel on direct routes. If pedestrians are forced to zig-zag through intersections, jay-walking increases, which heightens risk of crashes.
11. Do not force pedestrians to travel over an excessive expanse of uninterrupted pavement. Pedestrian refuge islands give walkers and bicyclists safe places to rest or wait for traffic signals to change [OR DOT 1995: 125].12.
12. Do not let street furniture (such as signal poles and telephone poles) obstruct pedestrian movement or impede visibility.

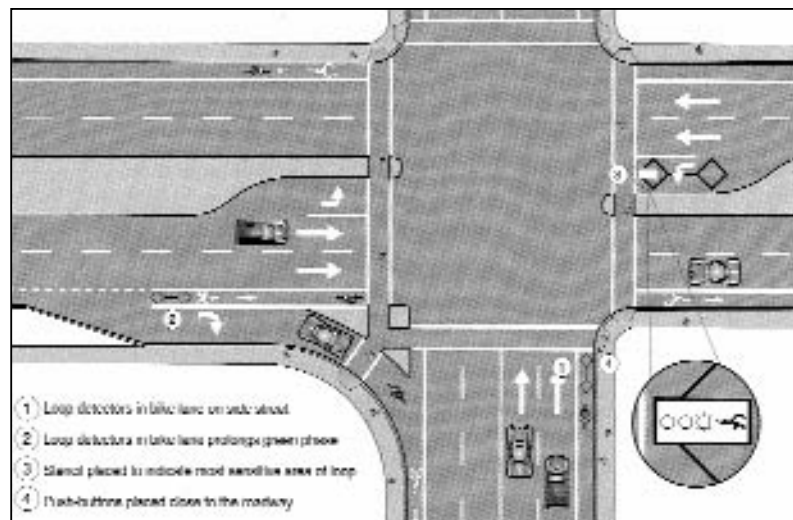


fig. 8 Good signaled intersection, sensitive to bicyclists.

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chapter

3

MAINTENANCE ISSUES

Introduction

Spot Improvement
Programs

Recommended
Maintenance Practices

MYTH

It is prohibitively expensive to accommodate bicyclists and pedestrians on all roads.

REALITY

Many accommodation problems can be solved with regular maintenance practices.

INTRODUCTION

Maintenance is, in many cases, the simplest and least expensive way for a community to improve bicyclist and pedestrian access. Advocates may first want to consider how maintenance affects bicyclists and pedestrians, and only after look into more costly retrofits. This section presents the basics of road maintenance appropriate to such use.

In general, well-maintained roads are safer for all users. And conversely, the neglect of routine maintenance can threaten bicycling and pedestrian facilities [AASHTO 1999: 73]. Many design provisions for bicyclists and pedestrians can be installed during regular maintenance at little or no extra cost (for example, if a road is already being re-striped, the cost of including a bicycle lane is negligible). Advocates may ask to review their municipal maintenance policies to evaluate them with regard to bicyclist and pedestrian use.

Maintenance problems are, however, still subject to budget constraints and priorities. If they could, most road agencies would like to perform all the maintenance procedures listed in this chapter. Advocates can help by ensuring governments allot sufficient funds to maintenance, and assisting agencies in making tradeoffs necessitated by limited budgets.

For greater efficiency and reduced cost, neighboring jurisdictions may want to consider joint programs. A good program will establish maintenance standards and a regular schedule for inspection.

The following suggestions, drawn largely from the *Oregon Bicycle and Pedestrian Plan* (1995), incorporate many of AASHTO's recommendations from the *Guide for the Development of Bicycle Facilities*.

Spot Improvement Programs

Spot improvement programs enable problems to be brought to the attention of authorities in a quick and efficient manner. They are meant to identify such things as drainage grate replacement, bridge expansion joints, railroad crossings, intersection signal modifications that are substandard or in disrepair. Since citizens are often the first to notice facilities in need of maintenance, they are encouraged to report problems to a central contact person.

Recommended Maintenance Practices

SWEEPING

Keep the road surface free from debris and hazards. For example, sand is slippery and leaves and snow can be difficult to bicycle or walk through. Piles of debris force pedestrians and bicyclists into other parts of the roadway, where they may be less visible. Of course, debris should not be swept onto sidewalks and conversely, debris from side-

walks should not swept into the street. If it is not cost-effective to frequently remove sanding materials during icy weather, sweep high-use areas after major storms and following the winter season. This will keep storm sewers clean, reduce siltation of streams and improve water quality at points of discharge.

SURFACE REPAIRS

The quality of pavement is very important to bicyclists and pedestrians. Maintain a smooth surface, free of cracks (especially longitudinal wheel-grabbing cracks and parallel-to-traffic pavement joints), potholes, bumps by fixing physical problems regularly.

PAVEMENT OVERLAYS

Do not leave a ridge in the area where bicyclists ride (this can occur where an overlay extends partially, but not fully, to the edge of the shoulder). The drop can cause bicyclists to fall into traffic and is particularly hazardous for elderly pedestrians.

VEGETATION

Overgrown shrubs and low-hanging branches can obscure signs and people, so routinely cut vegetation back, and keep it out of walkways or bikeways. Maintain adequate clearance and sight-distances at driveways and intersections so bicyclists and pedestrians are visible to motorists. Control roots by installing root barriers during sidewalk construction to prevent the break-up of sidewalks and roadway surfaces. Require maintenance of vegetation originating from private property through local ordinances.

SIGNS, STRIPES AND LEGENDS

Over time, bikeway and walkway signs may fall into disrepair and legends may become hard to read. Keep signs and legends—including those directed at motorists—legible.

DRAINAGE IMPROVEMENTS

Drains should not catch bicycle tires. A bicycle-safe drainage grate at the proper height improves bicyclist safety. Adjust or replace catch basins to improve drainage. Puddles that form due to poor drainage are perilous to pedestrians and bicyclists alike. When pedestrians or bicyclists have to avoid puddles, they often stray into the roadway, where motorists are not expecting them. Puddles freeze in winter, becoming even more hazardous. Drainage grates, manhole and utility covers should be flush with the pavement.

CHIP SEALING

Chip sealing is the application of a special protective wearing surface to existing pavement. Desirable as a low-cost way to fill and seal cracked and raveled surfaces of old pavement (which costs 80%-85% less than pavement overlays), it often leaves a rough and



bumpy surface undesirable for bicyclists. Further, debris from chip seals can ricochet off car tires and potentially hurt bicyclists and pedestrians.

PATCHING ACTIVITIES

Patching activities can result in loose asphalt being left on the roadway. When left on the shoulder, loose asphalt adheres to the surface and creates rough conditions for bicyclists. Avoid this by sweeping loose material off the road and shoulder immediately following patching activities.

BLADE PATCHING ACTIVITIES

The last pass of the grader sometimes leaves a rough tire track in the middle of the shoulder. Prevent this by covering the entire shoulder width, equipping road graders with smooth tires, rolling the shoulder area after the last pass of the grader, and sweeping fresh loose materials off the road before they adhere to the surface.

UTILITY CUTS

Utility cuts are the cuts in pavement made in order to make repairs or modifications to underground utilities (like power or water lines). They can leave a rough surface for bicyclists if not back-filled carefully. After cutting, finish the pavement as smooth as new. Whenever possible, make the cut in an area that will not interfere with bicycling travel. Back-filled cuts in bikeways should be flush with the

surface (humps will not get packed down by bicyclist traffic). When cutting parallel to bicycling traffic, do not leave a ridge or groove in the bicycle wheel track.

ABANDONED DRIVEWAY APPROACHES

When accesses are abandoned in urban areas, there is no point in leaving a pavement dip or warp at these locations. Fill them level with the pavement.

SNOW REMOVAL

Complete snow removal in such a way it does not interfere with bicyclist and pedestrian access. For example, do not clear snow to make room for cars by pushing it onto bicycle lanes, pavement, or

crosswalks. When these facilities are not cleared, pedestrians and bicyclists must re-route around them, forcing travel in places where drivers do not anticipate them.



Snow obstruction

NEW YORK BICYCLING COALITION
IMPROVING BICYCLING AND PEDESTRIAN SAFETY

chapter

4

TRAFFIC CALMING

Introduction

Goals, Principles and
Benefits

Traffic Control Devices and
Road Retrofits

MYTH:

The only way to improve traffic flow is to increase the speed at which vehicles move through an area.

REALITY:

Traffic calming uses a multi-modal infrastructure to improve traffic flow by decreasing vehicle speed, and boosts safety, quality of life, and local economies.

INTRODUCTION

Traffic calming techniques arise from the premise that safety and flow can be improved through measures that reduce the speed of traffic moving through a given area. The idea is somewhat counter-intuitive, and it stands in strong contrast to the conventional wisdom in traffic engineering that has prevailed in the United States for many years.

Nevertheless, traffic calming is becoming increasingly popular among transportation professionals and advocates. It improves bicyclist and pedestrian safety by reducing both the amount and speed of motor vehicle traffic [NYC DOT 1997: 53], and helps create green areas and play space on public right of ways. It also helps reduce crime. Studies show crime decreases when more people are out on the streets, creating a self-perpetuating cycle where safer, quieter streets increase bicycling and walking [Hoyle 1995: 16-18; Pinosof 1994: 11].

Traffic calming is also desirable from the standpoint of local economics. Increases in pedestrian traffic tend to lead in increased patronage of local businesses.

European, Australian, Canadian, and US studies have found pedestrian and bicyclist crashes are substantially lower on traffic-calmed streets. Injuries sustained in the crashes that do occur are less severe because vehicles are traveling at reduced speeds. Moreover, while traffic volumes remain constant, noise and air pollution decrease, along with the severity and number of injuries [Pinosof 1995: 12; Wynne 1992].

There is a caveat, however, from the point of view of transportation professionals. Traffic calming comes at a cost, which may accrue to motorists, or those depending on motorists (such as merchants). Like everything else, the value of the technique is using it in certain situations, sufficiently evaluating the design trade-offs to produce the best results. Transportation professionals are likely to find advocates who remember this perspective more thoughtful, reasonable, and empathetic.

The first part of this chapter builds on the design principles discussed in Chapter 2 to present a general picture of traffic calming and its benefits. The second part of the chapter presents traffic calming strategies used to retrofit roads to accommodate bicyclists and pedestrians.



TRAFFIC CALMING

The goal of traffic calming is to create transportation networks conducive to multiple modes of transportation. The New York State Department of Transportation defines *traffic calming* as: “the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users” [ITE State of the Practice, 1999].

Because wide and straight roads project an image to motorists of the street as “their turf,” traffic calming uses techniques to either actually reduce the area of the roadway available to motorized traffic, or to create the perception of reduced space. Either way, the result of traffic calming is more hospitable streets for bicyclists and pedestrians. Landscaping, for example, can be used to enhance residents’ *sense of place* [Hoyle 1995: 16-18]. Streets with landscaping and narrowed lanes have a relaxed, pedestrian feel and communicate a message to the driver: “Beware, this is shared space.”

The rest of this chapter gives an overview of traffic calming principles, benefits, and traffic control devices used in retrofitting roads according to traffic calming tenets. There is a wide variety of traffic calming literature available. See www.trafficcalming.org for the state of the art. See also Walkable Communities, Inc. at www.walkable.org, or the National Center for Biking and Walking at www.bikefed.org.

There is a wide variety of traffic calming literature available.

www.trafficcalming.org

Walkable Communities, Inc.
www.walkable.org

National Center for Biking and Walking
www.bikefed.org

General Traffic Calming Principles

- Street design allows drivers to drive at, but no more than, speed limit. (*fig. 1*)
- Street design allows local access, but discourages through traffic.
- Street design increases pedestrian traffic through commercial areas, often by allowing “mixed-use zoning.”
- Street design and traffic management devices are compatible with the neighborhood character.
- Street design and traffic control devices are easy to maintain.
- Landscape design improves safety for pedestrians and bicyclists.
- Design or redesign changes the psychological feel of the street. Rather than physically narrowing the street or travel lanes, modifications make the roadway appear narrower than it is. This can be accomplished by putting buildings closer to the roadway edge, or by adding tall trees as close as traffic safety allows. (*fig. 2*)

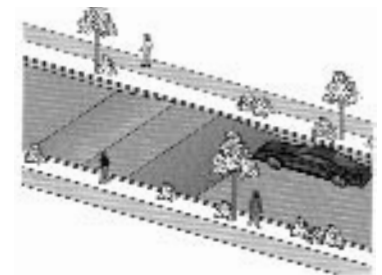


fig. 1 Speed hump allows drivers to drive at the speed limit.

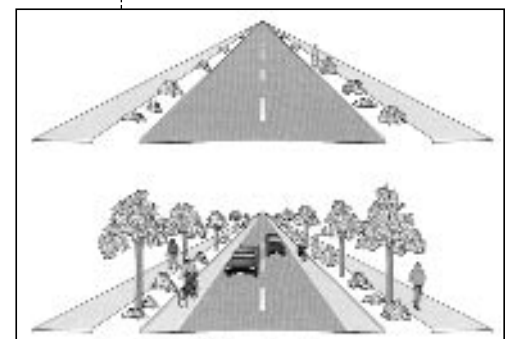
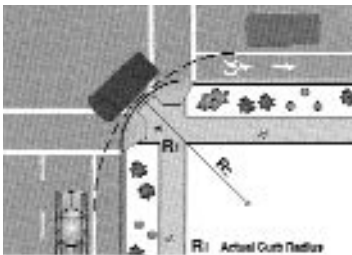
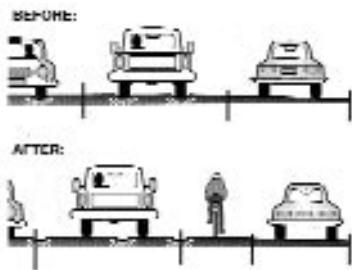


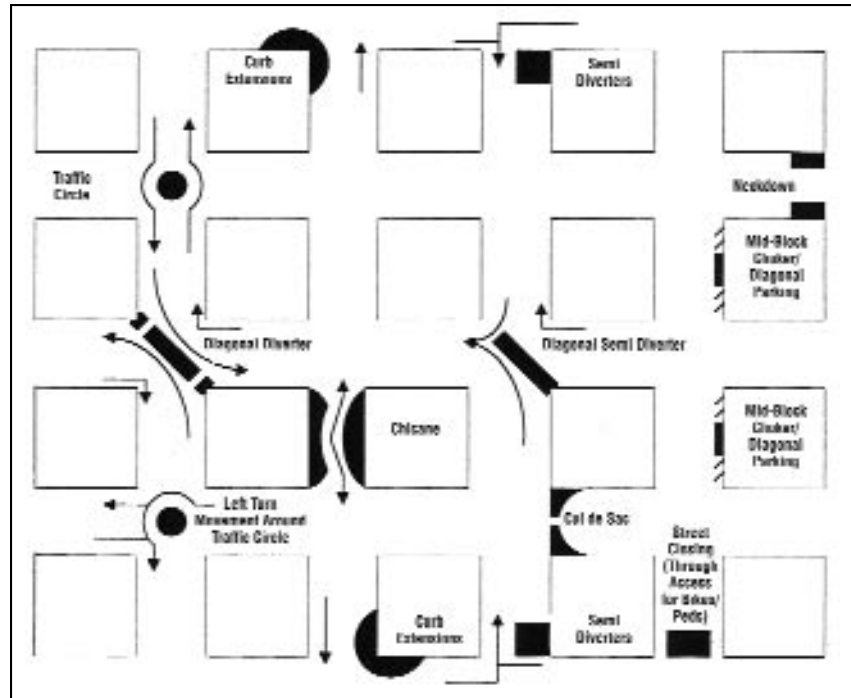
fig. 2 Trees and colored bike lanes make a roadway appear narrower.



Effective radius at intersections is increased with bike lanes.



Motor vehicles no longer drive in wheel ruts after restriping.



An example of traffic calming practices

- High-speed traffic is kept on appropriate roads and out of residential neighborhoods.
- Street modifications do not simply shift traffic problems from one part of the city to another.

Benefits of Traffic Calming

- Expanded route choice. Traditional town planning techniques (such as grid street patterns, on-street parking, narrower streets, smaller turning radii, and alleys rather than driveways) allow expanded route choice.
- Reduced exposure of bicyclists and pedestrians to intersecting traffic.
- Trips made by walking, cycling, or public transportation can be substituted for trips normally made by car.
- Increased mobility for children and the elderly through walking and cycling, resulting in less chauffeuring.
- Mixed zoning allows businesses to locate closer to residential areas.
- Increased levels of localized employment.
- Improved attractiveness of local shopping centers and facilitation of public festivals and entertainment [Hoyle 1995: 16-18; Lerner-Lam 1992; Pinsof 1995: 12].
- Enhanced safety. Travel lanes are offset from curbs, lanes are better defined, and parking is removed or reduced. Adding bicycle

lanes improves sight distance and increases turning radii at intersections and driveways.

- Lowered maintenance costs. Narrow streets have lower construction and maintenance costs. Re-striping can help extend pavement life, as traffic is no longer driving in the same well-worn ruts [OR DOT 1995: 81-85].

Traffic Control Devices and Road Retrofits for Traffic Calming Projects

This is only a cursory review of possible control devices for traffic calming projects. Again, for more information, visit the websites listed above.

STOP SIGNS/YIELD SIGNS

Bicyclists are more inconvenienced than drivers by unnecessary stopping, so yield signs and other traffic calming measures are preferable to stop signs.

COLORING OR TEXTURING

Make pedestrian crossings and bicycle lanes a different color from vehicular roadway. Drivers see only the travel lanes as available road space. Low-cost methods include:

- Paving travel lanes with concrete and bicycle lanes with asphalt, or the reverse.
- Slurry sealing or chip-sealing the roadway and not the bicycle lanes.
- Incorporating dyes into concrete or asphalt.

