



OLD LEE HIGHWAY TRANSPORTATION STUDY

CITY OF FAIRFAX

CORRIDOR ISSUES

This section addresses issues and concerns along the corridor that were observed and considered for potential mitigation or improvement. Potential alternatives that may be considered are briefly outlined, with more detailed discussion in *Findings and Recommendations*. The major corridor characteristics examined include traffic operations, sight distance, bicycle and pedestrian circulation, and landscaping.

Traffic Operations

The following are observed traffic conditions that warrant attention:

- Passing on the right in widened roadway segments,
- Speeding in late night and early morning hours
- Peak hour congestion
- Rear-end collisions

Passing on the Right

In selected locations, the existing roadway width encourages passing on the right to avoid stopping or slowing behind turning vehicles, as well as “shortcutting” of right-hand turns. This condition is undesirable and potentially unsafe. While having to wait behind a turning vehicle inconveniences those continuing on, passing on the right invites collisions with vehicles turning from the opposite direction or vehicles stopped on the minor approaches. Reductions in excess pavement width or intersection radii can reduce the opportunities for passing on the right.

Speeding in Late Night and Early Morning Hours

The combination of existing congestion along the corridor, as well as the location of the police department at the west end of the study area, appear to discourage speeding during daylight hours. However, the relatively quiet, uncongested, and straight two-lane roadway without stop signs or crossing signals may be contributing to speeding during late night and early morning hours. This does not appear to be a serious problem at this point, but measures to discourage speeding at any time in the corridor may be desirable, such as portable radar signs, increased police enforcement, and even traffic calming devices. These are discussed in more detail under *Findings and Recommendations*.

Peak Hour Congestion

The overlap of peak hours with school start and ending periods leads to stop-and-go traffic conditions in the vicinity of the schools. However, given the function of Old Lee Highway as a local road, this inconvenience is not necessarily undesirable from the perspective of discouraging through traffic and speeding. Therefore, while the observed levels of service during peak hours are low, they are not unacceptably so. Minor timing adjustments to signals just beyond the limits of the study area may be an option to help create gaps and break up the continuous flow of traffic through the study area.



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Rear-End Collisions

Rear-end collisions make up the vast majority of the collisions (65%) that have occurred over the past five years on Old Lee Highway. This could be attributed to several factors, including motorists who fail to react when vehicles in front of them slow or stop to make a turn. Another potential issue could involve vehicles from the side streets accepting inadequate gaps to turn onto Old Lee Highway, causing a collision with conflicting traffic upstream of the intersection. Side street traffic may have restricted sight distance due to the location of the stop bar, or may risk making a more aggressive turn maneuvers because of the lack of adequate gaps in through traffic on Old Lee Highway. Measures which reduce peak-hour congestion may also help to reduce the potential for rear-end collisions. In addition, improvements for side-street sight distance (see below) may also help to reduce accident frequency.

Sight Distance

An analysis was made of the sight distance at intersections and for the approaches to crosswalks. This analysis concluded that for the posted speed limit there are no sight distance problems with the existing crosswalks. However, for motorists attempting to enter Old Lee Highway from side streets, the following intersections had potential sight distance issues:

- Colony Road Looking east
- Old Post Road From the north looking east and west
- Heritage Lane Looking west
- Parklane Road Looking east and west
- Embassy Lane Looking east and west
- Brookwood Drive North and south approaches looking east
- Queen Anne Drive Looking west
- Cornell Road Looking east
- Army-Navy Country Club west entrance Looking east
- Army-Navy Country Club east exit Looking west

Most of the sight distance problems are due to the location of the side street stop bars, which are offset considerably from the actual travel lanes due to the excess pavement width at many intersections. Motorists attempting to enter Old Lee Highway are forced to pull forward into the travelway of Old Lee Highway to see approaching traffic on that roadway. There are also problems created by vegetation, some of which could be alleviated by the narrowing of Old Lee Highway and the relocation of the intersecting streets stop lines. In other areas, the issue could be resolved by cutting back overgrowth.

Bicycle and Pedestrian Circulation

The discontinuous nature of the sidewalks / bikepaths along the corridor make non-motorized travel difficult; in some places, bicyclists and pedestrians must use the travelway of Old Lee Highway or cross it to continue. In addition, there are numerous locations where the width is too narrow for bicycles and pedestrians to use the pathway simultaneously. Finally, the locations of the existing paths vary, from directly adjacent to the curbside, to a substantial distance from the roadway. All of these conditions have resulted from the piecemeal manner in which the roadway and sidewalks / bikepaths were developed over time. These conditions make usage of



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the pathways inconvenient and difficult. A more comprehensive approach to providing continuous facilities for non-motorized travel would improve circulation along Old Lee Highway.

