

EXECUTIVE SUMMARY

The Danville-Pittsylvania Metropolitan Planning Organization (MPO) in cooperation with the Virginia Department of Transportation, City of Danville, and Pittsylvania County has engaged URS Corporation to develop the U.S. Route 58 West (Martinsville Highway) Access Management Study and Plan. The goal of the study is to define a set of measures for maximizing the corridor's capacity and safety through planning and implementing a series of access management measures.

Studies have shown that the corridor is a major commuter route into the metropolitan area. It will also be a key route for employees accessing the proposed Mega Park.

This access management study is intended to provide the MPO and local governments with a detailed planning level assessment of the optimal strategy for preserving capacity and safety. This final report documents recommendations on both improvements and access management measures. The study provides the MPO and the County with recommendations that, with the cooperation and support of the corridor's key stakeholders, can be incorporated into local plans and policies.

EXISTING CONDITIONS

Volumes and Service Levels: Existing conditions on U.S. Route 58 West were documented using traffic count data collected in the field at 11 intersections and at the interchange ramps with the Danville Expressway. Capacity analysis is used to determine a Level of Service (LOS) for a given intersection, and the analysis procedures differ depending upon the type of traffic control at the intersection - signalized or unsignalized. The analysis shows that during both peak hours, both signalized and unsignalized intersections operate with adequate service levels (LOS C or better). In addition, at the interchange with the Danville Expressway, all movements to and from U.S. Route 58 are operating with excellent service levels - LOS A. Moreover, the results of the queuing analysis indicate that vehicle queues generally do not exceed 4 vehicles in length (approximately 100 feet) at any of the intersections.

In summary, the analysis of existing conditions did not indicate the presence of any deficiency related to roadway or intersection capacity. **Safety:** Crash records for the years 2005-2007 were reviewed and the results indicated that crashes are not a severe problem on the corridor. A total of 63 crashes were reported on U.S. Route 58 between Long Circle Road and Westover Drive. On U.S. Route 58 the crash rate and injury crash rate are moderately higher than the same statewide rate for roadways with the rural principal arterial functional classification. Crashes have also occurred at intersections, but not at a frequency or severity that would indicate hazardous conditions.

The generally higher crash and injury rates can be attributed to a segment of road that has rolling terrain, little to no paved shoulders, lack of turn lanes, and poor access management.

While a corridor-wide perspective on crashes does not generate cause for concern, there are two areas where crash records indicate a cluster of higher crash frequencies: 1) between Westover Drive and Berry Hill Road/Meadowview Drive, and 2) between Horseshoe Road and Grays Park Road (East).

ENVIRONMENTAL RESOURCES

Resource Inventory: A detailed scan of environmental resources in the U.S. Route 58 West corridor study area was conducted, and known resources were mapped.

During the field reconnaissance, the archaeological sensitivity of the project area was also assessed. Generally, the project area is considered to have a low potential to contain intact archaeological sites. Given the nature of the proposed access management measures, it is unlikely any improvements would be considered capable of generating an adverse impact to cultural resources.

Resource Mapping: The baseline data were used to develop alternatives while avoiding major environmental constraints. Soils, stream, and census data were further manipulated to enhance the usefulness of the mapping. USGS topographic quadrangle blue line streams were digitized to improve the reliability of stream layers.

YEAR 2035 FORECASTED CONDITIONS

Forecasts of year 2035 traffic volumes were developed using the travel demand modeling software and the Year 2035 Danville-Pittsylvania Area travel demand model. By the year 2035, volumes on U.S. Route 58 West are forecast to grow approximately 170% on the segments east of Pine Lake Road and by approximately 140% on the segments west of Pine Lake Road. A major factor in the high rate of forecasted volume growth is the Mega Park, which will become a center of employment, and U.S. Route 58 West will serve as a route of choice for many of the employees commuting to and from the site.

Using the forecasted volumes, capacity analysis was conducted on the intersections previously analyzed under existing conditions. The results show that when compared with existing conditions service levels, five of the intersections are forecast to operate at deficient service levels (LOS E and F). The most severe deficiencies are forecast to occur at the U.S. Route 58 West intersections with Pine Lake Road and with Whispering Pines Road. Both locations exhibit LOS E and F, during opposite peak periods. At both intersections, a traffic signal is the most likely measure to address deficiencies - provided traffic signal warrants will have been met. However, traffic signal volume warrants are unlikely to be met at Pine Lake Road. Similarly, the intersections of Stony Mill Road and Grays Park Road exhibit a forecasted p.m. peak hour service level of E, but the forecasted traffic volumes do not indicate that traffic signal volume warrants are likely to be met.

