

Master Plan Element Section V

# Circulation Plan Element

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Township of West Windsor | Mercer County, New Jersey

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## INTRODUCTION

The Township of West Windsor in Mercer County, New Jersey has continued to develop at a rapid pace since the latest revised Circulation Plan was prepared in 2002, revised in 2010, and traffic volumes within the Township have increased accordingly. Until very recently, the Township has been faced with situation in which there are more approvals for proposed development than can be sustained on the existing transportation network. With the onset of the COVID-19 pandemic, transportation systems have experienced less stress than before, as:

- Commuting to jobs has become less necessary due to telecommuting,
- Consumer good acquisition has been greatly affected by online shopping and delivery, and
- Trips on roadways are more essential (in-person work, education, food shopping or medical) in nature, or if leisurely, reflective of specific destinations and experiences.

The character of roadway traffic has been altered for the foreseeable future, as reliance on the automobile has been diminished. Although volumes of traffic may be reduced, the makeup of traffic may also be geared toward deliveries and recreation, requiring accommodation of truck traffic along with pedestrians, bicyclists and motorcyclists. Artificial intelligence will gradually develop so that people feel comfortable in self-driving cars, leaving motorists as enthusiasts. Automobile ownership will be less necessary and may become optional as people order a car equipped for their purpose, whether it is a trip to school, a night on the town, or to the airport. The ubiquitous nature of personal electronic devices will persist and evolve to make car transportation another transit option.

As elsewhere, West Windsor Township roadways will become less important for capacity reasons and will absorb more different types of uses geared toward automobiles, cyclists, and pedestrians. Roadway lanes will become less of an issue whereas apportionment of the available widths will become more. Focusing on maintenance and safety of our roadway and transit systems can and now should take the place of capacity's historical domination.

## CRITICAL CIRCULATION AND GROWTH ISSUES

As the Township approaches a level of infill development, where large tracts of land become earmarked for their purposes, the scopes of roadway systems will become much more critical. Correct sizing and configuration of these large tracts' connections is in the near term, as Princeton University's Lake Campus, the Sarnoff Tract, the Wyeth tract and others become developed.

Accordingly, the Township can take the opportunity suggested by significant changes in transportation demand to reduce roadway construction and capacity. An area is often defined by its connections to the roadway system. "Transportation drives the plan" has often been said by members of the engineering and planning communities alike.

Thus, we have an opportunity to set up the Township's remaining land uses by deciding on the scale and character of the connections to them. Each of these tracts of land has a history to it, and each has latest thoughts on how development might look. This Circulation Plan Element should be a guide to developers and other interested parties ascertaining Township goals for movement of goods and people.

Reaching further, the Circulation Plan Element should acknowledge the potential for reuse of lands which could be fundamentally changed. Although residential uses will always be in demand, office, and commercial uses, particularly retail, may shift to other functions. Regardless of the uses, it is likely that these clusters around US Route 1, if redeveloped, will be of the considerable size to support mixed use development incorporating residential, commercial and institutional uses. The resulting density, and characteristic localization of trips, will result in less demand on regional roadway systems will tend to reduce stress on arterials. Economies will cycle and West Windsor's robust economic history, due to its location on the Northeast Corridor and US Route 1 will result in adaptive reuse. Market forces have historically made the Route 1 corridor attractive to corporations and developers seeking new facilities and opportunities.

After decades of defining and implementing transportation facilities through a variety of innovative planning initiatives and funding mechanisms, West Windsor has in place a high quality regional and local arterial system. The remaining local projects, such as improving Route 571 through Princeton Junction, Edinburg improvements, are mainly intended to resolve local circulation needs and not to add large amounts of system capacity. The previously contemplated Millstone Bypass will not be constructed, but its demand may be replaced by a new connection across US Route 1 proposed by Princeton University, may offer the safety benefits of signal removal on US Route 1, and should remove some traffic from the Washington Road area of Penns Neck.

US Route 1's widening to four lanes in each direction is in preliminary design by NJDOT as of this writing. In the early 1980's, four decades ago, the New Jersey Department of Transportation studied the Route 1 corridor and concluded several things: office space construction would be massive; major improvements would be needed to both Route 1 and the local roadway system; and even with all of that in place, traffic demands would overwhelm the available system capacity over the long term. The Route 1 improvements now in place and nearing completion emerged from that study, but it was recognized at the time that they would be insufficient for the long-term needs of the corridor. However, the definition of long-term needs may have shifted, to the point that West Windsor Township and its interested parties now have the luxury of selecting land uses which do not hold the automobile paramount. Indeed, the selection of land uses which are not specifically geared toward the automobile should be encouraged, as the "Catch-22" of automobile-centric development producing only other automobile-centric development may have been broken.

Similarly, the Township may wish to reexamine its parking standards for new development. As new development becomes more oriented toward other modes of travel, or less travel in total, the amount of parking required for development may be less than that required today. Existing parking lots may be repurposed for development or may be desirable as automobile storage areas for on-demand self-driving car services. In redeveloped areas of the Township, parking for residents may be an option available for a fee, as it may not be necessary to have two, or even one car.

Now in the age of potentially diminished future automobile demand, it is appropriate to consider the viability of West Windsor Township's traffic model and resulting Capital Improvements Plan. Historically, the Capital Improvements Plan has been based on traffic demand, however, traffic capacity and demand may not be the sole determiner of which roadways or other improvements should be constructed under the Capital Improvements Plan or otherwise.

As a result, the Township's future planning efforts should seek to establish a balanced transportation system with three distinct types of activity:

- Adjustments to the Township's land development policies to encourage development which produces fewer commuters during peak hours and allows trips to be made on foot or other modes of travel. These policies could include changes in Floor Area Ratio (FAR); transit-friendly design; redefined uses (for example, research instead of office, resulting in a lower site population); or alternative uses (residential and retail typically generate fewer peak hour trips per acre than does conventional office, assuming office remains a primary viable use).
- Encourage bicycling and other forms of travel apart from the single-occupant vehicle. The Township has a unique opportunity to reduce auto dependency. Connectivity in every form can likely manifest itself as pavement areas are found to be too large for vehicles and can be repurposed. However, a link between two points is only useful if it is continuous, so the Township should focus on eliminating gaps in trail systems, and fostering, to the extent possible, local trails on private property. Historically, Transportation Demand Management (TDM) and transit programs have had little effect in suburban environments such as West Windsor. However, because future traffic volumes may be smaller than recent, and the internet's ability to connect transit segments into a hassle-free trip consolidating payment and offering choices, TDM and transit may be rebounding. In fact, internet-based route and trip planning is a form of TDM. Optimization of the existing circulation system using private-sector technology and available public right-of-way should take precedence over large capital outlays. Construction of bus rapid transit or light rail systems should be done where there is an overwhelming, obvious demand, because these systems may not induce demand themselves.
- Roadway planning and construction will be needed, both to complete the projects already contained in the circulation plan, and to define, fund, and implement specific, limited projects in the short term. Long-term efforts to build out of congestion may not be necessary, nor should they. The focus should be on maintaining the existing system, promoting safety, and most of all, making transportation elements fit their place as areas of the Township are returned from the automobile to other uses with a sense of "place" for residents, workers and visitors. Removal of automobile traffic from areas such as Penns Neck, to return the viability of land uses and restore the area should be the goals of roadway planning efforts. This is a marked recent shift from increases in pavement area for capacity's sake. Finally, safety efforts should concentrate on resolving high crash areas, removal of municipally maintained traffic signals where possible, and simplifying the task for roadway users by eliminating confusing directional signing and other clutter.

