CHERRY HILL BICYCLE AND PEDESTRIAN MASTER PLAN

FINAL OCTOBER 2012

Prepared For:
The New Jersey Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

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Baker

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1. INTRODUCTION AND SUMMARY

1.1 INTRODUCTION

This Plan was sponsored through the New Jersey Department of Transportation (NJDOT) Bicycle and Pedestrian Local Technical Assistance Program. Through this program, New Jersey municipalities have an opportunity to identify pedestrian and bicycle issues that they would like addressed. Upon the request of a local entity, NJDOT provides consultant planning services to the community to perform planning studies that evaluate needs and opportunities relating to bicycle and pedestrian circulation and safety. The planning study serves as a basis for developing proposals for implementing specific improvements. The studies are locally driven in a partnership arrangement with the municipality and have a strong public outreach component.

The study was advanced under the direction of the Cherry Hill Township Department of Community Development to support the Township's goal to improve bicycle and pedestrian facilities, enhance bicycle and pedestrian accessibility to local and regional destinations, and to develop education initiatives to increase residents' knowledge of recommended bicycle and pedestrian travel practices. A Steering Committee (SC) was formed, consisting of municipal officials, stakeholders and Township residents. The SC was instrumental in guiding the study and providing feedback and comments throughout the process.

The primary goal of the Master Plan is to increase bicycle and pedestrian travel in the Township, thereby improving personal health, transportation options, and air quality. This document outlines the activities, findings, and recommendations of the Cherry Hill Township Pedestrian Master Plan, which includes the data collection process, assessment of major bicycle and pedestrian corridors, outlines a range of recommended improvements, implementation strategies, and identifies areas in need of further study to address the complex and constrained characteristics of Cherry Hill's environment.

1.2 SCOPE OF SERVICES

Cherry Hill Township requested bicycle and pedestrian planning assistance from the New Jersey Department of Transportation-Office of Bicycle and Pedestrian Programs (NJDOT-OBPP) to develop a Bicycle and Pedestrian Master Plan. NJDOT-OBPP contracted with Michael Baker Jr., Inc. (Baker) to assist Cherry Hill in developing the Bicycle and Pedestrian Plan through analyzing existing conditions and recommending locations of pedestrian and bicycle facility conceptual improvements. The Cherry Hill Township Bicycle and Pedestrian Plan included the following series of tasks:

- **Data Collection** – Site visits were performed to identify key bicycle and pedestrian trip generators and travel patterns. Bicycle and pedestrian crash data was evaluated to determine locations with recurring crashes.
- **Network Development** – Existing roadway and sidewalk conditions were assessed to determine bicycle compatibility and sidewalk conditions of key corridors which make up the preliminary study network. Select intersections were also assessed to document existing bicycle and pedestrian deficiencies.
- **Recommendations** – Conceptual improvements were developed to enhance bicycle and pedestrian mobility and safety.
- **Public Involvement** – The study incorporated an active public outreach component. A Steering Committee was formed, comprising local officials, advocacy groups, regional agencies, and residents. Two Steering Committee meetings were held to provide input and direction to the

study team. Two Public Information Centers were held during the Cherry Hill Earth Day event, on April 30, 2011, and April 28, 2012. Subject interviews were held with key stakeholders such as Police Department and School Board representatives. Additionally, input was gathered via an online survey and an online interactive map.

1.3 SUMMARY OF BARRIERS AND RECOMMENDATIONS

Following is a summary of the common physical barriers affecting bicycle and pedestrian mobility in Cherry Hill:

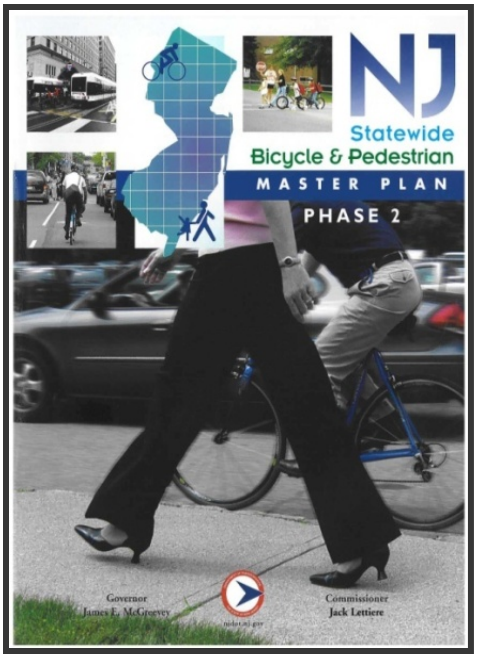
- High vehicular traffic volumes.
- High vehicular traffic speeds (arterial roads).
- Wide streets and intersections (barrier to cross).
- Congestion.
- Lack of sidewalks.
- Lack of advanced warning and visibility of pedestrians at intersections.
- Excessive number of driveways.

2. POLICIES AND PLANNING STUDIES

2.1 NEW JERSEY STATEWIDE BICYCLE AND PEDESTRIAN MASTER PLAN

The Local Technical Assistance Program, and by association this study, is governed by the goals and objectives of the New Jersey Statewide Bicycle and Pedestrian Master Plan. The Master Plan has the following goals:

- **Build the Infrastructure:** "Create bicycle and pedestrian infrastructure by planning, designing, constructing and managing transportation and recreational facilities that will accommodate and encourage use by bicyclists and pedestrian and be responsive to their needs."
- **Improve Access:** "Make community destinations, transit facilities and recreation facilities accessible and convenient for use by all types and skill levels of bicyclists and pedestrians."
- **Update Policies, Ordinances and Procedures:** "Reform land use planning policies, ordinances and procedures to maximize opportunities for walking and bicycling."
- **Educate and Enforce:** "Develop and implement education and enforcement programs that will result in reduction of crashes and a greater sense of security."
- **Foster a Pro-Bicycling and Pro-Walking Ethic:** "Increase bicycling and walking by fostering a pro-bicycling and pro-walking ethic in individuals, private sector organizations and all levels of government."



The goals are factored into the bicycle and pedestrian planning and concept development process as appropriate. *The Statewide Bicycle and Pedestrian Master Plan, Update* is available online at http://www.bikemap.com/RBA/NJBikePed.pdf.

2.2 NJDOT COMPLETE STREETS POLICY

The Local Technical Assistance (LTA) Program is also governed by the NJDOT Complete Streets (CS) policy. The policy was finalized in December 2009 and requires that future roadway improvement projects include safe accommodations for all users, including bicyclists, pedestrians, transit riders, and the mobility-impaired. The NJDOT CS policy is implemented through the planning, design, construction, maintenance, and operation of new or rehabilitated transportation facilities within public rights-of-way that are federally or state funded, including projects processed or administered by NJDOT. A copy of the NJDOT CS Policy and Complete Street Checklist is included as **Appendix A**.

The recommendations outlined in this study incorporate CS principles. Section 6 - Recommendations discusses the use of CS principles as a means of implementing bicycle and pedestrian improvements.

2.3 PLANNING STUDIES

Several existing Cherry Hill Township planning studies support and endorse the implementation of bicycle and pedestrian facilities within the Township. The following is a summary of the documents reviewed and a brief description of their endorsement to include pedestrian and bicycle accommodations.

- Cherry Hill Master Plan Reexamination Report, 2007 identifies the need for an integrated bikeway system as follows:

  "The Cherry Hill bikeway system should interconnect bicycle generators and destinations, such as major transit stops, large parks, historical sites, walkable areas (such as downtown Erlton, Batesville neighborhood, and the Garden State Park Town Center), and other points of interests. This system should designate clearly marked ways, identified with signage, road striping, and maps."

- The 2007 Reexamination Report also identified biking and walking as part of "Trends and Issues" where:

  "A coordinated bicycle/pedestrian system is needed in the Township. Walking and bicycling as a mode of traveling and recreation should be improved to provide necessary infrastructure and acceptance."

- DVRPC's Pedestrian and Bicycle Friendly Policies, Practices, and Ordinances, November 2011 outlines various strategies for the design and development of bicycle and pedestrian improvements and programs.

- Cross County Connections 2008 Bicycle Facilities Summary Report identifies existing and proposed bicycle facilities within Camden County.

It should be noted that Route 70 (Marlton Pike) was not included as part of this planning study, given that several earlier studies identify substantial recommendations to improve bicycle and pedestrian mobility along Route 70. Therefore, this study did not want to duplicate the work of the earlier studies. The earlier studies included:

- Route 70 (Marlton Pike) Cuthbert Boulevard to Penn Avenue Pedestrian Road Safety Audit/Assessment completed in September of 2008 by consultant VHB.
- NJ Route 70 Corridor Study Airport Circle to Marlton Circle completed in October of 2005 by DVRPC.

Cherry Hill Township should reference these resources and recommendations to incorporate bicycle and pedestrian improvements as part of all projects, where practicable.

3. Public Involvement

An active public involvement component was important to the Plan. Input was received from the project Steering Committee; persons attending the 2011 and 2012 Earth Day Event; and online survey and interactive map. Below is a brief summary of the public outreach elements completed as part of the Cherry Hill Township plan. A comprehensive summary can be found in Technical Memorandum #2 – Public Outreach, September 2011.

3.1 GOALS AND VISION STATEMENT

The following goals and Vision Statement were identified for this Plan by the study team, Steering Committee and public feedback:

3.1.1 Goals

- Provide biking and walking facilities for all ages and abilities.
- Provide bike lanes that are connected and continuous.
- Improve crossing conditions at major intersections.
- Encourage and educate residents of “Rules of the Road”.
- Promote safety.

3.1.2 Vision Statement

Cherry Hill Township is a place where bicyclists and pedestrians can safely and easily access area destinations. Bicycling and walking is considered a viable option for recreation and transportation to work, school, and for daily errands. Bicycling and walking facilities are incorporated as a standard component in the planning and design of capital improvements. Such facilities include an integrated network of connected sidewalks, manageable intersections, bicycle lanes, and shared paths. Residents, businesses, and employees work together to promote programs that educate people on the benefits and laws of biking and walking, and serve as examples by using these forms of transportation as part of their daily lives. The promotion of biking and walking programs has led to a mutual respect among all road users and a greater understanding of transportation laws.

3.2 STEERING COMMITTEE

Two Steering Committee meetings were held on April 26th, 2011 and March 12th, 2012. The first meeting was held to gather input on goals, vision, key issues and opportunities, and the second meeting was held to present the results of data collection and analysis, and draft conceptual improvements. The Steering Committee is comprised of local residents and officials, internal departments, and Transportation Management Association (TMA) and MPO representatives.

3.3 CHERRY HILL EARTH DAY EVENT

Baker personnel attended two Cherry Hill Earth Day Events on April 30th, 2011 and April 28th, 2012 at Croft Farm. The first event was held to inform residents of the Bicycle and Pedestrian Plan study. The second event was to share results and recommendations of the plan. A table was shared with the Township's Way-to-Go Committee. Comment cards, maps, and summary data were provided during each meeting. Overall, the public feedback indicated they were pleased to see that the Township was completing such a study and were supportive of the proposed bicycle and pedestrian improvements in the community.

3.4 ONLINE SURVEY

An on-line resource, www.surveymonkey.com, was used to conduct the survey. The survey was announced through the Cherry Hill Township Mayor's Office and the Township's Way-to-Go Committee. A link to the survey was posted on Cherry Hill Township's website and was accessible for one month, from May 20th, 2011 through June 20th, 2011.

A total of 384 responses were received for the survey. Of these, the large majority of respondents, more than 85%, were residents of Cherry Hill Township, while less than 10% reported being visitors. Although the survey did not ask where visitors were from, it is assumed they are most likely interested residents from neighboring communities.

Overall, the survey results indicate that the majority, more than 60%, of respondents walk and bike on a weekly basis for recreational purposes. Vehicle speeds are the biggest deterrent to people biking and walking, followed by difficulty crossing at intersections. Respondents indicated that they would increase their levels of biking and walking if more sidewalks and bike lanes were provided and if more were done to make the streets safer to accommodate biking and walking.

Many of the comments from respondents indicate their desire for bike paths and trails. This reinforces the desire to be separated from traffic, and having a place where people can walk and bike with a feeling of safety.

3.5 ONLINE COMMUNITY MAP

An online interactive map was designed and administered. The purpose of the map was to gather public input and assist NJDOT and Cherry Hill in identifying deficiencies and opportunities for bicycling and walking in the Township.

An on-line resource, www.communitywalk.com, was used to create the interactive map. The map was announced through the Cherry Hill Township Mayor's Office and the Township's Way-to-Go Committee. A link to the map was posted on Cherry Hill Township's website and was accessible for one month, from June 27th, 2011 through July 27th, 2011.

The Cherry Hill Township Bicycle and Pedestrian Community Walk Map shows a preliminary network that was developed by the project Steering Committee and public comments received during the Cherry Hill Earth Day event. Viewers were able to add markers to comment and provide information on the needs, issues and opportunities that exist for biking and walking in the community. Over 300 people viewed the map and 14 comments were received in addition to 23 markers that were added on the map.

3.6 SUBJECT INTERVIEWS

Five subject interviews were held with key stakeholders to obtain more in-depth information regarding the needs and issues related to biking and walking in the Township and to present the findings and recommendations directly to Township and County officials. The subject interviews included:

- Cherry Hill Way-to-Go Committee (October 2011)
- Cherry Hill School Board Representative (November 2011)
- Cherry Hill Township Internal Review (February 2012)
- Camden County Planning and Engineering (March 2012)

A summary of these interviews and meetings are included as part of **Appendix B**.

4. STUDY AREA

Cherry Hill Township encompasses 24 square miles and has a population of more than 70,000 residents. The Township includes many neighborhoods, schools, parks, recreational facilities, trails, community centers, shopping mall and retail centers, transit stops, and employment centers. A dense network of roadways, including several state and county highways, and major interstates and toll roads such as I-295 and NJ Turnpike, serves these land uses in Cherry Hill Township.

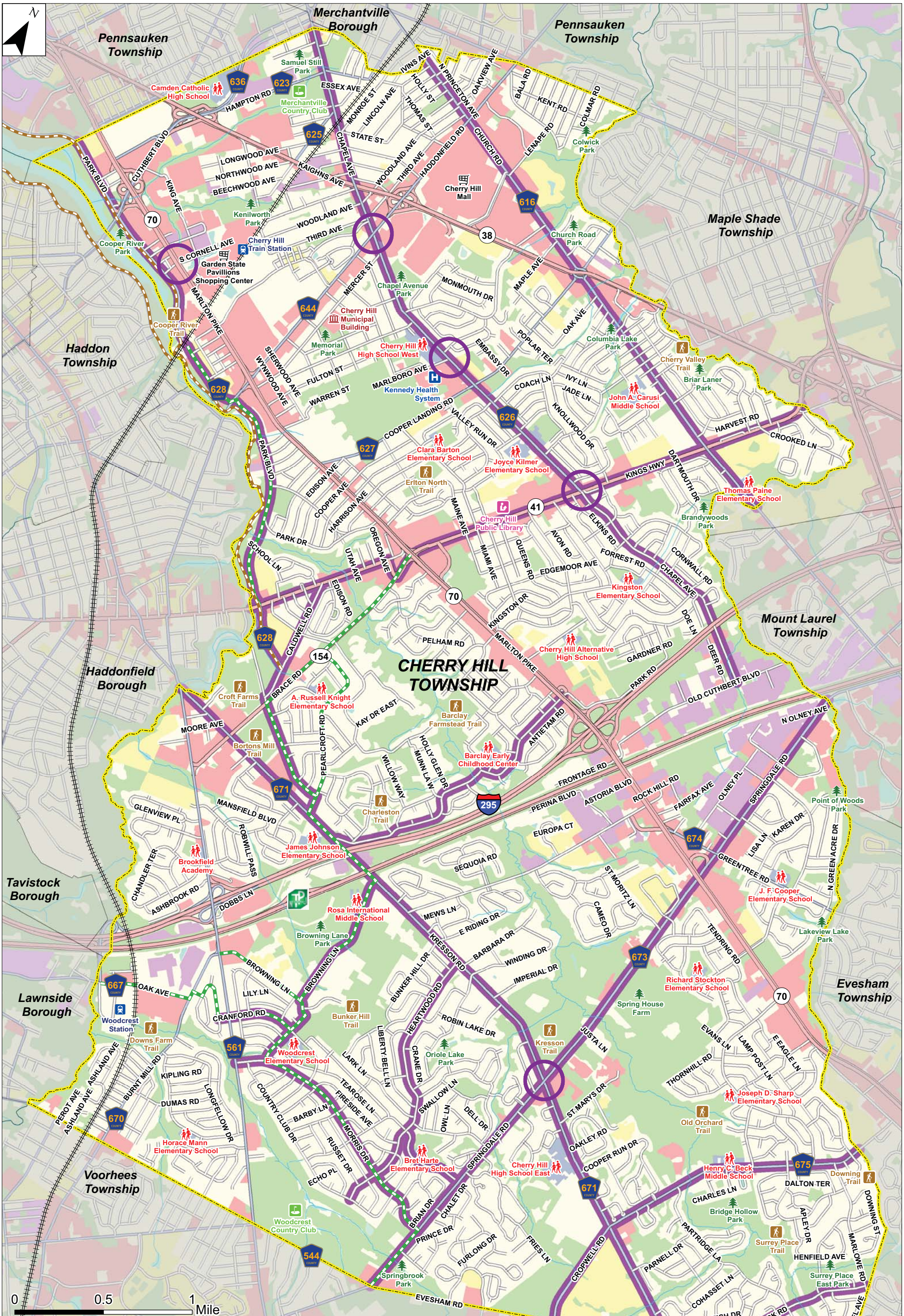
4.1 NETWORK DEVELOPMENT

Select roadways were identified to serve as the preliminary bicycle and pedestrian network in Cherry Hill Township. These corridors were selected as priorities based on traffic and crash data, demand and connectivity, and survey results, as well as feedback from the project SC and the general public. It is anticipated that Cherry Hill Township will continue to build upon the preliminary network, adding additional facilities on roadways, as recommendations of this plan move forward.

The preliminary network consists of priority bicycle corridors, pedestrian corridors, intersections, and off-road trail connections. These locations were evaluated to assess existing biking and walking conditions. **Figure 1 – Bicycle and Pedestrian Network Map** highlights the roadways and intersections included as part of the preliminary network.

4.2 NJDOT MANAGEMENT SYSTEM DATA

NJDOT Management System Data was obtained to assess existing conditions for Congestion, Pavement, and Drainage. A summary of the results from each of these Management Systems for State Highways located within Cherry Hill Township is included as part of **Appendix C.**


Merchantville Borough
Pennsauken Township
Pennsauken Township
Maple Shade Township
Haddon Township
Haddonfield Borough
CHERRY HILL TOWNSHIP
Mount Laurel Township
Tavistock Borough
Lawnside Borough
Voorhees Township
Evesham Township
Camden Catholic High School
Samuel Still Park
Merchantville Country Club
Cherry Hill Mall
Colwick Park
Church Road Park
Kenilworth Park
Cherry Hill Train Station
Cooper River Park
Garden State Pavillions Shopping Center
Chapel Avenue Park
Cherry Hill Municipal Building
Memorial Park
Cherry Hill High School West
Kennedy Health System
Columbia Lake Park
Cherry Valley Trail
Briar Laner Park
John A. Carusi Middle School
Cooper River Trail
Clara Barton Elementary School
Joyce Kilmer Elementary School
Erlton North Trail
Thomas Paine Elementary School
Brandywoods Park
Cherry Hill Public Library
Kingston Elementary School
Cherry Hill Alternative High School
Croft Farms Trail
A. Russell Knight Elementary School
Barclay Farmstead Trail
Bortons Mill Trail
Barclay Early Childhood Center
Charleston Trail
Point of Woods Park
James Johnson Elementary School
Brookfield Academy
Rosa International Middle School
Browning Lane Park
Lakeview Lake Park
Woodcrest Station
Downs Farm Trail
Woodcrest Elementary School
Bunker Hill Trail
Oriole Lake Park
Kresson Trail
Spring House Farm
Richard Stockton Elementary School
Joseph D. Sharp Elementary School
Old Orchard Trail
Horace Mann Elementary School
Bret Harte Elementary School
Cherry Hill High School East
Henry C. Beck Middle School
Downing Trail
Bridge Hollow Park
Surrey Place Trail
Surrey Place East Park
Woodcrest Country Club
Springbrook Park
J. F. Cooper Elementary School
Cherry Hill Township Bicycle and Pedestrian Local Planning Assistance
Figure 1 - Bicycle and Pedestrian Network Map
October 2011
0 0.5 1 Mile
LEGEND
Bicycle and Pedestrian Network
Study Corridors
Study Intersections
Transit
Rail Line
Existing Bicycle Facilities
Bike Route
Trail
Land Use
SCHOOLS
INDUSTRIAL
RESIDENTIAL, MULTI-UNITS
PARKS RECREATIONAL
COMMERCIAL SERVICES
RESIDENTIAL, SINGLE UNIT
US Department of Transportation
Federal Highway Administration
CHERRY HILL
Baker

5. EXISTING CONDITIONS

Existing conditions in Cherry Hill were investigated in order to observe and evaluate bicycle and pedestrian conditions, and identify deficiencies. Data was gathered on crash activity, presence and condition of sidewalks, and presence and condition of bicycle facilities. Data was gathered on key roadways to identify bicycle compatibility. A comprehensive summary of existing conditions can be found in Technical Memorandum #1 – Data Collection, October 2011.

5.1 BICYCLE AND PEDESTRIAN TRIP GENERATORS AND ACTIVITY

Bicycle and pedestrian trip generators and travel patterns are illustrated in **Figure 2 – Bicycle and Pedestrian Travel Patterns Map**. The map illustrates land use areas in Cherry Hill which is largely made up of commercial and residential uses. Commercial land uses are predominately located adjacent to major arterials, such as Route 70 and Route 41. Residential land uses are typically located between major arterials and commercial uses.

Observations made during the Activity Investigations indicate that neighborhoods within Cherry Hill are generally walkable and bikable where destinations are within close proximity, sidewalks are available, and local street networks provide good connectivity. However, several existing obstacles reduce bicycle and pedestrian connectivity and access between neighborhoods. Some of the common obstacles include large-scale auto-oriented intersections, wide crossings, right-turn-on-red, signs and landscaping that block visibility, excessive number of access points, high traffic volumes, and interstate highways that bisect the community.

The observed travel patterns of people walking and biking in Cherry Hill are similar to the people who drive. People use the main thoroughfares to get to and from their homes or transit stops to major destinations within the community. Many corridors within the preliminary network were observed to have high pedestrian and biking activity. **Figure 2** highlights these locations. Although specific counts were not completed, more bicyclists were observed during field visits than pedestrians. However, this may have been dependent on the time of day, where travel patterns may vary throughout the day.


Merchantville Borough
Pennsauken Township
Pennsauken Township
Maple Shade Township
Haddon Township
Haddonfield Borough
CHERRY HILL TOWNSHIP
Mount Laurel Township
Tavistock Borough
Lawnside Borough
Voorhees Township
Evesham Township
Camden Catholic High School
Samuel Still Park
Merchantville Country Club
Colwick Park
Cherry Hill Mall
Kenilworth Park
Cooper River Park
Cherry Hill Train Station
Garden State Pavillions Shopping Center
Church Road Park
Chapel Avenue Park
Cherry Hill Municipal Building
Memorial Park
Cherry Hill High School West
Kennedy Health System
Columbia Lake Park
Cherry Valley Trail
Briar Laner Park
John A. Carusi Middle School
Cooper River Trail
Clara Barton Elementary School
Joyce Kilmer Elementary School
Erlton North Trail
Thomas Paine Elementary School
Brandywoods Park
Cherry Hill Public Library
Kingston Elementary School
Cherry Hill Alternative High School
Croft Farms Trail
A. Russell Knight Elementary School
Barclay Farmstead Trail
Bortons Mill Trail
Barclay Early Childhood Center
Charleston Trail
James Johnson Elementary School
Brookfield Academy
Point of Woods Park
Rosa International Middle School
Browning Lane Park
J. F. Cooper Elementary School
Lakeview Lake Park
Richard Stockton Elementary School
Spring House Farm
Bunker Hill Trail
Kresson Trail
Oriole Lake Park
Woodcrest Station
Downs Farm Trail
Woodcrest Elementary School
Joseph D. Sharp Elementary School
Old Orchard Trail
Horace Mann Elementary School
Bret Harte Elementary School
Cherry Hill High School East
Henry C. Beck Middle School
Downing Trail
Bridge Hollow Park
Surrey Place Trail
Surrey Place East Park
Woodcrest Country Club
Springbrook Park
Cherry Hill Township Bicycle and Pedestrian Local Planning Assistance
Figure 2 - Bicycle and Pedestrian Travel Patterns Map
October 2011
0 0.5 1 Mile
LEGEND
Travel Patterns
High Demand
Transit
Rail Line
Bus Stop
Land Use
SCHOOLS
PARKS RECREATIONAL
INDUSTRIAL
COMMERCIAL SERVICES
RESIDENTIAL, MULTI-UNITS
RESIDENTIAL, SINGLE UNIT
Bicycle and Pedestrian Network
Study Corridors
Existing Bicycle Facilities
Bike Route
Trail

5.2 LEAGUE OF AMERICAN BICYCLIST (LAB) BICYCLE FRIENDLY COMMUNITY

The League of American Bicyclist (LAB) promotes the Bicycle Friendly Community program to encourage local communities to create improved conditions for cycling. Communities can assess their conditions using the League's Bicycle Friendly Community Scorecard.

As part of this study a Bicycle Friendly Community Scorecard was completed for Cherry Hill Township. As a result, Cherry Hill scored 6 points out of a potential of 8, which indicates Cherry Hill has some improvements to make before becoming a LAB Bicycle Friendly Community. Section 6.3 Bike Friendly Cherry Hill, provides specific recommendations to improve the score of becoming a Bicycle Friendly Community.

The LAB also provides an Action Plan guiding communities in what they need to become a full-fledged Bicycle Friendly Community. A copy of the LAB Bicycle Friendly Scorecard completed for Cherry Hill and Action Plan is included as **Appendix D.**

5.3 PEDESTRIAN ASSESSMENT

5.3.1 Existing Sidewalk Conditions

An assessment of existing sidewalk conditions was completed to determine their presence and condition. The assessment was completed along the 11 priority pedestrian corridors as listed in **Table 1** below. The existing sidewalk conditions data was obtained from the NJDOT County Roadway Sidewalk Inventory (CRSI) for county routes and Maintenance Management System Inventory (MMS) for state routes. Field visits were completed to verify the CRSI and MMS data, and investigate sidewalk conditions for local roads where CRSI and MMS data was not available. The sidewalk conditions were evaluated using the CRSI value rating as described in **Table 2** below.

Table 1: Sidewalk Assessment

Priority Pedestrian Corridors
Heartwood Road (Kresson Rd to Country Club Drive)
Cropwell Road (Evesham Rd to Old Marlton Pike)
Kings Highway (NJ 41)
Queen Anne Road (Springdale Rd to Heartwood Rd)
Kresson Road (CR 671)
Springdale Road (CR 673)
Morris Drive
Church Road (CR 616)
Park Drive/Park Boulevard
Chapel Avenue(CR 626)
Evesham Road (Springdale Rd to Cropwell Rd)

Table 2: CRSI Sidewalk Condition Classifications

Value	Description
Good	New or nearly new material is present. No identifiable defects are present.
Fair	Minor defects are present but are not considered detrimental to bicycle/pedestrian traffic.
Poor	Major defects are present. Example: Sidewalk is severely cracked or is disintegrating. Bicycle/pedestrian travel could be difficult.
No Sidewalk	No sidewalk present

The results of the sidewalk assessment indicate that the presence of sidewalks along the preliminary network corridors is inconsistent. More than 70% of the corridors assessed have an almost complete stretch of sidewalks in good condition, such as Church Road and Chapel Avenue, while 21% have large gaps. This is the case on Kresson Road where more than half of the length of the corridor lacks sidewalks. **Table 3** summarizes the percentage of existing sidewalk conditions. **Figure 3 – Existing Sidewalk Condition Map** indicates the complete results of the sidewalk assessment.

Table 3: Existing Sidewalk Condition Percentage

Condition	Miles	Percentage
Good/Fair Sidewalk	40.20	73%
Poor Sidewalk	3.73	7%
No Sidewalk	11.54	21%
Total	**55.47**	**100%**

LEGEND

Existing Sidewalk Condition

- Good/Fair Sidewalk
- Poor Sidewalk
- No Sidewalk

Transit

- Rail Line

Cherry Hill Township Bicycle and Pedestrian Local Planning Assistance

Figure 3 - Existing Sidewalk Condition Map

December 2011

5.3.2 Pedestrian Demand

Pedestrian demand was evaluated using a capture area of a ½-mile radius around schools, parks, and trails. The distance of ½-mile was used because it is considered a realistic walking distance for the average able person. The destinations included in this assessment were limited to schools, parks, and trails, since the dense development in Cherry Hill puts most destinations within a ½-mile walking distance. The results, as shown in **Figure 4 – Pedestrian Demand Map**, highlight the ½-mile capture area of how far someone is willing to walk assuming adequate pedestrian facilities are available.

LEGEND

1/2 - Mile Radius Around Schools, Parks & Trails

Sidewalk Condition

- Good/Fair Sidewalk
- Poor Sidewalk
- No Sidewalk

Transit

- Rail Line
- Bus Stop

Cherry Hill Township Bicycle and Pedestrian Local Planning Assistance

Figure 4 - Pedestrian Demand Map

November 2012

U.S. Department of Transportation Federal Highway Administration

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5.4 BICYCLE COMPATIBILITY ASSESSMENT

The corridors listed in **Table 4** were evaluated to determine the bicycle compatibility of the existing roadway conditions.

Table 4: Bicycle Compatibility Assessment

Priority Bike Corridors
Kresson Road (CR 671)
Springdale Road (CR 673)
Morris Drive
Kings Highway (NJ 41)
Woodleigh Drive/Cranford Road/Browing Lane
Heartwood Road (Kresson Rd to Country Club Drive)
Cropwell Road
Church Road (CR 616)
Brick Road
Park Drive/Park Boulevard
Covered Bridge Road
Bortons Mill Road/Pearl Croft Road/Caldwell Road
Chapel Avenue
Cropwell Road (Kresson Rd to Old Marlton Pike)

The assessment of bicycle compatibility utilizes a new methodology recently developed by NJDOT as part of their Statewide Bicycle Map. The methodology builds on the 1996 *NJDOT Bicycle Compatible Roadways and Bikeways, Planning and Design Guidelines.* The bicycle compatibility assessment considers several factors, which are listed in **Table 5.** Each of the factors were inventoried during field investigations, with the exception of traffic volumes.

Table 5: Bicycle Compatibility Criteria

Factors Evaluated
Traffic Volume (AADT)
Speed Limit
Land Use Type (Urban/Rural)
Curb Lane Width
Presence of Parking

Annual Average Daily Traffic (AADT) data was obtained from NJDOT's Straight Line Diagram (SLD) and Traffic Monitoring System, Delaware Valley Regional Planning Commission (DVRPC) and Cherry Hill Township. For locations where traffic volume data was not available, estimates were developed using volumes from nearby roadways with similar functional classification. Estimates were verified with local officials.

The Bicycle Compatibility Rating Criteria outlines three ratings of bicycle compatibility as follows:

- Most – Most suitable for on-road cycling. A majority of cyclists would find conditions favorable
- Moderate – Moderately suitable for on-road cycling. Cyclists of lesser skill and experience may find conditions unfavorable
- Least – Least suitable for on-road cycling. Cyclists of advanced skill and experience riding in traffic may find conditions unfavorable

A copy of the Bicycle Compatibility Rating Criteria chart is included as Part of **Appendix E.**

The results of the bicycle compatibility assessment indicate that most roadways in the preliminary network are rated as moderate (45%) and least (43%) suitable for cycling as summarized in **Table 6.** However, several of the segments that are currently rated as least suitable have the potential to be rated as most suitable if the utilization of on-street parking is low. Additional field inspections should be completed to confirm existing parking conditions. These locations are identified in the comment section of the Proposed Bicycle Compatibility Matrix, **Table 14,** as "Depends on percentage of parking".

Table 6: Existing Bicycle Compatibility Percentage

Condition	Miles	Percentage
Most	4.29	12%
Moderate	15.22	45%
Least	14.84	43%
Total	**34.35**	**100%**

The majority of the roadways in the preliminary network have a mix of bicycle compatibility ratings. The Bicycle Compatibility Matrix in **Table 7** outlines a summary of each of the corridors assessed, factors considered, and results of the existing bicycle compatibility rating. **Figure 5- Existing Bicycle Compatibility Rating Map** illustrates the results of the bicycle compatible rating of the preliminary network.

Table 7: Existing Bicycle Compatibility Matrix

SRI	Road Name	From	MP_From	To	MP_To	AADT (year)	Speed Limit (mph)	# of Lanes	Street Parking (Y/N)	Existing Compatibility Rating*	Existing Cross-Section (ft)
00000041__	Kings Highway (NJ 41)	Park Blvd (CR 628)	9.80	Churchill Rd	10.21	11,908 (1995)	40	2	Y	Moderate**	11.5'/12'//12'/9.5'
		Churchill Rd	10.21	Brace Rd (NJ 154)	10.68	32,664 (2011)	40	2	Y	Moderate	8'/16'//16'/10'
		Brace Rd (NJ 154)	10.68	Stage Coach Ln	13.01	24,416 (2009)	45	4	N	Least**	12'/12'/12'//17'//12'/12'/12'
04000616__	Church Road (CR 616)	Ivins Ave	2.12	Haddonfield Rd (CR 644)	2.57	v > 10,000	35	2	N	Least	0'/18'//18'/0'
		Haddonfield Rd (CR 644)	2.57	Lenape Rd	2.95	v > 10,000	35	4	N	Least	0'/14.5'/10.5'//12.5'/16.5'/0'
		Lenape Rd	2.95	Coolidge Rd	3.79	v > 10,000	35	2	N	Least	0'/15'//15'/0'
		Coolidge Rd	3.79	Roosevelt Dr	4.19	v > 10,000	25	2	N	Moderate	0'/15'//15'/0'
		Roosevelt Dr	4.19	Kings Highway (NJ 41)	4.78	v > 10,000	25	2	N	Moderate	0'/15'//17'/0'
		Kings Highway (NJ 41)	4.78	*Cherry Hill Border*	5.23	19,716 (2006)	25	2	N	Least**	0'/20'//20'/0'
04000626__	Chapel Avenue (CR 626)	Wisteria Ave	0.32	Kaighns Ave (NJ 38)	1.24	2,000 < v < 5,000	25	2	N	Most	0'/15'//15'/0'
		Kaighns Ave (NJ 38)	1.24	Haddonfield Rd (CR 644)	1.53	2,000 < v < 5,000	25	2	N	Moderate**	0'/15'//15'/0'
		Haddonfield Rd (CR 644)	1.53	Cherry Hill Blvd	2.02	v > 10,000	25	2	Y (NB only)	Moderate	13'/12'//15'/0'
		Cherry Hill Blvd	2.02	Marlboro Ave	2.40	v > 10,000	25	2	N	Moderate	8'/13'//21'/0'
		Marlboro Ave	2.40	*Hospital Entrance*	2.42	v > 10,000	25	2	N	Moderate	0'/22'//40'/0'
		Hospital Entrance	2.42	Knolwood Dr	2.73	v > 10,000	25	4	N	Least	0'/12.5'/12.5'//12'/13'/0'
		Knolwood Dr	2.73	Forge Ln	2.94	5,000 < v < 10,000	25	2	Y (NB only)	Moderate	10'/15'//15'/10'
		Forge Ln	2.94	Kings Highway (NJ 41)	3.43	6,800 (2008)	25	2	Y	Moderate	10'/15'//15'/10'
	Chapel Avenue	Kings Highway (NJ 41)	0.85	Cornwall Rd	0.02	5,000 < v < 10,000	25	2	Y	Moderate**	0'/18'//18'/0'
		Cornwall Rd	0.02	Kingswood Ct	0.00	2,000 < v < 5,000	25	2	Y	Least	0'/18'//18'/0'
		Kingwood Ct	0.00	Old Cuthbert Blvd	0.58	2,000 < v < 5,000	25	2	N	Most	0'/18'//18'/0'
04000628__	North Park Drive (CR 628)	*Cherry Hill Border*	1.61	Cuthbert Blvd (CR 636)	2.05	3,898 (2010)	35	2	N	Most	8'/16'//16.5/9'
		Cutherbert Blvd (CR 636)	2.05	*Railroad*	2.88		35	2	Y	Most	6'/16'//16'/7'
040006282_	Park Boulevard (CR 628 II)	*Railroad*	0.00	Haddonfield Rd (CR 644)	0.42	2,000 < v < 5,000	35	2	Y	Most	0'/21'//24'/0'
		Haddonfield Rd (CR 644)	0.42	Kings Highway (NJ 41)	1.68	5,000 < v < 10,000	35	2	N	Moderate	0'/15.5'//15'/0'
		Kings Highway (NJ 41)	1.68	Caldwell Rd	2.06	2,000 < v < 5,000	35	2	N	Most	5.5'/10.5'//17'/0'
04000671__	Kresson Road (CR 671)	Berlin Rd (CR 561)	0.00	Moore Ave	0.28	v > 10,000	35	2	N	Least	0'/18'//16'/0'
		Moore Ave	0.28	Brace Rd (NJ 154)	0.38	v > 10,000	35	2	N	Least	0'/20'//14'/0'
		Brace Rd (NJ 154)	0.38	Old Towne Rd	0.92	v > 10,000	40	2	N	Least	0'/15'//19'/0'
		Old Towne Rd	0.92	Covered Bridge Rd	1.22	v > 10,000	40	2	N	Least	0'/15'//15'/0'
		Covered Bridge Rd	1.22	Browning Ln	1.54	v > 10,000	40	2	N	Least**	4'/14'//14'/4'
		Browning Ln	1.54	Marlkress Rd	1.79	v > 10,000	40	2	N	Moderate	4'/14'//14'/4'
		Marlkress Rd	1.79	Bunker Hill Dr	2.03	v > 10,000	40	2	N	Least	3'/15'//15'/3'
		Bunker Hill Dr	2.03	Heartwood Dr	2.19	v > 10,000	40	2	N	Least	4'/16'//16'/4'
		Heartwood Dr	2.19	Springdale Rd	3.04	v > 10,000	40	2	N	Least	3'/15'//15'/3'
		Springdale Rd	3.04	*High School Entrance*	3.38	v > 10,000	40	4	N	Least	11'/11'//15'//11'/12'
		High School Entrance	3.38	Oakley Rd	3.44	v > 10,000	40	2	N	Least	18'/14'//18'
		Oakley Rd	3.44	Cooper Run Dr	3.59	v > 10,000	40	2	N	Least	15'//14'//15'/2'
		Cooper Run Dr	3.59	Country Walk	3.77	v > 10,000	40	2	N	Least	2'/15'//15'/4'
		Country Walk	3.77	Cropwell Rd (CR 675)	3.93	v > 10,000	40	2	N	Least	24'//14'/2'
		Cropwell Rd (CR 675)	3.93	Evesham Rd (CR 544)	4.67	v > 10,000	40	2	N	Least	3'/15'//14'/4'

04000673__	Springdale Road (CR 673)	Evesham Rd (CR 544)	7.19	*N Shopping Entrance*	7.29	15,573 (1995)	45	4	N	Least	12'/12'//10'//13'/13'
		N Shopping Entrance	7.29	Spring Rd	7.45		45	3	N	Least	8'/18'//12'/12'
		Spring Rd	7.45	Morris Dr	7.61		45	2	N	Moderate	6'/12'//12'//14'/6'
		Morris Dr	7.61	Chateau Dr	7.76		45	2	N	Least	15'/20'//30'/5'
		Chateau Dr	7.76	Queen Anne Rd	8.00		45	2	N	Moderate	15'/20'//20'/15'
		Queen Anne Rd	8.00	Wilderness Dr	8.16		45	2	N	Moderate	12'/12'//12'/9'
		Wilderness Dr	8.16	Lark Ln	8.21		45	3	N	Moderate	6'/12'/11'//12'/9'
		Lark Ln	8.21	White Horse Ln	8.53		45	2	N	Least	5'/12.5'//12.5'/6'
		White Horse Ln	8.53	Ravenswood Way	8.62		45	2	N	Moderate	15'/12'//11'/12'
		Ravenswood Way	8.62	Kresson Rd (CR 671)	8.70		45	3	N	Least	25'//11'//11'/11'
		Kresson Rd (CR 671)	8.70	Greentree Rd (CR 674)	10.30	25,838 (2007)	40	4	N	Least	11'/11'//14'//11'/11'
		Greentree Rd (CR 674)	10.30	Olney Ave	11.30	19,157 (2006)	40	4	N	Least	12'/11'//11'/12'
04000675__	Cropwell Road (CR 675)	Evesham Rd (CR 544)	5.97	Kresson Rd (CR 671)	6.60	v > 10,000	40	2	N	Moderate	5'/12'//12'/5'
		Kresson Rd (CR 671)	6.60	Branch Dr	7.21	v > 10,000	30	2	N	Moderate	6'/12'//12'/6'
		Branch Dr	7.21	Rabbit Run Rd	7.49	v > 10,000	30	2	N	Moderate	13'/13'//13'/7'
		Rabbit Run Rd	7.49	Guilfrod Rd	8.06	v > 10,000	30	2	N	Moderate	6'/12'//12'/6'
04091342__	S Woodleigh Drive	Browning Ln	0.00	N Woodleigh Dr	0.05	5,000 < v < 10,000	25	2	Y	Least	0'/15'//15'/0'
		N Woodleigh Dr	0.05	Cranford Rd	0.22	5,000 < v < 10,000	25	2	N	Moderate	0'/18'//18'/0'
	Astor Drive	Cranford Rd	0.22	Morris Dr	0.43	5,000 < v < 10,000	25	2	Y	Moderate**	0'/18'//18'/0'
04091353__	Cranford Road	Berlin Rd (CR 561)	0.00	Astor Dr	0.40	5,000 < v < 10,000	25	2	Y	Moderate**	0'/18'//18'/0'
04091964__	Browning Lane	S Woodleigh Dr	0.54	Kresson Rd (CR 671)	1.35	7,154 (2009)	25	2	N	Moderate	5'/12'//12'/5'
04091965__	Pearl Croft Road	Kresson Rd (CR 671)	0.00	Bortons Mill Rd	0.11	2,000 < v < 5,000	25	2	Y	Moderate**	0'/15'//15'/0'
	Bortons Mill Road	Pearl Croft Rd	0.11	Caldwell Rd	0.71	2,266 (2008)	25	2	Y	Least	0'/18'//18'/0'
04091966__	Caldwell Road	Bortons Mill Rd	0.00	Park Blvd (CR 628)	0.19	2,000 < v < 5,000	25	2	N	Most	0'/12'//12'/0'
		Park Blvd (CR 628)	0.19	Kings Highway (NJ 41)	0.72	2,000 < v < 5,000	25	2	Y (SB Only)	Least	0'/12'//12'/0'
04091982__	Covered Bridge Road	Kresson Rd (CR 671)	0.00	Tarrington Rd	0.38	2,000 < v < 5,000	25	2	N	Most	0'/18'//18'/0'
		Tarrington Rd	0.38	Sherry Way	0.73	2,000 < v < 5,000	25	2	Y	Moderate**	8'/10'//10'/8'
		Sherry Way	0.73	Forge Rd	1.01	2,000 < v < 5,000	25	2	Y	Moderate**	0'/18'//18'/0'
		Forge Rd	1.01	Wyndmoor Rd	1.35	2,000 < v < 5,000	25	2	Y	Moderate**	0'/18'//18'/0'
	Covered Bridge Road	Wyndmoor Rd	0.00	Marlton Pike (NJ 70)	0.33	2,000 < v < 5,000	25	2	Y	Moderate**	8'/10'//10'/8'
04091990__	Morris Drive	Berlin Rd (CR 561)	0.00	Heartwood Dr	1.09	2,000 < v < 5,000	25	2	Y	Moderate**	0'/18'//18'/0'
		Heartwood Dr	1.09	Springdale Dr (CR 673)	1.48	2,000 < v < 5,000	25	2	Y	Least**	0'/18'//18'/0'
04091991__	Heartwood Road	Country Club Dr	0.00	Lark Ln	0.36	2,000 < v < 5,000	25	2	Y	Moderate**	0'/13'//13'/0'
		Lark Ln	0.36	Kresson Rd (CR 671)	1.38	2,000 < v < 5,000	25	2	Y	Moderate**	0'/18'//18'/0'
04341962__	Brick Road	Evesham Rd (CR 544)	0.24	Marlowe Rd	1.13	7,867 (2006)	25	2	Y	Moderate**	0'/18'//18'/0'

LEGEND

*Compatibility Rating:

Most - Most suitable for on-road cycling. A majority of cyclists would find conditions favorable

Moderate - Moderately suitable for on-road cycling. Cyclists of lesser skill and experience may find conditions unfavorable

Least - Least suitable for on-road cycling. Cyclists of advanced skill and experience riding in traffic may find conditions unfavorable

** Original results modified based on feedback from Way-to-Go Committee

LEGEND

Existing Compatibility Rating

- Most
- Moderate
- Least

Boundary

- Cherry Hill Township

Transit

- Rail Line

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Figure 5 - Existing Bicycle Compatibility Rating Map

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5.5 INTERSECTION ASSESSMENT

Four signalized intersections and one unsignalized intersection, listed in **Table 8**, were evaluated to assess existing bicycle and pedestrian conditions. Each of the intersections was inventoried to collect lane and shoulder width, number and configuration of travel lanes, type of signal controls, including pedestrian, and condition and type of curb ramps, crosswalks, and sidewalks. The evaluation also considered the factors outlined in the Master Prompt List of Federal Highway Administration's Pedestrian Road Safety Audit Guidelines, which is included as **Appendix F.**

Table 8: Intersection Assessment

Priority Intersection Locations
Signalized
Chapel Avenue (CR 626) and Kings Highway (NJ 41)
Chapel Avenue (CR 626) and Haddonfield Road (CR 644)
Springdale Road (CR 673) and Kresson Road (CR 671)
Marlton Pike (NJ 70) and South Cornell Avenue
Unsignalized
Chapel Avenue (CR 626) and Marlboro Avenue

The most common deficiencies at intersections include obstructed view of pedestrians, conflicts with turning vehicles, and lack of pedestrian scale lighting. A complete list of the common deficiencies found at intersections is summarized in **Table 9.**

Table 9: Common Intersection Deficiencies

Common Deficiencies
Curb ramps are not ADA compliant
Curb ramps are missing
Crosswalks are faded
Pedestrian signal heads are missing
Pedestrian signal heads are not countdown
Pedestrian push buttons are missing
Pedestrian push buttons are more than 6 feet from the curb ramp
Sidewalks are missing
Landscaping and signs obstruct visibility of intersection

Results of the intersection inventory are summarized in the following pages.

