

HUGHES DEVELOPMENT LLC

Petition for Zoning Map Amendment
Wake County, North Carolina

Case No. PLG-RZ-001350-2019

Revised Submittal: March 12, 2021
Updated: April 7, 2021
April 23, 2021

Prepared for:

Hughes Development LLC
901-F Paverstone Drive
Raleigh NC 27615

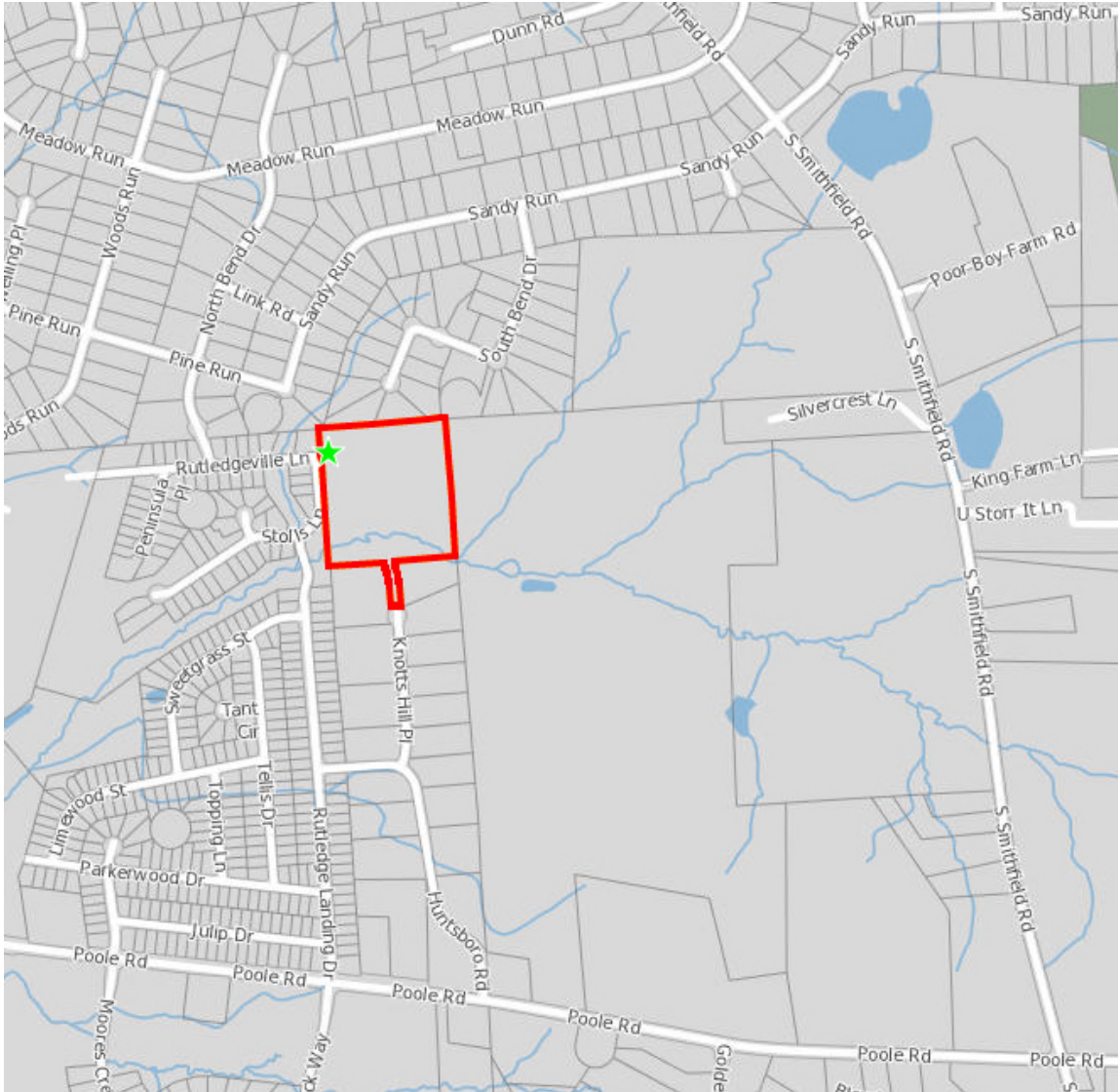
Prepared by:

Andrew Petesch
Petesch Law
127 W. Hargett Street, Suite 500
Raleigh, NC 27601
(919) 747-8611
andy@peteschlaw.com

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Location & Vicinity Map

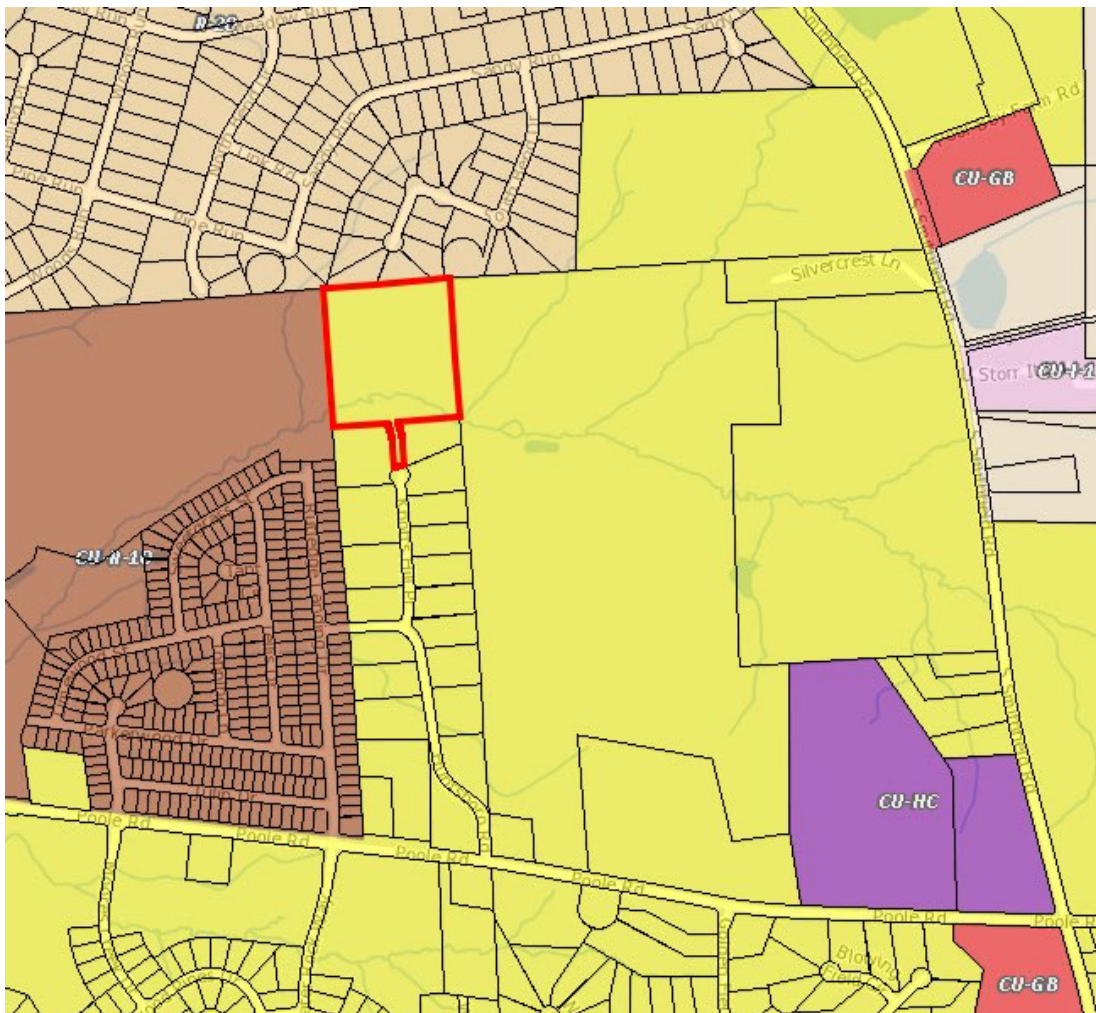


The subject property, highlighted in red above, is an undeveloped parcel created as part of the Huntsboro subdivision circa 1998. At that time, access was only available from the south via Knotts Hill Place, which would require crossing a USGS stream. An alternate plan for access to and development of the subject parcel would allow preservation of environmentally sensitive land on both sides of the stream as open space.

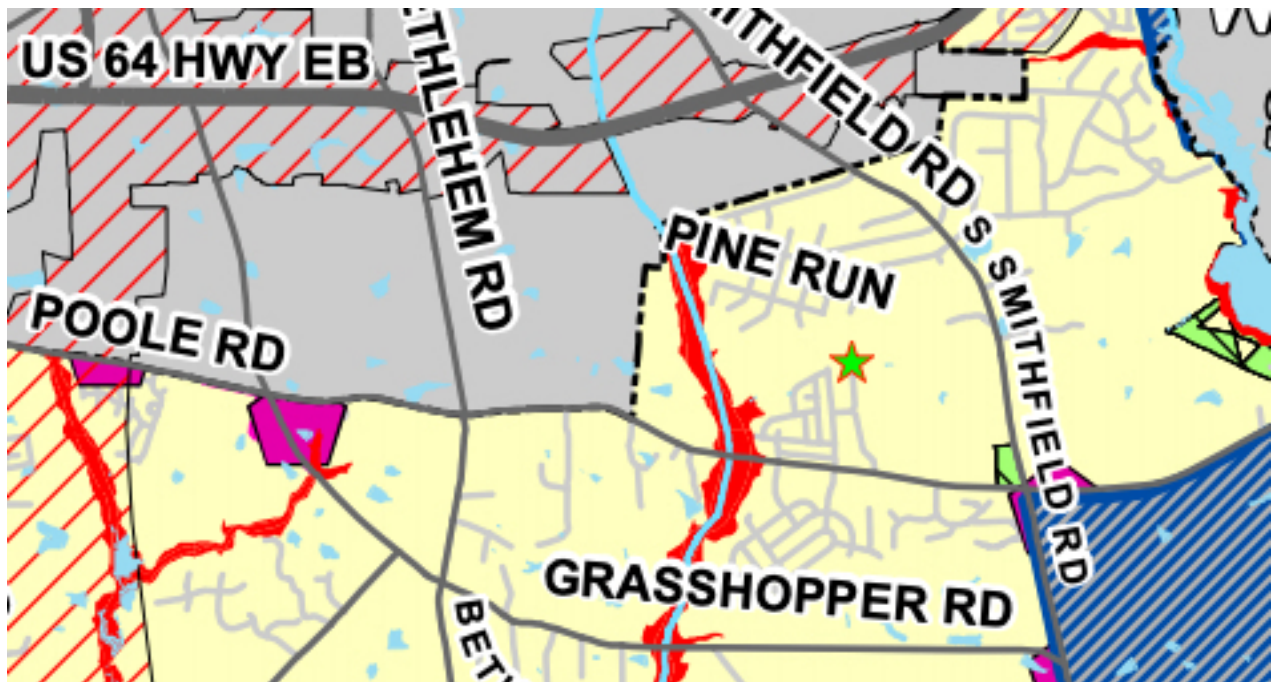
Rutledge Landing Subdivision Phase 3 to the immediate west of the subject property provides new connectivity to the subject parcel via Rutledgeville Lane (indicated by green star in the map above). This would provide ingress and egress through both the Ashley Hills subdivision to the north and through the Rutledge Landing subdivision to the south. Ashley Hills provides close access to Pine Run and Sandy Run, both designated as collector streets on the Wake County Collector Street Plan, which feed Smithfield Road. Rutledge Landing provides close access to Rutledge Landing Drive, which feeds into Poole Road.

Project Data

PIN:	1763007038
Property Address:	900 Knotts Hill Place, Knightdale NC 27545-8112
Property Size:	10.08± acres
Property Status:	Vacant – Wooded
Current Zoning Designation:	Residential-30 (R-30)
Proposed Zoning Designation:	Conditional Use-Residential-10 (CU-R-10)
Existing Area Zoning:	
• North Area:	Residential-20 (R-20)
• West Area:	Conditional Use-Residential-10 (CU-R-10)
• East Area:	Residential-30 (R-30)
• South Area:	Residential-30 (R-30)

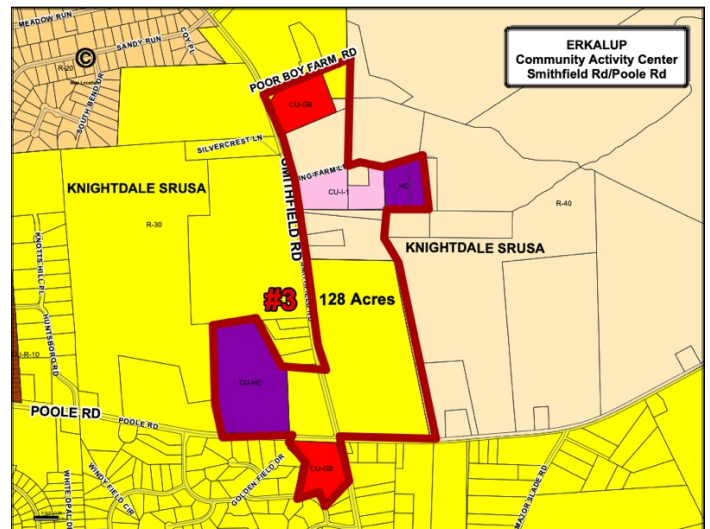


Area Land Use Plan:	East Raleigh / Knightdale
Short Range Planning Area:	Knightdale
Current Land Use Plan Designation:	Residential (Less Than 1.5 Units Per Acre)
Proposed Land Use Plan Designation:	Residential (1.5 to 4 Units Per Acre)
Land Use Plan Amendment Petition:	PLG-LUPA-002583-2020



Excerpt of the relevant section of Wake County's East Raleigh-Knightdale Area Land Use Plan showing this area designated as Residential less than 1.5 dwelling units per acre. The subject property is shown with the green star.

The Petitioner seeks to maintain a Residential land use designation, but one that allows up to four (4) dwelling units per acre, rather than the current maximum of 1.5 units per acre. Such an amendment to the Land Use Plan and associated maps would increase the Subject Property's compatibility with the current zoning designations and developments to the North and West. See Existing Area Zoning Map supra. The Subject Property is located approximately 0.9 miles from the intersection of Smithfield Road and Poole Road, which is the hub of a LUP Community Activity Center. See East Raleigh-Knightdale Area Land Use Plan (ERKALUP) Map.



Rezoning Petition Narrative

How is this proposed use a public necessity?

The subject ten (10±) acre parcel was originally part of the Huntsboro Subdivision, but was left undeveloped (i.e. reserved by the owner) in large part due to feasibility challenges of crossing an environmentally sensitive stream area (e.g. Neuse River stream buffers, flood hazard soils, and steeper slopes) on the southern portion of the property. The proposed rezoning from Residential-30 (R-30) to Residential-10 (R-10) would allow for the construction of up to 26 additional single-family homes (i.e. 40 versus 14 homes). Housing is generally accepted as a public necessity.

The Wake County Land Use Plan (LUP), when adopted many years ago, projected that the County population would exceed one million people by 2027. (LUP p. I.1). The North Carolina State Demographer Office's current population estimate for Wake County as of July 2020 was 1,109,883. That Office's projection for July 2025 is 1,217,614 – demonstrating that continued strong growth and population increase is expected. Therefore, in addition to housing being a public necessity, there is an ongoing market need for housing in Wake County.

What is the impact on adjacent properties and the surrounding neighborhood?