A former challenge encountered in developing prior Circulation Plans was the competition between the need for new or widened roadways and the resulting impacts to the abutting Township residents and business owners. There was much discussion as to whether the Township should provide needed transportation capacity despite the impacts to adjacent property owners, or whether it would be preferable to limit roadway widening projects and attempt to absorb the added congestion. No longer should the alternate to providing the needed transportation capacity on arterial roads be a major increase in congestion on those roads and the diversion of traffic to local and collector roadways. The

Township should make paramount the preservation of the quality of life in local residential neighborhoods. The community has elected, through this master planning process, to limit the amount of roadway widening in residential areas, and to focus on providing safe pedestrian and bicycle movements in heavy traffic locations.

## PRINCIPLES OF THE CIRCULATION PLAN

The Township has an established overall circulation strategy based on a hierarchal road network. The purpose is to provide a roadway system that consists of arterials and collectors to transport regional and inter-township/county traffic, and collectors and local roadways for internal traffic. The arterial roadways are intended to direct traffic around, not through, residential areas of the Township. Arterial roads tend to be under the jurisdiction of the State or the County, and improvements require the approval of many more entities than local improvements. As such, the Township has a smaller amount of control over the phasing of these projects as they are prioritized on a regional basis. For instance, the formerly proposed Millstone Bypass, needed to reduce congestion on US Route 1 and alleviate traffic on Washington Road, is under State jurisdiction. The State had significant opposition by Princeton Township and Princeton Borough, and as a result of constituent pressure, the project was scrapped. However, the need for an alternative link between the Princeton University Lake Campus, and the Sarnoff Tract will always be needed to reduce east-west traffic in the Penns Neck community, assist NJDOT's long-term goal of signal removal on US Route 1, providing adequate access across US Route 1 to ensure adjacent land uses' viability, and to provide regional access across Route 1 using roadway networks incorporated into the Lake Campus and Sarnoff Tract. The planning of effective regional traffic circulation also requires coordination with the neighboring municipalities, the County and the State.

Planned roadway and intersection improvements are identified, albeit based on traffic changes and demographic changes within and around the Township which are difficult to predict. Due to the pandemic and temporary and future reductions in traffic growth, the Township should take advantage of the opportunity to redefine decades of automobile-oriented land development.

## GOALS AND OBJECTIVES

The main purpose of this Circulation Plan is to adequately plan for the upgrade of the transportation network. However, there are many supporting goals and objectives used to accomplish this initiative. Those goals and objectives include the following:

A. Goal: Continue to pursue a coordinated road plan, which enables the safe and efficient movement of people and goods and minimizes the negative impact of regional traffic on local roads, particularly in residential areas.

### Policies

1. Establish a hierarchy of roads with appropriate geometric characteristics and capacity, thus avoiding channeling regional traffic onto local streets resulting in the degradation of residential areas and community centers.
2. Continue to support a system of existing arterial roadways for the purpose of carrying regional and inter-municipal traffic through West Windsor. Discourage regional traffic from using local and collector roadways.

3. Support completion and upgrading of connections roadways to aid in improving local circulation, particularly those related to Route 1.
4. Limit major new road construction to those linkages and improvements identified in the Circulation Plan as needed to insure an adequate distribution of local traffic.
5. Emphasize development of final major connections and local roadway improvements as part of development of major parcels (Lake Campus, Sarnoff Tract, Wyeth Tract) to aid in east-west traffic movement, rather than invest time and resources in long-term, Federally-funded projects.
6. Plan for a transportation network compatible with those of neighboring Townships, the County, and the State. Coordinate with regional Metropolitan Planning Organizations, Transportation Management Associates and local bicycle and pedestrian advocacy groups.

B. Goal: Encourage alternate circulation modes and networks (e.g., pedestrian, bicycle, bus/mass transit) to be devised to minimize local auto traffic trips, and to increase opportunities for recreational bicycling and walking.

#### Policies

1. Provide and interconnect pedestrian and bicycle pathways throughout the Township, with particular emphasis on interconnections between recreational uses and schools. Create bicycle-compatible roadways to improve accessibility to parks and recreation areas and develop a network of multi-use trails.
2. Improve pedestrian accessibility in areas of the Township where pedestrian traffic is encouraged (i.e., train station, community recreation areas, shopping areas) and in areas where pedestrian activity is anticipated.
3. Plan various modes of transportation so that they interface cohesively to encourage intermodal travel. In particular, encourage implementation of a transit-way system capable of supporting bus rapid or light rail transit to link major employment, retail, and residential areas with train station, park-and-rides, and other elements of the regional transportation system.
4. Encourage alternate commuter rail parking and rail stops in the region to minimize future impacts on the Princeton Junction area.
5. Make Mobility as a Service – MaaS (a/k/a device-based trip planning and ticketing) a priority by providing Township-based service information to MaaS developers, and encouraging other transit providers in the Township (e.g. Tiger Transit, NJ Transit) to open their data to private sector computer-based or device-based applications.

C. Goal: Create a pedestrian and bikeway system that makes walking and cycling a viable alternative to driving, and which improves bicyclist and pedestrian safety.

