

Circulation Plan Element

Township of Moorestown

County of Burlington

PLANNING BOARD
TOWNSHIP OF MOORESTOWN
APRIL 3, 2014

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Circulation Element

Township of Moorestown County of Burlington

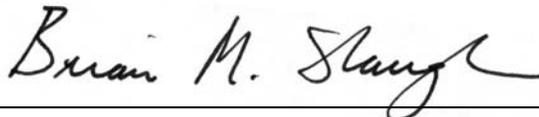
Prepared pursuant to *N.J.S.A. 40:55D-28b(4)* and *-(11)*,
the New Jersey Municipal Land Use Law

Adopted by the Moorestown Township Planning Board

April 3, 2014

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Circulation Element

(April 3, 2014)

INTRODUCTION

This element is concerned primarily with the movement of people and goods within and through the Township. The Circulation Element examines the transportation network of streets, sidewalks and pathways that provide mobility for commuters, residents and business owners. This document takes the local view of the transportation system and its influence on the policies of the Land Use Plan Element. While much of this element focuses on the street network, it also includes a comprehensive bicycle plan and descriptions of public transportation and pedestrian access. Though Moorestown has rail service, it has limited use as a freight line and does not feature in any significant way in providing goods movement. Accordingly, rail transportation is not discussed in this document. Lastly, the element discusses ride sharing ideas and design concepts for improvements to streetscapes.

REGIONAL PLACEMENT AND DESCRIPTION OF ROADS

Moorestown is located in close proximity to Interstate 295 and the New Jersey Turnpike, the two major limited access highways in the southwestern part of the state, paralleling the Delaware River. Access to the Interstate is from state Route 38 (Exit 40) and County Route 636 (Creek Road; Exit 43). The NJ Turnpike's closest access is Exit 4 from state Route 73, a drive of 5 to 10 minutes from most of Moorestown. State Route 38, the only such highway actually in Moorestown, traverses the Township in an east/west direction. Route 38 is the Township's main commercial artery and was originally constructed in 1932. The highway was "dualized" in 1960 by constructing two additional travel lanes and a median strip. Route 73 lies just to the south and west of the municipality in Maple Shade and Mt. Laurel Townships. Route 73 supplies a similar function as Rt. 38. Route 130 lies to the north and west of Moorestown in the neighboring municipalities of Cinnaminson and Delran. This highway served as the principal route between Camden and Trenton prior to the advent of the limited access highway system. Route 130 serves as the primary commercial artery for the river towns in Burlington County. Because the bulk of Moorestown lies between Rts. 38 and 130, considerable intermunicipal traffic occurs on the county roads linking the two highways. The state highway system is linked to Pennsylvania and New York in a complex web of roadways. Because of Moorestown's close proximity to these major routes, it is well positioned for convenient access to Philadelphia, New York and more distant destinations.

The jurisdiction of the public road network is divided among state, county, and local governments. This section of the Element describes the road system within Moorestown. Since no federally designated routes traverse Moorestown, they have been excluded from this section (though Rt. 38 is part of the National Highway System, it has a state route number). Private roads such as those serving apartment buildings, townhouse developments and office complexes or those that create shared access among several uses may serve many of the same functions as the public street network but will not be dealt with in this Element.

Table VII-1 below enumerates the total number of miles under each level of government.

Table VII-1. Road Miles by Governmental Jurisdiction in Moorestown.

<u>Jurisdiction</u>	<u>Number of Miles</u>
New Jersey	2.7
Burlington County	24.7
Moorestown Township	<u>74.0</u>
Total	101.4

Source: NJDOT, Moorestown DPW and CCH calculations.

Table VII-2 lists the roads under state and county jurisdiction in Moorestown. These include the following:

Table VII-2. State and County Roads in Moorestown.

NEW JERSEY STATE ROAD:	Route 38
BURLINGTON COUNTY ROADS:	Lenola Road (Route 608)
	Kings Highway (Route 611)
	Camden Avenue (Route 537)
	New Albany Road (Route 583)
	Church Street (Route 607)
	Fellowship Road (Route 673)
	Chester Avenue/Riverton Road (Route 603)
	Bridgeboro Road (Route 613)
	Moorestown-Mt. Laurel Road (also Route 603)
	Marter Avenue (Route 610)
	Marne Highway (also Route 537)

Table VII-2. State and County Roads in Moorestown, cont.

BURLINGTON COUNTY ROADS: Tom Brown/Westfield Road (Route 614)
 Hartford Road (Route 686)
 Creek Road (Route 636)

Source: NJDOT and Burlington County Highway Master Plan

Sections of two roads identified by county route numbers are actually under other jurisdictions: one under Moorestown's; the other under the State of New Jersey. Main Street connects Camden Avenue and Marne Highway through the center of the Township and carries the County Route number of 537 but is under the jurisdiction of Moorestown. Lenola Road between Rt. 38 and the intersection of Nixon Drive/Collins Avenue has the County Route number 608 but is under the jurisdiction of the State of New Jersey. This means that those two governments are responsible for capital improvements and maintenance of the roads.

Road jurisdiction roughly reflects the functional relationship between governments in the use of streets and highways. Highways of national importance are federally designated and the majority of their funding is provided by the federal government. Conversely, streets providing access to residential lots are provided by municipalities. A hierarchy has been created of functional categories that range from roads of national importance to those at the local level. A description of these functional categories is in the following section.

FUNCTIONAL CLASSIFICATION SYSTEMS

Streets and roads are classified in three different ways depending on the agency and purpose of the system. One classification of roads is based on the Federal Highway Administration's (FHWA) definitions¹. This classification is highway oriented covering the interstate and regional highway network. The character of the traffic using this system determines its classification. The FHWA classification is extended in this element to cover Burlington County's classification of their road network. The second road classification system categorizes residential streets under the state's Residential Site Improvement Standards (RSIS). The RSIS establishes a hierarchy of roads for access to residential property. These types of roads form the large majority of the streets

¹ - Under the Municipal Land Use Law, the Circulation Element is required to consider these classifications.

under Moorestown's jurisdiction. Though the two systems use some of the same terminology, they are distinct. The third system unique to the Master Plan, creates a system of roads labeled as Principal Arterial, Major Arterial, Minor Arterial and Collector as these roads function with the municipality. These road designations are shown on the Circulation Plan at the end of this document.

The FHWA's classification system is described in the following sections:

PRINCIPAL ARTERIALS

Principal Arterials are intended to handle large volumes of regional and through traffic. Principal Arterials include the Interstate and Turnpike traversing the state just outside of Moorestown. In addition, the FHWA also considers Rt. 38, Rt. 73 and Rt. 130 to be Principal Arterials. Highways of this type are intended for large volumes of traffic in urban areas, such as Moorestown. The FHWA makes a distinction between urban and rural areas in its classification system. In urban areas, volumes exceeding 25,000 vehicles per day are common, though may not exceed 5,000 vehicles during average daily traffic (ADT) in rural parts of the country. The prime characteristic is the principal arterial's function to carry through traffic. All of the highways noted above are designated as Urban Principal Arterials. Daily traffic counts indicate the high usage of these roads. For example, Rt. 38 carries about 52,000 vehicles per day in Maple Shade and about 42,000² in Moorestown (Rt. 73 siphons away traffic). Principal Arterials are part of the National Highway System. The National Highway System is an extensive network of primary roads of national importance, totaling about 164,000 miles of which 2,100 miles are in New Jersey. On the Circulation Plan, this designation is also called a Principal Arterial, with only one road, Rt. 38, identified.

MINOR ARTERIAL AND MAJOR COLLECTOR

Minor Arterials are intended to move traffic from municipality to municipality within a region and to provide connections between Principal Arterials and lower orders of streets. In the urban vs. rural dichotomy, Major Collectors are the rural version of Minor Arterials. Once a Major Collector crosses the defined urban boundary under the FHWA system, it becomes a Minor Arterial. Since Moorestown is in an urban area, all roads of this type are designated Minor Arterials. In Moorestown, these roads are largely under Burlington County's jurisdiction. However in this document, classifying all of the roads that provide through travel between municipalities and to regional attractions such as the Moorestown Mall, is too imprecise at the local level. Instead, this category is divided into two classes for the Master Plan: Major and Minor Arterials. Major

² - The Maple Shade data is from 1998 and the Moorestown data, taken between S. Church Street and Moorestown-Mt. Laurel Road is from 1999 (*source* NJDOT).