The Subject Parcel is currently zoned R-30, and this rezoning petition requests a change in the base zoning district to R-10. The Wake County Unified Development Ordinance (UDO) Use Table shows that the permitted uses in both zoning districts are identical, with the only difference being the allowed density for single-family detached dwellings. In addition, the setbacks and vegetative buffers required around the perimeter of the proposed subdivision are essentially identical regardless of whether it is developed under the density limits of R-30 or R-10.

The R-10 zoning would allow for up to 40 single-family homes versus a maximum of 14 under the existing R-30 zoning. While the additional homes would lead to additional traffic on the area road network, it is well below what is required to trigger a formal Traffic Impact Analysis ("TIA"). Even though a formal TIA is not required, the Wake County Planning Staff required a detailed Traffic Assessment Statement, which was prepared by the engineering firm Ramey Kemp Associates. After performing a thorough analysis, the traffic engineer concluded that the increased traffic associated with an R-10 zoning designation and a proposed 40-parcel residential subdivision is expected to have minimal impact on key intersections in the area. Residential development of the Subject Property under a R-10 designation is not predicted to adversely affect the level of service of the roadways and intersections studied, even accounting for annual background traffic growth and the addition of the future traffic from Rutledge Landing Phases 3 and 4.

Connection to existing and underutilized community water and sewer service with sufficient capacity for a 40-lot residential subdivision mitigates any potential adverse impacts to the water quality, water pressure, and wastewater treatment of neighboring residential properties. These systems, which currently serve the adjacent Rutledge Landing subdivision, are permitted by the State of North Carolina and are operated and maintained by Carolina Water Service of North Carolina.

Petitioner has held multiple meetings with neighboring residents. A summary of those meetings is attached as Exhibit A.

How does the proposed use benefit the adjacent and surrounding properties?

An increase in density under a R-10 zoning designation allows for subdivision development that connects to Phase 3 of the Rutledge Landing subdivision, which also has a R-10 base zoning. With a street connection via Rutledgeville Lane, the Petitioner is able to offer a condition that prohibits access through the Huntsboro Subdivision to the south. This change in access allows for the preservation of a natural area, which includes a USGS stream and ensures that area can be designated as open space and will not be disturbed.

Development of a small subdivision on the subject property would extend Rutledgeville Lane across the parcel to the large vacant tracts between this property and Smithfield Road, which will provide future street connectivity on the east side of the Subject Property and support growth of the nearby Smithfield Rd / Poole Rd Community Activity Center. Interconnected roadways generally result in more efficient movement of traffic, especially for school buses, trash pick-up, delivery vehicles, dispersion of traffic, and emergency response vehicles, although these benefits may not be fully realized until the properties to the east are developed. If the subject property were developed pursuant to its current zoning designation and as a single parcel, this connectivity link could not exist.

Statement of How the Rezoning Complies with the Land Use Plan

This Rezoning Petition is accompanied by a Land Use Plan Amendment Petition requesting a change to Residential (1.5 to 4 Units Per Acre). Although the Subject Property was designated as Residential Less Than 1.5 Units Per Acre when the East Raleigh/Knightdale Area Land Use Plan map was created, the type of growth in the vicinity of the Subject Property makes an amendment to the ERKALUP map reasonable, appropriate, and – on balance – compatible with the Wake County Land Use Plan. Additionally, the LUP envisions the County as

an outstanding community of urban and rural areas, where the demand for quality and affordable growth is met, economic development and opportunity is enhanced, environmental quality and cultural heritage are maintained, and all of these objectives are balanced with protecting the property rights of landowners.

(LUP p II.1). Plotting a path to this vision, the LUP sets out eleven goals and strategies, including:

- *To encourage growth close to municipalities, to take advantage of existing and planned infrastructure, such as transportation, water and sewer facilities.*
 - (Goal #2)
- *To encourage the development of communities which provide adequate land for anticipated demands, in a pattern which allows a mixture of uses.*
 - (Goal #3)
- *To ensure that the land use plan and transportation plan mutually support each other.*
 - (Goal #7)
- *To ensure that the County always protects the property rights of landowners.*
 - (Goal #8)

The Subject Property is within the Town of Knightdale's Short-Range Urban Services Area ("SRUSA"). The LUP established Urban Services Area classifications to define areas in the County's jurisdiction expected and intended to be urbanized in the foreseeable future, i.e. "developed at the range of urban intensities typically found in area municipalities, served by the urban facilities and services typically available in municipalities, and eventually becoming part of an adjacent municipality." (LUP p III.1). SRUSAs are most closely connected to Goal #2's call for encouraging growth close to municipalities, Goal #3's call for ensuring the availability of sufficient land zoned for short-range growth demands, and Goal #7's call for ensuring planning transportation facilities in relation to planned growth and promoting transit-oriented development. (LUP p III.3).

The proposed amendment will allow for increased residential density on a parcel that was originally reserved by the developer of the Huntsboro Subdivision ("Huntsboro"). Developed between 1994 and 1998, Huntsboro is comprised of 17 parcels, generally ranging from 1 to 2 acres and improved with single-family detached homes. The Subject Property was the 18th Huntsboro lot and located at the north end of the subdivision. It is significantly larger than the other Huntsboro lots at 10.08± acres. The requested rezoning is comparable to the adjacent existing development to the north and west.

North of the Subject Property is the Ashley Hills Subdivision ("Ashley Hills"), which was developed in the 1980s and includes over 200 lots ranging generally from .45 to .80 acres. Although Ashley Hills is designated as Residential Less Than 1.5 Units Per Acre on the ERKALU map, the subdivision is zoned R-20, which supports a density of approximately 2.1 units per acre.

West of the Subject Property is the Rutledge Landing Subdivision ("Rutledge Landing"). Rutledge Landing Phase 1 was developed around 2001, Phase 2 around 2003, and Phases 3 and 4, which are currently under construction or pending. Although Rutledge Landing is

designated as Residential Less Than 1.5 Units Per Acre on the ERKALU map, the subdivision is zoned CU-R-10, which supports a density of just over 4.0 units per acre.

East of the Subject Property is an 86.2 acre property, which is largely undeveloped. That property is designated as Residential Less Than 1.5 Units Per Acre on the ERKALU map and zoned R-30.

The Subject Property is also covered by the East Raleigh-Knightdale Area Land Use Plan. The proposed LUPA is consistent with that Plan's adopted goals including:

- #2 *Encourage growth that will take advantage of existing and planned infrastructure so that municipalities are able to provide basic public services in accordance with their adopted plans.*

The subject property will utilize existing infrastructure such as community water and sanitary sewer, which allows for increased density without imposing on public water and sewer resources. Per UDO § 12-11-1(C)(5), proposed water and wastewater systems must be designed and installed in accordance with the applicable standards of the relevant municipality (in this case the Town of Knightdale).

- #3 *Focus compact development in mixed-use activity centers that include housing, commercial services and employment opportunities designed with convenient pedestrian and vehicular access from surrounding development areas.*

The Subject Property is located approximately 0.9 miles from the intersection of Smithfield Road and Poole Road, which is the hub of a LUP Community Activity Center. Increased density in proximity to an activity center is supportive of mixed-use development and growth.

In response to Petitioner's inquiry, Knightdale Planning Staff indicated that the proposed change in allowed density would be inconsistent with the KnightdaleNext 2035 Comprehensive Plan ("2035 Comp Plan").

However, Knightdale Planning Staff also noted that the 2035 Comp Plan uses a "playbook approach" that allows for aspects of the Plan to evolve over time as conditions change. (See attached 2035 Comp Plan excerpt (Exhibit B)). Because the Subject Property is in the County's planning jurisdiction rather than Knightdale's, there is no opportunity for the Town to apply these playbook principles to the Subject Property and make a determination as to whether current conditions would actually align this rezoning request with the 2035 Comp Plan. Consequently, Planning Staff could not consider current conditions in providing their comment on Plan consistency.

Compliance with Transitional Urban Development Policies

The subject property will be served by centralized community water and sanitary sewer. Allowing for increased density will help better utilize existing water and sewer capacity without directly impacting the capacity of public water and sewer services. A letter from Carolina Water Service of North Carolina confirming capacity for up to 40 parcels adjacent to the Rutledge Landing subdivision is attached as Exhibit C. Connectivity to community water and sewer allows for the promotion of more urban intensities. Per UDO § 12-11-1(C)(5), proposed water and wastewater systems must be designed and installed in accordance with the applicable standards of the relevant municipality (in this case the Town of Knightdale).

As noted above, development of the Subject Property as a small subdivision would extend Rutledgeville Lane to the large vacant tracts between the Subject Property and Smithfield Road, which would provide future street connectivity on the east side of the Subject Property and help support growth of the nearby Smithfield Rd / Poole Rd Community Activity Center.

Statement of How Rezoning Otherwise Advances the Public Health, Safety, and General Welfare

As discussed above, given recent growth in the area, new street connectivity through Phase 3 of the Rutledge Landing subdivision, availability of community water and sewer, and identical permitted uses as is currently allowed, the requested zoning change is compatible with surrounding uses. In addition, the requested CU-R-10 rezoning would allow a cluster subdivision development that preserves the natural areas on the southern portion of the Subject Property both by the rezoning condition prohibiting access via Knotts Hill place and by designation of open space in the subdivision approval process. Not only does this prevent disturbance of a U.S.G.S. stream, but also provides a substantial buffer for the existing lower-density residential development to the south.

As noted in the next section, a very detailed Traffic Assessment Statement was prepared by Ramey Kemp Associates. Their conclusion was that the increased traffic associated with an R-10 zoning designation and proposed residential subdivision is expected to have minimal impact on key intersections in the area.

Traffic Impact Analysis Requirement: Traffic Assessment Statement

The proposed land use plan amendment does not trigger either the 100 peak hour trips or 1000 trips per day thresholds that would require the preparation of a formal traffic impact analysis. In consultation with Planning Staff, the Petitioner has attached a Traffic Assessment Statement prepared by Ramey Kemp Associates. Based on that assessment, the increased traffic associated with the proposed residential subdivision developed pursuant to an R-10 zoning designation is expected to have a minimal impact on the studied intersections.

Rezoning Petition Addendum (Miscellaneous Section)

Valuable natural features (rare plant community, wildlife habitat, lake, stream, geology, etc.) on or adjoining site:

A USGS perennial stream runs from east to west across the southern portion of the Subject Property. There are 50-foot Neuse River buffers on either side of this perennial stream as well as Wake County flood hazard soils. Environmentally sensitive areas will be protected in accordance with the provisions of the Wake County UDO and other applicable State laws. Amending the LUP to allow higher residential density will allow development of a cluster subdivision whereby the environmentally sensitive areas associated with the perennial stream will be preserved and protected in their natural state. Additionally, the steeper slopes dropping down to the stream are heavily wooded and would serve as a natural buffer/screen between such development and the lower-density Huntsboro subdivision to the south.

There are no known existing rare plants or wildlife habitats that will be adversely impacted by the proposed map amendment.

**Hughes Development LLC
Rezoning Case No. ZP-900-19**

Neighborhood Meeting Summaries

I. 2019 Neighborhood Meeting

A neighborhood meeting was held on Thursday, March 21, 2019 from 5:30pm to 7:30pm at the Marsh Creek Park Community Center, 3050 N New Hope Road. The following members of the applicant team were present:

Richard Stockett, Principal, Hughes Development LLC
Andy Petesch, Attorney, Petesch Law
James McConnell, Spanish Interpreter, N.C. State University

An estimated 40-50 people attended the March 21, 2019 neighbor meeting. The following people signed the attendance sheets (attached hereto):

- | | |
|----------------------------|------------------|
| • Lisa Wynn Newbanks | • Deborah Veale |
| • Robert Newbanks | • Richie Savage |
| • Anonymous (Huntsboro Rd) | • Michael Little |
| • Krais | • Ida Little |
| • Dustin Worley | • Roque Montano |
| • Amy Worley | • Maria Montano |
| • Chris Koch | • Tommy Gresham |
| • Pat Koch | • Dawn Zuccarini |
| • Shirley M Smith | • Art Threatt |
| • Vance Smith, Jr. | • Suzanne Mealy |
| • Tony C. Veale | • Bryan Morgan |

Mr. Petesch began the meeting by orienting the group to the subject property and providing an overview of the proposed rezoning.

The group asked a variety of questions focused on the following topics:

- Subdivision access through Huntsboro Subdivision
- Safety & Crime Issues
- Screening & Buffer on South Boundary
- Covenants
- Traffic from Rutledge Landing through Huntsboro Subdivision

There was discussion about the process for rezoning approvals, including Planning Board meeting and public hearing before the Board of Commissioners.

Mr. Petesch and Mr. Stockett offered to remain in contact with attendees, reminding them that the letter from Mr. Petesch included his contact information.

II. 2020 Neighborhood Meetings

Hughes Development held a second set of neighbor meetings on October 19, 20, and 21, 2020. Due to the pandemic, these meetings were held by video conference on Zoom. A telephone call-in number was also provided. The notice and invitation letter were sent to approximately 400 area property owners. Given the number of invitees, meetings were generally divided by adjacent neighborhood to more efficiently address respective concerns.

A. The first neighborhood meeting was held on Monday, October 19, 2020 from 7:00pm to 8:00pm. The following members of the applicant team were present at each meeting:

Richard Stockett, Principal, Hughes Development LLC
Andy Petesch, Attorney, Petesch Law

Approximately 10 people attended the October 19, 2020 neighbor meeting, including but not limited to:

- Dawn Zuccarini
- Art Threat
- Melanie Hall

Mr. Petesch began the meeting by updating the attendees on the Petitioner's rezoning request since the last meeting and providing an overview of the proposed rezoning.

Attendee questions focused on the following topics:

- Subdivision access through Huntsboro Subdivision
- Screening & Buffer on South Boundary
- Covenants
- Procedural aspects of rezoning process

There was discussion about the process for rezoning approvals, including Planning Board meeting and public hearing before the Board of Commissioners.

Mr. Petesch and Mr. Stockett offered to remain in contact with attendees, reminding them that the letter from Mr. Petesch included his contact information.

B. The second neighborhood meeting was held on Tuesday, October 20, 2020 from 7:00pm to 8:00pm. The following members of the applicant team were present at each meeting:

Richard Stockett, Principal, Hughes Development LLC
Andy Petesch, Attorney, Petesch Law

Approximately 6-8 people attended the October 20, 2020 neighbor meeting, including but not limited to:

- Bonnie Hart
- Kathie Watkins
- Phyllis Fairley-Keating
- Marniece Bryant

Mr. Petesch began the meeting by updating the attendees on the Petitioner's rezoning request since the last meeting and providing an overview of the proposed rezoning.

Attendee questions focused on the following topics:

- Relation to Rutledge Landing Subdivision
- Open space on west side of Stoll Lane
- Driveway access to Stoll Lane
- Procedural aspects of rezoning process

There was discussion about the process for rezoning approvals, including Planning Board meeting and public hearing before the Board of Commissioners.

Mr. Petesch and Mr. Stockett offered to remain in contact with attendees, reminding them that the letter from Mr. Petesch included his contact information.

C. The third neighborhood meeting was held on Wednesday, October 21, 2020 from 7:00pm to 8:00pm. The following members of the applicant team were present at each meeting:

Richard Stockett, Principal, Hughes Development LLC
Andy Petesch, Attorney, Petesch Law

Approximately 14-16 people attended the October 21, 2020 neighbor meeting, including but not limited to:

- Tanyon Rainey
- Michael Passer
- Palmer & Vickie Randall
- Patrick Lynch
- Phyllis Rush

Mr. Petesch began the meeting by updating the attendees on the Petitioner's rezoning request since the last meeting and providing an overview of the proposed rezoning.