Policies

1. Provide accessible, convenient pedestrian and bicycle compatible links to major generators and destinations, including major shopping and commercial destinations, the Princeton Junction Train Station, employment centers, schools, and community facilities.
2. Provide bicycle parking and storage at major bicycle destinations, including working with employers and retailers to provide facilities for commuters and patrons.
3. Identify locations and provide roadway illumination at those locations where pedestrian street crossings and movements occur. Appropriate levels and types of illumination should be determined. Pedestrian crosswalks, signage, bus stop locations and amenities, and other treatments should be reviewed to improve safety.
4. Provide the public with information on bicycle and pedestrian facilities by including these facilities in device-based (e.g. iPhone or Android) applications. Institute bicycle and pedestrian safety programs for school children and educational efforts directed at adult cyclists and drivers.
5. Maintain programs to track bicycle and pedestrian crashes and to develop solutions for problem areas; to increase the public's awareness of bicycle and pedestrian safety, and to implement roadway features such as signage and traffic calming to improve pedestrian and bicycle safety. Consult with County and State partners which regularly analyze this data for ease of implementation.
6. Seek to improve roadway lighting in the vicinity of pedestrian crosswalk locations and other areas of pedestrian activity to improve the safety of such locations.
7. Identify missing links in the sidewalk network, prioritize bicycle and pedestrian improvements and assure that bicycle and pedestrian facilities are considered as an integral part of all street maintenance and reconstruction work. Work with Mercer County and the State of New Jersey to incorporate bicycle and pedestrian facilities into roadway reconstruction, resurfacing, and improvement projects.
8. Continuously improve and maintain bicycle and pedestrian facilities by incorporating them into new open space as acquired and as feasible. Coordinate with neighboring communities, the County, and the Greater Mercer TMA to provide linkages to create a regional bicycle trail network. Specifically, the Township should work with Plainsboro Township and the Board of Education to provide a high-quality pedestrian and bicycle connection to the High School property in Plainsboro. Seek to implement stable funding mechanisms, such as funding bicycle facility, sidewalk, and crosswalk maintenance as a regular part of the street maintenance budget and exploring the possibility of funding multi-use trails through the Township's open space tax.

D. Goal: Develop an implementation plan for necessary transportation improvements, which outlines the schedule for improvements and funding mechanisms, utilizing the off-tract transportation improvement program.

#### Policies

1. Continue application of off-tract road improvements and pro-rata share obligations for roadway improvements generated by new development in accordance with the Township Circulation and Capital Improvement Plan.
2. Evaluate the impact that changes in the circulation plan will have on the Capital Improvement Program and the Township's roadway assessment program and, if needed, seek appropriate modifications to agreements with Mercer County, in conjunction with State and Federal agencies.

## WEST WINDSOR CIRCULATION NETWORK

This Circulation Plan provides a planned circulation network and a corresponding Capital Improvement Plan (CIP) developed to systematically achieve the transportation goals of the Township's roadway network. The intent is to utilize the existing roadways with planned improvements, to the fullest extent possible, then plan new roadways to complete the network. The steps used in developing the circulation network for this Circulation Plan are as follows: a) develop a hierarchical classification of roads to provide a logical network of local roads leading to collector roads and collector roads leading to arterials; b) determine the standard characteristics of each roadway classification; c) determine the individual roadway improvements needed to comply with the classification standards; and d) evaluate the future network traffic volumes versus roadway capacity to identify the sequence of construction.

### Roadway Classification

The Township circulation plan is formulated using a roadway classification system based on a hierarchy of intended traffic-carrying capacity and roadway function. This system classifies roadways as arterials, collectors, or local streets. The classification given to each roadway relates to the function that roadway serves within the transportation system. The classification of roadways within the Township was guided by the American Association of State Highway and Transportation Officials (AASHTO) definitions of roadway classifications, adjusted for local conditions. In addition, the State mandated standards for residential roadways are published in the Residential Site Improvement Standards (RSIS). The Township is required to comply with the RSIS standards or file for a waiver to exceed these standards on a project specific basis. These standards dictate design standards for residential roadway infrastructure for roadway classifications from major collector and lower, which include minor collectors and local roads. Local roads can fall into many RSIS classifications (i.e. alleys, loop roads, cul-de-sacs).

In this fashion, a hierarchical system of roadways was established which, in descending order, accommodates lesser volumes of traffic. The highest traffic volumes are accommodated on the principal arterial (US Route 1). The next level would be the arterial system, then the collector system (principal, major and minor), with the local street system carrying the lowest traffic volumes.

The arterial roads, which carry the highest volumes of traffic, are the most difficult to designate. Those that are already built with arterial design standards can simply be redesignated. But those that must be selected to complete the network are most difficult to designate.

The roadway classifications for arterials are not regulated by the RSIS. The differentiation between principal collector and arterial roads is related both to the type of traffic intended to travel on the road, as defined herein, and to the projected design traffic volumes. Roadway traffic for collector roads is defined per RSIS not to exceed an average daily traffic (ADT) of 7,500 vehicles. However, some arterials may have ADTs less than 7,500 vehicles per day as well.

The roadway and right-of-way widths indicated below for roadway classifications are similar to the prior Circulation Plan, except for roads regulated by RSIS. The collector and local road standards shown are consistent with RSIS to the extent that they are not already built or designed, provide additional width for bicycle compatibility and provide additional width for purposes of intersection and driveway turning lanes. During the review of development applications, the Planning Board should seek to achieve an optimal level of service through the design of such details as intersections, islands, shoulders, bike paths, and driveways. The current RSIS standards result in a narrower roadway and right-of-way, where turn lanes are not present, than previously planned by the Township, which would cause a discrepancy for drivers between those collectors that are already constructed to a wider section and those that are newly constructed to the RSIS standards. One additional change in this Circulation Plan caused by the RSIS classifications and standards is the reclassification of four lane major collectors to the principal collector classification. RSIS does not provide for a four-lane collector.

Another area of the RSIS that requires further waiver attention is that two lane residential road standards provided in RSIS do not allow for shoulders and curb, only one or the other. However, there are locations that curb is needed for drainage and safety, as well as traffic shoulders for safety and bicycles. The Township should pursue revision of the RSIS to permit use of both without a special waiver.

The road classifications used in West Windsor Township to advance a peripheral arterial road network and its supporting collector/local street system are described in the following subsections.

The Circulation Plan Map shown on the next page illustrates these three classifications.

### 1. Principal Arterial Roads

Principal arterial roads are the highest order road classification in the Township. A principal arterial road provides limited vehicular property access and generally carries high volumes of inter-municipal and regional traffic.

Principal arterial roads have a typical right-of-way of 150 feet, although the New Jersey Department of Transportation (NJDOT) is seeking up to 170 feet in certain instances on future improvement plans for Route 1. Route 1, the only principal arterial road in West Windsor, now has six (6) travel lanes, with a median traffic divider. NJDOT plans for Route 1 call for elimination of all traffic signals in the Township to increase traffic capacity and reduce delays. Grade separated interchanges have been and will continue to be constructed at key intersections to replace signalized intersections as a means of crossing and accessing Route 1. Construction is also underway to construct a collector-distributor divided roadway configuration between Meadow Road and Carnegie Center Boulevard along northbound Route 1.

