chapter two

Principles

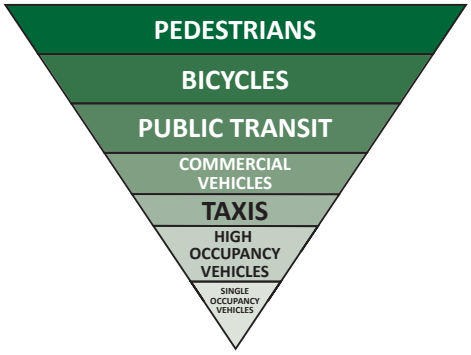

STATE
LAW

Principles

This chapter addresses the high level planning principles and policies that provide the framework for new land development in Chester County. Planning principles are the desired goals while the design concepts are the means to achieve the goals. From these principles and concepts, actual design is accomplished through more quantifiable, measurable design elements which are discussed in **Chapter 3 'Design Elements'**.

Principles and design concepts must be considered throughout the plan development process – before a design is started, during the design process, and in the final review of a plan. If correctly applied, principles and concepts can lead to a properly functioning circulation system which is compatible with existing and future land uses.

> *"Automobile dependency refers to transportation and land use patterns that favor automobile travel and provide relatively inferior alternatives. Its opposite, multimodalism, refers to a transport system that offers users diverse transport options that are effectively integrated, in order to provide a high degree of accessibility even for non-drivers."*
>
> *- Todd Litman, Multi-Modal Transportation Planning, Victoria Transport Policy Institute, 2014*



Source: City of Portland, OR

Multimodal planning gives recognition to the fact that planners, engineers, developers and public officials must find alternative means of dealing with existing and future traffic problems. Experiences across the country point to the need to manage the demand for travel through: ride-sharing, altering work trip patterns, expanding opportunities for modes of travel other than the automobile and managing access on existing roads. Addressing the circulation side of the problem is not the only approach. The integration of land use and transportation planning within a community can lead to fewer vehicular trips, a safer circulation network and more attractive surroundings.

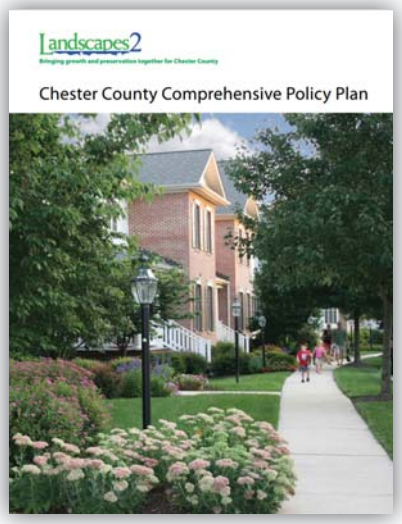
Effective and responsible planning for a community is based on careful considerations of laws and regulations, planning principles, design concepts, design elements and coordination among all parties involved with development and circulation. The same considerations can be applied to individual land developments. One of the foundations of successful

land development is the proper accommodation of multimodal circulation within the development, at all access points to the development, and along the adjacent roads which serve the development. A properly functioning multimodal circulation system leads to more desirable, marketable developments and more viable communities.

Establishing the Policy Framework

LANDSCAPES2

Landscapes2 is Chester County's comprehensive policy plan. It has brought together growth management and preservation strategies. It has guided municipalities, developers, preservationists, and many others in setting priorities for where and how our county grows—including both how to revitalize our urban centers and small towns and how best to protect our natural, rural, and historic heritage.



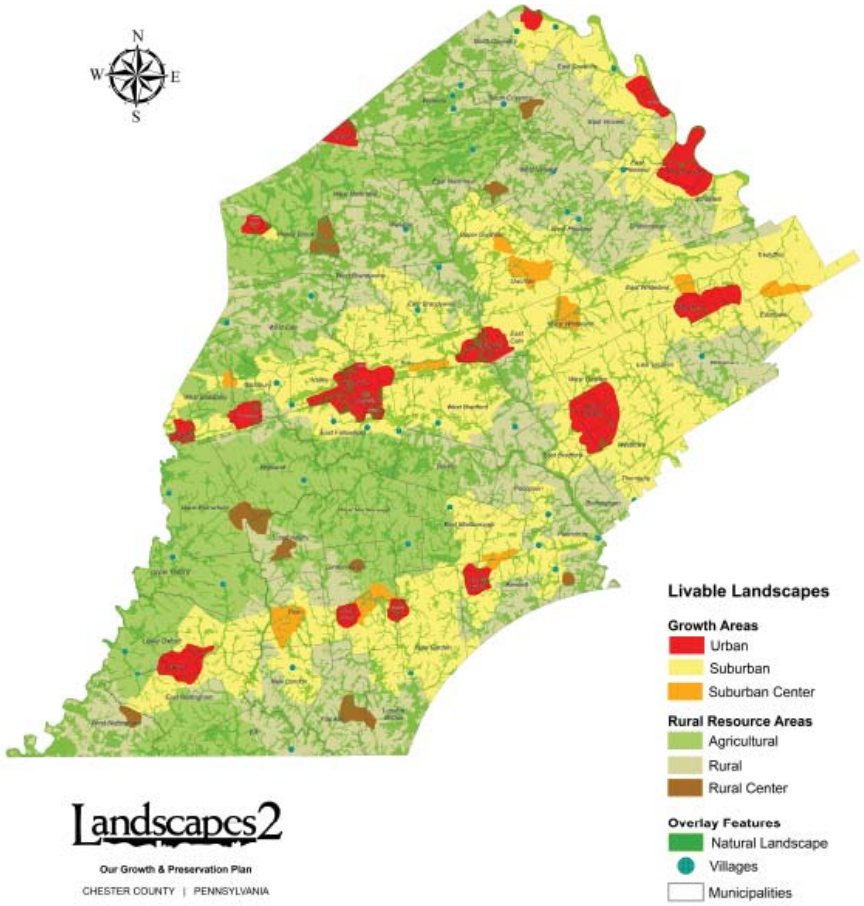
Landscapes2 states the following regarding land use, transportation, and multimodal facilities:

> *Land use and transportation interact in dynamic fashion, where land use policy affects transportation behaviors and transportation policy affects land use behaviors. It is the management of this relationship that is transportation planning.*

and

> *No single travel mode will accommodate our needs. A sole reliance on the automobile has limitations and costs. Transit options are needed in most communities, along with facilities for bicyclists and pedestrians.*

The concept of “livable landscapes” provides a framework for protection and growth strategies within Chester County. The Livable Landscapes map serves as a guide for accommodating expected future growth while maintaining the quality of life in the county.



The Landscapes2 System-wide transportation policy (T 1.4) regarding land use:

T 1.4 Integrate – Coordinate the regulation, enhancement, and impacts of land use and transportation to effectively promote sustainable transportation choices and behaviors.

T 1.4a Encourage appropriate and supportive land uses, density, and site designs that reduce vehicular dependency, encourage public transportation, and provide bicycle and pedestrian mobility.

T 1.4b Encourage increased development density where supportive transportation infrastructure exists.

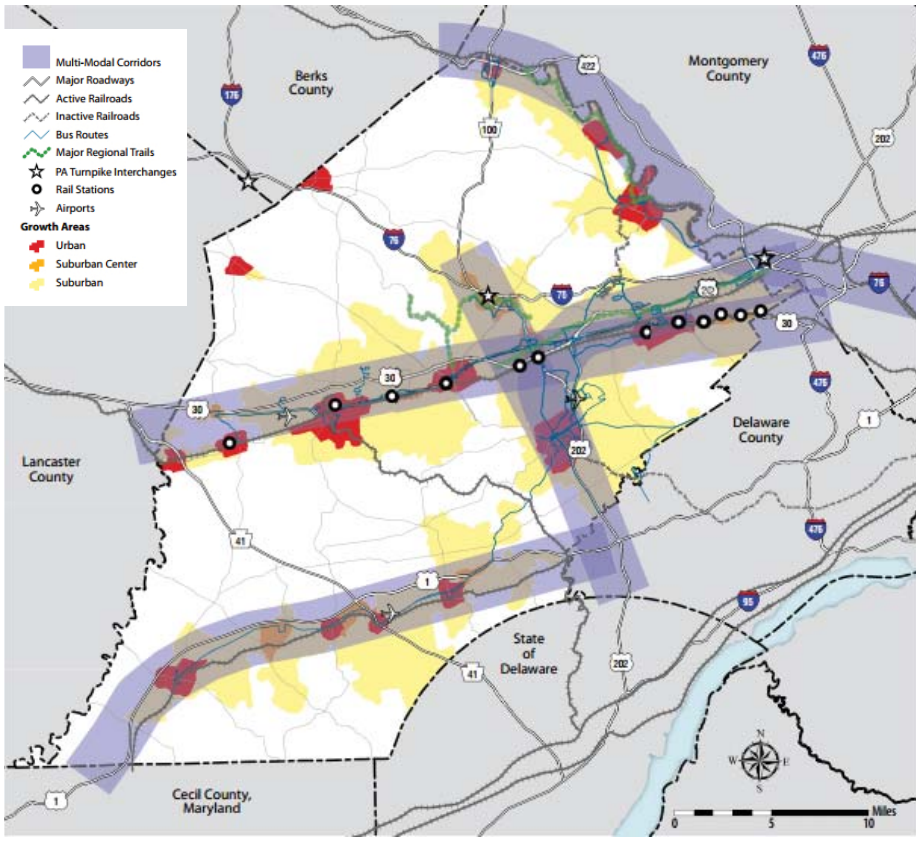
T 1.4c Promote a corridor-planning approach to integrate transportation investments and land use policies.

Multimodal Transportation Corridors

Landscapes2 states the following:

The foundation of a "system-wide" approach to transportation planning is close coordination of various transportation modes and the surrounding land uses that are served and supported. The map (below) highlights this critical relationship between transportation infrastructure and the identified growth area, particularly urban and suburban centers. The major multi-modal corridors encompass key roadways, active rail lines, passenger rail stations, bus routes, regional trails, airports and the PA Turnpike interchange. These corridors are priorities for maintaining and investing in our transportation system to support efficient movement of people and goods.

