

Chapter Eleven

Transportation and Circulation Plan

INTRODUCTION

A distinct correlation exists between land use planning and planning of transportation networks in the Kennett Area Region. The transportation and circulation plan determines how people and goods can move safely and efficiently into, out of, within, and through the Region. Conversely, the transportation opportunities or limitations frequently determine the location and appropriateness of different land uses. Due to this interdependency of the two plans, they have been formulated as an iterative process for maximum effectiveness.

The Transportation and Circulation Inventory (Chapter Six) outlined the modes of transportation, circulation system, existing functional classifications of roads, roadway and bridge conditions, scenic road preservation, and overall regional planning issues impacting the Region. Techniques and strategies are recommended in this chapter for addressing the identified planning implications. The implementation of recommendations can be undertaken by individual municipalities, as a coordinated effort of neighboring municipalities, or on a regional level. Some municipalities in the Region are already using one or more of the techniques discussed below to plan for a safe and efficient transportation and circulation system.

Consistent application of these recommended techniques and strategies throughout the Region, would most effectively achieve the Region's overall goal identified for Transportation and Circulation:

Plan for a safe, efficient, and diversified transportation system that takes into consideration both current and future transportation needs of the Region and surrounding areas.

Recommendations are provided under the following categories:

- Regional functional classification system
- Regional transportation study
- Non-vehicular and alternative forms of transportation
- Regional strategies to increase carrying capacity

A complete summary of transportation and circulation recommendations is located in Chapter Fourteen, Implementation Strategies. The **numbers** next to each recommendation section below correspond to those in the Chapter Fourteen.

The planning implications from Chapter Six, Transportation and Circulation Conditions, are shown in the boxes below and are followed by specific recommendations for addressing the identified issues.

11.1 REGIONAL FUNCTIONAL CLASSIFICATION SYSTEM

- ❑ There is a need to coordinate the differences between the municipal road functional classifications and design standards, and work towards greater regional consistency to facilitate efficient access and mobility.

As explained in Chapter Six, functional classification of roads considers the type and volume of traffic that will be accommodated because different types of traffic have different roadway needs. Roadway functional classification is a tool used to describe the hierarchy of roads based upon the level of service they are intended to provide.

Currently, each municipality in the Region has a different set of functional classification for their roads. This gives rise to the inconsistencies in roadway design, capacity, and level of service as they cross municipal borders. These inconsistencies need to be resolved to achieve efficient access and mobility functions, and to plan improvements of the various classes of roads.

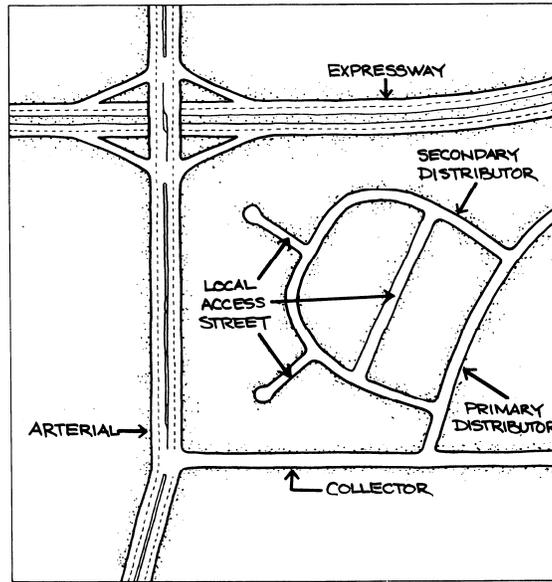
For the purposes of this Plan, the roadway classification system for the Region will consist of

- Expressways,
- Major and Minor Arterials, and
- Major and Minor Collectors.

Due to the regional focus of this Plan, the impact of local roads on the Region is not as significant as the other classes, and will not be discussed in detail. However, local roads and their preservation should be considered in individual municipal plans. Local roads need to be further divided into more distinct classes – primary and secondary distributors and local access roads. This recommendation is a significant departure from existing municipal classifications. Commonly, all roads with lower functions than collectors are classified as local roads, but there are significant differences in these roads that should be recognized. For example, a residential cul-de-sac serving five to six lots functions very differently than a long farm lane that carries some through traffic in addition to providing access to adjacent properties. Because, existing classification systems do not differentiate these functions, municipalities over-classify these higher functioning roads as collectors. Therefore, there is a need to further classify local roads as described below and depicted in Figure 11-1:

1. *Primary Distributor* – serves a significant mobility function.
2. *Secondary Distributor* – provides minimal mobility function in addition to primarily providing access to adjacent properties.
3. *Local Access Road* – serve only to provide access to adjacent properties.

