

TECHNICAL MEMORANDUM

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Date: January 11, 2017
Project: West Rosslyn TIA (2120-004)
Subject: Response to VDOT/Arlington County Comments

VDOT
Arlington County

Introduction

This memorandum addresses comments received from Arlington County and VDOT Staff regarding the West Rosslyn Transportation Impact Analysis dated May 10, 2016. It should be noted that since the original submission, the development program for the West Rosslyn site has been updated and is described in detail below. The updated program no longer triggers an 870 study based on the weekday ADT. The responses to comments are provided below.

Arlington County December 28, 2016 Comments

1. Page 21 – A stop on Wilson Boulevard approximately 270 feet west of N Oak Street intersection existed serving Metro 4B, 38B, and since TIA submission it's been relocated 90 feet west of N Oak street, please include in figure.
Figure 7 has been updated to reflect the bus stop relocation.
2. Page 66 – Please revise name for intersection 6 to be “New Street and 18th Street N” (applies to page 56 – 2019 results as well)
Intersection has been relabeled in Table 7 and Table 8.
3. Page 66 – Please remove existing and future without development LOS from intersection 6 or clarify why their outputs are shown.
LOS results for intersection 6 and 7 have been removed.
4. Page 67 – For easier review please label for which peak the hourly volumes that are graphed coincide with.
Figure 28 has been labeled with corresponding peak hour.
5. Provide updated trip generation calculations reflecting current development plan in the comment response memo.
The TIA dated May 10, 2016 analyzed a worst-case development scenario. Since the TIA was submitted the development program has been finalized to include 912 high-rise apartments, approximately 25,000 square feet of retail, a City Park, and Fire Station. The trip generation analyzed in the May 10 TIA is shown in Table 1, and the proposed development trip generation is presented in Table 2. A comparison of the analyzed trip generation and

the proposed trip generation is shown in Table 3. However, as shown in Table 3 below, the proposed development generates fewer trips during the AM, PM, and Saturday peak hours (both for the total peak hour and by direction), as well as Weekday and Saturday daily trips.

Table 1: Analyzed Trip Generation

Land Use	ITE Code	Size	Weekday						Saturday				
			AM Peak Hour			PM Peak Hour			Daily	Sat Peak Hour			Daily
			In	Out	Total	In	Out	Total		Total	In	Out	
Existing Use*													
General Office	710	143 ksf	178	6	184	19	111	130	-	2	24	26	-
Specialty Retail	826	14 ksf											
Fire Station	-		3	2	5	6	3	9	-	4	4	8	-
City Park	-	25 ksf	-	-	-	-	-	-	-	-	-	-	-
<i>Existing Trips</i>			181	8	189	25	114	139	0	6	28	34	0
Proposed Residential													
High-Rise Apartment	222	700 DU	53	157	210	144	92	236	2,800	147	111	258	3,506
Transit Reduction (Residential)**		60%	-32	-94	-126	-86	-56	-142	-1,680	-88	-67	-155	-2,104
<i>Subtotal (Residential vehicle trips)</i>			21	63	84	58	36	94	1,120	59	44	103	1,402
<i>Internal Trip Reduction - (5% AM, 10% PM and Sat, 15% Weekday)</i>			-1	-3	-4	-6	-3	-9	-168	-6	-4	-10	-210
<i>Total Retail External Trips</i>			20	60	80	52	33	85	952	53	40	93	1,192
Proposed Retail													
Fire Station	-		3	2	5	6	3	9	-	4	4	8	-
City Park	-	25 ksf	-	-	-	-	-	-	-	-	-	-	-
Specialty Retail	826	22 ksf	19	18	37	33	41	74	979	55	55	110	925
Transit Reduction (Retail)**		50%	-10	-9	-19	-17	-20	-37	-490	-28	-27	-55	-463
Retail Pass-by Trips		25%	-2	-3	-5	-4	-5	-9	-122	-7	-7	-14	-116
Super Market	850	20 ksf	42	26	68	121	116	237	2,731	184	177	361	3,552
Transit Reduction (Supermarket)***		50%	-21	-13	-34	-61	-58	-119	-1,366	-92	-89	-181	-1,776
Supermarket Pass-by Trips		25%	-5	-4	-9	-15	-15	-30	-341	-23	-22	-45	-444
General Office	710	400 ksf	510	70	580	89	437	526	3,765	93	79	172	844
Transit Reduction (Office) **		40%	-204	-28	-232	-36	-174	-210	-1,506	-37	-32	-69	-338
<i>Total Retail External Trips</i>			332	59	391	116	325	441	3,650	149	138	287	2,184
<i>Total Site External Trips</i>			352	119	471	168	358	526	4,602	202	178	380	3,376
<i>Total Pass-by Trips</i>			-7	-7	-14	-19	-20	-39	-463	-30	-29	-59	-560
<i>Total Site Trips</i>			345	112	457	149	338	487	4,139	172	149	321	2,816
<i>Net New Trips</i>			164	104	268	124	224	348	4,139	166	121	287	2,816

