Exhibit 32

All Impacts Are Estimated and Subject To Change

Stream Crossing A Impacts (Northern)		
Temporary Stream Impacts	20 LF	250 SF
Permanent Stream Impacts	135 LF	1,800 SF
Wetland Impacts	N/A	4,400 SF
Riparian Buffer Impacts	N/A	22,000 SF

Stream Crossing B Impacts (Southern)		
Temporary Stream Impacts	20 LF	400 SF
Permanent Stream Impacts	120 LF	2,300 SF
Wetland Impacts	N/A	2,200 SF
Riparian Buffer Impacts	N/A	14,00 SF

MANN'S CHAPEL ROAD

GAS LINE EASEMENT

OUTPARCEL
± 7.2 ACRES

WQ

WQ

WQ

LOD LINE–
APPROXIMATE
LIMIT OF CLEARING
& GRADING

1. PROPOSED IMPERVIOUS AREAS:

	SF	AC
– ROADWAYS	118,130	2.71
– LOT IMPERVIOUS*	300,500	6.89
– 5,000/LOT		
– MAIL KIOSK AREA	2,000	0.05
– TOTALS	418,830	9.66

* LOT IMPERVIOUS ESTIMATE INCLUDES DRIVEWAYS

2. PROPOSED IMPERVIOUS %: 8.46%

3. ESTIMATED CUT/FILL VOLUMES:

	CY
– CUT	40,000
– FILL*	40,000

* ASSUMES 15% SWELL FACTOR

Map is for illustration purposes only, based upon current development concepts, which are subject to change without notice. No guarantee can be made that development of the Mann's Chapel Subdivision ("Community") will proceed as described.

RYAN'S CROSSING SUBDIVISION

PRELIMINARY LAND PLAN W/APPROXIMATE IMPERVIOUS AREAS

Scale: 1" = 200'

0 200 400 600

April 3, 2018

McKIM&CREED

Exhibit 33

Kimley»Horn

KIMLEY-HORN AND ASSOCIATES, INC
NC License #F-0102

MEMORANDUM

To: Mr. Alex Barroso
From: Kevin Dean, P.E.
Kimley-Horn and Associates, Inc.
Date: January 31, 2018
Subject: Ryan's Crossing – Traffic Impact Analysis

Kimley-Horn has performed a Traffic Impact Analysis for the proposed Ryan's Crossing residential development located on the east side of Mann's Chapel Road at Tobacco Road in Chatham County, North Carolina. As currently envisioned, the development will include 60 single-family homes and is proposed to be accessed via one full-movement driveway on Mann's Chapel Road approximately 330 feet south of Tobacco Road. The development has a projected build-out year of 2019.

This report presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands in conjunction with the proposed development in the 2019 study year. The site location and proposed site plan are shown on **Figures 1** and **2**, respectively.

Existing and Background Traffic

AM and PM peak hour turning movement counts were collected on January 25, 2018 at the following intersection:

- Mann's Chapel Road at Tobacco Road

A 24-hour pneumatic tube count was also performed on Mann's Chapel Road south of Tobacco Road between January 24 and January 25, 2018 to obtain daily traffic volumes near the proposed site driveway. As more than 24 hours of volume data was collected as part of that count, daily volumes were reported for both the highest 24 hours as well as the volume for one calendar day. Based on the tube count, the 24-hour volume for Thursday January 25 was 2,943 vehicles, while the maximum number of vehicles in any consecutive 24-hour period was 2,975.

The existing AM and PM peak hour turning movement volumes are shown on **Figures 3** and **4**, respectively, and the count data is attached.

Based on historic daily traffic volumes in the area and consistent with the methodology used for analysis of the Briar Chapel development, an annual growth factor of 3% was applied to the existing traffic volumes up to the year 2019 to calculate background traffic volumes. Site traffic associated with the full build-out of the Briar Chapel development was obtained from the *Briar Chapel – Traffic Improvements Phasing Analysis* (Kimley-Horn, January 2018) tech memo and included in this analysis as background traffic. It should be noted that, while the full build-out of the Briar Chapel development is anticipated after the build-out of the Ryan's Crossing development, site traffic for the 100% Build-out scenario of

Briar Chapel was included to be conservative. Peak hour background traffic volumes, which include historic growth traffic and approved development traffic, are shown on **Figures 3** and **4**.

Trip Generation

The trip generation potential of the development was determined using the traffic generation rates published in the *ITE Trip Generation Handbook* (Institute of Transportation Engineers, Tenth Edition, 2017). The trip generation for the development is summarized in Table 1.

Table 1
ITE Traffic Generation (Vehicles)

Land Use Code	Land Use	Intensity		AM Peak Hour		PM Peak Hour	
				In	Out	In	Out
210	Single-Family Detached Housing	60	d.u.	12	35	39	23

The proposed Ryan's Crossing project is expected to generate 650 new daily trips, with 12 new trips entering and 35 new trips exiting during the AM peak hour and 39 new trips entering and 23 new trips exiting during the PM peak hour.

Trip Distribution and Assignment

The proposed generated trips were assigned to the surrounding roadway network. The directional distribution and assignment were based on land uses and existing travel patterns in the area.

- 70% to/from the north on Mann's Chapel Road
- 30% to/from the south on Mann's Chapel Road

The site traffic distribution and percent assignment for the net new site trips are shown on **Figure 5**.

The attached **Figures 6** and **7** show the AM and PM peak hour site traffic volumes at the study intersections, respectively, as well as the total build-out peak hour traffic volumes.

Existing peak hour factors (PHF) were used for all of the traffic conditions, with a PHF of 0.90 used at new intersections.

Capacity Analysis

Capacity analyses were performed using Synchro and SimTraffic Version 9.2 software. Synchro intersection level-of-service (LOS) reports are attached. The LOS for the study intersections are summarized in Table 2.

Table 2 Level-of-Service Summary		
Condition	**AM Peak Hour LOS (Delay)**	**PM Peak Hour LOS (Delay)**
Mann's Chapel Road at Tobacco Road (Unsignalized)		
Existing (2018) Traffic	EB – B (12.1) NBL – A (7.6)	EB – B (10.4) NBL – A (7.7)
Background (2019) Traffic	EB – B (12.4) NBL – A (7.7)	EB – B (10.7) NBL – A (7.7)
Build-out (2019) Traffic	EB – B (12.8) NBL – A (7.7)	EB – B (11.1) NBL – A (7.8)
Mann's Chapel Road at Site Driveway (Unsignalized)		
Build-out (2019) Traffic	WB – B (11.2) SBL – A (8.0)	WB – A (9.9) SBL – A (7.6)

Analysis indicates that all of the study intersections are expected to operate at an acceptable level-of-service with short delays at project build-out.

Queuing Analysis

Queuing analyses were performed using SimTraffic Version 9.2 software for the build-out scenario to determine if there would be any queue conflicts on Mann's Chapel Road between the northbound left-turn movement at Tobacco Road and southbound left-turn movement at the Site Driveway that would warrant the construction of a left-turn lane at the Site Driveway. The average and maximum queues at the study intersections are summarized in Table 3.

Table 3 Queuing Summary		
Condition	**AM Peak Hour Queues (ft.)**	**PM Peak Hour LOS (Delay)**
Mann's Chapel Road at Tobacco Road		
Build-out (2019) Traffic	**NBL:** Average: 5' Maximum: 40'	**NBL:** Average: 3' Maximum: 35'
Mann's Chapel Road at Site Driveway		
Build-out (2019) Traffic	**SBL:** Average: 2' Maximum: 26'	**SBL:** Average: 4' Maximum: 44'

SimTraffic simulations show that no queueing issues are expected at project build-out at either of the study intersections, and that neither average nor maximum queues are expected to spill back between the study intersections. It should also be noted that Synchro 95th percentile queues for both left-turn movements are expected to be less than 1 vehicle (assumed to be 25') at project build-out.

Turn-Lane Warrant Analysis

A turn-lane warrant analysis was also performed using the NCDOT "Warrant for Left and Right-Turn Lanes" graph by plotting the intersection of the build-out volumes for the southbound left-turn movement and the sum of the northbound through/right-turn movements in both the AM and PM peak hours at the intersection of Mann's Chapel Road at the Site Driveway. Table 4 summarizes the southbound left-turn and conflicting northbound through/right turn volumes used for the warrant analysis, and those points are plotted on the attached graph.

Table 4
Warrant Volume Summary

Condition	Southbound Left-Turn Volume (veh.)	Northbound Through + Right-Turn Volume (veh.)
Mann's Chapel Road at Site Driveway (Unsignalized)		
AM Peak Hour	8	314
PM Peak Hour	27	140

Based on the NCDOT "Warrant" graph, the plotted points for these volumes fall well-below the 50' Storage curve.

Traffic volume data suggests that the total existing AM and PM peak hour volumes account for approximately 25% of the current daily traffic on Mann's Chapel Road south of Tobacco Road. Based on that proportion, and a total AM and PM peak hour volume projection of 888 in the project vicinity, the projected daily traffic volume at project build-out for this roadway segment is approximately 3,550 vehicles.