Arterials carry heavier levels of traffic, typically in excess of 10,000 vehicles ADT, and constitute the main routes of travel for commuters and shoppers through the Township. They may have more than two lanes of traffic or may be expanded to more lanes. Examples include Centerton Road, Nixon Drive, and Lenola Road near the Mall. Minor arterials carry lesser levels of traffic, typically greater than 3,000 ADT but less than 10,000 ADT and are usually two lanes. Where two minor arterials converge such as Kings Highway and Camden Avenue to form Main Street, Main Street has been designated a Major Arterial. The following roads have been classified as Major Arterials:

Table VII-3. Major Arterial Roads in Moorestown Township.

<u>Name</u>	<u>Between</u>	<u>No. of Lanes</u>	<u>Jurisdiction*</u>
Lenola Road	Kings Hwy. & Nixon Dr.	4	C & S
Nixon Dr.	Entire Length	4 to 5	M
Fellowship Rd.	Entire Length	2	C
Church St.	Entire Length	2	C
Main St.	Camden Ave. & Mt. Laurel Rd.	2	M
Marter Ave.	Entire Length	3 to 4	C & S
Borton Landing Rd.	Main St. to Westfield Rd.	2	M
Salem Rd.	Borton Landing & Westfield Rds.	2	M
Westfield Rd.	Bridgeboro Rd. & Mt. Laurel Border	2	C
Hartford Rd.	Entire Length	2	C
Centerton Rd.	Entire Length	2 to 4	M
Creek Rd.	Entire Length	2	M

* - S=State of New Jersey, C=Burlington County, and M=Moorestown

As noted in the discussion above, Minor Arterials in the Master Plan function for many of the same purposes as Major Arterials but with lesser volumes of traffic and fewer through routes. They provide a connection between major arterials and residential or non-residential collector streets, as well as providing intra-municipal travel paths. Minor arterials are not intended to be enlarged to handle major arterial levels of traffic, though intersection improvements are warranted in certain circumstances to add stacking lanes for left hand turns. Table VII-4 lists the streets designated as minor arterials in Moorestown Township.

Table VII-4. Minor Arterial Roads in Moorestown Township.

<u>Name</u>	<u>Between</u>	<u>No. of Lanes</u>	<u>Jurisdiction*</u>
Lenola Road	Kings Hwy. & Cinnaminson Border	2 to 3	C
New Albany Rd.	Entire Length	2	C
Camden Avenue	Entire Length	2	C
Kings Highway	Entire Length	2	C
Pleasant Valley Rd.	Entire Length	2	M
Harper Dr.	Entire Length	2 to 4	M
East Gate Dr.	Entire Length	4	M
Chester Ave./ Riverton Rd.	Entire Length	2	C
Bridgeboro Rd.	Entire Length	2	C
Tom Brown Rd.	Entire Length	2	C
Haines Mill Rd.	Entire Length	2	M

* - C=Burlington County, and M=Moorestown

COLLECTOR

Collector streets are the next lower step in the street hierarchy. Collectors distribute traffic between residential access and subcollector streets and arterial order streets in residential subdivision design. Some of the streets designated as Minor Arterials in this document would be considered Collectors under the FHWA system since they do not serve as through routes. An example would be Harper Drive. Non-residential collectors also service industrial and business parks by channeling traffic to arterial roads. Collectors are intended to carry up to 3,000 vehicles per day (ADT). Table VII-5 indicates roads classified as collectors on the Circulation Plan.

Table VII-5. Collector Roads in Moorestown Township.

<u>Name</u>	<u>Between</u>	<u>No. of Lanes</u>	<u>Jurisdiction*</u>
Foster Rd./ Glen Ave.	Lenola Rd. & N. Church St.	2	M
Flynn Ave.	Entire Length	2	M
Maple Ave.	N. Church St. & Chester Ave.	2	M
Second St.	Camden Ave. & Chester Ave.	2	M
N. Stanwick Rd.	Entire Length	2	M
Sentinel Rd./ Windsock Way	N. Stanwick & Westfield Rds.	2	M
Salem Crossing/ Salem Rds.	Borton Landing & Hartford Rds.	2	M

* - M=Moorestown

The classifications of Principal Arterial, Major Arterial, Minor Arterial and

Collector are the higher order streets. Lower orders of streets serving residential neighborhoods are discussed in a following section.

SCENIC ROADS

The Circulation Plan also includes a special classification that has been called Scenic Road. Four roads are labeled with this designation:

- 1) Haines Drive along Strawbridge Lake.
- 2) Garwood Road.
- 3) Cox Road.
- 4) McElwee Road.

Moorestown, of course, has many other attractive and beautiful streets. These four are singled out for several reasons. The first is that the streets are under local control. Their scenic beauty can be assured by Moorestown, unlike Creek Road, for example, that is under the jurisdiction of Burlington County. Secondly, the roads exemplify two particularly attractive types, the park drive in the case of Haines Drive and the rural road for the other three roads. All four roads also are links to the past. Haines Drive provides opening vistas of Strawbridge Lake. The 1937-era Strawbridge Lake (actually a series of three lakes) represents the efforts of the federal Works Progress Administration in park development and the local initiatives of the Shade Tree Commission and Moorestown Improvement Association. Garwood, Cox and McElwee Roads represent a pastoral era when agriculture was the mainstay of the economy. Even though only four roads have been highlighted as scenic, the elements that define this scenic quality are important throughout Moorestown. Public perception of the community character of Moorestown places great emphasis on streetscapes that combine history and scenic beauty. Preserving and enhancing the streetscape through tree planting, defining the physical demarcation of the public and private spheres through fencing and walls, hedges and planting beds are worthy techniques to use in creating new scenic roads.

RESIDENTIAL SITE IMPROVEMENT STANDARDS

In January 1997, the New Jersey Department of Community Affairs adopted the Residential Site Improvement Standards (RSIS) in accordance with law enacted in 1993 to standardize the level of required public improvements for residential development throughout the state. Though much criticized by municipalities, the RSIS has withstood legal challenge. The RSIS has preempted municipal street standards for residential uses and has rendered

invalid any existing ordinance provisions pertaining to the width of streets and cartways, parking requirements and technical engineering criteria.

Like the Federal Highway Administration, the RSIS established a hierarchy of streets but only for residential development. The RSIS classifications have some commonality with the FHWA terms, but are defined somewhat differently. For example, the RSIS's major collector is intended to handle traffic that would be classified as a minor arterial under the FHWA definition. All of the streets noted in this section are considered Local Streets in the FHWA classification system. The RSIS establishes the following street hierarchy:

MAJOR COLLECTOR (RESIDENTIAL COLLECTOR)

This street type, as its name suggests, collects and distributes traffic between lower-order residential streets and the higher-order streets in the FHWA's system. This type of street carries the largest volume of traffic at higher speeds compared to other residential streets. Its function is to promote free traffic flow. On-street parking and direct access reduce this free flow and should be avoided for this type of street. Major Collectors should be limited to no more than 7,500 trips per day.

In Moorestown, modern neighborhoods have been designed without major collectors due to the comparatively small number of housing units in any one location. Many of the Township's residential areas were constructed before the hierarchy of streets concept was established. For instance, Maple Avenue functions as a Collector for the surrounding neighborhoods as well as collecting traffic from the east side of Chester Avenue. The largest post-World War II neighborhood is Laurel Creek with more than 450 housing units which could be expected to generate about 4,000 trips per day. It is unlikely that any future residential development would have this number of housing units or need to be designed with a Major Collector as part of its internal road system.

MINOR COLLECTOR (RESIDENTIAL SUB-COLLECTOR)

Minor Collector is a middle order residential street. Such streets provide frontage for access to lots and carry traffic to and from adjoining residential access streets. Minor Collectors connect to either (Residential) Major Collectors or Arterials. This type of street should be designed to carry traffic volumes higher than lower-order streets such as rural and residential access streets, with traffic limited to motorists having origin or destination within the immediate neighborhood. They are not intended to carry regional traffic. Each half of a loop-configured minor collector may be classified as a single minor collector street, but the total traffic volume conveyed on the loop

should not exceed 3,500 ADT, nor should it exceed 1,750 ADT at any point of traffic concentration.

