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T 919 872 5115

5808 Faringdon Place
Raleigh, NC 27609

February 27, 2020

Sean Brennan, PE
Senior Assistant District Engineer [NCDOT District 1]
4009 District Drive
Raleigh, NC 27607
P: 919.733.7759 E: spbrennan@ncdot.gov

Subject: Traffic Assessment – Poole Road Project
Wake County, North Carolina

Dear Mr. Brennan:

This report provides a traffic assessment for the proposed Poole Road Residential Project to be located between Knotts Hill Place and South Bend Drive in Wake County, North Carolina. Refer to Figure 1 for the site location map. The proposed development is expected to consist of up to 40 detached single-family homes and is expected to be built-out by 2023. Access to Smithfield Road and Poole Road is proposed to be provided via cross-access with the Rutledge Landing Subdivision [Phases 3 and 4]. Refer to the attached site plan for reference. The purpose of this study is to evaluate the traffic conditions for the study intersections during the weekday AM and PM peak hours for the following scenarios:

- Existing (2020) Traffic Conditions
- Background (2023) Traffic Conditions
- Combined (2023) Traffic Conditions

It should be noted that due to the low number of single-family lots being proposed, the development is not expected to exceed the Wake County Unified Development Ordinance's threshold for triggering the need for a Traffic Impact Analysis (TIA) outlined in Section 15-2-2.

Existing Roadways

Based on coordination with Wake County (County), the study area is proposed to consist of the following intersections:

- Smithfield Road and Poole Road (signalized)
- Smithfield Road and Sandy Run (signalized)
- Smithfield Road and Meadow Run (unsignalized)
- Poole Road and Water Rock Way / Rutledge Landing Drive (unsignalized)

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Existing lane configurations (number of traffic lanes on each intersection approach), lane widths, storage capacities, and other intersection and roadway information was obtained by Ramey Kemp & Associates, Inc. (RKA). Table 1, on the following page, provides a summary of the data collected. Refer to Figure 3 for an illustration of the existing lane configurations and traffic control within the study area.

Table 1: Existing Roadway Inventory

Road Name	Route Number	Typical Cross Section	Speed Limit	Maintained By	2017 ADT (vpd)
Smithfield Road	SR 2233	2-lane undivided	55 mph	NCDOT	14,000
Poole Road	SR 1007	2-lane undivided	55 mph	NCDOT	4,700
Sandy Run	N / A	2-lane undivided	25 mph	Town	710*
Meadow Run	N / A	2-lane undivided	25 mph	Town	230*
Water Rock Way	N / A	2-lane undivided	25 mph	Town	760*
Rutledge Landing Drive	N / A	2-lane undivided	25 mph	Town	870*

*ADT based on the traffic counts from 2020 and assuming the weekday PM peak hour volume is 10% of the average daily traffic.

Existing (2020) Traffic Volumes

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections by RKA during the AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods on a typical weekday in January of 2020 while schools were in session. Traffic volumes were balanced where appropriate. Refer to Figure 4 for existing (2020) AM and PM peak hour traffic volumes. Refer to the attachments for the traffic count data.

Background (2023) Traffic Volumes

In order to account for growth of traffic and subsequent traffic conditions at a future year, background traffic projections are needed. Background traffic is the component of traffic due to

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the growth of the community and surrounding area that is anticipated to occur regardless of whether or not the proposed development is constructed. Background traffic is comprised of existing traffic growth within the study area and additional traffic created as a result of adjacent approved developments.

Through coordination with the County, it was determined that an annual growth rate of 3% would be used to generate projected (2023) AM and PM peak hour traffic volumes. Refer to Figure 5 for projected (2023) peak hour traffic. Additionally, Rutledge Landing [Phases 3 and 4] was included as an adjacent development.

Although a Traffic Impact Analysis (TIA) was completed for Phases 3 and 4 of Rutledge Landing by Kimley-Horn and Associates, Inc. on January 13, 2012 [and was approved on April 27, 2017], revisions to the trip distributions and assignments from the previously approved TIA were required due to access that is to be provided to Poole Road via an easement that was previously marked for emergency use only. The updated trip distributions were estimated based on existing traffic patterns, the 2020 traffic counts, and engineering judgment. Refer to the attachments for the previously approved adjacent development information. The updated adjacent development trips are shown in Figure 6.

The background (2023) traffic volumes were determined by adding the adjacent development trips to the projected (2023) peak hour traffic volumes. Refer to Figure 7 for an illustration of the background (2023) peak hour traffic volumes at the study intersections.

Trip Generation

The proposed development is expected to consist of up to 40 detached single-family homes. Average weekend peak hour trips for the proposed development were estimated using methodology contained within the ITE Trip Generation Manual, 10th Edition. Table 2 provides a summary of the trip generation potential for the site.

Table 2: Trip Generation Summary

Land Use (ITE Code)	Intensity	Weekday Daily Traffic (vpd)	AM Peak Hour Trips (vph)		PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Detached Single-Family Homes (210)	40 dwellings	448	8	25	26	16

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It is estimated that the proposed development will generate 448 total site trips (in and out) on the roadway network during a typical 24-hour weekday. Of the daily traffic volumes, it is anticipated that 33 trips (8 entering and 25 exiting) will occur during the AM peak hour and 42 trips (26 entering and 16 exiting) will occur during the PM peak hour.

As mentioned previously, the low trip generation potential of the proposed development does not meet the County UDO's requirement of 1,000 [or more] vehicle trips generated during a 24-hour period or 100 [or more] vehicle trips generated during the peak hour outlined in Section 15-2-2.

Site Trip Distribution and Assignment

Trip distribution percentages used in assigning site traffic for this development were estimated based on existing traffic patterns, volumes, and engineering judgement. The trip distributions are summarized below:

- 60% to / from the north via Smithfield Road
- 20% to / from the south via Smithfield Road
- 15% to / from the east via Poole Road
- 5% to / from the west via Poole Road

Refer to Figures 8 and 9 for the site trip distribution and site trip assignment, respectively.

Combined (2023) Peak Hour Traffic

To estimate traffic conditions with the site fully built out, the site trip assignment (Figure 9) was added to the background (2023) traffic volumes (Figure 7) to determine the combined (2023) traffic volumes. Refer to Figure 10 for an illustration of the combined (2023) peak hour traffic volumes with the proposed site developed.

Capacity Analysis

Study intersections were analyzed using the methodology outlined in the Highway Capacity Manual, 6th Edition (HCM) published by the Transportation Research Board. Capacity and level of service are the design criteria for this traffic study. A computer software package, Synchro (Version 10.3), was used to complete the analyses for each of the study area intersections. Please note that the unsignalized capacity analysis does not provide an overall level of service for an intersection; only delay for an approach with a conflicting movement.

The HCM defines capacity as "the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given

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time period under prevailing roadway, traffic, and control conditions." Level of service (LOS) is a term used to represent different driving conditions and is defined as a "qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers." Level of service varies from Level "A" representing free flow, to Level "F" where breakdown conditions are evident. Refer to Table 3, on the next page, for HCM levels of service and related average control delay per vehicle for both signalized and unsignalized intersections. Control delay as defined by the HCM includes "initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay". An average control delay of 50 seconds at a signalized intersection results in LOS "D" operation at the intersection.

Table 3: Highway Capacity Manual – Levels-of-Service and Delay

UNSIGNALIZED INTERSECTION		SIGNALIZED INTERSECTION	
LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)
A	0-10	A	0-10
B	10-15	B	10-20
C	15-25	C	20-35
D	25-35	D	35-55
E	35-50	E	55-80
F	>50	F	>80

Capacity analysis at all study intersections was completed according to the NCDOT Congestion Management Guidelines. Signal information was obtained from NCDOT and is included in the attachments. Signal information from the signal plans was utilized in all analysis scenarios. Please note that a minimum peak hour volume of 4 vehicles per hour [1 vehicle per each 15-minute period] was utilized for the purpose of this analysis.

Smithfield Road and Poole Road

The signalized intersection of Smithfield Road and Poole Road was analyzed under existing (2020), background (2023), and combined (2023) traffic conditions with the lane configurations and traffic control shown in Table 4. Refer to Table 4 for a summary of the capacity analysis results. The Synchro capacity analysis reports are included in the attachments.

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Table 4: Analysis Summary of Smithfield Road and Poole Road

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2020) Conditions	NB	1 LT-TH-RT	C	C	B	C
	SB	1 LT-TH-RT	A		C	
	EB	1 LT-TH-RT	D		D	
	WB	1 LT-TH-RT	D		D	
Background (2023) Conditions	NB	1 LT-TH-RT	C	C	B	C
	SB	1 LT-TH-RT	A		C	
	EB	1 LT-TH-RT	E		E	
	WB	1 LT-TH-RT	D		D	
Combined (2023) Conditions	NB	1 LT-TH-RT	D	C	B	C
	SB	1 LT-TH-RT	A		C	
	EB	1 LT-TH-RT	E		E	
	WB	1 LT-TH-RT	D		D	

Capacity analysis of existing (2020), background (2023), and combined (2023) traffic conditions indicates that the intersection and each of the approaches are expected to operate at LOS D or better, with the exception of the eastbound approach [of Poole Road] during the AM and PM peak hours under background and combined conditions. Although the eastbound approach is expected to experience heavier delays during the AM and PM peak hours, the approach delay is not expected to increase by more than 0.5 seconds per vehicle with the additional traffic associated with the proposed residential development. While the LOS of the northbound approach [of Smithfield Road] is expected to degrade one (1) letter grade between background (2023) and combined (2023) conditions during the weekday AM peak hour (3.2% increase in overall delay), the approach is expected to operate at an acceptable level-of-service under combined (2023) conditions. Additionally, the site traffic associated with the proposed development is expected to account for less than 1% of the total weekday AM and PM peak hour traffic under combined (2023) conditions. Therefore, no improvements are recommended at this intersection.

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Smithfield Road and Sandy Run

The signalized intersection of Smithfield Road and Sandy Run was analyzed under existing (2020), background (2023), and combined (2023) traffic conditions with the lane configurations and traffic control shown in Table 5. Refer to Table 5 for a summary of the capacity analysis results. The Synchro capacity analysis reports are included in the attachments.

Table 5: Analysis Summary of Smithfield Road and Sandy Run

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall	Approach	Overall
Existing (2020) Conditions	NB	1 LT-TH-RT	B	B	A	B
	SB	1 LT-TH-RT	A		B	
	EB	1 LT-TH-RT	D		D	
	WB	1 LT-TH-RT	D		D	
Background (2023) Conditions	NB	1 LT, 1 TH-RT	C	C	B	B
	SB	1 LT, 1 TH-RT	A		B	
	EB	1 LT-TH-RT	F		E	
	WB	1 LT-TH-RT	E		D	
Combined (2023) Conditions	NB	1 LT, 1 TH-RT	C	C	B	B
	SB	1 LT, 1 TH-RT	A		B	
	EB	1 LT-TH-RT	F		E	
	WB	1 LT-TH-RT	D		D	

*Bold denotes an improvement required as part of Rutledge Landing Phases 3 and 4 [see attachments].

Capacity analysis of existing (2020) traffic conditions indicates that the intersection and each of the approaches operate at LOS D or better during the AM and PM peak hours. With the construction of exclusive northbound and southbound left turns lanes on Smithfield Road [required as part of the Rutledge Landing development Phases 3 and 4], capacity analysis of background (2023) and combined (2023) traffic conditions indicates that the intersection and each of the approaches are expected to operate at LOS D or better, with the exception of the eastbound [AM and PM peak hours] and westbound [AM peak hour (background conditions only)] approaches. Although the eastbound and westbound approaches are expected to experience heavier delays during the AM and PM peak hours, the approach delays [of Sandy Run] are not

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expected to increase by more than 3.0 seconds per vehicle with the additional traffic associated with the proposed residential development. Additionally, the site traffic associated with the proposed development is expected to account for less than 1.5% of the total weekday AM and PM peak hour traffic under combined (2023) conditions. Therefore, no improvements are recommended at this intersection.

Smithfield Road and Meadow Run

The unsignalized intersection of Smithfield Road and Meadow Run was analyzed under existing (2020), background (2023), and combined (2023) traffic conditions with the lane configurations and traffic control shown in Table 6. Refer to Table 6 for a summary of the capacity analysis results. The Synchro capacity analysis reports are included in the attachments.

Table 6: Analysis Summary of Smithfield Road and Meadow Run

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall	Approach	Overall
Existing (2020) Conditions	NB	1 LT-TH-RT	A[1]	N/A	B[1]	N/A
	SB	1 LT-TH-RT	B[1]		A[1]	
	EB	1 LT-TH-RT	E[2]		F[2]	
	WB	1 LT-TH-RT	E[2]		E[2]	
Background (2023) Conditions	NB	1 LT-TH-RT	A[1]	N/A	B[1]	N/A
	SB	1 LT-TH-RT	B[1]		A[1]	
	EB	1 LT-TH-RT	F[2]		F[2]	
	WB	1 LT-TH-RT	F[2]		F[2]	
Combined (2023) Conditions	NB	1 LT-TH-RT	A[1]	N/A	B[1]	N/A
	SB	1 LT-TH-RT	B[1]		A[1]	
	EB	1 LT-TH-RT	F[2]		F[2]	
	WB	1 LT-TH-RT	F[2]		F[2]	

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis of existing (2020), background (2023), and combined (2023) traffic conditions indicates that the major-street left-turn movements are expected to operate at LOS B or better

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during the weekday AM and PM peak hours. While the minor-street approaches are expected to see heavier delays during the peak hours, the overall approach delays [of Meadow Run] are not expected to increase by more than 5.5 seconds per vehicle with the additional traffic associated with the proposed residential development. Additionally, the site traffic associated with the proposed development is expected to account for less than 1.5% of the total weekday AM and PM peak hour traffic under combined (2023) conditions. Therefore, no improvements are recommended at this intersection.

Poole Road and Water Rock Way / Rutledge Landing Drive

The unsignalized intersection of Poole Road and Water Rock Way / Rutledge Landing Drive was analyzed under existing (2020), background (2023), and combined (2023) traffic conditions with the lane configurations and traffic control shown in Table 7. Refer to Table 7 for a summary of the capacity analysis results. The Synchro capacity analysis reports are included in the attachments.

Table 7: Analysis Summary of Poole Road and Water Rock Way / Rutledge Landing Drive

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall	Approach	Overall
Existing (2020) Conditions	EB	1 LT, 1 TH-RT	A[1]	N / A	A[1]	N / A
	WB	1 LT, 1 TH-RT	A[1]		A[1]	
	NB	1 LT-TH-RT	B[2]		B[2]	
	SB	1 LT-TH-RT	B[2]		B[2]	
Background (2023) Conditions	EB	1 LT, 1 TH-RT	A[1]	N / A	A[1]	N / A
	WB	1 LT, 1 TH-RT	A[1]		A[1]	
	NB	1 LT-TH-RT	B[2]		B[2]	
	SB	1 LT-TH-RT	B[2]		B[2]	
Combined (2023) Conditions	EB	1 LT, 1 TH-RT	A[1]	N / A	A[1]	N / A
	WB	1 LT, 1 TH-RT	A[1]		A[1]	
	NB	1 LT-TH-RT	B[2]		B[2]	
	SB	1 LT-TH-RT	B[2]		B[2]	

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

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Capacity analysis of existing (2020), background (2023), and combined (2023) traffic conditions indicates that the major-street left-turn movements and minor-street approaches at this intersection are expected to operate at LOS B or better during the weekday AM and PM peak hours. Therefore, no improvements are recommended at this intersection.

Findings and Summary

As mentioned previously, the proposed development is estimated to generate 448 total site trips (in and out) on the roadway network during a typical 24-hour weekday with 33 trips (8 entering and 25 exiting) generated during the AM peak hour and 42 trips (26 entering and 16 exiting) generated during the PM peak hour. Based on the Wake County UDO's TIA threshold of vehicle trips generated (1,000 per day or 100 per peak hour) outline in Section 15-2-2, the requirements are not met for a formal TIA to be submitted.

Based on the findings of this study, the traffic associated with the proposed development is expected to have minimal impact on the study intersections. The site traffic associated with the proposed development is expected to account for less than 2.5% of the total weekday AM and PM peak hour traffic at any of the study intersections under combined (2023) conditions.

If you should have any questions, please feel free to contact me at (919) 872-5115.

Sincerely,

Chase T. Smith

NORTH CAROLINA PROFESSIONAL SEAL 47945 ENGINEER CHASE T. SMITH

2-27-2020

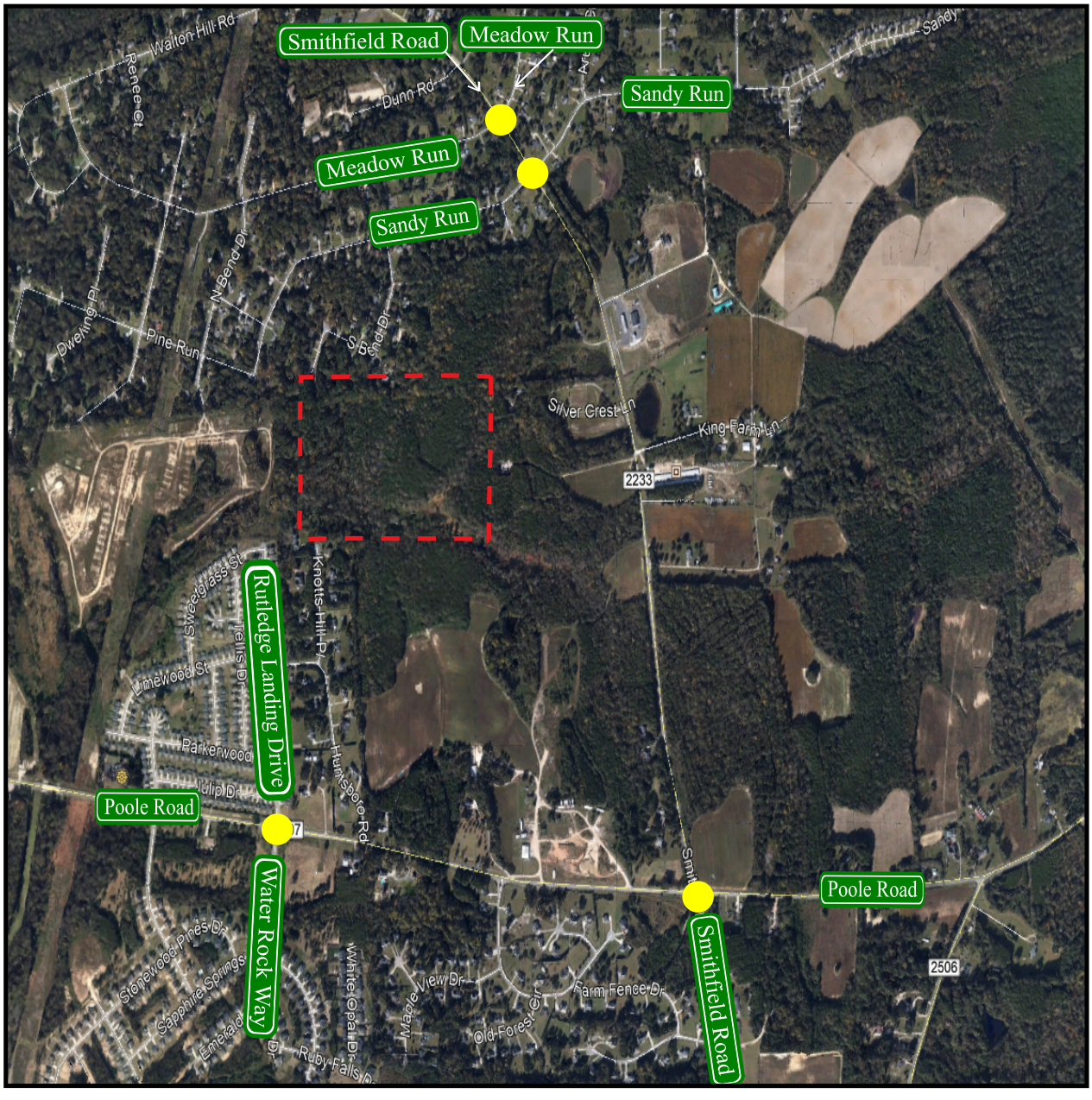
Chase Smith, P.E.
Ramey Kemp & Associates, Inc.
NC Corporate License # C-0910

Cc: Keith Lankford, Wake County

Attachments

APPENDIX

FIGURES



LEGEND

Proposed Site Location

Study Intersection

N

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RKA

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Poole Road Project
Wake County, NC

Site Location Map

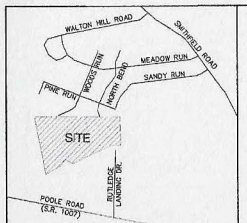
Scale: Not to Scale

Figure 1

RUTLEDGE LANDING

PHASE 3 & 4

WAKE COUNTY, NORTH CAROLINA



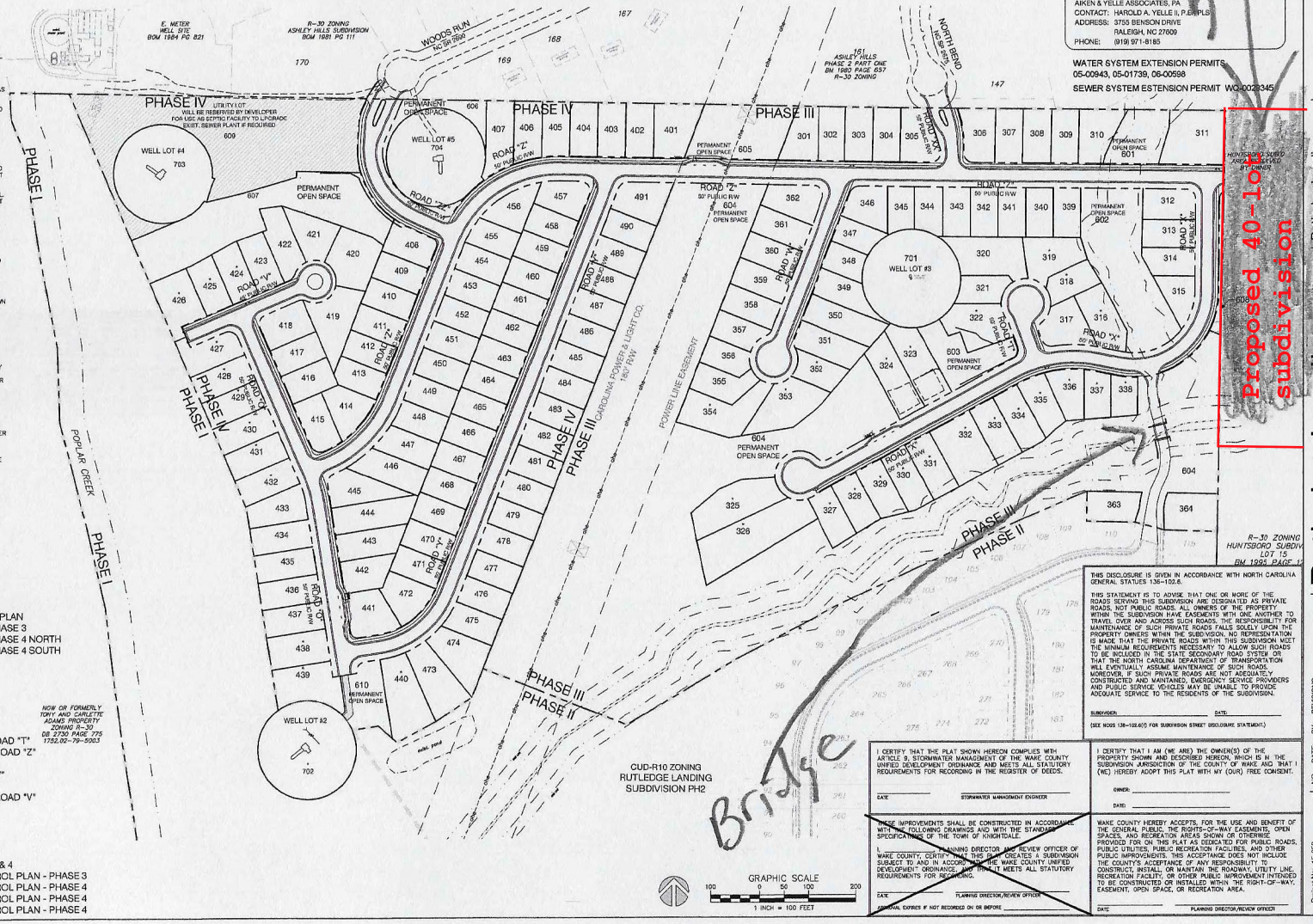
VICINITY MAP

GENERAL NOTES:

1. PEDESTRIAN ACCESS WILL BE PROVIDED AT REGULAR INTERVALS THAT WILL BE SHOWN ON ACTUAL CONSTRUCTION DRAWINGS TO REFLECT TOPOGRAPHIC FEATURES AS FIELD SURVEYED.
2. FIRE HYDRANT STUBS TO BE INSTALLED AT TIME OF CONSTRUCTION. FIRE HYDRANTS TO BE INSTALLED WHEN TOWN OF KNIGHTDALE SEWER AND WATER SERVICE BECOMES AVAILABLE OR WHEN ELEVATED WATER TANK HAS BEEN INSTALLED.
3. THE USE FOR PERMANENT COMMON OPEN SPACE SHALL BE NATURE CONSERVATION AREAS TO REMAIN UNDISTURBED, TRAILS FOR WALKING AND JOGGING IN AREAS ALLOWED BY NEUSE RIVE RIPARIAN BUFFER RULES.
4. STREET NAMES MUST BE APPROVED BY WAKE COUNTY GIS DEPARTMENT.
5. ALL PUBLIC ROADS WITHIN THE SUBDIVISION SHALL COMPLY WITH NCDOT STANDARDS.
6. COMMUNITY WATER AND SEWER SYSTEM TO BE SERVED BY CAROLINA WATER SYSTEMS, INC. AND SHALL BE APPROVED BY NCDENR PRIOR TO CONSTRUCTION.
7. CONSTRUCTION PLANS FOR ALL IMPROVEMENTS SHALL BE SUBMITTED TO NCDOT AND WAKE COUNTY FOR APPROVAL, INCLUDING SEDIMENTATION AND EROSION CONTROL PLANS PRIOR TO THE COMMENCEMENT OF DEVELOPMENT ACTIVITIES.
8. ALLUVIAL SOIL LOCATION DERIVED FOR WAKE COUNTY SOILS INFORMATION.
9. NCDOT DRIVEWAY PERMITS ARE REQUIRED PRIOR TO FINAL PLAT APPROVAL.
10. SIGN EASEMENT AND OR SIGNS CANNOT BE LOCATED IN THE PUBLIC RIGHT OF WAYS.
11. A FINANCIAL GUARANTEE TO WAKE COUNTY IS REQUIRED PRIOR TO RECORDATION OF PLAT.
12. APPROVAL FROM DWQ IS REQUIRED ON ALL ACTIVITIES IN NEUSE RIPARIAN BUFFERS.
13. ANY ACTIVITY IN FEMA FLOOD SOILS AND FLOOD HAZARD SOILS WILL REQUIRE FLOOD STUDIES DURING CONSTRUCTION PHASE.
14. THE OPEN SPACE AREAS AND PRIVATE ACCESS EASEMENTS AND IMPROVEMENTS WITHIN OPEN SPACE AND EASEMENT SHALL BE MAINTAINED BY HOME OWNERS ASSOCIATION.
15. LEGAL DOCUMENTATION MUST BE SUBMITTED STATING THAT THE PUBLIC HAS THE AUTHORITY TO USE THE 50 FOOT ACCESS EASEMENT (BETWEEN PHASE 2 AND ROAD Z) AS THOUGH IT WERE A PUBLIC ROAD EVEN THOUGH IT IS TO BE PRIVATELY MAINTAINED. THIS DOCUMENTATION MUST BE APPROVED BY PLANNING STAFF, THE COUNTY ATTORNEY AND THE TOWN OF KNIGHTDALE PRIOR TO FINAL PLAT APPROVAL.
16. SMITHFIELD ROAD AT MEADOW RUN: CONSTRUCT A NORTHBOUND AND SOUTHBOUND LEFT-TURN LANE ON SMITHFIELD ROAD WITH 100 FEET OF STORAGE AND A 100 FOOT TAPER. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH NCDOT STANDARDS AND SPECIFICATIONS AND NCDOT ENCROACHMENT AGREEMENTS.
17. CONSTRUCTION TRAFFIC FOR RUTLEDGE LANDING, PHASE 3 & 4 MUST UTILIZE RUTLEDGE LANDING DRIVE LOCATED IN THE EXISTING RUTLEDGE LANDING, PHASE 1 & 2.
18. CONSTRUCTION TRAFFIC FOR RUTLEDGE LANDING, PHASE 3 & 4 MAY ONLY UTILIZE ROADWAYS IN THE EXISTING ASHLEY HILL SUBDIVISION IF THE DEVELOPER BONDS THESE ROADWAYS FOR HEAVY HAULING WITH NCDOT OR AGREES TO STRENGTHEN THE EXISTING PAVEMENT TO NCDOT REQUIREMENTS.
19. PRIOR TO CONSTRUCTION PLAN APPROVAL, THE 50 FOOT ACCESS EASEMENT WILL NEED TO BE SHOWN AS A PRIVATE ROAD AND NOT AN EASEMENT AND THE LOT LINES FOR LOTS 364 & 365 MUST BE PLATTED OUTSIDE OF THE ROAD.
20. PRIOR TO CONSTRUCTION PLAN APPROVAL, PROVIDE PROOF OF APPROVAL FROM INC DIVISION OF WATER QUALITY THAT NEUSE RIVER RIPARIAN BUFFER CROSSINGS ARE PERMITTED.
21. EXISTING STRUCTURES WHICH DO NOT COMPLY WITH THE ZONING CONDITIONS SHALL BE REMOVED PRIOR TO RECORD PLAT APPROVAL.
22. THE SITE DATA LISTED ON THIS PLAN HAS BEEN COMPILED FOR RUTLEDGE LANDING SUBDIVISION.

SHEET INDEX

C-1.0	COVER SHEET
C-2.0	EXISTING CONDITIONS
C-3.0	OVERALL SITE PLAN
C-3.1	SITE PLAN - PHASE 3
C-3.2	SITE PLAN - PHASE 4 NORTH
C-3.3	SITE PLAN - PHASE 4 SOUTH
C-3.4	CLUSTER MAILBOX DETAILS
C-4.0	OVERALL GRADING & STORM DRAINAGE PLAN
C-4.1	GRADING & STORM DRAINAGE PLAN - PHASE 3
C-4.2	GRADING & STORM DRAINAGE PLAN - PHASE 4 NORTH
C-4.3	GRADING & STORM DRAINAGE PLAN - PHASE 4 SOUTH
C-4.4	SMITHFIELD ROAD IMPROVEMENTS
C-4.5	BRIDGE PLAN
C-5.0	OVERALL UTILITY PLAN
C-5.1	UTILITY PLAN - PHASE 3
C-5.2	UTILITY PLAN - PHASE 4 NORTH
C-5.3	UTILITY PLAN - PHASE 4 SOUTH
C-5.4	UTILITY PLAN & PROFILE - ROAD "X"
C-5.5	UTILITY PLAN & PROFILE - ROAD "X" & ROAD "T"
C-5.6	UTILITY PLAN & PROFILE - ROAD "XX" & ROAD "Z"
C-5.7	UTILITY PLAN & PROFILE - ROAD "Z"
C-5.8	UTILITY PLAN & PROFILE - ROAD "Z" & "W"
C-5.9	UTILITY PLAN & PROFILE - ROAD "Y"
C-5.10	UTILITY PLAN & PROFILE - ROAD "ZZ" & ROAD "V"
C-5.11	UTILITY PLAN & PROFILE - ROAD "O"
C-6.0	SITE DETAILS & SPECIFICATIONS
C-6.1	SITE DETAILS & SPECIFICATIONS
C-6.2	SITE DETAILS & SPECIFICATIONS
C-6.3	SITE DETAILS & SPECIFICATIONS
SHEET 28	SITE BMP DRAINAGE DETAILS - PHASE 3 & 4
SHEET 29	SITE SEDIMENTATION & EROSION CONTROL PLAN - PHASE 3
SHEET 30	SITE SEDIMENTATION & EROSION CONTROL PLAN - PHASE 4
SHEET 31	SITE SEDIMENTATION & EROSION CONTROL PLAN - PHASE 4
SHEET 32	SITE SEDIMENTATION & EROSION CONTROL PLAN - PHASE 4



CONTACT INFORMATION

OWNER/DEVELOPER:
RUTLEDGE LANDING DEVELOPMENT CO., LLC
CONTACT: HAROLD A. YELLE II, P.E., PLS
AIKEN & YELLE ASSOCIATES, PA
ADDRESS: 3755 BENSON DRIVE
RALEIGH, NC 27609
PHONE: (919) 971-8185

CIVIL ENGINEER & LANDSCAPE ARCHITECT:
URBAN DESIGN PARTNERS
CONTACT: BRIAN D. SMITH, PE
ADDRESS: 1318-E6 CENTRAL AVENUE
CHARLOTTE, NC 28205
PHONE: 704-334-3303 FAX: 704-334-3305

CO-ENGINEER:
AIKEN & YELLE ASSOCIATES, PA
CONTACT: HAROLD A. YELLE II, P.E./PLS
ADDRESS: 3755 BENSON DRIVE
RALEIGH, NC 27609
PHONE: (919) 971-8185

WATER SYSTEM EXTENSION PERMITS
05-00943, 05-01739, 06-00598
SEWER SYSTEM EXTENSION PERMIT WQ-0023345

THIS DISCLOSURE IS GIVEN IN ACCORDANCE WITH NORTH CAROLINA GENERAL STATUES 136-102.6.

THIS STATEMENT IS TO ADVISE THAT ONE OR MORE OF THE ROADS SERVING THIS SUBDIVISION ARE DESIGNATED AS PRIVATE ROADS, NOT PUBLIC ROADS. ALL OWNERS OF THE PROPERTY WITHIN THE SUBDIVISION HAVE EASEMENTS WITH ONE ANOTHER TO TRAVEL OVER AND ACROSS SUCH ROADS. THE RESPONSIBILITY FOR MAINTENANCE OF SUCH PRIVATE ROADS FALLS SOLELY UPON THE PROPERTY OWNERS WITHIN THE SUBDIVISION. NO REPRESENTATION IS MADE THAT THE PRIVATE ROADS WITHIN THIS SUBDIVISION MEET THE MINIMUM REQUIREMENTS NECESSARY TO ALLOW SUCH ROADS TO BE INCLUDED IN THE STATE SECONDARY ROAD SYSTEM OR THAT THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WILL EVENTUALLY ASSUME MAINTENANCE OF SUCH ROADS. MOREOVER, IF SUCH PRIVATE ROADS ARE NOT ADEQUATELY CONSTRUCTED AND MAINTAINED, EMERGENCY SERVICE PROVIDERS AND PUBLIC SERVICE VEHICLES MAY BE UNABLE TO PROVIDE ADEQUATE SERVICE TO THE RESIDENTS OF THE SUBDIVISION.

SUBDIVIDER: DATE:
(SEE NCGS 136-102.6(f) FOR SUBDIVISION STREET DISCLOSURE STATEMENT.)

I, CERTIFY THAT THE PLAT SHOWN HEREON COMPLIES WITH ARTICLE 8, STORMWATER MANAGEMENT OF THE WAKE COUNTY UNIFIED DEVELOPMENT ORDINANCE AND MEETS ALL STATUTORY REQUIREMENTS FOR RECORDING IN THE REGISTER OF DEEDS.

DATE STORMWATER MANAGEMENT ENGINEER

THESE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING DRAWINGS AND WITH THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

I, _____, PLANNING DIRECTOR AND REVIEW OFFICER OF WAKE COUNTY, CERTIFY THAT THIS PLAT CREATES A SUBDIVISION SUBJECT TO AND IN ACCORDANCE WITH THE WAKE COUNTY UNIFIED DEVELOPMENT ORDINANCE, AND FINALLY MEETS ALL STATUTORY REQUIREMENTS FOR RECORDING.

DATE PLANNING DIRECTOR/REVIEW OFFICER

APPROVAL EXPIRES IF NOT RECORDED ON OR BEFORE _____

I CERTIFY THAT I AM (WE ARE) THE OWNER(S) OF THE PROPERTY SHOWN AND DESCRIBED HEREON, WHICH IS IN THE SUBDIVISION JURISDICTION OF THE COUNTY OF WAKE AND THAT I (WE) HEREBY ADOPT THIS PLAT WITH MY (OUR) FREE CONSENT.

OWNER: _____

DATE: _____

WAKE COUNTY HEREBY ACCEPTS, FOR THE USE AND BENEFIT OF THE GENERAL PUBLIC, THE RIGHTS-OF-WAY EASEMENTS, OPEN SPACES, AND RECREATION AREAS SHOWN OR OTHERWISE PROVIDED FOR ON THIS PLAT AS DEDICATED FOR PUBLIC ROADS, PUBLIC UTILITIES, PUBLIC RECREATION FACILITIES, AND OTHER PUBLIC IMPROVEMENTS. THIS ACCEPTANCE DOES NOT INCLUDE THE COUNTY'S ACCEPTANCE OF ANY RESPONSIBILITY TO CONSTRUCT, INSTALL, OR MAINTAIN THE ROADWAY, UTILITY LINE, RECREATION FACILITY, OR OTHER PUBLIC IMPROVEMENT INTENDED TO BE CONSTRUCTED OR INSTALLED WITHIN THE RIGHT-OF-WAY, EASEMENT, OPEN SPACE, OR RECREATION AREA.

DATE PLANNING DIRECTOR/REVIEW OFFICER

URBAN DESIGN PARTNERS
1318-e6 central ave. p 704.334.3303
charlotte, nc 28205 f 704.334.3305
urbandesignpartners.com

NORTH CAROLINA PROFESSIONAL SEAL 027890 ENGINEER BRIAN D. SMITH
08.31.16

Rutledge Landing Development Co., LLC
12900 Billingsgate Lane
Raleigh, NC 27614

Rutledge Landing

Regular Subdivision (Lot-by-Lot)

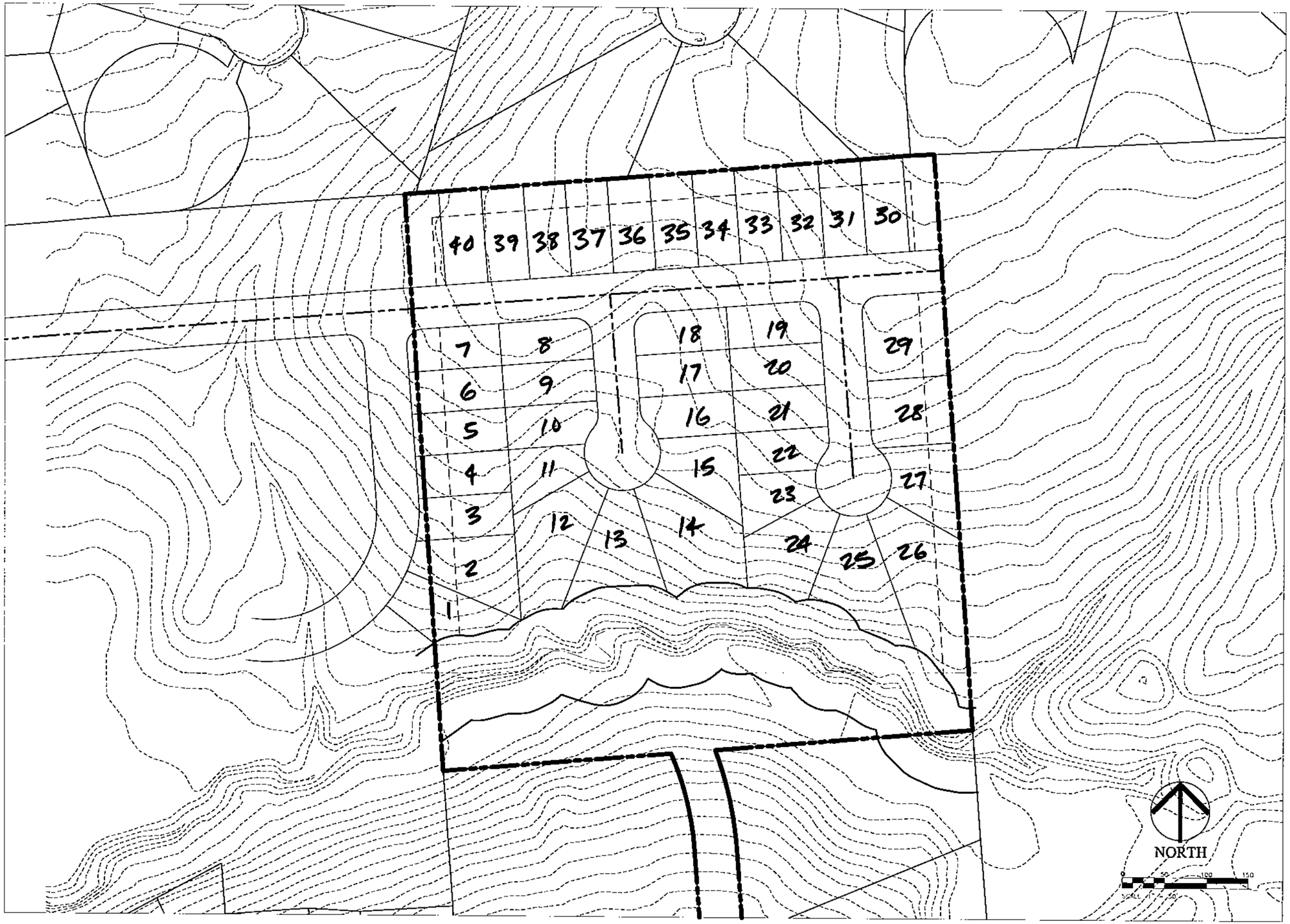
Cover Sheet

9009 Poole Rd. Wake County, NC

NO.	DATE:	BY:	REVISIONS:
1	12.16.15	udp	PER WAKE COUNTY COMMENTS
2	03.15.16	udp	ADD NCDOT DETAILS
3	04.08.16	udp	PER UTILITIES, INC. & NCDOT COMMENTS
4	04.25.16	udp	PER UTILITIES, INC. & NCDOT COMMENTS
5	08.22.16	udp	PER UTILITIES, INC. COMMENTS
6	08.31.16	udp	PER WAKE COUNTY COMMENTS

Project No: 15-459
Date: 08.21.15
Designed by: udp
Drawn By: tbt
Scale: 1" = 100'
Sheet No:

C-1.0



PLD

PIEDMONT LAND DESIGN, LLP

5522-204 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27615
919.846.2600 PHONE
919.846.2703 FAX

ENGR. FIRM LICENSE NO. F-0843

SUBDIVISION

KNOTT'S HILL PLACE
WENDELL, NORTH CAROLINA

ISSUED: 24 AUG 2018

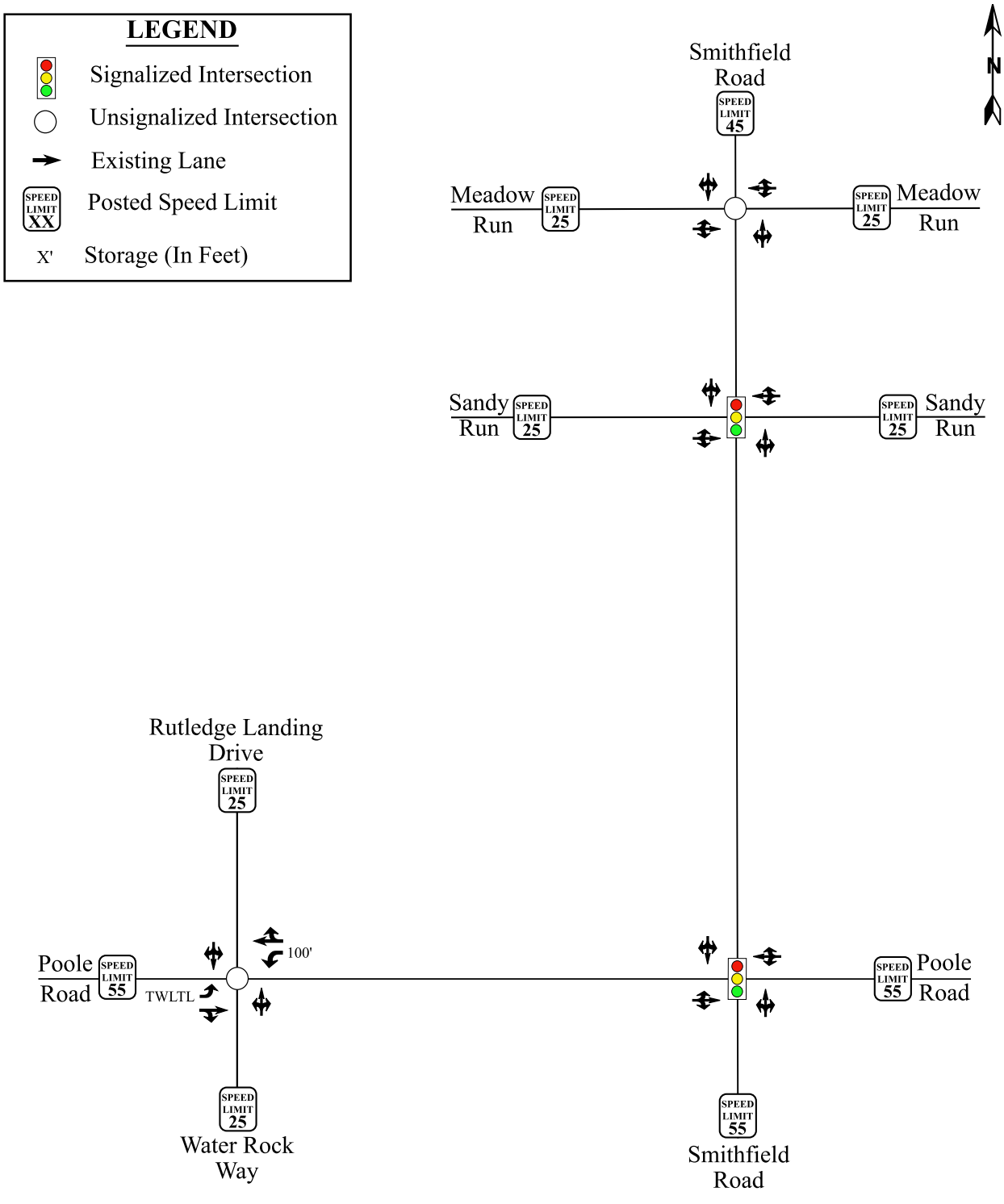
REVISIONS:

DRAWN BY: CRP
CHECKED BY: JDL

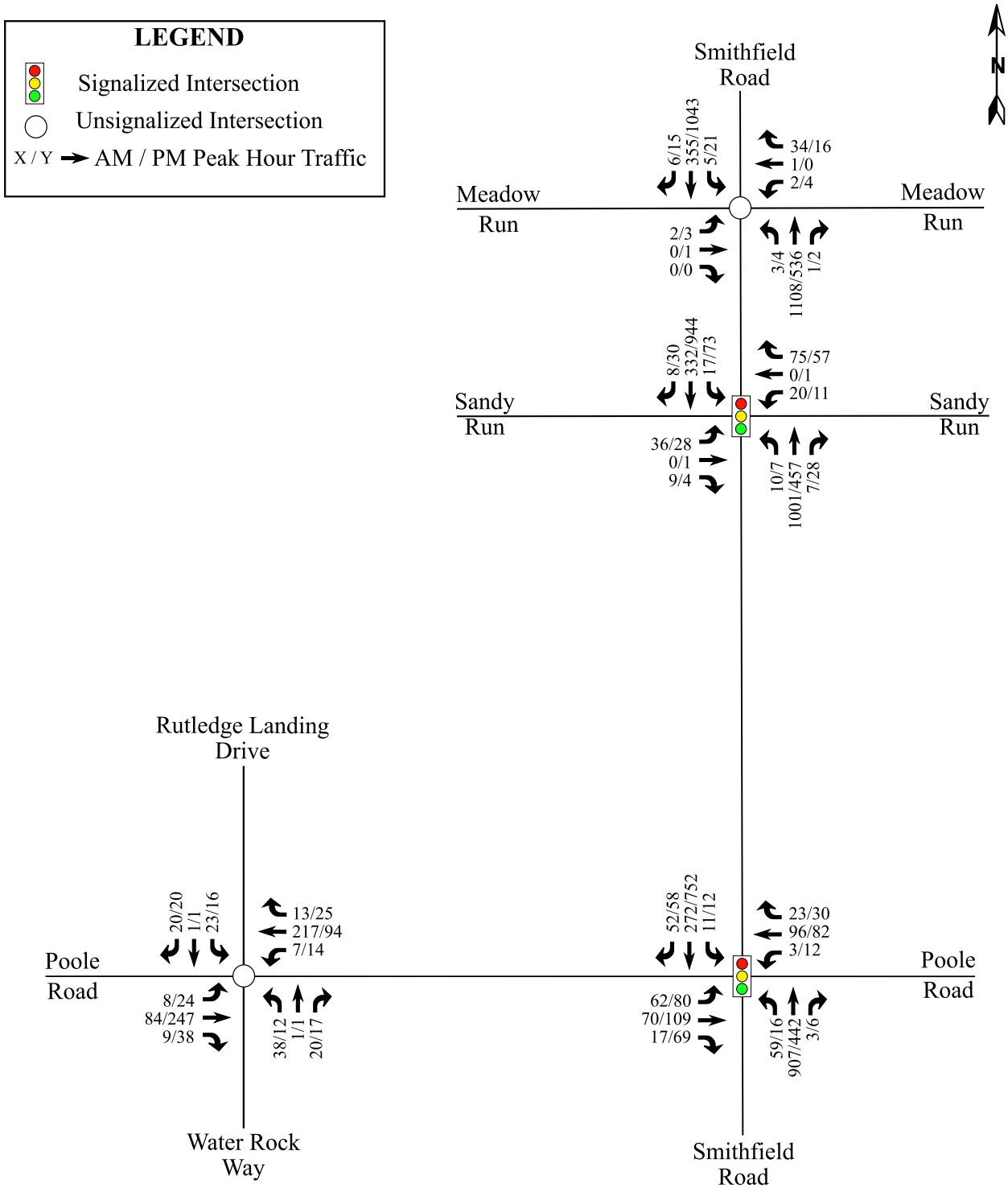
PROJECT: RSKHPS

CONCEPTUAL SUBDIVISION PLAN

DWG. NO. CC1.00



Moving forward. RKA RAMEY KEMP ASSOCIATES	Poole Road Project Wake County, NC	Existing Geometrics and Traffic Control Scale: Not to Scale | Figure 3