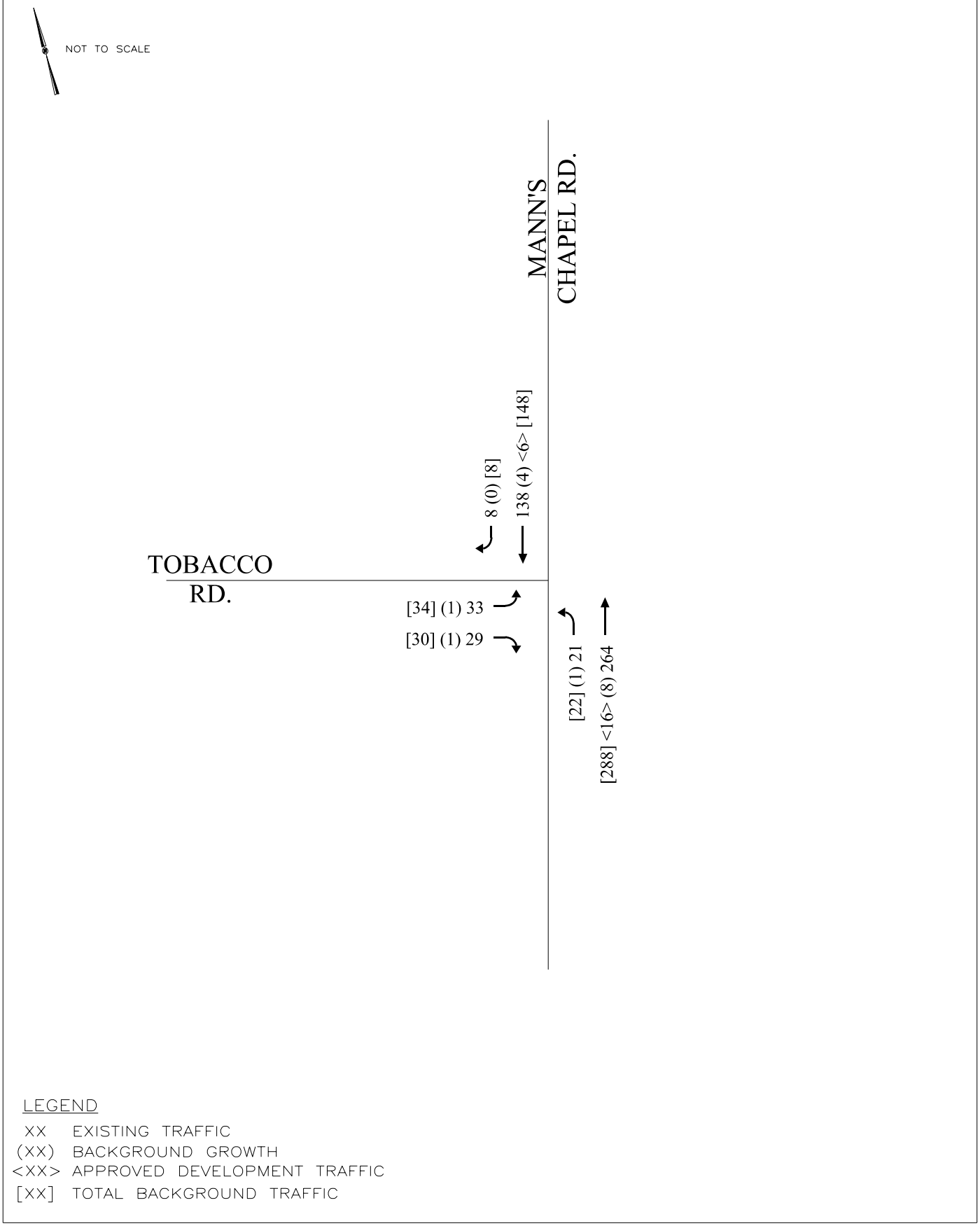
Recommendations

As all study intersections are expected to operate at an acceptable LOS at project build-out without queueing issues, and since volumes are not expected to exceed NCDOT Turn Lane Warrant thresholds, no roadway improvements are recommended to be performed to accommodate projected site traffic. The recommended laneage at project build-out is shown on **Figure 8**.

Should you have any questions or comments, please do not hesitate to contact me at (919) 653-2948 or kevin.dean@kimley-horn.com.

Kimley»Horn	RYANS CROSSING CHATHAM COUNTY, NC TRAFFIC IMPACT ANALYSIS	SITE LOCATION	FIGURE 1

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.



Kimley»Horn

RYANS CROSSING
CHATHAM COUNTY, NC
TRAFFIC IMPACT ANALYSIS

EXISTING AND PROJECTED (2021) BACKGROUND AM PEAK HOUR TRAFFIC VOLUMES

FIGURE 3

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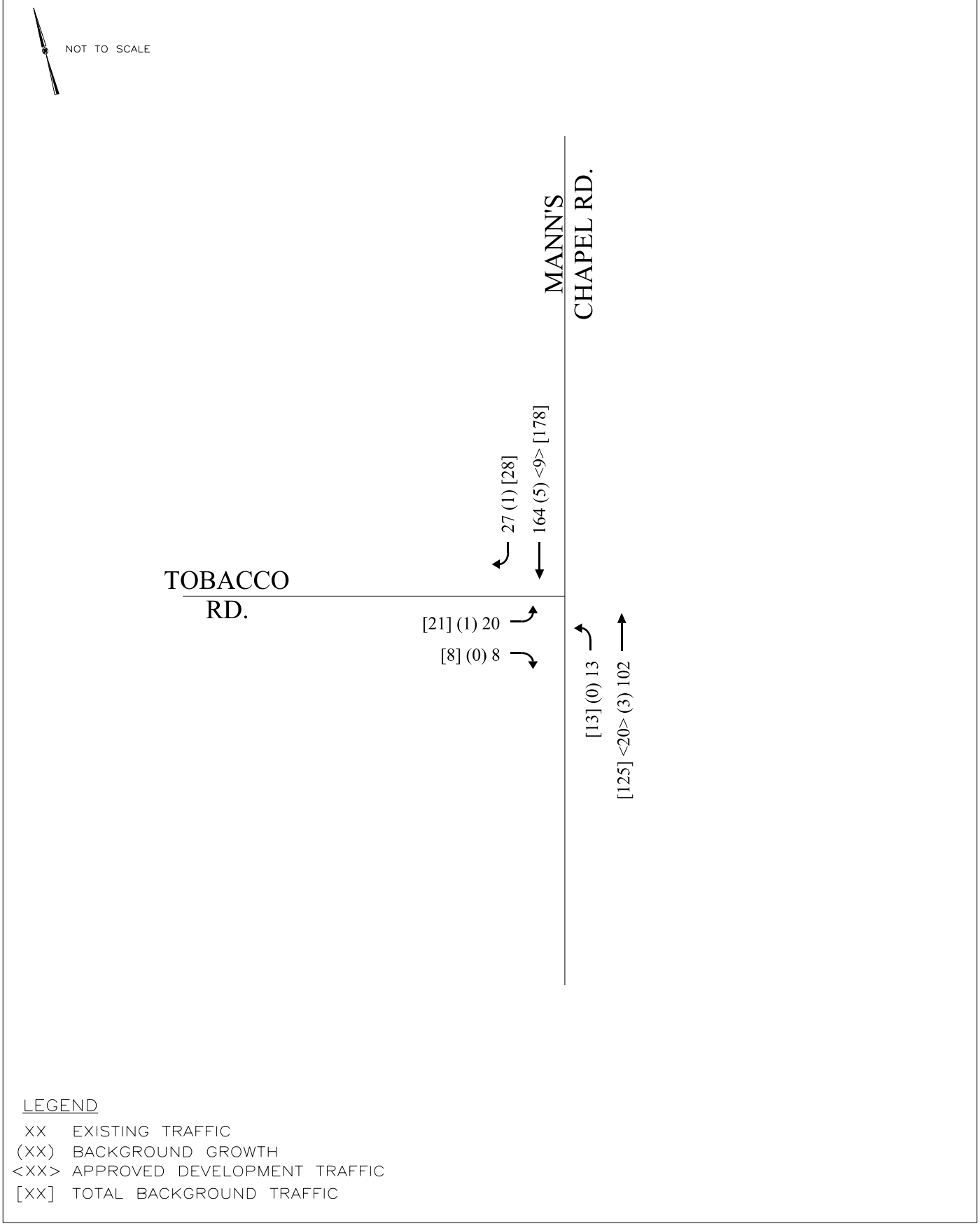

