

# Chapter 9

## Transportation and Circulation Plan

The transportation and circulation network available to residents and businesses affects the character and efficiency of the Borough and is an important factor in maintaining and enhancing Malvern's attractiveness as a place to live, visit, work, and shop. Land use patterns and transportation networks are closely related. Because Malvern is nearly fully developed, the ability to move within and through the Borough via a variety of modes is important to maintaining resident's quality of life and a strong business environment.

This Chapter describes the existing system of transportation and circulation facilities and describes recommendations to address the needs of the system.

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## TRANSPORTATION AND CIRCULATION SYSTEM INVENTORY

### Land Use Patterns

Malvern Borough is an urban municipality located on the main commuter rail line (SEPTA Paoli - Thorndale) through Chester County and near major roadways (US Routes 30 and 202, PA Routes 352, 252, 401, and 29, and Paoli Pike). In addition to a high density of development within the Borough, Malvern is surrounded by suburban land uses, including residential, commercial, institutional, and industrial uses. Being located within a broader area of highly developed and developing areas, traffic congestion and through traffic are an issue within the Borough and the surrounding areas.

### Modes of Travel

There are multiple modes of travel (types of transportation) available to Malvern residents: rail, bus, an extensive roadway network, a partially complete sidewalk system, and limited trails.

#### ***Rail***

The Malvern train station, located immediately north of West King Street and west of Warren Avenue (see Map 9-1), provides access to both the SEPTA Paoli/Thorndale commuter rail line (that travels between Thorndale and Philadelphia) and to AMTRAK service, via the Paoli or Exton stations (that travels between Philadelphia and Harrisburg).

Malvern Station is the westernmost station on the SEPTA Paoli/Thorndale Line that has regular half-hour passenger rail service throughout the week. This rail station maintains Malvern's 20<sup>th</sup> century role as a commuter rail center.

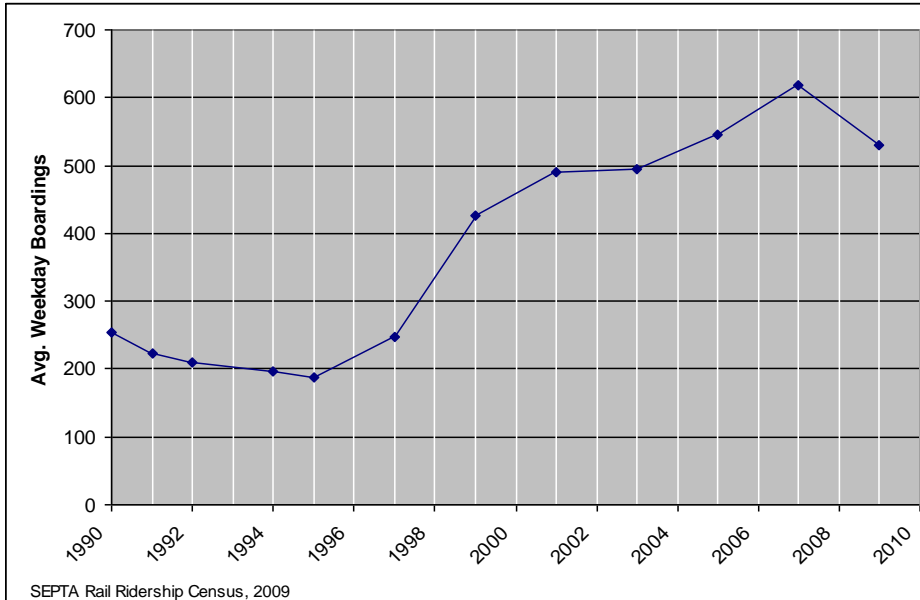
SEPTA data from 2009 (Figure 9-1) indicates that there were 537 average daily riders for the Malvern station, which ranks the station as the fourth busiest in Chester County behind Paoli, Strafford, and Exton. Ridership has grown significantly over the last 10 years to the point that the train station parking is at capacity on a daily basis.



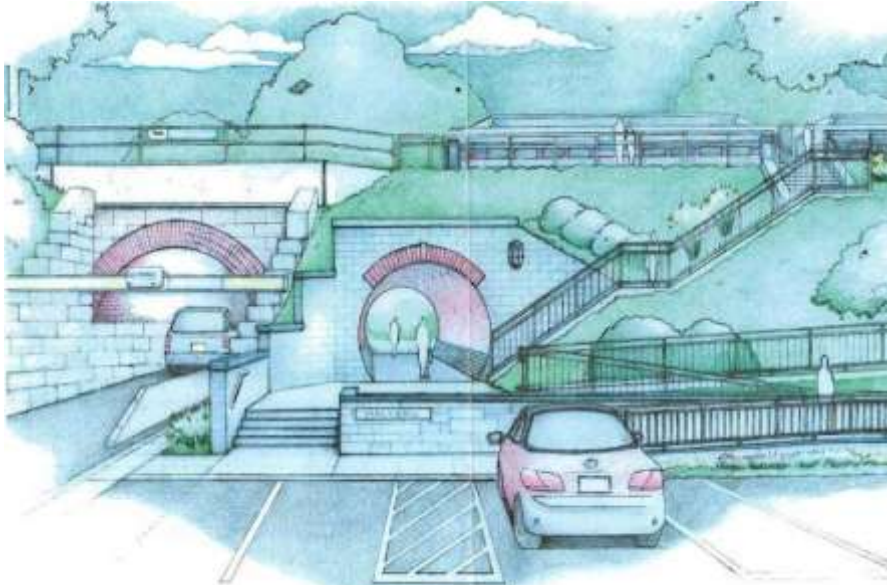
The Malvern train station serves Borough residents as well as users from outside the Borough. Map 9-1 displays the results of a 2002 license plate survey of train riders, showing that a majority of train riders that park at the station are coming from the areas immediately west and southwest of Malvern – Willistown, East Goshen, West Goshen, East Whiteland, West Whiteland, and Uwchlan

Townships, as well as West Chester Borough. This pattern clearly indicates that Malvern being the westernmost station on the Keystone/R5 Paoli - Thorndale with half hour service generates a significant travelshed within east-central Chester County. The 2002 license plate survey did not address train riders who walk to the station, or riders who park on Borough streets. Ridership at the Malvern station was 498 in 2001 and 514 in 2003. The results of the 2002 survey reflect present ridership patterns.

**Figure 9-1: Malvern Station Ridership, 1990-2009**



In 2010, SEPTA began construction on significant improvements to parking and pedestrian access at the Malvern Train Station. Figure 9-2 depicts the new pedestrian tunnel. (Also see below Transportation Improvements Inventory (TII)/Transportation Improvements Program (TIP).



**Figure 9-2: Malvern Train Station Pedestrian Tunnel**

The Paoli train station is located less than two miles east, and is in the planning stages of developing an intermodal transportation center. Completion of this center is not within the timeframe of this Plan. When completed, however, the Paoli train station would likely pull some riders from the Malvern train station, dependent upon factors such as rider amenities, parking convenience, and the train service provided at each station.

### ***Bus***

Malvern is also served by SEPTA's bus route #92, which provides service between West Chester and King of Prussia, and, through transfers, to Philadelphia and Wilmington, Delaware. The bus route runs along King Street, as depicted on Map 9-1. Data (2007) indicates there are approximately 30 boardings per weekday in Malvern Borough for this bus route.



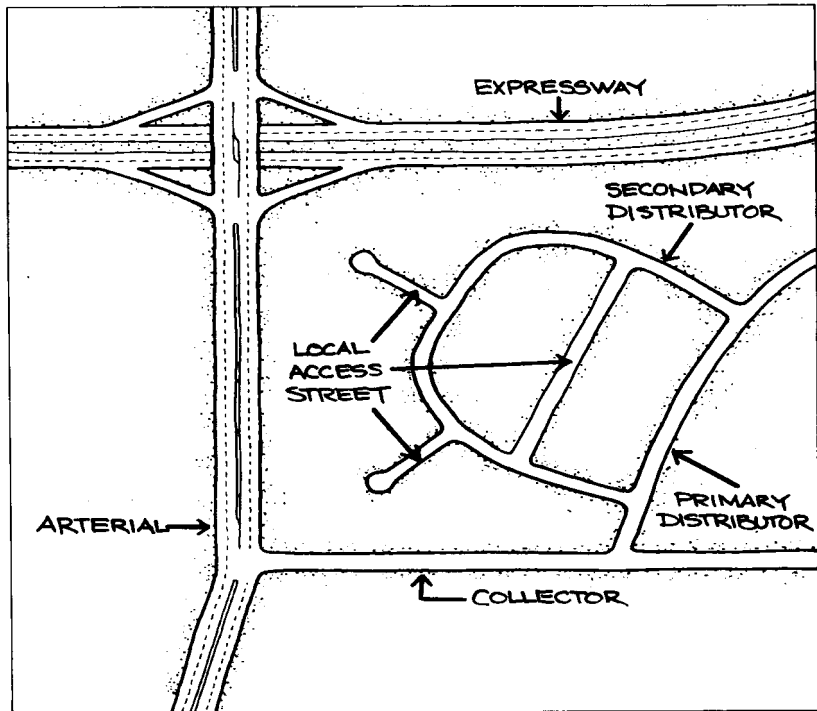
### ***Roadways***

Malvern residents also benefit from several major transportation corridors in the immediate area, including US Route 30, US Route 202, Route 29, Route 401, Route 252, and Route 352. Map 3-1 (see Chapter 3) depicts the location of the regional roadways. Map 9-1 depicts actual average daily traffic volumes (AADT) on Malvern area roadways. Within the Borough proper, as expected, King Street and Warren Avenue carry notable traffic volumes. Bordering and surrounding higher functional classification roadways such as Paoli Pike and US Route 30, carry significantly higher volumes of traffic.

Malvern is unique among Chester County municipalities in having no State owned roads bisect the Borough. State owned and maintained roads though do form a portion of the southern (Paoli Pike) and western (Sugartown Road) Borough boundaries. There are approximately 10 miles of Borough-owned and maintained public roads located entirely within the Borough boundaries. In addition, there are a number of private roads (serving individual developments) and alleyways in the Borough. In total, there are approximately 18 miles of roadways in and bounding the Borough. The Borough has a road density of 8 linear road miles per square mile of land area, which is a typical density for a borough in Chester County.

Roadways can function in different manners, serving varying traffic volumes, trip lengths and purposes, and accommodating varying traffic speeds. The roadway functional classification system is a method of categorizing roadways by their planned purpose to accommodate varying types (vehicular, pedestrian, and bicyclist) and volumes of traffic, as depicted in Figure 9-3.

The relationship between access and mobility is a key aspect of roadway classification. Accessibility refers to the ease of entering or exiting a roadway from adjacent properties. Mobility refers to the ability of the road to move traffic. They have an inverse relationship, as shown in Table 9-1.



Source: Chester County Planning Commission, 1993.

**Figure 9-3: Roadway Functional Classification Example**

**Table 9-1: Relationship Between Roadway Access and Mobility**

	<b>Greater Mobility</b>	<b>Lesser Mobility</b>
<b>More Access Points</b>	--	X (e.g. King St)
<b>Less Access Points</b>	X (e.g. Rt 202)	--

Roadway Functional Classification and Access/Mobility are useful in establishing roadway design standards, access management strategies, and to prioritize improvements. Map 9-1 depicts the Road Functional Classification of Malvern area roadways, which range from local roads (numerous) to King Street as a major collector and Paoli Pike as a minor arterial. As depicted by their functional classification, Paoli Pike,

Route 30, and Route 29 are designed and intended to serve regional traffic.