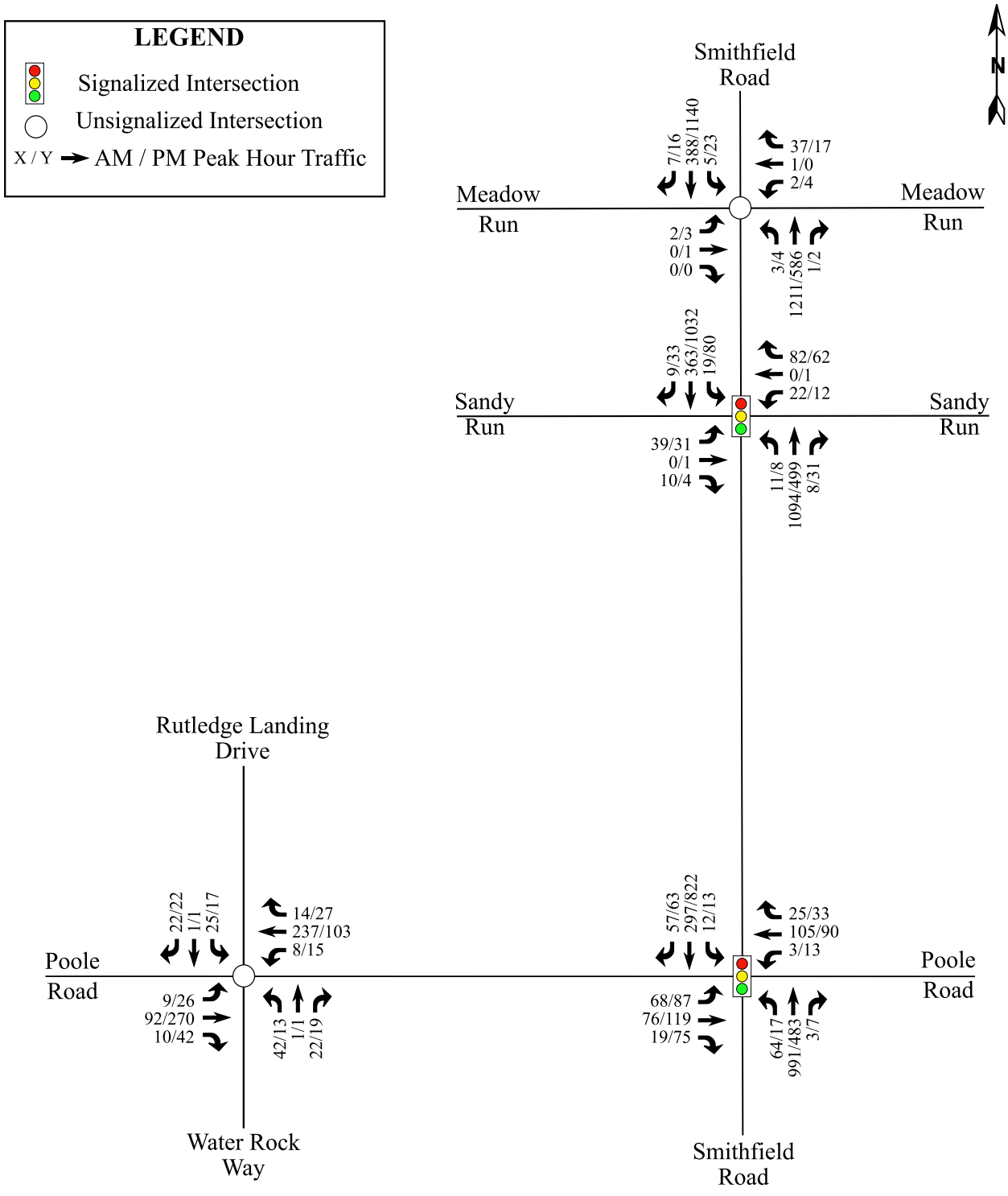


Moving forward.
RKA
RAMEY KEMP ASSOCIATES

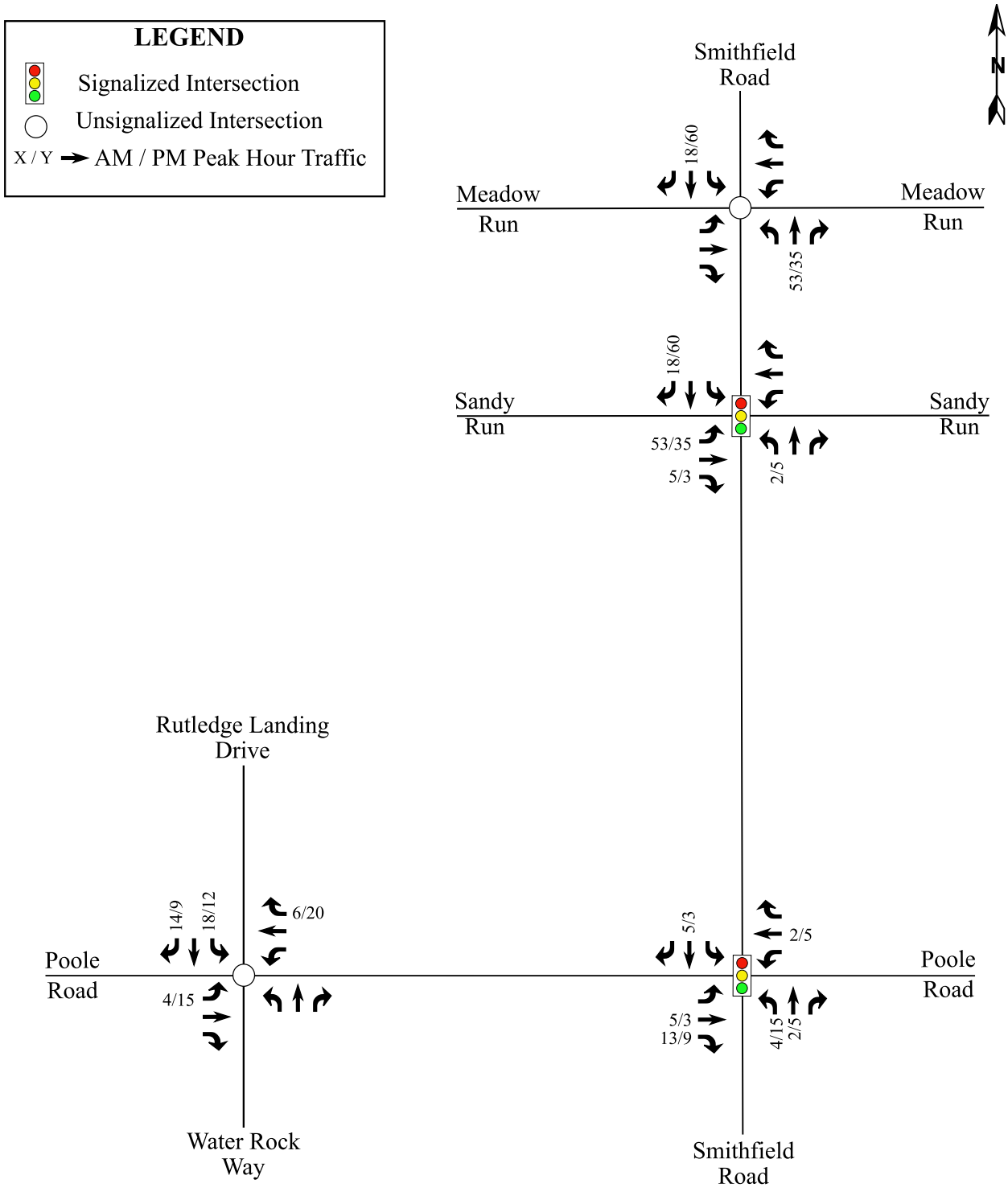
Poole Road Project
Wake County, NC

Existing (2020) Traffic Volumes

Scale: Not to Scale | Figure 4



Moving forward. RKA RAMEY KEMP ASSOCIATES	Poole Road Project Wake County, NC	Projected (2023) Traffic Volumes Scale: Not to Scale | Figure 5

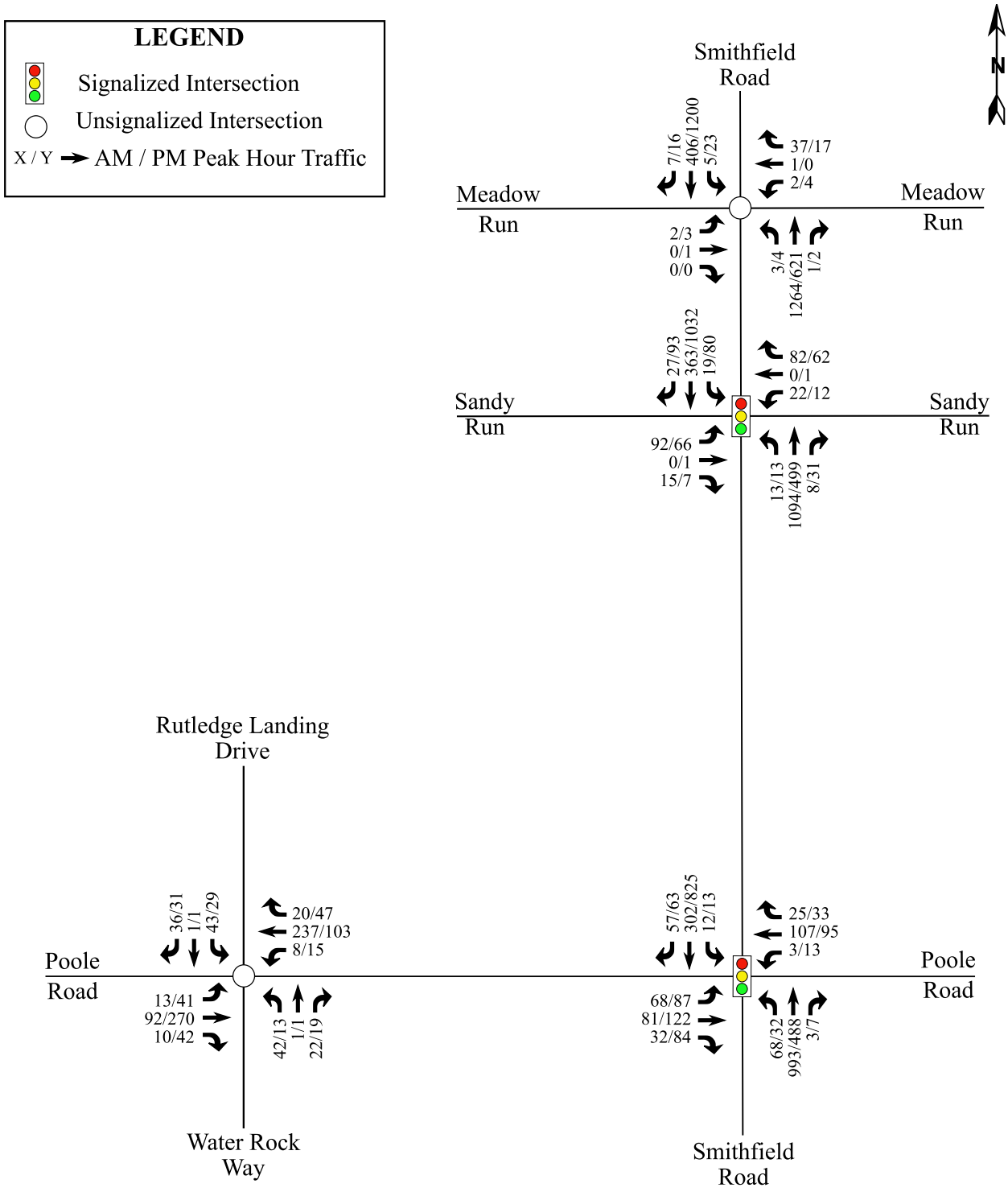


Moving forward.
RKA
RAMEY KEMP ASSOCIATES

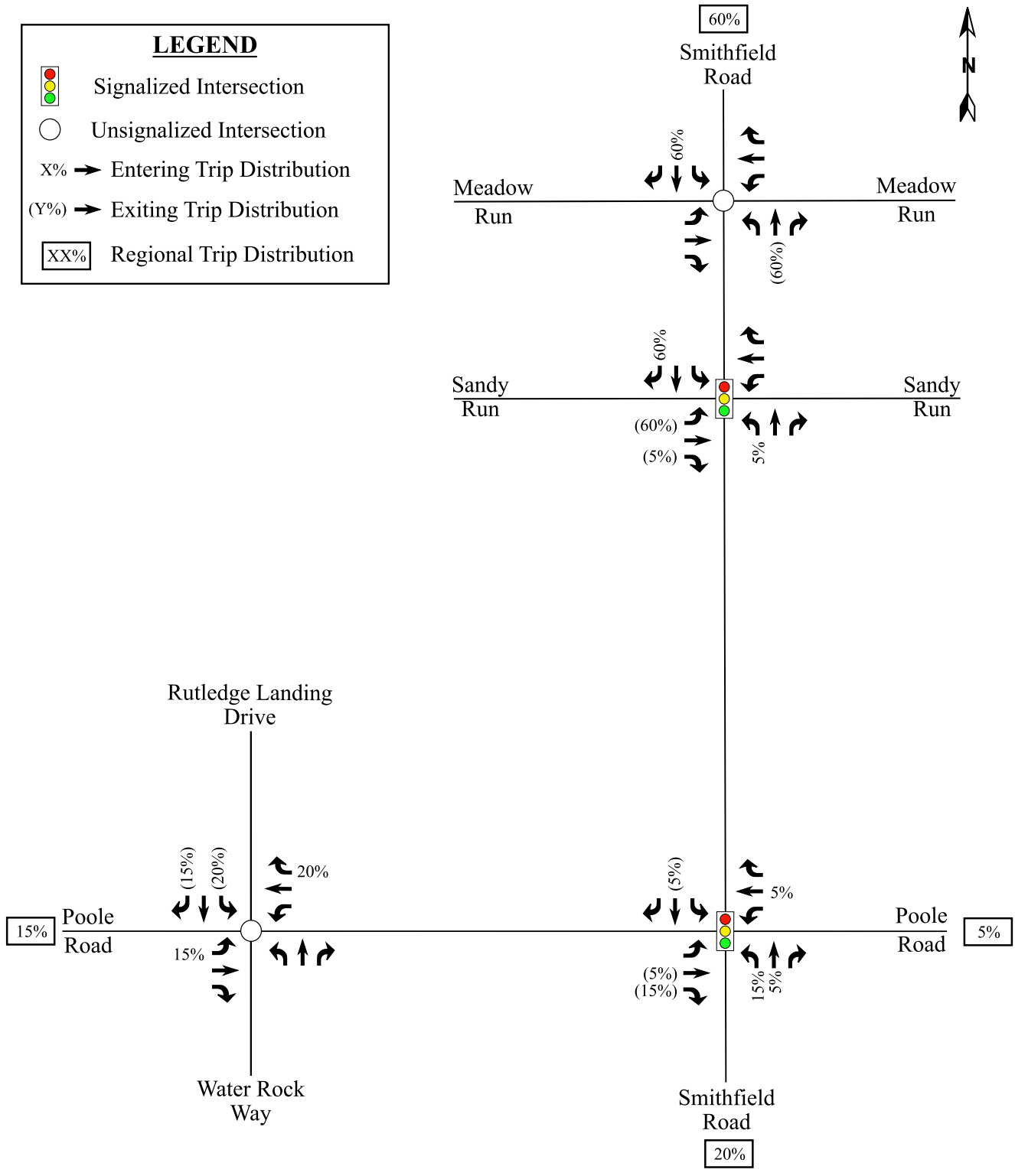
Poole Road Project
Wake County, NC

Adjacent Development
Peak Hour Traffic

Scale: Not to Scale | Figure 6



Moving forward. RKA RAMEY KEMP ASSOCIATES	Poole Road Project Wake County, NC	Background (2023) Traffic Volumes Scale: Not to Scale | Figure 7



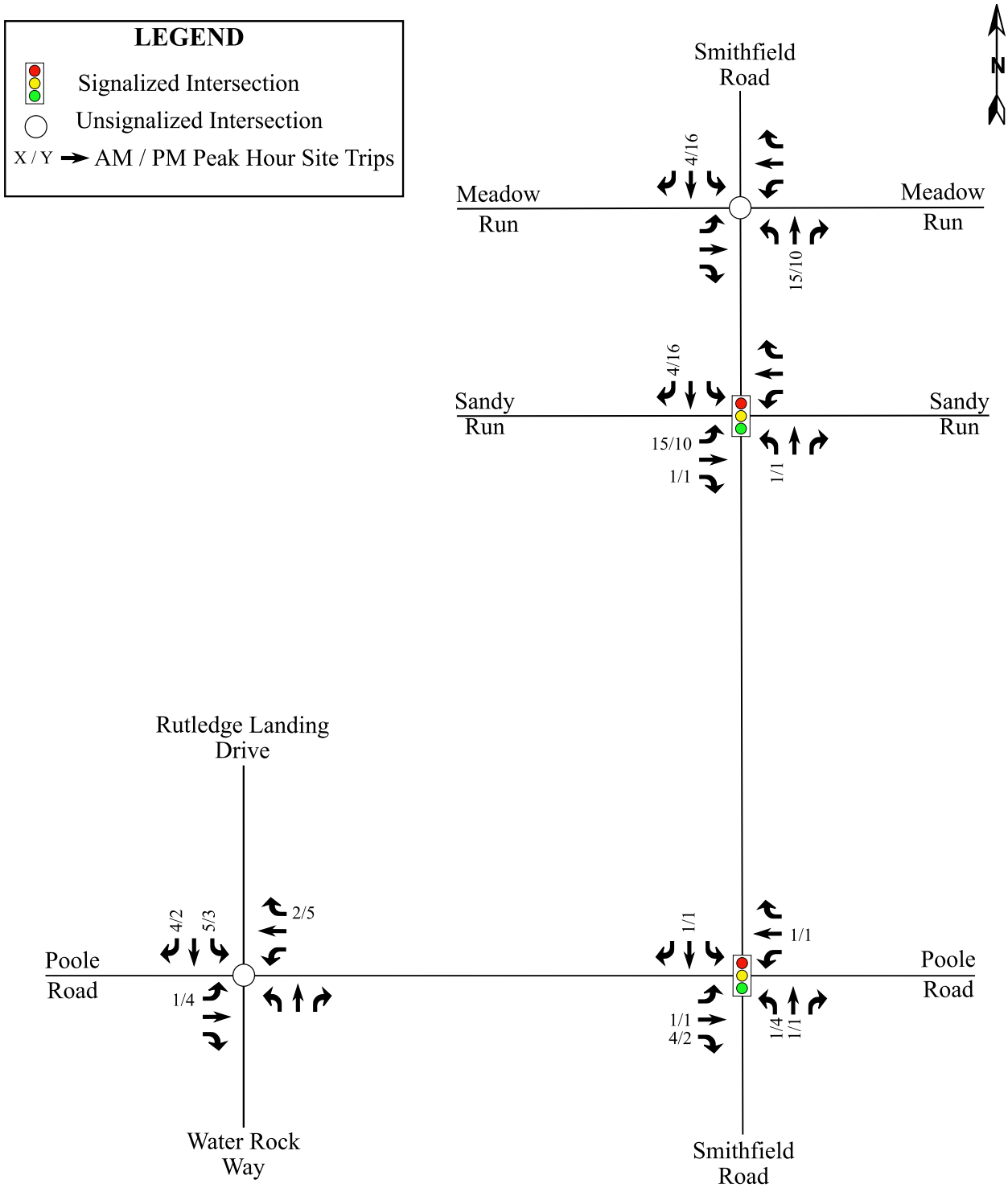
Moving forward.
RKA
RAMEY KEMP ASSOCIATES

Poole Road Project
Wake County, NC

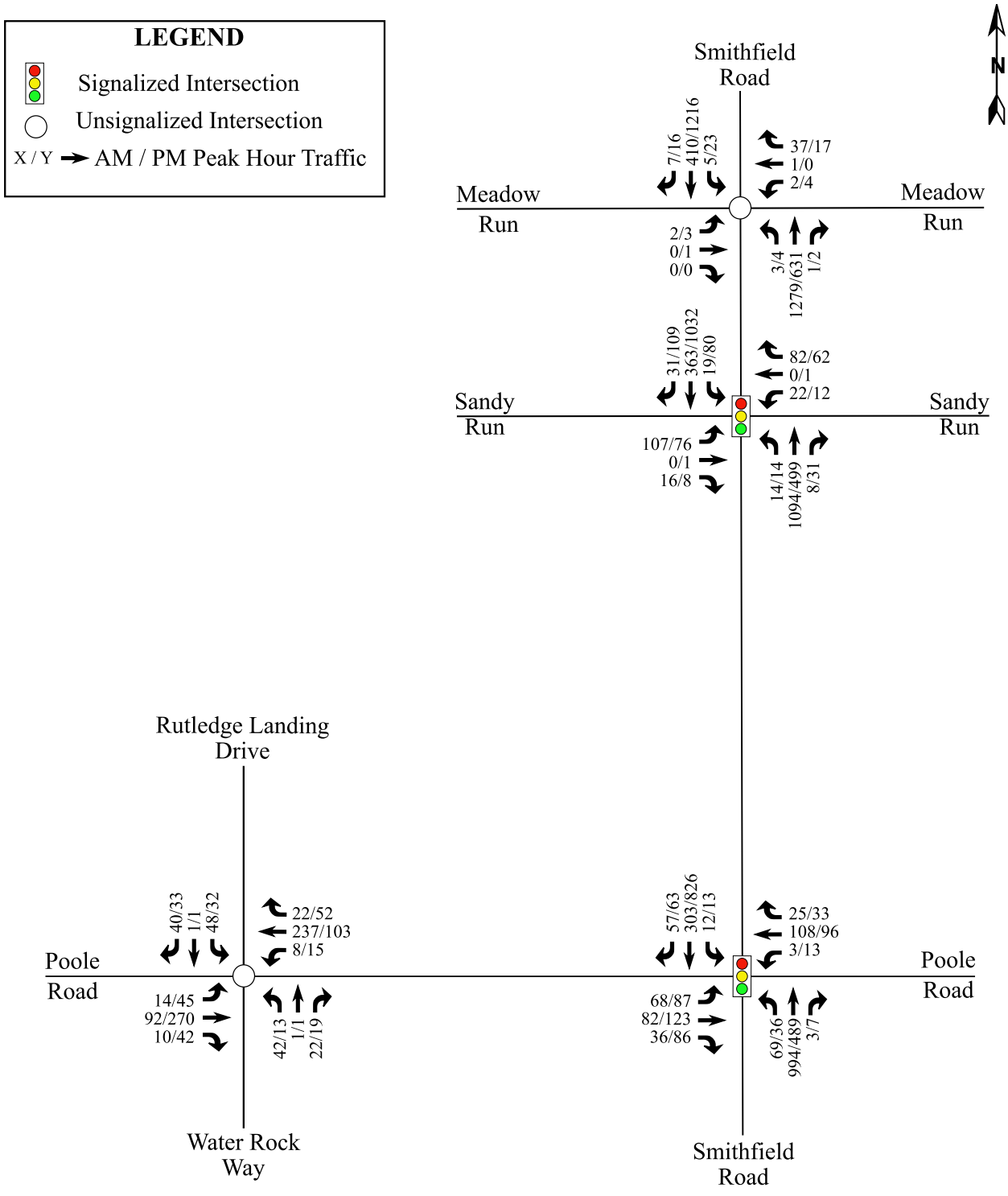
Site Trip Distribution

Scale: Not to Scale

Figure 8



Moving forward. RKA RAMEY KEMP ASSOCIATES	Poole Road Project Wake County, NC	Site Trip Assignment	
		Scale: Not to Scale	Figure 9