Kimley»Horn

RYANS CROSSING
CHATHAM COUNTY, NC
TRAFFIC IMPACT ANALYSIS

EXISTING AND PROJECTED (2021) BACKGROUND PM PEAK HOUR TRAFFIC VOLUMES

FIGURE 4

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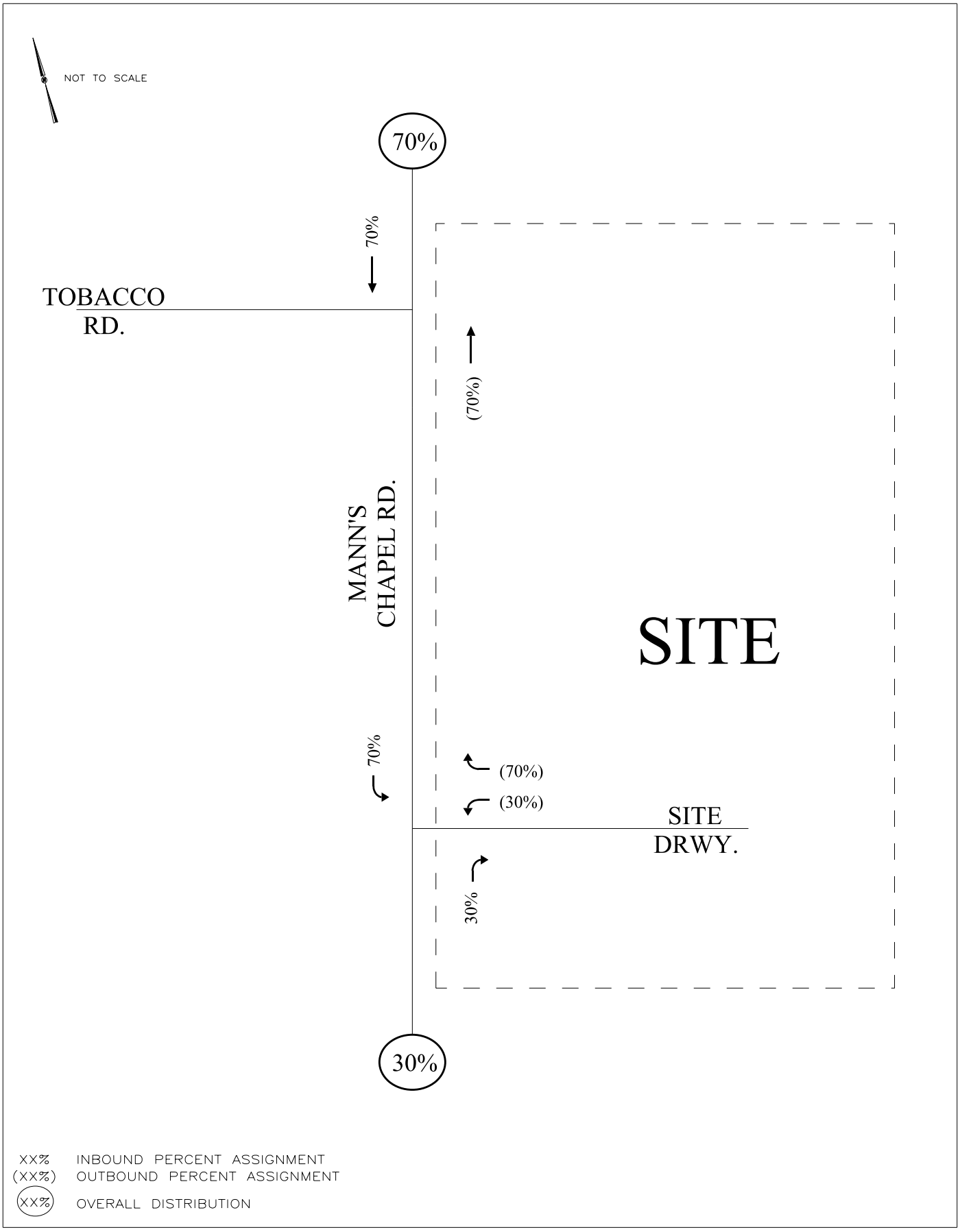

Kimley»Horn	RYANS CROSSING CHATHAM COUNTY, NC TRAFFIC IMPACT ANALYSIS	SITE TRAFFIC DISTRIBUTION AND PERCENT ASSIGNMENT	FIGURE 5

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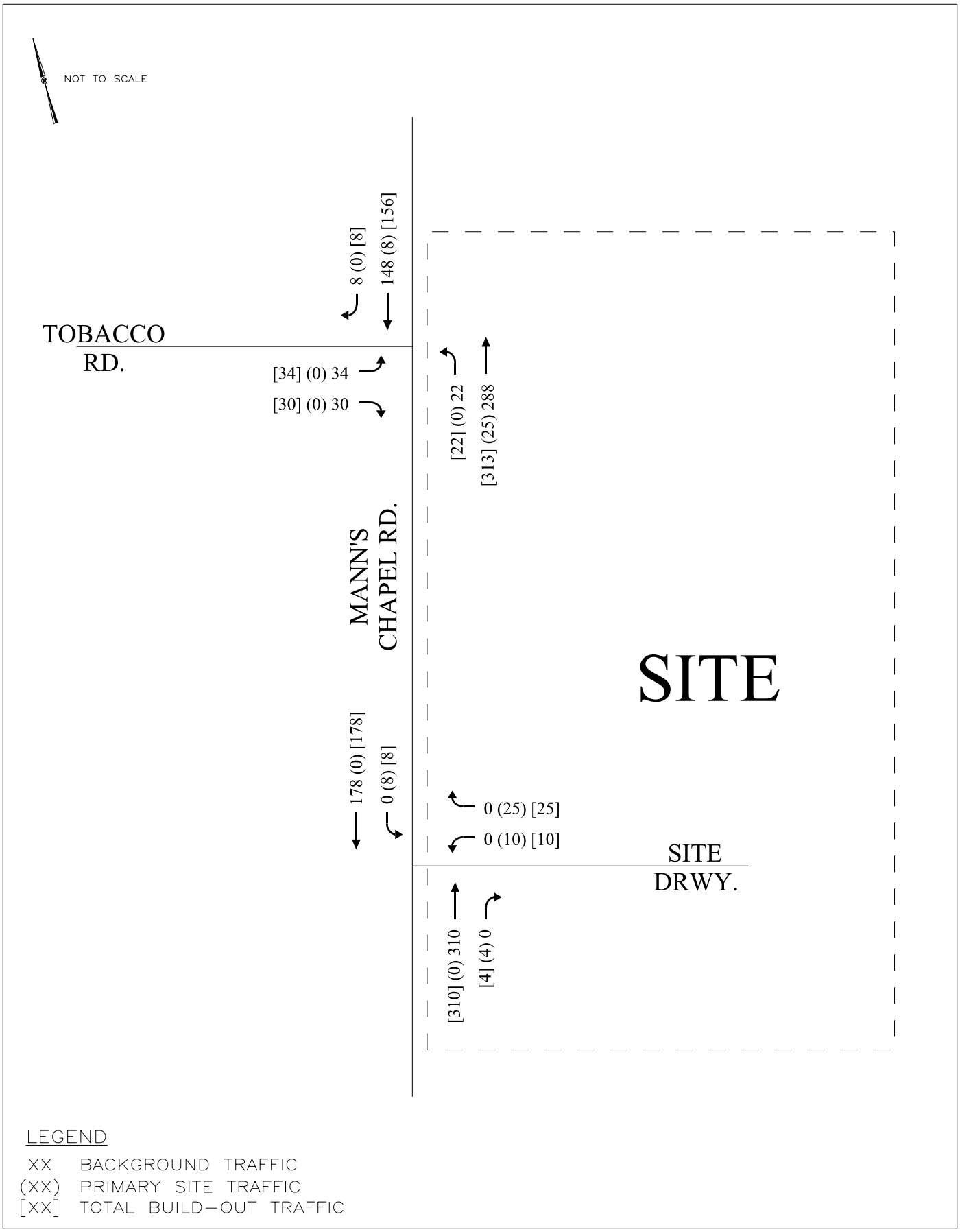

Kimley»Horn	RYANS CROSSING CHATHAM COUNTY, NC TRAFFIC IMPACT ANALYSIS	PROJECTED (2021) BUILD-OUT AM PEAK HOUR TRAFFIC VOLUMES	FIGURE 6

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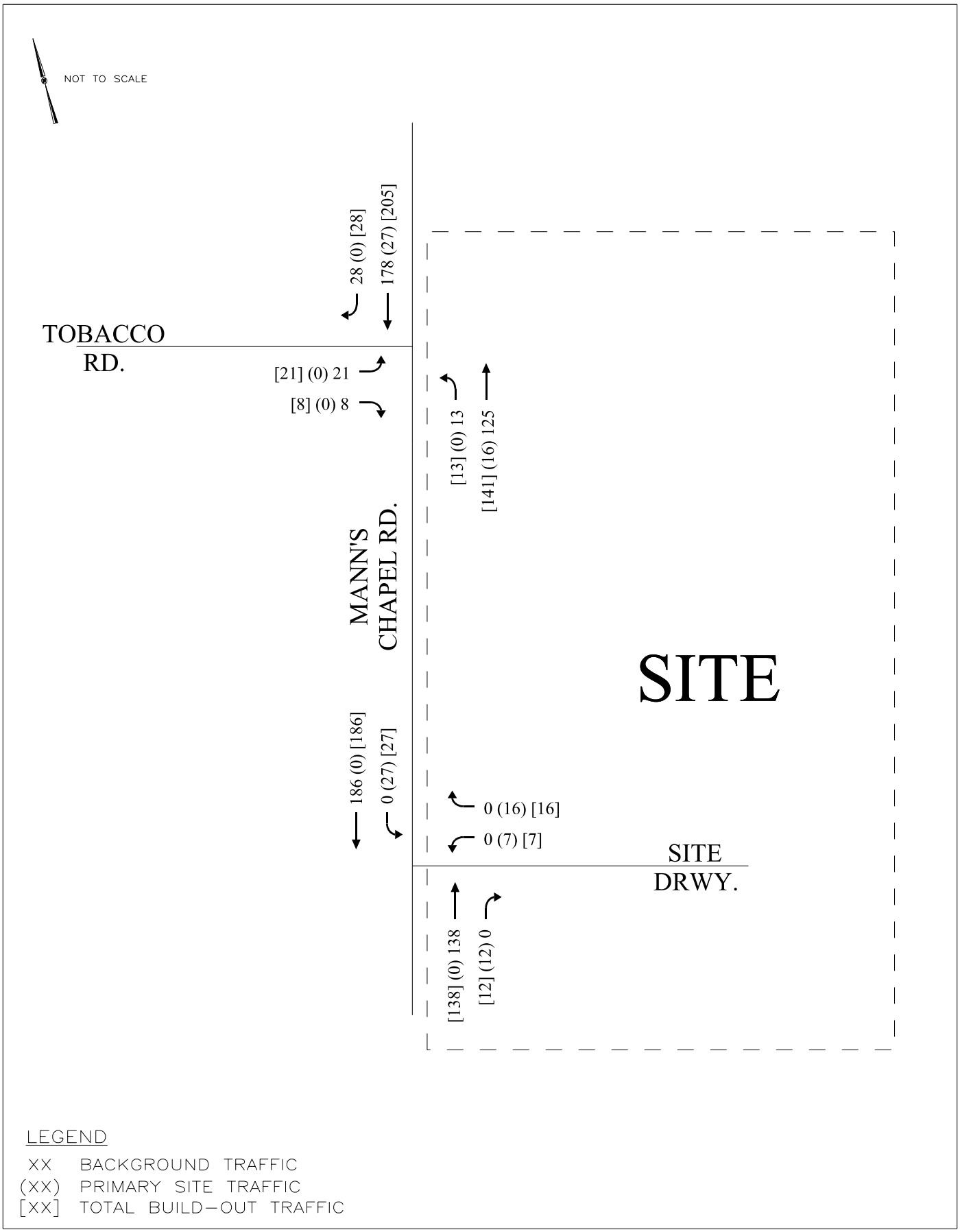