Attendee questions focused on the following topics:

- Screening & Buffer on North Boundary
- HOA effects on Ashley Hills subdivision and property owners
- Potential zoning changes to properties within the Ashley Hills subdivision
- Traffic impacts
- Environmental impacts
- Procedural aspects of rezoning process

There was discussion about the process for rezoning approvals, including Planning Board meeting and public hearing before the Board of Commissioners.

Mr. Petesch and Mr. Stockett offered to remain in contact with attendees, reminding them that the letter from Mr. Petesch included his contact information.

D. The neighbor meeting letter noted that anyone who was not able to attend could contact Mr. Petesch by phone or email. The following property owners made inquiries by email either because they could not attend a meeting or had follow-up questions (correspondence attached):

- Sharon Andrews (obo Dustin & Amy Worley)
- Jesse Forte
- Levaisha Eley
- Patrick Lynch
- Michael Passer

III. Supporting Documents

Documents related to the neighbor meetings, including notice letters and mailing lists, have been uploaded to Permit Portal separately.

From: Andrew Petesch apetes@peteschlaw.com
Subject: Re: Proposed Rezoning - Hughes Development - Knotts Hill Place
Date: March 11, 2021 at 4:43 PM
To: Sharon Andrews sandrews@eratriangle.com



From: Sharon Andrews <sandrews@eratriangle.com>
Date: Friday, October 16, 2020 at 3:52 PM
To: Andrew Petesch <apetes@peteschlaw.com>
Cc: Dustin Worley <dustin.4seasons@gmail.com>, Amy Worley <amyworley4@gmail.com>
Subject: Re: Proposed Rezoning - Hughes Development - Knotts Hill Place

Thanks Andy for the quick response and explanation! They will have a better weekend now!!!

Thanks so much!!

Sharon Andrews,
MIRM, CSP, NC Real Estate Broker | Luxury Distinctive Properties Specialist
Relocation Specialist | Navy Federal Certified & CNAS

On Fri, Oct 16, 2020 at 3:45 PM Andrew Petesch <apetes@peteschlaw.com> wrote:

Sharon,

Thank you for your questions. The rezoning is to allow for development of single-family detached homes more compatible with (but separate from) the Rutledge Landing subdivision. It would not include townhomes, only single-family detached homes.

Also, as a condition to this request, access to the subdivision would be through the newest phase of Rutledge Landing (Rutledgeville Lane). No access would be available through Knotts Hill Place, thereby protecting both the stream that runs across the southern portion of the subject property and the character of the Huntsboro Subdivision, which is lower density. The drawing on the back of my letter shows the boundaries of the subject property, which was originally intended to be part of the Huntsboro subdivision. As such, it still includes the anticipated access to Knotts Hill Place. My client will voluntarily close that access and connect to the new Rutledgeville Lane street instead.

Please let me know if you or your family members have any other questions about the proposed rezoning or residential subdivision.

With kind regards,
Andy

Andrew J. Petesch
[Petesch Law](http://PeteschLaw.com)
127 W. Hargett St., Suite 500
Raleigh, North Carolina 27601
T: (919) 747-8611
C: (999) 818 0605

T: (800) 840-5000
E: andy@peteschlaw.com

From: Sharon Andrews <sandrews@eratriangle.com>

Date: Friday, October 16, 2020 at 3:30 PM

To: Andrew Petesch <apetes@peteschlaw.com>

Cc: Dustin Worley <dustin.4seasons@gmail.com>, Amy Worley
<amyworley4@gmail.com>

Subject: Proposed Rezoning - Hughes Development - Knotts Hill Place

Hey Andy,

I'm emailing you in response to your letter of notification of a Zoom meeting on Monday, 10/19/2020 regarding the above referenced. My daughter and son-in-law live on Huntsboro Road and they would like to know if this is trying to be rezoned to townhomes? And if so, will those residents use Huntsboro Road to access the property?

Thanks so much!!

Sharon Andrews,

MIRM, CSP, NC Real Estate Broker | Luxury Distinctive Properties Specialist
Relocation Specialist | Navy Federal Certified & CNAS

Subject: Re: Proposed rezoning meeting

Date: Wednesday, October 21, 2020 at 2:52:15 PM Eastern Daylight Time

From: Andrew Petesch <apetes@peteschlaw.com>

To: Phyllis Fairley-Keaton <itsanewday2003@hotmail.com>

Phyllis,

Thank you for participating. Please let me know if you have any questions in the future.

With kind regards,

Andy

Andrew J. Petesch

Petesch Law

127 W. Hargett St., Suite 500

Raleigh, North Carolina 27601

T: (919) 747-8611

F: (888) 848-9605

E: andy@peteschlaw.com

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From: Phyllis Fairley-Keaton <itsanewday2003@hotmail.com>

Date: Tuesday, October 20, 2020 at 7:34 PM

To: Andrew Petesch <apetes@peteschlaw.com>

Subject: Proposed rezoning meeting

Hi Mr. Petesch:

My name is Phyllis. I am a home owner in Rutledge Landing. All of my questions were answered tonight. Thank you for the information.

Kindest Regards,

Phyllis

Sent from my Verizon, Samsung Galaxy smartphone

Get [Outlook for Android](#)

Subject: Re: Proposed Rezoning

Date: Sunday, October 25, 2020 at 4:13:51 PM Eastern Daylight Time

From: Andrew Petesch <apetes@peteschlaw.com>

To: Jesse Forte <junior1forte@gmail.com>

Mr. Forte,

Thank you for contacting me with your questions. Because I am not your attorney, the NC State Bar's Rules of Professional Conduct prevent me from advising you as to how the proposed rezoning would affect your property or the Ashley Hills subdivision. I hope you understand that limitation on what I can tell you.

I can share objective information about our request. The owner of the property, Hughes Development, plans to develop that property as a small subdivision of approximately 38-40 lots, which would be consistent with the density in the Rutledge Landing subdivision. The proposed Hughes subdivision would have street access through Rutledge Landing, which avoids any disturbance of the stream that crosses the southern portion of the property.

I hope you find this helpful. Please let me know if you have any additional questions or comments.

With kind regards,
Andy

Andrew J. Petesch
[Petesch Law](#)
127 W. Hargett St., Suite 500
Raleigh, North Carolina 27601
T: (919) 747-8611
F: (888) 848-9605
E: andy@peteschlaw.com

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From: Jesse Forte <junior1forte@gmail.com>

Date: Friday, October 23, 2020 at 1:03 AM

To: Andrew Petesch <apetes@peteschlaw.com>

Subject: Proposed Rezoning

Hello Mr. Petesch,

I'm sorry I missed the virtual community meeting however; I do have a questions for you, this proposed rezoning what will this mean for me as regards to 205 Meadow Run, Knightdale, NC 27545.

The letter states that this site is currently zoned Residential-30 (R-30) and is proposed to be rezoned to conditional-Residents-10 so what does that mean? And how will it affect my property or subdivision?

So please feel free to get in contact with me

And I like to thank you for your time and consideration.

Jesse Jr. Forte
(919) 803-0783

Subject: Re: Proposed Rezoning- Knotts Hill Place
Date: Sunday, October 25, 2020 at 4:20:32 PM Eastern Daylight Time
From: Andrew Petesch <apetes@peteschlaw.com>
To: L Eley <eleyl@e@gmail.com>

Thank you for contacting me with your questions. In an abundance of caution, I'd like to start out by clarifying that because I am not your attorney, the NC State Bar's Rules of Professional Conduct prevent me from advising you as to how the proposed rezoning would affect neighboring property owner's property. I hope you understand that limitation on what I can discuss.

I can share objective information about our request. The owner of the property, Hughes Development, plans to develop that property as a small subdivision of approximately 38-40 lots, which would be consistent with the density in the Rutledge Landing subdivision. The proposed Hughes subdivision would have street access through Rutledge Landing, which avoids substantial disturbance to the stream that crosses the southern portion of the property.

One of the key results of the meeting was a discussion about what could be done to mitigate the potential impacts to those property owners in Ashley Hills that directly abut the proposed development.

I hope you find this helpful. Please let me know if you have any additional questions or comments.

With kind regards,
Andy

Andrew J. Petesch
[Petesch Law](#)
127 W. Hargett St., Suite 500
Raleigh, North Carolina 27601
T: (919) 747-8611
F: (888) 848-9605
E: andy@peteschlaw.com

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From: L Eley <eleyl@e@gmail.com>
Date: Wednesday, October 21, 2020 at 2:38 PM
To: Andrew Petesch <apetes@peteschlaw.com>
Subject: Proposed Rezoning- Knotts Hill Place

Hello,

I was unable to attend the virtual meeting held yesterday. I am inquiring about the result of the meeting and also details of the development. Please advise.

Thank you

Subject: Re: R-30 or R-20?
Date: Sunday, October 25, 2020 at 4:28:37 PM Eastern Daylight Time
From: Patrick Lynch <patricklynch1969@gmail.com>
To: Andrew Petesch <apetes@peteschlaw.com>
Attachments: image001.jpg

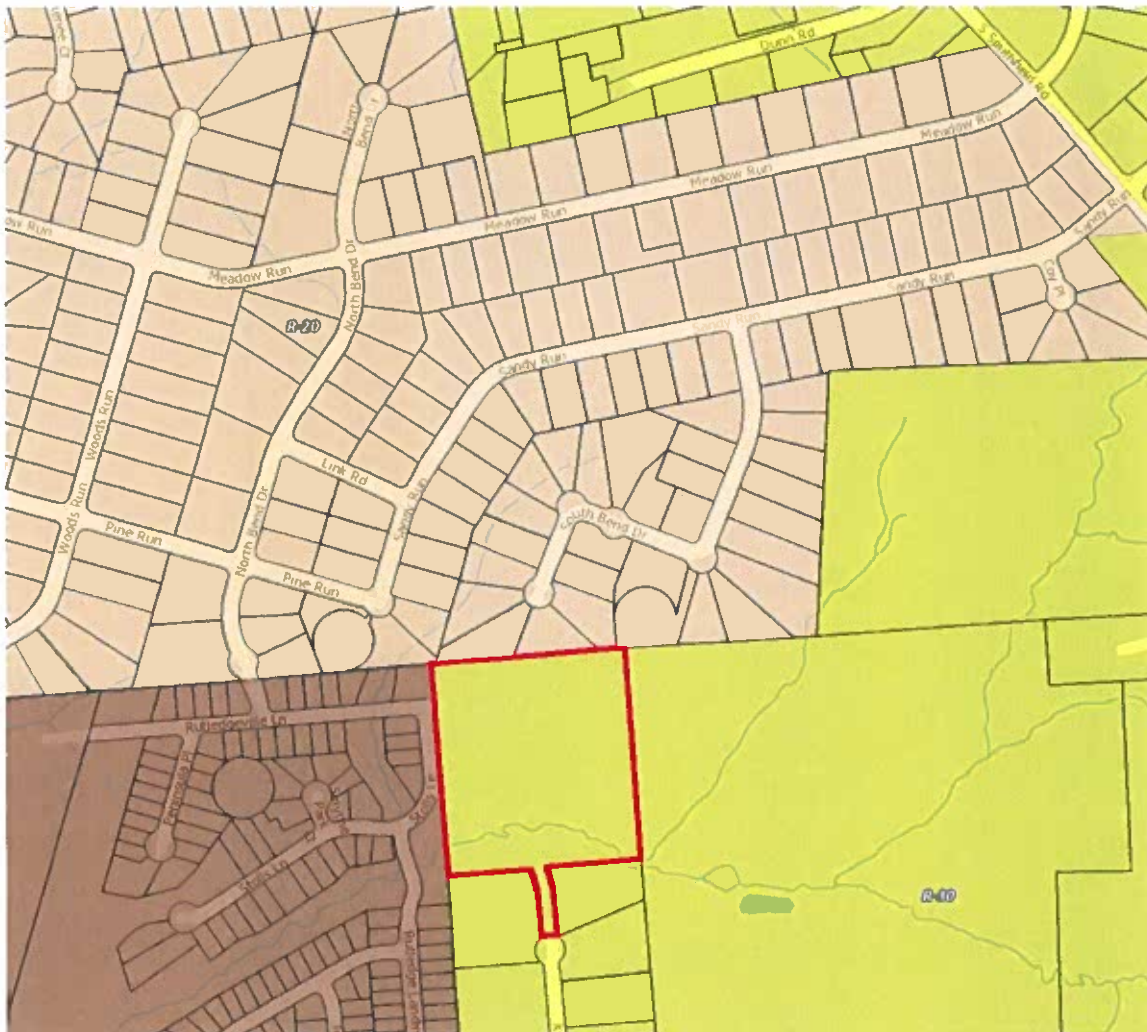
Thanks so much. Enjoy your weekend



From: Andrew Petesch <apetes@peteschlaw.com>
Sent: Sunday, October 25, 2020 4:27:11 PM
To: Patrick Lynch <patricklynch1969@gmail.com>
Subject: Re: R-30 or R-20?

Mr. Lynch,

Thank you for attending and for your follow-up questions. Wake County GIS indicates that the Ashley Hills subdivision is zoned R-20:





If the parcel highlighted in red above is rezoned from R-30 to R-10, none of the zoning designations of the surrounding properties will be changed or otherwise altered. The only zoning designation change would be to the Hughes Development property (highlighted in red).

Please let me know if you have any additional comments or questions.

With kind regards,
Andy

Andrew J. Petesch
[Petesch Law](#)
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Raleigh, North Carolina 27601
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From: Patrick Lynch <patricklynch1969@gmail.com>
Date: Thursday, October 22, 2020 at 9:40 AM
To: Andrew Petesch <apetes@peteschlaw.com>
Subject: R-30 or R-20?

Hello sir,

I'd like to thank you for how you conducted the Zoom meeting. We had to leave the meeting around 8:00 and didn't get the opportunity to ask you some questions. I'm just a bit confused and would appreciate your clarifying

Our house is on the inside of the curve, two doors to counter clockwise of the three houses sharing the border with your client.

I heard the term R-20 from yourself and one or two of the participants. I believe our current designation is R-30. Is that correct? If your client gets his parcel changed to R-10, will that impact our designation?

Thank you for your consideration.

Sincerely,

Patrick Lynch
301 S Bend Dr
Knightdale NC



Subject: Re: Proposed Rezoning Meeting

Date: Tuesday, October 27, 2020 at 3:06:59 PM Eastern Daylight Time

From: Andrew Petesch <apetes@peteschlaw.com>

To: Michael Passer <mbpasser13@gmail.com>

Michael,

Thank you for the follow-up. I will include your comments with the rezoning application updates later this week.

Sincerely,
Andy

Andrew J. Petesch

[Petesch Law](#)

127 W. Hargett St., Suite 500

Raleigh, North Carolina 27601

T: (919) 747-8611

F: (888) 848-9605

E: andy@peteschlaw.com

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From: Michael Passer <mbpasser13@gmail.com>

Date: Tuesday, October 27, 2020 at 12:28 PM

To: Andrew Petesch <apetes@peteschlaw.com>

Subject: Re: Proposed Rezoning Meeting

Hi Andy,

I am totally opposed to HOA's in general, and that is why I purchased my home in the area that I did.

I am also opposed to reducing the natural area because we do need to protect more of this area for the wildlife. This also helps provide more permeable areas for natural drainage.

I have concerns about tapping into the current water and sewage systems since these systems are already about forty years old and may become over stressed. Many systems throughout the county in this age range are breaking and causing serious damages.

Regards,
Michael

On Wed, Oct 21, 2020 at 8:20 PM Andrew Petesch <apetes@peteschlaw.com> wrote:

Michael,

Received. Thank you.

To clarify, are you saying you are opposed to HOA's in general and do not want one to be created that

would involve your property? Or do you have concerns about an HOA existing for this proposed new subdivision?

