Summary of Secondary Street Acceptance Requirements (SSAR)

What is SSAR?

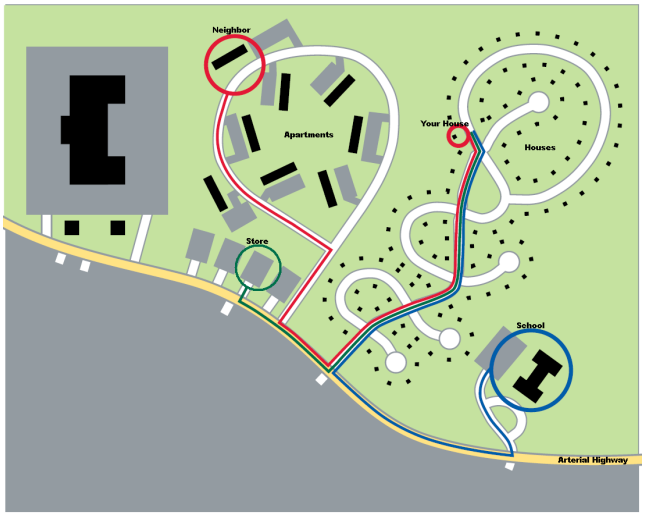
The Secondary Street Acceptance Requirements (SSAR) are the rules that govern the development of streets for acceptance by VDOT for perpetual public maintenance. The regulations are a result of legislation introduced at the request of Governor Kaine and unanimously adopted by the General Assembly during the 2007 session. The most significant aspect of the revised regulation is that it introduces a change in public policy regarding the design and function a street must meet in order to be added to the state system. In essence, the regulation revises the public-private partnership between the Commonwealth and the development community. The Commonwealth agrees to maintain streets built by developers and accepted by counties to the benefit and marketability of their developments. In exchange, the developer must build streets that connect with the surrounding transportation network in a manner that enhances the capacity of the overall transportation network and accommodates pedestrians, while also minimizing the environmental impacts of stormwater runoff by reducing the street widths allowing the use of low impact development techniques. This is a significant departure from the previous policy of accepting any street that served three or more homes and was built in conformance with state design and construction standards without regards to the impact on the overall transportation network. In addition to this policy change, the new regulation also updates the inspection and surety processes and fees in an effort to streamline the process and better align costs.

What are the policy goals of the SSAR?

These changes were initiated to address a number of problems with the previous street acceptance process. First, the public funds available to support transportation are not adequate to meet the ongoing demands being placed on the system by isolated insufficiently connected roadway networks. The previous acceptance requirements created an unsustainable cycle of street development and acceptance into the state system without consideration of the overall public benefit provided by these streets.

The new regulations work to provide a more sustainable balance by ensuring that streets accepted into the state's highway system are designed in a manner that better supports the function and efficiency of the transportation system as a whole. The primary ingredient in the new approach is the interconnection of local streets between developments. Developing streets that are well connected to the existing local network allows local trips to be made without placing unnecessary burdens on major roadways. Further, interconnected local street networks help facilitate multimodal trips that reduce the burden placed on all roadways. Consider the graphic on the following page that displays a representative development pattern prevalent today. Because streets in the developments do not connect, trips are forced to use the major roadway in order to make the frequent trips to adjoining neighborhoods, schools, or businesses. Failure to provide these direct connections ensures that the major roadways in the area carry a greater burden than would otherwise be necessary had these connections been provided. Overburdening

the major roadway may result in operational problems that would require costly improvements to intersections and/or the corridor as a whole. Additionally, the lack of direct connections presents a significant obstacle for pedestrians and bicyclists that are forced to follow indirect routes not well suited for pedestrian and bicycle travel.



The aerial photo below shows the development pattern around a school in southwest Virginia. Many of the streets end in cul-de-sacs that fail to connect adjoining neighborhoods to each other and also do not connect to the adjacent school. Even the local school trips are required to use the major roadway. This roadway's primary purpose is to serve as a regional US route connecting multiple regions of the state and to serve as a major connecting route within the greater urban area. The reliance on this roadway for local trips is unsustainable. The failure to include pedestrian and bicycle accommodations into the design of these streets coupled with the failure to connect local streets to one another act as major deterrents to multimodal transportation. This places an avoidable burden on the major roadway.