### Principal Arterial Roads:

- Route 1

### 2. Secondary Arterial Roads

A secondary arterial road links the collector road network with other arterial roads. The secondary arterial roads are designed to carry high volumes of traffic from one community to another and direct vehicular traffic away from the residential core of the municipality onto a higher volume road network. Secondary arterial roads are designed for four travel lanes with a right-of-way (ROW) of 80 feet. Route 571 should have a 60-foot roadway width between Clarksville Road and Cranbury Road/Wallace Road to accommodate one through lane in each direction, a center turn lane, and shoulders for bicycles and turning movements.

### Secondary Arterial Roads:

- Quakerbridge/Province Line Roads
- Old Trenton Road
- Princeton-Hightstown Road (Route 571)
- US Route 1 Crossing (Route 571)
- Clarksville Road (from Quakerbridge Road to Meadow Road)
- Meadow Road
- Alexander Road (from Route 1 to North Post Road)

### 3. Collector Roads

Collector roads are designed to carry moderate volumes of traffic from other collector roads and local roads to the arterial road network. Generally, collector roads carry traffic originating in one location within a municipal boundary, destined for another location within the municipality.

Minor and principal collector road classifications are used in West Windsor, with the latter being a newly added classification. Principal collectors are designed to support greater traffic volumes than minor collectors since they collect traffic from a series of residential neighborhoods or minor collectors and extend to an arterial roadway. The principal collector classification is also used for circulation roads in and around commercial developments that contain local residential traffic, such as Canal Pointe Boulevard and Nassau Park Boulevard.

RSIS requires for minor collectors up to a 36-foot road with parking lanes, with travel lanes from 10 to 12 feet and ROW of 50 to 60 feet. The roadway widths and ROW widths are dependent on the provision of shoulders and parking lanes. Typically, in the Township, collector roads have previously had a right-of-way of 60-70 feet and consisted of two to four (2-4) travel lanes, as traffic capacity and acceptable levels of traffic service warrant. Principal collectors will have a 70-foot ROW with 50-foot roadway widths supporting either four lanes or two lanes plus shoulders, widened for turn lanes as needed.

### Principal Collector Roads (4 lanes wide):

- Roszel Road
- Nassau Park Boulevard
- Canal Pointe Boulevard
- Carnegie Center Drive Connector to Meadow Road

- Carnegie Center Drive loop road
- Carnegie Center Boulevard
- Alexander Road (West of Route 1 to Princeton)

Principal Collector Roads (2 lanes wide):

- South Mill Road
- New Edinburg Road
- New Village Road
- Village Road West
- Edinburg Road
- Clarksville Road (Meadow Road to North Post Road)
- Clarksville Road (North Post Road to Route 571)
- North Post Road, Village Road to Clarksville Road
- Bear Brook Road
- Washington Road (west of US Route 1 to Princeton)

The principal collectors intended for a center median and/or center turn lane include, but are not limited to, New Village Road, Village Road, New Edinburg Road, Nassau Park Boulevard, Carnegie Center Boulevard and Bear Brook Road. Mountable curbed and landscaped median islands would be provided at roadway intersections, along with turn lanes to enhance pedestrian safety and traffic turning movements.

Minor Collector Roads (2 lanes wide):

- Route 1 Crossing extension roads (to Harrison Street, Washington Road and Sarnoff)
- Southfield Road
- South Post Road
- Rabbit Hill Road
- Cranbury Road
- Millstone Road
- Clarksville Road (Route 571 to Cranbury Road)
- Village Road East
- Conover Road
- Robbinsville Road
- North Mill Road
- Bennington Drive
- Dorchester Drive
- Line Road
- Windsor Road
- Wallace Road
- North Post Road, Clarksville to Alexander Road
- Washington Road (Station Drive to Millstone Bypass)
- Lanwin Boulevard
- Meadowbrook Road

- Woodmere Way
- Cubberly Road
- Grovers Mill Road
- South Lane (between Village Road East and Windsor Road)
- Wheeler Way (Emmons Drive to Farber Road)
- Emmons Drive (Wheeler Way to Route 1)
- Penn Lyle Road
- Proposed Vaughn Drive Extension (described in the New Roadways and New Alignments section)
- Proposed Meadow Road Extension to Village Road (described in the New Roadways and New Alignments section)

#### 4. Local Roads

Any road within the Township not designated as a principal arterial, secondary arterial road, or collector road is considered a local road. Local roads are the lowest classification roads in the Township and are designed to carry low volumes of municipal traffic from residential subdivisions and planned developments to collector roads.

Ward Road has been designated a Local Road connecting North Post Road to Penn Lyle Road. No exact alignment has been delineated, but the primary objective is accommodation of the needs of emergency service vehicles and incorporation of bicycle/pedestrian friendly pathways. The alignment should minimize any adverse impacts to the environment and to any natural features. There should be no connection between Ward Road and the Birchwood neighborhood.

#### Local Roads

- Ward Road

#### New Roadways and New Alignments

The arterial roadways include Route 1, Route 571, Quakerbridge Road, Hughes Drive, and Old Trenton Road. Currently there are "bottlenecks" along many of these roadways that require improvement to avoid the diversion of traffic onto lower hierarchy roads intended to serve mainly residential traffic. For example, there are historic bottlenecks on Route 1 at various signalized intersections; on Old Trenton Road at Edinburg Road and Robbinsville Road; and on Route 571 in Princeton Junction and at Route 1. The added capacity of these road improvements is needed even to accommodate the existing traffic demand. Traffic congestion and diversion to residential roads will worsen until these improvements or alternate improvements are completed.

In an effort to further the Township's circulation policy to direct large traffic volumes along an arterial road network, these new roadway realignments and/or new roadways continue to be needed to alleviate existing congestion. The current list of such improvement projects includes the Meadow Road extension at the Clarksville Road to Village Road intersection (including a widened bridge); Vaughn Drive Extension from Alexander Road to Route 571; connection across US 1 between the Lake Campus and Sarnoff Tract, and widening of Route 571 to provide turning lanes and shoulder through Princeton Junction.

These proposed improvements are indicated on the Circulation Map. It should be emphasized that these alignments are not fully engineered, and variations could occur prior to final designs being prepared.

#### Meadow Road Extension to Village Road

The realignment of Meadow Road from Route 1 to Clarksville Road was completed based on safety and environmental concerns along existing Meadow Road and future Meadow Road/Route 1 grade separated improvements.

The extension of Meadow Road from Clarksville Road to Village Road has been on plans for years, and right-of-way has been secured in various forms for this connection, and it can be constructed with the reconstruction of a new Clarksville Road bridge over Amtrak. Alternatively, a bicycle-pedestrian trail could be constructed on the new alignment, depending on demand and wetland delineation. The Township should evaluate the importance of this connection. (More can be added here based on feedback.)

