

**BINGHAMTON METROPOLITAN TRANSPORTATION STUDY  
PEDESTRIAN AND BICYCLE PLAN**

ADOPTED BY THE BMTS POLICY COMMITTEE  
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## EXECUTIVE SUMMARY

### GOAL

To increase the safety of all persons traveling on foot or by bicycle within the Binghamton metropolitan area, as measured by reduction in the number of accidents, while increasing the number of trips made by these modes.

### OBJECTIVES

- To create a network of *bicycle facilities* that is safe and convenient, and links residential, commercial, and business districts, educational institutions, major employment sites, recreation areas, and river corridors.
- To establish an interconnected system of *pedestrian facilities* that offers safety and convenience to both the general population and persons with disabilities.
- To make bicycle and pedestrian travel part of an intermodal transportation system.
- To maintain the existing road infrastructure in addition to unique features of the bicycle and pedestrian infrastructure to ensure its safety and usefulness, and to protect the community's investment.
- To ensure that cyclists, pedestrians, and motorists understand and abide by the laws and requirements for safe facility-sharing.
- To foster increased interest in cycling and walking in Broome and Tioga Counties. To encourage people to view cycling and walking as viable modes of transportation.

This *Pedestrian and Bicycle Plan* recognizes that a metropolitan transportation system must be truly intermodal. As such, the system must accommodate each mode and the linkages between them. This Plan proposes a phased approach to improve facilities for pedestrians and bicyclists, to increase safety for those people who choose to walk or travel by bicycle, and in so doing, to make those modes a more attractive choice for others. It is directed not only at trips made entirely by bicycle or on foot, but also at improving travel for those people who may walk or bike to the bus stop and complete their trip on transit; or those who drive, then walk from their car to their destination. The Plan also recognizes that there are high risk populations, whose special needs must be addressed. One such group is senior citizens, who cross streets more slowly and may be less able to see or hear oncoming traffic. Another group is children, who require continuous education and reinforcement with respect to pedestrian and bicycle safety.

The Plan was developed with the understanding that BMTS member municipalities will be the implementing agencies for most of the infrastructure requirements. This drives the goal to keep plan implementation incremental, affordable, and safety oriented. What follows is a partial list of recommended high, medium, and lower priority actions; the goal is to complete the high priority actions within two years, the next increment within five years, and the remainder to follow. It also recognized that infrastructure improvements must be complemented by public education activities.

## **High Priority/Short Range Actions**

### Pedestrian:

- ✓ Evaluate all hazardous intersections, based on accident report analysis. Based on accepted traffic engineering principles, develop and implement appropriate countermeasures.
- ✓ Construct sidewalks to provide access to all schools, including institutions of higher education, not currently served.
- ✓ Construct sidewalks along and providing access to all BC Transit bus routes.

### Bicycle:

- ✓ Develop the core bicycle route system as depicted on Map 1 by signing shared lanes.
- ✓ Install secure bicycle parking/storage facilities at municipal parking garages, Government Plaza, high volume outlying bus stops.

### General:

- ✓ Develop a candidate project for Federal Surface Transportation Program funding.
- ✓ Develop and implement a public education program emphasizing safe road sharing for all users.
- ✓ Include appropriate bicycle and pedestrian design elements in all currently programmed projects to construct, reconstruct, or improve State and local highways, streets, and bridges.
- ✓ Coordinate with the New York State Department of Transportation's regional and statewide pedestrian and bicycle plans.
- ✓ Continue to collect information about the local use of the transportation system by pedestrians and bicyclists.
- ✓ Continue research into best practices which demonstrate enhanced safety for pedestrians and bicyclists.

## **Medium Priority/Mid Range Actions**

### Pedestrian:

- ✓ Evaluate all signalized intersections not addressed as high priority. Modify signal timing as necessary to provide adequate pedestrian green time; install pedestrian signal indications as needed per the NYS MUTCD; install pedestrian actuation and pedestrian phases where needed to accommodate safe pedestrian crossing.
- ✓ Construct sidewalks to provide access to major employment centers, shopping malls and other commercial districts, parks and recreational facilities not currently served.
- ✓ Construct/install pedestrian amenities at high passenger volume bus stops.

### Bicycle:

- ✓ Improve bicycle infrastructure on the core bicycle route system as appropriate, with creation of striped bicycle lanes and intersection improvements as warranted by usage experience and system inventory.
- ✓ Provide a safe means of access to Chenango Valley State Park.
- ✓ Expand the core bicycle route system as appropriate to provide access to additional major employment centers, shopping malls and other commercial districts, parks and recreational facilities.
- ✓ Address hazards on streets/roads connecting to core system, including sewer grates, deteriorated pavement, narrow or deteriorated shoulders.
- ✓ Install bicycle racks on OCC-T buses as a pilot project.
- ✓ Create a development plan for a network of riverbank/greenway paths.

## **Lower Priority/Long Range Actions**

### Pedestrian:

- ✓ Construct sidewalks in unserved high to medium density residential areas.
- ✓ Construct/install pedestrian amenities at intervening bus stops.

### Bicycle:

- ✓ Continue to expand bicycle system as appropriate.
- ✓ Construct network of riverbank paths.

Primary responsibility for implementation of these projects would rest with the member municipalities and the Binghamton Metropolitan Transportation Study Central Staff. The Broome County Environmental Management Council will continue its involvement in planning, public education, and volunteer recruitment for special projects. The Broome County Health Department's Traffic Safety Program will play an integral role in overall public awareness and education.

Funding for infrastructure improvements could come largely from Federal Highway Administration Surface Transportation Program. Project selection for this fund source is a responsibility of the BMTS through the development of its Transportation Improvement Program. Some projects can be incorporated into regular road construction/reconstruction activities, when the facilities coincide with the planned system. Supplemental funding from public and private grant programs could be used to provide amenities specific to pedestrians and cyclists.

## **Local Situation**

Existing facilities for pedestrians and bicyclists are piecemeal and generally not connected. Sidewalks exist throughout the urban core, but are generally lacking in the suburban towns. Local accident data also are incomplete. However, it is known that 207 pedestrians and cyclists in the BMTS region were injured between 1990 and 1993. Ten people died as a result of their injuries. It is likely that there were other accidents that were not reported, some of which may have resulted in personal injury. The average age of injured pedestrians and cyclists from the BMTS region is about 15 years old. Many motorists, pedestrians, and cyclists are not aware of their rights and duties under the New York State Vehicle and Traffic Law.

Considerable demand for bicycle and pedestrian facilities is anticipated since 11% of all households in the BMTS region do not own a car. Also, planning efforts related to this plan resulted in considerable interest and involvement on the part of the public. Although it is unclear exactly how many people in the BMTS region currently walk and cycle, the 1995 Nationwide Personal Transportation Study (NPTS) will include a statistically valid sample for each of New York's metropolitan areas, including Binghamton. An informal survey of 480 people, conducted by the Broome County Environmental Management Council, found that over 70% of survey respondents would like to have more off and on road paths and routes. Although these are the opinions of only those who responded, and may not reflect the opinion of the general public, it provides a first look at public perception surrounding this issue.

## Literature Review

Many other metropolitan planning organizations, including a number in New York State, have completed pedestrian and bicycle plans. There has also been a great deal of research conducted on various issues surrounding these modes of travel. This Plan takes full advantage of work done by others. This is documented through a thorough search of relevant literature.

Although there are many possible ways to improve facilities for cyclists and pedestrians, it is often most successful to incorporate bicycle and pedestrian designs into all roadway construction or improvement projects. This is because pedestrians and cyclists generally want to travel to the same places as people in cars and need to be accommodated in order to do this safely. Sidewalks, off-road paths, striped bicycle lanes, bicycle routes, wide paved shoulders on suburban and rural roads, and wide shared curb lanes on urban streets are the most commonly used improvements.

While sidewalks are critical to encouraging more walking, bicycle lanes are preferred by most cyclists. This is because most riders prefer the sense of security that bicycle lanes provide by partially separating cyclists from motor vehicle traffic. In fact, communities that have installed bicycle lanes often experience the greatest increase in ridership. Pedestrians and cyclists also favor off-road paths. But contrary to popular opinion, these are not necessarily safer than sharing the road with motor vehicles unless the paths contain few intersections. Rail-to-trail conversions, which often travel for long distances with few intersections, are one example of off-road paths that are generally quite safe.

Maintenance is critical to protect a community's investment in its pedestrian and bicycle facilities. Repair of sidewalks and pavement, sweeping of roads and shoulders, and repainting pavement markings are especially important. Good maintenance is not only a low cost way to make communities pedestrian and bicycle friendly, it is essential to the lasting success of all improvements.

