

CONCLUSIONS AND RECOMMENDATIONS

The mitigation recommendations at each of the studied intersections were based on NCDOT's *Policy on Street and Driveway Access to North Carolina Highways* (Driveway Manual) methodology and mitigation threshold requirements, and engineering judgement.

According to NCDOT, mitigation improvements are required to the studied roadway network if at least one of the following conditions exists when comparing base network conditions to project build-out conditions:

- Average intersection or approach delay increases by 25% or greater while maintaining same LOS,
- LOS degrades by at least one level
- LOS is F

NCDOT has requested that turn lane warrant analyses be conducted at each of the appropriate un-signalized studied intersections. The NCDOT "*Warrant for Left and Right-Turn Lanes*" chart was utilized to determine potential turn lane storage length requirements. For the purposes of this report and to assist with overall mitigation, turn lane installation will be recommended when turn lane warrants are met for 75-feet of storage or greater.

Additionally, the Driveway Manual states that all site access points to a development should have a minimum internal protected stem length of 100 feet before any crossing / left-turning conflicts are allowed.

N. Greenwood Forest Drive @ Brickyard Road:

Based on HCM and NCDOT guidance, “LOS for un-signalized intersections is not defined as a whole and should only be reported for individual stop-controlled or yield movements.” As a result, the free-flow movements / approaches were not utilized when comparing background conditions to build-out conditions. As can be seen in Table 28, the difference in LOS, delay, v/c ratio, and queue between background traffic and the anticipated trips generated by the project is minimally increased for the northbound approach during the AM and PM peak hours.

**N. GREENWOOD FOREST DRIVE @ BRICKYARD ROAD
COMPARISON OF BACKGROUND VS BUILD-OUT PEAK HOUR TRAFFIC CONDITIONS**

Approach	Peak Hour	Background			Build-out			Delay Increase %
		LOS	Delay	V/C	LOS	Delay	V/C	
Eastbound (Brickyard)	AM	A	0.0	0.07	A	0.0	0.07	0%
	PM	A	0.0	0.05	A	0.0	0.07	0%
Westbound (Brickyard)	AM	A	4.9	0.02	A	3.4	0.02	-31%
	PM	A	4.6	0.06	A	4.3	0.06	-7%
Northbound (Greenwood Forest)	AM	A	9.5	0.14	A	9.6	0.15	1%
	PM	B	10.5	0.12	B	10.8	0.13	3%

<Table 28>

It should be noted that the westbound approach experiences a decrease in delay when comparing background conditions to build-out conditions. This is a result of the Synchro calculations taking a weighted average of the westbound approach volumes. Since only through movements are being added to the free flow westbound approach, the Synchro calculations result in a lower average approach delay.

None of the approaches are beyond the NCDOT thresholds for delay increase percentage or LOS degradation. Since each approach maintains adequate LOS operation for an un-signalized intersection during a peak hour, no changes are recommended at this intersection to accommodate traffic generated by the site under build-out conditions based solely on capacity analysis.

From a capacity analysis standpoint, LOS A & LOS B are acceptable operation for an un-signalized intersection during a peak hour. However, as a secondary analysis, left and right turn lane warrants were studied for the eastbound and westbound approaches at this intersection. Table 29 below shows the results of the turn lane warrant analysis for this intersection.

N. GREENWOOD FOREST DRIVE @ BRICKYARD ROAD
 TURN LANE WARRANT ANALYSIS

Approach	Peak Hour	Left Turns (Vehicles)	Opposing Lefts (Vehicles)	Right Turns (Vehicles)	Opposing Rights (Vehicles)	Required Storage Length per NCDOT Chart
Eastbound	AM	-	-	39	100	50'
	PM	-	-	36	100	50'
Westbound	AM	26	111	-	-	50'
	PM	79	104	-	-	75'

<Table 29>

The results of the turn lane warrant analysis indicate that build-out volumes warrant a 50-foot eastbound right turn lane and a 75-foot westbound left turn lane. It is recommended to install a 75-foot westbound left turn lane at this intersection to accommodate traffic generated by the proposed site. The NCDOT “Warrant for Left and Right-Turn Lanes” chart can be found in Appendix E.



Holly Springs Road @ Brickyard Road:

Based on HCM and NCDOT guidance, “LOS for un-signalized intersections is not defined as a whole and should only be reported for individual stop-controlled or yield movements.” As a result, the free-flow movements / approaches were not utilized when comparing background conditions to build-out conditions. As can be seen in Table 30, the difference in LOS, delay, v/c ratio, and queue between background traffic and the anticipated trips generated by the project is minimally increased for the southbound approach during the AM and PM peak hours.