In contrast, an interconnected network of streets provides for efficient trips within the neighborhood and more appropriately accommodates pedestrian, bicycle, and transit oriented trips. By providing an interconnected network of streets capable of accommodating local trips

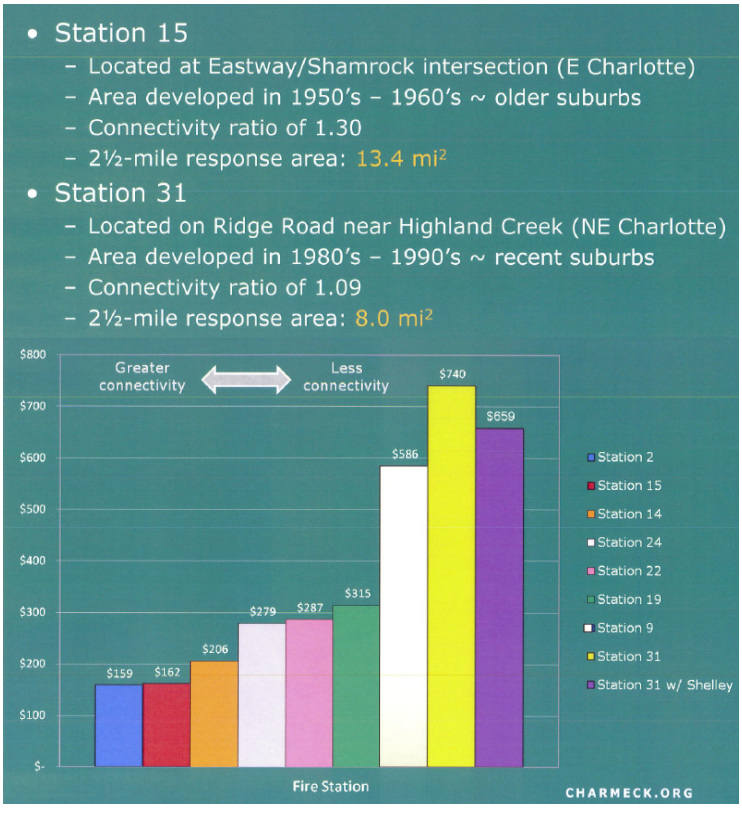
on local streets, major roadways can be preserved for serving longer trips resulting in a more efficient transportation network. This improved efficiency reduces the need for costly roadway improvements such as signalization and lane widening.

What benefits will these changes provide?

The interconnection of these local streets disperses trips throughout the network allowing each street to carry a well distributed portion of the demand and preventing any of the residential streets from being overburdened. The interconnection of the local street network provides direct and alternate routes for motorists that disperses traffic throughout the system which enables the use of a narrower street design. The narrower streets results in a reduction of impervious surface area and stormwater runoff. Additionally, the narrower width helps manage vehicle speeds resulting in slower operating speeds. These reduced operating speeds are appropriate for residential and mixed use areas, and help address a major concern of many citizens – speeding on local streets. These narrower streets effectively provide built-in traffic calming that is more compatible with the neighborhood street environment. This translates into an improved quality of life in residential areas where slower speeds improve safety and support walking, biking, safety and enhanced community interaction.

Increased connectivity of the local street network will allow revisions to VDOT's street design standards. The revised design standards allow for narrower streets than were allowed in the past. These narrower street widths will play a significant role in reducing vehicle speeds through neighborhoods. Additionally, these narrower roadways will reduce the amount of stormwater runoff. While the streets are narrower, they meet the nationally accepted AASHTO minimum design standards for the design of roadways.

In addition to the benefits of increased efficiency and overall capacity of the transportation system, increased connectivity can have other benefits for local governments. These benefits include reduced local service costs, enhanced response times for emergency responders, and a redundant transportation network that is better positioned to respond to temporary detours and other emergency demands.



