Board of Zoning Appeals

North Augusta
South Carolina's Riverfront

Minutes for the Thursday, September 2, 2021, Regular Meeting

Members of the Board of Zoning Appeals
Wesley Summers
Chairman
Bill Burkhalter — Kathie Stallworth
Jim Newman — Kevin Scaggs

CITIZEN ASSISTANCE: Individuals requiring special assistance or a sign interpreter to participate in the meeting are asked to please notify the Department of Planning and Development 48 hours prior to the meeting at 803-441-4221.

REGULAR MEETING

1. **Call to Order** – The regular meeting of September 2, 2021, having been duly publicized, was called to order at 7:00 p.m. by Chairman Wesley Summers.

2. **Roll Call** – Board members present were Chairman Wesley Summers, Board members Kathie Stallworth, Kevin Scaggs, Bill Burkhalter and Jim Newman. Also in attendance was Tommy Paradise, Interim Director of Department of Planning and Development, members of the public and the applicants. A full list of speakers is provided at the end of the minutes.

3. **Approval of Minutes** – Minutes of the Regular Meeting of the August 5, 2021 meeting.

4. **Confirmation of Agenda-** There were no changes to the agenda.

5. **ZV21-007**-- A request by S & H Enterprises for a variance at 5425 Jefferson Davis Hwy, TMP 013-15-02-001 & 013-20-03-004 from Article 3, Section 3.8.5.3, Table 3-9, Dimensional Standards, Maximum Front Setback (ft.) requiring a maximum building setback of 90 feet to allow the building to be setback 153.5 feet and Article 3, Section 3.8.5.2, Table 3-9, Dimensional Standards, Minimum Frontage Buildout which requires a minimum of 30% build out to allow a minimum of 26.3% build out.

    a. **Public Hearing** – The purpose of the hearing is to receive public comment on the application.
    Mr. Paradise states the location is 5425 Jefferson Davis Highway and knows this location as the old Taylor Toyota building facility and has been several things since that time. They want to do a scrape and build where they would like to tear

down the existing building and build a new car dealership which will meet their needs. It consists of a 9.25 acre parcel and a 7.26 acre parcel which is zoned Industrial and will be going in front of City Council for the first reading on 09/20/2021. It was recommended for rezoning by the Planning Commission and for this development to go forward, the property would have to be re-zoned. This parcel is in the Thoroughfare Corridor zoning district and also on the Highway overlay corridor. They are required to have a maximum setback of 90 feet from the right of way. This is inconsistent for a car dealership so they are requesting to be allowed to move it back to 153.5 feet. They also have to have 30% buildout across the frontage and 26.3% and asking variances for that issue. Mr. Paradise stated that Mr. Will Buchanan from Johnson, Laschober, and Associates was present to discuss the project and answer any questions the Board may have regarding this location.

Chairman Summers asked if it was going for the first reading 09/20/2021 to which Mr. Paradise confirmed. Then it was asked if it required only two reading and Mr. Paradise responding, "Yes."

Mr. Paradise stated that one of the recommendations that he included was that it be contingent on the rezoning of the other parcel so that these two parcels be combined. That way if City Council doesn't go through the rezoning, then it wouldn't be like a curve ball.

Chairman Summers swore in Mr. Will Buchanan of Johnson, Laschober, and Associates. Mr. Buchanan said once they received the information, his company made a conceptual site design that was based on a realistic survey. They realized that the building setback was much further back than what is allowed based on the overlay district. So the owner was contacted and asked about getting a variance. He said it is worth the efforts to get a variance because the way the business works, if the business didn't have the inventory by the road to be seen, it would hinder the business goals. Inventory being able to be seen is the most important factor. Mr. Buchanan said they were pretty close to meeting the build out width but we showed a future expansion if they meet the 30% number. And they wanted to go ahead and ask for the other variance as well.

Ms. Stallworth asked about a 4-foot variance is what the second one was about. He stated he did not know at the time. She stated that she was sure that was right.

Being that the lot is so big, Mr. Scaggs asked how much was visible from the road. He wanted to know if it would be the first couple of rows of vehicles or more.

Mr. Buchanan did not know the numbers on that specific question but that more is better. He says if the building stayed at 90 feet from the road that a few rows (3-4 rows) of inventory would be visible from the road. However, if the building is moved back to 153.5 feet he stated about 12-15 rows which would be a substantial difference of inventory being seen from the road.

Mr. Scaggs asked if the visibility piece was the sole reason for the variance request.

Mr. Buchanan stated that it was indeed the driving force.

Mr. Scaggs asked if there are any interferences involved.

Mr. Buchanan stated there are no easements and it's a big piece of property and nothing is going through it.

Mr. Scaggs said he realized it is a big piece of property with a big piece of green field property.

Mr. Buchanan noted that with all the other dealerships in the area, they are not meeting the 90-foot rule either so the precedent has already been set in the area based on that business model.

Chairman Summers stated that this is consistent with every other dealership in the area that has to come before the Board needing more space. Usually it depends on the design of the building because sometimes the code doesn't match up with Kia or Nissan's major corporations that will allow you to build. So this is nothing unusual. He understands needing the inventory up front for customers to visualize. He spoke of the problems with the Hyundai dealership and supporting a variance and granting a variance for the set-back to be further back.

Mr. Scaggs asked if Kia requires them to be setback a certain distance from the road. Mr. Buchanan stated there was no such requirement and that more is better. There is no black and white code to continue the project.

Mr. Buchanan said there is no black and white code for the project. The variance is business model driven to have the setback to allow for more cars to be seen because more is better.

Mr. Scaggs stated that there are no conditions of the property. It's just the requirement itself.

Mr. Buchanan stated that it is business model driven based on his model.

Chairman Summers states that it benefits the customer too and a little bit of the safety issue, people driving in and out, people backing in and out and wanting to take the car for a test drive. And the more space you have for that, the better. He also asked if it was a partial requirement from Kia.

Ms. Stallworth did not understand that. She said she thought he said that if it didn't happen they would not pull out of the project.

Mr. Buchanan stated that that was not what he meant. He did not mean to say they would pull out of the project. Kia said they would not pull out of the project if the variance wasn't approved.

Mr. Scaggs asked how many rows were at other lots compared to this one. Mr. Buchanan does not know for sure. However, Mr. Jim Newman said he thought it was 4 or 5 rows in front of their parking area at the Hyundai dealership

Chairman Summers said they gave a variance for Hyundai but could not get one for the Taylor Toyota. He said he goes there to service his vehicle and he believes they have 5 and may have 6 rows up front.

Mr. Buchanan said the dealership across the street is 128 feet back from the right of way.

Ms. Stallworth stated that the building for Toyota was required by them but was not up to code for the City of North Augusta so it was for a different type of variance. It was for the facing of the building.

b. **Consideration** – Application ZV21-007
Based upon these factors, the Board's review of this application, consideration of the staff report, as well as testimony and evidence submitted by the applicant, and providing the opportunity for public comment at the hearing, the Board has found in the affirmative that the appeal meets all of the standards required to issue the variance. The variance to a front setback of ±153.5 feet from Jefferson Davis Highway and a minimum front buildout of 26.6% is granted.

After a motion made by Mr. Scaggs, and duly seconded by Ms. Kathie Stallworth, the Board voted unanimously to approve the application with the following conditions:

1) Tax parcel number 013-20-03-004 is rezoned to Thoroughfare Commercial and is combined with tax parcel number 013-15-02-001 to form one parcel on which the site will be developed.
2) The property will be developed in general conformance with the layout provided. Minor changes to the layout may be allowed as determined by the Planning & Development Director or the City Engineer.

6. **ZV21-008**-- A request by Martintown LLC for a variance at 417 E. Martintown Road, TMP 007-12-06-032 from Article 3, Section 3.8.5.8.5 Front Setback Landscaping requirements. NADC §3.8.5.8.5.d requires a Type B buffer with a depth of 25 feet and NADC § 3.8.5.8.5.e requires a Type D buffer 20 feet in depth to allow a Type B buffer 4 feet in depth.

a. **Public Hearing** – The purpose of the hearing is to receive public comment on the application.

Mr. Paradise states it is an undeveloped piece of property adjacent to the Lidl's grocery store. It is a step out from the Lidl's property to this lot that puts some constraints on the location of the building for the applicant. Depending on the section you look at, it requires some buffering on the front because of the car isle and the setback from the front from the property line. Because of the inter-connection with Lidl and where the access road would go that prohibits them from moving it further back and meeting the requirements for the buffer. They are requesting a 4-foot buffer along the front in lieu of the other buffers which have been required. There was a previous variance, a special exception a few years ago. However, the exception has expired because the project of storage buildings never moved forward.

