ORANGE COUNTY, NEW YORK

BICYCLE AND PEDESTRIAN PLAN

NEWBURGH - ORANGE COUNTY TRANSPORTATION COUNCIL
1998
NEWBURGH ORANGE COUNTY TRANSPORTATION COUNCIL MEMBERS

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August 19, 1998
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I

INTRODUCTION

The Newburgh Orange County Transportation Council (NOCTC) was mandated by the 1991 federal Intermodal Surface Transportation Efficiency Act (ISTEA) to develop a long range transportation plan including a bicycle and pedestrian plan. The NOCTC commissioned a consultant to prepare a long range transportation plan for Orange County. In 1998, the long range plan was updated and approved by the NOCTC. This long range transportation plan explores a wide range of options for developing the transportation network in the County. The plan briefly touches upon the idea of including pedestrian and bicycle facilities in transportation planning.

In response for a more detailed plan for bicycle and pedestrian facilities, the Orange County Planning Department /NOCTC began a study to identify existing facilities and recommend future actions to add additional facilities for users, when opportunities arise. The plan incorporates a process outlined in the ISTEA legislation, that recognizes the idea of bicycle and pedestrian facilities as viable alternatives in our transportation and community planning.

The plan explores five areas related to bicycle and pedestrian facilities in the County of Orange. The first area includes a vision, goals, objectives and performance measures. The vision statement pursues a broad concept that recognizes the need for bicycle and pedestrians facilities as a part of a multi-modal transportation system. The goals recognize that safety, education, engineering including adequate facilities and linkages to other modes of transportation are essential to achieving the vision. The objectives map out ways to meet the goals and performance measures, and track the successes and the failures of the projects.

A second area of the plan identifies existing conditions for bicycle and pedestrian facilities. This discussion acknowledges the importance of improving safety and facilities for pedestrians and bicyclists in the County.

Pedestrians and bicyclists have significant issues relating to their safety and access to transportation facilities. The third section discusses ways to increase usage of the facilities. This is handled in four ways: encourage use of facilities with better access, security and safety; educate pedestrians, bicyclists and automobile drivers of their respective responsibilities; enforce all traffic laws; and design safe and adequate bicycle and pedestrian facilities.

A fourth section outlines recommendations and strategies for pedestrian and bicycle programs. They include such areas as developing safe facilities, safety education programs, enforcement education programs, inventories, cooperative strategies with employers and promotion materials. The section
travel ways for on-road and off-road use.

Finally the plan briefly identifies the role of the Newburgh Orange County Transportation Council for implementing the recommendations of the plan. Even though the role presently exists, the plan more clearly steers the NOCTC toward the needs and the concerns of the bicyclists and pedestrians, so that they too can enjoy the safety and convenience of a more diverse transportation network.

II
VISION

The bicycle/pedestrian vision for Orange County, New York is to make bicycling and walking a safe, viable transportation choice in the County.

GOALS, OBJECTIVES AND PERFORMANCE MEASURES

The following section identifies goals and objectives for the Bicycle and Pedestrian Plan. They are combined in one section to provide a comprehensive view of the objectives and the way they meet the stated goals.

GOAL 1: Increase the present percentage of journey-to-work trips and of total trips made by bicycling and walking in Orange County.

Objectives: Identify existing opportunities to enhance the percentage of journey-to-work trips and of total trips made by bicycling and walking in Orange County.

Realistically add to the current bicycling and walking trips by 50% by the year 2020.

Identify the funds to build and maintain needed facilities.

Performance measures: The number of bicycle/pedestrian projects on the TIP

The total dollars of bicycle/pedestrian projects by funding source

Annual monitoring of facility usage

GOAL 2: Improve the safety and convenience of the transportation system for bicyclists and pedestrians.

Objectives: By the year 2020 decrease the rate of bicycle and pedestrian injuries and fatalities by 10%.
Explore opportunities for bicycle and pedestrian facilities when road and bridge structures are improved.

Bring into conformance existing pedestrian facilities to meet current requirements and demands, when opportunities arise.

Develop pedestrian and bicycle enforcement programs.

Maintain the existing and develop new multi-use trail systems in accordance with the appropriate design standards.

Performance measures: An annual total/rate of bicycle/pedestrian crashes

- The number of transportation (road, bridge, etc) projects that contain bicycle and pedestrian facilities
- The percent of the highway system with a minimum of four foot shoulders
- The number of new bicycle and pedestrian projects and the total dollars spent by fund source
- The number of new bike paths or trailway projects and the total dollars spent by fund source

GOAL 3 Increase public awareness of compatible relationships among bicyclists, pedestrians, and motorists through educational efforts.

Objectives: Promote existing formal education programs to teach residents safe bicycle and pedestrian travel habits.

- Work with local governments, law enforcement agencies, school districts and other related organizations to prepare a comprehensive education program, when these opportunities arise.
- Through the Newburgh-Orange County Transportation Council, inform planners, designers, and other officials of existing and planned bicycle and pedestrian facilities and programs.

Performance measures: The number of persons educated in transportation safety programs

- The number of professional and government officials trained
Objective: Address and integrate bicycle and pedestrian needs in transportation studies, projects and programs.

When economically, environmentally and functionally feasible and appropriate, include provisions for pedestrians and bicyclists.

Build sidewalks from railroad stations and bus transit stations to major residential areas and commercial areas that are within a one quarter mile distance, when feasible.

Build bicycle facilities between railroad stations and bus transit stations to major residential areas and commercial areas that are within a two mile distance, when feasible and appropriate.

Identify funding and build bicycle parking facilities at railroad stations, bus transit areas and activity centers in urban areas.

Coordinate with transit service providers to include transport of bicycles on buses and rail cars, when feasible and appropriate.

Design and develop bicycle and pedestrian facilities as part of local land use development proposals, when possible.

Promote bicycle and pedestrian facilities and programs to local decision-makers and encourage the inclusion of facilities in local comprehensive development plans, when feasible and appropriate.

Performance measures: The number of transportation projects that include bicycle/pedestrian facilities

The number of new sidewalk miles built

The number of new bikeway miles built

The number of bicycle racks and lockers installed (The percent of rail stations/bus stops with bike facilities)

The number of bus and rail companies that allow bicycles on their vehicles

The number of bicycle racks installed on bus and rail vehicles (the percent of buses and rail cars that allow bicycles)

The number of proposed developments that contain bicycle and pedestrian facilities
The number of local land use plans that include bicycle and pedestrian facilities

GOAL 5 Develop a bicycle and pedestrian network that provides safe access to the important facilities of the community.