HOLLY SPRINGS ROAD @ BRICKYARD ROAD
COMPARISON OF BACKGROUND VS BUILD-OUT PEAK HOUR TRAFFIC CONDITIONS

Approach	Peak Hour	Background			Build-out			Delay Increase %
		LOS	Delay	V/C	LOS	Delay	V/C	
Eastbound (Brickyard)	AM	A	4.7	0.07	A	4.6	0.07	-2%
	PM	A	3.1	0.02	A	2.5	0.02	-20%
Westbound (Brickyard)	AM	A	0.0	0.06	A	0.0	0.10	0%
	PM	A	0.0	0.09	A	0.0	0.12	0%
Southbound (Holly Springs)	AM	B	10.9	0.13	B	12.1	0.19	11%
	PM	B	10.6	0.22	B	12.2	0.34	15%

<Table 30>

It should be noted that the eastbound approach experiences a decrease in delay when comparing background conditions to build-out conditions. This is a result of the Synchro calculations taking a weighted average of the eastbound approach volumes. Since through movements are being added to the free flow eastbound approach, the Synchro calculations result in a lower average approach delay.

None of the approaches are beyond the NCDOT thresholds for delay increase percentage or LOS degradation. Since each approach maintains adequate LOS operation for an un-signalized intersection during a peak hour, no changes are recommended at this intersection to accommodate traffic generated by the site under build-out conditions based solely on capacity analysis.

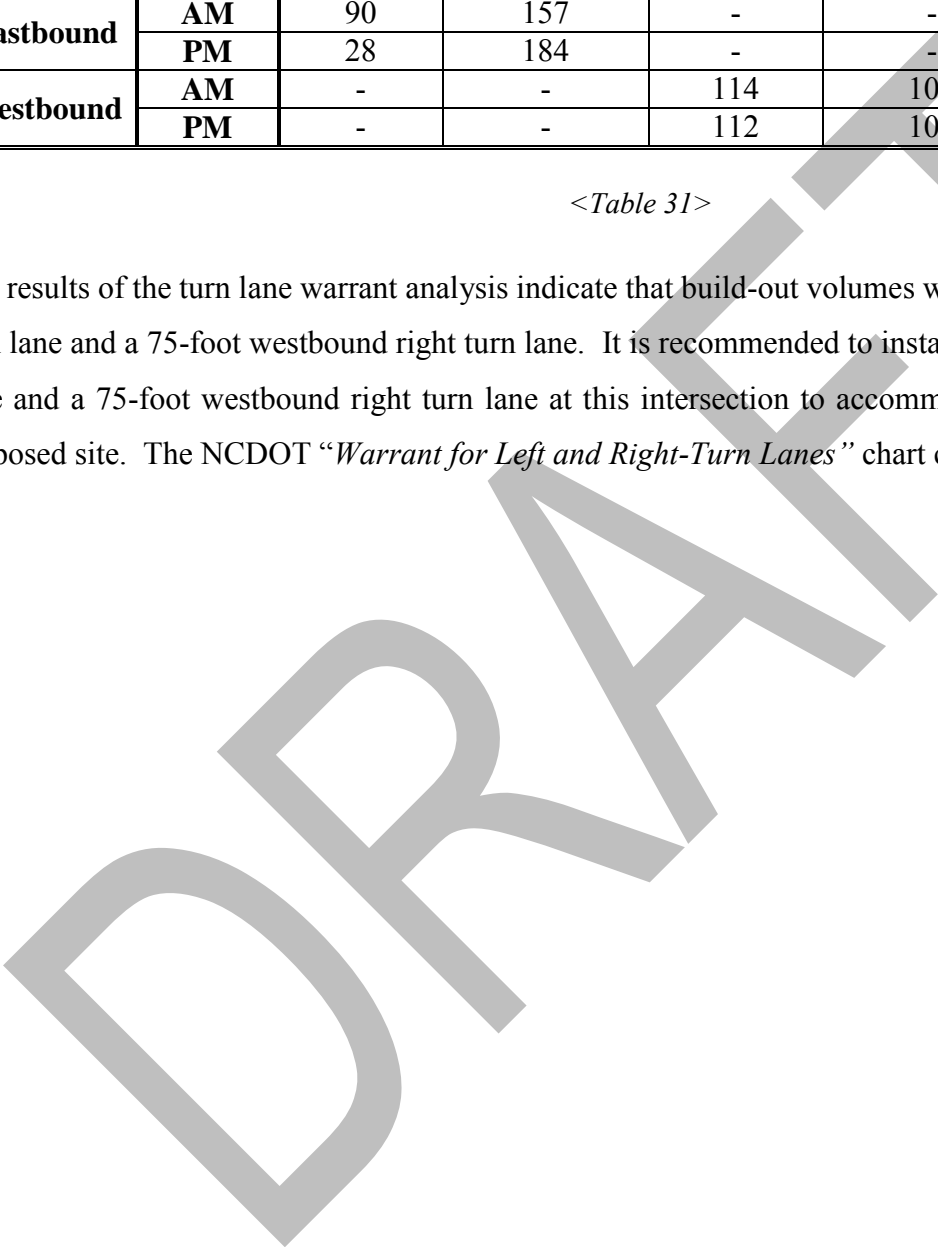
From a capacity analysis standpoint, LOS A & LOS B are acceptable operation for an un-signalized intersection during a peak hour. However, as a secondary analysis, left and right turn lane warrants were studied for the eastbound and westbound approaches at this intersection. Table 31 below shows the results of the turn lane warrant analysis for this intersection.