With kind regards,
Andy

Andrew J. Petesch
[Petesch Law](#)
127 W. Hargett St., Suite 500
Raleigh, North Carolina 27601
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F: (888) 848-9605
E: andy@peteschlaw.com

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From: Michael Passer <mbpasser13@gmail.com>
Date: Wednesday, October 21, 2020 at 8:07 PM
To: Andrew Petesch <apetes@peteschlaw.com>
Subject: Proposed Rezoning Meeting

Hi Andy,
I was in the Meeting and I live at 102 Dwelling PL. I do disagree with HOA's.

Sincerely,
Michael Passer

THE PLAYBOOK

Because the Town should be able to take advantage of opportunities when they present themselves, KnightdaleNext uses a ‘playbook approach’ to guiding future growth and development in the community.

Some parts of the document—things like the community vision, guiding principles, and *Growth Framework Map*—should remain constant and keep Knightdale on a focused path for success.

Other parts of the document—things like the general recommendations, focus area study recommendations, the *Growth and Conservation Map*, and other supporting infrastructure maps—may need to evolve over time as conditions change that were not contemplated at the time this document was adopted.

Any changes considered under the playbook mindset for the document should be evaluated against the community vision, guiding principles, and *Growth Framework Map* to determine if they are in the best long-term interests of the Town and its residents, businesses, and property owners.

Patience may be needed for some aspects of the plan to evolve, as it sets a long-term vision to guide growth over an extended period of time. Town officials should avoid ‘short-sighted’ decisions to modify the Plan as a playbook unless reasons to change it are supported by staff.



Carolina Water Service of North Carolina™

22 September 2019

Richard Stockett

Re: 40 Lots Adjacent to Rutledge Landing
Tax Parcels 1763350850 and 1763007038
Wake County NC

Mr. Stockett:

As you know, Carolina Water Service of NC, Inc. (CWSNC) provides sanitary sewer utility service to the area adjacent to the above referenced property. CWSNC is a franchised and regulated public utility company in the State of North Carolina.

CWSNC hereby agrees to accommodate the sanitary sewer utility needs for the referenced property under the existing permit provided that a mutually agreed upon developer agreement is executed prior to construction. The peak design flows as presented must concur with Wastewater Design Flow Rates found within 15A NCAC 02T.0114. All standard connection or other fees apply and may change from time to time as approved by the NC Utilities Commission.

As a part of any proposed development, the developer is required to perform necessary water and/or sewer system improvements to meet the needs of the proposed development and insure that the existing customers' services are not affected by proposed development. Not only do these system improvements include internal ones to the development, but external ones also, including but not limited to expansion of current lift stations and wastewater treatment facilities. The developer is required to provide a set of drawings to allow the proposed system improvements to be evaluated by CWSNC. If any systems improvements are determined necessary, the developer is notified, and these improvements must be included in the proposed development plans and constructed. All revised construction designs shall be submitted to CWSNC for review and approval. The end result is that a willingness and capability letter may be issued, but any proposed development will not be approved until all requirements as detailed above are met.

As a result of the Tax Cuts and Jobs Act of 2017 (TCJA), the exemption for water and sewer property transferred to a public utility from current year taxation has been removed from the tax code. Contributions in Aid of Construction (CIAC), whether paid in cash or in the form of contributed property, are now immediately taxable to the recipient of these contributions. The Tax Multiplier to be used to increase CIAC based on the Act is **29.836%**. To calculate the Tax Multiplier for contributed property or cash, simply multiply the transferred amount by 0.29836. This figure assumes a 21% federal tax rate and a 2.5% North Carolina state rate.

Should you have any questions, please do not hesitate to contact me directly in our Charlotte Office at 704-319-0517 or via email bryce.mendenhall@carolinawaterservicenc.com.

Sincerely,



J Bryce Mendenhall
VP of Operations

cc: Martin Scanlon, Project Manager
Dana Hill, Director of Operations



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)



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

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

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

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.

Table 4: Analysis Summary of Smithfield Road and Poole Road

ANALYSIS SCENARIO	A P P R O A C H	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.

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

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	A P P R O A C H	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

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	A P P R O A C H	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.

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.

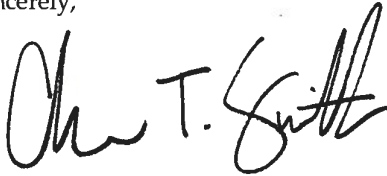
Findings and Summary

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



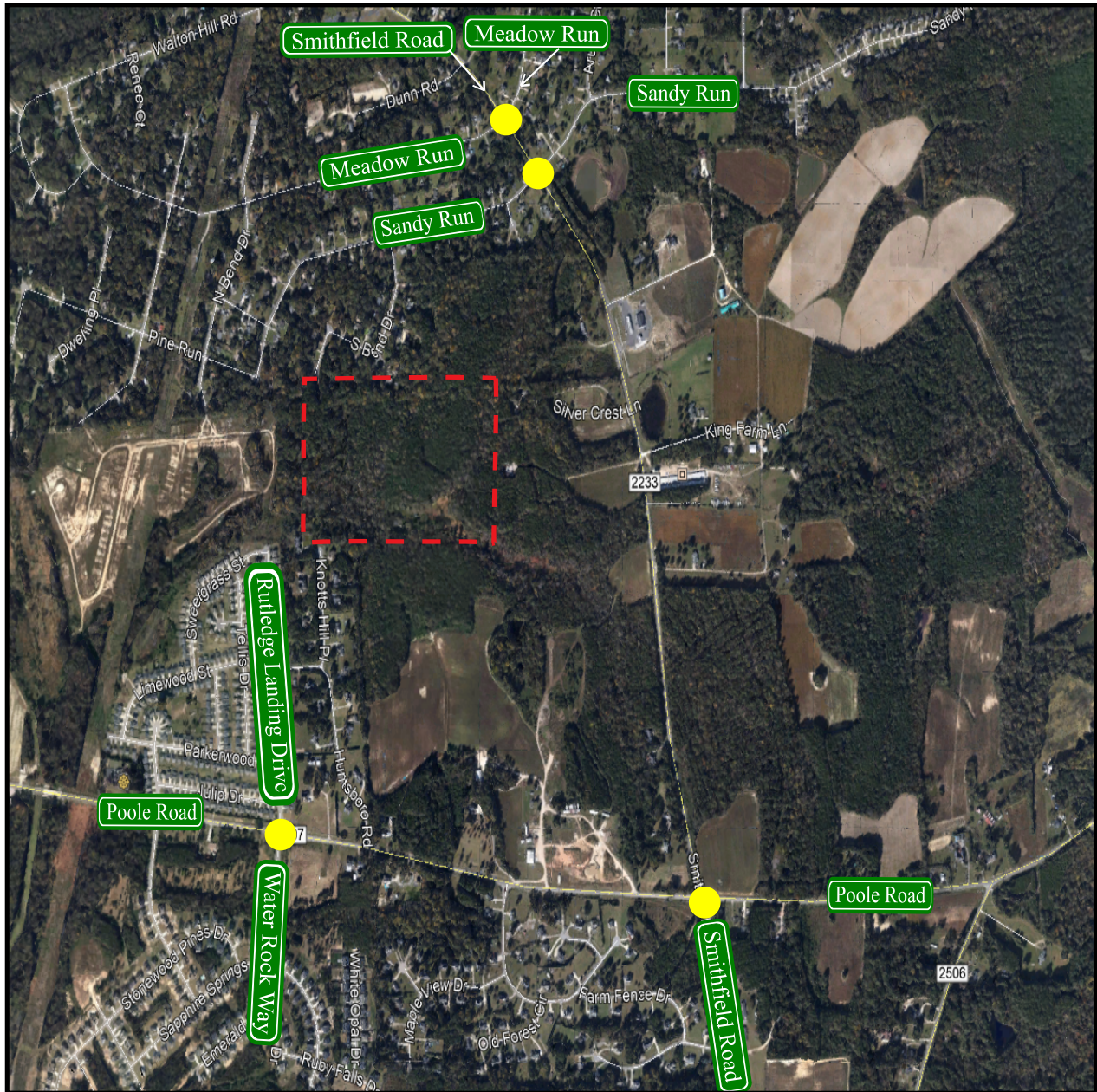
Cc: Keith Lankford, Wake County

Attachments





APPENDIX

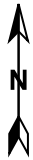
FIGURES



LEGEND

 Proposed Site Location

 Study Intersection



Moving forward.

RKA

RAMEY KEMP ASSOCIATES

Poole Road Project
Wake County, NC

Site Location Map

Scale: Not to Scale Figure 1



PLD

PEDIMENT LAND DESIGN, LLP
1000-404 1ST AVENUE NORTH
SUITE 200
FARMINGTON, CT 06030
TEL: 860.634.1100
FAX: 860.634.1101
E-MAIL: PLD@PLDDESIGN.COM

SUBDIVISION






KNOTT'S HILL PLACE
WENDELL, NORTH CAROLINA

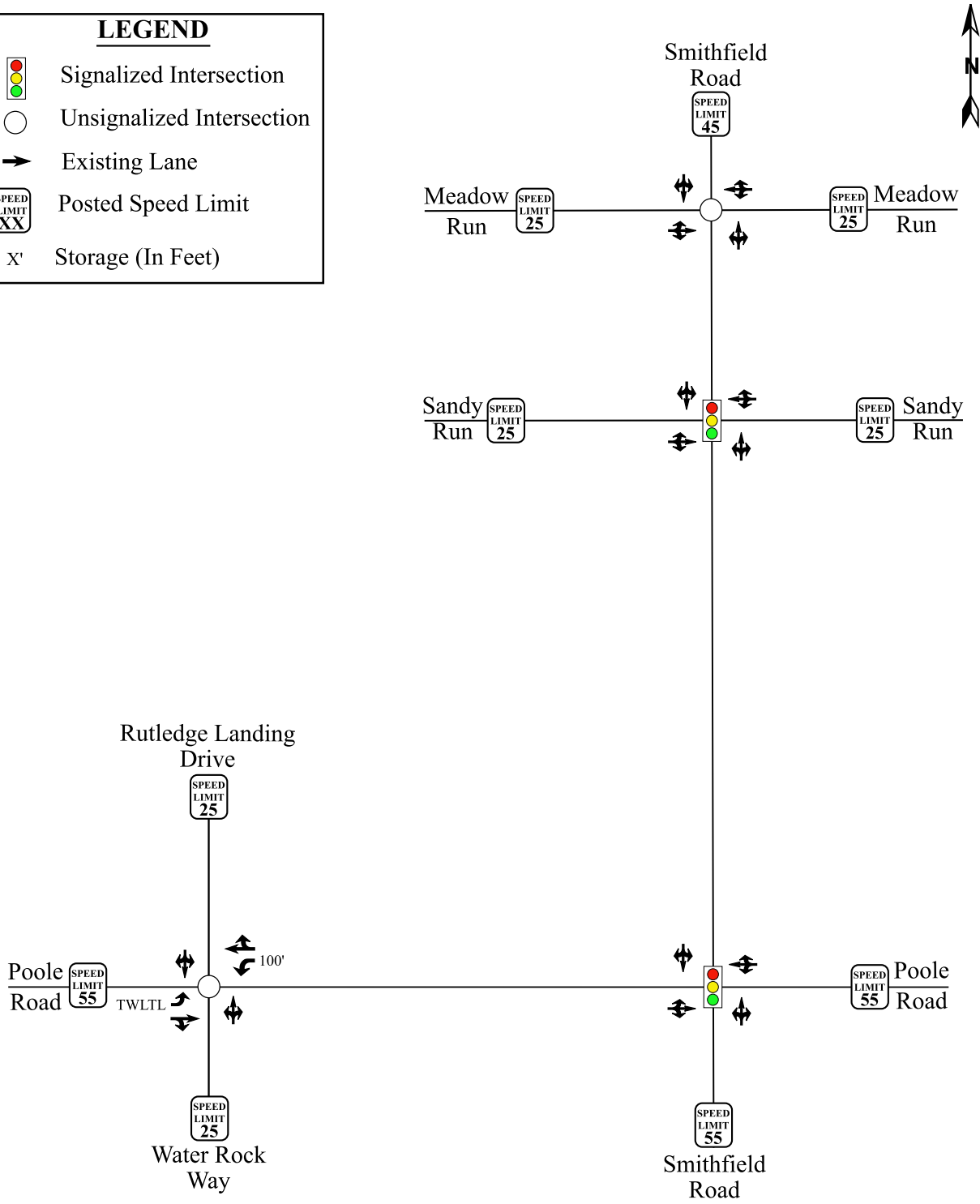
ISSUED: 24 AUG 2018

REVISIONS:

DRAWN BY: GMP
CHECKED BY: GMP
PROJECT: BSHWPS
CONCEPTUAL
SUBDIVISION
PLAN

LEGEND

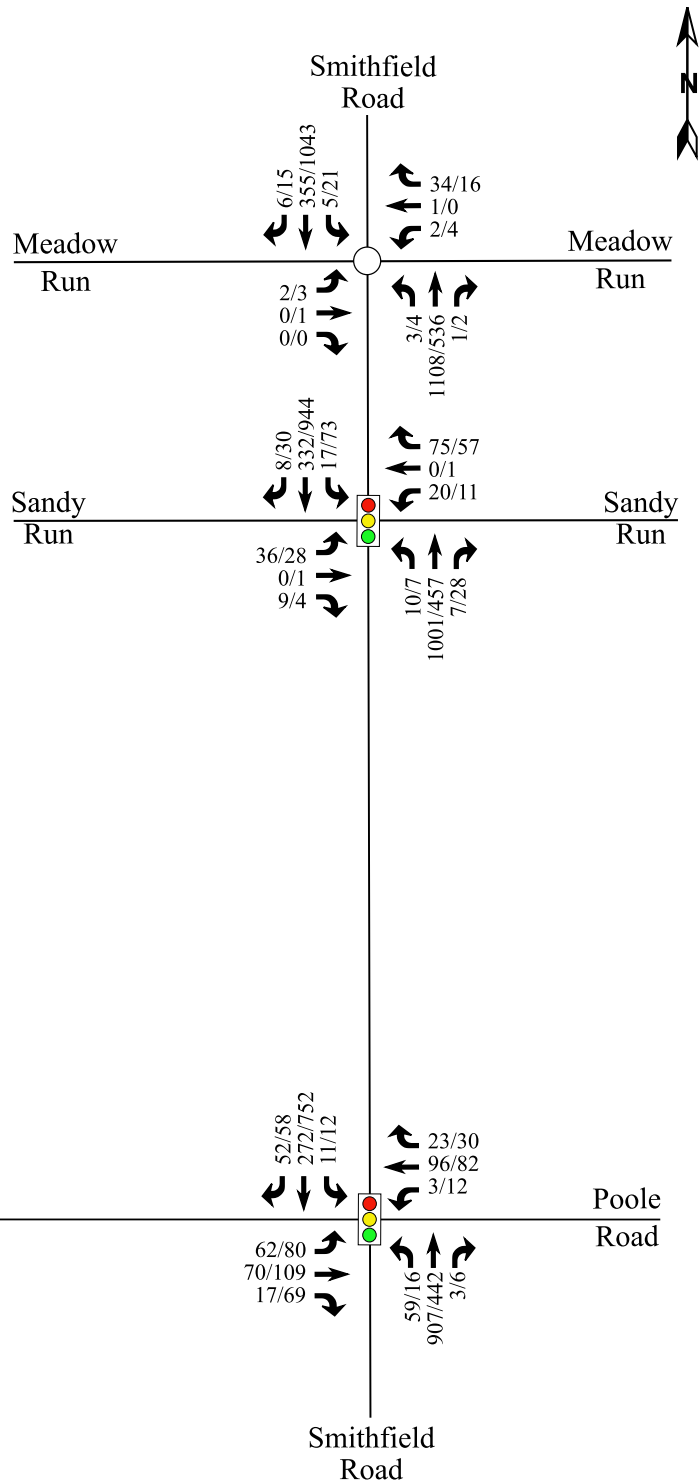
-  Signalized Intersection
-  Unsignalized Intersection
-  Existing Lane
-  Posted Speed Limit
-  Storage (In Feet)