Figure 11-1
Functional Classification of Roadways



Source: Chester County Planning Commission, 1993.

Figure 11-2: Recommended Functional Classification Criteria

CATEGORY	EXPRESS- WAYS	ARTERIALS		COLLECTORS	
		Major Arterials	Minor Arterials	Major Collectors	Minor Collectors
Type of Travel Generally Served	Serves inter-regional and through trips, with emphasis on through trips	Serves inter-regional and through trips	Serves inter- and intra-regional trips; very few through trips	Serves mostly intra-regional trips; inter-regional primarily near edges of region	Serves both inter- and intra-municipal trips
Mobility/Access Orientation	Total mobility orientation	Primary mobility orientation	Priority on mobility, with some access component	Mix of mobility and access, slight emphasis on access	Mix of mobility and access, emphasis on access
Travel Distance	Longest distance travel	Long distance travel	Moderate to long distance travel	Moderate to short distance travel	Short distance travel
Travel Speeds*	Highest level speeds (55 - 65 mph)	High travel speeds (35 mph - urban; 55 mph - rural)	Moderate to high travel speeds (30 mph - urban; 45 mph - rural)	Moderate travel speeds (45 mph)	Moderate to slow travel speeds (40 mph)
Level of Access Control	Limited access - interchanges only	Controlled access	Some control of access	Some control of access	Minimal access controls
Traffic Volumes (ADT = Average Daily Trips)	Highest traffic volumes (10,000 - 100,000 ADT)	Very high traffic volumes (10,000 - 40,000 ADT)	Moderate to high traffic volumes (5,000 - 20,000 ADT)	Moderate traffic volumes (3,000 - 10,000 ADT)	Moderate to low traffic volumes (2,000 - 5,000 ADT)

* Design Speeds and not posted speeds.

Source: Chester County Planning Commission, 1999

Figure 11-2 shows the recommended functional classification criteria for the Region. In developing these criteria, common criteria from the regional municipalities were considered, but a higher priority was

placed on establishing consistency within each classification and a linear relationship among each classification within each type of criteria. For example, travel distances are longest on expressways and short on minor collectors, with a linear progression in travel distances for the classifications between these two extremes.

Except for travel speeds and traffic volumes, the criteria applied to the functional classification of roadways in Figure 11-2 are qualitative and cannot be easily measured. Because of this qualitative nature, it can be difficult to apply these criteria to specific roadways. Applying criteria to an entire road network therefore involves many judgement calls. The primary objective is to achieve reasonable consistency throughout the Region as a whole, even if a particular road does not meet all of the criteria for the classification it is given. It is critical that the more quantifiable criteria, such as traffic volumes and traffic speeds, not be given undue emphasis, because the ranges of appropriate volumes and speeds can vary widely for any given classification. For example, traffic volumes on a major collector are considerably higher within the Borough, than in Pocopson. As seen on Map 6-1, the volumes on South Street are over six times that on Route 842, but they are both classified as major collectors, because they meet the majority of the other criteria.

Map 11-1 depicts the recommended functional classification for the Region. The main objective of this map is to promote consistency to the various roadway networks in the area. The following factors were considered in arriving at these recommendations to achieve consistency of all regional major roads:

- Consistency between major road functional classifications within the Region's municipalities,
- Consistency with road classes in the larger surrounding area influencing the Region, and
- Consistency with road functional classification at the County level.

Coordination with other regional planning organizations is important for the success of this Plan. West Chester Regional Planning Commission (WCRPC) completed a Functional Classification Study in 1994. Pocopson Township was included in that study. There are some inconsistencies with the functional classification recommendations between the current Pocopson Comprehensive Plan update and the WCRPC Study. The Kennett Area Region Plan's recommendations are consistent with the Pocopson Comprehensive plan, rather than the WCRPC study, because of the greater similarities between Pocopson Township and the Kennett Area Region. The West Chester area has more urban and dense suburban land uses than the Kennett Area Region. The density and type of land uses in the area influence the hierarchy of roads that serve them. The class of a single road can be different when studied from different regional perspectives.