#### Vaughn Drive Extension

Vaughn Drive is presently a local roadway serving as access to the Princeton Junction train station. The thoroughfare from Alexander Road to Washington Road via Vaughn Drive starts at Alexander Road, continues via access aisles through the Princeton Junction train station, and then connects with Station Drive to Washington Road/Route 571. It is not a direct link and not a through roadway in its current condition. The realignment and extension of Vaughn Road as a Township owned through roadway would provide another connection between Alexander Road and Route 571. Vaughn Drive should be constructed to a 36-foot cartway, with two lanes plus turn lanes. This improvement will accommodate some of the traffic volumes destined for Route 571 from Alexander Road that would otherwise travel via the Alexander Road Bridge.

Pedestrian and bicycle paths should be provided along the improved Vaughn Drive to facilitate non-motorized access to the train station.

#### US Route 1 Crossing

In order to provide local east-west circulation, the project would provide a bypass of the Penns Neck area of the Township, directing traffic on Route 571 traveling toward Princeton to travel on a new two lane roadway starting at the railroad bridge at the base of Washington Road, traveling to the north side of the Sarnoff site, crossing Route 1 just south of Harrison Street, and continuing to a point in the Lake Campus. It could connect to an extension of Canal Pointe Boulevard. Washington Road will have right turn access only to Route 1.

The alternative currently preferred by the Township includes a connector to Harrison Street and a connector to the Sarnoff buildings, and a grade separated interchange at Route 1 with the northbound Route 1 ramps signalized. Due to the project's overall proximity to the D&R canal, there are still environmental impacts of concern to many.

#### US Route 1 Mainline

Development of the remaining major non-residential tracts in West Windsor - Wyeth, Sarnoff, the remainder of Carnegie Center, and the Princeton University lands - will continue to stress even the improved Route 1 when coupled with ongoing regional growth.

Several actions will be needed in the long term to ensure that Route 1 can continue to absorb and serve the high volume of regional traffic which desires to use it. Failure to provide the necessary improvements will inevitably result in traffic diverting to the local street system, impacting areas of the Township that are sensitive and should not be so impacted. Further projects along Route 1 could include the following:

- Route 1 / Nassau Park Boulevard – The traffic signal was removed at this intersection. Additional construction of some additional ramp modifications within the Quakerbridge Road interchange and of additional lanes in the Quakerbridge Road / Province Line Road intersection will be needed to mitigate possible impacts. As development of the Wyeth tract proceeds, this intersection is an obvious location at which a grade separated interchange could be constructed, providing access to both Wyeth and to Nassau Park. Funding of such a major project will need to be determined.
- Route 1 / Carnegie Center Boulevard - This intersection is signalized at present, but once the Route 1 Crossing is completed and traffic signals removed from Penns Neck and Nassau Park Boulevard, it would be the only signal between I-295 and South Brunswick. Therefore, it is very important that this signal also be removed. In the past it has been suggested that a grade-separated interchange could be constructed here, but no funding source has been established and several Carnegie Center buildings block the interchange footprint. Therefore, it may be preferable to simply remove the signal, make the movements into and out of Carnegie Center Boulevard right-in/right-out only, and absorb the diverted traffic at the Alexander Road and Meadow Road interchanges. Special detailed studies will be needed to establish the effects of such a closure, to investigate alternatives, and to define any needed mitigation measures.

Clearly projects relating to Route 1 are within the jurisdiction of the New Jersey Department of Transportation. The Township will need maintain their good working relationship with the Department, so that these critical projects can be planned, programmed, funded, and ultimately constructed.

#### Princeton Junction

The Princeton Junction area includes several of the special roadway alignments discussed in this section including the Alexander Road Bridge, Vaughn Drive, and portions of the access to the Sarnoff Tract and its connectors. Other crucial roadways in this area are Wallace Road, Route 571, portions of Clarksville and North Post Roads, Alexander Road, and Bear Brook Road. Several improvements to these roadways and corresponding intersections will be needed to provide mobility in the peripheral roadway system:

- Vaughn Drive Extension should be constructed connecting Alexander Road and Route 571;
- The intersections of Route 571 with Wallace Road, Clarksville Road and Alexander Road should be improved to include turn lanes on all approaches and optimum signal timing, phasing and coordination; and
- Adequate pedestrian and bicycle safety amenities, including bike lanes, sidewalks, improved crosswalks, and pedestrian signals should be integrated into the improvement plan for Route 571 and nearby streets, including the vicinity of the Princeton Junction Train Station.

These improvements are closely related in shaping a traffic circulation network within Princeton Junction that is compatible with the land use initiatives in this area. In particular, there are recent efforts

to establish a Princeton Junction village center. If this initiative is pursued, the Township must reassess the long-term transportation circulation network in this area.

It should be noted that the development of the Sarnoff property will impact traffic flow through Princeton Junction. Assessment of an early development proposal indicates that traffic generated by the Sarnoff development and traveling through Princeton Junction could be equivalent to one full lane in each direction. This impact would be in addition to future traffic demands which would exceed the capacity of the proposed three-lane improved roadway after 10 years or so. While evaluating alternative land use and transportation plans for Princeton Junction, a thorough analysis needs to be made of the Sarnoff development and other through-traffic factors.

### Sidewalks and Bicycle Pathways

The Planning Board adopted a comprehensive sidewalk master plan. That master plan included an inventory of existing walkways and a priority listing of extensions to be completed. Many of the missing links have since been completed and the inventory updated.

In 2004 the Township participated in a joint bicycle/ pedestrian planning process funded by New Jersey Department of Transportation, and which provided recommendations for improvements to facilitate pedestrian and bicycle movement through the Township. Recommendations of that study are reflected in this Circulation Plan.

This Circulation Plan reaffirms the need for annual updates to the inventory and sidewalk extension program. A copy of the latest inventory and list of priority sidewalk extensions is included. All projects in the Township must conform to the Americans with Disabilities Act. Handicap ramps are to be provided at curb-sidewalk intersections. During roadway and site design projects, existing deficiencies will be identified and corrected.

### Principles of Bicycle / Pedestrian Facility Design

It is recommended that sidewalks be added along new site development frontages unless there are extreme reasons not to provide the sidewalk. The individual sidewalk links are very crucial in terms of completing the sidewalk network. In residential neighborhoods and pedestrian activity centers (train station, recreation areas, schools, future town or village center), sidewalk should be provided on both sides of roadways to the fullest extent possible, within the guidelines of the RSIS. Sidewalk should be provided along Wallace Road, Cranbury Road, and throughout Berrien City. Enhancements to the roadway lighting should be considered through this area since much of this pedestrian activity occurs during dark conditions. The Township engineer staff should also develop plans for additional sidewalk to provide access to Community Park, including along Route 571.