Objectives: Explore the design and construction of bicycle and pedestrian facilities that are physically separated from highway traffic, when road and bridge improvements are considered.

Seek to advance the pedestrian and bicycle facilities presently on the TIP.

Strive to add new projects to the TIP that meet the goals of this plan.

Performance measures: The number of completed TIP bicycle and pedestrian projects annually

The percent of bicycle and pedestrian facilities that are physically separated from highway traffic

The number of new TIP bicycle and pedestrian projects added each year

GOAL 6 Maintain a database on bicycling and pedestrian activities and needs.

Objectives: By the end of 1999 develop a program to collect, update and analyze data on bicycle and pedestrian activities, accidents, and other pertinent data.

Inventory, identify and prioritize bicycle and pedestrian needs for every plan update cycle.

Performance measures: The number of bicycle and pedestrian data bases and type

The number of bicycle and pedestrian projects taken from the inventory that are submitted for TIP inclusion annually
III
CURRENT NEEDS AND CONDITIONS

Information about the bicyclist and the pedestrian is vital to planning bicycle and pedestrian facilities, coordinating plans with state and local decision-makers and seeking financial resources to build planned facilities. Much of our information comes from the 1990 Census Bureau "Journey to Work" data and a report commissioned by the Federal government "The Nationwide Personal Transportation Survey" (NPTS).

Figure 1
Journey to Work, 1990

<table>
<thead>
<tr>
<th>Cities</th>
<th>Employed Residents</th>
<th>Bike</th>
<th>Walk</th>
<th>Total Bike/Walk</th>
<th>Percent Bike/Walk</th>
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<td></td>
<td></td>
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<td>218</td>
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<td>89</td>
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<td>1,430</td>
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<td>Minisink</td>
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<td>371</td>
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<td>98</td>
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<td>73</td>
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<td>177</td>
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<td>330</td>
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<td>50</td>
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<td>75</td>
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<td>40</td>
<td>3.0</td>
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<tr>
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<td>7</td>
<td>1.4</td>
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<tr>
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<td>13</td>
<td>4.7</td>
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<td>214</td>
<td>214</td>
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<tr>
<td>Warwick</td>
<td>1,596</td>
<td>10</td>
<td>91</td>
<td>101</td>
<td>6.3</td>
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<tr>
<td>Washingtonville</td>
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<td>50</td>
<td>2.1</td>
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<td><strong>Orange County</strong></td>
<td><strong>141,415</strong></td>
<td><strong>268</strong></td>
<td><strong>6,531</strong></td>
<td><strong>6,799</strong></td>
<td><strong>4.8</strong></td>
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</table>
Figure 1 identifies the 1990 "Journey-to-Work" statistics from the Bureau of the Census for Orange County. The data identified 141,415 workers 16 years and older in Orange County. Approximately .18% of the workers bicycled to work while 4.6% walked. The number of cyclists and pedestrians could be lower or higher than estimated primarily because the samples taken are restricted to one season rather than spread throughout the entire year.

The Federal Highway Administration published the 1990 Nationwide Personal Transportation Study (NPTS). Some of the results are as follows: Out of 22,317 households sampled, 7.2% of all trips made were walking trips, and 0.7% were bicycle trips. The average walking trip is 0.6 miles and a bicycle trip is 2.0 miles. 55% of the bicycle trips and 34% of the walking trips were for social and recreational reasons while only 10% of the bicycling and 12% of the walking trips were for work related travel.

An important observation is that journey to work trips begin and end with walking. These additional trips demonstrate the potential use of existing facilities and the demand for increasing pedestrian and bicycle facilities. Expansion of safe and accessible transportation opportunities for pedestrians as well as for bicyclists is only one reason for developing a bicycle/pedestrian plan for Orange County. Bicycle and pedestrian safety is another central factor moving the development of this plan.

By recording and studying the traffic accidents involving pedestrians and bicyclists, one can determine priority locations where bicycle and pedestrian safety improvements are needed. Figure 2 identifies traffic accidents affecting pedestrians and bicyclists that were gathered by the New York State Department of Motor Vehicles.

### Figure 2
Injury and Fatal Accidents
Orange County, NY

<table>
<thead>
<tr>
<th></th>
<th>Total Injury Accidents</th>
<th>Pedestrian Injuries (% of Total)</th>
<th>Bicycle Injuries (% of Total)</th>
<th>Total Fatal Accidents</th>
<th>Pedestrian Fatalities (% of Total)</th>
<th>Bicycle Fatalities (% of Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>3,791</td>
<td>185</td>
<td>4.8%</td>
<td>88</td>
<td>70</td>
<td>11.4%</td>
</tr>
<tr>
<td>1993</td>
<td>3,725</td>
<td>128</td>
<td>3.4%</td>
<td>92</td>
<td>38</td>
<td>13.2%</td>
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<td>1994</td>
<td>3,838</td>
<td>184</td>
<td>4.8%</td>
<td>80</td>
<td>47</td>
<td>3</td>
</tr>
<tr>
<td>1995</td>
<td>3,631</td>
<td>150</td>
<td>4.1%</td>
<td>84</td>
<td>35</td>
<td>4</td>
</tr>
<tr>
<td>1996*</td>
<td>2,761</td>
<td>97</td>
<td>3.5%</td>
<td>81</td>
<td>24</td>
<td>2</td>
</tr>
</tbody>
</table>

*numbers reported to September
Existing Bicycle and Pedestrian Facilities

For general discussion, the Plan identifies five major types of facilities for bicyclists and pedestrians in Orange County. They are multi-use trails, on-street bicycle routes, pedestrian facilities, roadways and hiking trails. (See Map 1)

A. Multi-use trails/paths: A multi-use trail, also called a path, is a facility physically separated from the roadway and intended for shared use by bicycle, pedestrian and other non-motorized users. The following are existing examples in Orange County.

1. Orange Heritage Trail:

When Conrail abandoned the "ERIE RR Mainline" just west of the City of Middletown to the Village of Monroe, the County of Orange purchased the section from the Wallkill River to the Village of Harriman excluding the stretch in the Village of Goshen. Orange Pathways (a non-profit organization) negotiated with the County of Orange to develop the entire County-owned stretch as an off-road multi-use trail. 6.3 miles of the right-of-way is completed for bicycling and hiking.