Multi-modal Transportation Corridors



Source: Landscapes2

Public Transportation Plan

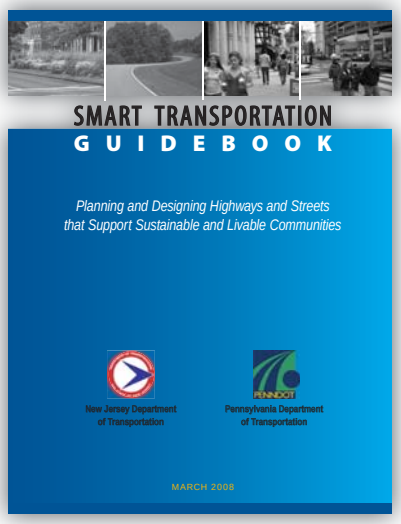
In July of 2014, the Chester County Commissioners adopted the ***Public Transportation Plan*** as an element to Landscapes2. This plan was structured around three main categories of issues concerning public transportation: the SYSTEM (everything that is operating or 'rolling' such as bus routes, commuter rail services, etc.), the ENVIRONMENT (all points of access to the system, including rail stations, transportation centers, bus stops), and the EXPERIENCE (reflected by everyone that utilizes the public transportation system).

The category whereby Chester County will have the most direct influence in improving public transportation services is within the realm of the built ENVIRONMENT. The plan's ENVIRONMENT goal is to:

"Provide a first class, barrier-free and multimodal means of transport from trip origin to trip destination."

One of the objectives towards achieving that goal is to encourage local growth area municipalities and engage developers in the creation and adoption of ordinances to provide for the integral development of transit related facilities and/or land uses.

PennDOT Smart Transportation



The New Jersey Department of Transportation (NJDOT) and the Pennsylvania Department of Transportation (PennDOT) jointly prepared and published their ***Smart Transportation Guidebook*** in March 2008. Its focus is to guide the development of non-limited access roads as context sensitive roadways, with the goal of creating transportation facilities that work well for all users, are affordable, and support smart growth community planning goals.

The following are the Smart Transportation Principles as published in the Guidebook:

1. Tailor solutions to the context;
2. Tailor the approach;
3. Plan all projects in collaboration with the community;
4. Plan for alternative transportation modes;
5. Use sound professional judgment; and,
6. Scale the solution to the size of the problem.

These principles constitute the basic philosophy of providing for a 'context sensitive' design. Notably, the Smart Transportation Guidebook introduce context sensitive engineering (where land use context changes the roadway design). Following the 2008 publication, these land use considerations were incorporated into PennDOT's design manuals.

The land use contexts described in the Smart Transportation Guidebook from least to most developed are as follows:

1. Rural.
2. Suburban Neighborhood.
3. Suburban Corridor.
4. Suburban Center.
5. Town/Village Neighborhood.
6. Town/Village Center.
7. Urban Core.

The contexts from Suburban Neighborhood (2) to Urban Core (7) correlate to the Landscapes2 Growth Areas, with Rural being synonymous in both publications.

Top Principles

The following are the principles towards which this Multimodal Handbook intends to guide future land developments in Chester County:

Create pedestrian-oriented experiences and design to the human scale. Providing for a pleasant environment that any person would experience should be a guiding principle in the planning, design, and construction of all new developments and/or redevelopments. Universal accessibility, building placement, mode separation, landscaping, signage, noise mitigation, and the creation of outdoor spaces play a major role in contributing to the aesthetics and human experience and thus the success of any development.

Integrate development as part of the community fabric. Land developments should consider not only the site specific conditions for design and implementation, but also how these developments can contribute to the community within which they are placed. Developments should be considered as part of the community building process rather than simply stand-alone projects.

Provide for all transportation modes. The transportation system is not exclusive to the automobile and should provide opportunities for bicyclists, pedestrians and public transit. Roadways should be designed to accommodate public transportation which would assist traffic flow and capacity. Public transportation facilities connect high-density population and employment centers where cost effective and help to reduce highway congestion and improve air quality by reducing the number of trips made by single occupant vehicles. Clearly defined pedestrian routes should be provided between residential, commercial and office developments and public transit facilities such as bus stops, rail stations, and transportation centers. Pedestrian and bicycle linkages should be created throughout and between all major developments since they serve as both transportation and recreation resources that contribute to bettering the community's overall health and well-being. Consideration for all of these modes will provide for a true multimodal transportation system in Chester County.

Incorporate sustainable design features. Site development should be designed to provide for long term sustainability and minimize the impacts to the natural environment. Roadways and parking lots are the biggest contributor towards stormwater runoff causing erosion and the inflow of chemicals such as road salts and de-icing agents that impact water quality in Chester County's waterways. While many best management practices infiltrate and/or treat stormwater before being discharged into local streams, minimizing the development footprint which includes not only the creation of new impervious surfaces but for all earth disturbance activity associated with land development would reduce this increased runoff at its source. In most cases, making roadways and site developments more compatible with their natural settings and avoiding impacts to wetlands, floodplains, forests, wildlife habitats, and other natural areas is the best way to apply this principle.

Accommodate future growth. Enough highway and intersection capacity should be provided through ultimate rights-of-way to accommodate peak hour demand from new land developments and preserve the future capacity and safety of arterial and collector roads. Municipalities and developers within growth areas should incorporate bus and other transit design concepts within subdivision and land development proposals to accommodate the future use of public transportation. High-density housing and employment centers should be located near established public transportation routes and centers. Adjacent developments should be interconnected to reduce the amount of vehicular, pedestrian or bicycle trips accessing arterial and collector roads for local circulation.