A study of Charlotte-Mecklenburg County, North Carolina fire services compared the cost to serve areas with a connected street network with areas that did not have connected street networks. The study

concluded that a connected street network could reduce the cost of provide fire service and increase the area served by individual stations. In particular, the study found that the annualized life cycle costs per household for a fire station located in an area with a connectivity ratio of 1.3 was $206 while the same costs for another station located in an area with an index of 1.09 was $740. The connectivity ratio referenced in this study is calculated slightly different than the SSAR connectivity index values.

How were these requirements developed?

As noted above, this revised regulation was a result of a gubernatorial initiative to improve the coordination between transportation and land use in an effort to achieve a more sustainable and efficient transportation network. The 2007 General Assembly unanimously adopted Senate Bill 1811 that added § 33.1–70.3 to the Code of Virginia and directed the Commonwealth Transportation Board to create the SSAR to replace the previous Subdivision Street Requirements. The Code specifically includes three legislative goals for the SSAR to achieve. These goals are:

1. Ensuring the connectivity of road and pedestrian networks with the existing and future transportation network;
2. Minimizing stormwater runoff and impervious surface area; and,
3. Addressing performance bonding needs of new secondary streets and associated cost recovery fees.

In achieving these goals, the new regulation will serve as a vital component in the planning, design and delivery of a street network that will promote livability, a more efficient transportation network and the creation of more transportation choices. To guide the development of the SSAR, the VDOT Commissioner formed a Technical Committee and the Secretary of Transportation formed an Implementation Advisory Committee. The Technical Committee was composed of staff from the Secretary's office and the Department of Transportation. The Implementation Advisory Committee was composed of representatives from local governments, developers, interested groups, associations, and private firms. In addition to working with these committees, input was received during 21 regional meetings and 10 meetings of the Commonwealth Transportation Board (CTB).

Public benefit requirements – connectivity, pedestrian accommodation & public service

In the past, streets have been accepted into the state system without consideration of the overall public benefit provided by the streets. The SSAR require streets to meet certain public benefit criteria to be considered for acceptance into the VDOT-maintained public street network. The previous standards required that each street serve a public purpose (e.g. serving a minimum of three dwellings units); however, it did not have the same level of expected public benefit. The new SSAR requires streets to also meet quantified connectivity requirements, be designed to accommodate pedestrians while continuing to a public purpose (e.g. serving three or more dwelling units). These requirements are collectively known as the public benefit requirements and they must be met in order for streets to be added to the state system. The specific requirements are graduated based on the location and density of the proposed development.

Under the SSAR, the streets within a development or phase of a development will generally be considered for acceptance as a single addition to the state system, or a "network addition."

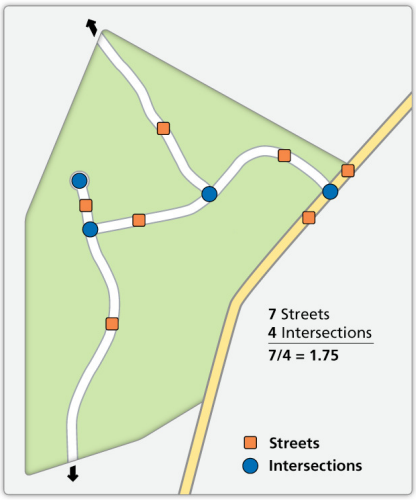
To be accepted for perpetual public maintenance, each network addition will need to provide:

- Connectivity: new streets must connect to adjacent properties in multiple directions and must satisfy a quantified street connectivity index established for the area type being served.
- Pedestrian accommodations: new streets must provide appropriate pedestrian accommodation. The type of accommodation is dependent upon the density of the development being proposed.
    - Developments with lot sizes less than ½ acre or a floor area ratio ≥ 0.4 require accommodations along both sides of the street.
    - Developments with lot sizes between ½ acre and 2 acres require pedestrian accommodation along one side of the street or within the development, such as a connecting trail system.
    - In both instances the accommodation may be a sidewalk, trail or other facility that provides equivalent pedestrian mobility.
- Public service: new street networks must serve a sufficient number of homes, businesses, and/or overall traffic demand that classifies the streets as being public in nature.