The existing trail is divided into two sections. One section extends from Hartley Road near the Wallkill River and extends southeast to the Village of Goshen Police Station. The Village of Goshen granted Orange Pathways permission to develop the section from the Village line to the police station and a short stretch from St. James Place to South Street.

Another section is a 4 mile stretch that begins at South Street in the Town of Goshen and runs to the former Erie Railroad Station in the Village of Chester. The trail is designed to accommodate bicyclists and pedestrians. For users who come to the trail by automobile, a parking lot is available nearby.

The Village of Goshen owns a short stretch of the railroad right-of-way that connects the two trail segments. It has been converted to a street and parking area. With proper signs and street markings the segment could complete a link between the Police Station and St. James Place.

Arrangements with the City of Middletown and Orange Pathways may also open a stretch of the ROW between the Wallkill River and the City. A portion of the ERIE Railroad right-of-way in the City of Middletown is proposed as an arterial to connect Dolson Avenue with East Main Street in the City. The design includes a bike lane.

2. Hudson River Valley Trail System:

Through the efforts from the Hudson River Greenway
Council and Greenway Conservancy, many of the Hudson River multi-use trails were included in the Hudson River Greenway Trail System. The Hudson River Greenway was created in 1991 to enhance the character, economy and identity of the Hudson River. The Greenway Council works with communities on local and regional planning and the Greenway Conservancy for the Hudson River Valley helps to fund and to implement specific projects that are linked by the Hudson River Trail system. The following list identifies several multi-use trail segments created in Orange County. More trails are yet to follow in order to complete the overall network.

a. **The Trail of Two Cities**: The twelve mile trail connects historic attractions, waterfronts and parks of the Cities of Newburgh and Beacon via the Newburgh-Beacon Bridge (Hamilton Fish Bridge) that crosses the Hudson River. In Newburgh the trail guides one along the designated streets in the historic neighborhoods of the East end of the City. Information and directional signs are provided along the way for bicyclists or pedestrians.

   The section of the trail that crosses the bridge is separated from the auto traffic and provides space for movement in both directions. The trail within the City utilizes existing sidewalks and streets. Bicyclists must share the roadway with motorists. Additional linkages to Downing Park, Delano-Hitch Park and the waterfront are included in the trail system.(See Map 2)

b. **Stillman and Howells Trail**: The trail is for hikers and designed for adventurous recreationists. It begins on Mountain Road in the Village of Cornwall, winds its way through Storm King Mountain for 5.9 miles, and ends at a designated point on State Route 218.

c. **Frederick Douglas Trail**: Beginning at Broad Street near the waterfront in the City of Newburgh, the trail follows several streets for 1.5 miles and ends at Washington’s Headquarters. The trail can be used by pedestrians and bicyclists. Bicyclists must share the travelway with motorists while pedestrians can safely use the sidewalks.(See Map 2)

d. **Highland Falls Trail**: The trail begins at the West Point Visitor’s Center and winds through the Village for two(2) miles returning to the Center. The bicyclist must share the route with automobile traffic. Sidewalks are available for the pedestrians.

e. **West Point Trail**: The trail is a multi-use facility for bicyclists and pedestrians. It begins at the Visitor’s Center in Highland Falls and ends at Washington Gate. The trail takes several routes with a maximum length of six plus miles. Existing streets and parallel sidewalks are used to lay out the trail. It was designed primarily for visitors to West Point, but commuters who work at the Academy have access as well.
B. **On-street bicycle routes:** The New York State Department of Transportation in cooperation with the Village of Monroe designated about 3 miles of State Route 17M as a State bicycle route. In addition, the State has identified State Routes 209 and 9W as future bicycle routes and will be placing signs on them when improvements or larger shoulders are completed.

New York State has designated State Bicycle Route 17. Bike route signs and shared highway signs are posted along the route. The route begins in the City of Newburgh, crosses the entire southern tier of New York State and ends in Buffalo. The route will follow portions of State Routes 207, 17M, 6, and 97 in Orange County.

C. **Pedestrian facilities:** Facilities for pedestrians vary from one municipality to another. Cities and villages, generally, have sidewalks along commercial and residential streets. Due to the American with Disabilities Act (ADA) requirements, many of these communities are presently installing or have installed handicap accessible connections between the street and the sidewalk at street intersections. Many communities need to reconstruct deteriorated sidewalks, provide missing connections between destination points and build new sidewalks. Other pedestrian facilities such as pedestrian signals, crosswalks, school crossing improvements are needed throughout the County.

Towns and rural areas are a different world for the pedestrian. Except for a few densely populated town neighborhoods, most town areas do not have sidewalks. Longer distances to travel in rural areas combined with a lack of sidewalks and/or shoulders causes residents to seek other means of travel (automobile, bicycle, transit, taxi or dial-a-ride) to work, school, parks and shopping areas.

D. **Roadways:** Present New York State Vehicle and Traffic Law governing mixed uses on the highways require motorists to share the road with bicyclists and pedestrians. Some local, county and state roads provide limited space at the edge of the road to accommodate shared use, however a majority of the roads do not.

E. **Hiking trails:** Orange County has numerous hiking trails that are primarily off-road trails. A few combine off-road and on-road experiences. Even though most of these trails are used by tourists, and local recreationists, a few such as the Long Path can be used by commuters as well. Below is a brief description of the trails:

1. **The Delaware River Heritage Trail:**

   The Trail is a multi-use trail for pedestrians and bicyclists and is located in the City of Port Jervis. Except for two short segments the Trail is also wheelchair accessible. The Trail begins at the historic Fort Decker on West Main
Street. The Trail follows Ferry Street to the River and runs parallel to the River south to Riverside Park and continues along the River to Laurel Grove Cemetery. After leaving the Cemetery the trail moves along East Main Street past Mercy Community Hospital and several churches to Orange Square on Pike Street. It returns to Main street and travels west to the Fort.