Signalized Intersection

Unsignalized Intersection

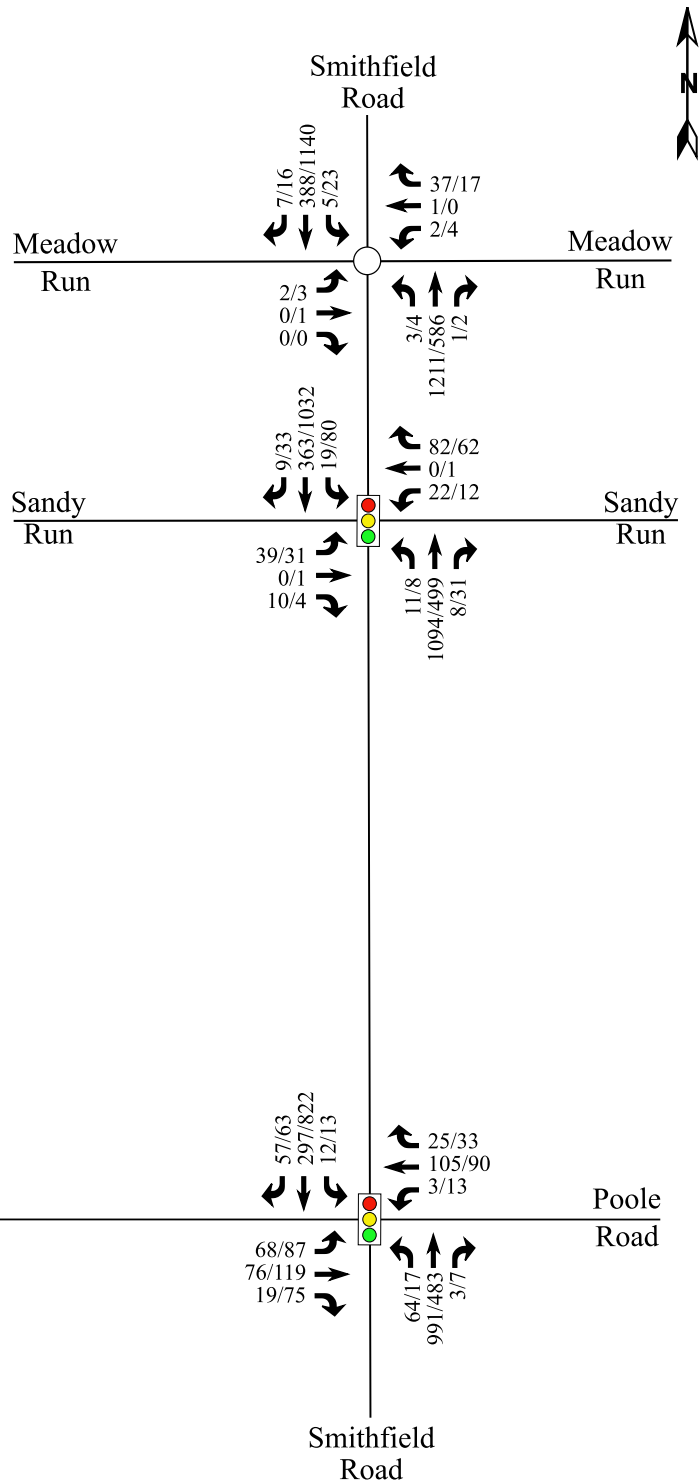
X / Y → AM / PM Peak Hour Traffic



Signalized Intersection

Unsignalized Intersection

X / Y → AM / PM Peak Hour Traffic

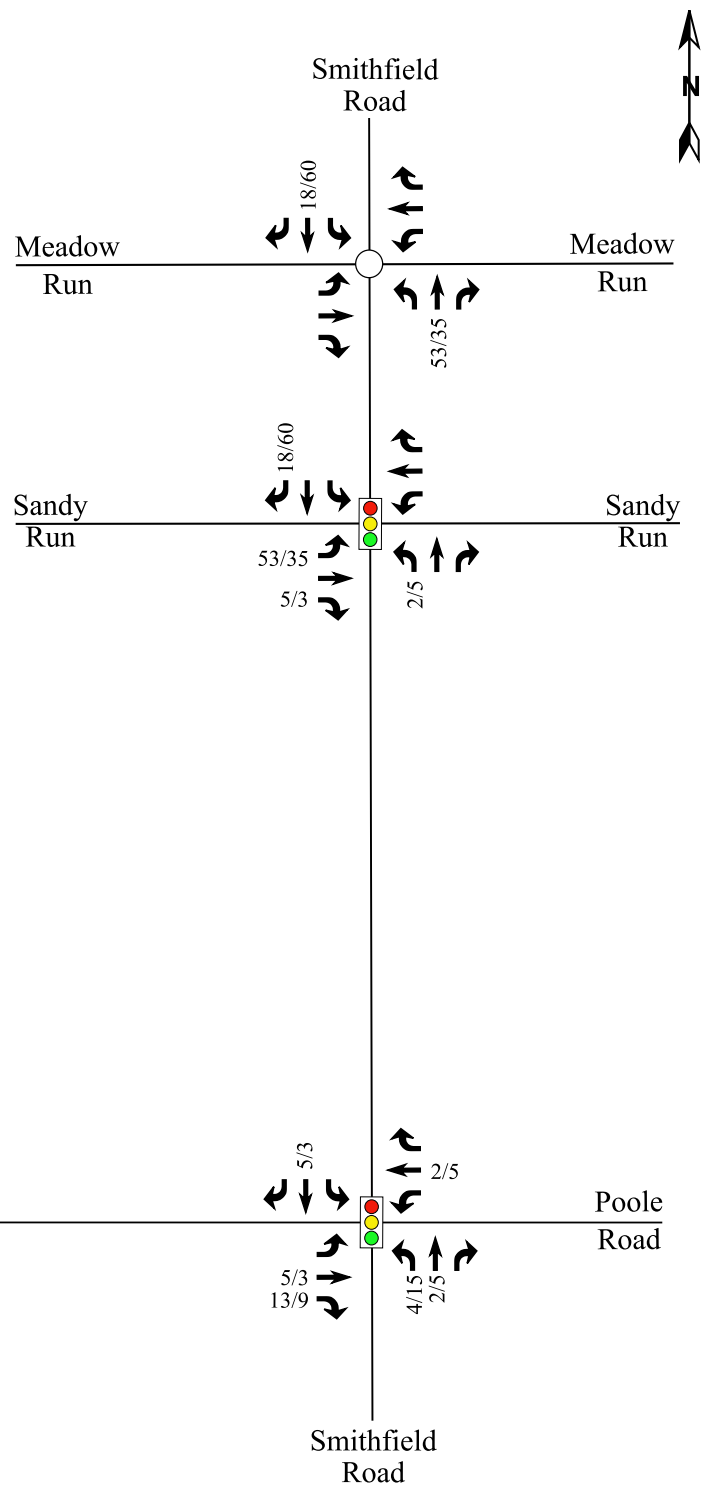


Signalized Intersection

Unsignalized Intersection

X / Y

→ AM / PM Peak Hour Traffic

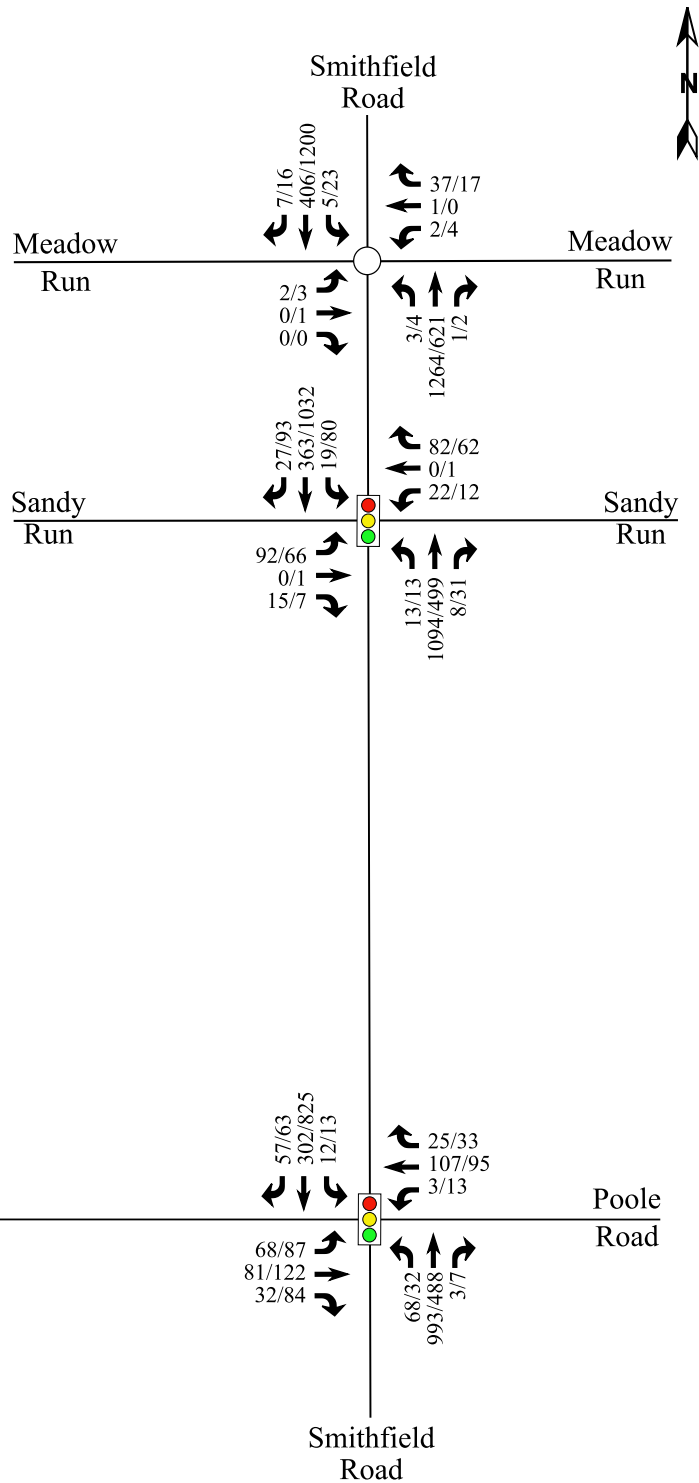


Signalized Intersection

Unsignalized Intersection

X / Y

→ AM / PM Peak Hour Traffic



Signalized Intersection

Unsignalized Intersection

X% →

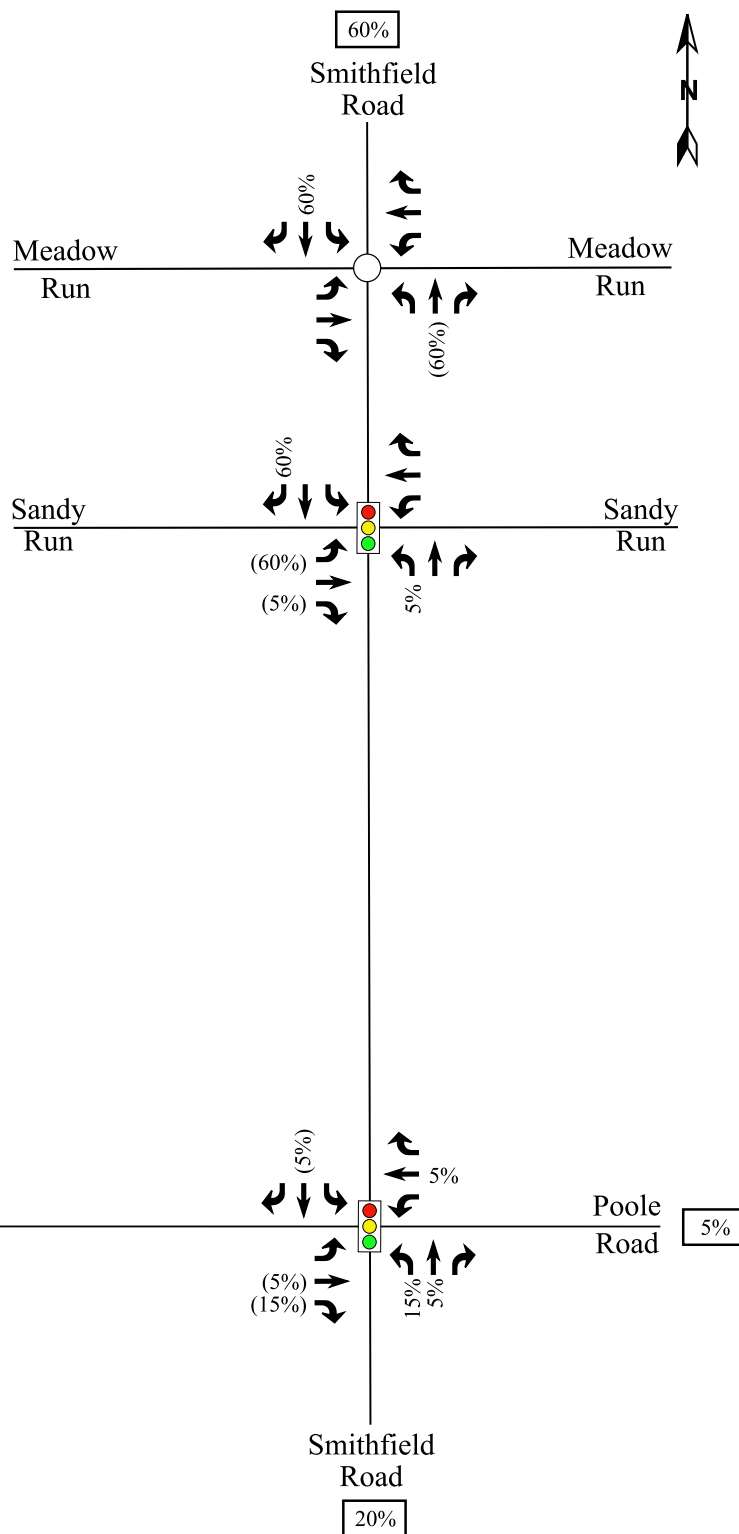
Entering Trip Distribution

(Y%) →

Exiting Trip Distribution

XX%

Regional Trip Distribution