CHICANES (fig. 3)

Chicanes create a curved path for vehicles on a previously straight roadway. The roadway width remains adequate for two cars to pass, but the interruption causes vehicles to slow down.

PEDESTRIAN REFUGE ISLANDS (fig. 4)

Pedestrian refuge islands (or safety islands) are pavement markings or raised islands between opposing traffic lanes within an intersection. They are particularly helpful to those who have difficulty crossing a wide street without stopping. Elderly pedestrians, for example, are over-represented in crashes when crossing wide streets of four or more lanes.

PEDESTRIAN MALLS

Pedestrian malls not only improve pedestrian safety but are an economic benefit to small business. Closing streets to car traffic (either completely or during certain hours of the day) increase the foot traffic past stores and may increase customers for local busi-

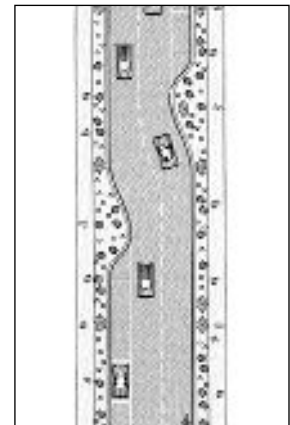


fig. 3 Chicane created through alternate parking

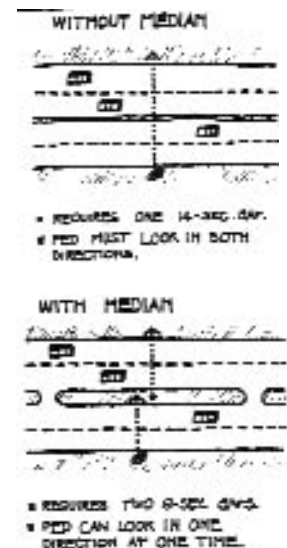


fig. 4 Pedestrian refuge islands.

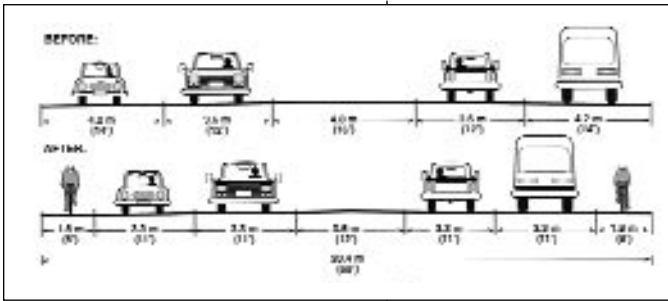


fig. 5 Reduced travel lane widths.

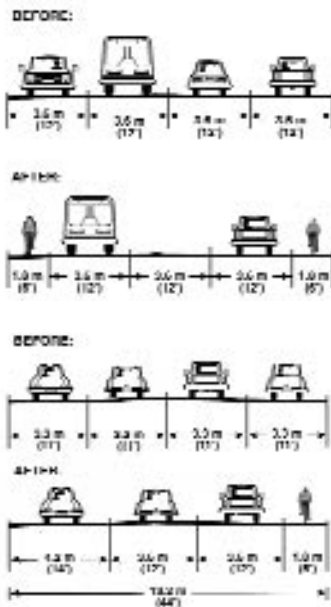


fig. 6 Reduced number of travel lanes from four to two, with center turning lane (top) and from four to three on a one-way street (bottom).

nesses. Pedestrian malls are often developed during revitalization efforts in a downtown area, with the added benefit of substantially increasing safety for younger and older pedestrians. They also increase economic activity because merchants tend to locate where there is a high volume of pedestrian traffic. Pedestrian malls can be made more attractive with the provision of seating areas.

REDUCED TRAVEL LANE WIDTHS (fig. 5)

The need for full-width travel lanes decreases with speed. This is significant because narrowing lanes helps make room for bicycle lanes. Additionally, creating dedicated left-turn lanes with the “left-over” space makes vehicular traffic more predictable.

Up to 25 MPH (40km/h): Travel lanes may be reduced to 10 or 10.5 ft (3 or 3.2 m).

30 to 40 MPH (50 to 65 km/h): 11 ft (3.3 m) travel lanes and 12 ft (3.6 m) center turn lanes may be acceptable.

45 MPH (70 km/h) or greater: Try to maintain a 12 ft (3.6 m) outside travel lane and a 14 ft (4.2 m) center turn lane if there are high truck volumes.

REDUCED NUMBER OF TRAVEL LANES (fig. 6)

On two-way streets with four travel lanes and a significant number of left-turn movements, re-striping for a center turn lane, two travel lanes, and two bicycle lanes often improves traffic flow.

One-way couplets, many of which were originally two-way streets, can result in an excessive number of travel lanes in one direction. In many cases, the road can be reduced by one lane.

REMOVING ALL PARKING

Safety and capacity of a roadway may be increased by removing all parking. However, this is usually not feasible in dense, commercial or residential urban areas. Problems may be avoided by taking a survey of on- and off-street parking used by area businesses and residences and removing parking on the side less reliant on on-street parking (usually the side with fewer residences or businesses, or the side with residences rather than businesses in mixed-use neighborhoods).

REMOVING SOME PARKING

It may not always be desirable to remove all parking: on-street parking can promote traffic calming efforts by serving as a buffer between cars and other traffic [OR DOT 1995: 12-14]. Some parking removal however, may be desirable. This can be accomplished in several ways.

Narrow the parking lane. (fig. 7)

Parking can be narrowed to 7 ft (2.1 m), particularly in areas with low truck parking volumes.

Remove parking on one side (fig. 8)

Parking may be needed on only one side to accommodate residences and/or businesses. It is not always necessary to retain parking on the same side of the road through an entire corridor.

Change diagonal to parallel parking (fig. 9)

Diagonal parking takes up an inordinate amount of roadway relative to the number of parking spaces provided. It can also be hazardous, since drivers backing out cannot easily see oncoming traffic. Changing to parallel parking reduces availability by less than one-half. On one-way streets, changing to parallel parking on one side is sufficient, reducing parking by less than one-fourth.

Restrict employee parking

Many cities have had success with ordinances prohibiting employees from parking on the street. This could help increase the number of available parking spaces for customers, even if the total number of parking spaces is reduced. One parking place occupied by an employee for eight hours is the equivalent of 16 customers parking for half an hour, or 32 customers parking for 15 minutes.

Replace lost parking

If the above have been attempted and residential or business parking losses cannot be sustained, additional options include off-street parking and other uses of right-of-way, such as using a portion of available planting strips.

RIGHT-TURN-ON-RED RESTRICTIONS

Restricting right turns on red has the potential to reduce collisions involving motorists turning right from a perpendicular roadway and, to a lesser extent, the frequency of pedestrians and bicyclists being cut off by right-turning motorists [Thom 1992: 99].

TIMING TRAFFIC SIGNALS

There are many ways to change traffic signals to better accommodate bicyclists and pedestrians. Bicyclists are more inconvenienced by stops than motorists. At signalized intersections, pedestrian signal heads should be clearly visible and not too far from the nearest safe refuge. A few seconds head start on the pedestrian signal phase will permit crossing before vehicular turning movements cut off the walkway. Other options include lengthening the green walk signal to accommodate slower pedestrians, installing sensors that activate the signal when pedestrians or bicyclists are present, or installing left-turn phase signals.

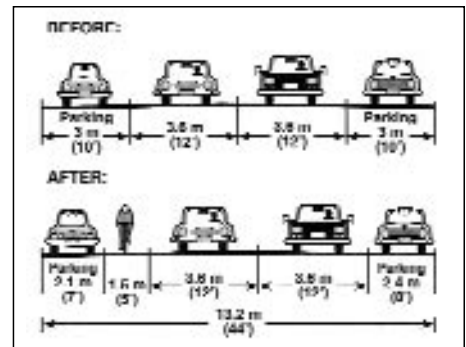


fig. 7 Narrowing parking on a one-way street.

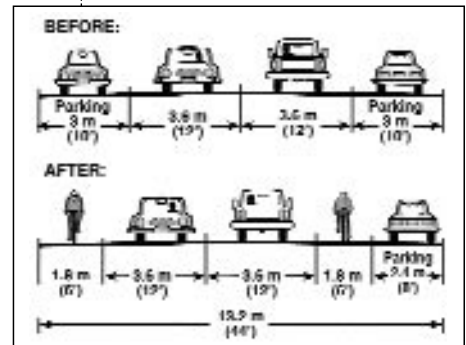


fig. 8 Parking removed on one side of a two-way street

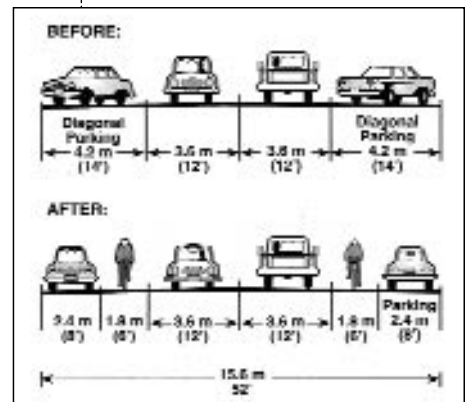


fig. 9 Changing from diagonal to parallel parking on a two-way street.

PEDESTRIAN CROSSINGS

To reduce jaywalking (an effect of large blocks), provide pedestrian crossing opportunities at regular intervals along streets and arterials. Use crossings every 500 ft (152 m) to create the feel of a more traditional urban neighborhood.



NEW YORK BICYCLING COALITION
IMPROVING BICYCLING AND PEDESTRIAN SAFETY

chapter

5

NEW YORK AGENCIES

State Agencies

Regional Agencies

Local Governments
Agencies

MYTH:

New York State bureaucracy is just too difficult to understand.

REALITY:

The programs for improving cycling and walking are varied but not complex, and the processes are often detailed, but not opaque.

Check the website for contact information and to determine your county's DOT region

www.dot.state.ny.us/pubtrans/bpcoord.html

The DOT is divided into eleven regions; see the NYS DOT website for a list of DOT regions by county:
www.dot.state.ny.us/
(click on local NYS DOT offices)

INTRODUCTION

This chapter orients the reader to New York State agencies involved in the provision and maintenance of bicycling and pedestrian facilities. In addition to the Department of Transportation, many agencies at the state, regional, and local levels have an impact on bicycling and walking. Also, most bicycling events need to be coordinated with (and often issued permits by) many of these agencies. Knowing a bit about these agencies helps advocates navigate government bureaucracy.

This section catalogues agencies with funding programs relevant to bicycling and pedestrian advocacy, which are current at the time of publication. Funding programs change all the time. Stay informed of new or altered programs through various sources, including agency contacts and agency websites.

The New York State Citizens' Guide at www.nysegov.com is an invaluable guide to NYS government. See Appendix C for more information on funding agencies and programs.

STATE AGENCIES

Department of Transportation (DOT)

The federal government is the source of most infrastructure funding. Money passes through the state, which then distributes monies to regional DOT offices.

BICYCLING & PEDESTRIAN COORDINATORS

The Intermodal Surface Transportation Efficiency Act (ISTEA), enacted in 1991, requires each state DOT have one statewide Bicycling and Pedestrian Coordinator (B/P) and B/P coordinators for each region. In NYC, there are two-city wide coordinators, one for bicycling and one for pedestrians. The statewide and regional coordinators work with advocacy groups, MPO staff, local municipal governments, elected officials and law enforcement agencies to include B/P considerations in all DOT activities.

The B/P coordinators are important people for you as an advocate to know. They can tell you when major projects come up, when the bicycling plan is up for renewal, and when you need to express your opinions to be included in major planning decisions. For example, they can give you early notice about bridge reconstruction projects so you can negotiate bicycling and pedestrian access across the bridge.

Unfortunately, not all regions have a full-time B/P Coordinator. Often the designated person has another job, and may only be able to devote a few hours a week to B/P issues.

Check the website for contact information and to determine your county's DOT region: www.dot.state.ny.us/pubtrans/bpcoord.html

The following DOT programs and plans may be useful for bicycling and pedestrian advocates:



NYS BICYCLING AND PEDESTRIAN PLAN

Under ISTEA, all state DOTs are required to produce transportation plans that include bicycling and pedestrian provisions. The New York State Bicycle and Pedestrian Plan, an Appendix to "The Next Generation. . . Transportation Choices For The 21st Century," 1997 can be ordered from the NYS DOT, Statewide Bicycle and Pedestrian Program by calling 518-457-8307.

TRANSPORTATION IMPROVEMENT PROGRAM (TIP)

The TIP is a list (adopted every two years) of regional transportation projects proposing to use federal funds, including all highway projects and transit projects. The regional lists are combined into the Statewide Transportation Improvement Program (STIP) list. The STIP includes all federally funded state and local projects approved by the FHWA (Federal Highway Administration) and the FTA (Federal Transit Administration) for the next three fiscal years.

CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT (CMAQ)

This money also comes from TEA-21. It is a good place to start when looking for funding for bicycling and pedestrian projects. As of 2001, the New York City and Syracuse metropolitan areas qualify for the CMAQ program's flexible funds. These areas do not meet the National Ambient Air Quality Standards (non-attainment or maintenance areas). Funds can be used for transportation projects and programs to meet the requirements of the Clean Air Act [NYS DOT 1997: 33].

DOT CAPITAL PROGRAM (STATE/FEDERAL FUNDS)

The Governor's Capital Program covers infrastructure spending on state and local highway and bridge improvement plans. The state funds local highway and bridge capital improvements under the Consolidated Highway Improvement Program (CHIPS) and the Municipal Streets and Highway Program (Marchiselli Funds) which assists localities in matching federal funds for projects.

Department of Motor Vehicles (DMV)

The DMV is the principal promulgator of the Vehicle and Traffic Law. Advocates who wish to see changes made in the law need to work with the DMV, especially in areas such as bicycling and pedestrian safety regulation. The legislature is unlikely make changes in these spheres without DMV support.

Department of Environmental Conservation (DEC)

DEC staff, in consultation with other agencies, municipalities and groups, develop Unit Management Plans (UMPs) for DEC properties (such as the Adirondack and Catskill Parks). These plans help the DEC assess natural and physical resources, identify recreational

USEFUL WEBSITES:

Transportation Improvement Program (TIP)
www.dot.state.ny.us/progs/stip.html

Department of Motor Vehicles (DMV)
www.nydmv.state.ny.us/



USEFUL WEBSITES:

**NYS Open Space
Conservation Plan**
[www.dec.state.ny.us/
website/opensp/](http://www.dec.state.ny.us/website/opensp/)

**The New York State Governor's
Traffic Safety Committee (GTSC)**
[www.nysgtsc.state.ny.us/
overview.htm](http://www.nysgtsc.state.ny.us/overview.htm)

opportunities, and consider the ability of the resources and ecosystems to accommodate public use.

NYS Open Space Conservation Plan

The 1998 Open Space Conservation Plan was created by the DEC, Office of Parks, Recreation and Historic Preservation (OPRHP), and nine Regional Advisory Committees appointed by state and local governments. It proposes open space, trails and historic sites for future preservation, and must be updated every three years. The Environmental Protection Fund (EPF) provides monies for open space acquisition. Title 7 allocates funds to DEC and OPRHP for land purchases to be included in the Forest Preserve, State Parks, State Nature and Historical Preserves, State Historic Sites, Unique Areas, trails, rails to trails and other categories. Title 9 provides funds for local governments and not-for-profit organizations to purchase, develop, and preserve park lands and historic resources. Within the Adirondack and Catskill Parks, DEC administers the Title 9 grant program through the Division of Lands and Forests, Bureau of Public Lands (New York State Open Space Conservation Plan, NYS DEC).

The New York State Governor's Traffic Safety Committee (GTSC)

The New York State Governor's Traffic Safety Committee (GTSC) coordinates traffic safety activities in the state. It consists of the heads of thirteen state agencies with traffic safety concerns. Chaired by the Commissioner of the Department of Motor Vehicles, the Committee's mission is to promote and support the state's highway safety program to provide for the safe transportation of people and goods on New York's roadways. The Committee acts as the state's official liaison with the National Highway Traffic Safety Administration (NHTSA) and works closely with a network of state and local agencies, non-profit organizations and private-sector partners to deliver quality traffic safety information, projects and services across the state.

Office of Parks, Recreation and Historic Preservation (OPRHP)

OPRHP manages over 300,000 acres of parks, historic sites and recreation areas, which support bicycling and walking activities (for both transportation and recreation). OPRHP plans and implements the NYS Open Space Plan, Conserving Open Space In New York, (State Comprehensive Outdoor Recreation Plan, or SCORP). Other funding administered by OPRHP may be used for bicycling and walking includes the Land and Water Conservation Fund and the



Municipal Parks Matching Grant Program (funded through EPF and the Clean Water/Clean Air Bond Act).

Recreational Trails Grant Program

OPRHP administers the Recreational Trails Grant Program, a federal matching grant program that provides funding to acquire and maintain recreational trails for motorized and non-motorized recreational trail use (30% motorized, 30% non-motorized and 40% mixed-use). Eligible trails must be: 1) accessible to the public; 2) developable as a trailway; 3) planned and developed to meet all state requirements; and 4) be a project identified or related to a project in the SCORP. Special consideration is given to projects which: 1) provide access for the disabled; 2) mitigate and minimize impacts to the natural environment; 3) utilize youth conservation or service corps; 4) receive Millennium Trails recognition; or 5) are National Scenic Trails, National Historic Trails or trails designated as National Recreational Trails. The NYS Trails Council, a citizens' advisory council consisting of representatives from various trail user groups, provides recommendations to OPRHP on Recreational Trails Grant Program applications [NYS OPRHP 1999: ii].