The land use context can vary significantly along the roadway regardless of the roadway's functional class. While PA 10 is a minor arterial in all three examples, one can see how the land use context varies along PA 10 in Chester County. The transportation design of PA 10 adjusts to the land use context. This is a key evolution of transportation engineering over the last decade: design for the context. This approach results in improved accomodations for all modes and a more context sensitive design.

PA 10 within a rural land use context.

PA 10 within a suburban land use context.

PA 10 within an urban land use context.

Defining the Context

STEP 1: Determine Land Use Context

The location of the proposed development relative to the Landscapes2 **livable landscapes** will have a bearing on various design guidelines as denoted in the Chapter 3 Design Elements. Please refer to the Livable Landscapes Map found on page 15 to determine if the proposed development is located within a Growth Area or a Rural Resource Area.

STEP 2: Determine Roadway's Functional Classification

Roadway functional classification an important land use and transportation planning tool that establishes a hierarchy of roads based on use relating to mobility and access. As a tool, functional classification provides a basis for the integration of land use and transportation through road design, access design and all relevant land use ordinances.

The overriding principle that guides the integration of land use and circulation is the need to establish and maintain a hierarchy of roads based on intended function. This is what is generally referred to as highway functional classification. Roadways serve two basic functions--mobility and access. Mobility is defined as the ability to carry traffic and is measured by volume, speed and trip length. Access is defined as the ability to move traffic to and from abutting land uses.

There is a fundamental incompatibility between mobility and access. Access to adjacent parcels generally inhibits or restricts the ability of a road to carry high volumes at high speeds. Conversely, high-speed traffic is incompatible and disruptive on roads such as residential streets which are primarily intended to provide access to abutting properties. Roadways fail when the design and use are not compatible with the intended function. For example, if a major road is intended to carry high volume, high speed traffic, but the adjacent properties are developed with an excessive number of access points, the conflict between mobility and access will result in higher accident rates and increased congestion.

Examples of roadways and their functional classification.

The classification that was established by the Chester County Planning Commission followed an eight-step process that led to adoption by the Planning Commission in 2003. The adoption focused on a map of the classification and a table of specific variables and criteria that was used to define and delineate the classification. The eight step process and table of specific variables, along with mapping of the entire county designating the functional class of each roadway may be found in the ***Road Functional Classification Technical Memorandum***, published by the Planning Commission in June 2004.

The adopted classification is comparable in scale to the classifications set at the regional, state and national levels. About 3 percent of the network mileage in the County consists of expressways. The arterials represent almost 10 percent of the mileage. Collectors represent about 20 percent of the mileage. The bulk of the mileage (over 2/3) consists of local roads, which in this context refers to their function and not necessarily ownership.

Approximately 12 percent of the road mileage carries 70 percent of the traffic. This relates to the circulatory analogy where the expressway and arterials are the lifeblood of the network.

In terms of the relationship of the functional classification to Landscapes2, the County's comprehensive policy plan, there is a strong nexus between the function of the major roads and their impact on the growth areas in the plan and on the preservation areas.