A more detailed description of each requirement follows.

What is connectivity?

The goal of the connectivity requirements is to ensure that the street networks of developments and phases of developments connect to existing communities and allow for future connections to adjacent property. These connections will create a more efficient transportation network. New streets must connect to adjacent properties in multiple directions. Additionally, in compact and suburban areas the overall network must satisfy a quantified street connectivity index value established for the area being served by the development. The connectivity index is defined as follows:



$$Connectivity\ Index = \left[\frac{\#\ of\ Street\ Segments}{\#\ of\ Intersections} \right]$$

The resulting value is a measure of the density of connections provided by a proposed network. The street network shown to the right has a connectivity index value of 1.75. This value is obtained by dividing the total number of street segments (denoted by the orange squares) by the total number of intersections (denoted by the blue dots). For the purposes of the connectivity index, cul-de-sacs are counted as intersections.

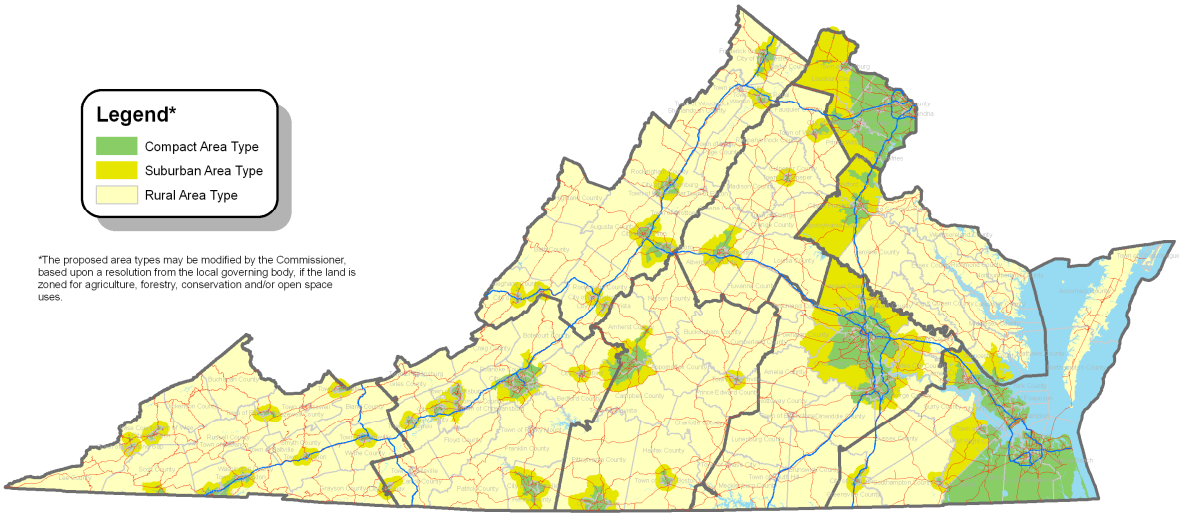
While the SSAR will be consistently applied across the state, the regulation recognizes that the Commonwealth's density and development patterns are very diverse. Because of this, the

regulation does not take a "one size fits all" approach. The connectivity requirements are graduated based on the location of the proposed development. The state is divided into three area types: compact, suburban, and rural. The perimeter of these area types will be consistent with federal, regional, and local planning boundaries including the following:

- Smoothed urbanized area
- Smoothed urban cluster
- Metropolitan planning organization study area
- Urban development areas
- Transfer of development rights receiving areas
- Within two miles of a smoothed urban cluster, urban development area or transfer of development rights receiving area

The regulation includes a process for local governments to work with VDOT to officially alter the perimeter of the area type when specific situations warrant such an action. The VDOT Commissioner, upon a resolution from the local governing body demonstrating good cause, may approve changes to the perimeter of the area type; however, approval of such modification requests is not assured and will be closely reviewed on an individual basis. See pages 16 and 17 in the regulation for more information on this issue.