Kimley»Horn	RYANS CROSSING CHATHAM COUNTY, NC TRAFFIC IMPACT ANALYSIS	PROJECTED (2021) BUILD-OUT PM PEAK HOUR TRAFFIC VOLUMES	FIGURE 7

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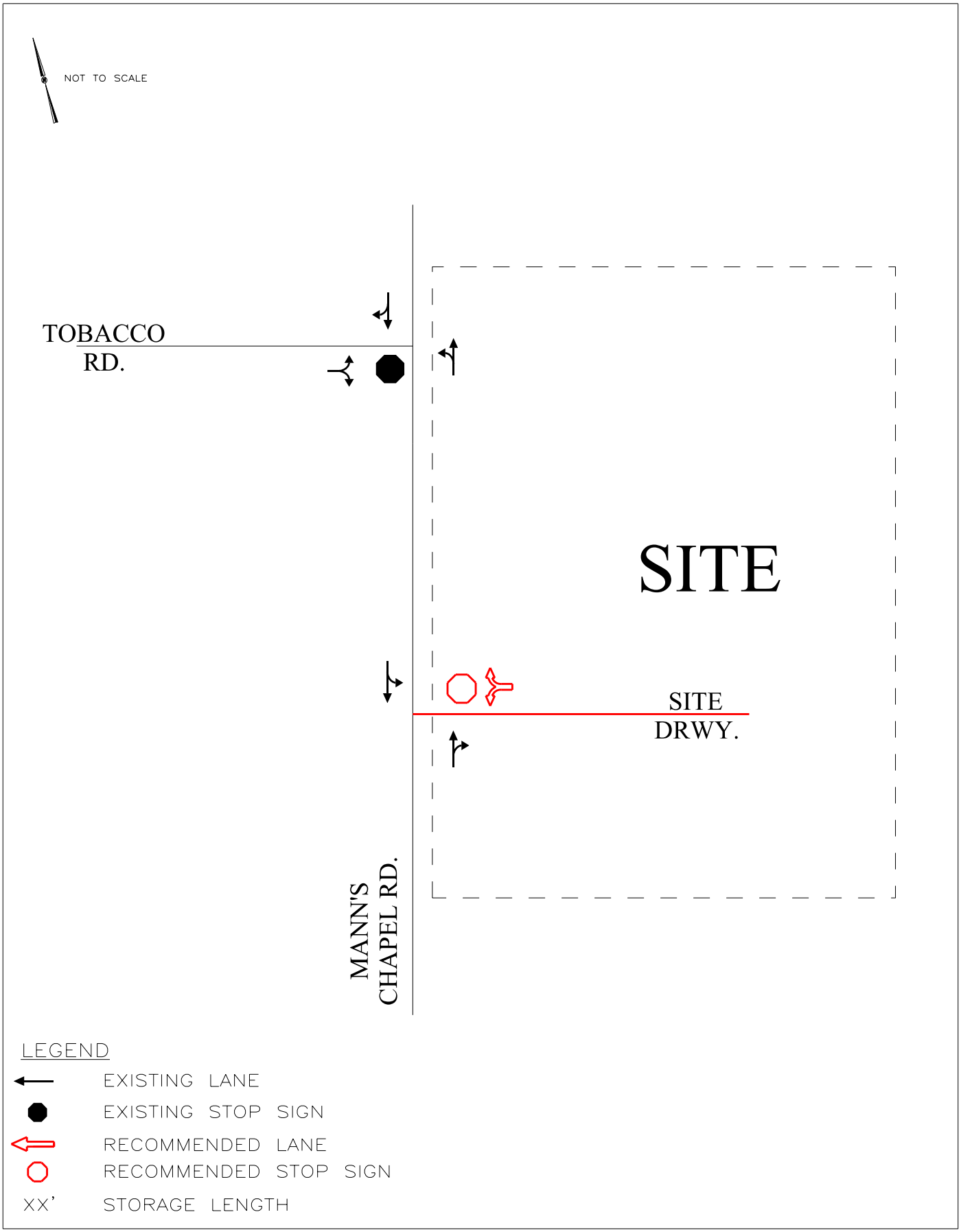

Kimley»Horn	RYANS CROSSING CHATHAM COUNTY, NC TRAFFIC IMPACT ANALYSIS	RECOMMENDED LANEAGE FIGURE	FIGURE 8

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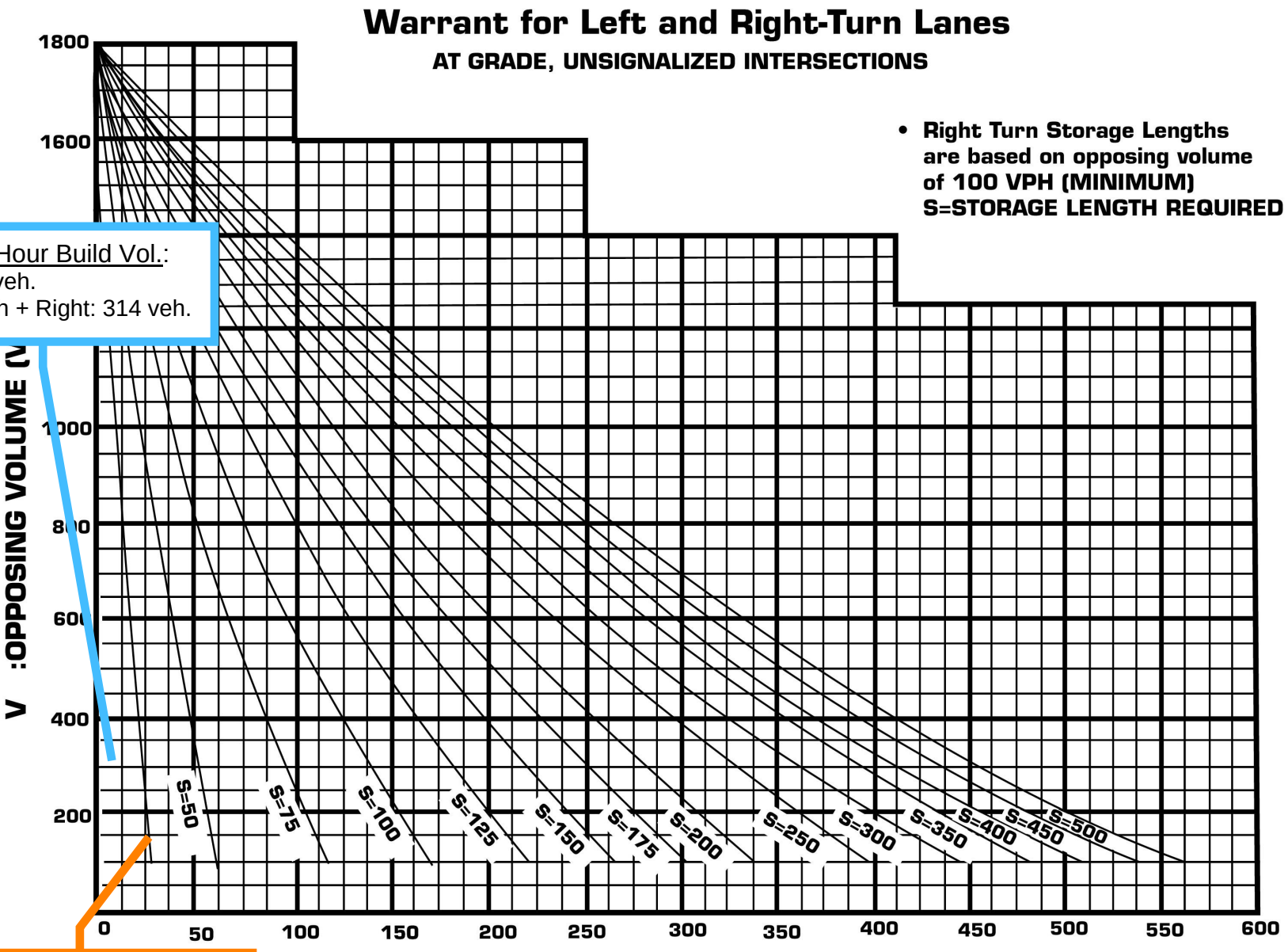
Ryans Crossing Turn-Lane Warrant (Chatham County, NC)

Mann's Chapel Road at Site Driveway



AM Peak Hour Build Vol.:
SB Left: 8 veh.
NB Through + Right: 314 veh.