Mr. Scaggs asked if the setback was over 30 feet then it has to have a type D buffer and type e if over 30 feet.

Mr. Paradise explained that he included both of them apply in the variance. He stated we would enforce the type D buffer because it's more astringent because you would come out of the car wash and drive all there. So that's why it needs to be setup. Mr. Paradise stated he put both in so there's no confusion or anyone coming back saying there's a variance for this however, something else applies. We have the entire thing in front to review and no hiccups going forward.

Mr. Jim Newman asked if this was similar setup to the car wash at exit 5 at Lulu's.

Chairman Summers stated he went and looked at the LuLu's on exit 5 and all the businesses have a 20-25 foot buffer from the highway with low vegetation.

Robert Titus, representing EMC Engineering was sworn in by Chairman Summers. He stated that they looked at several configurations from this lot and was granted the approval to move forward with connectivity to the adjoining parcels. If you were to see behind the paint store, the retaining wall is about 15-18 feet high and the blocks are huge. So with those, it limits the space they have for the project. The have to get the access drive down. For an automatic carwash, 125 feet is typical. With the layout and configuration with having one entrance that would go through the car wash and one exit so it controls the people that accesses the property limits the configuration but the plan seems to be set. If we didn't have the depth they could push it back to get the required 25 feet but that is not possible so they are stuck on the project.

Ms. Stallworth asked if it was going to be Perpendicular to Martintown road like Lulu's is to Highway 25. Mr. Titus responded yes.

Mr. Scaggs asked if he would try to sub-lease the other part of the property. Mr. Titus responded that there are a lot of constraints so he is not sure what would

really happen, if anything. They would like to at some point but as of right now, no plans.

Ms. Stallworth asked if it was going to be a national carwash or a local hometown carwash. Mr. Titus responded no.

Mr. Titus said they configured everything that if you have a driveway to the right, you would want to go counter- clockwise and similar that if you have a driveway to the left, you would go clockwise. He said that's what settled the configurations to make everything work. So they are squeezed.

They are left with a 4-foot buffer from the road. He stated that was from the right of way line. He said the property line is at the sidewalk line. It will be a public sidewalk.

Mr. Titus said the constraints from getting from US 1 down to the base of the property.

Chairman Summers asked if we could require them to dump traffic to Lidl's parking lot. And Mr. Titus said indeed that was the case.

Mr. Paradise stated that the inter-connection was an agreement when Lidl was developed that there would be that interconnection and this is just the next phase for that to happen. It follows through with the comprehensive plan as far as interconnectivity.

Ms. Stallworth stated that we would not have an exit entrance from Martintown and it was confirmed. Mr. Titus stated it would be a drive that would feed the connection to the carwash another entrance to Lidl. And will also provide for the potential of further development for anything else. Access mainly.

Chairman Summers finds it interesting the City is funneling traffic there and it was not the same as when Sherwin Williams and Lidl was built.

Mr. Titus states that from a traffic standpoint, you are trying to get more points of accessibility so you don't have congestion in one spot. He thinks that may be the reason.

Ms. Stallworth asked if it would be a left and right turn out to Martintown Road and confirmed by Mr. Titus.

Mr. Scaggs stated the variance request is that of landscaping. He asked what it would look like because he didn't know what type D was referring to. Mr. Titus explained that the trees were 50 feet for B and 40 feet for D. That's the reason they asked for the B because it was wider. And the branches would not be hanging in the road.

Mr. Jim Newman asked what was required coming off the road and provided another option.

Mr. Tommy Paradise stated that it would be an 8 foot Type A buffer is the width of 8 foot, one large tree every 60 feet, minimum trees are optional and buffer points are .2 as opposed to 1.2 for type B and 1.0 for C and .7 for D. Those points are assigned by trees and the number shrubs.

Mr. Jim Newman stated he has 34 feet to work with and plenty of room for those trees.

Ms. Stallworth commented that he does want the improvement to make it look better in that area. New construction will enhance the strip of road would be better. She doesn't want to do away with the landscaping.

The applicant's request for a variance to allow a front buffer of 4-feet in width of a Type D. buffer with small trees being substituted for large trees is granted.

b. **Consideration** – Application ZV21-008
After a motion was made by Mr. Scaggs, and duly seconded by Ms. Kathie Stallworth, the Board voted unanimously to approve the application with the following conditions:

1. The approved buffer along the East Martintown Road frontage consist of a Type D buffer with small trees being substituted for the required trees and the buffer being at least 4-feet in depth.
2. The property will be developed in general conformance with the layout provided. Minor changes to the layout may be allowed as determined by the Planning & Development Director or the City Engineer.

7. **Adjourn-** With no objections, Chairman Summers adjourned the meeting at approximately 8:45pm.

Department of Planning and Development

North Augusta
South Carolina's Riverfront

Memorandum

To: Board of Zoning Appeals
From: Tommy Paradise, Interim Planning Director
Re: Application Number ZV20-008
Date of Meeting: October 7, 2021

In the January 7, 2021 meeting of the Board of Zoning Appeals (BZA), the BZA heard a request from Ivey Development, LLC. Ivey Development, LLC, filed an appeal for a variance pursuant to Article 3, Zoning Districts; Table 3-3 Dimensional standards for the R-7, Small Lot, Single-Family Residential Zoning District; Item G: Minimum Lot Width (ft). The applicant requested a variance to allow a lot width of ±16 feet. The application affects ± 89.64 acres located at the termini of Green Forest, Napal, and Bobbye Drives and Dove Avenue, Tax Parcel Numbers 006-10-09-002 and 006-11-03-164.

After the BZA's review of the application, consideration of the staff report, testimony and evidence submitted by the applicant, and public comment both at the hearing, via email or written mail, and phone message, the Board has found that the application meets all of the standards required to issue the variance with the following conditions:

1) There may be no more than two (2) sixteen (16) foot townhome lots per block of townhomes with the other townhomes having lots that are twenty-four (24) feet or wider on a strip of four (4) or more townhomes. Blocks of less than four (4) townhomes shall have only one sixteen (16) foot lot, with all other lots being twenty-four (24) feet in width or more.
2) No more than thirty-six (36) total lots within the development will have a sixteen (16) foot lot width.
3) A traffic study will be required from the Developer with Planning and Development and Planning Commission approval as required. A final presentation to the Board of Zoning Appeals will be required.
4) The developer shall be required to have a similar floor plan to what was submitted, with final approval from the Planning Director.
5) "Future development" should be returned to the Board of Zoning Appeals if required by the Development Code at that time.

The developer has completed the traffic study (TIA) as required in condition #3. The developer will present that study to the BZA during the October 7, 2021 meeting. No additional action is necessary by the BZA.

North Augusta
South Carolina's Riverfront

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29841-3843

Post Office Box 6400
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City of North Augusta

January 29, 2021

Jason Whinghter
Ivey Development LLC
672 Industrial Park Drive
Suite 200
Evans, GA 30809

Re: Request for Interpretation: ZV20-008, Condition 3

Dear Sir,

On January 7, 2021, the North Augusta Board of Zoning Appeals voted unanimously to grant the variance request as shown on the attached order.

The applicant has requested further clarification on the intent and meaning of condition 3 which states:

"A traffic study will be required from the Developer with Planning and Development and Planning Commission approval as required. A final presentation to the Board of Zoning Appeals will be required."

It is the intent of the Board of Zoning Appeals that the study is required to be completed by a competent traffic engineer and approved by the City as required by the Development Code. The condition does not require an approval by the Board of Zoning Appeals and will be presented by staff as an informational item.

Sincerely,

O. Wesley Summers, Chair
Board of Zoning Appeals

cc. Kelly Zier, City Attorney, City of North Augusta
Briton Williams, Chair, City of North Augusta Planning Commission
James S. Clifford, City Administrator, City of North Augusta (via email)
Libby Hodges, Director of Planning and Development, City of North Augusta (via email)

Attachments

lh

Board of Zoning Appeals

North Augusta
South Carolina's Riverfront

Minutes of the Thursday, January 7, 2021 Regular Meeting

Members of the Board of Zoning Appeals

Wesley Summers
Chairman

Jim Newman
Kevin Scaggs
Kathie Stallworth
Lynn Stembridge

1. **Call to Order** – The regular meeting of January 7, 2021, having been duly publicized, was called to order by Chairman Wesley Summers at 7:00 p.m. The meeting was conducted virtually via GoToMeeting.

2. **Roll Call** – Board members present were Chairman Summers, Board members Jim Newman, Kathie Stallworth, and Kevin Scaggs. Board Member Lynn Stembridge was absent. Also in attendance was Libby Hodges, Director, Department of Planning & Development, members of the public, and the applicants. A full list of speakers is provided at the end of the minutes.

