



# County of Fairfax, Virginia

## MEMORANDUM

**DATE:** November 5, 2009

**TO:** Bernard Suchicital  
Policy and Plan Development Branch, FCDPZ

**FROM:** Leonard Wolfenstein, Chief *L.W.*  
Transportation Planning Section, TPD, FCDOT

**SUBJECT:** North County APR #08-III-3UP, INOVA Fair Oaks Hospital (IFOH)

The Fairfax County Department of Transportation (FCDOT) offers the following comments regarding the traffic impact study submitted per the Chapter 527 requirements regarding the proposed changes to the Comprehensive Plan indicated in the subject Area Plan Review (APR) nomination. VDOT has prepared comments, which have been acknowledged in this memo and are attached to the final staff report. FCDOT's comments are as follows:

### Current Comprehensive Plan Guidelines and Background Information

- Many of the road improvements identified on the Fairfax County Transportation Plan Map have been constructed in the immediate area including the widening of West Ox Road to four lanes and the widening of Rugby Road along the entire IFOH site to 4 lanes. The two transportation improvements identified on the Map that have not been constructed are the widening of Rugby Road south of the Fairfax County Parkway to four lanes and the widening of the Fairfax County Parkway to six lanes. Rugby Road is currently two lanes in the southbound direction and one lane in the northbound direction from Route 50 to the Fairfax County Parkway while the Fairfax County Parkway in the IFOH vicinity is four lanes.
- Fairfax Connector bus route 605 currently provides service to the site. It runs every 60 minutes from the Fairfax County Government Center through the site to the Reston Town Center Transit Station. The County is currently developing a Draft Transit Development Plan (TDP), which is a comprehensive 10-year plan for bus service (Fairfax Connector and Metrobus) throughout the entire County. The draft plan recommends increased service on route 605 from every hour to every 30 minutes and it will connect to the future Reston Parkway Metrorail station.
- There are currently only two points of vehicle access to the hospital. One is located on the north side at Joseph Siewick Drive and Ox Trail and the other is on south at Joseph Siewick Drive and Alder Woods Drive. To alleviate congestion within the site, the nominator proposes an additional full access along Rugby Road. The nominator originally proposed two additional accesses in the APR nomination but only one was examined in the traffic study submitted; therefore, only one additional access was

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evaluated. The current Comprehensive Plan states that no additional vehicle access should be provided on Rugby Road into the site.

### **Traffic Impact Analysis Results from the 3UP Traffic Study (Includes FCDOT Comments)**

- No trip reductions are assumed in the traffic impact analysis in order to present a conservative estimate of the vehicular traffic that could be generated from the proposed increase in density. FCDOT does recognize that some trip reductions will occur because of synergy between the medical office and the hospital as well as bus service to the site. Transportation Demand Management (TDM) measures will be needed in order to minimize the impacts to Rugby Road and the surrounding road network from the proposed increased density.
- Tables 1-5 below outline intersection level of service, road segment congestion, and total trips for both the 0.40 FAR original proposed density increase and the reduced proposed density increase of 0.35 FAR. All 2030 values assume build-out of the Constrained Long Range Plan (CLRP) transportation network. The analysis assumed four lanes on Rugby Road between Route 50 and the Fairfax County Parkway. This improvement is not currently in the CLRP; however, as development occurs, justification for adding this road improvement to the CLRP is possible. Not all of the improvements identified in the County's Transportation Plan Map are in the CLRP. This can be due to a multitude of factors such as growth, need, and even fiscal constraints.
- The number bullets under Tables 1 and 2 are suggested improvements from the nominator. They have not been factored into the analysis are meant to serve as suggested mitigation measures. Evaluation of these recommendations could possibly improve the intersection level of service but they would need to be evaluated with a more detailed traffic analysis at rezoning.