PM Peak Hour Build Vol.:
SB Left: 27 veh.
NB Through + Right: 150 veh.

Volume
File Name: C:\Users\John\Documents\Counts\KHA\2018\Pittsboro\MannsChapelV.tf2
Start Date: 1/24/2018
Start Time: 1:45:00 PM
Site Code: 000000000222
Station ID:
Location 1: 200 Ft. south of Tobacco Rd.
Location 2:
Mann's Chapel Rd. south of Tobacco Rd.
January 23 - 25, 2018
Weather: Clear
Volume

Date	Time	Northbound	Southbound
1/24/2018	01:45 PM	29	26
1/24/2018	02:00 PM	19	18
1/24/2018	02:15 PM	25	27
1/24/2018	02:30 PM	21	29
1/24/2018	02:45 PM	25	51
1/24/2018	03:00 PM	58	42
1/24/2018	03:15 PM	64	29
1/24/2018	03:30 PM	26	43
1/24/2018	03:45 PM	23	33
1/24/2018	04:00 PM	26	31
1/24/2018	04:15 PM	27	35
1/24/2018	04:30 PM	17	34
1/24/2018	04:45 PM	23	35
1/24/2018	05:00 PM	23	36
1/24/2018	05:15 PM	23	43
1/24/2018	05:30 PM	29	50
1/24/2018	05:45 PM	24	37
1/24/2018	06:00 PM	26	27
1/24/2018	06:15 PM	17	25
1/24/2018	06:30 PM	14	30
1/24/2018	06:45 PM	19	23
1/24/2018	07:00 PM	20	21
1/24/2018	07:15 PM	9	23
1/24/2018	07:30 PM	9	14
1/24/2018	07:45 PM	17	25
1/24/2018	08:00 PM	10	11
1/24/2018	08:15 PM	10	12
1/24/2018	08:30 PM	10	12
1/24/2018	08:45 PM	4	7
1/24/2018	09:00 PM	7	13
1/24/2018	09:15 PM	8	16
1/24/2018	09:30 PM	6	10
1/24/2018	09:45 PM	3	8
1/24/2018	10:00 PM	4	6
1/24/2018	10:15 PM	1	5
1/24/2018	10:30 PM	10	6
1/24/2018	10:45 PM	4	3
1/24/2018	11:00 PM	0	4
1/24/2018	11:15 PM	1	4
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1/25/2018	12:15 AM	1	0
1/25/2018	12:30 AM	1	3
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1/25/2018	01:45 AM	0	0
1/25/2018	02:00 AM	0	0
1/25/2018	02:15 AM	0	0
1/25/2018	02:30 AM	0	1
1/25/2018	02:45 AM	1	0
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1/25/2018	07:30 PM	7	15
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1/25/2018	11:30 PM	0	1
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1/26/2018	12:00 AM	0	2
1/26/2018	12:15 AM	0	2
1/26/2018	12:30 AM	2	3
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1/26/2018	03:30 AM	0	0
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1/26/2018	04:00 AM	3	0
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1/26/2018	05:00 AM	1	0
1/26/2018	05:15 AM	4	1
1/26/2018	05:30 AM	8	3
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1/26/2018	06:15 AM	15	4
1/26/2018	06:30 AM	15	9
1/26/2018	06:45 AM	13	7
1/26/2018	07:00 AM	27	21
1/26/2018	07:15 AM	35	59
1/26/2018	07:30 AM	65	70
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1/26/2018	08:30 AM	23	17
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1/26/2018	10:15 AM	19	9
1/26/2018	10:30 AM	20	11
1/26/2018	10:45 AM	21	18
1/26/2018	11:00 AM	24	17
1/26/2018	11:15 AM	17	16
1/26/2018	11:30 AM	9	15
1/26/2018	11:45 AM	13	19
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1/26/2018	12:15 PM	16	14
1/26/2018	12:30 PM	12	18
1/26/2018	12:45 PM	17	23
1/26/2018	01:00 PM	14	21
1/26/2018	01:15 PM	18	11
1/26/2018	01:30 PM	20	16
1/26/2018	01:45 PM	15	20

One Day Peak:	2943	veh.
Any 24-Hour Peak:	2975	veh.

File Name: C:\Users\John\Documents\Counts\KHA\2018\Pittsboro\MannsTobacco.ppd
Start Date: 1/25/2018
Start Time: 7:00:00 AM
Site Code: 00001804
Comment 1: Mann's Chapel Rd. @ Tobacco Rd.
Comment 2: Pittsboro, NC
Comment 3: Jan. 25, 2018 Counter JCG
Comment 4: Weather: Clear

	Mann's Chapel Rd. From North			Mann's Chapel Rd. From South			Tobacco Rd. From West						
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	15-min	1-Hour		
07:00	0	23	0	0	26	2	3	0	8	62			
07:15	1	43	0	0	36	2	10	0	11	103			
07:30	1	65	0	0	56	2	9	0	6	139			
07:45	2	14	0	0	119	10	5	0	9	159	463		
08:00	4	16	0	0	53	7	5	0	7	92	493		
08:15	1	4	0	0	37	1	1	0	4	48	438		
08:30	1	11	0	0	32	5	4	0	5	58	357		
08:45	1	8	0	0	18	1	1	0	2	31	229		
	8	138	0	0	264	21	29	0	33			**0.78**	**PHF:**
16:00	8	28	0	0	36	3	2	0	5	82			
16:15	4	26	0	0	25	0	1	0	2	58			
16:30	8	22	0	0	40	5	1	0	2	78			
16:45	3	37	0	0	25	8	1	0	5	79	297		
17:00	6	33	0	0	25	1	1	0	5	71	286		
17:15	4	45	0	0	25	2	4	0	5	85	313		
17:30	9	54	0	0	22	5	0	0	2	92	327		
17:45	8	32	0	0	30	5	3	0	8	86	334		
	27	164	0	0	102	13	8	0	20			**0.91**	**PHF:**

Ryans Crossing

Table 1 - Trip Generation

Land Use	Intensity	Daily			AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out	Total	In	Out
210 Single Family Detached Housing	60 d.u.	650	325	325	47	12	35	62	39	23

INTERSECTION ANALYSIS SHEET

Project:	**Ryans Crossing**
Location:	**Chatham County, NC**
Ct. Date	**1/25/2018**
N/S Street:	**Manns Chapel Road**
E/W Street:	**Tobacco Road**

	AM In	**AM Out**	**PM In**	**PM Out**
Net New Trips:	12	35	39	23

Annual Growth Rate:	3.0%	**Existing Year:**	2018
Growth Factor:	0.03	**Buildout Year:**	2019

AM PEAK HOUR
AM PHF = 0.78

Description	Tobacco Road **Eastbound** Left	Through	Right	**Westbound** Left	Through	Right	Manns Chapel Road **Northbound** Left	Through	Right	Manns Chapel Road **Southbound** Left	Through	Right
2018 Traffic Count	33	0	29	0	0	0	21	264	0	0	138	8
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2018 Existing Traffic	33	0	29	0	0	0	21	264	0	0	138	8
Growth Factor (0.03 per year)	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
2019 Background Growth	1	0	1	0	0	0	1	8	0	0	4	0
Committed Projects												
Briar Chapel (100% Build)	0	0	0	0	0	0	0	16	0	0	6	0
Total Committed Traffic	0	0	0	0	0	0	0	16	0	0	6	0
2019 Background Traffic	34	0	30	0	0	0	22	288	0	0	148	8
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	70%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	0	0	8	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	70%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	0	0	0	0	25	0	0	0	0
Total Project Traffic	0	0	0	0	0	0	0	25	0	0	8	0
2019 Buildout Total	34	0	30	0	0	0	22	313	0	0	156	8
Percent Impact (Approach)		0.0%			-			7.5%			4.9%	

Overall Percent Impact 5.9%

PM PEAK HOUR
PM PHF = 0.91

Description	Tobacco Road **Eastbound** Left	Through	Right	**Westbound** Left	Through	Right	Manns Chapel Road **Northbound** Left	Through	Right	Manns Chapel Road **Southbound** Left	Through	Right
2018 Traffic Count	20	0	8	0	0	0	13	102	0	0	164	27
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2018 Existing Traffic	20	0	8	0	0	0	13	102	0	0	164	27
Growth Factor (0.03 per year)	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
2019 Background Growth	1	0	0	0	0	0	0	3	0	0	5	1
Committed Projects												
Briar Chapel (100% Build)	0	0	0	0	0	0	0	20	0	0	9	0
Total Committed Traffic	0	0	0	0	0	0	0	20	0	0	9	0
2019 Background Traffic	21	0	8	0	0	0	13	125	0	0	178	28
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	70%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	0	0	27	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	70%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	0	0	0	0	16	0	0	0	0
Total Project Traffic	0	0	0	0	0	0	0	16	0	0	27	0
2019 Buildout Total	21	0	8	0	0	0	13	141	0	0	205	28
Percent Impact (Approach)		0.0%			-			10.4%			11.6%	