Moving forward. RKA RAMEY KEMP ASSOCIATES	Poole Road Project Wake County, NC	Combined (2023) Traffic Volumes Scale: Not to Scale | Figure 10

TRAFFIC COUNT DATA

TRAFFIC DATA COLLECTION

File Name : Knightdale(Smithfield and Poole)AM Peak
Site Code :
Start Date : 1/9/2020
Page No : 1

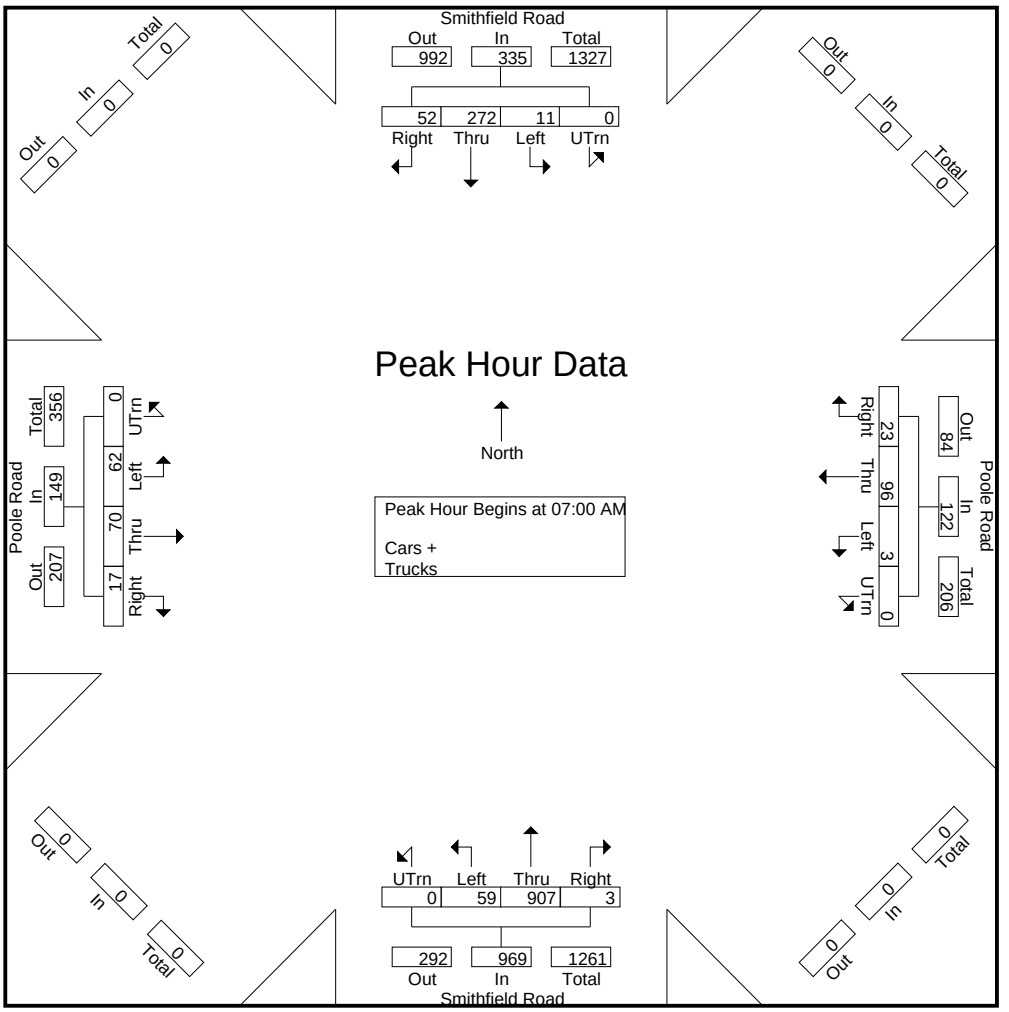
Groups Printed- Cars + - Trucks

	Smithfield Road Southbound					Poole Road Westbound					Smithfield Road Northbound					Poole Road Eastbound					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
07:00 AM	16	71	3	0	90	0	23	0	0	23	0	229	22	0	251	3	15	18	0	36	400
07:15 AM	17	65	3	0	85	9	24	1	0	34	2	211	14	0	227	5	21	17	0	43	389
07:30 AM	8	79	4	0	91	5	23	0	0	28	1	250	11	0	262	3	17	13	0	33	414
07:45 AM	11	57	1	0	69	9	26	2	0	37	0	217	12	0	229	6	17	14	0	37	372
Total	52	272	11	0	335	23	96	3	0	122	3	907	59	0	969	17	70	62	0	149	1575
08:00 AM	9	69	7	0	85	6	20	1	0	27	2	205	11	0	218	0	15	7	0	22	352
08:15 AM	9	57	3	0	69	9	16	1	0	26	0	229	8	0	237	4	11	5	0	20	352
08:30 AM	11	82	2	0	95	4	20	0	0	24	0	254	8	0	262	5	11	11	0	27	408
08:45 AM	10	73	2	0	85	8	18	1	0	27	0	174	5	0	179	2	10	12	0	24	315
Total	39	281	14	0	334	27	74	3	0	104	2	862	32	0	896	11	47	35	0	93	1427
Grand Total	91	553	25	0	669	50	170	6	0	226	5	1769	91	0	1865	28	117	97	0	242	3002
Apprch %	13.6	82.7	3.7	0		22.1	75.2	2.7	0		0.3	94.9	4.9	0		11.6	48.3	40.1	0		
Total %	3	18.4	0.8	0	22.3	1.7	5.7	0.2	0	7.5	0.2	58.9	3	0	62.1	0.9	3.9	3.2	0	8.1	
Cars +	90	526	25	0	641	49	167	6	0	222	5	1744	91	0	1840	28	114	94	0	236	2939
% Cars +	98.9	95.1	100	0	95.8	98	98.2	100	0	98.2	100	98.6	100	0	98.7	100	97.4	96.9	0	97.5	97.9
Trucks	1	27	0	0	28	1	3	0	0	4	0	25	0	0	25	0	3	3	0	6	63
% Trucks	1.1	4.9	0	0	4.2	2	1.8	0	0	1.8	0	1.4	0	0	1.3	0	2.6	3.1	0	2.5	2.1

TRAFFIC DATA COLLECTION

File Name : Knightdale(Smithfield and Poole)AM Peak
Site Code :
Start Date : 1/9/2020
Page No : 2

	Smithfield Road Southbound					Poole Road Westbound					Smithfield Road Northbound					Poole Road Eastbound					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	16	71	3	0	90	0	23	0	0	23	0	229	**22**	0	251	3	15	**18**	0	36	400
07:15 AM	**17**	65	3	0	85	**9**	24	1	0	34	**2**	211	14	0	227	5	**21**	17	0	**43**	389
07:30 AM	8	**79**	**4**	0	**91**	5	23	0	0	28	1	**250**	11	0	**262**	3	17	13	0	33	**414**
07:45 AM	11	57	1	0	69	9	**26**	**2**	0	**37**	0	217	12	0	229	**6**	17	14	0	37	372
Total Volume	52	272	11	0	335	23	96	3	0	122	3	907	59	0	969	17	70	62	0	149	1575
% App. Total	15.5	81.2	3.3	0		18.9	78.7	2.5	0		0.3	93.6	6.1	0		11.4	47	41.6	0		
PHF	.765	.861	.688	.000	.920	.639	.923	.375	.000	.824	.375	.907	.670	.000	.925	.708	.833	.861	.000	.866	.951



TRAFFIC DATA COLLECTION

File Name : Knightdale(Smithfield and Poole)PM Peak
Site Code :
Start Date : 1/9/2020
Page No : 1

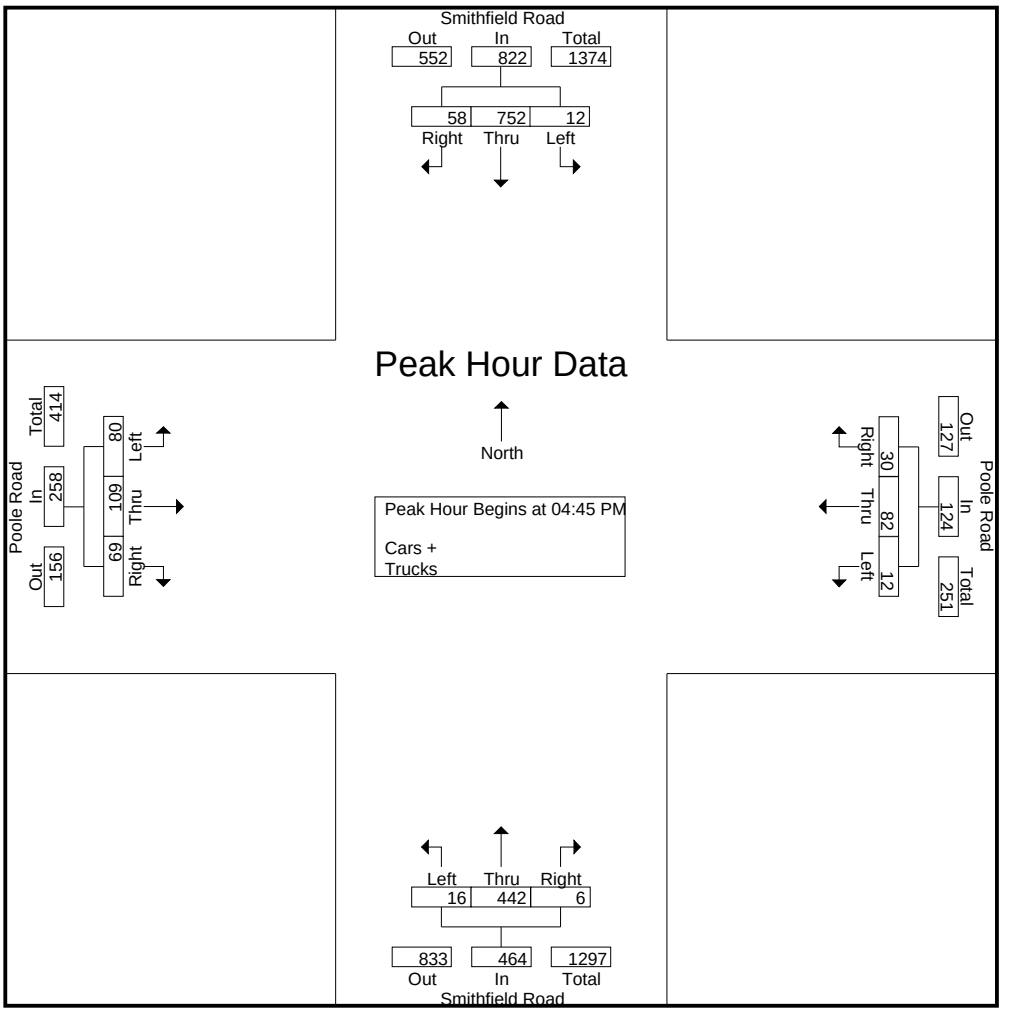
Groups Printed- Cars + - Trucks

	Smithfield Road Southbound				Poole Road Westbound				Smithfield Road Northbound				Poole Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
04:00 PM	13	193	8	214	10	22	2	34	2	97	1	100	15	19	16	50	398
04:15 PM	10	199	4	213	8	16	0	24	2	98	1	101	8	19	15	42	380
04:30 PM	8	226	4	238	7	12	0	19	1	91	2	94	12	20	11	43	394
04:45 PM	13	195	3	211	8	22	4	34	1	106	4	111	8	25	24	57	413
Total	44	813	19	876	33	72	6	111	6	392	8	406	43	83	66	192	1585
05:00 PM	15	186	3	204	5	18	2	25	0	99	2	101	19	39	18	76	406
05:15 PM	21	185	1	207	8	26	4	38	3	130	6	139	22	27	14	63	447
05:30 PM	9	186	5	200	9	16	2	27	2	107	4	113	20	18	24	62	402
05:45 PM	8	173	5	186	6	19	4	29	0	121	6	127	13	33	11	57	399
Total	53	730	14	797	28	79	12	119	5	457	18	480	74	117	67	258	1654
Grand Total	97	1543	33	1673	61	151	18	230	11	849	26	886	117	200	133	450	3239
Apprch %	5.8	92.2	2		26.5	65.7	7.8		1.2	95.8	2.9		26	44.4	29.6		
Total %	3	47.6	1	51.7	1.9	4.7	0.6	7.1	0.3	26.2	0.8	27.4	3.6	6.2	4.1	13.9	
Cars +	96	1520	33	1649	60	145	18	223	11	824	25	860	117	193	132	442	3174
% Cars +	99	98.5	100	98.6	98.4	96	100	97	100	97.1	96.2	97.1	100	96.5	99.2	98.2	98
Trucks	1	23	0	24	1	6	0	7	0	25	1	26	0	7	1	8	65
% Trucks	1	1.5	0	1.4	1.6	4	0	3	0	2.9	3.8	2.9	0	3.5	0.8	1.8	2

TRAFFIC DATA COLLECTION

File Name : Knightdale(Smithfield and Poole)PM Peak
Site Code :
Start Date : 1/9/2020
Page No : 2

	Smithfield Road Southbound				Poole Road Westbound				Smithfield Road Northbound				Poole Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	13	**195**	3	**211**	8	22	**4**	34	1	106	4	111	8	25	**24**	57	413
05:00 PM	15	186	3	204	5	18	2	25	0	99	2	101	19	**39**	18	**76**	406
05:15 PM	**21**	185	1	207	8	**26**	4	**38**	**3**	**130**	**6**	**139**	**22**	27	14	63	**447**
05:30 PM	9	186	**5**	200	**9**	16	2	27	2	107	4	113	20	18	24	62	402
Total Volume	58	752	12	822	30	82	12	124	6	442	16	464	69	109	80	258	1668
% App. Total	7.1	91.5	1.5		24.2	66.1	9.7		1.3	95.3	3.4		26.7	42.2	31		
PHF	.690	.964	.600	.974	.833	.788	.750	.816	.500	.850	.667	.835	.784	.699	.833	.849	.933



TRAFFIC DATA COLLECTION

File Name : Knightdale(Smithfield and Sandy Run)AM Peak
Site Code :
Start Date : 1/9/2020
Page No : 1

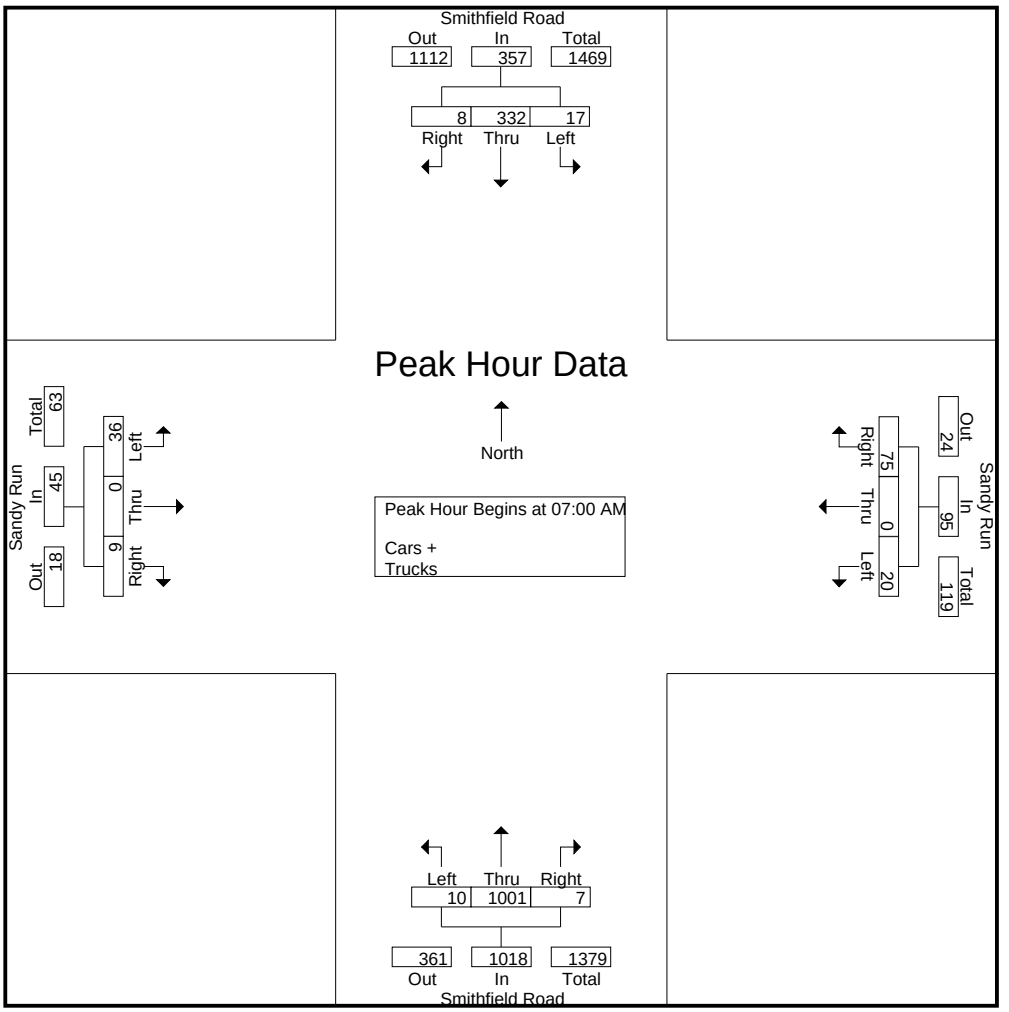
Groups Printed- Cars + - Trucks

	Smithfield Road Southbound				Sandy Run Westbound				Smithfield Road Northbound				Sandy Run Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00 AM	1	80	3	84	24	0	4	28	2	245	4	251	4	0	12	16	379
07:15 AM	2	78	1	81	19	0	7	26	3	248	1	252	1	0	7	8	367
07:30 AM	1	93	9	103	18	0	4	22	2	260	3	265	3	0	9	12	402
07:45 AM	4	81	4	89	14	0	5	19	0	248	2	250	1	0	8	9	367
Total	8	332	17	357	75	0	20	95	7	1001	10	1018	9	0	36	45	1515
08:00 AM	3	60	4	67	14	0	7	21	2	219	2	223	3	0	11	14	325
08:15 AM	5	80	7	92	17	0	1	18	1	243	3	247	5	0	9	14	371
08:30 AM	3	79	3	85	15	1	5	21	5	250	2	257	2	3	5	10	373
08:45 AM	2	80	2	84	18	0	7	25	3	205	5	213	1	0	6	7	329
Total	13	299	16	328	64	1	20	85	11	917	12	940	11	3	31	45	1398
Grand Total	21	631	33	685	139	1	40	180	18	1918	22	1958	20	3	67	90	2913
Apprch %	3.1	92.1	4.8		77.2	0.6	22.2		0.9	98	1.1		22.2	3.3	74.4		
Total %	0.7	21.7	1.1	23.5	4.8	0	1.4	6.2	0.6	65.8	0.8	67.2	0.7	0.1	2.3	3.1	
Cars +	21	606	33	660	139	1	40	180	18	1897	22	1937	20	3	67	90	2867
% Cars +	100	96	100	96.4	100	100	100	100	100	98.9	100	98.9	100	100	100	100	98.4
Trucks	0	25	0	25	0	0	0	0	0	21	0	21	0	0	0	0	46
% Trucks	0	4	0	3.6	0	0	0	0	0	1.1	0	1.1	0	0	0	0	1.6

TRAFFIC DATA COLLECTION

File Name : Knightdale(Smithfield and Sandy Run)AM Peak
Site Code :
Start Date : 1/9/2020
Page No : 2

	Smithfield Road Southbound				Sandy Run Westbound				Smithfield Road Northbound				Sandy Run Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	1	80	3	84	**24**	0	4	**28**	2	245	**4**	251	**4**	0	**12**	**16**	379
07:15 AM	2	78	1	81	19	0	**7**	26	**3**	248	1	252	1	0	7	8	367
07:30 AM	1	**93**	**9**	**103**	18	0	4	22	2	**260**	3	**265**	3	0	9	12	**402**
07:45 AM	**4**	81	4	89	14	0	5	19	0	248	2	250	1	0	8	9	367
Total Volume	8	332	17	357	75	0	20	95	7	1001	10	1018	9	0	36	45	1515
% App. Total	2.2	93	4.8		78.9	0	21.1		0.7	98.3	1		20	0	80		
PHF	.500	.892	.472	.867	.781	.000	.714	.848	.583	.963	.625	.960	.563	.000	.750	.703	.942



TRAFFIC DATA COLLECTION

File Name : Knightdale(Smithfield and Sandy Run)PM Peak
Site Code :
Start Date : 1/9/2020
Page No : 1