The range of crosswalk lengths is a function of the roadway pavement widths. The problem created by the longer crosswalks is the tendency of pedestrians to enter the paved portion of the roadway outside the unmarked travel lanes to reduce the time needed to cross the roadway. The excess pavement invites pedestrians to stand where cars do not regularly travel, but which is paved as part of the roadway and is not protected from automobiles. A corridor-wide assessment of pavement widths is presented in the next section to assess locations where crosswalk distances may be reduced.

Landscaping

The study corridor includes several visually attractive areas, but its lack of curbs and gutters and its varying pavement widths do not visually reinforce the function of the roadway. There is no consistent sense of the character of the roadway due to these varying conditions, nor is its function as primarily a local road clearly conveyed by design or signage. The excessive pavement width of the roadway may convey a misleading message to motorists of a road meant to function as a minor arterial rather than a local collector. The following sections examine the potential measures that could be implemented to create a more consistent look for Old Lee Highway and to visually reinforce the function of the corridor.



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POTENTIAL IMPROVEMENTS

Roadway Width

One potential improvement for the entire corridor would be to create a uniform two-lane cross section on Old Lee Highway. Figure 7 illustrates a potential typical cross-section for the corridor looking east. It shows the shared-use path south of the roadway and the sidewalk to the north, with two travel lanes, curb and gutter, and buffer space on either side of the roadway. In those areas where left and/or right turn lanes are provided, the cross-section would be appropriately adjusted (see figures under *Long Term Improvements*).