Intersection of Chapel Avenue (CR 626) and Kings Highway (NJ 41)

Assessment	
Crosswalks:	• Not visible enough for traffic speed and volume
Curb Ramps:	• Curb ramps missing in the SE and NE corner to cross NJ 41. • Curb ramps are not ADA compliant.
Pedestrian Signals or Push Buttons:	• Pedestrian signal heads missing for crossing of Chapel Ave. • Pedestrian signal heads are not countdown. • Pedestrian push button on NE corner is more than 6 feet from the curb ramp.
Sidewalk:	• Sidewalk is missing on eastbound approach of Chapel Avenue.
Visibility:	• Landscaping and signs obstruct visibility of intersection especially SW corner of traffic approaching NJ 41 from eastbound Chapel.
Comment	• Excessively wide crossing distance • Right Turn on Red conflicts with pedestrian crossing, particularly for motorists turning onto NJ 41 southbound from eastbound Chapel. Motorist are busy looking for oncoming traffic to the left and do not look right for pedestrians.

Intersection of Chapel Avenue (CR 626) and Haddonfield Road (CR 644)

Assessment	
Crosswalks:	• Crosswalks are faded and not visible enough for speed and volume of traffic
Curb Ramps:	• Curb ramps are not ADA compliant.
Pedestrian Signals or Push Buttons:	• Pedestrian push button is missing from the southeast corner.
Sidewalk:	• N/A
Visibility:	• Landscaping and signs obstruct visibility of intersection. • Visibility is limited for motorists turning from Chapel Avenue onto southbound Haddonfield Road.
Comment:	• Radius of SW corner is excessively large.

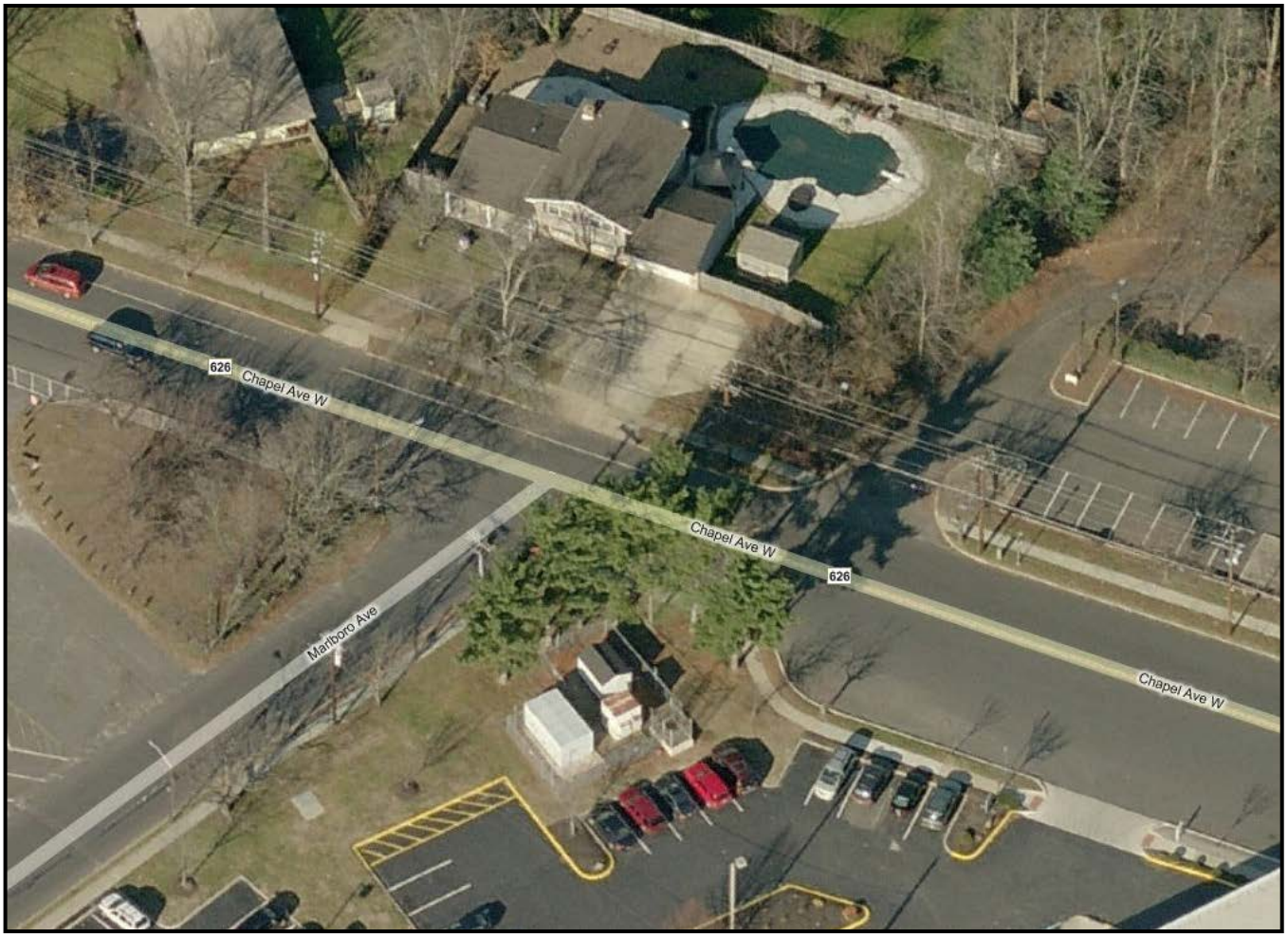
Intersection of Springdale Road (CR 673) and Kresson Road (CR 671)

Assessment	
Crosswalks:	• Crosswalks are faded and not visible enough for speed and volume of traffic.
Curb Ramps:	• Curb ramps are not ADA compliant.
Pedestrian Signals or Push Buttons:	• The location of push button at the NE corner of the intersection is more than 6 feet away from curb ramp.
Sidewalk:	• Sidewalks are missing along the southbound side of Springdale Rd, Northbound approach and along Kresson Rd northbound and southbound side of the westbound approach.
Visibility:	• N/A
Comment:	• Excessively wide crossing distance. • Intersection is over designed and not walkable. People have indicated that they are scared to cross here.

Intersection of Marlton Pike (NJ 70) and S Cornell Avenue

Assessment	
Crosswalks:	• Missing from NW side of intersection
Curb Ramps:	• Curb ramps are not ADA compliant.
Pedestrian Signals or Push Buttons:	• The location of push button in island on Marlton Pike is more than 6 feet away from cub ramp.
Sidewalk:	• Sidewalks are missing along the southbound side of Cornell Avenue and along eastbound approach of Marlton Pike.
Visibility:	• N/A
Comment:	• Excessively wide crossing distance. • There is not enough time to cross Marlton Pike. • Highly utilized transit stops are located along both sides of Marlton on the near side of the intersection. • See recommendation in Route 70 Study by VHB.

Intersection of Chapel Avenue (CR 626) and Marlboro Avenue



Assessment	
Crosswalks:	• None present
Curb Ramps:	• Curb ramps are not ADA compliant.
Pedestrian Signals or Push Buttons:	• N/A (un-signalized intersection)
Sidewalk	• A concrete sidewalk is missing along the southbound side of Marlboro Avenue only.
Visibility:	• Landscaping and sign obstructs visibility of intersection, especially the southeast corner of Marlboro Avenue.
Comment:	• There are no pedestrian crossing warning signs available at Marlboro Avenue. • Excessive number of vehicular access points close to intersection. • Access management and signal warrant should be further investigated at this location.

5.6 BICYCLE AND PEDESTRIAN CRASH ANALYSIS

The bicycle and pedestrian crash summary was prepared using the Rutgers Center for Advanced Infrastructure and Transportation (CAIT) Plan4Safety database and reports provided by Cherry Hill Police Department for the period of February 2007 to December 2009. A total of 97 bicycle and pedestrian crashes occurred during this period. Fifty-seven crashes are pedestrian, and 40 crashes are bicycle. Five pedestrian crashes were fatal. There were no bicycle fatalities. The analyzed data is summarized in **Table 10** through **Table 12** and illustrated in **Figure 6 – Bicycle and Pedestrian Crash Map**.

Table 10: Bicycle and Pedestrian Crashes

Crash Year	Total Number of Crashes	Number of Pedestrian Crashes	Number of Bike Crashes	Top Recurring Location for Bike/Ped Crashes		Location of Fatal Crashes
				Most Crashes - Roadway (# of crashes)	Most Crashes - Intersection (# of crashes)	
2007	36	25	11	NJ 41-Kings Highway (7)	NJ 38-Kaighns Ave & Chestnut St (1Bike & 1Ped)	Pedestrian - NJ 41, 400' south of NJ 70
					NJ 38-Kaighns Ave & CR 616-Church Rd (2Ped)	
					NJ 70-Marlton Pike & Cornell Ave (2Ped)	
2008	37	19	18	NJ 70-Marlton Pike (7)	CR 626-Chapel Ave & Marlboro Ave (2Ped)	Pedestrian - CR 644, 50' south of Yale Ave
						Pedestrian – Intersection of NJ 70 and Edison Ave
2009	24	13	11	NJ 70-Marlton Pike (5)	NJ 38-Kaighns Ave & Longwood Ave (2Ped)	Pedestrian - NJ 38 between Longwood Ave and Northwood Ave
						Pedestrian - NJ 70, 150' east of CR 644

Table 11: Top Roadway Crashes

Roadways with Most Bike/Ped Crashes (2007 to 2009)
NJ 70-Marlton Pike (17)
NJ 41-Kings Highway (13)
NJ 38-Kaighns Avenue (13)
CR 626-Chapel Avenue (10)
CR 644-Haddonfield Road (9)

Table 12: Top Intersection Crashes

Intersections with Most Bike/Ped Crashes (2007 to 2009)
CR 626-Chapel Avenue & CR 644-Haddonfield Road (3)
CR 626-Chapel Avenue & Marlboro Avenue (3)
NJ 41-Kings Highway & Tampa Avenue (3)
NJ 38-Kaighns Avenue & Chestnut Street (2)
NJ 38-Kaighns Avenue & CR 616-Church Road (2)
NJ 38-Kaighns Avenue & Longwood Avenue (2)
NJ 41-Kings Highway & Tampa Avenue (2)
NJ 70-Marlton Pike & Cornell Avenue (2)
NJ 70-Marlton Pike & CR 623-Hampton Rd (2)
CR 561-Berlin Road & Haddontowne Court (2)

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Figure 6 - Bicycle and Pedestrian Crash Map

(February 2007 - December 2009)

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6. RECOMMENDATIONS

This section presents proposed recommendations to improve biking and walking along the roadway corridors included as part of the preliminary bicycle and pedestrian network in Cherry Hill Township. The recommendations include priority sidewalk locations, proposed bicycle facility types, and select locations of conceptual schematics showing restriping improvements. Collectively, the recommendations create a comprehensive network for biking and walking in the township.

The New Jersey Department of Transportation (NJDOT) acts as the facilitator, and is not the author of the aforementioned study. No promises, express or implicit, are made as to future study, funding or construction of any of the recommendations contained therein.

The applicant is aware that they are ultimately responsible for initiating the implementation of any future improvements that are recommended as part of the study. In the case of roadways under State jurisdiction, NJDOT policy dictates that it is the responsibility of the applicant to complete a Problem Statement, and submit it to NJDOT Capital Investment Planning and Development. NJDOT makes no guarantee of any kind that recommendations will be advanced for further study.

6.1 PEDESTRIAN FACILITY IMPROVEMENTS

The installation of sidewalks is recommended to increase pedestrian safety and accessibility. **Table 13** outlines a prioritized list of the 10 corridors evaluated where sidewalks are recommended to be installed. Sidewalk prioritization ratings are listed in order of importance and are based on crash data, public feedback and the ability to:

- Complete a critical gap in sidewalk network
- Extend existing sidewalk connectivity
- Connect to major destinations (schools, transit, employment)

Implementing the priority sidewalk locations would provide an additional 14.92 linear miles to the pedestrian network of Cherry Hill Township. **Figure 7 – Priority Sidewalk Improvement Location Map** illustrates each of the priority sidewalk locations.

Table 13: Priority Locations of Sidewalk Implementation

Priority Rating	Corridor	Limits	Prioritization Factors
1	Kresson Road	(CR 671) (Brace Rd to Heartwood Rd)	• Corridor is in front of James Johnson Elementary School and Rosa International Middle School. • Provides connectivity to schools and adjacent neighborhoods, and extends the existing sidewalk network from Heartwood Road, and trails from Croft Farms and Borton Mill.
2	Kings Highway	(NJ 41) (Route 70 to Township Border Haddonfield Borough)	• There are sporadic sections of sidewalk missing throughout this corridor. A critical location for improvement is between Route 70 and Brace Road. • This corridor provides a critical link to employment, transit, shopping and service destinations along Route 41. • Pedestrian fatal crash occurred on Route 41, 400 feet south of Route 70.
3	Kresson Road	(Heartwood Rd to Springdale Rd)	• The majority of the northbound side of Kresson Road is lacking sidewalks. Sidewalks along the southbound side are in poor condition and a segment is missing between Middle Acre Lane and Ravenswood Way. • This section of Kresson Road provides connectivity between civic and recreational destinations.
4	Springdale Road	(White Horse Lane to Morris Dr)	• There are sporadic segments of sidewalks in the areas of new development along this corridor. These locations are closest to the intersection of Kresson Road and Evesham Road. The majority of the midsection of the corridor is lacking sidewalks on both sides.
5	Springdale Road	(north of Greentree Rd)	• Sporadic segments of sidewalks exist in the areas of new development along this corridor. However, there are many long gaps without sidewalks. • This industrial and service section along Springdale Road provides a critical access to employment and transit destinations.
6	Church Road	(Haddonfield Rd to Township Border)	• Sidewalks are present along the west side of Church Road, but are missing near the township border. The east side has a few segments of sidewalks on individual properties.
7	Cropwell Road	(south of Kresson Rd)	• Sidewalks exist along approximately two-thirds of the east side of Cropwell, but they are in poor condition. Sidewalks are missing entirely from the west side.
8	Chapel Road	(Kingswood Ct to Old Cuthbert Blvd)	• Sidewalks are missing from the majority of this corridor. There are a few segments of sidewalk along the bridge over I-295 and a few short stretches in front of industrial buildings along the east side.
9	Heartwood Road	(Kresson Rd to Lark Ln)	• Sidewalks currently exist along both sides of Heartwood Road. However they are in poor condition and need to be repaired and/or replaced due to heaving tree roots and overgrowth of vegetation.
10	Evesham Road	(Springdale Rd to Cropwell Rd)	• Sidewalk inventory was obtained for westbound Evesham Road only. Sidewalks are missing between Short Hills Drive and Cropwell Road. Sidewalks are missing along the athletic fields.

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Figure 7 - Priority Sidewalk Improvement Locations Map

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6.2 BICYCLE FACILITY IMPROVEMENTS

A bicycle network is proposed to accommodate bike trips to major land uses using public roadways. The proposed recommendations enhance roadways for the use by bicyclists through appropriate signing, striping and markings. The following is a description of common bicycle facility types, innovative facilities that solve common constraints, recommended facility improvements specific to Cherry Hill, and LAB recommendations to improve Cherry Hill's Bicycle Friendly Scorecard rating.

6.2.1 Bicycle Facility Types

NJDOT's *Planning and Design Guidelines for Bicycle Compatible Roadways and Bikeways* outline the types of on-road bicycle facilities that were considered for Cherry Hill's roadway network: Bicycle Lane, Paved Shoulder, and Shared Lane. Specific roadway attributes (pavement width, parking provisions, traffic volumes, posted speed limit, etc.) were assessed to determine the feasibility of each facility under existing conditions. These facilities have been successfully applied on urban and suburban roadway networks in NJ and throughout the US in attempts to better accommodate bicycle travel. The following is a description of common bicycle facilities:

Bike Lane

Bicycle lanes are designated travel lanes for exclusive or preferential use by bicyclists, and are typically 5 to 6 feet in width. Bicycle lanes are often located on roadways in urban settings with moderate to high vehicular traffic volumes, moderate to high posted speeds and permitted or designated on-street parking. According to the Manual on Uniform Traffic Control Devices, bicycle lanes must include the words "bike lane" or the bike lane symbol; they may be accompanied by bike lane signs. Studies have shown that bike lanes have many safety benefits, and one study concluded that they were the safest type of bike facility. They decrease the number of bicyclists riding on the sidewalk, and they increase the compliance of bicyclists with traffic controls.

Paved Shoulders

A paved shoulder accommodates bicyclists on the roadway shoulder adjacent to vehicular travel lanes. Paved shoulders can be located on urban or rural roadways with moderate to high vehicular traffic volumes and moderate to high posted speeds. Paved shoulders for bicyclists typically range in width from 4 to 6 feet, and are occasionally supplemented with 'Share the Road' warning signs. Shoulders are used in a variety of circumstances. Bicyclists appreciate them because they indicate an area of roadway in which motorists normally do not encroach. On roadways where 5-foot bike lanes cannot be fit, 3- to 4-foot shoulders can sometimes be striped. Studies show that on roadways without on-street parking, the effect of shoulders is similar to bike lanes.

Shared Lane

A shared lane accommodates bicyclists and motorists in the same travel lane. Shared lanes can be located on roadways with low vehicular traffic volumes and low posted speeds, and are occasionally supplemented with 'Share the Road' warning signs. Wide outside travel lanes (ideally 14 feet) are often desired for shared lane facilities.

Shared Lane Markings

Informally referred to as "sharrows," shared lane markings are a sub-category of shared lanes; bicyclists shared the road with motorists, but markings guide bicyclists with lateral positioning, unlike the typical shared lane. The sharrow markings comprise two chevrons together with a bicyclist symbol, with the center of the chevron marked 11 feet from the curb on streets with parking, and 4 feet from the curb on streets without parking. These markings are placed after intersections and spaced at intervals of at least every 250 feet. They should be accommodated by "Bicycles May Use Full Lane" signs (MUTCD R4-11). They are particularly recommended for use on urban streets with on-street parking where bike lanes cannot be accommodated. They are a relatively new marking, having just been approved for inclusion in the 2009 Manual on Uniform Traffic Control Devices (MUTCD). Initial studies show a number of safety benefits of sharrows. In one study in San Francisco, sharrows were shown to reduce sidewalk riding by 35% and the number of wrong-way bicyclists by 80%. They also were demonstrated to increase the distance between bicyclists and passing cars and parked cars.[1] The success of sharrows in increasing distance between bicycles and cars was also demonstrated in other studies.[2]

Bike Path

Bike paths (often referred to as shared use paths, since they accommodate a variety of non-motorized users, especially pedestrians) are bikeways that are physically separated from motorized traffic by an open space or barrier.

[1] San Francisco Department of Parking and Traffic, *San Francisco's Shared Lane Pavement Markings: Improving Bicycle Safety*, 1984.

[2] FHWA, *TechBrief: Evaluation of Shared Lane Markings*, FHWA Publication No. FHWA-HRT-10-044, October 2010.

6.2.2 Innovative Bicycle Facilities

In certain situations, traditional bicycle facilities (e.g., bicycle lanes) may not achieve desired results due to the nature of the existing roadway network. For this reason, the application of innovative facilities can be utilized to make important connections that would otherwise be unavailable through traditional means.

The National Association of City Transportation Officials (NATCO) Urban Bikeway Design Guide provides details for innovative bicycle facility treatments that are not directly referenced in the current versions of the AASHTO Guide to Bikeway Facilities or the Manual on Uniform Traffic Control Devices (MUTCD). The Federal Highway Administration has recently posted information regarding approval status of various bicycle related treatments not covered in the MUTCD, including many of the treatments provided in the NACTO Urban Bikeway Design Guide. All of the NACTO Urban Bikeway Design Guide treatments are in use internationally and in many cities around the US.

Three (3) examples of innovative facilities are presented below. The buffered bike lane is a proposed bicycle facility treatment in Cherry Hill. The others may be applicable for future improvements to bicycle compatibility in Cherry Hill.

Advance Stop Line "Bicycle Box"

The Advance Stop Line or "Bicycle Box" is a roadway treatment developed to provide cyclists with the space to position themselves for turning movements at signalized intersections. This treatment marks an area for bicyclists in front of stopped vehicles at signalized intersections. Similar to High Visibility Bicycle Lanes, current applications use a contrasting surface color to mark the entire area occupied by the bicycle box and to enhance visibility. A prominent example of this treatment currently in use and under evaluation is in Portland, Oregon.

Bicycle Boulevard

A Bicycle Boulevard is a roadway on which bicycle travel receives priority over vehicular traffic. Typical applications are found on local roadways with low volumes, which are intended to serve as low-speed "arterials" for bicycle travel. Bicycle boulevards typically include bicycle route signage and other physical diversions that allow for the passage of bicycles, and discourage or slow vehicular through traffic. Intersecting streets are usually stop controlled, giving full right-of-way to the travelling bicyclist.

Buffered Bike Lane

Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. A buffered bike lane is allowed as per MUTCD guidelines for buffered preferential lanes (section 3D-01).

6.2.3 Cherry Hill Bicycle Facilities

The recommended bicycle facilities are proposed to improve bicycle compatibility and accessibility in Cherry Hill Township. They include a variety of bicycle facility treatments including bike lanes, bike lane with buffer, and shared lanes. The recommendations are intended to be implemented within the existing cross-section of the roadway as part of re-surfacing, restriping or other roadway reconstruction projects.

Bike lanes are generally the most preferred type of on-road bicycle facility. There are several opportunities to install them on roadways throughout Cherry Hill. The installation of bike lanes could be easily integrated by reducing the width of existing travel lanes, edging the parking lane as part of the bike lane, and designating existing shoulders. In several locations, where ample width is available a buffer has been introduced along with a bike lane. The buffer provides an added separation between the bike lane and vehicular travel lane. A buffer is preferred by lesser skilled cyclists when higher volumes and speeds are present. The buffer also provides added space for cyclists to keep out of the door zone when on-street parking is present.

In locations where space is constrained and bike lanes cannot be accommodated, shared lanes are proposed. Shared lanes are used mutually by cars and bikes. Under these conditions, it is recommended that Shared Lane Marking, also referred to as sharrows, are incorporated to reinforce this shared use.

The Proposed Bicycle Compatibility Matrix, **Table 14**, outlines specific details of the recommended cross-section to incorporate bike facilities within the existing cross-section. **Figure 8 – Proposed Bicycle Compatibility Rating Map** illustrates the results. Additional recommendations to improve bicycle compatibility and accessibility are noted in the comments section of the Bicycle Compatibility Matrix. These include reducing existing posted speed limits, addressing access management issues, adding left turn lanes, and traffic calming measures such as center medians.

The recommended bike facilities notably improve bicycle compatibility in Cherry Hill. The miles of roadway rated as “Moderate” would increase by 22% from 15.22 miles to 22.8 miles. Correspondingly, the roads rated as “Least” compatible would decrease by 22%, while the roads rated as “Most” compatible remain at 12%. **Table 15** provides a summary of Bicycle Compatibility under the proposed conditions.

Table 15: Proposed Bicycle Compatibility Percentage

Condition	Miles	Percentage
Most	4.29	12%
Moderate	22.80	67%
Least	7.26	21%
Total	**34.35**	**100%**

The bicycle facility recommendations were prepared for 22 roadways, which are broken down into 75 segments. As a roadway cross-section changes it is represented by a different segment.

Bike lanes represent the majority of the proposed facility types and can be accommodated within the existing cross-section through restriping on 61% of the preliminary bike network.

Proposed shared lane facilities represent 15% of the preliminary network, accommodated within existing cross-section using signing and striping.

Table 16: Proposed Bicycle Facility Type by Segment

Recommended Facility Type/Improvement	Number of Segments	Percentage
Bike Lane	46	61%
Shared Lane	11	15%
Parking Utilization Assessment	17	23%
Access Management Review	1	1%
Total	**75**	**100%**

Recommended bicycle facility types have not been proposed for 17 segments, where the existing utilization of on-street parking could not be fully verified. There are several locations, particularly on residential streets, where the existing cross-section is 36' wide with two lanes, on-street parking, and low traffic volume posted at 25 mph. Under these criteria, the bicycle compatibility assessment of these streets is rated as "Moderate". However, based on public feedback we understand that on-street parking is underutilized and has the potential to be removed. An assessment of parking utilization should be completed by the Township to fully determine the need for parking in these locations. These locations are highlighted in the comment section of **Table 14.** If it is determined that parking can be removed from both sides, bike lanes should be incorporated, to provide a 6' wide bike lane and 12' wide travel lane. If parking remains on one side, 14' wide shared lanes (with markings) and a striped parking lane (typically 8') should be provided. Either of these recommendations would likely increase the bicycle compatibility of these roadways.

Additionally, bicycle facility recommendations were not proposed for Kings Highway (Route 41), from Brace Road to Stage Coach Lane. This segment is rated as least compatible. Although this corridor has wide shoulders, the excessive number of driveways and high volume of turning traffic conflict with bicycle compatibility. Improvements beyond restriping are needed to address access management issues and improve bicycle compatibility. Cherry Hill Township should initiate a corridor wide study of Kings Highway to address these deficiencies.

Table 14: Proposed Bicycle Compatibility Matrix

SRI	Road Name	From	MP_From	To	MP_To	AADT (year)	Speed Limit (mph)	# of Lanes	Street Parking (Y/N)	Proposed Compatibility Rating *	Proposed Cross-Section (ft)	Comments
00000041__	Kings Highway (NJ 41)	Park Blvd (CR 628)	9.80	Churchill Rd	10.21	11,908 (1995)	40	2	Y	Moderate	7'/5'/10'//10'/5'/7'	Bike Lane with parking
		Churchill Rd	10.21	Brace Rd (NJ 154)	10.68	32,664 (2011)	40	2	Y	Moderate	8'/5'/12'//12'/5'/8'	Bike Lane with parking
		Brace Rd (NJ 154)	10.68	Stage Coach Ln	13.01	24,416 (2009)	45	4	N	Least**	Maintain Existing	*To improve bike suitability access management issues should be addressed***
04000616__	Church Road (CR 616)	Ivins Ave	2.12	Haddonfield Rd (CR 644)	2.57	v > 10,000	35	2	N	Moderate	5'/13'//13'/5'	Bike Lane - Reduce speed limit from 35 to 25mph matching rest of the corridor
		Haddonfield Rd (CR 644)	2.57	Lenape Rd	2.95	v > 10,000	35	4	N	Moderate	5'/11'/11'//11'/11'/5'	Bike Lane - Reduce speed limit from 35 to 25mph matching rest of the corridor
		Lenape Rd	2.95	Coolidge Rd	3.79	v > 10,000	35	2	N	Moderate	Maintain Existing	Shared Lane - Add Sharrow Markings Reduce speed limit from 35 to 25mph matching rest of the corridor
		Coolidge Rd	3.79	Roosevelt Dr	4.19	v > 10,000	25	2	N	Moderate	Maintain Existing	Shared Lane - Add Sharrow Markings Reduce speed limit from 35 to 25mph matching rest of the corridor
		Roosevelt Dr	4.19	Kings Highway (NJ 41)	4.78	v > 10,000	25	2	N	Moderate	5'/11'//11'/5'	Bike Lane
		Kings Highway (NJ 41)	4.78	*Cherry Hill Border*	5.23	19,716 (2006)	25	2	N	Moderate	5'/4'/11'//11'/4'/5'	Bike Lane with buffer
04000626__	Chapel Avenue (CR 626)	Wisteria Ave	0.32	Kaighns Ave (NJ 38)	1.24	2,000 < v < 5,000	25	2	N	Most	Maintain Existing	Shared Lane - Add Sharrow Markings
		Kaighns Ave (NJ 38)	1.24	Haddonfield Rd (CR 644)	1.53	2,000 < v < 5,000	25	2	N	Moderate**	Maintain Existing	Shared Lane - Add Sharrow Markings
		Haddonfield Rd (CR 644)	1.53	Cherry Hill Blvd	2.02	v > 10,000	25	2	Y (NB only)	Moderate	8'/5'/11'//11'/5'	Bike Lane
		Cherry Hill Blvd	2.02	Marlboro Ave	2.40	v > 10,000	25	2	N	Moderate	8'/5'/12'//12'/5' OR 5'/11'//10'//11'/5'	Bike Lane with parking OR Bike Lane with median/turn lane
		Marlboro Ave	2.40	*Hospital Entrance*	2.42	v > 10,000	25	2	N	Moderate	8'/3'/5'/11'//8'//11'/5'/3'/8'	Bike Lane with parking, buffer and median/turn lane
		Hospital Entrance	2.42	Knolwood Dr	2.73	v > 10,000	25	4	N	Moderate	0'/14'/11'//11'/14'/0'	Shared Lane - Add Sharrow Markings
		Knolwood Dr	2.73	Forge Ln	2.94	5,000 < v < 10,000	25	2	Y (NB only)	Moderate	8'/5'/11'//11'/5'/8'	Bike Lane with parking
		Forge Ln	2.94	Kings Highway (NJ 41)	3.43	6,800 (2008)	25	2	Y	Moderate	8'/5'/12'//12'/5'/8'	Bike Lane with parking
	Chapel Avenue	Kings Highway (NJ 41)	0.85	Cornwall Rd	0.02	5,000 < v < 10,000	25	2	Y	Moderate**	Maintain Existing	*Low utilization of on-street parking***
		Cornwall Rd	0.02	Kingswood Ct	0.00	2,000 < v < 5,000	25	2	Y	Least	Maintain Existing	*Depends on percentage of parking*
	Chapel Avenue	Kingwood Ct	0.00	Old Cuthbert Blvd	0.58	2,000 < v < 5,000	25	2	N	Most	6'/12'//12'/6'	Bike Lane

04000628__	North Park Drive (CR 628)	*Cherry Hill Border*	1.61	Cuthbert Blvd (CR 636)	2.05	3,898 (2010)	35	2	N	Most	8'/5'/11'//11'/5'/8'	Bike Lane with parking
		Cutherbert Blvd (CR 636)	2.05	*Railroad*	2.88		35	2	Y	Most	8'/14.5'//14.5'/8'	Shared Lane with parking - Add Sharrow Markings
040006282_	Park Boulevard (CR 628 II)	*Railroad*	0.00	Haddonfield Rd (CR 644)	0.42	2,000 < v < 5,000	35	2	Y	Most	8'/14.5'//14.5'/8'	Shared Lane with parking - Add Sharrow Markings
		Haddonfield Rd (CR 644)	0.42	Kings Highway (NJ 41)	1.68	5,000 < v < 10,000	35	2	N	Moderate	Maintain Existing	Shared Lane - Add Sharrow Markings
		Kings Highway (NJ 41)	1.68	Caldwell Rd	2.06	2,000 < v < 5,000	35	2	N	Most	5'/4'/11'//11'/4'/5'	Bike Lane with buffer
04000671__	Kresson Road (CR 671)	Berlin Rd (CR 561)	0.00	Moore Ave	0.28	v > 10,000	35	2	N	Moderate	5'/12'//12'/5'	Bike Lane
		Moore Ave	0.28	Brace Rd (NJ 154)	0.38	v > 10,000	35	2	N	Moderate	5'/12'//12'/5'	Bike Lane
		Brace Rd (NJ 154)	0.38	Old Towne Rd	0.92	v > 10,000	40	2	N	Moderate	5'/12'//12'/5'	Bike Lane - Reduce speed limit from 40 to 35mph matching rest of the corridor
		Old Towne Rd	0.92	Covered Bridge Rd	1.22	v > 10,000	40	2	N	Moderate	4'/11'//11'/4'	Shared Lane - Reduce speed limit from 40 to 35mph matching rest of the corridor
		Covered Bridge Rd	1.22	Browning Ln	1.54	v > 10,000	40	2	N	Moderate	6'/12'//12'/6'	Bike Lane
		Browning Ln	1.54	Marlkress Rd	1.79	v > 10,000	40	2	N	Moderate	6'/12'//12'/6'	Bike Lane
		Marlkress Rd	1.79	Bunker Hill Dr	2.03	v > 10,000	40	2	N	Moderate	6'/12'//12'/6'	Bike Lane
		Bunker Hill Dr	2.03	Heartwood Dr	2.19	v > 10,000	40	2	N	Moderate	5'/10'//10'//10'/5'	Bike Lane with median/turn lane
		Heartwood Dr	2.19	Springdale Rd	3.04	v > 10,000	40	2	N	Moderate	6'/12'//12'/6'	Bike Lane
		Springdale Rd	3.04	*High School Entrance*	3.38	v > 10,000	40	4	N	Moderate	14'/11//10'//11'/14'	Shared Lane with & median/turn lane
		High School Entrance	3.38	Oakley Rd	3.44	v > 10,000	40	2	N	Moderate	5'/3'/11'//10'//11'/3'/5'	Bike Lane with buffer & median/turn lane
		Oakley Rd	3.44	Cooper Run Dr	3.59	v > 10,000	40	2	N	Moderate	5'/12'//12'//12'/5'	Bike Lane with median/turn lane
		Cooper Run Dr	3.59	Country Walk	3.77	v > 10,000	40	2	N	Moderate	6'/12'//12'/6'	Bike Lane
		Country Walk	3.77	Cropwell Rd (CR 675)	3.93	v > 10,000	40	2	N	Moderate	5'/10'//10'//10'/5'	BL with median/turn lane
		Cropwell Rd (CR 675)	3.93	Evesham Rd (CR 544)	4.67	v > 10,000	40	2	N	Moderate	6'/12'//12'/6'	Bike Lane
04000673__	Springdale Road (CR 673)	Evesham Rd (CR 544)	7.19	*N Shopping Entrance*	7.29	15,573 (1995)	45	4	N	Least	14'/11//10'//11'/14'	Shared Lane with & median/turn lane
		N Shopping Entrance	7.29	Spring Rd	7.45		45	3	N	Moderate	5'/3'/11'//12'//11'/3'/5'	Bike Lane with buffer & median/turn lane
		Spring Rd	7.45	Morris Dr	7.61		45	2	N	Moderate	5'/3'/11'//12'//11'/3'/5'	Bike Lane with buffer & median/turn lane
		Morris Dr	7.61	Chateau Dr	7.76		45	2	N	Moderate	6'/11'/12'//12'//12'/11'/6'	Bike Lane with median/turn lane
		Chateau Dr	7.76	Queen Anne Rd	8.00		45	2	N	Moderate	6'/11'/12'//12'//12'/11'/6'	Bike Lane with median/turn lane
		Queen Anne Rd	8.00	Wilderness Dr	8.16		45	2	N	Moderate	6'/11'//11'//11'/6'	Bike Lane with median/turn lane
		Wilderness Dr	8.16	Lark Ln	8.21		45	3	N	Moderate	5'/3'/11'//12'//11'/3'/5'	Bike Lane with buffer & median/turn lane
		Lark Ln	8.21	White Horse Ln	8.53		45	2	N	Moderate	6'/12'//12'/6'	Bike Lane
		White Horse Ln	8.53	Ravenswood Way	8.62		45	2	N	Moderate	5'/3'/11'//12'//11'/3'/5'	Bike Lane with buffer & median/turn lane
		Ravenswood Way	8.62	Kresson Rd (CR 671)	8.70		45	3	N	Least	14'/10'//10'//10'/14'	Shared Lane with median/turn lane - Add Sharrow Markings
		Kresson Rd (CR 671)	8.70	Greentree Rd (CR 674)	10.30	25,838 (2007)	40	4	N	Least	14'/10'//10'//10'/14'	Shared Lane with median/turn lane - Add Sharrow Markings
		Greentree Rd (CR 674)	10.30	Olney Ave	11.30	19,157 (2006)	40	4	N	Moderate	5'/12'//12'//12'/5'	Bike Lane - Road Diet
04000675__	Cropwell Road (CR 675)	Evesham Rd (CR 544)	5.97	Kresson Rd (CR 671)	6.60	v > 10,000	40	2	N	Moderate	Maintain Existing	Bike Lane - Reduce speed limit from 40 to 30mph matching rest of the corridor
		Kresson Rd (CR 671)	6.60	Branch Dr	7.21	v > 10,000	30	2	N	Moderate	Maintain Existing	Bike Lane
		Branch Dr	7.21	Rabbit Run Rd	7.49	v > 10,000	30	2	N	Moderate	5'/12'//12'//12'/5'	Bike Lane with median/turn lane
		Rabbit Run Rd	7.49	Guilfrod Rd	8.06	v > 10,000	30	2	N	Moderate	Maintain Existing	Bike Lane

04091342__	S Woodleigh Drive	Browning Ln	0.00	N Woodleigh Dr	0.05	5,000 < v < 10,000	25	2	Y	Least	Maintain Existing	*Depends on percentage of parking*
		N Woodleigh Dr	0.05	Cranford Rd	0.22	5,000 < v < 10,000	25	2	N	Moderate	6'/12'//12'/6'	Bike Lane
	Astor Drive	Cranford Rd	0.22	Morris Dr	0.43	5,000 < v < 10,000	25	2	Y	Moderate**	Maintain Existing	*Low utilization of on-street parking***
04091353__	Cranford Road	Berlin Rd (CR 561)	0.00	Astor Dr	0.40	5,000 < v < 10,000	25	2	Y	Moderate**	Maintain Existing	*Low utilization of on-street parking***
04091964__	Browning Lane	S Woodleigh Dr	0.54	Kresson Rd (CR 671)	1.35	7,154 (2009)	25	2	N	Moderate	Maintain Existing	Bike Lane
04091965__	Pearl Croft Road	Kresson Rd (CR 671)	0.00	Bortons Mill Rd	0.11	2,000 < v < 5,000	25	2	Y	Moderate**	Maintain Existing	*Low utilization of on-street parking***
	Bortons Mill Road	Pearl Croft Rd	0.11	Caldwell Rd	0.71	2,266 (2008)	25	2	Y	Least	Maintain Existing	*Depends on percentage of parking*
04091966__	Caldwell Road	Bortons Mill Rd	0.00	Park Blvd (CR 628)	0.19	2,000 < v < 5,000	25	2	N	Most	Maintain Existing	Sidepath
		Park Blvd (CR 628)	0.19	Kings Highway (NJ 41)	0.72	2,000 < v < 5,000	25	2	Y (SB Only)	Least	Maintain Existing	*Depends on percentage of parking*
04091982__	Covered Bridge Road	Kresson Rd (CR 671)	0.00	Tarrington Rd	0.38	2,000 < v < 5,000	25	2	N	Most	6'/12'//12'/6'	Bike Lane
		Tarrington Rd	0.38	Sherry Way	0.73	2,000 < v < 5,000	25	2	Y	Moderate**	Maintain Existing	*Low utilization of on-street parking***
		Sherry Way	0.73	Forge Rd	1.01	2,000 < v < 5,000	25	2	Y	Moderate**	Maintain Existing	*Low utilization of on-street parking***
		Forge Rd	1.01	Wyndmoor Rd	1.35	2,000 < v < 5,000	25	2	Y	Moderate**	Maintain Existing	*Low utilization of on-street parking***
	Covered Bridge Road	Wyndmoor Rd	0.00	Marlton Pike (NJ 70)	0.33	2,000 < v < 5,000	25	2	Y	Moderate**	Maintain Existing	*Low utilization of on-street parking***
04091990__	Morris Drive	Berlin Rd (CR 561)	0.00	Heartwood Dr	1.09	2,000 < v < 5,000	25	2	Y	Moderate**	Maintain Existing	*Low utilization of on-street parking***
		Heartwood Dr	1.09	Springdale Dr (CR 673)	1.48	2,000 < v < 5,000	25	2	Y	Least**	Maintain Existing	*High utilization of on-street parking***
04091991__	Heartwood Road	Country Club Dr	0.00	Lark Ln	0.36	2,000 < v < 5,000	25	2	Y	Moderate**	Maintain Existing	*Low utilization of on-street parking***
		Lark Ln	0.36	Kresson Rd (CR 671)	1.38	2,000 < v < 5,000	25	2	Y	Moderate**	Maintain Existing	*Low utilization of on-street parking***
04341962__	Brick Road	Evesham Rd (CR 544)	0.24	Marlowe Rd	1.13	7,867 (2006)	25	2	Y	Moderate**	Maintain Existing	*Low utilization of on-street parking***

LEGEND

*Compatibility Rating:

Most - Most suitable for on-road cycling. A majority of cyclists would find conditions favorable

Moderate - Moderately suitable for on-road cycling. Cyclists of lesser skill and experience may find conditions unfavorable

Least - Least suitable for on-road cycling. Cyclists of advanced skill and experience riding in traffic may find conditions unfavorable

** Original results modified based on feedback from Way-to-Go Committee

BL – Bike Lane
SL – Shared Lane

Cherry Hill Township Bicycle and Pedestrian Local Planning Assistance

Figure 8 - Proposed Bicycle Compatibility Rating Map

October 2011

6.3 BICYCLE FRIENDLY CHERRY HILL

The League of American Bicyclist (LAB) recommends communities consider the following to improve their ranking as a Bicycle Friendly Community.