Department of Health (DOH)

The Department of Health (DOH) promotes bicycling and walking for their health benefits, and maintains statistics for injuries resulting in death or hospitalization. Often, the DOH Injury Facts for NYS publication is the most reliable source of pedestrian and bicyclist injury statistics in a county. Within the DOH, the Physical Activity Coalitions, such as the Healthy Heart Coalitions, Eat Well/Play Hard and Healthy Neighborhoods Program, also promote bicycling and walking.

I Love NY, Department of Tourism

The Department of Tourism promotes bicycling as a benefit to local economies, particularly in upstate, rural areas. The recreation and adventure section of their website contains information about local bicycling touring and rental companies, clubs, trails and places to ride.

The Department of State (DOS)

The Department of State (DOS) conducts the coastal zone programs in NYS. Many of these programs include revitalization agendas that address pedestrian and bicycling issues, sometimes including a traffic calming component. Grants for planning and implementation are available, and approved plans can be a key to obtaining the cooperation of other State and Federal agencies.

DOS also administers the Quality Communities Interagency Task Force for the Lieutenant Governor's office. This program, announced in January 2001, emphasizes safe pedestrian and bicycling systems

USEFUL WEBSITES:

Department of Health (DOH)
www.health.state.ny.us/

[www.health.state.ny.us/nysdoh/
consumer/heart/contract.htm](http://www.health.state.ny.us/nysdoh/consumer/heart/contract.htm)

I Love NY,
Department of Tourism
www.iloveny.com

The Department of State (DOS)
www.dos.state.ny.us/

USEFUL WEBSITES:

Hudson River Valley Greenway
www.hudsongreenway.state.ny.us/

as an integral component of neighborhood revitalization. DOS staff can identify programs to help communities achieve these goals.

Department of State Police (DSP)

The State Police (along with local Police) are responsible for enforcement of bicycling and pedestrian laws. Further, they investigate many accidents and are often a supplemental source of accident data and hazard judgments.

REGIONAL AGENCIES

County Governments

County governments encompass, but do not supersede, the cities, towns and villages within their borders, with the exception of the five New York City boroughs, which act as counties for certain purposes but are not organized as county governments [NYS 2000: 58].

County Highway Departments

County Highway Departments are either called Department of Transportation (DOT) or Department of Public Works (DPW). County governments maintain county roads and (often) associated sidewalks but usually do not maintain roadways within cities. Maintenance varies by county. Some counties have large, well-equipped maintenance departments and perform most of the needed work while others have only a small work force and contract with towns for maintenance [NYS 2000: 220]. See Chapter 3 for more information about aspects of maintenance that can improve bicyclist and pedestrian safety.

County Planning Boards

Counties may create planning boards to develop multi-year plans. The county legislative body may authorize planning boards to review planning and zoning actions by municipalities within the county, providing municipalities with assistance and improving communication among municipalities within the county. The coordination of planning between the State, Counties and local municipalities improves local infrastructure, reduces work and uses scheduled maintenance work to reach goals.

County Health Departments (DOH)

County health departments (and some regional offices) support health care programs throughout New York State. They promote physical activity and improved bicycling and walking infrastructure.



Hudson River Valley Greenway

The Hudson River Valley Greenway Communities Council and Conservancy is a state sponsored program developing regional strategy for the Hudson River Valley (Albany, Rensselaer, Columbia, Dutchess, Orange, Putnam, Rockland, Ulster and Westchester counties, and, more recently, NYC). Its goal is to preserve “scenic, natural, historic, cultural and recreational resources while encouraging compatible economic development and maintaining the tradition of home rule for land use decision-making.” The Greenway provides technical assistance and money for planning and project implementation, including efforts that support trails and bicycling.

USEFUL WEBSITES:

NYS Canal Corporation
www.canals.state.ny.us/

Metropolitan Planning Organizations (MPOs)

Federal highway and transit statutes require, as a condition for spending federal highway or transit funds in urbanized areas and their surrounding region, the designation of MPOs which have the responsibility for planning, programming and coordination of federal highway and transit investments. Generally, MPOs will cover regional areas of a population greater than 200,000.

NYS Canal Corporation

NYS Canal Corporation is working to complete the Canalway Trail along the 524-mile canal system. As of 2001, over 220 miles are complete. The Canal Corporation administers a Matching Grants Program to communities along the canal system to facilitate the construction of local trails and other amenities.

LOCAL GOVERNMENT: CITIES, VILLAGES & TOWNS

A *village* is part of a *town*, and its residents pay town taxes and receive town services (the term *hamlet* actually has no meaning under New York law). Some towns have created formal departments for their operational organization. Villages range from large multi-departmental organizations similar to cities, to small villages employing a few individuals. Villages provide services such as basic road and sidewalk repair, snow removal and even large-scale community development programs. They have the power to zone the area of the village separately from the remainder of the town. The General City Law grants specific powers to cities, such as construction and maintenance of public works, expenditure of public funds, and zoning [NYS 2000: 75-76, 92, 101, 107 & 109].

USEFUL WEBSITES:

Zoning
www.planning.org

Public Works Departments

There are a variety of names given to departments responsible for maintaining road systems: Highway Department, Department of Public Works, and Streets and Facilities Departments. Contact your local municipality to find out who has the responsibility for a particular section of roadway. Like counties, local municipalities do Capital Programming for public improvement planning and financing. Capital programs list proposed projects, project financing and estimates for three years of operating costs [NYS 2000: 167-168].

Local Planning Processes

There are many ways local planning processes impact bicycling and walking. Most municipalities either have a comprehensive plan, or are updating their current one. Plans address subjects such as affordable housing, agriculture, land use, historic districts, natural resources and transportation. When a community is creating or revising their comprehensive plans, they are required to solicit and accept public input. By volunteering to be on an advisory committee, or by reading the plan and making comments, an advocate can increase the visibility of bicycling and pedestrian projects. Additionally, some communities do specialized sub-plans for transportation targeted to bicyclists and pedestrians.

Zoning

Zoning, a land-use technique, helps local municipalities implement their comprehensive plans. Through districting, zoning regulates the use of land, the density of land use, and development. Zoning regulations describe a wide variety of standards (such as building height and density). Sometimes small changes in zoning regulations can make a big difference to bicyclists and pedestrians. See the American Planning Association website for more discussion about the impact of zoning on urban development.



chapter

6

COMMUNICATING BETWEEN ADVOCATES AND TRANSPORTATION PROFESSIONALS

Introduction

Communication

Common Misperceptions

Helping Transportation
Professionals

Helping Advocates

Elected Officials

Talking Points

MYTH:

Advocates and transportation professionals live in two parallel universes that never intersect.

REALITY:

Advocates and government employees share a common concern for safety. Better communication is possible and leads to improvements in bicycling and pedestrian infrastructure.

INTRODUCTION

The first chapters of this manual help advocates understand and navigate a maze of transportation facilities, policies, and related government agencies. This chapter aims to facilitate communication between advocates and transportation professionals in order to improve bicyclist and pedestrian safety and access to transportation networks.

Transportation professionals are the stewards of the systems we enjoy when bicycling and walking, and they use and enjoy these systems. Advocates represent a large constituency—like the tens of thousands of members of local bicycling clubs—that use bicycling and pedestrian facilities. Advocates distill civic opinions and desires from users and deliver this information to transportation professionals and governmental representatives. Successful governments listen and react to a broad constituency of user groups.

This chapter provides general ways to develop empathy between advocates and transportation professionals. Empathy makes advocates more effective representatives of constituent groups, and allows transportation professionals to better integrate feedback from these groups into public policy decisions.

COMMUNICATION

Communication problems are a principal source of conflict between advocates and transportation professionals. Often differences arise from the kinds of information people use to make decisions, and the ways people process such information. That is, advocates and professionals are simply from different cultures and neither is crazy or always in the right (plus neither all advocates, nor all transportation professionals, think alike).

For example, transportation professionals consider a number of factors when making decisions (though they may seem to favor quantitative data). When weighing options, they consider and balance neighborhood and political sentiment, governing legal constraints, program mandates, and agency policies, available budget, scheduling problems, and other items not readily apparent to (or appreciated by) the general public.

Also, the professional, with limited resources, cannot address all deficiencies and must prioritize. As a general rule, the engineer prefers to invest public money where it can prevent a pattern of actual crashes (as opposed to a pattern of near-misses). Advocates often present their case in the context of their own experience or anecdotal information (even if they have used other sources, such as statistics, newspaper articles, or reports, to formulate their opinions). But professionals tend to view anecdotal information about near-crashes the same way Chicken Little's neighbors reacted to his



claims about the sky falling—advocates are overreacting, and lacking compelling evidence to back up their claims.

Nevertheless, there are various things advocates and transportation professionals can learn about the way each other listens to, and processes information.

On the one hand, advocates can learn to prepare certain types of data to bring to present to transportation professionals. When asked to examine an intersection, for example, many transportation professionals will first want to know certain statistics. How many crashes have occurred at this intersection? Under what conditions? Of course the responsible transportation professional will also want to inquire about scheduled projects for this area. See Chapters 7 and 8 for some tools to use when compiling and presenting data.

On the other hand, transportation professionals can learn from the information that laypeople accumulate from experience. This user's perspective may hold key pieces of information about designing intersections and modifications so they truly fit the way people use the built environment. Good design is not simply measured by how it is used under optimal conditions (e.g., all users obeying all laws) but other factors as well, such as how well it communicates proper use to the user, or how much it accommodates the way people tend to use it. The key is for both parties to find a middle ground where they can not only listen to each other, but take in new information and put it to use.

Good design is not simply measured by how it is used under optimal conditions (e.g., all users obeying all laws) but other factors as well, such as how well it communicates proper use to the user, or how much it accommodates the way people tend to use it.

COMMON MISPERCEPTIONS

Many would-be advocates don't take their case very far because they are stymied by common misperceptions about how things work in the transportation world.

Often, advocates are told it is too late for them to make modifications to designs. In actuality, the point in time that changes can be made to an underway project depends on the change's scope, cost, and schedule impacts. By not assuming it is too late to make modifications, costly retrofits or renovation work may be avoided. Of course, if it is truly too late to change a design, advocates can become more involved in future planning processes to ensure decisions best accommodate the needs of bicyclists and pedestrians, or in collecting feedback on recent projects.

Advocates tend to assume all government funds are already programmed (earmarked for spending according to a department plan), and there is nothing left to spend on new projects. The reality is agencies continuously revise their programs and can reallocate funds toward bicycling and pedestrian projects. For example, most of the needs of bicyclists and pedestrians can be met through minor adjustments to existing programs and plans, or as part of regular highway and transit projects.

Ignoring bicyclist or pedestrian needs increases liability.

Furthermore, new highway and transit projects are added to the “over-programmed” list everyday. Bicyclists and pedestrians can be there to ensure simple things (such as shoulders being part of highway projects, sidewalks in urban areas and bicycling facilities at transit stops) get done now, not later.

Another common misperception by advocates is the Department of Transportation is responsible for all traffic engineering in New York State. NYS DOT owns only 15,000 of the 115,000 miles of road in New York, and operates no transit systems. Although leadership does come from the state DOT, there are about 1,600 highway jurisdictions and 400 transit operators in New York. Most bicycling and walking takes place on local (rather than state) systems.

Advocates may be told accommodating bicyclist and pedestrian needs exposes local governments to increased liability. This is not always true, and often ignoring bicyclist or pedestrian needs can increase liability. About 2,000 people die on New York State’s transportation systems every year, and about one-third of highway and transit fatalities in New York State involve a bicyclist or pedestrian. It would be financially impossible for every municipality to correct every highway or transit safety deficiency, but they can help protect themselves by *prioritizing* their safety deficiencies. Ask for, and advise on, a prioritized list of high-accident pedestrian or bicyclist locations.

HELPING TRANSPORTATION PROFESSIONALS

Advocates can become more effective by understanding how transportation professionals make decisions, and the constraints they face. For starters, advocates can start by amassing targeted information:

- Find out if any projects are already scheduled for this area. For example, is the intersection ranked on the Transportation Improvement Plan? If there is an established planning process, get involved early and become a part of the initial conceptual phases, to avoid offering criticism after expensive design work has already been done.
- Familiarize yourself with relevant maintenance and retrofitting possibilities (see Chapters 3 and 4).
- Contact any relevant agencies (see Chapter 5).
- Present some ideas about where the money to fix the problem can come from (see Appendix C).
- Collect information about the problem to be discussed, such as a dangerous intersection (see Chapters 7 and 8).
- Be ready to present possible solutions (see Chapters 7 and 8).



Additionally, advocates will do well to remember their problem spot is but one problem among many facing transportation professionals. It is important to champion a single area, but it is equally important to keep things in perspective. Having a larger perspective reduces the stress levels for both advocates and professionals. Communicating calmly will improve advocates' effectiveness, and allow transportation professionals greater latitude in listening to advocates' perspectives.

Transportation professionals are people too, and appreciate common courtesies. This includes keeping meetings brief and to the point. End your meetings with a concise statement of your purpose. Make your point, and then end your meeting with a concise statement of what you suggest and why. (This last sentence was meant to be a subtle joke about people's tendency to repeat themselves.) Afterwards, thank them and their staff for their time. If appropriate, follow up with a letter of thanks reiterating your suggestions and any agreed upon follow-up steps.

HELPING ADVOCATES

Advocates are known, and at times rightly so, for being loud, pushy, emotional and even obnoxious. At the same time, many advocates are also patient, technically savvy, highly motivated, educated, experienced, and passionate.

The words "emotional" and "passionate" describe both the best and worst qualities of an advocate. To advocates, being told they are being emotional can sound like being told they are wrong, unrealistic, or making a big deal out of nothing. Transportation professionals can understand citizens are emotional because transportation networks play a significant role in the way they live. By building on this emotion as a resource—rather than a liability—transportation professionals can begin to use advocates as a source for baseline information about the transportation network used by all citizens.

Transportation professionals should understand that for an advocate, an issue may be very important, even personal. At the same time, transportation professionals can provide perspective by explaining the priority of a given project within a regional plan. Provide advocates with a list of individuals and groups to contact (including MPO, DOT, City, Local Bicycle and Pedestrian Advisory Committees) and information about how funding decisions are made.

Additionally, transportation professionals should bear in mind advocates want to feel empathy for their plight. By showing you are listening, you will help create a constructive working relationship aimed at addressing the problem. Good communication helps keep both parties calm, and better able to provide and assimilate important information.

Communicating calmly will improve advocates' effectiveness, and allow transportation professionals greater latitude in listening to advocates' perspectives.

When going to an elected official to discuss a problem, make sure you have a specific solution or list of possible solutions to present. Prepare and provide one or two pages of notes regarding the issues, relevant history, possible solutions and support for the project. Don't forget to add a contact name and ways (phone, e-mail) staff could get more information.

Advocates are motivated to take action. Take advantage of their energy and commitment by helping them to get involved in decision-making processes. As transportation network users and regular travelers, advocates often have thoughtful contributions to the design of transportation networks. Advocates can help to bring interested parties out to review plans and fulfill public meeting requirements.

Keeping advocates involved in the scoping and design process may be time consuming, but it also helps ensure a more "context sensitive design," defined by the NYS DOT as design that "seeks to build in context with the surrounding community, responding to its character rather than ignore it." Added effort in the beginning can save time in the end if potential conflicts are avoided or resolved ahead of time.

Further, officials have a basic duty to assure citizens have meaningful participation in local affairs. The NYS Local Government Handbook notes participation is significant because it helps:

- Avoid misunderstandings (citizens should be involved in the planning stages of a program or project);
- Obtain firsthand knowledge of citizen needs and problems;
- Take advantage of local citizen expertise which otherwise might not be available, especially in small communities with limited bureaucratic staff;
- Spread the base of community support;
- Improve public relations; and
- Fulfill the requirements of certain federal and state programs [NYS 2000: 126, 132].

ELECTED OFFICIALS

Sometimes the best recourse for solving a pressing bicycling or pedestrian problem within the local or state road system is to work directly with your locally elected officials.

It is easy to become worked up about a general problem or situation. When going to an elected official to discuss a problem, make sure you have a specific solution or list of possible solutions to present. Prepare and provide one or two pages of notes regarding the issues, relevant history, possible solutions and support for the project. Don't forget to add a contact name and ways (phone, e-mail) staff could get more information.

Don't set yourself back by taking an overly dogmatic position from the outset. When interacting with public officials, focus on the issue at hand, bicyclist and pedestrian mobility and safety. Many politicians (and transportation professionals for that matter) are turned off when people talk stridently about the environment, rights, or social problems—even when it is something they believe in. Many people



have knee-jerk negative reactions to people they perceive to be prone to inflexible and polemical positions.

Contacting elected officials

There are many different ways to contact your local elected and state officials to express your opinion, concerns and ideas. While it is always good to get over the hurdle of making the contact, the most effective (and time-consuming) method is still face-to-face. The next best thing is to write a letter of concern or praise. Often you can reach an aide or assistant by phone. Emails tend to be read by assistants and tallied based upon content, and are often not actually seen by the governmental official.

Do not begin the process of addressing a problem in the local road system by having a press conference attacking your local government or officials. It is usually more effective to wait till you have exhausted all other friendly approaches before going negative.

For more information on state assembly members and senators, see: www.assembly.state.ny.us and www.senate.state.ny.us.

For more information on state assembly members and senators, see:

www.assembly.state.ny.us

www.senate.state.ny.us.

Talking points

When discussing bicyclist and pedestrian issues with elected officials, remember one of their primary goals is re-election. You might want to help them take credit for improvements. Here are some talking points:

Bicyclist and pedestrian issues are quality of life issues. Providing and maintaining bicycling and walking supportive infrastructure will support health, transportation choice, promote tourism and create quality communities. The recently published Quality Communities Interagency Task Force Report, available from the NYS Lt. Governor's Office, provides excellent examples of these goals.