RESIDENTIAL ACCESS

Residential Access streets are the lowest order classification, other than the rural street type. Most streets in residential subdivisions fall into this category. As its name suggests, this street type allows access to lots and carries traffic with a destination or origin on the street itself. They are designed to carry the least amount of traffic at the lowest speed. The best design practice is to front all of the lots on streets of this order. Each half of a loop street should be classified as a single residential access street, but the total traffic volume generated on the loop street should not exceed 1500 ADT, nor should it exceed 750 ADT at any point of traffic concentration.

Specialized forms of residential access streets are cul-de-sacs, alleys, and parking loops which should not exceed 250-500 ADT, depending on design.

STATE HIGHWAY POLICY

The New Jersey Department of Transportation (NJDOT) adopted a Highway Access Management Code (HAMC) in April 1992, with several subsequent amendments, that applies to all of the roads under its jurisdiction. The HAMC was developed in response to the unprecedented increase in traffic congestion in the 1980's when the state realized that it could not construct enough road capacity to satisfy potential demand. This demand arose from several trends that solidified in the 1980's - a high percentage of women in the workforce, an increase over time in the average lot size and house, and decreasing household size. These latter two factors increased the consumption of land at the urban fringe where the existing road capacity is thinly stretched. In response, NJDOT changed the emphasis of the highway system from providing access to property to providing mobility for people and goods. NJDOT discovered that easy access to the state highway system impaired its traffic moving capabilities and added extra costs to the economy in the form of delays.

Each state highway has been classified for different levels of access, depending on existing conditions and NJDOT's functional plans for the highway system. Route 38 is classified as an Access Level 3, which allows right hand turns into a site from the highway, but left hand turns are only permitted via a jughandle. The left turn lanes in the median at East Gate Drive and Pleasant Valley Road do not meet this access level standard and would not be permitted under the present regulations.

NJDOT has also established an ultimate highway development classification called Desirable Typical Sections (DTS). This indicates how wide the highway, under ideal circumstances, would become in the future. Rt. 38 is designated with a DTS of 6A. This DTS has six travel lanes with a median and a right-of-way width between 114 and 128 feet. The existing right-of-way is 110 feet. Though the DTS is wider, there are no long range plans for widening in Moorestown. Conceptual interchange improvements at the intersection of Rt. 38 and I-295 in Mt. Laurel were developed by NJDOT in 2001; however, this project has not been placed in the department's capital program.

BURLINGTON COUNTY HIGHWAY POLICY

The Burlington County Highway Master Plan, adopted in 1989 and updated in 1991, provides a comprehensive analysis of the County's roadway system. The Master Plan includes an ultimate right-of-way circulation plan for its highway system that functions in much the same way as NJDOT's DTS standard. The County usually requires a dedication of land for right-of-way purposes if the road is substandard in width when a developer submits an application for development. In most circumstances, the County's right-of-way policy will result in the dedication of additional land in Moorestown. The table below lists the County routes and compares the existing and proposed rights-of-way.

Table VII-6. Comparison of Proposed County R.O.W's with Existing R.O.W's

<u>No.</u>	<u>Road Name</u>	<u>Proposed R.O.W.</u>	<u>Existing R.O.W.</u>
537	Camden Ave./	66' (Lenola Rd. - Main St.)	66' (Lenola Rd. - Main St.)
	Marne Hwy.	86' (Marter Ave.-Centerton Rd.)	66' (Marter Ave.-Centerton Rd.)
603	Riverton Rd./	66' (Cinn. Twp.-Walnut Ave.)	49.5'- 76' (Cinnaminson-Walnut Ave.); 60'-73'
	Chester Ave./	60' (Walnut Ave.-Main St.)	(Walnut Ave.-Main St.)
607	Mt. Laurel Rd.	66' (Main St. – Rt. 38)	50'- 68' (Main St. – Rt. 38)
	Church Street	86' (Cinn.Twp-New AlbanyRd.);	66'- 76' (Cinn. Twp.-New Albany Rd.);
		50' (New Albany Rd.- Rt. 38)	50'-66' (New Albany Rd.- Rt. 38);
608	Lenola Road	86' (Rt. 38 – Mt. Laurel Twp.)	66' (Rt. 38 – Mt. Laurel Twp)
		86' (Cinnaminson-Camden Ave.)	49.5'-86' (Cinnaminson-Camden Ave.)
		66' (Camden Ave.-Kings Hwy)	50'-66' (Camden Ave.-Kings Hwy);
		86' (Kings Hwy-Mt. Laurel Twp)	66' (Kings Hwy. Rt. 38) 86' (Rt. 38-Nixon Drive)

Table VII-6. Comparison of Proposed County R.O.W's
with Existing R.O.W's, cont.

<u>No.</u>	<u>Road Name</u>	<u>Proposed R.O.W.</u>	<u>Existing R.O.W.</u>
613	Bridgeboro Rd.	86' (Riverton Rd. – Delran Twp.)	49.5'-76' (Riverton Rd. – Delran Twp.)
614	T. Brown Rd./ Westfield Rd.	86' (Riverton Rd. – Centerton Rd.)	49.5'-86' (Riverton Rd. – Centerton Rd.)
636	Creek Road	86' (Delran – Mt. Laurel)	49.5'- 67.75' (Delran – Mt. Laurel)
673	Fellowship Road	86' (Mt. Laurel – Rt. 38)	49.5' (Mt. Laurel – Rt. 38)
686	Hartford Road	86' (Delran – Mt. Laurel)	49.5'- 67.75' (Delran – Mt. Laurel)

Source: Burlington County Highway Master Plan and Moorestown tax assessment maps.

The County's responsibility is to provide travel routes between municipalities and as connections from higher order roads to significant regional attractions such as employment centers and shopping areas. Their rationale for the width of roads is to permit four or six lanes of travel with appropriate left turn lanes at intersections either with or without medians. The Highway Master Plan makes concessions in areas that are already developed, such as Chester Avenue, where no wider right-of-way is contemplated. Nonetheless, road widenings on the scale that could occur within the proposed right-of-way would be significant.

NEW COUNTY ROADS

In addition to the County Routes indicated above, the Highway Master Plan identifies Centerton Road as a proposed county road since it will carry significant regional traffic between Creek Road and Marter Avenue. In many ways it will function as a service road between two interchanges of the Interstate at Exits 40 (Rt. 38) and 43 (Creek Road - C.R. 636). Since 2002, intensive retail development has occurred on this road in Moorestown and office development in Mt. Laurel. As part of the development of these sites, Marter Avenue was widened to five lanes, Centerton Road was widened and extended to Westfield Road, a section of C.R. 537 (Marne Highway) was removed and the route number moved to a short segment of Westfield Road, a dangerous railroad underpass was removed and the crossing converted to an at-grade intersection.

However, the plans to widen Centerton Road from Westfield to Creek Road, as well as to realign Centerton Road westward from Parker's Creek to a new

intersection opposite Mainsail Boulevard at Rancocas Point have not moved forward, primarily to a significant lessening of projected traffic in Moorestown.

The County Highway Master Plan, however, does not mention other road segments that have many of the same characteristics as Centerton Road – namely its regional significance and interconnections between higher order streets. Nixon Drive and East Gate Drive share these same characteristics by serving regional traffic in the East Gate office complex, the East Gate Square shopping center and the Moorestown Mall. For example, ramps from Interstate 295 lead directly to Nixon Drive which also serves as the means for traveling northbound to Rt. 73. East Gate Drive provides a main connection between Rt. 38 and Fellowship Road in Mt. Laurel where there is substantial office and hotel development. This connection, as well as the Harper Drive bridge over a tributary of the Pennsauken Creek, serves as an outlet for commuter traffic to I-295 that would otherwise utilize the congested Fellowship Road intersection with Rt. 73. It should also be noted that the East Gate Drive/Harper Drive and Nixon Drive/Harper Drive traffic signals are the only ones under municipal maintenance where all of the other traffic signals in Moorestown are operated by the County. Considering how these roads are used, it is recommended that the transfer of jurisdiction of Harper and East Gate Drives to the County be pursued by the appropriate Township officials.