ENGINEERING

- Establish a comprehensive and connected bicycling network
- Provide readily available bike parking throughout the community
- Adopt a Complete Streets Policy

EDUCATION

- Provide Bike Education programs as part of a SRTS Program
- Provide Bike Education courses for adults
- Educate motorists and cyclists on rules and responsibilities of the road

ENCOURAGEMENT

- Develop a community bike map
- Celebrate National Bike Month (May) with events in your community, such as Bike to Work Week or Bike to Work Day
- Encourage bicycle advocacy groups
- Host community bike events

ENFORCEMENT

- Provide training to law enforcement officials on the rules and responsibilities of all road users
- Highlight and increase bike patrols by police and public safety officials
- Adopt ordinances that treat bicyclists equally

EVALUATION

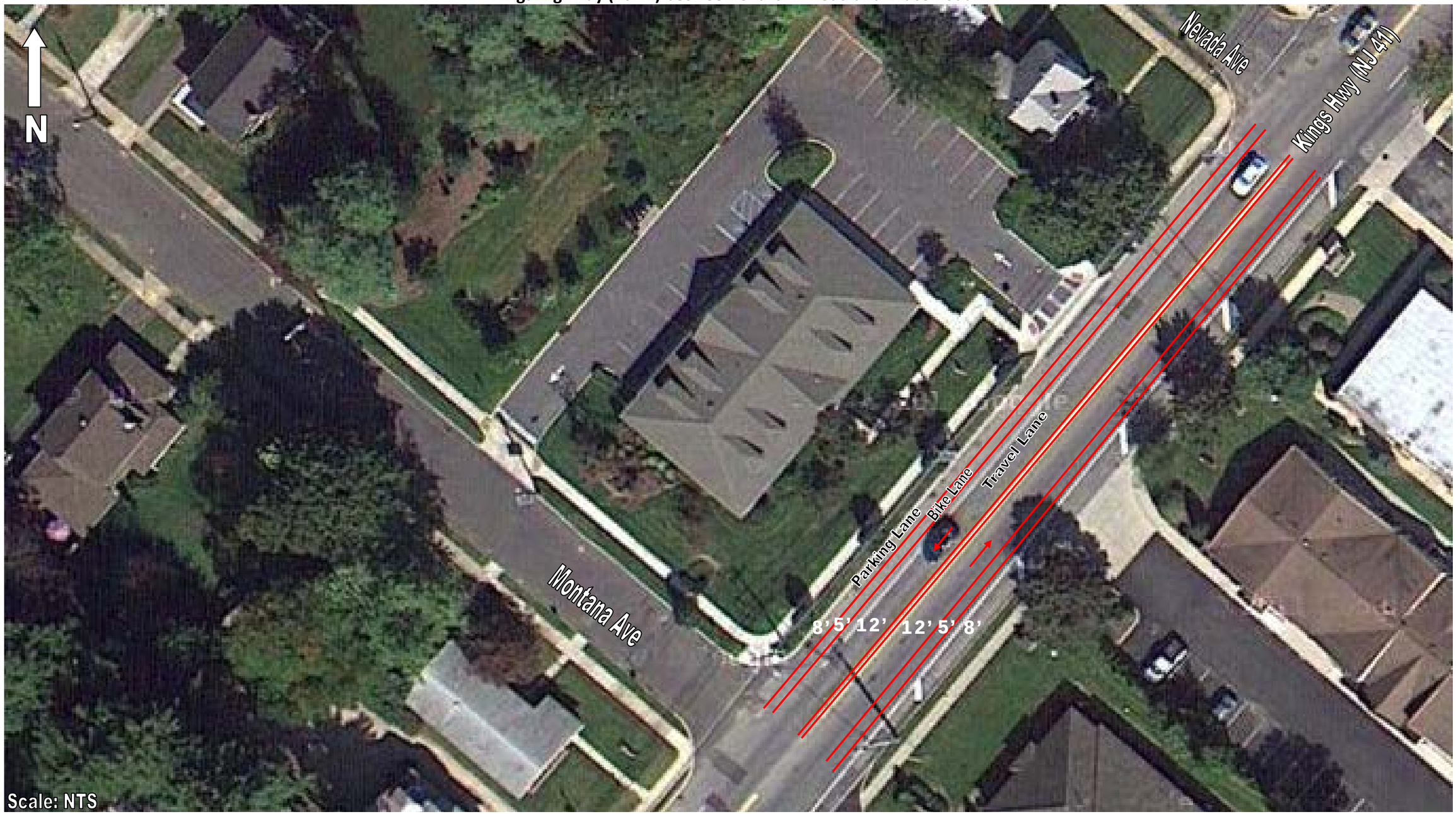
- Adopt a plan to reduce the number of bike crashes (monitor and track)
- Implement and update a comprehensive bike plan
- Adopt a plan to count the number of people cycling (monitor and track)

As noted earlier, the League also provides an Action Plan for communities to follow in assessing how they can move towards becoming a full-fledged Bicycle Friendly Community. The LAB Action Plan is included as **Appendix D.**

6.4 CONCEPTUAL SCHEMATICS

The locations of conceptual schematic designs were selected based on crash data, existing deficiencies, and feedback from the Steering Committee and public. The conceptual schematic designs were prepared to illustrate a variety of solutions to address both bicycle and pedestrian deficiencies. It should be noted that additional planning and design is required to fully determine the feasibility of each of the designs recommended.

Kings Highway (NJ 41) between Churchill Road and Brace Road

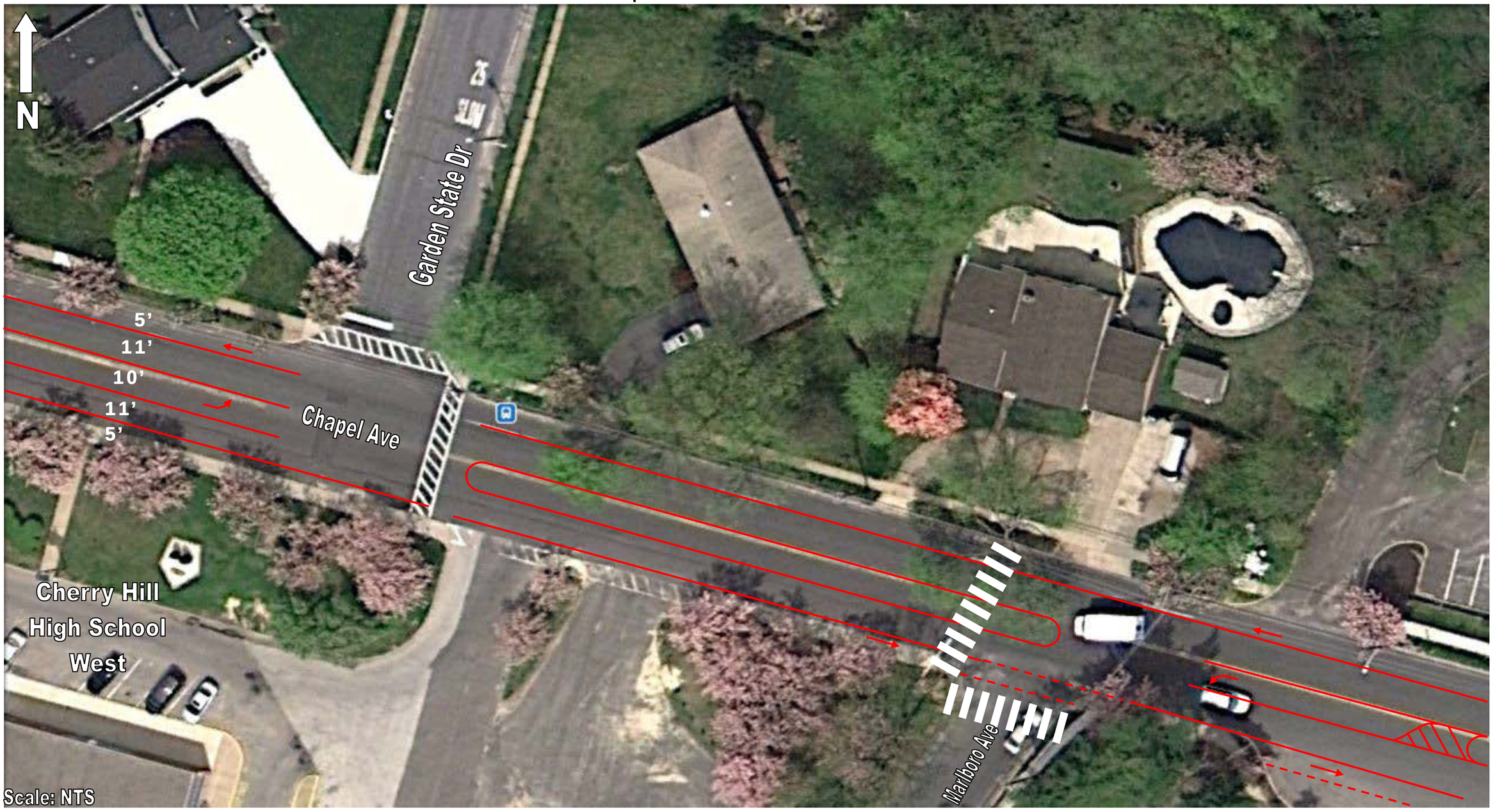


Kings Highway (NJ 41) between Churchill Road and Brace Road

The proposed design includes the addition of a 5' wide bike lane. This design would require reducing the existing travel lane from 17' wide to 12' wide. Currently, an 8' wide shoulder is striped along the corridor. The existing shoulder striping is faded and worn. On-street parking is not officially designated along the corridor, but sporadically occurs.

The schematic for Kings Highway (NJ 41) shows a short segment of the proposed design applied between the intersections of Montana and Nevada Avenue.

Chapel Avenue at Marlboro Avenue

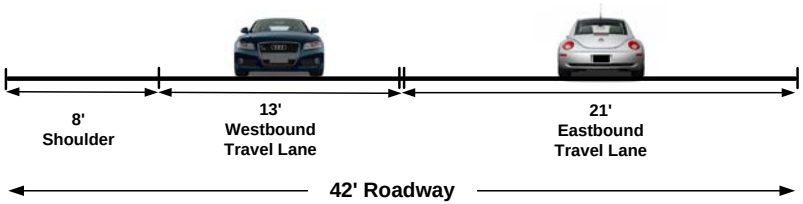


Chapel Avenue between Cherry Hill Boulevard and Marlboro Avenue

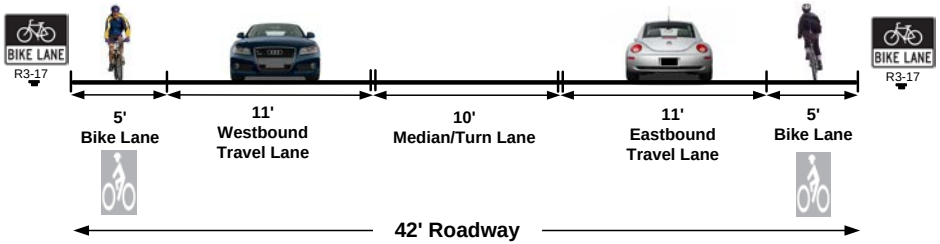
The proposed design includes the addition of a 5' wide bike lane and a center median/left turn lane. The bike lane is adjacent to the curb and can deter people from parking in front of the school for pick-up/drop-off, which is not authorized. Additionally, the center median can function as a traffic calming feature to reduce speeds in the corridor. The center median transitions into a left turn lane at intersections. This will be critical at the intersection of Marlboro where turning volumes are high during the school year. Eventually the center median should be raised, but as a short-term application it can be completed using striping. High visibility crosswalks should be added to all legs of the intersection on Chapel Avenue at Marlborough Avenue and Garden State Drive. Cherry Hill Township should initiate a signal warrant analysis for the intersection of Chapel Avenue and Marlborough Avenue.

The schematic of Chapel Avenue shows a short segment of the proposed design applied in front of the Cherry Hill West High School.

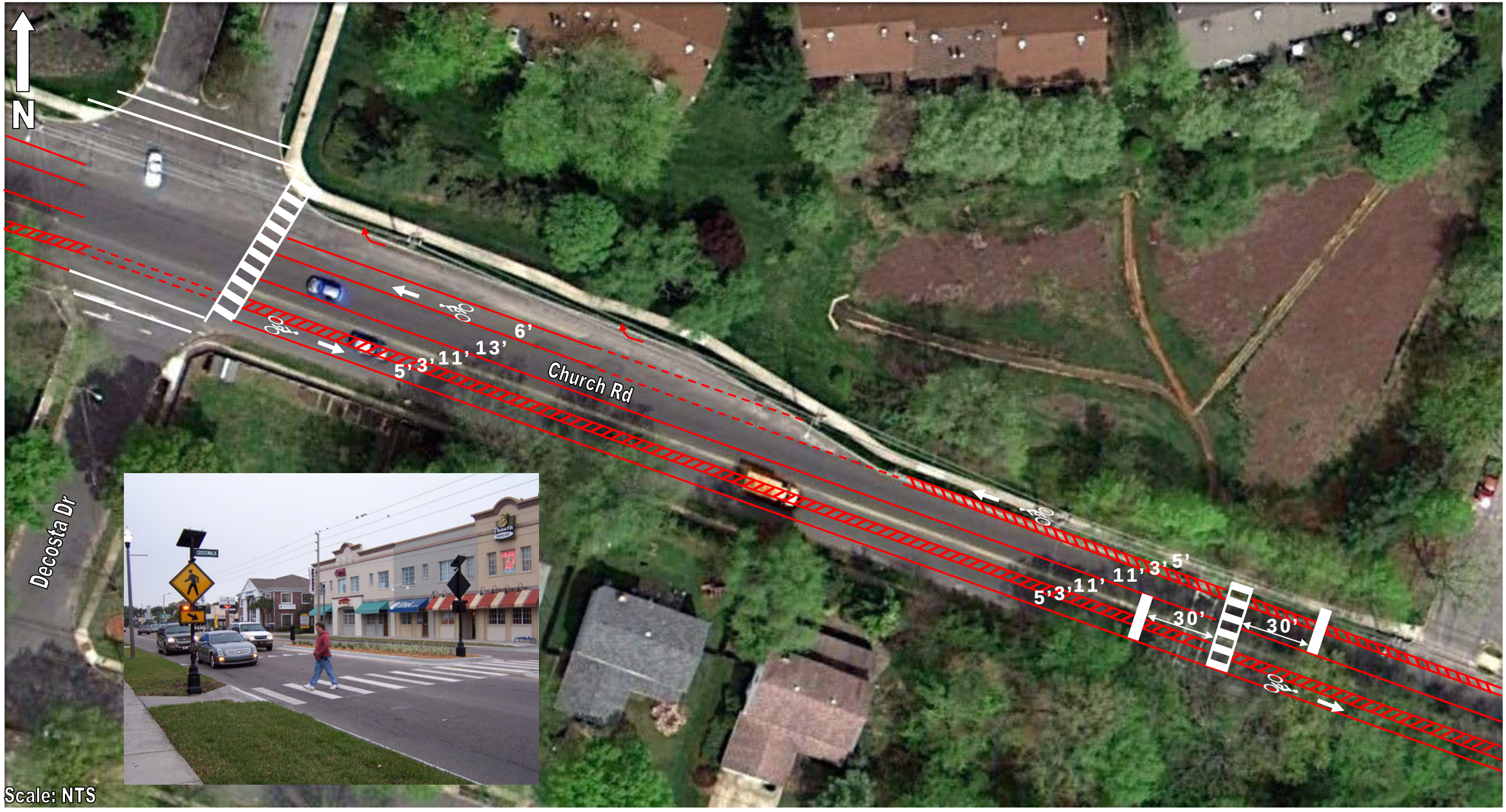
Existing Cross-Section



Proposed Cross-Section



Church Road at Decosta Drive



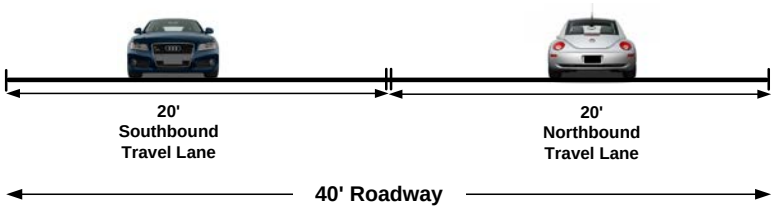
Scale: NTS

Church Road between Kings Highway (NJ 41) and Crofton Commons

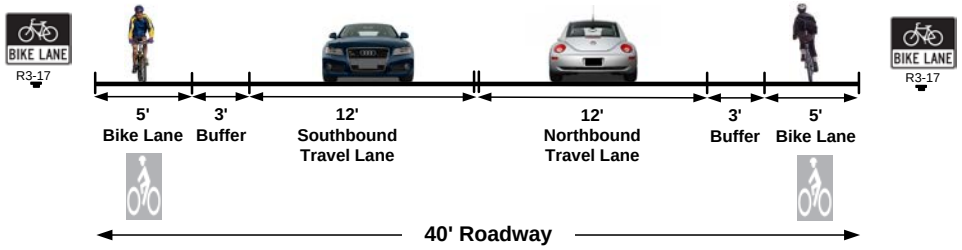
The proposed design includes the addition of a 5' wide bike lane with a 3' buffer lane. The bike lane is striped across the right turn lane and through the intersection of Decosta Drive. Currently each travel is 20' wide. The proposed design would stripe each travel lane at 12' by adding a buffer and bike lane. The design also proposes the addition of a high visibility crosswalk at the intersection of Church Road and Decosta Drive, and a mid-block crosswalk north of the Thomas Paine Elementary School driveway. The mid-block crosswalk includes advanced stop bars and pedestrian activated pedestrian warning signal. The design is intended to better accommodate pedestrians and cyclists and reinforce the 25mph speed limit within the school zone.

The schematic of Church Road shows a short segment of the proposed design applied in front of the Thomas Paine Elementary School.

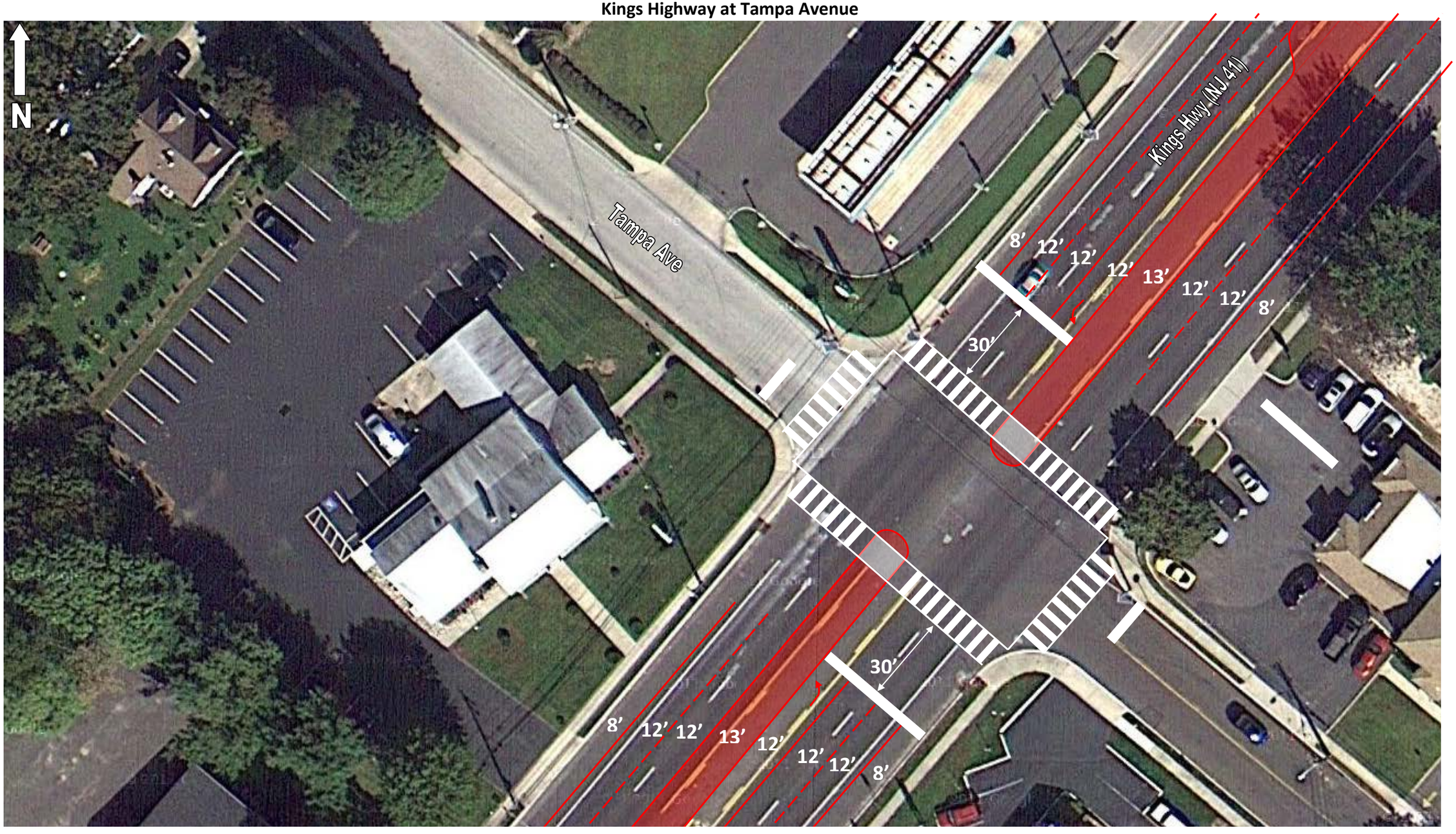
Existing Cross-Section



Proposed Cross-Section



Kings Highway at Tampa Avenue



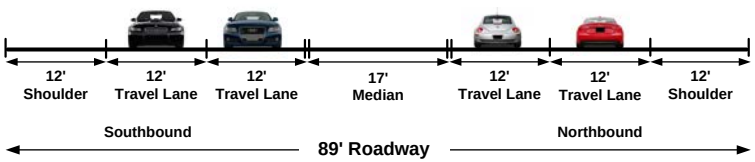
Kings Highway (NJ 41) and Tampa Avenue

The proposed design includes the addition of a raised center median, left turn lane. This involves reducing the median width from 17' to 13' and reducing the shoulder from 12' to 8'. The raised median provides pedestrians a refuge area, allowing them to cross one direction of traffic at a time. The left turn lane provides designated turning areas, controlling access.

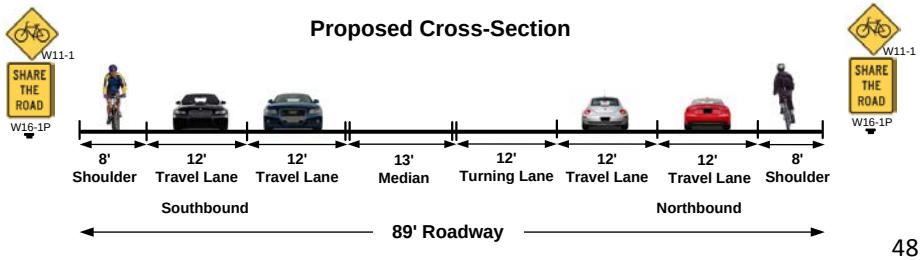
The design is intended to better accommodate pedestrians by reducing the crossing distance and their exposure to traffic. The reduced shoulder width is intended to discourage drivers from using the shoulder as a turning lane. The design also reduces the number of conflict points by restricting turning traffic and controlling access points. Further study is required to determine the feasibility of this design treatment along the entire corridor.

The schematic of Kings Highway shows a short segment the proposed design. Further study is required to evaluate if the design can be applied to the entire corridor.

Existing Cross-Section



Proposed Cross-Section



7. IMPLEMENTATION PLAN

The recommendations outlined as part of this Master Plan provide a great opportunity to enhance biking and walking throughout Cherry Hill Township. There are multiple opportunities to improve bicycle and pedestrian access and mobility. The following sections provide guidance on coordination, planning, and funding sources that can serve as a resource for advancing and implementing the proposed facilities throughout Cherry Hill.

7.1 COORDINATION EFFORTS

Coordination between Cherry Hill Township, neighboring communities, Camden County, and NJDOT should begin to advance improvements for bicycle and pedestrian accommodations on roadways in Cherry Hill. A potential next step could be the formation of a working group (e.g., Bike/Ped Task Force) to pursue opportunities, and resources to support the design and implementation of the facilities. The working group could assist with advancing priority recommendations and build upon the preliminary network identified in this plan, as well as identify opportunities for improving biking and walking through future development. In addition, representatives from DVRPC, Cross County Connections, Way-2-Go Committee, School Board, and general public should be included as part of such a working group.

7.2 DEVELOPMENT REVIEW

Cherry Hill Township can also support the implementation of bicycle and pedestrian improvements by ensuring development and redevelopment plans and proposals are consistent with the recommendations made as part of this plan. Cherry Hill Township can strengthen their zoning regulations and development standards by requiring and recommending minimum standards. Cherry Hill may consider adopting one or more of the following[3]:

- RECOMMEND that bicycle and pedestrian access be included as part of all development proposals
- REQUIRE that bicycle and pedestrian access be provided in all new development proposed within specific geographic areas
- REQUIRE that bicycle and pedestrian access be provided as part of specific types of new development
- PROVIDE general principles to guide facility design
- REQUIRE that bicycle and pedestrian access be provided in accordance with specific design standards
- REQUIRE that all site plans show existing and proposed bicycle facilities and pedestrian amenities

7.3 CAPITAL IMPROVEMENT PROJECTS

Cherry Hill Township can review their Capital Improvement Projects to determine where bicycle and pedestrian improvements can be integrated. The majority of the bicycle facility recommendations outlined within this plan can be implemented as part of regular resurfacing and/or restriping projects, without further construction.

[3] Maryland Department of Transportation, *"Twenty Year Bicycle & Pedestrian Access Master Plan Model Ordinances for the Enhancement of Bicycle and Pedestrian Access to Transportation Facilities"*, October, 2002.

7.4 FUNDING IMPROVEMENTS

Although costs associated with bicycle and pedestrian improvements can fluctuate, many improvements (e.g., installing "Share the Road" signs or striping a bike lane) can be completed at a relatively low cost. Signs and striping could be accomplished by utilizing municipal maintenance resources.

The recommended concepts for both bicycle and pedestrian projects could be eligible for the following potential funding sources:

- Community Development Block Grants (CDBG)
- Congestion Mitigation and Air quality (CMAQ)
- New Jersey's Local Aid Program for Municipalities and Counties
- Transportation Development Districts (TDD)
- Smart Future Planning Grants

Funding sources for bicycle and pedestrian projects are described in more detail in **Appendix G**, "Funding Pedestrian and Bicycle Planning, Programs, and Projects" http://bikeped.rutgers.edu/_ImageFolio43_files/gallery/Funding/Documents/VTC_2009_Funding_Bicycle_Pedestrian_Projects_NJ.pdf. This document was compiled in 2009 by NJDOT to identify major funding sources for bicycle and pedestrian planning and project development activities. Some of the sources in this document may be outdated, given recent federal legislation, which has eliminated specific funding of the Transportation Enhancements and Safe Routes to School Programs. It will be up to individual states to determine if and how these programs continue to get funding. At the time of publishing this report NJDOT has not made a determination regarding funding these programs.

8. IMPLEMENTATION MATRIX

It is recommended that Cherry Hill Township determine the most practicable means for implementing the recommendations made in this Plan. In an effort to assist the Township, this plan includes an Implementation Matrix for both proposed sidewalks and bicycle facilities. The Implementation Matrix is intended to assist Cherry Hill Township in prioritizing the recommendations for a phased implementation, as well as identifying costs and the appropriate agency to coordinate carrying them out.

The Proposed Sidewalk Implementation Matrix, **Table 17**, is based on the priorities identified earlier in Section 6, Recommendations. The priorities are the same as those listed in Table 13 with the addition of identifying the timeframe of implementation, general cost estimates, priority ranking, and jurisdictional agency. **Table 18**, Proposed Sidewalk Cost Estimates, outlines each segment and associated costs of proposed sidewalk. This information has been provided so that the Township can consider a phased implementation of sidewalks through individual projects or as construction occurs within one of the segments identified.

The Proposed Bicycle Implementation Matrix, **Table 19**, identifies the recommended bicycle facility type, proposed cross-section of the roadway, general cost estimates, and jurisdictional agency. The Proposed Bicycle Implementation Matrix does not include a priority rating. Cherry Hill Township should review proposed development, construction and resurfacing projects of roadways within the preliminary network to establish how the proposed bike facility recommendations can be included. Cherry Hill Township will need to coordinate with Camden County and NJDOT regarding the recommendations outlined in this plan. **Appendix H**, Proposed Bicycle Facility Cost Estimates, outlines a more detailed breakdown of each roadway segment and associated

costs of proposed bike facility. This information has been provided so that the Township can consider a phased implementation of bike facilities through individual projects or as construction occurs within one of the segments identified.

Table 17: Proposed Sidewalk Implementation Matrix

Location	From (MP)	To (MP)	Issue	Improvement	Timeframe	Cost	Priority	Jurisdiction
Kresson Road (CR 671), EB	Brace Rd (0.38)	N/A (1.15)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	High	Camden County & Cherry Hill Township
	Covered Bridge Rd (1.22)	Springdale Rd (3.04)						
Kresson Road (CR 671), WB	Pearl Croft Rd (1.01)	Covered Bridge Rd (1.22)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	High	Camden County & Cherry Hill Township
	NJ Turnpike (1.47)	Riding Dr (2.03)						
	East of Middle Acre Ln (2.71)	Ravenswood Way (2.80)						
Kings Highway (NJ 41), NB	Oxford St (9.92)	Plymouth Rd (10.07)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	High	Camden County & Cherry Hill Township
	Churchill Rd (10.21)	Utah Ave (10.37)						
	Old Rt. 41 (10.57)	North of Brace Rd (10.74)						
	North of Brace Rd (10.74)	Shopping Center (10.94)						NJDOT – TE&I/OBPP
Kings Highway (NJ 41), SB	North of Churchill Rd (10.23)	Utah Ave (10.37)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	High	Camden County & Cherry Hill Township
	Old Rt. 41 (10.57)	North of Brace Rd (10.74)						
	North of Brace Rd (10.74)	Shopping Center (10.94)						NJDOT – TE&I/OBPP
Springdale Road (CR 673), SB	North of Evesham Rd (7.37)	Kresson Rd (8.70)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	High	Camden County & Cherry Hill Township
Springdale Road (CR 673), NB	North of Morris Dr (7.70)	White Horse Ln (8.53)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	High	
Springdale Road (CR 673), SB	North of NJ 70 (10.26)	north of Birchwood Park Dr (10.88)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	High	Camden County & Cherry Hill Township
	North of Esterbrook Ln (11.00)	Carnegie Plaza (11.12)						

Location	From (MP)	To (MP)	Issue	Improvement	Timeframe	Cost	Priority	Jurisdiction
Springdale Road (CR 673), NB	Greentree Rd (10.30)	north of Garden Ave (10.43)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	High	Camden County & Cherry Hill Township
	Huntington Dr (10.56)	Birchwood Park Dr (10.83)						
	Esterbrook Ln (10.93)	north of Esterbrook Ln (11.00)						
Evesham Road (CR 544), WB	Short Hills Rd (8.76)	Cropwell Rd (9.22)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	High	Camden County & Cherry Hill Township
Church Road (CR 616), WB	Glenwood Ave (2.06)	State St (2.19)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	Medium	Camden County & Cherry Hill Township
	Barlow Ave (2.24)	Haddonfield Rd (2.57)						
Church Road (CR 616), EB	Haddonfield Rd (2.57)	east of Haddonfield Rd (2.63)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	Medium	Medium	Camden County & Cherry Hill Township
Cropwell Road (CR 675), NB	Evesham Rd (5.97)	north of Lafayette Ln (6.27)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	Medium	Medium	
Cropwell Road (CR 675), SB	Evesham Rd (5.97)	Kresson Rd (6.60)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	Medium	Camden County & Cherry Hill Township
	Signal Hill Rd (6.77)	Signal Hill Rd (6.84)						
Chapel Avenue, WB & EB	Kingswood Ct (N/A)	Old Cuthbert Blvd (N/A)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	Medium	Cherry Hill Township
Heartwood Road, NB & SB	Lark Ln (0.36)	Kresson Rd (1.38)	Pedestrian Accommodation	Repair sidewalks with ADA ramps	Long	High	Medium	Cherry Hill Township
Church Road (CR 616), EB	East of Delwood Rd (3.58)	NJ 38 (2.60)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	Low	Camden County & Cherry Hill Township
	Friendship Ln (4.71)	east of Kings Hwy (4.80)						
	Dacosta Dr (4.95)	Municipal Border (5.23)						

Location	From (MP)	To (MP)	Issue	Improvement	Timeframe	Cost	Priority	Jurisdiction
Chapel Avenue (CR 626), WB	Wisteria Ave (0.32)	Main St (0.49)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	Medium	Low	Camden County & Cherry Hill Township
Chapel Avenue (CR 626), EB	Wisteria Ave (0.32)	Orchard Ave (0.43)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	Medium	Low	Camden County & Cherry Hill Township
	east of Bellows Ln (3.35)	Kings Hwy (3.43)						
North Park Drive (CR 628), EB	Municipal Border (1.61)	Railroad (2.88)	Pedestrian Accommodation	Install sidewalks with ADA ramps	Long	High	Low	Camden County & Cherry Hill Township
Park Boulevard (CR 628 II), EB	Railroad (0.00)	Washington Ave (0.23)						

LEGEND:

Timeframe
Short = 1-2 years
Medium = 3-4 years
Long = 5+ years

Cost
Low = < $25,000
Medium = $25,000 - $250,000
High = $250,000+

Priority
Sidewalk prioritization ratings are listed in order of importance and are based on crash data, public feedback and the ability to complete a critical gap in sidewalk network, extend existing sidewalk connectivity, and connect to major destinations (schools, transit, and employment).