3. **Approval of Minutes** – The minutes of the Regular Meeting of December 10, 2020 were approved as written. Mrs. Stallworth moved that the minutes be approved. Mr. Newman seconded the motion and the motion was approved unanimously.

4. **Confirmation of Agenda** – There were no changes to the agenda.

5. **ZE20-008** – – A request by Ivey Development for lot widths less than the minimum permitted in the R-7, Small-Lot Single-Family Residential zoning district by Table 3-3, Dimensional Standards of Article 3, Zoning Districts, of the North Augusta Development Code. The request affects a proposed townhome and single-family detached development on ±89.64 acres located at the terminus of Napal, Green Forest, Bobbye Drive, and Dove Avenue, TPNs 006-10-09-002 and 006-11-03-164.

   Mr. Scaggs recused himself from the meeting and signed off the meeting.

   a. **Public Hearing** – The purpose of the hearing is to receive public comment on the application.

Chairman Summers swore in Libby Hodges, Director of Planning & Development. Mrs. Hodges clarified that the request is for a variance to the lot widths. The request is not a rezoning. The property is zoned R-7, Small Lot, Single-Family Residential and townhouses are a permitted use.

She stated she has a list of emails, phone messages, and callers on the line with public comments.

Mr. Newman asked for clarification on which portion of the development would require a variance to the lot widths. Mrs. Hodges stated that the Board of Zoning Appeals could set conditions on the number of lots with the lot width. Chairman Summers asked to save that question for later in the discussion.

Chairperson Summers clarified that the project that can be built, but this case only deals with lot widths.

Ms. Stallworth asked about which street stubs are represented, staff clarified that is included.

Chairman Summers swore in Jason Whingter, representative from Ivey Development. Mr. Whingter stated the request for a variance is only for the townhome portion of the development and the single-family detached dwelling units would meet the lot width requirements of the code. The minimum lot width for townhomes would be 16 ft but range to approximately 35 ft wide. The approximate number of townhomes proposed is 72 with about half at the 16-20 ft lot width range. Mr. Whingter explained about the structure of a homeowner's association. The townhome portion accounts for less than half the proposed lots for the entire development.

Chairman Summers swore in Mark Ivey, representative from Ivey Development. Mr. Ivey said he believed the proposed layout addressed some of the neighbor concerns.

Ms. McKie request to speak regarding Ivey Development. The Chair deferred until later in the meeting.

Board members had questions about the location of the potential townhomes and how many. Mr. Whingter clarified that a study has not been completed yet, with connections to Green Forest and Nepal; stub out from Vireo may be limited by site distance. Dove also not an appropriate connection. Most of the townhomes will have an alley-facing garage entrance. Mr. Whingter discussed site conditions that limit development area. Mr. Whingter introduced Mark Ivey. Mr. Summers had questions about the width and which lots would be the minimum lot size. Mr. Whingter clarified.

The Chair requested Mrs. Hodges read the names and addresses of the citizens that sent email comments.

At the request of Chairman Summers, Mrs. Hodges read the entirety of the comments from John Mullins, Robert Longe, Mark and Julie Lott, and Jerome Porter as a sample of the surrounding neighbors. Mr. Newman requested Mrs. Hodges read the email in favor of the development. Mrs. Hodges read an email from Tom Kinney aloud. All emails are attached to the minutes in full.

Chairman Summers swore in Ross Douglas, 101 Cascade Dr. Mr. Douglas requested the BZA deny the application. He stated the traffic will impact the safety of the neighborhood, adding more than 800 cars a day. Streets are currently not wide enough, walkers may be endangered, and Knotty Pine crossing and the Pisgah and Five Notch will be congested. They are very concerned about the infrastructure. He voiced concerns regarding the wetlands and potential for erosion and pollution from stormwater runoff. He voiced concerns about erosion and foundation issues. Mentioned 171 signatures on the petition.

Chairman Summers swore in David Owens, 1952 Bolin Rd. Mr. Owens stated he and his wife Linda have lived on Bolin Rd. for over 10 years. He stated the surrounding neighborhood is upset regarding the development and he would not repeat some of the issues brought up by Mr. Douglas. He stated his concerns for the public notice timeline. He requested that the Board postpone a vote due to the overwhelming concern from the neighbors and to give the public more time to respond. Mr. Owens expressed further concerns for the wildlife in the area. He understands that the developer has the right to develop the property as it is zoned R-7, Small Lot, Single-Family Residential, but wanted time to understand the impacts.

Chairman Summers swore in Christine Liner. Mrs. Christine Liner stated she did not receive a letter and found out about the application from her neighbors. She concurs that she was aware the land would be developed eventually. Her concerns were for the Knollwood covenants and the vision for the neighborhood not aligning with the original plans to connect to Martintown Road and Cascade. She asked the Board to look at the covenants, a traffic study, and environmental impact study. She questioned the number of homes within the development and requested postponing the decision. She asked that the board look at the covenants, environmental impacts and traffic impacts. How does this neighborhood integrate into the existing neighborhood and positively impact the City.

Mr. Newman questioned if this is truly an extension of Knollwood and if their covenants would extend to this particular piece of property. Mrs. Hodges responded that each subdivision is treated independently for development review purposes and that the Planning Department does not enforce private covenants.

Ms. Liner stated that the do not have a Homeowner's Association and mentioned a recorded plat and who signed the covenants. Ms. Stallworth asked about the plat for the original Knollwood. Ms. Liner responded that the extension was shown on the plat. She stated the plat showed houses outlined behind Mr. Douglas' home.

Chairman Summers swore in Doug Melton, 104 Cascade Drive. He wanted to correct a few statements from others and does not believe the Board can legally grant the variance. He said a traffic study was done around 2003 when there was some discussion on the Hugh Street connection. He also stated that he believes the proposed development only shows one outlet on Green Forest Drive. He does not understand how the Board can approve something that will not work. Mr. Melton has concerns about the entrances, stating that there has been flooding across the Greeneway crossing. He stated the City commissioned a study of traffic at that time.

Mrs. Hodges stated that traffic studies do expire after a period of time, so an old study may not be appropriate to use. Unless the traffic study was adopted with specific conditions staff may be limited to enforce. Some of the minutes from the Planning Commission at that time expressed concern that some conditions were not enforceable. No preliminary plat was approved for this area so there are no vested plans. The current code sets plan expiration dates at 2 years. Since they have not vested plans, current plans would need to meet current standards.

Mr. Summers reiterated the application is not a rezoning request.

Chairman Summers swore in JoAnn McKie, property owner. She clarified that their family did not develop Mountside. She stated SCDOT has deemed Vireo drive inaccessible due to sight distances. She stated they are very protective of Knollwood and spoke about history of the site and nearby property. She stated the Greeneway would be approximately 500 ft from the edge of the development in the proposed plans. The choice for Ivey Development is based on their ability to build without mass grading the entire site.

Chairman Summers swore in Forrest McKie, property owner. He questioned the Cascade Dr. bridge and Martintown Rd. connections that were mentioned by the public. He disputed some of the statements made by previous speakers. As for flooding, he stated the site will be engineered to address runoff. He stated he believes that the neighborhood needs a shot in the arm.

Mrs. McKie stated she has advocated for Knollwood in the past. Family still lives on Green Forest. Mrs. McKie spoke about Ivey Homes' reputation and building methods. Ms. McKie mentioned that Whatley Place has the same 16' homes with garages in the back. Mrs. McKie clarified with Mr. Ivey that the lots will be several hundred feet from the Greeneway. Mrs. McKie reviewed several other developments that have similar lots and

spoke about mass grading and other lot widths. Mrs. McKie spoke about crossing over Cascade, wants to make 3 roads into the neighborhood, spoke about stop signs.

Mr. Summers asked Mrs. McKie about the project with 16' lots; corrected to 24'. Mr. Summers does not recall a 16' lot being approved by the BZA.

Mrs. McKie stated she believed the BZA has not approved those lots; but that Whatley Place has 16' lots. Mr. Summers questioned how those lots were approved. Mr. Summers reiterated that each project is reviewed separately. Mrs. McKie responded that they chose Ivey for their building and design methods.

There were no other comments taken.

Mr. Summers asked Mr. Whingter if there were 72 townhomes. This was confirmed, depending on final design. Mr. Summers asked if they were asking if all townhome lots would be 16' width. Mr. Whingter confirmed. Mr. Whingter offered an average lot width. Mr. McKie stated to explain the maximum density for the site cannot be exceeded. Mr. Whingter agreed.