In contrast, the intersection at Whispering Pines Road is likely to meet the 4-hour volume warrant. All other unsignalized intersection service levels are forecast at D or better. Under forecasted conditions the signalized intersection at Berry Hill Road/Meadowview Drive

exhibits minor increases in delay when compared with analysis results for existing conditions, and overall intersection levels of service remain at LOS B for both peak hours. Finally, the interchange movements at the Danville Expressway are forecast to exhibit adequate (LOS A or B) service levels during both peak hours. The findings of the year 2035 No Build Alternative analysis indicate that even with the forecasted growth in traffic volumes, service levels and vehicle queue lengths at intersections generally will continue to perform within adequate ranges. The poor service levels at several unsignalized intersection approaches are the result of motorists on the minor street approaches encountering delays caused by the increasingly heavy traffic stream on U.S. Route 58.

With growing volumes on the mainline arterial and volumes remaining relatively low on minor street approaches, emphasis must be placed on ensuring that the capacity of U.S. Route 58 is not diminished by the cumulative impacts of numerous closely spaced points of conflict.

PURPOSE AND NEED

In 2007 the Virginia General Assembly approved legislation authorizing VDOT to develop and publish regulations and standards for the management of access to highways maintained by VDOT. As stated in the regulations, the goals of access management are:

1. Reduce traffic congestion;
2. Help maintain levels of service;
3. Enhance public safety;
4. Support economic development;
5. Reduce the need for new highways;
6. Preserve investment in new highways; and,
7. Coordinate transportation and land use decisions.

Based on the regulatory definition of Access Management goals and on the analysis of existing and forecasted conditions, the purpose and need for the U.S. Route 58 West Access Management Study and Plan is defined as addressing the following issues:

1. Frequencies of crashes along two segments of U.S. Route 58 West have the potential to increase as traffic volumes and development pressures increase;
2. Capacity along the corridor should be preserved so that it can adequately serve traffic volumes associated with commuters to and from the Mega Park;
3. Pittsylvania County needs a guide for assisting property owners and developers with understanding the application of access management regulations along a Rural Principal Arterial, U.S. Route 58 West; and,
4. Pittsylvania County needs a guide for the prioritizing steps for bringing the corridor into compliance with the regulatory guidelines for driveway and median crossover spacing in a gradual and orderly manner.

DEVELOPMENT OF ACCESS MANAGEMENT MEASURES

Access Management on U.S. Route 58 West: As recommended in the *Long Range Transportation Plan*, an access management study and plan is to be developed for the U.S. Route 58 West Corridor in the MPO. VDOT provides guidance on access management in the publication *Access Management Design Standards for Entrances and Intersections*. This manual specifically provides spacing distances based on the functional classification and the posted speed limit for a road. The goal of the study is to define a set of measures for maximizing the corridor's capacity and safety through planning and implementing access management measures.

One of the key issues addressed in an access management plan is spacing of commercial entrances and intersections. Commercial driveways, median crossovers, and public road intersections were evaluated for compliance with VDOT access management standards. Residential driveways were not specifically addressed in this plan because of the high number and individual residential driveways serve a low volume. Emphasis has been placed on providing a strategy for managing future commercial driveway locations.

To provide for future access points serving development of future land tracts, proposed driveway locations have been shown for large (approximately 5 acres or more) undeveloped parcels with frontage on Route 58 West. Often this involved proposing a shared driveway with an adjacent parcel or locating the proposed driveway opposite an existing or proposed median crossover.

Median crossovers that do not meet spacing standards were identified, and these median crossovers should be considered for closure concurrent with development activity that includes installation of adjacent proposed median crossovers.

Turn lane warrants were evaluated throughout the corridor where traffic counts were conducted. Intersections were evaluated based on 2035 forecasted traffic volumes. Additionally, existing turn lanes were evaluated for compliance with current VDOT standards, which require a minimum of 200 feet of storage length and 200 feet of taper length. As a practice, the recommendation for the installation of left turn lanes is detailed in VDOT's *Access Management Design Standards for Entrances and Intersections* – "As a general policy, left-turn lanes are to be provided for traffic in both directions in the design of all median crossovers on non-access controlled divided highways using controls as shown."

Evaluation Criteria: A set of weighted evaluation criteria was developed and adopted by the Project Management Team. The evaluation criteria and weighting were developed prior to identifying improvements to avoid introducing bias in the selection process by adopting criteria and weights that would favor one improvement over another. A total of nine evaluation criteria were developed, each with a weighting from 1-3 (the higher weight indicating greater importance). A list of the evaluation criteria and the relative weights (in parenthesis) is as follows:

1. Capacity (3) – producing an acceptable (LOS C or better) level of service for ramps, freeway segments, ramp junctions with arterials and at signalized intersections.
2. System Performance (3) – a relative comparison of the performance of the overall system within the study area.
3. Safety (3) – address geometric and capacity factors related to the corridor accident rate by improving intersection capacity or removing conflicts.
4. Cost (3) – costs for each alternative were estimated and compared using year 2007 dollars as provided by VDOT.
5. Right Of Way Impacts (3) – the number of acres, residences, and other structures that are affected by alternative improvements.
6. Environmental Impacts (3) – the amount of wetlands, hazardous waste sites, Section 4(f) & 6(f) properties, and historic and cultural resources that are adversely impacted by alternative improvements. Environmental justice will also be evaluated.
7. Economic Impacts (2) – the value of each alternative in terms of travel time savings provided to motorists.
8. Financial Impacts (2) – the impact of funding proposed improvement alternatives has on the funding resources for all transportation improvements in the Danville-Pittsylvania area.
9. Consistency with Local Plans (2) – determining if the proposed improvements in each alternative are consistent with current local transportation and land use.