The state map below displays the approximate location of these area types:



The requirement that new streets connect to adjacent properties in multiple directions applies to all area types while the connectivity index value requirement is dependant upon the area type in which the development is being proposed. The required values are as follows:

Compact Area: Connectivity Index $\geq$ 1.6

Suburban Area: Connectivity Index $\geq$ 1.4

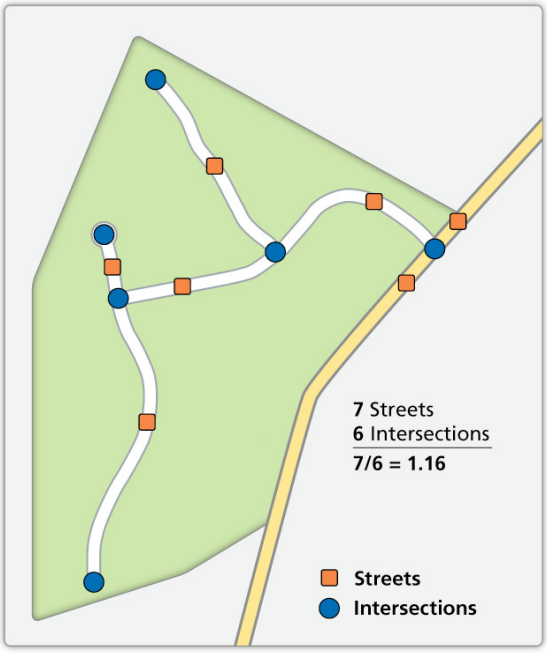
Rural Area: No Connectivity Index Requirement

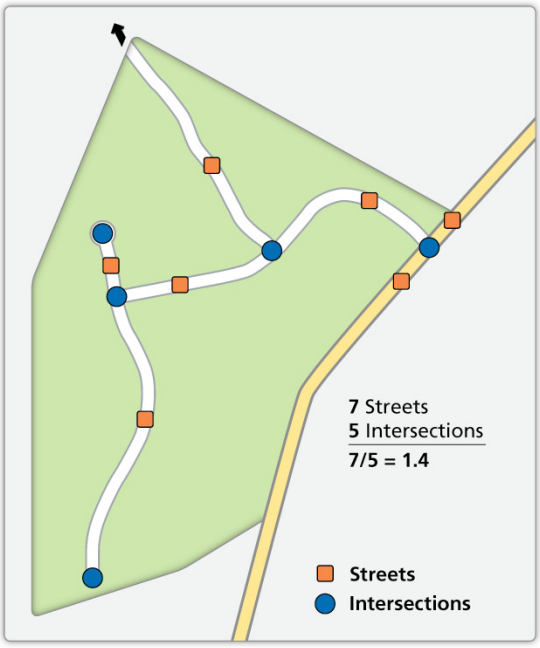
The example network shown below is a typical subdivision pattern that might have been proposed under the 2005 Subdivision Street Requirements. The connectivity index of the proposed development can be calculated by:

$$Connectivity\ Index = \left[\frac{\#\ of\ Street\ Segments}{\#\ of\ Intersections}\right] = \left[\frac{7}{6}\right] = 1.16$$

As shown in the graphic below, the resulting value is 1.16; therefore, the development would fail to meet the minimum required values in compact and suburban area types. Additionally, the proposed development plan fails to meet the requirements for connecting to adjacent properties in multiple directions. While the connection to the major street is considered as one such connection, no other connection is planned; therefore, it fails to meet this requirement. Under the new SSAR, this development could not be accepted into the state system.

If one of the streets in the development was extended to connect with property adjoining the development, the number of intersections would be reduced by one and thus the resulting connectivity index value would increase to 1.4. This value meets the minimum connectivity index value required in suburban area types. Additionally, it satisfies the requirement that the development connect to adjoining properties in multiple directions. However, if this development was proposed in a compact area type, it would not meet the minimum connectivity index requirement for compact area types of 1.6.