To maximize the number of people who walk and cycle, facilities need to be provided and maintained and interconnected to a community's transit system. This is because transit riders are pedestrians or cyclists on either end of their transit trip. The addition of pedestrian and bicycle amenities at transit stops such as shelters, sidewalk access, bicycle parking, and bicycle racks on buses, can greatly encourage walking and cycling, while also increasing transit ridership.

Finally, a combination of education, advocacy, and enforcement programs is needed for pedestrians and cyclists of all ages and abilities. Special events such as bicycle rodeos, public service announcements, employee wellness programs, and in-school education programs make a well-rounded community education program. Positive enforcement, or rewarding pedestrians and cyclists who use safe walking or cycling practices, further complements these programs.

## I. OPPORTUNITY STATEMENT

*TRANSPORTATION TOMORROW*, the long range transportation plan for the Binghamton metropolitan area adopted by the Binghamton Metropolitan Transportation Study Policy Committee in October, 1994, includes the following policy statements that form the foundation for this Pedestrian and Bicycle Plan:

*(1) Fully accommodate bicyclists and pedestrians in the metropolitan transportation system.*

The Binghamton Metropolitan Transportation Study (BMTS) seeks to direct investments in the metropolitan transportation system to enhance and support all modes of travel in the Binghamton metropolitan area. Encouraging walking and bicycling is beneficial from a planning, engineering, and financial perspective. Further, improvements to the pedestrian and bicycle infrastructure are a cost effective and equitable way to serve people of all ages, abilities, and incomes. BMTS recognizes that non-motorized modes, walking and bicycling, have been for the most part overlooked in the past.

There also considerable potential demand for pedestrian and bicycle facilities in the BMTS region, as 10,931 (11% ) of the households in the BMTS area show zero car ownership in the 1990 U.S. Census. Residents of these households stand to benefit significantly from improved pedestrian and bicycle facilities. Also, sizable student populations at Broome Community College and Binghamton University, and a growing elderly population make both cycling and walking necessary and viable transportation modes.

*(2) Improve safety for all users of the metropolitan transportation system.*

Because there have been no comprehensive actions to address the needs of pedestrians and bicyclists, the regional transportation infrastructure does not always safely accommodate people who cycle and walk. Safety is a critically important consideration. 1994 National Safety Council statistics for motor vehicle related fatalities found that 23% of deaths in urban areas and 10% of those in rural areas were pedestrians and cyclists.

*(3) Recognize the importance of the natural and human environments, and minimize negative impacts.*

While the Binghamton metropolitan area is in attainment of national air quality standards, it is the policy of BMTS that its transportation plans should result in reduced emissions. Encouraging people to shift some of their travel from a single occupant vehicle to a non-motorized mode will have a positive impact on that goal, and help enhance the quality of life in the region.

Finally, both of BMTS's policy goals are supported by the federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). ISTEA requires that all Metropolitan Planning Organizations (MPOs) include pedestrian and bicycle considerations in their long range plans. This is further supported by federal and state transportation policy which promotes bicycling and walking as important and environmentally sound modes of travel.

## II. GOALS AND OBJECTIVES

This plan is driven by a single goal, adopted from the policy statements of *TRANSPORTATION TOMORROW* as detailed above, and mirroring the goal of the National Bicycling and Walking Study of the U.S. Department of Transportation.

**Goal:** To increase the safety of all persons traveling on foot or by bicycle, as measured by reduction in the number of accidents, while increasing the number of trips made by these modes.

This goal statement recognizes that there is interaction between safety and utilization of these modes. As strategies are put in place and facilities developed that make cycling and walking safer, not only will current users be positively impacted, but people who may have been hesitant to travel by those modes will be positively influenced. It is understood that this makes the goal difficult to accomplish. As more trips are made by these modes, there are more opportunities for conflicts and accidents. It is clear then, that work must ongoing on both parts of the safety and utilization equation.

**Objectives:** In order to accomplish the goal, a number of objectives have been developed which will guide the recommended action plan. These objectives are divided into the following categories: (1) system development, (2) system maintenance, and (3) education, encouragement, and enforcement.

### 1. System Development

**Objective #1:** To create a network of *bicycle facilities* that is safe and convenient, and links residential, commercial, and business districts; educational institutions, major employment sites, recreation areas, and river corridors.

**Objective #2:** To establish an interconnected system of *pedestrian facilities* that offers safety and convenience to the disabled and general population.

**Objective #3:** To make bicycle and pedestrian travel part of an intermodal transportation system.

### 2. System Maintenance

**Objective #4:** To maintain the existing road infrastructure in addition to unique features of the bicycle and pedestrian infrastructure to ensure its safety and usefulness, and to protect the community's investment.

### 3. Education, encouragement, and enforcement

**Objective #5:** To ensure that cyclists, pedestrians and motorists understand and abide by the requirements for safe facility-sharing.

**Objective #6:** To foster increased interest in cycling and walking in Broome and Tioga Counties. To encourage people to view cycling and walking as a viable mode of transportation.

### III. LOCAL SITUATION

In order to plan for the future development of the pedestrian and bicycle infrastructure, it is necessary to have a thorough understanding of the current local situation. This section will discuss the following topics:

- (A) Policy and regulatory environment
- (B) Local participants in transportation planning
- (C) Description of the BMTS region
- (D) Past pedestrian and bicycle planning activities
- (E) Profile of walkers and cyclists
- (F) Local transportation systems
- (G) Safety and accident data
- (H) Relationship to public transit

#### A. Policy and Regulatory Environment

New York State Vehicle and Traffic Law (V&T) assigns various rights and responsibilities to both pedestrians and bicyclists, and to drivers who encounter them. While it may seem to be common sense, §1146 of the V&T states:

" **Drivers to Exercise Due Care.** Notwithstanding the provisions of any other law to the contrary, every driver of a vehicle shall exercise due care to avoid colliding with any bicyclist [or] pedestrian upon the roadway and shall give warning by sounding the horn when necessary."

Article 27 of the V&T covers pedestrians rights and duties. §1150 states:

" **Pedestrians subject to traffic regulation.** Pedestrians shall be subject to traffic control signals as provided in §1111 of this title, but at all other places pedestrians shall be accorded the privileges and shall be subject to the restrictions stated in this article.

The privileges and restrictions that follow deal with drivers' duty to yield the right-of-way to pedestrians in crosswalks, and on sidewalks when crossing driveways; pedestrians' duty to yield the right-of-way to vehicles when crossing at other than crosswalks; and pedestrians' duty to use sidewalks when provided, and their right to walk along the edge of the roadway when they are not.

Article 34 describes the operation of bicycles. Perhaps most importantly, §1231 states:

" **Traffic laws apply to persons riding bicycles.** Every person riding a bicycle upon a roadway shall be granted all of the rights and shall be subject to all of the duties applicable to the driver of a vehicle by this title, except as to special regulations in this article and except as to those provisions of this title which by their nature can have no application.

This makes it clear that bicycles are vehicles. §1234 then spells out how these vehicles are to use the roadway system.

**" Riding on roadways, shoulders, bicycle lanes and bicycle paths.** (a) Upon all roadways, any bicycle shall be driven either on a usable bicycle lane or, if a usable bicycle lane has not been provided, near the right-hand curb or edge of the roadway or upon a usable right-hand shoulder in such a manner as to prevent undue interference with the flow of traffic except when preparing for a left turn or when reasonably necessary to avoid conditions that would make it unsafe to continue along near the right-hand curb or edge. Conditions to be taken into consideration include, but are not limited to, fixed or moving objects, vehicles, bicycles, pedestrians, animals, surface hazards or traffic lanes too narrow for a bicycle and a vehicle to travel safely side-by-side within the lane.

In relation to these sections, the NYSDOT Legal Affairs Bureau has issued an opinion that the state and municipal owners of roadways are responsible for providing safe facilities for bicyclists (see appendix for copy of memorandum). Thus, making improvements such as erecting bicycle route signs or striping bicycle lanes does not increase the road owner's liability by "instructing" bicyclists to use those streets, since that liability already exists for all public thoroughfares. In fact, any improvements should have the effect of reducing potential liability to the extent that they make the roadway safer for all users.

Finally, there are sections of the law which spell out the rights of governmental entities to prohibit the use of limited access facilities by pedestrians and cyclists; establish bicycle lanes or paths; establish crosswalks; and mark these with signs.