HOLLY SPRINGS ROAD @ BRICKYARD ROAD
 TURN LANE WARRANT ANALYSIS

Approach	Peak Hour	Left Turns (Vehicles)	Opposing Lefts (Vehicles)	Right Turns (Vehicles)	Opposing Rights (Vehicles)	Required Storage Length per NCDOT Chart
Eastbound	AM	90	157	-	-	75'
	PM	28	184	-	-	50'
Westbound	AM	-	-	114	100	75'
	PM	-	-	112	100	75'

<Table 31>

The results of the turn lane warrant analysis indicate that build-out volumes warrant a 75-foot eastbound left turn lane and a 75-foot westbound right turn lane. It is recommended to install a 75-foot eastbound left turn lane and a 75-foot westbound right turn lane at this intersection to accommodate traffic generated by the proposed site. The NCDOT “Warrant for Left and Right-Turn Lanes” chart can be found in Appendix E.



McKinney Road @ Brickyard Road:

Based on HCM and NCDOT guidance, “LOS for un-signalized intersections is not defined as a whole and should only be reported for individual stop-controlled or yield movements.” As a result, the free-flow movements / approaches were not utilized when comparing background conditions to build-out conditions. As can be seen in Table 32, the difference in LOS, delay, v/c ratio, and queue between background traffic and the anticipated trips generated by the project is increased for the eastbound and westbound approaches during the PM peak hours.

McKINNEY ROAD @ BRICKYARD ROAD
COMPARISON OF BACKGROUND VS BUILD-OUT PEAK HOUR TRAFFIC CONDITIONS

Approach	Peak Hour	Background			Build-out			Delay Increase %
		LOS	Delay	V/C	LOS	Delay	V/C	
Eastbound (Brickyard)	AM	A	9.0	0.15	A	9.8	0.21	9%
	PM	A	9.2	0.16	B	12.3	0.34	34%
Westbound (McKinney)	AM	B	11.0	0.02	B	13.4	0.26	22%
	PM	B	12.8	0.04	C	17.6	0.30	45%
Northbound (Brickyard)	AM	A	7.0	0.05	A	5.8	0.05	-17%
	PM	A	7.2	0.09	A	5.5	0.09	-24%

<Table 32>

The eastbound approach experiences LOS degradation under PM peak hour conditions when comparing background traffic to build-out traffic. During the PM peak hour, the westbound approach goes from a LOS A (9.2 seconds under background conditions) to LOS B (12.3 seconds under build-out conditions) – representing a 3.1 second increase in delay. Additionally, the delay increase percentage is beyond NCDOT thresholds – 34%.

The westbound approach experiences LOS degradation under PM peak hour conditions when comparing background traffic to build-out traffic. During the PM peak hour, the westbound approach goes from a LOS B (12.8 seconds under background conditions) to LOS C (17.6 seconds under build-out conditions) – representing a 4.8 second increase in delay. Additionally, the delay increase percentage is beyond NCDOT thresholds – 45%.

It should be noted that the northbound approach experiences a decrease in delay when comparing background conditions to build-out conditions. This is a result of the Synchro calculations taking a weighted average of the northbound approach volumes. Since through movements are being added to the free flow northbound

approach, the Synchro calculations result in a lower average approach delay.

Even though the eastbound and westbound approaches are beyond the NCDOT thresholds for delay increase percentage and LOS degradation, LOS A, LOS B, & LOS C are acceptable operation for an un-signalized intersection during a peak hour and typically do not warrant mitigation to accommodate site traffic. Since each approach maintains adequate LOS operation for an un-signalized intersection during a peak hour, no changes are recommended at this intersection to accommodate traffic generated by the site under build-out conditions based solely on capacity analysis.

However, as a secondary analysis, left and right turn lane warrants were studied for the eastbound and westbound approaches at this intersection. *Table 33* below shows the results of the turn lane warrant analysis for this intersection.

**BRICKYARD ROAD @ MCKINNEY ROAD
TURN LANE WARRANT ANALYSIS**

Approach	Peak Hour	Left Turns (Vehicles)	Opposing Lefts (Vehicles)	Right Turns (Vehicles)	Opposing Rights (Vehicles)	Required Storage Length per NCDOT Chart
Eastbound	AM	-	-	134	100	100'
	PM	-	-	137	100	100'
Westbound	AM	57	175	-	-	50'
	PM	45	229	-	-	50'

<Table 33>

The results of the turn lane warrant analysis indicate that build-out volumes warrant a 100-foot eastbound right turn lane. It is recommended to install a 100-foot eastbound right turn lane at this intersection to accommodate traffic generated by the proposed site. The NCDOT “*Warrant for Left and Right-Turn Lanes*” chart can be found in *Appendix E*.