Table 18: Proposed Sidewalk Cost Estimates

Roadway (milepost)	Cost	Priority
Church Road WB (MP 2.06-2.57)	$ 306,000	High
Church Road EB (MP 2.57-2.63)	$ 99,000	Medium
Church Road EB (MP 3.58-5.23)	$ 270,000	High
Total	**$ 675,000**	
Cropwell Road NB (MP 5.97-6.27)	$ 223,000	Medium
Cropwell Road SB (MP 5.97-6.84)	$ 430,000	High
Total	**$ 653,000**	
Springdale Road NB (MP 7.70-8.53)	$ 537,000	High
Springdale Road SB (MP 7.37-8.70)	$ 810,000	High
Springdale Road NB (MP 10.30-11.00)	$ 351,000	High
Springdale Road SB (MP 10.26-11.12)	$ 490,000	High
Total	**$2,188,000**	
Chapel Avenue WB (MP 0.32-0.49)	$ 156,000	Medium
Chapel Avenue EB (MP 0.32-3.43)	$ 166,000	Medium
Chapel Avenue EB & WB (Kingswood Ct-Old Cuthbert Blvd)	$ 456,000	High
Total	**$778,000**	
Kings Highway NB (MP 9.92-10.94)	$ 420,000	High
Kings Highway SB (MP 10.23-10.94)	$ 332,000	High
Total	**$752,000**	
Kresson Road EB (MP 0.38-3.04)	$ 1,184,000	High
Kresson Road WB (MP 1.01-2.80)	$ 605,000	High
Total	**$1,789,000**	
Heartwood Road NB & SB (MP 0.36-1.38)	$ 1,149,000	High
Heartwood Road Total	**$ 1,149,000**	
Park Boulevard/North Park Drive EB (MP 0.00-0.23 & 1.61-2.88)	$ 861,000	High
Park Boulevard Total	**$ 861,000**	
Evesham Road WB (MP 8.76-9.22)	$ 222,000	High
Evesham Road Total	**$ 222,000**	
TOTAL	**$ 9,067,000**	

Table 19: Proposed Bicycle Implementation Matrix

Road Name	From	To	MP From	MP To	Proposed Bike Facility	Proposed Cross-Section (ft)	Cost	Jurisdiction
Kings Highway (NJ 41)	Park Blvd (CR 628)	Churchill Rd	9.80	10.21	Bike Lane	7'/5'/10'//10'/5'/7'	Low	Camden County
	Churchill Rd	Brace Rd (NJ 154)	10.21	10.68	Bike Lane	8'/5'/12'//12'/5'/8'	Low	Camden County
	Brace Rd (NJ 154)	Stage Coach Ln	10.68	13.01	Bike Lane		High	NJDOT
Church Road (CR 616)	Ivins Ave	Haddonfield Rd (CR 644)	2.12	2.57	Bike Lane	5'/13'//13'/5'	Low	Camden County
	Haddonfield Rd (CR 644)	Lenape Rd	2.57	2.95	Bike Lane	5'/11'/11'//11'/11'/5'	Low	Camden County
	Lenape Rd	Coolidge Rd	2.95	3.79	Shared Lane	N/A	Low	Camden County
	Coolidge Rd	Roosevelt Dr	3.79	4.19	Shared Lane	N/A	Low	Camden County
	Roosevelt Dr	Kings Highway (NJ 41)	4.19	4.78	Bike Lane	5'/11'//11'/5'	Low	Camden County
	Kings Highway (NJ 41)	*Cherry Hill Border*	4.78	5.23	Bike Lane w/ Buffer	5'/4'/11'//11'/4'/5'	Medium	Camden County
Chapel Avenue (CR 626)	Wisteria Ave	Kaighns Ave (NJ 38)	0.32	1.24	Shared Lane	N/A	Low	Camden County
	Kaighns Ave (NJ 38)	Haddonfield Rd (CR 644)	1.24	1.53	Shared Lane	N/A	Low	Camden County
	Haddonfield Rd (CR 644)	Cherry Hill Blvd	1.53	2.02	Bike Lane	8'/5'/11'//11'/5'	Low	Camden County
	Cherry Hill Blvd	Marlboro Ave	2.02	2.40	Bike Lane	8'/5'/12'//12'/5' OR 5'/11'//10'//11'/5'	Medium	Camden County
	Marlboro Ave	*Hospital Entrance*	2.40	2.42	Bike Lane	8'/3'/5'/11'//8'//11'/5'/3'/8'	Low	Camden County
	Hospital Entrance	Knolwood Dr	2.42	2.73	Shared Lane	0'/14'/11'//11'/14'/0'	Low	Camden County
	Knolwood Dr	Forge Ln	2.73	2.94	Shared Lane	8'/5'/11'//11'/5'/8'	Low	Camden County
	Forge Ln	Kings Highway (NJ 41)	2.94	3.43	Bike Lane	8'/5'/12'//12'/5'/8'	Low	Camden County
Chapel Avenue	Kings Highway (NJ 41)	Cornwall Rd	0.85	0.02	Shared Lane	N/A	Low	Cherry Hill Township
	Cornwall Rd	Kingswood Ct	0.02	0.00	Shared Lane	N/A	Low	Cherry Hill Township
	Kingwood Ct	Old Cuthbert Blvd	0.00	0.58	Bike Lane	6'/12'//12'/6'	Low	Cherry Hill Township

Road Name	From	To	MP From	MP To	Proposed Bike Facility	Proposed Cross-Section (ft)	Cost	Jurisdiction
North Park Drive (CR 628)	*Cherry Hill Border*	Cuthbert Blvd (CR 636)	1.61	2.05	Bike Lane	8'/5'/11'//11'/5'/8'	Low	Camden County
	Cutherbert Blvd (CR 636)	*Railroad*	2.05	2.88	Shared Lane	8'/14.5'//14.5'/8'	Low	Camden County
Park Boulevard (CR 628 II)	*Railroad*	Haddonfield Rd (CR 644)	0.00	0.42	Shared Lane	8'/14.5'//14.5'/8'	Low	Camden County
	Haddonfield Rd (CR 644)	Kings Hwy (NJ 41)	0.42	1.68	Shared Lane	N/A	Low	Camden County
	Kings Highway (NJ 41)	Caldwell Rd	1.68	2.06	Bike Lane w/ Buffer	5'/4'/11'//11'/4'/5'	Low	Camden County
Kresson Road (CR 671)	Berlin Rd (CR 561)	Moore Ave	0.00	0.28	Bike Lane	5'/12'//12'/5'	Low	Camden County
	Moore Ave	Brace Rd (NJ 154)	0.28	0.38	Bike Lane	5'/12'//12'/5'	Low	Camden County
	Brace Rd (NJ 154)	Old Towne Rd	0.38	0.92	Bike Lane	5'/12'//12'/5'	Low	Camden County
	Old Towne Rd	Covered Bridge Rd	0.92	1.22	Shared Lane	4'/11'//11'/4'	Low	Camden County
	Covered Bridge Rd	Browning Ln	1.22	1.54	Bike Lane	6'/12'//12'/6'	Low	Camden County
	Browning Ln	Marlkress Rd	1.54	1.79	Bike Lane	6'/12'//12'/6'	Low	Camden County
	Marlkress Rd	Bunker Hill Dr	1.79	2.03	Bike Lane	6'/12'//12'/6'	Low	Camden County
	Bunker Hill Dr	Heartwood Dr	2.03	2.19	Bike Lane	5'/10'//10'//10'/5'	Low	Camden County
	Heartwood Dr	Springdale Rd	2.19	3.04	Bike Lane	6'/12'//12'/6'	Low	Camden County
	Springdale Rd	*High School Entrance*	3.04	3.38	Shared Lane	14'/11//10'//11'/14'	Low	Camden County
	High School Entrance	Oakley Rd	3.38	3.44	Bike Lane w/ Buffer	5'/3'/11'//10'//11'/3'/5'	Low	Camden County
	Oakley Rd	Cooper Run Dr	3.44	3.59	Bike Lane	5'/12'//12'//12'/5'	Low	Camden County
	Cooper Run Dr	Country Walk	3.59	3.77	Bike Lane	6'/12'//12'/6'	Low	Camden County
	Country Walk	Cropwell Rd (CR 675)	3.77	3.93	Bike Lane	5'/10'//10'//10'/5'	Low	Camden County
	Cropwell Rd (CR 675)	Evesham Rd (CR 544)	3.93	4.67	Bike Lane	6'/12'//12'/6'	Low	Camden County

Road Name	From	To	MP From	MP To	Proposed Bike Facility	Proposed Cross-Section (ft)	Cost	Jurisdiction
Springdale Road (CR 673)	Evesham Rd (CR 544)	*N Shopping Entrance*	7.19	7.29	Shared Lane	14'/11//10'//11'/14'	Low	Camden County
	N Shopping Entrance	Spring Rd	7.29	7.45	Bike Lane w/ Buffer	5'/3'/11'//12'//11'/3'/5'	Low	Camden County
	Spring Rd	Morris Dr	7.45	7.61	Bike Lane w/ Buffer	5'/3'/11'//12'//11'/3'/5'	Low	Camden County
	Morris Dr	Chateau Dr	7.61	7.76	Bike Lane	6'/11'/12'//12'//12'/11'/6'	Low	Camden County
	Chateau Dr	Queen Anne Rd	7.76	8.00	Bike Lane	6'/11'/12'//12'//12'/11'/6'	Low	Camden County
	Queen Anne Rd	Wilderness Dr	8.00	8.16	Bike Lane	6'/11'//11'//11'/6'	Low	Camden County
	Wilderness Dr	Lark Ln	8.16	8.21	Bike Lane w/ Buffer	5'/3'/11'//12'//11'/3'/5'	Low	Camden County
	Lark Ln	White Horse Ln	8.21	8.53	Bike Lane	6'/12'//12'/6'	Low	Camden County
	White Horse Ln	Ravenswood Way	8.53	8.62	Bike Lane w/ Buffer	5'/3'/11'//12'//11'/3'/5'	Low	Camden County
	Ravenswood Way	Kresson Rd (CR 671)	8.62	8.70	Shared Lane	14'/10'//10'//10'/14'	Low	Camden County
	Kresson Rd (CR 671)	Greentree Rd (CR 674)	8.70	10.30	Shared Lane	14'/10'//10'//10'/14'	Low	Camden County
	Greentree Rd (CR 674)	Olney Ave	10.30	11.30	Bike Lane	5'/12'//12'//12'/5'	Low	Camden County
Cropwell Road (CR 675)	Evesham Rd (CR 544)	Kresson Rd (CR 671)	5.97	6.60	Bike Lane	N/A	Low	Camden County
	Kresson Rd (CR 671)	Branch Dr	6.60	7.21	Bike Lane	N/A	Low	Camden County
	Branch Dr	Rabbit Run Rd	7.21	7.49	Bike Lane	5'/12'//12'//12'/5'	Low	Camden County
	Rabbit Run Rd	Guilfrod Rd	7.49	8.06	Bike Lane	N/A	Low	Camden County
S Woodleigh Drive	Browning Ln	N Woodleigh Dr	0.00	0.05	Shared Lane	N/A	Low	Cherry Hill Township
	N Woodleigh Dr	Cranford Rd	0.05	0.22	Bike Lane	6'/12'//12'/6'	Low	Cherry Hill Township
Astor Drive	Cranford Rd	Morris Dr	0.22	0.43	Shared Lane	N/A	Low	Cherry Hill Township
Cranford Road	Berlin Rd (CR 561)	Astor Dr	0.00	0.40	Shared Lane	N/A	Low	Cherry Hill Township
Browning Lane	S Woodleigh Dr	Kresson Rd (CR 671)	0.54	1.35	Bike Lane	N/A	Low	Cherry Hill Township

Road Name	From	To	MP From	MP To	Proposed Bike Facility	Proposed Cross-Section (ft)	Cost	Jurisdiction
Pearl Croft Road	Kresson Rd (CR 671)	Bortons Mill Rd	0.00	0.11	Shared Lane	N/A	N/A	Cherry Hill Township
Bortons Mill Road	Pearl Croft Rd	Caldwell Rd	0.11	0.71	Shared Lane	N/A	Low	Cherry Hill Township
Caldwell Road	Bortons Mill Rd	Park Blvd (CR 628)	0.00	0.19	Side Path	N/A	Medium	Cherry Hill Township
	Park Blvd (CR 628)	Kings Highway (NJ 41)	0.19	0.72	Shared Lane	N/A	Low	Cherry Hill Township
Covered Bridge Road	Kresson Rd (CR 671)	Tarrington Rd	0.00	0.38	Bike Lane	6'/12'//12'/6'	Low	Cherry Hill Township
	Tarrington Rd	Sherry Way	0.38	0.73	Shared Lane	N/A	Low	Cherry Hill Township
	Sherry Way	Forge Rd	0.73	1.01	Shared Lane	N/A	Low	Cherry Hill Township
	Forge Rd	Wyndmoor Rd	1.01	1.35	Shared Lane	N/A	Low	Cherry Hill Township
Covered Bridge Road	Wyndmoor Rd	Marlton Pike (NJ 70)	0.00	0.33	Shared Lane	N/A	Low	Cherry Hill Township
Morris Drive	Berlin Rd (CR 561)	Heartwood Dr	0.00	1.09	Shared Lane	N/A	Low	Cherry Hill Township
	Heartwood Dr	Springdale Dr (CR 673)	1.09	1.48	Shared Lane	N/A	Low	Cherry Hill Township
Heartwood Road	Country Club Dr	Lark Ln	0.00	0.36	Shared Lane	N/A	Low	Cherry Hill Township
	Lark Ln	Kresson Rd (CR 671)	0.36	1.38	Shared Lane	N/A	Low	Cherry Hill Township
Brick Road	Evesham Rd (CR 544)	Marlowe Rd	0.24	1.13	Shared Lane	N/A	Low	Cherry Hill Township

LEGEND

Cost

Low = < $25,000
Medium = $25,000 - $250,000
High = $250,000+

9. POLICIES AND PROGRAMS

9.1 LOCAL COMPLETE STREETS POLICY

A Complete Streets Policy is designed to ensure that future roadway construction projects consider all roadway users. Many counties and local municipalities throughout NJ have adopted their own CS Policy to ensure the integration of these principles.

Cherry Hill Township should consider adopting a Complete Streets Policy of its own. In doing so, they should consider their individual needs and may want to use the NJDOT Complete Streets Policy as a starting point, included as **Appendix A.**

9.2 ORDINANCE REVIEW

Upon completing a review of Cherry Hill Township ordinances related to biking and walking, we found that there are a few ordinances that support these modes, such as the Township's bike parking regulations, and regulations to maintain clear rights-of-way. However, more ordinances are needed to fully integrate the principles of this plan. Cherry Hill should consider the following examples as they modify and adopt ordinances to strengthen biking and walking in the Township.

Table 20 outlines leading examples of ordinances and codes that provide for an in depth integration of biking and walking from around the country. The example from Bellingham, WA, provides clear detail regarding the operation and use of a bicycle. The example from Florida Department of Transportation provides clear direction as to when a bike lane should be provided.

Table 20: Example Ordinances

Bellingham, WA - Operation and Use of a Bicycle	
Code	**Description**
11.48.020 Parent or guardian shall not authorize or permit violation by a child or ward	The parent of any child and the guardian of any ward shall not authorize or knowingly permit any such child or ward to violate any of the provisions of this chapter.
11.48.030 Effect of regulations - penalty	**A.** It is a traffic infraction for a person to do any act forbidden or fail to perform any act required in Sections 11.48.030 through 11.48.100 (RCW 46.61.750 through 46.61.780). **B.** These regulations applicable to bicycles shall apply whenever a bicycle is operated upon any highway or upon any path set aside for the exclusive use of bicycles subject to those exceptions stated herein.
11.48.040 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 Sections 11.48.030 through 11.48.100 and except as to those provisions of this chapter which by their nature can have no application.

Bellingham, WA - Operation and Use of a Bicycle	
Code	**Description**
11.48.050 Riding on bicycles	**A.** A person propelling a bicycle shall not ride other than upon or astride a permanent and regular seat attached thereto. **B.** No bicycle shall be used to carry more persons at one time than the number for which it is designed and equipped.
11.48.060 Clinging to vehicles	No person riding upon any bicycle, coaster, roller skates, sled or toy vehicle shall attach the same or himself to any vehicle upon a roadway.
11.48.080 Carrying articles	No person operating a bicycle shall carry any package, bundle or article which prevents the driver from keeping at least one hand upon the handle bars.
11.48.090 Hand Signals	All hand signals required of persons operating bicycles shall be given in the following manner: **A. Left turn.** Left hand and arm extended horizontally beyond the side of the bicycle; **B. Right turn.** Left hand and arm extended upward beyond the side of the bicycle, or right hand and arm extended horizontally to the right side of the bicycle; **C. Stop or decrease speed.** Left hand and arm extended downward beyond the side of the bicycle. The hand signals required by this section shall be given before initiation of a turn.
11.48.00 Lamps and other equipment on bicycles	**A.** Every bicycle when in use during the hour of darkness as defined in Section 11.72.050 (RCW 46.37.020) shall be equipped with a lamp on the front which shall emit a white light visible from a distance of at least 500' to the front and with a red reflector on the rear of a type approved by the state commission on equipment which shall be visible from all distances from 100' to 600' to the rear when directly in front of lawful lower beams of head lamps on a motor vehicle. A lamp emitting a red light visible from a distance of 500 feet to the rear may be used in addition to the red reflector. **B.** Every bicycle shall be equipped with a brake which will enable the operator to make the braked wheels skid on dry, level, clean pavement.
11.48.120 Bicycles – obedience to traffic control devices	**A.** Any person operating a bicycle shall obey the instructions of official traffic-control devices applicable to vehicles, unless otherwise directed by a police officer. **B.** Whenever authorized signs are erected indicating that no right or left or U turn is permitted, no person operating a bicycle shall disobey the directions of any such sign, except where such person dismounts from the bicycle at the right-hand curb or as close as is practicable to the right edge of the right-hand shoulder to make any such turn, in which event such person shall then obey the regulations applicable to pedestrians.

Florida Department of Transportation[4]	
Code	**Description**
Bicycle Lanes	1) Bicycle lanes shall be provided on new or reconstructed arterials and major collector roadways within the MMTD in accordance with the FDOT *Bicycle Facilities Planning and Design Guidelines* (Revised April 2002). 2) Restriping of arterial or major collector roadways under [local government] jurisdiction within the MMTD shall be considered any time the facility is scheduled for resurfacing allowing for a safe, dedicated space for bicycle travel.

When Cherry Hill Township adopts the Bicycle and Pedestrian Master Plan they should also update their codes and regulations to be consistent with national (AASHTO, ADA, MUTCD, etc.) standards and guidelines. The updates should be completed on a regular basis to address the changing needs of biking and walking. Revisions may include provisions on restricting vehicles from parking in bicycle lanes or addressing new facilities such as bicycle boulevards. **Appendix I** includes a copy of *"Planning and Policy Models for Pedestrian and Bicycle Friendly Communities in New York State"* http://www.albany.edu/ihi/files/NY_Planning_And_Policy_Models_iHi.pdf. Cherry Hill Township can use this as a starting point to determine which types of policies can work best to integrate biking and walking.

10. EDUCATION, ENCOURAGEMENT AND ENFORCEMENT

Education, encouragement, and enforcement are three of the often cited "5 Es" needed for making a community bicycle and pedestrian friendly. Bicyclists, pedestrians and motorists need education on how to

[4] National Center for Transit Research Center for Urban Transportation Research University of South Florida, *"Model Regulations and Plan Amendments for Multimodal Transportation Districts"*, FDOT Contract Number: BC-137-47, April 2004.

safely share the road and navigate traffic. Widespread education efforts can contribute to safer roadways for all. Encouragement is also needed to promote the spread of bicycling and walking as means of transport, recreation, and physical activity. Enforcement is required to ensure rules of road and traffic laws are observed.

10.1 EDUCATION

To properly plan, design and implement bicycle and pedestrian facilities it is important that an entire community be educated including professionals, local officials, police, residents, and students. Reaching a broad audience with consistent and positive information will help to institutionalize biking and walking within the community. Educational programs should dispel myths, encourage courteous and lawful behavior, promote benefits, and enhance awareness.

When choosing educational programs the needs and resources of each community should be considered. In Cherry Hill, special interest groups that could benefit most from bicycle and pedestrian safety and education programs might include:

- **Professionals, Educators and Public Officials**
- **Bicyclists Riding on Sidewalks**
- **Young (17 and under) bicyclists and pedestrians**
- **Adult bicyclists and pedestrians**
- **All Motorists**
- **Transit Users**

Education and training might include University courses, webinars, and regional and national conferences, which can be obtained from the following organizations:

Professional Development

- Association of Pedestrian and Bicycle Professionals (APBP) – www.apbp.org
- Rutgers Center for Advanced Infrastructure and Transportation (CAIT) - http://cait.rutgers.edu/cait/designing-accessibility
- NJDOT Complete Streets PowerPoint Presentations http://bprc.rutgers.edu/wordpress/?page_id=2279
- NJ Bike/Walk Coalition – Statewide advocacy group http://www.newjerseybikewalk.org/
- Probike/Prowalk – Biannual national conference http://www.pps.org/pwpb2012/
- TransAction – Annual transportation conference based in NJ http://www.njtransactionconf.com/
- NJ Highway Traffic Safety - http://www.nj.gov/oag/hts/pedestrian.html
- Rutgers Pedestrian Safety Enforcement Training Workshops http://bprc.rutgers.edu/wordpress/index.php/training-workshops/
- Adult and Child Bicycle Courses http://www.trafficsafetymarketing.gov/CAMPAIGNS/Bicycle+Safety/Campaign+Materials

The National Highway Traffic Safety Administration also distributes a packet called “Getting to School Safely Community Action Kit.” Within the packet there are fact sheets about bicycle and pedestrian safety. Another

organization that distributes a guide about how to walk to school is the Department of Health and Human Services, Center for Disease Control and Prevention (CDC). The CDC gives parents fun tips for teaching children the proper way to walk to school. These resources are available online, at the following websites:

- http://www.nhtsa.gov/people/injury/buses/Getting_to_School/index.html
- http://www.cdc.gov/nccdphp/dnpa/kidswalk/

10.2 ENCOURAGEMENT AND PROGRAMMATIC RECOMMENDATIONS

Low-cost programmatic recommendations that encourage biking and walking are recommended to complement educational programs. These include:

- Bike to Work Week/Day Events
- Promotional Bike Rides/Walking Events
- Open Street Initiatives – Car free zones, Block Parties, Neighborhood Celebrations
- Walking School Bus

Walking School Bus

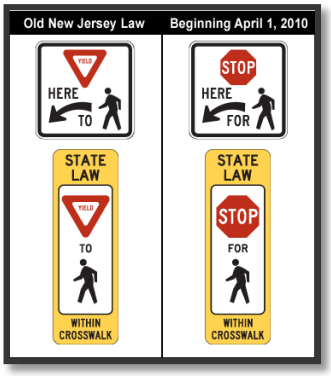
A Walking School Bus provides parents with a tool to teach children how to walk to school safely. The concept involves one or more parents walking to school with a group of children, therefore providing a healthy alternative for students where bussing is not available. Walking School Buses are often developed in coordination with the school administrations and local law enforcement. Communities in New Jersey, such as Garwood and Westfield, have successfully implemented Walking School Bus programs. Additional information on developing a Walking School Bus has been provided in **Appendix J**.

Bicycle Rodeos

A Bicycle Rodeo provides parents and law enforcement with a tool to teach children how to safely ride a bicycle. This concept involves children attending a class which teaches proper riding techniques by local law enforcement and school administrators or volunteers. Through a series of "real life" riding simulations, students are taught how to safely ride their bicycle. Communities in New Jersey such as Hoboken and Tenafly have successfully implemented Bicycle Rodeos. Additional Information on developing a Bicycle Rodeo has been provided in **Appendix K**.

10.3 ENFORCEMENT

An important component of a safe and well traveled transportation system is an enforcement program for traffic regulations as they apply to each type of roadway user: motorists, bicyclists, and pedestrians. Cherry Hill Township can improve travel habits and behavior through enforcement. This process should include reviewing current ordinances and traffic regulations to identify elements that may unnecessarily affect certain roadway users, such as bicyclists. As bicycle facilities are installed, it is recommended that local ordinances and regulations be developed or revised to clarify items such as: application of vehicle laws to bicyclists, permitted movements on and across bicycle facilities (e.g., permitted motor vehicle movements across bicycle lanes), bicycling on sidewalks, and bicycle parking requirements.



In addition, a review of enforcement regulations and practices may assist in identifying opportunities to partner with community, county, or state organizations to inform users about safe bicycle travel behavior, such as the required use of helmets by bicyclists under the age of 17 (N.J.S.A 39:4-10.1), or the recent changes in N.J.S.A 39: 4-36 which now require motorists to stop for pedestrians in the crosswalk**.** Outreach and promotion through community channels and events is a critical piece in reminding motorists, bicyclists, and pedestrians of applicable laws and recommended travel practices.

11. LIABILITY

Municipal officials are often concerned that implementing bicycle and pedestrian facilities will increase their community's liability. However, the mode of travel is irrelevant when it comes to concerns of liability. Accommodating bicycle and pedestrian travel safety is not liability-inducing. As long as facilities are designed and constructed in accordance with national standards and guidelines municipalities have immunity from tort liability. The following bullet points address common questions related to the liability concerns of implementing bicycle and pedestrian facilities.

- Claims against public entities are covered under NJ Statues Title 59 – Tort Claims Act
- Immunity from tort liability is the general rule and liability is the exception
- If a design or plan is in conformance with previously approved standards immunity will attach regardless of which mode the traveler was using.
- Plan or Design Immunity NJSA 59:4-6 attaches when:
  - Plan, design or improvement is approved by an official body
  - Plan, design or improvement is approved by a public employee exercising discretion
  - Plan, design or improvement is in conformity with standards previously approved by authorized entity or person.
- Plan or Design Immunity is perpetual and cannot be lost even if later knowledge shows a design or plan to be dangerous, or later circumstances render it dangerous, (Manna v. State).

The above content was prepared from excerpts of a presentation given by Dorothy Kowal, Esq. and Tracey Hinson, Esq. at the 2010 NJ Complete Street Summit. Their complete presentation can be found at http://policy.rutgers.edu/vtc/bikeped/completestreets/Presentations/Liability%20101.pdf.

12. MAINTENANCE

Maintenance of roadways, including on-road bicycle facilities is an important consideration as bicycle ridership and pedestrian volumes increase with the creation of new facilities.

The condition, specifically smoothness, of a roadway's surface is an important factor in bicycle comfort and safety. When a surface is irregular it not only causes an unpleasant ride, but also poses risk to the bicyclist as potholes, cracking, heaving, and other roadway deterioration may cause a bicyclist to swerve into motor vehicle traffic to avoid the obstacle. NJDOT and AASHTO bicycle guidelines recommend the routine maintenance of roadways to provide good riding conditions for bicycle traffic. In addition, efforts should be made to remove and prevent debris from being placed in the roadway, especially along the outside edge of roadways where bicyclists often ride. Debris can impact bicycle operations and increase maintenance needs of roadway facilities over time.

When facilities are installed, it is important for municipalities to notify residents of the necessity in not placing debris in shoulders and bicycle lanes. Additionally, continued coordination with the appropriate public works departments should also be maintained to identify areas that will need additional street cleaning during the fall and winter months.

The City of Seattle Washington outlines the following as example maintenance items to consider when preparing estimates and schedules for on-road and off-road bicycle facilities. They include:

- Replace missing and damaged regulatory and directional signs.
- Repaint worn pavement markings.
- Trim trees, shrubs and grass to maintain sight distances.
- Patch holes, fill cracks and feather edges.
- Clean drainage systems, make modifications to eliminate the formation of ponds.
- Sweep to remove mud, gravel and other debris
- Mow bike lane, roadway and trail shoulders (0.8 to 1.5 m (2.5 to 5 ft) back from facility).
- Inspect structures for structural deterioration.
- Spot pruning to maintain view, enhance aesthetics.
- Maintain furniture and other furnishings.
- Mow selectively where groomed look is desired.
- Install and remove snow fences.
- Maintain irrigation lines.
- Pick up trash, empty trash cans.
- Clean rest rooms and drinking fountains, repair as needed.
- Remove graffiti from retaining walls, rocks, etc.
- Prune dense understory growth to improve user safety.
- Spray for weed control.
- Remove snow and ice.
- Maintain emergency telephones.

http://www.bicyclinginfo.org/bikesafe/case_studies/casestudy.cfm?CS_NUM=403

Sidewalk conditions also affect pedestrians, especially those with disabilities. Municipalities should include a process to routinely inspect sidewalk conditions, so that cracking, shifting, or deterioration can be addressed

quickly. If replacement is necessary, the appropriate notice should be made to the responsible party or parties. The NJDOT Pedestrian Compatible Planning and Design Guidelines, Chapter 4, Operations and Maintenance of Pedestrian Facilities, provides a checklist of Pedestrian Facility Maintenance Requirements http://www.state.nj.us/transportation/publicat/pdf/PedComp/pedintro.pdf. The checklist is also included as **Appendix L.**

Appendix A

NJDOT Complete Streets Policy

DEPARTMENT OF TRANSPORTATION
POLICY

Policy No. 703 Supersedes: 703 dated 8/7/89
Page 1 of 3

SUBJECT: Complete Streets Policy	Effective Date:	Commissioner Approval: Sponsor Approval: Robert Miller Contact Telephone #: 530-3855

I. PURPOSE

To create and implement a Complete Streets Policy in New Jersey through the planning, design, construction, maintenance and operation of new and retrofit transportation facilities within public rights of way that are federally or state funded, including projects processed or administered through the Department's Capital Program.

II. DEFINITIONS

A Complete Street is defined as means to provide safe access for all users by designing and operating a comprehensive, integrated, connected multi-modal network of transportation options.

III. BACKGROUND

The benefits of Complete Streets are many and varied:

- Complete Streets improve safety for pedestrians, bicyclists, children, older citizens, non-drivers and the mobility challenged as well as those that cannot afford a car or choose to live car free.
- Provide connections to bicycling and walking trip generators such as employment, education, residential, recreation, retail centers and public facilities.
- Promote healthy lifestyles.
- Create more livable communities.
- Reduce traffic congestion and reliance on carbon fuels thereby reducing greenhouse gas emissions.
- Complete Streets make fiscal sense by incorporating sidewalks, bike lanes, safe crossings and transit amenities into the initial design of a project, thus sparing the expense of retrofits later.

IV. POLICY

The New Jersey Department of Transportation shall implement a Complete Streets policy though the planning, design, construction, maintenance and operation of new and retrofit transportation facilities, enabling safe access and mobility of pedestrians, bicyclists, transit users of all ages and abilities. This includes all projects funded through the Department's Capital Program. The Department strongly encourages the adoption of similar policies by regional and local jurisdictions who apply for funding through Local Aid programs.

SUBJECT: NJDOT Complete Streets Policy	Effective Date:

1. Create a comprehensive, integrated, connected multi-modal network by providing connections to bicycling and walking trip generators such as employment, education, residential, recreational and public facilities, as well as retail and transit centers.

2. Provide safe and accessible accommodations for existing and future pedestrian, bicycle and transit facilities.

3. Establish a checklist of pedestrian, bicycle and transit accommodations such as accessible sidewalks curb ramps, crosswalks, countdown pedestrian signals, signs, median refuges, curb extensions, pedestrian scale lighting, bike lanes, shoulders and bus shelters with the presumption that they shall be included in each project unless supporting documentation against inclusion is provided and found to be justifiable.

4. Additionally, in rural areas, paved shoulders or a multi-use path shall be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day. Paved shoulders provide safety and operational advantages for all road users. Shoulder rumble strips are not recommended when used by bicyclists, unless there is a minimum clear path of four feet in which a bicycle may safely operate. If there is evidence of heavy pedestrian usage then sidewalks shall be considered in the project.

5. Establish a procedure to evaluate resurfacing projects for complete streets inclusion according to length of project, local support, environmental constraints, right-of-way limitations, funding resources and bicycle and/or pedestrian compatibility.

6. Transportation facilities are long-term investments that shall anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements.

7. Address the need for bicyclists and pedestrians to cross corridors as well as travel along them. Even where bicyclists and pedestrians may not commonly use a particular travel corridor that is being improved or constructed, they will likely need to be able to cross that corridor safely and conveniently. Therefore, the design of intersections, interchanges and bridges shall accommodate bicyclists and pedestrians in a manner that is safe, accessible and convenient.

8. Design bicycle and pedestrian facilities to the best currently available standards and practices including the New Jersey Roadway Design Manual, the AASHTO Guide for the Development of Bicycle Facilities, AASHTO's Guide for the Planning, Design and Operation of Pedestrian Facilities, the Manual of Uniform Traffic Control Devices and others as related.

9. Research, develop and support new technologies in improving safety and mobility.

10. Make provisions for pedestrians and bicyclists when closing roads, bridges or sidewalks for construction projects as outlined in NJDOT Policy #705 – Accommodating Pedestrian and Bicycle Traffic During Construction.

11. Improvements should also consider connections for Safe Routes to Schools, Safe Routes to Transit, Transit Villages, trail crossings and areas or population groups with limited transportation options.

12. Establish an incentive within the Local Aid Program for municipalities and counties to develop and implement a Complete Streets policy.

13. Improvements must comply with Title VI/Environmental Justice, Americans with Disabilities Act (ADA) and should complement the context of the surrounding community.

14. Implement training for Engineers and Planners on Bicycle/Pedestrian/Transit policies and integration of non-motorized travel options into transportation systems.

15. Establish Performance Measures to gauge success.

V. EXEMPTIONS

Exemptions to the Complete Streets policy must be presented for final decision to the Capital Program Screening Committee in writing by the appropriate Assistant Commissioner and documented with supporting data that indicates the reason for the decision and are limited to the following:

1) Non-motorized users are prohibited on the roadway.
2) Scarcity of population, travel and attractors, both existing and future, indicate an absence of need for such accommodations.
3) Detrimental environmental or social impacts outweigh the need for these accommodations.
4) Cost of accommodations is excessively disproportionate to cost of project, more than twenty percent (20%) of total cost.
5) The safety or timing of a project is compromised by the inclusion of Complete Streets.

An exemption other than those listed above must be documented with supporting data and must be approved by the Capital Program Committee along with written approval by the Commissioner of Transportation.

VI. AUTHORITY

N.J.S.A. Title 27

Appendix B

Subject Interview Summary

MEMORANDUM OF MEETING

Project:	Cherry Hill Township Bicycle and Pedestrian Element Study	**S.O. No:**	2010 SDA787B, T.O. #6
Date:	October 18, 2011	**Time:**	7:00 – 9:00 pm
Place:	Cherry Hill Municipal Building	**By:**	L. Fryc/D. Chaplick
Purpose:	Way to Go Meeting		

Attending:

Name	Representing	Email
John Berg	Way to Go	bergrides@gmail.com
Barb Berman	Way to Go	bab96@verizon.net
Jay James	Way to Go	jonesclan.sj@gmail.com
Lee Widman	Way to Go	emwidman@hotmail.com
David Nghuem	Way to Go	davesnewadventure@yahoo.com
Don Elsas	Way to Go	donelsas@yahoo.com
Rob Buatt	Way to Go	rob@robertbuattl.com
Jake Gordon	Coopers Ferry	jake@coopersferry.com
Denise Chaplick	Michael Baker Jr. Inc. (Baker)	denise.chaplick@mbakercorp.com
Layla Fryc	Michael Baker Jr. Inc. (Baker)	lfryc@mbakercorp.com

Denise Chaplick started the meeting by welcoming everyone and telling the attendees that the purpose of this meeting is to gather feedback from them on the existing conditions of the bicycle and pedestrian facilities in Cherry Hill. Ms. Chaplick handed out key pages taken directly from both Draft Technical Memorandum 1 and 2. Four maps were shown to the attendees by describing the content in each one:

1. Preliminary Network Map – Ms. Chaplick explained that the key corridors shown on the map were identified by the Steering Committee members, by attendees to the Community Event, and from the results and feedbacks of the Online Survey. Those key corridors were assessed for bicycle and pedestrian deficiencies.

2. Existing Sidewalk Condition Map – Ms. Chaplick talked about the condition of the sidewalk being collected during field work and through the NJDOT County Sidewalk Inventory database. She showed the Sidewalk Priority Ranking map which helps categorize the missing sidewalks into levels of importance to install new sidewalks. Bob Buatt asked how the sidewalk priority ranking was determined. Ms. Chaplick replied that the sidewalk priority ranking was identified according to pedestrian demand near schools, parks and trails. Mr. Buatt thinks that the ranking should be revised.

3. Bicycle and Pedestrian Crash Data Map – Ms. Chaplick explained the bicycle and pedestrian crash data which was obtained from Plan4Safety. She points out the clusters of crashes in specific areas.

4. Bicycle Compatibility Rating Map – Ms. Chaplick passed around the Bicycle Compatibility Matrix and explained how the levels of suitability were obtained through the NJDOT Bicycle Guidelines. She asked the attendees for their feedback on the percentage of parking used on certain roadways and if any of the roadway segments should be less or more suitable for bicycling.

The attendees gathered around the Bicycle Compatibility Matrix and the Bicycle Compatibility Rating map, and discussed the necessary changes. After their input and feedbacks were gathered, Ms. Chaplick thanked everybody for coming to the meeting and mentioned that the next upcoming events are the second Steering Committee meeting and the Public Meeting.

Baker

Project Memorandum

TO: Project File

FROM: Denise Chaplick

DATE: November 3, 2011

RE: **Cherry Hill Bike/ Ped Plan**
Subject Interview with
Carol Matlack, Cherry Hill Board of Education Representative

Denise Chaplick of Baker conducted a phone interview on Thursday November 3, 2011 with Carol Matlack, a representative of the Cherry Hill School Board and member of the Project Steering Committee. Prior to the phone interview Denise provided Carol with several questions to initiate the discussion. See attached e-mail correspondence.

Carol explained that she forwarded some of the questions onto School Principles and other Board members. To date she not had yet received a reply, but will forward their responses once she does.

Carol described that Cherry School Board does not have any specific policies regarding biking and walking, but does have policies related to busing children to school. This policy outlines that busing is provided to school for:

- Elementary students living greater than 1-mile from school
- Middle School students living greater than 1.5-miles from school
- High School students living greater than 2-miles from school
- Students living along roadways classified as a Hazardous Routes

Cherry Hill has 19 schools with a 2011 student population of 11,466 including:

- 5,033 Pre-K & Elementary students
- 2,670 Middle School students
- 3,763 High School students

Cherry Hill buses approximately 9,800 students (85%). More than 6,400 (65%) of our transported students are 'courtesy riders' under the hazardous routes criteria.

A roadway is classified as a Hazardous Route if there are no sidewalks or if a busy streets or highway needs to be crossed to get to school. Carol was not certain of which roadways are classified as hazardous routes or when the classification was last updated.

As a resident and mother of schoolchildren in Cherry Hill, Carol described that over the years she has observed a dramatic increase in students within walking distance (non-bused) being driven to school. Carol noted that the schools in Cherry Hill were designed as neighborhood schools and get very congested with many drop-offs and buses.

Baker

Project Memorandum

TO: Joe Powell, Project Manager
NJDOT-OBPP

CC: Natalie Barney, Cherry Hill Township

FROM: Denise Chaplick,
Michael Baker Jr., Inc.

DATE: March 22, 2012

RE: **Cherry Hill Bike/Ped Plan**
Review Meeting with Cherry Hill Township

A review meeting held on Friday February 17, 2012 with internal department of Cherry Hill Township (attendee list attached) to discuss the findings and recommendations outlined as part of the Cherry Hill LTA project to integrate bike and pedestrian improvements. The following is a summary of discussion from that meeting.

- Denise presented a brief overview of the following materials including:
    - Project Study Network – Denise explained that this was developed based on feedback from the public outreach, surveys, and crash data results
    - Crash data summary – Denise reviewed the results and highlighted those locations with recurring crashes involving pedestrians and bicyclists
    - Sidewalk Inventory Assessment & Priority Ranking – Denise reviewed the summary and indicated that for the most part, sidewalk infrastructure is in good to fair condition, with 73% of the study network rating in that category. There are spot locations (7%) in poor condition, and identified missing gaps, where 21% of the study network is missing sidewalks. The recommendation for implementing sidewalks were prioritized by their:
        - Proximity to major destinations (schools, employment, transit, shopping, recreation)
        - Connectivity to existing sidewalk networks
        - Crash data

COMMENTS:

- Sergeant Rann indicated that the results of the sidewalk assessment should be used to help establish and prioritize SRTS corridors.
- Natalie indicated that she would share the plan and results as they continue their discussion with the schools.

Bicycle Suitability Rating – Denise explained that a variety of roadway factors were collected and evaluated to assess the bicycle suitability of study networks existing conditions. The evaluation used a recently expanded version of the NJDOT Bike Guidelines. The result indicate 12% of the roadway segments are most suitable, 44% are moderately suitable, and 43% are least suitable for cyclists of mid to lesser skill levels. Denise outlined that the Bicycle Matrix also outlines proposed cross-section to incorporate improvements to increase bicycle suitability. With those proposed changes the results increase to 13% most suitable, 67%

moderately suitable, and 21% least suitable. The proposed changes indicate that Cherry Hill has great potential to integrate bicycle improvement simply through re-striping/resurfacing efforts.

COMMENTS:

- The group was very encouraged to hear these results and liked the proposed solutions to include bicycle facilities. They also indicated they would look to include the improvements as part of other projects.

Intersection Assessment – 5 intersections were evaluated to identify existing deficiencies. Denise summarized the recurring deficiencies that included signs and landscaping that obstruct visibility of pedestrians, lack of ADA ramps, and missing signal heads and push buttons.

COMMENTS:

- Several people questioned who and how the large scale landscaping was placed at the intersection. They thought adjacent business owners probably planted them without approvals.

Route 41 - Denise presented the proposed recommendations for bike and pedestrian improvements along Route 41 including:

  - Brace Road to Haddonfield municipal border, which is currently 50' wide curb-to-curb with 8' and 10' shoulders and two 16' travel lanes.
  - The existing bicycle suitability rating ranks as moderately suitable.
  - The proposed recommendation includes bike lanes through re-striping with a cross-section of two 8' shoulders/parking, two 5' bike lanes, and two 12' travel lanes.
  - The proposed cross-section is being recommended to provide an exclusive lane for cyclists while narrowing the vehicle travel lane.