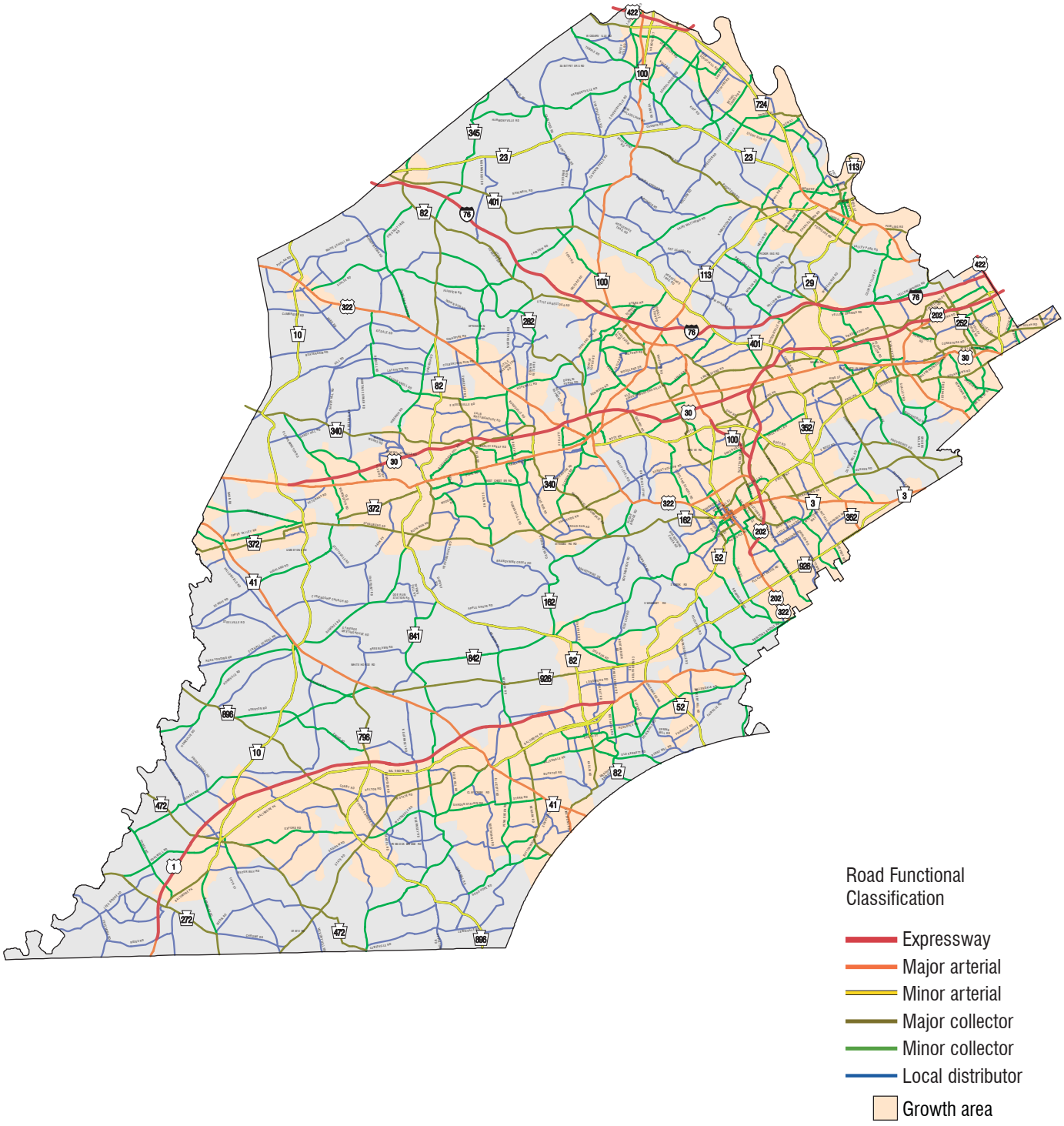
The following exhibit illustrates select criteria and variables associated the functional classifications and how those criteria and variables differ between the Landscapes2 Growth Areas and Rural Areas:

Chester County Planning Commission Road Functional Classification—Variables and Criteria

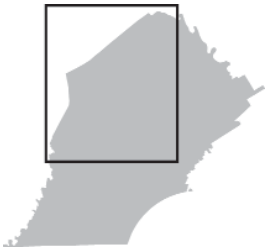
Variables	Expressway	Major Arterial	Minor Arterial	Major Collector	Minor Collector	Local Distributor	Local
Daily Traffic Volume Range (1)	15,000 to over 100,000 vehicles	10,000–60,000 vehicles	8,000–20,000 vehicles	4,000–10,000 vehicles	1,000–5,000 vehicles	Less than 1,500 vehicles	Less than 1,000 vehicles
Mobility	Strict priority to moving vehicles	Mobility more critical than property access	Mobility more critical than property access	Even priority to mobility and access	Even priority to mobility and access	Access more important than mobility	No priority to mobility
Access	Only at interchanges	Strict median access control	Some control of property access	All roads and properties have access	All roads and properties have access	Priority is given to property access	Priority is given to property access
Corridor Length	Over 15 miles	Over 15 miles	Over 10 miles	4–15 miles	2–10 miles	Less than 4 miles	Less than 2 miles
Connections (Relationship to LANDSCAPES)	Connects states, regions, counties, cities and landscapes urban centers	Connects regions, counties and multiple landscapes centers	Connects multiple landscapes centers some inter-county trips	Connects landscapes centers and villages, primarily intra-county trips	Connects villages and multiple neighborhoods primarily intra-county trips	Connects neighborhoods some intermunicipal trips	Links individual properties to distributors and collectors
Truck Traffic	Highest truck mobility	High truck mobility	High truck mobility	Moderate truck mobility	Moderate truck mobility	Local delivery only	Local delivery only
Basic Geometry and Design	Wide lanes and shoulders; medians; more than 2 through lanes	Wide lanes and shoulders; occasional median; turning lanes	Wide lanes and shoulders; no medians; turning lanes	Two lanes; no medians; limited turning lanes	Two lanes; no medians; limited turning lanes	Narrow Lanes	Narrow Lanes
On-Street Parking	Prohibited	Only in urban areas	Only in urban areas	Discouraged outside "centers"	Discouraged outside "centers"	Limited use outside"centers"	Appropriate on selected streets
Through Traffic (2)	Over 50%	Over 50%	Over 50%	25–50%	25–50%	Less than 25%	Less than 10%
Vehicle Speed (Posted)	55–65 mph 40 mph minimum	35–55 mph	35–55 mph	35–55 mph	35–55 mph	Less than 45 mph	Less than 35 mph
Bicycle Pedestrian Access	Only through separate facilities	Specially designed facilities	Adjacent facilities and crossings	Adjacent facilities and crossings	Adjacent facilities and crossings	High priority to bike and pedestrian access	High priority to bike and pedestrian access

(1) Wide range of traffic volumes accounts for differences between urban, suburban, and rural areas.
(2) Through traffic has no origin or destination in the immediate neighborhood, community, village or center.
Source: Adopted by Chester County Planning Commission, 2003