Federal and State transportation law and policy has resulted in renewed interest in planning for bicycle and pedestrian transportation. The Federal policy is stated in the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, which authorizes all programs of the Federal Highway and Transit Administrations. ISTEA requires that bicycle and pedestrian issues be considered in all statewide transportation plans, and in the plans developed by metropolitan planning organizations, like BMTS, for urban regions of the country. ISTEA also continues the Federal policy of making pedestrian and bicycle projects eligible for Federal funding. Legal requirements have been reflected in policies of the United States Department of Transportation (USDOT) to support local efforts to increase bicycling and walking. The *National Biking and Walking Study*, produced by the Federal Highway Administration, strives to double the number of trips currently made on foot or by bicycle while simultaneously reducing the number of injuries and/or fatalities by 10%.

The Clean Air Act Amendments (CAAA) of 1990 is another piece of Federal law that affects non-motorized transportation. Although the Binghamton metropolitan area is in compliance with National Ambient Air Quality Standards (NAAQS), BMTS still strives to minimize the impacts of transportation projects on the environment. Encouraging walking and bicycling to replace some automobile trips clearly has a positive environmental impact.

One other Federal law that has affected pedestrian travel is the Americans With Disabilities Act of 1990. The ADA has resulted in significant improvements to pedestrian infrastructure. It requires that a variety of facilities, including sidewalks and public buildings, be fully accessible to individuals with mobility or other impairments. This has resulted in states and municipal governments installing curb ramps at intersections on a regular upgrade program. ADA also requires that public transit buses be accessible to persons with disabilities; along with sidewalk improvements, this will greatly improve the mobility of many people.

New York State policy has in many ways mirrored that of the Federal government. The New York State Department of Transportation has appointed a pedestrian/bicycle coordinator in its main office and each of its regional offices. They have signed two long distance bicycle routes, roughly paralleling Route 5 from Albany to Buffalo, and Route 9 along the Hudson River. Work is currently underway on Bike Route 17, from the Hudson River to western New York. NYSDOT has also in recent months focused attention on the problem of pedestrian safety, in both urban and rural locations, creating a task force to develop an appropriate set of solutions.

In sum, it is clear that the transportation policy environment has changed since 1991 to include the understanding that pedestrian and bicycle travel is part of a true intermodal transportation system, and must be made safe and encouraged.

## **B. Local Actors in Transportation Planning**

### **1. Binghamton Metropolitan Transportation Study**

BMTS, also known as a Metropolitan Planning Organization (MPO), is responsible for transportation planning and programming. MPOs are mandated by Federal law in urban areas having more than 50,000 people. The Binghamton metropolitan area includes parts of Broome and Tioga Counties. BMTS, like most MPOs, is structured so that decisions are made collectively by all municipalities within the region in cooperation with New York State. Composed of municipal officials, state and federal transportation officials, and representatives from local and regional planning boards, the BMTS Policy Committee allocates federal transportation funds within the BMTS region, and adopts transportation plans. To do this, the Committee must reach consensus. A second committee, the Planning Committee, assists the Policy Committee by providing planning and engineering expertise. Members of the Planning Committee also represent each of the municipalities in the BMTS region. BMTS Central Staff provides research and administrative support to both committees.

### **2. Municipalities in BMTS region**

BMTS's region includes parts or all of the Towns of Owego, Conklin, Kirkwood, Binghamton, Vestal, Union, Chenango, Dickinson, and Maine; the Villages of Owego, Endicott, and Johnson City; and, the City of Binghamton (see map next page). These municipal governments are responsible for constructing, improving, and maintaining local roads within their boundaries. These responsibilities include all pedestrian and bicycle facilities on those roads. Broome and Tioga Counties also have jurisdiction over their respective county highway systems.

### **3. BMTS Pedestrian and Bicycle Plan Advisory Committee**

The Advisory Committee to the Pedestrian and Bicycle Plan was established by BMTS in 1994 to provide public input on the plan from early scoping stages to the review of final drafts.

### **4. Broome County Environmental Management Council (EMC)**

The EMC is the citizens advisory board to Broome County government on a broad range of local environmental issues. Its work includes but is not limited to land use and natural resource planning, solid and hazardous waste management, water resource protection, and alternative transportation

planning. In April of 1994, the EMC's Executive Committee created the Ad Hoc Committee on Alternative Transportation whose mission statement is, "To plan and promote alternative transportation projects that are environmentally sound and improve the quality of life in Broome County." This committee and BMTS's Pedestrian and Bicycle Advisory Committee have merged, and will participate in and advise on the implementation of this plan.

#### 5. New York State Department of Transportation (NYSDOT)-Regions 6 and 9

The BMTS region includes parts of both NYSDOT Regions 6 and 9 (see map in appendix). Each of these regions is responsible for the construction and maintenance of state roads within its jurisdiction as well as management of the Federal-aid transportation program. Both regions, as well as the NYSDOT Central Office, have designated bicycle and pedestrian coordinators. They are responsible for developing regional and statewide bicycle and pedestrian plans, programs, and policies.

### **C. Description of Binghamton Metropolitan Region**

The BMTS region encompasses 163 square miles that is home to 182,492 people (BMTS 1993). It is comprised of both urban and suburban elements. Although the region is centered around the relatively flat Susquehanna and Chenango River Valleys (820 feet above sea level), elevations quickly reach up to 1,600 feet above sea level within a five mile radius of the river valleys. The rolling hills that characterize the area can make for challenging walking and cycling in some areas of the BMTS region.

A more extensive discussion of BMTS's transportation infrastructure can be found in *TRANSPORTATION TOMORROW*, BMTS's vision statement for the next 20 years.

The Binghamton region is in attainment with air quality standards established by the CAAA and the United States Environmental Protection Agency (USEPA). This means that on virtually every day of the year, air quality in Broome and Tioga counties is rated as good. More specifically, it is assumed that levels of sulfur dioxide, carbon monoxide, ground-level ozone, nitrogen dioxide, lead, and inhalable and total suspended particulates fall within acceptable levels.

Currently, however, all of New York State falls within the Northeast Ozone Transport Region, an area created by Congress in the CAAA that includes all east coast states from Maine to Virginia. The USEPA requires that these states enforce more stringent standards for volatile organic compounds (VOCs). Because almost 50% of VOCs emissions come from mobile sources (motor vehicles), it is to the advantage of all communities located in the region to encourage bicycle and pedestrian travel to the maximum extent practicable. By increasing the number of trips made on foot or by bicycle, air quality will be positively impacted.

### **D. Past Planning Activities**

Planning for cyclists in the Binghamton region is not new. In 1976, BMTS contracted with Konski Engineers, P.C. to complete a long-term bicycle plan for the region entitled the *Binghamton Metropolitan Bikeway System: A Plan and Program*. In 1979, BMTS Central Staff revised the study and wrote *Bikeways System Report*. Since then, only piecemeal improvements to pedestrian and bicycle facilities have been made. This is due to decisions by BMTS policy makers to assign a lower priority to such projects in comparison to highway, bridge, and transit improvements. Neither of the

early plans explicitly considered the needs of pedestrians.

BMTS has been involved continuously in reviewing the accommodation of bicyclists and pedestrians on a project oriented basis.

## **E. Profile of Walkers and Cyclists**

### 1. Census data

Documentation of pedestrian and cyclist behavior in the BMTS region can be found in the Journey-to-Work survey of the 1990 U.S. Census. It indicates that in the BMTS region 298 people cycled and 5150 people walked to work in 1990. In comparison, 74,472 drove, 11,744 carpooled, and 2,386 took public transportation. These numbers do not account for trips made to stores, to school, for personal business or recreational activities.

Another source of information is the 1990 Nationwide Personal Transportation Study (NPTS) which interviewed 22,317 households nationwide regarding their travel behavior. It found that 7.2% of all person-trips are made on foot while cycling accounted for 0.6% (Hu and Gray 1990). It is not known how representative these figures are of local walking and cycling behavior. The 1995 NPTS will include a statistically valid sample for each of New York's metropolitan areas, including Binghamton. This data is expected to be available in late 1996. The National Biking and Walking Study, published in 1994 by the

Federal Highway Administration (FHWA), supports the NPTS findings with a statement that 7.9% of all trips are made either on foot or by bicycle.

Census data also reveals that 10,931 households, or 11% of all households in the Binghamton metropolitan area, do not own a car. While residents of these households may sometimes have access to a car, they most likely rely extensively on public transit, walking, and bicycling for their travel needs.

### 2. EMC survey

In order to gauge local interest in walking and bicycling, the EMC administered a targeted survey. Survey forms were distributed at Earth Fest 1995. While responses may not represent the opinions of the general public, they give an indication of local concerns and interests.