NCDOT has requested a historical crash analysis at this intersection. The crash analysis will be forthcoming as a separate TIA Addendum.

Pisgah View Drive (North) @ McKinney Road:

Based on HCM and NCDOT guidance, “LOS for un-signalized intersections is not defined as a whole and should only be reported for individual stop-controlled or yield movements.” As a result, the free-flow movements / approaches were not utilized when comparing background conditions to build-out conditions. As can be seen in *Table 34*, the difference in LOS, delay, v/c ratio, and queue between background traffic and the anticipated trips generated by the project is minimally increased during the AM and PM peak hours.

**PISGAH VIEW DRIVE (NORTH) @ MCKINNEY ROAD
COMPARISON OF BACKGROUND VS BUILD-OUT PEAK HOUR TRAFFIC CONDITIONS**

Approach	Peak Hour	Background			Build-out			Delay Increase %
		LOS	Delay	V/C	LOS	Delay	V/C	
Eastbound (McKinney)	AM	A	0.0	0.01	A	0.0	0.04	0%
	PM	A	0.0	0.01	A	0.0	0.03	0%
Westbound (McKinney)	AM	A	2.9	0.01	A	3.0	0.01	3%
	PM	A	2.9	0.01	A	2.9	0.01	0%
Northbound (Pisgah View)	AM	A	8.5	0.01	A	8.9	0.04	5%
	PM	A	8.6	0.02	A	9.1	0.10	6%

<Table 34>

None of the approaches are beyond the NCDOT thresholds for delay increase percentage or LOS degradation. Since each approach maintains adequate LOS operation for an un-signalized intersection during a peak hour, no changes are recommended at this intersection to accommodate traffic generated by the site under build-out conditions based solely on capacity analysis.

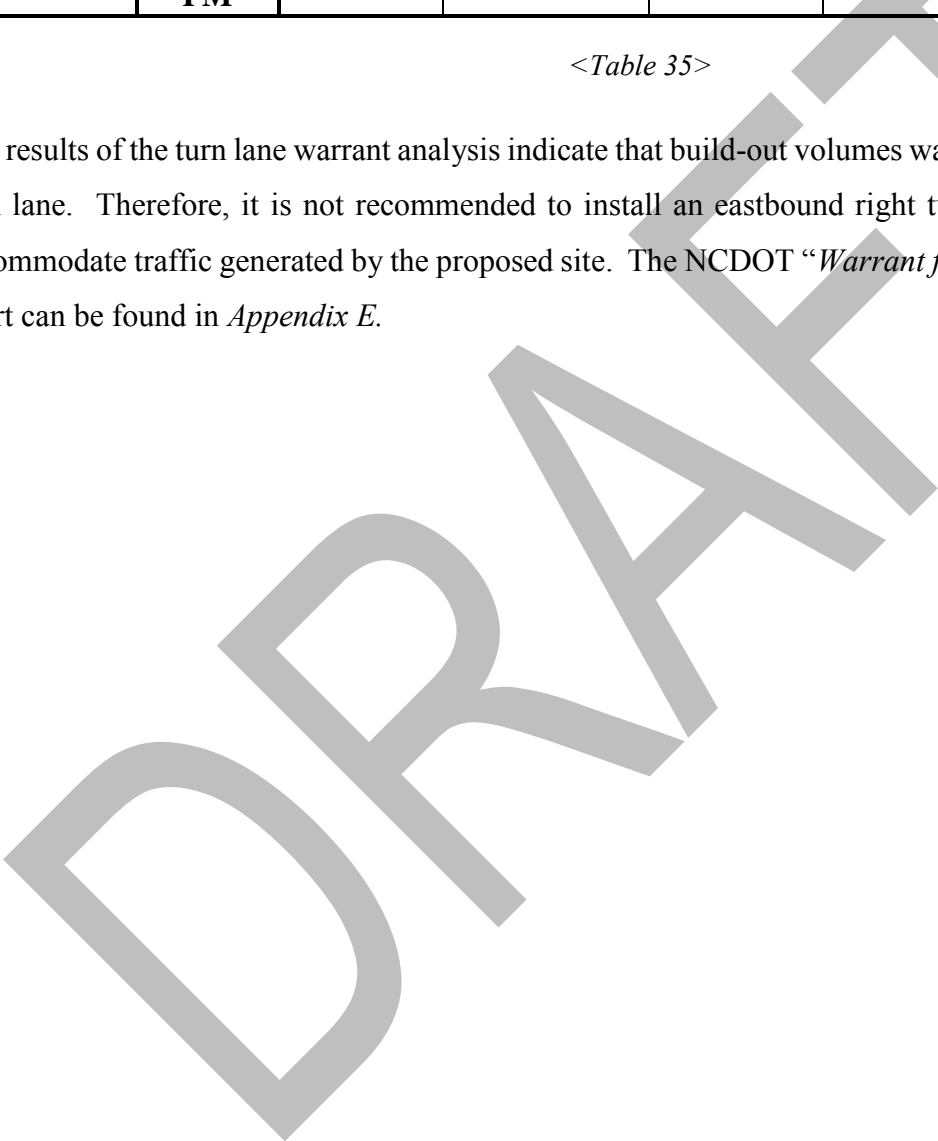
However, as a secondary analysis, right turn lane warrants were studied for the eastbound approach at this intersection. A left turn lane warrant was not evaluated since there are no westbound left turning vehicles under build-out conditions. *Table 35* below shows the results of the turn lane warrant analysis.

