

Smart Transportation

Across the nation, transportation representatives are sharing design concepts and producing transportation systems that will enhance the quality of life in our communities. Nationally, much attention and research is being conducted to help further the concept of Smart Transportation. In Pennsylvania, the land development rate has increased five times over the rate of population increase. Traffic in Pennsylvania has increased by over 60% while the population has remained constant. Recognizing this fact, it is apparent that PennDOT will be unable to build its way out of congestion and will need to explore alternate solutions to "manage" congestion problems.

Smart Transportation considers future land use, road network, and flexible design standards to address transportation problems. Incorporating community goals such as improved safety and pedestrian accommodations and upfront identification of environmental constraints are key ingredients to any Smart Transportation solution.

PennDOT is in the early stages of developing its Smart Transportation Policy. PennDOT is committed to working with communities to determine what is best for their municipality. PennDOT will incorporate Smart Transportation concepts in updates to our long range plan.



Our scope of road design is no longer confined to just the traveled way (pavement) or even the right-of-way. Rather, it now encompasses the right-of-way and all its access features (driveways, intersecting streets). Context-sensitive design, now the goal of good road design, includes all of these roadway features and also the adjoining land development.

Design Process

Establish Controls

Context
Functional Class
Traffic Service
Design Speed

Then

Fit Elements

Cross Section

Design Speed	Bikes
Drainage	Trees
Parking	Lights
Sidewalks	

Frontage

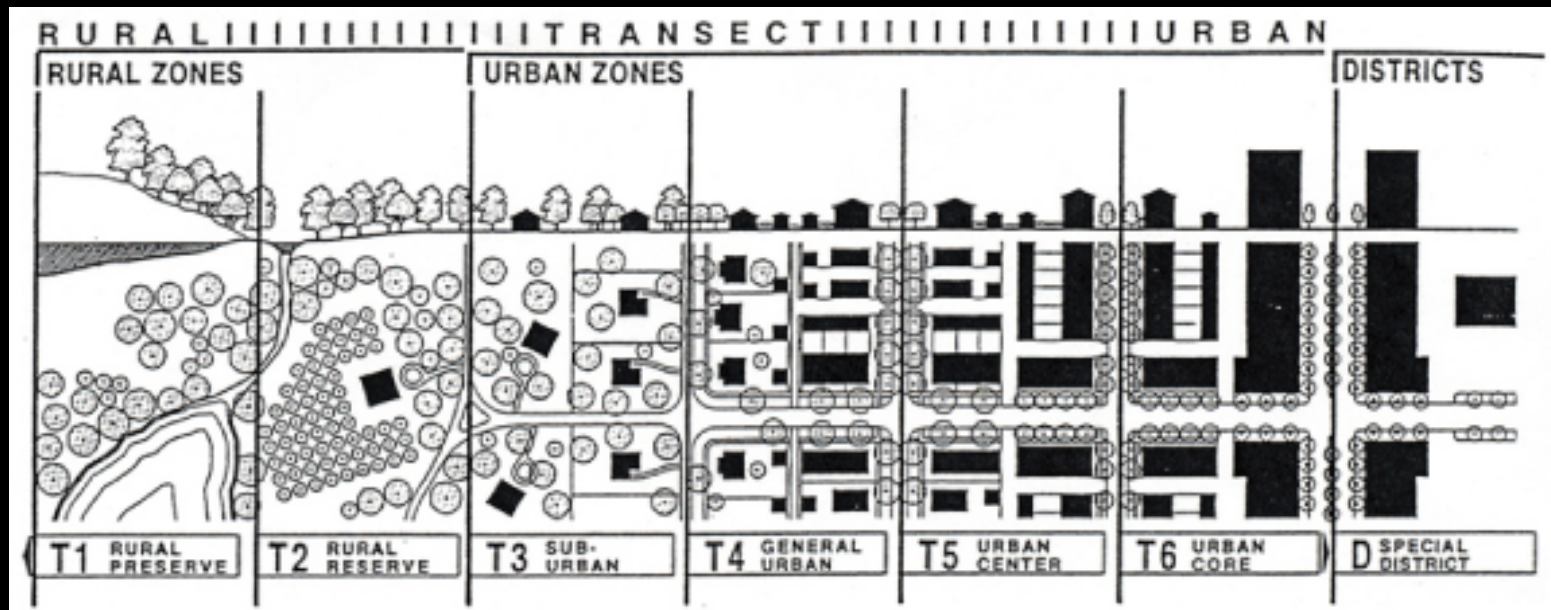
Building Siting
Off-Street Parking

Network

Street Spacing
Street Access

The first step in the design process, establishing the design controls, is where the “big decisions,” which largely determine the character of the road, are made. Previously, these decisions were made by specialist technicians, who then proceeded with a design based on the controls. Previously, stakeholders were not invited into the process until detailed elements were being fitted to the design.