Overall Percent Impact 10.3%

INTERSECTION ANALYSIS SHEET

Project:	**Ryans Crossing**
Location:	**Chatham County, NC**
Ct. Date	**Balanced with Tobacco Road**
N/S Street:	**Manns Chapel Road**
E/W Street:	**Site Driveway**

	AM In	**AM Out**	**PM In**	**PM Out**
Net New Trips:	12	35	39	23

Annual Growth Rate:	3.0%	**Existing Year:**	2018
Growth Factor:	0.03	**Buildout Year:**	2019

AM PEAK HOUR
AM PHF = 0.90

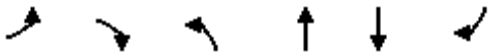
	Eastbound			Site Driveway Westbound			Manns Chapel Road Northbound			Manns Chapel Road Southbound		
Description	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	285	0	0	167	0
2018 Existing Traffic	0	0	0	0	0	0	0	285	0	0	167	0
Growth Factor (0.03 per year)	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
2019 Background Growth	0	0	0	0	0	0	0	9	0	0	5	0
Committed Projects												
Briar Chapel (100% Build)	0	0	0	0	0	0	0	16	0	0	6	0
Total Committed Traffic	0	0	0	0	0	0	0	16	0	0	6	0
2019 Background Traffic	0	0	0	0	0	0	0	310	0	0	178	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	30%	70%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	4	8	0	0
Percent Assignment Outbound	0%	0%	0%	30%	0%	70%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	10	0	25	0	0	0	0	0	0
Total Project Traffic	0	0	0	10	0	25	0	0	4	8	0	0
2019 Buildout Total	0	0	0	10	0	25	0	310	4	8	178	0
Percent Impact (Approach)		-			100.0%			1.3%			4.3%	

Overall Percent Impact 8.8%

PM PEAK HOUR
PM PHF = 0.90

	Eastbound			Site Driveway Westbound			Manns Chapel Road Northbound			Manns Chapel Road Southbound		
Description	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	115	0	0	172	0
2018 Existing Traffic	0	0	0	0	0	0	0	115	0	0	172	0
Growth Factor (0.03 per year)	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
2019 Background Growth	0	0	0	0	0	0	0	3	0	0	5	0
Committed Projects												
Briar Chapel (100% Build)	0	0	0	0	0	0	0	20	0	0	9	0
Total Committed Traffic	0	0	0	0	0	0	0	20	0	0	9	0
2019 Background Traffic	0	0	0	0	0	0	0	138	0	0	186	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	30%	70%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	12	27	0	0
Percent Assignment Outbound	0%	0%	0%	30%	0%	70%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	7	0	16	0	0	0	0	0	0
Total Project Traffic	0	0	0	7	0	16	0	0	12	27	0	0
2019 Buildout Total	0	0	0	7	0	16	0	138	12	27	186	0
Percent Impact (Approach)		-			100.0%			8.0%			12.7%	

Overall Percent Impact 16.1%



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	33	26	21	264	138	8
Future Volume (vph)	33	26	21	264	138	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1706	0	0	1855	1850	0
Flt Permitted	0.973			0.996		
Satd. Flow (perm)	1706	0	0	1855	1850	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	1375			450	1185	
Travel Time (s)	20.8			6.8	18.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	0	0	365	187	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.2%		ICU Level of Service A	
Analysis Period (min) 15			

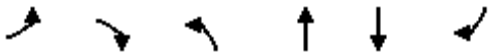
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	33	26	21	264	138	8
Future Vol, veh/h	33	26	21	264	138	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	33	27	338	177	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	574	182	187	0	-	0
Stage 1	182	-	-	-	-	-
Stage 2	392	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	480	861	1387	-	-	-
Stage 1	849	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	468	861	1387	-	-	-
Mov Cap-2 Maneuver	468	-	-	-	-	-
Stage 1	849	-	-	-	-	-
Stage 2	667	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1387	-	586	-	-
HCM Lane V/C Ratio	0.019	-	0.129	-	-
HCM Control Delay (s)	7.6	0	12.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	8	13	102	164	27
Future Volume (vph)	20	8	13	102	164	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1729	0	0	1852	1827	0
Flt Permitted	0.966			0.994		
Satd. Flow (perm)	1729	0	0	1852	1827	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	1375			450	1185	
Travel Time (s)	20.8			6.8	18.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	0	0	126	210	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.3%		ICU Level of Service A	
Analysis Period (min) 15			

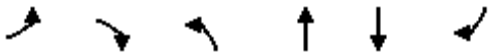
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	8	13	102	164	27
Future Vol, veh/h	20	8	13	102	164	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	9	14	112	180	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	336	195	210	0	-	0
Stage 1	195	-	-	-	-	-
Stage 2	141	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	659	846	1361	-	-	-
Stage 1	838	-	-	-	-	-
Stage 2	886	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	652	846	1361	-	-	-
Mov Cap-2 Maneuver	652	-	-	-	-	-
Stage 1	838	-	-	-	-	-
Stage 2	876	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1361	-	698	-	-
HCM Lane V/C Ratio	0.01	-	0.044	-	-
HCM Control Delay (s)	7.7	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	30	22	288	148	8
Future Volume (vph)	34	30	22	288	148	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1700	0	0	1855	1850	0
Flt Permitted	0.974			0.996		
Satd. Flow (perm)	1700	0	0	1855	1850	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	1375			450	1185	
Travel Time (s)	20.8			6.8	18.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	0	397	200	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.4%		ICU Level of Service A	
Analysis Period (min) 15			

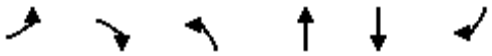
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	30	22	288	148	8
Future Vol, veh/h	34	30	22	288	148	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	38	28	369	190	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	621	195	200	0	-	0
Stage 1	195	-	-	-	-	-
Stage 2	426	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	451	846	1372	-	-	-
Stage 1	838	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	439	846	1372	-	-	-
Mov Cap-2 Maneuver	439	-	-	-	-	-
Stage 1	838	-	-	-	-	-
Stage 2	642	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1372	-	567	-	-
HCM Lane V/C Ratio	0.021	-	0.145	-	-
HCM Control Delay (s)	7.7	0	12.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	8	13	125	178	28
Future Volume (vph)	21	8	13	125	178	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1729	0	0	1853	1829	0
Flt Permitted	0.965			0.995		
Satd. Flow (perm)	1729	0	0	1853	1829	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	1375			450	1185	
Travel Time (s)	20.8			6.8	18.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	0	151	227	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.4%		ICU Level of Service A	
Analysis Period (min) 15			

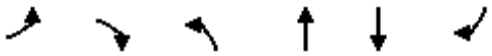
Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	8	13	125	178	28
Future Vol, veh/h	21	8	13	125	178	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	9	14	137	196	31

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	377	211	226	0	-	0
Stage 1	211	-	-	-	-	-
Stage 2	166	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	625	829	1342	-	-	-
Stage 1	824	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	618	829	1342	-	-	-
Mov Cap-2 Maneuver	618	-	-	-	-	-
Stage 1	824	-	-	-	-	-
Stage 2	854	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1342	-	665	-	-
HCM Lane V/C Ratio	0.011	-	0.048	-	-
HCM Control Delay (s)	7.7	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	30	22	313	156	8
Future Volume (vph)	34	30	22	313	156	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1700	0	0	1857	1852	0
Flt Permitted	0.974			0.997		
Satd. Flow (perm)	1700	0	0	1857	1852	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	1375			334	1185	
Travel Time (s)	20.8			5.1	18.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	0	429	210	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.1%		ICU Level of Service A	
Analysis Period (min) 15			

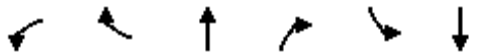
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	30	22	313	156	8
Future Vol, veh/h	34	30	22	313	156	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	38	28	401	200	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	663	205	210	0	-	0
Stage 1	205	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	426	836	1361	-	-	-
Stage 1	829	-	-	-	-	-
Stage 2	637	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	415	836	1361	-	-	-
Mov Cap-2 Maneuver	415	-	-	-	-	-
Stage 1	829	-	-	-	-	-
Stage 2	620	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1361	-	543	-	-
HCM Lane V/C Ratio	0.021	-	0.151	-	-
HCM Control Delay (s)	7.7	0	12.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	25	310	4	8	178
Future Volume (vph)	10	25	310	4	8	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1659	0	1859	0	0	1859
Flt Permitted	0.986					0.998
Satd. Flow (perm)	1659	0	1859	0	0	1859
Link Speed (mph)	15		35			45
Link Distance (ft)	415		561			334
Travel Time (s)	18.9		10.9			5.1
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	39	0	348	0	0	207
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.6%		ICU Level of Service A	
Analysis Period (min) 15			

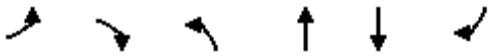
Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	25	310	4	8	178
Future Vol, veh/h	10	25	310	4	8	178
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	28	344	4	9	198

