

# OLD LEE HIGHWAY TRANSPORTATION STUDY



**PREPARED FOR:**  
**THE CITY OF FAIRFAX**  
**DEPARTMENT OF PUBLIC WORKS**  
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**FAIRFAX, VIRGINIA 22030**

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# TABLE OF CONTENTS

PAGE

<b>EXECUTIVE SUMMARY</b> .....	ES-1
<b>INTRODUCTION</b> .....	1
Study Purpose .....	1
Project Study Area .....	1
Background .....	2
Methodology .....	3
<b>EXISTING CONDITIONS</b> .....	5
Land Uses .....	5
Streets and Traffic .....	5
School Zones .....	8
Bus Stops .....	9
Bicycle and Pedestrian Circulation .....	9
Landscaping .....	10
<b>CORRIDOR ISSUES</b> .....	11
Traffic Operations .....	11
Sight Distance .....	12
Bicycle and Pedestrian Circulation .....	12
Landscaping .....	13
<b>POTENTIAL IMPROVEMENTS</b> .....	14
Roadway Width .....	14
School Zones .....	14
Intersection Improvements .....	15
Bicycle and Pedestrian Improvements .....	15
<b>PUBLIC INVOLVEMENT</b> .....	17
Stakeholder Meetings .....	17
Public Workshops .....	17
Community Input .....	17
<b>FINDINGS AND RECOMMENDATIONS</b> .....	19
Short Term Improvements .....	19
Long Term Improvements .....	22
<b>APPENDIX A – Northern VA Regional Bikeway and Trail Network Study</b> .....	i
<b>APPENDIX B – Public Involvement</b> .....	ii
<b>APPENDIX C – Sight Distance Analysis</b> .....	iii
<b>APPENDIX D – Old Lee Highway Recommended Design Drawings</b> .....	iv
<b>APPENDIX E – Supporting Information</b> .....	v



# OLD LEE HIGHWAY TRANSPORTATION STUDY

## CITY OF FAIRFAX

### EXECUTIVE SUMMARY

The purpose of this study is to examine geometric and operational issues along Old Lee Highway from Layton Hall Drive to Ridge Avenue, as well as to make recommendations for improving traffic operations, pedestrian and bicycle circulation, and safety. The recommendations to address issues identified are categorized by short term and long term improvements.

The existing roadway corridor is characterized by a single travel lane in each direction with occasional right turn lanes. The width of the paved surface varies widely, with inconsistent segments of shoulder, paved asphalt gutter or swales, and concrete curb and gutter. The excess pavement is a likely factor contributing to passing on the right and aggressive driving maneuvers. Elimination of the excess asphalt may curb such unsafe driving behavior. Sidewalks or walking trails are provided along a majority of the corridor, but are discontinuous and of varying width and pavement material. Pedestrians and bicyclists are underserved by the existing configuration due to the non-uniform sidewalk system, as well as a lack of crosswalks in higher-volume pedestrian areas.

Along many of the side streets, the stop bar is located a considerable distance back from the roadway, hindering sight distance. Speeding was observed and documented mainly in the off-peak and evening hours, especially on the east end of Old Lee Highway. During the peak hours, congestion can become problematic, with motorists on the side streets experience long delays when attempting to turn onto Old Lee Highway. Accident data showed that rear-end collisions were the most prominent type, with a large percentage occurring on the east section of Old Lee Highway. Finally, landscaping and general aesthetics could be greatly enhanced by an overall plan that visually reinforces the function of the roadway as a local residential collector road instead of a commuter arterial.

The following improvements were identified as potential mitigating strategies for the issues identified along Old Lee Highway:

#### Short Term Improvements

##### Pavement Width

The immediate problem of varying pavement width can be addressed in the short term by removing the excess pavement, replacing asphalt with grass, and grading the resulting unpaved areas to drain as they do at this time. In short, the removal of the excess pavement may not require immediate construction of curbs, gutters, inlets and sewers where they do not now exist. The expected benefits of selective pavement width reductions include:

- Improve sight distances in corridor by removing excess pavement, lowering the risk of vehicular and vehicle-pedestrian accidents;
- Lower top speeds by creating the appearance of a narrower roadway;
- Provide space for improved pedestrian and bicycle facilities;
- Create a visual appearance in keeping with the function of Old Lee Highway as a local road.

The exception to the two-lane cross section would be between Rebel Run and Great Oaks Drive, where the westbound direction would have a continuous curb lane for right turns.