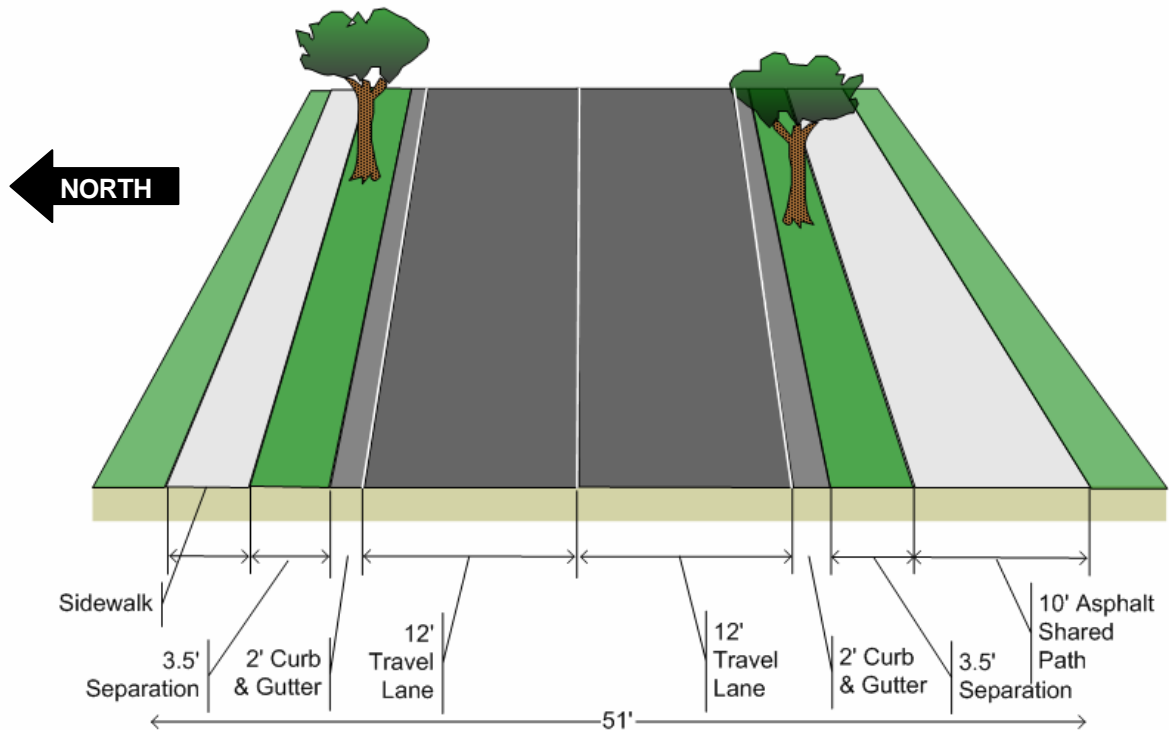


Figure 7 Typical Section without Turn Lane

School Zones

The two existing school zones (at Saint Leo the Great School / Daniels Run Elementary and at Fairfax High School) are currently posted at 25 miles per hour and experience significant pedestrian traffic at the crosswalks. Additional pavement markings may be considered to supplement the signage with the school zones along Old Lee Highway, as detailed in Section 7C.06 of the MUTCD⁵. These include “SCHOOL” pavement markings and “ladder-style” crosswalks with diagonal or longitudinal lines within the crosswalk, and other supplemental markings.

⁵ Manual on Uniform Traffic Control Devices, 2004 Edition. FHWA. p. 7C-1-4.



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Intersection Improvements

There are currently no signalized intersections within the study area where east-west traffic is forced to stop (other than at the crosswalks during school hours). Based upon an analysis of the traffic data available for the corridor study area and a review of traffic signal warrants outlined in the 2004 Edition of the MUTCD, none of the existing unsignalized intersections within the study area meet traffic signal warrants, with the possible exception of the Rebel Run intersection.

An analysis to determine whether a traffic signal may be warranted at this intersection was performed in the PM Peak Hour (the worst case). While this analysis concluded some of the criteria for installation of a new traffic signal at Rebel Run could be met, others did not. It is also possible that Old Lee Highway, once reconfigured, could see lower levels of through traffic, moderating conditions at Rebel Run. Given the limited traffic data and the unknown effect of the recommended improvements to Old Lee Highway on through traffic⁶, a formal traffic signal study using more comprehensive traffic data is recommended prior to making a decision to signalize the intersection at Rebel Run.

One potential option to improve the gap availability on Old Lee Highway and reduce side street delay would be to retime the signals at either end of the corridor to meter through traffic within the study area. Signal splits and offsets could be carefully coordinated so as to create more organized platoons of east-west vehicles without creating undue delays and queues upstream or downstream of the study area. If this countermeasure fails to be effective due to ingress traffic from the side streets, additional gap strategies could include potential signal installation at Rebel Run or at one of the entrances to Daniels Run Elementary School (if warranted by future volumes) to break up the flow of continuous through traffic. Any potential modifications to the existing signal timings should be implemented in a way such that adverse impacts to vehicle delay are minimized, if at all possible.

Bicycle and Pedestrian Improvements

A regional study of bikeways for Northern Virginia⁷ identified the Old Lee Highway corridor as the corridor offering the greatest potential for latent demand bicycle usage because it could connect George Mason University to the Metro Station at Vienna. The total length of that bikeway would be 5 miles. Appendix A includes an excerpt of that report addressing the Old Lee Highway corridor.

The City of Fairfax's bike plan⁸ identified Old Lee Highway from Van Dyke Park to Fairfax Circle as a safety concern, citing the discontinuity of the path and its failure to meet design criteria. The plan recommended construction of a Class 1 bike path ("a completely separated paved path ... for bicyclists and pedestrians.") from Layton Hall Drive to the Fairfax Circle area. This bikeway plan is currently being updated.

Based on recommended practices, there are three practical ways to accommodate bicycles and pedestrians in a roadway corridor in such a way that pedestrians and bicyclists are served by separate travelways:

⁶ Many of the measures recommended in this analysis could be classified as "traffic calming" measures. Any change in through traffic on Old Lee Highway will be a function of how well they work and conditions on Lee Highway (Route 29/50) and Pickett Road, parallel roadways designated for through traffic.

⁷ *Northern Virginia Regional Bikeway and Trail Network Study, Final Report*, VDOT, 11/19/03, Appendix A, Demonstration Project Case Studies, p. 73 – 76.

⁸ *Bikeway Program Review*, 1980 Bikeways Review Committee, July 1980, p. 4-5



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1. Exclusive bikepath and exclusive sidewalks (not intended for joint usage of bikes and pedestrians) that are separated on both sides of the roadway;
2. A shared use path (bikepath/walkway) on one side of the road and a sidewalk on the other side of the street; or
3. Bike lanes in the roadway and sidewalks on either side of the roadway.