COMMENTS:

- Sergeant Rann (Police Dept) and Steven Musilli (Public Works) indicated the section of Route 41 south of Route 70 is a County Road. Confirmed using the NJDOT-SLD, Route 41 within Cherry Hill extends from MP 9.74 to MP 13.2 and is under both NJDOT and Camden County jurisdiction. The section of Route 41 under County jurisdiction extends from MP 9.74 (Haddonfield/Cherry Hill municipal boarder) to 10.73 (south of Route 70) and is the location where the bike lane is proposed. Therefore, County not NJDOT, approval is needed for the proposed bike lane.
- There was also discussion regarding a concern of having a bike lane located next to parking that has the potential to have a high turnover rate, given the many service-oriented businesses along this corridor.

Route 41 & Tampa Avenue - Denise reviewed the recommendations located at the intersection of Route 41 and Tampa Avenue. Recommendations are being made at this location based on the number of pedestrian and bicycle crashes and include:

  - The curb-to-curb width at this location is 89', with an existing cross-section that includes two 12' shoulders, four 12' travel lanes, and 17' striped median.
  - The proposed recommendation includes a cross-section of two 8' shoulders, four 12' travel lanes, 12' opposing center turn lane, and 13' wide center median. The lane reductions and exclusive turn lanes can be incorporated through resurfacing/re-striping effort. The center median can be painted as a short-term measure. However, it is recommended that a raised median be constructed to provide protection for the pedestrian allowing them to cross one direction of traffic at a time. In addition, high visibility crosswalks and advance stop bars are proposed at this location.

COMMENTS:

- There was a question regarding the specific nature of the crashes at this location, such as time and age of those involved.
- Denise responded to note that we did not receive individual crash reports to identify this level of details, but had utilized crash summaries provided by the Police Department.
- There was a comment noting that this design would be helpful corridor wide, but it would also impact access to businesses.
- Denise indicated that the concept would need to be discussed further by the Township, and additional design work would be needed to address individual access points and circulation.

Church Road at Decosta Drive - Denise reviewed the recommendations located between Route 41 and Cherry Hill boarder in the area of Decosta Drive. Recommendations are being made at this location to include bicycle facilities and highlight the design of a bike lane with buffer. The existing 40' cross-section includes two 20' travel lanes. The proposed improvements include:

- two 5' bike lanes, two 3' buffers, and two 11' travel lanes

COMMENTS:

- The group indicated that they liked the design and questioned if it could be extended further.
- Denise responded that the design extends to the municipal boarder and that further coordination would have to take place with Mount Laurel Township to extend the bike lane design.

Chapel Avenue at Malboro Avenue - Denise reviewed the recommendations along Chapel in front of Cherry Hill High School – West near Malboro Avenue. Recommendations are being made at this location based on the number of pedestrian and bicycle crashes and include:

- The curb-to-curb width at this location is 42', with an existing cross-section that includes one 8' shoulders, one 13' travel lane, and one 21' travel lane.
- The proposed recommendation includes a cross-section of two 5' bike lanes, two 11' travel lanes, and one 10' center median/left turn lane.
- Additionally access management recommendations include the closure of two driveways at the High School to minimize the number of conflict points near the intersections and direction traffic to one manageable point.

COMMENTS:

- The group indicated that something is needed in this area and that reducing the lanes width would be helpful.
- They also indicated that further coordination with the school would be required prior to approving recommendations for closing access points.
- Denise indicated that there is a school board representative on the Steering Committee.

Springdale Avenue & Kresson Road - Recommendations are being made at this location based on consistent public feedback that this intersection was an issue. However, the crash data does not confirm this condition. The recommendation of a roundabout is proposed in order to reduce the scale of the intersection and provide pedestrians breaks in crossing.

COMMENTS:

- The group indicated that they liked idea of the roundabout, but felt the potential ROW impacts would raise too much concern at this conceptual phase of the project.

- We agreed that the roundabout concept design would be removed from the proposed recommendations.

Denise explained that the next steps of the project include:

- Steering Committee on March 12
- Review meeting with Camden County Planning & Engineering
- Public Meeting (end of April)

Denise indicated that once these meetings are complete a final plan would be prepared summarizing the process, findings, and recommendations of the work.

The meeting concluded in approximately 2 hours.

Meeting attendees included:

Natalie Barney	Cherry Hill Township – Comm Dev	nbarney@chtownship.com
Lorissa Luciani	Cherry Hill Township – Comm Dev	lluciani@chtownship.com
Steven Musilli	Cherry Hill Township – Public Works	smusilli@chtownship.com
Mike Rann	Cherry Hill Township – Police Dept	mrann@cherryhillpolice.com
Paul Stridick	Cherry Hill Township – Comm Dev	pstridick@chtownship.com
Erin Gill	Cherry Hill Township – Mayor's Office	egill@chtownship.com
Joseph Powell	NJDOT-OBPP	Joseph.powell@dot.state.nj.us
Denise Chaplick	Michael Baker Jr., Inc.	Denise.chaplick@mbakercorp.com

Baker

Project Memorandum

TO: Joe Powell, Project Manager
NJDOT-OBPP

CC: Natalie Barney, Cherry Hill Township

FROM: Denise Chaplick,
Michael Baker Jr., Inc.

DATE: March 22, 2012

RE: **Cherry Hill Bike/Ped Plan**
Review Meeting with Camden County

A review meeting held on Wednesday March 21, 2012 with representative of Cherry Hill Township and Camden County (attendee list attached) to discuss the findings and recommendations outlined as part of the Cherry Hill LTA project to integrate bike and pedestrian improvements along County roadways. The following is a summary of discussion from that meeting.

- Denise presented a brief overview of project history to date outlining the public outreach, data collection, evaluation, and recommendations. She reviewed the following materials including:
    - Project Study Network – Denise explained that this was developed based on feedback from the public outreach, surveys, and crash data results
    - Crash data summary – Denise reviewed the results and highlighted those locations with recurring crashes involving pedestrians and bicyclists
    - Sidewalk Inventory Assessment & Priority Ranking – Denise reviewed the summary and indicated that for the most part, sidewalk infrastructure is in good to fair condition, with 73% of the study network rating in that category. There are spot locations (7%) in poor condition, and identified missing gaps, where 21% of the study network is missing sidewalks. Of the 10 roadways evaluated the recommendation for implementing sidewalks were prioritized by their:
        - Proximity to major destinations (schools, employment, transit, shopping, recreation)
        - Connectivity to existing sidewalk networks
        - Crash data
    - Denise highlighted which of the roads assessed were under county jurisdiction and indicated that Kresson Road (CR 671) was ranked as the first and third priority for improvement
    - Kevin noted that several section of Kresson Road will need drainage included as part of sidewalk installation and would increase project costs.

COMMENTS:

- Kevin noted that sidewalks were proposed for the middle of Kresson Road as part of the SRTS Grant program, which she indorsed. She questioned if the SRTS Grant was submitted.
- Cherry Hill Township replied that it was not due to inconsistencies with the school.

Bicycle Suitability Rating – Denise explained that a variety of roadway factors were collected and evaluated to assess the bicycle suitability of study networks existing conditions. The evaluation used a recently expanded version of the NJDOT Bike Guidelines. The result indicate 12% of the roadway segments are most suitable, 44% are moderately suitable, and 43% are least suitable for cyclists of mid to lesser skill levels. Denise outlined that the Bicycle Matrix also outlines proposed cross-section to incorporate improvements to increase bicycle suitability. With those proposed changes the results increase to 13% most suitable, 67% moderately suitable, and 21% least suitable. The proposed changes indicate that Cherry Hill has great potential to integrate bicycle improvement simply through re-striping/resurfacing efforts.

The review focused on the roadways under county jurisdiction.

COMMENTS:

- Andrew questioned why these roads were chosen to promote biking.
- Denise noted that the study network was identified by the Steering Committee and public who were asked to identify where they currently bike/walk and/or where they would like to bike/walk. This was using in combination with crash data.
- There was a discussion as to whether or not parking was allowed along Route 41, south of Route 70. The proposed cross-section outlines 10' travel lanes. Kevin was not entirely comfortable with 10' travel lanes in this location.
- Several people indicated that if parking is allowed, it could be combined to one side of the roadway, and allow for wider travel lanes and possibly a bike lane with buffer.
- Kevin indicated that the County will be resurfacing this section of Route 41 in the summer 2012. The County will need to coordinate with the Township Engineer to have a resolution approving the change in striping. They will also coordinate with the Township Engineer to confirm parking regulations in this area.
- Kevin questioned the recommendation to reduce the speed limit along Church Road from 35mph to 25mph. She understands the intension to provide consistency and slower speeds, but is not sure if it is appropriate in the area adjacent to the mall.
- Overall the County was accepting of the recommended cross-section to improve biking, with the exception of the locations that reduce the travel lane to 10'. Overall, this is not an acceptable travel lane width for the County.
- The County was agreeable toward the recommendations made for the area of Chapel Avenue and Marlboro Avenue. However, further coordination with the school will be required prior to approving recommendations for closing access points in the area of Chapel Avenue and Marlboro Avenue.
- We discussed the intersection of Springdale Avenue & Kresson Road, in that this location was consistently referenced in public feedback as an issue. However, data does not confirm this. The group discussed the intersection is large and the public may have a general sense of intimidation to cross as a pedestrian due to its size. Andrew mentioned that it was reconstruction about 10 to 15 years ago. Natalie suggested adding turning splitter islands to take up some asphalt.
- Kevin questions what funding sources are available to cover the additional cost of adding these features.
- Denise mentioned the NJDOT Bikeways Programs and Dan mentioned the DVRPC CMAQ funding as potential sources.

Denise explained that the next steps of the project include:

- Public Meeting (end of April)

Denise indicated that once these meetings are complete a final plan will be prepared summarizing the process, findings, and recommendations of the work. It is anticipated that Cherry Hill Township will adopt the plan as part of their Master Plan.

The meeting concluded in approximately 2 hours.

Meeting attendees included:

Natalie Barney	Cherry Hill Township – Community Development	nbarney@chtownship.com
Steven Musilli	Cherry Hill Township – Public Works	smusilli@chtownship.com
Andrew Levecchia	Camden County – Pubic Works/Planning	andrewl@camdencounty.com
Kevin Becica	Camden County – Public Works	kbecica@camdencounty.com
Dan Nemiroff	DVRPC	dnemiroff@dvrpc.org
Denise Chaplick	Michael Baker Jr., Inc.	Denise.chaplick@mbakercorp.com

Appendix C

NJDOT Management System Data

Management System Data

Management System Data was requested from the New Jersey Department of Transportation (NJDOT) for state routes NJ 38, NJ 41, NJ 70, and NJ 154 within Cherry Hill Township.

Congestion Management System

The Congestion Management System (CMS) analyzes sections of roadways on the State Highway System based on the following factors: Average Daily Traffic (ADT), the number of travel lanes and volume/capacity ratio. The CMS then ranks the sections of roadways from high to low relative to congestion. The following summarizes the congestion of the state roadways in Cherry Hill.

NJ 70 (MP 0.66 - 7.34)

From	To	Distance in Miles	Priority Rating	Congestion
Township Border (MP 0.66)	West of Mercer Street (MP 2.34)	1.68	Medium	Very Congested
West of Mercer Street (MP 2.34)	Interstate 295 (MP 5.08)	2.74	High	Severely Congested
Interstate 295 (MP 5.08)	Astoria Boulevard (MP 5.40)	0.32	Medium	Very Congested
Astoria Boulevard (MP 5.40)	Greentree Road (MP 5.74)	0.34	Low	Moderately Congested
Greentree Road (MP 5.74)	East of Springdale Road (MP 6.40)	0.66	Medium	Very Congested
East of Springdale Road (MP 6.40)	Township Border (MP 7.34)	0.94	High	Severely Congested

NJ 41 (MP 9.74 - 13.20)

From	To	Distance in Miles	Priority Rating	Congestion
Township Border (MP 9.27)	Nevada Avenue (MP 11.48)	2.21	Medium	Very Congested
Nevada Avenue (MP 11.48)	Township Border (MP 13.20)	1.72	Low	Moderately Congested

NJ 154 (MP 0.00 - 1.58)

From	To	Distance in Miles	Priority Rating	Congestion
Haddonfield Road (MP 0.00)	Coppers Creek (MP 0.70)	0.70	High	Severely Congested
Coppers Creek (MP 0.70)	Kings Highway (MP 1.58)	0.88	Medium	Very Congested

NJ 38 (MP 1.30 - 4.42)

From	To	Distance in Miles	Priority Rating	Congestion
Township Border (MP 1.30)	Church Road (MP 3.85)	2.55	Medium	Very Congested
Church Road (MP 3.85)	Township Border (MP 4.42)	0.57	High	Severely Congested

Pavement Management System

The Pavement Management System (PMS) evaluates the performance and condition of roadway surfaces on the State Highway System. According to the PMS, Route 70 is anticipated to have a pavement resurfacing in year 2015 from MP 0.0 to MP 8.5 and Route 38 is anticipated to have a pavement resurfacing in year 2014 from MP 0.0 to MP 6.1. According to the PMS for Cherry Hill Township, both Route 41 and Route 154 are ranked #78 and #319 out of 418 respectively.

Drainage Management System

The Drainage Management System (DMS) evaluates and prioritizes drainage problems (sewer inlet blockages, flooding, etc.) on the State Highway System. Route 70 between MP 4.3 and 4.32 has a ranking of 81 in Drainage Management Unit's DMS Ranking List. The remainder of Route 70 within Cherry Hill is not in the DMS Ranking List. Routes 38, 41, and 154 are not ranked in the DMS. Flooding occurred only on Route 38 and Route 70 and the locations are summarized below.

Locations of Flooding on Route 38 and Route 70

Date of Incident	Municipality	Route	Direction	Mile Post	Limits	Lanes Affected	Description
10/28/2008	Cherry Hill Twp	38	E	4.38	Mill Rd		Clogged Storm Drain/Flooding
10/27/2007	Cherry Hill Twp	38	W	4.38	Mill Rd		Flooding
1/2/2007	Cherry Hill Twp	38	S	2.42	Chapel Ave		Clogged Storm Drain/Flooding
10/1/2010	Cherry Hill Twp	70	E&W	7.37	Conestoga Rd	All	Flooding
7/14/2010	Cherry Hill Twp	70	W	3.5	Boundery Ln	Multiple	Flooding
7/13/2010	Cherry Hill Twp	70	E	7.4	Conestoga Rd	All	Flooding
7/13/2010	Cherry Hill Twp	70	E	7.24	Old Marlton Pike	Multiple	Flooding
8/22/2009	Cherry Hill Twp	70		7.37	Conestoga Rd		Flooding
4/20/2009	Cherry Hill Twp	70	W	4.3	Kingston Dr		Flooding
4/3/2009	Cherry Hill Twp	70	W	4.3	Kingston Dr		Flooding
1/7/2009	Cherry Hill Twp	70	W	4.3	Kingston Dr		Flooding
1/7/2009	Cherry Hill Twp	70	W	4.32	Kingston Dr		Flooding
12/19/2008	Cherry Hill Twp	70	E	4.3	Kingston Dr	Multiple	Flooding
1/1/2007	Cherry Hill Twp	70	E&W	4.3	Kingston Dr		Flooding

Appendix D

League of American Bicycle Friendly Scorecard

&

Action Plan

ENGINEERING

○ YES ◉ NO	Does your community have a comprehensive, connected and well-maintained bicycling network?
○ YES ◉ NO	Is bike parking readily available throughout the community?
○ YES ◉ NO	Is there a Complete Streets ordinance or another policy that mandates the accommodation of cyclists on all road projects?

EDUCATION

○ YES ◉ NO	Is there a community-wide Safe routes to School program that includes bicycling education?
○ YES ◉ NO	Are there bicycling education courses available for adults in the community?
○ YES ◉ NO	Does your community educate motorists and cyclists on their rights and responsibilities as road users?

ENCOURAGEMENT

○ YES ◉ NO	Does your community have an up-to-date bicycle map?
○ YES ◉ NO	Does the community celebrate bicycling during national Bike month with community rides, Bike to Work Day or media outreach?
◉ YES ○ NO	Does the community host any major community cycling events or rides?
◉ YES ○ NO	Is there an active bicycle advocacy group in the community?

ENFORCEMENT

◉ YES ○ NO	Do law enforcement officers receive training on the rights and responsibilities of all road users?
○ YES ◉ NO	Does your community have law enforcement or other public safety officers on bikes?
◉ YES ○ NO	Do local ordinances treat bicyclists equitably?

BIKE LEAGUE BLOG
Read our Blog.

JOIN THE LEAGUE
Get great benefits.

CYCLING IN YOUR AREA
Find local resources.

SOCIAL NETWORKING

WANT TO LEARN MORE?
Read our E-Newsletter
GO

EVALUATION

○ YES ◉ NO	Is there a specific plan or program to reduce cyclist/motor vehicle crashes?
◉ YES ○ NO	Does your community have a current comprehensive bicycle plan?
◉ YES ○ NO	Is there a Bicycle advisory Committee that meets regularly?
○ YES ◉ NO	Does your community have a bicycle program manager?

Your score: 6 points.

Score 0-8: Your community probably has some improvements to make before becoming a Bicycle Friendly Community – but keep the momentum going! Call us and we'll tell you more about the strengths (and weaknesses) your scorecard reveals. Download the BFC application and let us help you start implementing an action plan.

Click here for more information on the Bicycle friendly Community program. Questions? Contact us at 202-822-1333 or info@bicyclefriendlycommunity.org. We would love to help you make your community a Bicycle Friendly Community.

League of American Bicyclists, 1612 K Street NW, Suite 510, Washington, DC 20006. 202-822-1333 bikeleague@bikeleague.org

League of American Bicyclists
1612 k street nw suite 800 washington, dc 20006
phone 202-822-1333 fax 202-822-1334
www.bikeleague.org

Action Plan for Bicycle Friendly Communities

We, the undersigned Mayors and municipal elected officials, make decisions every day affecting the health and safety of our residents, the efficient conduct of commerce and delivery of government services, and the long term quality of life in our communities.

Cities across the globe are managing diverse issues such as pollution, congestion, traffic safety, accessibility, social inclusion, and economic growth. Increasing urbanization and sprawl is generating extra demand for quality public spaces and recreation opportunities. A renewed emphasis on security and the costs of dealing with the emerging epidemics of obesity and physical inactivity are stretching limited resources even further.

Solutions to these many challenges are equally diverse and complex. This Charter recognizes one policy initiative that addresses these challenges and contributes to many of the solutions necessary to improve the quality of life in cities: increasing the percentage of trips made by bicycle by making communities more bicycle-friendly.

We recognize that increasing bicycle use can:

Improve the environment by reducing the impact on residents of pollution and noise, limiting greenhouse gases, and improving the quality of public spaces.

Reduce congestion by shifting short trips (the majority of trips in cities) out of cars. This will also make cities more accessible for public transport, walking, essential car travel, emergency services, and deliveries.

Save lives by creating safer conditions for bicyclists and as a direct consequence improve the safety of all other road users. Research shows that increasing the number of bicyclists on the street improves bicycle safety.

Increase opportunities for residents of all ages to participate socially and economically in the community, regardless income or ability. Greater choice of travel modes also increases independence, especially among seniors and children.

Boost the economy by creating a community that is an attractive destination for new residents, tourists and businesses.

Enhance recreational opportunities, especially for children, and further contribute to the quality of life in the community.

Save city funds by increasing the efficient use of public space, reducing the need for costly new road infrastructure, preventing crashes, improving the health of the community, and increasing the use of public transport.

Enhance public safety and security by increasing the number of "eyes on the street" and providing more options for movement in the event of emergencies, natural disasters, and major public events.

Improve the health and well being of the population by promoting routine physical activity.

(Over)

Therefore we, the undersigned Mayors and municipal elected officials, are committed to taking the following steps to improve conditions for bicycling and thus to realizing the significant potential benefits of bicycling in our community. We hereby adopt the following **Action Plan for Bicycle Friendly Communities**:

1. Adopt a target level of bicycle use (e.g. percent of trips) and safety to be achieved within a specific timeframe, and improve data collection necessary to monitor progress.

2. Provide safe and convenient bicycle access to all parts of the community through a signed network of on- and off-street facilities, low-speed streets, and secure parking. Local cyclists should be involved in identifying maintenance needs and ongoing improvements.

3. Establish information programs to promote bicycling for all purposes, and to communicate the many benefits of bicycling to residents and businesses (e.g. with bicycle maps, public relations campaigns, neighborhood rides, a ride with the Mayor)

4. Make the City a model employer by encouraging bicycle use among its employees (e.g. by providing parking, showers and lockers, and establishing a city bicycle fleet).

5. Ensure all city policies, plans, codes, and programs are updated and implemented to take advantage of every opportunity to create a more bicycle-friendly community. Staff in all departments should be offered training to better enable them to complete this task.

6. Educate all road users to share the road and interact safely. Road design and education programs should combine to increase the confidence of bicyclists.

7. Enforce traffic laws to improve the safety and comfort of all road users, with a particular focus on behaviors and attitudes that cause motor vehicle/bicycle crashes.

8. Develop special programs to encourage bicycle use in communities where significant segments of the population do not drive (e.g. through Safe Routes to Schools programs) and where short trips are most common.

9. Promote intermodal travel between public transport and bicycles, e.g. by putting bike racks on buses, improving parking at transit, and improving access to rail and public transport vehicles.

10. Establish a citywide, multi-disciplinary committee for nonmotorized mobility to submit to the Mayor/Council a regular evaluation and action plan for completing the items in this Charter.

"We will promote safe and environmentally friendly cycling and walking by providing safe infrastructure and networks..." World Health Organization Charter on Transport, Environment and Health, 1999.

"The US Conference of Mayors calls on cities and communities to promote increased safe bicycle use for transportation and recreation..." US Conference of Mayors, 2003.

For the City of:

....

Signature Name

Appendix E

Bicycle Compatibility Rating Criteria

Bicycle Compatibility Rating Criteria

Note: all links falling outside the parameters below are to be considered **Least Suitable** regardless of traffic volumes

Traffic: < 1,200 Vehicles/Day

All roads with one-way average daily traffic < 1,200 vehicles per day are considered Above Average unless some categorical exclusion exists (e.g. cycles banned)

Traffic: 1,200-2,000 Vehicles/Day

Posted Speed	Setting		
	Urban (Parking)	Urban (No Parking)	Rural
< 30 MPH	12' Shared	11' Shared	10' Shared
30 - 40 MPH	14' Shared	14' Shared	12' Shared
41 - 50 MPH	15' Shared	15' Shared	Shoulder - 4'
>50 MPH	N/A	Shoulder - 4'	Shoulder - 4'

Traffic: 2,000 - 5,000 Vehicles/Day or 2,001 - 10,000 Vehicles/Day with Truck Ban

Posted Speed	Setting		
	Urban (Parking)	Urban (No Parking)	Rural
< 30 MPH	14' Shared	12' Shared	14' Shared
30 - 40 MPH	14' Shared	14' Shared	Shoulder - 4'
41 - 50 MPH	15' Shared	15' Shared	Shoulder - 4'
>50 MPH	N/A	Shoulder - 6'	Shoulder - 6'

Traffic: 5,000 - 10,000 Vehicles/Day (No Ban on Trucks)

Posted Speed	Setting		
	Urban (Parking)	Urban (No Parking)	Rural
< 30 MPH	14' Shared	12' Shared	14' Shared
30 - 40 MPH	14' Shared	14' Shared	Shoulder - 4'
41 - 50 MPH	15' Shared	15' Shared	Shoulder - 4'
>50 MPH	N/A	Shoulder - 6'	Shoulder - 6'

Traffic: > 10,000 Vehicles/Day

Posted Speed	Setting		
	Urban (Parking)	Urban (No Parking)	Rural
< 30 MPH	14' Shared	14' Shared	14' Shared
30 - 40 MPH	14' Shared	Shoulder - 4'	Shoulder - 4'
41 - 50 MPH	15' Shared	Shoulder - 6'	Shoulder - 6'
>50 MPH	N/A	Shoulder - 6'	Shoulder - 6'

Ratings Key:

	MOST SUITABLE: Most suitable for on-road cycling. A majority of cyclists would find conditions favorable
	MODERATELTY SUITABLE: Moderately suitable for on-road cycling. Cyclists of lesser skill and experience may find conditions unfavorable
	LEAST SUITABLE: Least Suitable for on-road cycling. Cyclist of advanced skill and experience riding in traffic may find conditions unfavorable

Notes:

Roadways with a known cycling ban will be shown separately
Presence of a bicycle lane may substitute for a shoulder of any width, assumes bicycle lane design specifically tailored to the location
A limited visual inventory will be done for QA/QC where data gathering is unnecessary
For all links with curb lane widths in excess of 15' and no shoulder, each 1' in excess of 15' will be considered shoulder (e.g.. 17' lane = 2' shoulder)

Appendix F

FHWA Master Prompt List

Master Prompt List

RSA Matrix

Universal Considerations (For Entire RSA Site)

I. Needs of Pedestrians: Do pedestrian facilities address the needs of all pedestrians?

II. Connectivity and Convenience of Pedestrian Facilities: Are safe, continuous, and convenient paths provided along pedestrian routes throughout the study area?

III. Traffic: Are design, posted, and operating traffic speeds compatible with pedestrian safety?

IV. Behavior: Do pedestrians or motorists regularly misuse or ignore pedestrian facilities?

V. Construction: Have the effects of construction on all pedestrians been addressed adequately?

VI. School Presence: Is the safety of children in school zones adequately considered?

Topic	Subtopic	RSA Zones			
		A. Streets	B. Street Crossings	C. Parking Areas/Adjacent Developments	D. Transit Areas
Pedestrian Facilities	1. Presence, Design, and Placement	Sidewalks, paths, ramps, and buffers	Crossing treatments, intersections	Sidewalks and paths	Seating, shelter, waiting/ loading/unloading areas
	2. Quality, Condition, and Obstructions	Sidewalks, paths, ramps, and buffers	Crossing treatments (see prompts in A)	Sidewalks and paths (see prompts in A)	Seating, shelter, waiting/ loading/unloading areas (see prompts in A)
	3. Continuity and Connectivity	Continuity/ Connectivity with other streets and crossings	Continuity/connectivity of crossing to ped network; channelization of peds to appropriate crossing points	Continuity/connectivity of pedestrian facilities through parking lots/ adjacent developments	Connectivity of ped network to transit stops
	4. Lighting	Pedestrian level lighting along the street	Lighting of crossing	Pedestrian level lighting in parking lots/adjacent developments (see prompts in A and B)	Lighting at and near transit stop
	5. Visibility	Visibility of all road users	Visibility of crossing/ waiting pedestrians and oncoming traffic	Visibility of pedestrians and backing/turning vehicles; visibility of pedestrian path	Visibility of pedestrians/ waiting passengers and vehicles/buses
Traffic	6. Access Management	Driveway placement and design along streets	Driveway placement next to intersections	Driveway placement and use in relation to pedestrian paths	n/a*
	7. Traffic Characteristics	Volume and speed of adjacent traffic, conflicting conditions	Volume and speed of traffic approaching crossing, conflicting movements	Traffic volume and speed in parking lots and developments, conflicting conditions	Volume and speed of adjacent traffic and traffic at crossings to bus stops, conflicting conditions
Traffic Control Devices	8. Signs and Pavement Markings	Use and condition of signs, pavement markings, and route indicators	Use and condition of signs, pavement markings, and crossing indicators	Use and condition of signs, pavement markings for travel path and crossing points	Use and condition of transit-related signs and pavement markings
	9. Signals	n/a*	Presence, condition, timing, and phasing of signals	n/a*	See prompts in B

Appendix G

Funding Pedestrian and Bicycle Planning, Programs, and Projects

Alan M. Voorhees Transportation Center

Funding Pedestrian and Bicycle Planning, Programs and Projects: A Compilation of Funding Sources

prepared by:
New Jersey Bicycle and Pedestrian Resource Center

prepared for:
New Jersey Department of Transportation

funded by:
Federal Highway Administration

March 2009

RUTGERS
Edward J. Bloustein School of Planning and Public Policy

Introduction/Acknowledgements

This paper presents a compilation and brief description of sources of funding that have been used, or could be, to fund pedestrian and bicycle improvements in New Jersey. The list is not exhaustive, but there has been an attempt to identify all major funding sources that can be utilized to fund bicycle and pedestrian planning and project development activities, as well as construction. In some cases these funds may also be used to fund programmatic activities. The paper emphasizes those funding sources that have been utilized in, or are unique to, New Jersey.

Much of the material for the original version of this paper was taken directly from a previous draft called, "Funding Pedestrian and Bicycle Planning, Programs and Projects" that was originally taken from both the "Memorandum on Funding Sources for Innovative Local Transportation Projects" prepared by the Tri-State Transportation Campaign, and a paper on bicycle and pedestrian funding within ISTEA prepared by the Bicycle Federation of America. Virtually all of the funding sources that were available for bicycle or pedestrian projects or planning under ISTEA and TEA-21 have been continued under the new federal transportation funding legislation, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Additional material has been taken from the USDOT publication "A Summary: Bicycle and Pedestrian Provisions of the Federal-Aid Program" and from the Alan M. Voorhees Transportation Center "NJ Walks and Bikes!: A Partner's Guide to Who's Who in Walking and Biking in New Jersey."

This paper is a work in progress to be updated as new sources are identified.

Table of Contents

Funding of *Planning and Programmatic Activities*

Federal and/or State Funded Programs

Subregional Studies Program
This program provides federal grants for consultant-based planning, engineering, design, and evaluation of transportation projects. The funding is for studies, not capital improvements or operating costs. Applicants for grants can include state or local governmental entities. Funding can be, and has been, used to fund pedestrian and bicycle planning activities. For example, Monmouth County has received approval to carry out a planning study to address pedestrian needs and opportunities in several major corridors in the County. Additionally, Somerset County has received funding for a traffic calming study of selected locations in the county. Contact your regional MPO for more information. The North Jersey Transportation Planning Authority subregions served are the counties of Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union and Warren as well as Jersey City and Newark. More information is available at www.njtpa.org. The South Jersey Transportation Planning Authority serves Atlantic, Cape May, Cumberland and Salem counties and is available at www.sjtpo.org. The Delaware Valley Regional Planning Commission serves Burlington, Camden, Gloucester and Mercer counties and is available at www.dvrpc.org.

Supportive Task Grants
A portion of funds given to NJTPA to support planning activities are passed through to the sub-regions (counties) to fund staff planning activities. The Subregional Study Program funds studies assessing accessibility and mobility issues. For fiscal year 2008-2009 grants totaled approximately $2.4 million. Somerset County has used this to fund the "Somerset County Regional Center Pedestrian, Bicycle and Greenway Systems Connection Plan", intended to improve pedestrian, bike and greenway connections between community facilities.

Transportation Management Associations (TMAs)
In New Jersey, Transportation Management Associations receive substantial funding assistance through the Department of Transportation. In recent years, these funds have been from federal sources (CMAQ, or STP) although in the past, funding came from state sources. TMAs have considerable latitude in developing annual work programs to implement Travel Demand Management strategies. TMAs have carried out and are encouraged to continue to develop and undertake work program elements involving the promotion of bicycling and walking including development of bicycling suitability maps, promotional efforts aimed at increasing bicycling and walking, effective cycling presentations and other activities. For example, Keep Middlesex Moving sponsors the annual Bike to Work Week.

New Jersey TMA Contact Information

CROSS COUNTY CONNECTION TMA
Greentree Executive Campus
2002D Lincoln Drive West
Marlton, NJ 08053
Ph: 856-596-8228

Fax: 856-983-0388
Email: ccctma@driveless.com
www.driveless.com

GREATER MERCER TMA
15 Roszel Road South, Suite 101
Princeton, NJ 08540
Ph: 609-452-1491
Fax: 609-452-0028
www.gmtma.org

HUDSON TMA
574 Summit Avenue
5th Floor
Jersey City, NJ 07306
Ph: 201-792-2825
Fax: 201-795-0240
Email: info@hudsontma.org
www.hudsontma.org

HART COMMUTER INFORMATION SERVICES
84 Park Avenue, Suite E-104
Flemington, NJ 08822
Ph: 908-788-5553
Fax: 908-788-8583
Email: info@hart-tma.com
www.hart-tma.com

KEEP MIDDLESEX MOVING
100 Bayard Street, 2nd Floor, Suite 202
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MEADOWLINK RIDESHARING
C/O Meadowlands Regional Chamber of Commerce
201 Route 17 N
Rutherford, NJ 07070
Ph: 201-939-4242
Fax: 201-939-2630
Email: info@meadowlink.org
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RIDEWISE OF RARITAN VALLEY
360 Grove Street
Bridgewater. NJ 08807
Ph: 908-704-1011
Email: staff@ridewise.org
www.ridewise.org

TRANSOPTIONS
2 Ridgedale Avenue, Suite 200
Cedar Knolls, NJ 07927
Ph: 973-267-7600
Fax: 973-267-6209
www.transoptions.org

Local Transportation Planning Assistance Program (LTPA)
This program makes professional transportation planning consultants available to municipalities wishing to implement the State's Smart Growth land use and transportation policies. The program is designed to help municipalities and counties with planning initiatives that will preserve the long term integrity of the state transportation system, as well as to enhance community quality of life objectives. Through the transportation and land use planning experts under contract with the Department, municipalities are able to develop or update local circulation elements, conduct downtown traffic calming and parking management studies, develop access management plans, and plan for improved bicycle, pedestrian and local transit services. Potential and designated Transit Villages, Transit Oriented Developments, and municipalities participating in the State's Office of Smart Growth Plan Endorsement Process receive highest priority.

The LTPA program is administered by the Division of Local Aid and Economic Development, Local Transportation Planning Assistance Unit. For more information please contact Helene Rubin, Section Chief, LTPA Unitat 609-530-2869, Helene.Rubin@dot.state.nj.us or Mike Russo, Director, Local Aid and Economic Development
at 609-530-3640, Michael.Russo@dot.state.nj.us.

Bicycle/Pedestrian Planning Assistance
This program provides NJDOT consultant support designed to develop local pedestrian/bicycle circulation plans and facility inventories. The program provides municipalities with consultant expertise in the professional disciplines of transportation and pedestrian/bicycle planning to develop local circulation elements and other transportation related planning initiatives. Potential and designated State Development and Redevelopment Plan Centers, target neighborhoods under the Urban Strategies Initiatives and improving bicycle and pedestrian access and safety locations receive priority. Assistance is to be provided under a partnership arrangement, and applicants must commit staff and or/financial resources to these efforts. All studies undertaken must have a public outreach aspect, including continuing involvement by both the official representatives of the municipality as well as participation by local citizens. This program is administered by the Division of Statewide Planning, Bureau of Commuter Mobility Strategies. For more information please contact Sheree Davis, Manager of Commuter Mobility Strategies via email at sheree.davis@dot.state.nj.us.

Smart Future Planning Grants
The Smart Future Planning grant program, formerly known as Planning Assistance for Counties and Local Agencies, is administered through the Department of Community Affairs, Office of Smart Growth. The program provides money for municipalities, counties and regional organizations to develop plans that lead to smart growth objectives and create investment opportunities for communities. The grants are designed to promote the principles of smart growth by providing funding and technical assistance so that a county or municipality can develop and implement plans that add to the overall value of their communities. The value added comes from coordinating land use, transportation, parks and recreation, environmental protection, farmland preservation, health, schools and other land uses, so that communities can deliver services more efficiently as well as take full advantage of their positions in the region. Hudson County received a Smart Future grant in 2001 to support a Regional Strategic and Open Space Action Plan to focus on construction of the Waterfront Walkway along the Hudson River through seven Hudson County towns. Similar planning projects to improve the pedestrian or bicycle environment could be proposed by other counties or municipalities.
Each year, our grant categories change. For more information, visit http://www.nj.gov/dca/divisions/osg/programs/grants.html; visit SAGE at https://njdcasage.state.nj.us/portal.asp or call 609-292-7156.

Small Cities Development Block Grant
This grant provides funds for economic development, housing rehabilitation, community revitalization, and public facilities designed to benefit people of low and moderate income or to address recent local needs for which no other source of funding is available. For further information, visit http://www.state.nj.us/dca/dcr/sccdbg/index.shtml or contact Richard Z. Osworth at rosworth@dca.state.nj.us or (609) 633-6263.

New Jersey Historic Trust
The Historic Trust provides matching grants, loans and protection for New Jersey's historic resources. Funding assistance is limited to certified nonprofit organizations and units of local or county governments. Funding programs include, the Garden State Historic Preservation Fund, Revolving loan fund and the Cultural Trust Capital Preservation Grant Program. Private owners of historic resources may benefit from the Trust's easement or New Jersey Legacies programs. For more information, visit: http://www.njht.org or telephone (609) 984-0473.

New Jersey Redevelopment Authority (NJRA)
The New Jersey Redevelopment Authority (NJRA) is committed to revitalizing urban New Jersey as demonstrated in Governor Jon S. Corzine's Economic Growth Strategy. This strategy ensures that economic growth benefits all cities and regions of the state creating new economic opportunities for New Jersey citizens.

The mission of the New Jersey Redevelopment Authority (NJRA) supports the Governor's goal to support the resurgence of the state's cities by providing the necessary financial and technical tools to grow and revitalize neighborhoods.

It is NJRA's unique approach to revitalization that allows for the creation of programs and resources that improve the quality of life by creating value in urban communities. NJRA makes

it mark in cities throughout the state by investing in comprehensive redevelopment projects that contribute to an improved quality of life.

The NJRA provides many resources, critical to the redevelopment process in the form of loans, loan guarantees, bond financing, and equity investments. The NJRA's remains flexible and responsive to ensure successful redevelopment throughout New Jersey. To date the NJRA has committed to invest more than $330 million in New Jersey's urban communities, leveraging over $2.9 billion in private sector investments.

Authority Resources

NJRA Pre-Development Fund ("NJRA PDF")
The NJRA PDF is a $2.5 million financing pool that provides funding to cover various predevelopment activities, including feasibility studies, architectural costs, environmental and engineering studies, legal and other related soft costs for development to occur. This program offers the flexibility to structure financing at the early stages of development. The NJRA PDF increases the availability of funding for community economic development projects within the NJRA's eligible municipalities.

New Jersey Urban Site Acquisition Program ("NJUSA")
The NJUSA Program is a $20 million revolving loan fund that facilitates the acquisition, site preparation and redevelopment of properties, which are components of an urban redevelopment plan in NJRA-eligible communities. Acting as a catalyst to jump-start urban revitalization efforts, the NJUSA Program provides for-profit and nonprofit developers and municipalities with a form of bridge financing to acquire title to property and for other acquisition-related costs.

NJRA Bond Program
The NJRA issues bonds at attractive interest rates to a broad range of qualified businesses and nonprofit organizations. The NJRA has the ability to issue both taxable and tax-exempt bonds to stimulate revitalization in New Jersey's urban areas.

New Jersey Redevelopment Investment Fund ("RIF")
The NJRA manages this flexible investment fund that provides debt and equity financing for business and real estate ventures. Through the RIF Program, the NJRA offers direct loans, real estate equity, loan guarantees and other forms of credit enhancements.

NJRA Environmental Equity Program ("E^2P")
The E^2P Program advances brownfields efforts by providing up-front capital to assist with the predevelopment stages of brownfields redevelopment projects. E^2P funds assist with site acquisition, remediation, planning, and demolition costs associated with brownfields redevelopment projects.

Working in Newark's Neighborhoods ("WINN")
WINN is a $10 million revolving loan program focused on redevelopment efforts in the City of Newark's neighborhoods. Funds from WINN can be used for commercial and mixed-use projects directly related to comprehensive redevelopment initiatives including: pre-development,

site preparation, acquisition, demolition, permanent financing, loan guarantees and construction financing.

NJRA Redevelopment Training Institute
The NJRA Redevelopment Training Institute (NJRA RTI) offers intensive intermediate-level training courses that focus on the redevelopment of New Jersey's communities. NJRA RTI is designed to provide nonprofit and for-profit developers, professional consultants, entrepreneurs and city/county staff with a body of knowledge of the redevelopment and real estate development process. The goal of NJRA RTI is to provide classroom instruction outlining the nuances of the redevelopment planning process in New Jersey, to focus on the real estate development process and to unlock the key to understanding real estate finance.

Contact: New Jersey Redevelopment Authority
150 West State Street, Second Floor
P.O. Box 790
Trenton, NJ 08625
Phone: 609-292-3739
Fax: 609-292-6070
Web site: www.njra.us
E-mail: njra@njra.state.nj.us

Freshwater Wetlands Mitigation Council
The Freshwater Wetlands Mitigation Council's role in the state's wetland mitigation program is to serve as a repository for land donations and monetary contribution collected as a result of freshwater wetlands/state open water impacts that cannot be mitigated for on-site, off-site, or at a wetland mitigation bank. The Council also reviews and approves freshwater wetland mitigation banks. Furthermore, the Council is responsible for the management and disbursement of dollars from the Wetland Mitigation Fund to finance mitigation projects. With those funds, the council has the power to purchase land to provide areas for enhancement or restoration of degraded freshwater wetlands, to engage in the enhancement or restoration of degraded freshwater wetlands and transition areas determined to be of critical importance in protecting freshwater wetlands. For more information, contact the council at (609)777-0454 or Jill.Aspinwall@dep.state.nj.us or visit www.nj.gov/dep/landuse/fww/mitigate/mcouncil.html.