PennDOT and municipal vehicular accident data was analyzed and summarized to identify priority intersections in the Borough, as shown on Map 9-2. This map shows accident clusters in the Borough and region, as well as more specific accidents data in the Borough. The analysis identified three key intersections/area accident clusters in the Borough, including: Sugartown Road at Monument Road, Paoli Pike at Warren Avenue, King Street between Warren Avenue and Bridge Street. One of these key areas involves North Warren Avenue at Broad Street, as well as there being accidents at North Warren Avenue and Pennsylvania and Quaker; the proposed Malin Road extension would increase safety at these intersections by possible intersection improvements (sight distance, turn lanes, stops signs, etc) and by providing an alternative means for truck traffic to access the industrial area thereby reducing conflicts between commercial/industrial truck traffic and local residential town traffic, and mitigating accident potential in these areas. It is also notable that there are accidents occurring along East King Street, where traffic calming improvements are underway but have not yet been completed, but few along West King Street where traffic calming improvements have been implemented.



### ***Pedestrian and Bicycle Circulation***

Pedestrian circulation is a key part of the Malvern transportation system, while bicycle circulation plays a more limited role within the Borough primarily as a recreational activity. While the significant majority of residents drive to work, many non-work trips within Malvern can be accommodated by foot. In addition, a quality pedestrian environment makes a walk or bike ride through town an end in itself. A complete network of sidewalks and connectivity to area trails is an important component in encouraging pedestrian and bicycle activity. The Malvern Borough Planning Commission began to

address this issue in detail with a 2008 Sidewalk Survey, the full results of which are included in Appendix B, and which is further addressed below under Recommendations.



The Survey noted sidewalk existence, condition, curbing, sidewalk type, lighting, and Americans with Disabilities Act (ADA) compliance. Currently, there are sidewalks on many residential streets and in the commercial center of the Borough (see Map 9-3). The commercial area also provides other pedestrian amenities such as benches, on-street parking (which provides a buffer between pedestrians and moving traffic) curb “bulb-outs” (to offset on-street parking spaces and slow or “calm” traffic), bollards (to provide a sense of safety for pedestrians at intersections), and a generally

aesthetically pleasing streetscape. In the neighborhoods close to the business district, sidewalks are relatively complete with most streets having sidewalks on at least one side of the street. While there is an extensive sidewalk network in the Borough, there are areas where key connections are lacking, as noted in the 2008 Sidewalk Survey.

Trails are another aspect of pedestrian and bicycle circulation. Existing trails and paths within Malvern are primarily used for recreational activity. They are located in the Paoli Battlefield Site, Randolph Woods, Rubino Park, and Burke Park, and from Quann Park to the Paoli Battlefield Site. The Patriots Path is a proposed regional trail network that would pass through the Borough, and this link would create multiple opportunities for recreational connections/uses for Borough residents. Trails are discussed in more detail in Chapter 11, and proposed and existing alignments are displayed on Map 11-1. Discussion of trail opportunities is also included as Appendix A. The proposed trail alignments depicted on Map 11-1 would link open space areas within the Borough (such as Randolph Woods, Paoli Battlefield Site, and Paoli Memorial Association Grounds) with the residential and commercial areas of the Borough, as well as link residents to trails extending through Willistown and East Whiteland Townships.

### **Parking**

A 1998 parking survey<sup>1</sup> of the King Street corridor, including SEPTA parking lots, indicated that at that time there was adequate parking in the overall corridor to meet parking needs, specifically around 40 percent of the total parking spaces were available during the day. It was noted, however, that while the corridor as a whole had a high degree of parking availability, there were localized areas in the corridor, including the SEPTA lots, where parking availability was still adequate but limited. Approximately 700 total parking spaces were identified along the entire corridor, with SEPTA lots providing around 300 of those spaces. Half of the SEPTA lot spaces were delineated striped spaces, while half, in the unpaved portion of the south SEPTA lot, were

<sup>1</sup> Completed as part of the Transportation Inventory of the 1999 Borough Comprehensive Plan

unmarked spaces. Though this information is dated, it still provides a good background and general grasp on the number of parking spaces in the corridor and particularly in the SEPTA lots.

Since that time, demand for parking appears to have increased, although there has not been a parking survey to document the demand and availability. There appears to be greater spill-over from the train station parking lots onto nearby streets and Borough owned parking lots. This spill-over effect has diminished parking for Malvern shoppers, visitors, and residents.

In 2010, parking and pedestrian access improvements began at the Malvern train station property, which should serve to help to mitigate commuter parking issues. These improvements entail a rebuilt south parking lot with paving and striping, delineating previously unmarked parking spaces, improving parking space configuration, acquiring additional contiguous land, as well as improving traffic flow in the south lot. A highlight of the project is the construction of a new ADA compliant pedestrian access tunnel along with related ramps to improve pedestrian connection/access between the north and south parking lots and train platforms. Additionally, resurfacing, restriping, curbing, and designating one-way access to improve traffic flow are the project improvements to the north lot. There will also be new stormwater management, signage, lighting, landscaping, and an electronic pay-by-space parking fee collection system. These improvements provide 50 additional parking spaces for a total of 330 delineated paved spaces after the project is complete, although the impact of these additional spaces on Borough parking concerns is unclear at this time (2011). The project is to be completed in 2011.



There is currently (2011) a permit parking system for the Borough owned lots, which allows users to exceed the time limits at three parking lots – 15 South Warren Avenue, Channing Avenue at East King Street, and Church Street at East King Street. Otherwise, these lots are limited to either three or four hour parking. There is currently a waiting list for a parking permit.

## Commuting Patterns

Based on Chapter 7, the Borough primarily serves as a bedroom community, with 90 percent of workers going outside the Borough for employment, with Philadelphia and communities along the US Route 202 and US Route 30 corridors providing the highest employment for Malvern residents. The 1990 and 2000 data were consistent, indicating that approximately one-third of Malvern's residents worked outside of Chester County, and approximately 60 percent worked within the County. American Community Survey 5-year estimates (2005-09) indicate that 88 percent of Malvern workers travelled outside the Borough for employment. This slight decrease is consistent with the increase from 2000 to 2005/09 of Borough residents working from home as below described. As of 2011, specific data on commuting patterns of Malvern workers is not available, however in general terms 95 percent of Malvern workers worked in Pennsylvania, 55 percent of Malvern workers worked in Chester County, and 40 percent worked outside the County.

Table 9-2 depicts the mode of travel for workers aged 16 and older for Chester County and Malvern Borough. Malvern data correspond closely to Chester County data, with the notable exceptions of public transportation and carpooling modes. Malvern has a higher percentage of workers that use public transportation and a lower percentage that carpool, as compared with the County overall. The higher use of public transportation in Malvern is expected with the Malvern Train Station at the Borough's center. In 2005/09, a greater number of Malvern workers worked from home, with the percentage resembling that in the County, as compared to 2000 when few worked from home as compared to the County. The increase in working from home is reflective of the general trend of telecommuting becoming more prevalent overall. Other notable items are that

the number of Malvern workers who walked or carpoled to work dropped from 2000 to 2005/09, while the number who drove alone or worked from home increased. Use of public transportation generally remained consistent over that time frame.

**Table 9-2: Commuting Method by Workers 16 and Older by Percentage, 2000-2009**

	<b>Drove Alone (car/truck/van)</b>	<b>Carpooled (car/truck/van)</b>	<b>Public Transportation*</b>	<b>Walked</b>	<b>Other Means</b>	<b>Worked at Home</b>
	<b>2000/2009</b>	<b>2000/2009</b>	<b>2000/2009</b>	<b>2000/2009</b>	<b>2000/2009</b>	<b>2000/2009</b>
Chester County	80.7/81.1	8.6/7.7	2.6/2.6	2.5/2.3	0.6/1.1	4.9/5.2
<b>MALVERN</b>	80/4/82.2	8.0/5.5	5.6/4.5	3.6/1.7	0.7/1.5	1.7/4.6

Source: U.S. Census Bureau, 2000; American Community Survey, 5-year estimates 2005-2009 \*excludes taxicabs

## Transportation Improvements Inventory (TII) and Transportation Improvements Program (TIP)

The Chester County Planning Commission (CCPC) Transportation Improvements Inventory (TII) is an inventory of proposed improvements submitted by municipalities to the CCPC that are combined into a single report, which is updated every two years, most recently in 2011. Inclusion in the TII is the first step for a project to become listed in the Delaware Valley Regional Planning Commission (DVRPC) Transportation Improvements Program (TIP). The TIP is the regionally agreed upon list of priority transportation projects, as required by federal law. The TIP document must list all projects that intend to use federal funds, along with all non-federally funded projects that are regionally significant. Other state funded capital projects are also included. The projects include bicycle, pedestrian, freight related projects, innovative air quality projects, and the more traditional highway and public transit projects. The TIP is developed cooperatively between state and regional agencies and is approved by the Pennsylvania legislature and federal review agencies including the Federal Highway Administration every other year; was most recently adopted for FY 2011.

The six projects in the 2011 TII for the Borough plus projects in the area are listed in Table 9-3. Malvern's transit-related project on the TII (Amtrak/SEPTA Keystone Line) is listed on the FY 2011 TIP, as well as a portion of the Patriots Path (but not the section in Malvern). Recent FY 2009 TIP funded (and 2009 TII Inventory) projects in and near Malvern are the Malvern Train Station pedestrian and parking improvements, Patriots Path trail segment construction, and regional rail equipment upgrades. Of those projects in the Malvern area, US 202, Section 300, those projects related to the Paoli Transportation Center, US 30 at PA 252 improvements are listed on the FY 2011 TIP. All other TII projects await consideration for inclusion on future TIPs. There is intense competition for transportation funding in the DVRPC region as well as nationally, which reflects the inadequacy of transportation funding in general at the local, state, and national levels. This trend is expected to continue. In Chester County alone, 464 transportation projects are listed on the TII, competing for funding.