The survey instrument was divided into two separate sets of questions, one for pedestrians and one for cyclists (see Appendix for copies of survey forms). Two hundred seventy six persons responded to the bicycling questions, while 204 persons responded to the pedestrian survey. For both sets of questions, a majority of respondents (70% - bicycle, 72% - pedestrian) live in either the City of Binghamton, the Villages of Endicott and Johnson City, or the Towns of Vestal and Union. These municipalities make up the core of the BMTS region.

The survey results indicated three major issues of concern. First, respondents would like to have more off-road trails, especially those that utilize riverbanks or abandoned railroad corridors. Second, people are very concerned about the safety, both personal and traffic related, of walking and cycling. Lastly, most people in the region currently walk and cycle for exercise or recreation rather than what they think of as "transportation."

For example, 71% and 77%, respectively, answered that the current lack of bicycle routes, paths, and lanes in the BMTS region is or was a significant problem. Further, both surveys contained an open ended question regarding what other things people would like to see improved. Of those who responded, 38% of pedestrians and 62% of cyclists suggested that dedicated bicycle/pedestrian trails be developed.

Regarding cycling and walking trip purposes, the bike survey found that 15% currently bike to work or school and 27% bike to run errands. Numbers increased sharply to 70% and 40% for percentages of people who rode for on and off-road recreation, and to 60% for people who bike for exercise. Trends were similar for pedestrians. While only 18% of respondents currently walk to work or school, 65% and 51% walk for recreation (on and off road) and 60% and 53% walk for exercise (on and off road).

Finally, regarding the suitability of available facilities, 56% of pedestrians felt that a lack of sidewalks posed a moderate to significant obstacle to walking. Cyclists' responses paralleled this but raised concerns about the condition of shoulders rather than sidewalks. For example, 68%, 65%, and 77%, respectively, indicated that debris on shoulders, uneven shoulders, and inadequate shoulder width posed moderate to significant problems for cyclists.

Regarding safety, 67% of pedestrians believed that traffic safety was a moderate to significant problem. 60% also were concerned about safety at intersections. Cyclists responded similarly. 77% and 67% of respondents answered that inconsiderate auto traffic and dangerous intersections, respectively, were a moderate to severe problem.

## **F. Local Systems**

### **1. Inventory**

There are a few bicycle route signs scattered throughout the BMTS region. However, they are not connected as part of a larger route system. Facilities that specifically accommodate cyclists' and pedestrians' include: South Washington Street Bridge and the Martin Luther King memorial walk in Binghamton, the riverwalk in the Village of Endicott (pedestrians only), sidewalks throughout parts of the City of Binghamton, Villages of Endicott, Johnson City, and Owego, and Towns of Union and Vestal. Many pedestrians also walk along the south side of the Susquehanna River in Vestal where there is an old tow path. On the same side of the river in Binghamton (Lourdes Hospital region) there is a small foot trail used by area residents.

Most suburban areas in the Binghamton region lack sidewalks. Sidewalks are expensive for municipalities to install. Property owners frequently do not want responsibility for maintaining sidewalks, as is required by law. While many subdivision ordinances permit the municipality to require a developer to construct sidewalks, none require it. Such provisions are rarely used.

Parks or recreational areas are other places where people can cycle and walk, for recreation and exercise. In Broome County parks located within the metropolitan area, on-road biking is allowed at Otsiningo Park. Walking and hiking are available at Finch Hollow Nature Center. People also walk and cycle in Tioga County's Hickories Park. Chenango Valley State Park, immediately adjacent to the BMTS region, has hiking and off-road biking trails. There are also opportunities to walk and cycle in municipal parks.

## 2. Maintenance

Several changes have been made to maintain and improve bicycle and pedestrian conditions. The Town of Union, and the Villages of Johnson City and Endicott report that virtually all "tire-catching" sewer grates, a significant hazard to cyclists, have been replaced. The City of Binghamton and the Town of Owego have replaced most tire-catching grates and continue to install safer grates as funding permits. The Villages of Endicott and Johnson City, the Town of Union, and the City of Binghamton also sweep their streets 2-3 times per year. This is generally done in early to mid spring, to remove winter debris. Finally, municipalities with sidewalks regularly install curb ramps at intersections by request and as funding permits. Staff from the Southern Tier Independence Center considers the metropolitan area to be relatively accessible to disabled persons. Regarding pavement marking, all municipalities in the routinely stripe roads except for the Town of Owego, which does not stripe any roads due to ongoing maintenance costs.

## **G. Safety/Accident Data**

### 1. Local data

There are two data bases of accident reports maintained by the NYSDMV. The State Accident Surveillance System (SASS) and the Consolidated Local Accident Surveillance System (CLASS) summarize accident data for the State highway system and local roads, respectively. Accidents include collisions between motor vehicles and either pedestrians or cyclists. Only reported accidents are included, using standard accident reports filed either by police agencies, or by motorists through their insurance companies.

SASS/CLASS data was extracted for Broome and Tioga Counties from 1990-1993. In all, 207 pedestrians and cyclists were injured in accidents with motor vehicles. Ten people died as a result of their injuries. The average age of Tioga County residents involved in these accidents is 15.5 while the average age for Broome County residents is 20.4. These statistics must be viewed with the understanding that except for those resulting in injury, many bicycle and pedestrian accidents go unreported.

Many of the accidents documented by SASS/CLASS occurred when pedestrians and cyclists shared the road with motorists. Other contributing factors include driver inattention, darting out of a pedestrian or cyclist, absence of adequate crosswalks, crossing against signals, cycling against the flow of traffic, view obstructions, road debris, pedestrian error, glare, or playing in the roadway. This points to a need to stress road sharing in any future safety education program.

### 2. Existing safety programs

Currently, the Broome County Division of Health, as part of its injury prevention mission, houses a Traffic Safety Program which includes safety education programs aimed at bicyclists and pedestrians. The program is funded through an annual grant from the Governor's Traffic Safety Committee. NYSDOT also addresses bicycle and pedestrian safety in the course of performing safety investigations of high accident locations, and through scoping and design of its highway and bridge projects.

## **H. Transit**

Most transit passengers are pedestrians at each end of their trip. With facility improvements, cyclists may also use transit for part of their travel. Therefore it is important to look at transit facilities as part of the pedestrian and bicycle planning process. Transit service has the potential to be an important component of an intermodal pedestrian and bicycle system in the BMTS region. This requires examination of pedestrian access to the transit system, primarily the presence of sidewalks along bus routes, and amenities like benches and shelters. It also requires discussion of appropriate facilities for cyclists; some may want to carry their bikes on racks on the bus, while others may need secure parking/storage at the bus stop.

The Broome County Department of Public Transportation operates three bus services. B.C. Transit is a fixed-route service operating on 12 routes throughout the metropolitan area, providing about 3,000,000 trips annually. Half the B.C. Transit fleet will be accessible to persons with disabilities by late 1996. B.C. Lift is a paratransit service for persons with disabilities, operating within the metropolitan area. B.C. Country is a paratransit service for rural Broome County residents, providing rural-rural and rural-urban trips. BC Transit also operates a paratransit service in conjunction with the Broome County Office for Aging. This service helps senior citizens travel to medical facilities, residencies, and shopping.

There are several private for-profit providers. These provide ambulette, taxi, and charter bus service. The downtown Binghamton bus stations provide intercity service on Shortline and Greyhound buses.

One other important component of public transit in the area is the Off Campus College Transport (OCCT) service, a private non-profit transportation provider. OCCT serves Binghamton University students and staff. On average, OCCT serves 500,000 riders each year with fixed route bus service.

Tioga County also has a public transit program. It operates both a fixed route and dial-a-ride service. Tioga Public Transit also travels into Broome and Tompkins County carrying passengers to and from Broome Community College and Cornell University.

Currently, no bicycles are allowed on either OCCT, or Broome County and Tioga transit buses because it is not safe to do so. However, OCCT is considering a pilot program to install bicycle racks on OCCT buses.

## IV. SYSTEM DESIGN

This section presents recommended design guidelines for pedestrian and bicycle facilities. These standards may need to be modified to accommodate unique local circumstances. However, using uniform standards improves the public's familiarity with and understanding of pedestrian and bicycle facilities.

In general, highway designers should refer to Chapter 18 of the *NYS DOT Highway Design Manual*, *AASHTO's Guide for the Development of Bicycle Facilities*, and *FHWA's Selecting Roadway Treatments to Accommodate Bicycles*. The New York State Manual of Uniform Traffic Control Devices (MUTCD) establishes warrants for signs, pavement markings, and signals. Unfortunately, the national initiative to include signs and markings for bicycle facilities has not proceeded to adoption.