CONNECTION BETWEEN LAND USE AND TRANSPORTATION

How land is used affects the circulation system. Each land use generates a certain number of vehicle trips. Reports on the amount of traffic that is generated by a particular land use have been assembled into reference manuals used by transportation engineers and planners to predict the level of traffic that a proposed development will generate. Each level of traffic can then be assigned to a road segment or an intersection to determine if improvements are necessary. In this way, lands with traffic intensive uses can be located in a close physical relationship to higher order streets and highways (*see* Functional Classifications, above, and the Land Use Plan Element).

Traffic is not evenly distributed throughout the day but has higher levels of use at certain times. The capacity of the road system to handle the traffic generated is usually examined from a “peak hour” perspective. Congestion occurs when the capacity of an intersection or road segment is reached.

PEAK HOUR CONGESTION AND ROAD CAPACITY

The use of the road system is heaviest at certain times of the day during rush hour, or technically, the peak hour of travel. During the weekday, one hour within the range of 7 a.m. to 9 a.m. is typically the morning peak hour and one hour between 4 p.m. and 6 p.m. is the afternoon peak hour. Different land uses generate traffic that uses the road system at different times. The accumulation of the traffic generated from different land uses is what leads to the overall peak hour. Office uses, for example, have a peak hour that corresponds generally to the overall peak hour, but retail uses do not contribute much to the morning peak hour since main shopping areas are not yet open. During the weekday, retail uses have a peak hour in the late afternoon to early evening period that slightly lags the office peak hour as workers stop on their way home to shop. Store's highest peak hour usually occurs in the early afternoon on Saturdays, between 12 noon and 2 p.m. Schools have a peak hour that often begins at 6:30 a.m. in the morning but ends by 3:30 p.m. in the afternoon. Manufacturing, which has traditionally operated as shifts of workers, has a peak hour pattern similar to that of schools.

Capacity constraints in the road system occur primarily at intersections. Traffic signals identify those intersections with the highest levels of traffic. By definition, intersections without traffic signals have lower levels of traffic, since a certain threshold of traffic, called a warrant, is necessary before state approval can be obtained to install a signal³. Which segments and intersections of the Township's road system have the greatest capacity constraints has not been systematically studied. Anecdotally, the intersections of the through roads - such as Lenola, Church Street, Chester Avenue/Mt. Laurel Road and Borton Landing/Marter Avenue - between Rt. 38 and Rt. 130 with Main Street, New Albany Road and Camden Avenue, have long queues of traffic at the morning and evening peak hour.

ACCIDENT DATA AND IDENTIFIED CONGESTION POINTS

In addition to observation, accident data collected by the Moorestown Police Department is an indicator of troublesome intersections. At intersections with capacity constraints, motorists may attempt to proceed through an intersection after the signal has turned against them, or make risky maneuvers to turn left against the flow of through traffic without a sufficient gap between vehicles, leading to accidents. The following table lists (in descending order) the top dozen locations having the highest accident rates in

³ - All of the traffic signals in Moorestown are under the jurisdiction of the state or county excepting the two signals on Harper Drive at Nixon Drive and East Gate Drive.

Moorestown in the year 2001.

Table VII-7. Intersections with Highest Levels of Accidents, 2001.

1. Camden Avenue and Lenola Road
2. Westfield and Bridgeboro Roads
3. Westfield and Salem Roads
4. Harper and East Gate Drives
5. Chester Avenue and Bridgeboro Road
6. (tie)
 - N. Church Street and Maple Avenue
 - N. Church Street and New Albany Road
 - Hartford and Centerton Roads
 - Kings Highway and Pleasant Valley Avenue
10. (tie)
 - Westfield and Borton Landing Roads
 - Westfield and Centerton Roads
 - Lenola and New Albany Roads

Source: Moorestown Police Department

County Routes that intersect Main Street or Kings Highway and Camden Avenue are among the highest accident locations. These roads, which traverse the Township between Rt. 38 and Rt. 130, are heavily congested at peak hour times. Long queuing occurs at the traffic signals at Rt. 537. Many of the accidents occur when motorists attempt left hand turns with insufficient gaps in the through traffic. Improvements to these intersections should emphasize left turn stacking lanes and left turn signals where warranted. This type of improvement was recently completed at Main Street and Church Street as part of the Main Street streetscape beautification and has allowed easier left hand turns. Similar left hand turn improvements are slated for Lenola and New Albany Roads.

Westfield Road figures prominently in the accident report data. Westfield is relatively unencumbered by cross streets and driveways. For large stretches, the land is open and the road is straight and level. These characteristics contribute to higher rates of speed than can be achieved on most other roads of a similar functional classification. The Lockheed Martin complex, the largest office worker generator with more than 4,000 employees, is located along a portion of Westfield Road, contributing to congestion at its intersecting streets, such as Salem, Borton Landing and Centerton Roads. The congestion and higher speeds largely explain Westfield's prominence in the ranking. However, intersection design also plays a role. In the summer of 2001, the intersection of Borton Landing and Westfield was improved with

left hand turn lanes being added for stacking vehicles, though the signal remained unchanged. This may improve the accident incidence at this location.

The intersection at Salem Road served as a short cut for drivers on Borton Landing desiring to head northwest on Westfield Road. Sight distance is limited looking west and the cartway⁴ is narrow. The Police Department identified this intersection and this stretch of Salem Road as hazardous. Two potential solutions have been broached. One is to make the road one-way from Westfield to Borton Landing. This would preserve Salem's function as a relief movement for the Borton Landing intersection located a short distance east and permit easier access from the Moorestown Hunt neighborhood. The second is to close off the through movement of traffic and channel it to the neighboring Borton Landing Road. Ultimately, this latter path was the one taken and a portion of the cartway was removed in 2008.

In 2008, the intersection of Westfield Road at Bridgeboro Road next to the Flying Feather Farm Market with its lack of dedicated left turning lanes hampered the ability to move traffic through the intersection. A County intersection improvement upgraded the intersection by installing not only the turning lanes but new signals and video pixel change cameras. Since that time the intersection has operated at a much more efficient level. However, now that the intersection has been improved, the rate of speed on Westfield Road and its vertical sight distance problems still require attention.

The Circulation Plan identifies several additional problematic intersections for further study other than those already mentioned in this section. These include the following:

- 1) *Camden Avenue and Lenola Road.* This intersection and the one on Lenola at New Albany handle substantial traffic heading for the business park between Lenola and N. Church Street. The cartway is too narrow to permit left hand turns from northbound Lenola Road onto westbound Camden Avenue. This congestion contributes to this intersection having the highest accident rate in the Township. Signal timing changes allowing more through time for Lenola Road have aided traffic movement.
- 2) *Rt. 38 and Lenola Road.* This is a major intersection for traffic to and from the Moorestown Mall and East Gate Square shopping centers. The intersection has been expanded many times and is probably at its

⁴ - The cartway is the paved portion of the street. The street includes the area between the right-of-way lines that may also include curbing, street trees, street furniture, sidewalks and utilities.

- maximum feasible limit. Because of the stacking of vehicles on Lenola on the north side of Rt. 38, the jughandle in front of Perkins Restaurant functions poorly.
- 3) *Rt. 38 and Pleasant Valley.* Pleasant Valley on the north side of Rt. 38 lacks turning lanes because of the restrictions imposed by the bridge that crosses Hooten Creek, dividing the upper from the middle of Strawbridge Lake. The environmental factors present at this intersection may preclude the possibility of making physical improvements.
 - 4) *Rt. 38 and S. Church St.* In a similar situation, S. Church Street lacks sufficient cartway to permit a left-hand turn stacking lane at Rt. 38 to head east on the state highway. Motorists create two lanes but the street was not designed to accommodate this arrangement. In order to create a stacking lane, additional right-of-way from the service station on the corner may be necessary.
 - 5) *Rt. 38 and Marter Avenue.* Though this intersection is in Mt. Laurel, traffic congestion affects motorists traveling on Marter Avenue in Moorestown. Though this intersection underwent a major reconstruction as part of the development of the Centerton Square shopping center in 2003, congestion remains due to the lack of ramps at the interchange with Rt. 38 and I-295 and a reverse jughandle around Martin's Liquor and Donut store. Motorists traveling on the Interstate and exiting must use the intersection to head eastbound on Rt. 38. This intersection also serves traffic heading westbound on Rt. 38 and making the turning movement to northbound I-295.
 - 6) *W. Second and N. Church Streets.* This intersection is close to the intersection of N. Church and W. Main Street and is affected by its congestion. The short length of N. Church between Main and Second Streets is often filled to capacity even at off-peak hours. Motorists traveling westbound on Second Street are often blocked from moving around a vehicle turning left southbound onto N. Church St., leading to significant delay.
 - 7) *Chester Avenue and E. Main Street.* Delay and significant congestion occur from the combination of commuter and school traffic at this location. Motorists turning left into the Moorestown Friends School block through movements heading west on Main Street.

