

DATE: December 19, 2016

TO: Michael O. Geisel, P.E.
City Administrator

FROM: James A. Eckrich, P.E.
Public Works Director / City Engineer

RE: Schoettler Road



*Jim: Please Place on
NEXT PPW AG and/or for
committee consideration
12/20/2016*

As you know, the City of Chesterfield accepted maintenance responsibility for Schoettler Road from St. Louis County on April 1, 2010. Since that time the City of Chesterfield has looked for ways to improve Schoettler Road. Steps taken include the creation of a Concept Study (completed in 2013) by HR Green and the submittal of grant applications through the Surface Transportation Program (STP) in 2014, 2015, and 2016. None of these grant applications were successful as the cost/benefit ratio was not competitive with other projects submitted. It is the opinion of the City Staff that until conditions along Schoettler Road change, there is no real likelihood that future STP applications will be successful.

Instead of submitting a new grant application that will likely be denied, the City Staff has investigated Schoettler Road in order to determine what can be done to improve the roadway incrementally at this time, and in the near future. This investigation is detailed in the attached memorandum from Civil Engineer Todd Ohmes, which also includes a history of the previous grant submittals. A summary of the Staff's recommendations regarding Schoettler Road is as follows:

- Discontinue the annual submittal of STP grant applications for the improvement of Schoettler Road. Instead, concentrate on a grant submittal for a functionally classified roadway which has a reasonable chance of being accepted. At this time the City Staff recommends that a grant application be submitted for Old Chesterfield Road.
- Funding for sidewalks is available annually or bi-annually through the Transportation Alternatives Program (TAP). Study the sections of Schoettler Road with missing sections of sidewalk, and submit TAP applications when appropriate to obtain funding for the missing sections of sidewalk on Schoettler Road.
- Consider designing and constructing center lanes / left turn lanes in areas where there is no center lane / left turn lane but there are adjacent side streets. The memo from Mr. Ohmes provides details regarding four sections of Schoettler Road which were analyzed for turn lanes. While only one of these areas (Highcroft Drive) meets technical warrants for a turn lane, I want to be clear that it is always safer, and preferable, to have a center turn lane on an

arterial roadway such as Schoettler Road. Unfortunately, it appears that only the intersection with Georgetown Road contains the necessary right of way to allow the construction of a center lane / left turn lane at this time. Adding lanes at the other intersections would require the acquisition of right of way and easements, both permanent and temporary. A previous staff estimate, included in Mr. Ohmes' memorandum, indicates that the turn lane at Georgetown is estimated to cost \$75,000. I believe this estimate may be a little high, but it is a good and conservative budgetary figure. However, please remember when considering the cost to construct additional turn lanes that this estimate DOES NOT include right of way and easement acquisition. It only includes the costs for design and construction.

1. Design and construct a left turn lane at Georgetown. Estimated cost is \$75,000. This could be incorporated into the 2018 Budget or funded through General Fund – Fund Reserves.
 2. Look for ways to incorporate additional center lanes / left turn lanes on Schoettler Road, where appropriate. Such investigation should begin at the intersection with Highcroft Drive, as that intersection comes the closest to meeting the warrants for a turn lane.
- There are areas along Schoettler Road where there are no shoulders and a sharp grade change (drop off) outside the edge of pavement. The City Staff will continue to look for ways to improve these areas and add shoulders where possible. Many of these areas are the same areas where sidewalk is missing.



Action Recommended

This matter should be presented to the Planning and Public Works Committee for consideration. Should the Committee concur with Staff's recommendation as to how to proceed regarding Schoettler Road, it should approve this course of action via voice vote. This matter does not need to be forwarded to City Council (as there is no expenditure of funds at this time) unless the PPW Committee desires to recommend the funding of the left turn lane at Georgetown Drive through General Fund – Fund reserves above the 40% Policy.

Memorandum

Department of Public Services



TO: Jim Eckrich, Public Works Director

FROM: Todd Ohmes, Civil Engineer *TAO*

DATE: December 19, 2016

RE: Schoettler Road Corridor Improvements

Schoettler Road is a functionally classified minor arterial road that connects South Outer Forty to Clayton Road, about 2.4 miles. The majority of the road is a two lane road, with 1.0 mile also containing a center turn lane. The two lane typical section is ten foot lanes with one to two foot shoulders. Drainage varies between open and closed throughout the corridor.

Concept Plan

In 2013 HR Green developed a Concept Plan for the future improvement to Schoettler Road. At the time, HR Green estimated implementation to cost around \$24 million. The design criteria and typical section of the Concept Plan included:

- Correct deficient sight distance at Clayton Road intersection
- Improve tight horizontal curves
- Provide center turn lane throughout project
- 5 foot bike lanes
- 5 to 8 foot treelawns
- 5 foot sidewalk on both sides of roadway
- Replace deficient bridge about 300 feet south of Sycamore Manor Drive

The bridge was in poor condition, and qualified for the On-System Bridge Replacement and Rehabilitation Program (BRM) funding through East West Gateway Council of Government's (EWGW). This project is currently in right of way negotiations and scheduled for construction in 2017.

Past Roadway Federal Grant Submittals

The City originally phased the Concept Plan into four projects. The southern portion of Schoettler Road would provide the most benefit to vehicles and pedestrians, therefore the City applied for Surface Transportation Program-Suballocated Funds (STP-S) funding from Brook Hill Drive to Clayton Road in February 2014. This submittal included work to build out the full cross section HR Green developed in the Concept Plan. The project cost for this portion was just over \$4.5 million. EWGW ranks project by cost effectiveness (federal contribution divided by total score). They award funding to the projects which prove to be the most cost effective. Below summarizes the results of the 2014 STP submittal:

Cost effectiveness cutoff for STP projects in 2014: \$1253
2014 Schoettler Road cost effectiveness: \$8847

Recognizing that the project cost was way above the qualifying mark, staff looked to reduce project cost to improve the project score. In February 2015, the City again applied for STP funding. The proposed work was similar to the 2014 submittal, with two exceptions:

- Use existing roadway base rather than full replacement
- Build center turn lane only at intersections with cross streets

The adjustment to the scope reduced the project costs to just under \$3 million. Below summarizes the results of the 2015 STP submittal:

Cost effectiveness cutoff for STP projects in 2015: \$1124
2015 Schoettler Road cost effectiveness: \$4056

Once again, this project was not anywhere close to being recommended for funding. Following the second year of poor scoring, Staff looked to further reduce the project scope. Work included adding a dedicated right turn lane at Clayton Road, left turn lanes at Westerly Place and Georgetown Road, sidewalks on both sides of road, bike lanes on both sides of road, 12 foot wide driving lanes, and the project limits were reduced from Clayton Road to Georgetown Road. The adjustment to the scope reduced the project costs to \$1.7 million. Below summarizes the results of the 2016 STP submittal:

Cost effectiveness cutoff for STP projects in 2016: \$ 977
2016 Schoettler Road cost effectiveness: \$2770

The project was again not recommended for funding. Projects are recommended for STP-S funding based purely on the cost effectiveness ratio. For Schoettler Road, two factors are negatively affecting the cost effectiveness ratio: the magnitude of the project (adding center turn lane, bike lanes, sidewalk, water quality, right of way purchase, etc.) makes the project expensive, and the lack of benefit points (lack of pedestrian connectivity, lack of crash data to support safety concerns, current pavement rating, etc.).

Exhibit 1 summarizes the STP-S selection for Fiscal Year 2016-2019 TIP. The top rows represents the six project priorities that are used to breakdown the roadway improvement type. A brief explanation and how it applies to Schoettler Road is below:

- Preservation: Schoettler Road is currently rated an 8 out of 10. Pavement ratings likely needs to drop to a 4 to obtain enough points to be competitive.
- Capacity Adding: No additional through lanes to be added. No connection to major pedestrian generators. Center turn lanes are not considered capacity adding.
- Operational & Safety: Crash history does not support the claim that the corridor is dangerous.
- Transit: Not Applicable
- Payback: Not Applicable
- Other: Not Applicable

As the highlighted rows in Exhibit 1 show, the majority of funds are distributed to projects within the Preservation category (46.5% in Missouri), for which Schoettler Road is many years away from qualifying. Submitting as a Safety project (13.9% of funds in Missouri) or Capacity Adding (1.1% of funds in Missouri) priority does not obtain the points necessary to make the project competitive, as the past three years' submittals have proven.

