



MEMORANDUM

TO: SMART29 Coalition
FROM: Dexter R. Williams, P. E.
SUBJECT: Rt. 29 Traffic Conditions And Proposed Rt. 29/Rio Road Grade Separation Project
DATE: November 18, 2014

This memorandum and enclosed exhibits present a perspective on Rt. 29 traffic conditions and as they relate to the proposed Rt. 29/Rio grade separation project. It is based on available data and reports.

TRAFFIC DATA SOURCES

VDOT publishes daily traffic counts for roads throughout the state and these include Rt. 29. Daily traffic counts provide a general measure of volume and VDOT counts over time can provide a measure of traffic growth trends. Daily traffic counts are not the principle basis for measuring traffic performance.

Peak hour counts and conditions are used for measuring traffic performance. Peak hour counts are typically conducted for special study purposes and are not typically conducted routinely year after year.

The most comprehensive peak hour traffic counts I have found for the Rt. 29 corridor is in Places 29: US 29 North Corridor Transportation Study, prepared by Meyer, Mohaddes Associates and Community Design + Associates available on the TJPDC website. The study includes peak hour traffic counts for the Rt. 29 from Hydraulic Road to Frays Mill Road. These peak hour counts were conducted in 2005.

For traffic forecasts, the Places 29 report included a table of comparing 2005 counts and 2025 forecast daily traffic and a 2025 PM peak hour traffic forecast.

Another recent but more limited source is included in the Rt. 29 Solutions VDOT presentation to the Charlottesville Regional Chamber of Commerce dated October 28, 2014. 2014 PM peak hour counts and 2018 and 2040 peak hour counts are presented for the Rt. 29/Rio Road intersection only.

2005 TRAFFIC CONDITIONS

The Places 29 report included travel time runs on the Rt. 29 corridor northbound and southbound from Hydraulic Road to Fray Mill Road. Because Rt. 29 is generally an eight lane arterial highway from Hydraulic Road to Polo Grounds Road, a distance of 3.3 miles. Rio Road is

approximately the midpoint of this eight lane section of Rt. 29. This eight lane section of Rt. 29 is used to assess traffic operating conditions.

The following table presents traffic level of service (LOS) criteria for urban highways based on travel speeds for highways such as Rt. 29:

TABLE ONE URBAN STREET LEVEL OF SERVICE IN MPH 2010 HIGHWAY CAPACITY MANUAL			
Base Free Flow Speed (mph) [= Posted Speed Limit + 5 MPH]			50
LOS A	Free flow operation. Vehicles unimpeded.	85%	100%
		42.5	50
LOS B	Reasonably unimpeded operation. Maneuvering slightly restricted.	67%	85%
		33.5	42.5
LOS C	Stable operation. Less maneuvering, longer queues than LOS B	50%	67%
		25	33.5
LOS D	Less stable condition. Small traffic increases create substantial increases in delay and decreases in travel speed	40%	50%
		20	25
LOS E	Unstable operation and significant delay.	30%	40%
		15	20
LOS F	Extremely low speed.	0%	30%
		0	15

The eight lane section of Rt. 29 has a posted speed limit of 45 mph and a 50 mph operating speed is assumed in Table One above.

The Places 29 travel time runs for 2005 produce the following operating speeds and LOS on Rt. 29 from Hydraulic Road to Polo Grounds Road:

TABLE TWO RT. 29 2005 OPERATING SPEED AND LOS		
	Operating Speed (mph)	LOS
AM Peak Hour Northbound	40.6	B
AM Peak Hour Southbound	32.1	C
PM Peak Hour Northbound	34.4	B
PM Peak Hour Southbound	29.8	C

These results do not show any kind of sort of traffic congestion problem that warrants solution.