**Table 9-3: TII and TIP Projects In and Near Malvern (2011)**

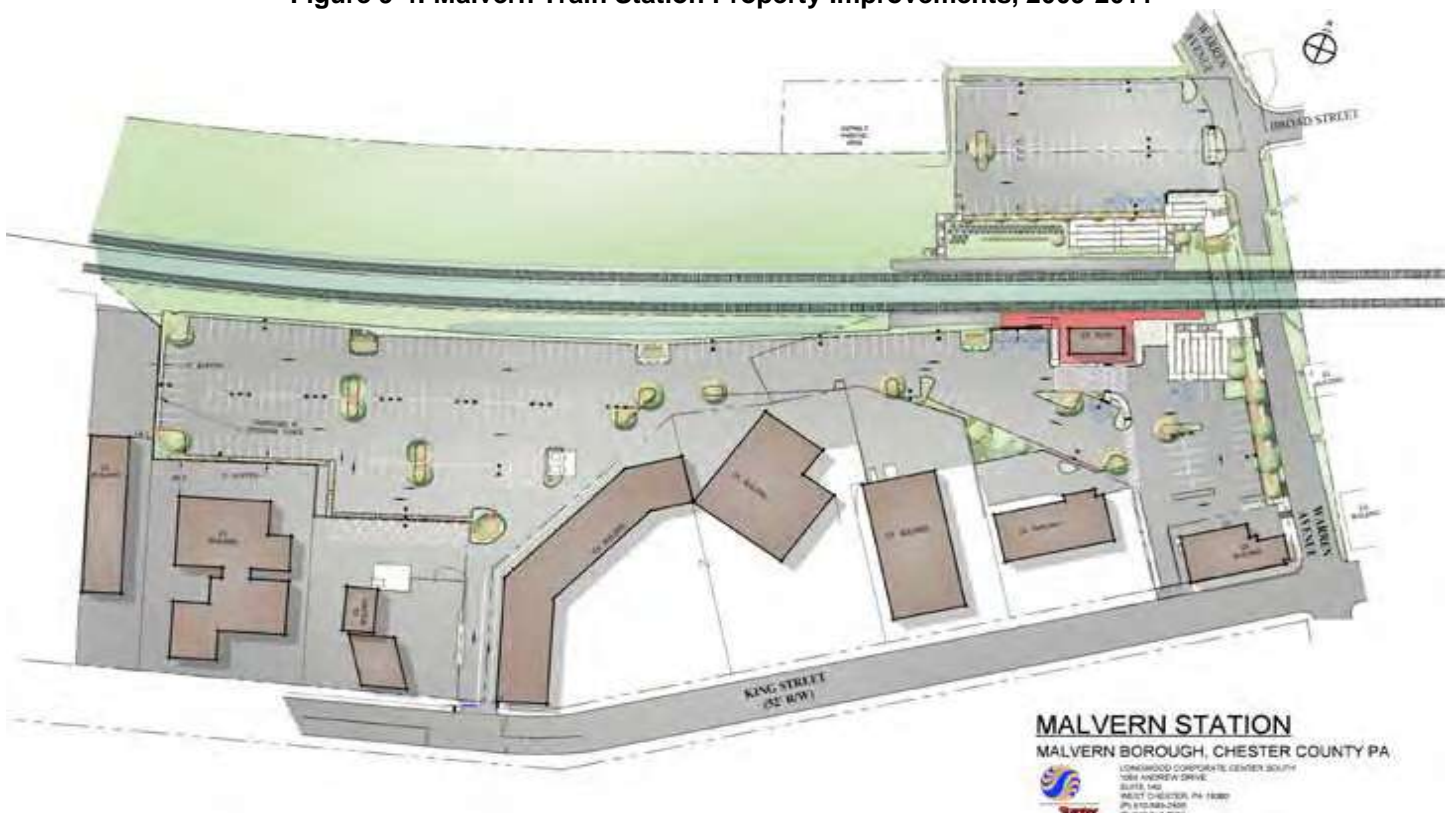
<b>TII Projects Within Malvern</b>		
<b>Project #</b>	<b>Project Name</b>	<b>Description</b>
PTR 1*	Amtrak/SEPTA Keystone Line	Upgrade Infrastructure and Equipment
BP 14*	Patriot's Path: Malvern to Valley Forge Park	Multi-Use Trail (multiple spurs)
NC 7	Malin Road Extension (Malin Rd to PA Ave)	New Collector Road
INT 23	Paoli Pike at Warren Avenue	Intersection (Capacity) Improvements
INT 29	Sugartown Road at Monument Avenue	Safety Improvements
INT 92	Pennsylvania Avenue at Warren Avenue	Pedestrian improvements/drainage

<b>TII Projects Near Malvern</b>		
<b>Project #</b>	<b>Project Name</b>	<b>Description</b>
PTS 1*	Paoli Transportation Center	Intermodal Station/Parking
RW 1*	Paoli Transportation Center: Road Improvements	Traffic and Intersection Improvements/Bridge
INT 24	Paoli Pike at Sugartown Road	Add Turn Lanes
MCF 1*	US 202, Section 300 (US 30 to N Valley Road)	Widen to 6 Lanes
NC 10	Three Tun Road Extension (PA 352 to Malin Road)	New Collector Road
MCN 7	US 30 (US 202 to Malin Road)	Widen to 5 Lanes
INT 12	PA 352 at King Road	Add Turn Lanes/Safety
INT 21	US 30 at PA 352	Add Turn Lanes/Safety
INT 1*	US 30 at PA 252	Add Turns Lanes/Safety
SB 1	PA 352 Underpass of Amtrak	Replacement
INT 53	PA 401 at Swedesford Road	Realignment/Add Turn Lanes

\*On the TIP

A significant recent project achievement from the TII/TIP listing was the funding of the construction of a pedestrian underpass tunnel and parking improvements at the Malvern Train Station (TII Project Number PTS 4), which was funded under the American Recovery and Reinvestment Act of 2009 (economic stimulus funding). The funding of the Malvern Station project demonstrates the need and importance of creating the TII and TIP inventories for the purpose of recognition and prioritization of key projects ready for funding as it becomes available.

**Figure 9-4: Malvern Train Station Property Improvements, 2009-2011**



In addition, the Malin Road Extension (TII Project Number NC 8) recently received funding through DVRPC through the Efficient Growth for Growing Suburbs (EGGS) Program for a Feasibility Study. The Borough teamed with East Whiteland Township on the Malin Road Extension Feasibility Study. This Study provides alternative alignments for new roadway and its connections, evaluates traffic impacts, assesses potential environmental impacts, and provides cost estimates for roadway



design and construction. The Malin Road Extension is a proposed one-mile roadway that will connect Malin Road in East Whiteland's industrial area to Pennsylvania Avenue in Malvern's industrial area. The extension will provide truck traffic direct access to and from these industrial areas onto US Route 30, thus redirecting it away from residential neighborhoods in the Borough. The Malin Road extension would resolve several issues and accomplish several goals (Also see Planning Area 14). The Malin Road Extension also provides an alternative for commuter access from northwest of the Borough to the Malvern Train Station. The Feasibility Study was completed in December 2010. Appendix C includes the Conceptual Engineering Plan from the Feasibility Study. The Feasibility Study determined that while costly, the extension of Malin Road to both Pennsylvania Avenue and Three Tun Road (in East Whiteland) is feasible.

One notable point from the Malin Road experience is that non-traditional funding mechanisms are becoming increasingly important due to the current limits on traditional funding. Malvern Borough is well positioned to take advantage of non-traditional sources (such as developer improvements and community development funding) as a transit location and an urban area. Implementing new, more local sources for transportation improvements should be considered as national funding levels are anticipated to remain low for the foreseeable future.

## Interrelationships among Transportation Modes

The transportation network, including all modes of travel and facilities discussed in this Chapter, need be looked at in a comprehensive and interrelated manner for the network to function efficiently and safety. It is important to research and address each mode and facility on an individual basis, but also to recognize their interrelationships. An individual focus on each transportation mode, with an awareness of their interrelationships, will lead to improved safety, increased effectiveness, new opportunities to meet needs in the Borough.

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## TRANSPORTATION AND CIRCULATION SYSTEM PLANNING IMPLICATIONS

It is essential that transportation planning maximize the interrelationship and coordination between all modes of travel to achieve an appropriate balance that serves all Borough residents. In light of the transportation inventory, the key transportation related issues facing Malvern are:

- **Through Traffic** - One of the key traffic problems is the volume of through traffic using local Borough streets without having an origin or destination within the Borough. Through traffic is particularly an issue on King Street, Warren Avenue, Bridge Street, Monument Avenue, and Old Lincoln Highway. While regional roadways (such as Paoli Pike and US Route 30) clearly carry larger volumes of through traffic and local traffic, local roads were not designed to serve large volumes of traffic. A combination of efforts, including traffic calming measures, enforcement, and support of improvements to regional roadways are needed to continue to address this issue and to maintain safe conditions for vehicular, bicycle, and pedestrian use along local roads.
- **Truck Traffic in Residential Neighborhoods** – Truck traffic from the industrial area in the northern portion of the Borough currently must pass through residential neighborhoods in order to enter or leave the Borough. These trucks create significant impacts for the residents of these areas, which may be addressed through traffic calming measures and new roadways.
- **Pedestrian Orientation** – One of the Borough's key assets is its pedestrian orientation. Preserving and enhancing this pedestrian orientation through a combination of connectivity

improvements, sidewalk improvements, streetscape improvements, and further implementation of traffic calming measures is critical.

- **Malvern Train Station** – The Malvern train station serves a vital function in the Borough, and its continued success is important to the Borough. Improvements to the Malvern train station, particularly in light of proposed improvements to the Paoli train station, will be important to maintaining and enhancing Malvern train station as a convenient option for train riders. A critical part of that is a positive relationship between the Borough and SEPTA.
- **Parking** – Convenient parking is an issue for Borough residents, visitors, shoppers, and those who use the Malvern train station for commuting purposes. Continuing to address parking for all of these users is key to keeping and enhancing the Borough as a destination for shoppers and visitors, convenient transit point for train riders, and as residence of high quality for those who call Malvern home.
- **Redevelopment** – As redevelopment occurs within the Borough, issues of parking, access management, traffic calming, pedestrian movement, and traffic circulation will need to be addressed and accommodated. For example, more specifically, any new developments or redevelopments are required to provide adequate parking for the new uses per zoning.

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## TRANSPORTATION AND CIRCULATION SYSTEM PLANNING RECOMMENDATIONS

The overall goal of the Transportation Plan is to further the attainment of a balanced, multi-modal transportation network in which each mode is able to contribute to meeting the needs of the Borough's residents. In addition to addressing public transportation, roadways, and pedestrian and bicycle facilities, the recommendations address: regional collaboration, parking, truck traffic, access management, traffic calming, and other components of the transportation system. Taken together, the recommendations advance a strategy for increased transportation choices in a manner that strengthens the land use plan and helps achieve a sustainable transportation system and maintain a high quality of life for residents of Malvern.

### System-wide

#### 9.1 Continue to support existing and future Malvern area projects identified on the TII and TIP.

- **Public Transportation** - Three Malvern area transit projects are currently identified on the TIP: the Amtrak/SEPTA Keystone Line (upgrade of infrastructure and equipment), the Paoli Transportation Center (intermodal station and parking), and the Paoli Transportation Center Road Improvements (bridge and traffic improvements). Improvements to these area transit facilities will ensure that commuters have convenient and accessible transportation choices, which will reduce pressure on Malvern's transportation network.
- **Roadways** - Existing roadway projects focus on improved capacity of regional roadways and improved circulation within the Borough. Improved circulation is the focus of the Malin Road Extension, which is a proposed collector road included on the TII. The Borough has taken a lead on this project and will need to continue to push for its advancement. The results of the Malin Road Feasibility Study identify the next steps to

advance this project. As well, intersection improvements are the focus of the nearby Pennsylvania Avenue at Warren Avenue TII Inventory project.