With continued development of the Route 1 corridor, it is recommended that this sidewalk plan be re-examined to ensure that opportunities for creating appropriate linkages between housing, jobs, and supportive community facilities are implemented. As grade separated interchanges are designed for intersections along Route 1, pedestrian and bicycle accessways should be incorporated as part of those structures or in a separate location where such traffic demand would logically be expected to cross Route 1. On the west side of Route 1, pedestrian/bicycle pathways from residential development are being tied into the D&R Canal system. This concept should be extended to include future office developments as well as longer-term development of Princeton University lands. Similarly, on the east

side of Route 1, pathways within Carnegie Center are being connected into similar systems from other developments, such as the Palladium office and hotel development.

The Township endorses the concept of providing multiple bicycle/pedestrian-friendly crossing opportunities along Route 1, such as at the existing Dinky rail line as well as other locations with significant potential for bicycle/ pedestrian activity.

Similarly, a continuous sidewalk system should be provided along Meadow Road and Clarksville Road to Route 1, and along Alexander Road from Princeton Junction to Route 1.

An important element of the Township's overall circulation system involves bikeways. Since the 1970's, bicycling for commuting, recreation and other travel purposes has become increasingly popular in the county and in West Windsor. Adequate bicycle circulation, which links people with major activity centers, is achievable in the Township. There are several circulation components that make up the township bicycle network plan: bicycle lanes, roadways with compatible shoulders, shared roadways, and multi-use trails. Multi-use bicycle pathways or trails also provide pathways for pedestrians. The bicycle circulation system should be achieved utilizing utility ROW and possibly parallel easements along the Greenbelt, consistent with the Township Open Space and Recreation Plan and Greenbelt Plan. Bicycle facilities should be designed in conformance with the NJDOT's Bicycle Compatible Roadway and Bikeways Planning and Design Guidelines.

This plan does not preclude bicyclists from using other bikeways to travel within the Township. In fact, as this plan is developed, additional bikeways should be incorporated. In addition, while this bikeway plan is intended to provide linkage with Township activity centers, linkage with facilities or activity centers outside of municipal boundaries is encouraged by this plan.

#### Design Considerations

Bicycle lanes are portions of roadways that have been designated by striping, signing and pavement markings for preferential use by bicyclists. These lanes may be located on low volume roadways; or roadways with moderate traffic volumes and speeds and having fifteen (15) foot wide vehicular travel lane widths in each direction; or roadways with somewhat higher traffic volumes and speeds and having paved shoulders. Bicycle compatible inlet grates need to be used for new roadway construction.

Bike lanes follow the direction of traffic. Ideally, bike lanes should have a minimum lane width of four (4) feet. However, additional width may be necessary depending on an individual roadway's truck and car traffic volume and speed limit.

The designation of a bike lane on an existing roadway with two travel lanes allows for the preservation of a wider shoulder area for bicycle travel. It also strengthens the ability of the Township to seek from the NJDOT a reduced speed limit for the roadway.

Bicycle lanes are generally recommended for collector or arterial roadways that provide direct connections in the bikeway network. Bike lanes also provide links between major employment centers, schools, shopping centers, and higher density residential areas. Roads recommended for installation of bike lanes typically are found in the northern section of the Township where the population and commercial centers are at a higher density than the more rural, lower density areas in the southern part of the Township. Within the category of proposed bike lanes, it is useful to further categorize roadways into those needing minor or major improvements. Bike lanes designed with minor improvements can

typically be created through spot widening or restriping of shoulders and travel lanes. Bike lanes that require more significant improvements typically are incorporated into larger roadway improvement or construction efforts. For example, the Township could coordinate with Mercer County to install bike lanes on County roads as part of planned capital improvements, such as milling or repaving.

The majority of the West Windsor bikeway circulation plan consists of bicycle lanes along roadways as depicted on Figure 4- Bikeway Circulation Map. The reason for this is that bike lanes do not require much public funding since the roadways on which the bicycle lanes will be located have sufficient roadway width to accommodate vehicular and bicycle traffic. Some signage and striping will be required at a minimal cost. General guidelines for signage and striping are provided in the Manual on Uniform Traffic Control Devices.

Roadways recommended for compatible shoulders are typically lower volume roads or streets where the posted speed limit is below 30 mph. All shoulder segments should be designed with appropriate width according to NJDOT guidelines. Segments of roadways that currently meet these standards for shoulder width should be maintained as such or upgraded to bike lanes if located within more developed parts of the Township. Compatible shoulders should be installed when future roadway construction and/or drainage improvements are planned for roads.

With respect to shared roadways, several roadways have been suggested for the bike network even though they cannot easily accommodate bike lanes or compatible shoulders. Most of these streets are in residential areas and have low enough volumes to accommodate shared use.

These roadways provide important connections to generators such as the train station, schools, parks, and other community facilities. Consequently, many of these roads are appropriate for bike route signage and could be designated as shared roadways.

Multi-Use Trails and bicycle pathways are portions of a bikeway that are physically separated from motorized vehicular traffic by an open space or barrier, usually within an independent right-of-way or along a property line. Bike pathways usually are located along railroad tracks, in parks, along river or stream banks, and similar areas. There are a number of existing multi-use trails or pedestrian paths throughout the Township. The majority of these facilities have been installed by developers. (The central pathway system within Carnegie Center serves as an example of such a pathway.)

Multi-Use Trails in greenbelt and environmentally sensitive areas must be designed in consultation with the Township Environmental Commission and other stakeholders, to ensure that such facilities properly account for and relate to the surrounding physical environment.

While they provide an attractive pedestrian facility or a path for young or inexperienced bicyclists, Multi-Use Trails are often too narrow to safely accommodate a wide range of users. Studies also indicate a greater degree of risk in those locations where multi-use trails or side paths intersect roadways or driveways. In the future, multi-use paths should be limited to locations with relatively few driveway and roadway intersections, since motorists can be taken by surprise at those locations. Where they follow parallel roads, these paths should not be considered a substitute for on-road facilities, but rather should be used in conjunction with shoulders or bike lanes.

For a two-directional bicycle path, a paved width of 8-12 feet is necessary depending on expected bicycle traffic, anticipated pedestrian traffic, and pathway alignment. One direction pathways should have a minimum width of 5 feet and a minimum 2-3 foot wide-graded area on both sides of the pathway pavement.

#### Bicycle Facility Locations and Linkages

This Circulation Plan indicates the recommended locations where bicycle facilities should be developed.