**PISGAH VIEW DRIVE (NORTH) @ MCKINNEY ROAD
TURN LANE WARRANT ANALYSIS**

Approach	Peak Hour	Left Turns (Vehicles)	Opposing Lefts (Vehicles)	Right Turns (Vehicles)	Opposing Rights (Vehicles)	Required Storage Length per NCDOT Chart
Eastbound	AM	-	-	60	100	50'
	PM	-	-	44	100	50'
Westbound	AM	-	-	-	-	-
	PM	-	-	-	-	-

<Table 35>

The results of the turn lane warrant analysis indicate that build-out volumes warrant a 50-foot eastbound right turn lane. Therefore, it is not recommended to install an eastbound right turn lane at this intersection to accommodate traffic generated by the proposed site. The NCDOT “*Warrant for Left and Right-Turn Lanes*” chart can be found in *Appendix E*.



Pisgah View Drive (South) @ McKinney Road:

Based on HCM and NCDOT guidance, “LOS for un-signalized intersections is not defined as a whole and should only be reported for individual stop-controlled or yield movements.” As a result, the free-flow movements / approaches were not utilized when comparing background conditions to build-out conditions. As can be seen in *Table 36*, the difference in LOS, delay, v/c ratio, and queue between background traffic and the anticipated trips generated by the project is minimally increased during the AM and PM peak hours.

**PISGAH VIEW DRIVE (SOUTH) @ MCKINNEY ROAD
COMPARISON OF BACKGROUND VS BUILD-OUT PEAK HOUR TRAFFIC CONDITIONS**

Approach	Peak Hour	Background			Build-out			Delay Increase %
		LOS	Delay	V/C	LOS	Delay	V/C	
Eastbound (McKinney)	AM	A	0.6	0.01	A	5.6	0.02	833%
	PM	A	3.5	0.01	A	6.6	0.06	89%
Westbound (McKinney)	AM	A	0.0	0.01	A	0.0	0.01	0%
	PM	A	0.0	0.01	A	0.0	0.01	0%
Southbound (Pisgah View)	AM	A	8.4	0.01	A	8.6	0.06	2%
	PM	A	8.4	0.01	A	8.6	0.05	2%

<Table 36>

Please note, the westbound approach experiences significant delay increase percentage but maintains a LOS A under build-out conditions. The significant percent increase is a result of the calculation when comparing background conditions to build-out conditions and should not be of concern when determining appropriate mitigation.

Since each approach maintains adequate LOS operation for an un-signalized intersection during a peak hour, no changes are recommended at this intersection to accommodate traffic generated by the site under build-out conditions based solely on capacity analysis.