### A. Pedestrian Facilities

#### 1. Sidewalks

The sidewalk is the most important and most used feature of a pedestrian system. Refer to the following criteria:

- ◆ Install sidewalks that are a minimum of 4 feet (1.5 meters) wide (the minimum width to accommodate a wheelchair) at every point along the walk. Average sidewalk width is 4-5 feet wide with wider areas in especially busy downtown areas, or other areas with heavy pedestrian traffic.
- ◆ Set sidewalks back from the road 4 feet, whenever possible. Additional setback may be needed if driveway slopes interfere with sidewalk surfaces. Setbacks can be accomplished by including a planting strip. Strips provide a space for trees, a buffer for pedestrians against traffic, and a location for snow storage.
- ◆ As much as possible, install the minimum cross slope necessary for good drainage. A maximum of 1 inch of fall for every 4 feet of width is recommended. Minimize longitudinal grade to 8%.
- ◆ Install sidewalks on both sides of the street when appropriate, based on adjacent land use (refer to Figure 1 in Appendix A).

#### 2. Curb Cuts/Ramps

The curb cut/ramp is the most important improvement for disabled pedestrians. Use the following criteria in designing them:

- ◆ At a minimum, install cuts/ramps to be 4 feet wide (1.5 meters).
- ◆ Do not exceed a 1:12 slope. Grades less than 8% are recommended.
- ◆ Include a tactile warning texture extending the full width and length of the ramp.
- ◆ Blend curb cuts/ramps evenly with road surfaces. Wheelchairs can tip over due to a 1/4" drop off to the street.
- ◆ Locate curb cuts/ramps on two sides of each corner. Avoid placing curb cuts/ramps in the middle of a corner; this results in the channeling of pedestrians into the middle of an

intersection.

- ◆ Provide adequate drainage so that ice does not accumulate on curb cuts/ramps.

### 3. Crosswalks

Crosswalks are the portion of roadway designated for pedestrians to use in crossing the street. Each proposed crosswalk should be evaluated individually but in general, should be considered:

- (1) for areas with substantial pedestrian traffic;
- (2) in areas of school crossings (with signals or crossing guards);
- (3) at intersections with traffic signals, especially when in central business districts or other areas of high pedestrian traffic;
- (4) at an unsignalized intersection when there is significant development along both sides of a road but no nearby signalized intersection;
- (5) where it is desirable to indicate to pedestrians where to cross; and,
- (6) in locations of anticipated or known conflicts between pedestrians and motor vehicles (NYS MUTCD 1983, ITE 1994).

- ◆ Remove and relocate storm drains located in the path of crosswalks. Storm drain openings should not exceed 1/2" in any direction. Wider openings catch the tires of wheelchairs and cyclists.

- ◆ Paint crosswalk lines 6" wide (at a minimum).

- ◆ Install signs to warn motorists of mid-block crosswalks.

- ◆ Consider using a higher visibility crosswalk markings for added visibility in locations with high volume or where motorists might not expect pedestrians to cross (Marking "C" shown in Figure 2, Appendix A is preferred). The New York State Manual of Uniform Traffic Control Devices (MUTCD) says stripes should be 12-24" wide and should be separated by spaces equal to the width of the lines.

- ◆ Avoid crosswalks where traffic speed limits are greater than 45 mph.

- ◆ Install stop lines 4' in advance of crosswalks to help prevent motorists from encroaching on crosswalks. Lines should be 12-24" wide and parallel to the adjacent crosswalk.

- ◆ Avoid overuse of crosswalks. Refer to Figure 3 (Appendix A) to help determine where crosswalks may be needed.

### 4. Signalization

Install traffic signals to assign the right-of-way to pedestrian traffic. Signalization options for pedestrians include traffic signals, pedestrians signals (walk/don't walk indications), and push-button actuation of both traffic and pedestrian signals.

- ◆ Pedestrian signals (WALK/DON'T WALK indications) are *required* under the following conditions:

- (1) When traffic signals have been installed to meet pedestrian and/or school crossing warrants;
- (2) when an exclusive phase is provided for pedestrian movements in one or more directions, and all motor vehicle traffic is stopped;
- (3) when there is significant pedestrian activity and vehicle signals are not visible to

pedestrians; and,

(4) at signalized intersections within established school zones;

◆ Pedestrian signals (WALK/DON'T WALK indications) are *recommended* under the following conditions:

(1) When pedestrian crossing times different than motor vehicle crossing times are needed to provide for adequate and safe pedestrian crossing (reduce pedestrian/motorist conflict);

(2) when signals are necessary to assist pedestrians in safely crossing a road;

(3) when existing vehicle signals would confuse pedestrians (i.e., at intersections with multi-phase or split phase timing); and,

(4) when pedestrians cross to an island and should not be able to cross the remaining roadway in the same timing phase.

(5) signs explaining to pedestrians the explicit meaning of each of the phases of pedestrian signal indications have proven to be helpful (NYS MUTCD 1983).

◆ Pedestrian Activated Traffic Signals (Push Buttons) are needed in the following locations:

(1) at semi-actuated intersections, to allow pedestrians to cross the main street without having to rely on a vehicle to trigger the signal;

(2) at intersections having a flashing signal light; and,

(3) at any other signalized intersection where the usual crossing time (green light phase) is not adequate for safe pedestrian crossing. Note that accepted pedestrian crossing speed has been changed from 4 feet per second to three feet per second.

◆ For additional design information, refer to Chapter 5 of the Institute of Transportation Engineers' Design and Safety of Pedestrian Facilities for specific timing and sign conditions.

## B. Bicycle Facilities

In general, we recommend that FHWA guidelines (Figure 4, Appendix A) be used as a guide for selecting bicycle facilities. The following discussion highlights these and other design considerations:

### 1. Bicycle lanes

Bicycle lanes are striped and signed corridors that carry one-way bicycle traffic in the same direction as motor vehicle traffic. Use the following criteria and the information listed in Figure 4 when designing lanes:

Urban roads:

- ◆ Install lanes with a minimum width of 4'.
- ◆ Add an additional 1-2 feet where there are high traffic volumes (greater than 15,000 ADT), 5% or more truck traffic, or traffic speeds greater than 35 mph.
- ◆ Install lanes with a minimum width of 5' when placed next to cement curbs.
- ◆ Where parking lanes exist, place bike lanes between parking lane and the motor vehicle lane (see Figure 5, Appendix A).

Rural roads:

- ◆ Install a minimum 4' shoulder

Urban and Rural Roads:

- ◆ Paint lanes with appropriate markings (diamonds, bicycles) to clearly indicate their intended use.
- ◆ Install clear markings where bike lanes cross intersections. Refer to Figure 6 (Appendix A) for suggested designs.
- ◆ Install a separate turning lane where there is a considerable volume of bicycles turning left (refer to MUTCD for specific design).

### 2. Bicycle routes

Bike routes are roads that are signed to provide continuity to other bicycle facilities. Use the following guidelines and the information listed in Figure 4 (Appendix A) when developing bicycle routes:

- ◆ Install signs along route including: share the road signs, bike route signs, and information about destination distances and route direction changes.
- ◆ Pavement width, drainage grates, railroad crossings, pavement condition, signal responsiveness to bicycles should be evaluated and improved as needed on roads designated as bicycle routes (AASHTO 1991).

### 3. Bicycle paths

Install bike paths where there is continuous right-of-way that is generally uninterrupted by intersections. Use the following guidelines and the information listed in Figure 4 (Appendix A) when designing bicycle paths:

- ◆ Construct a minimum 10' wide path. Install a 12' path where significant pedestrian as well as bicycle traffic are anticipated. Use pavement markings to designate separate bicycle and pedestrian areas.
- ◆ Minimize grade to 5%.
- ◆ Provide a minimum 2' graded area on either side of path.
- ◆ Sign intersections with streets, both on the path and the street.

#### 4. Traffic Actuated Signals

- ◆ AASHTO (1990) recommends that the clearance time for bicycles in intersections be checked assuming the following: (1) the average cyclist travels about 10 mph and, (2) needs 2.5 seconds to brake before an intersection.
- ◆ Install loop detectors that detect bicycles in all lanes including left turn lanes. See Figures 7 and 8 (Appendix A) for loop detector design.

