Chapter 17

# Transportation Network

**Introduction**

The transportation network may be the most critical element of the physical infrastructure of any community. The residents of Upper Providences already recognize this, as traffic concerns were named by them as the most critical issue facing the Township in the 2004 public survey. We have already noted that the European settlement of the Township began when William Penn directed the establishment of the Providence Great Road inland from the banks of the Delaware: the Township began because of transportation. The historic development of Upper Providence was also largely directed by transportation, as roads and railroads provided convenient access to major employment centers and commercial areas, facilitating the establishment of the largely residential community we know today.

The paths connecting home, work, play, and commerce remain critical to the vitality of the Township; maintaining these paths is one of the principal functions of local government. The degree of access provided by the transportation infrastructure plays a major part in determining land use patterns, neighborhood character, and quality of life generally. Hence, any plan for the future of the community must consider the role of transportation. The Pennsylvania Municipalities Planning Code requires us to create "...a plan for the movement of people and goods..." through the Township as an element of this Comprehensive Plan, but this simple statement only hints at the complexity of the issues involved. Road quality and safety are immediately obvious elements of such a plan, but good quality, safe roads tend to attract a lot of traffic. High volumes of traffic may in turn facilitate the development of commercial and industrial land uses, but may also have a negative effect upon the safety of pedestrians and cyclists as well as upon the quality of life in adjacent residential areas. The plan must therefore strike a balance between the need for traffic to move smoothly and the need to protect public safety and the character of the community.

"Transportation" is not synonymous with "roads," although the highway network is perhaps the most significant and most obvious element of the transportation infrastructure. This chapter is an inventory of the various modes of transit available within the Township. In addition to the road network we will consider the availability of mass transit (trains and buses), pedestrian accommodations, bicycle travel, and the interface of these modes.

**Road Network**

Transportation experts have a highway classification system based upon road function and the observation that – particularly in densely developed areas – there is an inverse relationship between access and mobility. In other words, highways with a high degree of mobility have the most restrictions to access: an expressway like the Media By-Pass is a good example. Conversely, those roads with unrestricted access tend to have less mobility (i.e., slower average speeds) and are generally less travelled, particularly by long-distance drivers. The classification system defines four basic road types: expressways, arterials, collectors, and local access streets. These are described in greater detail below. Figure 17.1 shows which roads in Upper Providence Township are in each category. Figure 17.2 illustrates them on a map of the

Township and includes the most recent available traffic counts to allow comparison according to volume of traffic; identified “problem areas” are also shown.

- **EXPRESSWAYS** are limited access highways that accommodate the largest volume of traffic and the highest rates of speed. Expressways do not provide access to any adjacent properties. Instead, access is strictly limited to grade-separated interchanges with major roads. As a result, the presence of an expressway in a community is something of a mixed blessing. While the presence of an interchange will provide residents with quick access to the region, the road corridor itself has nearly the same effect as a wall or a moat, disrupting the local development pattern. The only expressway in Upper Providence is **US Route 1**, commonly known as the Media By-Pass. There are two interchanges within the Township: one with PA Route 252 ( Providence Road) at Rose Tree and another with State Road near the Marple Township line. Just east of State Road, in Marple Township, the By-Pass has an interchange with Interstate Route 476, locally known as the “ Blue Route.” This is significant as it provides a connection to the regional and national expressway network for Upper Providence and the surrounding communities.
- **ARTERIALS** provide for the movement of large volumes of traffic at relatively high speeds both within a region and between regions. In moderate to densely developed areas, access will be restricted to other roads and driveways for major uses, such as shopping centers. Access to individual residential or commercial lots should be provided only in rural areas. Although arterials generally lack the grade-separated interchanges characteristic of expressways, other intersection control measures like traffic lights, dedicated turn lanes, and acceleration/deceleration lanes are common. Arterials will not provide on-street parking except possibly in very dense urban areas. Arterials roads are often sub-classified as **major** or **minor arterials**. The distinction is somewhat subjective and often depends upon local conditions. In general, a major arterial will have a higher volume of traffic and will serve a higher proportion of non-residential uses than a minor arterial. In Upper Providence, **PA Route 252** (Providence/Palmers Mill Roads) and **Baltimore Pike** are considered major arterials; minor arterials are named in Figure 17.1.
- **COLLECTOR** roads accommodate lower volumes of traffic than arterials and at slower speeds. They are not intended for long-distance travel, but may be used as an alternate route where an arterial may unavailable due to an emergency or construction. As the name suggests, collector streets typically function to gather traffic from residential neighborhoods and local access streets and direct it toward arterial roads and expressways. Collectors may provide access to neighborhood business and commercial areas, but are not usually able to provide the capacity needed to serve larger shopping centers, office buildings, industries, or other major traffic generators. Like arterials, collectors are frequently further categorized as **major** or **minor collectors**. Again, this distinction is a bit subjective and dependent upon local conditions rather than a universal standard. While both types of collector serve mostly residential areas, major collectors will have a higher volume of traffic and will have more intersections with local access streets than a minor collector. Minor collectors, in contrast, will provide a higher degree of access to adjacent properties via driveways serving single lots. Collectors are identified in Figure 17.1.
- Every other street in the Township is a **LOCAL ACCESS** street. Local access streets allow driveway access to all adjacent properties and are generally inappropriate for long distance travel; all cul-de-sacs and private streets are local access streets. Local access