The construction of turning lanes will have only an incremental effect on

improving the overall flow of traffic through intersections. Widening cartways to accommodate such traffic movements requires a judicious balancing of the potentially adverse effects with the benefits to the traveling public. It must be noted that even if all of the constrained intersections were improved, significant delays would still remain simply because the number of employees and students traveling to work and school exceeds the existing road system – a system that was largely developed in the 18th and 19th centuries for horse-drawn wagons. This is another way of stating that congestion can not be relieved solely by construction, but that other approaches in controlling the demand for road capacity need to be implemented.

BICYCLE AND PEDESTRIAN ROUTES

Moorestown has sought opportunities to extend its bicycle and pedestrian systems for more than two decades. As of 2010, the Township had developed approximately twelve miles of paved, separate dual-use paths for bicycles and pedestrians. The municipality has received government grants, payments in lieu of construction from developers required to install paths, and has ensured the construction of new paths as part of the development process.

At the beginning of 2009, a Bicycle Safety Task Force was created by the Township Council in response to the deaths of two bicyclists in 2008. The Township sought planning assistance from the NJ Department of Transportation to assist in the analysis of bicycle safety and was awarded a Local Bicycle/Pedestrian Planning Assistance Grant. NJDOT maintains a list of qualified professionals who meet with the stakeholders and produce a report under the department's supervision. Because of its singular focus, the document delves more thoroughly into bicycle safety, the extension of the system, program recommendations, and implementation. Entitled, *Moorestown Bicycle Circulation and Safety Plan*⁵, this document is incorporated by reference as a technical appendix to the Master Plan.

The *Bicycle Circulation and Safety Plan* include several additional statements of purpose that are adopted as objectives of this Circulation Element:

- Improve bicycle mobility and circulation by creating a bicycle network that links attractions within the Township of Moorestown and to regional destinations outside of Moorestown;
- Promote bicycle safety; and

⁵ - Urban Engineers, Inc. and Toole Design Group, LLC; December 2010

- Accommodate varying skill levels of bicyclists, from inexperienced to advanced riders.

These objectives fit under the overall Township goal of *Managing the Present*:

Maintain the necessary services, capacities and opportunities sufficient to satisfy the needs of present residents and to allow for their well-planned expansion to meet future needs.

Following the AASHTO classification system⁶, the Township's system - once fully implemented - consists of Class I, Class II and Class III routes and are depicted on the Bicycle Routes plan, next page. Classes are defined as follows.

Class I (Separate Facility) - A non-motorized paved cartway, physically separated from motorized vehicular traffic by an open space strip or curb barrier. This is also called a Bicycle Path, Bike Trail, Multi-purpose Trail or some combination thereof.

Class II (Bike or Bicycle Lane) - A portion of a roadway that is designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists. Most often these are done in couplets, each one being one way and adjacent to the outside through travel lane.

Class III (Bike or Bicycle Route) - A segment of road designated by the jurisdiction having authority, with appropriate directional and informational markers, but without striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

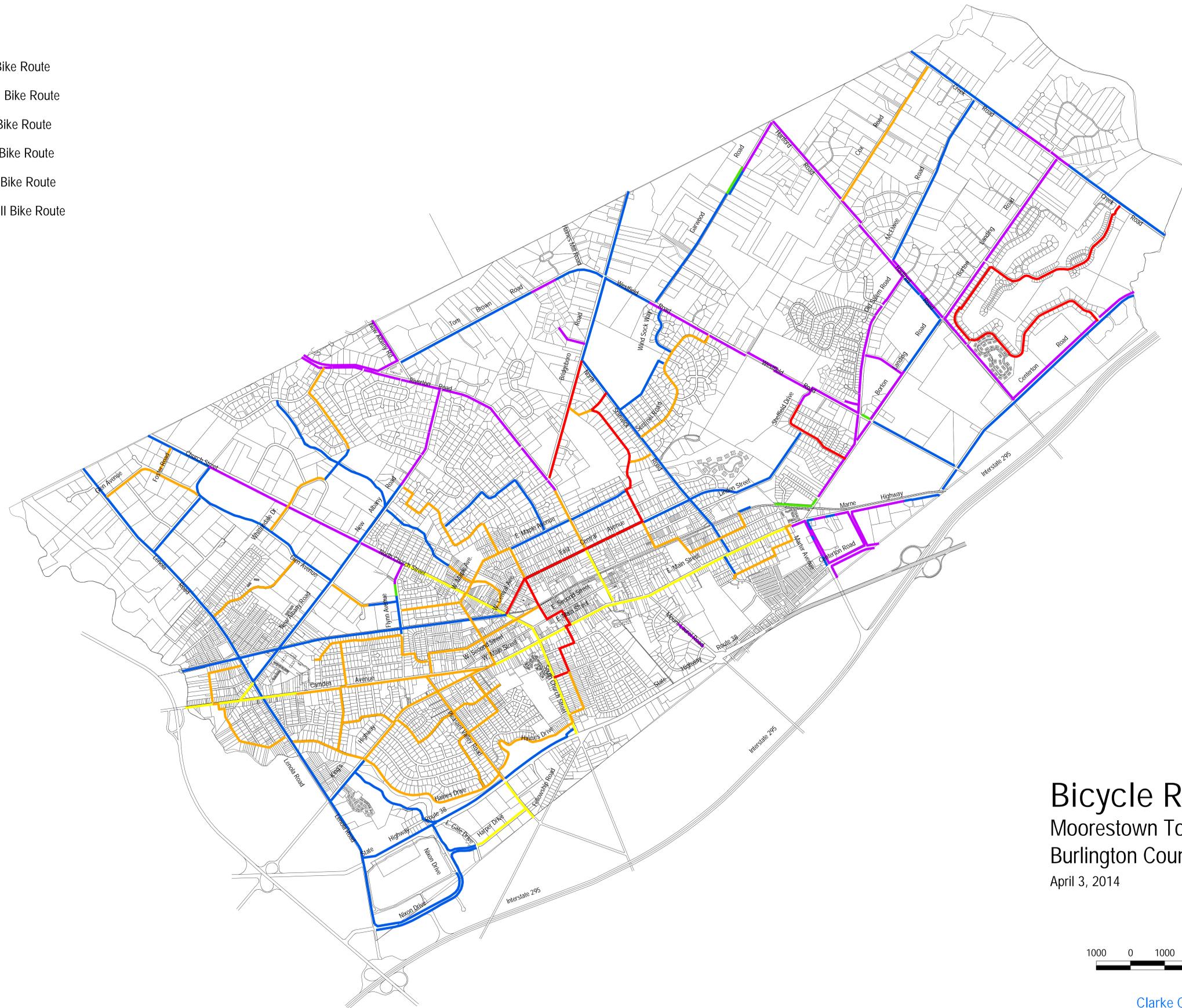
These classifications aggregate the Bicycle Facilities Plan categories in the *Moorestown Bicycle Circulation and Safety Plan*. The *Safety Plan* should be consulted for a more refined recommendation on implementing bicycle facilities for specific road segments in the Township.

The *Moorestown Bicycle Circulation and Safety Plan* also contains a number of recommendations for further study. One of note is the suggestion that the subdivision and site plan ordinance be amended to require bicycle parking as well as motor vehicle parking. Having new locations for bicycle storage at retail and office locations will promote non-motorized means of travel.

⁶ - American Association of State Highway Transportation Officials, *Guide for Development of New Bicycle Facilities*, 4th ed., 2012 with 2013 errata.