Most other projects included on the TII or TIP focus on improved capacity or functioning of regional roadways. While not within the Borough, these projects will have a significant impact on through-traffic and pedestrian safety within the Borough. For example, intersection improvements and turn lanes can improve circulation safety and serve both local and through-traffic. Improving the regional roads and focusing higher levels of traffic on these roads will help roads in Malvern to function in the capacity for which they were designed. Malvern should continue to support these regional projects as follows:

- Paoli Pike at Warren Avenue – intersection improvements (TII)
  - Paoli Pike at Sugartown Road – add turn lanes (TII)
  - Sugartown Road at Monument Avenue - Safety Improvements (TII)
  - Three Tun Road Extension (PA 352 to Malin Road) - New Collector Road
  - US 30 (US 202 to Malin Road) – widen to five lanes (TII)
  - PA 352 at King Road – add turn lanes/safety (TII)
  - US 30 at PA 352 – capacity improvements (TII)
  - PA 401 at Swedesford Road – realignment, add turn lanes (TII)
- ***Pedestrian and Bicycle Circulation*** - Currently the only pedestrian/bicycle project on either the TII or TIP in the Malvern area is the Patriots Path (Malvern to Valley Forge Park), a multi-use trail that is currently identified on the TIP. Implementation of this project in its entirety is critical to linking Malvern to regional destinations.

## **9.2 Continue to coordinate with surrounding municipalities on regional transportation issues, particularly traffic circulation, through-traffic, parking, and a trail network.**

Malvern Borough has already begun the process of working with East Whiteland Township on the Malin Road Extension, and with Willistown, East Whiteland, and Tredyffrin Townships on a regional trail network, the Patriots Path (see Appendix A). Additional coordination could be undertaken with Willistown Township on the functioning of Paoli Pike and Sugartown Road. With Paoli Pike as a portion of Malvern's southern boundary with Willistown Township and Sugartown Road as a portion of Malvern's western boundary with Willistown Township, coordination on these roadways is imperative. Both roadways have intersection improvements listed on the 2011 TII (see 9.1 above). Also, coordination needs to be undertaken about parking issues in the region. If the parking issues in other areas of the region, such as at the Paoli Train Station, were addressed this would relieve Malvern's parking issues. Advancing transportation improvement projects requires the support of all affected municipalities. Regular coordination will ensure that Malvern Borough and its surrounding municipalities are moving together for future improvements.

## **9.3 Submit identified transportation and circulation project priorities to CCPC for inclusion on the TII, and initiate needed studies related to those priority projects as well as coordinate with CCPC and other appropriate agencies to help to advance the identified Borough priority projects.**

To this end, it is important that the Borough undertake, as possible, feasibility studies, engineering studies, and other preliminary planning studies and coordinate with CCPC and other entities. These types of initiatives show the Borough's commitment to projects while at the same time provide needed initial project planning; these efforts advance projects putting them in better line for implementation funding for engineering and construction work/costs. Table 9-4 provides a summary of key project ideas that have been recommended via this

Comprehensive Planning process, which should be furthered considered and prioritized as to their importance by the Borough and considered for addition to the TII.

The TII update occurs every two years with the most recent update having occurred in 2011. Coordination with CCPC on transportation needs is critical to having identified needs/priorities translated into proposed projects, leading down the path to potential future TIP or other funding.

**Table 9-4 Recommended Project Ideas**

<b>Project Description</b>	<b>Action</b>
Sugartown Road at Monument Road: Intersection improvements (on 2011 TII)	9.15
King Street at Warren Avenue: Intersection improvements	9.16
King Street at Bridge Street: Intersection improvements	9.17
Broad Street at Bridge Street: Pedestrian improvements	9.23
Longford Avenue at Old Lincoln Highway: Intersection turning improvements	9.8
King Street at Powelton Avenue: Construct raised intersection (funded via 2011 Chester County Urban Center Community Revitalization Grant program)	9.24
King Street at Woodland Avenue: Construct raised intersection	9.24
King Street at Woodland and Channing, and Powelton: Streetscape improvements (Powelton portion funded via 2011 Chester County Urban Center Community Revitalization Grant program)	9.25
Warren Avenue - First Avenue to Paoli Pike: Pedestrian and bicycle improvements	9.27

**9.4 Seek funding from traditional and non-traditional sources for transportation projects, and consider alternative local funding source options for transportation improvements.**

Given that transportation needs far outweigh available funds, it is imperative that the Borough remain proactive in advocating for its projects, and diligent in seeking out funding from all available sources. Presently, federal and state transportation (traditional) funding is very limited and will continue to be highly constrained for the foreseeable future; thus, the Borough should consider whether there are options for local funding sources for transportation improvements. Local funding alternatives can include:

- Developer required improvements through land development (see Action 9.14)
- Transportation Grants (e.g. EGGS grant for Malin Road)
- Revenue Generation Mechanisms (e.g. Business Improvement District, TRID)

The Delaware Valley Regional Planning Commission has published a comprehensive list of funding and implementation tools in their Municipal Resource Guide. Their website (<http://www.dvrpc.org>) is updated regularly and includes newly announced grant and program opportunities.

**9.5 Consider developing and adopting an Official Map to delineate the desired locations of new roadways, alleyways, pedestrian, and bicycle facilities in the Borough, to ensure that the future transportation and circulation network/ facilities is consistent with Borough goals and objectives.**

Official maps can serve a valuable function for a municipality, providing options without requiring an immediate commitment on the part of the municipality. Identification of infrastructure corridors through adoption of an official map is a valuable tool that Malvern should consider. An example of the use of an Official Map might be delineating the general alignment for the proposed Malin Road extension (based on the 2010 Feasibility Study), roadway improvements for the proposed TOD area to the north of the train station, and denoting a pedestrian/bicycle path along South Warren Avenue, should either Malvern Prep



or St. Joseph-in-the-Hills Retreat ever change to be more intensive land uses. (Also see Chapter 11, recommendation 11.22)

**9.6 Continue to investigate, and implement, where necessary, traffic calming measures to improve the overall safety of the transportation network.**

Malvern Borough has implemented several traffic calming measures in recent years, but other areas have been identified and will likely arise in the future. It is vital that the Borough keep a focus on implementing traffic calming measures that are multi-modal serving varying modes of circulation, and that funding be sought to address multi-modal issues. Specific locations for traffic calming measures are noted in the recommendations for Pedestrian and Bicycle Circulation.



**9.7 Review zoning, SLDO, and other Borough standards to ensure roadway, sidewalk, and trail standards are current.**

Although Malvern's regulations are currently up-to-date as of 2011, technical standards are evolving, particularly in regard to sidewalks and trails. Periodic reviews of regulations will best position the Borough to deal with land use changes and proposed development.

**9.8 Continue to consider the best methods to manage access along Borough roads to minimize conflicts and improve mobility.**

For the Borough, the highest priority road that has significant access and sight line issues is Sugartown Road. Other priority roads include access and sight issues at Paoli Pike and South Warren Avenue near Malvern Prep. Broad Street at Longford Avenue and Broad Street at Bridge Street is another key area of concern due to the conflict between truck traffic going to/from the industrial area and resident car and pedestrian movements; the proposed Malin Road extension is key to relieve this ongoing safety issue/conflict. Another safety concern is the difficulty for residents heading towards Route 30 to make left turns from Longford Avenue onto Old Lincoln Highway due to heavy traffic on Old Lincoln Highway

**9.9 Use the most current census or other valid data available when considering transportation initiatives.**

## **Public Transportation**

**9.10 Conduct a new survey of train station users/riders.**

Such a survey would provide the Borough with detailed information on where train station users are coming from, which will help with determining how to best meet their needs. This survey should include commuters who park in lots or on-street and commuters who walk to the train station.

**9.11 Coordinate with SEPTA regarding the Malvern Train Station and any future improvements necessary.**

Following completion of parking and pedestrian improvements to the Malvern Train Station in 2011, it remains imperative that the Borough continue to coordinate with SEPTA to ensure

that the Malvern Station continues to provide users with a high quality, convenient transportation option. Use prioritized survey findings, see 9.10 above, to begin coordination and discussions with SEPTA. Additional parking needs may be part of this discussion (see Parking Recommendations).

**9.12 Continue to support the bus route through the Borough, which provides convenient access for Borough residents and visitors.**

Access to as many transportation options as possible is in the best interest of Borough residents and visitors, and the continuation of a bus line through the Borough adds to the choices available. As it is a financial responsibility the Borough (and not SEPTA), when funds permit, the Borough could consider the installation of a bus shelter along West King Street, including amenities, such as bus schedules and benches, in the shelter.

## Roadways

See Map 9-4 for a depiction of roadway recommendations.

**9.13 Support the next steps for the Malin Road Extension project in cooperation with East Whiteland Township.**

Completed in December 2010, the Study examined the extension of Malin Road in East Whiteland Township's industrial area to connect with Pennsylvania Avenue in the Borough's industrial area. Such an extension, approximately one mile in length, provide trucks with direct access to and from these industrial areas onto US Route 30, redirecting it away from residential neighborhoods and alleviating present industrial/residential traffic conflicts and safety issues. The Feasibility Study determined that while costly, the extension of Malin Road to both Pennsylvania Avenue and Three Tun Road (in East Whiteland) is feasible. Appendix C includes the Conceptual Engineering Plan from the Feasibility Study.

The Study identifies the next steps to implement the proposed roadway extension by way of 14 implementation actions. Malvern Borough will need to take an active role to advance the project, in cooperation with East Whiteland Township. The Action Plan from the Feasibility Study, including all 14 actions, is also included in Appendix C.

- ⇒ Recommended regulatory actions include development of an Official Map to show the new roadway, consideration of the Malin Road extension during municipal land use reviews, and consideration and adoption of land use policies that promote sustainable growth and transportation, multi-modal travel, and transit-oriented development design.
- ⇒ Recommended finance actions include seeking grant funding and consideration of transportation impact fees.
- ⇒ Other recommended implementation actions include stakeholder identification, municipal promotion of the project, and right-of-way acquisition.

The Borough should focus on this project as a multi-municipal priority to alleviate truck traffic in the residential neighborhoods in the northern portion of the Borough, as well as to provide better flow of traffic to/from/through the industrial area, access to the largest undeveloped parcel in the Borough, and additional access to the Malvern Train Station, all the latter serving to help booster Borough business and economic development/revitalization efforts.

In addition to the Malin Road extension to Pennsylvania Avenue, the Borough should explore how to link Quaker Lane in Malvern to Malin Road/Pennsylvania Avenue, creating multiple access points for all properties within Planning Areas 13 and 14, further improving the economic development potential of these properties.

**9.14 Address traffic issues related to redevelopment projects, including the proposed East King Street Redevelopment.**

Although there is limited subdivision and land development potential in the Borough, there is always potential for redevelopment, as the East King Street Redevelopment proposal shows. The 2006 Malvern Subdivision and Land Development Ordinance (SLDO) has extensive design standards that apply to subdivision and land development projects within the Borough. The standards address streets, intersections, alleys, sidewalks, and trails. For example, the SLDO specifically notes that traffic calming measures may be required, as well as turning lanes (Section 502). Constructed crosswalks may also be required at intersections to provide for safe pedestrian movement (Section 506). Adherence to the SLDO standards for all subdivision and land development projects, including the East King Street Redevelopment proposal, is imperative to maintaining, and expanding where necessary, an effective transportation network.