streets are almost exclusively residential, although they may have some small, neighborhood-scale businesses and institutions. Local access streets are not specifically named in Figure 17.1, as it would be redundant to do so.

**FIGURE 17.1: CLASSIFICATION OF STREETS**

With the exception of "Expressway," the characteristics shown in the "Description" column should be interpreted as what is typical and desirable. The Upper Providence examples may not exhibit all of these characteristics for their entire length, but are so classified due to the type of trips and volume of traffic accommodated rather than their physical qualities. The classifications shown here have been determined by the Delaware Valley Regional Planning Commission (DVRPC).

| STREET TYPE | DESCRIPTION | IN UPPER PROVIDENCE |
|---|---|---|
| Expressway | • designed for long-distance travel<br>• accommodates highest speeds<br>• multiple lanes in each direction<br>• access limited to grade-separated interchanges with major roads<br>• NO driveway access permitted | U.S. Route 1 (Media By-Pass) |
| Major Arterial | • connects regions and is principal means of circulation within a region<br>• accommodates high volumes at relatively high speeds<br>• often multi-lane<br>• intersections feature traffic signals, dedicated left-turn lanes, and other physical controls, but are not grade-separated<br>• driveways limited to major uses<br>• characterized by non-residential uses, especially in urban areas | PA Route 252 ( Providence Rd. [part] and Palmer Mill Rd.)<br><br>Baltimore Pike |

| | | |
|---|---|---|
| Minor Arterial | • important component of intraregional circulation<br>• relatively high volume of traffic<br>• usually single lane in each direction, but may feature center left-turn lane or dedicated left-turn lanes at principal intersections<br>• higher frequency of driveways than major arterials; some access provided to smaller properties<br>• higher proportion of residential uses than major arterials | Providence Rd. north of PA 252 intersection<br><br>Orange St./Knowlton Rd. south of Media borough<br><br>State Rd. |
| Major Collector | • accommodate travel between neighbor-hoods; also convey traffic from local streets to arterials<br>• moderate level of traffic at moderate speeds<br>• single lane in each direction, with dedi-cated left-turn lanes at major intersections<br>• driveways more frequent than along arterials<br>• non-residential uses limited to smaller, neighborhood-oriented shops and services | Bishop Hollow Rd.<br><br>Ridley Creek Rd.<br><br>Rose Tree Rd.<br><br>Kirk Lane |
| Minor Collector | • same function as major collector, but has lower volume of traffic<br>• single lane in each direction<br>• frequent driveways; occasional intersections with local streets and culs-de-sacs.<br>• predominantly | Farnum Rd.<br><br>Orange St. between Rose Tree Rd. and Media Borough line<br><br>Sycamore Mills Rd. |

| | | |
|---|---|---|
| | residential | |
| Local Access | • accommodates neighborhood traffic; not suitable for long-distance travel<br>• single lane in each direction<br>• provides access to all adjacent property; culs-de-sacs are a type of local access street<br>• few if any non-residential uses | all streets not previously named |

SOURCE: Delaware Valley Regional Planning Commission and Spotts, Stevens & McCoy, Inc., 2004.