Segments of the Trail that follow the City streets can be used by bicyclists but they must share the roadway with motorists. The entire trail is primarily designed for the pedestrian. The theme of the trail is to acquaint the user with the numerous historic sites in the City. (See Map 2)

2. The Appalachian Trail:

This trail is part of a much larger trail that extends from the State of Maine to Georgia. The section in Orange County is approximately 35 miles. It is owned by the National Park Service and locally maintained by the NY-NJ Trail Conference. In Orange County, it begins in the southern part of the County just west of Greenwood Lake on Bellvale Mountain. It extends north and leaves Bellvale Mountain near the Chester boundary. The trail skirts eastward through the Town of Monroe into the Town of Tuxedo south of Arrow Lake. There, it crosses the Thruway south of Arden and goes through the Harriman State Park, crossing the Hudson River at Bear Mountain Bridge. The hiking trail is for pedestrian travel only.

3. The Long Path:

This Trail also serves as a pedestrian only hiking trail through the County. It is maintained by the NY-NJ Trail Conference and traverses both public and private land. With adequate promotion and signing, sections of the Trail could also be used for short distance commuting. The Long Path originates in Rockland County and has about 49 miles in Orange County. The Trail runs through the Harriman State Park and a section of the United States Military Academy along Route 293 and returns to the Park. When it leaves the Park the Trail follows roads, easements and a section of the former NYO & W Railroad right-of-way. It takes a northeasterly path and exits the County north of Route 17.

4. Shawangunk Trail:

The Shawangunk Trail is 17 miles long. It is primarily used for hiking and provides a north-south link between the Appalachian Trail and the Long Path. The Trail begins in High Point State Park at the Appalachian Trail in New Jersey. It runs north along the ridge through Orange County to the Mohonk Mountain House in Ulster County.

5. The Highlands Trail:

The Highlands Trail is a new trail that begins at the
Delaware River in New Jersey and ends at the Hudson River in New York. 32 miles of the trail is in Orange County. It is primarily for hiking and follows a ridge of mountains commonly called the Highlands. It extends from the Delaware Water Gap in New Jersey diagonally through the State to the Sterling Forest area in New York State. From there it goes northwest to Goosepond Mountain then to Schunnemunk Mountain and turns east through Cornwall to the Storm King State Park on the Hudson River. Map and trail development is not complete for the stretch in Orange County.

6. Other recreational trails:

Numerous trails exist in the Bear Mountain and Harriman State Parks, the Schunnemunk Mountain, the Storm King/Cornwall area, Black Rock Forest, the Stewart International Airport "buffer lands and the Sterling Forest State Park. Many of these trails are mapped and marked for easy access. To obtain access to the Stewart Airport lands a day use permit can be requested through the airport administration office.

IV
MAJOR ISSUES

Bicyclists and pedestrians are an essential part of the transportation community. They have certain issues and needs that affect bicycle/pedestrian planning and management. It is important that community and transportation planners as well as elected officials address these issues and incorporate the needs of these groups into the planning, design and construction of highways, transit systems, trails, new development and redevelopment plans, when feasible.

The following section addresses problems and opportunities that exist with bicycle/pedestrian planning and management. This section is divided into four main topics for general discussion: encouragement, education, enforcement and engineering.

ENCOURAGEMENT

Encouraging bicycling and walking involves providing safe and convenient facilities for citizens to use. A perceived low level of safety and convenience often inhibits people from pursuing walking or bicycling from his or her home to other destinations within a reasonable round trip distance. It is important for a bicyclist or pedestrian to leave their home and travel by bicycle or walk to destinations along safe, well designed bicycle and pedestrian facilities. The following sections address the important issues that contribute to a successful program.

Access:
A major issue related to access is how to accommodate the bicyclist and the pedestrian in the planning of the existing and future transportation system. When sidewalks and other needed pedestrian facilities are provided as a link between one’s residence and place of business, shopping or recreation, they are an incentive for people to walk.

A parallel scenario plays out for bicyclists. With access to safe bike lanes or bike routes along highways or separate pathways, bicyclist safety is improved. Safety improvements have been shown to drastically increase bicycle ridership.

The range of travel can be greatly enhanced for bicyclists and pedestrians through integration with transit. Bicyclists may choose to use bus and/or rail travel during their journey. To encourage this type of travel bike racks or similar means should be provided on buses or trains.

**Safety and security:**

When bicyclists and pedestrians are using community facilities they want to feel safe and secure. Their concerns include well designed bicycle and pedestrian facilities and systems including: adequate sidewalk width or bike lane width, protective buffers from adjacent vehicular traffic, lighting, security patrols, signage, and bicycle storage equipment.

**Parking and storage:**

Bicycle parking and storage facilities should be an important component of existing and new residential and commercial development. Bicycle parking facilities are needed at the bus and rail stations or transfer points for those who choose not to take their bicycles with them.

Additionally, facilities for bicycle parking and storage should be available as a minimum in high usage areas. Some ideal locations are schools, office buildings, retail centers and transportation hubs. Bicycle storage lockers are appropriate for when bicycles are left for long periods of time. Racks are sufficient for shorter stays.

**EDUCATION**

Ongoing education for bicyclists, pedestrians, and motorists is essential for the safety of all users of the highways and off-road facilities. Programs must emphasize safety and place importance on sharing the travel ways and the regulations governing movement within them.

By strengthening the school programs with effective current resources, young bicyclists and pedestrians are encouraged to think about safety on the highways. Planning, transportation and local officials also need to be included in
the educational process. Bicycle and pedestrian educational programs in transportation subjects are needed to acquaint these officials with issues and solutions.

ENFORCEMENT

Enforcement of the existing vehicle and traffic law of the State is essential in improving the traveling environment for pedestrians and bicyclists. Enforcement by local police of the laws that affect bicyclists, pedestrians and motorists is an important step. Communities with police forces can include bicycle patrols in their law enforcement program, when possible. Several communities in the County have bicycle patrols. They demonstrate the ease of moving along the streets and increasing the ability of enforcement.

In addition to police patrols, appropriate signage for pedestrian and bicycle related activities may act to reduce violations and educate the users. Pedestrian crosswalks, bike lane markings, and regulatory and warning signs are examples of some types of signage that will encourage participants to obey the bicycle and pedestrian laws.

ENGINEERING

In order to increase bicycling and walking and to make them safer transportation choices, the full range of bicycle and pedestrian facilities must be constructed. Guidelines for designing and building these facilities are developed by the American Association of State Highway and Transportation Officials (AASHTO). This section includes a definition of terms and illustrations used by AASHTO.