Mr. Newman asked if there were plans to cross the wetlands in the future or place townhomes in a future phase. Mr. Whingter stated he did not know about the townhomes, but they would have to buy mitigation credits from a wetlands mitigation bank and at this time there are no mitigation banks for this particular drainage basin.

There was some discussion regarding the number of 16 ft wide lots that would be allowed and in what arrangement. Mr. Summers, Newman, Mrs. McKie and Mr. Whingter discussed it at length. The final condition reflects the discussion.

Mr. Summers reiterated a concern about traffic, seconded by Mrs. Stallworth. Staff requested that the findings be followed. Chairman Summers read the 10 findings of fact and then closed the public hearing at approximately 8:38 p.m.

Mrs. Hodges informed callers that since the public comment was closed, callers could leave if they would like.

b. **Consideration** – Application ZE20-008

The Board discussed the findings at length. Staff reiterated that the project must still go through the development review process and a traffic study will be completed as part of the development review process. Mr. Newman made the motion with the following conditions:

1) There may be no more than two (2) sixteen (16) foot townhome lots per block of townhomes with the other townhomes having lots that are twenty-four (24) feet or wider on a strip of four (4) or more townhomes. Blocks of less than four (4) townhomes shall have only one 16 foot lot, with all other lots being twenty-four (24) feet in width or more.
2) No more than thirty-six (36) total lots within the development will have a sixteen (16) foot lot width.
3) A traffic study will be required from the Developer with Planning and Development and Planning Commission approval as required. A final presentation to the Board of Zoning Appeals will be required.
4) The developer shall be required to have a similar floor plan to what was submitted, with final approval from the Planning Director.
5) "Future development" should be returned to the Board of Zoning Appeals if required by the Development Code at that time.

Mrs. Stallworth offered a second. The vote to approve was unanimous.

In other items from staff, staff encouraged the public and the Board to take the survey shown on the screen.

6. Adjourn

With no objections, Chairman Summers adjourned the meeting at approximately 10 p.m.

As approved February 5, 2021.

Libby Hodges, AICP
Director of Planning and Development
Secretary to the Board of Zoning Appeals

Attached Public Comments as noted

STATE OF SOUTH CAROLINA	)	**BEFORE THE**
	)	**CITY OF NORTH AUGUSTA**
COUNTY OF AIKEN	)	**BOARD OF ZONING APPEALS**
	)	
In Re: McKie Property Townhomes	)	**ORDER**
	)	
Variance Application	)	**Application Number: ZV20-008**
	)	**Parcel Numbers: 006-10-09-002 and 006-11-03-164**
		Termini of Green Forest, Napal, and Bobbye Drives and Dove Avenue

Request

Ivey Development, LLC, filed an appeal for a variance pursuant to Article 3, Zoning Districts; Table 3-3 Dimensional standards for the R-7, Small Lot, Single-Family Residential Zoning District; Item G: Minimum Lot Width (ft). The applicant requested a variance to allow a lot width of ±16 feet. The application affects ± 89.64 acres located at the termini of Green Forest, Napal, and Bobbye Drives and Dove Avenue, Tax Parcel Numbers 006-10-09-002 and 006-11-03-164.

Public Notice

The application and description were advertised via a public notice describing the variance request and advertising the scheduled date of the Board of Zoning Appeals hearing in The Star and www.northaugusta.net on December 23, 2020. A written notice of the variance request and scheduled date of the Board of Zoning Appeals hearing was mailed to the owners of property within 200 feet of the subject property on December 21, 2020. The property was posted with the required public notice on December 21, 2020.

2021002444
ORDER
RECORDING FEES $25.00
PRESENTED & RECORDED:
01-27-2021 10:26 AM
JUDITH WARNER
REGISTER OF MESNE CONVEYANCE
AIKEN COUNTY, SC
BY: QUINLAN BATES DEPUTY
BK: RB 4902
PG: 1932 - 1935

Findings of Fact and Decision

Section 18.4.5.4.2 of the North Augusta Development Code defines the Board's powers and duties related to hearing and deciding upon appeals for variances and provides the criteria which the Board must use in reviewing each variance request. To grant a variance, the Board must find and explain in writing that the evidence and facts of the case prove that each of the following mandatory factors applies:

1. An unnecessary hardship exists;

2. There are extraordinary and exceptional conditions pertaining to the particular piece of property;

3. The conditions do not generally apply to other property in the vicinity;

4. Because of the conditions, the application of this Chapter to the particular piece of property would effectively prohibit or unreasonably restrict the utilization of the property; and

5. The authorization of a variance will not be of substantial detriment to adjacent property or to the public good, and the character of the district will not be harmed by the granting of the variance. Harm to the character of the district may include structures that are significantly out of scale, and the creation or potential for the creation of excessive noise, light, traffic or incompatible late night activity. (Rev. 12-1-08; Ord. 2008-18)

6. In the approval of an application for a variance from the provisions of Article 13, Signs, regulating the size, height, appearance, or location of a sign, the Board of Zoning Appeals shall also find that no alternative signage solution that complies with the provisions of Article 13 is available and would provide adequate visibility, recognition and understanding.

7. The Board of Zoning Appeals does not grant a variance the effect of which would be:
    a. To allow the establishment of a use not otherwise permitted in a zoning district.
    b. To extend physically a nonconforming use of land.
    c. To change zoning district boundaries shown on the official zoning map.

8. That the unnecessary hardship is not self-imposed.

9. That using the property more profitably was not grounds for granting the variance.

10. In granting a variance, the Board of Zoning Appeals may attach to it such conditions regarding the location, character, or other features of the proposed building, structure, or use as the Board may consider advisable to promote the public health, safety, or general welfare.

Based upon these factors, the Board's review of this application, consideration of the staff report as well as testimony and evidence submitted by the applicant, and providing the opportunity for public comment both at the hearing, via email or written mail, and phone message, the Board has found in the affirmative that the appeal meets all of the standards required to issue the variance.

After a motion made by Mr. Jim Newman, and duly seconded by Mrs. Kathy Stallworth, and joined by Chairman Wes Summers, the Board voted unanimously to approve the application with the following conditions:

1) There may be no more than two (2) sixteen (16) foot townhome lots per block of townhomes with the other townhomes having lots that are twenty-four (24) feet or wider on a strip of four (4) or more townhomes. Blocks of less than four (4) townhomes shall have only one sixteen (16) foot lot, with all other lots being twenty-four (24) feet in width or more.
2) No more than thirty-six (36) total lots within the development will have a sixteen (16) foot lot width.
3) A traffic study will be required from the Developer with Planning and Development and Planning Commission approval as required. A final presentation to the Board of Zoning Appeals will be required.
4) The developer shall be required to have a similar floor plan to what was submitted, with final approval from the Planning Director.
5) "Future development" should be returned to the Board of Zoning Appeals if required by the Development Code at that time.

Therefore, based upon these findings of fact and conclusions of law; it is:

ORDERED that subject to the conditions enumerated herein, the applicant's request for a variance pursuant to Article 3, Zoning Districts, Section 3.8.5.3, Table 3-3, Dimensional Standards for the Article 3, Zoning Districts; Table 3-3 Dimensional standards for the R-7, Small Lot, Single-Family Residential Zoning District; Item G: Minimum Lot Width (ft) for ±89.64 acres acres located at the termini of Green Forest Drive, Napal Drive, Bobbye Drive and Dove Avenue, Tax Parcel Numbers 006-10-09-002 and 006-11-03-164, is GRANTED; and further

ORDERED that the executed Order be given to the North Augusta City Clerk and that copies be provided to the applicant and the North Augusta Department of Planning and Development.

IT IS SO ORDERED

O. Wesley Summers, Chairman
Board of Zoning Appeals

Jan. 25, 2021
North Augusta, South Carolina

Copy of this order sent to the applicants **BY CERTIFIED MAIL** on _____, 2021.