For example, Route 842 is an important road connecting the Region with West Chester Borough and surrounding areas. The WCRPC Study designates Route 842 as a minor collector, whereas this Plan designates it as a major collector. The Pocopson comprehensive plan designates Route 842 as a major collector (see Map 6-1), and so does the East Marlborough comprehensive plan. Therefore, from the perspective of West Chester Region, Route 842 is of lesser significance than when considered from the perspective of Kennett Area Region. When considered on a Countywide perspective, Route 842 is more appropriately designated as a major collector for future use. For the same reason discussed above, PA 52, Red Lion Road, and North Brook Road, are designated with a lower functional class in the WCRPC Study, in comparison with this Plan.

Road Design Standards

Matching the function of the road network with the design of that network is important so that, as improvement opportunities arise, roads can be improved to the proper standards. Such standards are typically located in the subdivision and land development ordinance.

The design of the road network should be directly related to the function of that network and should be directly implemented through land use regulations. This is an important consideration because the function of a road dictates specific requirements, such as the necessary amount of right-of-way, cartway width, shoulder width, design speeds, and number of lanes. In effect, the function of the road must be established and preserved through such land use controls as zoning and subdivision and land development ordinances. Therefore, the Region's municipalities should review and revise their road design standards as needed for consistency throughout the Region.

Access Management

Access management is a program designed to achieve a balance between safety, mobility, and access onto abutting properties from highways. Access management problems occur where conflicts between mobility and access exist, resulting in congestion and safety problems. If the Region experiences increased development activity, particularly along PA Routes 52, 82 and 926, access onto local roads could become overloaded. Access management is most critical on roads with competing functions, such as Routes 52, 842, 926, and parts of Route 1 where, though they have a predominant mobility function, they also provide access to businesses and residential properties.

The ability to control access points on selected roadways is becoming an important issue in the Region and throughout the County. Though the Region is generally rural and suburban in nature, it is experiencing major access problems. Appendix D describes several access management techniques that can be implemented to correct existing problems and to aid in preventing future access management problems.

Each municipality's subdivision and land development ordinance should require an access management plan when a development proposes access onto major roads such as Routes 52, 842, 926, or Route 1. The techniques discussed in Appendix D should be implemented in these plans to reduce the possibility of future access problems. The municipalities can also adopt an Access Management Overlay District to ensure the consistent application of these techniques. A coordinated access management strategy will be extremely useful where roads cross municipal boundaries.

Pennsbury is in the process of producing a Route 1 Corridor study. This study will examine access management options, among other things for the section of Route 1 traversing the Township. The Region may want to conduct a similar study along designated roads, to undertake access management as a consistent and cooperative effort.

<p><input type="checkbox"/> Future land use planning and transportation planning for the Region should be coordinated as they strongly influence each other.</p>
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Due to the strong correlation between transportation planning and land use planning, land use policy should be closely reviewed and monitored in terms of its impacts on the road network and its functional classification. The Region needs to address this planning implication on a regional and municipal level. The future land use recommendations discussed in Chapter Eight can help to provide overall coordination for transportation planning as well.

Municipalities should work towards integrating existing land use plans, land use ordinances, and transportation and circulation planning. This will reduce potential conflicts between land uses and the capacity and function of the abutting roadway. The municipalities should review zoning district regulations, as they relate to roadway access, mobility and capacity. The potential effect of existing zoning ordinances on traffic conditions and their road functions should be evaluated.

Existing corridor plans, like the Route 1 Corridor Study, should continue to be updated to assess impacts of surrounding land uses, growth trends and projections, and recommended functional classification of roadways. The Region may want to conduct other corridor studies to guide coordinated development along these corridors.

⇒ **Recommendations for Functional Classification System and Access**

- 11.1.1 Establish a classification of roads, based on their function. Local roads should be further classified, at the municipal level, to reflect their various functions and impacts on land use.
- 11.1.2 Identify and adopt the preferred design standards for each class of roads.
- 11.1.3 Develop municipal access management plans that reflect cohesiveness with adjacent municipalities and the regional road network, in the form of an overlay district. Establish access restrictions for each functional class in conjunction with access management programs.
- 11.1.4 Integrate land use ordinances, land use planning, and transportation and circulation planning.
- 11.1.5 Evaluate the impact of the existing zoning ordinance on the road network.
- 11.1.6 Conduct a Regional Transportation Study including regional corridors to guide and coordinate development and future transportation decisions; conduct or update existing municipal traffic studies and corridor studies and determine their impacts on ordinances.