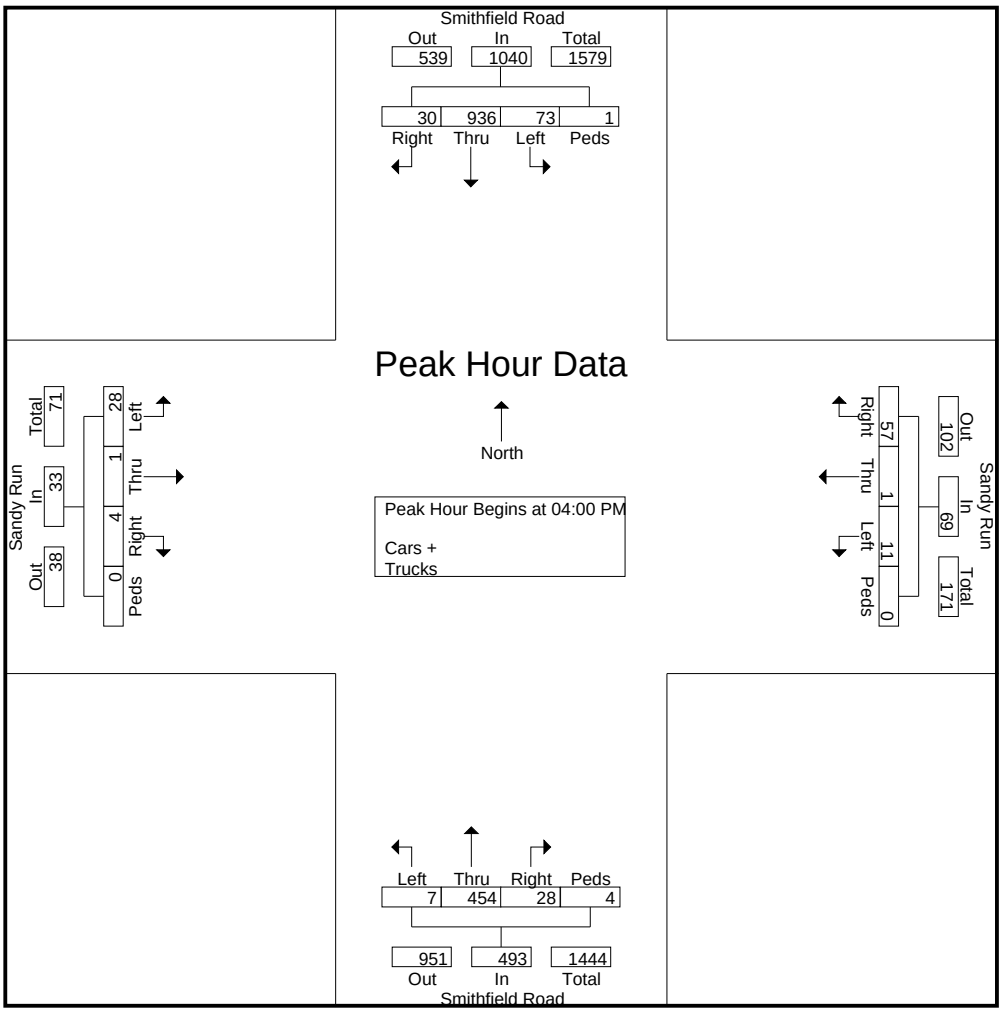
Groups Printed- Cars + - Trucks

	Smithfield Road Southbound					Sandy Run Westbound					Smithfield Road Northbound					Sandy Run Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	7	211	15	0	233	14	0	2	0	16	6	112	2	2	122	1	0	6	0	7	378
04:15 PM	8	229	23	1	261	13	0	3	0	16	9	109	2	2	122	0	0	5	0	5	404
04:30 PM	3	268	17	0	288	15	1	3	0	19	5	102	1	0	108	3	1	7	0	11	426
04:45 PM	12	228	18	0	258	15	0	3	0	18	8	131	2	0	141	0	0	10	0	10	427
Total	30	936	73	1	1040	57	1	11	0	69	28	454	7	4	493	4	1	28	0	33	1635
05:00 PM	9	192	16	0	217	14	0	2	0	16	10	114	1	0	125	1	0	8	0	9	367
05:15 PM	10	209	14	0	233	16	0	4	0	20	4	141	5	0	150	1	0	6	0	7	410
05:30 PM	9	224	26	0	259	9	0	1	0	10	10	143	2	0	155	2	0	4	0	6	430
05:45 PM	9	191	22	0	222	17	0	1	0	18	8	143	5	0	156	2	0	3	0	5	401
Total	37	816	78	0	931	56	0	8	0	64	32	541	13	0	586	6	0	21	0	27	1608
Grand Total	67	1752	151	1	1971	113	1	19	0	133	60	995	20	4	1079	10	1	49	0	60	3243
Apprch %	3.4	88.9	7.7	0.1		85	0.8	14.3	0		5.6	92.2	1.9	0.4		16.7	1.7	81.7	0		
Total %	2.1	54	4.7	0	60.8	3.5	0	0.6	0	4.1	1.9	30.7	0.6	0.1	33.3	0.3	0	1.5	0	1.9	
Cars +	66	1733	151	1	1951	113	1	19	0	133	60	976	20	4	1060	10	1	49	0	60	3204
% Cars +	98.5	98.9	100	100	99	100	100	100	0	100	100	98.1	100	100	98.2	100	100	100	0	100	98.8
Trucks	1	19	0	0	20	0	0	0	0	0	0	19	0	0	19	0	0	0	0	0	39
% Trucks	1.5	1.1	0	0	1	0	0	0	0	0	0	1.9	0	0	1.8	0	0	0	0	0	1.2

TRAFFIC DATA COLLECTION

File Name : Knightdale(Smithfield and Sandy Run)PM Peak
Site Code :
Start Date : 1/9/2020
Page No : 2

	Smithfield Road Southbound					Sandy Run Westbound					Smithfield Road Northbound					Sandy Run Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	7	211	15	0	233	14	0	2	0	16	6	112	**2**	**2**	122	1	0	6	0	7	378
04:15 PM	8	229	**23**	**1**	261	13	0	**3**	0	16	**9**	109	2	2	122	0	0	5	0	5	404
04:30 PM	3	**268**	17	0	**288**	**15**	**1**	3	0	**19**	5	102	1	0	108	**3**	**1**	7	0	**11**	426
04:45 PM	**12**	228	18	0	258	15	0	3	0	18	8	**131**	2	0	**141**	0	0	**10**	0	10	**427**
Total Volume	30	936	73	1	1040	57	1	11	0	69	28	454	7	4	493	4	1	28	0	33	1635
% App. Total	2.9	90	7	0.1		82.6	1.4	15.9	0		5.7	92.1	1.4	0.8		12.1	3	84.8	0		
PHF	.625	.873	.793	.250	.903	.950	.250	.917	.000	.908	.778	.866	.875	.500	.874	.333	.250	.700	.000	.750	.957



TRAFFIC DATA COLLECTION

File Name : Knightdale(Smithfield and Meadow Run)AM Peak
Site Code :
Start Date : 1/9/2020
Page No : 1

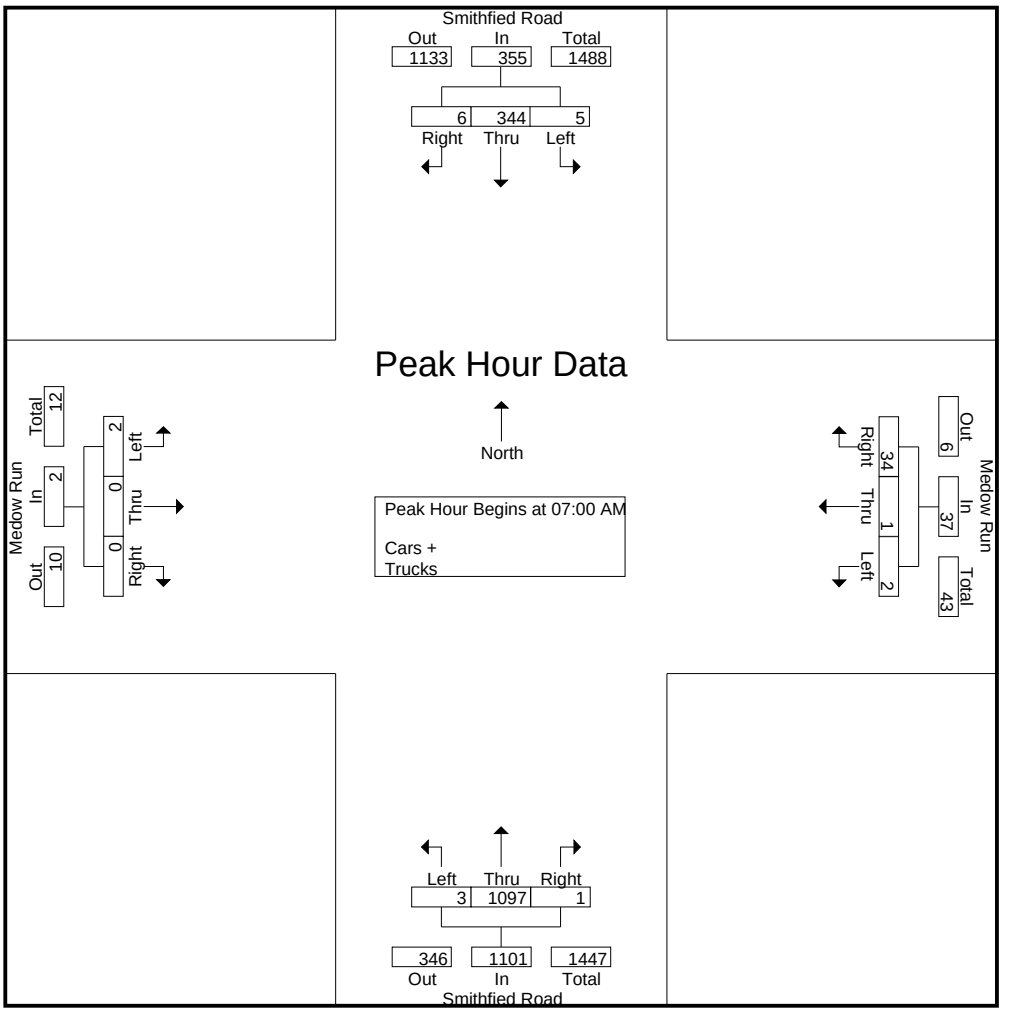
Groups Printed- Cars + - Trucks

	Smithfied Road Southbound				Medow Run Westbound				Smithfied Road Northbound				Medow Run Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00 AM	1	77	1	79	9	0	0	9	1	279	0	280	0	0	2	2	370
07:15 AM	2	80	1	83	8	0	0	8	0	270	0	270	0	0	0	0	361
07:30 AM	1	103	1	105	11	1	0	12	0	289	1	290	0	0	0	0	407
07:45 AM	2	84	2	88	6	0	2	8	0	259	2	261	0	0	0	0	357
Total	6	344	5	355	34	1	2	37	1	1097	3	1101	0	0	2	2	1495
08:00 AM	1	65	2	68	7	0	1	8	1	222	0	223	0	0	1	1	300
08:15 AM	2	94	4	100	4	0	0	4	1	267	0	268	0	0	3	3	375
08:30 AM	1	85	3	89	2	0	0	2	0	267	1	268	0	0	6	6	365
08:45 AM	3	90	3	96	5	0	0	5	0	226	1	227	0	0	2	2	330
Total	7	334	12	353	18	0	1	19	2	982	2	986	0	0	12	12	1370
Grand Total	13	678	17	708	52	1	3	56	3	2079	5	2087	0	0	14	14	2865
Apprch %	1.8	95.8	2.4		92.9	1.8	5.4		0.1	99.6	0.2		0	0	100		
Total %	0.5	23.7	0.6	24.7	1.8	0	0.1	2	0.1	72.6	0.2	72.8	0	0	0.5	0.5	
Cars +	13	658	17	688	52	1	3	56	3	2055	5	2063	0	0	14	14	2821
% Cars +	100	97.1	100	97.2	100	100	100	100	100	98.8	100	98.9	0	0	100	100	98.5
Trucks	0	20	0	20	0	0	0	0	0	24	0	24	0	0	0	0	44
% Trucks	0	2.9	0	2.8	0	0	0	0	0	1.2	0	1.1	0	0	0	0	1.5

TRAFFIC DATA COLLECTION

File Name : Knightdale(Smithfield and Meadow Run)AM Peak
Site Code :
Start Date : 1/9/2020
Page No : 2

	Smithfied Road Southbound				Medow Run Westbound				Smithfied Road Northbound				Medow Run Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	1	77	1	79	9	0	0	9	**1**	279	0	280	0	0	**2**	**2**	370
07:15 AM	**2**	80	1	83	8	0	0	8	0	270	0	270	0	0	0	0	361
07:30 AM	1	**103**	1	**105**	**11**	**1**	0	**12**	0	**289**	1	**290**	0	0	0	0	**407**
07:45 AM	2	84	**2**	88	6	0	**2**	8	0	259	**2**	261	0	0	0	0	357
Total Volume	6	344	5	355	34	1	2	37	1	1097	3	1101	0	0	2	2	1495
% App. Total	1.7	96.9	1.4		91.9	2.7	5.4		0.1	99.6	0.3		0	0	100		
PHF	.750	.835	.625	.845	.773	.250	.250	.771	.250	.949	.375	.949	.000	.000	.250	.250	.918



File Name : Knightdale(Smithfield and Meadow Run)PM Peak
Site Code :
Start Date : 1/9/2020
Page No : 1

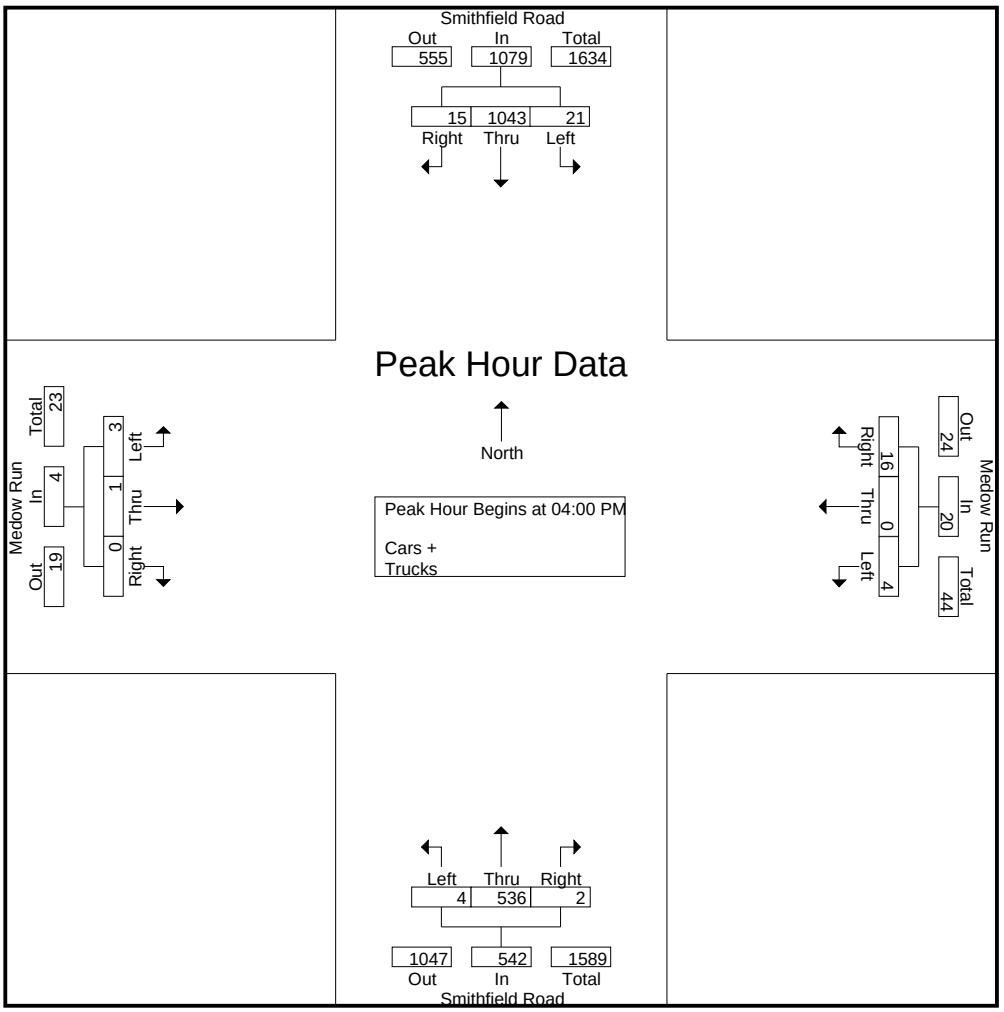
Groups Printed- Cars + - Trucks

	Smithfield Road Southbound				Medow Run Westbound				Smithfield Road Northbound				Medow Run Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
04:00 PM	5	233	9	247	8	0	1	9	2	132	0	134	0	1	2	3	393
04:15 PM	4	266	2	272	1	0	2	3	0	130	1	131	0	0	1	1	407
04:30 PM	2	288	9	299	4	0	1	5	0	118	0	118	0	0	0	0	422
04:45 PM	4	256	1	261	3	0	0	3	0	156	3	159	0	0	0	0	423
Total	15	1043	21	1079	16	0	4	20	2	536	4	542	0	1	3	4	1645
05:00 PM	4	208	5	217	2	0	0	2	3	134	2	139	4	0	2	6	364
05:15 PM	4	241	8	253	3	0	1	4	1	161	2	164	0	0	1	1	422
05:30 PM	5	244	4	253	0	0	0	0	0	163	0	163	2	0	0	2	418
05:45 PM	5	232	7	244	4	0	0	4	0	157	3	160	2	0	1	3	411
Total	18	925	24	967	9	0	1	10	4	615	7	626	8	0	4	12	1615
Grand Total	33	1968	45	2046	25	0	5	30	6	1151	11	1168	8	1	7	16	3260
Apprch %	1.6	96.2	2.2		83.3	0	16.7		0.5	98.5	0.9		50	6.2	43.8		
Total %	1	60.4	1.4	62.8	0.8	0	0.2	0.9	0.2	35.3	0.3	35.8	0.2	0	0.2	0.5	
Cars +	33	1947	45	2025	24	0	5	29	6	1131	11	1148	8	0	7	15	3217
% Cars +	100	98.9	100	99	96	0	100	96.7	100	98.3	100	98.3	100	0	100	93.8	98.7
Trucks	0	21	0	21	1	0	0	1	0	20	0	20	0	1	0	1	43
% Trucks	0	1.1	0	1	4	0	0	3.3	0	1.7	0	1.7	0	100	0	6.2	1.3

TRAFFIC DATA COLLECTION

File Name : Knightdale(Smithfield and Meadow Run)PM Peak
Site Code :
Start Date : 1/9/2020
Page No : 2

	Smithfield Road Southbound				Medow Run Westbound				Smithfield Road Northbound				Medow Run Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**5**	233	**9**	247	**8**	0	1	**9**	**2**	132	0	134	0	**1**	**2**	**3**	393
04:15 PM	4	266	2	272	1	0	**2**	3	0	130	1	131	0	0	1	1	407
04:30 PM	2	**288**	9	**299**	4	0	1	5	0	118	0	118	0	0	0	0	422
04:45 PM	4	256	1	261	3	0	0	3	0	**156**	**3**	**159**	0	0	0	0	**423**
Total Volume	15	1043	21	1079	16	0	4	20	2	536	4	542	0	1	3	4	1645
% App. Total	1.4	96.7	1.9		80	0	20		0.4	98.9	0.7		0	25	75		
PHF	.750	.905	.583	.902	.500	.000	.500	.556	.250	.859	.333	.852	.000	.250	.375	.333	.972



TRAFFIC DATA COLLECTION

File Name : Knightdale(Water Rock and Poole)AM Peak
Site Code :
Start Date : 1/9/2020
Page No : 1

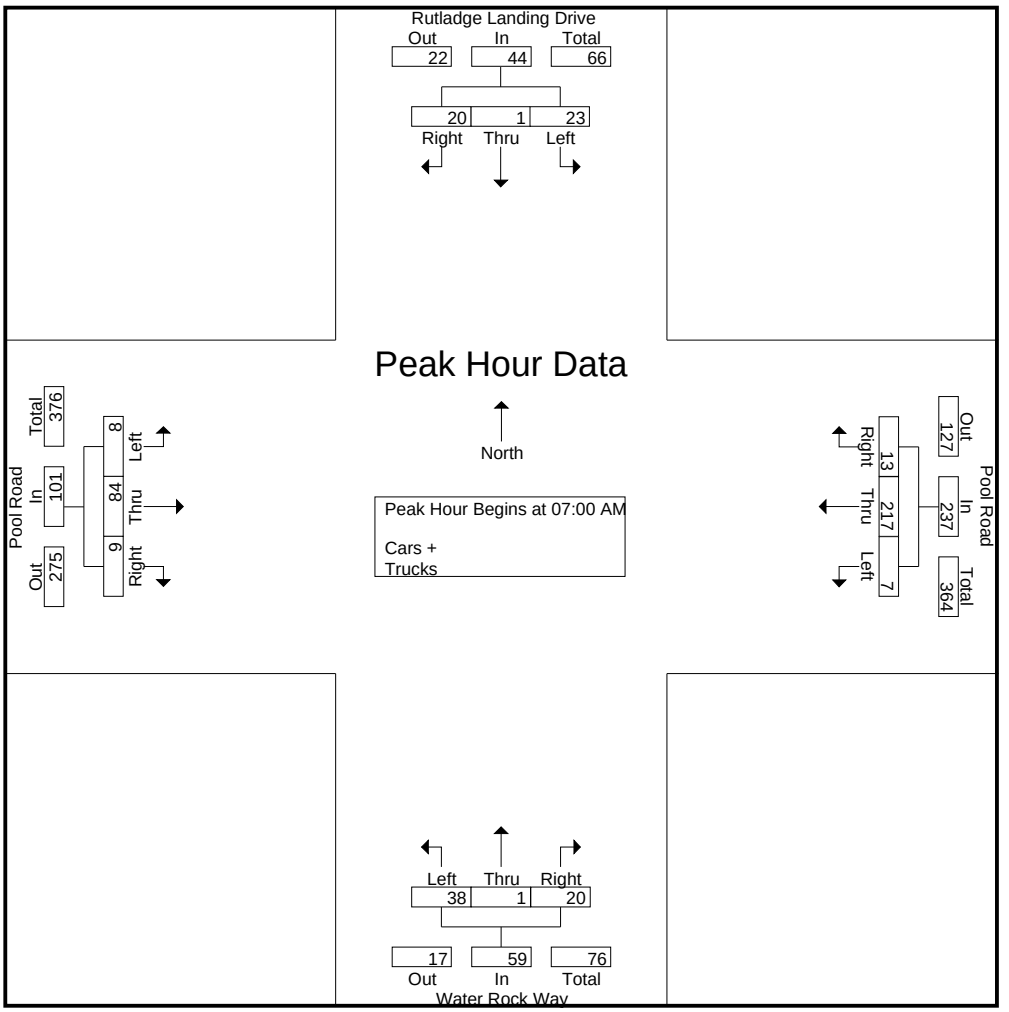
Groups Printed- Cars + - Trucks

	Rutladge Landing Drive Southbound				Pool Road Westbound				Water Rock Way Northbound				Pool Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00 AM	11	0	4	15	6	72	2	80	3	0	13	16	2	26	2	30	141
07:15 AM	2	0	7	9	1	52	2	55	3	0	6	9	1	21	3	25	98
07:30 AM	2	1	7	10	3	45	0	48	6	1	15	22	3	15	3	21	101
07:45 AM	5	0	5	10	3	48	3	54	8	0	4	12	3	22	0	25	101
Total	20	1	23	44	13	217	7	237	20	1	38	59	9	84	8	101	441
08:00 AM	3	0	1	4	2	42	2	46	4	0	10	14	2	20	4	26	90
08:15 AM	4	0	3	7	2	24	1	27	6	1	5	12	0	8	1	9	55
08:30 AM	7	0	4	11	1	42	2	45	4	0	11	15	0	19	1	20	91
08:45 AM	7	0	1	8	5	27	4	36	1	0	7	8	0	16	2	18	70
Total	21	0	9	30	10	135	9	154	15	1	33	49	2	63	8	73	306
Grand Total	41	1	32	74	23	352	16	391	35	2	71	108	11	147	16	174	747
Apprch %	55.4	1.4	43.2		5.9	90	4.1		32.4	1.9	65.7		6.3	84.5	9.2		
Total %	5.5	0.1	4.3	9.9	3.1	47.1	2.1	52.3	4.7	0.3	9.5	14.5	1.5	19.7	2.1	23.3	
Cars +	41	1	32	74	23	344	16	383	34	2	71	107	11	145	16	172	736
% Cars +	100	100	100	100	100	97.7	100	98	97.1	100	100	99.1	100	98.6	100	98.9	98.5
Trucks	0	0	0	0	0	8	0	8	1	0	0	1	0	2	0	2	11
% Trucks	0	0	0	0	0	2.3	0	2	2.9	0	0	0.9	0	1.4	0	1.1	1.5

TRAFFIC DATA COLLECTION

File Name : Knightdale(Water Rock and Poole)AM Peak
Site Code :
Start Date : 1/9/2020
Page No : 2

	Rutledge Landing Drive Southbound				Pool Road Westbound				Water Rock Way Northbound				Pool Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**11**	0	4	**15**	**6**	**72**	2	**80**	3	0	13	16	2	**26**	2	**30**	**141**
07:15 AM	2	0	**7**	9	1	52	2	55	3	0	6	9	1	21	**3**	25	98
07:30 AM	2	**1**	7	10	3	45	0	48	6	**1**	**15**	**22**	**3**	15	3	21	101
07:45 AM	5	0	5	10	3	48	**3**	54	**8**	0	4	12	3	22	0	25	101
Total Volume	20	1	23	44	13	217	7	237	20	1	38	59	9	84	8	101	441
% App. Total	45.5	2.3	52.3		5.5	91.6	3		33.9	1.7	64.4		8.9	83.2	7.9		
PHF	.455	.250	.821	.733	.542	.753	.583	.741	.625	.250	.633	.670	.750	.808	.667	.842	.782



TRAFFIC DATA COLLECTION

File Name : Knightdale(Water Rock and Poole)PM Peak
Site Code :
Start Date : 1/9/2020
Page No : 1