Libby Hodges, AICP, Director
Department of Planning & Development
Secretary to the Board of Zoning Appeals

McKie Property Housing Development
North Augusta, South Carolina

Traffic Engineering Study

Prepared for:

Ivey Group

Prepared by:

ISM

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March 4, 2021
Revised July 7, 2021

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INTRODUCTION

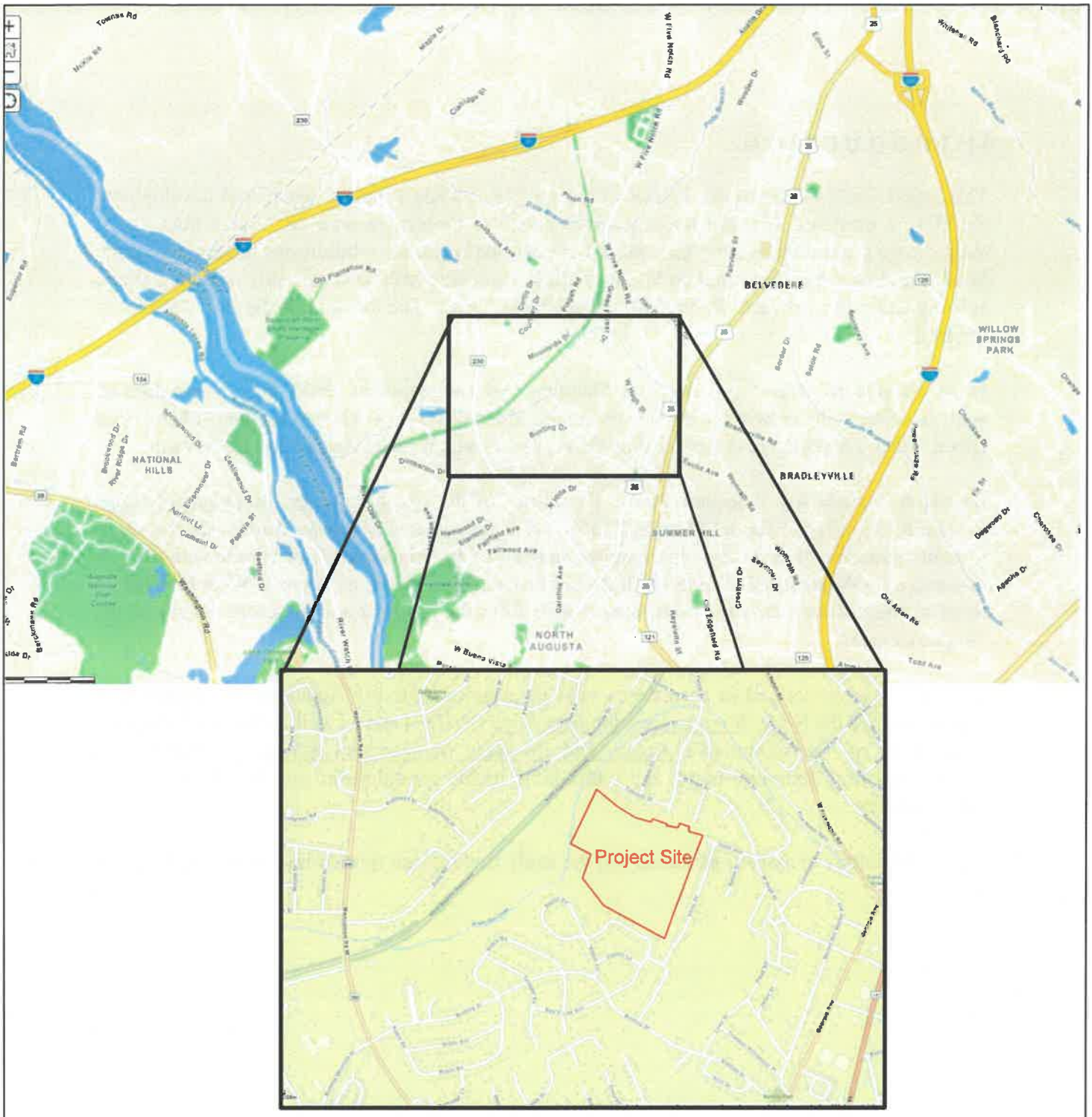
This report analyzes the traffic impact of the propose McKie Property residential development (MPRD), a proposed 167-unit housing development to be located on a 86.72-acre tract that is located in the midst of the existing Knollwood, Lynhurst, and Highlands subdivisions in North Augusta, South Carolina with a projected build-out of 2024. Access to MPRD is currently proposed at two existing stub-out roadways: Bobbye Drive and Napal Drive. The location of the site is shown in Figure 1.

From discussions with North Augusta Planning and Development Staff, they would like an analysis of the study network to include the intersections of West Five Notch Road at Green Forest Drive, Green Forest Drive at Knotty Pine Drive, and Pisgah Road at Knollwood Boulevard.

Based on "Article 8 – Adequate Public Facilities" of the North Augusta Development Code, *Section 8.7.4 – Traffic Impact Tiers* and *Table 8-1 Adopted Level of Service Standards*, the site is located within the "Tier 2" area that requires analysis of an "impact area" of ½ mile with a level-of-service (LOS) standard of LOS D. It should be noted that the intersection of West Five Notch Road at Green Forest Drive is more than ½ mile from the property and therefore outside of the "impacted area."

The study was performed in accordance with the requirements of "Appendix B – Application Documents" of the North Augusta Development Code (NADC) and as well as the South Carolina Department of Transportation's Access and Roadside Management Standards (ARMS) and includes existing, future no-build, and future build traffic conditions at each intersection in the study network.

The methodology to assess operations and the study findings are summarized in the sections that follow.



ISM Infrastructure Systems Management, LLC	*McKie Property Traffic Impact Analysis*	**Site Location Map**	**Figure 1**
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CAPACITY ANALYSIS METHODOLOGY

Synchro 11 software were used to perform capacity analysis at each intersection within the study network in accordance with criteria set forth in the Transportation Research Board's Highway Capacity Manual, 2010 Edition (HCM).

In general, the LOS may be defined as a measure of operations conditions within a traffic stream and the perception of the condition by the general motoring public. The six levels of service are briefly described, as follows:

- LOS A – Little or no traffic delays;
- LOS B – Minimal to short traffic delays;
- LOS C – Average traffic delays;
- LOS D – Relatively long traffic delays;
- LOS E – Intersections are at or near the maximum capacity and traffic experiences long delays; and
- LOS F – Intersections are operating above their maximum capacity and traffic delays are long and unstable.

For signalized intersections, one overall intersection LOS is reported. At unsignalized intersections, the LOS for each controlled approach or movement (side-streets and main-street left-turns) is reported. Table 1 presents LOS criteria for signalized and unsignalized intersections.

Table 1
Level of Service Criteria

LOS	Average Control Delay (sec / veh)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10	≤10
B	> 10 and ≤20	> 10 and ≤ 15
C	> 20 and ≤35	> 15 and ≤ 25
D	> 35 and ≤55	> 25 and ≤ 35
E	> 55 and ≤80	> 35 and ≤ 50
F	> 80	> 50

Source: 2000 Highway Capacity Manual

For signalized intersections, a volume-to-capacity ratio (v/c) is also computed. The capacity of the intersection is calculated based on the geometry and signal green-time allocation. Intersection capacity is then compared to the volumes entering the intersection. A v/c ratio of less than 1.0 indicates that there is sufficient capacity for the traffic demand. A v/c ratio of more than 1.0 generally indicates the need for intersection improvements.

EXISTING ROADWAY FACILITIES

A site visit was performed to develop an inventory and observations of the existing roadways within the study network, which are described in the sections that follow.

West Five Notch Road (S-45)

West Five Notch Road is a north-south, state-maintained minor arterial that is designated SC 225 in the vicinity of the site. West Five Notch Road begins at Sweetwater Road (SC 34) and runs south into Aiken County where it becomes SC 45 and terminates at its intersection with Georgia Avenue in North Augusta. West Five Notch Road has a posted of 40 mph along its northern section that increases to 45 mph just south of Sweetwater Road before dropping to 35 mph in Aiken County.

Land uses along West Five Notch are primarily residential in nature with some institutional and light commercial uses also present. At its intersection with Green Forest Drive, West Five Notch Road is uncontrolled with right-turn lanes and shared through-left-turn lanes in each direction.

In 2019, SCDOT reported an annual average daily traffic volume (AADT) of 8,400 vehicles per day (vpd) along West Five Notch Road south of Green Forest Drive. A bi-directional count performed for this study on January 28, 2021 recorded 10,697 vehicles in a 24-hour period south of Green Forest Drive.

Green Forest Drive (L-2757)

Green Forest Drive is a two-lane, north-south and east-west urban local road less than a mile in length and serves as the main spine road for the Knollwood subdivision.

At it's unsignalized intersection with West Five Notch Road, Green Forest Drive is stop-controlled with a single lane to serve all traffic movements.

SCDOT does not maintain a count station along Green Forest Drive but, two 24-hour bi-directional counts performed for this study on January 28, 2021 showed 24-hour volumes of 993 vpd west of West Five Notch Road and 668 vpd south of Knotty Pine Drive.

Knotty Pine Drive (L-2680)

Knotty Pine Drive is a two-lane, east-west urban local road less than a mile in length and runs between Green Forest Drive and White Pine Drive, connecting the Knollwood subdivision with the Pinehurst and Highlands subdivisions as well as other subdivisions to the west.