The SLDO currently (2011) does not have requirements for a traffic, circulation, or parking impact study, but it does allow the Borough to require specific measures, such as traffic calming measures and raised crosswalks during land development, if the Borough deems it necessary. Technically, under this provision, the Borough could require a traffic impact study under certain specific conditions; this would likely require further analysis as to whether a development application had risen to meet those conditions. In future SLDO updates, the Borough should consider requiring multi-modal transportation impact studies outright. Also, the Borough should consider creating completing an Act 209 Study related to implementing transportation impact fees; for example such fees, if implemented by the Borough, could assist with funding intersection improvements such as improvements to the intersections of North Warren Avenue/Pennsylvania Avenue and North Warren Avenue/Quaker Lane or other close in improvements when development in close proximity occurs, such as could occur if the proposed Malin Road extension is realized.

**9.15 Investigate improvements to the Monument/Sugartown Roads intersection, and request that the project continue to be on the TII as part of the 2013 update.**

An important entryway into the Borough, the Monument/Sugartown Road intersection does not function effectively. A thorough investigation of all options for improvements to this intersection should be undertaken to develop the best solution for all modes of transportation. Options include signals, signage, traffic calming measures, and landscaping to make this intersection more of a gateway to the Borough; a combination of any of these methods would be the most effective. This intersection does not appear to be well suited for a roundabout, due to topologic constraints. This project is on 2011 TII.

**9.16 Investigate improvements to the King Street/Warren Avenue intersection, and request that the project be added to the TII as part of the 2013 update.**

As the central intersection, the operations and safety of this intersection is critical to the quality of life and economic vitality of the Borough. Alternatives for improving intersection safety as well as operation for vehicles and pedestrians should be evaluated. However, the Borough's business community does not want to lose on-street parking opportunities, so this would need to be taken into account should intersection improvements occur.

**9.17 Investigate improvements to the King Street/Bridge Street intersection, and request that the project be added to the TII as part of the 2013 update.**

Similar to the King Street/Warren Avenue intersection, this intersection is a key and critical intersection to Malvern circulation network. Alternatives for improving the intersection safety and operations for vehicles and pedestrians should be evaluated.

**9.18 Consider conducting an origin and destination study for the Borough.**

Such a study would provide clear and current data on traffic flow through the Borough, assisting with any proposed roadway project. Understanding the vehicular patterns would provide valuable data for proposed traffic calming measures, intersection improvements, or parking improvements.

**9.19 Evaluate any available accident data and ameliorate problem areas.**

**9.20 Ensure maintenance of local roads is addressed on a continual basis.**

With ownership of all public roads located within the Borough, there is a unique opportunity to move forward with many recommendations, but there is the additional responsibility to ensure that the roads are maintained properly; this is an ongoing commitment on the part of the Borough. Consideration should be undertaken in the annual budget and via capital improvements planning as well as Borough administrative policy and day-to-day administrative activities.

## **Pedestrian and Bicycle Circulation**

See Map 9-5 for a depiction of pedestrian and bicycle circulation recommendations.

**9.21 Implement the recommendations of the Sidewalk Survey, focusing initially on those as identified in Table 9-5 and on Map 9-5.**

As noted previously, the Malvern Borough Planning Commission began to address pedestrian and bicycle circulation in detail with a 2008 Sidewalk Survey. The survey noted sidewalk existence, condition, curbing, type, lighting, and ADA compliance, and also prioritized sidewalk repair and construction needs. For example, sidewalk safety repairs in the high traffic area on South Warren Avenue from Burke Park to Monument Avenue have been already completed based on their identification in and recommendation of the Survey. Table 9-5 displays critical areas that were prioritized for repair, replacement, or construction in the survey, which still need to be addressed. Map 9-5 displays all areas categorized during the survey, either as a need for new sidewalk or repair/replacement, and whether the need is critical, high, or lower priority. The 2008 survey results can serve as a basis for sidewalk construction and reconstruction for the next several years, as funding is available.

**Table 9-5: Critical Sidewalk Needs (Identified in the 2008 Sidewalk Survey)**

<b>Street</b>	<b>Side</b>	<b>Address/Block</b>	<b>Repair/Replace or New</b>	<b>Rationale</b>
East King	S	138	Replace	High Traffic, Safety
Monument	N	423 – 425	Replace	Safety
Monument	N	243	Replace	Safety
South Warren	W	at Monument	Repair	Safety
Longford	E	131 – 159	New	Safety Critical
Monument	N	500 Block	New	Safety Critical, Ball Fields
Monument	N	601 – 617	New	Safety Critical, Ball Fields



Street	Side	Address/Block	Repair/Replace or New	Rationale
West 1 <sup>st</sup> Ave	N	9	New	Safety Critical, School
West 1 <sup>st</sup> Ave	N	23 (and 145 Powelton)	New	Safety Critical, Park access
West 1 <sup>st</sup> Ave	S	0-99 (softball field block)	New	Safety Critical, Park access

## 9.22 Support trail proposals that further a pedestrian and bicycle network.

The grid network of Malvern and the partially complete sidewalk network, combined with limited trails already in place, provides a good starting point for a pedestrian and bicycle network. However, there are missing links and safety improvements that are necessary to take full advantage of the opportunities available. Linking open space areas within the Borough (such as Randolph's Woods, Paoli Battlefield Site, and Paoli Memorial Association Grounds) with the residential and commercial areas of the Borough, and to trails extending through Willistown and East Whiteland Townships via the regional Patriots Path project, is key. The Borough's 2008 Sidewalk Survey also addresses some pedestrian path needs and identified completing the path on West 1<sup>st</sup> Avenue west of Wayne, repairing Carters Grove Path into Memorial Park, and addressing the lack of pedestrian access to Memorial Park via Sugartown Road north of Monument as critical needs. (Additional information is in Chapter 11 and existing and proposed trail alignments are depicted on Map 11-1. Discussion of trail opportunities is also found in Appendix A.)

## 9.23 Investigate improvements to pedestrian movement at the Broad Street/Bridge Street intersection.

While there are many sidewalks in the Borough and repairing or adding sidewalks in key areas would address most pedestrian circulation needs, the Broad and Bridge Streets intersection is a more challenging situation. Further investigation is necessary to determine the most effective and cost-efficient manner to provide for safe pedestrian movement.

## 9.24 Construct raised intersections at King Street/Powelton Avenue and King Street/Woodland Avenue to improve pedestrian safety.

Raised intersections decrease conflicts between motorists and pedestrians by more clearly delineating the pedestrian right of way and slowing traffic. Both of these sites were identified as priorities in the 2009 Malvern Borough Revitalization Plan update, and additional information is provided therein. The Borough has been successful in acquiring funding for this project via the 2011 Chester County Urban Center Community Revitalization Grant program. This project serves Borough residents, neighborhood businesses and public transit riders. The funded project's scope focus is to calm traffic on King Street at Powelton Avenue and to beautify and increase pedestrian safety on Powelton Avenue. Specifically, project activities include the installation of chokers, curbs, sidewalks, crosswalks, streetlamps, handicap ramps and landscaping.



## 9.25 Continue streetscape improvements, as funding is available, focusing on the King Street corridor at and along Woodland, Channing, and Powelton Avenues.

Streetscape improvements have already been completed along much of the King Street corridor, but continuing those efforts will achieve a more cohesive environment for this important commercial area of the Borough. The above listed locations are those remaining from the original Borough streetscaping efforts over the past 15 years. In 2011, the Borough

was awarded funding from the Chester County Urban Center Community Revitalization Program to undertake traffic calming and streetscaping improvements along Powelton Avenue and at its intersection with West King Street portion of this recommendation.

**9.26 Map safe biking routes (a north/south and an east/west route) that avoid main roads.**

While King Street and Warren Avenue are the most direct routes through the Borough, they are not necessarily the safest or most enjoyable for a bicyclist. Identification of alternate biking routes and posting of this information in various formats, including the Borough's website, would offer bicyclists safer and more enjoyable options.

**9.27 Investigate the construction of a pedestrian/bicycle lane or path along South Warren Avenue between First Avenue and Paoli Pike, to better link the south end of the Borough and Willistown Township with the Borough's commercial area.**

## **Parking**

**9.28 Conduct a new parking survey to determine parking needs within the Borough. If determined necessary by the survey, conduct, as a next step, a formal study to identify Borough-wide parking solutions and create a parking strategy specifically for the train station and commercial areas.**

Parking within the Borough remains a concern and a new survey would assist in clarifying the needs of train riders, shoppers, visitors, and residents. The new parking survey should include the parking needs related to train station users and in the commercial areas of the Borough. If it is determined that the next step of undertaking a formal study of Borough-wide parking solutions is needed, the construction of additional surface lots or a parking garage should be considered as possible scenarios in that study. As well, a parking strategy to address the train station area and the Borough commercial area should be included. Parking is also discussed in the Malvern Borough Revitalization Plan, 2009 Update.

**9.29 Coordinate with the Malvern Shopping Center to reconfigure parking space and access patterns at the Malvern Shopping Center for the purpose of creating additional parking spaces and improving traffic flow.**