The relevant width requirements⁹ for sidewalks, shared use bike/walkways and for exclusive bikeways are:

- Sidewalk (without provision for bicycles): 6 feet
- Shared Use Path: 10 feet
- Bike lane (in street, one on each side of roadway): 2 x 4 feet = 8 feet total
- Separation of sidewalk or bikeway from roadway: 3.5 feet. (If less, use protection to separate).

Given these dimensions, Table 4 summarizes the recommended space requirements for the three alternatives.

Option	1. Exclusive bikepath and sidewalks on both sides of the road	2. Shared use path on one side of the road and a sidewalk on the other.	3. Bike lanes in the roadway, sidewalks on either side.
Sidewalk width	6 feet x 2 = 12 feet	6 feet (exclusive)	6 feet x 2 = 12 feet
Bikeway/Bike lane width	10 feet	10 feet (shared)	4 feet x 2 = 8 feet
Clearances	Roadway to Paths (3.5 feet x 2) + Paths to Sidewalks (3 feet x 2) = 13 feet	3.5 feet x 2 = 7 feet	3.5 feet x 2 = 7 feet
Total Space Needed	35 feet	23 feet	27 feet

Table 4 Bikeway and Pedestrian Path Alternatives Widths

Of the options listed, the least right-of-way width is required by Option 2, the shared use path and single sidewalk. The shared use path with an exclusive sidewalk on the other side of Old Lee Highway would also offer safer operations for the bicycles than bike lanes in the roadway and would require less total width. The advantage of Option 1 is that exclusive facilities for pedestrians and bicyclists are provided on both sides of the roadway, reducing the potential for users to cross the roadway. Similarly, Option 3 provides exclusive facilities on both sides of the roadway, but the bike lanes are a component of the roadway, which can be less desirable for bicyclists.

⁹ *Guide for the Development of Bicycle Facilities*, AASHTO, 1999. *Designing Sidewalks and Trails for Access*, FHWA, 2001



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PUBLIC INVOLVEMENT

Stakeholder Meetings

Two stakeholder meetings were held, one with a member of the City of Fairfax School Board, and the other with representatives from the Citizen’s Appearance Committee, the City of Fairfax Transportation Department, the Department of Public Works, and the City of Fairfax Police Department’s Crossing Guard Unit. These meetings were held to offer an opportunity for representatives of each stakeholder group to provide their input to the project and for the study team to collect data on the operating characteristics of each group.

Public Workshops

Two public workshops and one Final Project Meeting were held with the public. The first citizen workshop described the project scope and sought comments on community issues. The meeting was conducted as an informal workshop. At that meeting an aerial was displayed showing the project limits and focus areas for further study and discussion. A comment sheet was provided with questions and space for comment as a method to generate community feedback. Citizens were asked to complete their questionnaires and engage group facilitators in discussion concerning the project.

After conceptual design development for Old Lee Highway, a second citizen workshop was conducted to obtain feedback on the conceptual design. The meeting was conducted as an informal workshop. A comment sheet was provided with questions related to the conceptual design as a means of obtaining and recording community feedback.

Community Input

Table 5 summarizes the input received from the public and agencies over the course of this project. Appendix B provides meeting summaries for the public meetings.

Topic	Comment Summary
Congestion	Perception of heavy congestion on Old Lee Highway in peak periods.
Emergency response	Ability to service the corridor including emergency response, accident investigation and traffic enforcement stressed. Ability to use excess pavement to avoid blocking moving lanes during these activities cited. Noted demands from special events traffic such as for the Historic Blenheim Estate. Fire Department expressed concern about ability to traverse the corridor in rush periods, suggesting a middle or shoulder lane(s). Signal preemption of any new signals to allow emergency vehicles to override cited as desirable.
High speeds	Perceived as an enforcement problem on Old Lee Highway despite 292 speeding tickets being issued in 2003.
Landscaping	Cited as a priority. Previous proposal of a grassy median cited. Use of landscaping in areas of excess pavement recommended. Seen as potentially contributing to traffic calming.