* Existing trip generation to be based on existing site trips based on intersection counts

**Table S-3 and S-4 from WMATA Survey, Arlington County Commercial Building Research Topline Report, and Arlington County Residential Building Transportation Performance Monitoring Study

***Final Mode split based on consultation with Arlington County and review of comparable sites

Table 2: Proposed Trip Generation

Land Use	ITE Code	Size	Weekday						Saturday				
			AM Peak Hour			PM Peak Hour			Daily	Sat Peak Hour			Daily
			In	Out	Total	In	Out	Total		In	Out	Total	
Existing Use*													
General Office	710	143 ksf	178	6	184	19	111	130	-	2	24	26	-
Specialty Retail	826	14 ksf											
Fire Station	-		3	2	5	6	3	9	-	4	4	8	-
City Park	-	25 ksf	-	-	-	-	-	-	-	-	-	-	-
<i>Existing Trips</i>			181	8	189	25	114	139	0	6	28	34	0
Proposed Residential													
High-Rise Apartment	222	912 DU	68	204	272	185	119	304	3,488	188	142	330	4,572
Transit Reduction (Residential)**		60%	-41	-122	-163	-111	-71	-182	-2,093	-113	-85	-198	-2,743
<i>Subtotal (Residential vehicle trips)</i>			27	82	109	74	48	122	1,395	75	57	132	1,829
<i>Internal Trip Reduction - (5% AM, 10% PM and Sat, 15% Weekday)</i>			-1	-4	-5	-7	-5	-12	-209	-8	-5	-13	-274
<i>Total Retail External Trips</i>			26	78	104	67	43	110	1,186	67	52	119	1,555
Proposed Retail													
Fire Station	-		3	2	5	6	3	9	-	4	4	8	-
City Park	-	25 ksf	-	-	-	-	-	-	-	-	-	-	-
Specialty Retail	826	25 ksf	21	20	41	36	45	81	1,107	63	63	126	1,051
Transit Reduction (Retail)**		50%	-11	-10	-21	-18	-23	-41	-554	-32	-31	-63	-526
Retail Pass-by Trips		25%	-3	-2	-5	-5	-5	-10	-138	-8	-8	-16	-131
<i>Total Retail External Trips</i>			10	10	20	19	20	39	415	27	28	55	394
<i>Total Site External Trips</i>			36	88	124	86	63	149	1,601	94	80	174	1,949
<i>Total Pass-by Trips</i>			-3	-2	-5	-5	-5	-10	-138	-8	-8	-16	-131
<i>Total Site Trips</i>			33	86	119	81	58	139	1,463	86	72	158	1,818
Net New Trips			-148	78	-70	56	-56	0	1,463	80	44	124	1,818

* Existing trip generation to be based on existing site trips based on intersection counts