At it's unsignalized intersection with Green Forest Drive, Knotty Pine Drive is stop-controlled with a single lane to serve all traffic movements.

SCDOT does not maintain a count station along Knotty Pine Drive but, a 24-hour bi-directional count performed for this study on January 28, 2021 showed 24-hour volumes of 440 vpd west of Green Forest Drive.

Bobbye Drive (L-884)

Bobbye Drive is a short, two-lane, north-south urban local road less than a mile in length and runs from West east for 0.1 mile to its terminus at an existing stub-out that connects to the McKie Property. It is proposed that one access to the proposed development will be via Bobbye Drive.

At it's unsignalized intersection with West Hugh Street, Bobbye Drive is stop-controlled with a single lane to serve all traffic movements.

SCDOT does not maintain a count station along Bobbye Drive, but with only six existing homes, it would be expected based on estimates from the 10th edition of the Institute of Transportation Engineers' (ITE) Trip Generation report utilizing the following land-uses: *ITE Land Use 210 – Single-Family Detached Housing* which estimates daily traffic along Bobbye Drive would be 78 vpd. These estimates are shown in Table 2.

Table 2
Estimated Traffic for Bobbye Drive

Land Use	Size	AM Peak Hour			Midday Peak Hour			PM Peak Hour			24-hour
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	2-way
210 – Single-Family Detached	6	2	7	9	3	2	5	4	3	7	78
Total	**6**	**2**	**7**	**9**	**3**	**2**	**5**	**4**	**3**	**7**	**78**

West Hugh Street (L-3311

This portion of West Hugh Street is a short, two-lane, east-west urban local road less than a mile in length and runs from Green Forest Drive east for 0.1 mile to a dead-end landscape feature that restricts connectivity to the east.

At it's unsignalized intersection with Green Forest Drive, West Hugh Street is stop-controlled with a single lane to serve all traffic movements.

SCDOT does not maintain a count station along West Hugh Street, but with only eight existing homes along West Hugh Street and six existing homes along Bobbye Drive, it would be expected based on estimates from the Institute of Transportation Engineers (ITE) Trip Generation report that daily traffic along West Hugh Street would be 180 vpd. These estimates are shown in Table 3.

Table 3
Estimated Traffic for West Hugh Street

Land Use	Size	AM Peak Hour			Midday Peak Hour			PM Peak Hour			24-hour
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	2-way
210 – Single-Family Detached	8	3	7	10	4	3	7	6	3	9	102
From Bobbye Drive	6	2	7	9	3	2	5	4	3	7	78
Total	**167**	**5**	**14**	**19**	**7**	**5**	**12**	**10**	**6**	**16**	**180**

Pisgah Road (S-901)

Pisgah Road is a two-lane, north-south urban major collector less than a mile in length primarily serving several subdivisions east of the proposed development.

At it's two-way, stop-controlled, unsignalized intersection with Knollwood Boulevard, Pisgah Road is uncontrolled with a single one through lane and a right-turn lane along the northbound approach and a shared through-left along the southbound approach.

In 2019, SCDOT reported an annual average daily traffic volume (AADT) of 5,300 vehicles per day (vpd) along Pisgah Road near its intersection with Knollwood Boulevard. Counts were not collected for this study at the intersection of Pisgah Road and Knollwood Road, however, hourly traffic counts were estimated using existing AADT data, data collected at the intersection of Knotty Pine Road and Green Forest Drive, as well ITE Trip Generation for the existing homes between Pisgah Road and West Green Forest. These are shown in Table 4.

Table 4
Estimated Traffic from Existing Homes between Pisgah Road and Green Forest Drive

Street	Units	AM Peak Hour			Midday Peak Hour			PM Peak Hour			24-hour
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	2-way
Knollwood Blvd	7	3	7	10	4	3	7	5	3	8	90
White Pine S of Knollwood	19	5	13	18	10	7	17	13	8	21	226
White Pine N of Knollwood	32	7	21	28	15	11	26	21	13	34	364
Knotty Pine Drive	10	3	9	12	5	4	9	7	4	11	125
Total	**68**	**18**	**50**	**68**	**34**	**25**	**59**	**46**	**28**	**74**	**805**

Peak-hour traffic along Pisgah Road was estimated using the AADT and calculated percentage of ADT calculated for the Green Forest Drive of 6.24 % in the morning peak hour; 7.35% in the midday peak hour, and 10.87 % occurring during the evening peak hour.

EXISTING CONDITIONS

Raw Existing Traffic Volumes

Peak hour turning movement counts were collected at the intersections of West Five Notch Road at Green Forest Drive and Green Forest Drive at Knotty Pine Drive on Thursday, January 28, 2021 for the morning peak period between 7:00 am and 9:00 am; the midday (after school) peak period from 2:00 pm to 4:00 pm; and the evening peak period from 5:00 pm to 7:00 pm. Peak hour data for Pisgah Road and Knollwood were estimated based on AADT, trip gerneration data, and volumes at intersection of West Five Notch Road and Green Forest Drive.

From these data, the peak hour volumes for the intersections were found to occur between 7:15 am and 8:15 am for the morning peak hour; between 3:00 pm and 4:00 pm for the midday (after school) peak hour; and between 5:00 pm and 6:00 pm for the evening peak hour. These volumes are shown in Figure 2. However, it is recognized that these volumes will require adjustments due to the on-going CoViD-19 pandemic.

Adjusted Existing Traffic Volumes

To estimate and adjust traffic volumes resulting from the impact of the on-going school closures for the CoViD-19 pandemic, a 12% growth factor was applied to raw traffic volumes in accordance with SC DOT guidance. The resulting adjusted morning and evening peak hour volumes are shown in Figure 3.

Existing Conditions Analysis

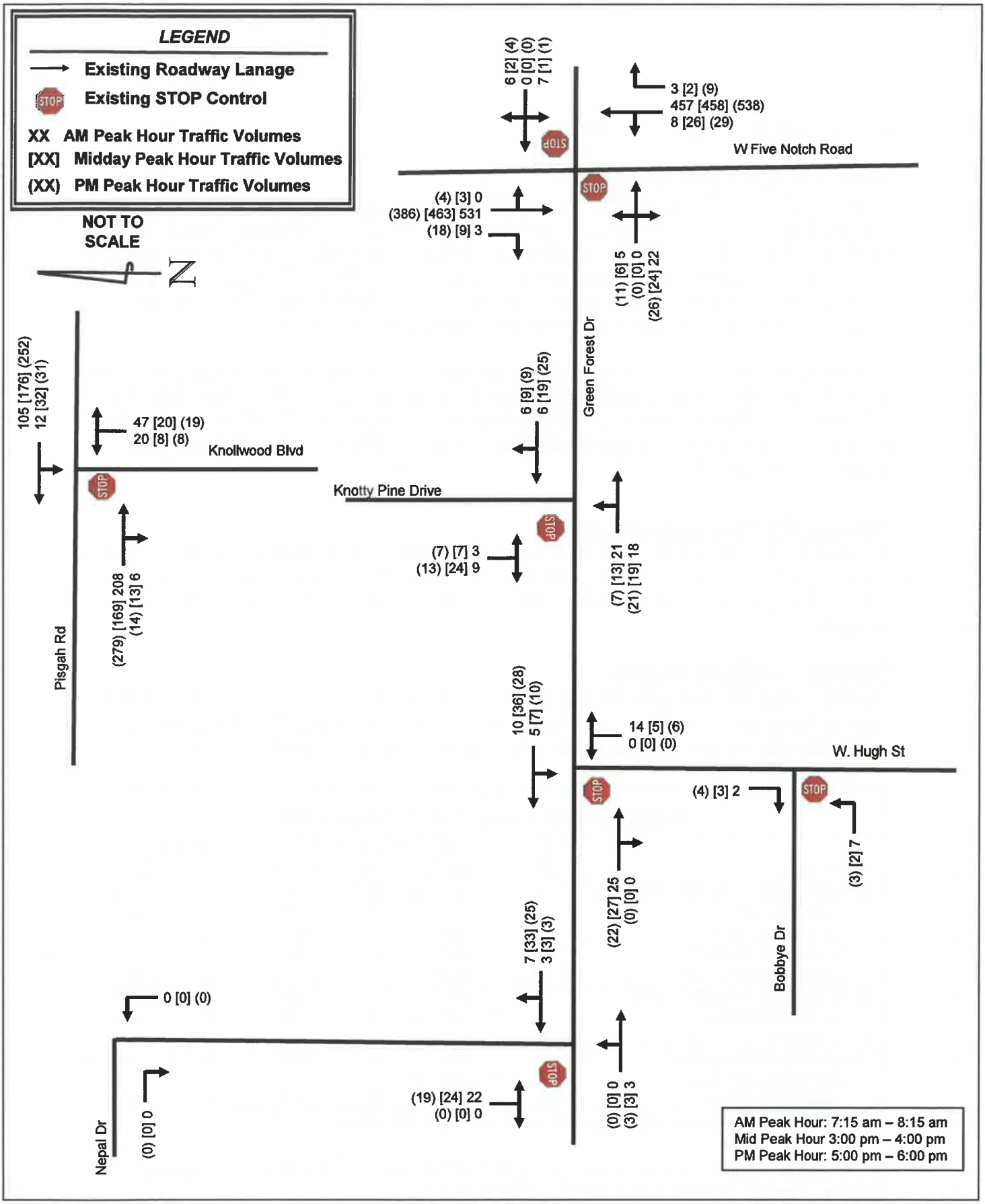
Existing intersection operations were analyzed to determine current traffic conditions and identify existing deficiencies that should be addressed. Peak hour intersection traffic volumes and existing intersection geometries were used in the analysis and the results are presented in Table 5.