Corridor Issues

At this time, we need to step back and look at alternative methods to improve Schoettler Road. In order to prioritize the improvements needed, research was completed to see where trouble spots are believed to exist.

Were any issues identified through the Work Order system as resident concerns?

- Work Orders on Schoettler Road are comprised almost entirely of bushes obstructing sidewalk, potholes at intersections, and dead animals on road. No request for turn lanes or safety issues aside from potholes and tree trimming. The Schoettler Grove development (2016) at the northwest corner of Schoettler Road and Clayton Road installed a center turn lane for northbound Schoettler Road traffic to turn into the new development. By constructing the turn lane, the northbound lane now jogs from the three lane section to the two lane section in a relatively short distance due to the lack of available right of way. One Work Order questions the design of the turn lane addition. The City performed a short mill and overlay project for the northbound lane through the taper to improve the roadway profile. Following the overlay and restriping in early October, 2016, no complaints have been received.

Does accident data point to any problem areas?

- Accident data does not raise any red flags with respect to the lack of shoulders or center turn lanes. Accidents were primarily related to driver inattention. Several accidents were reported at the intersection of Clayton Road and Schoettler Road, but mainly due to people running red lights or not yielding appropriately. An in depth review of accident reports is covered later in this memo.

Have any requests come in via letters to staff or elected officials?

- Various requests for continuous sidewalk have been made over the years.
 - Overall, there are two major gaps where no sidewalk exists on either side of Schoettler Road. On the north side from South Outer Forty Road to Highcroft (650 feet) and near the midpoint from Windsor Valley Court to south of Greenleaf Valley Drive (990 feet). A development is currently being proposed at the northeast corner of Schoettler Road and North Outer 40. If this development or another development is approved, a sidewalk may be constructed by the developer and eliminate the gap.
 - To break down the missing sidewalk sections further, the east side has a cumulative measurement of missing sidewalk of 3,470 feet. The west side has a cumulative measurement of missing sidewalk of 4,340 feet. The map in Exhibit 2 shows the gaps that are present on Schoettler Road
- In 2013, a Council Member requested an investigation of the feasibility of installing left turn lanes at Westerly and Georgetown. A feasibility study was conducted with the results attached in Exhibit 3. In 2016, City staff met with an area resident regarding a similar request.
- A complaint was received mid 2016 regarding the overall safety of the corridor. The complaint referenced a lack of shoulders and sidewalks.

Other items of note:

- City staff has concerns regarding sight distance at two locations:
 - Exiting Brook Hill Drive, it can be difficult to see oncoming southbound traffic due to the trees and other vegetation abutting Schoettler Road. The trees line a creek bank, which runs parallel to Schoettler Road, so it would be difficult to clear the roadside while still preserving the integrity of the creek bank and preventing erosion.
 - Highcroft Drive carries a relatively high volume of traffic and intersects Schoettler Road at an S-turn that is less than ideal. Sight distance is lacking for Highcroft Drive vehicles turning onto Schoettler Road. Furthermore, Schoettler Road does not contain a center turn lane at this location, therefore northbound traffic queues in the drive lane during heavier traffic periods. Since cars can stack up in the northbound Schoettler Road lane, which is immediately following the S-turn, sight distance is also a concern at this location.
- Some vehicles traveling southbound on Schoettler Road and turning right onto Highcroft Drive cut the corner too short and have created a rut along the roadway edge, as seen in Exhibit 4. This corner of the approach is fairly flat, and is designed to drain into the grass tree lawn where an area inlet is located. Since the approach is very flat, installing a curb leads to a high probability of ponding water. Another method to deter motorists from cutting the corner too short is to install delineators in the grass. The delineators were installed in the fall of 2016, and thus far appear to be working.

Left Turn Lanes

Background

As stated previously, the Concept Plan developed by HR Green in 2013 included a center lane/left turn lane the length of the project. A way to reduce cost while fully maintaining the roadway function is to reduce the turn lanes to only serve the side streets. I estimate about 20% of the roadway has no need for a center turn lane based on the location of side streets.

To analyze warrants for left turn lanes, four intersections were investigated: Georgetown Road, Westerly Place, Chesterfield Trails Drive, and Highcroft Drive. The Chesterfield Police Department assisted by providing crash data on Schoettler Road dating back to January, 2014. Chesterfield Trails Drive and Highcroft Drive were selected due to the large number of homes, and in Highcroft's instance Highcroft Ridge Elementary School, which generates a large amount of traffic. Georgetown Road and Westerly Place were selected based on past requests for installation of a left turn lane.

The Missouri Department of Transportation's Engineering Policy Guide (EPG) was used as guidance for the traffic study. Section 940.9, Auxiliary Acceleration and Turning Lanes provides instructions for determining whether left turn lane warrants are met. A manual traffic count intersection study was conducted to gather the appropriate data needed to check warrants. City staff collected data during the A.M. and P.M. rush at all four intersections to be studied.

Following data collection, the information was analyzed and plotted on the graph provided by the EPG (Exhibit 5). To use the graph, first, the percentage of left turn movements was calculated and the corresponding line estimated, according to the percentages shown at the top of the graph. Next, a point was plotted using the Opposing Volume and Advancing Volume on the graph. If the plotted point was to the left of the percentage making left turn

lane line, then no turn lane is warranted. If the plotted point is to the right, then the turn lane meets the EPG warrants. Exhibit 6 contains the plotted graphs for each intersection, with a separate graph for the A.M. and P.M. rushes.

Left Turn Analysis Results

- Georgetown Road
 - Warrant not met for A.M. nor P.M. (less than ten left turns per hour)
- Westerly Place
 - Warrant not met for A.M. nor P.M. (less than ten left turns per hour in the A.M.)
- Chesterfield Trails Drive
 - Warrant not met for A.M. nor P.M.
- Highcroft Drive
 - A.M. rush meets warrant between the hours of 7:00-8:30 A.M.
 - P.M. rush did not meet warrant, but was very close between 3:30-4:30 P.M.

Vehicle Accident Reports

Accident data was gathered for Schoettler Road from January 1, 2014 to present day. A breakdown of the accidents is seen below for the nearly three years' worth of data:

Georgetown Road

- One accident – Vehicle 1 stopped in driving lane for a pedestrian, was rear ended by Vehicle 2. Left turn lane would **NOT HAVE PREVENTED**.

Westerly Place

- Three accidents
 - One car fire. Left turn lane would **NOT HAVE PREVENTED**.
 - One rear end while waiting to make left turn. Left turn lane would **HAVE PREVENTED**.
 - One rear end while waiting to make left turn at residential driveway 250' south of Westerly. Left turn lane would **HAVE PREVENTED**.

Chesterfield Trails Drive

- Two accidents
 - One alcohol related single car accident in which the driver spun out. Left turn lane would **NOT HAVE PREVENTED**.
 - One rear end not related to left turn movement. Left turn lane would **NOT HAVE PREVENTED**.

Highcroft Drive

- Three accidents
 - Two rear ends while waiting to make left turn. Left turn lane would **HAVE PREVENTED**.
 - One rear end while waiting to make a left turn at Chesterfield Pines Lane, 375' north of Highcroft Drive. Left turn lane would **HAVE PREVENTED**.

Right of Way

A brief review of property lines was conducted to research the feasibility of adding a left turn lane within existing right of way widths.

Georgetown Road

- Existing right of way appears to be wide enough to construct a 12' wide center turn lane. It does not appear Temporary Slope and Construction License (TSCL) would be required for working room.

Westerly Place

- A center turn lane cannot be constructed within the existing right of way. In order to widen the roadway at this intersection, acquiring right of way and TSCL from the farmhouse at 2290 Schoettler Road will be required. Correspondence from the Public Works Director at the time, Brian McGownd, indicated the resident, Ms. Mary Jane Lyons, was not willing to discuss selling property or donating right of way. Unless the City would be willing to pursue condemnation, it does not appear a turn lane can be constructed at Westerly Place while Ms. Mary Jane Lyons owns 2290 Schoettler Road.

Chesterfield Trails Drive

- Existing right of way appears to be sufficient to construct a left turn lane. However, due to the slope on the west side of Schoettler Road, substantial grading will be required, necessitating the acquisition of TSCL.

Highcroft Drive

- Right of way acquisition appears necessary to increase the width of Schoettler Road at Highcroft Drive. Additionally, Highcroft Drive is one of four intersections within an 850 foot section of Schoettler Road. If installing a turn lane at one intersection, it would be practical and most cost effective to build the turn lane for all four intersections simultaneously. Furthermore, the S-turn should be improved (straightened out) to increase the overall safety of the roadway.