Clearly, not all of the roads in Upper Providence are designed appropriately for their function. Where there is a disconnect between design and function, congestion and potentially unsafe conditions result. We note that the results of the 2004 public survey showed that roads, road conditions, and traffic were residents' top concerns. Circumstances such as these are common in communities like Upper Providence that have such a long history that road functions and traffic volumes have changed dramatically over time. In addition, issues created by this design-function dichotomy are exacerbated when there are actual deficiencies of design or quality. Fully resolving such conditions in built-up areas such as Upper Providence is a particular challenge.

The quality of a travel experience depends upon a variety of factors. If the road surface is rough, if there is excessive congestion, or if the driver feels unsafe, they will have a poor experience. Road maintenance is one of the principal responsibilities of Township government. However, specific maintenance issues are not an appropriate topic for a Comprehensive Plan as they change relatively quickly. In contrast, congestion and the perception of safety are both design-related issues and better suited to the type of long-term solutions this Plan is intended to establish.

As already noted, congestion will result where there is a disconnect between the design of a road and its function. The 2004 survey makes it clear that Township residents feel this disconnect. In a community with a history as long as Upper Providence, this is a particular problem: William Penn could never have imagined today's vehicular demands upon Providence Road when he established it more than 300 years ago. Narrow travel lanes and buildings built close to the edge of the cartway are typical problems for older roads, and building additional lanes to ease congestion is often too problematic to be practical. The issue is complicated by the observation that congestion is not always a bad thing. Congestion effectively slows traffic to the potential benefit of both pedestrians and the owners of adjacent retail businesses. A more common – and equally valid – view of congestion is that it represents a loss of time and a waste of resources and that it generates a level of frustration among motorists that may lead to unsafe driving practices. The proper policy regarding congestion will be based upon a

evaluation of how much congestion is acceptable: at what point do the costs outweigh the benefits. Where some relief of congestion is required, it is necessary to consider both structural and non-structural approaches. The former includes what are perhaps the most obvious solutions: widening streets and travel lanes, providing center left-turn lanes, adding mechanical traffic control devices (like traffic signals), and building new roads. Smaller-scale structural approaches includes those strategies that have become known as "traffic calming" measures, including the *narrowing* of travel lanes, textured pavement, and tightened curves that force traffic to slow down. Until recently, traffic bumps were part of this strategy, but these have become less popular – particularly in climates where Townships need to plow snow on a regular basis. In contrast, non-structural approaches involve little if any new construction. Examples include calibration of traffic signals, establishing alternate routes over existing roads, changing speed limits, and signage and pavement markings. One "pure planning" approach to traffic management is to coordinate with local employers to stagger their hours of operation (or to accommodate flex-time) in order to spread out the rush-hour volume. Another approach is land planning that restricts major traffic generators to locations along major highways or where mass transit is readily available – or both.

The perception of safety (or the lack of it) is subjective, and will vary among individuals. Nevertheless, there are certain circumstances where nearly all motorists will feel uncomfortable. While some such situations may be due to the volume or speed of traffic, many are design issues. Examples include poorly aligned intersections where it is difficult to see oncoming traffic, horizontal and vertical curves (i.e., bends and dips) that limit forward vision, inadequate shoulders, and signage that is too small, poorly placed, illegible, confusing, or non-existent.

**Observed Road Deficiencies**

A number of road-related concerns expressed by the residents were related to the speed and volume of traffic. The former is an enforcement issue and the latter will require a regional solution that may or may not include construction. While some traffic problems can be addressed without resorting to some kind of construction project, design deficiencies *must* have this kind of solution. The following locations have been identified by various sources as deficient due to design.