Functional Classification Maps with Growth Areas



Northwest Section



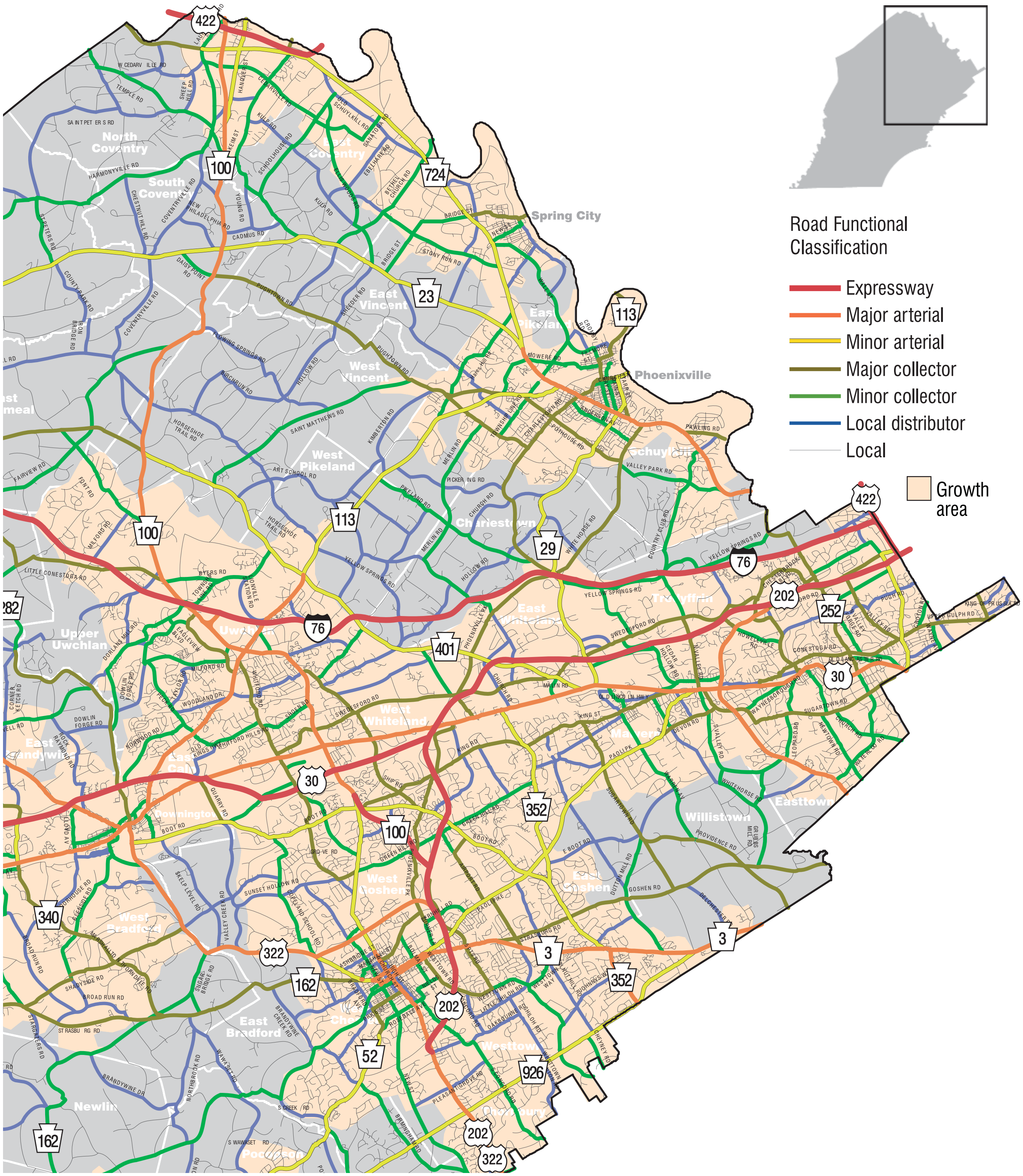
Road Functional Classification

- Expressway
- Major arterial
- Minor arterial
- Major collector
- Minor collector
- Local distributor
- Local
- Growth area

Northeast Section

Road Functional Classification

- Expressway
- Major arterial
- Minor arterial
- Major collector
- Minor collector
- Local distributor
- Local
- Growth area