**Table 1**  
**Intersection Level of Service (LOS) – With the Proposed Density of 0.40 FAR**

#	Intersection	2008 Existing	2030 Comp Plan	2030 with 0.40 FAR	2030 0.40 FAR w/ Access
(1)	Rugby Road/ Fairfax County Parkway (1)	AM - E PM - E	AM - E PM - E	AM - E PM - E	AM - E PM - F
(2)	Rugby Road/ Alderwoods Drive (2), (3)	AM - B PM - C	AM - B PM - C	AM - C PM - E	AM - A PM - B
(3)	Joseph Siewick Drive/ Alderwoods Drive * (3)	AM - A/D PM - A/C	AM - B/F PM - A/F	AM - B/F PM - A/F	AM - A/C PM - A/C
(4)	Rugby Road/ Proposed Site Access	N/A N/A	N/A N/A	N/A N/A	AM - A PM - C
(5)	Lamplight Drive/ Misty Creek Lane *	AM - A PM - A	AM - A PM - A	AM - A PM - A	AM - A PM - A
(6)	Misty Creek Lane/ Ox Trail *	AM - A/D PM - A/C	AM - A/D PM - A/C	AM - A/D PM - A/D	AM - A/D PM - A/C
(7)	Ox Trail/ Joseph Siewick Drive * (3)	AM - A/C PM - A/C	AM - A/C PM - A/C	AM - A/F PM - A/E	AM - A/D PM - A/C
(8)	West Ox Road/ Ox Trail/Falkirk Drive	AM - C PM - B	AM - F PM - E	AM - F PM - F	AM - F PM - F
(9)	Alderwoods Drive Right Out/ Route 50 *	AM - B PM - B	AM - B PM - B	AM - B PM - B	AM - B PM - B
(10)	Alderwoods Drive/Dorforth/ Route 50	AM - B PM - B	AM - B PM - C	AM - C PM - C	AM - C PM - C

\* Denotes a non-signalized intersection

Recommended Improvements from the Nominator that have not been factored into the Traffic Analysis:

- (1) Add SB left turn lane; Add EB left turn lane; signal timing adjustments
  - (2) Extension of NB right turn lane; signal timing adjustments
  - (3) Add new site access (Rugby Road/Proposed Site Access)
- Five of the intersections analyzed in the traffic study are not signalized. Two of the five non-signalized intersections are at the hospital's two existing entrances. Both of the existing hospital intersections (3 and 7) have failing approaches with the proposed increased in density of 0.40 FAR or 0.35 FAR. However, the failing approaches are located within the hospital and are not on Alder Woods Drive or Ox Trail. With the proposed new full signalized access on Rugby Road, the current approaches within the hospital at its two existing intersections would operate at acceptable levels of service. With this new full access the intersection of Rugby Road and Alder Woods has an

improved level of service; however, the failing levels-of-service outside the hospital's property are not improved with this new full access.

- The traffic study shows that the two existing hospital intersections (with no additional access) at the 0.40 FAR scenario are significantly failing while the 0.35 FAR scenario only shows one approach that is significantly failing. The approach that is failing is the southbound left turn lane from Joseph Siewick Drive to Alder Woods Drive. Under both scenarios, the new proposed access would allow vehicles to utilize the signal to turn left out of the hospital onto southbound Rugby Road. Without the proposed access, these same vehicles would be turning right out of the hospital onto Alder Woods Drive to make the left onto southbound Rugby Road. The reason that the existing intersection at Joseph Siewick Drive operates acceptably with the proposed access is because the vehicles that are turning left out of the site onto eastbound Alder Woods can do so without the vehicles turning left into the site from Alder Woods. Currently, these vehicles turn right onto Alder Woods and then left into the site. The new proposed access on Rugby Road would allow these vehicles to continue straight on Rugby Road and turn right into the site at the new proposed access.
- The new proposed access alleviates the intersection at Joseph Siewick Drive and Ox Trail by allowing vehicles to utilize the signal to turn left from the hospital to southbound Rugby Road. Currently, these vehicles have to wait for an opening in traffic to make the left (non-signalized intersection).
- Both scenarios show that a new access is beneficial to the hospital site in terms of vehicle ingress/egress and wait times for vehicles turning onto the public streets. However, neither scenario shows that a new full access with a signal is justified. The hospital would then have a total of three full accesses. FCDOT recommends that a partial access (right in/right out) be explored in place of a third full access.
- The traffic study shows that under both scenarios, the new full signalized access onto Rugby Road would increase the delay times on Rugby Road at Fairfax County Parkway south of Alder Woods Drive as vehicles will turn left onto Rugby at the new signal.
- The intersection at West Ox and Ox Trail fails under buildout of the Comprehensive Plan in the AM peak hour. The intersection delay increases by approximately 2% in the AM peak hour under the 0.40 FAR scenario. The failing level of service can be greatly attributed to vehicles turning left onto West Ox Road from Ox Trail. The level of service at the approach for vehicles turning left onto northbound West Ox is already failing under buildout of the existing Comprehensive Plan. The 0.40 FAR density increases delay (also known as wait time) at this intersection by 6% or approximately 15 seconds. The PM peak hour falls from a level of service E under buildout of the existing Comprehensive Plan to level of service F. The delay is an increase of approximately 15%. The level of service is barely an F under the proposed density increase of 0.40 FAR and fails because of through traffic in both directions on West Ox Road. The through traffic on West Ox Road has no bearing on the hospital as these vehicles are not utilizing the hospital's services.