Bicycle and pedestrian facilities

Bicycle and pedestrian facilities are improvements and provisions made to accommodate and encourage bicycling and walking. Different user abilities and experience levels require varying degrees of separation from motor vehicle traffic. Below is a description of potential approaches.

A. Bikeways

Any road, path, or way that in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes (AASHTO) The following descriptions identify a variety of techniques that can be used to design bikeways.

1. Bicycle routes:

A bicycle route is a system of bikeways designated by
the jurisdiction having authority for that highway. The bike route is identified with directional and informational markers with or without specific bicycle route numbers. (AASHTO)

2. Paved shoulder

Shoulders are an appropriate choice for bicyclists in a suburban and rural setting. Generally, they should be a minimum of four (4) feet wide, have a smooth surface and be maintained. On stretches that have inclines the shoulder should be widened to accommodate slower moving bicyclists. (AASHTO)

3. Shared travel lanes

Shared travel lanes are streets and highways with no special provision for bicyclists. In areas where the right-of-way is limited, shared travel lanes provide enough room for bicyclists and motorists to coexist at low speeds. The lane is typically 14 feet wide or less with no shoulders, allowing cars to safely pass bicyclists. (AASHTO)
4. Bicycle lanes

Bicycle lanes are part of the roadway and separated exclusively for bicyclists by various types of markings. The striping establishes a more predictable relationship between the motorist and the bicyclist. It also provides more security for the bicyclist. The motorist knows that he or she can expect bicyclists to be in the lane and should avoid swerving into it.

Bicycle lanes should always be one way facilities carrying traffic in the same direction as adjacent motor vehicle traffic. Shoulders for uncurbed streets are designed with a minimum width of four(4) feet. When a curbed street, with or without parking, is used, five(5) feet or wider lanes are needed to provide safety for the bicyclists, if adjacent to the curb. (AASHTO)
5. Bicycle paths

Bicycle paths are the safest approach to providing travel ways for cyclists, however the construction cost may be high and the availability of land may be limited. Existing possibilities that can keep costs at a minimum are abandoned railroad rights-of-way, banks of rivers, public parks and unused public parks. These routes have the potential for both recreation and commuter uses. More recent design and building materials enable increased safety and usage of the bike path concept. (AASHTO)

6. Multi-use trail and/or paths

Multi-use trail and/or paths are designed to accommodate a variety of users (bicycles, pedestrians, skaters, wheelchairs, baby strollers, equestrian riders). In conjunction with bike lanes and sidewalks, multi-use paths can supplement existing travel ways that connect workplaces, neighborhoods, shopping areas, transportation connections and recreation centers. Design standards must account for the numerous uses and adequately instruct the users of proper etiquette and safety. This can be done by building separate paved or unpaved user paths, provide adequate spacing between paths and installing instructional signs. (AASHTO)
B. Pedestrian facilities

1. Sidewalks

Sidewalks require certain design standards in order to ensure safety for pedestrians, the primary users. Pedestrian signals, crosswalks and off-road paths are common safety measures. A standard sidewalk is five feet wide, however, wider widths are necessary in heavier travelled areas. Requirements of the Americans with Disabilities Act (ADA) are followed to provide access to sidewalks at crosswalks and street intersections.

Sidewalks are safe passageways for pedestrians who must have access to community centers and other activities. Sidewalk connections between parking areas and destination points provide easy and safe access in urban areas or large employment and shopping centers. When appropriate, new streets and subdivision developments should also contain sidewalk connections to workplaces, shopping and transportation stops to provide safe passage for pedestrians.

Designated school crossings at intersections and safe sidewalk connections to neighborhood schools are important issues to school officials, parents and children. They are essential for the safe passage of school children from their homes to school and back and should be considered in any street improvements or new construction.
2. Traffic calming

Traffic calming incorporates a variety of techniques that reduce the speed of the automobile in heavily populated residential neighborhoods and improve safe passage for pedestrians and bicyclists within these travelways. Some of the techniques include buffer zones between the sidewalk and the street traffic, visibly marked crosswalks, planted medians in multi-lane streets, and flared sidewalks at intersections. To assist the pedestrian, amenities such as bus shelters, planters, seating, trash cans, lighting, and pedestrian and bicycle signals are included in the design.

Maintenance

The regular maintenance of bicycle and pedestrian facilities is important to the safety of the users and to encouraging future use. Maintenance includes sweeping the pavement, maintaining a smooth pavement surface, repairing large cracks, removing oily spills and filling potholes. All storm water grates, manhole covers and utility covers should be routinely checked to insure
that they are flush with the surface and secured properly. Unsafe conditions could easily lead to a bicycle or pedestrian crash.

Although, responsibility for maintenance, generally, lies with the agency that has jurisdiction over the adjacent road, this is not always the case. Many municipalities may place the responsibility for maintenance and repair upon the adjacent property owner. NYSDOT will construct sidewalks and bicycle paths along its roads, and may seek a maintenance agreement with a local or county agency.

When no public agency is found to maintain the bicycle and pedestrian facilities, a local group of citizens may volunteer or be called upon to take responsibility for funding and maintenance.

Safety

A. Pavement and surfaces

Roadway surfaces have a significant impact upon the safe movement of bicyclists and pedestrians from one destination to another. Adequate pavement width provides for safer bicycle and pedestrian travel. Usually four (4) foot minimum shoulders added to the pavement width is adequate. In cities, villages, large hamlets and commercial strips, sidewalks are a essential for safe access.

Surface irregularities such as cracks parallel to the flow of traffic can trap wheels of bicycles and cause riders to lose control of the vehicle or pedestrians can trip and lose their balance. Potholes and bumps can cause bicyclists to swerve into the flow of automobiles potentially causing accidents.

Structures such as bridges with steel decking may be slippery when wet. Other structures including storm water drains, utility covers, manhole covers must be designed and constructed properly in order to maintain a safe experience for bicyclists and pedestrians.

Existing structures should be inspected to ensure that they are flush with the surface and not endanger the bicyclist or pedestrian. If at all possible, newly constructed fixtures should be constructed outside the bicycle travelway.

Parallel bars on drainage grates pose a serious problem for bicyclists. The front wheels of bicycles can become lodged in the grate openings and cause a loss of control. These grates should be replaced with bicycle-safe and hydraulically efficient ones. When this is not immediately possible, consideration should be given to welding steel bars perpendicular to the flow of traffic as a temporary measure. Curb inlets are an alternative solution to on road drainage grates.
In the illustration above, the use of slip lanes, medians, pedestrian islands (bulbouts), minimized left turns and pedestrian signalization reduce street crossing exposure for slower moving pedestrians.