Left Turn Lane Summary

Georgetown Road – Does not meet the warrants per MoDOT’s guidelines and no left turn related accidents in nearly three years. Existing right of way appears to be adequate to construct a left turn lane.

Westerly Place – Does not meet the warrants per MoDOT’s guidelines. One accident at Westerly Place and at the driveway 250 feet south of Westerly Place could have been prevented with the installation of left turn lanes. Both crashes were attributable to driver error. Existing right of way is not adequate and land acquisition from 2290 Schoettler Road will be required. Previous correspondence with owner indicated condemnation will be necessary.

Chesterfield Trails Drive – Does not meet warrants per MoDOT’s guidelines. Two accidents in nearly three years, not related to left turn movements. Existing right of way may be adequate, but substantial grading and TSCL will be necessary.

Highcroft Drive – Per MoDOT’s guidelines, the warrants were met during the A.M. rush and were close during the P.M. rush. Three accidents have occurred in nearly three years, all of which could have been prevented with the installation of a left turn lane. Existing right of way is not sufficient to construct a left turn lane nor straighten out the S-curve.

A Policy on Geometric Design of Highways and Streets, 6th Edition, (Green Book) states safety should also be taken into account when determining warrants for a left turn lane. Due to the overall very low crash rates on Schoettler Road, analyzing crash data does not further warrant a left turn lane. However, the Green Book states “Ideally, left-turn lanes should be provided at driveways and street intersections along major arterial and collector roads wherever left turns are permitted.” Although left turn lanes on Schoettler Road may not meet the warrants, their installation is still “ideal” and will improve traffic flow and safety.

Conclusion

STP-S submittals the past three years have proven the typical sections from the Schoettler Road Concept Plan do not qualify for federal funding, and will not qualify until the pavement condition has deteriorated enough to qualify for a Preservation project, which is many years away.

A more systematic approach is to divide and conquer the problems we know exist.

- Pedestrians are forced to walk on the roadway where sidewalk gaps exist. This is a major safety concern for both pedestrians and vehicles. **First, the City should submit for a Transportation Alternative Program (TAP) grant to close the sidewalk gap from Greenleaf Valley Drive to Windsor Valley Court.** TAP funds are separate from STP-S funds and are awarded to projects solely for bicycle and pedestrian facilities. If the proposed development at the northeast corner of Schoettler Road and North Outer 40 does not construct a sidewalk adjacent to the roadway, the City should also explore options to make that connection. After the two main sidewalk gaps are closed, the City can then start examining methods to infill the remaining sidewalk.
- Center turn lanes are always beneficial to arterial roadways. However, crash data does not support safety concerns raised by residents. Upon performing traffic counts, left turn lane warrants were not met at any of the four intersections studied, except for a portion of the AM rush at Highcroft Drive. Right of way and/or TSCL would be required at three of the four intersections (existing Georgetown Road right of way is sufficient). **I recommend beginning pursuit of left hand turn lanes where possible, subject to Council authorization. Engineering will begin at Highcroft Drive, which has the historic need, or Georgetown Road where right of way is available.**
- If a construction project is pursued at Highcroft Drive, the limits should extend to the three other intersections immediately adjacent (Oak Tree Estates Drive, Chesterfield Pines Lane, and Schoettler Estates Drive). Furthermore, the S-turn on Schoettler Road should be improved. Increasing the scope adds cost, however, these are deficiencies which have been observed and it would be most cost effective to address them all in one project.
- The vegetation that reduces the sight distance at Brook Hill Drive cannot be properly cleared at this time due to the creek channel. A permanent solution at this location is likely not feasible until a full reconstruction project is performed, which would clear vegetation, adjust the creek location, and install sidewalk. **I recommend continuing general maintenance of trimming vegetation at this location until a full reconstruction projects becomes feasible.**
- The final area for improvement is the edge drop-offs that exist at various locations along Schoettler Road. Crash data does not indicate this is a problem, but residents have expressed concern about the overall safety of the roadway, including the lack of shoulder. Adding a shoulder where hazards exists could improve the comfort level for drivers and increase the chances of vehicle recovery. At present time, this would most likely need to be funded entirely by the City. **Since crash data does not support this as being a safety hazard, I recommend focusing City funds on the pedestrian gaps and left turn lane needs prior to dedicating funds to widen the roadway.**

Unfortunately, many of the areas that are missing sidewalk, shoulders, and left turn lanes are at locations of minimal right of way. The purchase of right of way quickly adds cost, along with any water quality requirements that will be required with the installation of impermeable surfaces. These are items that must be accounted when calculating the feasibility of any future projects.

Total Program

Program Summary - FY 2016-2019 TIP

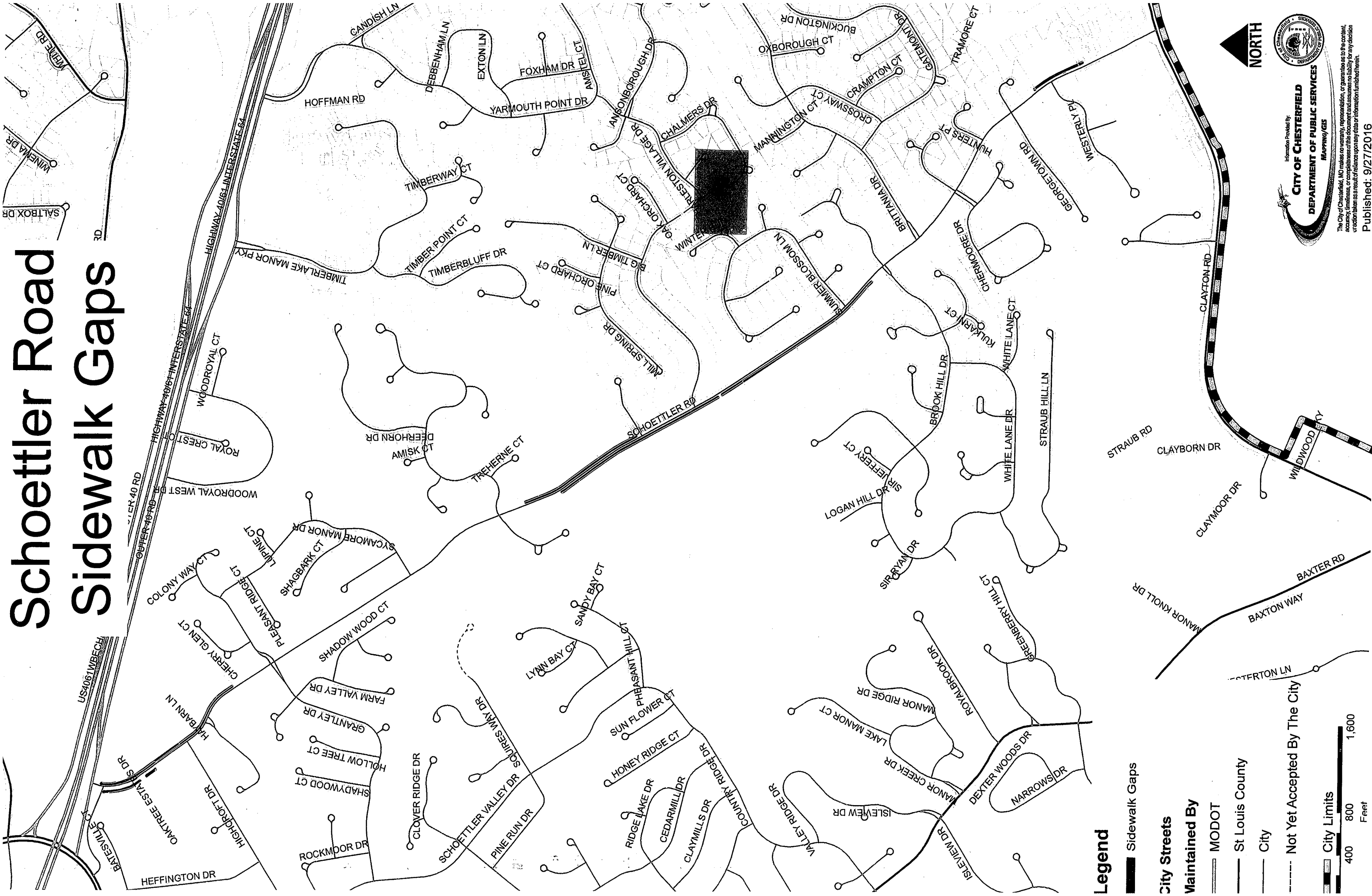
The total regional program summarized in this FY 2016-2019 TIP contains 655 projects (135 new and 520 reprogrammed) at a total cost of approximately \$1.69 billion in federal, state, local, and private funding. The reprogrammed or rescheduled projects account for \$1.39 billion of the total program and the new projects account total \$304.3 million. Consistent with the goals of the long range plan, this TIP continues the region's emphasis on preserving the existing infrastructure, committing 36.5% of the total program (\$616.3 million over the next four years) to resurface and reconstruct roads, repair/replace bridges, and replace other aging transportation systems and facilities.