#### 5. Bicycle Parking

- ◆ Older "dish-rack" style bicycle parking racks are no longer preferred. Most bicycles have quick release front tires and seats, making it necessary to secure both the frame and tires to them.
- ◆ Building racks, hitch racks, ring racks, sheltered racks, and ribbon racks are recommended (see Figure 9, Appendix A) (Herman 1993).

## V. RECOMMENDED ACTIONS

The recommended actions each relate to the previously stated objectives of the plan. In the following section, these actions will be assigned a priority for implementation.

### 1. System Development

**Objective #1:** To create a network of *bicycle facilities* that is safe and convenient, and links residential, commercial, and business districts; educational institutions, major employment sites, recreation areas, and river corridors.

#### **Recommended Actions:**

1. Collect and compile data necessary to determine the number of trips made by bicycle. Rely primarily on Binghamton samples of the 1995 Nationwide Personal Transportation Survey.
2. Prioritize and phase-in bicycle system development over several years. High priority locations are shown on the system map. The development of this system, and pilot projects, should begin at the earliest possible time.
3. Provide adequate resources for planning, implementing, and maintaining the existing road infrastructure for cycling at all levels of government in the BMTS region.
4. Incorporate bicycle design elements as appropriate in all local road, highway, and bridge construction, reconstruction, and improvement projects on the BMTS Transportation Improvement Program, in accordance with AASHTO standards and this plan.
5. Evaluate and improve intersections where necessary to safely accommodate cyclists.
6. Provide for safe bicycle travel in construction zones or provide alternative routes.
7. Install secure bicycle parking facilities at municipal garages and parking lots. Work with businesses and public institutions to establish secure bicycle parking as appropriate.
8. Continue to inventory the road network in the urbanized area and assess its ability to accommodate bicycle facilities. Additional data items include: road widths, average annual daily traffic and peak period traffic flow, volume/capacity ratio, bicycle treatment at semi-actuated signalized intersections.
9. Create the following two maps on BMTS's Geographical Information System (GIS). The first, included in this plan, shows the ideal pedestrian and bikeway system once completed. The second, to be updated on an ongoing basis, will display recommended routes based on actual infrastructure improvements.
10. Review site development proposals during all review processes related to the State Environmental Quality Review Act (SEQRA) and Section 239(l&m) of NYS Municipal Law. Encourage developers to incorporate bicycle design elements in construction plans in

accordance with this plan.

11. Consider traffic calming techniques (e.g., construction of refuge islands, landscaped medians, sidewalk neckdowns, speed limit reductions, and street trees) in areas where use by cyclists is being encouraged and there is evidence of safety hazard and conflict.
12. NYSDOT Region 9 and 6 notify BMTS regarding the availability of abandoned railroad properties. Evaluate any such corridors based on their usefulness as bicycle paths and acquire as appropriate and as resources are available.
13. Involve State and local parks departments and tourism professionals to help establish connections between parks and other greenways in the area.
14. Post signs along major roads entering the BMTS region welcoming bicyclists and providing guidepost and service information.

**Objective #2:** To establish an interconnected system of *pedestrian facilities* that offers safety and convenience to the disabled and general population.

**Recommended Actions:**

1. Collect and compile data necessary to determine the number of trips made by pedestrians. Rely primarily on Binghamton samples of the 1995 Nationwide Personal Transportation Survey.
2. Continue to inventory the network of pedestrian facilities in the urbanized area. Identify and map locations that are a high priority for pedestrian improvements.
3. Prioritize and phase in pedestrian system developments. Follow recommended System Design guidelines for these projects. The development of this system should begin at the earliest possible time.
4. Evaluate and improve intersections where necessary to safely accommodate pedestrians. This includes the current policy of installing curb ramps to accommodate persons with mobility impairments and ensuring the adequacy of pedestrian green time at signalized intersections.
5. Include pedestrian design features as appropriate on all local road, highway, and bridge construction, reconstruction, and improvement projects on the BMTS Transportation Improvement Program, in accordance with AASHTO standards and this plan.
6. Use traffic-calming techniques (e.g., construction of refuge islands, landscaped medians, sidewalk neckdowns, speed limit reduction) in areas where pedestrian travel is present or is being encouraged and there is evidence of safety hazard and conflict. Municipalities have the authority to designate pedestrian safety zones under the New York State Vehicle and Traffic Law (Section 1640, Part 8).
7. NYSDOT Region 9 and 6 notify BMTS regarding the availability of abandoned railroad

properties. Evaluate all such corridors based on their usefulness as pedestrian paths and acquire as appropriate and as resources are available.

8. Review site development proposals during all review processes related to the State Environmental Quality Review Act (SEQRA) and Section 239(l&m) of NYS Municipal Law. Encourage developers to incorporate pedestrian design elements in construction plans in accordance with this plan.

**Objective #3:** To make bicycle and pedestrian travel part of an intermodal transportation system.

**Recommended Actions:**

1. Make all bus routes accessible by sidewalks.
2. Install shelters and/or benches for pedestrians at major transit stops.
3. Install bicycle racks and/or lockers at major bus stops and terminals.
4. Install bicycle lockers and/or racks at park and ride lots/commuter parking lots.
5. Initiate a pilot project of installing bicycle racks on Broome County Transit, Tioga County Transit, and/or Binghamton University's Off Campus College Transit buses.

2. System Maintenance

**Objective #4:** To maintain the existing road infrastructure in addition to unique features of the bicycle and pedestrian infrastructure to ensure its safety and usefulness, and to protect the community's investment.

**Recommended Actions:**

1. All bike and pedestrian facilities must be well maintained in order to ensure their safety and continued use. System maintenance activities include sweeping, filling of cracks, filling of potholes, replacing tire-catching or below-grade grates, and repainting pavement markings.
2. Responsible jurisdictions may not be aware of bicycle and pedestrian-level hazards. Because of this, pedestrians and cyclists should assist municipalities by notifying them, in writing, of hazards whenever possible.
3. Governmental entities responsible should clean roadways and shoulders of debris after accidents and after construction activity.
4. Include snow removal on bicycle and pedestrian facilities as a regular part of winter maintenance. This is particularly critical in the area of bus stops.

### 3. Education, encouragement, and enforcement

**Objective #5:** To ensure that cyclists, pedestrians and motorists understand and abide by the requirements for safe facility-sharing.

#### **Recommended Actions:**

1. Support the continued development and implementation of safety education programs for cyclists and pedestrians.
2. Develop a public awareness program focussing on "Share the Road" safety consciousness.
3. Assess the educational needs of other target groups including motorists and local government officials.
4. Encourage local police agencies to enforce traffic violations involving bicyclists and pedestrians.
5. In conjunction with other MPOs, advocate the incorporation of bicycle and pedestrian safety laws into the NYS drivers' manual and drivers' test.

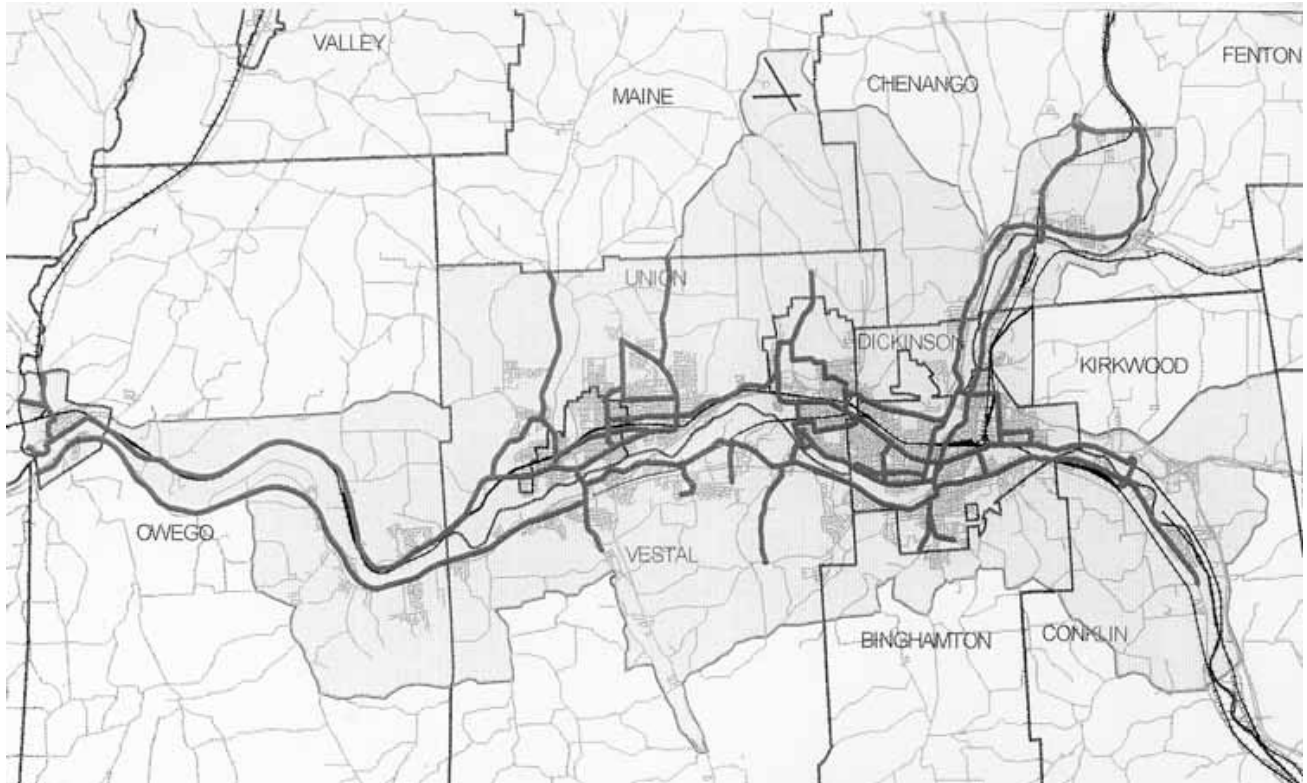
**Objective #6:** To foster increased interest in cycling and walking in Broome and Tioga Counties. To encourage people to view cycling and walking as viable modes of transportation.