The new process, for context-sensitive design, engages stakeholders in the major design control decisions, at the very outset of the process.



The transect arranges all the possible settings of a road into a few distinct categories, ranging from the most rural to the most urban. With the setting clearly defined, road designers can develop plans that fit and improve the value of their surrounding. Pennsylvania has a wide range of settings, varying from pristine rural environments to highly developed towns.



Urban Activity Center



Village Center



Neighborhood Center

Transect points define the different types of settings along a road corridor. This set of 7 points, illustrated graphically, established the range of desired settings in Alachua County, a Florida county with development patterns similar to many areas of Pennsylvania.



Industrial

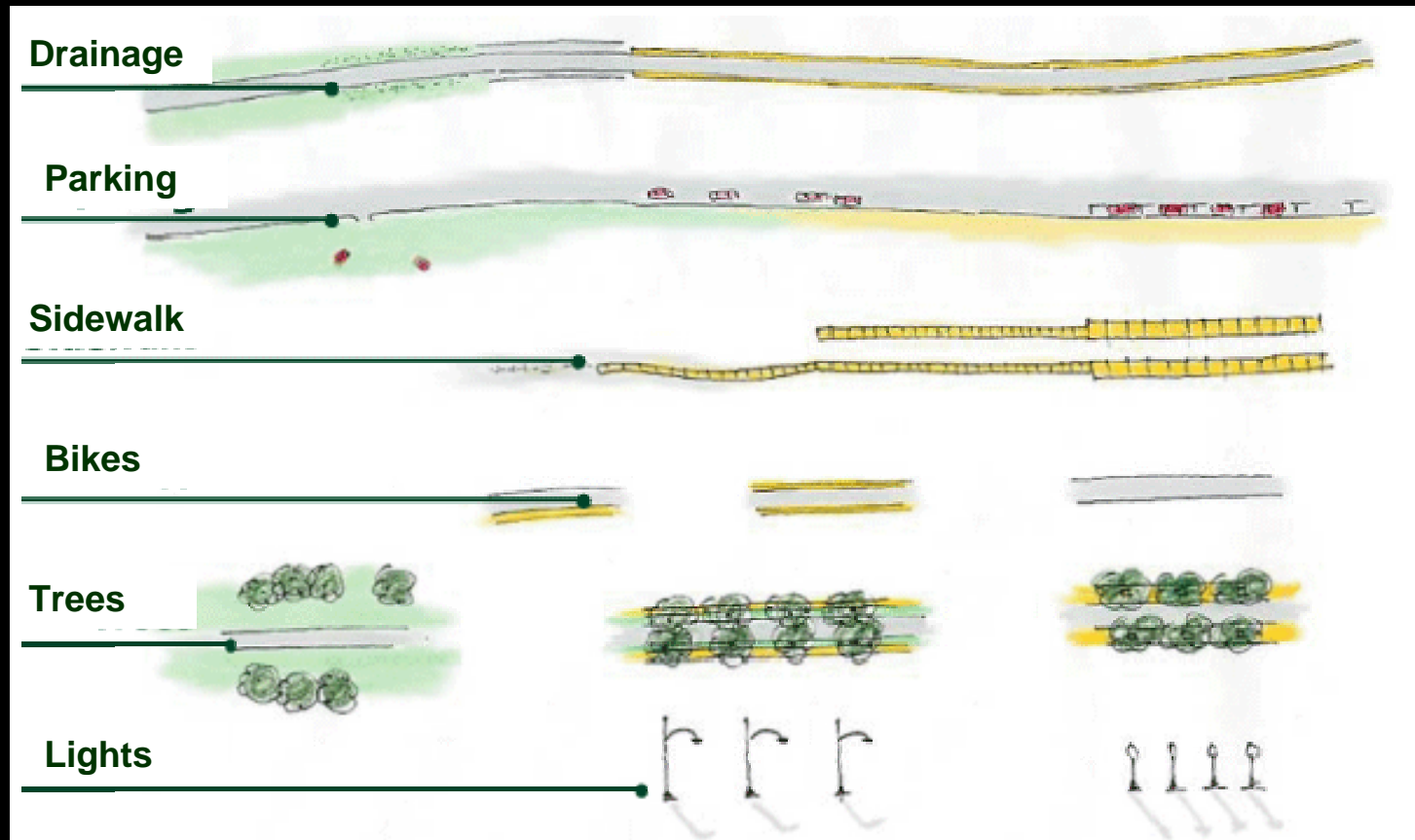


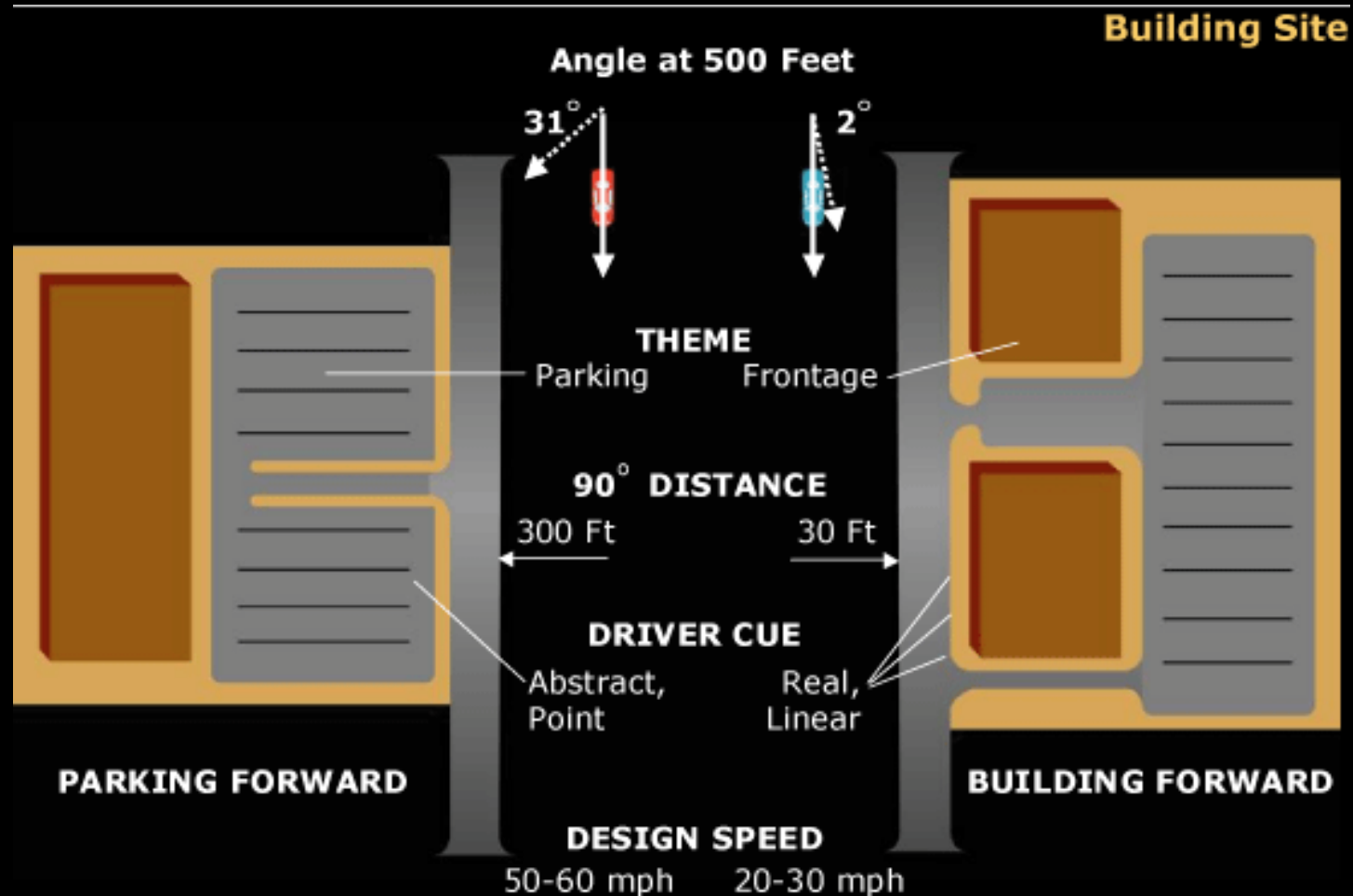
Rural Cluster



Rural Agricultural Area

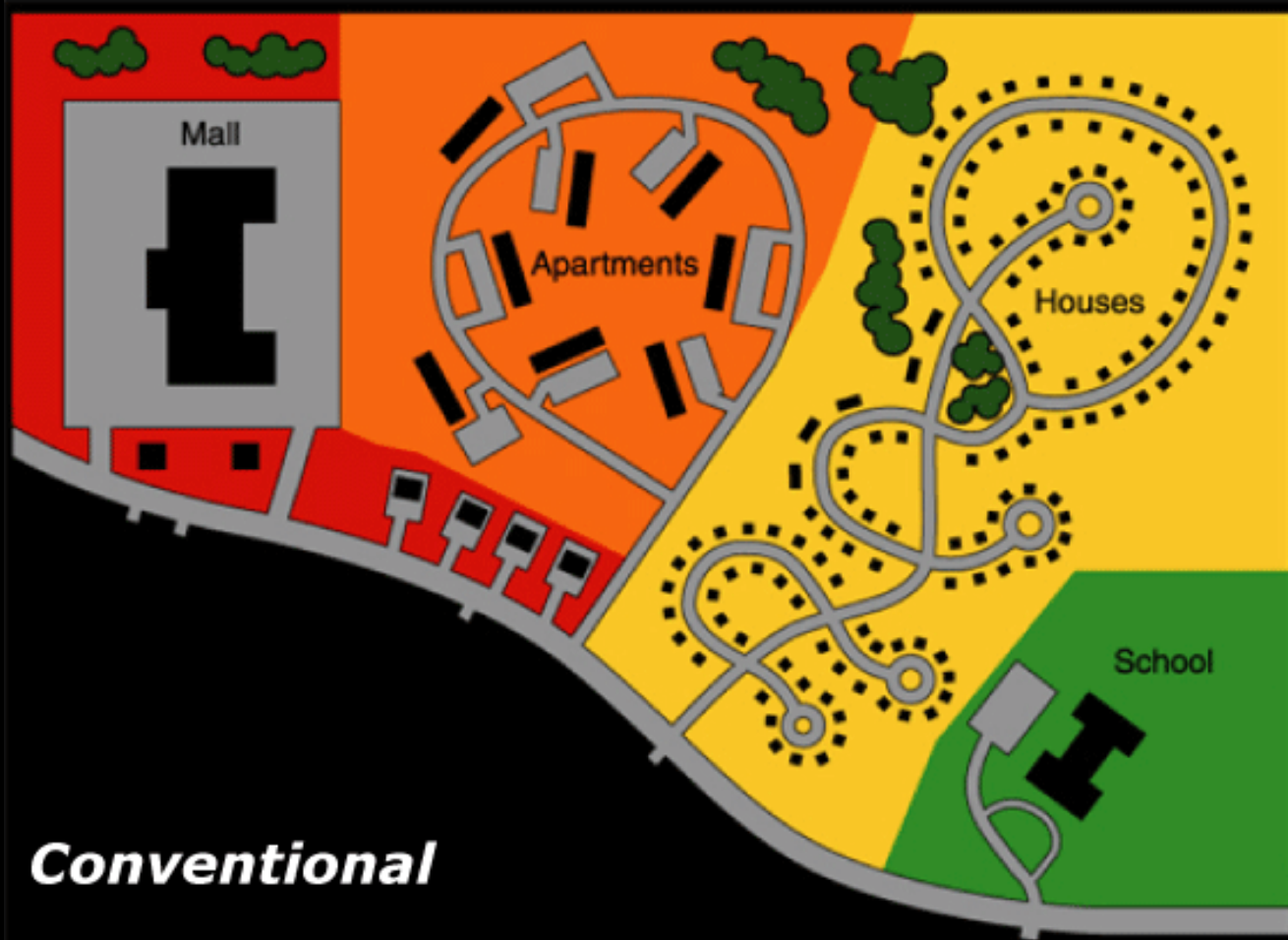
Cross-section elements are the design details that establish much of the road's appearance and character. The design of all cross-section elements should vary, according to the setting ("transect point") of the specific segment of road being designed. The failure to observe the distinction and settings accounts for much of the "one-size fits all" inappropriateness of many recent road designs.





Building placement, while not a roadway design element, has a critical impact on the character of the road. The conventional suburban building placement, with the buildings deeply set back and with parking adjacent to the road, permanently relegates the road to a blighted suburban strip commercial character. Further, this character ensures high operating speeds (50-60 mph) for vehicles, further undermining any "main street" or "town center" atmosphere.

The same development, arranged so that buildings front the road and parking is concealed in the rear (i.e., same amount of buildings and parking) produces a road with fundamentally different character and low (20-30 mph) operating speeds for vehicles. These conditions permit attractive character, such as main streets or town centers.