Table 5
Existing Intersection Operations with Existing Geometry

Intersection	A.M. Peak Hour		Midday Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
West Five Notch Rd at Green Forest Dr	**A**	**1.1**	**A**	**1.2**	**A**	**1.2**
- northbound left-turn	A	9.0	A	8.6	A	8.4
- southbound left-turn	A	0.0	A	8.8	A	8.9
- eastbound approach	C	18.6	C	18.8	C	18.1
- westbound approach	D	25.8	C	20.7	C	16.5
Green Forest Dr at Knotty Pine Dr.	**A**	**4.1**	**A**	**4.0**	**A**	**2.7**
- northbound left-turn	A	7.3	A	7.3	A	7.3
- eastbound approach	A	8.7	A	8.9	A	8.8
Pisgah Rd at Knollwood Blvd.	**A**	**2.3**	**A**	**1.4**	**A**	**1.1**
- southbound left-turn	A	7.8	A	7.8	A	8.1
- westbound approach	B	10.7	B	10.4	B	11.9

1. Volume-weighted average delay for all vehicles entering the intersection.

Based on the results of the analyses shown in Table 2, the intersection and all approaches are currently operating within their respective LOS standards.



ISM Infrastructure Systems Management, LLC	*McKie Property Traffic Impact Analysis*	**Raw Existing Traffic Volumes**	**Figure 2**
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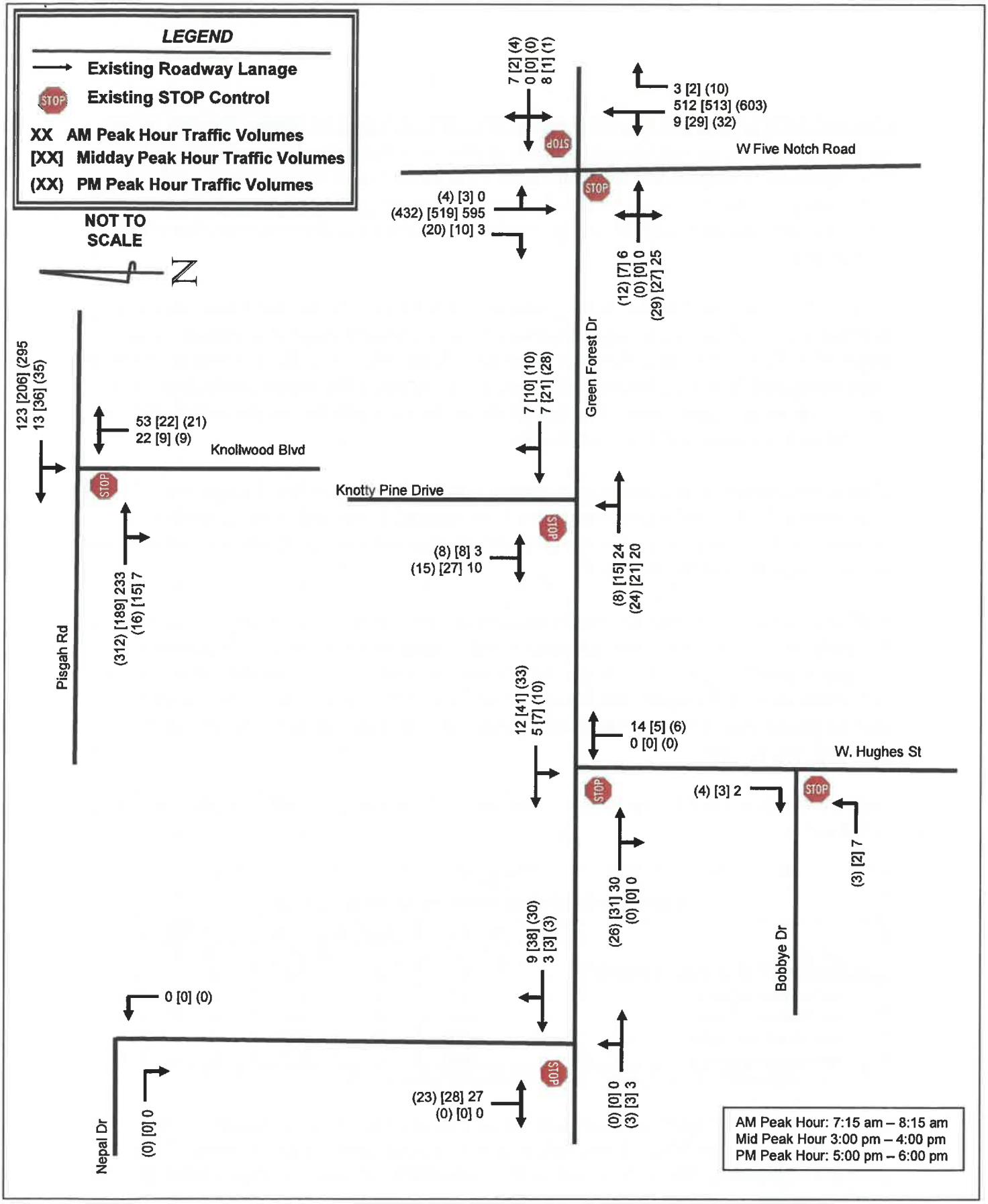

ISM Infrastructure Systems Management, LLC	*McKie Property Traffic Impact Analysis*	**Adjusted Existing Traffic Volumes**	**Figure 3**
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Existing Left-Turn Lane Analysis (West Five Notch Road at Green Forrest Drive)

As noted previously, the southbound approach of West Five Notch Road currently has a right turn lane, therefore the need for a left-turn lane in the Existing Condition was evaluated in accordance with section *9.5 Auxiliary Turn Lanes* of the SC DOT Roadway Design Manual (March 2017) which provides volume guidelines and criteria for the installation of left-turn lanes at unsignalized intersections.

Left-turn lane analysis is based on the percentage of left-turn vehicles in the same direction in combination as well as the total opposing traffic volume versus trailing traffic volume. Based on projected traffic volumes, the percentage of left-turns in the existing condition during the morning and evening peak hour are 1.7% and 5.0%, respectively and the left-turn evaluations for each peak hour are shown in Figure 4 and reveal that a left-turn lane is warranted for the northbound West Five Notch Road approach to Green Forest Drive.

Because this improvement is necessary to address existing deficiencies, it is considered a "system" improvement." "System" improvements are those required to mitigate existing deficiencies not associated with traffic generated by the proposed development not typically considered to be the whole responsibility of the developer.

Additionally, as noted previously, this intersection is outside of the ½ mile "impact area" defined by Table 8-1 NADC and, while this lane is not needed to achieve the LOS standard, *8.7.2 Mitigation, part (c)* states: "Roadways and intersections within the project site and on all roads and streets along its boundary that operate or are projected to operate below the adopted LOS, without project related site-generated traffic, need not to be improved to the adopted LOS by the proposed development."