Access Management Recommendations: A set of access management measures was developed and reviewed by the Project Management Team for application along the U.S. Route 58 corridor. These recommendations are intended to serve as a guide in considering future development and redevelopment proposals. They should also be provided to interested property owners, developers and site designers to convey the general level of expectations for management of access along the corridor. Within this context, the recommendations should be viewed as a strategy for pursuing compliance with the standards and achieving the goals of VDOT's access management program. However, they should not be viewed as the only method, and private interests may propose alternative access management measures as part of specific site development designs so long as they comply with VDOT's access management standards.

It is important to consider that these recommendations are not intended for immediate implementation, but rather incorporated into site development (or redevelopment) proposals for providing access to and from U.S. Route 58. Recommended measures also may be implemented using public funds to address safety concerns or to leverage private economic development opportunities. In addition, turn lane recommendations are to be considered as a preliminary response to operational and safety concerns. Prior to installation, turn lane warrant analysis should be performed.

The recommendations are detailed in **Figures 9-12**, which depict the location of recommended measures beginning at the western terminus of the project study area. A general description of and justification for the individual access management measure is presented in **Tables 13-16**. The measures in **Figure 9** are described in **Table 13**; the measures in **Figure 10** are described in **Table 14**; the measures in **Figure 11** are described in **Table 15**; and, the measures in **Figure 12** are described in **Table 16**. It should be noted that several access management measures are shown in more than one Figure and Table. This duplication is a result of overlap on the underlying aerial photographs.

COST ESTIMATES

Cost estimates were prepared for each proposed improvement related to the access management segments of the corridor using VDOT Transportation & Mobility Planning Division's statewide planning level cost estimates developed based on year 2009 data. A total cost of program implementation of approximately \$5.8 million has been developed. However, it should not be inferred that the entire program is to be funded with public funds. Many of the recommended improvements are likely to be wholly or partially financed as part of private development activity.

FINANCIAL AND ECONOMIC IMPACTS

The *FY 2012 Six-Year Transportation Improvement Program (SYIP)* does not identify funds for any improvements in the U.S. Route 58 corridor study area through Fiscal Year 2017.

Extending the perspective beyond Fiscal Year 2017, the *Danville-Pittsylvania Area Long-Range Transportation Plan* identifies anticipated funding resources on an annual basis beginning in Fiscal Year 2010. The funding resources indicated that beginning in Fiscal Year 2016, construction funding for roadway improvements in the Danville-Pittsylvania urbanized area is anticipated to be approximately \$2.4 million per year.

The recommended program of funds for roadway improvements in the *Long-Range Transportation Plan* does not identify any specific project on the U.S. Route 58 corridor. However, the recommendations include a funding category identified as "Safety/Operational Improvements, " with \$4.5 million of anticipated funding through the year 2035.

In summary, for the use of public funds from VDOT to implement the U.S. Route 58 Access Management Plan, the *Long-Range Transportation Plan* provides a funding source. The *Plan* also anticipates that annual allocations will be prioritized with other safety/operational improvements in the MPO area located outside the U.S. Route 58 corridor. This funding approach is consistent with the intent of the Access Management Plan to be implemented in a gradual manner over time without a set schedule of prioritized projects.

No planning document forecasts a source of funds for privately funded improvements. The Access Management Plan is to serve as a guide for private development interests, indicating the expectations for bringing the corridor into compliance with VDOT's access management standards.

PERMIT EVALUATION

The Access Management Plan does not include widening of U.S. Route 58 nor do the recommended measures anticipate acquisition of right of way. The inventory of environmental resources do not indicate the presence of any constraints that are likely to compromise the ability of either VDOT, the County or private development interests to implement recommended actions.

PUBLIC INVOLVEMENT

The public involvement program conducted as part of the corridor study provided three opportunities for interested citizens and stakeholders to participate in the process. The first Citizens Information Meeting was held on Wednesday, July 12, 2011 between 4 p.m. and 7 p.m. at the Brosville Elementary School. The second Citizen Information Meeting was conducted on Tuesday, September 20, 2011, between 4 p.m. and 6 p.m. also located at the Brosville Elementary School. Finally, on Tuesday, November 15, 2011 between 2 p.m. and 4 p.m. at the Brosville Library an "open house" format meeting was conducted for key stakeholders.

In addition to citizen information meetings, a website was maintained to provide updated information to interested parties.

Finally, an opportunity for citizen input was provided at the MPO Board meeting on March 29, 2012 at which this study was accepted.