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	563	347	0	0	349	0
Stage 1	347	-	-	-	-	-
Stage 2	216	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	487	696	-	-	1210	-
Stage 1	716	-	-	-	-	-
Stage 2	820	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	483	696	-	-	1210	-
Mov Cap-2 Maneuver	483	-	-	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	813	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	618	1210	-
HCM Lane V/C Ratio	-	-	0.063	0.007	-
HCM Control Delay (s)	-	-	11.2	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	8	13	141	205	28
Future Volume (vph)	21	8	13	141	205	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1729	0	0	1855	1833	0
Flt Permitted	0.965			0.996		
Satd. Flow (perm)	1729	0	0	1855	1833	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	1375			334	1185	
Travel Time (s)	20.8			5.1	18.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	0	169	256	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.2%		ICU Level of Service A	
Analysis Period (min) 15			

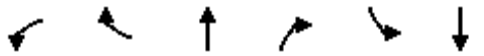
Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	8	13	141	205	28
Future Vol, veh/h	21	8	13	141	205	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	9	14	155	225	31

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	425	241	256	0	-	0
Stage 1	241	-	-	-	-	-
Stage 2	184	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	586	798	1309	-	-	-
Stage 1	799	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	579	798	1309	-	-	-
Mov Cap-2 Maneuver	579	-	-	-	-	-
Stage 1	799	-	-	-	-	-
Stage 2	838	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1309	-	626	-	-
HCM Lane V/C Ratio	0.011	-	0.051	-	-
HCM Control Delay (s)	7.8	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	16	138	12	27	186
Future Volume (vph)	7	16	138	12	27	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1664	0	1842	0	0	1852
Flt Permitted	0.985					0.994
Satd. Flow (perm)	1664	0	1842	0	0	1852
Link Speed (mph)	15		35			45
Link Distance (ft)	415		561			334
Travel Time (s)	18.9		10.9			5.1
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	166	0	0	237
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	16	138	12	27	186
Future Vol, veh/h	7	16	138	12	27	186
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	18	153	13	30	207

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	427	160	0	0	167	0
Stage 1	160	-	-	-	-	-
Stage 2	267	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	584	885	-	-	1411	-
Stage 1	869	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	570	885	-	-	1411	-
Mov Cap-2 Maneuver	570	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	759	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	758	1411	-
HCM Lane V/C Ratio	-	-	0.034	0.021	-
HCM Control Delay (s)	-	-	9.9	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

1: Mann's Chapel Road & Tobacco Road Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.2	0.1	0.1
Total Delay (hr)	0.1	0.0	0.0	0.1	0.0	0.0	0.2
Total Del/Veh (s)	5.7	2.5	2.1	0.6	0.5	0.2	1.0

2: Mann's Chapel Road & Site Driveway Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.2	0.2	0.0	0.0	0.2
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	5.8	3.3	0.3	0.1	2.1	0.5	0.6

Total Network Performance

Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.2
Total Delay (hr)	0.3
Total Del/Veh (s)	2.0

Intersection: 1: Mann's Chapel Road & Tobacco Road

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	57	40
Average Queue (ft)	23	5
95th Queue (ft)	42	25
Link Distance (ft)	1332	274
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Mann's Chapel Road & Site Driveway

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	50	3	26
Average Queue (ft)	23	0	2
95th Queue (ft)	49	3	14
Link Distance (ft)	384	527	274
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

1: Mann's Chapel Road & Tobacco Road Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.2	0.2	0.1
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	4.2	1.8	1.9	0.4	0.8	0.3	0.8

2: Mann's Chapel Road & Site Driveway Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.2	0.2	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	4.0	2.7	0.3	0.1	1.2	0.7	0.7

Total Network Performance

Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.2
Total Delay (hr)	0.2
Total Del/Veh (s)	1.7

Intersection: 1: Mann's Chapel Road & Tobacco Road

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	28	35
Average Queue (ft)	14	3
95th Queue (ft)	32	19
Link Distance (ft)	1332	274
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Mann's Chapel Road & Site Driveway

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	35	44
Average Queue (ft)	16	4
95th Queue (ft)	41	22
Link Distance (ft)	384	274
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

From: Alex Barroso
To: Dan McCauley; Chris Seamster
Subject: Fwd: RE: [External] RE: Ryans Crossing - Mann"s Chapel Road
Date: Thursday, March 22, 2018 3:56:44 PM
Attachments: image003.png

Guys,
Please include this in the EAU and upcoming submittal.

Thanks,
Alex Barroso
---------- Forwarded message ----------
From: "Kitchen, Matthew W" <mwkitchen@ncdot.gov>
Date: Mar 22, 2018 3:36 PM
Subject: RE: [External] RE: Ryans Crossing - Mann's Chapel Road
To: "Dean, Kevin" <kevin.dean@kimley-horn.com>, "Richardson, Justin T" <jtrichardson@ncdot.gov>
Cc: "Alex Barroso" <alex@sealidevelopment.com>, "Adams, Richard" <Richard.Adams@kimley-horn.com>

> Kevin,
>
> We have reviewed the traffic memo and concur with your findings. Should you have any questions or need additional information please do not hesitate to contact our office.
>
> Thanks,
>
> Matt
>
> Matthew W. Kitchen, PE
>
> District Engineer
>
> Division 8 - District 1
>
> 336-318-4000 Office
>
> mwkitchen@ncdot.gov
>
> 300 DOT Drive

PO Box 1164

Asheboro, NC 27204

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From: Dean, Kevin [mailto:kevin.dean@kimley-horn.com]
Sent: Thursday, March 22, 2018 2:25 PM
To: Kitchen, Matthew W <mwkitchen@ncdot.gov>; Richardson, Justin T <jtrichardson@ncdot.gov>
Cc: Alex Barroso <alex@sealidevelopment.com>; Adams, Richard <Richard.Adams@kimley-horn.com>
Subject: [External] RE: Ryans Crossing - Mann's Chapel Road

CAUTION: External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to Report Spam.

Matt/Justin,

Thanks for the meeting yesterday. I meant to mention but forgot – have you had a chance to review the traffic memo for the Ryans Crossing site on Mann's Chapel Road at Tobacco Road?

Thanks as always,

Kevin Dean, P.E.
Kimley-Horn | 300 W. Morgan Street, Suite 1500, Durham, NC 27701
Direct: 919-678-4185 | Mobile: 919-810-2021 | www.kimley-horn.com

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From: Dean, Kevin
Sent: Friday, February 9, 2018 2:15 PM
To: mwkitchen@ncdot.gov; 'Richardson, Justin T' <jtrichardson@ncdot.gov>
Cc: 'Alex Barroso' <alex@sealidevelopment.com>; Adams, Richard <Richard.Adams@kimley-horn.com>
Subject: Ryans Crossing - Mann's Chapel Road

Matt/Justin,

Our client is working on a single-family development with a proposed intensity of 60 homes on Mann's Chapel Road at Tobacco Road in Chatham County. The development is proposed to be accessed via one site driveway approximately 330 feet south of Tobacco Road and anticipating a build-out year of 2019. No traffic study was required by the County, but we did want to do some analysis to determine if turn lanes would be necessary at the site driveway.

Given the low trip generation of the site (650 daily trips, 47 AM peak trips, 62 PM peak trips) and the distance from other significant intersections (over 3 miles from US 15/501 at Mann's Chapel Road), we prepared an analysis that just analyzed the intersections of Mann's Chapel Road at Tobacco Road and at the proposed site driveway. Our intent was to both get an idea of what daily traffic volumes are in that area (current ADT of 2,975 vpd and projected 3,550 vpd) as well as to determine if any turn lanes would be warranted based on either queues or turning volumes. Our analysis showed that no queueing issues would be expected at either study intersection and that, based on both Synchro/SimTraffic results as well as the NCDOT Turn Lane Warrants graph, no turn lanes were warranted at the site driveway.

I've attached a tech memo summarizing the analysis and results as well as our traffic counts and Synchro analyses for your review. Please let us know if you need anything else from us.

Exhibit 34

CHATHAM COUNTY
NORTH CAROLINA

WATERSHED PROTECTION DIVISION
Environmental Quality Department

P.O. Box 548
Pittsboro, NC 27312
PHONE: (919) 545-8394

Fax: (919) 542-2698 ● E-mail: drew.blake@chathamnc.org ● Website: www.chathamnc.org

January 2, 2018

Mr. Eric Andrews
P.O. Box 1400
Pittsboro, NC 27312

Project Name:	Ryan's Crossing (Parcels 1777, 1780, 88505, 88506)
Chatham County Planning Application #:	2017-1982
Location:	Manns Chapel Road, Chatham County
Subject Feature(s):	Two (2) ephemeral streams, four (4) intermittent streams, four (4) perennial streams, nine (9) wetlands
Date of Determination:	January 2, 2018

Explanation: The site visit was completed on January 2, 2018 by Drew Blake with Chatham County Environmental Quality and Dan McCauley of Soil & Environmental Consultants, PA, (S&EC) on four (4) properties identified as Chatham County Parcel numbers 1777, 1780, 88505, 88506 which are located within the Jordan Lake watershed. S&EC personnel completed a previous site visit which resulted in the identification of two (2) potential ephemeral stream segments, four (4) intermittent streams segments, four (4) perennial streams segments, and nine (9) potential wetlands. S&EC submitted a request to Chatham County to complete a formal review to determine if the aforementioned features would be subject to riparian buffers according to Section 304 of the Chatham County Watershed Protection Ordinance. All points of origin and stream type transitions were reviewed and agreed to in the field. All stream and wetland denotations referenced below are based on Figure 3 – Sketch Map dated 11/16/17 and completed by S&EC. Streams E and J were confirmed to be ephemeral streams and will require a 30-ft buffer proceeding landward from the top of bank on both sides of the features. Streams C, D, G, and I were confirmed to be intermittent streams and will require a 50-ft buffer proceeding landward from the top of bank on both sides of the features. Streams A, A, B, and F were confirmed to be perennial streams and will require a 100-ft buffer proceeding landward from the top of bank on both sides of the features.