## OLD LEE HIGHWAY TRANSPORTATION STUDY CITY OF FAIRFAX

Another improvement associated with the overall cross-section width includes a review and removal of existing vision obstructions (including vegetation) at intersections. For example, at the northeast corner of Heritage Lane, trees are blocking motorists' view of Old Lee Highway. Other intersections where improvements could increase sight distance include: Colony Road, Old Post Road, Parklane Road, Embassy Lane, Brookwood Drive, Queen Anne Drive, Cornell Road, and the entrances to Army-Navy Country Club.

### Signage and Markings

For drivers who are less familiar with the corridor, additional warning and guidance measures may more effectively alert them to upcoming school zones and corresponding pedestrian traffic.

The current use of crossing guards for traffic control at the schools in the corridor provides a more flexible and responsive system than would an automated traffic control system. Given the widely varying conditions and hours of operation, it is recommended this practice continue indefinitely. One potential improvement that is suggested to supplement the existing traffic control and signage is installation of "SCHOOL" pavement markings in advance of the areas where school zone speed restrictions are in place.

Once the excess pavement widths are removed, the entire corridor should be restriped according to standard design regulations, with edge lines used in any areas that do not have existing curb and gutter. In addition, the stop bars for intersecting streets should be adjusted to reflect the changed width of pavement on Old Lee Highway, improving sight lines for those roadways.

### Speed Enforcement

Based on data collection and field observations, the central and east portions of the roadway are more likely to experience higher speeds than the rest of the corridor. Rear-end collisions, which can often be attributed to a combination of speeding and maintaining poor following distance, were most prominent at Old Post Road (center of the corridor) and Rebel Run (east part of the corridor). Therefore, it is likely that additional speed enforcement in these areas could reduce the chances of rear accidents.

Other speed deterrents, such as portable radar speed indicator signs that show actual vehicle speeds, as well as continued selective focused enforcement by the police, could prove effective in reducing the likelihood of late night and off-peak speeding in the corridor.

### Pedestrian and Bicycle Circulation

As an interim countermeasure, one recommended strategy is to provide connecting sidewalk segments where they are missing on the north side of Old Lee Highway. Specifically, along the segment fronted by the Arm-Navy Country Club, there is no dedicated area for pedestrians. The interim recommendation is for the sidewalk on the north side only, leaving the shared use path on the south side of the roadway for later implementation.

Additional improvements for pedestrian and bicycle circulation include the following:

- Implement new painted, ladder-striped crosswalks across Old Lee Highway near bus stops to improve pedestrian circulation. Per ADA requirements, some of the crosswalks may require installation of new or upgraded curb ramps to provide the adequate slope for wheelchairs. Suggested locations for new crosswalks include:
  - South of the Police Station's north driveway
  - Between either front driveway entrance for both Daniels' Run & Saint Leo School



# OLD LEE HIGHWAY TRANSPORTATION STUDY

## CITY OF FAIRFAX

- North of Heritage Lane
- North of Embassy Lane
- Between Brookwood and Queen Anne
- North of Great Oaks Way
- Across minor streets and school driveways to Old Lee Highway.

- Implement signage to warn motorists of the pedestrian Right-of-Way and potential fines for not yielding when a pedestrian is in the crosswalk. Also suggested is installation of a bollard-style warning sign placed 20 to 50 feet in front of each existing and new crosswalk.
- Improve the horizontal sight line distance on the existing multi-use pedestrian/bicycle path on the west side of Old Lee Highway (especially in the vicinity of Great Oaks Way), providing a safer condition.

### Long Term Improvements

These improvements would all be in addition to the recommended interim improvements. Implementation of these recommendations would be anticipated over the course of the next 4-6 years.

### Reconfiguration of Old Lee Highway

While removing the excess pavement from Old Lee Highway will provide an interim benefit, it is recommended that, ultimately, the roadway be milled and resurfaced as 28-foot wide cross-section, including one consistent 12-foot wide thru lane northbound, one consistent 12-foot wide thru lane southbound, two two-foot gutters, and two six-inch curbs to provide a more consistent cross-section and the necessary associated drainage system. This will include installation of about 41 new curb inlets and three new manholes along with about 4,500 feet of new storm drain pipe. The new storm drains and pipes will be connected to the existing storm drain system.