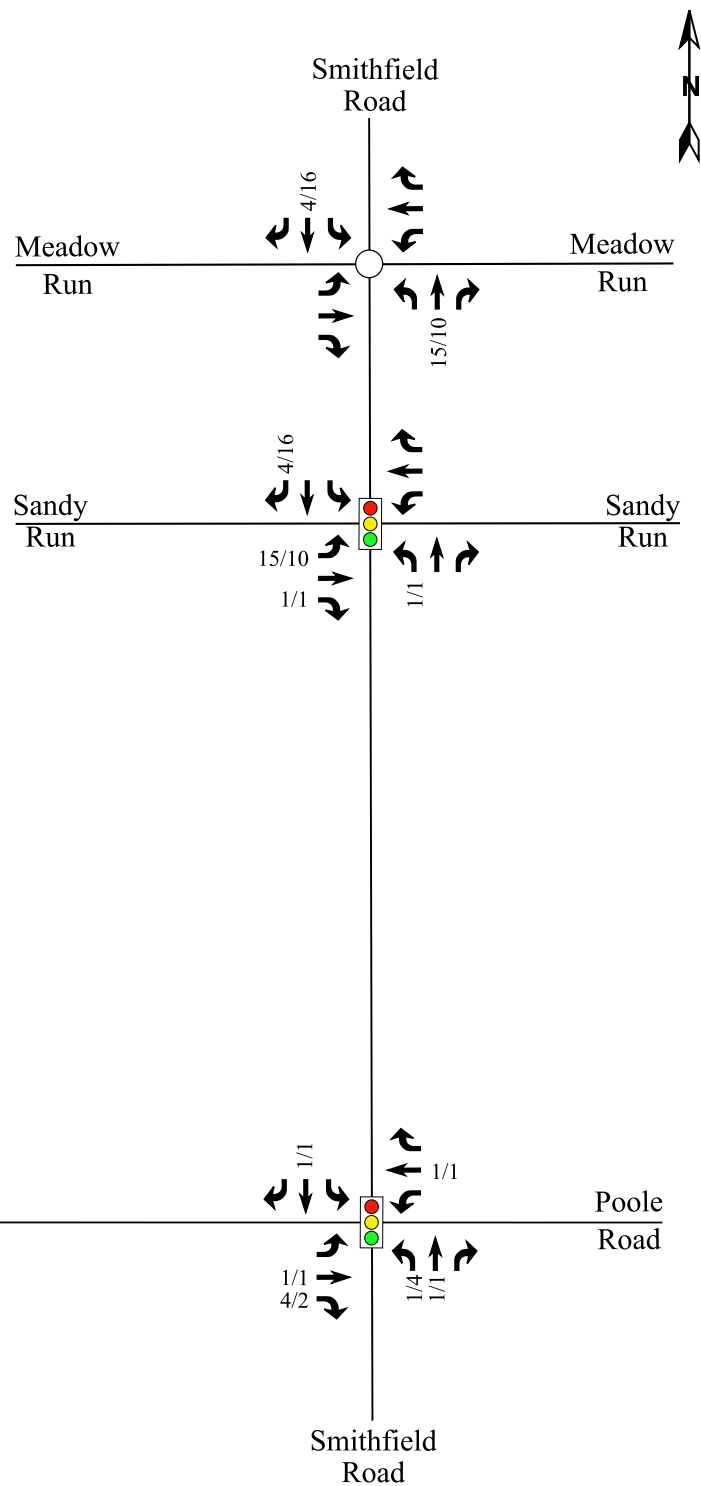


Signalized Intersection

Unsignalized Intersection

X / Y

→ AM / PM Peak Hour Site Trips

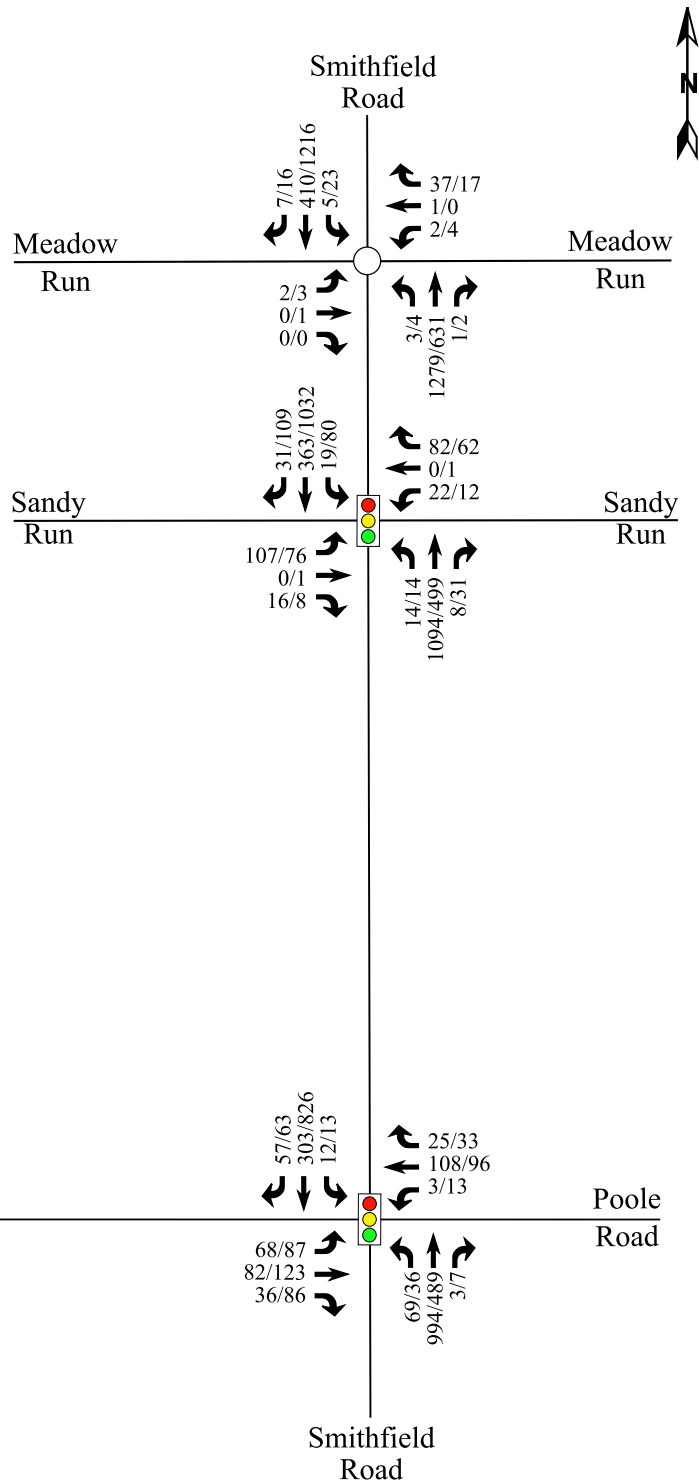


Signalized Intersection

Unsignalized Intersection

X / Y

→ AM / PM Peak Hour Traffic



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

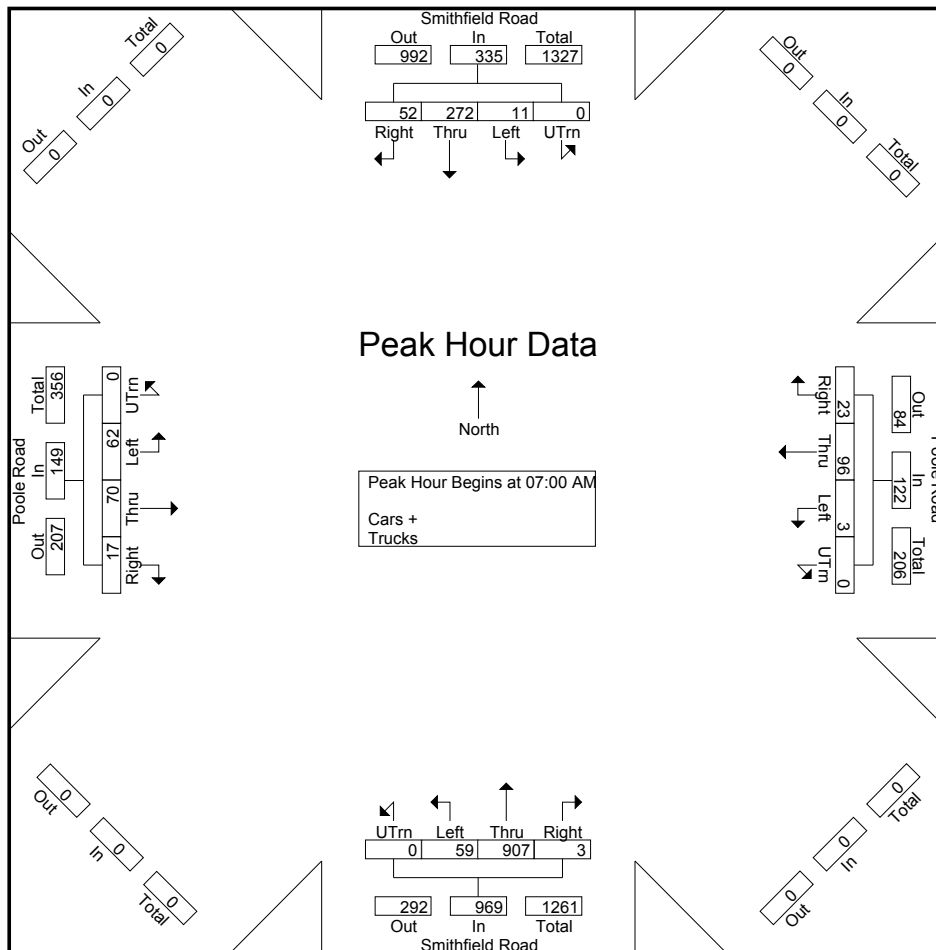
File Name : Knightdale(Smithfield and Poole)AM Peak

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

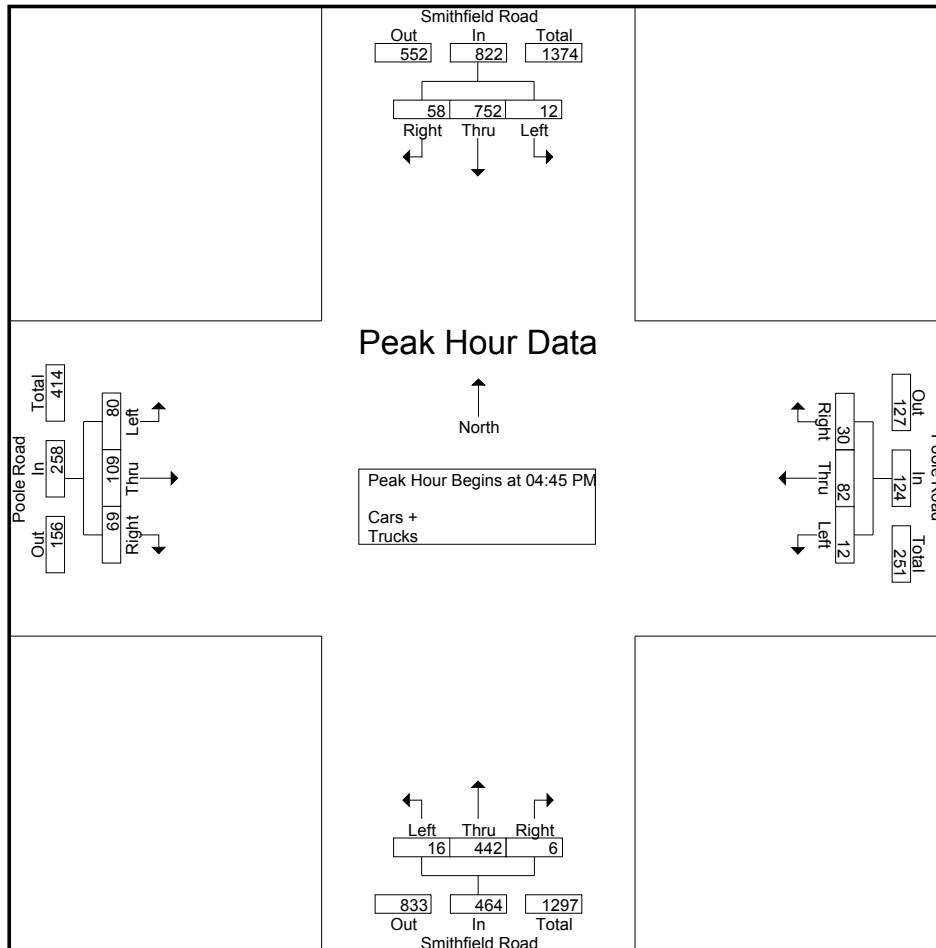
File Name : Knightdale(Smithfield and Poole)PM Peak

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

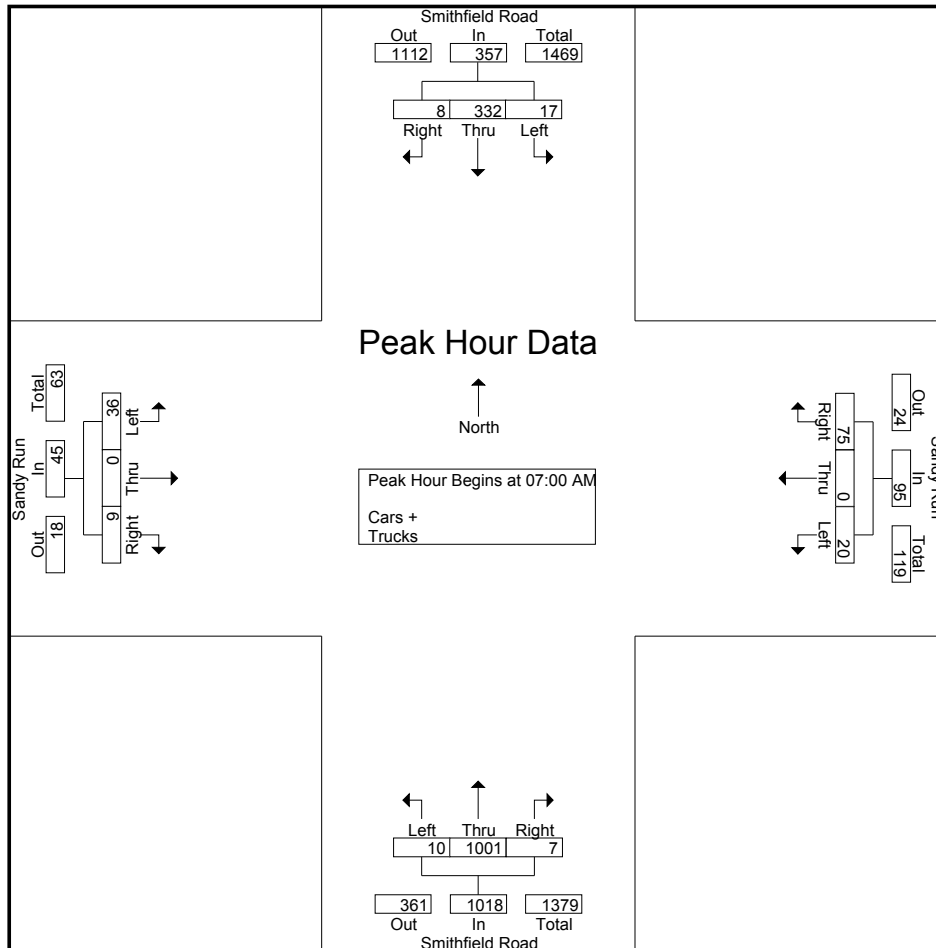
File Name : Knightdale(Smithfield and Sandy Run)AM Peak