Legend

- Existing Class I Bike Route
- Proposed Class I Bike Route
- Planned Class I Bike Route
- Planned Class II Bike Route
- Existing Class III Bike Route
- Proposed Class III Bike Route



Bicycle Routes Moorestown Township Burlington County, New Jersey April 3, 2014



Clarke Caton Hintz ● ● ■
 Architecture
 Planning
 Landscape Architecture

DESCRIPTION OF BUS ROUTES

Bus service in Moorestown is provided by New Jersey Transit, an arm of the state government. Six different routes operate in the Township. These are described below:

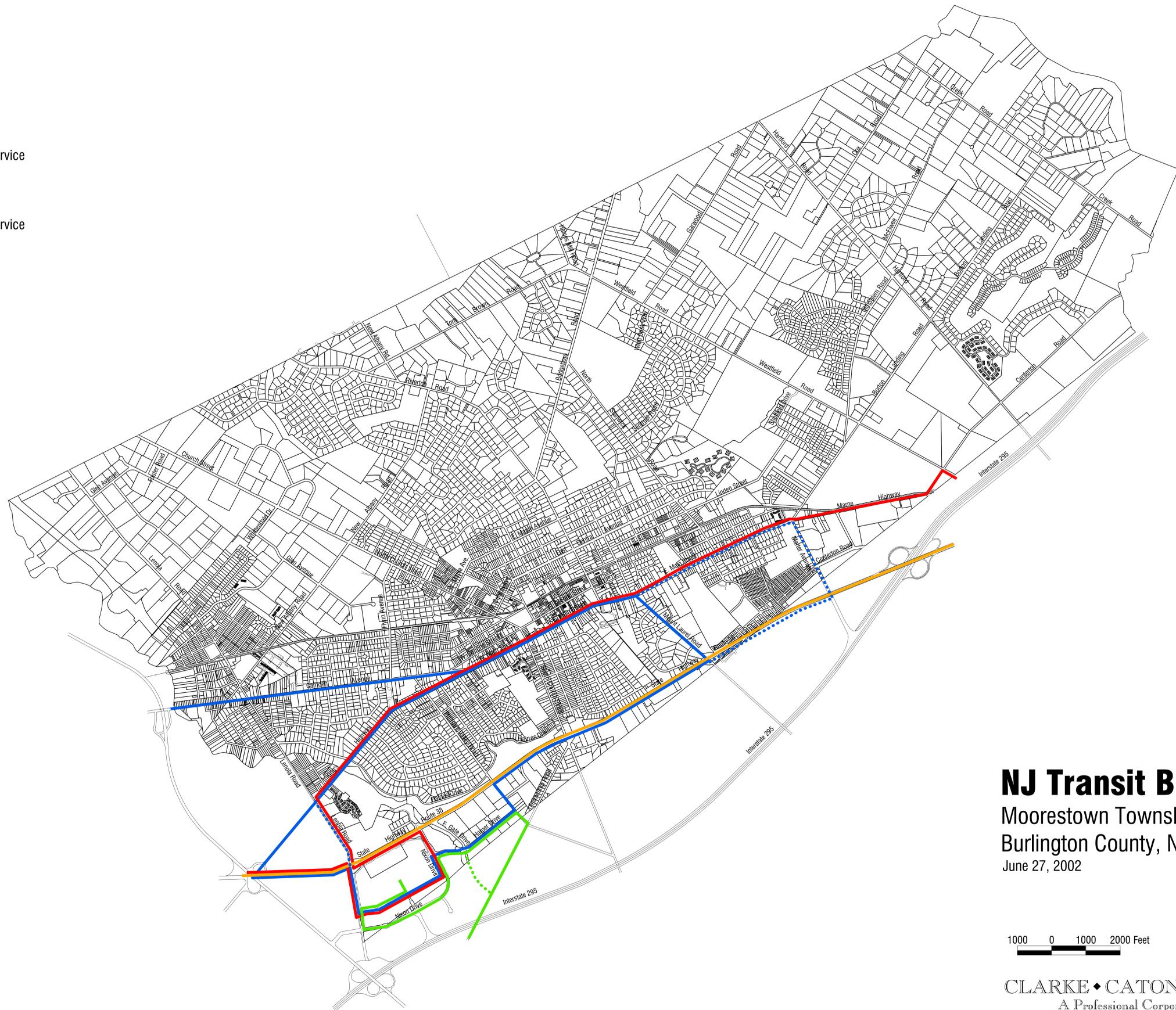
- *Route 317.* This route is an express that runs between Philadelphia and Asbury Park, New Jersey. The bus stop makes one regular stop for passengers at the Moorestown Mall. NJ Transit operates nine full routes including stops at Fort Dix and McGuire Air Force Base.
- *Routes 407 and 414.* Route 407 runs between Philadelphia and the Moorestown Mall. Its main route is a loop that runs down Route 537 to Mt. Laurel Road and then along Rt. 38 to the Mall. One version of the route runs along Kings Highway rather than Camden Avenue and an intermittent service uses Marter Avenue rather than Mt. Laurel Road. The 414 originates in Philadelphia and skips the stops in Camden where the 407 begins but otherwise follows the same route in Moorestown.
- *Route 413.* Service is also provided to the Moorestown Mall and downtown on Route 413. This route operates between Camden and Mt. Holly. The route coming from Camden via Maple Shade uses Rt. 38 to the Moorestown Mall. The route then continues on Lenola Road to Kings Highway and then to Main Street and Marne Highway to the Center Square Shopping Center at Young Avenue and Centerton Road. Twenty buses are available daily on this route.
- *Route 418.* This route provides express bus service to Trenton from the Moorestown Mall through Mt. Holly along Rt. 38 and then north. Two buses per day are operated by NJ Transit.
- *Route 457.* Route 457 runs from Camden to Haddonfield, Cherry Hill and Mt. Laurel to Fellowship Road. The route makes a loop through the East Gate office park and ends at the Moorestown Mall. This route has eighteen buses daily in operation.

The four main bus routes in Moorestown are depicted on the following map.

Legend

NJ Transit Bus Route #

- 317
- 407
- 407 Intermittent Service
- 413
- 457
- 457 Intermittent Service



NJ Transit Bus Routes

Moorestown Township
Burlington County, New Jersey
June 27, 2002

1000 0 1000 2000 Feet



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The six routes that service Moorestown are concentrated in the Rt. 38/Main Street corridor (see preceding page). No bus routes operate from the towns that line the Delaware River to Moorestown for employees of the business parks in the Township. Finding a method to increase bus service to the northwest business parks would help to moderate future levels of traffic when employment grows as expected.

NEW ROAD SEGMENTS

Proposed new road segments are limited in this Master Plan. Within the time period of the Plan, it is expected that Centerton Road will be extended and widened to four lanes from Marter Avenue to Creek Road. Some question remains as to the timing, cost and responsibility for that portion between Westfield Road and Hartford that will require municipal input and possible action.

The construction of a part of Linden Street has been identified as a very important need of the Public Works Department because of the difficulty of moving staff and equipment from its entrance on Borton Landing Road via East Third Street. Linden Street between N. Stanwick Road and Sheffield Drive is an existing right-of-way but the cartway is only partially constructed – a condition known as a “paper street”. While a portion of Linden Street from N. Stanwick Road to the Public Works facility was constructed as residential development happened on the street, there remains one small segment that should be constructed to finish the access to the Public Works facility. A portion of Linden Street near the Mindy Drive detention basin east of the Public Works facility was vacated to prevent through traffic using Linden Street as a collector or higher order street out to Westfield Road.

Crider Avenue was developed as a collector street. Originally residential in nature, the street was extended into the adjacent industrial park. Collector street design ordinarily separates residential from non-residential uses. This arrangement results in truck traffic traveling through the residential area to reach Lenola Road, which is classified as a minor arterial road in the Circulation Plan (see last page of this element). Crider Avenue would benefit from the construction of a speed table or other traffic calming measure (see TRAFFIC CALMING, below). Traffic calming measures should also be studied for Central Avenue since its wide cartway, straightness and good vertical sight distance all contribute to higher vehicle speeds than is desirable in a residential neighborhood.

RESIDENTIAL STREET DESIGN

Most of the streets that will be built in the future in Moorestown Township will be designed to service new residential development. New residential streets are created as part of the subdivision and development of land. The Township has an important interest in the design and layout of streets for several reasons. The first of these is the efficiency of the street layout which has an effect on the cost of providing services to residents. Inefficient layouts are wasteful of land and are more expensive to maintain and reconstruct, if necessary, because there are correspondingly fewer residences per road mile to generate taxes to maintain the system.