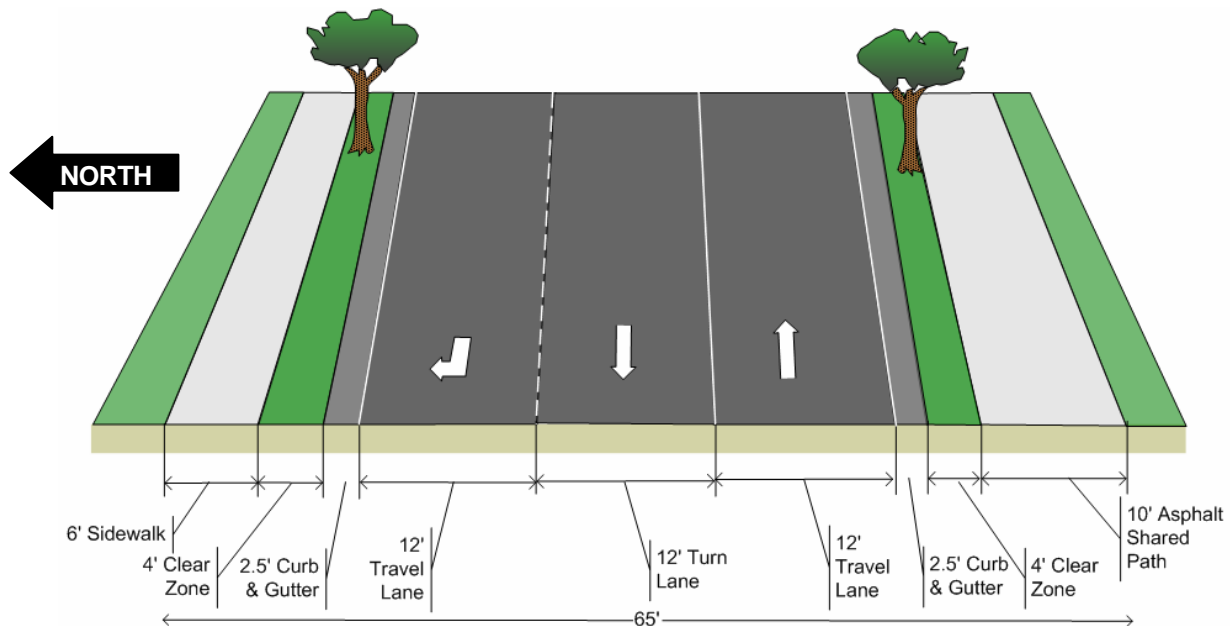


Figure ES-1 Recommended Typical Section with Outside Turn Lane

Figure ES-1 shows a dedicated right turn lane with the shared use path and sidewalk configurations. It would apply on Old Lee Highway at Queen Ann Drive (eastbound), Rebel Run (westbound), Great Oaks Drive (westbound), and Ridge Avenue (westbound).



# OLD LEE HIGHWAY TRANSPORTATION STUDY

## CITY OF FAIRFAX

Figure ES-2 shows a center turn lane configuration. This would apply on Old Lee Highway at Cornell Road (both east and westbound directions) and Rebel Run (eastbound to northbound).

