

## SECTION 6

### TRAFFIC OPERATIONS IMPROVEMENTS

By enabling roadways to perform more efficiently, operational improvements increase roadway capacity, may reduce the need for expansion projects, and help preserve and maintain the existing infrastructure, which is a high priority at national and regional levels. Operational improvements, such as access management and improved signalization, can be very effective in reducing congestion. By facilitating traffic turns, merging, and other movements, operational improvements enhance both mobility and safety.

In comparison to capacity construction projects, most operational improvements can be implemented relatively quickly and at a low cost. Although congestion is an area-wide phenomenon, operational improvements are especially effective on arterials, such as Alexandria Pike. Before the interstate highways were constructed, it was arterials — mostly federal and state highways — that determined the locations of major travel origins and destinations, and these facilities continue to shape current travel patterns. The region's arterial system accounts for about 35% of daily vehicle miles of travel and is critical to regional mobility.

As development and single-occupant vehicle (SOV) travel have increased, the region's arterials have become more congested and less efficient. Proliferation of curb cuts (driveways), frequent and improperly spaced traffic signals, inadequate turn lanes, and other factors have reduced arterials' ability to move traffic.

As curb cuts and cross streets have multiplied on arterials, they have also reduced safety. Every accelerating, decelerating, or turning vehicle increases accident risk. Typically, more than half of all accidents occur at intersections or are access-related. As traffic volume increases, so does the potential for accidents from conflicting maneuvers.

Another consequence of development that impairs arterial performance is the use of traffic signals to move vehicles safely through intersections. Every signalized intersection reduces arterial capacity because some green time is set aside to serve the intersecting street. Frequent and poorly spaced traffic signals can reduce roadway capacity by more than 50%.

Where curb cuts, cross streets, and traffic signals are already in place, their adverse impacts can be mitigated by a variety of operational improvements. On arterials where development is pending or just beginning, arterial capacity can be preserved and mobility problems can be mitigated by a preventative approach.

### Access Management in Developing Areas

In developing areas, such as the portion of US27 south of East Alexandria Pike, access management is fundamental to preventing the mobility and safety problems caused by multiple curb cuts and traffic signals. Access management is also appropriate for developed areas, but it takes a different approach, as discussed in the next section. Access management controls the design and operation of driveway and street connections onto a highway. This control is achieved by public plans or policies aimed at preserving the functional integrity of the existing roadway system.

In managing vehicular access between the public roadway system and adjacent private property, access management may address:

- The number, location, and design of private access points
- The frequency and spacing of cross streets and signalized intersections
- The addition of turn lanes or the prohibition of turns
- Land planning and development activities
- Safety and operational issues such as sight distances and corner clearances

Access management has been demonstrated as an effective means of reducing congestion and improving safety. A Florida study found that travel delays during peak hours, an indicator of congestion, decreased by as much as 76% after half the median openings were closed. In Colorado, case studies of access management applications on urban and suburban arterials show crashes reduced by 20% to 60%. According to the Ohio Department of Transportation, access management can increase travel speeds as much as 50% and reduce accidents by as much as 50%.

There are a number of means by which units of government can implement access management, including the following:

- **A corridor access management plan**, which is formally adopted by the appropriate units of local government.
- **Case-by-case negotiation**, in which a governmental agency negotiates with developers and landowners on a case-by-case basis
- **Access management regulations or ordinances**, that are legally enforceable, can be adopted as policy or planning tools for all lands and roads under a local government's jurisdiction
- **Planned unit development and/or subdivision regulations**, which incorporate language ranging from specific and detailed requirements to simply recognizing access management as a legitimate governmental

function for which authority is vested in an appropriate official or agency, such as the city public works director or the county engineer.

In partially developed or developing areas, access management focuses on preserving roadway capacity and functional integrity. Even as adjoining property approaches full development, access management applications can minimize an arterial's loss of roadway capacity and maintain a high level of safety.

#### Optimizing the Existing System

For arterials in developed corridors, such as US27 north of East Alexandria Pike, access management is one of several measures that can be applied to improve traffic flow. Other operational improvements that may be appropriate include improvements to signalization and spot or localized improvements such as traffic channelization, one-way streets, improved lighting and signage, and intersection improvements (left or right turn lanes, or increasing the radius of corners to facilitate the movement of trucks and buses through the intersection).

In developed corridors, the focus of access management is on reducing the potential for additional congestion from new projects and moderating existing congestion problems.

Approaches for managing access range from simply addressing new access points to retrofitting existing roadways, which can be effective in the most heavily developed and congested arterials. Retrofit plans may involve constructing new facilities such as access/service drives, providing cross-access between parking lots, or consolidating or relocating existing driveways.

In addition to access management, improvements to signalization are often effective means of improving traffic flow in developed corridors. Since computerized traffic signal systems have become available, options have increased for reducing congestion by applying and coordinating progressive signal systems. On a corridor, area-wide or multi-jurisdictional basis, centralized networks may involve dozens or even hundreds of signalized intersections.