Other sources of funding

Bicycle and pedestrian planning activities and programs can and have been funded through local funds budgeted through county and municipal budgets.

Funding of *Projects*

Federal Funding Under SAFETEA-LU

All the major funding programs under SAFETEA-LU include bicycle and pedestrian facilities and programs as eligible activities.

Division of Local Aid and Economic Development
The Division of Local Aid and Economic Development oversees the development and authorization of funds in the Capital Program, Statewide Transportation Improvement Program, and Study and Development Program. The division also manages problem statements for NJDOT. Staff members work with county and municipal government officials to improve the efficiency and effectiveness of the state's transportation system. The SAFETEA-LU legislation has provided funding assistance to local governments for roads, bridges, and other transportation projects. For more information, telephone (609) 530-3640 or visit http://www.state.nj.us/transportation/business/localaid/funding.shtm.

National Highway System (NHS)
The NHS is comprised of the 42,000-mile Interstate system and another 113,000 miles of roads identified by the states based on their importance to the national and regional economy, defense and mobility. NHS funding for projects on NHS roadways can be used for bicycle and pedestrian improvements on NHS systems highways, or on land adjacent to any NHS system highway, including interstate highways. This includes incidental improvements within larger projects which enable bicycle compatibility such as paved shoulders and bicycle safe drainage grates, designated bicycle facilities such as bikeways, signed routes, bike lanes and paths, and pedestrian accommodations such as sidewalks, signals, overpasses and crosswalks. It also includes funding of independent bicycle and pedestrian projects (projects that are initiated primarily to benefit bicycle and pedestrian travel) along or in the vicinity of NHS roadways. Projects could include shoulder paving, bicycle safe drainage grates, construction of sidewalks or bikeways, installation of pedestrian signals, crosswalks or overpasses.

Surface Transportation Program (STP) Funds
The program is broadly defined and gives states flexibility to invest in a wide variety of transportation activities. Bicycle and pedestrian facilities and walkways are specifically listed as eligible activities under this program. As with NHS, pedestrian and bicycle improvements may be incidental improvements within larger projects which establish bicycle compatibility or designated bicycle and pedestrian accommodations. The funds can also be used for independent bicycle and pedestrian projects along or in the vicinity of roadways. Projects could include shoulder paving, bicycle safe drainage grates, construction of sidewalks or bikeways, installation of pedestrian signals, crosswalks or overpasses. Under SAFETEA-LU, it is specified that these funds may be used for the modification of sidewalks to comply with the Americans with Disabilities Act.

It should be noted that STP funds may be used for non-construction projects (such as maps, brochures and public service announcements) related to safe bicycle use and walking. These

funds are administered partially through NJDOT and partially through the state's Metropolitan Planning Organizations (MPOs).

STP Resources

Local Scoping and Local Lead Projects
The Local Scoping program (in the MPOs) provides a set aside of federal (STP) funds directly to the sub regions for the advancement of project proposals through the NEPA process, ultimately making that project eligible for inclusion in the Statewide Transportation Improvement Program, STIP (as a Local Lead project). The Local Lead Program provides funding to move projects from final design to construction. Local Scoping and Lead projects are selected via a competitive selection process.

Municipalities are eligible for the Local Scoping Program but must work through their appropriate sub region. Projects must be part of the National Highway System or be designated a Federal Aid route. A project is considered to be "Scoped" when it has received an approved environmental document, and a scoping Report including any design exceptions and that the preliminary engineering is completed. An important aspect of Scoping is the public involvement process that is required under NEPA. A decision to either advance a project for inclusion in the STIP and an eventual final design, right-of-way purchase and construction, or a decision to discontinue the project will be the result of the Scoping process. If a decision is made to advance the project to construction, funding will be provided either through the Local Lead Program, the New Jersey Department of Transportation, or other sources. A completed Scoping project does not guarantee construction funding.

The Local Lead program is an opportunity for sub regions to apply for federal funding for the advancement of projects through final design, right-of-way, and/or construction. This is a highly competitive program. The MPOs select the projects for inclusion in the Program. Applications are evaluated on a myriad of factors including but not limited to whether the project improves air quality, reduces travel time, reduces congestion, optimizes capacity, creates a community of place, etc.

Each of these sources of funds can be used to advance bicycle or pedestrian projects. As yet, only a handful of Local Scoping/Local Lead projects have directly addressed non-motorized needs as independent projects. Local Scoping/Local Lead projects can also benefit the non-motorized modes if they incorporate, incidentally, features that address bicycle and pedestrian travel needs. Contact your MPO for more information.

Transportation Enhancement Program
Ten percent of annual STP funds are set aside to support non-traditional transportation projects whose objectives support more livable communities, enhance the travel experience, and promote new transportation investment partnerships. The Transportation Enhancement Program links state and federal policy. It focuses on transportation projects designed to preserve and protect environmental and cultural resources, and to promote alternative modes of transportation.

The grants are used to help local governments creatively integrate transportation facilities into their local surroundings. Two of the possible kinds of projects that can be funded with these grants are directly related to pedestrian and bicycle facilities and activities, and several others are indirectly related. The types of projects that can qualify include "provision of facilities for pedestrians and bicycles" and "provision of safety and educational activities for pedestrians and bicyclists." Others include "acquisition of scenic easements and scenic or historic sites," which could be used to enhance the pedestrian experience, "landscaping and other scenic beautification", which might be part of a streetscape project that can be beneficial to pedestrians and "preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian and bicycle trails)." The grants can also be used for other types of projects, which may have a more indirect or secondary benefit for bicyclists and pedestrians.

Several restrictions apply to the grants. Proposals must be for a complete, identifiable, and usable facility or activity. Funds are used for design, property acquisition or construction of projects. The proposed bicycle and pedestrian facilities cannot be solely for recreation; they must be proposed as transportation facilities. The projects must be ready for implementation or construction within two years after the project is selected for a grant. The proposal must also show, through an attached resolution or letter, that the facility or project will be maintained for at least 20 years. The proposal should show that the entire project would be wholly funded, either in combination with other funding sources, or solely through this grant program. Grants from this program can be used as matching funds; projects with supplemental funding will be given higher priority. Work that is performed before the project is formally approved by the Federal Highway Administration (FHWA), such as surveys, preliminary engineering or final design, will not be funded through the program.

Additionally, NJDOT analyzes user impact when evaluating proposals. Especially helpful to communities that are trying to make their environments more pedestrian and bicyclist friendly is the fact that NJDOT takes into consideration how the project would promote the use of non-automotive forms of transportation. Furthermore, the projects' urgency will be taken into consideration, such as a project that will lose other funding sources should it not receive matching funds. Finally, Urban Aid communities, proposals that include letters of community support and projects that have an economic benefit or have value as a cultural resource will also be given additional consideration.

Local agencies and non-profit groups can also apply for grants, but they need to have their projects endorsed by the governing board in the municipality in the form of a resolution. Regional projects must have both municipal and county endorsement. The projects must also conform to the National Environmental Policy Act, the National Historic Preservation Act and the Department of Transportation Act, Section 4(f). The projects must also be designed to meet American Association of State Highway and Transportation Officials (AASHTO) standards and NJDOT's Planning and Design Guidelines for Bicycle and Pedestrian Facilities, the American Disabilities Act, state and local building codes, and other applicable professional design standards. All projects funded through this program are subject to the NJDOT policy requiring that bicycle and

pedestrian traffic should be incorporated into the planning, design, construction and operation of all projects and programs funded or processed by the NJDOT.

These grants are funded through the federal SAFETEA-LU Act. Applications are submitted to the New Jersey Department of Transportation (DOT) and reviewed by several state agencies, including the DOT and the Department of Environmental Protection, as well as the Metropolitan Planning Organizations (MPOs) and representatives from outside the traditional transportation group. This committee reviews the applications and creates a short list to be submitted to the Commissioner of Transportation. Those applications that pass the basic eligibility part of the screening process are sent to the county planning department for the county perspective. Applicants should notify the county planning department about the proposed project. The funds are distributed on a reimbursement basis.

Hazard Elimination Program

Ten percent of the STP program is to be used to fund safety projects. The Local Safety Program provides $3 M ($1 M per MPO) annually to counties and municipalities for the improvement of known safety hazards on local and county roadways. Projects will focus on crash prone locations and may include but not be limited to intersections and other road improvements including installation and replacement of guide rail and pavement markings to enhance pedestrian and vehicular safety. These safety improvements are construction ready and can be delivered in a short period of time. Funding is provided for safety-oriented improvements. Improvements that either directly or indirectly improve conditions for pedestrians can be funded. In New Jersey, the program is administered by the NJDOT Bureau of Traffic Engineering and Safety (in the near future it will be transferred to a new Bureau of Safety Programs). In general, projects are selected on the basis of excessive occurrence of a particular accident type at a given location. This often involves some sort of intersection modification, such as resurfacing with a skid resistant pavement surface. In some cases safety improvements have included the installation of pedestrian signal heads. NJDOT is revising its project selection process. The new process will include specific accident categories for which projects are to be funded. One of these categories will be pedestrian-related accidents.

Sources: "Funding Bicycle and Pedestrian Projects in New Jersey: A guide for Citizens, Cities and Towns" by the Tri-State Transportation Campaign- October 1999;
http://www.fhwa.dot.gov/environment/bikeped/bp-broch.htm

Safe Routes to School
Safe Routes to School (SRTS) is a Federal-Aid program created in SAFETEA-LU and administered by State Departments of Transportation. The program provides funds to the States to substantially improve the ability of primary and middle school students to walk and bicycle to school safely. The purposes of the program are to enable and encourage children to walk and bicycle to school, to make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and to facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity (approximately 2 miles) of primary and middle schools (Grades K-8). The program encompasses a comprehensive approach that includes the five E's: Engineering, Education, Enforcement, Encouragement, and Evaluation. Counties and municipalities, school districts, and non-profit organizations will be eligible to apply. The New Jersey Department of Transportation awarded the first SRTS grants in July 2007 and announced the second round of grant applications in January 2008. For more information, contact Elise Bremer-Nei, New Jersey Safe Routes to School Coordinator, at (609) 530-2765.

Local Aid for Designated Transit Villages
NJDOT and NJ TRANSIT spearhead a multi-agency Smart Growth partnership known as the Transit Village Initiative. The Transit Village Initiative helps to redevelop and revitalize communities around transit facilities to make them an appealing choice for people to live, work and play, thereby reducing reliance on the automobile. The Transit Village Initiative is an excellent model for Smart Growth because it encourages growth in New Jersey where infrastructure and public transit already exist. Aside from Smart Growth community revitalization, two other goals of the Transit Village Initiative are to reduce traffic congestion and improve air quality by increasing transit riders.

Studies have shown that an increase in residential housing options within walking distance of a transit facility, typically a one quarter to one half mile radius, does more to increase transit ridership than any other type of development. Therefore, it is a goal of the Transit Village Initiative to bring more housing, more businesses and more people into communities with transit facilities. Programs include bicycle/pedestrian paths, bike routes signs, bicycle parking, and storage and bicycle/pedestrian safety education program. For more information, visit http://www.state.nj.us/transportation/community/village or contact Monica Etz at (609) 530-5957.

The Congestion Mitigation and Air Quality Improvement Program (CMAQ*)*
Authorized by SAFETEA-LU, The Congestion Mitigation and Air Quality Improvement Program provides funds for surface transportation and other projects that help to reduce congestion and improve air quality. The funds are mainly used to help communities in non-attainment areas and maintenance areas to reduce emissions. Non-attainment areas are those areas designated by the Environmental Protection Agency as not meeting the National Ambient Air Quality Standards (NAAQS). A maintenance area was once a non-attainment area but has now reached NAAQS. The SAFETEA-LU CMAQ program provides more than $8.6 billion in funds to State Departments of Transportation (DOT), Metropolitan Planning Organizations (MPO), and transit agencies to invest in emissions-reducing projects. Pedestrian and Bicycle

Programs are two kinds of many programs that can be funded using CMAQ funds.

Bicycle and pedestrian programs that can be funded under this program can come in one of many forms. Some include creating trails or storage facilities or marketing efforts designed to encourage bike riding and walking as forms of transportation. Education and outreach programs are also eligible for CMAQ funds and could be used to increase public knowledge about the benefits of biking and walking.

The funds are made available through the MPOs and NJDOT to local governments and non-profit organizations, as well as to private organizations as part of a public-private partnership CMAQ funds are only released as reimbursement payments for completed work. CMAQ funds require a state or local match. Usually, this breaks to 80% federal funding, subject to sliding scale, and 20% state or local funding.
Source: "The Congestion Mitigation and Air Quality Improvement Program" by the U.S. Department of Transportation, FHWA, Federal Transit Administration

National Recreational Trails Program (Symms Trails System Act)
An annual sum is apportioned to the states for use in developing trails related projects, many of which benefit bicyclists and pedestrians. Funding is from federal motor fuels taxes collected on sale of fuel for motorized recreational vehicles (ATVs, off road motorcycles, snowmobiles) and is administered through the Federal Highway Administration. In New Jersey, the program, including solicitation of projects and project selection, is administered by the Office of Natural Lands Management in the Division of Parks and Forestry. State, county, and local governments and non-profit organizations are eligible for funds.

In 2008, New Jersey will receive approximately $1,000,000 for trail projects. The deadline for submitting applications for 2008 was December 15, 2007. Next year's application and additional information can be obtained from Larry Miller at 609-984-1339, larry.miller@dep.state.nj.us or http://www.state.nj.us/dep/parksandforests/natural/njtrails.html.

Scenic Byways
This program recognizes roads having outstanding scenic, historic, cultural, natural, recreational, and archaeological qualities and provides for designation of these roads as National Scenic Byways, All-American Roads or America's Byways. Funds for this program can also be used in the development and provision of tourist implementation; and construction of bicycle and pedestrian facilities, interpretive facilities, overlooks and other enhancements for byway travelers. Designation of the scenic byway must be in accordance with a Scenic Byways program developed and adopted by the state.

Benefits of adoption as a Scenic Byway under the Program could include direct funding of projects and preferential treatment in the funding/selection process for other funding sources administered by the Department.

Section 402 Safety Funds
These funds are administered jointly by the National Highway Traffic Safety Administration (NHTSA) and the Federal Highway Administration (FHWA) to be spent on non-construction activities to improve the safety of the traveling public. Pedestrian and bicycle projects are on the

NHTSA priority list. In each state, the program is administered by a designated Highway Safety representative. In New Jersey, the designated representative is the Director of the Division of Highway Traffic Safety in the Department of Law and Public Safety.

Federal Transit Administration Funds
Title 49 U.S.C. (as amended by TEA-21) allows the Urbanized Area Formula Grants, Capital Investment Grants and Loans, and Formula Program for Other than Urbanized Area transit funds to be used for improving bicycle and pedestrian access to transit facilities and vehicles.

SAFETEA-LU continues the Transit Enhancement Activity program with a 1% set-aside of Urbanized Area Formula Grant funds designated for, among other things, pedestrian access and walkways and bicycle access, including storage equipment and installing equipment for transporting bicycles on mass transit vehicles.

Federal Community Development Block Grant (CDBG) Program

Community Development Block Grants (CDBG) are for the use of local communities serving low- to moderate-income people. These grants are funded through the U.S. Department of Housing and Urban Development and administered by the Office of Block Grant Assistance in HUD's Office of Community Planning and Development (CPD). The grants are most often used for projects such as rehabilitating or constructing affordable housing or for job-creating economic development, but they can also be used for projects that would benefit low- and moderate- income pedestrians and bicyclists. Several of the types of projects that can be funded with these grants could be used for pedestrian and bicycle activities. These include acquisition of land for some public purpose, building public improvements or facilities, including sidewalks and recreational facilities, and also the costs associated with administrating or planning these projects.

Not all local governments are eligible to apply for CDBG. The local government must have at least 50,000 residents or be designated a central city of a metropolitan area. Urban counties with at least 200,000 residents may also apply (these local governments are called entitlement communities). The local governments can spend the money themselves or distribute it to local non-profit or for-profit organizations or entities. Additionally, a portion of the funds is distributed to states, which can then distribute the funds as they see fit, including to non-entitlement communities. The most central restriction on the use of CDBG funds is that at least 70% of the money must be used for activities that primarily benefit low- to moderate-income people. In the case of building sidewalks or other pedestrian facilities, this usually means that these funds can only be used in areas where at least 70% of the residents have low to moderate incomes.

Importantly, a community must also prepare a Consolidated Plan in order to be eligible for the funds. This plan contains an action plan, which specifies how the community will use the funds, as well as fulfills the reporting and application requirements for entitlement communities.

For more information on the federal CDBG program contact Kathleen Naymola of HUD at 973-

776-7288 or kathleen_a._naymola@hud.gov. For information on New Jersey's Small Cities CDBG program please contact Richard Osworth at (609) 633-6263 or rosworth@dca.state.nj.us

Fairview, in Bergen County, used $449,000 in CDBG funds to make sidewalk and intersection improvements, including crosswalk striping and Guttenberg, in Hudson County, used $234,770 in CDBG funds for the Bergenline Avenue streetscape project and sidewalk improvements. Several other New Jersey communities have used the funds in a similar fashion.
Sources: http://www.hud.gov/offices/cpd/communitydevelopment/programs/cdbg.cfm *and Pedestrian and Bicycle Resource Project database.*

State Funding

Local Aid for Centers of Place

Currently, the Centers of Place program is designed to assist municipalities that have formally participated in implementation of the New Jersey State Development and Redevelopment Plan (SDRP). The program provides funds to non-traditional transportation improvements that advance municipal growth management objectives. NJDOT notifies eligible municipalities about the application process.

The funding from this program is meant to help communities in New Jersey make non-traditional transportation improvements that are meant to aid in managing growth. The funds can only be used by those communities that have formally participated in implementing the New Jersey State Development and Redevelopment Plan (SDRP). The State Planning Commission designates these communities as Centers (Urban, Regional, Town, or Village Center) as part of this process and the Centers prepare a Strategic Revitalization Plan and Program, approved by the Commissioner of Transportation or enter into an officially recognized Urban Complex. If a project is selected for funding, it must follow certain standards, including the NJDOT Bicycle Compatible Roadways Planning and Design Guidelines and the AASHTO Guide for the Development of New Bicycle Facilities.

The current categories of projects include, pedestrian and bicycle facilities, scenic or historic transportation programs, parking and circulation management, landscaping/beautification of transportation related facilities, and rehabilitation of transportation structures. Eligible pedestrian and bicycling projects include strategies which enable mixed use of a "Main Street" as both a public space and a transportation link, traffic calming improvements, bicycle lockers at transportation facilities, retail complexes, public buildings and public and mid-block connections/paths to ease bicycle and pedestrian circulation

The grants can be used for project-related activities including preliminary or final design (for Urban Aid or Depressed Rural Centers according to the Transportation Trust Fund Authority Act) and/or construction, including construction inspection and material testing according to the Transportation Trust Fund Authority Act. These grants cannot be used for roadway projects that are eligible for funding though NJDOT's State Aid to Counties and Municipalities Program, such as resurfacing, rehabilitation or reconstruction, and signalization. They also cannot be used for right-of-way purchases or for operating costs associated with any project.

Priority is given to projects that meet several criteria, including that the project is transportation related, construction ready, compatible with the State Development and Redevelopment Plan, located in an Urban Coordinating Council target area, has local commitment, has supplemental funds, has community support and is coordinated with other funding sources or programs. Form SA-96 must be submitted to the Division of Local Government Services District Office to apply for funding. Supplemental materials, including photographs and maps, are encouraged.

Municipalities that want to make improvements on county or state roads must have the appropriate resolution or permission to proceed. Applications are evaluated by the Centers of Place Review Committee, which includes representatives from several state offices, including the DOT, the Office of State Planning, the Economic Development Authority and Downtown New Jersey. This committee makes recommendations to the Commissioner of Transportation.

Several New Jersey communities have received funding from NJDOT through this program for local pedestrian- and bicycle-oriented projects. 2007-2008 grant recipients include Palmyra Burrough of Burlington County which received $90,000 for their Palmyra Pathway Project. North Bergen Township of Hudson county received $400,000 for their JFK Boulevard East Streetscape while ten other municipalities received from $150,000 and $400,000 for a myriad of projects.

Contact your local Division of Local Government Services District Office for additional information. Visit http://www.state.nj.us/transportation/business/localaid/office.shtm.
Sources: "New Jersey Department of Transportation Centers of Place Handbook: Procedures for Local Aid for Centers of Place Program, November 1998" and http://www.state.nj.us/transportation/lgs/.

County Aid Program
Currently, County Aid is used for the improvement of public roads and bridges under county jurisdiction. Public transportation, bicycle and pedestrian projects, and other transportation initiatives are eligible for funds.

This program provides funding to counties for transportation projects. These funds are allocated to New Jersey's 21 counties by a formula that takes into account road mileage and population. Annually, each county develops an Annual Transportation Program that identifies all projects to be undertaken and their estimated cost. Projects may include improvements to public roads and bridges under county jurisdiction, public transportation or other transportation related work. Funding can be used for design, ROW, and construction.

Independent pedestrian and bicycle projects can be funded under the County Aid program; however, few independent pedestrian and bicycle projects have been funded.

As state funded projects, all projects funded under the county aid program are subject to the NJDOT policy that requires that all bicycle and pedestrian traffic should be incorporated into the planning, design, construction and operation of all projects and programs funded or processed by the NJDOT. The Department of Transportation will continue efforts to encourage counties to comply with this policy mandate. For more information, visit their website at http://www.state.nj.us/transportation/business/localaid/countyaid.shtm.

Municipal Aid Program
Currently, funds are appropriated by the legislature for municipalities in each county based on a formula contained in legislation. These funds can be used for a variety of transportation projects including bicycle and pedestrian related projects. Additional funds are allotted for municipalities that qualify for Urban Aid.

The Municipal Aid program provides funding to municipalities for transportation projects. Funding is made available for municipalities in each county based on a formula that takes into account municipal road mileage within the county and municipal population. These funds are allocated to individual projects within various municipalities through a competitive process. Funding is allotted to municipalities that qualify for Urban Aid under N.J.S.A. 52:D-178 et seq. All 566 municipalities may apply. Projects may be improvements to public roads and bridges under municipal jurisdiction. Applications are submitted to the Division of Local Aid and Economic Development District Office. The results are presented to a Screening Committee comprised of Municipal Engineers and NJDOT staff, appointed by the Commissioner. The Committee evaluates the projects and makes recommendations to the Commissioner for approval.

NJDOT will pay 75% of the award amount at the time that the award of construction is approved by the NJDOT. The remaining amount is paid upon project completion.

As is the case with the County Aid program, independent pedestrian and bicycle projects can be funded under the Municipal Aid program; however, few if any independent pedestrian and bicycle projects have been funded through this program.

As with county aid projects, all projects funded under the Municipal Aid program are subject to NJDOT policy that requires that all bicycle and pedestrian traffic be incorporated into the planning, design, construction and operation of all projects and programs funded or processed by the NJDOT. More information is located at http://www.state.nj.us/transportation/business/localaid/municaid.shtm.

Discretionary Funding/Local Aid Infrastructure Fund
Currently, subject to funding appropriations, a discretionary fund is established to address emergencies and regional needs throughout the state. Any county or municipality may apply at any time. Under this program, a county or municipality may apply for funding for pedestrian safety and bikeway projects.

The Discretionary Aid program provides funding to address emergency or regional needs throughout the state. Any county or municipality may apply at any time. These projects are approved at the discretion of the Commissioner.

As state funded projects, all projects funded under the discretionary aid program are subject to NJDOT policy which requires that all bicycle and pedestrian traffic should be incorporated into the planning, design, construction and operation of all projects and programs funded or processed by NJDOT.

NJDOT will pay 75% of the award amount at the time of the award of construction with the remaining amount to be paid upon project completion. To gain more information, visit their website at http://www.state.nj.us/transportation/business/localaid/descrfunding.shtm.

Safe Routes to School
This program is funded at $612 million over federal fiscal years 2005-2009 to fund projects that improve safety for school children walking or bicycling to school. New Jersey will receive approximately $15 million for fiscal years 2005-2009. It focuses on projects that create safer walkwats and bikeways, safer street crossings, and improve motorists' awareness of school children. For more information visit their website at www.state.nj.us/transportation/community/srts.

Bikeways Projects
This program provides funds for municipalities and counties for the construction of bicycle projects. These could include roadway improvements, which enable a roadway or street to safely accommodate bicycle traffic, or designated bikeways (signed bike routes, bike lanes or multi-use trails). The solicitation for project applications occurs at the same time as the solicitation for municipal aid projects. Special consideration will be given to bikeways that are physically separated from motorized vehicle traffic by an open space or barrier. 2008 recipients included Bordentown Township in Burlington County for the Joseph Lawrence Park Pedestrian/Bike Path as well as Princeton Township in Mercer County for their Stony Brook Regional Bicycle and Pedestrian Pathway. The program is administered by NJDOT's Division of Local Government Services. For more information, their website is http://www.state.nj.us/transportation/business/localaid/bikewaysf.shtm

Urban Enterprise Zones (UEZ)
Several communities in New Jersey have used Urban Enterprise Zones to fund pedestrian and bicycle facilities. The Urban Enterprise Zone Program (UEZ), enacted by the State Legislature in 1983, is meant to revitalize the State's most distressed urban communities through the creation of private sector jobs and public and private investment in targeted areas within these communities. The UEZ Authority usually designates around 30% of a city as a UEZ. New Jersey has established 32 UEZs covering 37 economically distressed cities.

More information is available at http://www.newjerseycommerce.org/about_uez_program.shtml or by calling (609) 777-0885.

Office of Green Acres
The Green Acres program provides loans and grants to counties, towns and nonprofit land trusts to preserve land and develop parks for recreation and conservation purposes. (In a separate part of the program, Green Acres also directly purchases land for the state to increase the state's ownership of open space). The open space land that is purchased by the local government or nonprofit can be used for outdoor recreation, which is why the program is important for funding pedestrian and bicycle projects. The development of bikeways, trails, and other outdoor recreation is eligible for Green Acres funding.

Currently, the mission of the Office of Green Acres is to achieve, in partnership with others, a system of interconnected open spaces that protect, preserve, and enhance New Jersey's natural environment, which serves the historic, scenic, and recreational needs of the public through use and enjoyment. Green Acres' primary focus is acquiring land that creates linkages between existing protected lands to form open space corridors. These corridors provide linear habitat for wildlife to move through, parkland for recreation, and areas of scenic beauty between towns and urban centers. Recreation needs are as diverse as the people who play. To meet these needs, Green Acres funds different types of parks in a variety of settings. Whether in rural, suburban, or urban areas, parks play an important role in sustaining New Jersey's high quality of life. Increasingly, Green Acres gathers other public and private partners together to assist in buying and managing open space. The Program works with municipal and county governments, nonprofit organizations, and the state Farmland Preservation Program to meet compatible conservation goals. To gather more information, visit http://www.nj.gov/dep/greenacres/ or call Deputy Administrator Gary M. Rice at 609-984-0500.

County or Municipal Capital (Public Works) Funding

County or municipal funding can be used to fund pedestrian improvements including sidewalks, trails, crosswalks signals, traffic calming and other projects on rights of way under county or municipal jurisdiction, by including the project in the municipal (or county) budget, or bonding for it in the same way bonds are used to fund the construction and rehabilitation of roadway improvements for cars. Pedestrian improvements can be fully or partially assessed against the property owners along whose frontage the improvement (most commonly, a sidewalk) is placed. As with other categories of funding, bicycle and pedestrian improvements may be incidental to larger roadway projects, or they can be independent.

Even small amounts of funding from the county or municipality can be very important since they may be used to leverage or show local commitment in applications for other funding sources (e.g., TE, Local Aid For Centers, etc.).

Special Improvement Districts (SIDs)

Another form of municipal funding is through the creation of a local Special Improvement District. The funding is used for infrastructure improvements, including pedestrian improvements within the district. This form of funding can be used to leverage or show local commitment in applications for other funding sources. Impetus for SID usually comes from business and property owners hoping to attract new customers by cleaning up sidewalks, improving parks, etc. Property owners within the District are assessed a special fee to cover the cost of the improvements.

Transportation Development Districts (TDD)

TDDs are joint state/county programs in New Jersey in which transportation improvements within a defined growth area are funded through a combination of public funding and developer

contributions (for new developments) within the district. Independent pedestrian improvements can be included in the infrastructure improvement plan developed through a joint planning process for the district, and funded through the TDD. TDDs must have a plan of development consistent with other land use and development plans. They are a convenient and lawful method by which municipalities and counties can agree together on methods to raise revenue to fund infrastructure and other development related costs.

Developer Provided Facilities

The Residential Site Improvement Standards currently in effect in New Jersey require new residential developments to include sidewalks.

Other municipal and state zoning or access code regulations have been used to require developers to provide both onsite and offsite improvements to benefit bicycle and pedestrian traffic.

Open Space Trust Funds

Many counties have established open space trust funds, which can be used to purchase land for bicycle and pedestrian facilities. For example, Atlantic County used $459,000 from the Atlantic County Open Space Trust Fund to help pay for the Atlantic County Bikeway East. Other counties also have open space trust funds or an open space tax, including Bergen, Burlington, Camden, Cape May, Cumberland, Essex, Gloucester, Hunterdon, Mercer, Middlesex, Morris, Ocean, Passaic, Somerset, Sussex, Union and Warren.

The Bergen County Open Space, Recreation, Farmland and Historic Preservation Trust fund is funded through an annual property tax assessment and is used to preserve land, improve and develop outdoor recreation opportunities, preserve farmland, and improve historic areas. At least thirty percent of the money is distributed to municipalities to support their efforts in these areas. Additional information can be obtained from Mr. Robert Abbatomarco at 201-336-6446, rabbatomarco@co.bergen.nj.us, or Open Space, Recreation, Farmland & Historic Preservation Trust Fund, Bergen County Department of Planning & Economic Development, ONE Bergen County Plaza, Fourth Floor, Hackensack, New Jersey 07601-7000.

The Hunterdon County Open Space, Farmland and Historic Preservation Trust Fund is funded through property taxes and funds the preservation of lands for many purposes, including recreation, conservation, farmland and general open space and historic preservation. The funds can also be distributed to municipalities or charitable organizations for similar preservation purposes. The current fund does not provide for development of any facilities. Additional information about this fund can be obtained at www.co.hunterdon.nj.us/openspachtm, the Planning Board at (908)788-1490 , or Hunterdon County Open Space Trust Fund Program, Route 12 County Complex, Building #1, PO Box 2900, Flemington, New Jersey, 08822-2900.

Many municipal governments also have open space funding programs. Counties and

municipalities with open space taxes can receive more money in matching grants than local governments that do not, as described in the Green Acres section of this document above. Manalapan is one of many townships with an open space tax and an open space element in their comprehensive plan. The open space element lays out the properties that the township hopes to acquire. Part of the open space element includes an "Action Plan" to apply for funds from the Green Acres program to buy their proposed open space lands.

Some private organizations also have established open space trust funds, including the Passaic River Coalition, which has established a Land Trust. Among other activities, the Land Trust acquires land for recreation.
Source: Pedestrian Bicycle Resource Project database; municipal and county websites; Passaic River Coalition website.

Other Funding Sources

Bicycles Belong
The Bicycles Belong Coalition is sponsored by member companies of the American bicycle industry. The Coalition's stated goal is to put more people on bikes more often through the implementation of TEA-21. One of the Coalition's primary activities is the funding of local bicycle advocacy organizations that are trying to ensure that TEA-21-funded bicycle or trail facilities get built. They concentrate efforts in 4 areas: federal policy, national partnerships, community grants and promoting bicycling. Grants are awarded for up to $10,000 on a rolling basis. Between 2002 and 2005, bicycles belong invested $1 million in a lobbying effort that involved several national bicycle advocacy groups. Information about the Coalition, including grant applications and related information, is on the web at www.bikesbelong.org. They can also be contacted at:

Bikes Belong
1368 Beacon Street, Suite 102
Brookline, MA 02446-2800
617-734-2800 Fax: 617-734-2810

Local School Districts
Local communities with bicycle/pedestrian plans that effect schools or will serve schools can approach local school districts or private schools about funding those projects. The Phillipsburg Board of Education in Lopatcong Township, Warren County, has pledged to build trails near a proposed new high school, which would be built adjacent to a Lopatcong Township recreation center. As part of the discussions with the Board of Education concerning the new high school, the Board agreed to construct part of a proposed bikeway on the Board of Education property. Another example is in Hightstown, in Mercer County. The borough, the county, the state and the Peddie School are sharing the costs of engineering and constructing pedestrian improvements to a bridge that, in part, connects faculty housing to the school.

Appendix H

Proposed Bicycle Facility Cost Estimates

KING HIGHWAY (Park to Brace)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	16800	8400
R3-17 24"x18" (Bike Lane Sign)	U	90	6	540
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	2	80
Bicycle Pavement Marking	U	100	18	1800
Arrow Pavement Marking	U	5	18	90
INCIDENTAL ITEMS TOTAL		=		10910

Church Road (Ivins to Haddonfield)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	4800	2400
R3-17 24"x18" (Bike Lane Sign)	U	90	4	360
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	12	1200
Arrow Pavement Marking	U	5	12	60
INCIDENTAL ITEMS TOTAL		=		4020

Church Road (Haddonfield to Lenape)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	4050	2025
R3-17 24"x18" (Bike Lane Sign)	U	90	2	180
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	8	800
Arrow Pavement Marking	U	5	8	40
INCIDENTAL ITEMS TOTAL		=		3045

Church Road (Lenape to Roosevelt)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	0	0
W11-1 24"x18" (Share the Road)	U	90	14	1260
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	0	0
Arrow Pavement Marking	U	5	0	0
Shared Lane Marking	U	155	22	3410
INCIDENTAL ITEMS TOTAL		=		4670

Church Road (Roosevelt to Kings Hwy)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	6300	3150
R3-17 24"x18" (Bike Lane Sign)	U	90	4	360
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	8	800
Arrow Pavement Marking	U	5	8	40
Shared Lane Marking	U	155	22	3410
INCIDENTAL ITEMS TOTAL		=		7760

Church Road (Kings Hwy to municipal boarder)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	18400	9200
4" Epoxy Resin - Gore Strips (x6)	LF	0.45	55200	24840
R3-17 24"x18" (Bike Lane Sign)	U	90	8	720
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	12	1200
Arrow Pavement Marking	U	5	12	60
Shared Lane Marking	U	155	22	3410
INCIDENTAL ITEMS TOTAL		=		39430

CHURCH ROAD	**$58,925**

Chapel Ave (Wisteria to Haddonfield)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	0	0
W11-1 24"x18" (Share the Road)	U	90	12	1080
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	0	0
Arrow Pavement Marking	U	5	0	0
Shared Lane Marking	U	155	22	3410
INCIDENTAL ITEMS TOTAL		=		4490

Chapel Ave (Haddonfield to Cherry Hill Blvd.)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	7500	3750
R3-17 24"x18" (Bike Lane Sign)	U	90	5	450
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	8	800
Arrow Pavement Marking	U	5	8	40
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		5040

Chapel Ave (Cherry Hill Blvd. to Marlboro)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	7600	3800
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	47600	21420
R3-17 24"x18" (Bike Lane Sign)	U	90	4	360
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	8	800
Arrow Pavement Marking	U	5	8	40
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		26420

Chapel Ave (Marlboro to Hospital)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	5600	2800
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	22400	10080
R3-17 24"x18" (Bike Lane Sign)	U	90	2	180
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	4	400
Arrow Pavement Marking	U	5	4	20
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		13480

Chapel Ave (Hospital to Knowlwood)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	0	0
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	2	180
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	0	0
Arrow Pavement Marking	U	5	0	0
Shared Lane Marking	U	155	6	930
INCIDENTAL ITEMS TOTAL		=		1110

Chapel Ave (Knowlwood to Kings Hwy)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	14800	7400
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	4	360
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	12	1200
Arrow Pavement Marking	U	5	12	60
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		9020

CHAPEL AVENUE	**$59,560**

N. Park Drive (Cuthbert to Railroad)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	8800	4400
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	4	360
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	0	0
Arrow Pavement Marking	U	5	0	0
Shared Lane Marking	U	155	8	1240
INCIDENTAL ITEMS TOTAL		=		6000

N. Park Drive (Railroad to Haddonfield)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	4500	2250
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	2	180
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	0	0
Arrow Pavement Marking	U	5	0	0
Shared Lane Marking	U	155	8	1240
INCIDENTAL ITEMS TOTAL		=		3670

N. Park Drive (Haddonfield to Kings Hwy.)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	0	0
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	6	540
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	0	0
Arrow Pavement Marking	U	5	0	0
Shared Lane Marking	U	155	16	2480
INCIDENTAL ITEMS TOTAL		=		3020

N. Park Drive (Kings Hwy. to Caldwell)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	11712	5856
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	2	180
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	6	600
Arrow Pavement Marking	U	5	6	30
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		6666

PARK BLVD	**$19,356**

Kresson (Berlin to Old Towne)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	19600	9800
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	6	540
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	8	800
Arrow Pavement Marking	U	5	8	40
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		11180

Kresson (Old Towne to Covered Bridge)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	3200	1600
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	0	0
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	0	0
Arrow Pavement Marking	U	5	0	0
Shared Lane Marking	U	155	2	310
INCIDENTAL ITEMS TOTAL		=		1910

Kresson (Covered Bridge to Bunker Hill)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	8400	4200
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	2	180
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	6	600
Arrow Pavement Marking	U	5	6	30
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		5010

Kresson (Bunker Hill to Heartwood)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	11712	5856
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	2	180
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	6	600
Arrow Pavement Marking	U	5	6	30
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		6666

Kresson (Heartwood to Springdale)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	9000	4500
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	4	360
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	10	1000
Arrow Pavement Marking	U	5	10	50
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		5910

Kresson (Springdale to Cooper Run)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	11680	5840
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	2	180
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	8	800
Arrow Pavement Marking	U	5	8	40
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		6860

Kresson (Cooper Run to Evesham)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	12500	6250
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	7	630
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	12	1200
Arrow Pavement Marking	U	5	12	60
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		8140

KRESSON ROAD	**$45,676**

Springdale (Spring to Morris)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	8400	4200
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	4	360
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	4	400
Arrow Pavement Marking	U	5	4	20
Shared Lane Marking	U	155	4	620
INCIDENTAL ITEMS TOTAL		=		5600

Springdale (Morris to Queen Anne)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	10800	5400
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	2	180
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	6	600
Arrow Pavement Marking	U	5	6	30
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		6210

Springdale (Queen Anne to Lark)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	5600	2800
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	0	0
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	4	400
Arrow Pavement Marking	U	5	4	20
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		3220

Springdale (Lark to Kresson)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	15000	7500
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	4	360
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	8	800
Arrow Pavement Marking	U	5	8	40
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		8700

Springdale (Kresson to Greentree)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	34000	17000
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	6	540
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	0	0
Arrow Pavement Marking	U	5	0	0
Shared Lane Marking	U	155	20	3100
INCIDENTAL ITEMS TOTAL		=		20640

Springdale (Greentree to Olney)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	21600	10800
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	4	360
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	10	1000
Arrow Pavement Marking	U	5	10	50
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		12210

SPRINGDALE ROAD	**$56,580**

Cropwell (Evesham to Kresson)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	0	0
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	4	360
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	8	800
Arrow Pavement Marking	U	5	8	40
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		1200

Cropwell (Kresson to Branch)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	0	0
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	1	90
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	6	600
Arrow Pavement Marking	U	5	6	30
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		720

Cropwell (Branch to Rabbit Run)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	6000	3000
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	2	180
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	4	400
Arrow Pavement Marking	U	5	4	20
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		3600

Cropwell (Rabbit Run to Guilford)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	0	0
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	4	360
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	10	1000
Arrow Pavement Marking	U	5	10	50
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		1410

CROPWELL ROAD	**$6,930**

Astor (Cranford to Morris)				
Item	Units	Cost	x Quantity	Amount
Shared Lane Marking	U	155	4	620
INCIDENTAL ITEMS TOTAL		=		620

Cranford (Berlin to Astor)				
Item	Units	Cost	x Quantity	Amount
Shared Lane Marking	U	155	7	1085
INCIDENTAL ITEMS TOTAL		=		1085

Browing (S. Woodleigh to Kresson)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	0	0
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	6	540
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	12	1200
Arrow Pavement Marking	U	5	12	60
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		1800

Pearl Croft (Kresson to Bortons Mill)				
Item	Units	Cost	x Quantity	Amount
W11-1 24"x18" (Share the Road)	U	90	0	0
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		0

Bortons Mill (Pearl Croft to Caldwell)				
Item	Units	Cost	x Quantity	Amount
W11-1 24"x18" (Share the Road)	U	90	4	360
Shared Lane Marking	U	155	12	1860
INCIDENTAL ITEMS TOTAL		=		1860

Caldwell (Bortons Mill to Park)				
Item	Units	Cost	x Quantity	Amount
Shared Use Path	LF	200	1000	200000
INCIDENTAL ITEMS TOTAL		=		200000

Caldwell (Park to Kings Hwy.)				
Item	Units	Cost	x Quantity	Amount
W11-1 24"x18" (Share the Road)	U	90	2	180
Shared Lane Marking	U	155	10	1550
INCIDENTAL ITEMS TOTAL		=		1550

Covered Bridge (Kresson to Tarrington)				
Item	Units	Cost	x Quantity	Amount
Bike Lane Stripes, Long Life Epoxy	LF	0.5	3850	1925
4" Epoxy Resin - Gore Strips (x28)	LF	0.45	0	0
R3-17 24"x18" (Bike Lane Sign)	U	90	6	540
R3-17aP/bP 24"x8" (Bike Lane plaques)	U	40	0	0
Bicycle Pavement Marking	U	100	8	800
Arrow Pavement Marking	U	5	8	40
Shared Lane Marking	U	155	0	0
INCIDENTAL ITEMS TOTAL		=		3305

Covered Bridge (Tarrington to Marlton)				
Item	Units	Cost	x Quantity	Amount
W11-1 24"x18" (Share the Road)	U	90	6	540
Shared Lane Marking	U	155	24	3720
INCIDENTAL ITEMS TOTAL		=		3720

Morris (Berlin to Springdale)				
Item	Units	Cost	x Quantity	Amount
W11-1 24"x18" (Share the Road)	U	90	8	720
Shared Lane Marking	U	155	30	4650
INCIDENTAL ITEMS TOTAL		=		4650

Heartwood (Country Club to Kresson)				
Item	Units	Cost	x Quantity	Amount
W11-1 24"x18" (Share the Road)	U	90	8	720
Shared Lane Marking	U	155	24	3720
INCIDENTAL ITEMS TOTAL		=		3720

Brick (Evesham to Marlowe)				
Item	Units	Cost	x Quantity	Amount
W11-1 24"x18" (Share the Road)	U	90	6	540
Shared Lane Marking	U	155	16	2480
INCIDENTAL ITEMS TOTAL		=		2480

Appendix I

Planning and Policy Models for Pedestrian and Bicycle Friendly Communities in New York State

Planning and Policy Models

For Pedestrian and Bicycle Friendly Communities in New York State

iHi
UNIVERSITY AT ALBANY
State University of New York

September 2007

A Message for Healthy Communities

Walking and bicycling are important forms of transportation and recreation throughout New York State. Unfortunately, the rate at which people are walking or biking to work has decreased in many communities since 1990. During this same period the number of people who are obese in New York increased from 9.8% in 1990 to over 20% in 2002 according to the *Centers for Disease Control* (CDC). These two trends are related, and creating a better built environment for walking and bicycling is a key element to rectifying this critical issue. As the costs of health care, energy, and transportation continue to escalate, walking and bicycling continue to be important solutions which require the support of policy, planning, and infrastructure. We can create quality communities if policy makers and planners work together in changing policy and transportation planning techniques that encourage people to walk and bicycle. This document is intended to be a guide for planners, policy makers, non-profit organizations, and municipal board members to make well informed decisions about adopting policies that support healthy infrastructure solutions for communities in New York State.