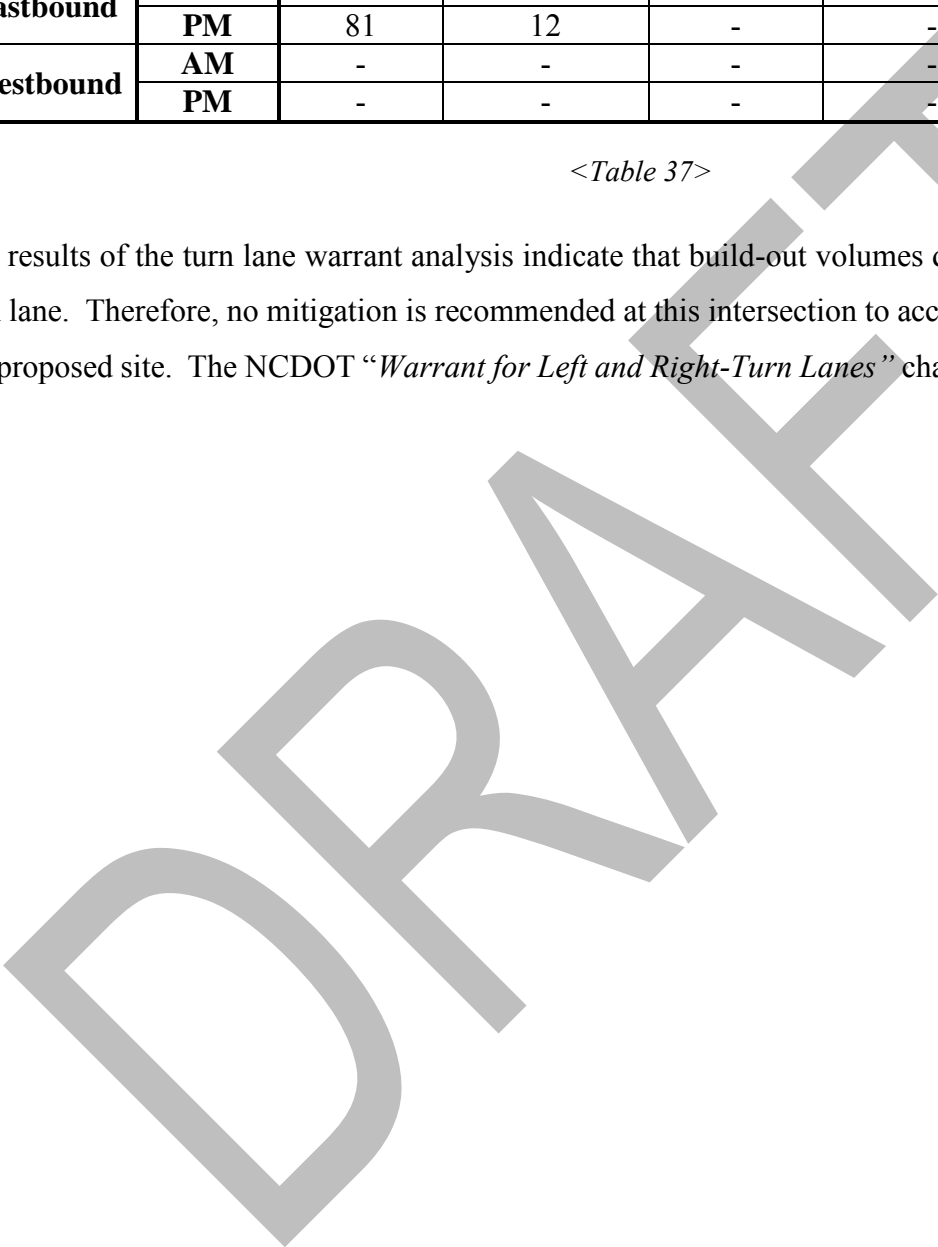
However, as a secondary analysis, left turn lane warrants were studied for the eastbound approach at this intersection. A right turn lane warrant was not evaluated since there are no westbound right turning vehicles under build-out conditions. *Table 37* below shows the results of the turn lane warrant analysis.

**PISGAH VIEW DRIVE (SOUTH) @ MCKINNEY ROAD
TURN LANE WARRANT ANALYSIS**

Approach	Peak Hour	Left Turns (Vehicles)	Opposing Lefts (Vehicles)	Right Turns (Vehicles)	Opposing Rights (Vehicles)	Required Storage Length per NCDOT Chart
Eastbound	AM	32	12	-	-	0'
	PM	81	12	-	-	0'
Westbound	AM	-	-	-	-	-
	PM	-	-	-	-	-

<Table 37>

The results of the turn lane warrant analysis indicate that build-out volumes do not warrant a eastbound left turn lane. Therefore, no mitigation is recommended at this intersection to accommodate traffic generated by the proposed site. The NCDOT “*Warrant for Left and Right-Turn Lanes*” chart can be found in *Appendix E*.



McKinney Road @ US 64 (Brevard Road):

As can be seen in *Table 38*, the difference in LOS, delay, v/c ratio, and queue between background traffic and the anticipated trips generated by the project is minimally increased for all approaches during the AM and PM peak hours except for the eastbound approach during the AM and PM peak hour.

**MCKINNEY ROAD @ US 64 (BREVARD ROAD)
COMPARISON OF BACKGROUND VS BUILD-OUT PEAK HOUR TRAFFIC CONDITIONS**

Approach	Peak Hour	Background			Build-out			Delay Increase %
		LOS	Delay	V/C	LOS	Delay	V/C	
Eastbound (US 64)	AM	A	9.0	0.49	A	8.9	0.51	-1%
	PM	A	6.6	0.46	A	6.5	0.46	-2%
Westbound (US 64)	AM	A	7.1	0.34	A	7.0	0.37	-1%
	PM	A	6.1	0.44	A	6.5	0.49	7%
Northbound (Old Hwy 64)	AM	B	10.3	0.39	B	13.4	0.44	30%
	PM	B	11.8	0.25	B	13.5	0.28	14%
Southbound (McKinney)	AM	A	9.9	0.07	B	12.4	0.24	25%
	PM	B	12.6	0.10	B	14.8	0.24	17%

<Table 38>

The eastbound approach experiences a slightly improved delay under build-out conditions due to this intersection operating as an actuated signal and more green-time being allocated to the eastbound approach to accommodate proposed site traffic.