Second, certain types of streets are more expensive to service. Cul-de-sacs create a particular problem for the municipality. Trash trucks and school buses have difficulty in maneuvering within cul-de-sac streets. Cul-de-sacs take longer to be cleared of snow because of the backing up that is required. Loop streets should be encouraged instead of cul-de-sacs when residential developments are being designed. Loop streets provide nearly the same level of privacy as cul-de-sacs without impairing governmental efficiency.

STREETSCAPE

The view from the public street forms most people's perception of the aesthetic quality of a place. Surveys have indicated, for example, that a well-developed tree canopy is associated with high quality residential neighborhoods. The need to provide for mobility within town must be balanced with the negative aesthetic impacts of wide streets, overhead utility lines and lack of vegetation. Certain roadways exhibit characteristics of the Township's disappearing rural landscapes. These may be typified by narrow lanes, or narrow shoulders, drainage swales rather than curbs with drainage inlets, and delineation of roadways by hedgerows and open-work fences. Historically, rural roadways were developed over a lengthy time period instead of being pre-engineered and constructed to modern standards from their inception. Rural roads were typically created by cutting trees, pulling the stumps out and scraping the ground with horse-drawn sledges to even the road bed. Later, starting in the 1920's, gravel would have been added to dirt roads to allow travel during spring thaw and to accommodate the rapid increase in motorized transportation. Early paved roads in rural areas would have been made from a mixture of bitumen and small stones ("oil and chip"). Finally, asphalt paving (bituminous concrete) would have added yet another layer, creating a durable all-weather surface. Such gradual improvement could easily have taken one hundred years.

Roads built over a long period of time were often done by eye instead of by survey and plan. They follow the contour of the land more closely than modern roads because horses and carriages moved much more slowly than automobiles. Vertical and horizontal curves are hence sharper than is desirable for motorized vehicles. Edge clearance - which is the distance from travel lanes to obstacles on the shoulder - was not a consideration when people traveled at 8 or 10 mph. Nowadays, greater edge clearance is necessary to allow motorists to correct driving errors. While cartways may be narrow on contemporary rural roadways and are desirable from an aesthetic standpoint, the grassed shoulder should be undergirded with stabilizing materials to provide a firmer surface than can be achieved merely with soil. In this fashion, the scenic nature of rural roads can be preserved, while maintaining safety for the traveling public.

The Scenic Roads shown on the Circulation Plan are intended to be maintained in this fashion. Other streets which retain some rural character could also benefit from this preservation strategy when the need for through travel is not dominant.

TRAFFIC CALMING

Traffic calming is an approach to traffic planning that attempts to reduce the volume and speed of vehicles in neighborhoods while maintaining maximum mobility and access. By reducing vehicle speeds, traffic calming methods can help decrease the number and severity of accidents, reduce air quality and noise impacts related to vehicle traffic, and can actually increase the capacity of existing road space by reducing the travel distance required between each vehicle.⁷ These methods can also encourage greater use of the street by pedestrians and bicyclists.

Traffic calming techniques include both active and passive controls. Active controls focus on physical alterations to roadway design, including installation of, speed tables, rumble strips, diagonal diverters, median barriers, curb extensions, and other construction that alters the cartway. Passive control devices include traffic signs, traffic signals, and pavement markings that are intended to regulate traffic without direct physical intervention. Studies that have been done in the United States (particularly in the Pacific Northwest states) and in Western Europe find that the active controls are more effective than passive controls in instituting traffic calming.

⁷ - Cynthia L. Hoyle, Traffic Calming (Chicago: American Planning Association, PAS Report No. 456, 1995) 9

Studies have consistently shown that speed limit signs, for example, are widely ignored when the design of the roadway permits motorists to comfortably travel at higher speeds. This occurs on Westfield Road, for instance. Roadway design is also evolving towards “self-reinforcing” speed limits through various traffic calming methods that alert motorists to the proper speed for their vehicles.

Moorestown has a few examples of traffic calming. The crosswalks on Main Street, with their contrasting surfaces and median signs, warn motorists of pedestrian movements. The town also has some existing examples, such as small roundabouts in residential areas, like this illustration on Stafford Drive.



Following are descriptions of various active traffic calming controls that may be suitable for Moorestown. The town centers at Main Street and in Lenola and immediately adjacent residential areas are good candidates for active controls.

- *Speed Tables.* A speed table is a raised hump in a street that extends across the roadway. The speed table is approximately 12 feet long, so that both the front and rear wheels of a car can be on top of the table at the same time. An example is in front of the former Acme store on Centerton Road. The extended length is also needed to allow normal snow plowing operations. Examples can be found in the Speed tables can be comfortably crossed only at a speed of 15 to 25 miles per hour.
- *Rumble Strips.* Rumble strips are patterned sections of rough pavement that cause vibrations in a vehicle, causing a driver to become more alert and slow down. Studies have shown that a change in road surface affects primarily the upper end of acceptable speeds in residential areas. However, studies have also shown that such strips have noticeably reduced accidents when placed in advance of stop signs.
- *Chokers and Protected Parking.* These devices reduce vehicle speed by extending the curb to block access in one direction or to provide protection for parking bays. Main Street has a partial curb extension

in front of the Prudential real estate office.

- *Chicanes.* A variation of the *choker* technique is the use of *chicanes*, which are curbed extensions to protect parking that alternate from one side of the street to the other. An extension of this concept is the creation of pedestrian streets as in found in Western Europe, where the entire surface is paved for pedestrians. The vehicle travel lane is then limited to about eight feet, with a widening for passing every 100 feet. Also called “woonerfs”, streets are broken up into small sections by the use of large planters, walls, benches, barriers, or mounds.
- *Traffic Circles or Roundabouts.* A traffic circle or roundabout is created by installing a raised island, which is usually landscaped, at the intersection of two streets. In addition to reducing traffic speed, roundabouts are more effective than stop signs and traffic signals in reducing the number of accidents at intersections. In New Jersey, “traffic circle” has become a pejorative term because of motorists’ experience with state highway circles. However, the roundabout discussed here differs in substantive ways from the state highway circles. Roundabouts are much smaller than the state traffic circles and handle much less traffic. One of the reasons that state highway circles gained their poor reputation was that the volume of traffic greatly exceeded their design specifications. Roundabouts are designed to handle only one lane of traffic at each intersection into the circle; state highways often had multiple lanes entering in the same direction. The state of the art has advanced considerably since the time when the state’s traffic circles were first designed. The use of roundabouts in New Jersey is increasing. Roundabouts have been installed outside of Camden County College
- *Interrupted Sight Lines.* Many of the traffic calming devices also create interrupted sight lines, which causes drivers to slow down to widen their field of vision. In Moorestown, interrupted sight lines occur most often from the extensive tree canopy that exists. Other methods of



interrupting sight lines are gateways that arch over the road, walls that define the street line - such as are found at the Evergreens complex on Bridgeboro Road - and the visual termination of the street through landscaping or building placement.

TRANSPORTATION DEMAND MANAGEMENT

The Land Use Plan Element includes an analysis of anticipated workers in Moorestown should all of the potential land for development be utilized. Theoretically based on the Land Use Plan, the level of employment in the Township could increase about 50%. The Township is well-established in its development pattern of streets and buildings which makes constructing new roads problematic. Increasing road capacity to handle existing and future congestion brought on by the anticipated growth in employment will have several negative effects. These negative effects may include:

- Loss of the street tree canopy;
- Noise and air pollution on residential property;
- Narrowing of sidewalks and bikeways;
- Stream encroachments; and
- Water quality degradation

These quality of life problems could occur from indiscriminant street widenings and the construction of new connector roads. They may also occur if intersection improvements for turning lanes, discussed in a previous section of this element, are done in an insensitive manner. Making streets wider, which is the traditional response to congestion, can be viewed as increasing the supply of road miles to meet the demand for more capacity in the system. What has received less attention in transportation planning has been the demand side of the equation. If demand, meaning the volume of traffic, can be reduced, then the need for wider roads declines.

Transportation Demand Management is the term of art for reducing the need for new infrastructure by reducing vehicular use. It is a difficult proposition to undertake since it requires people to change their driving behavior. Transportation Demand Management (TDM) requires a strong collaborative effort between business owners and government, but may be run by either sector. The concept of TDM may take a number of forms and includes such activities as:

- *Car Pooling and Ride Sharing.* Car pooling has traditionally operated among neighbors going to the same company. In TDM, rides are matched by a transportation coordinator to bring together people from

the same neighborhood who work for different companies in the same business park.