DAILY TRAFFIC COUNTS, TRENDS AND FORECASTS

To determine the potential for traffic growth, VDOT daily traffic counts from 2005 to 2013 for the Rt. 29 eight lane corridor from Hydraulic Road to Airport Road are shown on enclosed Exhibit A. Exhibit A shows three sections on the corridor and all sections show a decreasing trend on Rt. 29. Traffic on Rt. 29 over this period simply is not increasing. The daily counts on Exhibit A are typical of traffic count trends through the state.

Enclosed Exhibit B shows the addition of Places 29 2025 daily traffic forecast added to VDOT traffic counts and trends. The Place 29 forecasts are 37.5% to 58.7% greater than 2013 VDOT traffic counts. This 2025 forecast, only eleven years in the future now, is not realistic.

PM PEAK HOUR COUNTS, TREND AND FORECAST AT RT. 29/RIO ROAD

Exhibit C shows a graph of total PM peak hour traffic at the Rt. 29/Rio Road intersection for counts, trend and forecasts as follows:

1. The Places 29 2005 PM peak hour counts and the recent Rt. 29 solution 2014 PM peak hour counts are the actual counts shown for the at grade signalized intersection. The intersection counts declined 2% over the nine year period.
2. The 2014 to 2025 trend forecast is based on the actual count trend.
3. The Places 29 forecast for 2025 is 81.6% greater than the 2005 counts.
4. The VDOT Rt. 29 Solutions grade separation forecast for 2014, 2018 and 2040. The 2018 and 2040 forecasts follow a 1% per year increase in traffic.

As with daily counts, actual counts and trends are declining. The Places 29 forecasts portray a rapid increase in traffic that simply isn't happening. The VDOT Rt. 29 Solutions forecasts are obviously more plausible than The Places 29 forecast but are still not supported by ongoing trends.

EFFECTS OF RT. 29/RIO GRADE SEPARATION

The most touted benefit of the proposed grade separation is traffic-signal-free-travel for through traffic. In this case, through traffic refers to traffic going through three existing signals: Fashion Square, Rio Road and Albemarle Square. All traffic that previously turned at these three signals will use ramps to one signalized intersection at Rio Road. (It should be noted that through traffic in various discussions of Rt. 29 can also mean traffic between Culpeper and Lynchburg, or between Rt. 29 north of Albemarle and south of Albemarle, or between some point on Rt. 29 north the split at the Rt. 250 bypass).

The VDOT Rt. 29 Solutions forecast for 2014 with the grade separation has through traffic at one-half to two-thirds of Rt. 29 traffic at Rio Road. Other definitions of through traffic as previously discussed mean increasingly smaller percentages of defined through traffic.

The improvement in travel for the VDOT Rt. 29 Solutions through traffic is this: the traffic will be able to travel at speeds approaching the 50 mph free flow speed for 0.9 miles. This is an increase of operating speeds of 10 to 20 mph for 0.9 miles.

Whether or not this marginal improvement in operating speeds for some traffic for less than a mile offsets additional travel time for diverted traffic has not been documented in anything I have reviewed to date. The Places 29 study included a plethora of other road changes so a specific without and with grade separation comparison is not possible. VDOT Rt. 29 Solutions has not included any specific documentation of traffic operations that I have seen.

RT. 29 THROUGH TRAFFIC PERSPECTIVES

Traffic studies I have reviewed to date have not included any specific origin/destination data particularly for the eight lane section of Rt. 29 from Hydraulic Road to Polo Grounds Road. Without this type of data, it is not possible to make an exact determination of through for this section of Rt. 29.

The Place 29 2005 PM peak hour traffic counts for the Rt. 29 corridor do provide some perspective on the potential size of through traffic versus traffic that turning onto and off of Rt. 29, i.e., non-through traffic as follows:

1. Two way traffic on Rt. 29 south of Hydraulic Road: 4399 vehicles per hour.
2. Two way traffic on Rt. 29 north of Polo Grounds Road: 4208 vehicles per hour.
3. Highest two way traffic on any section of Rt. 29: 5893 vehicles per hour.
4. Turning movements entering and exiting of Rt. 29: 15,473 vehicles per hour each.