**Table S-3 and S-4 from WMATA Survey, Arlington County Commercial Building Research Topline Report, and Arlington County Residential Building Transportation Performance Monitoring Study

***Final Mode split based on consultation with Arlington County and review of comparable sites

Table 3: Trip Generation Comparison

Scenario	Weekday						Saturday				
	AM Peak Hour			PM Peak Hour			Daily	Sat Peak Hour			Daily
	In	Out	Total	In	Out	Total		In	Out	Total	
Analyzed Trip Generation	164	104	268	124	224	348	4,139	166	121	287	2,816
Proposed Trip Generation	-148	78	-70	56	-56	0	1,463	80	44	124	1,818
Net Difference (Proposed - Analyzed)	-312	-26	-338	-68	-280	-348	-2,676	-86	-77	-163	-998

VDOT June 23, 2016 Comments

- Figure 18: The roadway configuration for the future with development scenario should show lane control, and all movements for the proposed intersections #6 and #7. Also, please change in Legend future without development to future with development.

Figure 18 has been updated to reflect these comments.

- Table 6: Trip Generation: Trip generation of 457 trips in the AM peak hour and 487 trips in the PM peak hour after all reductions applied for the proposed 700 residential units, 400,000 square feet of office space, 22,000 square feet of retail and 20,000 square feet of grocery space seems too low and not proportional when compared to the 184 trips in the AM peak hour and 130 trips in the PM peak generated by the existing 50,000 square feet office building and existing fire station. The significant difference in size between the existing use and proposed development does not correlate with the existing use generated traffic and proposed use generated trips. Please re-evaluate applied TDM/transit mode split reductions.

The existing square footage has been updated to correctly identify what exists today, which is approximately 156,825 square feet of space including office and ground floor retail uses. Based on the updated square footages, the size difference between the existing and analyzed office development is less significant; therefore, the correlation between the existing trips and analyzed trips generated for the office component is improved. It should also be noted that a large component of the development will include residential units which, and the trip

generation for the existing office and proposed residential use will not necessarily correlate. The mode splits used are consistent with similar developments in the area, and are still appropriate with the existing square footage has been corrected.

3. Please provide 95th Percentile Queue Comparison and highlight 2019 future with development conditions queue increases compared to 2019 future without development conditions that are beyond available storage lengths.
The comparison table has been updated to present 95th percentile queues.
4. Table 9: Comparison of LOS Results: Existing (2016) and Future Without Development (2019) LOS results should not be shown for intersection #6, LOS results should be shown for intersection #8.
The comparison table has been updated to remove LOS results for intersection 6 and now include results for intersection 8.
5. Vehicular access to the site will be provided via a new north-south street connecting Wilson Boulevard with 18th Street N. Please discuss in the report spacing standards and access management requirements for new connection.
The new street is identified in the West Rosslyn Area Planning Study (WRAPS) to provide a north-south pedestrian and vehicle connection. During the planning stages of the WRAPS, multiple locations were considered for the north-south connection and the final location was chosen. The location of this street shown for this application is consistent with the approved WRAPS plan. This new street is also shown in the Arlington County Master Transportation Plan.
6. In addition to the preliminary signal warrant analyses for the N Nash Street (east) and Key Boulevard intersection, please discuss in the report access management standards in relation to the minimum signalized intersection spacing requirements and if needed exceptions/waivers to the spacing standards.
Key Boulevard and N Nash Street are maintained by Arlington County rather than VDOT; therefore, VDOT spacing standards do not apply. Arlington County does not have signalized intersection spacing standards; however the distance of approximately 250 feet between N Nash Street (east) and Key Boulevard to the next adjacent signalized intersection (N Fort Myer Drive and 19th Street N) is similar to the distance between signalized intersections elsewhere in Rosslyn. A signal is suggested at this location based on existing capacity analysis and queuing issues. With the addition of the signal, all queues are reduced or able to be accommodated within the available storage with the exception of the southbound left/thru lanes during the AM peak hour and the eastbound left during the Saturday peak hour. The eastbound left queue during the Saturday peak exceeds available storage by less than two vehicles and does not block another signalized intersection. The southbound queue exceeding available storage in the AM peak hour can be mitigated with coordinated signal timing at the intersection of N Fort Myer Drive and 19th Street N.
7. From the Synchro files appear that there are noticeable imbalances along Wilson Blvd and Key Blvd in traffic volumes departing one intersection and arriving at the next. Major fluctuations (greater than 10% of the total approach traffic volumes) can yield inaccurate results. If there are no entrances or obvious reasons for the traffic volume variation and the difference in volumes are substantial, investigation is needed to justify and determine the reason for the discrepancies. For more information and the ways to balance traffic volumes see VDOT Traffic Operations and Safety Analysis Manual (TOSAM).
The volume imbalances can be explained by the presence of driveways between study area intersections. There are multiple driveways along both Wilson Boulevard and Key Boulevard.