Simplified median crossings allow pedestrians to cross roads with a sense of safety. Raised medians to provide refuge for pedestrians and landscaping for amenities are important design considerations.
Railroad crossings pose another potential hazard for bicyclists. A bicyclist should cross perpendicular to the tracks. If the bicyclist crosses the track at a diagonal, the greater the chance of lodging the wheel in the flangeway and the greater chance of an accident injury. Widening the outside lane or shoulder may give the bicyclists a better opportunity to cross at right angles. If this is not possible, a flangeway filler is an alternative solution.

B. Traffic control devices

Well designed traffic signals, crosswalks, and pedestrian signals are not only important for the safe and efficient movement of vehicular traffic but also for the safe and efficient movement of pedestrians and bicyclists at busy intersections. The design of traffic control devices should give special consideration to the physically challenged, children and the elderly. At intersections that are more than two lanes or accommodate large volumes of pedestrians, the traffic signals should allow for adequate crossing time.

Refuge islands on multilane highways are an important device to give pedestrians more time to cross the highway. For the visually impaired crossing signals should include audible warning devices.

Where bicycle traffic exists or is anticipated, bicycles should be considered in the timing of signal cycles. Even though the bicyclist can cross an intersection at the same time as an auto, at multi-lane crossings special consideration should be given to ensure that short clearance intervals are not chosen. Pedestrian actuated buttons are also used by bicyclists as a means to provide easy crossing at intersections for bicyclists. They are a reasonable alternative to in-road detectors as long as they do not require the bicyclist to dismount or make unsafe leaning movements.

At specific low volume intersections with traffic signals, traffic detection devices are crucial to the safe and efficient movement of bicyclists. The traffic detector loop that is embedded in the roadway responds to the magnetic field from the metal in the auto. It is important that the loop is located in the expected path of bicyclists, including detectors in the turn lanes, and be bicycle sensitive. Pavement markings can be used to identify where the bicycle needs to be to activate the signal.

C. Signs and markings

Good signage is essential for bicyclist and pedestrian safety. Signs alert motorists of potential bicyclists and pedestrians on the road and encourage safe conditions. Signs must be consistent, readable and visible at all times.
After consultation with the appropriate highway officials additional signs that identify turns, narrow roads, or potential hazards could be added to the route. The Manual of Uniform Traffic Control Devices should be consulted for designing and locating signs.

Signing and marking are important safety measures on bicycle paths especially to alert bicyclists and motorists at highway intersections. Additional guidance is needed for bike paths and multi-use trails to provide a safe crossing for bicyclists and pedestrians. Advanced warning signs and as well as a high visibility crossing with appropriate pavement markings and visual warnings is essential.

Guide or identification signs should contain the crossing route name/number, possibly, the destination point, mileage, directions, distances and intersection identification. When an off-road trail crosses a highway, the crosswalk can be striped (zebra stripes) on the roadway to provide a visual path for pedestrians and bicyclists. It also serves as a constant reminder to the motorist that bicyclists and pedestrians may cross the roadway at any time.

On two directional bike paths or multi-use trails, a four inch center-line stripe is recommended. (AASHTO) The line provides a visual separation between lanes and delineates an area for the users traveling in different directions. In areas of high volume use, limited sight distance at turns and during night time use, the line will help to minimize accidents and injuries.
V

RECOMMENDATIONS AND STRATEGIES FOR IMPLEMENTATION

The Newburgh-Orange County Transportation Council has an overall goal to provide multi-modal transportation opportunities when possible through its transportation policies and network. These opportunities include facilities for bicycles and pedestrians within and connecting each of Orange County's forty municipalities.

A primary tool for implementing the recommendations in this plan and the NOCTC’s long range plan, "2020 Vision" is the Transportation Improvement Program (TIP). Projects listed in the TIP reflect long range plans. These plans set goals for implementing Orange County’s future transportation system and land-use development.

The TIP is approved by the Newburgh Orange County Transportation Council (NOCTC) and includes transportation projects that are to be funded within a 5 year period. The TIP includes federally funded projects and most major state, county and local projects. Every two years projects are solicited and the TIP is updated by the NOCTC. Bicycle and pedestrian programs and projects can be funded through all Federal, State and local fund categories.

A. Recommendations for bicycle use:

1. Include bicycle transportation in the existing project review process for appropriate transportation and land use projects as a way to provide needed facilities.

2. The Orange County Department of Planning should work with local municipalities to review any land use regulations and zoning ordinances to ensure consideration for bicycle facilities including parking requirements.

3. Bicycle transportation should be considered in appropriate transportation projects. When highways are planned for improvement and receive state and federal funds, a paved shoulder larger than four feet should be considered to accommodate bicycle and pedestrian users when physically, environmentally and economically possible. On designated bicycle routes six foot shoulders should be provided. Where appropriate signage should be installed to inform motorists of the additional highway users.

4. In urban areas where shoulders are not feasible, a curb lane of 14 feet should be the minimum design for improvements to the street. Primary consideration should be given to off-road alternatives or bike lanes physically separated from highway traffic where warranted.

5. Support the development of multi-use trails as
connectors between adjacent developments and to cut across barriers. Provide vehicle parking areas where feasible at access points to off-street multi-use facilities.

6. The Orange County Transportation Plan 2020 Vision suggests that future land use development encourage "pedestrian pocket" concepts. A small enclave, defined as a sustainable community with housing for 5000 people and jobs for 3,000, will enable residents to walk and bike to mass transit services, shopping facilities, work places and other community facilities. Present development patterns in rural areas discourage alternative means of transportation.

The County should support the concepts of higher density community development identified in the Orange County Comprehensive Development Plan adopted in 1980 and 2020 Vision-A Transportation Plan for Orange County adopted in 1995 and updated in 1998. The concept of sustainable communities suggested in both documents supports, not only transit transportation, but also bicycling and walking as a means of travel.

7. Integrate bicycle transportation with the mass transit system. Work with the bus and transit companies to improve or begin bicycle access to the mass transit system on scheduled bus and train service, when feasible and appropriate. Install bicycle storage equipment at the Orange County park & ride locations, bus and rail stations and transfer centers to store bicycles for the day.