11.2 REGIONAL TRANSPORTATION STUDY

<p><input type="checkbox"/> There is a need to prepare a regional level transportation study and implementation plan, to cooperatively improve driving conditions throughout the Region and make all roads safe to travel.</p>
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Often the solutions to circulation problems are too numerous and expensive for an individual municipal budget to handle. In order to make the best use of a municipality's limited resources, careful analysis and financial planning for any improvement should be pursued. This involves prioritizing projects in a manner that will be most beneficial to the Region.

The Region should prepare a Regional Road Transportation Study and a Road Improvements Survey to identify future transportation needs for the Region. This study should prepare a *survey* and *inventory* of all improvement projects in the Region. This survey can act as the basis for prioritizing and recommending projects to be included in the Chester County Highway Improvements Survey and the PennDOT Twelve Year Program. Projects that are supported by the Region have a better chance of being placed on, and moved up the PennDOT 12 year program. This study should carefully examine the following:

- Adjacent land uses and project future transportation needs;
- Impacts of future roadway improvements;
- The proposed interchanges along U. S. Route 1;
- Unified functional classification of roadways for the Region;
- Unified roadway design standards to relate directly to the functional classification;
- Unified access management strategies for U.S. Route 1, and PA 52, PA 82, and PA 926;
- Identify the north-south and east-west connectors discussed at the end of this chapter;
- Other related transportation issues.

If the road to be improved is a state road, it will necessitate working with PennDOT. Another consideration that is a concern to the Region is a funding of road improvements. With the statewide considerations facing PennDOT, the Region may need to pursue alternative road improvement financing strategies. Appendix E discusses several funding options that are available to the Region.

The individual municipalities of the Region need to participate in this regional effort to prioritize and fully support, with the aid of appropriate agencies, a hierarchy of road improvements. If the Region or individual municipalities are willing to commit to a percentage of the total improvement cost of a project, it is more probable that some of the required improvement options would be funded by PennDOT. Projects receive a better chance of being placed in the first four years of the Twelve Year Program if a matching or partnership funding approach is utilized and is supported by the regional municipalities.

Funding Opportunities

There are a variety of funding resources for roadway improvements, each with limitations on what types of projects are eligible, some with requirements for local matching funds, and each with different programming requirements. A list of funding sources, with brief discussions of eligibility and matching fund requirements, is shown in Appendix E.

Turn Back of State Roads

This program allows the state to gradually turn back state roads to municipalities. PennDOT and the individual municipalities negotiate an agreement for each road, stipulating what short-term maintenance PennDOT would perform before turning the road back to the municipality. Once turned back, the local municipality is responsible for maintenance and repairs to the road. However, the municipality would receive liquid fuels funds and a one-time flat rate per mile allocated for this program, from the state to offset some of the costs. Though this program does not offer great economic benefits, it does allow more local control of roadways as detailed below. Pocopson, Kennett and East Marlborough townships have accepted some state roads from this program.

In cases where it would be beneficial, individual municipalities should apply for “turn back” of State roads. Potential benefits to consider in this decision include the following:

- Maintenance and improvements initiated by the municipality may be more appropriately carried out at the local level;
- Snow plowing and roadway improvements can occur in a more timely manner;
- Ability to ensure that future development or necessary improvements have the minimum impact on the scenic character of roads and the Region’s municipalities.

If a municipality is interested in this program, they can acquire further information from the Supervisor of the Chester County Maintenance Office for PennDOT (610-436-2091). The municipality should

directly approach PennDOT with their basic proposal. Then PennDOT's Municipal Service Office will meet with the municipality to discuss basic issues and process and ways the municipality can pursue the proposal

- Any additional roadway and bridge projects that need to be improved that are not already included in the PennDOT's Twelve Year Program should be identified and recommended to the County and State for inclusion in their capital improvement projects. This will assist in scheduling and addressing identified problems cooperatively throughout the Region.
- The Region could identify any historic bridges that they wish to preserve as a historic resource.

The Region should identify the possible improvements, based on all the recommendations discussed in this chapter. This would form the recommended Regional Road Improvements Survey. This survey of improvements should be prioritized at a regional level. This prioritized list of improvements can be the basis for application of various funding possibilities, inclusion on the County's Capital Improvement Program, and State 12-Year Program. As discussed above, projects with the collective support of the Region have a better chance on being placed on and moved up through the 12-Year Program.