Of the total program, 5.3% (\$89.4 million) is allocated to adding capacity in the form of new roads, new bridges, and new lanes on existing roads. Projects to improve the operations and/or safety of the region's transportation facilities account for \$171.7 million (10.2% of the total program). The transit category consists of \$604.6 million or 35.8 % of the total program. This category contains projects such as fixed rail/bus service expansion, MetroLink Improvements, service vehicles, operations and for providing upgrades and maintenance for non-MetroLink equipment and facilities. The payback category includes payments to local public agencies or state DOTs for cost share projects or payments to retire debt from bonds. For example, \$54 million is programmed in this TIP to payback bonds issued for the I-64 reconstruction project. Approximately \$132.5 million or 7.8% of this program is dedicated to paybacks. The remaining \$76.2 million or 4.5% falls under the "Other" category. This includes such projects as bike trails, sidewalk improvements, education programs, setasides for engineering/land acquisition and system enhancements.

FY 2016-2019 - Total Bi-State Program									
Total Dollars - Improvement Type by County									
	Preservation	Capacity Adding	Operational & Safety	Transit	Payback	Other	TOTAL	% Total	% of Allocated
Franklin	\$77,579,471	\$0	\$3,793,645	\$0	\$303,000	\$747,876	\$82,423,992	9.1%	9.3%
Jefferson	\$30,381,873	\$2,943,000	\$6,322,091	\$909,278	\$0	\$1,892,815	\$42,449,057	4.7%	4.8%
St. Charles	\$32,913,510	\$0	\$56,122,071	\$1,051,281	\$6,585,000	\$9,303,000	\$105,974,862	11.7%	11.9%
St. Louis	\$192,820,656	\$7,350,005	\$29,787,757	\$23,977,538	\$0	\$17,609,129	\$271,545,085	30.1%	30.5%
St. Louis City	\$69,050,133	\$0	\$12,584,508	\$81,403,153	\$0	\$4,300,000	\$167,337,794	18.5%	18.8%
Multi-County	\$11,771,000	\$0	\$19,257,191	\$142,336,954	\$59,092,000	\$4,298,526	\$236,755,671	26.2%	26.6%
Regional	\$13,667,000	\$0	\$0	\$0	\$0	\$0	\$13,667,000	1.5%	
Missouri Total	\$428,183,643	\$10,293,005	\$127,867,263	\$249,678,204	\$65,980,000	\$38,151,346	\$920,153,461	100.0%	
Missouri %	46.5%	1.1%	13.9%	27.1%	7.2%	4.1%	99.9%		
Jersey	\$0	\$0	\$494,200	\$0	\$0	\$0	\$494,200	0.1%	0.2%
Madison	\$42,764,744	\$0	\$2,811,000	\$40,552,843	\$0	\$6,067,310	\$92,195,897	27.8%	33.3%
Monroe	\$7,680,622	\$0	\$1,765,000	\$0	\$0	\$400,652	\$9,846,274	3.0%	3.6%
St. Clair	\$85,057,637	\$46,113,000	\$14,151,476	\$5,436,351	\$0	\$13,526,967	\$164,285,431	49.6%	59.3%
Multi-County	\$0	\$30,000	\$1,967,000	\$1,006,022	\$0	\$7,443,038	\$10,446,060	3.2%	3.8%
Regional	\$21,020,000	\$0	\$22,680,000	\$0	\$0	\$10,540,000	\$54,240,000	16.4%	
Illinois Total	\$156,523,003	\$46,143,000	\$43,868,676	\$46,995,216	\$0	\$37,977,967	\$331,507,862	100.0%	
Illinois %	47.2%	13.9%	13.2%	14.2%	0.0%	11.5%	100.0%		
Multi-State Total	\$31,561,000	\$32,935,000	\$0	\$307,877,082	\$66,500,000	\$77,692	\$438,950,774	100.0%	
Multi-State %	7.2%	7.5%	0.0%	70.1%	15.1%	0.0%	100.0%		
Bi-State Total	\$616,267,646	\$89,371,005	\$171,735,939	\$604,550,502	\$132,480,000	\$76,207,005	\$1,690,612,097	100.0%	
Bi-State %	36.5%	5.3%	10.2%	35.8%	7.8%	4.5%	100.0%		

Note: Percent of allocated funding represents the share of funds identified for specific investments in counties.

Schoettler Road Sidewalk Gaps



Legend

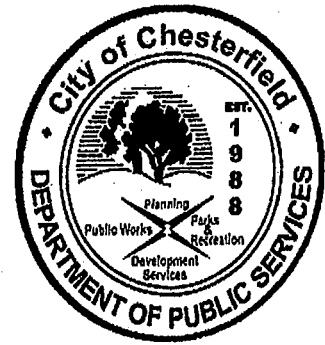
- Sidewalk Gaps
- City Streets Maintained By**
- MODOT
- St Louis County
- City
- Not Yet Accepted By The City
- City Limits
- 400 800 1,600
Feet



Information Provided By
CITY OF CHESTERFIELD
 DEPARTMENT OF PUBLIC SERVICES
 Mapping/GIS

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 Published: 9/27/2016

MEMORANDUM



DATE: January 10, 2014
TO: Jim Eckrich, Public Works Director
FROM: Kim Streicher, Civil Engineer
RE: Feasibility of adding Left Turn Lanes to Westerly Pl. and Georgetown Rd. from Schoettler Rd.

Regarding the feasibility/cost study of adding left turn lanes at Westerly and Georgetown off of Schoettler:

- Adding a left turn lane onto Georgetown Road is feasible.
 - There is adequate right of way to accommodate the lane and the transition back to a two lane road.
 - A very rough cost estimate (attached) puts the cost of a left turn lane at around \$75,000.
 - There is an existing southbound left turn onto Schoettler Manor Court, so the addition of a northbound turn lane would essentially create a three lane road through the intersection.

- A left turn onto Westerly Place would be more problematic:
 - It would require additional right of way on 2290 Schoettler Road. The property owner of this parcel has been previously unwilling to negotiate easements in order to connect adjacent sidewalk through her property. (See attached memo from Brian McGownd)
 - There are utility poles along the frontage of 2290 Schoettler Road that would need to be relocated.
 - There is a roadside ditch just off the east edge of shoulder that would require substantial grading and sewer work.

A map of the proposed area of improvement is attached.

Cost Estimate

1/9/14
KAS

Left Turn lane Schwetler into Georgetown.

150' Turn lane into Schwetler Manor Ct. exists.

Modify to a three lane section through intersection.

360 of new pavement 12' wide \Rightarrow Asphalt to match existing.
 $= 480 \text{ yd}^2$

Aggregate Base: $0.06166 \frac{\text{tons}}{\text{sq. in}} \times 480 \text{ yd}^2 \times 4" \text{ thick} = 118 \text{ tons}$
 $480 \text{ yd}^2 \times \$75/\text{sq} = \$36000$

Asphalt: $0.06 \frac{\text{tons}}{\text{sq. in}} \times 480 \text{ yd}^2 \times 10.5" = 302.4 \text{ tons}$
 $302.4 \text{ tons} \times \$128/\text{ton} = \$38707$