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Topic	Comment Summary
Multi-use path	Providing a narrowed path of 8 feet versus the recommended 10 feet was suggested to provide more green space.
Neighborhood Access	Difficulty exiting local streets to access Old Lee Highway, especially during rush periods. Particular difficulty making left turns onto Old Lee Highway
New Crosswalks	A desire for additional pedestrian crosswalks at Van Dyke Park and near bus stops.
Parking lot U-Turns	The north parking lot of Daniels Run Elementary was reported to be used for U-turns to avoid delays at the school, creating an unsafe condition.
Passing lanes	Addition of passing lanes near the elementary schools and Saint Leo the Great School Church were suggested to reduce congestion.
Passing on the right.	Perceived as unsafe condition resulting from excess pavement.
Pedestrian/Student Safety	Primary focus of public and school comments. Desire for better marking of crosswalks including signage.
Preservation of existing condition	Some citizens expressed a preference to leave the corridor unchanged.
Signals	Intelligent Traffic Lights (ITL's) to stop traffic on Old Lee Highway to permit left turns from cross streets that would activate only on demand for entry to Old Lee Highway.
Stop signs	Stop signs were seen as increasing congestion, especially during off-peak periods.
Traffic Signals	New signals at Brookwood and Old Post Road were suggested.
Turn lanes	Addition of left turn lanes at Daniels Run Elementary and Saint Leo the Great School were suggested.

Table 5 Summary of Public and Agency Comments



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FINDINGS AND RECOMMENDATIONS

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. A detailed topographical survey will be required to determine if there are areas where temporary or permanent drainage countermeasures are needed. However, if this approach is taken, the travelway and turn lanes must be clearly delineated, using appropriate pavement markings.

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.

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

The function of Old Lee Highway as a local road serving residential streets and schools is not clearly delineated. The roadway segment that is within the study area differs characteristically from the more commercialized areas just outside the project limits. Based on driver expectancy, non-local motorists may not anticipate the high-pedestrian-volume areas within the school zones. The issue is exacerbated by the slight horizontal curves in advance of the two school zones. Along the approaches to the school zones, a number of roadside elements visually compete for motorist attention, including existing signing. 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.



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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.

An additional issue is the weaving section created along the existing westbound auxiliary lane between Great Oaks Drive and Rebel Run, where citizens have voiced concerns that motorists do not merge or diverge appropriately. A potential improvement would be to modify the pavement markings to meet the MUTCD's standards and VDOT's Northern Virginia Guidelines for Pavement Markings. This will require the final 150 feet prior to Rebel Run to be a solid single white line. Two right turn arrows and an "ONLY" pavement marking should also be applied to the pavement within the final 150 feet. Signage posted adjacent to "ONLY" should include an R3-7 sign ("Right Lane Must Turn Right") The preceding 250 feet should be marked as dotted with a two foot line and 10 foot gap (puppy tracks). The remaining 150 should remain a single dashed line to allow merging for vehicles turning right from Great Oaks Drive.

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 the most recent speed data collected by the City of Fairfax Police Department, the frequency of speeding during off-peak hours and at night is higher. The presence of the police headquarters within the corridor doubtless moderates the tendency of those using Old Lee Highway at late night or early morning to speed on its west end. However, the central and east portions of the roadway are more likely to experience higher speeds. 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. These countermeasures would be especially effective at the east end of the corridor, where there is less police presence.

Pedestrian and Bicycle Circulation

The greatest short-term problem with the sidewalk/bikeway system is that it lacks continuity. Therefore, 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:



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- 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. Specific locations could be evaluated on a case-by-case following a topographical survey of existing conditions. Suggested locations for new crosswalks include:
 - South of the Police Station's north driveway
 - Between either front driveway entrance for both Daniels' Run and Saint Leo the Great School
 - 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 MUTCD sign R1-6 (Figure 8) 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.



Figure 8 Crosswalk Warning Sign



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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 9 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).