8. Page 6 -- The procedure, as described here, when applied to the volumes shown in Figure 11, do not result in the numbers shown in Figures 14 and 16 for some of the intersections. Please recheck. If correct, please show a sample calculation for one intersection.

The future (2019) without development traffic volume (Figure 16 volumes) calculations are fully described starting on Page 30 of the TIA. Page 6 is part of the executive summary and does not reference figure numbers; therefore, it is difficult to correlate the numbers. The future (2019) without development volumes shown on Figure 16 are the addition of the existing volumes shown on Figure 11, background growth traffic volumes shown on Figure 14, and background project traffic volumes shown on Figure 15. A few sample calculations are shown in Table 4 below.

Table 4: Example Future (2019) Without Development Traffic Volume Calculations

Future Without Development (2019) Traffic Volumes												
Intersection (Movement)	AM Peak Hour				PM Peak Hour				Saturday Peak Hour			
	Existing Volumes - Figure 11	Background Growth Volumes - Figure 14	Background Project Volumes - Figure 15	Future (2019) without Development Volumes - Figure 16	Existing Volumes - Figure 11	Background Growth Volumes - Figure 14	Background Project Volumes - Figure 15	Future (2019) without Development Volumes - Figure 16	Existing Volumes - Figure 11	Background Growth Volumes - Figure 14	Background Project Volumes - Figure 15	Future (2019) without Development Volumes - Figure 16
1 N Quinn Street and Key Boulevard Southbound Right	26	0	6	32	27	0	8	35	35	1	12	48
3 N Quinn Street and Wilson Boulevard Westbound Thru	334	7	78	419	579	12	207	798	392	8	72	472
8 N Oak Street and Key Boulevard Eastbound Right	58	1	106	165	12	0	38	50	20	0	6	26
10 N Oak Street and Wilson Boulevard Westbound Thru	586	12	81	679	621	13	186	820	392	8	76	476
13 N Nash Street (east) and Key Boulevard Northbound Right	7	0	0	7	14	0	0	14	8	0	0	8
14 N Nash Street and Lee Highway Southbound Left	101	2	0	103	78	1	0	79	57	1	0	58
15 N Fort Myer Drive and Lee Highway Eastbound Thru	1352	20	25	1397	902	14	18	934	742	11	16	769

9. Page 29 (Figure 11) -- The traffic volumes as shown here (and the other figures) do not balance between intersections at some locations. Please recheck. If traffic at access points (driveways, etc.) between intersections is causing this, please state that in the text.

The volume imbalances can be explained by the presence of driveways between study area intersections. As stated earlier, there are multiple driveways along both Wilson Boulevard and Key Boulevard as well as other study roadways.

10. Page 47 -- Expand on the determination of the distribution of the trips.

The trip distribution was based on existing volumes, anticipated traffic patterns to and from regional roadways, and other recent studies conducted in the area. The trip distribution was agreed upon by both VDOT and Arlington County staff during the scoping process.