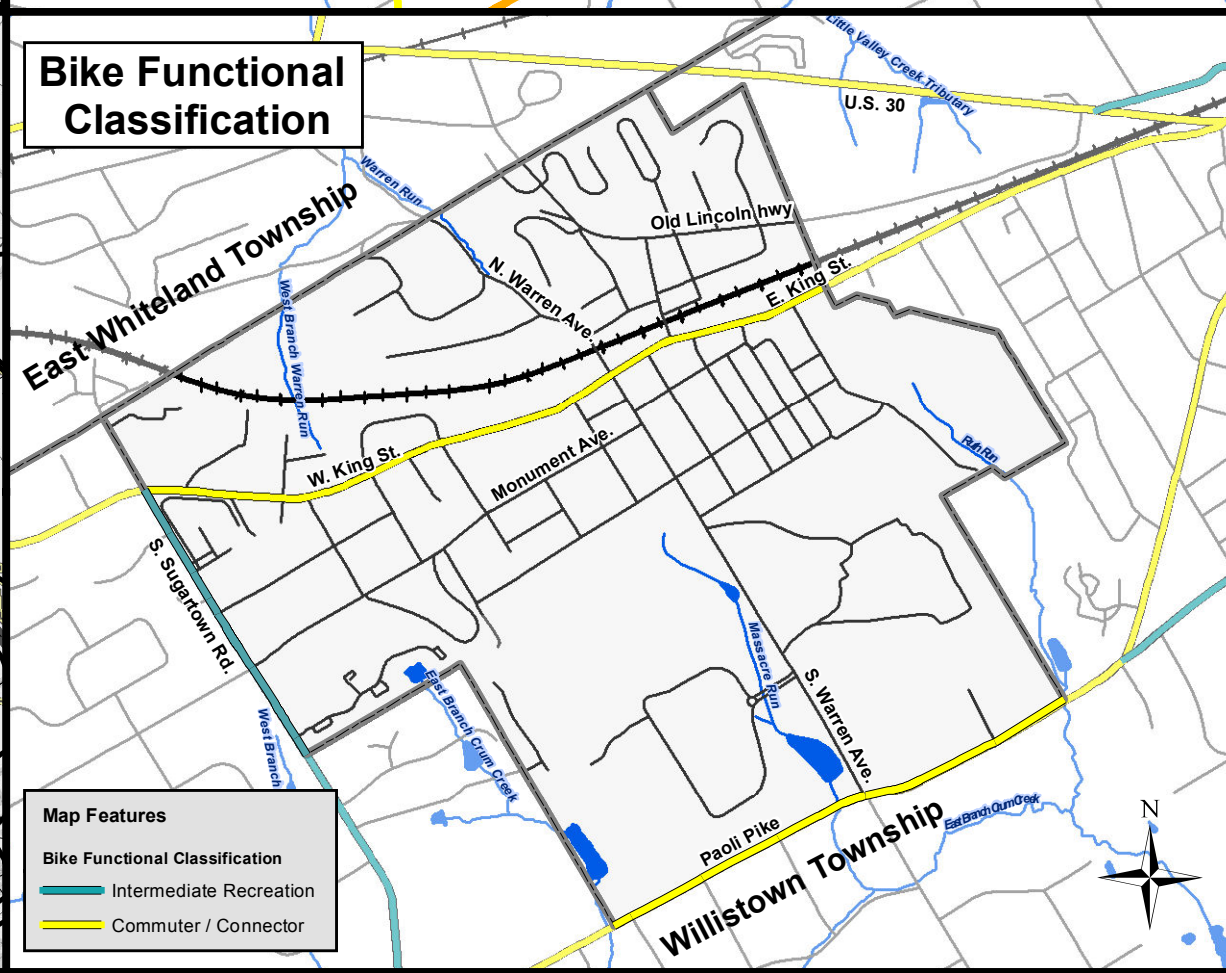
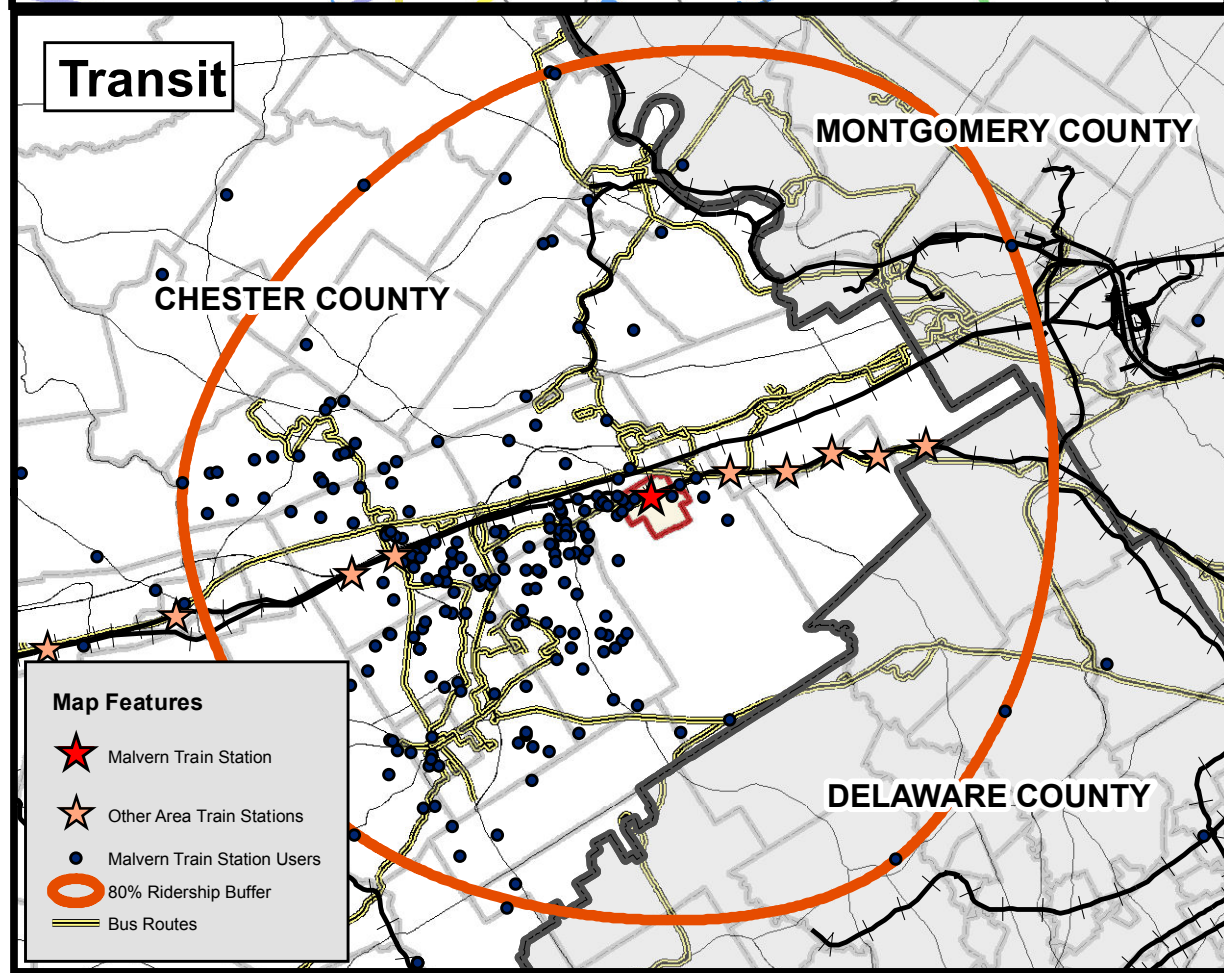
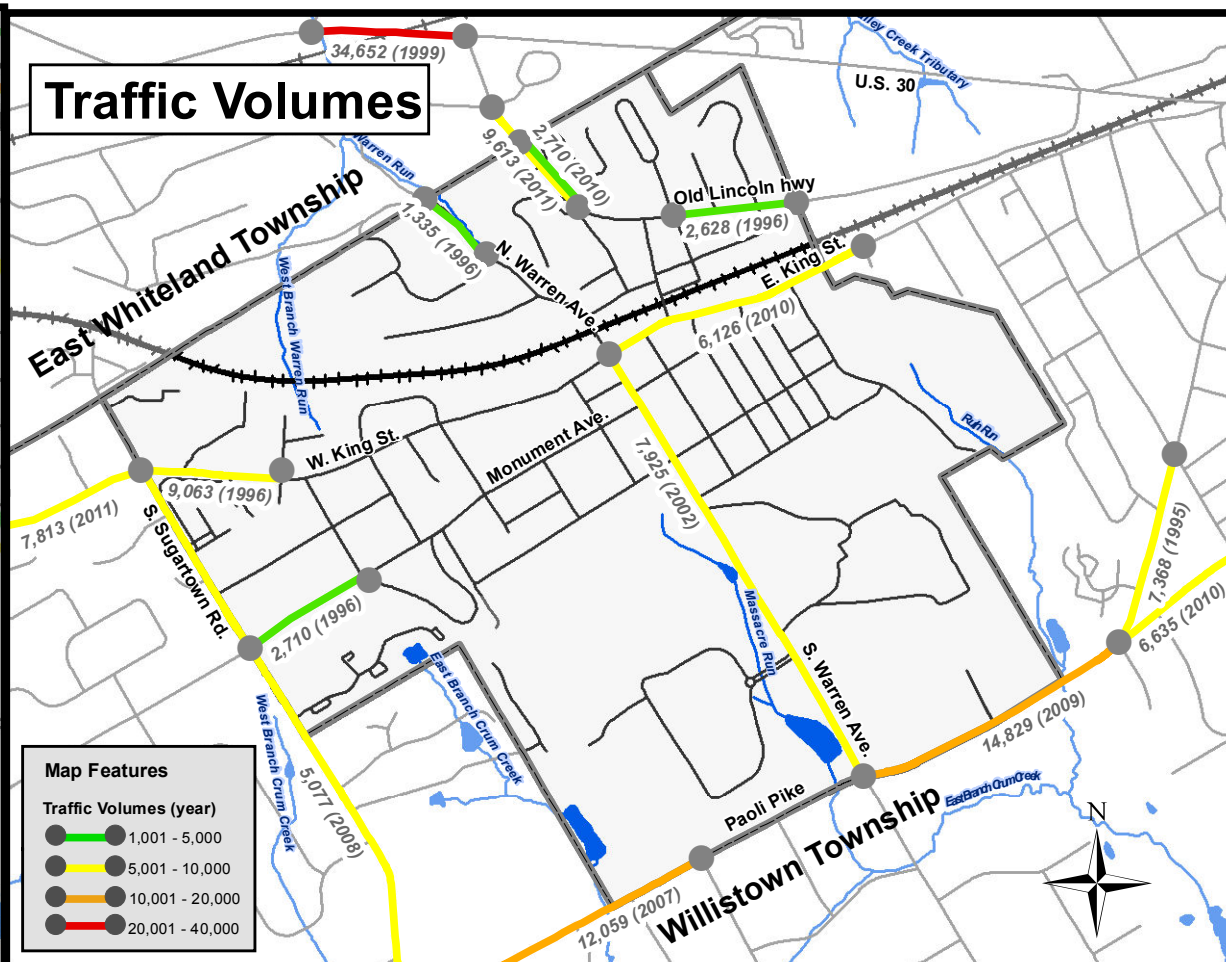
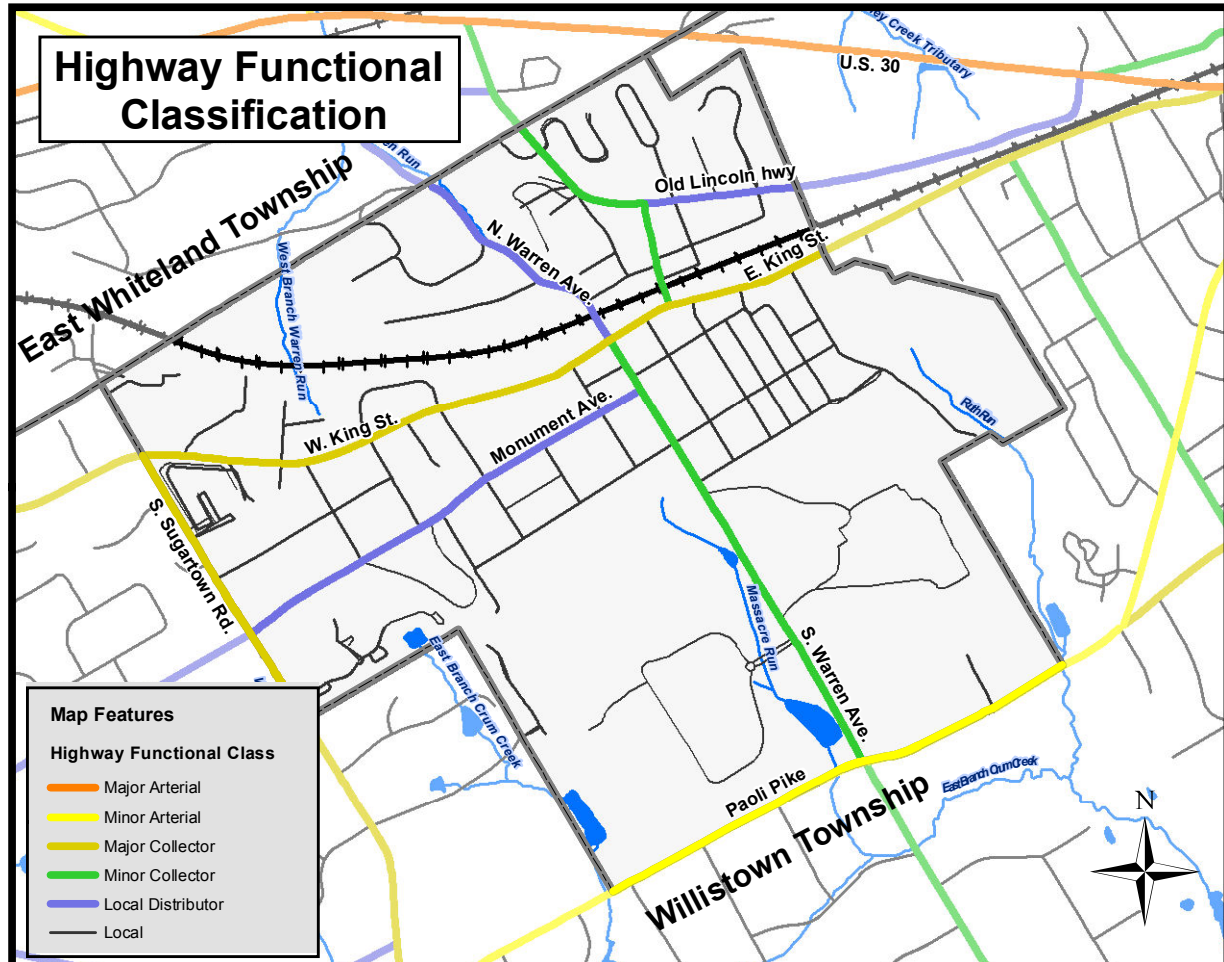
This issue is discussed at length in the 2009 Malvern Borough Revitalization Plan update. Similar to the 2009-11 relining/upgrade of the northern parking lot for the Malvern Train Station, minor changes to the existing parking lot can create additional spaces and improve traffic flow, making the best use of existing infrastructure.