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

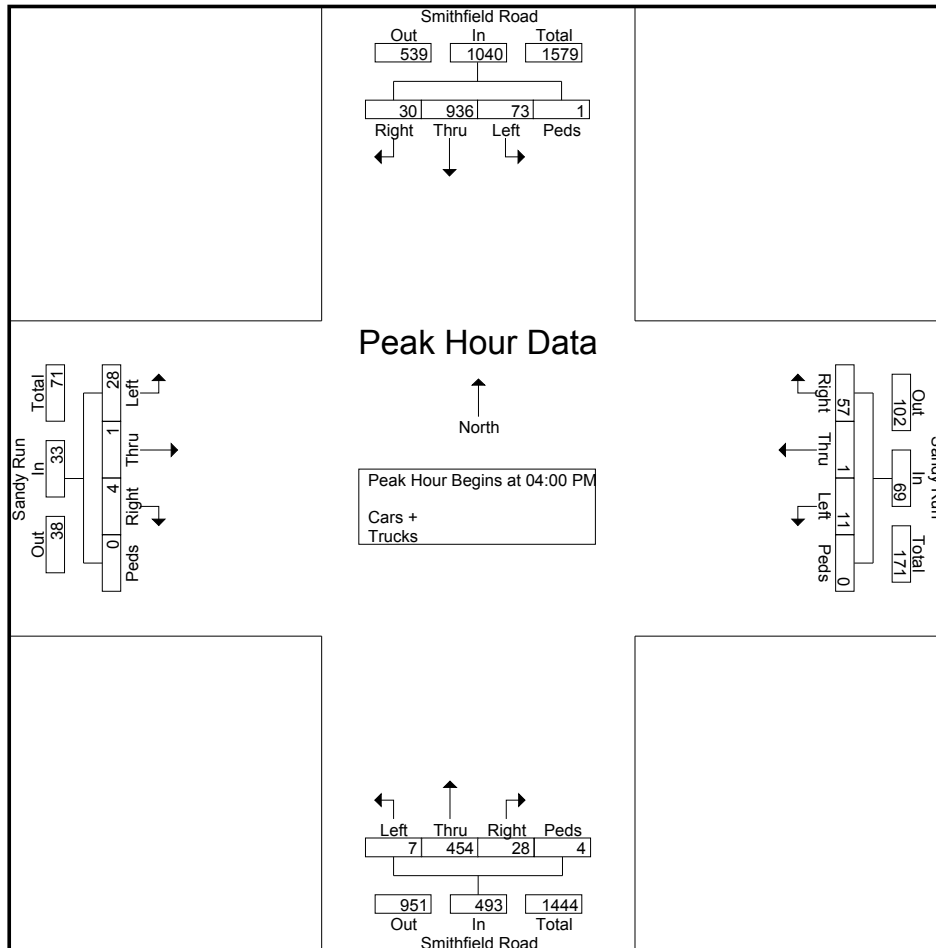
File Name : Knightdale(Smithfield and Sandy Run)PM Peak

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				Meadow Run Westbound				Smithfied Road Northbound				Meadow 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

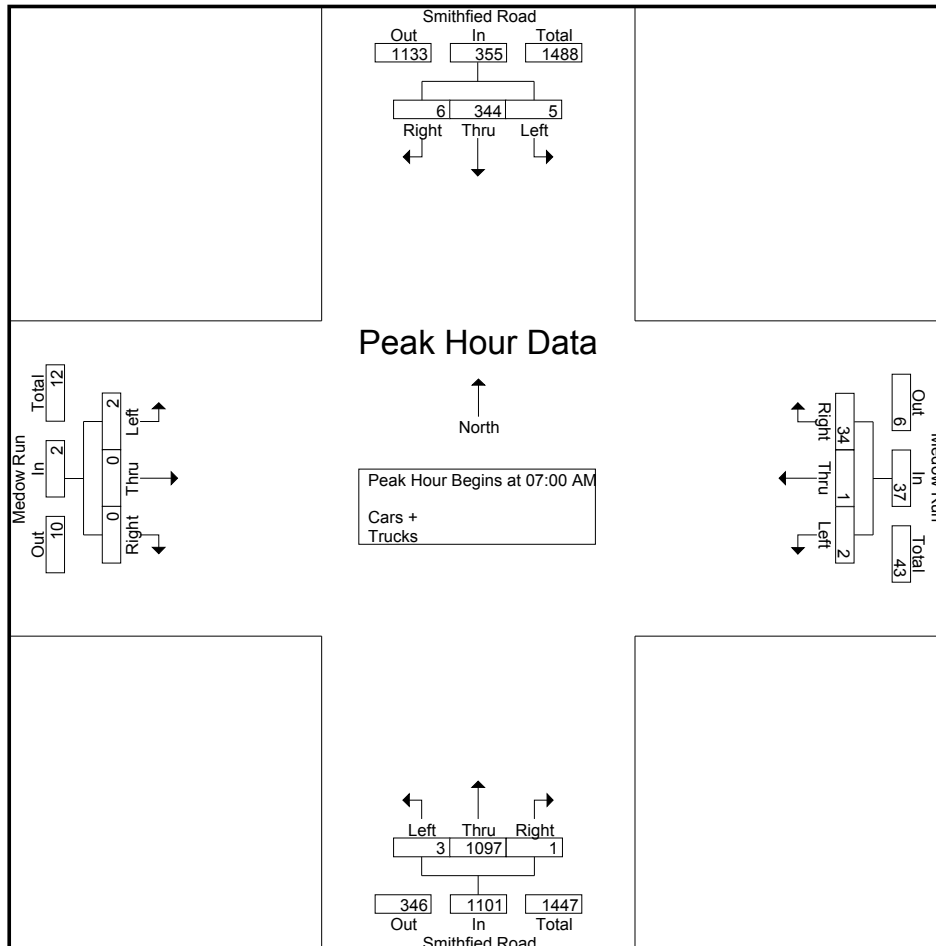
File Name : Knightdale(Smithfield and Meadow Run)AM Peak

Site Code :

Start Date : 1/9/2020

Page No : 2

	Smithfied Road Southbound				Meadow Run Westbound				Smithfied Road Northbound				Meadow 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





TRAFFIC DATA COLLECTION

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				Meadow Run Westbound				Smithfield Road Northbound				Meadow 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

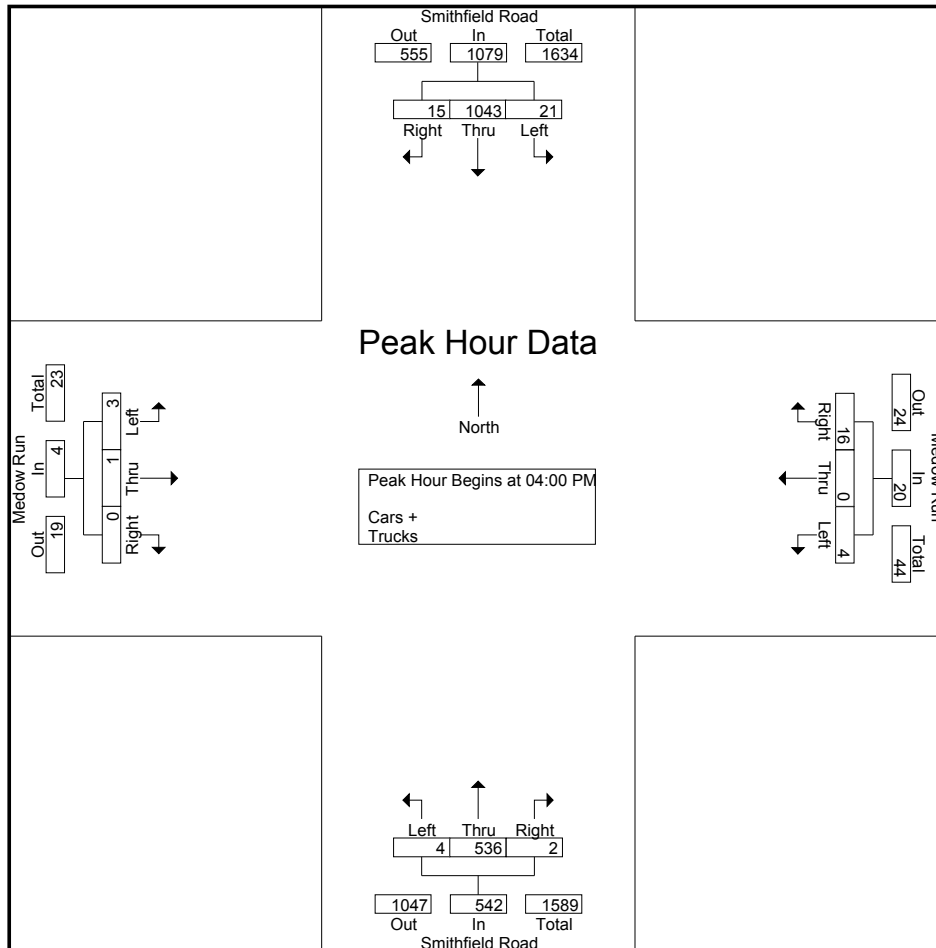
File Name : Knightdale(Smithfield and Meadow Run)PM Peak

Site Code :

Start Date : 1/9/2020

Page No : 2

	Smithfield Road Southbound				Meadow Run Westbound				Smithfield Road Northbound				Meadow 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

	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
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

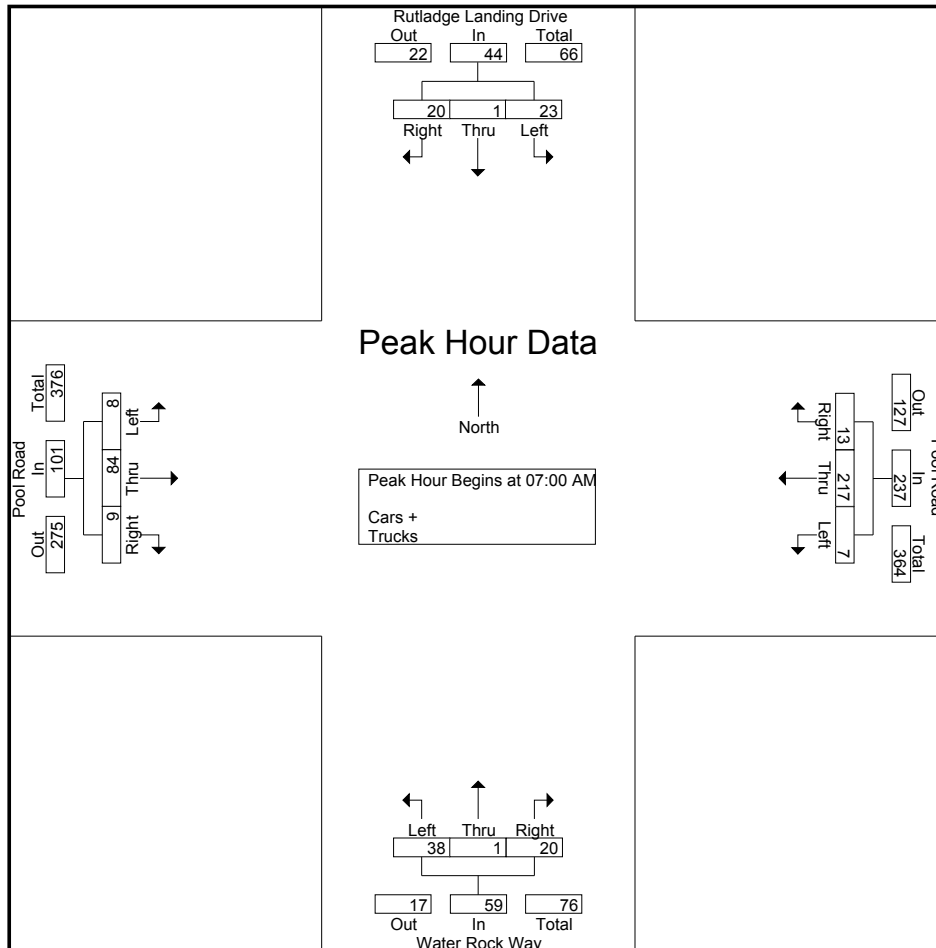
File Name : Knightdale(Water Rock and Poole)AM Peak

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

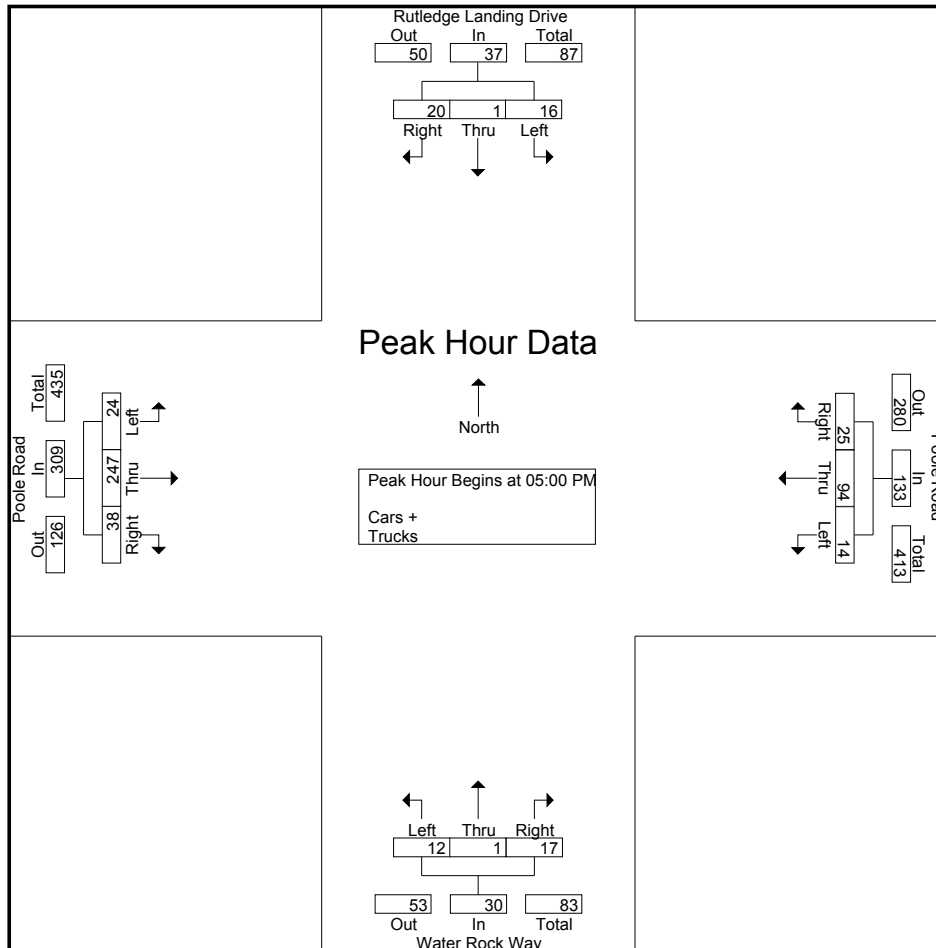
File Name : Knightdale(Water Rock and Poole)PM Peak

Site Code :