SAFER STREETS FOR KIDS

These will present savings to the community in injuries prevented and lives saved. They will allow children to provide their own transportation to and from school, increase their independence, improve their fitness and health, and save school monies for items other than busing.

RECREATIONAL OPPORTUNITIES/TRANSPORTATION ALTERNATIVES FOR ADULTS

Providing adults with opportunities to choose different ways to commute or run errands has the benefit of decreasing overall vehicle traffic. Providing additional recreational opportunities will help create communities where people want to live and raise families, improve public health, and even improve tourism, all of which have added economic benefits.

TRAFFIC CALMING

Providing a safer transportation system benefits all road users and increases mobility choices. Traffic calming also has the side benefits of less overall traffic congestion, improved local economy, and a decrease in noise and air pollution.

NEW MONEY SOURCES FOR COMMUNITIES

Creating a community-wide plan that focuses and prioritizes the needs of bicyclists and pedestrians will allow the community to apply for funding sources with bicycling and pedestrian projects the community has agreed upon.

AFFORDABLE TRANSPORTATION

Bicycling and walking are affordable means of transportation. Affordable transportation is an integral part of the equation for successful urban development, along with affordable housing, safe streets, and job opportunities.



NEW YORK BICYCLING COALITION
IMPROVING BICYCLING AND PEDESTRIAN SAFETY

chapter

7

GATHERING DATA AND REPORTING

Introduction

Gathering and Presenting
Data

Verbal Description Reports

Citizen's Site Portrait

MYTH:

Only transportation experts are qualified to collect data, analyze intersections, and propose modifications.

REALITY:

Citizen advocates have access to a vast amount of unique information that, when well-organized and presented, can be an effective tool for change.

INTRODUCTION

Advocates are uniquely familiar with their neighborhoods. Their experience gives them special insight into undesirable conditions in intersections and on stretches of road (but not, of course, a guarantee to being 'right' about what to do to fix these conditions). This chapter provides a framework to harness this experience in a form transportation professionals can understand and use.

That said, transportation professionals will want advocates to remember road deficiencies are common, and not all deficiencies necessarily require urgent attention. Also, not every accident indicates an underlying engineering problem. So, the advocate has several tasks. One is to demonstrate the frequency and severity of the deficiency. Another is to present information to show the frequency and severity of related accidents is above the norm. Then, that the remedy's cost is commensurate with the accidents likely to be reduced (severity/numbers). In other words, the professional will be looking to see if:

- Data identifies a meaningful deficiency;
- The deficiency is a problem that is causing accidents;
- The cost of remedy is consistent with the likely accident reductions (in severity and/or number) it will deliver; and
- The remedy brings enough safety benefit to give it priority over other safety projects, competing for available funds.

Now many of us don't have the skills and knowledge to conclusively show these conditions can be met. So the advocate is saddled with the task of gathering enough information to persuade the professional engineering attention can yield a project meeting these conditions. If convinced there is a viable project, the professional is likely to gather the additional information and do the analyses needed to justify project expenditures.



GATHERING AND PRESENTING DATA

Transportation professionals make decisions using specific kinds of information, often presented in very specific ways. By collecting such information, advocates improve their ability to communicate effectively with transportation professionals.

Data (particularly statistics) can help push your “hot spot” onto a local action list (the Transportation Improvement Plan, or TIP). When you approach a public official, bring photos, sketches, a collection of traffic count data, signed anecdotes from individuals and organizations pertaining to particular crashes or recurring problems, and newspaper articles about recurring crashes.

It is imperative to be creative about presenting information. **Take pictures or video footage** of a problem intersection and bring them into your meetings. These aids can help bring a problem “to life” for transportation professionals. They help create a feeling of urgency and lend legitimacy to your story. Moreover, people are more likely to act when they can visualize a problem and have the relevant data.

VERBAL DESCRIPTION REPORTS

Among the information transportation professionals may want to see are Verbal Description Reports (VDRs). These are abstracts of accident reports, based on data collected from police reports at the scene of a crash. The DOT stores VDR’s in a database by intersection.

Although VDR’s are usually in themselves not sufficient reason to initiate a project, they are used to screen locations for evidence of an accident traffic pattern and unusual accident rates. (Do the accidents cluster under a certain weather condition, at a certain time of day? with a certain collision type? on a particular intersection leg? etc.) If the data reveals a pattern, then the professional will request the actual reports to make a more detailed assessment. Should s/he find evidence supporting a particular remedy, the VDR helps guide the project design.

VDRs are available from regional offices of the DOT or from the state office, and you can view them from just about any intersection. See Appendix F for a sample VDR.

Be aware, however, VDRs may take some time to procure and may not provide a full story about what is going on in an intersection. There may have been plenty of near-misses, but these will not be reported in a VDR because they did not result in a crash that was reported to the police.

Official accident/crash statistics can be helpful, but they are often incomplete. They often fail to document the incident location and cause for bicyclist and pedestrian injuries. For less severe crashes, these reports are more reliable for property damage assessment than for providing information about injuries to bicyclists and pedes-

For more information about accident/crash statistics, see Appendix D for the key findings of NYBC report, or download the report, *An Analysis of Available Bicycle and Pedestrian Accident Data*, from www.nybc.net

See Appendix F for a sample VDR.

trians. Secondary data, such as hospital statistics, may be needed to corroborate regional trends.

For more information about accident/crash statistics, see Appendix D for the key findings of NYBC report, or download the report, *An Analysis of Available Bicycle and Pedestrian Accident Data*, from www.nybc.net [Brustman 1999].

CITIZEN'S SITE PORTRAIT

The following matrix was developed for this manual by an experienced transportation professional. It is ideal for taking with you in "the field."

The portrait may be made for several reasons:

- to become familiar with the details of a situation;
- to use in briefing others on the situation;
- to facilitate methodic analyses at both the advocate and professional levels; and
- to support the advocate's case that there is a viable project.

Of course the savvy and mature advocate would not march into a meeting, present this site portrait to a professional, and declare "I rest my case." This matrix is merely a tool for initiating a constructive discussion. For instance, advocates might use the site portrait as a basis for asking questions, (e.g. "Doesn't this information suggest better lighting is needed?") This shows you acknowledge the professional's expertise and you want to learn more about how decisions are made. If the professional sees the situation differently, ask why. If the professional sees the situation the same, but believes it is tolerable or not of sufficient priority, ask for an explanation. You may not agree with the answers, but will get useful insights into the way the professional makes judgments.

Using the Citizen's Site Portrait

Attach several blank copies of this matrix to a clipboard and use it to gather information about an intersection or problem area.

Be sure to take with you an umbrella and some plastic sheets to cover the clipboard in case of rain. Wear bright colors, or better yet, a reflective orange safety vest, to maximize visibility. The orange reflective vest has a secondary benefit, lending credibility when you collect field data. You might be surprised by chance encounters with people when they see you out collecting data. These interactions could lead you to learn from others about the intersection or area you are studying. Furthermore, you could be making contacts with others who could eventually become bicycling or pedestrian advocates themselves.

See Appendix G for a sample of the Citizen's Site Report that can be photocopied and used in the field.

It may take some time to gather and organize this information. It is always helpful to visit a site a few times, ideally at different times of the day, including the on- and off-peak travel times. This will especially help overcome any perceptions that you are reporting anecdotal information. Peak traffic times have three windows, within the hours of 7am-9am, 11am-1pm, and 4pm-6pm. There may be smaller intervals of high-traffic activity within peak times, depending on the area (e.g. 7:30am-8:30am if there is a nearby school, or 11:45am-12:45pm if there is a lunch crowd).

You might also want to do an informal traffic count. Count the number of bicyclists, pedestrians, and vehicular traffic traveling in each direction. Strive for spending two-hour intervals in the field, during both on- and off-peak times of the day. Remember, the more quantitative data, the better.

Include as much information about surroundings as you can, such as speed limits, roadway width, traffic controls, and surrounding uses (schools, homes). If possible, gather information and pictures under different weather conditions.

Verbal Description reports can be obtained at the local or state level. In preparing this manual, we are indebted to Rob Limoges in the Safety Program Management Bureau at the State Department of Transportation who provided us with electronic copies of VDR's. NYSDOT 1220 Washington Avenue State Office Building 5 Room 314 Albany, New York 12232. (518) 457-2452.



CITIZEN'S SITE SURVEY NOTES & USABLE SURVEY SHEET

NYBC

CITIZEN'S SITE SURVEY

OBSERVER: _____
 Date: _____
 Time of Day: _____ Weather: _____

MUNICIPALITY

County: _____
 City: _____
 Village: _____
 Town: _____

LOCATION

Principal Street: _____
 Intersecting Street(s): _____
 Reason for Selection: *Ex. from left, typicality, heavy use, unusual geometry* _____

SKETCH									
N									

INTERSECTION CHARACTER

Area Type: *includes residential, commercial, institutional, park, etc.; e.g. "busy shopping street"* _____
 Street Type/Lanes: *E.g. arterial, collector, local service road; wide, narrow; express street.* *Number lanes on sketch for reference as needed.* _____
 Alignment: *if needed to supplement sketch.* *includes how it falls, curved, skewed, etc.* _____
 Pavement Condition: *note if potholed, washed, heaved, much debris, cobblestones, etc.* _____

PHOTOS

Roll: _____ Frame(s): _____

TRAFFIC CONTROL:

Signals: *note type. Also, as needed, note condition, placement or other features. Check for pedestrian signals.* _____

Signs: *note ones not already indicated on sketch. If necessary, indicate condition, placement, message, or other feature.* _____

Markings: *crosswalks, lane lines, turn lanes, arrows, pad crossings, etc.* *includes medians, placement, message or other feature.* _____

Other: *e.g. poles, crossing guard, etc.* _____

Significant Parking/Turning Restrictions: _____

OTHER FEATURES:

Lighting: *note if lighting and its condition.* _____

Transit Facilities: *bus stops, subway stations, etc.* _____

Parking: *note unusual arrangements, if any.* _____

Bicycle Facilities: *bike lanes, bike racks, etc.* _____

Driveways: *noting interference?* _____

Sidewalks: *ADA compliant, etc.* _____

Other Features Worth Noting: *note features or conditions thought to be significant to the analysis of this intersection.* _____

NOTES

Use this space to contain sketches, to elaborate on observations or to note anything else thought of to be true to the investigation.

TRAFFIC FLOW/BEHAVIOR:

Motor Vehicles: *Observe density, composition, speed, heavy use movements and note typical issues* _____

Pedestrians: *as needed, note volume (heavy, light, etc.), types (children, elderly, etc.), behavior (hesitant, ignoring signals, etc.)* _____

Bicycles: *as needed, note volume and types (children, commuters, etc.), behavior (weaving, on sidewalks, ignoring signals, etc.)* _____

Apparent Violations/Conflicts: *note double parking, jay walking, roadway signals, blocking the box, uncertain pedestrian conflicts, etc.* _____

notes continue on back

NYBC

CITIZEN'S SITE SURVEY

OBSERVER: _____

Date _____

Time of Day _____ Weather _____

MUNICIPALITY

County _____

City _____

Village _____

Town _____

LOCATION

Principal Street _____

Intersecting Street(s) _____

Reason for Selection _____

SKETCH									
N									

INTERSECTION CHARACTER

Area Type _____

Street Types/Lanes _____

Alignment _____

Pavement Condition _____

PHOTOS

Roll _____ Frame(s) _____

TRAFFIC CONTROL:

Signals _____

Signs _____

Markings _____

Other _____

Significant Parking/Turning Restrictions _____

TRAFFIC FLOW/BEHAVIOR:

Motor Vehicles _____

Pedestrians _____

Bicycles _____

Apparent Violations/Conflicts _____

OTHER FEATURES:

Lighting _____

Transit Facilities _____

Parking _____

Bicycle Facilities _____

Driveways _____

Sidewalks _____

Other Features Worth Noting _____

NOTES

notes continue on back

A SAMPLE SURVEY

NYBC Field Checklist

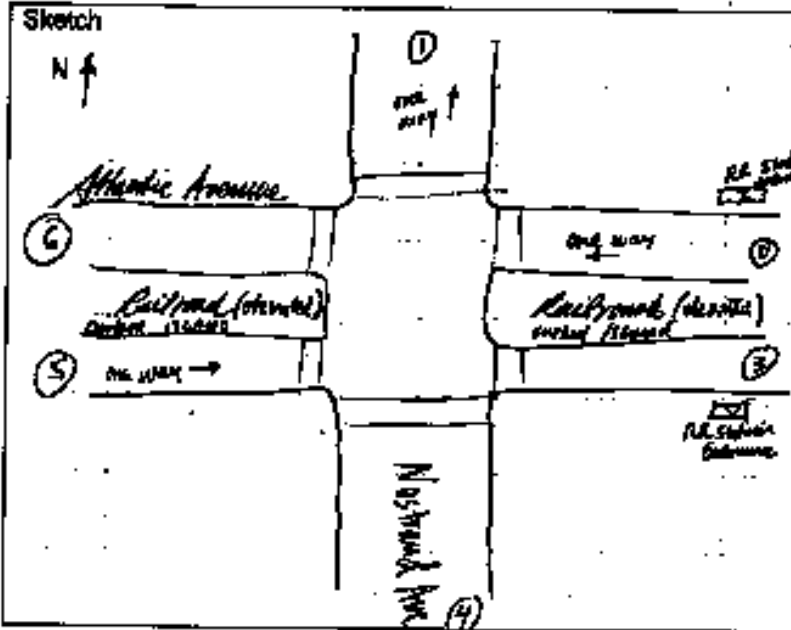
Municipality:

- County Kings
 City Brooklyn (NYC)
 Village _____
 Town _____

Location:

Principal Street Atlantic Ave
 Intersecting Street(s) Nostrand Avenue
 Reason for Selection List

Observer: R D Brustman



Date 10/17/00
 Time of day 4:15 pm
 Weather overcast, light rain

Intersection Character:
 Area Type Commercial, retail

Street Types & Lanes
Arterials
 (1) 2 lanes, one way marked
 (2) 3 lanes each, one way

Alignment straight, level

Pavement Condition
asphalt, good

Photos:
 (Roll 2 Frame(s) 1-4)

Traffic Control:

Signals 3 phase, ped signals at each of 4 corners
 Signs one way signs, no left turn signs for traffic on top (2) "No Turn" for traffic on top (2)
 Markings ped crossings as indicated, lane markings on Atlantic Avenue
 Other _____
 Significant Parking and Turning Restrictions No parking on Nostrand 4 to 7 pm, both tops (1) (2)

Traffic Flow and Behavior:

Motor Vehicles Heavy on Nostrand Avenue
 Pedestrians moderate to heavy
 Bicycles few, on sidewalks
 Apparent Violations, Conflicts _____

Other Features:

Lighting Yes, but on standards right at intersection
 Transit Facilities LIRR Station
 Other Features worth noting Railroad (LIRR Crossbay Line) runs down middle of Atlantic Avenue. Elevated, with minimal clearance. (22' 6" high restrictions for vehicles)
 Parking on Nostrand only
 Bicycle Facilities none
 Driveways not significant
 Sidewalks curb cuts

Notes:

Check if notes continue on back

NEW YORK BICYCLING COALITION
IMPROVING BICYCLING AND PEDESTRIAN SAFETY

chapter

8

THE PROJECT PROPOSAL: CASE STUDIES

Introduction

Current Gaps in Crash Data
Gathering

Selecting Intersections for
Community Safety
Campaigns

Understanding the Case
Studies

Individual Case Studies

The examples in this chapter were done with the assistance of professionals. So regard them as models, not typical advocate products. Still, the advocate should strive for a credible product that conveys the nature of the problem, the relevant facts, and feasible recommendations.

INTRODUCTION

Previous Chapters explained the advocate's role in advancing needed safety projects. Here we give examples of products developed during activities leading to a project proposal. The examples in this chapter are for intersections (where traffic conflicts are most common), but the method is similar for all types of proposals.

The responsible advocate has to do homework before taking a project proposal to the implementing highway agency. As stressed in the previous chapter, the goal is to prepare a case that will persuade the agency's professional there is a high priority problem that can be solved or mitigated within the agency's means.

The general process has several steps.

1. Select the problem and location to work on. There may be dozens of deficiencies in the community road system, so focus where a remedy is thought to give the best "bang for the buck."
2. Gather information on the situation. Be as complete as you can to support the arguments to be made. Anecdotal information is okay, but it is not the most authoritative. Not all the desired information may be readily available, particularly in the area of accident history data, but the idea is to get enough information to show the situation warrants a full engineering investigation.
3. Analyze the information to confirm the problem and refine the recommendations. Recommendations should offer effective and economic fixes. Since the advocate is not necessarily professionally trained in traffic engineering, acknowledge you are presenting "working proposals," subject to subsequent investigation.
4. Organize and package the information for presentation to the petitioned agency. The material has to be intelligible to the agency's professionals and, if well done, the engineer may use it as the preliminary investigation.

CURRENT GAPS IN CRASH DATA GATHERING

Crash data can be very effective for putting together a compelling case for redesigning an intersection. Unfortunately, there are still many gaps in crash data gathering, including:

- Missing or incomplete documentation for bicyclist and pedestrian crashes;
- Missing or incomplete documentation for bicyclist and pedestrian crashes that did not involve a motor vehicle;
- Lack of current information on intersection volumes and turning movements for motor vehicles;

- Lack of information on pedestrian and bicyclist volumes for specific intersections and areas;
- Limited data on total pedestrian and bicycling data at all levels of US planning; and
- Different kinds of data for bicyclist problems versus pedestrian problems.