- The intersections at Misty Creek Lane/Lamplight Drive, Route 50/Alder Woods Drive Right-Out, and Route 50/Alder Woods Drive/Dorforth Drive are minimally affected by the proposed increase in density.

**Table 2**  
**Intersection Level of Service (LOS) – With the Reduced Density of 0.35 FAR**

#	Intersection	2008 Existing	2030 Comp Plan	2030 with 0.35 FAR	2030 0.35 FAR w/ Access
(1)	Rugby Road/ Fairfax County Parkway (1)	AM - E PM - E	AM - E PM - E	AM - E PM - E	AM - E PM - E
(2)	Rugby Road/ Alderwoods Drive (2)	AM - B PM - C	AM - B PM - C	AM - B PM - D	AM - A PM - B
(3)	Joseph Siewick Drive/ Alderwoods Drive * (3)	AM - A/D PM - A/C	AM - B/F PM - A/F	AM - B/F PM - A/F	AM - A/C PM - A/C
(4)	Rugby Road/ Proposed Site Access	N/A N/A	N/A N/A	N/A N/A	AM - A PM - B
(5)	Lamplight Drive/ Misty Creek Lane *	AM - A PM - A	AM - A PM - A	AM - A PM - A	AM - A PM - A
(6)	Misty Creek Lane/ Ox Trail *	AM - A/D PM - A/C	AM - A/D PM - A/C	AM - A/D PM - A/C	AM - A/D PM - A/C
(7)	Ox Trail/ Joseph Siewick Drive * (3)	AM - A/C PM - A/C	AM - A/C PM - A/C	AM - A/E PM - A/D	AM - A/C PM - A/C
(8)	West Ox Road/ Ox Trail/Falkirk Drive	AM - C PM - B	AM - F PM - E	AM - F PM - E	AM - F PM - F
(9)	Alderwoods Drive Right Out/ Route 50 *	AM - B PM - B	AM - B PM - B	AM - B PM - B	AM - B PM - B
(10)	Alderwoods Drive/Dorforth/ Route 50	AM - B PM - B	AM - B PM - C	AM - C PM - C	AM - C PM - C

\* Denotes a non-signalized intersection

Recommended Improvements from the Nominator that have not been factored into the Traffic Analysis:

- (1) Add SB left turn lane; Add EB left turn lane; signal timing adjustments
  - (2) Extension of NB right turn lane; signal timing adjustments
  - (3) Add new site access (Rugby Road/Proposed Site Access)
- Signal timing and modifications was offered as a mitigation measure at select intersections within the study area. It should be noted that VDOT operates traffic signals in networks where signal cycles are determined to allow for network optimization (as

opposed to a single intersection). The feasibility of signal modifications would need to be evaluated as part of a network and not a single intersection.

- The mitigations listed above are potential improvements suggested in the traffic study. The suggested potential improvement of a third left turn lane on southbound Rugby Road to southbound Fairfax County Parkway might be difficult to implement due to right-of-way needs on the western side of the road segment. There are currently two homes that are approximately 30 feet from Rugby Road. Acquisition of right-of-way on the eastern side of the road is more feasible as this is undeveloped land. However, acquiring right-of-way on the east side of the road to accommodate road improvements on southbound Rugby Road would be very difficult to implement as the road could be substantially offset. This means that through lanes on northbound Rugby Road would not line up correctly crossing the Fairfax County Parkway.
- Additionally, the inclusion of a second eastbound left turn lane from the Fairfax County Parkway to Rugby Road could also have right-of-way implications. There are already designs for expanding the Parkway to six lanes and these plans do not include an additional left turn lane. This additional left may be possible but it will need to be resolved with a more detailed traffic analysis at rezoning.