Arrows: 4 total @ \$350 = \$1400

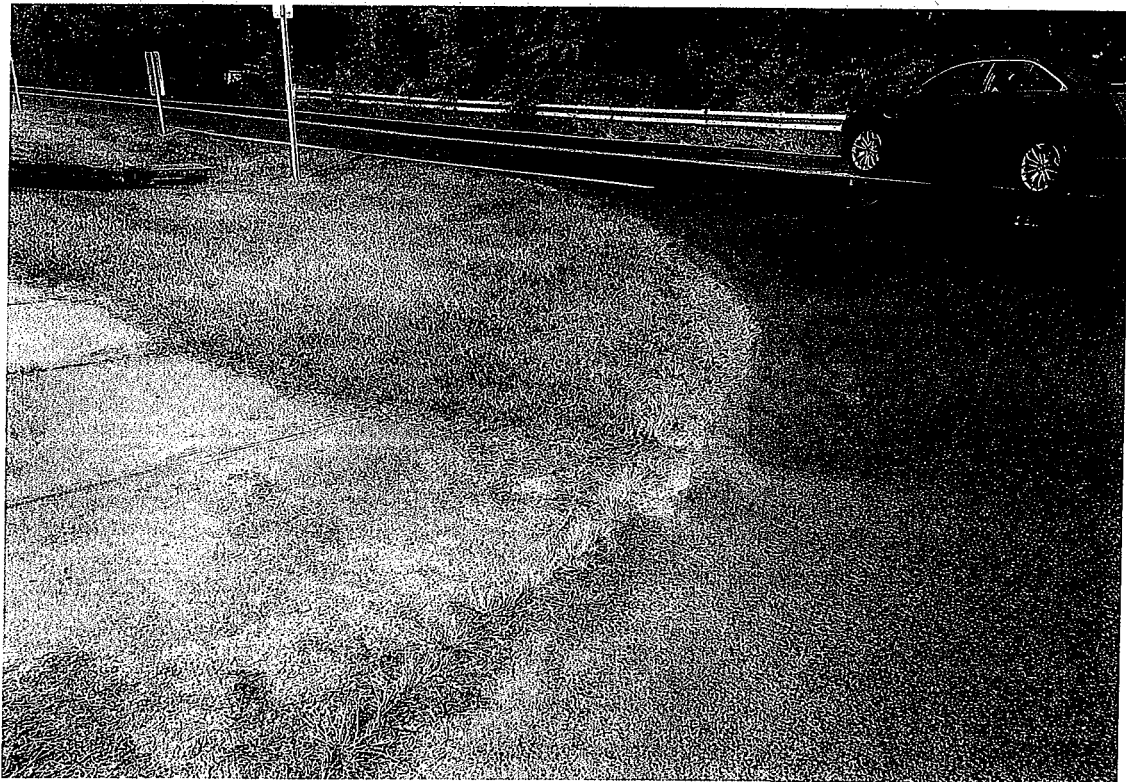
Stripes: 2 yellow, one white $\times 350' = 1050 \text{ lin. ft.} @ \$0.35/\text{ft} = \$368$

(since small Qty's added 50% to prices from Schwetler cost est)

Total material = \$44075

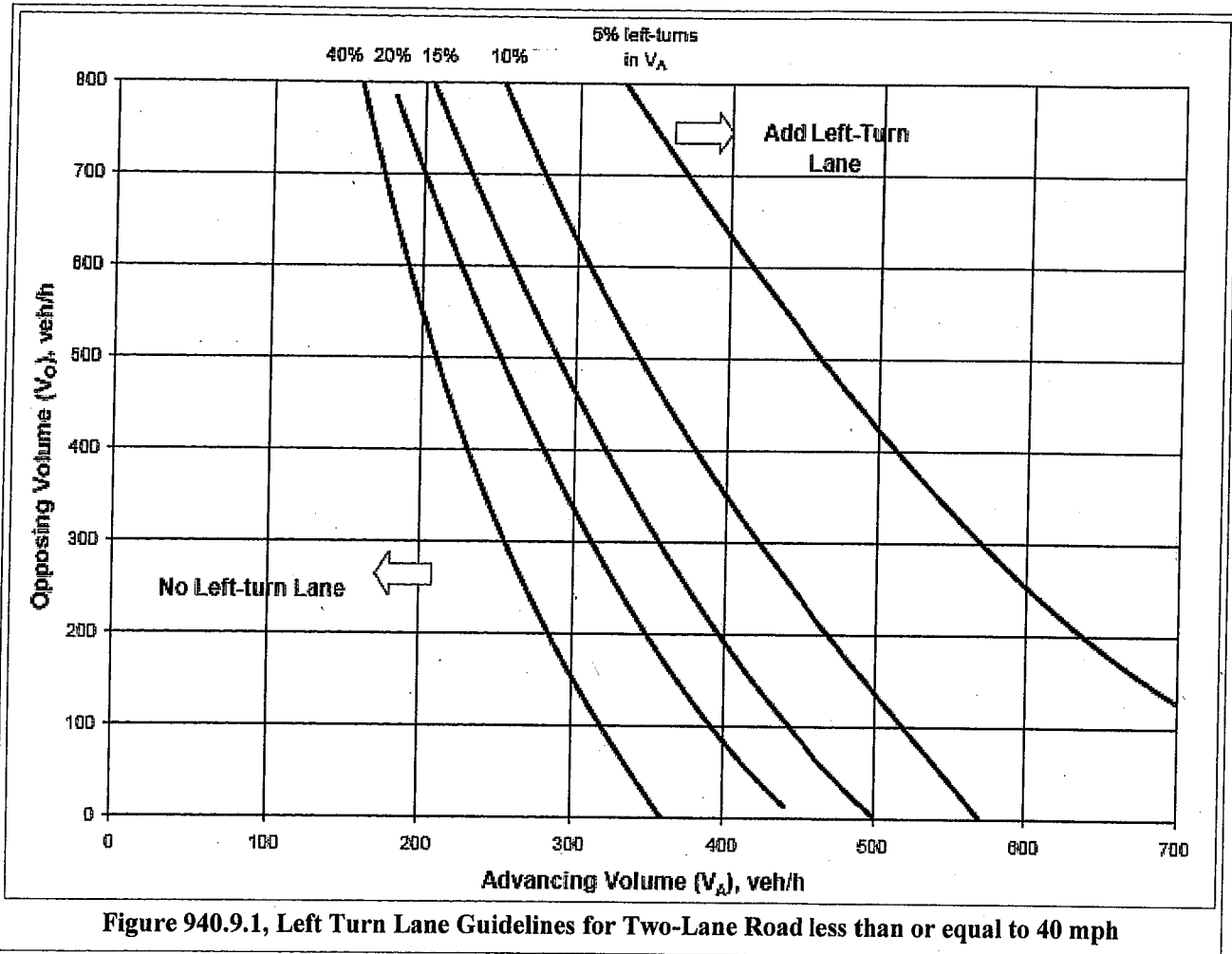
Traffic Control	2%
Mobilization	20%
Incidental	2%
Contingency	20%
Water Quality	8%
PE	12%
	<hr/>
	64%

$1.64 \times \$44075 = \$72,280$



10 940.9.10 Offset Right- and Left-Turn Lanes

940.9.1 Left Turn Lane Guidelines for Two-Lane Roads less than or equal to 40 mph



The following data are required:

1. Opposing Volume (veh/hr) - V_O - The opposing volume is to include only the right-turn and through movements in the opposite direction of the left turning vehicle.
2. Advancing Volume (veh/hr) - V_A - The advancing volume is to include the right-turn, left-turn and through movements in the same direction as the left turning vehicle.
3. Operating Speed (mph) - The greatest of anticipated operating speed, measured 85th percentile speed or posted speed.
4. Percentage of left turns in V_A