The northbound approach experiences a delay increase percentage beyond NCDOT thresholds during the AM peak hour when comparing background traffic to build-out traffic. The 30% increase in delay corresponds to a 3.1 second increase. This increase in delay is not anticipated to negatively affect intersection operation for the northbound approach during the AM peak hour – especially at a signalized intersection.

The southbound approach experiences LOS degradation under AM peak hour conditions when comparing background traffic to build-out traffic. During the AM peak hour, the westbound approach goes from a LOS A (9.9 seconds under background conditions) to LOS B (12.4 seconds under build-out conditions) – representing a 2.5 second increase in delay. Additionally, the delay increase percentage is beyond NCDOT thresholds – 25%.

Even though the northbound and southbound approaches are beyond the NCDOT thresholds for delay increase percentage and LOS degradation, LOS A & LOS B are acceptable operation for a signalized

intersection during a peak hour and typically do not warrant mitigation to accommodate site traffic. Since each approach maintains adequate LOS operation for a signalized intersection during a peak hour, no changes are recommended at this intersection to accommodate traffic generated by the site under build-out conditions.

Brickyard Road @ US 64 (Brevard Road):

As can be seen in Table 39, the difference in LOS, delay, v/c ratio, and queue between background traffic and the anticipated trips generated by the project is minimally increased for all approaches during the AM and PM peak hours except for the eastbound approach during the PM peak hour.

BRICKYARD ROAD @ US 64 (BREVARD ROAD)
COMPARISON OF BACKGROUND VS BUILD-OUT PEAK HOUR TRAFFIC CONDITIONS

Approach	Peak Hour	Background			Build-out			Delay Increase %
		LOS	Delay	V/C	LOS	Delay	V/C	
Eastbound (US 64)	AM	A	7.2	0.39	A	7.5	0.40	4%
	PM	A	6.8	0.43	A	6.7	0.42	-1%
Westbound (US 64)	AM	B	10.6	0.50	B	14.0	0.56	32%
	PM	B	11.7	0.63	B	17.3	0.71	48%
Southbound (Brickyard)	AM	B	17.2	0.42	C	20.3	0.53	18%
	PM	C	22.7	0.46	C	28.7	0.57	26%

<Table 39>

The eastbound approach experiences a slightly improved delay during the PM peak hour under build-out conditions due to this intersection operating as an actuated signal and more green-time being allocated to the eastbound approach to accommodate proposed site traffic.

The westbound approach experiences a delay increase percentage beyond NCDOT thresholds during the AM and PM peak hours when comparing background traffic to build-out traffic. The 32% increase in delay in the AM peak hour corresponds to a 3.4 second increase in delay and the 48% increase in delay during the PM peak hour corresponds to a 5.6 second increase in delay. This increase in delay is not anticipated to negatively affect intersection operation for the northbound approach during the AM and PM peak hours – especially at a signalized intersection.

The southbound approach experiences LOS degradation under AM peak hour conditions when comparing background traffic to build-out traffic. During the AM peak hour, the westbound approach goes from a LOS B (17.2 seconds under background conditions) to LOS C (20.3 seconds under build-out conditions) –

representing a 3.1 second increase in delay. Additionally, the delay increase percentage for the PM peak hour is beyond NCDOT thresholds – 26%.

Even though the westbound and southbound approaches are beyond the NCDOT thresholds for delay increase percentage and LOS degradation, LOS A, LOS B, & LOS C are acceptable operation for a signalized intersection during a peak hour and typically do not warrant mitigation to accommodate site traffic. Since each approach maintains adequate LOS operation for a signalized intersection during a peak hour, no changes are recommended at this intersection to accommodate traffic generated by the site under build-out conditions.

N. Greenwood Forest Drive @ US 64 (Brevard Road):

Based on HCM and NCDOT guidance, “LOS for un-signalized intersections is not defined as a whole and should only be reported for individual stop-controlled or yield movements.” As a result, the free-flow movements / approaches were not utilized when comparing background conditions to build-out conditions. As can be seen in Table 40, the difference in LOS, delay, v/c ratio, and queue between background traffic and the anticipated trips generated by the project is minimally increased for all approaches during the AM and PM peak hours except for the eastbound approach during the AM and PM peak hour.