By connecting an additional street within the proposed network to an adjoining property the number of intersections is reduced to 4. This results in a revised connectivity index value of 1.75 which meets the requirement in both suburban and compact areas. Lastly, the network in the next figure has a connectivity index value of 1.6 which meets the index value requirements; however, it fails to meet the overall connectivity requirement because it does not connect streets

to adjoining properties in multiple directions. Street networks with one-way in and one-way out place a significant burden on the major street network and do not enhance the overall capacity of the transportation network.

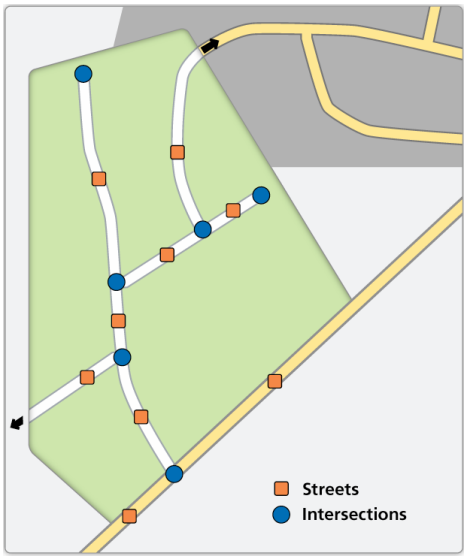
The regulation recognizes that connectivity cannot always be achieved because of various physical constraints and special situations. To streamline the exceptions involving physical constraints, the regulation allows an automatic exception to address the following constraints:

- Railroad tracks
- Limited access highways
- Navigable river or a standing body of water > 4 feet deep
- Grades > 20%
- Select government owned properties (see regulation)
- Conservation easements accepted by the Virginia Outdoors Foundation

Additionally, special exceptions may be authorized by the District Administrator for situations that require consideration on a case-by-case basis such as unique characteristics of a site including jurisdictional wetlands and cluster developments, or incompatible land use of adjoining property. It is important to note that the regulation specifically states that retail, office, and residential uses are considered to be compatible.

The regulation requires developments to connect to existing stub outs. In the event that a development is not connected to an existing stub out that is maintained by VDOT and the local governing body approves the subdivision or development plan and requests that VDOT accept the corresponding secondary streets, there will be a financial consequence to the local government for this action.

In these situations, VDOT will add the future connection of this stub out as the Commissioner's top priority for expenditure of improvement funds for the locality's six-year plan for secondary roads. This provides the local government with the option of allowing the developer to construct a connection to the existing stub out or having the secondary road allocations being used to construct the connection. Providing connections between publicly maintained streets in neighboring developments is more cost effective and sustainable than relying solely on projects to widen major highways.



What constitutes public service?

To be considered for inclusion into VDOT's secondary street network, individual streets must meet one or more of the following criteria:

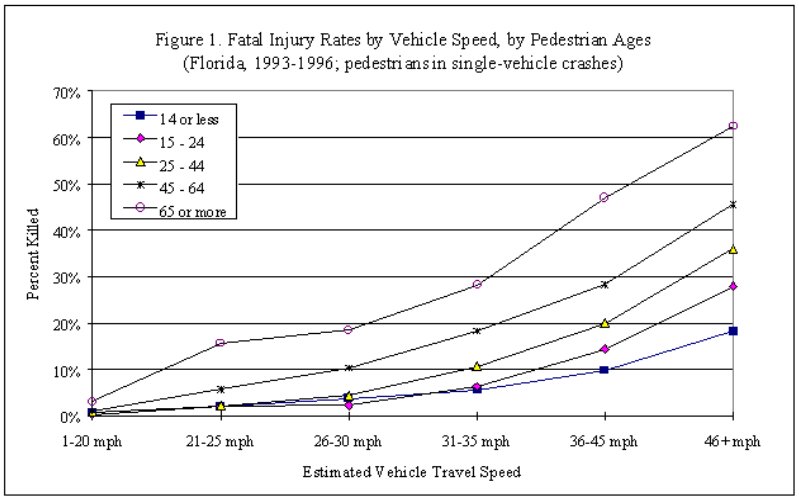
- Serves three or more occupied units
- Serves a school or other similar facility open to public use
- Constitutes a missing link in the network
- Is a stub out street that facilitate future connections to adjoining properties
- Carries at least 100 VPD and is in the locality's comprehensive plan
- Satisfies specific requirements regarding acceptance of streets within multifamily developments, retail shopping complexes, and/or acceptance of streets in nonresidential land uses in advance of occupancy of three or more units of varied proprietorship. See pages 18 - 20 of the regulation for more details on these specific requirements.