8. With the cooperation of all transportation parties involved, develop an all season comprehensive maintenance program that considers bicycling concerns and is accepted by all jurisdictional agencies.

9. Ensure that the connections between on-street bicycle systems and the off-street trails are smooth and correctly signed.

10. Given the funding levels, develop and fund through the NOCTC professional bicycle transportation education programs for County and local government officials.

11. Municipal school districts within the County should implement bicycle safety programs in all their schools beginning at an early age and emphasize the importance of learning the rules. The NOCTC should assist in funding these programs, when feasible and appropriate.

12. Work with law enforcement personnel who provide educational programs to institute a regular review course for law enforcement officials about the rights and responsibilities of bicyclists and motorists.

13. The Orange County Traffic Safety Board, local
bicycle clubs, school districts and municipal police should sponsor bicycle events to teach proper bike safety.

14. Ensure that Driver Education courses are emphasizing an awareness of the relationships and regulations for automobiles, bicycles and pedestrians.

15. Develop a community-wide "Share the Roads" campaign each year to educate drivers and bicyclists on how to share the road. For multi-use trails develop a "Share the trail" campaign to educate users about their responsibilities in order to develop mutual respect for other users. As part of this effort, develop an educational video that can be distributed to local cable networks and operators of education programs.

16. Develop and distribute through the Orange County Tourism Promotion Agency and local groups maps and literature to increase awareness of bicycle facilities and programs.

17. Work with local governments and groups to develop promotional materials to encourage bicycling.

18. Encourage employers to begin programs that will increase the number of workers who choose to walk or bicycle to work. Incentives for accomplishing this goal may include bicycle lockers, bicycle racks and showers.

19. Develop programs that register and mark bicycles as a deterrent to theft.

20. Ensure that bicycle facilities are properly illuminated for safety.

21. Locations and causes of bicycle crashes should be monitored. Action by the appropriate agency should be taken to improve and avoid future crashes.

B. Recommendations for pedestrian use:

1. Include in the existing project review process for appropriate transportation improvement projects as a way to assess pedestrian related elements.

2. Develop a comprehensive inventory of existing pedestrian facilities, pedestrian accident history, and key pedestrian projects. Cooperate with the appropriate agencies to develop strategies to correct any deficiencies.

3. Within cities, villages and other high density development in the towns, require sidewalks and link them between residential areas, major streets, parks, schools and retail developments. Back lot trails should be considered as an alternative in the design of new developments. Connect through a trail system back to back cul-de-sacs. When feasible, and
when safety factors prevail, sidewalks should be built on both sides of the street.

4. Examine existing impediments to access for pedestrians, create a plan to eliminate them and develop a schedule to complete the tasks included.

5. Re-examine policies in cities and villages concerning "right on red" at busy intersections. When feasible and appropriate, eliminate the "right on red" at these intersections. For safety reasons, clearly identify crosswalks at major intersections with high visibility crosswalk materials.

6. Install crossing signals when possible that include audible and visual warnings at crosswalks.

7. Ensure that walkways are illuminated for safety and that adequate police and/or security officers are readily visible.

8. Provide pedestrian amenities at major transit stops such as sidewalks, pedestrian signals, crosswalks, shelters, pay phones and information.

9. Install signs in heavily travelled pedestrian areas that remind drivers that they must legally yield to pedestrians.

10. Ensure that the connections between on-street pedestrian systems and the off-street trails are smooth and correctly signed.

11. Develop a cooperative strategy with employers in the County that will encourage more workers to walk to work.

12. With the cooperation of all transportation parties involved, develop an all season comprehensive maintenance program that considers pedestrian concerns and is accepted by all jurisdictional agencies.

13. Investigate the opportunities for off-street multi-use trails on any rights-of-way that may be abandoned or sold.

14. When feasible and appropriate, develop and fund through the NOCTC pedestrian transportation education programs for County and local government officials.

15. Provide pedestrian educational programs to educate law enforcement officials, motorists, and pedestrians concerning rights and responsibilities.

16. Develop maps and literature to increase the awareness of pedestrian facilities and programs.
C. **Specific project recommendations:**

Pedestrian and bicycle facilities should be included with the planning and design of appropriate transportation and land use projects, especially highway and street projects. Safety features such as sidewalks, wide shoulders, pedestrian signals, crosswalks, proper storm drain grates, sidewalk ramps, and adequate signal timing are important facilities generally incorporated in the general reconstruction, resurfacing, intersection changes or bridge improvement projects.

With the support of State, County and local advocates these features can continue to be included in new highway projects and as stand alone projects to improve bicycle and pedestrian usage. Off-road facilities will also be considered to provide additional facilities for bicyclists and pedestrians. (See Map 3) A chart listing the projects and their estimated costs is located in Appendix D.

**For Bicyclists:**

* **Off-road facilities:**

1. The TIP identifies the extension of the Heritage Trail from the Village of Chester Railroad Station to the end of the County-owned right-of-way in the Village of Harriman. The stretch from the restored ERIE Station in Chester to Museum Village is under construction and the remainder to follow. The NOCTC should continue to support this project.

2. The TIP includes another extension of the Heritage Trail from Hartley Road in the Town of Goshen to the Thrall Library(former Erie Railroad Station) in the City of Middletown. The City of Middletown owns the section of the ROW from the Wallkill River to Thrall Library. The City of Middletown will work with Orange Pathways to develop this section of the right-of-way. A section of the right-of-way is planned by the City of Middletown as an arterial within the City and Orange Pathways will maintain a bike lane along that portion of the right-of-way. The NOCTC should continue to support this project.

3. Orange County should consider the purchase of the abandoned ConRail right-of-way from Main Street in the City of Middletown to the operating Graham Railroad line and let Orange Pathways develop it as part of the Heritage Trail. This project is also identified on the TIP.

4. The abandoned Erie Railroad ROW from the Graham Line in the Town of Mount Hope to Otisville should be designated as an extension of the Heritage Trail and developed as a link with the Shawangunk Trail west of the Village.

5. The Orange County Department of Parks and Conservation should explore the feasibility of converting the former D
& H Canal towpath into a multi-use trail from Port Jervis to the Basha Kill. The former D & H Canal right-of-way, along with the former New York Ontario and Western Railroad that runs parallel to it, is recommended as a multi-use trail in the New York State Plan entitled "21st Century Mobility". The concept for the linear rights-of-way is a bike way/trailway/greenway from the City of Kingston in Ulster County to the City of Port Jervis. The facility will highlight historic transportation uses through interpretive signage while providing for present and future non-motorized transportation.