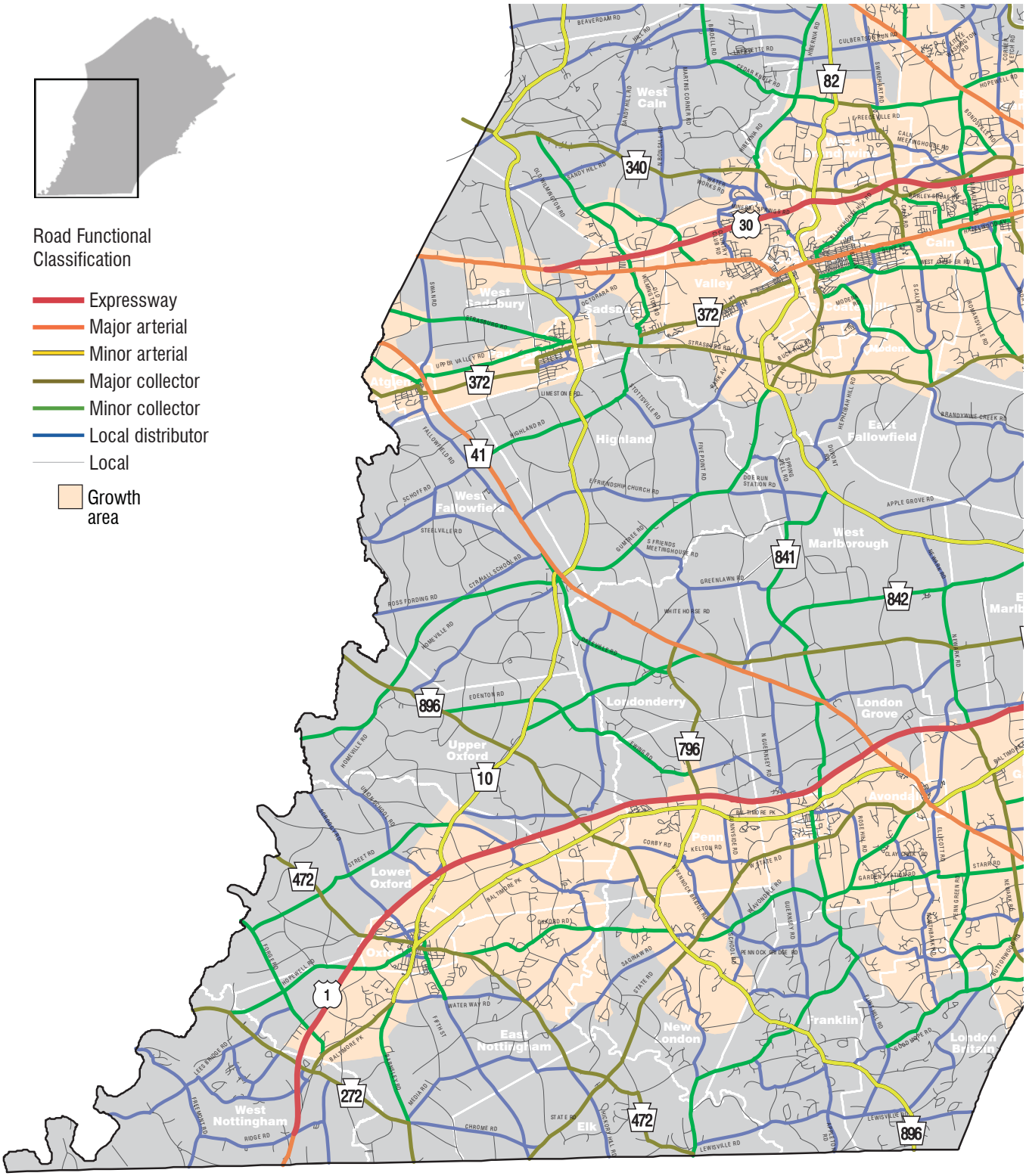


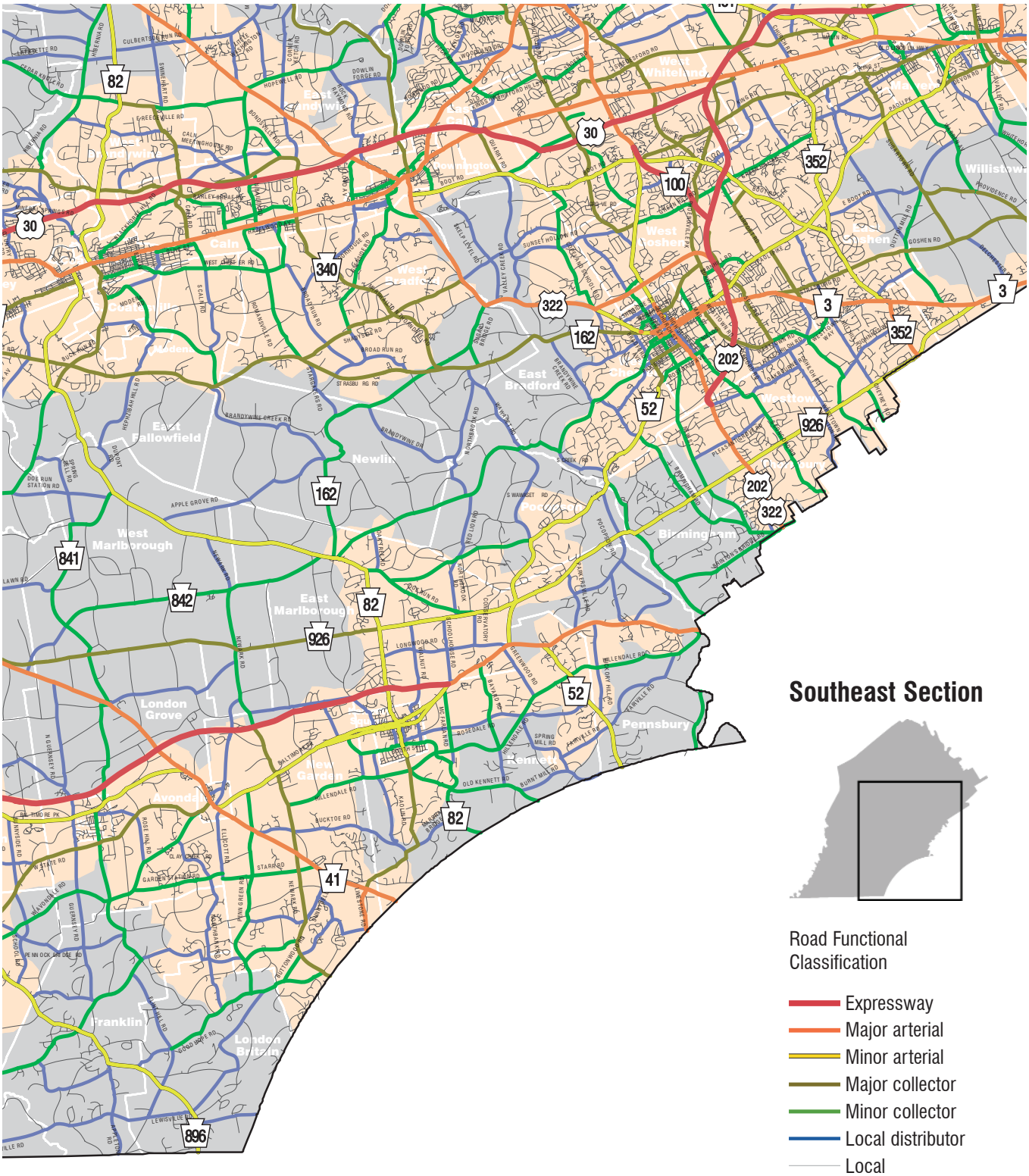
Southwest Section

Road Functional Classification

- Expressway
- Major arterial
- Minor arterial
- Major collector
- Minor collector
- Local distributor
- Local

Growth area




Southeast Section
Road Functional Classification
Expressway
Major arterial
Minor arterial
Major collector
Minor collector
Local distributor
Local
Growth area

STEP 3: Translate between CCPC and PennDOT Terminology

The following chart provides the translation key between the Planning Commission's Highway Functional Classification and Landscapes2: Livable Landscapes and the PennDOT Smart Transportation highway classification and land use contexts, with examples of such roadways located in Chester County:

Translation of CCPC Landscapes2 & Highway Functional Classification to PennDOT Smart Transportation Guidelines

			Land Use Context					
	Chester County Planning Commission	**Landscapes2**	**Urban**	**Suburban Center**	**Suburban**	**Rural Center/ Villages**	**Rural**	**Ag**
	Highway Functional Classification	**PennDOT Smart Transportation**	**Town/Village Center & Neighbor-hood**	**Suburban Center**	**Suburban Corridor & Neighbor-hood**	**Town/Village Center**	**Rural**	**Rural**
Functional Classification	**Expressway**	**Expressway**	US 202, US 30, US 1, PA Turnpike					
	Major Arterial	**Regional Arterial**	PA 3 – West Chester; PA 252 – Paoli	PA 100 – Exton; PA 41 – London Grove	PA 3 – E/W Goshen; US 322 – E Brandywine	PA 41 – Chatham; PA 100 – Bucktown	PA 252 – Easttown; US 322 – E Bradford	PA 41 – W Fallowfield; US 322 – Honey Brook