#### **Recommended Actions:**

1. Increase general public's awareness about health and environmental benefits of cycling and walking.
2. Make public aware of local opportunities to bike and walk through the distribution of maps.
3. Merge EMC Ad Hoc Committee on Alternative Transportation with existing BMTS Pedestrian and Bicycle Plan Advisory Committee, and establish it as the ongoing forum for public review of the plan's implementation.
4. Design and implement a pilot project for state, county, and city government offices in Binghamton Government Plaza to encourage employees to walk and cycle to work. Encourage major employers in the metropolitan area to establish walk and cycle to work programs.
5. Investigate other sources of funding for plan implementation i.e., special grants, bicycle registration and licensing, etc.

## VI. THE CORE SYSTEM OF BICYCLE ROUTES

The following map highlights roadways in the Binghamton region that are recommended for inclusion in the initial Binghamton metropolitan area bicycle system. These streets and roads will serve as a primary network, or core system, of bicycle routes. They are the highest priority for initial signing, and follow up improvements such as striping, geometric modification, and enhanced maintenance.



The following factors were considered when roads were chosen:

- ◆ Continuity of the route system, and connectivity to important destinations such as central business districts, major employers, educational institutions, government facilities, high density residential areas, and recreational facilities.
- ◆ Routes recommended in the 1976 "Binghamton Metropolitan Bikeway System: A Plan and Program".
- ◆ Areas known to be especially hazardous were avoided, especially those where countermeasures would be difficult and/or costly to construct.
- ◆ Review and input from municipal officials, reacting to an initial system proposal.

Volunteer cyclists have traveled and evaluated the routes. More than one person evaluated each route. Although responses to the evaluation were inconclusive, they did provide guidance in choosing roads

for inclusion in the core system. As expected, cyclists' preferences varied greatly depending on their experience and ability. This supports the argument that a variety of roads may be included in the bicycle route system to support different levels of travel.

Cyclists generally have similar travel patterns (trip origins and destinations) as people who travel locally by car. Thus, the choice of these roads was not based on the present condition of the infrastructure, i.e., pavement condition, traffic volume, traffic speed; but rather on the location of major attractors and generators of trips and appropriate connecting corridors. Making needed improvements to commonly traveled corridors will best accommodate the majority of cyclists in the long run; selecting roads which do not presently require improvements may be less costly initially, but is not likely to result in a rational system.

## VII. ACTION PLAN AND IMPLEMENTATION ACTIVITIES

### A. Guidelines for Phased Implementation

This action plan will guide BMTS and its member municipalities in the implementation of recommended actions. The result will be a phased program for improving pedestrian and bicycle facilities in the Binghamton metropolitan area. What follows are examples of high, medium, and lower priority projects which will help involved agencies select implementation projects.

#### 1. High Priority/Short Range Actions

##### Pedestrian:

- ✓ Evaluate all hazardous intersections, based on accident report analysis. Based on accepted traffic engineering principles, develop and implement appropriate countermeasures.
- ✓ Construct sidewalks to provide access to all schools, including institutions of higher education, not currently served.
- ✓ Construct sidewalks along and providing access to all BC Transit bus routes.

##### Bicycle:

- ✓ Develop the core bicycle route system as depicted on Map 1 by signing shared lanes.
- ✓ Install secure bicycle parking/storage facilities at municipal parking garages, Government Plaza, high volume outlying bus stops.

##### General:

- ✓ Develop projects as candidates for Federal Surface Transportation Program funding.
- ✓ Develop and implement a public education program emphasizing safe road sharing for all users.
- ✓ Produce, distribute, and periodically update a system map for consumers.
- ✓ Include appropriate bicycle and pedestrian design elements in all currently programmed projects to construct, reconstruct, or improve State and local highways, streets, and bridges.
- ✓ Coordinate with the New York State Department of Transportation's regional and statewide pedestrian and bicycle plans.
- ✓ Continue to collect information about the local use of the transportation system by pedestrians and bicyclists.
- ✓ Continue research into best practices which demonstrate enhanced safety for pedestrians and bicyclists.
- ✓ Promote pilot projects and special events to increase interest in walking and bicycling.

#### 2. Medium Priority/Mid Range Actions

##### Pedestrian:

- ✓ Evaluate all signalized intersections not addressed as high priority. Modify signal timing as necessary to provide adequate pedestrian green time; install pedestrian signal indications as needed per the NYS MUTCD; install pedestrian actuation and pedestrian phases where needed to accommodate safe pedestrian crossing.
- ✓ Construct sidewalks to provide access to major employment centers, shopping malls and other commercial districts, parks and recreational facilities not currently served.
- ✓ Construct/install pedestrian amenities at high passenger volume bus stops.

#### Bicycle:

- ✓ Improve bicycle infrastructure on the core bicycle route system as appropriate, with creation of striped bicycle lanes and intersection improvements as warranted by usage experience and system inventory.
- ✓ Provide a safe means of access to Chenango Valley State Park.
- ✓ Expand the core bicycle route system as appropriate to provide access to additional major employment centers, shopping malls and other commercial districts, parks and recreational facilities.
- ✓ Address hazards on streets/roads connecting to core system, including sewer grates, deteriorated pavement, narrow or deteriorated shoulders.
- ✓ Install bicycle racks on OCC-T buses as a pilot project.
- ✓ Encourage installation of secure bicycle parking/storage facilities at significant privately owned traffic generators.
- ✓ Create a plan for a network of riverbank/greenway paths.

### **3. Lower Priority/Long Range Actions**

#### Pedestrian:

- ✓ Construct sidewalks in unserved high to medium density residential areas.
- ✓ Construct/install pedestrian amenities at intervening bus stops.
- ✓ Expand of the core system of bicycle and pedestrian facilities.
- ✓ Identify a system of dedicated bicycle/pedestrian paths, including linkage of existing park and river bank facilities and rail-to-trail conversions.

#### Bicycle:

- ✓ Continue to expand bicycle system as appropriate to serve high to medium density residential areas.
- ✓ Expand of the core system of bicycle and pedestrian facilities.
- ✓ Identify a system of dedicated bicycle/pedestrian paths, including linkage of existing park and river bank facilities and rail-to-trail conversions.
- ✓ Develop pilot projects into ongoing programs; expansion to other sites.
- ✓ Construct network of riverbank paths.

## B. Delineation of Responsibilities

A number of agencies and organizations will be involved in plan implementation. The following delineation of responsibilities will assist in the coordination of their efforts.