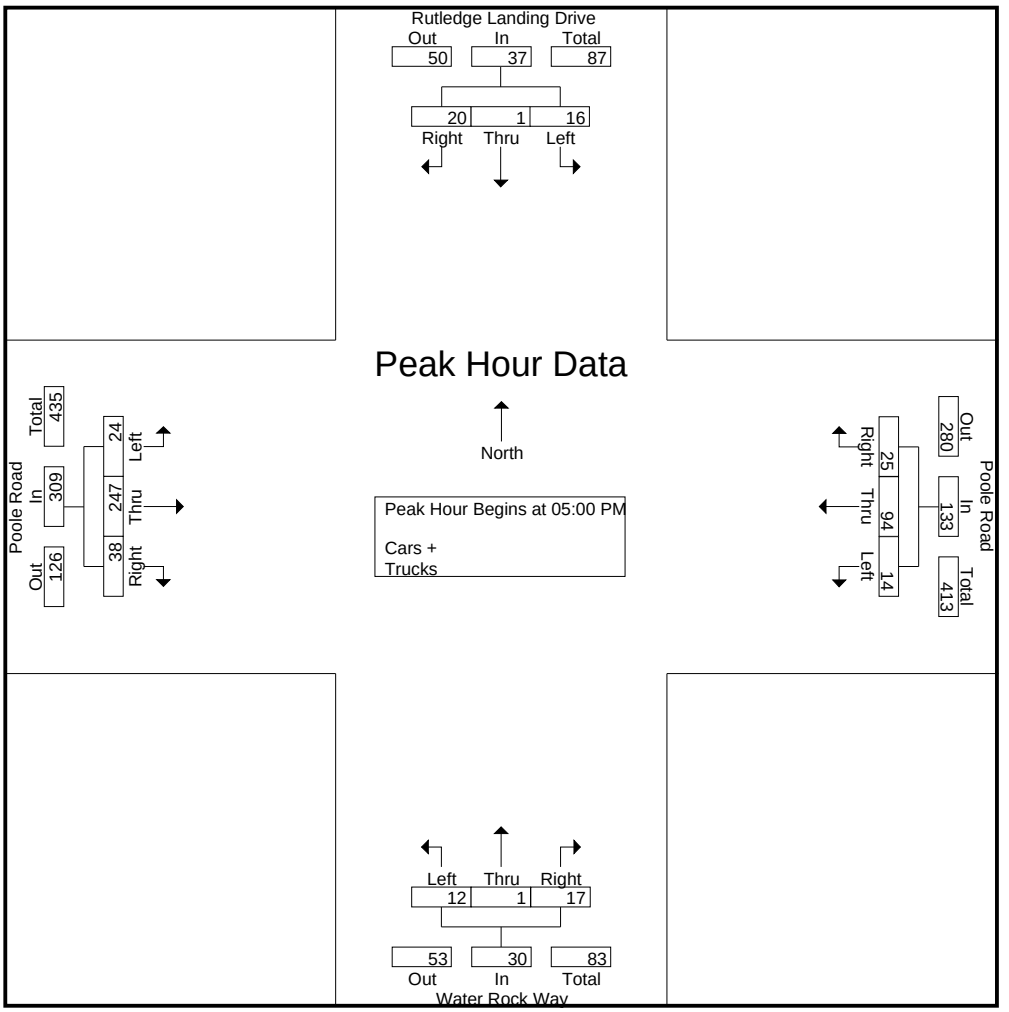
Groups Printed- Cars + - Trucks

	Rutledge Landing Drive Southbound				Poole Road Westbound				Water Rock Way Northbound				Poole Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
04:00 PM	4	0	4	8	6	25	4	35	2	1	3	6	5	43	7	55	104
04:15 PM	8	0	2	10	6	21	0	27	2	0	3	5	6	43	4	53	95
04:30 PM	6	0	7	13	7	13	2	22	7	0	3	10	10	41	8	59	104
04:45 PM	3	1	3	7	4	26	4	34	2	0	2	4	6	54	4	64	109
Total	21	1	16	38	23	85	10	118	13	1	11	25	27	181	23	231	412
05:00 PM	5	1	3	9	1	24	5	30	7	0	0	7	6	63	8	77	123
05:15 PM	8	0	8	16	11	30	4	45	6	0	2	8	8	68	6	82	151
05:30 PM	5	0	3	8	6	16	4	26	2	1	5	8	9	54	10	73	115
05:45 PM	2	0	2	4	7	24	1	32	2	0	5	7	15	62	0	77	120
Total	20	1	16	37	25	94	14	133	17	1	12	30	38	247	24	309	509
Grand Total	41	2	32	75	48	179	24	251	30	2	23	55	65	428	47	540	921
Apprch %	54.7	2.7	42.7		19.1	71.3	9.6		54.5	3.6	41.8		12	79.3	8.7		
Total %	4.5	0.2	3.5	8.1	5.2	19.4	2.6	27.3	3.3	0.2	2.5	6	7.1	46.5	5.1	58.6	
Cars +	41	2	32	75	48	176	24	248	30	2	23	55	65	417	47	529	907
% Cars +	100	100	100	100	100	98.3	100	98.8	100	100	100	100	100	97.4	100	98	98.5
Trucks	0	0	0	0	0	3	0	3	0	0	0	0	0	11	0	11	14
% Trucks	0	0	0	0	0	1.7	0	1.2	0	0	0	0	0	2.6	0	2	1.5

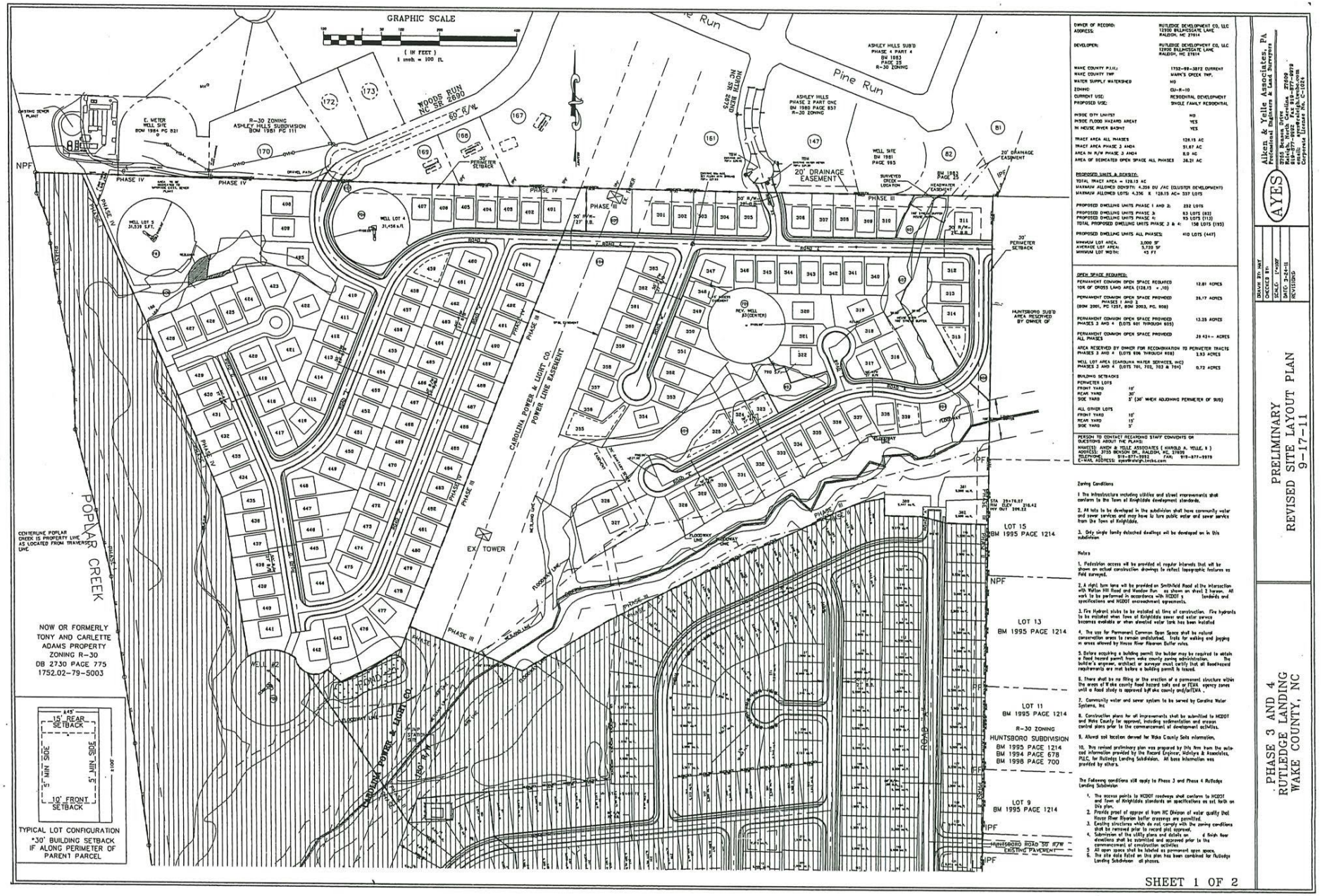
TRAFFIC DATA COLLECTION

File Name : Knightdale(Water Rock and Poole)PM Peak
Site Code :
Start Date : 1/9/2020
Page No : 2

	Rutledge Landing Drive Southbound				Poole Road Westbound				Water Rock Way Northbound				Poole Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	5	**1**	3	9	1	24	**5**	30	**7**	0	0	7	6	63	8	77	123
05:15 PM	**8**	0	**8**	**16**	**11**	**30**	4	**45**	6	0	2	**8**	8	**68**	6	**82**	**151**
05:30 PM	5	0	3	8	6	16	4	26	2	**1**	**5**	8	9	54	**10**	73	115
05:45 PM	2	0	2	4	7	24	1	32	2	0	5	7	**15**	62	0	77	120
Total Volume	20	1	16	37	25	94	14	133	17	1	12	30	38	247	24	309	509
% App. Total	54.1	2.7	43.2		18.8	70.7	10.5		56.7	3.3	40		12.3	79.9	7.8		
PHF	.625	.250	.500	.578	.568	.783	.700	.739	.607	.250	.600	.938	.633	.908	.600	.942	.843



APPROVED DEVELOPMENT DATA


GRAPHIC SCALE
(IN FEET)
1 inch = 100 ft.
Pine Run
WOODS RUN
NC SR 2690
50' R/W
R-30 ZONING
ASHLEY HILLS SUBDIVISION
BOM 1981 PG 111
ASHLEY HILLS SUB'D
PHASE 4 PART 4
BM 1983
PAGE 25
R-30 ZONING
ASHLEY HILLS
PHASE 2 PART ONE
BM 1980 PAGE 857
R-30 ZONING
NORTH REED
NC SR 2575
E. METER
WELL SITE
BOM 1984 PG 821
EXISTING SEWER
PLANT
WELL SITE
BM 1981
PAGE 995
20' DRAINAGE
EASEMENT
SURVEYED
CREEK
LOCATION
HEADWATER
EASEMENT
BM 1983
PAGE 25
NPF
PHASE IV
PHASE III
20' DRAINAGE EASEMENT
30' PERIMETER SETBACK
WELL LOT 3
31,539 S.F.
WELL LOT 4
31,456 S.F.
7" ROAD 'A'
ROAD 'A'
ROAD 'B'
ROAD 'C'
ROAD 'D'
ROAD 'E'
ROAD 'F'
ROAD 'G'
ROAD 'H'
ROAD 'I'
ROAD 'J'
ROAD 'K'
ROAD 'L'
ROAD 'M'
ROAD 'N'
ROAD 'O'
ROAD 'P'
ROAD 'Q'
ROAD 'R'
ROAD 'S'
ROAD 'T'
ROAD 'U'
ROAD 'V'
ROAD 'W'
ROAD 'X'
ROAD 'Y'
ROAD 'Z'
REV. WELL #3 (CENTER)
HUNTSBORO SUB'D
AREA RESERVED
BY OWNER OF
CAROLINA POWER & LIGHT CO.
POWER LINE EASEMENT
EX. TOWER
LOT 15
BM 1995 PAGE 1214
LOT 13
BM 1995 PAGE 1214
LOT 11
BM 1995 PAGE 1214
R-30 ZONING
HUNTSBORO SUBDIVISION
BM 1995 PAGE 1214
BM 1994 PAGE 678
BM 1998 PAGE 700
LOT 9
BM 1995 PAGE 1214
HUNTSBORO ROAD 50' R/W
EXISTING PAVEMENT
POPLAR CREEK
CENTERLINE POPLAR CREEK IS PROPERTY LINE AS LOCATED FROM TRAVERSE LINE
NOW OR FORMERLY
TONY AND CARLETTE
ADAMS PROPERTY
ZONING R-30
DB 2730 PAGE 775
1752.02-79-5003
WELL #2
15' REAR SETBACK
5' MIN SIDE
SUM MIN 5'
10' FRONT SETBACK
TYPICAL LOT CONFIGURATION
*30' BUILDING SETBACK
IF ALONG PERIMETER OF
PARENT PARCEL
OWNER OF RECORD: RUTLEDGE DEVELOPMENT CO, LLC
ADDRESS: 12930 BILLINGSGATE LANE
RALEIGH, NC 27614
DEVELOPER: RUTLEDGE DEVELOPMENT CO, LLC
12930 BILLINGSGATE LANE
RALEIGH, NC 27614
WAKE COUNTY P.I.N.: 1752-99-3872 CURRENT
WAKE COUNTY TWP: MARK'S CREEK TWP.
WATER SUPPLY WATERSHED: NO
ZONING: CU-R-10
CURRENT USE: RESIDENTIAL DEVELOPMENT
PROPOSED USE: SINGLE FAMILY RESIDENTIAL
INSIDE CITY LIMITS? NO
INSIDE FLOOD HAZARD AREA? YES
IN NEUSE RIVER BASIN? YES
TRACT AREA ALL PHASES: 128.15 AC
TRACT AREA PHASE 3 AND4: 51.87 AC
AREA IN R/W PHASE 3 AND4: 8.0 AC
AREA OF DEDICATED OPEN SPACE ALL PHASES: 38.21 AC
PROPOSED UNITS & DENSITY:
TOTAL TRACT AREA = 128.15 AC
MAXIMUM ALLOWED DENSITY: 4.356 DU /AC (CLUSTER DEVELOPMENT)
MAXIMUM ALLOWED LOTS: 4.356 X 128.15 AC= 337 LOTS
PROPOSED DWELLING UNITS PHASE 1 AND 2: 232 LOTS
PROPOSED DWELLING UNITS PHASE 3: 83 LOTS (83)
PROPOSED DWELLING UNITS PHASE 4: 95 LOTS (113)
TOTAL PROPOSED DWELLING UNITS PHASE 3 & 4: 178 LOTS (195)
PROPOSED DWELLING UNITS ALL PHASES: 410 LOTS (427)
MINIMUM LOT AREA: 2,000 SF
AVERAGE LOT AREA: 5,720 SF
MINIMUM LOT WIDTH: 42 FT
OPEN SPACE REQUIRED:
PERMANENT COMMON OPEN SPACE REQUIRED 10% OF GROSS LAND AREA (128.15 x .10): 12.81 ACRES
PERMANENT COMMON OPEN SPACE PROVIDED PHASES 1 AND 2 (BOM 2001, PG 1257, BOM 2003, PG. 908): 24.77 ACRES
PERMANENT COMMON OPEN SPACE PROVIDED PHASES 3 AND 4 (LOTS 601 THROUGH 805): 13.35 ACRES
PERMANENT COMMON OPEN SPACE PROVIDED ALL PHASES: 39 424+- ACRES
AREA RESERVED BY OWNER FOR RECONFIGURATION TO PERIMETER TRACTS PHASES 3 AND 4 (LOTS 806 THROUGH 808): 2.83 ACRES
WELL LOT AREA (CAROLINA WATER SERVICES, INC) PHASES 3 AND 4 (LOTS 701, 702, 703 & 704): 0.72 ACRES
BUILDING SETBACKS
PERIMETER LOTS
FRONT YARD 10'
REAR YARD 30'
SIDE YARD 5' (30' WHEN ADJOINING PERIMETER OF SUB)
ALL OTHER LOTS
FRONT YARD 10'
REAR YARD 15'
SIDE YARD 5'
PERSON TO CONTACT REGARDING STAFF COMMENTS OR QUESTIONS ABOUT THE PLANS:
NAME(S): ANDY & YELLE ASSOCIATES (HAROLD A. YELLE, II)
ADDRESS: 3755 BENSON DR., RALEIGH, NC, 27609
TELEPHONE: 919-877-9252 FAX: 919-877-9979
E-MAIL ADDRESS: eye@mindspring.com
Zoning Conditions
1. The infrastructure including utilities and street improvements shall conform to the Town of Knightdale development standards.
2. All lots to be developed in the subdivision shall have community water and sewer services and may have to turn public water and sewer service from the Town of Knightdale.
3. Only single family detached dwellings will be developed on in this subdivision
Notes
1. Pedestrian access will be provided at regular intervals that will be shown on actual construction drawings to reflect topographic features as field surveyed.
2. A right turn lane will be provided on Smithfield Road at the intersection with Walton Hill Road and Meadow Run as shown on sheet 2 hereon. All work to be performed in accordance with NCDOT's landcrds and specifications and NCDOT encroachment agreements.
3. Fire Hydrant stubs to be installed at time of construction. Fire hydrants to be installed when Town of Knightdale sewer and water services becomes available or when elevated water tank has been installed
4. The use for Permanent Common Open Space shall be natural conservation areas to remain undisturbed. Trails for walking and jogging in areas allowed by Neuse River Riparian Buffer rules.
5. Before acquiring a building permit the builder may be required to obtain a flood hazard permit from wake county zoning administration. The builder's engineer, architect or surveyor must certify that all flood hazard requirements are met before a building permit is issued.
6. There shall be no filling or the erection of a permanent structure within the areas of Wake county flood hazard soils and or FEMA agency zones until a flood study is approved by the county and/orFEMA .
7. Community water and sewer system to be served by Carolina Water Systems, Inc
8. Construction plans for all improvements shall be submitted to NCDOT and Wake County for approval, including sedimentation and erosion control plans prior to the commencement of development activities.
9. Allowed soil location derived for Wake County Soils information.
10. This revised preliminary plan was prepared by this firm from the autocad information provided by the Record Engineer, McIntyre & Associates, PLLC, for Rutledge Landing Subdivision. All base information was provided by others.
The Following conditions still apply to Phase 3 and Phase 4 Rutledge Landing Subdivision
1. The access points to NCDOT roadways shall conform to NCDOT and Town of Knightdale standards an specifications as set forth on this plan.
2. Provide proof of approval from NC Division of water quality that Neuse River Riparian buffer crossings are permitted.
3. Existing structures which do not comply with the zoning conditions shall be removed prior to record plat approval.
4. Submission of the utility plans and details on 4 finish floor elevations shall be submitted and approved prior to the commencement of construction activities
5. All open space shall be labeled as permanent open space.
6. The site data listed on this plan has been combined for Rutledge Landing Subdivision all phases.
Allen & Yelle Associates, PA
Professional Engineers & Land Surveyors
3755 Benson Drive
Raleigh, North Carolina 27609
phone: 919-877-9252 fax: 919-877-9979
email: eye@mindspring.com
Copyright Licensee No. C-2439
AYES
DRAWN BY: MAT
CHECKED BY:
SCALE: 1"=100'
DATE: 3-24-11
REVISIONS
PRELIMINARY
REVISED SITE LAYOUT PLAN
9-17-11
PHASE 3 AND 4
RUTLEDGE LANDING
WAKE COUNTY, NC
SHEET 1 OF 2

of Transportation Engineers, Eighth Edition, 2008) and is summarized in Table 1. Detailed trip generation calculations are attached.

Table 1
ITE Trip Generation

Land Use	Size	Daily		AM		PM	
		In	Out	In	Out	In	Out
Single Family Detached Housing	158 DU	792	792	30	90	100	59

Table 1 shows that the site has the potential to generate approximately 792 new daily trips in and 792 new daily trips out with 30 new trips entering and 90 new trips exiting in the AM peak hour and 100 new trips entering and 59 new trips exiting in the PM peak hour.

Background Traffic

A 3% annual growth factor was applied to the existing traffic volumes to calculate background traffic volumes in 2014. Traffic for the Poor Boy General Store & Grill Development was also added to the roadway network based on the TIA prepared by CMS Engineering in November 2010. Total background traffic, which includes existing traffic, background growth, and approved development traffic, is shown on Figures 1 and 2 and detailed on the attached intersection worksheets.

Distribution and Assignment

The proposed development site trips were assigned to the study intersections as follows:

- 80% to/from the north on Smithfield Road
- 20% to/from the south on Smithfield Road

Figure 3 shows the site traffic distribution and percent assignment at the study intersections. Site traffic was assigned to the network based on the distributions shown above and added to the background traffic to obtain total traffic volumes. Figures 4 and 5 show the AM and PM peak hour site and total traffic volumes at the two study intersections.

Levels of Service

Capacity analyses were performed for the two study intersections using Synchro Version 7 software. Synchro intersection LOS reports are attached. The level-of-service at each of the study intersections is summarized on Table 2.

WAKE COUNTY NORTH CAROLINA

Planning, Development & Inspections

TEL (PLANNING) 919 856 6310
TEL (INSPECTIONS) 919 856 6222

A Division of Community Services
P.O. Box 550 • Raleigh, NC 27602
www.wakegov.com

April 9, 2019

Brett Clark
2521 Schieffelin Rd, Suite 116
Apex, NC 27502

Re: Rutledge Landing Subdivision (S-08-17)

Dear Mr. Clark,

This letter is in reply to your April 3, 2019 request for an extension of approval for Rutledge Landing Subdivision preliminary plan approval. The Wake County Planning Staff has approved the request for a one (1) year extension of Rutledge Landing Subdivision (S-08-17) approval. The subdivision approval will now expire on **April 27, 2020**. The following conditions of approval still apply:

1. Legal documentation must be submitted stating that the public has the authority to use the 50 foot access easement (between Phase 2 and Road Z) as though it were a public road even though it is to be privately maintained. This documentation must be approved by planning staff, the county attorney and the Town of Knightdale prior to final plat approval.
2. Smithfield Road at Meadow Run:
   - Construct a northbound and southbound left-turn lane on Smithfield Road with 100 feet of storage and a 100 foot taper. The required turn lanes must be in place prior to any additional traffic being added.
3. Construction traffic for Rutledge Landing, phase 3 & 4 must utilize Rutledge Landing Drive located in the existing Rutledge Landing, Phase 1&2.
4. Construction traffic for Rutledge Landing, phase 3&4 may only utilized roadways in the existing Ashley Hill Subdivision if the developer bond these roadways for heavy hauling with NCDOT or agrees to strengthen the existing pavement to NCDOT requirements.
5. Change the label of the sewer easement from “Proposed 40’ City of Raleigh Public Sewer Easement and Town of Knightdale Greenway Easement” to “Proposed 40’ City of Raleigh Sewer Easement and Town of Knightdale Greenway Easement”.

If you need additional information or have any questions or comments regarding this matter, please contact me at 919-856-6214.