Seen something new on your travels? Send NYBC your thoughts and pictures so we can put them on our website. nybc@nybc.net

SELECTING INTERSECTIONS FOR COMMUNITY SAFETY CAMPAIGN CASE STUDIES

To aid in the ranking of counties according to bicyclist and pedestrian crash data, NYBC used the report, *An Analysis of Available Bicycle and Pedestrian Accident Data* by Richard Brustman, to analyze the frequency and rate of bicyclist and pedestrian injuries for all sixty-two counties in New York State. Using this report, NYBC narrowed the initial group of counties to the fifteen which had the highest rate of injuries NYBC took into consideration whether the county drew attention from DOT's Surveillance System and then ranked by area type (rural, suburban and upstate metro). The group was further narrowed by a point system based on the standing of the counties within the previously mentioned categories. A pool of 10 candidate counties spread evenly within the area types was then solicited to participate in the grant process. A 1999 report of this county selection process is available from NYBC.

An application was sent to the County Executives, Borough Presidents, and selected Counties Commissioners (e.g., planning, transportation, etc) in each of the candidate counties explaining the grant and requesting they fill out the application to participate. An important aspect of the application process was the county's willingness to be the main facilitator among a variety of interest groups and to gather important information needed to initiate the local site selection process.

Based on the applications received, NYBC selected three counties in year one of the grant (Albany, Suffolk and Monroe) and one New York City borough (Kings County - Brooklyn) in year two. A task force reviewed the local bicycling and pedestrian situation and specific areas known to have high numbers of bicyclist and pedestrian injuries or traffic conflicts. Local working groups, comprised of cycling and pedestrian advocates, law enforcement officials, public health officials, transportation planners, engineers and other constituent groups, led this process. The working groups gathered the data regarding sites or corridors within the counties where high frequencies of injuries or crashes were either documented or anecdotally known. In each county, the working groups tried to select a diverse range of urban, suburban and rural hot spots.



These solutions represent the engineer's perspective, but do not necessarily reflect pioneering work being done on bicycling and pedestrian facilities in the United States and around the world.

Urban bicycling facilities are important. All intersections should eventually be equipped with bicycling facilities, including lanes and intersection controls.

Engineers from Greenman-Pedersen, Inc, aided by David Bulman P.E, and Richard Brustman, Transportation Analyst worked to develop the recommended engineering and education "fixes" for the selected areas.

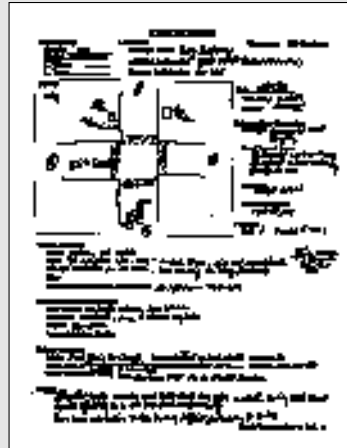
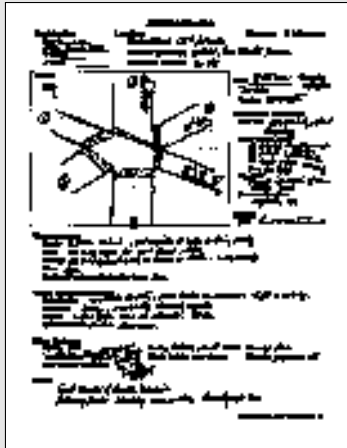
UNDERSTANDING THE CASE STUDIES

Since these case studies were done by professionals, they are not intended to exemplify an "advocates' product". Their utility to advocates is in depicting the way transportation professionals troubleshoot intersections and formulate conclusions. Engineers, in order to be able to give their drawings a professional stamp, must produce designs consistent with the State Highway Design Manual. These designs, however, can create user conflicts. For example, recommendations for a few of the intersections include rumblestrips, which are handy for increasing driver awareness, but tend to destabilize bicyclists and even trap bicycle wheels (and some wheelchair wheels).

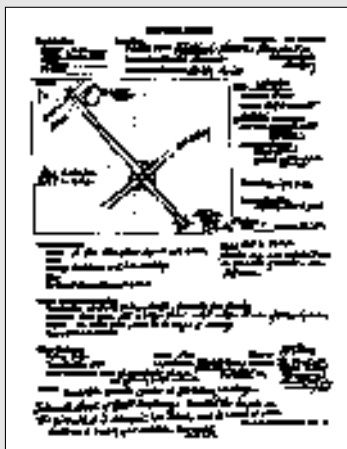
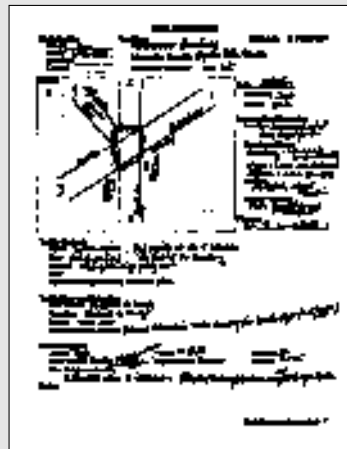
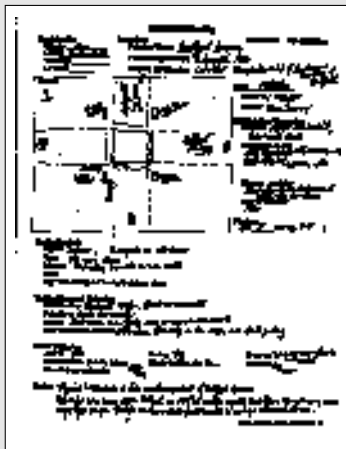
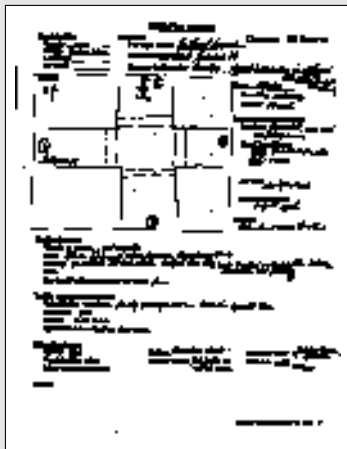
These solutions represent the engineer's perspective, but do not necessarily reflect pioneering work being done on bicycling and pedestrian facilities in the United States and around the world. Meanwhile, standards are continually updated to reflect national and international research, and State and local policies, so even these solutions may warrant update prior to implementation. Advocates can stay informed about these developments through many of the sources listed elsewhere in this manual and by keeping an eye out for new designs when traveling in this country and abroad.

Additionally, these case study examples are heavily weighted towards pedestrian solutions. This should not be taken as a sign that urban bicycling facilities are insignificant. **Urban bicycling facilities are important.** All intersections should eventually be equipped with bicycling facilities, including lanes and intersection controls. Bicycling facilities are often better designed as longer systems: work on separate intersections did not lend itself to route-level solutions such as systems of bicycle lanes. Future studies should explore the application of good transportation design not only to intersections but also to longer routes. Additional studies may solve problems at troublesome intersections, but also suggest bicycling lanes and other solutions required for safe, comprehensive transportation networks. Part two of the GTSC Community Safety Campaign strives to incorporate work on intersection design and selected routes (see Introduction).





CASE STUDIES



CASE STUDY 1
KINGS COUNTY

FLATBUSH AVENUE
from Myrtle Avenue to Tillary Street

PROBLEM STATEMENT:

Dense commercial and institutional activity, with a heavy volume of automobiles, trucks and transit buses, as well as pedestrians and bicyclists, all competing for the same space.

DETAILED DESCRIPTION:

This is an exceedingly busy stretch of road with the Flatbush Ave./Myrtle Ave. and Flatbush Ave./Tillary St. intersections congested with vehicular and pedestrian traffic. Flatbush Ave. is a major arterial with 8 lanes, 5 northbound (2 reserved for left turns) and 3 southbound, with a 5 ft curbed median.

Tillary St. is a major arterial with 6 lanes and a curbed median and Myrtle Ave. is an arterial with 4 lanes with a wide landscaped median on the west side. The Flatbush Ave./Myrtle Ave. intersection is a five-legged skewed intersection with Gold Street, a one-way low volume road heading northeast from the intersection. The Flatbush Ave./Tillary St. intersection is crossed by Duffield Avenue, a short diagonal road in the southeast corner of the intersection going from Flatbush Ave. to Tillary St. Low volume intersecting roads, Johnson Street and Tech Place, are across from each other midway between the two main intersections. Pedestrian signals are provided. There are no specific provisions for bicyclists. From September 1994 to August 1999, 799 crashes, including 9 bicyclist and 36 pedestrian crashes were reported over this 924 ft stretch of road.

SPECIFIC PROBLEMS FOR PEDESTRIANS:

- Institutional and commercial facilities characterize this busy urban intersection with heavy vehicular and pedestrian traffic.
- Pedestrian errors include jaywalking and crossing against the signal.
- There are no curb ramps at intersections.
- Motorists do not pay attention to pedestrians or yield right of way.

SPECIFIC PROBLEMS FOR BICYCLISTS:

- There is no shoulder on the road, nor any other bicyclist-specific facility.
- Extensive parallel parking of motor vehicles produces possible conflicts with car doors, etc.
- Road surface is irregular with drains and grates in bicyclists' path.
- Utility covers are not flush with road surface.
- Turning radii are large, allowing cars to corner at high rates of speed.
- There is heavy motor vehicle traffic.

SPECIFIC PROBLEMS FOR MOTOR VEHICLES:

- There are a number of institutions with major pedestrian surges, and pedestrians jaywalk extensively.
- There are very heavy turning movements for vehicles on Tillary Street.

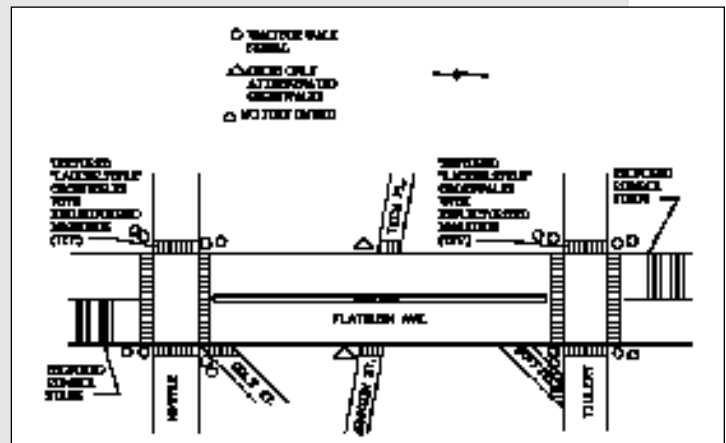


- Plethora of commercial, regulatory and warning signage adds the challenge of safely negotiating this stretch of roadway.
- Motorists not paying attention or yielding right of way to pedestrians and bicyclists have resulted in numerous crashes.

RECOMMENDED SOLUTIONS:

Short-term (cheap & immediate):

- Increase signal time for both Myrtle Ave and Tillary St. will allow pedestrians to cross Flatbush Avenue along with lead timing for pedestrians and bicyclists where appropriate.
- Install "Trailblazer" signs routing bicyclist around Flatbush to avoid section entirely.
- Install raised/textured "ladder style" crosswalks with reflectorized markings across all four legs of Flatbush Ave./Myrtle Ave. and Flatbush Ave./Tillary St. intersections using high quality materials.
- Install enforceable signage for pedestrians on each corner of both intersections, as follows: WAIT FOR WALK SIGNAL.
- At the corners of the intersection with Johnson Street and Tech Place, install enforceable signage for pedestrians as follows: CROSS ONLY AT CROSSWALKS.
- Install NO RIGHT TURN ON RED signage. Since NYC law already prohibits right on red turns, the sign can have "anywhere in NY City" underneath in smaller letters.



Longer-term (more expensive, longer implementation, and possibly further study needed):

- Determine if a crosswalk is warranted at the intersection of Flatbush Avenue with Johnson Street and Tech Place.
- Install pedestrian signals at the corners of Flatbush Avenue/Myrtle Ave. and Flatbush Avenue/Tillary St.
- Install bicycle lanes and intersection controls.

CASE STUDY 2

KINGS COUNTY

**UTICA AVENUE
at Eastern Parkway**

PROBLEM STATEMENT:

Extremely busy intersection with heavy pedestrian use; significant jay walking and crossing against the signal by pedestrians.

DETAILED DESCRIPTION:

The Utica Avenue intersection with Eastern Parkway, located in the Crown Heights, north central section of Brooklyn (Kings County), is a mix of intense commercial use on Utica and high rise apartments on Eastern. Utica Avenue carries a high volume mix of cars, trucks, transit busses and school busses. No commercial traffic is allowed on Eastern Parkway, which is striped for three lanes eastbound and two lanes westbound separated by a striped median. A sidewalk with benches is located between the service roads and Eastern Parkway. A bicycle lane is provided along the sidewalk between the eastbound service road and Eastern Parkway. Traffic counts were unavailable. From September 1994 to August 1999, 489 crashes, including 68 pedestrian and 6 bicyclist crashes, were reported. Though well-thought-out traffic control devices currently exist at this intersection, additional safety measures are warranted to reduce the number of reported crashes.

SPECIFIC PROBLEMS FOR PEDESTRIANS:

- This is an extremely busy intersection with heavy traffic volumes and surging pedestrian flows, exacerbated by boarding and alighting subway passengers and multiple roadway crossings to traverse.
- Pedestrian signals are in place for pedestrians crossing Eastern Parkway only. None are available to guide and control pedestrian flow across Utica Avenue or the service roads.
- Pedestrians were observed jay walking across Eastern, Utica and the service roads, increasing the potential for serious pedestrian crashes at this location.
- Eleven of the reported 68 pedestrian crashes involved pedestrians crossing against the signal, which is dangerous, but not uncommon, where pedestrian volumes are high.

SPECIFIC PROBLEMS FOR BICYCLISTS:

- Intensely busy intersection, heavy vehicular and pedestrian traffic.
- Pedestrian conflict area in vicinity of bicycle path and subway station entrance.
- Bicycle path users experience high risk crossing Utica Avenue.

SPECIFIC PROBLEMS FOR MOTOR VEHICLES:

- Utica avenue is a heavily used north-south commercial corridor with a mixture of autos and trucks (some making on-street deliveries), transit busses, school busses and crowds of pedestrians.
- Commercial vehicles are prohibited on Eastern Parkway; auto traffic is heavy but generally smooth flowing.
- Jay walking pedestrians require motorists to be especially alert.
- Nearly chronic congestion exists at the intersection of Utica Avenue and Eastern Parkway. "Blocking the box" traffic conditions are frequent.



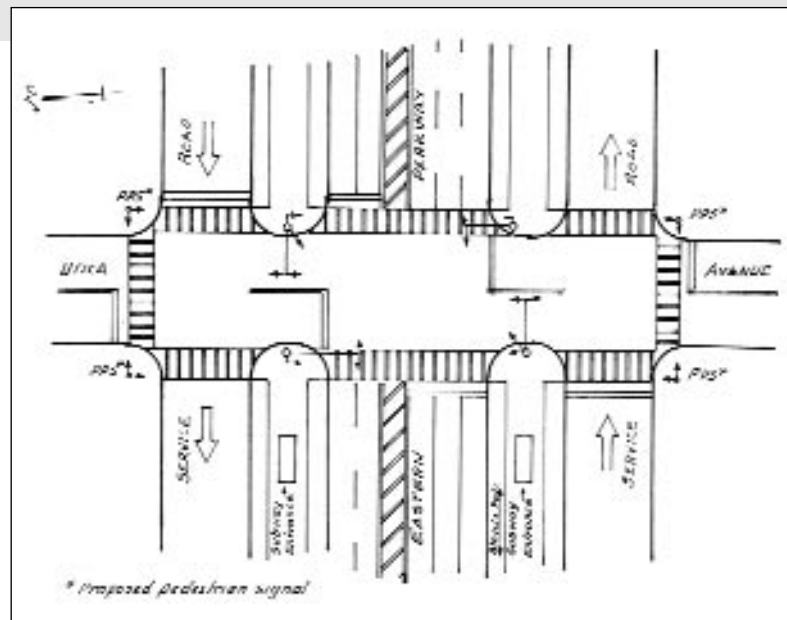
RECOMMENDED SOLUTIONS:

Short-term (cheap & immediate):

- Add two new signs, appropriately placed, to reduce jay walking and crossing against the signal, that read: DO NOT JAY WALK: USE CROSSWALKS and WAIT FOR WALK SIGNAL

Longer-term (more expensive, longer implementation, and possibly further study needed):

- Add pedestrian signals at each of the four outer corners of the intersection of Utica Avenue and the eastbound and westbound service roads to guide and control pedestrian movements (primarily across Utica Avenue).
- Surface treatments, such as color pigmented pavement, will better indicate the bicycle path crossings at major Eastern Parkway intersections, including Utica Ave., and will alert motorists to the upcoming crossings.
- Install bicycle lanes and intersection controls.



CASE STUDY 3
KINGS COUNTY
BROADWAY
at Flushing

PROBLEM STATEMENT:

Multiple uses, including dense commercial activity, and a heavy volume of automobiles, trucks and transit buses as well as pedestrians and bicyclists are competing for the same space. Driver inattention and failure to yield the right of way are compounded by pedestrian jaywalking and crossing against the signal.

DETAILED DESCRIPTION:

The Broadway at Flushing intersection in King's County is a five-legged skewed intersection under an elevated subway line with intense pedestrian activity. All five legs of the intersection are considered major arterials. Pedestrian signals are provided. There are no provisions for bicyclists. In the past five years, 122 accidents, including 6 bicyclist and 21 pedestrian accidents were reported.