In general a bike lane should be constructed within the roadway on two-lane roads, and an off-road bike path should be constructed along roads with more than two travel lanes. The design and layout of such facilities should be subject to the specific conditions of the street and abutting properties and development.

Mercer County Park has an extensive bike pathway system, which extends along the sides of Lake Mercer. This county system is beneficial to West Windsor bicyclists. The Township Bikeway Plan identifies a pathway to connect to this County system to make the existing County system more accessible to bicyclists. The proposed conceptual County bike system extension is shown on the Township Bikeway Circulation Map.

The Township bikeway plan is comprehensive and designed to provide bikeway linkage throughout the community. Because of the cost of providing such a comprehensive plan as well as the fact that additional or more appropriate bikeway routes are likely to be recommended by Township bicyclists, a phasing schedule is established in order to implement the bikeway plan.

The phasing schedule targets a first phase basic bicycle network that provides designated bikeway routes where the greatest numbers of bicyclists are envisioned to travel. The basic network is designed to establish the framework for a comprehensive bikeway system. Access to schools, recreation centers, employment centers, the Princeton Junction train station, and the county park from established residential neighborhoods was considered vital to the basic bicycle system framework. Many of the bike lanes are existing or will be provided during the construction of planned roadway improvements. The bikeways, however, will require specific projects for their completion. It is recommended that the Township -dedicate resources to study and design these pathways.

A specific improvement which should be considered is a pedestrian/bicycle bridge to connect Varsity Avenue and the Princeton University property, which should be coordinated with redevelopment of the property along the northbound side of US Route 1 in Penns Neck. Varsity Avenue could be truncated so that it does not access US Route 1, except for emergency vehicles.

A project to use the PSE&G utility easement for a bikeway is moving forward. The Township is in the process of preparing plans and obtaining easements adjacent to the ROW, which will provide a direct linkage with the Mercer County Park.

The second phase bicycle network involves providing additional linkages from emerging residential and commercial areas to the basic system. No time frames are established for either implementation phase. However, it is anticipated that both phases can be implemented in a timely fashion and coordinated with the capital road improvement plans, as they are prepared.

### Ancillary Bicycle Facilities

To improve the quality of the proposed bikeway system, it is important to provide supplemental or accessory facilities. These facilities will make the bikeways more enjoyable, thus encouraging their greater use.

Bike parking facilities should be provided at various stopping points along the bikeway system for security and weather protection. For example, shopping centers, commuter parking at Princeton Junction, the municipal complex and employment centers should have adequate parking facilities that are conveniently located near building entrances or other highly visible areas which are self-policing. As noted by the American Association of State Highway and Transportation Officials, bicycle parking that is not properly designed will encourage bicyclists to use trees, railings, and other appurtenances for bicycle parking.

The Township should seek ways to encourage employers to provide bicycle-friendly accommodations for employees. These could include such things as bicycle lockers and racks, and shower and changing facilities.

This plan envisions adequate Township capital budgeting to provide for continued connecting of missing minor links of sidewalk and bikeways or bike paths. Funding should also be pursued from the NJDOT. Dedicated funding for pedestrian and bicycle accessibility projects is allocated by the NJDOT and DVRPC.

### Roadway Access and Curb Cuts

This plan seeks to reinforce established local policy to continue sound highway access management procedures with respect to driveway spacing along Route 1 and the Township's major arterial and collector road system. Its intention is to preserve the traffic carrying capacity of such roadways and to preclude multiple access points on all roadway classifications above local or minor collector streets. Depending upon a parcel's specific location, direct access to principal arterials, where other access alternatives are practically available, will be discouraged.

The NJ State Highway Access Management Code controls Route 1 access design. This Code defines the spacing of driveways, driveway widths and number, developer fair share contributions for State highway improvements and allowable traffic operation degradation permitted by developers. The Code heavily supports the use of reasonable alternative access, onto side streets for example, in lieu of driveways onto the heavily congested Route 1. The Code also supports the use of shared accesses and cross accesses to minimize the number of access points along the highway and encourage internal traffic movements rather than external movements to move between sites. Examples of this application within the Township include the shared and cross accesses between Princeton Marketfair, Carnegie Center West and other adjacent restaurant and hotel development, and the future shared access for Princeton Overlook and Carnegie Center West. The Township should continue to support shared and cross accesses for all site plan applications to which such a configuration is reasonable, particularly along arterial roadways. Like missing sidewalk links, individual cross accesses will lead to a comprehensive program, alleviating traffic congestion on these heavily traveled roads. Shared accesses have been of concern to property owners due to potential competition for parking spaces and the desire of commercial property owners to have recognition through its own driveway. Site planning in the Township has consistently supported the goal of reducing intensity of development parcels to preserve adequate parking facilities. In the interest of maintaining diminishing roadway capacity, standards to

require shared and cross accesses for parcels fronting arterials and collector roadways should be developed. The County's future access management plan, discussed below, will potentially offer such standards for County roads. The Township should consider using the County and State access management plans to develop Township standards.

### Mass Transit and Travel Demand Management

Use of mass transit and travel demand management are often closely related to one another. Travel demand management techniques include use of transit, ridesharing, telecommuting and other forms of reducing single occupancy vehicular travel. Use of mass transit is dependent on the cost of single occupancy vehicular travel, including cost of fuel and cost of travel time. When roadway congestion increases, use of mass transit becomes more attractive to commuters. Travel demand management is used to then decrease roadway congestion. Use of mass transit is also dependent on a convenient, cost effective transit system. The Central Jersey Transportation Forum is evaluating bus route enhancements for West Windsor. The Township also has the benefit of convenient rail service that saves travel time for residents and regional travelers commuting to Newark, New York and Philadelphia employment centers on the Northeast Corridor Amtrak and New Jersey Transit rail line. This train station has been one of the attractions for new residents of the Township. The largest deterrent to using the train to travel to these locations is the limitation on parking spaces at the station, which is discussed further in the next section.

The future development of large commercial properties such as Sarnoff and Wyeth, coupled with completion of already approved developments including Carnegie Center and the Palladium, will create a very large employment and retail complex in the Township. The travel activities that this complex (and others in adjoining communities) will generate may be large enough to justify a major public transit investment to link residential, office, and retail areas to each other and to the Princeton Junction train station. It has been suggested that the Dinky rail line could be expanded and extended in the form of a Bus Rapid Transit (BRT) or Light Rail Transit (LRT) facility. This plan illustrates a possible concept: to the north, the line could be extended through the Sarnoff property and further into Plainsboro. To the south, the line could branch to provide a loop through Carnegie Center and the Canal Pointe area, and/or it could be further extended to the south through Nassau Park, the Wyeth property, and terminating in the vicinity of Quakerbridge Mall.