How will this change design standards?

Under the 2005 Subdivision Street Requirements local streets were commonly designed and built to be 36 – 40 feet wide. These widths combined with the off-street parking requirements of many local ordinances and VDOT requirements often resulted in an effective local street lane width of 18 feet. This width results in large impervious surface areas that exacerbate stormwater runoff and encourages higher vehicular speeds that are generally inappropriate in residential and mixed use areas.

A set of key elements that will contribute to the implementation of the SSAR are the revised elements of the roadway's geometric design. The revised geometric design standards generally allow for narrower streets (24 to 29 feet wide for local streets) than were allowed in the past. These narrower street widths will play a significant role in reducing vehicle speeds through neighborhoods. Additionally, these narrower roadways will reduce the amount of stormwater runoff due to their smaller impervious area. While the streets are narrower, they meet the nationally accepted AASHTO minimum design standards for the design of roadways.

The direct link between speed and safety has been clearly drawn in many studies. Speed is a very important factor for determining the severity of crashes involving pedestrians. The National Highway Traffic Safety Administration has produced extensive findings in this area and has demonstrated compelling evidence of the importance of speed as it relates to injuries and fatalities among pedestrians. One such study's results (DOT HS 809 021 October, 1999), shown in the figure on the right demonstrate clearly the linkage between pedestrian injuries and fatalities and speed.



A study titled "Residential Street Typology and Injury Accident Frequency" by Swift, Painter, and Goldstein 2006 found a strong correlation between street widths and accident frequency suggesting that narrower streets in residential areas can result in safer operation than standard width local streets.

Additional key elements of the new SSAR include added flexibility regarding parking requirements and placement of stormwater best management practices or devices (also known as low impact development techniques) within the right of way.

How are inspections, fees, and sureties being changed?

The SSAR have also revised the surety bonding and fee structure from what was found in the old regulations. The length of surety (1 year) in the revised regulations is the same as it is today for streets inspected using the normal VDOT staff inspection process. However, the regulation provides additional flexibility to local governments and developers to use alternate means of inspection that do not rely on VDOT staff. As in the previous regulation, a local government may initiate a local certification process where, if desired by the local government, the locality would take on the role of street inspection. Currently Prince William County and Fairfax have set up such programs. A new provision gives developers the option of hiring a third party to inspect the streets for VDOT. In both of these situations the surety bonding requirement would be waived and the associated VDOT inspection fees would be reduced by 75%. The maintenance fee is eliminated and the fee covering inspection costs is separated from the administrative cost recovery fee.

When does the SSAR go into effect?

A transition period will be in effect until July 1, 2009. During this period, developer's may choose to process street acceptance requests under the older 2005 Subdivision Street Requirements or the new 2009 Secondary Street Acceptance Requirements. However, it is important to note that these regulations cannot be mixed. The 2009 SSAR must be used after July 1, 2009. Developments approved prior to July 1, 2009 may use the former requirements. Additional grandfathering provisions exist for area type changes and specific proffered conditions. For more details on these grandfathering issues, please reference page 10 of the regulation.

How can I get more information about the SSAR?

The new SSAR is the result of specific public policy objectives requested by the Governor and unanimously supported by the 2007 General Assembly. They have been structured to meet the required goals of the legislation that include:

1. Ensuring the connectivity of road and pedestrian networks with the existing and future transportation network;
2. Minimizing stormwater runoff and impervious surface area; and,
3. Addressing performance bonding needs of new secondary streets and associated cost recovery fees.

Clearly, this public policy change will have implications on the development process and the transportation network. If you would like to learn more about the specifics of the SSAR visit VDOT's website at http://www.virginiadot.org/projects/ssar/.