SPECIFIC PROBLEMS FOR PEDESTRIANS:

- Subway entrances, bus stops and intense commercial retail shopping characterize this busy urban intersection with heavy vehicular and pedestrian traffic
- Pedestrians are waiting in the street for the walk signal or a gap in traffic to jay walk across the street
- Jaywalking, walking along the roadway and crossing against the signal
- Lack of curb ramps at intersections
- Obstructions in sidewalk

SPECIFIC PROBLEMS FOR BICYCLISTS:

- No shoulder on road or any other bicyclist facility
- Extensive parallel parking of motor vehicles
- Road surface is irregular with drains and grates in bicyclists' way
- Utility covers not flush with road surface
- Cause of all reported accidents was motorist inattention to bicyclists
- Large turning radius allows cars to turn corner at high speed
- Heavy motor vehicle traffic
- Poor drainage that traps water on roadway or at intersection
- Extensive commercial activity

SPECIFIC PROBLEMS FOR MOTOR VEHICLES:

- Influence of elevated subway accesses, bus stops and the medical center
- Heavy congestion, significant pedestrian activity, a multitude of commercial businesses and related signing
- Overabundance of regulatory and warning signing and pavement marking impede motorists' ability to safely navigate intersection
- Motorists' inattention to bicyclists and pedestrians resulted in numerous accidents



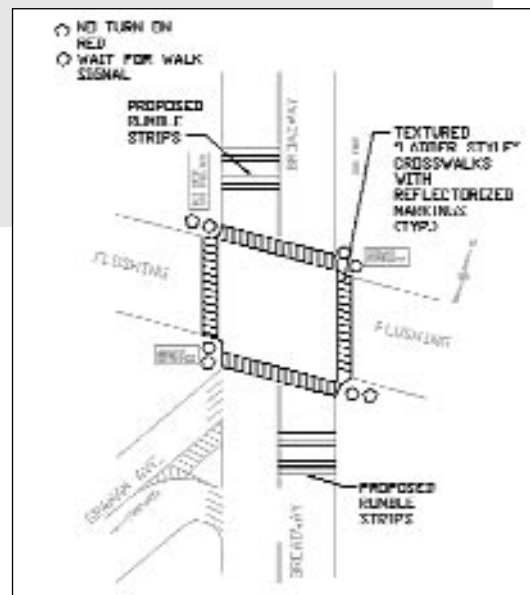
RECOMMENDED SOLUTIONS:

Short-term (cheap & immediate):

- Remove obstructions in sidewalk or keep obstructions near the curb in a confined space.
- Reduce area speed limit to allow all vehicles to more safely negotiate through the confusing and heavily regulated intersection.
- Install raised/textured “ladder style” crosswalks with reflectorized markings across all four legs of the intersection using high quality materials
- Install enforceable signing for pedestrians on each corner, as follows: WAIT FOR WALK SIGNAL
- Install enforceable signing for motorists as follows: NO TURN ON RED

Longer-term (more expensive, longer implementation time or possibly further study needed):

- Installations of curb neckdowns to reduce right turn speed and lessen the street space to be crossed by a pedestrian.
- Installation of curb ramps at corners.
- Repave roadway surface, fixing drainage problem.
- Bring utility covers and grates flush with the road surface, or move out of direct bicycle path.
- Install bicycle lanes and intersection controls.



CASE STUDY 4
ALBANY COUNTY

DELAWARE AVENUE
at Madison Avenue and Lark Street

PROBLEM STATEMENT:

Complex signalized intersection with heavy traffic volumes and long, unsignalized pedestrian crosswalks.

DETAILED DESCRIPTION:

The Madison Avenue intersection with Delaware Avenue and Lark Street, located in a commercial area of the City of Albany, experiences heavy peak hour traffic of nearly 2,000 vehicles. Pedestrian traffic is significant during peak times, and even at off peak hours. A two-phased fixed time traffic signal controls the intersection traffic. There are no pedestrian signals. From September 1994 to August 1999, 95 crashes were reported at this intersection, including three pedestrian and one bicyclist crash.

SPECIFIC PROBLEMS FOR PEDESTRIANS:

- Multi-leg intersection with heavy turning traffic.
- On west side of intersection, long crosswalk across Madison Avenue have no pedestrian refuge.
- On southeast side of intersection, long crosswalk across Lark Street/Delaware Avenue.
- There are no pedestrian signals to guide and control safe pedestrian crossings.
- The crosswalks are minimally visible to approaching motorists.

SPECIFIC PROBLEMS FOR BICYCLISTS:

- No specific provisions for bicyclists.
- Heavy volumes of turning traffic through the complex intersection.

SPECIFIC PROBLEMS FOR MOTOR VEHICLES:

- Complex multi-leg intersection geometry.
- Heavy through and turning vehicular traffic volumes.
- Significant pedestrian traffic.
- Minimally visible crosswalks.



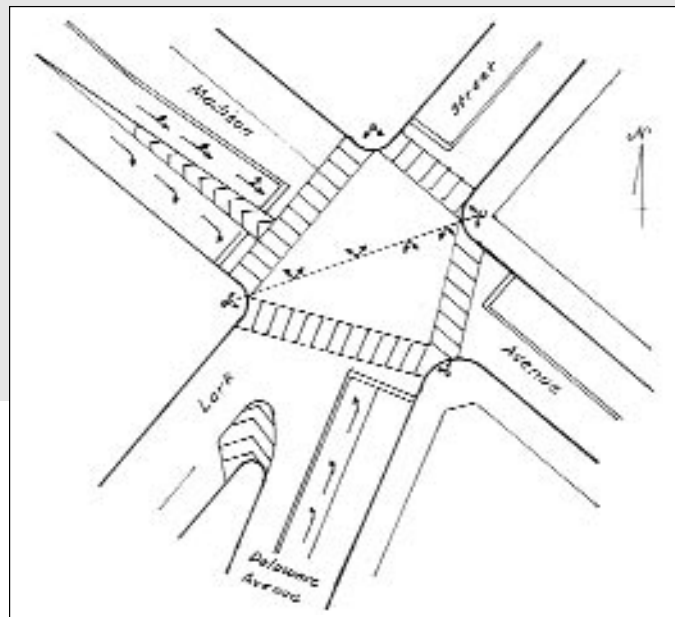
RECOMMENDED SOLUTIONS:

Short-term (cheap & immediate):

- Relocate the crosswalk across the southerly leg of the intersection to provide a safe crossing between the southwest corner of the intersection of Madison and Lark to the southeast corner of Delaware and Madison, and to shorten the pedestrian waiting time in the intersection.
- Install “ladder style” crosswalks across all four legs of the intersection to increase their visibility to the motorists. Use high quality permanent materials for all pavement markings.
- Adjust traffic signal head for eastbound Madison Avenue traffic.
- Install pedestrian signals on each of the four corners.

Longer-term (more expensive, longer implementation, and possibly further study needed):

- Channelize, with pavement markings, the west side Madison Avenue approach to provide a pedestrian refuge and to better direct 1) eastbound traffic into the narrower Madison Avenue east of the intersection and 2) left-turning vehicles into northbound Lark Street.
- Install pavement markings and new turning arrows.
- Stripe, with pavement markings, a bullnose to channelize and guide eastbound right turning traffic from Madison into Delaware and to delineate a parking bay on the east side of Lark Street south of the intersection.
- Install bicycle lanes and intersection controls.



CASE STUDY 5

ALBANY COUNTY

DELAWARE AVENUE

at Second Avenue, Whitehall Road and Ten Eyck Avenue

PROBLEM STATEMENT:

Heavy peak hour through and turning traffic volumes with minimal pedestrian provisions and no specific provisions for bicyclists.

DETAILED DESCRIPTION:

The Delaware Avenue intersection with Whitehall Road, Second Avenue and Ten Eyck Avenue is located in a commercial area on the south edge of the City of Albany. This intersection experiences heavy through and turning traffic volumes. A nearby senior center, nursing homes and a park contribute to special crossing needs. A three-phase traffic signal controls the intersection. Fixed time pedestrian signals only on three corners. From September 1994 to August 1999, 61 crashes, including three pedestrian crashes, were reported at this intersection.

SPECIFIC PROBLEMS FOR PEDESTRIANS:

- Heavy left and right turn movements between northbound Delaware and eastbound Whitehall across crosswalk on west side of intersection, especially during peak hours of traffic flow.
- Heavy eastbound and westbound peak hour traffic flow between Whitehall and Second Avenue.
- No pedestrian signal on southwest corner of Delaware and Second Avenue.
- Traffic from Delaware and Second Avenue splits without guidance or control into Whitehall and Ten Eyck Avenue.
- No channelization to guide traffic or pedestrians in the open area between Whitehall and Ten Eyck.

SPECIFIC PROBLEMS FOR BICYCLISTS:

- No specific provisions for bicyclists.
- Complex intersection geometry and heavy through and turning traffic volumes.
- Three phase traffic signal operation.
- Busy driveways into Mobil station in the southeast quadrant of the intersection.

SPECIFIC PROBLEMS FOR MOTOR VEHICLES:

- Awkward and difficult intersection geometry.
- Heavy peak hour traffic volumes.
- Minimally visible crosswalks.
- No pedestrian signal in southeast quadrant, thus no pedestrian guidance or control.
- No stop line at any approach to the intersection.



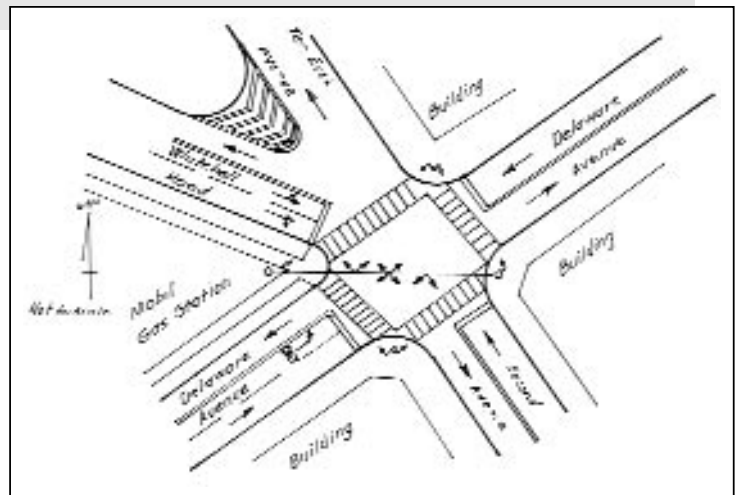
RECOMMENDED SOLUTIONS:

Short-term (cheap & immediate):

- Install pedestrian actuated signal on southwest corner of Delaware Avenue and Second Avenue.
- Install "ladder style" crosswalks across each approach to the intersection, using high quality, permanent, reflective pavement marking materials.
- Install stop lines on each approach, using high quality, permanent, reflective pavement marking materials.
- Install painted bullnose channelization between Whitehall Road and Ten Eyck Avenue, using high quality, permanent, reflective pavement marking materials.

Longer-term (more expensive, longer implementation, and possibly further study needed):

- Install bicycle lanes and intersection controls.



CASE STUDY 6

ALBANY COUNTY

**WASHINGTON AVENUE
at Eagle Street, Pine Street and Maiden Lane**

PROBLEM STATEMENT:

Poorly defined vehicular traffic control, especially given the heavy volume of mass transit, coupled with a lack of provisions for pedestrians and bicyclists in an area characterized by a historic statue in front of the historic Albany City Hall and the State Capitol and part of the central business district and government center.

DETAILED DESCRIPTION:

The intersection of Washington Avenue with Eagle Street, Pine Street and Maiden Lane in Albany's Central Business District presents a difficult intersection for motorists and is daunting to pedestrians and bicyclists. Washington Avenue is considered a minor arterial. Eagle Street and Pine Street are collectors and Maiden Lane is a local road. The project area is the busiest bus route on Washington Avenue. There are two handicap accessible ramps, one on the corner of the State Capitol and the other on the corner of the park across from the northeast corner of City Hall, but no crosswalks. There are no provisions for bicyclists. In the past five years, there have been six accidents, including 1 involving a pedestrian.

SPECIFIC PROBLEMS FOR PEDESTRIANS:

- No crosswalks
- Two handicap accessible ramps that dump pedestrians, physically impaired or otherwise, into the travel way
- Obstructions in sidewalk
- Pedestrians must cross substantive distances of unmarked pavement

SPECIFIC PROBLEMS FOR BICYCLISTS:

- Lack of shoulder on road or any other bicyclist facility
- Diagonal parking along Eagle Street in front of City Hall
- Bicyclists must navigate with motorists through an intersection with scarce pavement markings

SPECIFIC PROBLEMS FOR MOTOR VEHICLES:

- Scarcity of pavement markings makes it unclear how best to navigate through the intersection
- Lack of crosswalks and other pedestrian amenities indicates a de-emphasis of the pedestrian and bicyclist environment.



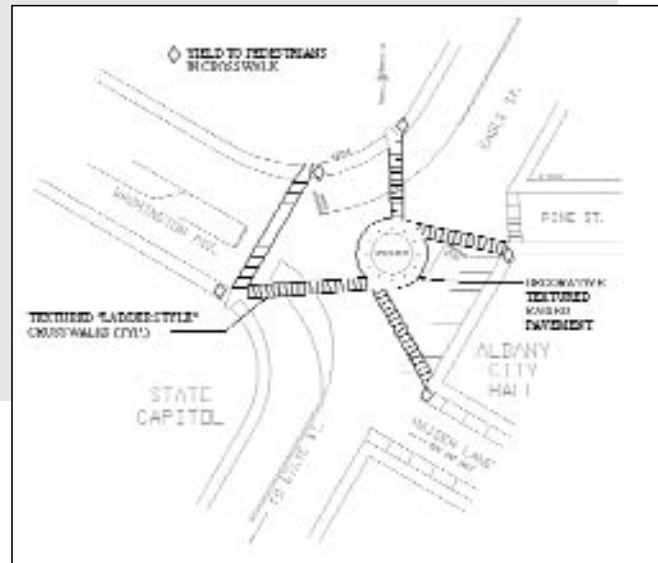
RECOMMENDED SOLUTIONS:

Short term (cheap and immediate):

- Install textured “ladder style” crosswalks, as shown, including one across Washington Avenue where there is an existing handicap ramp on the south side of Washington Avenue using high quality materials
- Install handicap ramp on the north side of Washington Avenue (eliminating one parallel parking place)

Longer-term (more expensive, longer implementation time or possibly further study needed):

- Install a curb cut on the north side of Washington Avenue by eliminating one parallel parking place.
- Install a raised and textured band around the monument of three foot width beyond concrete posts.
- Install raised and textured band around the monument of three foot width beyond concrete posts
- Install YIELD TO PEDESTRIANS signs, as shown
- Install bicycle lanes and intersection controls.



CASE STUDY 7

MONROE COUNTY

**MAIN STREET
at Alexander Street**

PROBLEM STATEMENT:

Dense commercial activity and a heavy volume of automobiles, trucks and transit buses, as well as pedestrians and bicyclists competing for the same space. Driver inattention and failure to yield the right of way are compounded by pedestrian jaywalking and crossing against the signal. A de-emphasis of the pedestrian environment within the Central Business District sends the wrong message to motorists.

DETAILED DESCRIPTION:

The Main Street at Alexander Street intersection in Monroe County is a four-legged intersection in the middle of Rochester's Central Business District with average traffic of 27,400 vehicles per day. The south leg of Alexander Street and both legs of Main Street are considered minor arterials. Bus stops are provided along Main Street. Pedestrian signals are provided for crossing Main Street only. There are no specific provisions for bicyclists. Between September 1994 and August 1999, 57 crashes, including 1 bicyclist and 5 pedestrian crashes, were reported.

SPECIFIC PROBLEMS FOR PEDESTRIANS:

- Poorly defined crosswalks.
- No pedestrian phase to cross either leg of Alexander Street.
- Obstructions in sidewalk.
- Pedestrians must cross six lanes of traffic to cross Main Street.

SPECIFIC PROBLEMS FOR BICYCLISTS:

- Lack of shoulder on road or any other bicycling facility.
- Road surface is irregular with drains and grates in bicyclists' path.
- All of the reported crashes were a result of motorists' inattention to bicyclists.
- Turning radii are large, allowing cars to corner at a high rate of speed.
- Heavy motor vehicle traffic.
- Extensive commercial activity.

SPECIFIC PROBLEMS FOR MOTOR VEHICLES:

- Bus stops, in combination with other features of an urban central business district, have potential to obstruct view.
- Poorly defined crosswalks do not capture the motorists' attention.



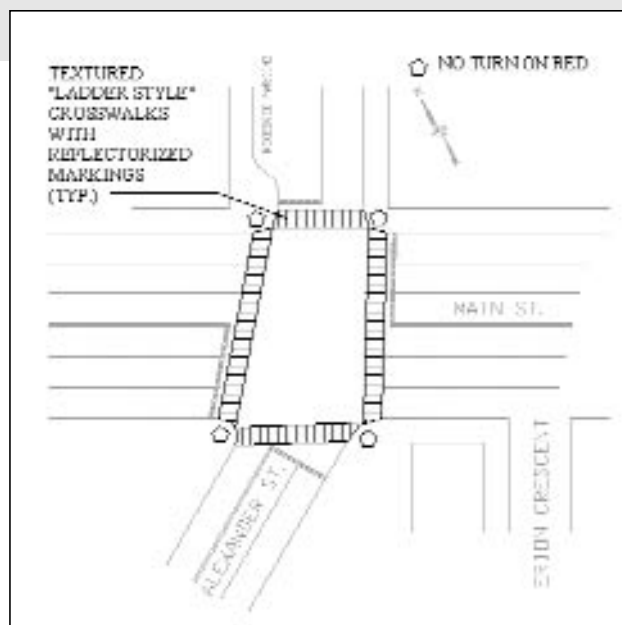
RECOMMENDED SOLUTIONS:

Short-term (cheap & immediate):

- Install raised/textured "ladder style" crosswalks with reflectorized markings across all four legs of the intersection using high quality materials.
- Install enforceable signing for motorists as follows: NO RIGHT TURN ON RED.
- Increase light phase on Alexander Street to allow for easier pedestrian crossing of Main St.