Clearly overall through traffic demand on this 3.3 miles section of Rt. 29 is substantially less than the local turning movements.

COMPARABLE ARTERIAL HIGHWAYS

Rt. 60 Midlothian Turnpike in Chesterfield County is a six lane arterial highway from Rt. 76 Powhite Parkway to west of Rt. 147 Huguenot Road to Alverser Drive (3.2 miles). It continues as a four lane highway to the west throughout Chesterfield County. Following are 2013 daily traffic counts for the section of Rt. 60:

1. Powhite Parkway to Robious Road: 1.25 miles, 62,000 vehicles per day on six lanes.
2. Robious Road to Huguenot Road: 1.65 miles, 51,000 vehicles per day on six lanes.

The Powhite/Robious section of Rt. 60 carries more traffic than Rt. 29 north of Hydraulic Road on two less lanes. The Robious/Huguenot section of Rt. 60 carries more traffic than Rt. 29 north of Rio Road on two less lanes.

CONCLUSIONS

The need to grade separate the Rt. 29/Rio Road intersection is not demonstrably needed to accommodate traffic growth. Traffic simply isn't growing.

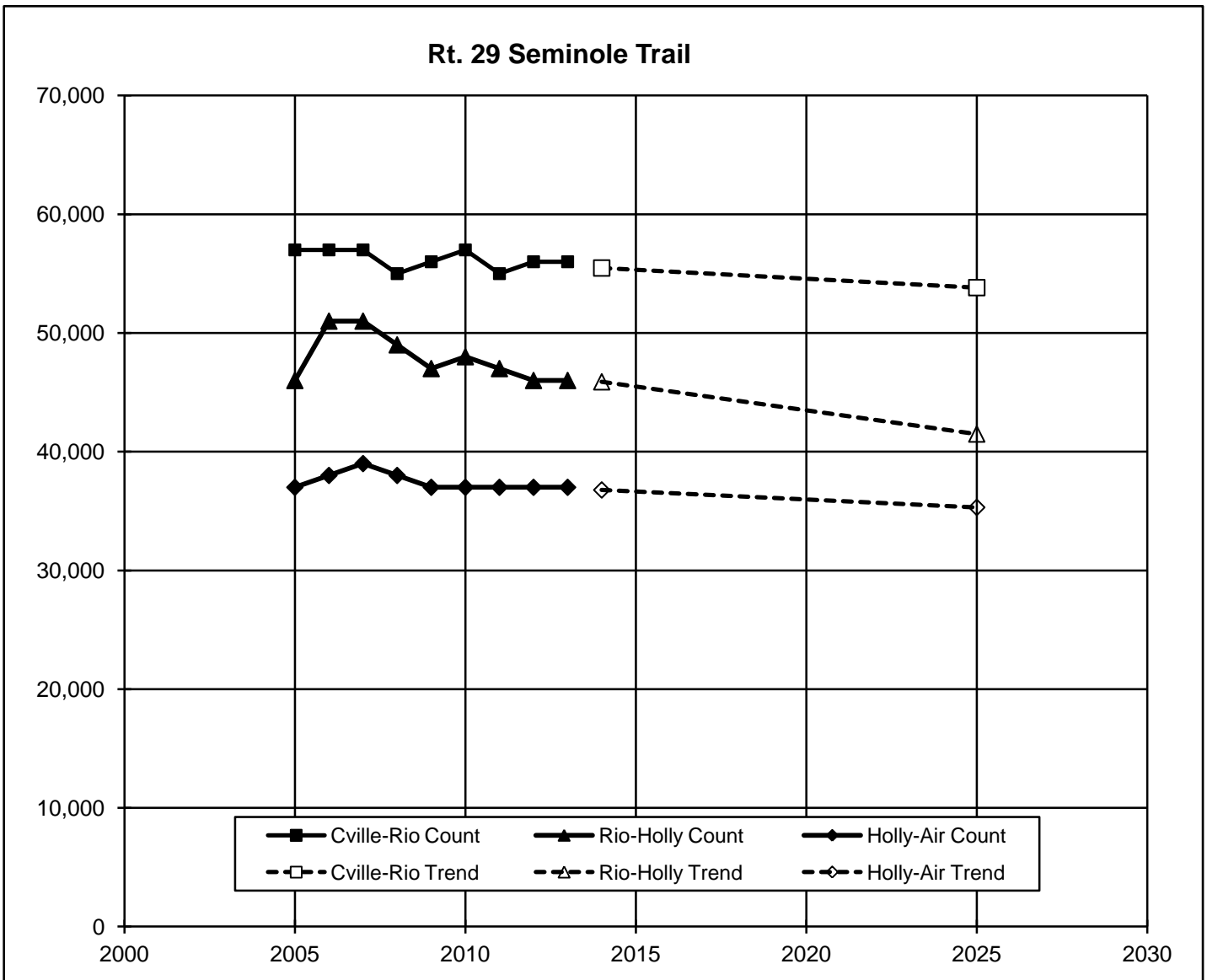
With the grade separation, some traffic will be able to increase operating speed for 0.9 miles distance. No measure of adverse effect on access changes to adjacent properties has been documented to measure against this marginal change in traffic operations.