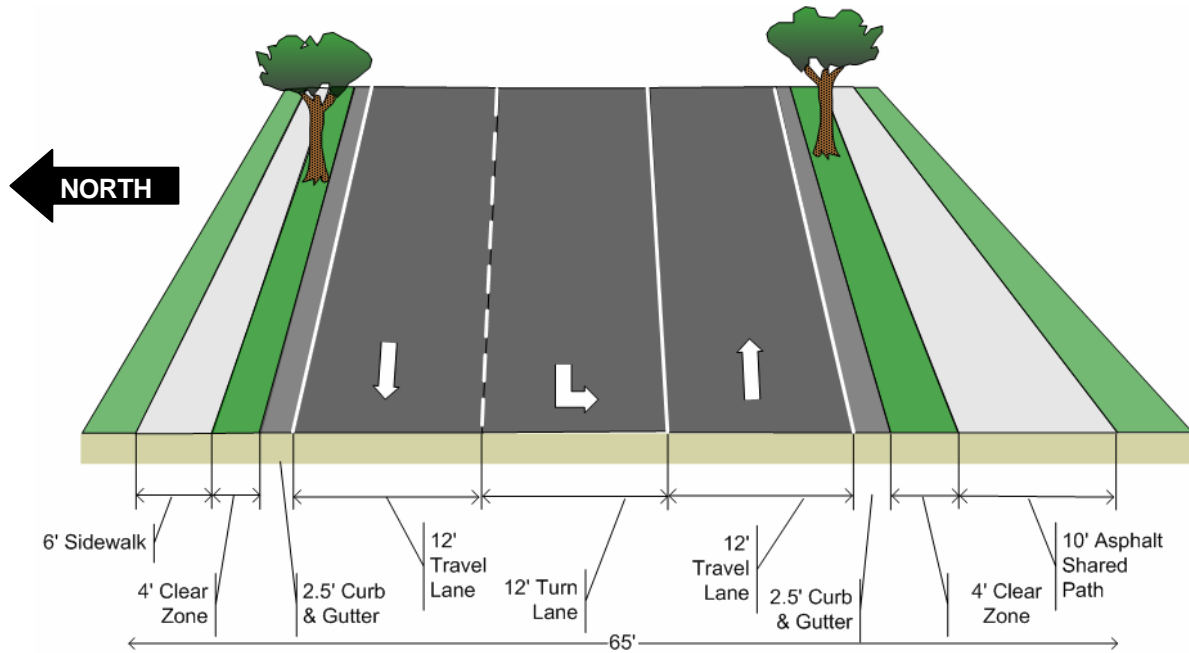


Figure ES-2 Recommended Typical Section with Center Turn Lane

### Crosswalks

There are eight existing crosswalks across Old Lee Highway within the study area. An additional seven new crosswalks are recommended as short-term improvements. In addition, 23 new crosswalks are recommended to be delineated across the intersecting streets (there are currently only three existing 3 crosswalks across the side streets). The proposed crosswalk locations are shown in Appendix D.

### Pedestrian and Bicycle Circulation

Development of a shared use path with a sidewalk on the south side of Old Lee Highway is recommended. This would provide a 10-foot shared-use path on the south side of Old Lee Highway and a sidewalk on the north side. The shared-use path would be continuous for the full length of Old Lee Highway in the study area, although it would be of reduced width at its eastern end due to topographic and right-of-way constraints. The sidewalk would be continuous from Army-Navy Country Club to the west end of the study area. Both would be designed with curb cuts and marked crossings. Where a 3.5 feet separation from the roadway is not possible, an aesthetically attractive barrier should be provided for the safety of the pedestrians.

### Speed Enforcement and Safety

For longer term improvements that may reduce vehicles speeds and increase safety, traffic calming measures should be considered. Examples of devices that may be appropriate for the Old Lee Highway corridor include brick paver crosswalks, especially at the school zones or at locations where heavy pedestrian traffic is heavy (such as bus stops). These treatments enhance the presence of the crosswalk and have shown to be effective in reducing vehicles speeds and drawing motorist attention to pedestrians. In



# OLD LEE HIGHWAY TRANSPORTATION STUDY

## CITY OF FAIRFAX

In addition, pedestrian refuge islands may also be used on segments of the roadway where it may be difficult for pedestrians to cross the entire roadway. These measures typically reduce vehicle speeds because they give the motorist the impression that the overall roadway width is narrowing. Small triangular islands may also be used to force vehicles in a right turn bay to turn right instead of using the lane to as a passing lane to speed by slower-moving or turning vehicles. If the decision is made to install traffic calming devices, a comprehensive traffic calming study should be preformed for the entire corridor.

Figure ES-3 provides a graphic summary of the recommended improvements.