**Table 3**  
**2030 Link Analysis – With the Proposed Density of 0.40 FAR**

Roadway	Section	AM/PM Peak Hour	2030 Comp Plan V/C Ratio	2030 0.40 FAR V/C Ratio	2030 0.40 FAR V/C Ratio w/ Access
NB Rugby Road	South of Fairfax Parkway	AM	0.43	0.48	0.48
SB Rugby Road	South of Fairfax Parkway	AM	0.18	0.20	0.20
NB Rugby Road	South of Alder Woods	AM	1.45	1.66	1.66
SB Rugby Road	South of Alder Woods	AM	0.44	0.53	0.53
NB Rugby Road	North of Alder Woods	AM	0.90	0.94	1.55
SB Rugby Road	North of Alder Woods	AM	0.32	0.34	0.50
NB Ox Trail	West of West Ox Road	AM	0.76	0.78	0.78
SB Ox Trail	West of West Ox Road	AM	0.41	0.46	0.46
NB Rugby Road	South of Fairfax Parkway	PM	0.16	0.18	0.18
SB Rugby Road	South of Fairfax Parkway	PM	0.62	0.66	0.66
NB Rugby Road	South of Alder Woods	PM	0.59	0.68	0.68
SB Rugby Road	South of Alder Woods	PM	1.01	1.20	1.20
NB Rugby Road	North of Alder Woods	PM	0.38	0.40	0.60
SB Rugby Road	North of Alder Woods	PM	0.68	0.73	1.08
NB Ox Trail	West of West Ox Road	PM	0.36	0.40	0.40
SB Ox Trail	West of West Ox Road	PM	0.62	0.82	0.82



**Table 4**  
**2030 Link Analysis – With the Reduced Density of 0.35 FAR**

Roadway	Section	AM/PM Peak Hour	2030 Comp Plan V/C Ratio	2030 0.35 FAR V/C Ratio	2030 0.35 FAR V/C Ratio w/ Access
NB Rugby Road	South of Fairfax Parkway	AM	0.43	0.45	0.45
SB Rugby Road	South of Fairfax Parkway	AM	0.18	0.19	0.19
NB Rugby Road	South of Alder Woods	AM	1.45	1.55	1.55
SB Rugby Road	South of Alder Woods	AM	0.44	0.48	0.48
NB Rugby Road	North of Alder Woods	AM	0.90	0.92	1.46
SB Rugby Road	North of Alder Woods	AM	0.32	0.33	0.46
NB Ox Trail	West of West Ox Road	AM	0.76	0.77	0.77
SB Ox Trail	West of West Ox Road	AM	0.41	0.43	0.43
NB Rugby Road	South of Fairfax Parkway	PM	0.16	0.17	0.17
SB Rugby Road	South of Fairfax Parkway	PM	0.62	0.64	0.64
NB Rugby Road	South of Alder Woods	PM	0.59	0.63	0.63
SB Rugby Road	South of Alder Woods	PM	1.01	1.10	1.10
NB Rugby Road	North of Alder Woods	PM	0.38	0.39	0.57
SB Rugby Road	North of Alder Woods	PM	0.68	0.70	1.00
NB Ox Trail	West of West Ox Road	PM	0.36	0.38	0.38
SB Ox Trail	West of West Ox Road	PM	0.62	0.81	0.81

- FCDOT asked the nominator to do a link capacity analysis on Rugby Road. A volume to capacity ratio above 1.0 (highlighted in yellow) means that the roads are saturated with vehicles. The link analysis shows that northbound Rugby Road (south of Alder Woods Drive) in the AM peak hour has a v/c ratio above 1.0 under the current Comprehensive Plan and increases with either the 0.40 FAR or the 0.35 FAR proposed densities. The same is also true for southbound Rugby Road (south of Alder Woods Drive) in the PM peak hour. The study shows that many of the vehicles on northbound Rugby Road in the AM peak hour are turning right onto Alder Woods to make a left into the hospital. This is proven by comparing the link analysis for northbound Rugby Road north of Alder Woods Drive with and without the proposed access. This link has a v/c ratio above 1.0 when the proposed access is factored into the analysis.
  - VDOT has recommended that Rugby Road should be widened to six lanes (three in each direction) based on the link capacity analysis.
  - FCDOT does not recommend that the road be widened based on the buildout of the Comprehensive Plan and with the proposed increases in density. As the traffic analysis for the intersections and the link capacity indicates, many of these vehicles are turning right at Alder Woods from northbound Rugby Road. FCDOT believes that the traffic impacts can be mitigated through intersection improvements and improvements with access to the IFOH site.