Overall traffic demand on Rt. 29 is in fact appreciably less than that commonly found in Virginia. Many arterial highways have more traffic than Rt. 29 with fewer lanes.

In summary, the proposed grade separation of Rt. 29 and Rio Road is a remarkably complicated and expensive change with limited or no benefits for most travelers on Rt. 29.

Street: **Rt. 29 Seminole Trail**

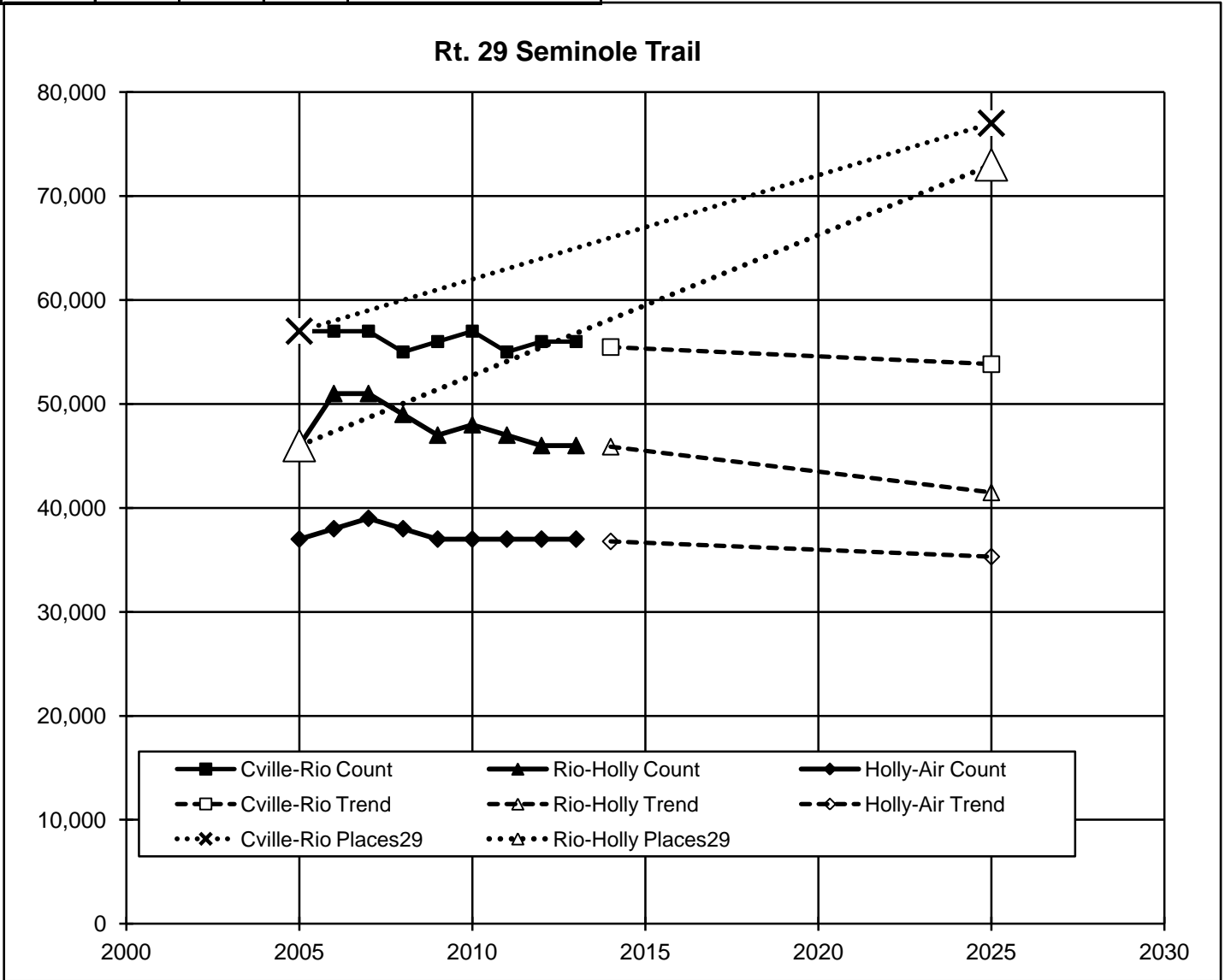
From:	NCL Cville	Rio Rd	Hollymead
To:	Rio Rd	Hollymead	Airport
Year			
2005	57,000	46,000	37,000
2006	57,000	51,000	38,000
2007	57,000	51,000	39,000
2008	55,000	49,000	38,000
2009	56,000	47,000	37,000
2010	57,000	48,000	37,000
2011	55,000	47,000	37,000
2012	56,000	46,000	37,000
2013	56,000	46,000	37,000
	$\Delta 14$	$\Delta 14$	$\Delta 14$
2014	55,472	45,889	36,778
2025	53,822	41,489	35,311
	0.97	0.90	0.96