- *Van Pooling.* Van pools operate with paid drivers who may have other duties in the middle of the day. They pick up passengers and deliver them to their jobs. Employees pay a fee for the service, but this is often subsidized by employers.
- *Bus Service.* More frequent bus service or routes that are specific to a particular location such as a business park may be instituted. For example, New Jersey Transit might be petitioned to alter its route to include a new office development. If there should be sufficient demand within Moorestown, a jitney service using passenger vans could be explored.
- *Staggered operating hours.* Coordination among companies to stagger their beginning work hours would spread the peak hour of congestion over a longer time span. This differs from flex time in that there is an established starting time for businesses.

TDM efforts have a thirty-five year history in the state. Furthermore, there is a local organization in Burlington County called the Cross-County Connection focused mainly but not exclusively on the Rt. 73 corridor. At one time the Township was a member; however, the group was not focused on traffic issues germane to Moorestown. But the concepts behind TDM have the potential for mitigating the increase in traffic expected from the level of employment projected in the Land Use Plan Element. If this comes to pass, a more coordinated effort to utilize some TDM methods will be necessary. Since the visual and environmental effects from wider roads are well known, utilizing TDM methods can have obvious benefits in the preservation of Moorestown's character.

SUMMARY AND RECOMMENDATIONS

Improving the ability of people and goods to be moved in and through the Township is an important goal of the Master Plan but in this element is tempered by the desire to preserve and enhance the scenic beauty of the street. It is clear that government can not build enough road capacity to satisfy the demand that exists. Congestion will remain but through incremental physical improvements, adverse effects on the fabric of the community can be minimized. Pedestrian and bicycle networks provide an important alternative to motorized transportation. As this system expands, it provides the opportunity for recreation trips instead of motor vehicle trips. The following recommendations are made in the Circulation Element and depicted on the Circulation Plan as appropriate:

- 1) *Street Tree Planting.* The Township's street tree planting program should be commensurate with the need to replace trees as they reach the end of their lives. Since many street trees were first planted in the 1920's, the coming decade will see many trees die. Bacterial leaf scorch disease among oaks and the arrival of the emerald ash borer will accelerate this trend.
- 2) *County Highway Plantings.* An agreement with Burlington County should be reached allowing the planting of street trees along County highways, even if it is at Township or private citizen expense.
- 3) *New Road Segment.* Linden Street is proposed to be extended from N. Stanwick Road to the Public Works facility.
- 4) *County Road Assumptions.* The shifting of jurisdiction to Burlington County for East Gate Drive, Nixon Drive and the Harper Drive connector between the two streets should be pursued. Burlington County participation in widening the stretch of Centerton between Westfield and Hartford Roads should be explored. The timing of the transfer of jurisdiction for Centerton Road from Moorestown to Burlington County should be made explicit.
- 5) *Intersection Improvements.* Several intersections have obvious congestion problems and are constrained by physical limitations. These are identified on the Circulation Plan and should be studied as funding permits.
- 6) *Bicycle Routes.* The bicycle route system should continue to be expanded as indicated on the Bicycle Route Map as funding permits.

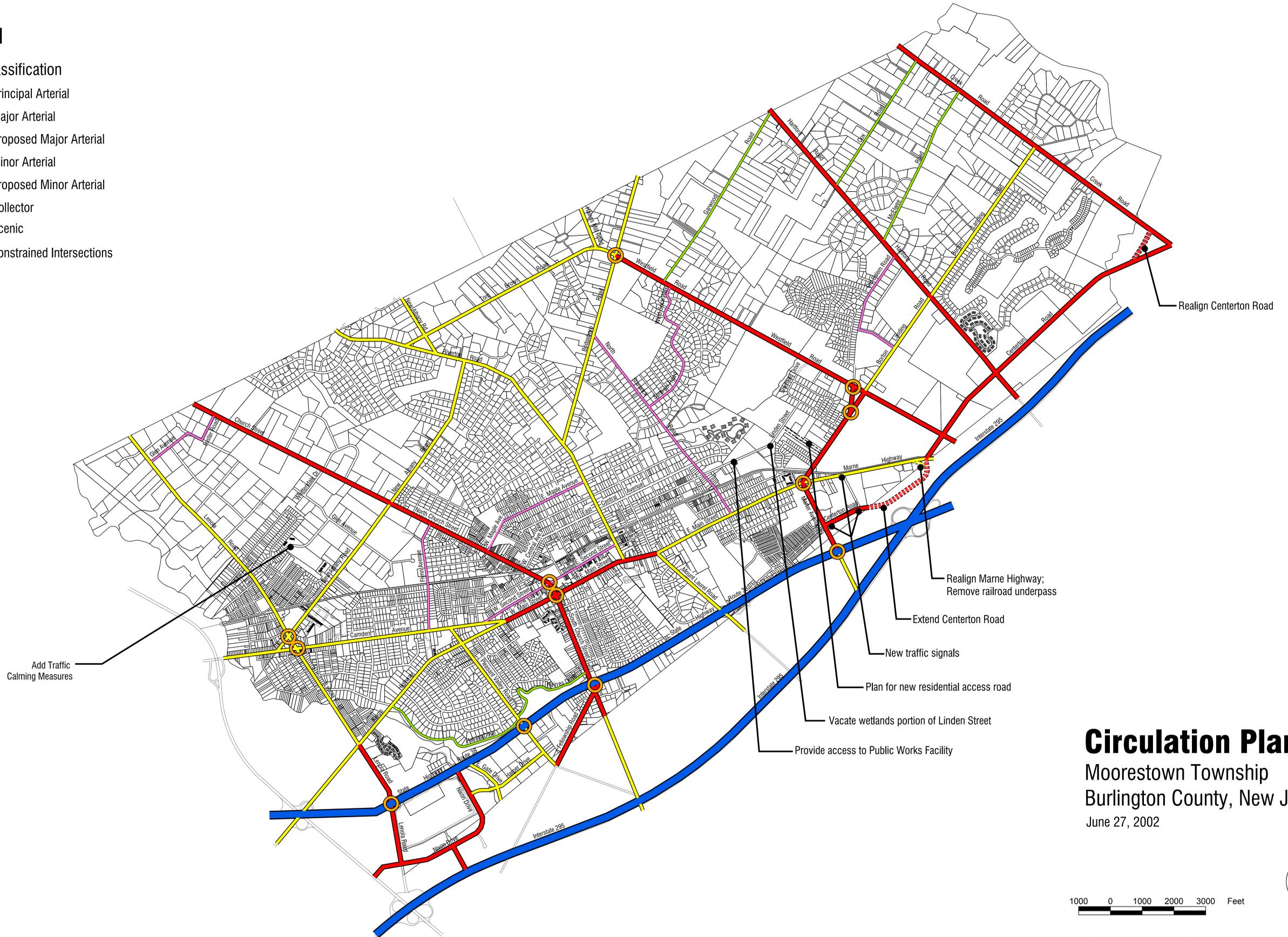
- 7) *Bicycle Parking Facilities.* The subdivision and site plan ordinance should be amended to require bike racks or other facilities as part of new non-residential development.
- 8) *Traffic Calming.* Traffic calming methods should be considered in the reconstruction of streets. Crider Avenue is specifically identified as a location for a speed table or other technique.
- 9) *Street Design.* Cul-de-sacs should be eliminated in favor of loop streets to reduce service costs to the municipality. A specific design standard for scenic roads should be developed emphasizing narrow lanes, a turf stabilized shoulder and drainage swales.
- 10) *Transportation Demand Management.* Any reduction in travel demand will aid in reducing congestion and the need to widen road segments and intersections. Transportation Demand Management techniques should be implemented on a Township-wide basis among business park owners to aid in reducing the demand for greater road capacity as circumstances warrant.

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Legend

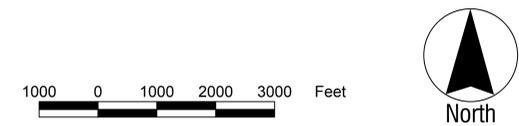
Road Classification

-  Principal Arterial
-  Major Arterial
-  Proposed Major Arterial
-  Minor Arterial
-  Proposed Minor Arterial
-  Collector
-  Scenic
-  Constrained Intersections



Circulation Plan

Moorestown Township
Burlington County, New Jersey
June 27, 2002



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