N. GREENWOOD FOREST DRIVE @ US 64 (BREVARD ROAD)
COMPARISON OF BACKGROUND VS BUILD-OUT PEAK HOUR TRAFFIC CONDITIONS

Approach	Peak Hour	Background			Build-out			Delay Increase %
		LOS	Delay	V/C	LOS	Delay	V/C	
Eastbound (US 64)	AM	A	1.9	0.19	A	1.8	0.21	-5%
	PM	A	0.9	0.22	A	0.8	0.25	-11%
Westbound (US 64)	AM	A	0.0	0.17	A	0.0	0.20	0%
	PM	A	0.0	0.21	A	0.0	0.23	0%
Southbound (Greenwood Forest)	AM	B	12.0	0.13	B	12.4	0.14	3%
	PM	B	12.0	0.20	B	12.5	0.21	4%

<Table 40>

It should be noted that the eastbound approach experiences a decrease in delay when comparing background conditions to build-out conditions. This is a result of the Synchro calculations taking a weighted average of the eastbound approach volumes. Since through movements are being added to the free flow eastbound approach, the Synchro calculations result in a lower average approach delay.

None of the approaches are beyond the NCDOT thresholds for delay increase percentage or LOS degradation. Since each approach maintains adequate LOS operation for an un-signalized intersection during a peak hour, no changes are recommended at this intersection to accommodate traffic generated by the site under build-out conditions.

Turn lane warrants were not evaluated at this intersection since the eastbound and westbound approaches already contain left and right turn lanes. No additional mitigation is recommended at this intersection to accommodate traffic generated by the site.

Site Access “A” @ McKinney Road:

As can be seen in *Table 41*, the resulting LOS, delay, v/c ratio, and queue are within acceptable levels for Site Access “A” @ McKinney Road. The southbound approach (proposed site access) is anticipated to operate at a LOS A during the AM and a LOS B during the PM peak hour.

SITE ACCESS “A” @ MCKINNEY ROAD
ANALYSIS OF BUILD-OUT AM/PM PEAK HOUR TRAFFIC CONDITIONS

APPROACH	AM PEAK HOUR			PM PEAK HOUR		
	Queue Free Percent (%)	LOS and Delay (sec)	V/C Ratio	Queue Free Percent (%)	LOS and Delay (sec)	V/C Ratio
Eastbound	96	A 6.4	0.04	90	A 7.2	0.10
Westbound	100	A 0.0	0.02	100	A 0.0	0.06
Southbound	87	A 9.7	0.20	90	B 10.3	0.18

<Table 41>

Since each approach maintains adequate LOS operation for an un-signalized intersection during a peak hour, no changes are recommended at this intersection to accommodate traffic generated by the site under build-out conditions based solely on capacity analysis.

However, as a secondary analysis, left and right turn lane warrants were studied for the eastbound and westbound approaches at this intersection. *Table 42* below shows the results of the turn lane warrant analysis for this intersection.

SITE ACCESS “A” @ MCKINNEY ROAD
TURN LANE WARRANT ANALYSIS

Approach	Peak Hour	Left Turns (Vehicles)	Opposing Lefts (Vehicles)	Right Turns (Vehicles)	Opposing Rights (Vehicles)	Required Storage Length per NCDOT Chart
Eastbound	AM	57	38	-	-	50'
	PM	132	87	-	-	100'
Westbound	AM	-	-	31	100	50'
	PM	-	-	71	100	75'

<Table 42>

The results of the turn lane warrant analysis indicate that build-out volumes warrant a 100-foot eastbound left turn lane and a 75-foot westbound right turn lane. It is recommended to install a 100-foot eastbound left turn lane and a 75-foot westbound right turn lane at this intersection to accommodate traffic generated by the proposed site. The NCDOT “Warrant for Left and Right-Turn Lanes” chart can be found in Appendix E.

Based on a review of the proposed site plan, the main Site Access “A” @ McKinney Road exceeds NCDOT’s internal protected stem length requirement of 100 feet.

Service Site Access @ McKinney Road / Emergency Access @ Ewbank Road:

Capacity analysis was not performed at either of these site access locations due to the intended functionality of each access under build-out conditions. The emergency site access will be gated accesses and service access will be designated as employees only so no residential traffic will utilize either access under normal daily traffic operations. Each of these access points exceed NCDOT’s internal protected stem length requirement of 100 feet. No mitigation is recommended at either the emergency access or service access to accommodate traffic generated by the site. The addition of site generated traffic is not anticipated to degrade general roadway or driver safety at either intersection.

Overall:

The proposed Farm at Eagles Nest residential development will adequately accommodate anticipated site generated traffic during the weekday AM and PM peak hours when the following mitigation measures take place:

- N. Greenwood Forest Drive @ Brickyard Road
 - Install 75' westbound left turn lane
- Holly Springs Road @ Brickyard Road
 - Install 75' eastbound left turn lane
 - Install 75' westbound right turn lane
- Brickyard Road @ McKinney
 - Install 100' eastbound right turn lane
 - Maintain existing Stop control configuration
- Main Site Access "A" @ McKinney Road
 - Install 100' eastbound left turn lane
 - Install 75' westbound right turn lane

When the above mitigation takes place, the anticipated site traffic from the proposed development will be adequately accommodated under build-out conditions. *Figure 10* below shows the proposed lane configurations for build-out conditions.