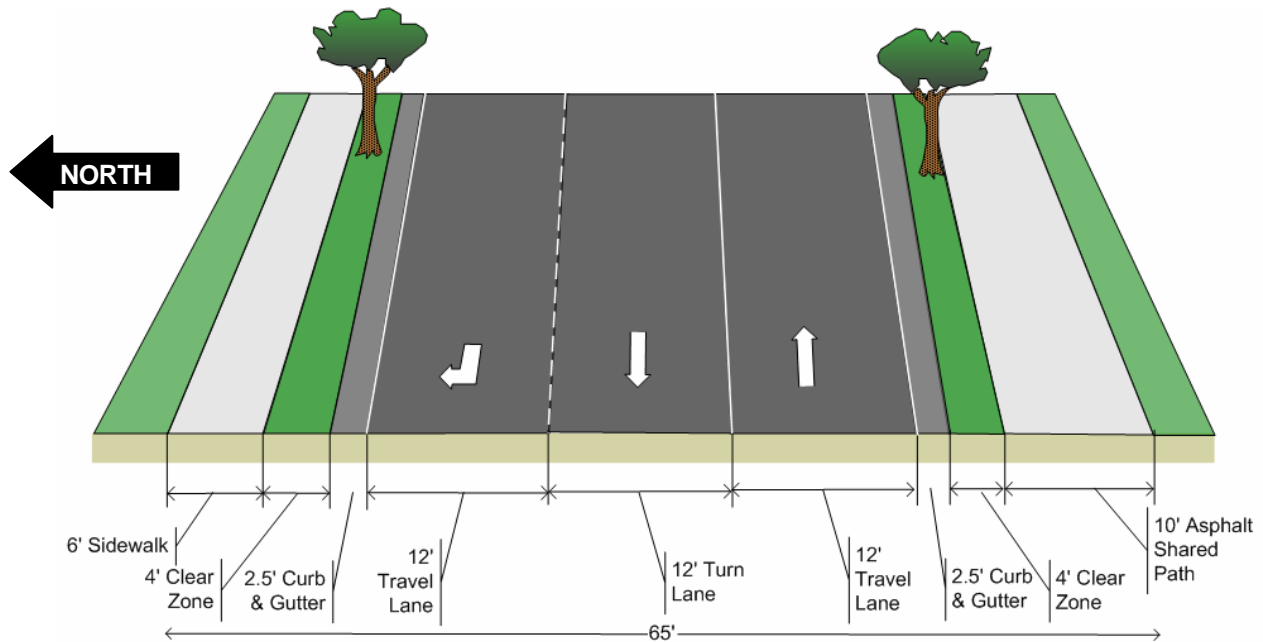


Figure 9 Recommended Typical Section with Outside Turn Lane

Figure 10 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).



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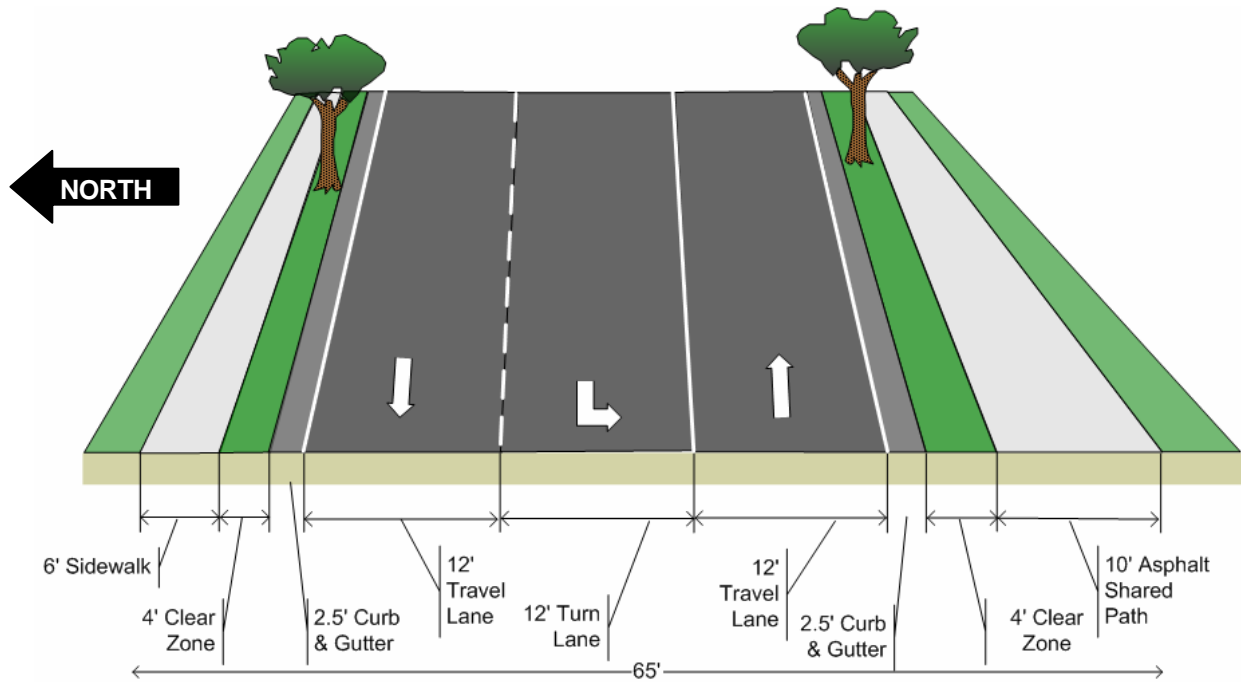