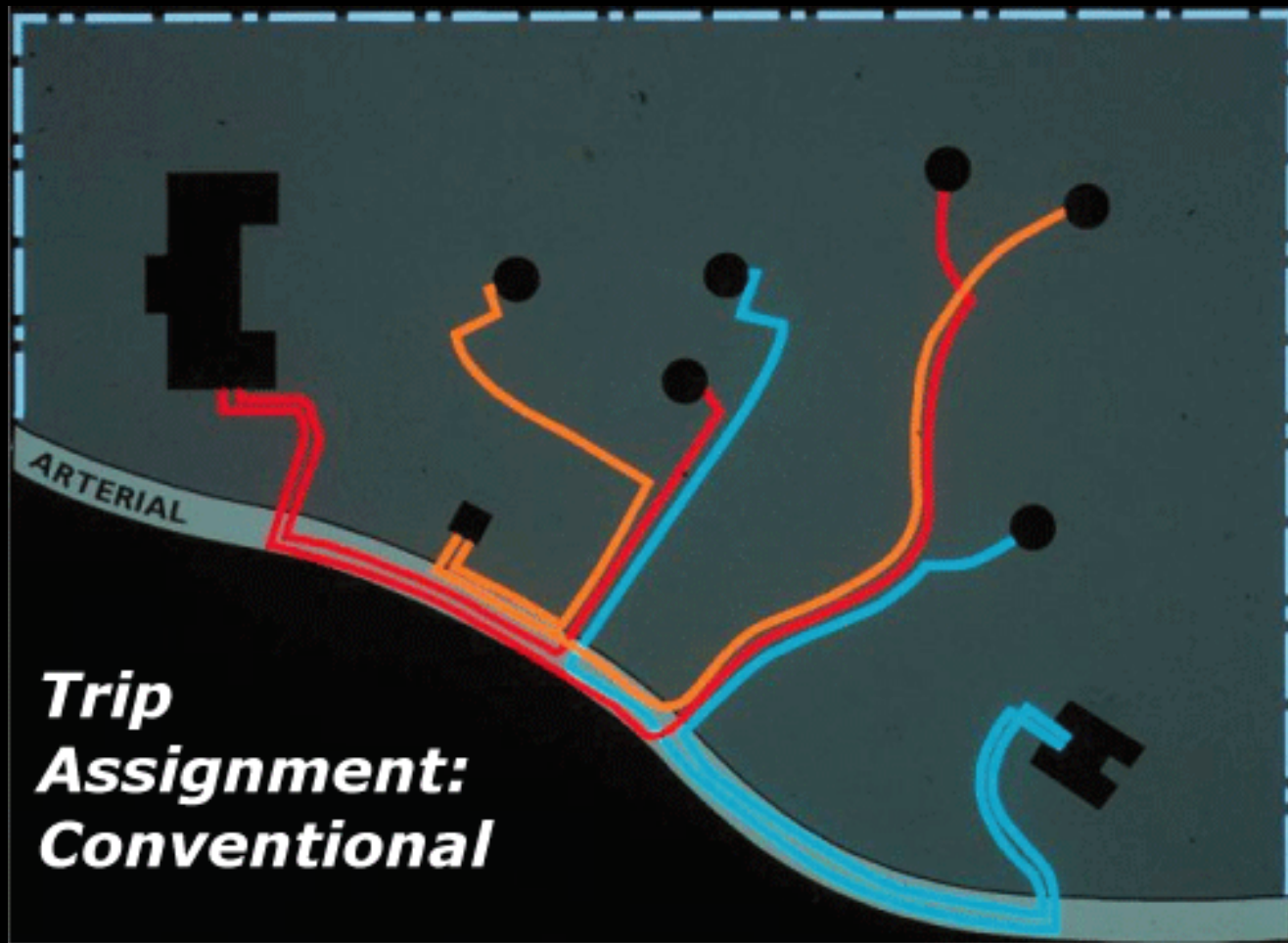


Conventional

Conventional Development Pattern: Until recently, the pattern for almost all new growth in many parts of Pennsylvania. Land uses are single purpose, and physically separated from each other with no connecting roadways. All travel between land uses requires use of the fronting arterial highway.



The "traditional" pattern of development is both the historical pattern of development as well as the pattern now advocated for "smart growth" development. In this development pattern, land uses are arranged along a street and block pattern, with different land uses immediately adjacent to each other. Most travel between different land uses is made on the local, highly connected street network.



The travel pattern on the conventional suburban pattern of streets focuses all travel onto the existing arterial highway. Little or no travel is accomplished on local street network, since the new developments are not connected with local streets. The traffic consequence is congestion and delay on the arterial highway, even as the surrounding land is still largely undeveloped.