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Table of Contents

This document was developed by iHi co-directors Jeff Olson and Catherine Lawson, Ph.D. and graduate student staff in the University at Albany's Geography and Planning program. Special thanks are due to Peter Manning of the New York Department of State for his guidance, and to the New York Planning Federation for their support.

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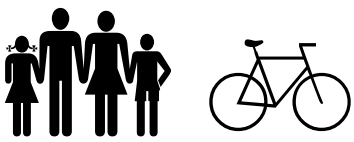


Introduction

This document has been developed to help communities in New York State improve conditions for walking and bicycling. Over the past decade bicyclist and pedestrian policies have changed significantly in the United States. With the passage of the *Intermodal Surface Transportation Efficiency Act* (ISTEA) in 1991, the *Transportation Equity Act* (TEA-21) in 1998, and the *Safe, Accountable, Flexible, Efficient Transportation Equity Act* (SAFETEA) in 2005, a national trend has emerged for encouraging improved systems of non-motorized transportation. Many communities, agencies, and organizations throughout the U.S. have established pedestrian and bicycle programs. The most successful programs have developed plans and policies that support improved mobility, health and safety for pedestrians and bicyclists. The best of these policies support both 'stand alone' projects as well as integrating bicycling and walking into engineering, education, encouragement, and enforcement efforts. This document provides background information and potential policy models for consideration by agencies and communities throughout New York State. These models are based on policies adopted by similar organizations in New York State and across the U.S.

Agencies and Organizations

Since successful pedestrian and bicyclist programs involve education, engineering and enforcement efforts, a diverse cross section of agencies and organizations can be responsible for related policies. Throughout New York State, these organizations include, but are not limited to, transportation agencies, the public health community, school districts, county and municipal governments. For the purposes of this document, the following have been identified as primary policy-setting organizations:

- Counties
- Villages
- Towns
- Cities
- School Boards
- Agencies

Policy Concepts and Categories

A number of policy solutions can be developed and implemented at the regional, county and local levels. These solutions can be grouped in various ways. For the purposes of this document they are summarized below as policy types under the headings *General Policies*, *Facility Policies* and *Issue-Based Policies*:

General Policies

- Resolution or Proclamation
- Zoning Laws
- Comprehensive Plan
- Agency Policy
- Subdivision Regulations
- Site Plan Review
- Agency Policy

Facility-Based Policies

- Sidewalks and Crossings
- School Zones
- On-Street Bikeways
- Greenways and Trails
- Operations and Maintenance
- Snow Removal
- Bicycle Parking
- Pedestrian / ADA Compliance

Issue-Based Policies

- Health and Fitness
- Energy Conservation
- Environment and Air Quality
- Transportation / Mobility
- Safety

Issues that create momentum for a community to adopt policies can vary widely. In some cases, a tragedy has occurred and forces a new policy to be adopted. In other cases a communities' concern for the environment or public health may cause decision makers to enact new public policies. The policy categories often overlap and can be complimentary to one another. Samples or 'models' of a variety of key policy concepts for walking and bicycling are provided in the following sections of this document based on National, State and local best practices.

National Policy Models

USDOT, AASHTO, and "Complete Streets"

At the national level, the US Department of Transportation (USDOT) has developed a model policy framework. This policy is based on the principle that bicyclists and pedestrians have the right to move along or across all roadways unless specifically prohibited from doing so. This policy has served as guidance for State DOT's and public works agencies throughout the U.S. It has recently evolved into the concept of "Complete Streets" – the idea that streets are only complete when they address the needs of all modes of transportation, including walking and bicycling. The USDOT guidance, issued by the Federal Highway Administration in 1991, is provided below:

I. USDOT: FHWA Bicycle and Pedestrian Program Guidance *(November 2001)*

> *"The challenge for transportation planners, highway engineers and bicycle and pedestrian user groups, therefore, is to balance their competing interest in a limited amount of right-of-way, and to develop a transportation infrastructure that provides access for all, a real choice of modes, and safety in equal measure for each mode of travel."*

Four Key Points

- Congress clearly intends for bicyclists and pedestrians to have safe, convenient access to the transportation system and sees every transportation improvement as an opportunity to enhance the safety and convenience of the two modes.
- "Due consideration" of bicycle and pedestrian needs should include, at a minimum, a presumption that bicyclists and pedestrians will be accommodated in the design of new and improved transportation facilities.
- To varying extents, bicyclists and pedestrians will be present on all highways and transportation facilities where they are permitted and it is clearly the intent of TEA-21 that all new and improved transportation facilities be planned, designed and constructed with this fact in mind.
- The decision not to accommodate [bicyclists and pedestrians] should be the exception rather than the rule. There must be exceptional circumstances for denying bicycle and pedestrian access either by prohibition or by designing highways that are incompatible with safe, convenient walking and bicycling.

Policy Statement

Bicycle and pedestrian ways shall be established in new construction and reconstruction projects in all urbanized areas unless one or more of three conditions are met:

- bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, a greater effort may be necessary to accommodate bicyclists and pedestrians elsewhere within the right of way or within the same transportation corridor.
- the cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. *Excessively disproportionate* is defined as exceeding 20% of the cost of the larger transportation project.
- where sparsity of population or other factors indicate an absence of need.

II. AASHTO Guidelines

The *American Association of Highway and Transportation Officials* (AASHTO) provides guidelines for State Departments of Transportation which are widely accepted and used throughout the U.S. The AASHTO 1999 *Guide for the Development of Bicycle Facilities* includes the following policy guidance:

> "*All highways, except those where cyclists are legally prohibited, should be designed and constructed under the assumption that they will be used by cyclists. Therefore, bicycles should be considered in all phases of transportation planning, new roadway design, roadway reconstruction, and capacity improvements and highway projects*."

AASHTO also produces national Pedestrian Design Guidelines, and their *Policy on the Geometric Design of Highways and Streets*, [a.k.a. *The Green Book*] is considered the 'bible' of the highway design profession.

The Green Book contains the following statement about including pedestrians in the design of highways:

> *"Pedestrians are a part of every roadway environment and attention must be paid to their presence in urban and rural areas…Because of the demands of vehicular traffic in congested urban areas, it is often extremely difficult to make adequate provisions for pedestrians. Yet this must be done, because pedestrians are the lifeblood of our urban areas, especially in the downtown and other retail shopping areas."*

III. Complete Streets

The idea of complete streets is based on the premise that quality transportation facilities ***"****are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across a complete street."* A national coalition of organizations supporting this policy concept has formed to encourage adoption of Complete Streets policies.

Guidelines for New York State Communities

Based on guidance provided by *USDOT* and *AASHTO* at the national level, it is possible to develop a series of policy tools that can be adopted at the appropriate level of governance in New York State. New York codes and policies related to land use and public works infrastructure are generally based on a 'home rule' approach. Therefore, it is essential to provide a flexible approach that can be adopted by a variety of different agencies and governments.

One key issue that cuts across all municipal boundaries is compliance with the Americans with Disabilities Act (ADA), which civil rights legislation, not an issue of local policy. An overview of the ADA as it applies to pedestrians is provided in the appendix of this document. An additional issue that applies to a large majority of upstate New York roadways is providing paved shoulders. Paved shoulders can have benefits to all modes of travel, and are particularly an asset on state and county roads. An overview of the benefits of paved shoulders is also provided in the appendix.

The principal tools for community planning in New York are the (1) **Comprehensive Plan**, (2) **Subdivision Regulations**, (3) **Zoning Laws and Site Plan Review**. The following sections identify models for integrating the 'complete streets' concepts into the most commonly used community policy tools. These tools are presented in sequence from the most broadly applied policy documents (Comprehensive Plans) through to detailed codes and ordinances for sidewalks and bicycle parking. Each proposed model is provided to facilitate adoption by the appropriate entity at the county, city or municipal level. It should be noted that most communities will not necessarily adopt all of these policies, but will more likely be able to adopt and/or modify the tools that are best suited to their needs.

This road shoulder was widened, providing an improved facility for pedestrians, bicyclists and motorists.

1. Comprehensive Plan

A comprehensive plan typically outlines a community's characteristics, articulates their visions, goals, and actions for their future. The comprehensive plan supports the use of other land use tools including *Zoning Laws* and the *Site Plan Review Process*. Additionally, a thorough comprehensive plan addresses all aspects of a community including transportation planning, environmental planning, economic development, parks and recreation, open space, storm water management, housing, as well as many other issues. Public involvement is an important element of the planning process. It is important that many comprehensive plans begin with a general statement that the purpose of the plan is to ensure the safety, health, and quality of life of a community. Walking, bicycling and physical activity are central to achieving this purpose, and therefore are important to include in local plans and policies.

The New York Planning Federation lists the following primary elements of a comprehensive plan for communities in New York State:

- General statements of goals, objectives, principles, and policies
- Consideration of regional needs and the official plans of other government units
- Existing and proposed location and intensity of land uses
- Existing and proposed educational, historical, cultural, agricultural, recreational, coastal and natural resources
- Demographic and socio-economic trends and projections
- Existing or proposed location of transportation facilities, public and private utilities and infrastructure
- Housing resources and future housing needs, including affordable housing
- Measures, programs, devices, and instruments intended to implement the goals and objectives of the various topics within the comprehensive plan

Comprehensive planning is supported by the following New York State statutes: Town Law § 272-a, General City Law § 28-a, and Village Law § 7-722.

Within the comprehensive planning process, special attention and planning should go into the goals and objectives of transportation planning, especially for bicycle and pedestrian transportation planning. Some bicycle and pedestrian friendly goals that could be stated in the Comprehensive Plan are:

(1) Transportation planning and programs will address a balanced program including the Four E's: Engineering, Education, Enforcement, and Encouragement.

(2) Infrastructure investments will be based on the concept of creating 'complete streets' that integrate the needs of all modes of travel, including walking, bicycling, transit and motor vehicles.

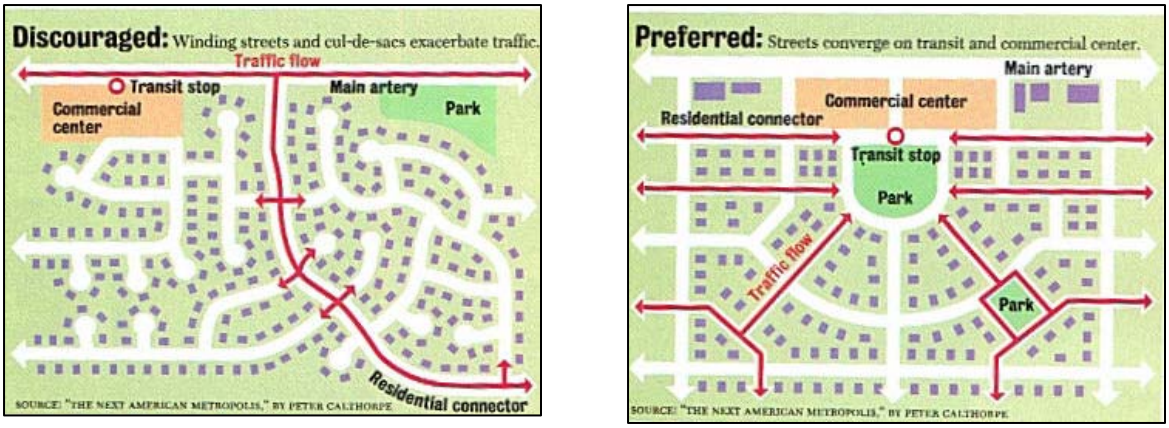
(3) Transportation mode shares will achieve a balance of walking, bicycling, transit and motor vehicles, and the amount of walking and bicycling will be measured in terms of physical activity, public health and transportation benefits.

(4) The connectivity of bicycle / pedestrian facilities throughout the community is a priority, and will be given equal consideration to other infrastructure investments.

(5) The safety of pedestrians and bicyclist will be improved, with specific annual targets for reducing crashes, injuries and fatalities.

(6) A bike and pedestrian plan will be adopted by reference as a section of the Comprehensive Plan.

Comprehensive plans can also be supplemented by the development of plans for Open Space, Transportation, and other special issues. Facilities for walking, bicycling and trails can be integrated in these documents and referenced in the appropriate element of the Comprehensive Plan. In some cases, these elements may be the responsibility of multiple jurisdictions, such as Metropolitan Planning Organizations (MPO's) which are responsible for transportation planning, school districts which are responsible for education planning, County agencies which can create county-level plans in cooperation with local governments, utility companies which plan and manage utility corridors, and municipal governments which are responsible for land use planning. Integrated planning can coordinate these elements into a consistent community planning process.



Integrated transportation and land use planning can create improved connectivity for pedestrians and bicyclists, reduce short trips by automobiles, and help encourage increased physical activity.

2. Subdivision Regulations and Site Plan Review

The Governors Office of Regulatory Reform describes the Site Plan Review Process as follows:

Purpose:

> "*Many local governments have adopted site plan review criteria. Site plan review may be in a separate local law or it may be part of a zoning ordinance. It is critical to review and coordinate the language in any new zoning districts with the local site plan law. The districts contemplated by these ordinances may encompass large tracts of land. Therefore, issues such as location of roadways, walkways, design of parking lots, number of parking spaces, grading, access points, infrastructure location, landscaping, etc., may be fully addressed in a district defined in the zoning ordinance, or the district description may simply reference required coordination with site plan review.*"

Site Plan Review regulations can be adopted by a municipality without zoning laws in place. The same issues apply to Special Use Permits and Planned Unit Development (PUD) regulations. It is important to ensure that local site plan review adequately addresses the needs of pedestrian, bicyclists, and issues raised by proposed development. In order to be sure that these facilities are integrated, it is important that zoning ordinances state intentions that correlate with subdivision and site plan review policies set forth in the community.

Some policy issues that can be stated in a community's subdivision regulations and review process to address bicycle and pedestrian connectivity are as follows:

(1) Subdivisions must provide bicycle and pedestrian connectivity through bicycle and pedestrian facilities that are both integrated into roadway design and provided as stand-alone facilities.

(2) Subdivisions require an internal circulation plan for traffic, and "traffic" is defined according to Section 152 of NYS Vehicle and Traffic Law, which includes pedestrians and bicyclists in the definition. Therefore, subdivision reviews should include an analysis of bicycle and pedestrian facilities as part of the traffic impact analysis process.

(3) Subdivision plans should demonstrate connectivity between developments for pedestrians and bicyclists to minimize short-distance trips by motor vehicles. These can be provided as "cut through" easements in suburban cult-de-sac developments, and as part of connected street grids in traditional neighborhood development.

(4) Conservation development or Cluster development can also be a tool for encouraging access to open space, and compact land use patterns that support increased walking and bicycling.

3. Zoning Laws

Much of conventional zoning in New York State is based on health-based codes that evolved from the squalid conditions of many large American cities in the late 1800's. The concept of zoning was to separate uses, so that manufacturing was set apart from housing, which was set apart from retail, etc. This resulted in a more homogenous landscape, and had the additional impact of creating automobile dependent suburbia. Communities have created a number of innovative planning tools to begin moving away from conventional zoning and towards more compact, mixed use communities. In mixed use communities, it is once again possible to live, work and go to school within walkable neighborhoods and town centers. Key elements for creating zoning and planning codes that support walking and bicycling include:

Mixed Use Development: creating zones where retail, office, residential and other uses are combined

Town Center Planning: encouraging development into compact centers, either in new communities or existing developed areas

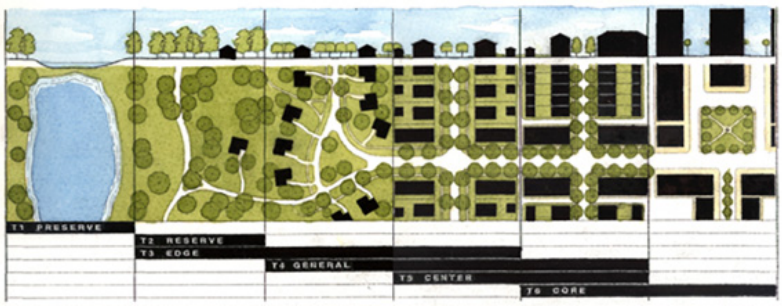
Design Guidelines: establishing clearly defined roadway, streetscape and public space criteria to ensure that new projects provide for walking, bicycling and trails.

Main Streets: redevelopment of historic central business district streets

Form-Based Codes: instead of conventional zoning, create codes that define the size, scale and proportions of buildings in a graphic format

As part of the movement called 'the New Urbanism,' an innovative new zoning model has been developed called Transect Zoning. This model is based on traditional, non-automobile dependent land use patterns. This Transect concept is based in part on a plan and model code proposed in the year 2000 for Onondaga County, New York, which includes the City of Syracuse and surrounding suburbs, villages, and countryside. Transect zoning is a categorization system that organizes all elements of the urban environment on a scale from rural to urban (see diagram below). Transect zoning can be combined with other innovative tools can be used to create more compact, walkable communities.

The following examples show how pedestrian and bicyclist friendly policy models can be used in a format that can be adopted at the county and municipal levels in New York State.



Transect zoning is illustrated in this graphic diagram.

Source: DPZ

County Pedestrian and Bicyclist Policy

Purpose:

County level policies can provide useful guidelines for local municipalities. Since county planning commissions are responsible for reviewing projects which cross municipal boundaries or have multi-jurisdictional impacts, a county bicycle and pedestrian plan and policies can ensure consistency of design and operational characteristics of cross community bicycle and pedestrian transportation systems.

Proposed Policy:

The County will support local communities in the development of a complete system of bikeways, pedestrian facilities and shared use paths, bicycle parking and safe crossings connecting the region's residences, businesses and public places. The County will promote bicycling and walking for health, exercise, transportation and recreation.

Bicycle and pedestrian facilities shall be provided in new construction, reconstruction and maintenance projects in the County unless one of the following conditions is met:

- Bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, bicyclists and pedestrians will be accommodated elsewhere within the right of way or within the same transportation corridor.
- The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. Disproportionate is defined as exceeding twenty percent of the cost of the larger project.

Bicycle and Pedestrian facilities will be provided and maintained in accordance with guidelines adopted by the USDOT, NYSDOT and AASHTO. Site plan and subdivision reviews conducted by the county will incorporate these facilities. On county-maintained roadways, bicycle and pedestrian facilities will be provided in accordance with this policy. County offices and public buildings will provide bicycle parking, lockers and showers in accordance with local zoning and planning regulations.

Town, Village, or City Bicyclist / Pedestrian Policy

Proposed Policy:

I. Whereas, bicycling and walking are important forms of transportation and recreation in our community; and

II. Whereas, walking and bicycling contribute to health, fitness and economic development; and

III. Whereas, cost effective roadway and facility improvements can be provided as both 'stand alone' projects and integrated into projects and programs; and

IV. Whereas, educating the public about safety, health and mobility are part of being a quality community;

Now, therefore the (Town, Village, or City) of _____ hereby resolves to establish a Pedestrian and Bicyclist Policy as follows:

Engineering: The community's infrastructure will include a complete system of bikeways, pedestrian facilities and shared use paths, bicycle parking and safe crossings connecting our residences, businesses and public places.

Bicycle and pedestrian facilities shall be provided in new construction, reconstruction and maintenance projects in the community unless one of the following conditions is met:

- Bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, bicyclists and pedestrians will be accommodated elsewhere within the right of way or within the same transportation corridor.

- The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. Disproportionate is defined as exceeding twenty percent of the cost of the larger project.

Bicycle and Pedestrian facilities will be provided and maintained in accordance with guidelines adopted by the USDOT, NYSDOT and AASHTO.

Encouragement: The community will promote bicycling and walking for health, fitness, transportation and recreation through events, programs and other activities which benefit residents, businesses and visitors of all ages and abilities. These activities will be coordinated with local bicycle clubs, schools, health organizations and other partners.

Enforcement: The community will provide balanced enforcement of the New York State Vehicle and Traffic Law for motorists, pedestrians and bicyclists. This will include enforcement of pedestrian's right-of-way in crosswalks, bicyclists riding with traffic and all modes sharing the road safely.

Adopted by: The (Town, Village, or City) of _ _____, NY

Date: ……

NOTE: *In the 1970's, 80's and 90's local communities throughout the U.S. adopted similar policies. The League of American Bicyclists' "Bicycle Friendly Communities" program has provided incentives for these efforts. The most successful of these communities (Palo Alto CA, Tempe AZ, Madison WI, Boulder CO and others) have adopted such policies. One advantage that the proposed format offers is that New York State Communities can combine bicycle and pedestrian policies into common resolutions, and base these on the recent USDOT program guidance. This will facilitate implementation efforts that develop from policy changes.*

Model Regulations: Pedestrian Facilities

Purpose:

Many communities include sidewalks in their master plans and zoning laws, but few provide a comprehensive framework for all aspects of pedestrian infrastructure. The following text addresses the major issues, including sidewalks, crossings, accessibility and maintenance.

Proposed Policy:

The community is a pedestrian – friendly community, and will provide and maintain facilities for pedestrians as an integrated part of their new development and redevelopment projects. Property owners and agencies are responsible to construct and maintain facilities in accordance with this policy. Pedestrian facilities include sidewalks, traffic calming features, crossings and accessibility features such as signals, curb ramps and signage.

1. ***Sidewalks*:** sidewalks will be installed in accordance with the community Pedestrian Plan. Minimum width of all walks shall be five (5') feet with a five (5') planting strip (or 10' wide sidewalks in Central Business Districts) unless prohibited by documented environmental constraints. Sidewalks must be constructed continuously across all driveways.

2. ***Crossings*:** safe crossings shall be provided at all locations identified in the Pedestrian Plan. All crosswalk, signal and curb ramp features shall comply with the minimum guidelines established in the *NYSDOT Highway Design Manual* and the *Manual of Uniform Traffic Control Devices* (MUTCD). Traffic calming features shall be provided where necessary to balance pedestrian safety with vehicular speeds and volumes.

3. ***Accessibility*:** all pedestrian facilities will comply with the Americans with Disability Act (ADA) guidelines.

4. ***Maintenance*:** Each owner or occupant of any house or other building, and any owner or person entitled to possession of any vacant lot, and any person having charge of any facility or public building shall be responsible for maintaining the pedestrian facilities adjacent to their property. During the winter season, this shall include keeping the sidewalk free of snow or ice and at all other times shall keep the sidewalk in good and safe repair in a clean condition, free from obstructions or encumbrances.

NOTE: *The Town of Penfield (near Rochester), and the Town Greenwich provide excellent models for this type of local policy. Links to these policies are provided in the appendix of this document. Their sidewalk program follows clearly defined guidelines that make it easy for developers and property owners to build and maintain safe pedestrian facilities in accordance with the local pedestrian plan. For Villages and Cities, the New York Conference of Mayors and Municipal Officials has produces a May, 2000 document in their Municipal Management Series entitled "Streets and Sidewalks." This document provides an overview of the definitions, rights and responsibilities of municipalities, along with sample language and legal references.*

Facilities for pedestrians are an important part of a community's quality of life.

Model Zoning Law: Bicycle Parking

Purpose:

Bicyclists need a place to park at the end of a ride just like a motorist needs to park their car after driving to a destination. Municipal codes and ordinances require off-street parking for a variety of land uses. This language provides for bicycle parking as a local ordinance requirement, as part of site plan review, or as part of a special use permit.

Proposed Policy:

Section XXXX: Bicycle Parking Facilities

1. Bicycle parking shall be provided in accordance with the following guidelines. All projects submitted for site plan approval shall identify bicycle racks and lockers in accordance with these guidelines.
2. Bicycle parking types:
   a. Type 1 Bicycle Parking shall be defined as bicycle racks intended for short-term parking.
   b. Type 2 Bicycle Parking shall be defined as bicycle lockers intended for long-term parking.
3. Bicycle Parking Specifications: All bicycle parking devices shall be provided in accordance with guidelines published by the Association of Pedestrian and Bicycle Professionals (APBP).

Section XXXX: Bicycle Parking Schedule

The following minimum amounts of bicycle parking shall be provided:

- *Residential (Multi – Family)*: 1 bicycle parking space per dwelling unit
- *Commercial Uses*: bicycle parking spaces = 10% of required auto parking
- *Institutional (Schools)*: 1 bicycle parking space for every 10 students and staff *Government*: 1 bicycle parking space per every 10 employees
- *Industrial Uses*: 1 bicycle parking space per 1000 sq. ft.

NOTE: *For bicycle parking areas greater than 10 bicycles, 50% of the parking shall be provided in a covered area protected from the weather. Developers may reduce the amount of car parking spaces provided by the following factor: 1 car parking space may be reduced by providing parking for 10 bicycles.*

NOTE: *While many communities have off-street car parking requirements, few have adopted formal bicycle parking ordinances. This must be seen as a positive benefit, not a new 'unfunded mandate.' The provision allowing developers a bonus for providing bicycle parking creates a win-win situation that saves money for the developer and provides parking for the community. Madison WI, Oregon DOT, Toronto, and others have successfully adopted similar policies.*

Model Program: Showers and Lockers

Purpose:

For bicycle commuters, runners, in-line skaters and pedestrians, having a place to change clothes and take shower can make the difference in making the choice to bike to work. These facilities can also provide for on-site recreation or exercise for employees. While not all worksites can provide this amenity, larger employment centers often support these facilities. Opportunities also exist to partner with local health clubs, or other community organizations to provide lockers and showers in lieu of on-site facilities.

Proposed Policy:

Section XXXX: Lockers and Showers

Worksites are required to provide lockers and showers for any new building, addition or change in use in compliance with the following:

Commercial, Institutional, and Government Facilities:

Floor Area	# Lockers	# of Showers
0 – 10,000 sq. ft.	10	0
10 – 50,000 sq. ft.	20	2
> 50,000 sq. ft.	40	4

Alternate Formula based on the number of Employees:

# of Employees	# Lockers	# of Showers
0 - 100	10	0
101 - 200	20	2
201 - 300	40	4

NOTE: *Half of the number of lockers and showers shall be provided in men's and women's rooms, respectively.*

NOTE: *Like bicycle parking, it is important that providing lockers and showers is seen as a win-win situation. Developers and property managers can promote these facilities as a benefit for tenants, business can promote employee health and fitness, and employees receive an increase opportunity to choose to walk or bicycle.*

NOTE: *There may be some concerns with this type of regulation conflicting with building codes. An alternative to adopting these regulations as local law is to provide a voluntary incentive- based program linked to employee commuter programs, physical activity promotion or other local initiatives.*

School Board Policy – Safe Routes to School

Purpose:

To ensure that children and staff have the choice to walk or bicycle to schools and that schools are safe places within their communities.

Background:

Current policies for locating new schools and maintaining existing schools often limit the ability for children and staff to walk or bicycle to school. Traffic safety is often seen as a critical issue, as is personal security. Many children are being bused or driven to school by parents, creating traffic jams and pollution in school zones. At the same time, many children would benefit from improved health, fitness and educational benefits if they were able to walk or bike to school. Obesity in children is considered a national 'epidemic,' and schools could have a central role in changing this trend. Also, transportation costs represent a significant share of many school budgets, and these costs could be reduced if more children were able to walk or ride their bicycles. A national 'safe routes to schools' movement is developing, with considerable support in New York State.

Providing safe routes to schools involves coordinating pedestrian, bicyclist, bus and motor vehicle improvements.

Proposed Policy:

The School Board will encourage children to walk and bicycle to school. The School system will work with the local community to identify opportunities to improve safe routes to school, including providing bicycle lanes, bicycle parking, sidewalks and crossings to connect our schools to the surrounding neighborhoods. Implementation of this policy will be accomplished by the following:

1. School policies will be coordinated with local sidewalk, crossing, traffic calming and bicycle facilities policies.
2. Bicycling and walking will be included in physical education and other curriculum programs in cooperation with PTA's and other community organizations.
3. All elementary school children will have the routes they walk or bike to school mapped within a distance of ***xxxx*** miles from school. All middle and high school students will have their routes mapped for a distance of ***xxxx*** miles from school.
4. Each school will officially designate its walking and bicycling routes and the local municipality (town or village) will require sidewalks and bikeways on both sides of the street on the route (based on established minimum widths). Bicycle parking will be provided for both students and staff.
5. All crossings within a school zone will be provided with safe crossings designed in compliance with the *Manual of Uniform Traffic Control Devices* and the *ADA*, including pavement markings, signage, signals and curb ramps.
6. School Crossing Guards will be located at appropriate locations, will receive technical training and will be provided with safety clothing and equipment.
7. Traffic calming designs shall be provided where appropriate to manage speed and traffic volumes in school zones.
8. The School District will support efforts to promote *Walk and Bike to School* events and programs, including *International Walk a Child to School Day*, and safety initiatives such as the *Walking School Bus and the Bicycle Train*.

NOTE: *the following section of State Law allows schools to provide bus transportation for students who otherwise would live within walking distance if it can be demonstrated that walking (or bicycling) is unsafe. As a result, a "safety zone" is currently defined as a place which is unsafe. An alternative to this approach would be for local schools to truly create 'safety zones' within these areas, and encourage walking and bicycling improvements which would reduce the need for short-distance motor vehicle trips to school.*

Section 3635-b of the Education Law: Definition of a Child Safety Zone

"A child safety zone is a designated area within a common, central, central high school or union free school district, including at least one personal residence, within which children who reside at a lesser distance from school than the minimum eligibility distance may be provided transportation on the basis that their most direct walking route to school will traverse a hazardous zone. Once properly authorized by the board of education or trustees and the voters of the school district, such transportation may be provided for pupils in kindergarten through grade eight who reside within two miles of the school legally attended and for pupils in grades nine through twelve who reside within three miles of the school legally attended without regard to like circumstances."

Appendix

Online Policy Resources

Complete Streets Coalition:
http://www.completestreets.org/index.html

USDOT Bicycle and Pedestrian Policy Guidance
www.fhwa.dot.gov/environment/bikeped/Design.htm

NYSDOT Highway Design Manual Ch. 18 Bicycle and Pedestrian Facilities
www.dot.state.ny.us/cmb/consult/hdmfiles/hdm.html

Town of Penfield, NY Sidewalk Program
www.penfield.org/government/eng/si.php

New York State School Boards Association Policy Services
www.nyssba.org/index.html

NY State Education Department – Child Safety Zones
http://stateaid.nysed.gov/trans/safzon.htm

Congress for the New Urbanism Code Catalogue
http://www.cnu.org/pdf/code_catalog_8-1-01.pdf

Safe Routes to Schools
www.saferoutestoschools.org

New York State DOT Bicycle and Pedestrian Program
http://www.dot.state.ny.us/pubtrans/bpresrc.html

New York State Health Department
http://www.health.state.ny.us/nysdoh/heart/healthy/program.htm

New York State Quality Communities Clearinghouse
http://www.qualitycommunities.org/index.asp

New York Planning Federation
http://www.nypf.org/

National Pedestrian and Bicyclist Information Center
www.walkinginfo.org

The Initiative for Healthy Infrastructure – iHi at UAlbany
www.albany.edu/~ihi

Appendix: Existing State and National Policies

At the national level, the *Federal Highway Administration* and the *American Association of State Highway and Transportation Officials* (AASHTO) provide policy guidelines for use at the state and local level. In New York State, the *Department of Transportation* (NYSDOT) develop statewide policies which are in turn implemented by regional and local agencies including NYSDOT regional offices, the *New York Metropolitan Transportation Council* (NYMTC) and partner agencies including the *Metropolitan Transportation Authority* (MTA), counties and local government. The policy process is not linear and concurrence is not mandatory, and since New York is a 'home rule' state, a significant amount of decision making takes place at the local level. The following sections summarize key legislation and policies at the national, state and local levels.

Federal Transportation Legislation: ISTEA, TEA-21, SAFETEA

Federal Transportation Legislation: ISTEA and TEA-21

Federal transportation legislation provides a legal basis for the expenditure of federal aid transportation funding. Specific requirements for non-motorized transportation in ISTEA and TEA-21 include the following sections.

> *"Subject to Section 134 of this title, the State shall develop transportation plans and programs for all areas of the state. Such plans and programs shall provide for the development of transportation facilities (including pedestrian walkways and bicycle transportation facilities) which will function as an intermodal transportation system."*

1991 ISTEA: The Intermodal Surface Transportation Efficiency Act

"The Secretary shall not approve any project or take any regulatory action under this title that results in the severance of an existing major route or have significant adverse impact on the safety for non-motorized transportation traffic…unless such a project or regulatory action provides for a reasonable alternate route of such a route exists."

1998 TEA-21: The Transportation Equity Act for the 21st Century (continued and extended the provisions of ISTEA)

2005 SAFETEA: The Safe, Accountable, Flexible and Efficient Transportation Equity Act (continued and extended the provisions of TEA-21)

(**Appendix – Continued)**

New York State Legislation and Agency Policies

New York State Vehicle and Traffic Law

The New York State Vehicle and Traffic Law (V&T) is the 'bottom line' in establishing the rights and responsibilities on public roads in the State. While there are numerous sections which relate to non-motorized transportation, Section 152 provides the core legal principles of law upon which other policies are based. This section defines the term 'traffic' as follows:

> *"Traffic: Pedestrians…vehicles, bicycles and other conveyances either singly or together while using any highway for the purposes of travel."*
>
> ~ NYS Vehicle and Traffic Law, Section 152

The law continues to provide specific rights and obligations for this inclusive definition of 'traffic' and provides bicyclists and in-line skaters with the legal right to share the road as follows:

> *"Every person riding a bicycle or skating or gliding on in line skates upon a roadway shall be granted all the rights and shall be subject to all the duties applicable to the driver of a vehicle under this title…"*
>
> ~ NYS Vehicle and Traffic Law, Section 1231

An overview brochure of the New York State Vehicle and Traffic Laws relating to bicyclists, pedestrians and motorists is available at www.gtsc.gov.state.ny.us. The brochure is called "Sharing the Road."

(Appendix – Continued)

NYSDOT Bicycle and Pedestrian Policy – 1996

After the passage of ISTEA in 1991, New York State developed a Bicycle and Pedestrian Transportation program. A Commissioner's Bicycle and Pedestrian Policy Statement was issued by the Department in 1993, and it was updated and re-issued in October, 1996, as follows:

"*As part of our mission as an intermodal transportation agency, NYSDOT must make bicyclists and pedestrians an integrated element of our intermodal transportation system. Bicyclists and pedestrians are significant partners in NYSDOT's efforts, providing cost-effective solutions to our State's mobility, safety and environmental goals. The 1990 Census shows that more than 7% of New York State Commuters bicycle or walk to work, so it is important for us to take the lead in making these modes safer and more "user friendly*."

As we move forward into the 21st Century, we have the ability to make our State's highways, structures and public transportation systems into one of the most efficient, intermodal transportation systems in the nation. To accomplish this, facilities for pedestrians and bicyclists must be considered for incorporation into highway, bridge and transit projects and integrated throughout NYSDOT's policy, planning, implementation and operations efforts."
NYSDOT has further defined this policy with Engineering Instructions (EI's), particularly EI 97-002 "Sidewalk Construction and Maintenance Policy for Projects and Highway Work Permits on State Highways," and EI 04-2011, "Procedural Requirements for Pedestrian Accommodation." These documents are useful both as information for working with NYSDOT on roads in local communities, and as guidelines for similar policies and programs at the local level.

Source: www.dot.gov.state.ny.us

Appendix: The Americans with Disabilities Act

ADA Design Guidelines

The Americans with Disabilities Act (ADA) was enacted in 1990 to ensure people with disabilities have equal opportunities and access to public spaces as those who do not have disabilities. People with disabilities may have diminished mobility, limited vision, or reduced cognitive skills. In some instances, individuals may experience a combination of disabilities, which is more common as a person grows older. A person may experience a disability on a permanent or temporary basis. Without accessible pedestrian facilities, people with disabilities will have fewer opportunities to engage in employment, school, shopping, recreation, and other everyday activities. New or altered facilities must provide access for all pedestrians. This also needs to occur when implementing all the tools and treatments that are presented in this site.

Street designs that accommodate people with disabilities create a better walking environment for all pedestrians.

While improvements for persons with disabilities were mandated by the Federal Government to ensure access and mobility for physically-challenged pedestrians, most of these improvements benefit all pedestrians. Some of the items that will be presented in this guide, such as adequate time to cross streets, well-designed curb ramps, limited driveways, and sidewalks that are wide and clear of obstructions and have minimal cross-slope, are examples of design features that will accommodate pedestrians with disabilities, persons using strollers, and indeed, all pedestrians.[5]

All new construction or retrofit projects must include curb ramps and other accessible features that comply with ADA requirements. Agencies should review their street system to identify other barriers to accessibility and prioritize the needed improvements. This review was a requirement of the Rehabilitation Act (1973) and ADA. States, cities, and other localities were to develop a planning document and a transition plan for removing barriers in their existing facilities. The barriers should have been removed by 1995. Examples of barriers that are often overlooked include poles and signs in the middle of a sidewalk, steeply sloped driveways, and interruptions such as broken or missing sidewalk sections. An adequate level of surveillance and maintenance is also important to providing accessibility, especially in winter months in areas where snow accumulates. While all streets should be upgraded to be accessible, public agencies should set priorities for high-use areas, such as commercial districts, schools, parks, transit facilities, etc., and retrofit as rapidly as possible.

(Appendix – Continued)

The design criteria for the construction and alteration of facilities covered by law were developed by the U.S. Access Board and are the ADA Accessibility Guidelines (ADAAG). These guidelines serve as the basis for standards that are maintained by the U.S. Department of Justice and the U.S. Department of Transportation and are the minimum criteria for designing public right-of-way space. In addition, the Access Board is currently developing Public Rights-of-Way Guidelines, which will supplement ADAAG. A draft version of these guidelines is available at www.access-board.gov/rowdraft.htm. For the latest ADAAG information and guidance on ADA requirements and issues, visit www.access-board.gov.

Source: http://www.walkinginfo.org/pedsafe/background.cfm#ada

Appendix: Town of Greenwich, Local Law #1 (2001)

Town of Greenwich, Local Law #1

Pedestrian Circulation Systems

1. Where deemed necessary and appropriate, sidewalks may be required by the Planning Board...

2. Sidewalks shall be concrete unless otherwise specified.

3. At the discretion of the Planning Board, sidewalks shall be constructed and placed parallel to roadways. In such cases, a separation distance of five (5) feet shall be maintained between the roadway and the sidewalk wherever possible.

4. Walkways shall be clearly identified within parking areas and for public roadway crossings with striping as necessary.