	Minor Arterial	**Community Arterial**	PA 10 – Honey Brook; PA 82 – Kennett Sq	PA 796 – Jennersville; PA 29 – Great Valley	PA 352 – E Goshen; PA 401 – W Pikeland	PA 401 – Ludwigs Corner; PA 724 – Spring City	PA 113 – W/E Pikeland; PA 82 – W Marlborough	PA 10 – Upper Oxford; PA 23 – Warwick
	Major Collector	**Community Collector**	PA 82 – Elverson; PA 113 – Phoenixville	Swedsford Rd – Exton; Little Congs. Rd – Eagle	King Rd – E Goshen; PA 282 – E Brandywine	PA 162 – Marshallton; PA 272 – Nottingham	Strasburg Road – W Bradford; Pughtown Rd – E Vincent	PA 340 – W Caln; PA 82 – W Nantmeal
	Minor Collector	**Collector Neighborhood**	Rosedale Av – W Chester; Warren Av – Malvern	GO Carlson Blvd – Caln; Waterloo Rd – Devon	Hillendale Rd – Kennett; Greenhill Rd – W Goshen	St. Peters Rd – Warwick; PA 162 – Unionville	PA 345 – Warwick; Fairview Rd – E Nantmeal	PA 841 – W Marlborough; PA 926 – Londonderry
	Local Distributor	**Local**	Bradford Av – W Chester; Todd Rd – Honey Brook	Liberty Blvd – Great Valley; Shoen Rd – W Whiteland	Concord Rd – Westtown; Pleasant Grove Rd – Westtown	Appleton Rd – Franklin; Nanteal Rd – E Nantmeal	Creek Road – W Bradford; Horseshoe Tr Rd – W Vincent	B. Creek Rd – Newlin; Ridge Rd – W Nottingham
	Local	**Local**	Various examples	Various examples	Various examples	Various examples	Various examples	Various examples

STEP 4: Apply Design Criteria

Please use the land use context and the functional classification of the roadway(s) that will serve as the developments primary point(s) of access to determine the applicability of the design elements described in Chapter 3 towards the proposed development.

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