Left Turn Analysis

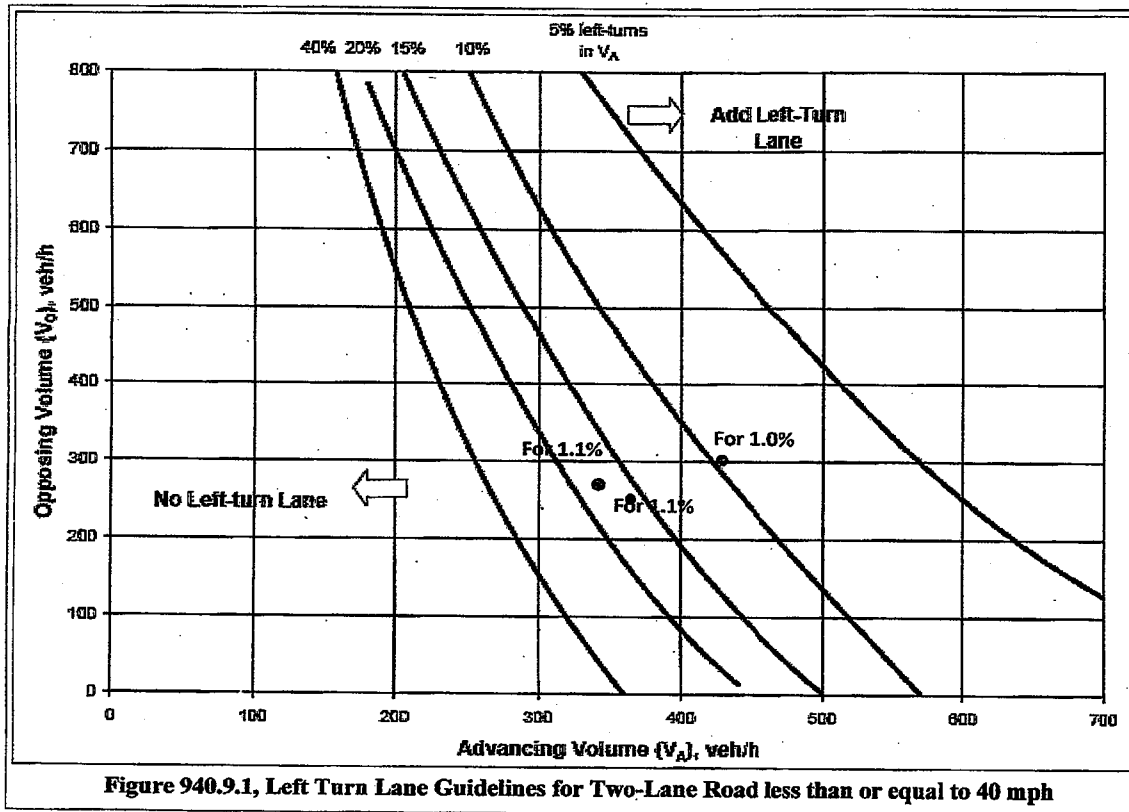
Schoettler Road at Georgetown Road

Data Collected 11/1/2016

		Field Collection			Hour Totals			
		Field	VO (veh/h)	VA (veh/h)	%L	VO (veh/h)	VA (veh/h)	%L
MORNING RUSH	7:00-8:00a	7:00-7:30a	175	233	0.4	302	432	1
		7:30-8:00a	127	199	1.5			
	7:30-8:30a	8:00-8:30a	121	169	0.6	248	368	1.1
	8:00-9:00a	8:30-9:00a	151	175	1.1	272	344	1.1

VO	Opposing Volume
VA	Advancing Volume
40 mph	Operating Speed
%L	Percentage of Left Turn Movements

*Less than 10 left turns per hour. Per MoDOT EPG, "Left turn lane is not needed for left turn volume less than 10 vph."



Left Turn Analysis

Schoettler Road at Georgetown Road

Data Collected 11/1/2016

		Field Collection			Hour Totals			
		Field	VO (veh/h)	VA (veh/h)	%L	VO (veh/h)	VA (veh/h)	%L
EVENING RUSH	3:30-4:00p		183	202	2	387	405	2
	4:00-4:30p		204	203	2			
	4:30-5:00p		221	188	1.1			
	5:00-5:30p		266	178	1.1			
	5:30-6:00p		202	228	1.3			
	3:30-4:30p							

VO	Opposing Volume
VA	Advancing Volume
40 mph	Operating Speed
%L	Percentage of Left Turn Movements

*Less than 10 left turns per hour. Per MoDOT EPG, "Left turn lane is not needed for left turn volume less than 10 vph."

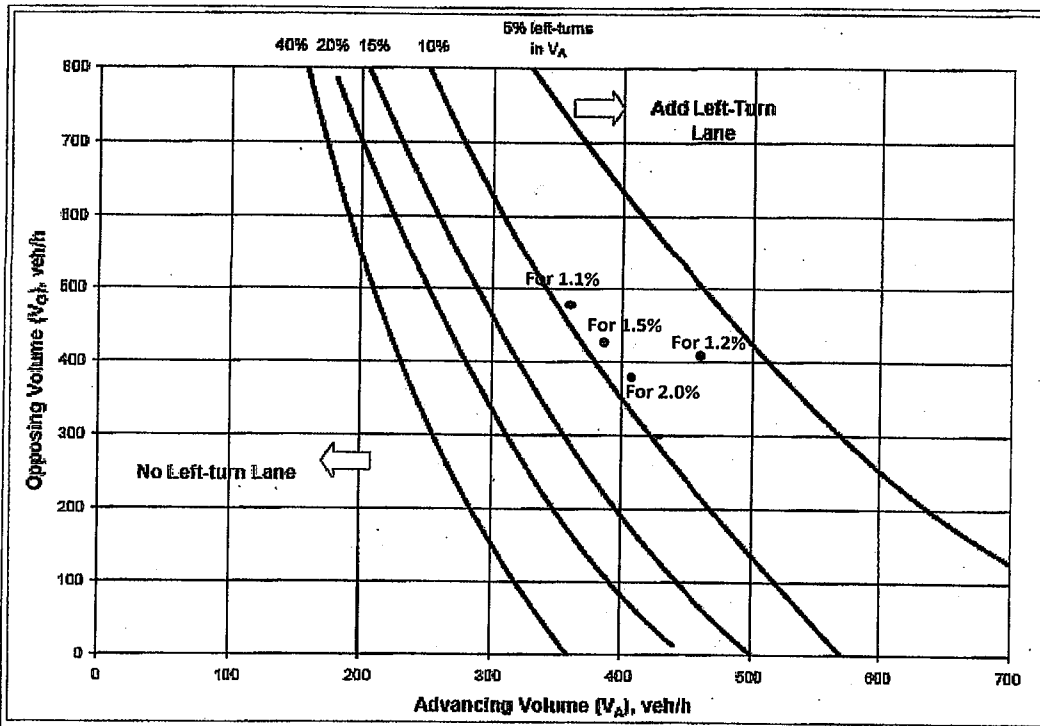


Figure 940.9.1, Left Turn Lane Guidelines for Two-Lane Road less than or equal to 40 mph

Left Turn Analysis

Schoettler Road at Westerly Place

Data Collected 11/1/2016

		Field Collection			Hour Totals			
		Field	VO (veh/h)	VA (veh/h)	%L	VO (veh/h)	VA (veh/h)	%L
MORNING RUSH	7:00-8:00a	7:00-7:30a	173	233	0	299	434	0.5
	7:30-8:30a	7:30-8:00a	126	201	1			
		8:00-8:30a	121	169	1.8			
	8:00-9:00a	8:00-8:30a	121	169	1.8			
		8:30-9:00a	152	175	2.9			

VO	Opposing Volume
VA	Advancing Volume
40 mph	Operating Speed
%L	Percentage of Left Turn Movements

*Less than 10 left turns per hour. Per MoDOT EPG, "Left turn lane is not needed for left turn volume less than 10 vph."

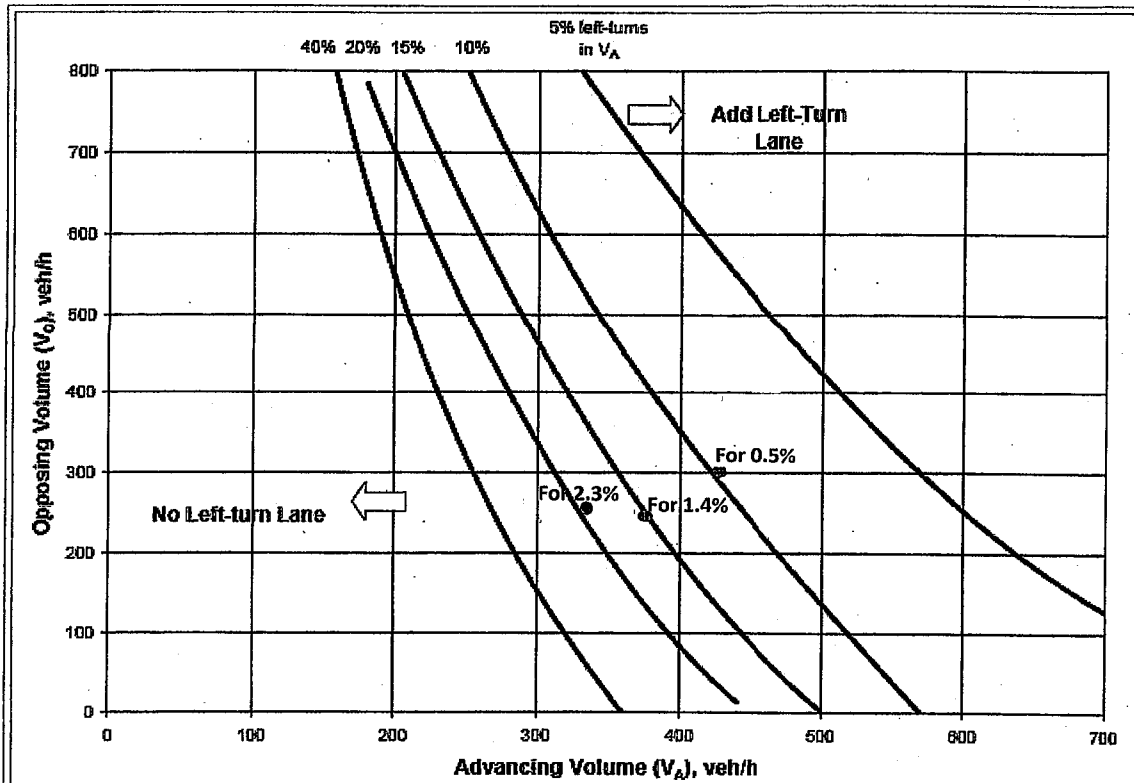


Figure 940.9.1, Left Turn Lane Guidelines for Two-Lane Road less than or equal to 40 mph