Clearly such a facility would require a substantial commitment by NJ Transit, the State of New Jersey, and others to provide both capital and operating funds. It does appear, however, that the needed activity thresholds are met to insure that a reasonable ridership level will result and that mobility in the Township will be significantly improved by the project. The Township should initiate discussions with responsible transportation agencies to begin planning for a facility of this type.

The Township is also served by several New Jersey Transit bus routes (Routes 600, 603, 609 and 976). Additional route expansions are being evaluated by NJ Transit. The routes primarily service regional shopping areas, hospitals, large office complexes and major employers. These 600 series routes are regional routes, all with bus stops at Quakerbridge Mall in Lawrence Township. Route 600 travels from the City of Trenton to Plainsboro Township along the Route 1 corridor, servicing Princeton Marketfair, Carnegie Center, and the Princeton Junction train station in the Township. Route 603 runs from Lawrence Township to the City of Trenton to Hamilton Township, with stops at Nassau Park in the Township. Route 609 travels from Ewing Township to Lawrence Township via Trenton, with bus stops at Mercer County Community College and Mercer County Votetchnical School in West Windsor.

Route 976 is a Wheels route, specifically geared toward bringing people from high density housing to the train station to support an alternate means of public transportation.

Mass transit currently serves to bring people into the Township to shop and work and serves to bring residents to work in other cities. There is little transit service for the remainder of the residents traveling needs, except to Princeton on the Dinky service.

The Township should periodically evaluate the need for additional service to employment and retail areas to better serve its residents and workers. The Township should review site plans for the need for bus stops, particularly along the Route 1 and Route 571 corridors, and discuss requiring site plan applicants to coordinate with New Jersey Transit for such service.

#### Princeton Junction Train Station

Parking and access to the Princeton Junction Commuter Station remains important to the overall circulation scheme for the Township. Currently, the New Jersey Transit and West Windsor Parking Authority parking lots operate at capacity during the weekdays. New Jersey Transit and the West Windsor Parking Authority provide daily and monthly permit parking.

The Princeton Junction Train Station services much of Mercer County's and part of Middlesex County's rail transit needs. In the 1990's the closest rail stations were in New Brunswick and Trenton, so many commuters traveled to Princeton Junction from Ewing, Hamilton Township, Lawrence Township, Princeton Township and Borough, Washington Township, Hightstown Borough, Cranbury Township, Plainsboro Township, South and North Brunswick Townships. In addition, Pennsylvania commuters may have chosen Princeton Junction Train Station over Trenton station.

A new station opened in neighboring Hamilton Township in 1999, and it is anticipated that a reduction in commuter traffic may be realized from areas such as Ewing, Hamilton and Lawrence Townships. As such, reducing parking at the Princeton Junction station for the construction of Vaughn Drive Extension may become more feasible. The peak travel times for people commuting to and from the station are prior to normal morning peak traffic hours and after evening peak traffic hours. Due to the roadway deficiencies around the station, such as at the Alexander Road and North Post Road intersection, the evening peak traffic failures last for several hours spanning both the rail traffic peaks and typical commuter peaks.

Bicycle and pedestrian access to the Princeton Junction Train Station is an important component of the Township's Circulation Plan in general, and of the Princeton Junction plan specifically. Improvements to bicycle and pedestrian facilities serving the Station should receive priority in the Township's consideration.

Regional demand for rail service will continue to grow as the area continues to develop. Clearly, the long-term solution to maintaining a workable commuter station and preserving the Township peripheral road circulation scheme involves a regional solution. This long-term solution can only be realized by joining cooperative local, County and State efforts, and the construction of a new rail stop between Princeton Junction Station and New Brunswick and construction of park-and-ride facilities within the region, preferably outside the Township. West Windsor should support a future station in South Brunswick Township to achieve a more balanced mass transit accessibility program in the region.

## MEANS OF ROAD IMPROVEMENT FUNDING

A combination of public and private funding is required to implement an overall capital road improvement program. The various sources and mechanisms to attain such funding are described below.

### Capital Improvement Plan

While previous sections of the circulation element addressed the planning rationale and concepts behind the circulation plan, costs for the various identified capital road improvements must also be addressed in order to allow for subsequent implementation of the plan. The Capital Improvement Plan (CIP) is a companion document to this circulation plan, which outlines the schedule and budget for implementing the improvements described herein.

The capital improvement program provides the basis for establishing private and public entities' (Township, county, and state) financial obligations for the various improvements. The program also serves as the basis for the computing developers' pro rata contributions to the road improvements.

To achieve the anticipated private share of the identified capital road improvement costs, the Township should continue to update its established off-tract transportation road assessment program as the collection mechanism for the Capital Improvement Program. The off-tract road assessment program serves the entire Township and is currently operational. The transportation model used for calculating the private off-tract assessment fee must be updated to reflect completed projects and actual or revised construction costs on an annual basis. The model also needs to be updated periodically to reflect changes to industry planning standards, such as trip generation rates.

Township improvements are to be supplied through subsequent adoption by the Township Council of a long range Capital Improvement Program and initiation of specific ten-year capital plans for road improvements. These funding programs should be derived from a prioritization of the projects identified within this Circulation Plan.

Bicycle and pedestrian facilities are considered to be an integral part of the roadway structure, and as such are an important part of the Capital Improvement Program. Costs of such facilities should be included in the Off-Tract Road Assessment Program.

### Off-Tract Road Assessment Program

An off-tract road assessment program, which superseded prior Township improvement district programs, provides for private participation of roadway improvements needed to support on-going site development. This program provides for the calculation and payment of fair share contributions by private developers for roadway improvements that are the financial responsibility of the Township and County. The primary tools used to facilitate this program are the Capital Improvement Program and the West Windsor travel demand model. This model is a series of computer programs that estimates the travel patterns of existing and expected development in West Windsor and translates that development into traffic volumes on the roadway network of West Windsor Township. These traffic volumes have been used to define areas of forecasted congestion and have helped shape the Township's capital improvement plan.

The Township should continue to allow for and encourage developers to construct roadway improvements for a credit towards their pro-rata off-tract improvement fee. This may reduce administrative costs associated with designing and constructing road improvements and eliminate some risks inherent to roadway construction.

#### County/State Improvements

An interlocal service agreement was approved between the Township and the County · which provides the necessary framework for financial resources to fund County road improvements in the Township. For a project to get a strong commitment from the County, it is suggested that the Township seek appropriate project priority on the County's Transportation Improvement Program (TIP) as well as to obtain annually, as necessary, project funding for those improvements in which a county obligation is required.

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