- *In instances where a road improvement is identified as needed, the developer should try in some form to accommodate it, reduce their development intensity, and/or create a TDM package that is tiered to appropriate levels of development and monitored.*

## RECOMMENDATIONS

- Rugby Road should be improved to four lanes from Route 50 to the Fairfax County Parkway prior to any development above the current Comprehensive Plan density of 0.30 FAR. The traffic study indicated that the through/left approach on northbound Rugby Road at the intersection with the Fairfax County Parkway is performing below an acceptable level of service in the future.
- In consideration of a density increase, the northern most access point at Joseph Siewick Drive and Ox Trail should be examined for possible alignment with Misty Creek Lane along with the exploring the potential closing of the existing northern access. There are current site distance issues with vehicles turning left from the hospital onto southbound Rugby Road. Also, the Office for Facilities Planning with the Fairfax County Public Schools expressed the need for improvements at Misty Creek and Ox Trail due to the nearby Navy Elementary School.
  - Additionally, the potential of installing a signal at the realigned Misty Creek/Joseph Siewick Drive and Ox Trail intersection should be explored. This could better facilitate the safe movement of vehicles turning left out of the site onto southbound Rugby as well as provide a safer point of crossing for pedestrians at Misty Creek and Ox Trail.
- FCDOT does not support a new full signalized access at the proposed new entrance and Rugby Road. As stated above, the analysis does not warrant this full access. Instead, the potential of a limited right-in/right-out access at the proposed new site entrance on Rugby could be explored. This would be subject to VDOT Access Management Guidelines and FCDOT approval upon the submission of a more detailed traffic analysis at rezoning. This new access could be reviewed only after the access improvements at Joseph Siewick Drive/Misty Creek Lane/ Ox Trail are examined for implementation.
- Upon reviewing the potential new limited access on Rugby Road, intersection improvements should be explored at Rugby Road/Alder Woods Drive and Rugby Road/Fairfax County Parkway. The following are potential improvements to be explored and have not been analyzed (in FCDOT or the traffic study submitted) for implementation, traffic operations, or an engineering analysis completed. They are:
  - The addition of an exclusive left turn lane on westbound Alder Woods at Rugby Road. The left-through lane would remain as well as the right-turn lane.
    - With this left turn lane, improvements would be needed to southbound Rugby Road. This could include the extension of the second southbound left turn to the intersection with Alder Woods.



- The extension of the left turn lane would require lane shifts on northbound Rugby Road.
- Again, a detailed traffic study along with VDOT and FCDOT approval is needed for any improvements made to these intersections.
- The Comprehensive Plan states that parcels located on Tax Map 45-2 ((2)) 38 and 39A (along with other parcels) should be dedicated to the Fairfax County Park Authority. These parcels should still be dedicated but only after improvements are made at Rugby Road/Alder Woods Drive and Rugby Road/Fairfax County Parkway as well as along Rugby Road.
- It is recommended that any future development of the IFOH site be phased as transportation improvements are identified and constructed. This includes improvements to the roads and intersections on the road network surrounding the IFOH site.
- A TDM program must also be established and include FCDOT-approved TDM measures. Fairfax County's Draft Transit Development Plan (TDP) shows enhanced bus service to the site in the future connecting directly to the Reston Parkway Metrorail station. The IFOH site should contribute to the increase headways on Fairfax Connector Route 605.

Please contact Mike Garcia at [Michael.Garcia3@fairfaxcounty.gov](mailto:Michael.Garcia3@fairfaxcounty.gov) or 703-877-5673 should you need further information or clarification of these comments.

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Attachments: Aerial of Existing and Proposed Access Points.

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# ATTACHMENT



## INOVA Fair Oaks Hospital

- ① - Existing Access
- ② - Existing Access
- ③ - Proposed Access (Nominator)
- ④ - Realigned Access (FCDOT)