Left Turn Analysis

Schoettler Road at Westerly Place

Data Collected 11/1/2016

		Field Collection			Hour Totals			
		Field	VO (veh/h)	VA (veh/h)	%L	VO (veh/h)	VA (veh/h)	%L
EVENING RUSH	3:30-4:00p		184	202	3.5			
	3:30-4:30p					386	405	3.2
	4:00-4:30p		202	203	3			
	4:00-5:00p					421	391	2.6
	4:30-5:00p		219	188	2.1			
	4:30-5:30p					483	366	2.2
5:00-5:30p		264	178	2.2				
5:00-6:00p					465	406	1.2	
	5:30-6:00p		201	228	1.8			

VO	Opposing Volume
VA	Advancing Volume
40 mph	Operating Speed
%L	Percentage of Left Turn Movements

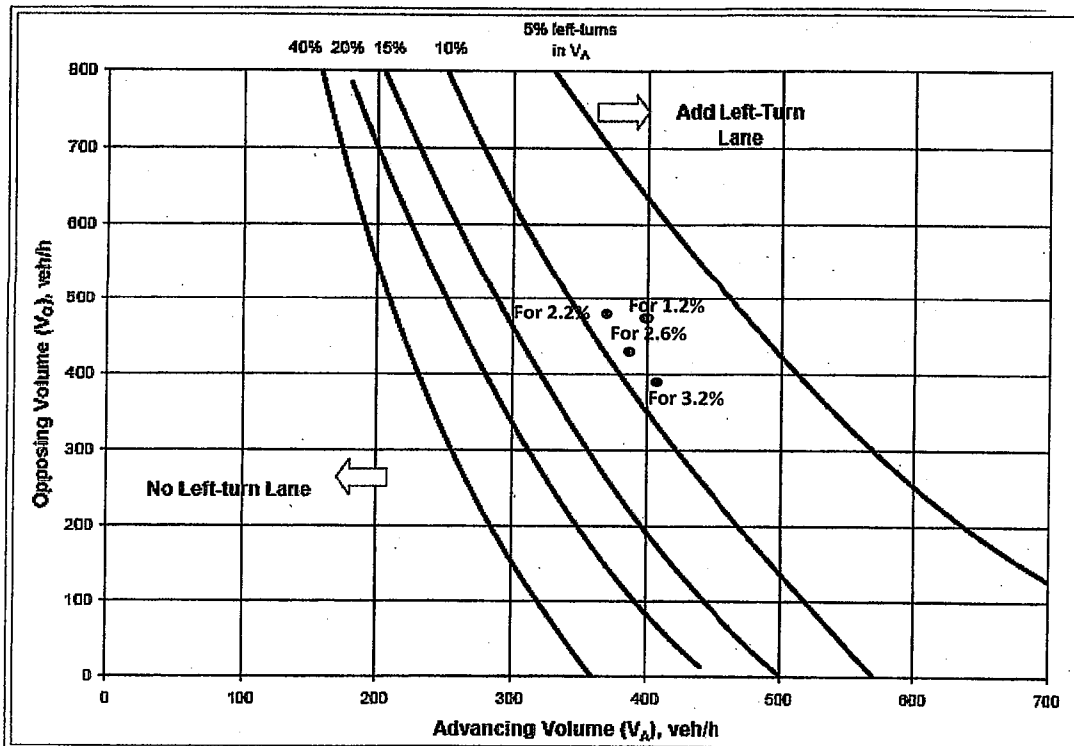


Figure 940.9.1, Left Turn Lane Guidelines for Two-Lane Road less than or equal to 40 mph

Left Turn Analysis

Schoettler Road at Chesterfield Trails Drive

Data Collected 10/19/2016

		Field Collection			Hour Totals		
	Field	VO (veh/h)	VA (veh/h)	%L	VO (veh/h)	VA (veh/h)	%L
MORNING RUSH	7:00-7:30a	119	102	2	311	168	3
	7:30-8:00a	192	66	4.5			
	7:30-8:30a	155	82	2.4			
	8:00-8:30a	142	61	3.3			
	8:30-9:00a						

VO	Opposing Volume
VA	Advancing Volume
40 mph	Operating Speed
%L	Percentage of Left Turn Movements

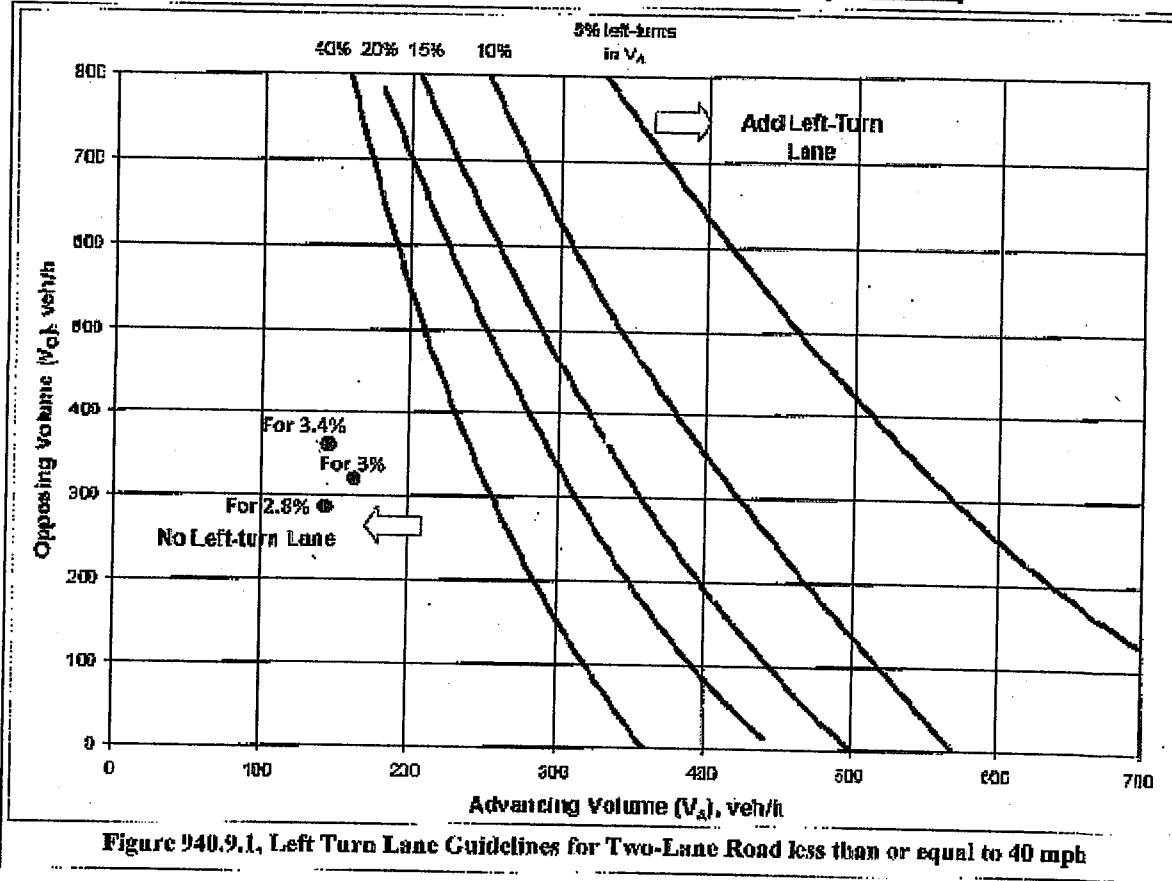


Figure 940.9.1, Left Turn Lane Guidelines for Two-Lane Road less than or equal to 40 mph