Sincerely,

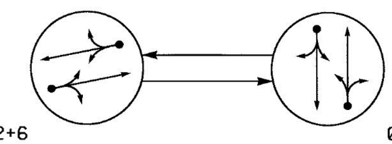
Celena Everette, Planner II
Celena.everette@wakegov.com
Wake County
Planning Department

cc: file, S-08-17

SIGNAL PLANS

PROJECT REFERENCE NO.	SHEET NO.
05-1361	Sig. 1

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

R
Y
G
12"

21, 22
41, 42
61, 62
81, 82

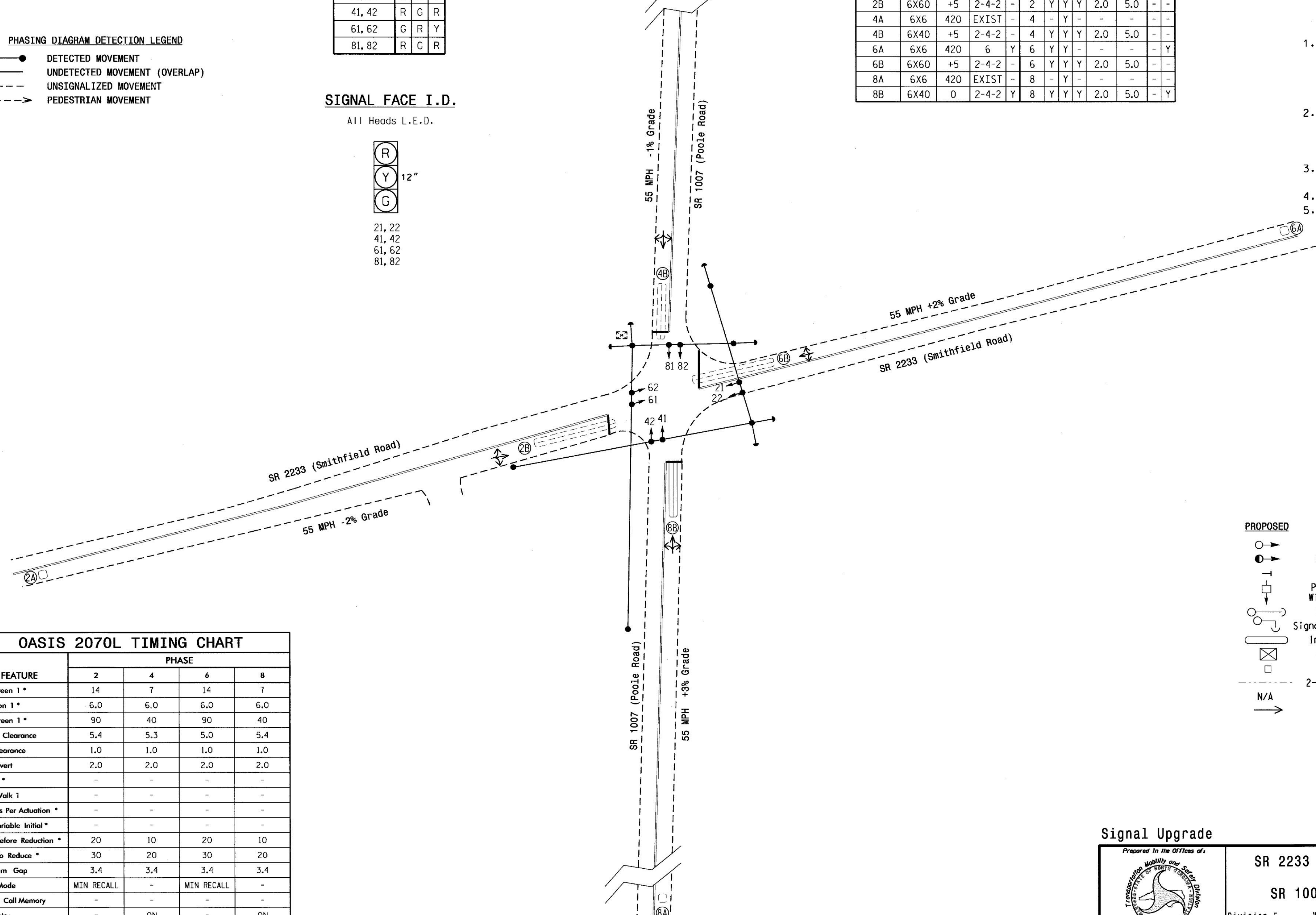
OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	420	6	Y	2	Y	Y	-	-	-	-	Y
2B	6X60	+5	2-4-2	-	2	Y	Y	Y	2.0	5.0	-	-
4A	6X6	420	EXIST	-	4	-	Y	-	-	-	-	-
4B	6X40	+5	2-4-2	-	4	Y	Y	Y	2.0	5.0	-	-
6A	6X6	420	6	Y	6	Y	Y	-	-	-	-	Y
6B	6X60	+5	2-4-2	-	6	Y	Y	Y	2.0	5.0	-	-
8A	6X6	420	EXIST	-	8	-	Y	-	-	-	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	Y	2.0	5.0	-	Y

2 Phase
Fully Actuated
(Isolated)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Pavement markings are existing.
5. Rewire phases in cabinet as shown.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	

OASIS 2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	14	7	14	7
Extension 1 *	6.0	6.0	6.0	6.0
Max Green 1 *	90	40	90	40
Yellow Clearance	5.4	5.3	5.0	5.4
Red Clearance	1.0	1.0	1.0	1.0
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	20	10	20	10
Time To Reduce *	30	20	30	20
Minimum Gap	3.4	3.4	3.4	3.4
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	-	-	-	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

Prepared in the Offices of: Transportation Mobility and Safety Division, Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE 0 40, 1"=40'

SR 2233 (Smithfield Road) at SR 1007 (Poole Road)

Division 5 Wake County E. of Raleigh

PLAN DATE: December 2012	REVIEWED BY:
PREPARED BY: C. J. Collins	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026486 ROBERT J. ZIEMBA
SIGNATURE DATE 2/4/13
SIG. INVENTORY NO. 05-1361

04-FEB-2013 13:49
S:*ITS&SU*ITS Signals*Signal Design Section*Central Region*Div 5*05-1361*051361_sig_dsn_20130204.dgn
rziemba

PROJECT REFERENCE NO.	SHEET NO.
05-1962	Sig. 1

3 Phase
Fully Actuated
(Isolated)

PHASING DIAGRAM

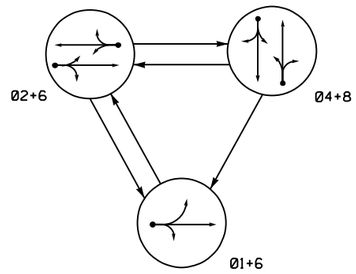


TABLE OF OPERATION				
SIGNAL FACE	PHASE 01+6	PHASE 02+6	PHASE 04+8	FLASH
21, 22	R	G	R	Y
41, 42	R	R	G	R
61	G	G	R	Y
62	G	G	R	Y
63, 64	OFF	OFF	ON	OFF
81, 82	R	R	G	R

WARNING BEACON TABLE OF OPERATION		
SIGNAL FACE	INTERVAL 1	INTERVAL 2
63	ON	OFF
64	OFF	ON

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X15	50	3	Y	1	Y	Y	-	-	15	-	Y
2A	6X6	300	5	-	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	10	-	-
6A	6X6	300	5	-	6	Y	Y	-	-	-	-	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	10	-	-

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 6 to allow the controller to clear from phase 2+6 to phase 1+6 by progressing through an all red display.
4. Set all detector units to presence mode.
5. Activate beacons 63 and 64 to flash 6 seconds prior to the end of the phase 6 green. These beacons shall remain flashing until the beginning of the succeeding phase 6 green.
6. Beacons 63 and 64 shall flash alternately.
7. Pavement markings are existing.

PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.

All Heads L.E.D.

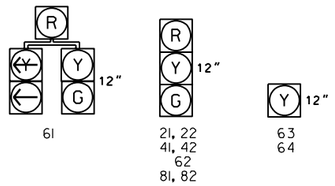


Figure 1:
Existing Sign w/ Beacons

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
N/A	Fence	
	Type III Signal Pedestal	

"BE PREPARED TO STOP" (W3-4) Sign Ⓐ and "WHEN FLASHING" (W16-13p) Plaque Ⓐ with Warning Beacons (See Figure 1)

OASIS 2070 TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	7	12	7	12	7
Extension 1 *	2.0	6.0	2.0	6.0	2.0
Max Green 1 *	15	90	30	90	30
Yellow Clearance	3.0	4.3	3.2	4.8	3.3
Red Clearance	1.6	1.0	1.2	1.0	1.3
Red Revert	2.0	2.0	2.0	5.0	2.0
Walk 1 *	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation *	-	2.5	-	-	-
Max Variable Initial *	-	34	-	-	-
Time Before Reduction *	-	15	-	15	-
Time To Reduce *	-	30	-	30	-
Minimum Gap	-	3.0	-	3.0	-
Recall Mode	-	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	YELLOW	-
Dual Entry	-	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Signal Design Section
DEPARTMENT OF TRANSPORTATION
750 N.Greenfield Pkwy.Garner,NC 27529

SR 2233 (S. Smithfield Road)
at
SR 2685 (Sandy Run)

Division 5 Wake County Knightdale

PLAN DATE: July 2017 REVIEWED BY:

PREPARED BY: Mohammed S Khan REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. ZIEMBA

DocuSigned by: 8/18/2017
DATE

SIG. INVENTORY NO. 05-1962

18-AUG-2017 12:06
S:#ITSASU#ITS Signals#Signal Design Section#Central Region#Div 5#05-1962#05196 2_sig_dsn_20170818.dgn
rziemba

CAPACITY ANALYSIS

SMITHFIELD ROAD

&

POOLE ROAD

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	70	17	4	96	23	59	907	4	11	272	52
Future Volume (vph)	62	70	17	4	96	23	59	907	4	11	272	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			3%			-2%			2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.974			0.999			0.979	
Flt Protected		0.980			0.999			0.997			0.998	
Satd. Flow (prot)	0	1807	0	0	1785	0	0	1874	0	0	1802	0
Flt Permitted		0.735			0.991			0.953			0.961	
Satd. Flow (perm)	0	1355	0	0	1771	0	0	1791	0	0	1735	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		3665			2078			1287			4951	
Travel Time (s)		45.4			25.8			16.0			61.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	69	78	19	4	107	26	66	1008	4	12	302	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	166	0	0	137	0	0	1078	0	0	372	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		14.0	14.0		14.0	14.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		21.0	21.0		20.0	20.0	
Total Split (s)	40.0	40.0		40.0	40.0		90.0	90.0		90.0	90.0	
Total Split (%)	30.8%	30.8%		30.8%	30.8%		69.2%	69.2%		69.2%	69.2%	
Maximum Green (s)	33.7	33.7		33.6	33.6		83.6	83.6		84.0	84.0	
Yellow Time (s)	5.3	5.3		5.4	5.4		5.4	5.4		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.3			-1.4			-1.4			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
Time Before Reduce (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		22.2			22.2			76.6			76.6	
Actuated g/C Ratio		0.20			0.20			0.70			0.70	
v/c Ratio		0.60			0.38			0.86			0.31	
Control Delay		51.4			42.8			21.6			7.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		51.4			42.8			21.6			7.3	
LOS		D			D			C			A	
Approach Delay		51.4			42.8			21.6			7.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D			D			C			A	
Queue Length 50th (ft)		117			92			495			87	
Queue Length 95th (ft)		191			152			#980			162	
Internal Link Dist (ft)		3585			1998			1207			4871	
Turn Bay Length (ft)												
Base Capacity (vph)		447			585			1408			1364	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.37			0.23			0.77			0.27	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 109
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 23.0 Intersection LOS: C
Intersection Capacity Utilization 96.3% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Smithfield Road & Poole Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	109	69	12	82	30	16	442	6	12	752	58
Future Volume (vph)	80	109	69	12	82	30	16	442	6	12	752	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			3%			-2%			2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.964			0.967			0.998			0.991	
Flt Protected		0.985			0.995			0.998			0.999	
Satd. Flow (prot)	0	1778	0	0	1765	0	0	1874	0	0	1826	0
Flt Permitted		0.833			0.960			0.959			0.991	
Satd. Flow (perm)	0	1503	0	0	1703	0	0	1801	0	0	1811	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		3665			2078			1287			4951	
Travel Time (s)		45.4			25.8			16.0			61.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	89	121	77	13	91	33	18	491	7	13	836	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	287	0	0	137	0	0	516	0	0	913	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		14.0	14.0		14.0	14.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		21.0	21.0		20.0	20.0	
Total Split (s)	40.0	40.0		40.0	40.0		90.0	90.0		90.0	90.0	
Total Split (%)	30.8%	30.8%		30.8%	30.8%		69.2%	69.2%		69.2%	69.2%	
Maximum Green (s)	33.7	33.7		33.6	33.6		83.6	83.6		84.0	84.0	
Yellow Time (s)	5.3	5.3		5.4	5.4		5.4	5.4		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.3			-1.4			-1.4			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
Time Before Reduce (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		28.9			28.9			66.9			66.9	
Actuated g/C Ratio		0.27			0.27			0.63			0.63	
v/c Ratio		0.70			0.30			0.46			0.80	
Control Delay		48.4			36.3			11.9			21.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		48.4			36.3			11.9			21.6	
LOS		D			D			B			C	
Approach Delay		48.4			36.3			11.9			21.6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D			D			B			C	
Queue Length 50th (ft)		187			78			180			459	
Queue Length 95th (ft)		327			151			270			690	
Internal Link Dist (ft)		3585			1998			1207			4871	
Turn Bay Length (ft)												
Base Capacity (vph)		525			595			1440			1448	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.55			0.23			0.36			0.63	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 106.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 24.1 Intersection LOS: C
Intersection Capacity Utilization 77.3% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Smithfield Road & Poole Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	81	32	4	107	25	68	993	4	12	302	57
Future Volume (vph)	68	81	32	4	107	25	68	993	4	12	302	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			3%			-2%			2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976			0.975						0.979	
Flt Protected		0.982			0.999			0.997			0.998	
Satd. Flow (prot)	0	1794	0	0	1787	0	0	1876	0	0	1802	0
Flt Permitted		0.713			0.992			0.944			0.954	
Satd. Flow (perm)	0	1303	0	0	1775	0	0	1776	0	0	1722	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		3665			2078			1287			4951	
Travel Time (s)		45.4			25.8			16.0			61.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	76	90	36	4	119	28	76	1103	4	13	336	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	202	0	0	151	0	0	1183	0	0	412	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		14.0	14.0		14.0	14.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		21.0	21.0		20.0	20.0	
Total Split (s)	40.0	40.0		40.0	40.0		90.0	90.0		90.0	90.0	
Total Split (%)	30.8%	30.8%		30.8%	30.8%		69.2%	69.2%		69.2%	69.2%	
Maximum Green (s)	33.7	33.7		33.6	33.6		83.6	83.6		84.0	84.0	
Yellow Time (s)	5.3	5.3		5.4	5.4		5.4	5.4		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.3			-1.4			-1.4			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
Time Before Reduce (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		26.0			26.0			85.2			85.2	
Actuated g/C Ratio		0.21			0.21			0.70			0.70	
v/c Ratio		0.72			0.40			0.95			0.34	
Control Delay		59.4			43.6			34.1			8.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		59.4			43.6			34.1			8.8	
LOS		E			D			C			A	
Approach Delay		59.4			43.6			34.1			8.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		E			D			C			A	
Queue Length 50th (ft)		148			102			742			113	
Queue Length 95th (ft)		234			164			#1317			207	
Internal Link Dist (ft)		3585			1998			1207			4871	
Turn Bay Length (ft)												
Base Capacity (vph)		376			513			1247			1209	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.54			0.29			0.95			0.34	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 121.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 32.1 Intersection LOS: C
Intersection Capacity Utilization 110.3% ICU Level of Service H
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Smithfield Road & Poole Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	122	84	13	95	33	32	488	7	13	825	63
Future Volume (vph)	87	122	84	13	95	33	32	488	7	13	825	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			3%			-2%			2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.968			0.998			0.991	
Flt Protected		0.985			0.996			0.997			0.999	
Satd. Flow (prot)	0	1772	0	0	1769	0	0	1872	0	0	1826	0
Flt Permitted		0.796			0.959			0.901			0.990	
Satd. Flow (perm)	0	1432	0	0	1703	0	0	1692	0	0	1809	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		3665			2078			1287			4951	
Travel Time (s)		45.4			25.8			16.0			61.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	136	93	14	106	37	36	542	8	14	917	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	326	0	0	157	0	0	586	0	0	1001	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		14.0	14.0		14.0	14.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		21.0	21.0		20.0	20.0	
Total Split (s)	40.0	40.0		40.0	40.0		90.0	90.0		90.0	90.0	
Total Split (%)	30.8%	30.8%		30.8%	30.8%		69.2%	69.2%		69.2%	69.2%	
Maximum Green (s)	33.7	33.7		33.6	33.6		83.6	83.6		84.0	84.0	
Yellow Time (s)	5.3	5.3		5.4	5.4		5.4	5.4		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.3			-1.4			-1.4			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
Time Before Reduce (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		32.7			32.7			75.7			75.7	
Actuated g/C Ratio		0.28			0.28			0.64			0.64	
v/c Ratio		0.83			0.33			0.54			0.87	
Control Delay		60.9			39.0			14.1			27.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		60.9			39.0			14.1			27.2	
LOS		E			D			B			C	
Approach Delay		60.9			39.0			14.1			27.2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		E			D			B			C	
Queue Length 50th (ft)		261			107			243			608	
Queue Length 95th (ft)		#422			172			336			852	
Internal Link Dist (ft)		3585			1998			1207			4871	
Turn Bay Length (ft)												
Base Capacity (vph)		432			514			1242			1327	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.75			0.31			0.47			0.75	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 118.7
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 29.7 Intersection LOS: C
Intersection Capacity Utilization 87.6% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Smithfield Road & Poole Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	82	36	4	108	25	69	994	4	12	303	57
Future Volume (vph)	68	82	36	4	108	25	69	994	4	12	303	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			3%			-2%			2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.974			0.975						0.979	
Flt Protected		0.982			0.999			0.997			0.998	
Satd. Flow (prot)	0	1791	0	0	1787	0	0	1876	0	0	1802	0
Flt Permitted		0.720			0.992			0.943			0.954	
Satd. Flow (perm)	0	1313	0	0	1775	0	0	1774	0	0	1722	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		3665			2078			1287			4951	
Travel Time (s)		45.4			25.8			16.0			61.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	76	91	40	4	120	28	77	1104	4	13	337	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	207	0	0	152	0	0	1185	0	0	413	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		14.0	14.0		14.0	14.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		21.0	21.0		20.0	20.0	
Total Split (s)	40.0	40.0		40.0	40.0		90.0	90.0		90.0	90.0	
Total Split (%)	30.8%	30.8%		30.8%	30.8%		69.2%	69.2%		69.2%	69.2%	
Maximum Green (s)	33.7	33.7		33.6	33.6		83.6	83.6		84.0	84.0	
Yellow Time (s)	5.3	5.3		5.4	5.4		5.4	5.4		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.3			-1.4			-1.4			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
Time Before Reduce (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		26.4			26.4			85.2			85.2	
Actuated g/C Ratio		0.22			0.22			0.70			0.70	
v/c Ratio		0.73			0.40			0.95			0.34	
Control Delay		59.3			43.4			35.2			8.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		59.3			43.4			35.2			8.9	
LOS		E			D			D			A	
Approach Delay		59.3			43.4			35.2			8.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		E			D			D			A	
Queue Length 50th (ft)		152			103			760			115	
Queue Length 95th (ft)		239			166			#1322			208	
Internal Link Dist (ft)		3585			1998			1207			4871	
Turn Bay Length (ft)												
Base Capacity (vph)		378			511			1242			1206	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.55			0.30			0.95			0.34	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 121.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 32.9 Intersection LOS: C
Intersection Capacity Utilization 110.8% ICU Level of Service H
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Smithfield Road & Poole Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	123	86	13	96	33	36	489	7	13	826	63
Future Volume (vph)	87	123	86	13	96	33	36	489	7	13	826	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			3%			-2%			2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.968			0.998			0.991	
Flt Protected		0.986			0.996			0.997			0.999	
Satd. Flow (prot)	0	1774	0	0	1769	0	0	1872	0	0	1826	0
Flt Permitted		0.797			0.959			0.888			0.990	
Satd. Flow (perm)	0	1434	0	0	1703	0	0	1667	0	0	1809	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		3665			2078			1287			4951	
Travel Time (s)		45.4			25.8			16.0			61.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	137	96	14	107	37	40	543	8	14	918	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	330	0	0	158	0	0	591	0	0	1002	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		14.0	14.0		14.0	14.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		21.0	21.0		20.0	20.0	
Total Split (s)	40.0	40.0		40.0	40.0		90.0	90.0		90.0	90.0	
Total Split (%)	30.8%	30.8%		30.8%	30.8%		69.2%	69.2%		69.2%	69.2%	
Maximum Green (s)	33.7	33.7		33.6	33.6		83.6	83.6		84.0	84.0	
Yellow Time (s)	5.3	5.3		5.4	5.4		5.4	5.4		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.3			-1.4			-1.4			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
Time Before Reduce (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Time To Reduce (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		33.0			33.0			75.9			75.9	
Actuated g/C Ratio		0.28			0.28			0.64			0.64	
v/c Ratio		0.83			0.34			0.56			0.87	
Control Delay		61.2			39.0			14.5			27.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		61.2			39.0			14.5			27.5	
LOS		E			D			B			C	
Approach Delay		61.2			39.0			14.5			27.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		E			D			B			C	
Queue Length 50th (ft)		265			108			248			609	
Queue Length 95th (ft)		#429			173			344			852	
Internal Link Dist (ft)		3585			1998			1207			4871	
Turn Bay Length (ft)												
Base Capacity (vph)		431			511			1216			1320	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.77			0.31			0.49			0.76	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 119.1
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 30.0 Intersection LOS: C
Intersection Capacity Utilization 87.6% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Smithfield Road & Poole Road

SMITHFIELD ROAD

&

SANDY RUN

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	4	9	20	4	75	10	1001	7	17	332	8
Future Volume (vph)	36	4	9	20	4	75	10	1001	7	17	332	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-2%			2%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.897			0.999			0.997	
Flt Protected		0.964			0.990						0.998	
Satd. Flow (prot)	0	1760	0	0	1671	0	0	1842	0	0	1881	0
Flt Permitted		0.678			0.926			0.996			0.934	
Satd. Flow (perm)	0	1238	0	0	1563	0	0	1835	0	0	1761	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		1346			1337			4951			431	
Travel Time (s)		36.7			36.5			75.0			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	40	4	10	22	4	83	11	1112	8	19	369	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	54	0	0	109	0	0	1131	0	0	397	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		12.0	12.0		7.0	12.0	
Minimum Split (s)	12.0	12.0		12.0	12.0		18.0	18.0		12.0	18.0	
Total Split (s)	30.0	30.0		30.0	30.0		90.0	90.0		15.0	90.0	
Total Split (%)	22.2%	22.2%		22.2%	22.2%		66.7%	66.7%		11.1%	66.7%	
Maximum Green (s)	25.6	25.6		25.4	25.4		84.7	84.7		10.4	84.2	
Yellow Time (s)	3.2	3.2		3.3	3.3		4.3	4.3		3.0	4.8	
All-Red Time (s)	1.2	1.2		1.3	1.3		1.0	1.0		1.6	1.0	
Lost Time Adjust (s)		0.6			0.4			-0.3			-0.8	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	2.0	2.0		2.0	2.0		6.0	6.0		2.0	6.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		2.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		0.0	15.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		30.0	30.0		0.0	30.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Act Effct Green (s)		11.2			11.2			68.0			68.0	
Actuated g/C Ratio		0.13			0.13			0.76			0.76	
v/c Ratio		0.35			0.56			0.81			0.30	
Control Delay		45.1			50.5			13.0			4.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		45.1			50.5			13.0			4.1	
LOS		D			D			B			A	
Approach Delay		45.1			50.5			13.0			4.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D			D			B			A	
Queue Length 50th (ft)		27			55			312			54	
Queue Length 95th (ft)		75			131			631			106	
Internal Link Dist (ft)		1266			1257			4871			351	
Turn Bay Length (ft)												
Base Capacity (vph)		353			445			1707			1725	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.15			0.24			0.66			0.23	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 89.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 14.4 Intersection LOS: B
Intersection Capacity Utilization 72.7% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 2: Smithfield Road & Sandy Run

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	4	4	11	4	57	7	457	28	73	944	30
Future Volume (vph)	28	4	4	11	4	57	7	457	28	73	944	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-2%			2%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.892			0.992			0.996	
Flt Protected		0.962			0.992			0.999			0.997	
Satd. Flow (prot)	0	1776	0	0	1665	0	0	1828	0	0	1877	0
Flt Permitted		0.743			0.940			0.984			0.927	
Satd. Flow (perm)	0	1371	0	0	1577	0	0	1800	0	0	1746	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		1346			1337			4951			431	
Travel Time (s)		36.7			36.5			75.0			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	31	4	4	12	4	63	8	508	31	81	1049	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	79	0	0	547	0	0	1163	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		12.0	12.0		7.0	12.0	
Minimum Split (s)	12.0	12.0		12.0	12.0		18.0	18.0		12.0	18.0	
Total Split (s)	30.0	30.0		30.0	30.0		90.0	90.0		15.0	90.0	
Total Split (%)	22.2%	22.2%		22.2%	22.2%		66.7%	66.7%		11.1%	66.7%	
Maximum Green (s)	25.6	25.6		25.4	25.4		84.7	84.7		10.4	84.2	
Yellow Time (s)	3.2	3.2		3.3	3.3		4.3	4.3		3.0	4.8	
All-Red Time (s)	1.2	1.2		1.3	1.3		1.0	1.0		1.6	1.0	
Lost Time Adjust (s)		0.6			0.4			-0.3			-0.8	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	2.0	2.0		2.0	2.0		6.0	6.0		2.0	6.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		2.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		0.0	15.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		30.0	30.0		0.0	30.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Act Effct Green (s)		9.5			9.5			76.7			76.7	
Actuated g/C Ratio		0.10			0.10			0.84			0.84	
v/c Ratio		0.28			0.48			0.36			0.80	
Control Delay		47.9			53.8			3.5			11.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		47.9			53.8			3.5			11.4	
LOS		D			D			A			B	
Approach Delay		47.9			53.8			3.5			11.4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D			D			A			B	
Queue Length 50th (ft)		22			47			72			321	
Queue Length 95th (ft)		58			100			134			682	
Internal Link Dist (ft)		1266			1257			4871			351	
Turn Bay Length (ft)												
Base Capacity (vph)		392			451			1593			1701	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.10			0.18			0.34			0.68	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 91.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 11.7 Intersection LOS: B
Intersection Capacity Utilization 101.5% ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 2: Smithfield Road & Sandy Run