- **Vicinity of Rt.1/Rt.252 ( Providence Rd.) Interchange** – This interchange and the immediately surrounding roads were cited more frequently than any other location when residents were asked by the 2004 survey to name the worst traffic area in the Township. While congestion is one aspect of the problem, it only exacerbates the design issues. The interchange itself is a "double diamond" type with short acceleration and deceleration ramps that requires traffic exiting the expressway to come to a full stop before continuing. Interchanges of this type are suitable for low volumes of traffic. The current volume at this location is well in excess of what is appropriate. Conditions are made worse by the proximity of the intersections of Rose Tree Road to the north and Kirk Lane to the south. With seven major points of access in less than 1,000 feet, this stretch of Providence Road is a confusing maze of conflicting vehicle movements, turn lanes (some dedicated, others not), and poorly synchronized traffic signals. Adding to the confusion are a number of private driveways, some serving uses that generate considerable traffic, including several gas stations, a convenience store, and the Rose Tree Corporate Center office park. Any "fix" for this interchange must consider the

effect of these nearby intersections and driveways.

- **Rt.252 ( Palmers Mill Rd.)/Providence Rd. Intersection** – This awkward intersection was second on the list of residents' road concerns from the 2004 survey. While through traffic on Rt.252 flows (relatively) smoothly, vehicles entering Providence Road must negotiate an unwieldy series of turns, and drivers leaving Providence Road contend with poor sight distance. Concerns regarding this location are heightened by the presence of Springton Lake Middle School and Rose Tree Park. Furthermore, rush-hour traffic frequently creates a solid line of congestion from well north of this intersection through the area of the expressway interchange described in the preceding paragraph.

While these two locations are by far the principal concerns, two others are also worth mentioning.

- **Ridley Creek Road** – While many appreciate this road for its scenic qualities, a number of residents noted concerns related to poor visibility and sight distance; the perceived safety of the intersection with Baltimore Pike is also a concern. A more careful study of this corridor can identify locations where better maintenance of weeds and trees and/or regrading of embankments will improve drivers' visibility. A traffic signal would be sufficient to resolve concerns regarding the Baltimore Pike intersection. Straightening of curves or widening of the cartway is not generally preferred, as these actions are likely to result in higher speeds.
- **Providence Road** – Providence Road is narrower and more twisting than one would expect for a minor arterial road. However, as with Ridley Creek Road, the design helps to control speed (although excessive speeds are still a problem here), which is an important consideration given the number of private residential driveways that directly access this road. The most significant design issue is the "2650 curve" – so-called by local police for its address location near the Watermill development. The curve is relatively sharp and sloping with less than ideal visibility: although no single design deficiency is remarkable, the combination of grade, curve radius, and visibility is apparently enough to give this location a noticeably higher frequency of accidents than other parts of the Township.

**Public Transportation**

Public transportation in Upper Providence is provided by the Southeastern Pennsylvania Transportation Authority ("SEPTA"). SEPTA operates a variety of light- and heavy-rail lines as well as an extensive bus system serving the region. Traditionally, the network has concentrated on providing service between central Philadelphia and the suburbs. More recently, SEPTA has added trips to serve suburban population and business centers.

SEPTA service to Upper Providence consists of the following.

- The **R-3 Media/Elwyn regional rail line** connects Elwyn with central Philadelphia (i.e., 30 th Street, Suburban, and Market East stations). While nearby Elwyn is the final stop on this line, some trains only go as far as Media, hence the route name. These trains all stop at the Media station, which is located in Upper Providence at the intersection of Media Station Road and Orange Street. This is the only train station in the Township. There are currently between 25 and 30 round-trips each week-day from Media. There is service throughout the day with a higher frequency of trips during the morning and afternoon rush hours.

In addition to the train service, three SEPTA **bus routes** pass through the Township.

- **Route 110** ( 69 th Street to Granite Run Mall and Penn State/Delaware County Campus) – This bus travels along Baltimore Pike with scheduled stops in Media and at the Elwyn, Inc. campus.
- **Route 111** ( 69 th Street to Penn State/Delaware County Campus and Chadds Ford via Granite Run Mall) – This bus travels through the Township along U.S. Route 1; there are no stops in Upper Providence.
- **Route 118** (Chester to Newtown Square) – This bus travels through the Township along PA 252 and has scheduled stops at South Media, Media, Rose Tree Corporate Center, and Delaware County Community College in Marple Township.