Left Turn Analysis

Schoettler Road at Chesterfield Trails Drive

Data Collected 10/25/2016

		Field Collection			Hour Totals			
		Field	VO (veh/h)	VA (veh/h)	%L	VO (veh/h)	VA (veh/h)	%L
EVENING RUSH	3:30-4:00p		143	144	7.6			
	3:30-4:30p					271	302	8.9
	4:00-4:30p		128	158	10.1			
	4:00-5:00p					239	349	7.7
	4:30-5:00p		111	191	5.8			
	4:30-5:30p					243	461	7.4
	5:00-5:30p		132	270	8.5			
5:00-6:00p					278	465	6.9	
	5:30-6:00p		146	195	4.6			

VO	Opposing Volume
VA	Advancing Volume
40 mph	Operating Speed
%L	Percentage of Left Turn Movements

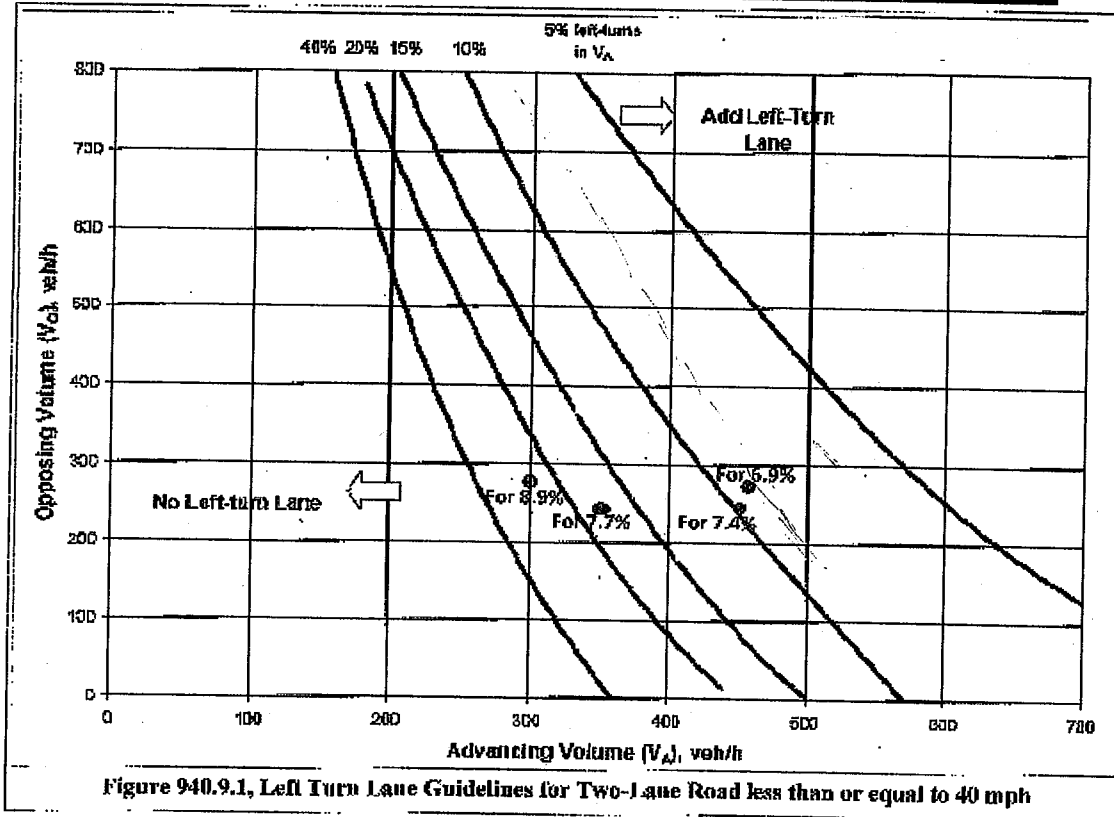


Figure 940.9.1, Left Turn Lane Guidelines for Two-Lane Road less than or equal to 40 mph

Left Turn Analysis

Schoettler Road at Highcroft Drive

Data Collected 10/18/2016

		Field Collection			Hour Totals			
		Field	VO (veh/h)	VA (veh/h)	%L	VO (veh/h)	VA (veh/h)	%L
MORNING RUSH	7:00-7:30a		165	210	9	260	461	12.4
	7:30-8:00a		95	251	15.1			
	7:30-8:30a		85	219	8.7			
	8:00-9:00a		87	201	10			
	8:30-9:00a		87	201	10			
	8:30-9:30a		193	340	8.5			
	9:00-9:30a		106	139	6.5			

VO	Opposing Volume
VA	Advancing Volume
30 mph	Operating Speed
%L	Percentage of Left Turn Movements

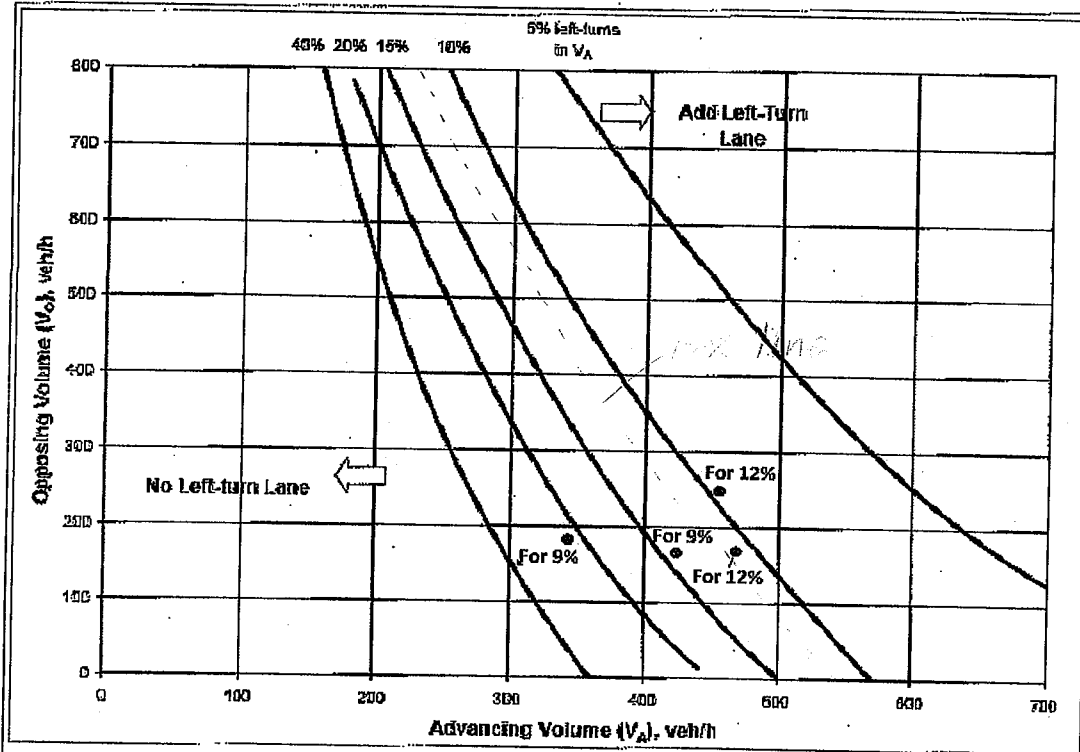


Figure 940.9.1, Left Turn Lane Guidelines for Two-Lane Road less than or equal to 40 mph

Left Turn Analysis

Schoettler Road at Highcroft Drive

Data Collected 10/18/2016

		Field Collection			Hour Totals			
		Field	VO (veh/h)	VA (veh/h)	%L	VO (veh/h)	VA (veh/h)	%L
EVENING RUSH	3:30-4:30p	3:30-4:00p	170	179	13.4	370	353	12.5
		4:00-4:30p	200	174	11.5			
	4:00-5:00p	4:30-5:00p	230	153	9.8	430	327	10.7
		5:00-5:30p	269	148	10.1			
	4:30-5:30p	5:00-5:30p	269	148	10.1	499	301	10
		5:30-6:00p	241	145	15.2			
5:00-6:00p	5:30-6:00p	241	145	15.2	510	293	12.6	

VO	Opposing Volume
VA	Advancing Volume
30 mph	Operating Speed
%L	Percentage of Left Turn Movements

close