The following are improvements that the Region should consider for inclusion in a Regional Road Improvements Survey:

- Within the Borough, improvement in the capacity of through streets will be increasingly important. An improvement plan needs to be prepared considering: signal modernization, signal timing optimization, signal interconnection, elimination of on-street parking, peak hour traffic regulations and turning lane channelization.
- Alternative routes for rerouting trucks through the Borough, to alleviate heavy truck movement through the historic downtown of Kennett Square.
- Corridors such as PA 926 and PA 82 can be protected from encroachment through a series of improvements including access management, widening, lane channelization, and provision for right-of-way expansions.
- Bridges along major roads that need to be preserved for their historic value, or replaced due to safety reasons, should be identified.
- Capacity and/or safety improvements on existing bridges and roadways.
- Capacity and/or safety improvements on certain intersecting roads.
- Other possible improvements could include – signage, intersection reconfiguration, traffic signalization, turning lanes, sight distance improvements.

⇒ **Recommendations for Regional Road Improvements**

11.2.1 The Region should prepare a Regional Transportation Study and a Road Improvements Survey. Funding possibilities should be pursued, individually or collectively, for the prioritized projects in the above studies.

11.3 NON-VEHICULAR AND ALTERNATIVE FORMS OF TRANSPORTATION

- There is a need to identify important pedestrian connections and bike routes within the Region. This can help in preparing an interconnected pedestrian trails and bike routes plan, linking destinations within and in the immediate vicinity of the Region.

This category of transportation includes networks for walking, jogging and bicycling. Many areas throughout the Region lack suitable provisions for pedestrian circulation. The Region does not have a formal trail network, which could be used to interconnect community parks, educational and community facilities, villages, shopping, and the Borough. As development continues in the Region, pedestrian facilities will become an increasingly important means to link various regional amenities, and as a way to tie various open spaces together to make them more useful and accessible.

Pedestrian circulation requires different treatments depending on the land uses of the area. In the Borough, treatment focuses mainly on sidewalks. Sidewalks within the Borough serve pedestrians walking between various Borough uses such as businesses, stores, parking areas, and homes. Consideration should be given to providing amenities such as benches, lighting, and attractive landscaping. Efforts should also be made to require new developments in and around the Borough to tie into the existing sidewalk system. The Borough currently has a “Main Street Development District” which addresses some of the issues discussed above.

Another component of a pedestrian circulation system addresses areas of the Region abutting the Borough. In these more rural areas, a trail system could link villages, neighborhoods, parks, open spaces and educational facilities. This system would accommodate pedestrians commuting between homes and various destinations, hikers, and horseback riders. Usually, this type of system is comprised of trails which require minimal improvements since they are suitable for use in a more natural state.

Bicycle circulation has special requirements. Natural ground surfaces of trails are usually too irregular to accommodate bicycle travel. Bicycle circulation should be viewed as a distinct form of circulation due to these ground surface needs. Segments of a trail network can be used for biking if surface improvements are made. Low volume roads can also be used to accommodate bike travel, but on higher volume roads, bike lanes should be provided on the shoulders.

The County is currently preparing a Bicycle and Pedestrian Trip Generator Map, to identify various trip generators in the County. Map 11-1 shows the identified trip generators for the Region. The Region could use this as a starting point and update it to create a Regional Bicycle and Pedestrian Trip Generator Map. Once these nodes (generators) are established, possible links could be determined. An initial step is to determine the general route of a proposed trail network by listing the areas of the Region to be served. Land which has development constraints, such as stream valleys, flood plains, or poor soils are possible areas for trails. At times when no possible link is available, trails may be routed on to roads, although proper safety improvements may be required. In rural areas, it is important to designate possible trail corridors before development removes all possible links to a trail system.

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| <p><input type="checkbox"/> There is a need to consider commuter destinations from the Region. These commuter destinations and patterns need to be considered while arriving at an effective strategic transportation and circulation plan for the Region.</p> |
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Public Transportation

Due to the growth in regional population, there may be a need for public transportation in the Region. At present the Region has very limited public transit facilities. The Chester County Paratransit System provides a demand responsive system which requires a 24 hour advance reservation. The ridership is primarily senior citizens, handicapped citizens, or state medical assistant clients. These riders pay no fees. The cost is covered by subsidies and funding from various sources. Paratransit is available to the general public, but is very expensive as subsidies do not extend to public ridership. There are some commercial shuttles to Avondale, the Borough, and Toughkenamon. But, again these are expensive and not the most desirable means of public transportation. There is no direct bus service to the Region due to the perceived lack of ridership. There have been some proposals to extend the Delaware Administration for Regional Transit (DART) bus from Centerville to Longwood Gardens and Hamorton.