Longer-term (more expensive, longer implementation, and possibly further study needed):

- Determine if pedestrian signal is warranted to cross Alexander St.
- Reduce turning radii to reduce the speed of turning cars.
- Repave roadway, bringing the grates flush with the road surface.
- Install shoulder.
- Install bicycle lanes and intersection controls.



CASE STUDY 8

MONROE COUNTY

**EAST AVENUE
at Alexander Street**

PROBLEM STATEMENT:

Dense commercial activity, and a heavy volume of automobiles, trucks and transit buses, as well as pedestrians and bicyclists are competing for the same space. Driver inattention and failure to yield the right of way are evident as the cause of reported crashes. A de-emphasis of the pedestrian environment within the Central Business District sends the wrong message to motorists.

DETAILED DESCRIPTION:

The East Avenue at Alexander Street intersection in Monroe County is a four-legged intersection in the middle of Rochester's Central Business District with average traffic of 26,900 vehicles per day. During the morning and afternoon peak hours, approximately 160 pedestrians cross Alexander Street and approximately 65 cross East Avenue. Both East Avenue and Alexander Street are considered minor arterials. Bus stops are provided along East Avenue. There are automatic pedestrian signals provided but no pedestrian buttons. There are no specific provisions for bicyclists. Between September 1994 and August 1999, 71 crashes, including 5 bicyclist and 1 pedestrian crash, were reported.

SPECIFIC PROBLEMS FOR PEDESTRIANS:

- Poorly defined crosswalks.
- No pedestrian phase to cross either of the minor arterials.
- Obstructions in sidewalk.

SPECIFIC PROBLEMS FOR BICYCLISTS:

- Lack of shoulder on road or any other bicycling facility.
- Road surface is irregular with drains and grates in bicyclists' way.
- All of the reported crashes were a result of motorists' inattention to bicyclists.
- Turning radii are large, allowing cars to corner at high rate of speed.
- Heavy motor vehicle traffic.
- Extensive commercial activity.

SPECIFIC PROBLEMS FOR MOTOR VEHICLES:

- Poorly defined crosswalks and a lack of bicycling facilities. Motorists are not alerted to pedestrian and bicyclist presence.



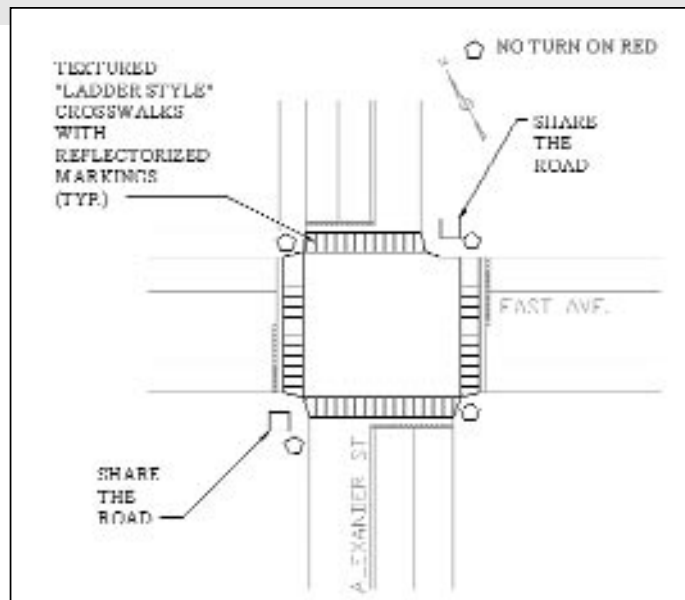
RECOMMENDED SOLUTIONS:

Short-term (cheap & immediate):

- Install raised/textured "ladder style" crosswalks with reflectorized markings across all four legs of the intersection using high quality materials.
- Install SHARE THE ROAD signs at the northeast and southwest corners of the intersection.
- Install enforceable signing for motorists as follows: NO RIGHT TURN ON RED.
- Change right lane north bound on Alexander Street at East Avenue intersection to RIGHT TURN ONLY, NO RIGHT TURN ON RED.

Longer-term (more expensive, longer implementation, and possibly further study needed):

- Repave roadway, paying attention to bring the grates flush with the road surface.
- Reduce turning radii to slow the speed of turning cars.
- Install bicycle lanes and intersection controls.



CASE STUDY 9

MONROE COUNTY

**AVENUE D
at Hollenbeck Street**

PROBLEM STATEMENT:

Significant collector street traffic on Avenue D conflicting with pedestrian and bicyclist traffic and vehicles traversing the Hollenbeck Street dog leg.

DETAILED DESCRIPTION:

The Avenue D intersection with Hollenbeck Street is located in the northerly urban residential area of Rochester. During morning and afternoon peak periods, the intersection experiences moderately heavy traffic volume on Avenue D and a strong north/south movement on Hollenbeck across Avenue D. Between September 1994 and August 1999, four bicyclist crashes were reported at this intersection.

SPECIFIC PROBLEMS FOR PEDESTRIANS:

- No striped crosswalks.
- No advance warning of pedestrian crossing across Avenue D.
- Confusing traffic pattern- dog leg intersection geometry.

SPECIFIC PROBLEMS FOR BICYCLISTS:

- No specific provisions for bicyclists.
- Bicyclists ride on the sidewalks.
- Inadequate sight distance for bicyclists and motorists in the northwest corner of Hollenbeck Street and Avenue D.

SPECIFIC PROBLEMS FOR MOTOR VEHICLES:

- No pavement markings.
- No centerline striping on Avenue D or Hollenbeck Street.
- No stop lines on Hollenbeck Street at Avenue D.
- No crosswalk across Avenue D.
- No crosswalks across Hollenbeck Street at Avenue D.
- Dog leg intersection for through traffic on Hollenbeck Street crossing Avenue D.
- No advance warning of pedestrians crossing Avenue D.
- Limited sight distance for southbound Hollenbeck Street traffic approaching Avenue D.



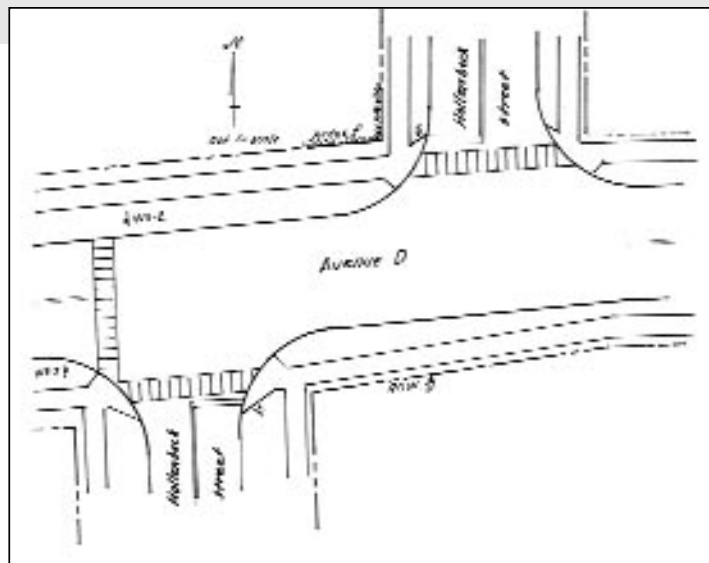
RECOMMENDED SOLUTIONS:

Short-term (cheap & immediate):

- Install high visibility “ladder style” crosswalks across Hollenbeck Street on the north and south side of Avenue D.
- Install stop lines in advance of crosswalks on Hollenbeck Street.
- Install approach double yellow no passing markings on north and south legs of Hollenbeck Street (minimum of 50 feet).
- Install double yellow no passing centerline markings on Avenue D (minimum of 100 feet).
- Install yellow-lime colored WS-2 pedestrian crosswalk signs for eastbound and westbound Avenue D traffic approaching the new pedestrian crosswalk across Avenue D.

Longer-term (more expensive, longer implementation, and possibly further study needed):

- Open the sight distance triangle on the northwest corner of Hollenbeck Street and Avenue D.
- Install bicycle lanes and intersection controls.



CASE STUDY 10
SUFFOK COUNTY

SUFFOLK AVENUE (CR-100)
at Carleton Avenue (CR-17)

PROBLEM STATEMENT:

An intersection that focuses on the efficient movement of motor vehicles at the expense of bicyclist and pedestrian traffic. The intersection has expansive pavement widths to maintain excellent levels of service, high speeds and high volumes of motor vehicle traffic, but the intersection is intimidating for pedestrians and bicyclists.

DETAILED DESCRIPTION:

The Suffolk Avenue at Carleton Avenue intersection is a four-legged intersection of two major county arterials. Suffolk Avenue (CR 100) is an east-west arterial while Carleton Avenue (CR 17) provides north-south travel from the south shore of Long Island to the Long Island Expressway. Near its intersection with Carleton Avenue, Suffolk Avenue is a high-speed four-lane highway with left turn lanes and shoulders. The east-west traffic volume entering the intersection exceeds 26,000 vehicles per day. This segment of Suffolk Avenue is designated as an on-road bicycling route. Carleton Avenue provides corridor access to County and Federal court complexes, major retail and housing developments and the County minor league sports stadium; the Central Islip Central Business District is along Carleton Avenue, just south of its intersection with Suffolk Avenue. The Long Island Rail Road crosses Carleton Avenue. The Central Islip station is less than half mile away. Between September 1994 and August 1999, 173 crashes, including 3 bicyclist and 4 pedestrian crashes, were reported.

SPECIFIC PROBLEMS FOR PEDESTRIANS:

- In all but one of the crashes involving pedestrians, the pedestrians crossed against the signal or jaywalked.
- Expansive pavement widths to cross with many actuated turn lanes minimize pedestrians' time to cross the highway.
- High speed traffic.
- Turning radius is large with dedicated turn lanes, allowing cars to make high speed turns.

SPECIFIC PROBLEMS FOR BICYCLISTS:

- Lack of shoulder on Carleton Avenue and narrow shoulders on Suffolk Avenue.
- Motorists' failure to yield right of way to bicyclists resulted in two of the three reported crashes.
- Turning radius is large with dedicated turn lanes, allowing cars to make high speed turns.
- Heavy motor vehicle traffic.
- Railroad tracks cross Carleton Avenue.

SPECIFIC PROBLEMS FOR MOTOR VEHICLES:

- Intense commercial area.
- Heavy traffic volumes.
- Poorly defined crosswalks.
- Railroad tracks cross Carleton Avenue.
- Central Islip railroad station less than half mile away.



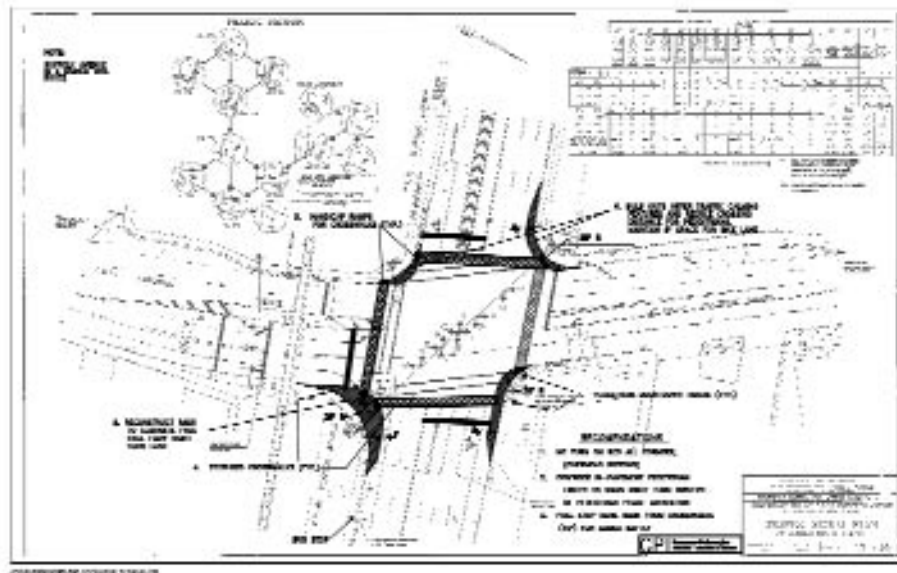
RECOMMENDED SOLUTIONS:

Short-term (cheap & immediate):

- Install enforceable signing for motorists as follows: NO RIGHT TURN ON RED.
- Move stop bars away from crosswalks for added safety.
- Install textured crosswalks, as shown, using high quality materials.
- Install "Share the Road" signs along Suffolk Ave to alert motorists to the presence of bicyclists sharing roadway.

Longer-term (more expensive, longer implementation, and possibly further study needed):

- Consider in-pavement pedestrian lights to warn right-turning drivers of pedestrian phase activation.
- Install curb cuts for crosswalks.
- Install neckdowns that offer traffic calming features and reduce crossing distance for pedestrians while maintaining five ft. width for bicycle lane.
- Install pedestrian countdown timers.
- Consider reconstruction of radii to eliminate free flow right turn lane.
- Install bicycle lanes and intersection controls.



CASE STUDY II

SUFFOLK COUNTY

STRAIGHT PATH (CR-2)

from Acorn Street and Merritt Avenue to Long Island Avenue

PROBLEM STATEMENT:

Dense commercial activity, a crossing of the Long Island Railroad, proximity to a train station and a heavy volume of motor vehicles, as well as pedestrians and bicyclists competing for the same space, contribute to a dangerous stretch of road.

DETAILED DESCRIPTION:

Straight Path is a major north-south arterial through the Town of Babylon that, in between its intersections with Acorn Street/Merritt Avenue and Long Island Avenue, provides for two through lanes that carry approximately 26,000 vehicles per day and nearly 2,000 vehicles during the evening peak. The Long Island Railroad crosses Straight Path at grade approximately 100 feet from the Acorn Street/Merritt Avenue intersection and approximately 70 feet from Long Island Avenue. Exclusive left turn lanes are provided at the Acorn Street intersection. Straight Path passes through the business district hamlet of Wyandanch, which is also a low-income community that tends to generate a significant amount of bicyclist and pedestrian activity.

The intersection of Straight Path and Acorn Street/Merritt Avenue is a five-leg intersection with Andrews Avenue, a one-way low volume road heading north away from the intersection. Acorn Street/Merritt Avenue is a Town of Babylon-maintained local collector that provide access to most of the parking lots for the Wyandanch train station, approximately 100 feet from Straight Path. Long Island Avenue is a Town of Babylon-maintained two-lane local collector that widens to provide left turn lanes at Straight Path. It is a designated bicycle route. A health clinic located on the southwest corner of the Straight Path/Long Island Avenue intersection generates significant turning movements and pedestrian activity. The intersections generate considerable turning movement, as vehicles cross the tracks to their destination on parallel roadways. Between September 1994 and August 1999, 163 crashes, including 8 bicyclist and 8 pedestrian crashes, were reported.

SPECIFIC PROBLEMS FOR PEDESTRIANS:

- Poorly defined crosswalks.
- Pedestrians cross against the signal and jaywalk extensively.

SPECIFIC PROBLEMS FOR BICYCLISTS:

- Lack of shoulder on road or any other specific bicycling facility except on Long Island Avenue.
- Crossing of railroad tracks.
- In all but one of the reported crashes, bicyclists were crossing against the signal or otherwise inappropriately.
- Heavy motor vehicle traffic.
- Extensive commercial activity.

SPECIFIC PROBLEMS FOR MOTOR VEHICLES

- Railroad crossing.
- Proximity of Wyandanch railroad station.



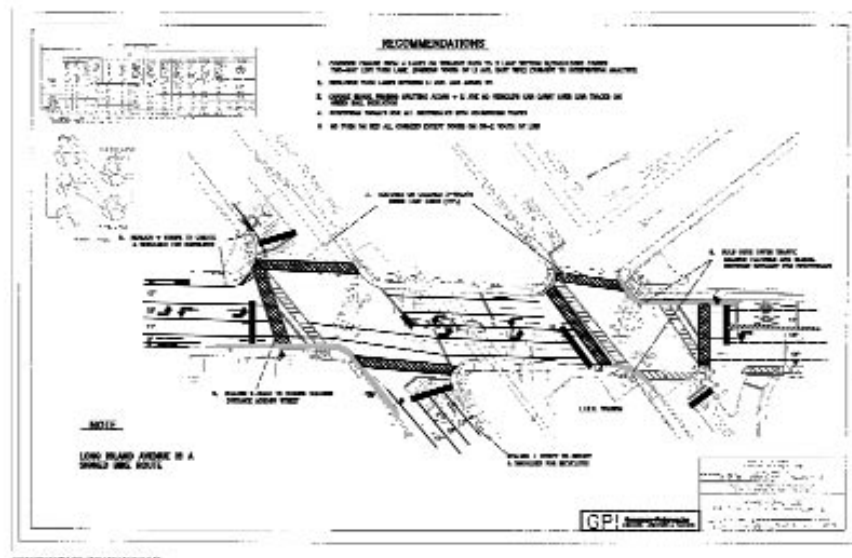
RECOMMENDED SOLUTIONS:

Short-term (cheap & immediate):

- Install enforceable signing for motorists on all corners except south on CR-2 (Straight Path) south of the Long Island Railroad as follows: NO RIGHT TURN ON RED.
- Install pedestrian signals for all crosswalks with countdown timers.
- Install textured/colored crosswalks inside the limit lines, as shown, using high quality materials.
- Realign crosswalk across Straight Path at its intersection with Long Island Avenue to reduce walking distance across street, as shown.
- Change signal phasing splitting Acorn Street and Long Island Avenue so vehicles can carry over the Long Island Railroad track on the green signal.