**9.30 Consider expanding the Borough's parking permit system.**

The parking permit system currently applies only to First Avenue and Burke Park municipal lots. In conjunction with other parking recommendations, changes to the parking permit system could be investigated to ensure that the system is serving the needs of residents and visitors to the Borough as effectively as possible. For example, a permit parking sticker program for commuters could be considered. These changes could occur after an updated parking survey has been completed.

**9.31 Analyze whether signage in key areas of the Borough is adequate to inform visitors about the location of Borough and SEPTA train station parking areas.**





## Map 9-1 Existing Transportation Systems Malvern Borough Comprehensive Plan

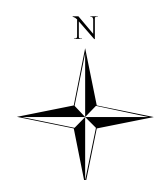
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### Base Features

- Municipalities
- Streams & Ponds
- Roads
- Railroad

EDC

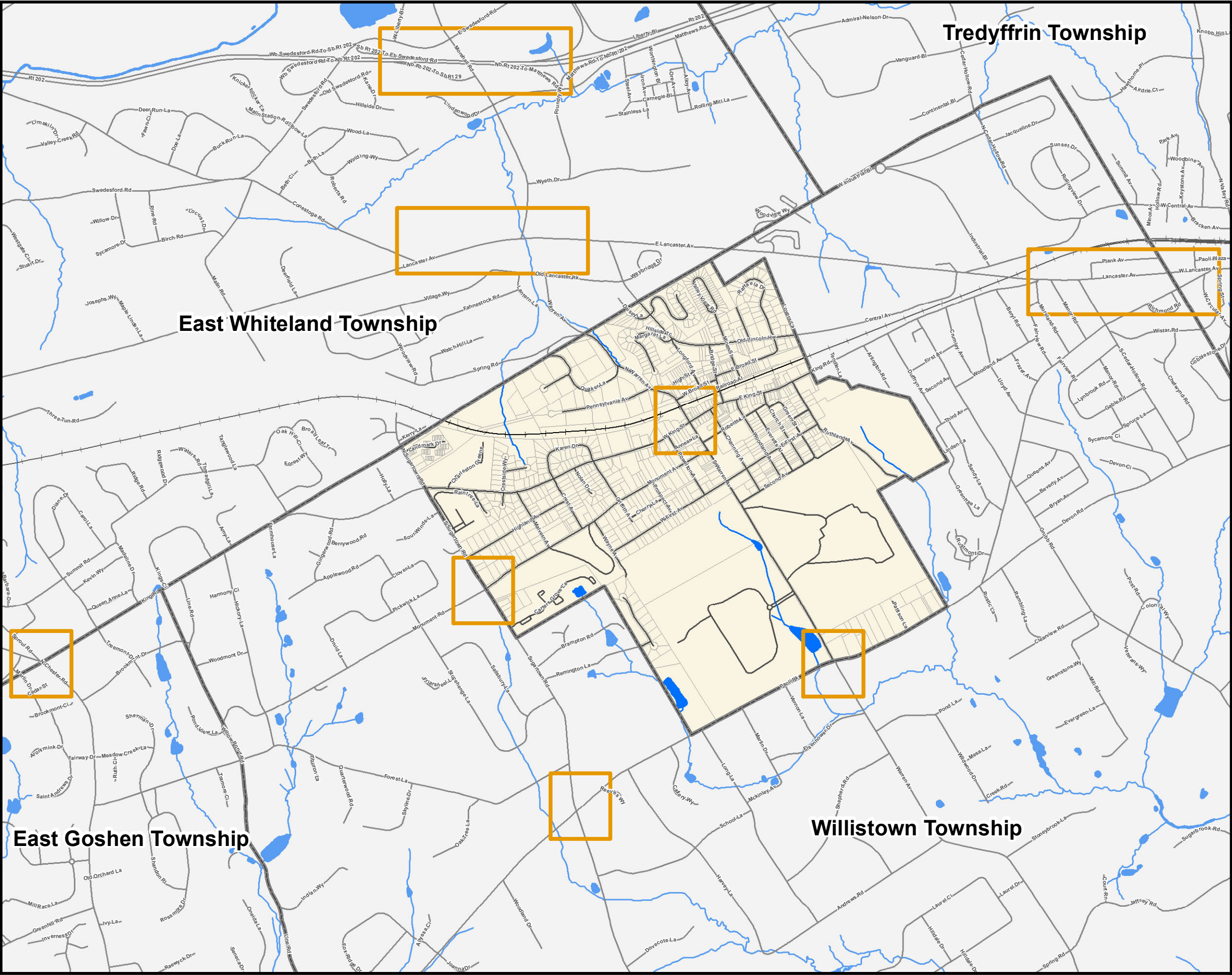


0 900 1,800 3,600 Feet

December 2011

Data Source: CCPC, 2011.






# Map 9-2 Vehicular Accident Clusters 2005 to 2009 Malvern Borough Comprehensive Plan






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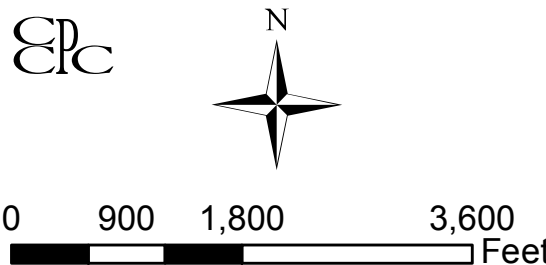
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## Map Features

 Vehicular Accident Clusters

## Base Features

-  Municipalities
-  Parcels
-  Ponds & Streams
-  Roads
-  Railroad



December 2011

Data Source: Reportable Accidents- Malvern Police Department, 2010; Veh. Accident Cluster- PennDOT, 2010; CCPC, 2011.



# Map 9-3 Existing Sidewalks (as of September 2011) Malvern Borough Comprehensive Plan

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## Map Features

### Existing Sidewalks

- Both Sides
- One Side
- None

### Base Features

-  Municipalities
-  Roads
-  Railroad
-  Ponds & Streams
-  Parcels

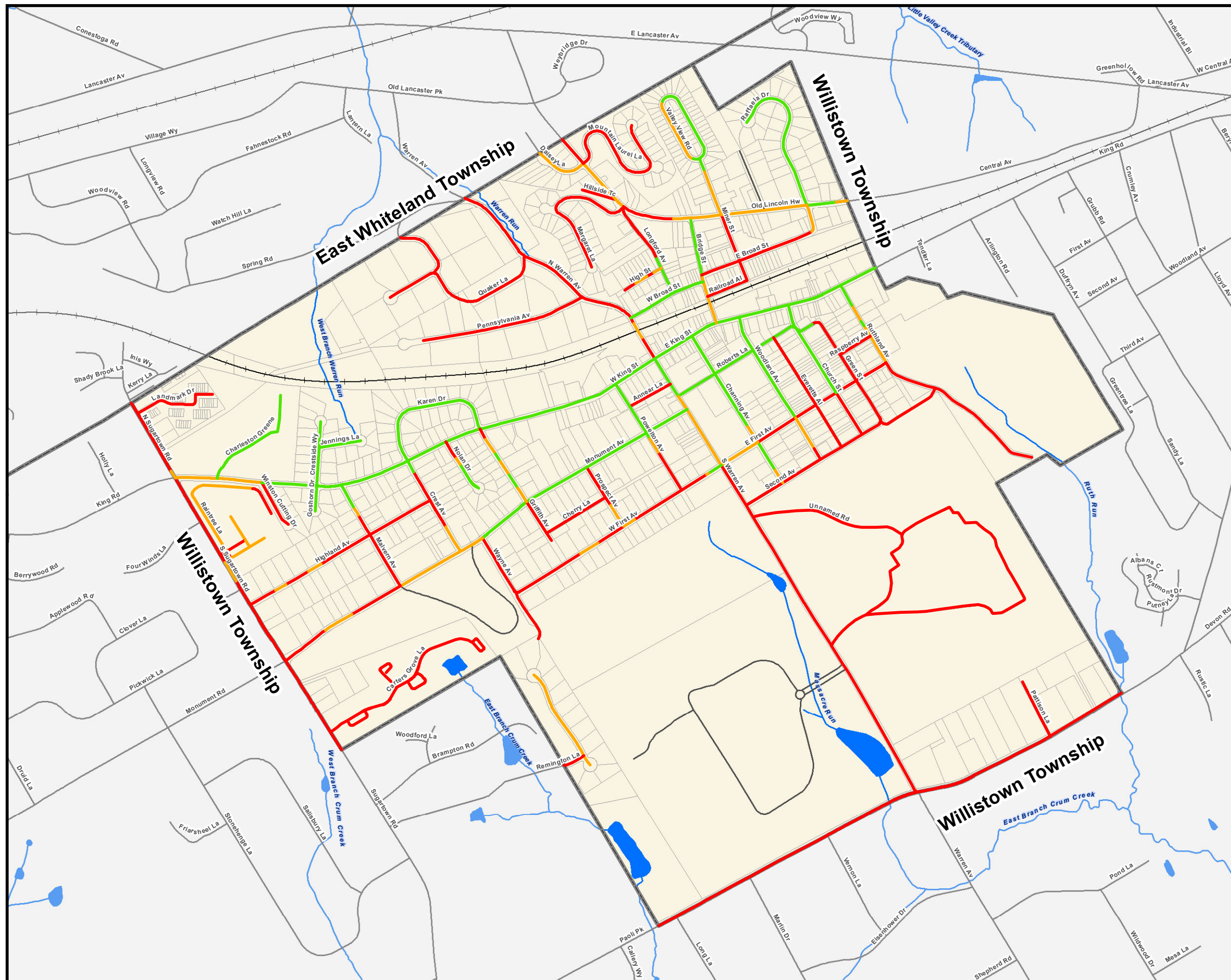
CPC



0 500 1,000 2,000  
Feet

September 2011

Data Source: CCPC and Malvern Borough, 2011.