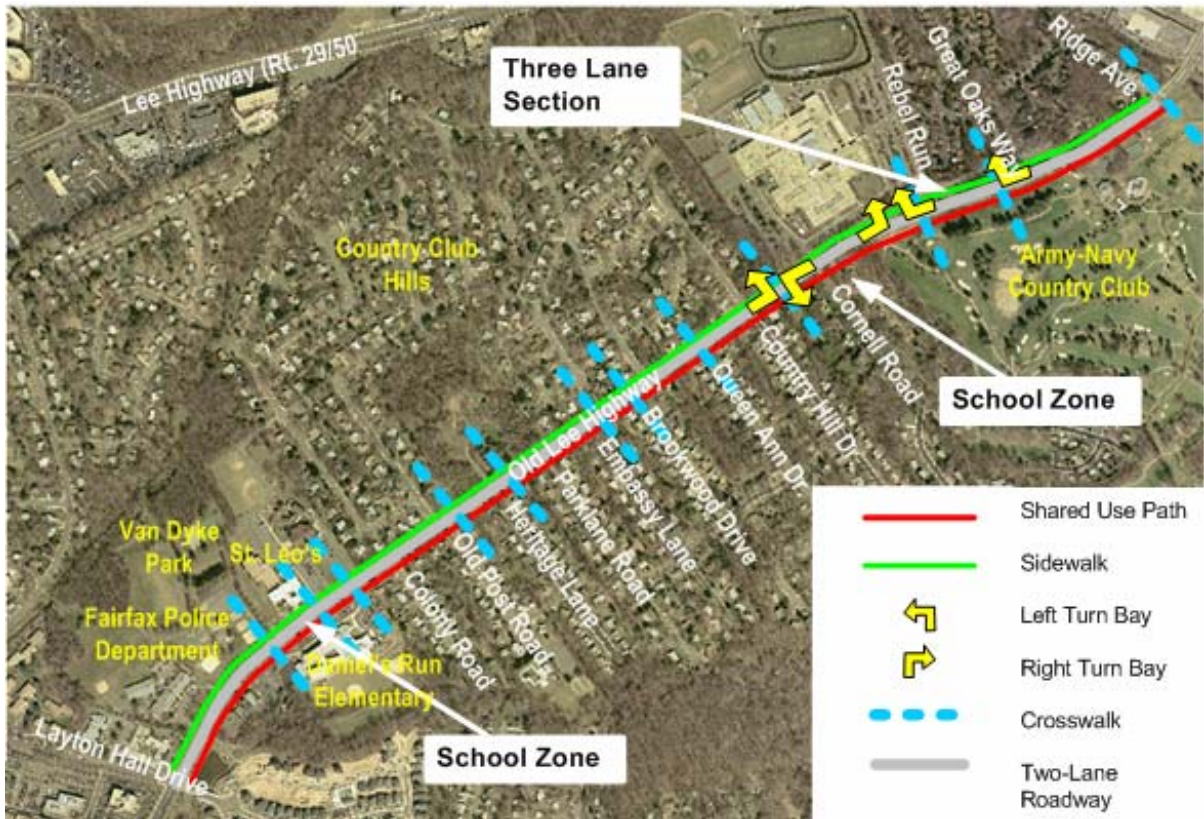


Figure ES-3 Summary of Recommended Improvements

### Landscaping

In addition to the recommended functional improvements to Old Lee Highway it is suggested that its identity be redefined to match its function as a local roadway. One of the most attractive sections of Old Lee Highway is its east end where overhanging trees and its confined shoulders clearly convey the street as not being meant for heavy volumes of traffic. It is suggested that this condition be replicated to the degree feasible along its entire length. Specifically, narrowing of the pavement needed for the roadway and even adding continuous sidewalks and bike paths will leave unused right-of-way that should be used for planting of trees and landscaping to reinforce the function of Old Lee Highway as a local collector. This would have the effect of unifying the roadway that presently has segments that are not aesthetically in agreement.



## OLD LEE HIGHWAY TRANSPORTATION STUDY CITY OF FAIRFAX

### Projected Costs

Order-of-magnitude quantities and associated costs were developed in order to establish a baseline for the potential cost of the proposed improvements. Work elements associated with both Short Term and Long Term Improvements are shown below.

The estimated cost to implement the **Short Term Improvements** is \$934,670. This includes:

- Removal of excess pavement
- Backfill and lay sod where the excess pavement is removed
- Complete missing sections of north side sidewalk
- Painted striping in the roadway for new crosswalks across Old Lee Highway as well as across intersecting streets along the north side
- 10% mobilization
- 20% for engineering design and topographic survey
- 15% for construction engineering
- 25% contingency for Maintenance of Traffic, erosion and sediment control, permits, and other construction contingencies

The estimated cost to implement the **Long Term Improvements** is \$3,139,830. This includes:

- New curb along portions of the roadway where the excess pavement is removed
- New curb along other portions of the roadway; e.g., the Blenheim House
- New shared use path along the south side of the roadway
- Painted striping for crosswalks for intersecting streets along the south side of Old Lee Highway, as well as for improved intersections where the shared used path ties in
- Plant trees and lay sod along Old Lee Highway
- Necessary utility relocation; e.g., poles on east side near ANCC
- 10% mobilization
- 10% for engineering design
- 15% for construction engineering
- 25% contingency for Maintenance of Traffic, erosion and sediment control, permits, and other construction contingencies

This construction cost estimate is based on 2005 unit prices and does not include administration costs incurred by the city or escalation.