Longer-term (more expensive, longer implementation , and possibly further study needed):

- Change from four lanes on Straight Path to three-lane section with shoulders and center two-way left turn lane (subject to a detailed intersection analysis).
- Exclusive turn lanes between Long Island Avenue and Acorn Street.
- Consider installation of bulbouts that offer traffic calming features and reduce crossing distance for pedestrians.
- Install bicycle lanes and intersection controls.



CASE STUDY 12

SUFFOLK COUNTY

**NORTH ROAD (CR-39)
at Sandy Hollow Road (CR-52)**

PROBLEM STATEMENT:

Preference by bicyclists and pedestrians for crossing a high speed road at a convenient location rather than at a traffic signal controlled, safer location 100 feet away.

DETAILED DESCRIPTION:

The intersection of North Road at Sandy Hollow Road is actually a merging of two county roads into one road approximately 80 feet west of an intersection with Sebonac Road. North Road is primarily used as an east-west bypass of downtown Southampton. At its merge with Sandy Hollow Road, in the eastbound direction, it has one through lane and one left turn lane onto Sandy Hollow Road; in the westbound direction, North Road has two through lanes and one turning lane. North Road is a high-speed road with traffic volumes slightly over 35,000 vehicles per day with an evening peak hour volume of 2,420 in the area of its merge with Sandy Hollow Road. Sandy Hollow Road has three lanes in the westbound direction, including an exclusive right turn lane onto Sebonac Road and two through lanes going into the merge; Sandy Hollow Road has one lane in the eastbound direction. There is no access to eastbound North Road from Sandy Hollow Road. Traffic volumes along Sandy Hollow Road entering the merge with North Road are approximately 4,500 vehicles per day with an evening peak of 250. Between September 1994 and August 1999, there have been 4 crashes, none of which involved pedestrians or bicyclists. This intersection was chosen by the Suffolk County working group based upon residents' letters.

SPECIFIC PROBLEMS FOR PEDESTRIANS:

- Not convenient to cross road at signal-controlled location. Anecdotally, there seems to be a high volume of jaywalking.

SPECIFIC PROBLEMS FOR BICYCLISTS:

- Not convenient to cross road at signal-controlled location.

SPECIFIC PROBLEMS FOR MOTOR VEHICLES:

- Pedestrians and bicyclists cross unexpectedly, and have the potential to surprise motorists along this merge of two county highways in a relatively rural, bucolic area.

APPENDICES

Appendix A

List of acronyms

Appendix B

List of NYS DOT Regions, MPOs, DEC Regions, OPRHP Region, by County

Appendix C

Funding Sources for Bicycle and Pedestrian Projects

Appendix D

An Analysis of Available Bicycle and Pedestrian Accident Data: Key Findings

Appendix E

Recommended publications and websites where they can be found

Appendix F

Sample page from a Verbal Description Report

Appendix G

Citizen's site survey sample for photocopying

Bibliography

APPENDIX A LIST OF ACRONYMS

AASHTO	American Association of State Highway & Transportation Officials
ADA	Americans with Disabilities Act
B/P	Bicycling (or Bicyclist) and Pedestrian
DMV	Department of Motor Vehicles
DOH	Department of Health
DOS	Department of State
DOT	Department of Transportation
DPW	Department of Public Works
DSP	Department of State Police
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GTSC	Governor's Traffic Safety Council
ISTEA	Intermodal Surface Transportation Efficiency Act
ITE	Institute of Transportation Engineers
MUTCD	Manual of Uniform Traffic Control Devices
MPO	Metropolitan Planning Organization
NEPA	National Environmental Policy Act
NHS	National Highway System
NYBC	New York Bicycling Coalition
OPRHP	Office of Parks, Recreation and Historic Preservation
SCORP	State Comprehensive Outdoor Resources Plan
SEQRA	State Environmental Quality Review
STIP	Statewide Transportation Improvement Plan
TE	Transportation Enhancements
TEA-21	Transportation Equity Act for the 21st Century
TIP	Transportation Improvements Plan
	New York Metropolitan Planning Organizations (MPO's)
A/GFTC	Adirondack & Glens Falls Transportation Council
BMTS	Binghamton Metropolitan Transportation Study
CDTC	Capital District Transportation Committee
ETCCC	Executive Transportation Committee for Chemung County
GTC	Genesee Transportation Council
GBNRTC	Greater Buffalo & Niagara Transportation Council
HOCTS	Herkimer & Oneida Counties Transportation Study
ITCTC	Ithaca & Tompkins County Transportation Council
N-OCTC	Newburgh & Orange Transportation Council
NYMTC	New York Metropolitan Transportation Council
PDCTC	Poughkeepsie & Dutchess County Transportation Council
SMTCC	Syracuse Metropolitan Transportation Council
	NYS Office of Parks, Recreation and Historic Preservation (OPRHP) Regions

A	Allegany
AP	Adirondack Park
CP	Catskill Park
C	Central
FL	Finger Lakes
G	Genesee
LI	Long Island
N	Niagara
NYC	New York City
P	Palisades
SCD	Saratoga/Capital District
T	Taconic
TIR	Thousand Islands Region

APPENDIX B

NYS AGENCIES LISTED BY COUNTY

(Most NYS Agencies are identified by county or regional office.)

DOH: Department of Health

DOT: Department of Transportation

DEC: Department of Environmental Conservation

MPO: Metropolitan Planning Organization

OPRHP: Office of Parks, Recreation and Historic Preservation

COUNTY	NYS DOT REGION	MPO REGION	NYS DEC	NYS OPRHP REGION	NYS DOH HEALTHY HEART PROGRAM
Albany	1	CDTC	4	SCD	Yes
Allegany	6		9	A	
Broome	9	BMTS	7	C	Yes
Bronx	11	NYMTC	2	NYC	Yes
Cattaraugus	5		9	A	Yes
Cayuga	3		7	FL	Yes
Chautauqua	5		9	A	
Chemung	6	ETCCC	8	FL	Yes
Chenango	9		7	C	Yes
Clinton	7		5	TIR & AP	Yes
Columbia	8		4	T	
Cortland	3		7	C	Yes
Delaware	9		4	C	Yes
Dutchess	8	PDCTC	3	T	
Erie	5	GBNRTC	9	N	Yes
Essex	1		5	AP	
Franklin	7		5	TIR & AP	Yes
Fulton	2		5	AP & SCD	
Genesee	4		8	G	Yes
Greene	1		4	SCD & CP	
Hamilton	2		5	AP	
Herkimer	2	HOCTS	6	AP & C	
Jefferson	7		6	TIR	
Kings (Brooklyn)	11	NYMTC	2	NYC	Yes
Lewis	7		6	TIR & AP	
Livingston	4		8	G	
Madison	2		7	C	Yes
Monroe	4	GTC	8	G	Yes
Montgomery	2		4	SCD	Yes
Nassau	10	NYMTC	1	LI	Yes

COUNTY	NYS DOT REGION	MPO REGION	NYS DEC	NYS OPRHP REGION	NYS DOH HEALTHY HEART PROGRAM
New York (Manhattan)	11	NYMTC	2	NYC	Yes
Niagara	5	GBNRTC	9	N	Yes
Oneida	2	HOCTS	6	AP & C	Yes
Onondaga	3	SMTC	7	C	Yes
Ontario	4		8	FL	
Orange	8	N-OCTC	3	P	
Orleans	4		8	G	
Oswego	3		7	C	
Otsego	9		4	C	
Putnam	8		3	T	
Queens	11	NYMTC	2	NYC	Yes
Rensselaer	1	CDTC	4	SCD	
Richmond (Staten Island)	11	NYMTC	2	NYC	Yes
Rockland	8	NYMTC	3	P	Yes
St. Lawrence	7		6	TIR & AP	
Saratoga and CDTC	1	A/GFTC	5	AP & SCD	
Schenectady	1	CDTC	4	SCD	Yes
Schoharie	9		4	SCD	
Schuyler	6		8	FL	
Seneca	3		8	FL	
Steuben	6		8	FL	Yes
Suffolk	10	NYMTC	1	LI	Yes
Sullivan	9		3	CP & P	Yes
Tioga	6		7	FL	
Tompkins	3	ITCTC	7	FL	
Ulster	8		3	CP & P	Yes
Warren	1	A/GFTC	5	AP & SCD	Yes
Washington	1	A/GFTC	5	AP	
Wayne	4		8	FL	
Westchester	8	NYMTC	3	T	Yes
Wyoming	4		9	G	Yes
Yates	6		8	FL	

A = Allegany
 AP = Adirondack Park
 CP = Catskill Park
 C = Central
 FL = Finger Lakes
 G = Genesee
 LI = Long Island

N = Niagara
 NYC = New York City
 P = Palisades
 SCD = Saratoga / Capital District
 T = Taconic
 TIR = Thousand Islands Region

APPENDIX C

FUNDING SOURCES FOR BICYCLING AND PEDESTRIAN PROJECTS

This list covers the major funding programs, but is not exhaustive. It is meant as a starting point. Check local government programs and new state and federal programs as well. Private sources, such as local land developers, may also be able to provide some funding for your project.

DOT

ISTEA/TEA-21

OPRHP

Recreational Trails Grant (FHWA)

Land and Water Conservation Fund (Department of the Interior)

Municipal Parks Matching Grant Program (EPF & Clean Water / Clean Air Bond Act)

DOH

Healthy Neighborhoods Program

MPO

ISTEA / TIPS

Greenway Conservancy for the Hudson River Valley:

Greenway Small Grants Program

Greenway Trail System Program

NYS Canal Corporation:

Matching Grants Program

Empire State Development:

Economic Development Fund

Urban Community Development Program (UCDP)

Metropolitan Economic Revitalization Fund (MERF)

APPENDIX D

AN ANALYSIS OF AVAILABLE BICYCLE AND PEDESTRIAN ACCIDENT DATA IN NEW YORK STATE

By Richard Brustman

For a complete copy of this report you can download a PDF file from www.nybc.net

KEY FINDINGS

- B/P Traffic Accidents pose a considerably bigger societal problem than most people assume. While such accidents are 1% of all reported traffic accidents, their detrimental effects are disproportionately larger because:

Each B/P Accident is more serious:

- B/P accidents are 16% of all reported serious traffic injuries
- B/P accidents are 30% of all reported traffic fatalities.

B/P Traffic Accidents affect the very young and elderly:

- Small children and young adults are chief bicycling accident victims.
- Small children and very elderly are chief pedestrian victims.

B/P Accidents have greater economic impacts:

- A bicyclist fatality averages ten years more loss in productive life than other traffic fatalities; and
- B/P injuries on average are more serious, incurring higher medical costs.

B/P Accidents are underreported:

- Bicyclist-only accidents do not involve auto insurance claims, removing a filing incentive.
- One-third of bicycling accident hospitalization cases are not in traffic accident databases.

While New York City has more B/P accidents than the balance of NYS, accident severity is more serious on Long Island and Upstate:

- Counties outside NYC have 30% of all pedestrian accidents, but have 50% of the fatalities.
- Similarly, they have 45% of all bicycling accidents, but 60% of the fatalities.

Systems for Collecting B/P accident data are fairly good, but issues remain:

- Underreporting of bicycling accidents, compared to motor vehicle accidents occurs due to differences in accident definitions, in reporting criteria, and in public awareness of reporting requirements.
- Not all collected data is processed and so does not become available for analysis.
- Routine B/P accident analyses and surveillance's are few and limited in scope.

Simple improvements to data systems are administratively and financially possible:

- Recommended remedial actions are within the existing administrative authorities of overseeing state agencies.
- Programs in TEA-21 (the principal federal transportation legislation) mean to encourage safety data systems improvement and offer financial assistance to states for system upgrades.

APPENDIX E RECOMMENDED PUBLICATIONS

Many of these publications are available from the agency or organization website.

A Policy on Geometric Design of Highways and Streets. 1994
American Association of State Highway and Transportation Officials (AASHTO)

This is the often referred to as "The Green Book."

www.aashto.org

Bicycle and Pedestrian related laws (Share the Road & Vehicle Laws)

www.dot.state.ny.us/progs/bike/share.html

Guide to Bicycle Advocacy.

Bikes Belong Coalition

www.bikesbelong.org

Design and Implementation of Bicycle Networks & Facilities

DOT

www.dot.gov

Guide for the Development of Bicycle Facilities (1999)

American Association of State Highway and Transportation Officials

Establishes minimum requirements for design and construction of bicycle facilities on Department projects. This is consistent with the provisions of 23 CFR 652.13 which establishes the AASHTO Guide as FHWA's standards for construction and design of bicycle facilities.

www.aashto.org

Highway Design Manual (2000 Edition, Contains Revisions 1 - 36)

NYS DOT Design Division

Implementing Bicycle Improvements at the Local Level (1999)

Institute of Transportation Engineers (ITE)

www.ite.org

National Strategies for Advancing Bicycle Safety: A Call to Action (2001)

National Bicycle Safety Network

www.cdc.gov/ncipc/bike/

Oregon Bicycle and Pedestrian Plan: An Element of the Oregon Transportation Plan (1995)

Oregon Department of Transportation (OR DOT)

Selecting Roadway Design Treatments to Accommodate Bicycles

(Publication No. FHWA-RD-92-073)

FHWA

Provides guidance about the types and recommended widths of typical on-road bicycle facilities that may be constructed to address needs identified in project Design Approval Documents. Available for \$35 from www.ite.org

The Americans with Disabilities Act Accessibility

Guidelines for Building and Facilities (ADAAG) (1993)

Landscape Architecture Bureau, NYS DOT

NYS DOT standards used for the design and construction of all pedestrian facilities in all Department projects.

State of New York Local Government Handbook, 5th Edition, January 2000
NYS DOS

www.dos.state.ny.us/lgss/list9.html

Traffic Calming: State of the Practice. Institute of Traffic Engineers.

www.trafficcalming.org

**The New York State Bicycle and Pedestrian Plan, an Appendix to "The Next Generation. . .
Transportation Choices For The 21st Century" (1997)**

NYS DOT Statewide Pedestrian & Bicycle Program

Order a copy by calling 518-457-8307.

APPENDIX F SAMPLE VERBAL DESCRIPTION REPORT

FILE ID: CLAS4200 MTS/OT-SAFETY INFORMATION MANAGEMENT SYSTEM
 ACCIDENT VERBAL DESCRIPTION REPORT
 *** MOOR ACCIDENTS ONLY ***
 DATE: 12/06/00 14:27
 PAGE: 1

Regn/Cnty: 11 ALBANY Municipality: 01 C ALBANY Date: SEP-01-1994 - 2009-31-1999
 Node: 60131 DELAWARE AVE IABR ST

*** Node: 60131 MADISON AVE US20 US9W ***
 SEP-23-1994 FRI MOR-REPORTABLE Case: 1994-468880

OCT-03-1994 MON DAWN Persons Killed: 0 Persons Injured: 1 Property Damage Only: N Num of Vch: 2 Case: 1994-4685476
 Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NOT REPORTED
 Manner of Collision: REAR END Weather: OTHER
 Road Surface Condition: OTHER Road Char.: NOT REPORTED Light Condition: NOT REPORTED

Vch: 1 CAR/VAN/PICKUP Direction of Travel: NOT REPORTED Driver's Age: 18
 Pre-Acc Action: STOPPED IN TRAFFIC None
 Apparent Factors: NONE

Vch: 2 CAR/VAN/PICKUP Direction of Travel: NOT REPORTED Driver's Age: 49
 Pre-Acc Action: GOING STRAIGHT AHEAD None
 Apparent Factors: NONE

NOV-02-1994 WED LGDN Persons Killed: 0 Persons Injured: 0 Property Damage Only: Y Num of Vch: 2 Case: 1994-4682783
 Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NOT REPORTED
 Manner of Collision: REAR TURN (MOTOR OTHER CAR) Weather: BAW
 Road Surface Condition: WET Road Char.: NOT REPORTED Light Condition: DAYLIGHT

Vch: 1 TRUCK Direction of Travel: NORTH-EAST Driver's Age: 37
 Pre-Acc Action: MAKING LEFT TURN
 Apparent Factors: DELAYED INITIATION
 TRUCK/BUS CLAS.: NOT REPORTED FAILURE TO YIELD RIGHT OF WAY

Vch: 2 CAR/VAN/PICKUP Direction of Travel: SOUTH Driver's Age: 23
 Pre-Acc Action: GOING STRAIGHT AHEAD None
 Apparent Factors: NONE

NOV-07-1994 MON MOR-REPORTABLE Case: 1994-468828

NYBC

CITIZEN'S SITE SURVEY

OBSERVER: _____

Date _____

Time of Day _____ Weather _____

MUNICIPALITY

County _____

City _____

Village _____

Town _____

LOCATION

Principal Street _____

Intersecting Street(s) _____

Reason for Selection _____

SKETCH									
N									

INTERSECTION CHARACTER

Area Type _____

Street Types/Lanes _____

Alignment _____

Pavement Condition _____

PHOTOS

Roll _____ Frame(s) _____

TRAFFIC CONTROL:

Signals _____

Signs _____

Markings _____

Other _____

Significant Parking/Turning Restrictions _____

TRAFFIC FLOW/BEHAVIOR:

Motor Vehicles _____

Pedestrians _____

Bicycles _____

Apparent Violations/Conflicts _____

OTHER FEATURES:

Lighting _____

Transit Facilities _____

Parking _____

Bicycle Facilities _____

Driveways _____

Sidewalks _____

Other Features Worth Noting _____

NOTES

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