Figure 10 Recommended Typical Section with Center Turn Lane

Crosswalks

The recommended improvements to Old Lee Highway are not intended to result in increases in traffic on the roadway. In fact, the result of the recommended improvements should be a reduction of non-local traffic, based on the results of past improvement projects that are similar in nature to Old Lee Highway. Historically, average traffic speeds tend to decrease when pedestrian facilities (especially crosswalks) have a major presence in the overall character of the roadway, usually followed by a decrease in through traffic. Therefore, given the adequacy of the existing crosswalks, the only recommendation for those areas is that they be coordinated during the reconstruction of Old Lee Highway with curb cuts to comply with accessibility requirements.

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.



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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 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 11 provides a graphic summary of the recommended improvements.

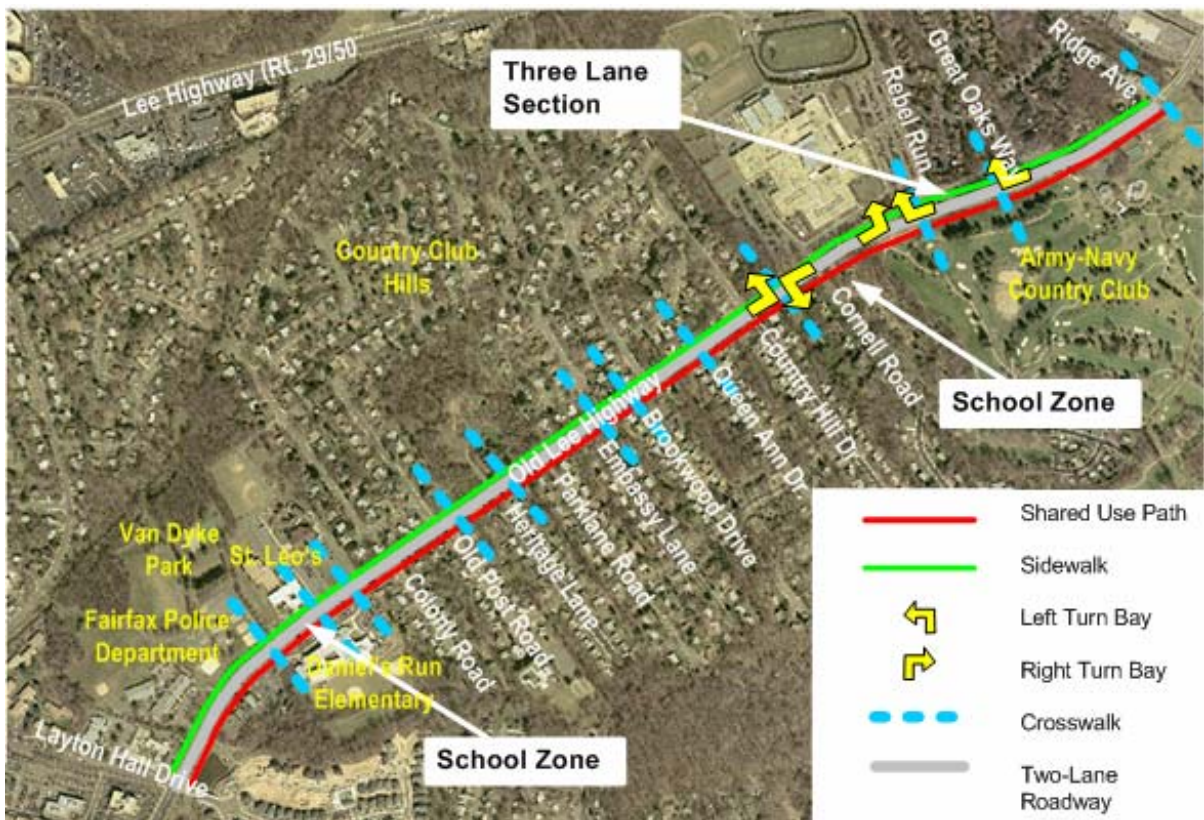


Figure 11 Summary of Recommended Improvements



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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.



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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. Major quantities and costs are broken out at the end of Appendix E, Supporting Information.