Finally, the **Route 101 trolley** provides frequent service between Media and the 69 th Street Terminal in Upper Darby. Although this line does not enter Upper Providence at any point, it is so close that it must be included in this inventory of transit services available to Township residents and visitors.

**Alternate Modes of Transit**

Pedestrian and bicycle traffic are not well accommodated in Upper Providence, although the 2004 survey indicates that residents would like to have facilities to accommodate this type of travel. The provision of dedicated pedestrian/bicycle access to Rose Tree Park is particularly desirable. There are few sidewalks, even in the most densely developed areas, and pedestrian trails are virtually non-existent. None of the streets have a dedicated bicycle lane. The Bicycle Coalition of Greater Philadelphia rates the suitability of public streets for bicycle use, classifying them as “bicycle friendly” (most suitable due to quality of surface and width of shoulders), “average” (lacks wide shoulders, but relatively low volume of traffic), and “below average” (least suitable and “not pleasant”). In Upper Providence, only Dog Kennel Road and Knowlton Road are deemed “bicycle friendly.” Not surprisingly, heavily traveled major routes, including Route 252, Providence Road, and Rose Tree Road, are all “below average.”

**Modal Interfaces**

The topic of modal interfaces addresses how one transfers from one mode of transit to another; or, once you get off the bus, how do you get home? Typical for a suburban community, Upper Providence residents are largely dependent upon the street network and private cars for their transit needs. However, a lack of transit options has the potential to degrade the overall quality of life for residents if there is no alternative to increasingly crowded roads.

Some suburban communities address the intermodal issue by creating “park and ride” facilities – essentially large parking lots at mass transit stations that are meant to encourage drivers to leave their cars. These have met with some success, particularly where the destination (usually an urban downtown) is extremely congested and parking is difficult or expensive. This strategy is not readily adaptable to Upper Providence: the existing parking lot that serves the train station is filled to overflowing during the work week, and securing any land for more parking is likely to be cost-prohibitive.

The examination of modal interface should not be limited to those that involve cars. Even as

the old Idlewild Hotel provided a boardwalk connection to the Media train station, the Township should consider ways to enhance pedestrian access to the train station and bus stops. Similarly, facilities to store bicycles securely at mass transit stations would improve the interface; SEPTA already accommodates bicycles on some trains and busses. One fairly obvious modal interface that could be implemented is a bus-to-train link: of the three SEPTA bus routes that serve the Township, none of them currently provide an easy connection to the Elwyn, Media, or Moylan train stations. In each case, a walk of several blocks is necessary. The 118 bus has a stop that is quite close to the Wallingford train station in Nether Providence Township, but even this is not a direct service to the station.

**Planning Implications**

- Traffic is the most critical planning issue facing the Township.
- There is a close relationship between land use and traffic. Changes in land use – or changes in density of use – will have a direct effect upon traffic volume.
- Changes in land use will need to be co-ordinated with improvements to the transportation network. The Township may wish to examine the applicability of enacting a transportation impact fee to fund such improvements.
- Land use changes that increase traffic volume are not necessarily to be avoided. On the contrary, such changes may make provision of mass transit more cost-effective thereby relieving dependence upon private automobiles.
- Most of the concerns about the road system are issues of speed and congestion. Addressing speed will require more focused enforcement; the congestion issue is more complex and will require a regional solution.
- Physical improvements to the road system should be done carefully in order to address safety concerns without exacerbating the speed and congestion issues. Generally speaking, improvements that will accommodate a higher volume of traffic are *not* favored.
- The benefits of providing facilities for pedestrian use and bicycle travel are not limited to pure traffic issues. Such facilities will also provide a recreational amenity, increase opportunities for exercise (thereby benefiting health), and will improve mobility for those who may not have access to a car, such as youth and the elderly. The goal is not traffic reduction per se, but to improve quality of life for Township residents.
- There are opportunities to improve modal interfaces, particularly in regard to the Media train station.

Responses to Township survey, Upper Providence Police Department, consultant observation.