The Region should support pursuing this or any other option that may be feasible to alleviate the lack of transit opportunities. Feasibility studies are needed to determine the most appropriate origins and destinations, service areas, as well as the general feasibility of public transportation for the Region. The Region could undertake such a study, which will provide the required basis to request transportation authorities (SEPTA and DART) to extend bus routes and rail lines into the area.

Currently, the Transportation Management Association (TMA) of Chester County and Southern Chester County Organization on Transportation (SCCOOT) has been awarded the special Federal Transit Administration Grant, for bus and enhanced paratransit services to southern Chester County. This grant has initiated a fixed route bus from Oxford Borough to West Chester Borough, and has been operational since the end of 1999.

Because there is very limited public transportation available, the residents of the Region are auto-oriented. There is some opportunity for carpooling or ride sharing. This could aid in reducing traffic congestion during peak hours. By providing park and ride facilities in appropriate locations, the Region may encourage carpooling. The Region has no park and ride facilities, but the closest facilities are located on Routes 7 and 41 in New Castle County, Delaware. Conserving the use of roads via "Ride Share" should be given consideration. This is the most readily utilized transportation alternative in high density areas such as Kennett Square to locations such as West Chester or Wilmington, Delaware or to the proposed new PECO facility from various areas yet to be determined. The Region supports and encourages the use of Travel Demand Management strategies like integrated traffic signal systems (signal timing), carpooling, and park and ride facilities.

Rail Service

As a long term strategy, the Region should support the preservation of potential rail service that exists on the Octoraro Branch of the Brandywine Valley Railroad (Shown on Map 6-1). Though there might not be a significant concentration of population to support it at the present time, there might be a need for light rail facilities in the future as the Region's population grows.

Currently a feasibility study is underway by SEPTA to extend the R3 line from Elwyn to Wawa in Delaware County. There is also discussion on studying the concept of extending that line northwest of Wawa to West Chester. But these plans have not moved forward, due to the fact that work trips from

southern Chester County to Philadelphia have not increased significantly to warrant this rail line. Extension of this rail line is another possibility that can be considered in the future if demands increase.

The other concept under discussion is to reactivate the former Octorara line from Wawa to Painter's Crossing in Delaware County, to cater to the residents traveling to Media and Philadelphia. This line is currently being used for transporting freight and recreational train ride purposes, and can be developed for passenger service when the demand warrants such use.

⇒ **Recommendations for Non-Vehicular and Alternative Forms of Transportation**

- 11.3.1 Produce a regional level Bicycle and Pedestrian Trip Generator Study. Develop a Bicycle and Pedestrian Circulation Plan based on the study that would link the various amenities and trip generators of the Region, including parks, educational facilities and other recreational facilities.
- 11.3.2 Work with potential developers to provide and preserve trails to achieve the goals of the Bicycle and Pedestrian Circulation Plan.
- 11.3.3 Properties within and adjacent to the Borough should develop provisions to require walkways where they can be connected to the existing pedestrian system.
- 11.3.4 Monitor public interest and demand for public transit and work with appropriate agencies to provide service to the Region

11.4 REGIONAL STRATEGIES TO INCREASE CARRYING CAPACITY

- The Region should identify at least one north-south and east-west roadway for increased carrying capacity, to accommodate anticipated growth within and outside of the Region.

There is a pressing need for a north-south roadway connection through the Region. Currently, small order roads are being used to get to West Chester, Downingtown and other destinations to the north. This is creating a growing problem with clashing access and mobility functions on these roads. The Region needs to designate a network of roads where carrying capacity can be increased to alleviate this problem. The best options for these connector routes should be identified in the Regional Transportation Study recommended earlier in this chapter (see 11.2.1).

⇒ **Recommendations for Regional Strategies to Increase Carrying Capacity**

- 11.4.1 Determine the best roadway connections to provide the north-south and east-west connections to alleviate congestion on local roads.

CONCLUSION

There are several opportunities available to the Region for enhancing the access, safety, and mobility of the overall transportation system. These opportunities can be implemented in several different ways. Some actions, such as an access management overlay district, might involve only two or three municipalities working together. In other cases, such as regional road improvements inventory and regional transportation study, the entire Region might be involved on a single project. Finally, municipalities could individually implement future functional classification and access management standards with the cumulative affect being a better balance of access and mobility for the entire Region. Priorities for the implementation of these recommendations are established in Chapter Fourteen, Implementation Strategies.