### 1. BMTS Central Staff

Designate a current BMTS Central Staff member to coordinate and lead implementation of the Bicycle and Pedestrian Plan. Responsibilities include:

- ◆ Collect and analyze pedestrian and bicycle trip making data in the metropolitan area.
- ◆ Collect local system inventory data for input into the BMTS Geographic Information System.
- ◆ Create and periodically update a pedestrian and bicycle system map.
- ◆ Monitor system maintenance.
- ◆ Provide technical assistance, through the BMTS traffic engineer, to municipalities in improving infrastructure.
- ◆ Review scoping and preliminary design documents for all State and local highway, street, and bridge construction, reconstruction, and improvement projects to ensure appropriate inclusion of bicycle and pedestrian design elements.
- ◆ Review site development documents as provided under SEQRA and Section 239 to ensure appropriate inclusion of bicycle and pedestrian design elements.
- ◆ Provide technical assistance to employers regarding bicycling and walking commute programs.
- ◆ Coordinate periodic bicycle and pedestrian facility workshops for municipal engineers, planners, highway officials, and elected officials to discuss and monitor plan implementation.
- ◆ Coordinate the efforts of the EMC Ad Hoc Committee on Alternative Transportation/BMTS Pedestrian and Bicycle Advisory Committee.
- ◆ Work with other agencies to develop a public education and marketing plan to promote a "Share the Road" safety consciousness and encourage cycling and walking.

The BMTS traffic engineer will assist by:

- ◆ Review scoping and preliminary design documents for all State and local highway, street, and bridge construction, reconstruction, and improvement projects to ensure appropriate inclusion of bicycle and pedestrian design elements.
- ◆ Review site development documents as provided under SEQRA and Section 239 to ensure appropriate inclusion of bicycle and pedestrian design elements.
- ◆ Review local accident records to identify hazardous locations.
- ◆ Check signal timings for adequate pedestrian green times as part of the BMTS traffic count program.
- ◆ Provide technical assistance to member jurisdictions regarding the redesign of hazardous intersections and traffic calming strategies.

### 2. New York State Department of Transportation

The NYSDOT Central Office and Regions 6 (Tioga County) and 9 (Broome County) have designated

Bicycle and Pedestrian Coordinators. Their responsibilities with respect to the BMTS plan include:

- ◆ Coordination with NYSDOT regional and statewide bicycle and pedestrian planning and implementation activities.
- ◆ Provision of technical and mapping assistance to BMTS Central Staff.
- ◆ Attendance at Advisory Committee meetings.
- ◆ Participation in scoping and preliminary design of Federal aid and State funded highway and bridge projects to ensure inclusion of appropriate bicycle and pedestrian related design elements.
- ◆ Communication regarding availability of abandoned railroad properties and/or DOT right of way for bicycle path development.

### 3. Broome County Environmental Management Council

The primary role of the Broome County EMC will be in the areas of public information and volunteer assistance. Key to this effort is its Advisory Committee on Alternative Transportation.

Responsibilities of EMC Staff include:

- ◆ Coordinate with BMTS Central Staff in overseeing the work of the Ad Hoc Committee on Alternative Transportation.
- ◆ Assist in the development of pilot walk/ride to work projects in the government plaza.
- ◆ Maintain library of bicycle and pedestrian literature and resources.

Role of Ad Hoc Committee on Alternative Transportation/Pedestrian and Bicycle Advisory Committee:

- ◆ Serve as a focal point for public participation in implementation of the BMTS bicycle and pedestrian plan.
- ◆ Assist BMTS Central Staff in developing a public education and marketing plan to promote a "Share the Road" safety consciousness and encourage cycling and walking.
- ◆ Review and comment on pedestrian and bicycle safety education programs.
- ◆ Assist BMTS in informing public of new pedestrian and bicycle facilities.
- ◆ Comment on project priorities in conjunction with BMTS staff and committees; recommend system improvements.
- ◆ Provide volunteer staff for promotional events.
- ◆ Assist BMTS Central Staff in developing system maps; assist in distribution.
- ◆ Advocate needs of bicyclists and pedestrians.

### 4. BMTS Member Municipalities

Because of their jurisdiction over local streets and sidewalks, local municipalities will have primary responsibility for implementation and maintenance of facilities. Responsibilities include:

- ◆ Participate in development of high priority improvement projects in conjunction with BMTS Central Staff.
- ◆ Include appropriate bicycle and pedestrian design elements in road, street, and bridge construction or reconstruction projects in their jurisdiction.
- ◆ Install additional facilities such as bike racks/lockers in areas recommended by this plan.
- ◆ Continue appropriate maintenance of streets, roads, sidewalks, and any other bicycle and

pedestrian facilities in their jurisdiction.

- ◆ Respond to recommendation from the BMTS traffic engineer regarding correction of hazardous locations.

#### 5. Broome County Traffic Safety Board Program

This ongoing program, funded by a grant from the Governor's Traffic Safety Committee, and housed by the Broome County Department of Health, has various responsibilities in the areas of traffic safety. The primary emphasis is education, both through broad public awareness campaigns and focused efforts. Responsibilities of the Traffic Safety Program Coordinator include:

- ◆ Develop and coordinate bicycle and pedestrian safety plans and programs.
- ◆ Provide information to other plan participants of best practices regarding pedestrian and bicycle safety issues.
- ◆ Advise on and participate in the development of the "Share the Road" public awareness safety campaign.

### C. Summary of Cost Estimates

Costs of items may vary depending on location and suppliers. Use these figures for planning purposes.

<u>Facility</u>	<u>Specifications</u>	<u>Cost per unit</u>
◆ Signs (installed):	Average cost	\$100/sign
◆ Sidewalks:	Concrete @ \$3 square foot	\$63,000 per mile
◆ Curb Ramps:	2 ramps per corner	\$1,500 per corner
◆ Striping:	4" wide	\$250-\$316.00/mile
◆ Road Stencils:	Variable design	\$0.50 per linear foot
◆ 4' Paved Shoulder:	6"gravel base, 2"binder, 1"top	\$25,000 per mile
◆ Road Sweeping:	Labor and overhead included	\$33.93/hour
◆ Bicycle lockers:	Variable design	\$450 - \$3,500/locker
◆ Bicycle racks:	Variable design	\$60 - \$900/space

Figures taken from "NYSDOT Unit/Item Cost Estimates For Pedestrian/Bicycle Facilities", NYSDOT, 1994; and, are provided courtesy of the Broome County Department of Public Works, the Village of Endicott Department of Public Works, and the City of Binghamton Department of Public Works.

## D. Funding Sources

Federal transportation funding is available through the Federal Highway Administration Surface Transportation Program (STP). All projects related to bicycle and pedestrian improvements that are not construed as maintenance are eligible for STP funding. Selection of these projects is the responsibility of the BMTS Policy Committee. For projects related to transit, including directly related pedestrian and bicycle amenities, Federal Transit Administration Section 9 funding is available. In both cases, the federal share is 80%, with the State and municipal project sponsor paying the remainder.

Both of these sources are limited. In any given year, BMTS has many projects competing for funds. To ensure that investments continually reflect State and local priorities, BMTS writes and updates its Transportation Improvement Program (TIP). This involves selecting and ranking projects, and scheduling ranked projects for design and construction over the next five year period. The TIP is financially constrained and can only program funds that are available. Because the federal programs must be reauthorized prior to October 1, 1997, there is some uncertainty about future funding availability.

Even if no new projects can be added to the TIP in the immediate future, it is possible to progress with bicycle and pedestrian improvements. Low-cost improvements such as better maintenance, striping, and signing may be possible for municipalities. Also, supplemental resources may be available from many private and public grant sources, as well as public/private partnerships. These partnerships have proven to be successful in funding pedestrian and bicycle improvements, and in increasing the awareness of the value of these travel modes to the private sector. For example, retail and commercial developers can be encouraged to provide appropriate facilities within the context of their development. Advertising space can be rented to pay for bus shelters or benches. Central business district merchants who understand that increases in human scale traffic are good for business may be willing to fund projects for sidewalk improvements, bus stop amenities, or bicycle racks. Service clubs may wish to participate in an "adopt a bus stop" maintenance program. Finally, in many communities, citizens groups have been formed to finance these sorts of improvements.

Many of these sources fund projects that preserve greenways (linear parks) including railroad to trails conversions, and pedestrian and bicycle projects. Some programs to watch for include:

- ◆ FHWA Surface Transportation Enhancement Program: This is a 10% set aside of STP funds for projects such as rail-to-trail conversions, historic preservation, and pedestrian and bicycle improvement projects. Treated more like a grant program than the rest of STP, applicant projects are selected for funding by an appointed committee.
- ◆ The New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) Environmental Protection Fund Programs: Money is available for projects such as municipal parks, historic preservation, and the acquisition and development of parklands.
- ◆ Rural New York Grants Programs: Offers up to \$5,000 to municipalities, not-for-profit groups, and unincorporated groups working on historic preservation, land trust, environmental action, or planning projects.
- ◆ AmeriCorps: Offers funding or people power for programs that protect and preserve neighborhood environments.

Many municipalities who have benefitted from these programs have found that matching dollars, which are necessary to receive funding, can be contributed through in-kind services.