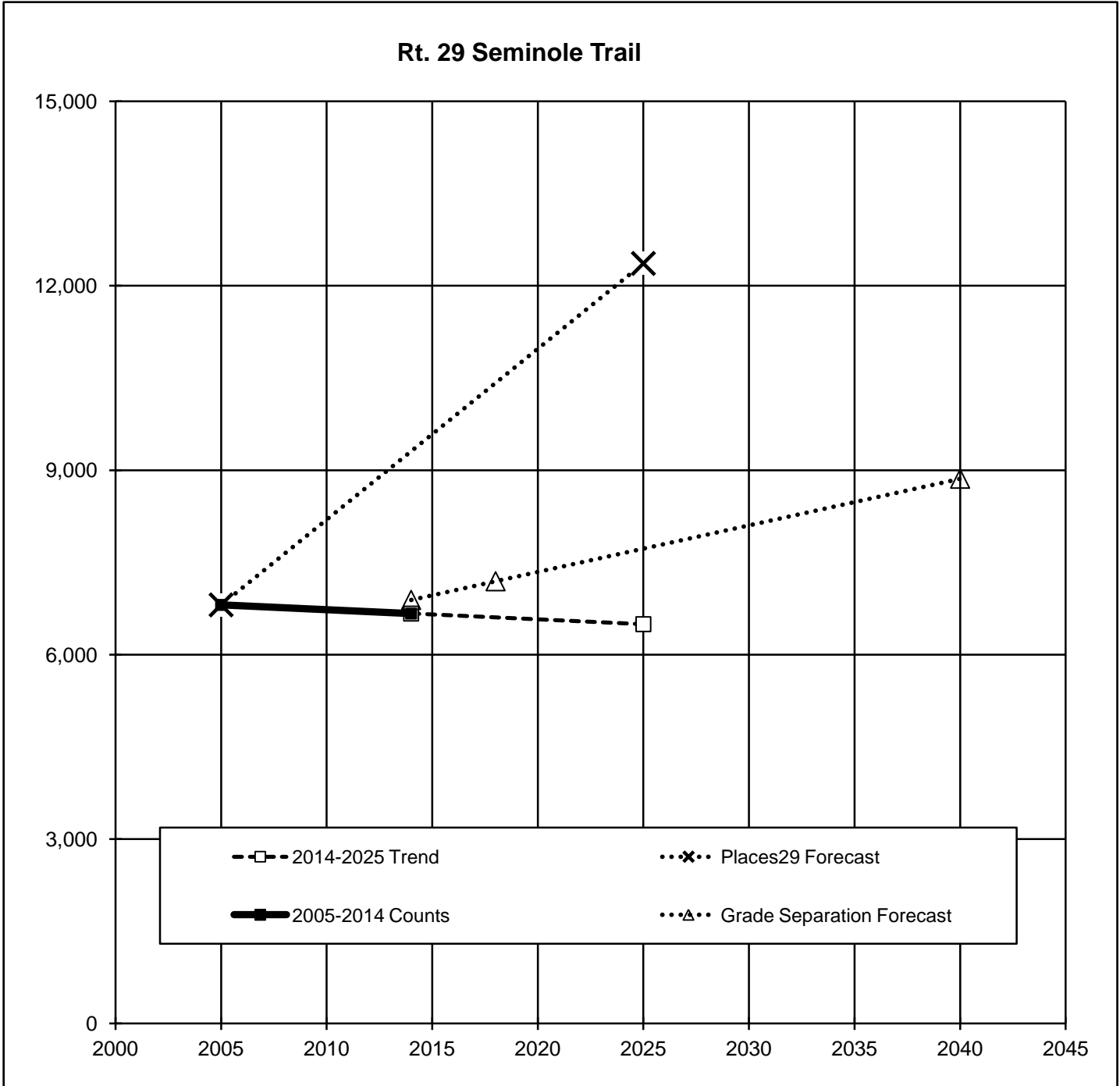
Street: **Rt. 29 Seminole Trail**

From:	NCL Cville	Rio Rd	Hollymead
To:	Rio Rd	Hollymead	Airport
Year			
2005	57,000	46,000	37,000
2006	57,000	51,000	38,000
2007	57,000	51,000	39,000
2008	55,000	49,000	38,000
2009	56,000	47,000	37,000
2010	57,000	48,000	37,000
2011	55,000	47,000	37,000
2012	56,000	46,000	37,000
2013	56,000	46,000	37,000
		$\Delta 14$	$\Delta 14$
2014	55,472	45,889	36,778
2025	53,822	41,489	35,311
	0.97	0.90	0.96
2005	57,000	46,000	
2025	77000	73000	

Places 29 Forecast 2025 UnJAM(b)



Year	At Grade		Year	Grade Separation
2005	6,809		2014	6,890
2014	6,668		2018	7,194
		Δ14	2040	8,862
2014	6,668			
2025	6,496	0.97		
2005	6,809			
2025	12363	Places 29 Forecast		



ROUTE 29 SEMINOLE TRAIL/RIO ROAD INTERSECTION
PM PEAK HOUR TOTAL INTERSECTION TRAFFIC

DRW Consultants, LLC
804-794-7312

Exhibit C

Rt. 29 Seminole Trail