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	4	15	22	4	82	13	1094	8	19	363	27
Future Volume (vph)	92	4	15	22	4	82	13	1094	8	19	363	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981			0.897			0.999			0.990	
Flt Protected		0.960			0.990		0.950			0.950		
Satd. Flow (prot)	0	1763	0	0	1671	0	1752	1842	0	1796	1872	0
Flt Permitted		0.566			0.934		0.511			0.050		
Satd. Flow (perm)	0	1039	0	0	1576	0	942	1842	0	95	1872	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		1346			1337			4951			431	
Travel Time (s)		36.7			36.5			75.0			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	102	4	17	24	4	91	14	1216	9	21	403	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	123	0	0	119	0	14	1225	0	21	433	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		12.0	12.0		7.0	12.0	
Minimum Split (s)	12.0	12.0		12.0	12.0		18.0	18.0		12.0	18.0	
Total Split (s)	30.0	30.0		30.0	30.0		90.0	90.0		15.0	90.0	
Total Split (%)	22.2%	22.2%		22.2%	22.2%		66.7%	66.7%		11.1%	66.7%	
Maximum Green (s)	25.6	25.6		25.4	25.4		84.7	84.7		10.4	84.2	
Yellow Time (s)	3.2	3.2		3.3	3.3		4.3	4.3		3.0	4.8	
All-Red Time (s)	1.2	1.2		1.3	1.3		1.0	1.0		1.6	1.0	
Lost Time Adjust (s)		0.6			0.4		-0.3	-0.3		0.4	-0.8	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	2.0	2.0		2.0	2.0		6.0	6.0		2.0	6.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		2.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		0.0	15.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		30.0	30.0		0.0	30.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Act Effct Green (s)		16.8			16.8		87.3	87.3		91.5	91.5	
Actuated g/C Ratio		0.14			0.14		0.74	0.74		0.77	0.77	
v/c Ratio		0.84			0.53		0.02	0.90		0.12	0.30	
Control Delay		90.3			55.9		7.2	26.2		5.6	5.2	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		90.3			55.9		7.2	26.2		5.6	5.2	
LOS		F			E		A	C		A	A	
Approach Delay		90.3			55.9			26.0			5.2	
Approach LOS		F			E			C			A	
Queue Length 50th (ft)		86			80		2	547		3	84	
Queue Length 95th (ft)		169			153		12	#1380		11	157	
Internal Link Dist (ft)		1266			1257			4871			351	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		220			335		694	1357		217	1591	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.56			0.36		0.02	0.90		0.10	0.27	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 118.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 27.0 Intersection LOS: C
Intersection Capacity Utilization 79.3% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Smithfield Road & Sandy Run

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	4	7	12	4	62	13	499	31	80	1032	93
Future Volume (vph)	66	4	7	12	4	62	13	499	31	80	1032	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.892			0.991			0.988	
Flt Protected		0.959			0.992		0.950			0.950		
Satd. Flow (prot)	0	1772	0	0	1665	0	1752	1828	0	1796	1868	0
Flt Permitted		0.701			0.952		0.118			0.334		
Satd. Flow (perm)	0	1295	0	0	1598	0	218	1828	0	631	1868	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		1346			1337			4951			431	
Travel Time (s)		36.7			36.5			75.0			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	73	4	8	13	4	69	14	554	34	89	1147	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	85	0	0	86	0	14	588	0	89	1250	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		12.0	12.0		7.0	12.0	
Minimum Split (s)	12.0	12.0		12.0	12.0		18.0	18.0		12.0	18.0	
Total Split (s)	30.0	30.0		30.0	30.0		90.0	90.0		15.0	90.0	
Total Split (%)	22.2%	22.2%		22.2%	22.2%		66.7%	66.7%		11.1%	66.7%	
Maximum Green (s)	25.6	25.6		25.4	25.4		84.7	84.7		10.4	84.2	
Yellow Time (s)	3.2	3.2		3.3	3.3		4.3	4.3		3.0	4.8	
All-Red Time (s)	1.2	1.2		1.3	1.3		1.0	1.0		1.6	1.0	
Lost Time Adjust (s)		0.6			0.4		-0.3	-0.3		0.4	-0.8	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	2.0	2.0		2.0	2.0		6.0	6.0		2.0	6.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		2.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		0.0	15.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		30.0	30.0		0.0	30.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Act Effct Green (s)		11.1			11.1		61.5	61.5		73.6	73.6	
Actuated g/C Ratio		0.12			0.12		0.65	0.65		0.77	0.77	
v/c Ratio		0.56			0.46		0.10	0.50		0.16	0.86	
Control Delay		58.1			50.9		8.5	10.4		3.4	16.0	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		58.1			50.9		8.5	10.4		3.4	16.0	
LOS		E			D		A	B		A	B	
Approach Delay		58.1			50.9			10.3			15.2	
Approach LOS		E			D			B			B	
Queue Length 50th (ft)		54			54		3	161		10	397	
Queue Length 95th (ft)		108			107		13	277		25	#875	
Internal Link Dist (ft)		1266			1257			4871			351	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		352			434		190	1598		615	1789	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.24			0.20		0.07	0.37		0.14	0.70	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 95
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 17.0 Intersection LOS: B
Intersection Capacity Utilization 85.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Smithfield Road & Sandy Run

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	4	16	22	4	82	14	1094	8	19	363	31
Future Volume (vph)	107	4	16	22	4	82	14	1094	8	19	363	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.897			0.999			0.988	
Flt Protected		0.960			0.990		0.950			0.950		
Satd. Flow (prot)	0	1767	0	0	1671	0	1752	1842	0	1796	1868	0
Flt Permitted		0.575			0.934		0.509			0.044		
Satd. Flow (perm)	0	1058	0	0	1576	0	939	1842	0	83	1868	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		1346			1337			4951			431	
Travel Time (s)		36.7			36.5			75.0			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	119	4	18	24	4	91	16	1216	9	21	403	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	141	0	0	119	0	16	1225	0	21	437	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		12.0	12.0		7.0	12.0	
Minimum Split (s)	12.0	12.0		12.0	12.0		18.0	18.0		12.0	18.0	
Total Split (s)	30.0	30.0		30.0	30.0		90.0	90.0		15.0	90.0	
Total Split (%)	22.2%	22.2%		22.2%	22.2%		66.7%	66.7%		11.1%	66.7%	
Maximum Green (s)	25.6	25.6		25.4	25.4		84.7	84.7		10.4	84.2	
Yellow Time (s)	3.2	3.2		3.3	3.3		4.3	4.3		3.0	4.8	
All-Red Time (s)	1.2	1.2		1.3	1.3		1.0	1.0		1.6	1.0	
Lost Time Adjust (s)		0.6			0.4		-0.3	-0.3		0.4	-0.8	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	2.0	2.0		2.0	2.0		6.0	6.0		2.0	6.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		2.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		0.0	15.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		30.0	30.0		0.0	30.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Act Effct Green (s)		18.9			18.9		86.7	86.7		93.2	93.2	
Actuated g/C Ratio		0.15			0.15		0.71	0.71		0.76	0.76	
v/c Ratio		0.87			0.49		0.02	0.94		0.13	0.31	
Control Delay		92.8			54.4		8.1	33.1		6.3	5.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		92.8			54.4		8.1	33.1		6.3	5.7	
LOS		F			D		A	C		A	A	
Approach Delay		92.8			54.4			32.8			5.7	
Approach LOS		F			D			C			A	
Queue Length 50th (ft)		114			90		4	918		4	97	
Queue Length 95th (ft)		#210			153		13	#1380		11	159	
Internal Link Dist (ft)		1266			1257			4871			351	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		217			324		665	1306		204	1538	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.65			0.37		0.02	0.94		0.10	0.28	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 122.2
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 32.1 Intersection LOS: C
Intersection Capacity Utilization 80.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Smithfield Road & Sandy Run

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	4	8	12	4	62	14	499	31	80	1032	109
Future Volume (vph)	76	4	8	12	4	62	14	499	31	80	1032	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.892			0.991			0.986	
Flt Protected		0.958			0.992		0.950			0.950		
Satd. Flow (prot)	0	1770	0	0	1665	0	1752	1828	0	1796	1864	0
Flt Permitted		0.694			0.954		0.102			0.334		
Satd. Flow (perm)	0	1282	0	0	1601	0	188	1828	0	631	1864	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		1346			1337			4951			431	
Travel Time (s)		36.7			36.5			75.0			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	84	4	9	13	4	69	16	554	34	89	1147	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	97	0	0	86	0	16	588	0	89	1268	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		12.0	12.0		7.0	12.0	
Minimum Split (s)	12.0	12.0		12.0	12.0		18.0	18.0		12.0	18.0	
Total Split (s)	30.0	30.0		30.0	30.0		90.0	90.0		15.0	90.0	
Total Split (%)	22.2%	22.2%		22.2%	22.2%		66.7%	66.7%		11.1%	66.7%	
Maximum Green (s)	25.6	25.6		25.4	25.4		84.7	84.7		10.4	84.2	
Yellow Time (s)	3.2	3.2		3.3	3.3		4.3	4.3		3.0	4.8	
All-Red Time (s)	1.2	1.2		1.3	1.3		1.0	1.0		1.6	1.0	
Lost Time Adjust (s)		0.6			0.4		-0.3	-0.3		0.4	-0.8	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	2.0	2.0		2.0	2.0		6.0	6.0		2.0	6.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		2.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		0.0	15.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		30.0	30.0		0.0	30.0	
Recall Mode	None	None		None	None		Min	Min		None	Min	
Act Effct Green (s)		12.1			12.1		63.3	63.3		75.4	75.4	
Actuated g/C Ratio		0.12			0.12		0.65	0.65		0.77	0.77	
v/c Ratio		0.61			0.43		0.13	0.50		0.16	0.88	
Control Delay		60.8			49.9		10.3	10.8		3.7	18.1	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		60.8			49.9		10.3	10.8		3.7	18.1	
LOS		E			D		B	B		A	B	
Approach Delay		60.8			49.9			10.8			17.2	
Approach LOS		E			D			B			B	
Queue Length 50th (ft)		65			56		3	168		11	447	
Queue Length 95th (ft)		120			106		16	293		27	#1130	
Internal Link Dist (ft)		1266			1257			4871			351	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		338			423		160	1561		609	1760	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.29			0.20		0.10	0.38		0.15	0.72	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 97.8
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 18.7 Intersection LOS: B
Intersection Capacity Utilization 86.4% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Smithfield Road & Sandy Run

SMITHFIELD ROAD

&

MEADOW RUN

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	4	4	4	4	34	4	1108	4	5	355	6
Future Vol, veh/h	4	4	4	4	4	34	4	1108	4	5	355	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	4	4	4	38	4	1231	4	6	394	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1672	1653	398	1655	1654	1233	401	0	0	1235	0	0
Stage 1	410	410	-	1241	1241	-	-	-	-	-	-	-
Stage 2	1262	1243	-	414	413	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	76	98	652	78	98	216	1158	-	-	564	-	-
Stage 1	619	595	-	214	247	-	-	-	-	-	-	-
Stage 2	208	246	-	616	594	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	59	96	652	73	96	216	1158	-	-	564	-	-
Mov Cap-2 Maneuver	59	96	-	73	96	-	-	-	-	-	-	-
Stage 1	612	587	-	212	244	-	-	-	-	-	-	-
Stage 2	167	243	-	599	586	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	44.6	35.2	0	0.2
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1158	-	-	104	165	564	-	-
HCM Lane V/C Ratio	0.004	-	-	0.128	0.283	0.01	-	-
HCM Control Delay (s)	8.1	0	-	44.6	35.2	11.4	0	-
HCM Lane LOS	A	A	-	E	E	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	1.1	0	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	4	4	4	4	16	4	536	4	21	1043	15
Future Vol, veh/h	4	4	4	4	4	16	4	536	4	21	1043	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	4	4	4	18	4	596	4	23	1159	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1831	1822	1168	1824	1828	598	1176	0	0	600	0	0
Stage 1	1214	1214	-	606	606	-	-	-	-	-	-	-
Stage 2	617	608	-	1218	1222	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	59	77	235	59	77	502	594	-	-	977	-	-
Stage 1	222	254	-	484	487	-	-	-	-	-	-	-
Stage 2	477	486	-	221	252	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	51	71	235	52	71	502	594	-	-	977	-	-
Mov Cap-2 Maneuver	51	71	-	52	71	-	-	-	-	-	-	-
Stage 1	220	237	-	479	482	-	-	-	-	-	-	-
Stage 2	451	481	-	198	235	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	59.6	35.3	0.1	0.2
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	594	-	-	79	145	977	-	-
HCM Lane V/C Ratio	0.007	-	-	0.169	0.184	0.024	-	-
HCM Control Delay (s)	11.1	0	-	59.6	35.3	8.8	0	-
HCM Lane LOS	B	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	4	4	4	4	37	4	1264	4	5	406	7
Future Vol, veh/h	4	4	4	4	4	37	4	1264	4	5	406	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	4	4	4	41	4	1404	4	6	451	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1904	1883	455	1885	1885	1406	459	0	0	1408	0	0
Stage 1	467	467	-	1414	1414	-	-	-	-	-	-	-
Stage 2	1437	1416	-	471	471	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	52	71	605	54	71	171	1102	-	-	485	-	-
Stage 1	576	562	-	171	204	-	-	-	-	-	-	-
Stage 2	166	203	-	573	560	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	37	69	605	50	69	171	1102	-	-	485	-	-
Mov Cap-2 Maneuver	37	69	-	50	69	-	-	-	-	-	-	-
Stage 1	566	552	-	168	201	-	-	-	-	-	-	-
Stage 2	121	200	-	555	550	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	69.3	50.7	0	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1102	-	-	69	127	485	-	-
HCM Lane V/C Ratio	0.004	-	-	0.193	0.394	0.011	-	-
HCM Control Delay (s)	8.3	0	-	69.3	50.7	12.5	0	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	1.7	0	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	4	4	4	4	17	4	621	4	23	1200	16
Future Vol, veh/h	4	4	4	4	4	17	4	621	4	23	1200	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	4	4	4	19	4	690	4	26	1333	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2106	2096	1342	2098	2103	692	1351	0	0	694	0	0
Stage 1	1394	1394	-	700	700	-	-	-	-	-	-	-
Stage 2	712	702	-	1398	1403	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	37	52	186	38	52	444	509	-	-	901	-	-
Stage 1	175	208	-	430	441	-	-	-	-	-	-	-
Stage 2	423	440	-	174	206	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	30	45	186	31	45	444	509	-	-	901	-	-
Mov Cap-2 Maneuver	30	45	-	31	45	-	-	-	-	-	-	-
Stage 1	173	184	-	424	435	-	-	-	-	-	-	-
Stage 2	396	434	-	146	182	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	104	55.7	0.1	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	509	-	-	49	98	901	-	-
HCM Lane V/C Ratio	0.009	-	-	0.272	0.283	0.028	-	-
HCM Control Delay (s)	12.1	0	-	104	55.7	9.1	0	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.9	1.1	0.1	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	4	4	4	4	4	37	4	1279	4	5	410	7
Future Vol, veh/h	4	4	4	4	4	37	4	1279	4	5	410	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	4	4	4	41	4	1421	4	6	456	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1926	1905	460	1907	1907	1423	464	0	0	1425	0	0
Stage 1	472	472	-	1431	1431	-	-	-	-	-	-	-
Stage 2	1454	1433	-	476	476	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	50	69	601	52	68	167	1097	-	-	477	-	-
Stage 1	573	559	-	167	200	-	-	-	-	-	-	-
Stage 2	162	200	-	570	557	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	35	67	601	48	66	167	1097	-	-	477	-	-
Mov Cap-2 Maneuver	35	67	-	48	66	-	-	-	-	-	-	-
Stage 1	563	549	-	164	196	-	-	-	-	-	-	-
Stage 2	117	196	-	552	548	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	72.9	53	0	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1097	-	-	66	123	477	-	-
HCM Lane V/C Ratio	0.004	-	-	0.202	0.407	0.012	-	-
HCM Control Delay (s)	8.3	0	-	72.9	53	12.6	0	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	1.7	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	4	4	4	4	17	4	631	4	23	1216	16
Future Vol, veh/h	4	4	4	4	4	17	4	631	4	23	1216	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	4	4	4	19	4	701	4	26	1351	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2135	2125	1360	2127	2132	703	1369	0	0	705	0	0
Stage 1	1412	1412	-	711	711	-	-	-	-	-	-	-
Stage 2	723	713	-	1416	1421	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	36	50	182	36	49	438	501	-	-	893	-	-
Stage 1	171	204	-	424	436	-	-	-	-	-	-	-
Stage 2	417	435	-	170	202	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	28	43	182	29	42	438	501	-	-	893	-	-
Mov Cap-2 Maneuver	28	43	-	29	42	-	-	-	-	-	-	-
Stage 1	169	179	-	418	430	-	-	-	-	-	-	-
Stage 2	390	429	-	142	177	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	109.5	60.2	0.1	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	501	-	-	47	92	893	-	-
HCM Lane V/C Ratio	0.009	-	-	0.284	0.302	0.029	-	-
HCM Control Delay (s)	12.2	0	-	109.5	60.2	9.2	0	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1	1.1	0.1	-	-

POOLE ROAD

&

WATER ROCK WAY / RUTLEDGE LANDING DRIVE

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	84	9	7	217	13	38	4	20	23	4	20
Future Vol, veh/h	8	84	9	7	217	13	38	4	20	23	4	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	93	10	8	241	14	42	4	22	26	4	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	255	0	0	103	0	0	393	387	98	393	385	248
Stage 1	-	-	-	-	-	-	116	116	-	264	264	-
Stage 2	-	-	-	-	-	-	277	271	-	129	121	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1310	-	-	1489	-	-	566	547	958	566	549	791
Stage 1	-	-	-	-	-	-	889	800	-	741	690	-
Stage 2	-	-	-	-	-	-	729	685	-	875	796	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1310	-	-	1489	-	-	542	540	958	544	542	791
Mov Cap-2 Maneuver	-	-	-	-	-	-	542	540	-	544	542	-
Stage 1	-	-	-	-	-	-	883	794	-	736	687	-
Stage 2	-	-	-	-	-	-	700	682	-	844	790	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.2	11.4	11.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	630	1310	-	-	1489	-	-	627
HCM Lane V/C Ratio	0.109	0.007	-	-	0.005	-	-	0.083
HCM Control Delay (s)	11.4	7.8	-	-	7.4	-	-	11.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	247	38	14	94	25	12	4	17	16	4	20
Future Vol, veh/h	24	247	38	14	94	25	12	4	17	16	4	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	274	42	16	104	28	13	4	19	18	4	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	132	0	0	316	0	0	512	513	295	511	520	118
Stage 1	-	-	-	-	-	-	349	349	-	150	150	-
Stage 2	-	-	-	-	-	-	163	164	-	361	370	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1453	-	-	1244	-	-	472	465	744	473	461	934
Stage 1	-	-	-	-	-	-	667	633	-	853	773	-
Stage 2	-	-	-	-	-	-	839	762	-	657	620	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1453	-	-	1244	-	-	447	450	744	447	446	934
Mov Cap-2 Maneuver	-	-	-	-	-	-	447	450	-	447	446	-
Stage 1	-	-	-	-	-	-	654	621	-	837	763	-
Stage 2	-	-	-	-	-	-	804	752	-	624	608	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.8	11.8	11.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	563	1453	-	-	1244	-	-	604
HCM Lane V/C Ratio	0.065	0.018	-	-	0.013	-	-	0.074
HCM Control Delay (s)	11.8	7.5	-	-	7.9	-	-	11.4
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	92	10	8	237	20	42	4	22	43	4	36
Future Vol, veh/h	13	92	10	8	237	20	42	4	22	43	4	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	102	11	9	263	22	47	4	24	48	4	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	285	0	0	113	0	0	450	439	108	442	433	274
Stage 1	-	-	-	-	-	-	136	136	-	292	292	-
Stage 2	-	-	-	-	-	-	314	303	-	150	141	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1277	-	-	1476	-	-	519	512	946	526	516	765
Stage 1	-	-	-	-	-	-	867	784	-	716	671	-
Stage 2	-	-	-	-	-	-	697	664	-	853	780	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1277	-	-	1476	-	-	482	503	946	502	507	765
Mov Cap-2 Maneuver	-	-	-	-	-	-	482	503	-	502	507	-
Stage 1	-	-	-	-	-	-	857	775	-	708	667	-
Stage 2	-	-	-	-	-	-	652	660	-	817	771	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.2	12.2	12.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	575	1277	-	-	1476	-	-	590
HCM Lane V/C Ratio	0.131	0.011	-	-	0.006	-	-	0.156
HCM Control Delay (s)	12.2	7.9	-	-	7.5	-	-	12.2
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	270	42	15	103	47	13	4	19	29	4	31
Future Vol, veh/h	41	270	42	15	103	47	13	4	19	29	4	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	46	300	47	17	114	52	14	4	21	32	4	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	166	0	0	347	0	0	609	616	324	602	613	140
Stage 1	-	-	-	-	-	-	416	416	-	174	174	-
Stage 2	-	-	-	-	-	-	193	200	-	428	439	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1412	-	-	1212	-	-	407	406	717	412	408	908
Stage 1	-	-	-	-	-	-	614	592	-	828	755	-
Stage 2	-	-	-	-	-	-	809	736	-	605	578	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1412	-	-	1212	-	-	374	387	717	382	389	908
Mov Cap-2 Maneuver	-	-	-	-	-	-	374	387	-	382	389	-
Stage 1	-	-	-	-	-	-	594	572	-	801	744	-
Stage 2	-	-	-	-	-	-	763	726	-	564	559	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.7	12.8	12.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	503	1412	-	-	1212	-	-	532
HCM Lane V/C Ratio	0.08	0.032	-	-	0.014	-	-	0.134
HCM Control Delay (s)	12.8	7.6	-	-	8	-	-	12.8
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	92	10	8	237	22	42	4	22	48	4	40
Future Vol, veh/h	14	92	10	8	237	22	42	4	22	48	4	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	102	11	9	263	24	47	4	24	53	4	44

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	287	0	0	113	0	0	457	445	108	447	438	275
Stage 1	-	-	-	-	-	-	140	140	-	293	293	-
Stage 2	-	-	-	-	-	-	317	305	-	154	145	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1275	-	-	1476	-	-	514	508	946	522	512	764
Stage 1	-	-	-	-	-	-	863	781	-	715	670	-
Stage 2	-	-	-	-	-	-	694	662	-	848	777	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1275	-	-	1476	-	-	474	498	946	498	502	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	474	498	-	498	502	-
Stage 1	-	-	-	-	-	-	852	771	-	706	666	-
Stage 2	-	-	-	-	-	-	645	658	-	811	767	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.2	12.3	12.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	567	1275	-	-	1476	-	-	587
HCM Lane V/C Ratio	0.133	0.012	-	-	0.006	-	-	0.174
HCM Control Delay (s)	12.3	7.9	-	-	7.5	-	-	12.4
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	270	42	15	103	52	13	4	19	32	4	33
Future Vol, veh/h	45	270	42	15	103	52	13	4	19	32	4	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	300	47	17	114	58	14	4	21	36	4	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	172	0	0	347	0	0	622	630	324	613	624	143
Stage 1	-	-	-	-	-	-	424	424	-	177	177	-
Stage 2	-	-	-	-	-	-	198	206	-	436	447	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1405	-	-	1212	-	-	399	399	717	405	402	905
Stage 1	-	-	-	-	-	-	608	587	-	825	753	-
Stage 2	-	-	-	-	-	-	804	731	-	599	573	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1405	-	-	1212	-	-	365	379	717	375	382	905
Mov Cap-2 Maneuver	-	-	-	-	-	-	365	379	-	375	382	-
Stage 1	-	-	-	-	-	-	586	566	-	795	742	-
Stage 2	-	-	-	-	-	-	756	721	-	556	552	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.7	12.9	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	495	1405	-	-	1212	-	-	522
HCM Lane V/C Ratio	0.081	0.036	-	-	0.014	-	-	0.147
HCM Control Delay (s)	12.9	7.7	-	-	8	-	-	13.1
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.5