6. In the New York State Plan 21st Century Mobility, the State proposes to build on the existing right-of-way of the Palisades Parkway a two way bike path, set as far as possible away from the automobile travel way. The project in Orange County will include approximately four(4) miles from the Rockland County boundary to the Bear Mountain Bridge.

7. The Maybrook Line Rail Trail project is mentioned in the New York State Plan 21st Century Mobility. It is being studied by DOT for future use. Sections of the right-of-way are being developed or studied for use as a rail-trail system.

8. The New York State Plan 21st Century Mobility identifies the Wallkill Valley Rail Trail as a multi-use trail and greenway to run from the City of Kingston to the Village of Walden. Some sections in Ulster County are developed. The Town of Montgomery, that owns the Town portion, with the help of Orange County should develop the right-of-way as a trail link to the Ulster County segment of the trail.

9. The Catskill Aqueduct right-of-way should be developed as a trailway as proposed in the New York State 21st Century Mobility Plan.

* On-road facilities:

The State of New York in the "Hudson Valley Pedestrian and Bicycle System Plan" section of 21st Century Mobility identifies several state highway routes in Orange County as part of a regional system of bike routes. To provide safe and efficient bicycle transportation, the designation requires that, whenever work is planned for a state highway as a bicycle route, one of several provisions be considered. Shoulders should be six(6) feet - eight(8) feet wide with a four(4) foot minimum, fourteen(14) feet travel lanes, four -five(4-5) foot bike lanes, bike paths, or alternate routing. These requirements apply to bridges as well. When designated State Bike Routes meet standards, they will be signaled and opened as bicycle routes.

The following state routes are recommended in the New York State 21st Century Mobility Plan for a regional system of bike routes and their linkage to key activity centers. Signs are now in place for State Bike Route 17:
1. The Route 9W corridor: In Orange County it passes through the Towns of Highlands, Cornwall, New Windsor and Newburgh. It also passes through the Village of Highland Falls, the Village of Cornwall and the City of Newburgh. A small segment of the corridor in Orange County between the Rockland County border and Bear Mountain Bridge is identified with New York State's Bike Route 9.

2. The Route 6 and the Route 17M corridors: From the Town of Woodbury to the City of Middletown the routes share the same corridor.

3. The State Bike Route 17 (Southern Tier): State Bike Route 17 begins in the City of Newburgh on the Trail of two Cities at the northern end of Marine Drive. It turns onto Washington Avenue to Route 207. It follows Route 207 west through the Village of Goshen to Hatfield Lane. The route follows the lane and then Maple Avenue, joining Route 17M/6 at the intersection. The route continues west on Route 17M/6 to Middletown and leaves Route 17M and follows Route 6 to Port Jervis. In Port Jervis, it leaves Route 6 and follows Route 97 along the Delaware River.

4. The Route 209 corridor: The route extends from the Pennsylvania border in Port Jervis through the City and travels to Kingston.

* Other state designated routes:

The following suggestions are additional routes recommended for future bike routes. Planned improvements to these roads should include facilities for bicyclists and any necessary safety improvements to accommodate pedestrians.

1. The State of New York should recognize Routes 42 as bike route from Sparrowbush to its entry into Sullivan County and mark with appropriate signs.

2. New York Route 211 that runs east-west between Cuddebackville and Middletown is an important link between the suggested rail-to-trail system from Middletown to Otisville. From Otisville there is a linkage with the Shawangunk Trail and the D & H Canal towpath in Cuddebackville. If the rail trail is not feasible then Route 211 can be used from Otisville to Middletown. In Howells the bike route can intersect with the proposed extension of the Orange Heritage Trail.

3. State Route 302 at the intersection of Route 17M north to the Hamlet of Pine Bush and the intersection of State Route 52: A potential alternative is the Conrail ROW from the proposed Orange Heritage Trail section in Middletown to Route 302 in Wallkill. Another possibility is to secure easements along the former rail line to Pine Bush that runs parallel to Route 302.
4. State Route 94 starting at the State line near New Milford and intersecting with State Route 17A in the Village of Warwick: From the Village along State Route 17A north through the Village of Florida to the intersection of State Routes 17 and 207 (Bike Route 17) Consideration should be given to using the former Pine Island branch of the Erie Railroad that connected Goshen with Pine Island and points south into New Jersey.

5. State Route 17A starting at the intersection of State Route 94 in the Village of Warwick and continue to the County Park near a large residential development. (Homestead village)

6. State Route 17K beginning at the intersection of State Route 302 in Bullville and continue east through the Village of Montgomery: Continue east past I-84 and I-87 through the City of Newburgh to Water Street (Marine Drive).

7. State Route 52 beginning in Pine Bush at the intersection of Route 302 and continue east to the Village of Walden. It continues east to the City of Newburgh.

8. State Route 208 beginning at the Ulster County Line and continue south through the Village of Washingtonville to the intersection with the Heritage Trail:

9. State Route 32 beginning at the intersection of State Route 17K in Newburgh and continue south through Central Valley to the intersection with the Heritage Trail in the Village of Monroe: An important link is to use a short stretch of Old Route 17 to connect with the Harriman Railroad station for users of bicycles and transit services.

* Local Roads

Municipalities should pursue pedestrian and bicycle facilities when reconstructing existing roads or planning new roads. Officials should work with the MPO staff to identify projects and apply for funding through the TIP or other available sources. (See Appendix C)
VI
IMPLEMENTATION

The plan recommends the following actions be taken by the Newburgh/Orange County Transportation Council.

1. Develop and coordinate a bicycle/pedestrian program, using the recommendations from this plan and the NOCTC long range plan. The major elements of the program are policy development, facility design, accident analysis, coordination activities among user organizations and appropriate government officials, educational support, public relations and legislative needs.

2. The NOCTC and support staff will continue existing responsibilities on bicycle and pedestrian matters as they relate to the long range transportation plan(2020 Vision).

3. The NOCTC will pursue every opportunity to include the recommendations of this plan and seek appropriate funding when reviewing projects for the Transportation Improvement Plan.

4. The NOCTC will seek the advice of the Orange County Citizens Transportation Advisory Committee when implementing the Orange County Bicycle and Pedestrian Plan.