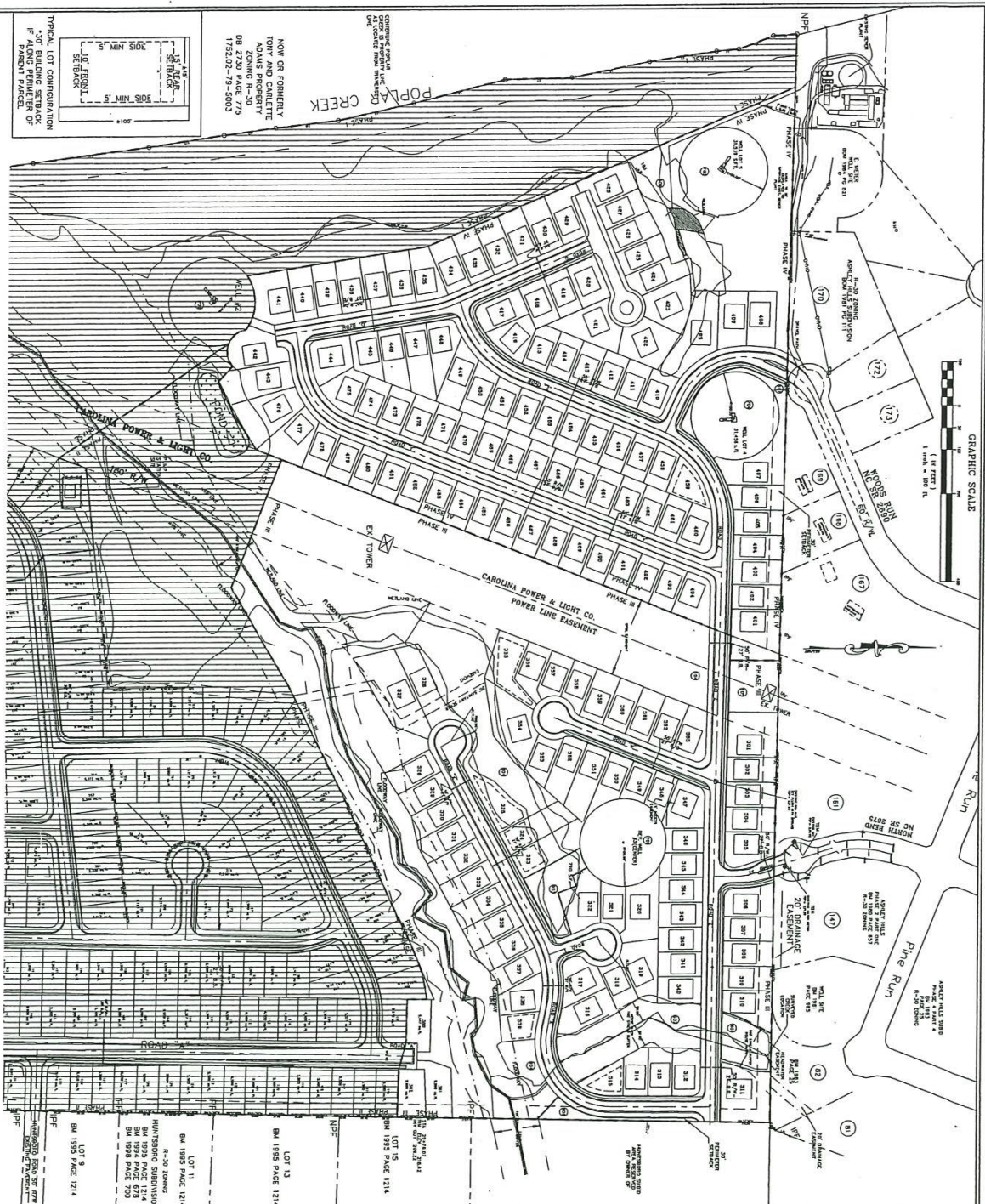
Start Date : 1/9/2020

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



NOTES:

1. Easements shown on this plan are for the purpose of showing the location of easements and are not to be construed as a grant of easements.
2. The easements shown on this plan are for the purpose of showing the location of easements and are not to be construed as a grant of easements.
3. The easements shown on this plan are for the purpose of showing the location of easements and are not to be construed as a grant of easements.
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10. The easements shown on this plan are for the purpose of showing the location of easements and are not to be construed as a grant of easements.

LEGEND:

- 1. Easements shown on this plan are for the purpose of showing the location of easements and are not to be construed as a grant of easements.
- 2. The easements shown on this plan are for the purpose of showing the location of easements and are not to be construed as a grant of easements.
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- 10. The easements shown on this plan are for the purpose of showing the location of easements and are not to be construed as a grant of easements.



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.



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.

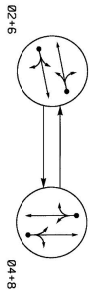
Sincerely,

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

cc: file, S-08-17

SIGNAL PLANS

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND
DETECTED MOVEMENT
UNDETECTED MOVEMENT (OVERLAP)
UNDETECTED MOVEMENT
PEDESTRIAN MOVEMENT

TABLE OF OPERATION	
PHASE	SIGNAL FACE
1	21, 22
2	41, 42
3	61, 62
4	81, 82

SIGNAL FACE I.D.

All Moods L-E-O.



OASIS 2070L TIMING CHART

FEATURE	2	4	6	8
Min Green 1 *	14	7	14	7
Extension 1 *	6.0	6.0	6.0	6.0
Min 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 Interval	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Interval *	-	-	-	-
Time Before Redout *	20	10	20	10
Time To Redout *	30	20	30	20
Actuation Gap	3.4	3.4	3.4	3.4
Max Actuation	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON

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

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

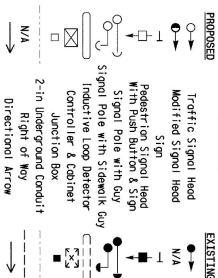
INDUCTIVE LOOPS		DETECTOR PROGRAMMING	
LOOP	SIZE (FT)	TURN	CALLING
2A	6X6	420	6
2B	6X6	420	6
4A	6X6	420	6
4B	6X6	420	6
6A	6X6	420	6
6B	6X6	420	6
8A	6X6	420	6
8B	6X6	420	6

2 Phase Fully Actuated (Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Refer to "Standard Specifications for Traffic Signals" dated January 2012.
- Set all detector units to the Engineer's presence mode.
- Pavement markings are existing.
- Rewire phases in cabinet as shown.

LEGEND



Signal Upgrade

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

Division 5
December 2012
MADE COUNTY
E. of Raleigh

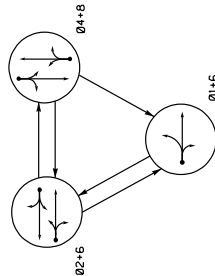
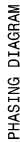
REVISIONS
C. J. COLLINS
REVISIONS
DATE
11/13

SEAL
11/13

3 Phase Fully Actuated (Isolated)

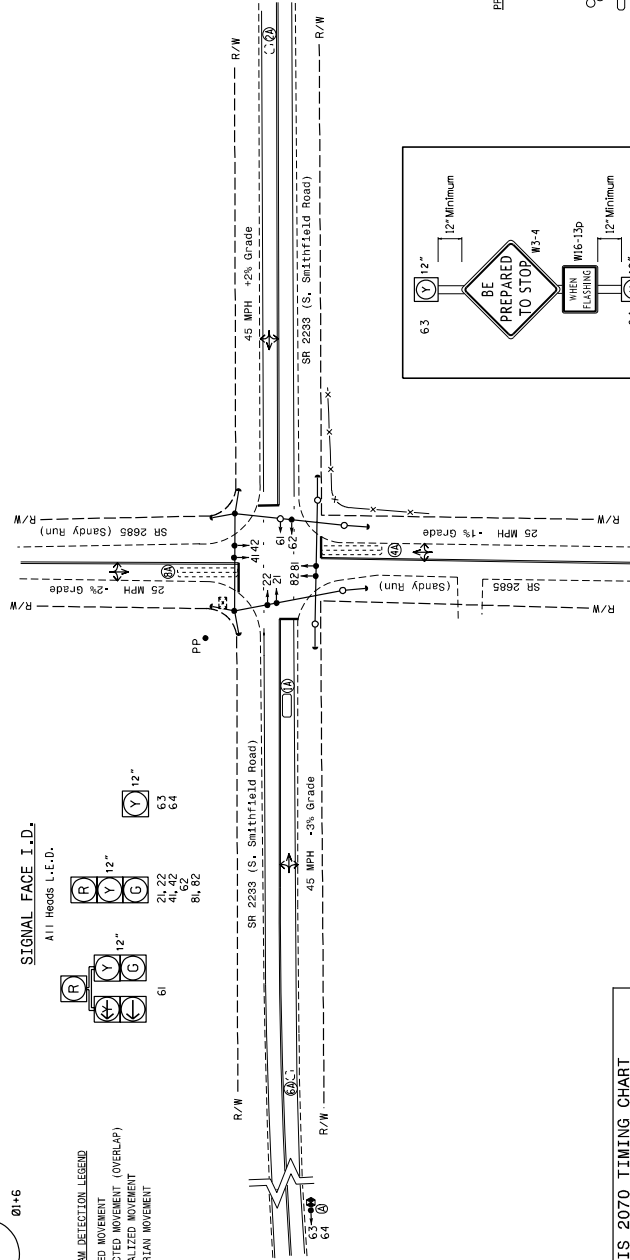
WARNING BEACON TABLE OF OPERATION		
SIGNAL FACE	INTERVAL	
	1	2
63	ON	OFF
64	OFF	ON

TABLE OF OPERATION	
SIGNAL FACE	PHASE
	FLASH
21, 22	R G R Y
41, 42	R R G R
61	G R Y
62	G R Y
63, 64	OFF ON OFF
81, 82	R R G R



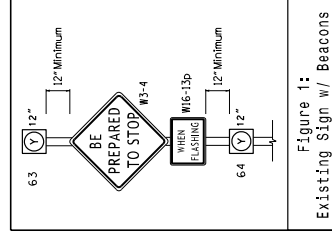
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART									
INDUCTIVE LOOPS			DETECTOR PROGRAMMING						
LOOP	DETECT (FT)	SPACING FROM STOPBAR (FT)	NEW LOOP	PHASE	CALCULATION	TOTAL TIME DELAY	STATION TIME	DELAY TIME	NEW CARD
1A	6X15	5	1	Y	Y	-	-	15	-
2A	6X6	300	5	2	Y	-	-	-	-
4A	6X40	0	2-4-2	4	Y	-	-	10	-
6A	6X6	300	5	6	Y	-	-	-	-
8A	6X40	0	2-4-2	8	Y	-	-	10	-

- ### NOTES
1. Refer to "Roadway Standard Drawings NC001" 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 "Protect for Phase 6" to allow the controller to clear from phase 246 to phase 146 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 phase 6 red.
 6. Beacons 63 and 64 shall flash alternately.
 7. Pavement markings are existing.



FEATURE	PHASE							
	1	2	4	6	8			
40% Green *	7	12	7	12	7			
Extension 1 *	2.0	6.0	2.0	6.0	2.0			
40% Green *	15	90	30	90	30			
Auto Green *	3.0	4.3	3.2	4.8	3.3			
Yellow Clearance	1.6	1.0	1.2	1.0	1.3			
Red Clearance	2.0	2.0	2.0	5.0	2.0			
Red Repeat	-	-	-	-	-			
Work 1 *	-	-	-	-	-			
Don't Work 1	-	-	-	-	-			
Seconds Per Activation *	-	2.5	-	-	-			
Red Recall	-	15	-	-	-			
Yellow Recall	-	15	-	15	-			
Thru To Release *	-	-	-	30	-			
40% Green * Group	-	3.0	-	3.0	-			
Red Recall	-	MIN RECALL	-	MIN RECALL	-			
40% Green * Memory	-	YELLOW	-	YELLOW	-			
Dead Entry	ON	ON	ON	ON	ON			
Signal Horn	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.



- | PROPOSER | LEGEND | EXISTING |
|----------|--|----------|
| | Traffic Signal Head | |
| | Modified Signal Head | |
| | Pedestrian Signal Head | |
| | Signal Pole with Push Button & Sign | |
| | Signal Pole with Sidewalk Guy | |
| | Inductive Loop Detector | |
| | Cabinet | |
| | Junction Box | |
| | 2-in Underground Conduit | |
| | Direction of Way | |
| | Right of Arrow | |
| | Fence | |
| | Type III Signal Pedestal | |
| | BE PREPARED TO STOP - (R3-4) SIGN
AND
WHITE FLASHING LIGHTS - (R15-4) PLaque | |

Signal Upgrade

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



CAPACITY ANALYSIS

























SMITHFIELD ROAD

&

POOLE ROAD













Lanes, Volumes, Timings
1: Smithfield Road & Poole Road

Existing (2020) AM
01/16/2020

												
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	

Lanes, Volumes, Timings
1: Smithfield Road & Poole Road

Existing (2020) AM
01/16/2020

												
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

	
90 s	90 s
	
90 s	90 s













Lanes, Volumes, Timings
1: Smithfield Road & Poole Road

Existing (2020) PM
01/16/2020

												
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		

Lanes, Volumes, Timings
1: Smithfield Road & Poole Road

Existing (2020) PM
01/16/2020

												
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 Capacity Utilization 77.3%

Analysis Period (min) 15

Intersection LOS: C

























ICU Level of Service D

Splits and Phases: 1: Smithfield Road & Poole Road

 02	 04
90 s	90 s
 06	 06
90 s	90 s

Lanes, Volumes, Timings
1: Smithfield Road & Poole Road

Background (2023) AM
01/16/2020

												
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		

























Background (2023) AM
01/16/2020

Splits and Phases: 1: Smithfield Road & Poole Road



Lanes, Volumes, Timings
1: Smithfield Road & Poole Road













Background (2023) PM
01/16/2020

												
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	

Lanes, Volumes, Timings

1: Smithfield Road & Poole Road

Background (2023) PM
01/16/2020

												
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 Capacity Utilization 87.6%
 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















Lanes, Volumes, Timings
1: Smithfield Road & Poole Road

Combined (2023) AM
01/16/2020

												
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		

Lanes, Volumes, Timings
1: Smithfield Road & Poole Road

Combined (2023) AM
01/16/2020

												
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 Capacity Utilization 110.8%
 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

	
90 s	90 s
	
90 s	90 s













Lanes, Volumes, Timings
1: Smithfield Road & Poole Road

Combined (2023) PM
01/16/2020

												
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		

Lanes, Volumes, Timings
1: Smithfield Road & Poole Road

Combined (2023) PM
01/16/2020

												
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

	02		04
90 s		90 s	
	06		08
90 s		90 s	

























SMITHFIELD ROAD

&

SANDY RUN













Lanes, Volumes, Timings
2: Smithfield Road & Sandy Run

Existing (2020) AM
01/16/2020

												
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	

Lanes, Volumes, Timings 2: Smithfield Road & Sandy Run

Existing (2020) AM
01/16/2020

												
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 Capacity Utilization 72.7%
 Analysis Period (min) 15

























Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 2: Smithfield Road & Sandy Run















Lanes, Volumes, Timings
2: Smithfield Road & Sandy Run

Existing (2020) PM
01/16/2020

												
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	

Lanes, Volumes, Timings 2: Smithfield Road & Sandy Run

Existing (2020) PM
01/16/2020

												
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 Capacity Utilization 101.5%

Analysis Period (min) 15

Intersection LOS: B

























ICU Level of Service G

Splits and Phases: 2: Smithfield Road & Sandy Run















Lanes, Volumes, Timings
2: Smithfield Road & Sandy Run

Background (2023) AM
01/16/2020

												
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	

Lanes, Volumes, Timings 2: Smithfield Road & Sandy Run

Background (2023) AM
01/16/2020

												
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 Capacity Utilization 79.3%
 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













Lanes, Volumes, Timings
2: Smithfield Road & Sandy Run

Background (2023) PM
01/16/2020

												
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	

Lanes, Volumes, Timings 2: Smithfield Road & Sandy Run

Background (2023) PM
01/16/2020

												
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 Capacity Utilization 85.8%
 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















Lanes, Volumes, Timings
2: Smithfield Road & Sandy Run

Combined (2023) AM
01/16/2020

												
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	

Lanes, Volumes, Timings
2: Smithfield Road & Sandy Run

Combined (2023) AM
01/16/2020

												
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 Capacity Utilization 80.2%
 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















Lanes, Volumes, Timings
2: Smithfield Road & Sandy Run

Combined (2023) PM
01/16/2020

												
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	

Lanes, Volumes, Timings 2: Smithfield Road & Sandy Run

Combined (2023) PM
01/16/2020

												
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 Capacity Utilization 86.4%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service E

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

HCM 6th TWSC
3: Smithfield Road & Meadow Run

Existing (2020) AM
01/16/2020

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	-	-

HCM 6th TWSC
3: Smithfield Road & Meadow Run

Existing (2020) PM
01/16/2020

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	-	-

HCM 6th TWSC
3: Smithfield Road & Meadow Run

Background (2023) AM
01/16/2020

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	-	-

HCM 6th TWSC
3: Smithfield Road & Meadow Run

Background (2023) PM
01/16/2020

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	-	-

HCM 6th TWSC
3: Smithfield Road & Meadow Run

Combined (2023) AM
01/16/2020

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	-	-

HCM 6th TWSC
3: Smithfield Road & Meadow Run

Combined (2023) PM
01/16/2020

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