All wetland boundaries (W1-W9) flagged in the field by S&EC are to be reviewed and confirmed by the US Army Corps of Engineers (USACE). A 50-ft buffer will be required beginning at the flagged boundary and proceeding landward of any of the nine (9) flagged wetlands determined jurisdictional by the USACE. Should a USACE review result in revisions to any features reviewed by Chatham County staff on January 2, 2018, additional reviews and consultation may be required. Please provide all revised maps, sketches, and documentation to Drew Blake following the USACE site visit for inclusion in our records.

CHATHAM COUNTY
NORTH CAROLINA

WATERSHED PROTECTION DIVISION
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Fax: (919) 542-2698 ● E-mail: drew.blake@chathamnc.org ● Website: www.chathamnc.org

This on-site determination shall expire five (5) years from the date of this letter. Landowners or affected parties that dispute a determination made by Chatham County, on parcels outside of the Jordan Lake watershed, may submit a request for appeal in writing to the Watershed Review Board. A request for a determination by the Watershed Review Board shall be made in accordance with Section 304 of the Chatham County Watershed Protection Ordinance. Landowners or affected parties that dispute a determination made by Chatham County, on parcels inside the Jordan Lake watershed, shall submit a request for appeal in writing to NC DWR, 401 & Buffer Permitting Unit, 1650 Mail Service Center, Raleigh, NC 27669-1650 attention of the Director of the NC Division of Water Quality.

Should this project result in any direct impacts to surface water features (i.e., crossing and/or filling streams or wetlands) additional reviews may be necessary. Additionally, a Section 404/401 Permit may be required. Any inquiries regarding Section 404/401 permitting should be directed to the Division of Water Resources (Central Office) at (919)-807-6364 and the US Army Corp of Engineers (Raleigh Regulatory Field Office) at (919)-554-4884.

Respectfully,

Drew Blake

Drew Blake
Watershed Specialist

Enclosures: Figure 3 – Sketch Map, dated November 16, 2017
Chatham County Riparian Buffer Application Packet (submitted December 13, 2017)

cc: Steven Ball, Soil & Environmental Consultants, PA
Dan McCauley, Soil & Environmental Consultants, PA
Alex Barroso, Seali Development Corporation
Rachael Thorn, Chatham County Watershed Protection Supervisor
Brian Burkhart, Chatham County Director of Environmental Quality
Lynn Richardson, Chatham County Subdivision Administrator
Kimberly Tyson, Chatham County Land Use Administrator
Angela Birchett, Chatham County Zoning Administrator
Jason Sullivan, Chatham County Director of Planning

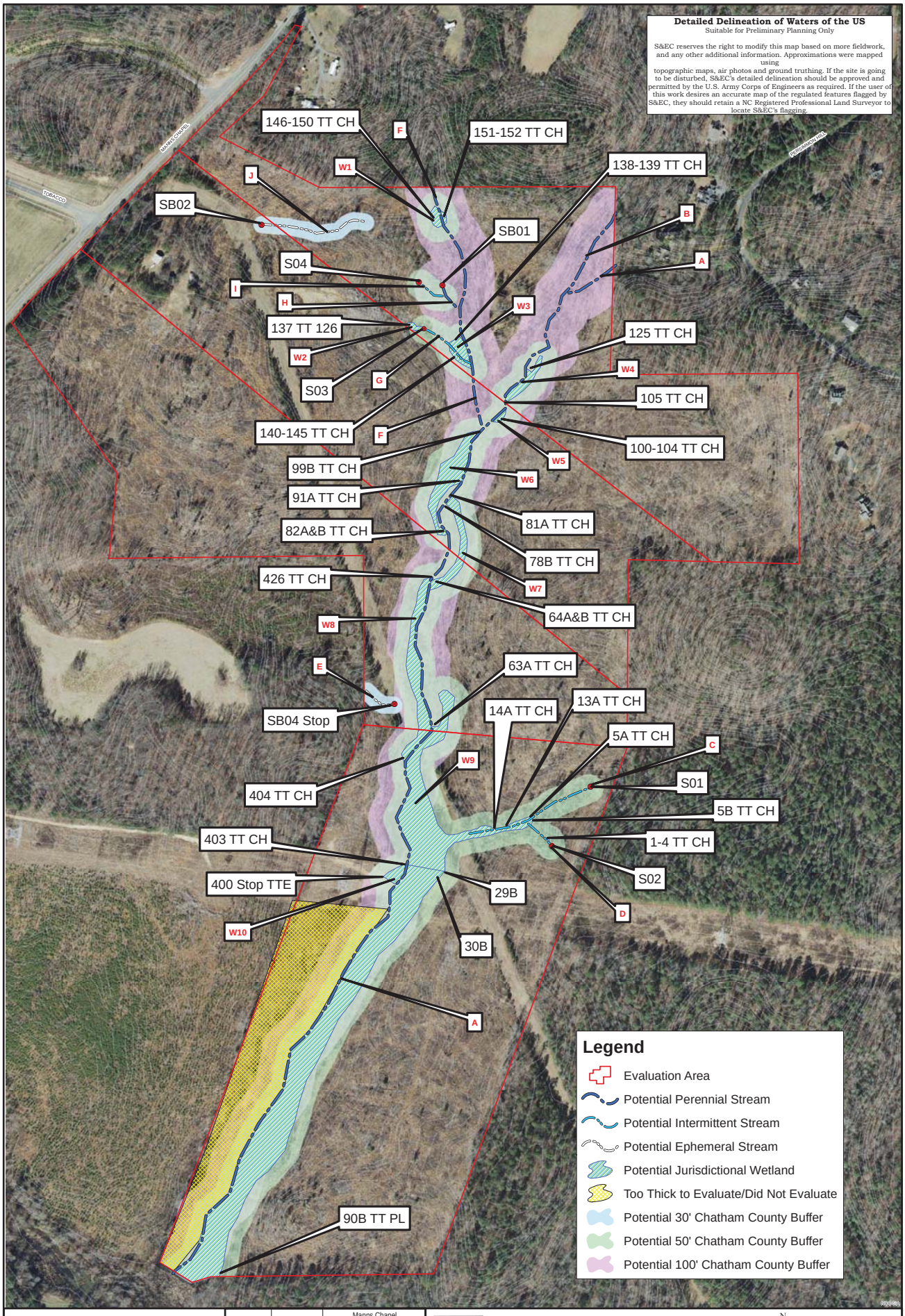

Figure 3 - Sketch Map

Project No.	Scale:	Manns Chapel Chatham County, NC Chatham County GIS NC OneMap
13203	1 = 150'	
Project Mgr.: SB	11/16/17	Prepared by: DM

S&EC Soil & Environmental Consultants, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615 • Phone: (919) 846-5900 • Fax: (919) 846-9467
sandsi.com

Watershed Protection Division
Environmental Quality Department
Phone: (919) 545-8394
Website: www.chathamnc.org

CHATHAM COUNTY
NORTH CAROLINA

Riparian Buffer Review Application
Surface Water Identification Request for
Major Subdivisions

Application Date: 12/13/17 Planning Application Number (Office Use Only): 2017-1982

Tract Information

Parcel #: 0088505/0001777 0088506/0001780 Watershed District (and name of creek if known): CAPE FEAR (WS-IV PA)

Property Owner: Dwight C. Ryan

Location/Physical Address of Tract: 2206, 2094, 2062, 2064 Manns Chapel Road

Driving Directions from Pittsboro: _____

Subdivision Name (if applicable): RYAN'S CROSSING

Owner's/Agent Contact Information (Agent: Consultant, Real Estate Agent, Surveyor, Other) Circle one

Name: Eric Andrews

Contact Phone Numbers: (h) _____ (w) 919-542-0523 (c) _____

E-mail: Eric@ericandrewsrealtor.com

Mailing Address: P.O. Box 1400, Pittsboro, NC 27312

Do you wish to be contacted prior to Chatham County staff visiting the property? ☐ Yes ☒ No

How much notice is required prior to arrival onsite? _____

How would you like to receive the completed review letter? (Please check one of the following)

☐ I would like to pick up the completed Riparian Buffer Review at the County Office

☐ I would like the completed Riparian Buffer Review mailed to me

☒ I would like the completed Riparian Buffer Review e-mailed to me

Please include the following items with this request

☐ Completed consultant findings report including the following:

- ☑ GIS generated or hand drawn sketch of surface water features found onsite (Buffer Plan Sheet) No smaller than 1"=60' and paper size 11"x17" or larger
- ☑ NCDWQ Stream Identification Forms, Version 4.11, Wetland Determination Data Form – Eastern Mountains and Piedmont Region, digital photographs, notes, sketches, etc.