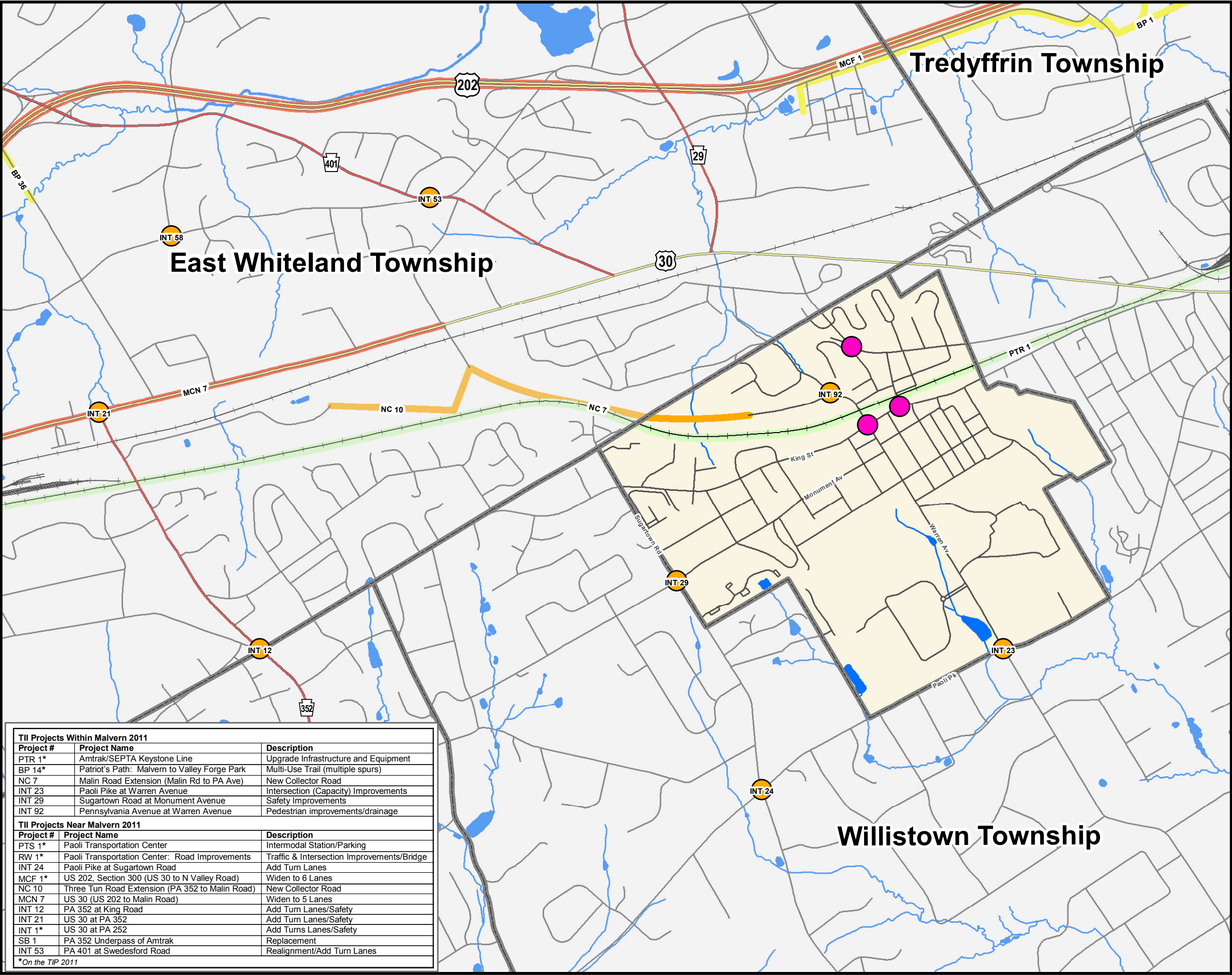
# Map 9-4 Roadway Recommendations Malvern Borough Comprehensive Plan

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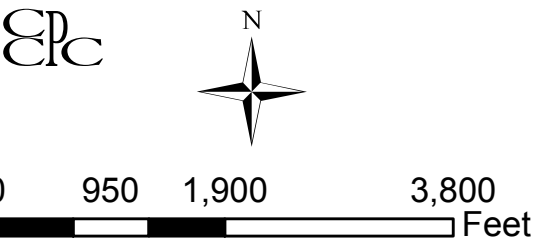
- Map Features
- TII 2011 Projects
- Future TII Project
  - Intersections
  - Major Corridors
  - Public Transportation
  - Bicycle/Pedestrian
  - Roadways & Operations

- Base Features
- Municipalities
  - Interstate Highway
  - PA Road
  - US Road
  - Local Roads
  - Railroad
  - Ponds & Streams



TII Projects Within Malvern 2011		
Project #	Project Name	Description
PTR 1*	Amtrak/SEPTA Keystone Line	Upgrade Infrastructure and Equipment
BP 14*	Patriot's Path: Malvern to Valley Forge Park	Multi-Use Trail (multiple spurs)
NC 7	Malin Road Extension (Malin Rd to PA Ave)	New Collector Road
INT 23	Paoli Pike at Warren Avenue	Intersection (Capacity) Improvements
INT 29	Sugartown Road at Monument Avenue	Safety Improvements
INT 92	Pennsylvania Avenue at Warren Avenue	Pedestrian improvements/drainage
TII Projects Near Malvern 2011		
Project #	Project Name	Description
PTS 1*	Paoli Transportation Center	Intermodal Station/Parking
RW 1*	Paoli Transportation Center: Road Improvements	Traffic & Intersection Improvements/Bridge
INT 24	Paoli Pike at Sugartown Road	Add Turn Lanes
MCF 1*	US 202, Section 300 (US 30 to N Valley Road)	Widen to 6 Lanes
NC 10	Three Tun Road Extension (PA 352 to Malin Road)	New Collector Road
MCN 7	US 30 (US 202 to Malin Road)	Widen to 5 Lanes
INT 12	PA 352 at King Road	Add Turn Lanes/Safety
INT 21	US 30 at PA 352	Add Turn Lanes/Safety
INT 1*	US 30 at PA 252	Add Turns Lanes/Safety
SB 1	PA 352 Underpass of Amtrak	Replacement
INT 53	PA 401 at Swedesford Road	Realignment/Add Turn Lanes

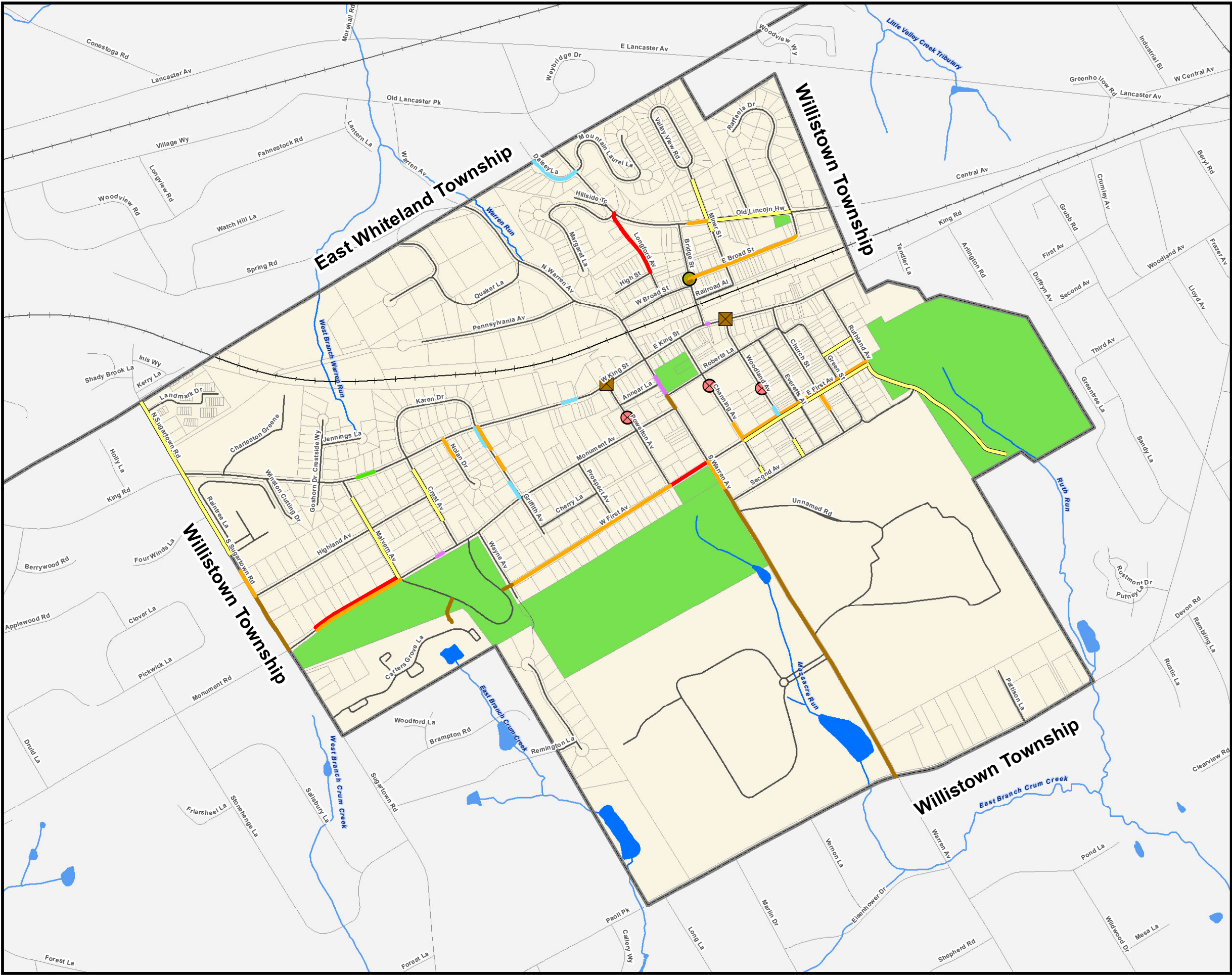
\*On the TIP 2011



December 2011

Data Source: CCPC, 2011.





# Map 9-5 Pedestrian/Bicycle Recommendations Malvern Borough Comprehensive Plan

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## Map Features

### Pedestrian/Bicycle Recommendations

- Pedestrian Improvements
- Raised Intersection
- Streetscaping

### Sidewalk Survey: 2008

- Existing Critical
- Existing High Priority
- Existing Lower Priority
- New Critical
- New High Priority
- New Lower Priority
- Other

### Base Features

- Municipalities
- Parcels
- Recreation
- Ponds & Streams
- Roads
- Railroad

CCPC



0 500 1,000 2,000 Feet

December 2011

Data Source: CCPC and Malvern Borough, 2011.