5. In order to maximize pedestrian access to and from adjacent sites, the Planning Board shall encourage interconnection of sidewalks and pathways.

Appendix: Paved Shoulders

Reasons for Highway Shoulders

Prepared by Michael Ronkin, Bicycle and Pedestrian Program Manager & Members of the Preliminary Design Unit Oregon Department of Transportation

Before the 1971 "Bike Bill" was passed, and the terms "shoulder bikeways" or "bike lanes" were commonly used, the Oregon Highway Division advocated (1) building paved shoulders when constructing roads and (2) adding paved shoulders to existing roads. These were often referred to as "safety shoulders." There are good reasons for this term.

The following reasons are what AASHTO has to say about the benefits of shoulders in three important areas: safety, capacity and maintenance. Most of these benefits apply to both shoulders on rural highways and to marked, on-street bike lanes on urban roadways. See other side for other benefits specific to urban areas.

Safety - highways with paved shoulders have lower accident rates, as paved shoulders:

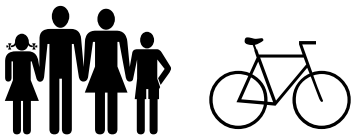
- Provide space to make evasive maneuvers;
- Accommodate driver error;
- Add a recovery area to regain control of a vehicle, as well as lateral clearance to roadside objects such as guardrail, signs and poles (highways require a “clear zone,” and paved shoulders give the best recoverable surface);
- Provide space for disabled vehicles to stop or drive slowly;
- Provide increased sight distance for through vehicles and for vehicles entering the roadway (rural: in cut sections or brushy areas; urban: in areas with many sight obstructions);
- Contribute to driving ease and reduced driver strain;
- Reduce passing conflicts between motor vehicles and bicyclists and pedestrians;
- Make the crossing pedestrian more visible to motorists; and
- Provide for storm water discharge farther from the travel lanes, reducing hydroplaning, splash and spray to following vehicles, pedestrians and bicyclists.

Capacity - highways with paved shoulders can carry more traffic, as paved shoulders:

- Provide more intersection and safe stopping sight distance;
- Allow for easier exiting from travel lanes to side streets and roads (also a safety benefit);
- Provide greater effective turning radius for trucks;
- Provide space for off-tracking of truck's rear wheels in curved sections;
- Provide space for disabled vehicles, mail delivery and bus stops; and
- Provide space for bicyclists to ride at their own pace;

Maintenance - highways with paved shoulders are easier to maintain, as paved shoulders:

- Provide structural support to the pavement;
- Discharge water further from the travel lanes, reducing the undermining of the base and subgrade;
- Provide space for maintenance operations and snow storage;
- Provide space for portable maintenance signs;
- Facilitate painting of fog lines.



Appendix J

Walking School Bus

Starting a walking school bus: the basics


Chester, VT

Why develop a walking school bus?

Studies show that fewer children are walking and biking to school, and more children are at risk of becoming overweight. Changing behaviors of children and parents require creative solutions that are safe and fun.

Implementing a walking school bus can be both.

What is a walking school bus?

A walking school bus is a group of children walking to school with one or more adults. If that sounds simple, it is, and that's part of the beauty of the walking school bus. It can be as informal as two families taking turns walking their children to school to as structured as a route with meeting points, a timetable and a regularly rotated schedule of trained volunteers.

A variation on the walking school bus is the bicycle train, in which adults supervise children riding their bikes to school. The flexibility of the walking school bus makes it appealing to communities of all sizes with varying needs.

Parents often cite safety issues as one of the primary reasons they are reluctant to allow their children to walk to school. Providing adult supervision may help reduce those worries for families who live within walking or bicycling distance to school.

Starting simple

When beginning a walking school bus, remember that the program can always grow. It often makes sense to start with a small bus and see how it works. Pick a single neighborhood that has a group of parents and children who are interested. It's like a carpool—without the car—with the added benefits of exercise and visits with friends and neighbors. For an informal bus:

1. Invite families who live nearby to walk.
2. Pick a route and take a test walk.
3. Decide how often the group will walk together.
4. Have fun!


Apex, NC

When picking a route, answer these four questions:

1. **Do you have room to walk?**
   Are there sidewalks or paths?
   Is there too much traffic?
2. **Is it easy to cross the street?**
3. **Do drivers behave well?**
   Do they yield to walkers?
   Do they speed?
4. **Does the environment feel safe?**
   Are there loose dogs?
   Is there criminal activity?

For more help identifying walkable routes, use the Walkability Checklist that can be found at www.walktoschool.org/buildevent/checklists.cfm.

Reaching more children

Success with a simple walking school bus or a desire to be more inclusive may inspire a community to build a more structured program. This may include more routes, more days of walking and more children. Such programs require coordination, volunteers and potential attention to other issues, such as safety training and liability. The school principal and administration, law enforcement and other community leaders will likely be involved.

First, determine the amount of interest in a walking school bus program. Contact potential participants and partners:

Parents and children
Principal and school officials
Law enforcement officers
Other community leaders

Mill Valley, CA

Second, identify the route(s).

The amount of interest will determine the number of walking routes.

Walk the route(s) without children first.

Sacramento, CA

Third, identify a sufficient number of adults to supervise walkers.

The Centers for Disease Control and Prevention recommend one adult for every six children. If children are age 10 or older, fewer adults may be needed. If children are ages 4 to 6, one adult per three children is recommended.

Next, finalize the logistical details.

Who will participate?

How often will the walking school bus operate? Will the bus operate once a week or every day?

When do children meet the bus? It's important to allow enough time for the slower pace of children, but also to ensure that everyone arrives at school on time.

Where will the bus meet children—at each child's home or at a few meeting spots?

Will the bus operate after school?

What training do volunteers need?

What safety training do children need? See "Walking School Bus: Guidelines for talking to children about pedestrian safety" at http://www.walkingschoolbus.org/safety.pdf.

Finally, kick-off the program.

A good time to begin is during International Walk to School Month each October. Walk and look for ways to encourage more children and families to be involved. Have fun!

For more detailed instructions on how to organize a walking school bus, go to:

- How to Organize a Walking/Cycling School Bus, Go for Green Canada, **http://www.goforgreen.ca/asrts**. Pick "English," then "Tools and Resources."
- The walking bus: A safe way for children to walk to school, Friends of the Earth UK, **http://www.foe.co.uk/campaigns/transport/resource/parents.html**
- Walking School Bus - A Guide for Parents and Teachers, VicHealth Australia, **http://www.vichealth.vic.gov.au**. Select "Local Government," then "Walking School Bus." Scroll to bottom to find link to download the guide.
- KidsWalk-to-School Guide, Centers for Disease Control and Prevention, **http://www.cdc.gov/nccdphp/dnpa/kidswalk/resources.htm**

Appendix K

Bicycle Rodeo

Wheeled Sport/Bike Rodeo Resources

Rodeos are an effective and fun way to involve children, parents, and community members in the safety aspects of bicycling and other wheeled sports. A rodeo typically involves simulating real life riding situations and teaches children and their parents how to enjoy their wheeled activities safely.

Riders must have a properly fitted helmet to participate in this event and some rodeos include a helmet fitting station. Some rodeos also feature an inspection center where participants can make sure their bikes, skateboards, scooters or skates are in good working condition. Volunteers, bike shop owners or police officers can perform these inspections. There may also be safety presentations, exhibits and give-aways. Some communities also include a "drivers licensing" booth and a bike registration center. Often, this is followed by a ride through an obstacle course, utilizing cones or chalk, where children can practice safe riding.

Organization and planning are important for a successful rodeo. Community partners can be utilized as volunteers to plan and publicize the event, and to help out on the day of the rodeo.

The following is an example of how to set up a rodeo in your town. For assistance in organizing a wheeled sport rodeo, you may also contact your local Safe Kids chapter, AAA or State Farm Insurance office.

Reprinted Material from

Safe Routes to Schools *Rodeo* Manual

Safe Routes to Schools Rodeo Manual is a Program of the Transportation Authority of Marin and created by the Marin County Bicycle Coalition

What is the Bicycle Rodeo?

The goal of the Rodeo is to teach children the importance of seeing, being seen, and remaining in control, at all times when riding a bike. This is achieved through a series of bike handling drills and the simulation of traffic situations. This activity is a follow up activity to two classroom lessons focusing on helmet usage, basic safety strategy, laws and regulations.

What do I need?

You must bring a bike, helmet, water, snack, hat and sunscreen.

Managing Students

The students arrive excited and ready to participate but are easily distracted because there is so much happening at once. Participation in the rodeo is a privilege, we explain this at the beginning of the event and we are very clear about the behavior we expect. You should not tolerate disruptive or disrespectful behavior. Students respond well to "Time Outs" where they are off their bikes until allowed to participate again. Consult lead staff or school teacher for additional support if unsafe or disruptive behavior continues

Communication Tips

Require Respect for yourself as an instructor and for one another as students. Do not tolerate or ignore disrespectful behavior. Use the specific language "I expect you to respect me/one another". Don't allow disruptive students to ruin the event for everybody. "Participating in the rodeo is a privilege and riding on your own is an important responsibility". .

Be enthusiastic, use this as a tool to engage them. Build on their enthusiasm.

Set high performance standards. Many children genuinely lack confidence and this can be a valuable confidence building experience. Many youth think these exercises are too easy. If you explain the stations correctly and provide them with **feedback** that is positive and encouraging, you can challenge their ability. If they are working hard they won't get bored and they will be easier to manage.

Keep an open ear. Youth are constantly being told what to do by adults, so keep an ear open to what they have to say. You must balance being firm and clear with your expectations and instructions with being welcoming and friendly.

Breathe! Especially when total chaos breaks out; smile and remember to BREATHE! Think about what needs to happen and act to make sure that it does. Ask for help. Improvisation is healthy.

Modeling. You should model (on bike) what you want them to do.

Ask a lot of questions. Rather than telling them, ask them, prompt them to provide the answers about how and why we do things.

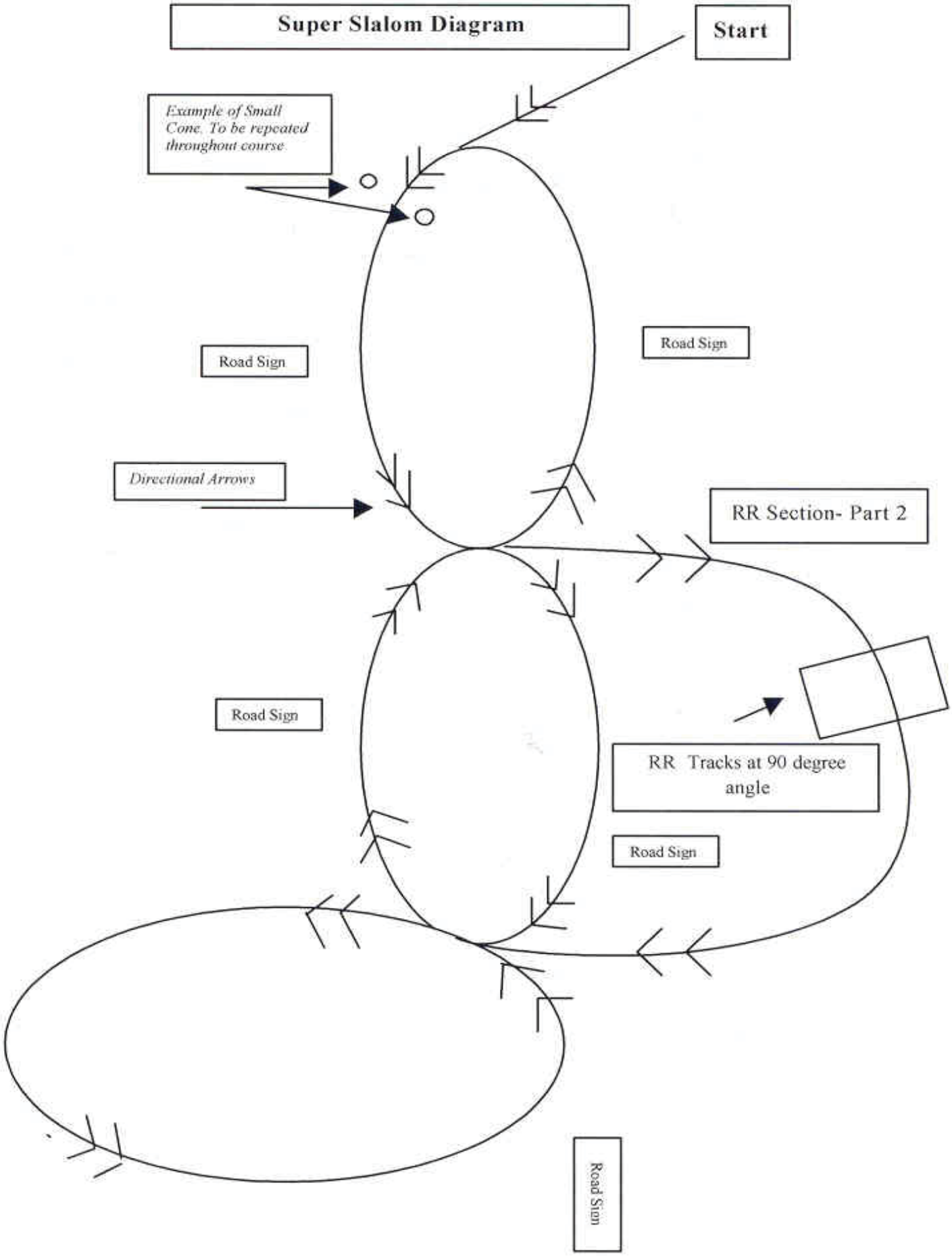
What is my job?

1. Set up and Break down.
You may need help loading and unloading the rodeo supplies and setting up the stations. All four stations and the orientation/debriefing area are set up as described below. You must place a white sandwich sign with the name of the station beside each of the four courses. Students will gather for start and finish of rodeo in a central area from which other stations are visible.
Notes: After deciding on the general layout, first chalk the slalom course, then chalk Safetyville. Incorporate the van/trailer into the Safetyville course and leave it parked. Leave Safetyville materials in van until course is chalked. Remove equipment for other stations and continue setup. During orientation: if there is a large number of scooters- keep them in the same group.

a. Initial Orientation with Students.
When students initially gather there will be a large number of bicycles needing minor adjustments. We will need your help with pumping up tires, checking brakes, adjusting seats and helmets and other details. Someone will be assigned to help students that don't have bikes and helmets. Safe Routes to Schools has extra bikes and helmets to lend out. Staff will be responsible for sizing the students for the right bikes. Two students can share a bike but not a helmet. Please remember to work quietly during these tasks as other instruction will be happening concurrently.

b. Running the Stations
Each station has specific teaching objectives. Use this manual to orient yourself with these objectives. Every teacher has his or her own style and ways of communicating with youth. Don't be hard on yourself the first few times explaining the stations. This manual will explain how many volunteers you need for your station and what to expect them to do. Just remember that keeping it simple and **modeling** instructions on your bike will always help.

Super Slalom
Set up The course consists of a circuitous chalk line, which winds and turns tightly then opens up into straight away sections. The line crosses itself at several points creating intersections. Think of a triple figure 8. Use arrows at crossings to indicate the direction riders should follow. The chalk line is outlined by traffic cones. The traffic cones are placed far enough apart that any child should be able to navigate the course while remaining between the cones. Traffic signs (supported by sawhorses) are placed to the left and right of the course so that students can use their peripheral vision to read them.
On separate section, place railroad crossing bars perpendicular to direction of rider.


Super Slalom Diagram
Start
Example of Small Cone. To be repeated throughout course
Road Sign
Road Sign
Directional Arrows
RR Section- Part 2
Road Sign
RR Tracks at 90 degree angle
Road Sign
Road Sign

Super Slalom Course Objectives:

Bike handling
Smooth stopping
Peripheral vision
Yielding to cross traffic
Navigating obstacles (railroad Tracks)

Instructions:

Ride the course once and demonstrate.

The object is to follow the chalk line drawn on the blacktop with their front wheel. Cones are set up to mark the course and they must stay within the cones. Keeping their tire right on the line will be very difficult (impossible actually) to do, but everybody should be able to stay within the cones. As riders practice this course, suggest that they pick up their speed

Teaching Points:

Peripheral Vision Demonstration. Have students hold their hands out in front of them at shoulder level and wiggle their index finger and thumb. They are easy to see in front of us. We are used to seeing this way, but we are going to learn about how much we can see on either side. Have students look forward while moving their arms at shoulder level out to the side. Find out how far you can hold your arms out to the side and see your wiggling fingers. This side vision is called Peripheral Vision. *Explain that is "what we see out of the corners of our eyes"; we can see things without looking directly at them.* Use this vision to help you read the street signs (out loud) on either side of the course and to watch for things out on the road. We always want to focus on where we are going, so instruct them to follow the chalk line but also to be aware of the other riders, they must avoid collisions at each intersection and avoid running into the rider ahead of them.

Crossing at Intersections. Students will need to slow down where the paths cross. The goal is to take turns. Explain that slowing or stopping to let someone else go ahead is the best way to stay safe and the kind, courteous thing to do. The Concept of "Yield" or surrendering your right of way will be introduced in Safetyville.

Crossing Rail Road Tracks is an important skill. Start the course with the railroad track section closed off. After students are comfortable with the triple figure 8 course, open the RR section. The railroad track unit can be turned over and the height adjusted or surface to be crossed changes from metal to wood to increase or decrease the difficulty of crossing. Initially angle the railroad tracks to be perpendicular to the slalom course line. As the course is being run, they will get used to crossing on this angle. Later on, change the orientation of the tracks and have students adjust their crossing angle to be perpendicular. Feed the riders onto the course one at a time, several seconds apart.

Volunteer Jobs Volunteers can be used to clean up knocked over cones and to help students navigate through intersections .

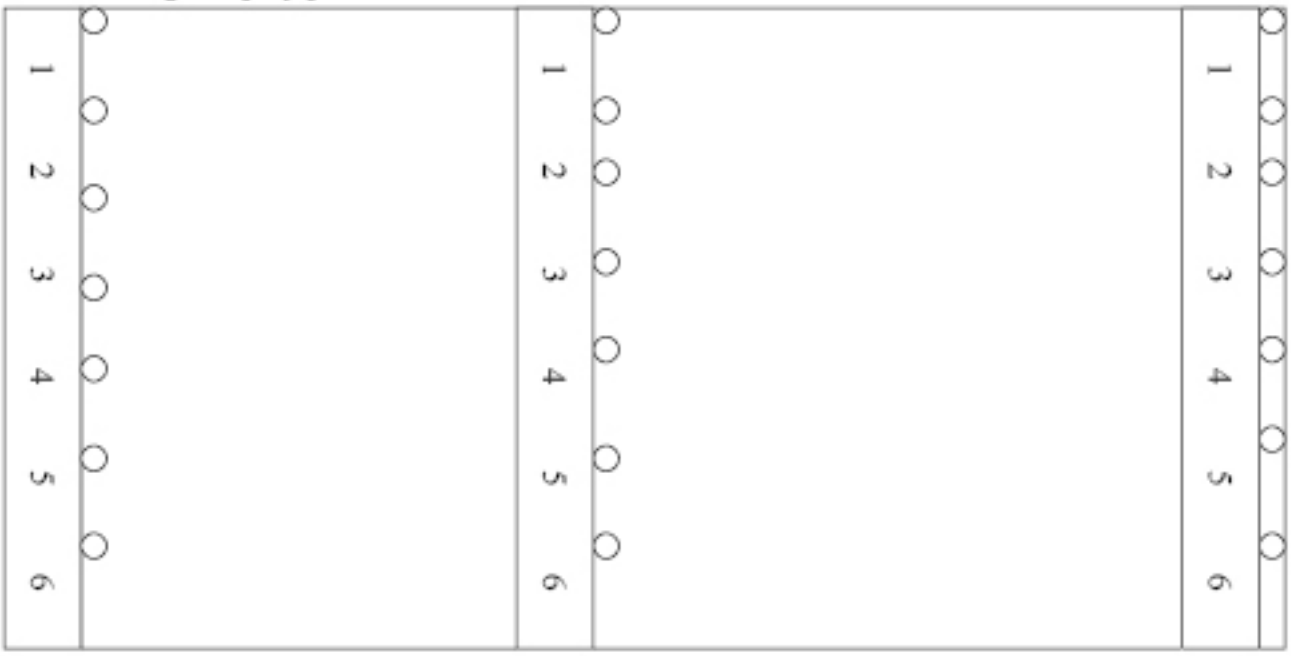
T**hings to watch for**:

Talk to the riders, offering positive and encouraging feedback but holding riders to the goals of the exercise. Keep the riders at a safe speed and do not allow passing. Replace cones when they get knocked over.

Turtle Race

Set Up

The course consists of 6 (or more) lanes about 3 feet wide and 75 feet in length. Mark the start, middle and finish with medium sized cones. You will need at 21 cones for 6 lanes. It helps students to mark lane numbers 1-6 in front of the cones. This station will need the red, yellow and green poly/plastic dots.



Turtle Race Station Objectives:

Balance and control when riding slowly
Quick stopping
Shoulder check

Instructions for stage one, Turtle Race; how slow can you go?

Ask the riders if they find it harder to control their bikes at slower speeds. They will most likely agree. Explain that this is a balance exercise, that we want them to practice controlling their bikes at slow speeds. *. *The objective for kids on scooters is to coast as much as possible, pushing off with their foot the least amount of times. Group all the scooters in the same heat.*

- The last person across the finish line is the winner
- Try not to put your foot down and stay in your lane.
- Start the riders by blowing the whistle, coach the riders, offering positive and encouraging feedback and challenging them to stay in their lanes. Cheer the riders enthusiastically

Teaching Points

Power Pedal: Starting from a stop with your pedal up in a 2 o'clock position gives cyclist a strong start. Demonstrate what a "scooter step" looks like and contrast it to a strong "power pedal position".

- Staying in your lane is the most important thing because you never want to swerve out in front of a car

Things to watch out for:

If a child is having difficulty going slow without swerving into other lanes, encourage them to put down their feet if they have to.

Instructions for stage two, Braking

Explain that now that we have mastered straight-line riding we will be adding a new challenge, this time they can pick up some speed but the marshal will be standing at the end of the lanes and will hold up a ”stoplight” There are three circles, red, green and yellow. Review what each color means at a stoplight. As they ride down the lane they must do what the card means. (Slow down for yellow, stop for red or keep going for green.)

Teaching Points:

- Breaking evenly to keep from going over the bars
- Shifting your weight back, over the rear wheel to maintain control

Instructions for stage three, Shoulder Check

Increase the challenge by looking over your shoulder while riding in a straight line. Model this by riding up the lane and scanning back to the right and the left without swerving. Explain that the natural tendency when we look back is to swerve in the direction we are trying to see. When riding on the street this can put you in the path of traffic. *This exercise is easiest if students can take one hand off the handlebars when peering behind them.*

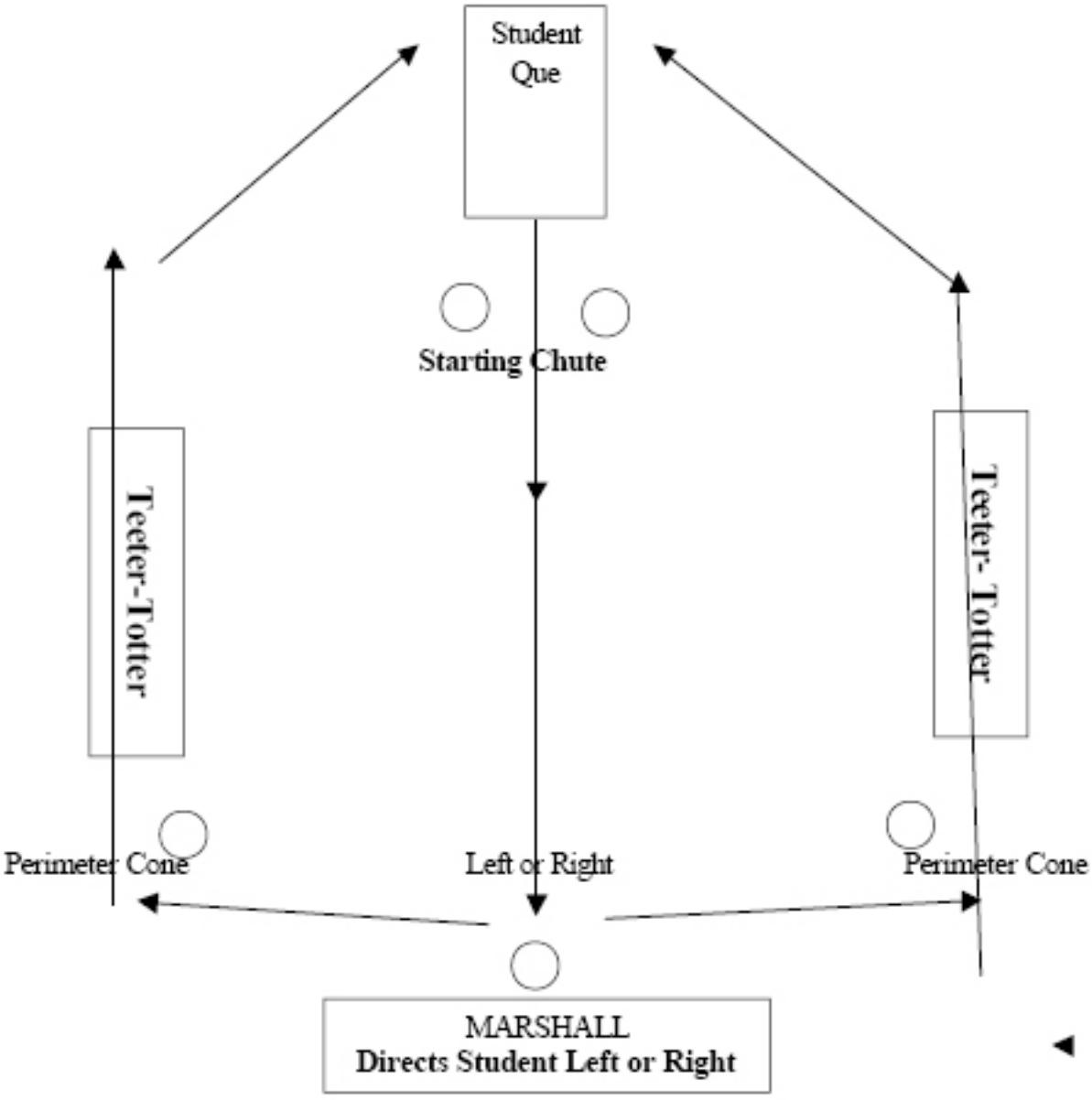
Riders proceed down the lane one at a time, the Marshal stands behind the rider and randomly calls out either “check right” or “check left” and holds up one of the big red, yellow or green colored circles which tells to slow, stop, or keep riding.

Volunteer Jobs

Volunteers can be used as cheerleaders and to help kids move from the end of the race back to the starting point efficiently and safely.

Quick Turn/Fast Dodge <u>Set up</u>

The course consists of a starting chute marked with chalk and/or cones. One at a time students will cycle toward a Course Marshall who will direct them to turn either left or right. Students will cycle around a perimeter cones and ride over a teeter-totter obstacle on their way back to the student line to try it again. An area of at least 100 feet by 40 feet is suggested; it works best when riders have the opportunity to build up speed.



<u>Quick Turn/Fast Dodge Objectives</u>

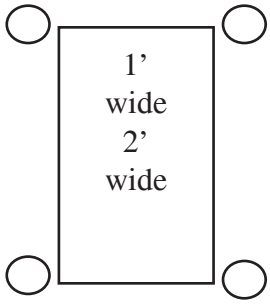
Quick decision making
Fast turning
Balance and control
Dodging an obstacle (optional)

<u>Instructions stage for stage one, Basic Route:</u>

Instruct the riders to line up at the top of the course (designated by the sandwich board) and ride through the marked chute toward the Marshal at the other end of the course, just as the rider reaches them they will direct the rider to turn right or left. Instruct them to then ride out between the marker cones and circle back to the top of the chute and repeat the drill.

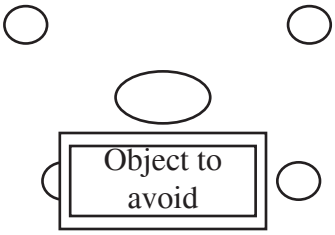
Demonstrate this. Encourage them to build up speed as they become comfortable with the activity. Have students ride the teeter-totters on the return trip, as they are comfortable.

Instructions for stage two, the Chute (optional)



On the way from the Marshall create a small chute 1’ x 2’
Instruct students to ride through the chute on their return to the top.
Demonstrate this.

Instructions for stage three, the Rock Dodge (optional)



Place the obstacle in the center of the chute. Instruct the students to continue to stay within the chute but flick their front wheel around the obstacle. **Demonstrate this.** This practices dodging road hazards like glass and rocks.

Teaching Points:

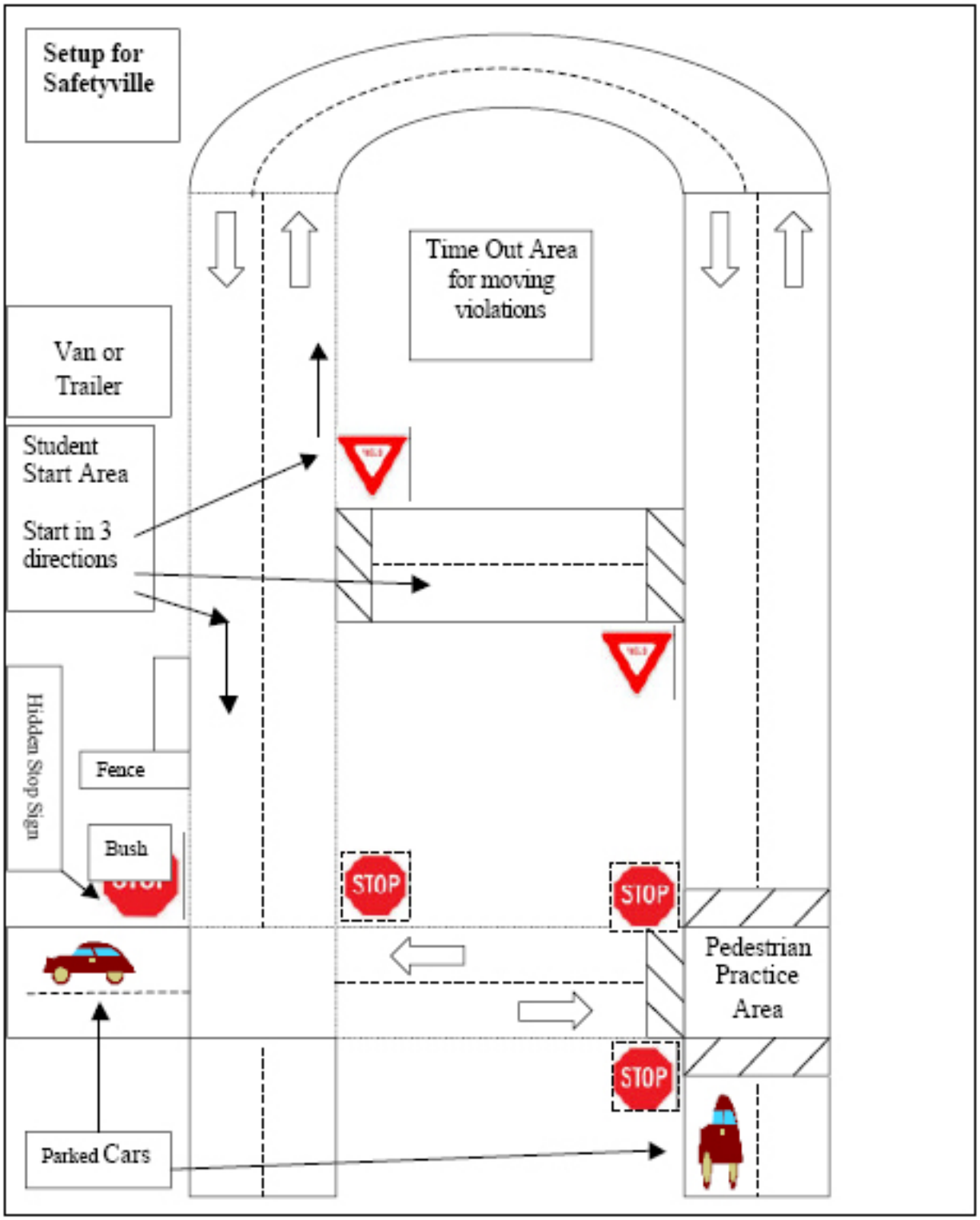
- Why is it more dangerous to hit something with the front wheel but not such a big deal if you roll over something with the rear wheel?
  Hitting something with the front wheel affects steering, the rear does not steer. Hitting things causes flats.

- Why is it more dangerous to get a flat on your front tire?
  A front flat makes it harder to control because you are steering with the front. A rear flat is not so bad because our weight is over the rear and this helps to stabilize the bike.

Volunteer Jobs

It is extremely useful to have one or two volunteers at this station. Since the course is long, it is useful to have the instructor starting kids at the chute and providing feedback near the teeter-totters. A volunteer can act as the marshal signaling the turn directions to students. It is useful to have someone stationed at the chute to pick up cones and fix the teeter-totter, etc.

Safetyville <u>Set up</u> Safetyville is the most complicated course in this program. Please consult the picture below. Use the chalk cart and props to set up a street course as pictured below. The basic idea is to create a course, simulating traffic patterns. Each intersection is a little different. Some have a barrier that covers a stop sign, others encourage yielding and communication among bikers/drivers. Rules of the Road are reinforced by giving bikers a Ticket/time out when they break the rules.



Safetyville Objectives:
Learning to hand signal
Practice stopping at edges
Learning to yield
Judgement and Bike Handling Skills

Instructions

Instruct the students to line up behind each other in groups of three. They will be pulling out of their driveway and entering into the roadway. The student on the left hand column will turn left out to the driveway, the student on the right column will turn right out of the driveway and the center column will cross the road and continue straight. Tell the students that Safetyville is a place where bikes get to Judgment and Bike take over the road,. Since bicycles and cars are both vehicles, bikes need to follow all the rules of the road. Students will get a ticket (placed into the middle of the route for 1 minute) if they break a rule.

- All students will demonstrate peeking around the fence barriers and looking left, right, left before pulling into the course
- At stop signs and intersections, students should demonstrate appropriate hand signals and yielding practices. They should also practice looking left, right and left before proceeding through the intersections
- Students can get a ticket for speeding and passing.

Teaching Points

- Teach students hand signals.
- Review stopping at edges and looking Left, Right and Left and using hand signals.
- Introduce the concept of "Yield." It means to surrender of give up your right of way. When you see the Yield sign you let other people go first unless there is no one there. At intersections you yield to pedestrians and the other riders who were there first.
- Pedestrians have the right of way (right to go first) at intersections. Pedestrians can practice in the marked crosswalk areas.

Volunteer Jobs

Volunteers can be used as police officers in this course. They should be placed at intersections to reinforce the use of hand signals and looking left, right and left before proceeding through intersections. Students can be used as pedestrians at cross works to reinforce the idea of pedestrian right of way.

Appendix L

Pedestrian Facility Maintenance Requirements Checklist

rounding system of sidewalks. This requirement is especially important where a pedestrian path forms part of an accessible route required to provide access to a building, facility or site.

c. Inspection and Maintenance Programs

The adequate maintenance and repair of pedestrian facilities can best be assured through the adoption of a periodic inspection and maintenance program. Table 8 presents a sample inspection and maintenance checklist for pedestrian facilities, outlining possible maintenance and repair problems and appropriate activities to correct problems. The frequency with which facilities should be inspected, and maintenance activities conducted, depends upon the environment in which the facility is located and the nature of the maintenance activity.

Table 8
Pedestrian Facility Maintenance Requirements

Pedestrian Facility	Concern	Maintenance Activity
Sidewalks and Walkways	1. Tree roots cracking and heaving the sidewalk.	1. Remove failed sidewalks, cut roots and install new sidewalk. A local arborist should be contacted prior to removing large roots.
	2. Section pop-up of vertical height greater than 13 millimeters (1/2 inch).	2. Replace defective section or provide temporary asphalt shim.
	3. Cracked or spalling surface and poorly placed temporary patches.	3. Replace defective sections.
	4. Snow and ice buildup and ponding from snow melt.	4. Enact and enforce local regulations requiring abutting land users to perform timely clearance activity. Hire private contractor to clear sidewalk and assess cost to abutting land users.
	5. Separation of expansion and construction joints so that space between adjoining sections are greater than 13 millimeters (1/2 inch).	5. Fill joint with hardening expansion compound.
	6. Trash, loose sand, oil and grease on walkways.	6. Serve notice to abutting land owners to clean and maintain sidewalks.
	7. Materials, signs, vending machines, etc. restricting effective sidewalk width.	7. Require responsible parties to remove obstructions.
	8. Low hanging tree limbs, bushes, weeds and other foliage growing into sidewalk and/or posing obstructions and sight restrictions.	8. Enact and enforce local regulations requiring abutting land users to perform timely clearance activity. Hire private contractor to clear sidewalk and assess cost to abutting land users.

Table 8
Continued

Pedestrian Facility	Concern	Maintenance Activity
Crosswalks and Curb Ramps	1. Curb ramp surface is worn into a glazed and slippery surface.	1. Replace curb ramp. Texturize surface with shallow, transverse grooves.
	2. Poor drainage causing water retention in gutter area.	2. Clean gutter and catch basin area.
	3. Street rutting causing water ponding in crosswalk.	3. Resurface street or crosswalk area.
	4. Street repaving resulting in step or transition problem at bottom of curb ramp.	4. Repaving contract specifications should specify a maximum of 6 millimeters (1/4 inch) vertical edge between new pavement and gutter or curb ramp.
	5. Slippery manhole covers in crosswalk.	5. When manholes must be located in crosswalk, they should have slip resistant cover design and be flush with the surface and visible.
	6. Snow and ice buildup and ponding from snow melt.	6. A maintenance program should be developed to ensure snow and ice removal.
	7. Stop bar and crosswalk pavement markings.	7. Identify high volume locations that require additional refurbishing activities.
	8. Separation of expansion and construction joints so that space between adjoining sections are greater than 13 millimeters (1/2 inch).	8. Fill joint with hardening expansion compound.
	9. Pedestrians do not have time to clear roadway prior to signal change.	9. Review pedestrian clearance/ timing plan assuming a maximum speed of 1.1m (3.5 ft.) per second plus a tolerance of 2 seconds for reaction time. Add refuge island in middle of street. Extend sidewalk to edge of parking lane.
Shoulders	1. Debris, trash and loose sand on shoulder.	1. A maintenance program should be developed to provide for regular sweeping of shoulders.
	2. Snow and ice buildup.	2. A maintenance program should be developed to ensure snow and ice removal.
Overpasses and Underpasses	1. Falling objects from overpass.	1. Enclose overpass with chain-link fencing.
	2. Sparse pedestrian use of underpasses.	2. Underpass should be well lighted to provide a feeling of personal security.
	3. Worn step or ramp surfaces.	3. Overlay, replace or texturize to slip free and unbroken surface.
	4. Snow and ice buildup and ponding from snowmelt.	4. A maintenance program should be developed to ensure snow and ice removal.
	5. Section pop-up of vertical height greater than 13 millimeters (1/2 inch).	5. Replace defective section or provide temporary asphalt shim.

Table 8
Continued

Pedestrian Facility	Concern	Maintenance Activity
Work Zones	1. Temporary pathways at work zones are typically constructed of relatively inexpensive, short life materials.	1. The pathway surface should be frequently inspected. Pathway surface materials constructed of wood should be treated with no slip strips or surface treatment. Surface materials with holes, cracks or abrupt changes in elevation should be replaced.
	2. Detour pedestrian paths place greater volumes on detour roadway.	2. The detour pathway should be checked periodically for: • Adequacy of pedestrian and vehicular signal timing. • Proper pedestrian detour signing. • Pedestrian traffic hazards. • Proper motorist information.
	3. Construction materials debris in pathway.	3. Require the contractor to maintain a clear pathway.
	4. Changing pedestrian accommodation needs due to dynamic construction activities.	4. Perform periodic inspection to ensure pedestrian information needs keep pace with construction activities.
	5. Damaged traffic barriers.	5. Damaged traffic barriers should be replaced and their adequacy reevaluated to ensure pedestrian safety.
Traffic Control Devices	1. Signs must be readily visible to pedestrians.	1. Inspect the signs from the vantage point of the pedestrian who is expected to read it. The signs should not be obscured by other signs or foliage.
	2. Pedestrian signs must be at a mounting height that can be read by all pedestrians.	2. If the sign extends into an accessible route they must be mounted in accord with the MUTCD to permit safe passage under the sign. Signs mounted on a wall should be mounted at a height between 1370 millimeters and 1675 millimeters (54 inches and 66 inches).
	3. Pedestrian signals must be maintained.	3. Pedestrian signals should be periodically: • Inspected for damage due to turning vehicles. If damaged, consider back bracketing the pedestrian assembly. • Refurbish, including lens cleaning and bulb replacement.

Source: Planning, Design and Maintenance of Pedestrian Facilities, FHWA, 1989.