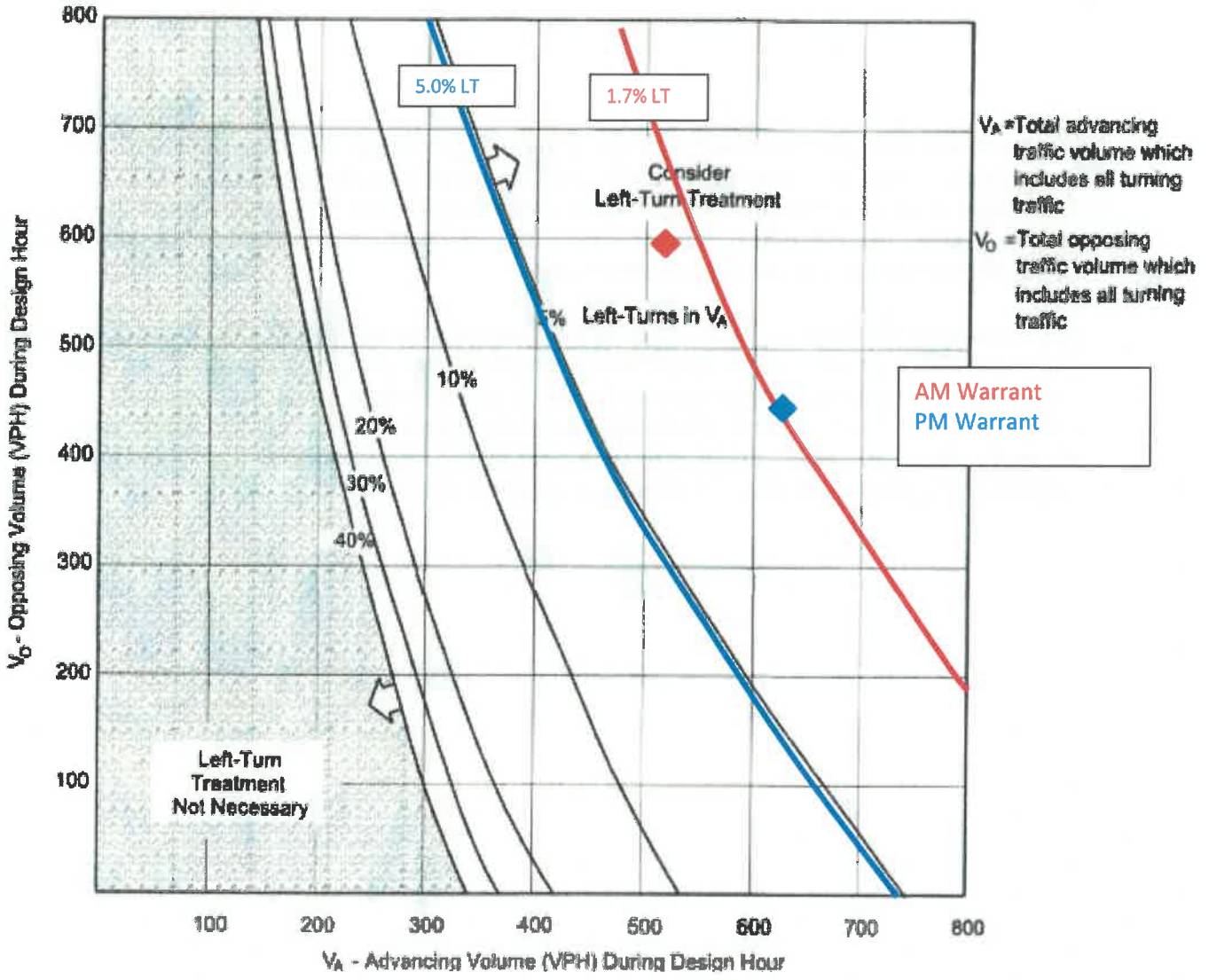
Analysis was performed for the Existing Condition with the warranted left-turn lane is presented in Table 6.

Table 6
Existing Intersection Operations with Warranted Left-turn Lane

Intersection	A.M. Peak Hour		Midday Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
West Five Notch Rd at Green Forest Dr	**A**	**1.1**	**A**	**1.2**	**A**	**1.2**
- northbound left-turn	A	9.0	A	8.8	A	8.4
- southbound left-turn	A	0.0	A	8.8	A	8.9
- eastbound approach	C	18.6	C	18.7	C	18.0
- westbound approach	D	25.8	C	20.5	C	16.5

1. Volume-weighted average delay for all vehicles entering the intersection.

As shown above, the addition of the northbound left-turn lane at the intersection of West Five Notch Road and Green Forest Drive only results in a slight improvement in delay. Therefore, careful consideration should be given to the cost-benefit of such an improvement prior to implementation.



Instructions:

1. *The family of curves represents the percent of left turns in the advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.*

2. *Read V_A and V_O into the chart and locate the intersection of the two volumes.*

3. *Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is warranted. If the point is to the left of the line, then a left-turn lane is not warranted based on traffic volumes.*

VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON TWO-LANE HIGHWAYS (45 mph)

It is also worth noting that it is likely that the closure of West Hugh Street has some influence on this analysis. Given that most of the traffic entering the existing development from West Five Notch Road originates from the east towards Georgia Avenue and West Hugh Street intersects Georgia Avenue, removing the closure of West Hugh Street and allowing this connection would potentially provide relief to the intersection as well.

While removing the closure of West Hugh Street would provide additional connectivity and route options which are typically sought in an urban environment, however the reasoning for this closure is unknown and removing it could increase traffic along West Hugh Street and impact the quality of life for those residents as well. Therefore, careful consideration and study beyond the scope of this study should be performed prior to such a change to help determine if it is desired or if additional mitigation, such as traffic calming, would be needed.

BACKGROUND GROWTH

Background growth estimates were performed using a combination of historic traffic volumes and census data for the area. This methodology is shown in the paragraphs that follow.

SC DOT maintains several count stations along in the vicinity of the site with data available between 2009 and 2019. The 2019 daily traffic volumes and calculated growth rates are presented in Table 7 for the count stations closest to the site.

Table 7
Traffic Growth in the Study Area

Route	Location	2019 ADT	10-year Average Annual Growth	5-year Average Annual Growth	2-year Average Annual Growth	1-year Average Annual Growth
Georgia Avenue	East of site	12,700	-0.31%	1.13%	-1.16%	-0.78%
Martintown Road	SW of site	22,600	1.03%	2.99%	1.82%	-1.31%
Martintown Road	NW of site	18,300	2.79%	3.51%	1.97%	-1.08%
West Five Notch Rd	South of site	8,400	-1.01%	0.24%	4.45%	-1.18%
West Five Notch Rd	North of site	8,400	-0.69%	1.49%	4.45%	-1.18%
Pisgah Rd	North of site	5,300	1.43%	4.76%	8.53%	-3.64%
Overall Average			0.74%	2.38%	2.32%	-1.30%

As shown by the data in Table 3, traffic growth in the immediate vicinity of the site has been fairly stable over the past ten years. Recent data over the last five years showed a rather aggressive growth pattern but, more recent data over the last 2 years show that the overall growth is showing signs leveling off or decline.

In addition to traffic growth, estimated census data from the South Carolina Revenue and Fiscal Affairs Office were obtained for Aiken County and reviewed. These data, as well as calculated average annual growth rates, are shown in Table 8.

Table 8
Population Projection Trends for Aiken County

Year	Population	% Change	Average Annual Growth
2020	171,320	–	–
2025	175,635	2.5%	0.5%
2030	178,735	4.3%	0.4%
2035	180,550	5.4%	0.4%

Similar to traffic trends shown previously, the annual growth in population for the county is also projected to stabilize over the long term as well, with annual growth falling below 1% in the next twenty years.

Taking the above into account, it was decided that a 1.5% annual growth factor would represent a conservative estimate for the future conditions.

2024 No-Build Condition

The development is expected to be completed in 2024, therefore, an estimate was made for the 2024 No-Build Condition which represents the traffic operations of the study network in 2024 without traffic from the proposed development.

To project traffic volumes for the 2024 No-Build Condition, the background growth rate, which was calculated previously at 1.5%, was applied to the adjusted existing traffic volumes for two years and are shown in Figure 5.

These volumes were used to analyze the 2024 No-Build traffic conditions surrounding the site with existing intersection geometry. The results of this analysis are presented in Table 9.

Table 9
No-Build Intersection Operations with Existing Geometry

Intersection	A.M. Peak Hour		Midday Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
West Five Notch Rd at Green Forest Dr	**A**	**1.2**	**A**	**1.2**	**A**	**1.2**
- northbound left-turn	A	9.2	A	8.9	A	8.5
- southbound left-turn	A	0.0	A	8.9	A	9.0
- eastbound approach	C	19.6	C	19.9	C	19.5
- westbound approach	D	28.1	C	22.0	B	17.4
Green Forest Dr at Knotty Pine Dr.	**A**	**4.1**	**A**	**4.0**	**A**	**2.7**
- northbound left-turn	A	7.3	A	7.3	A	7.3
- eastbound approach	A	8.7	A	8.9	A	8.8
Pisgah Rd at Knollwood Blvd.	**A**	**2.3**	**A**	**1.4**	**A**	**1.1**
- southbound left-turn	A	7.8	A	7.8	A	8.2
- westbound approach	B	11.0	B	10.5	B	12.1

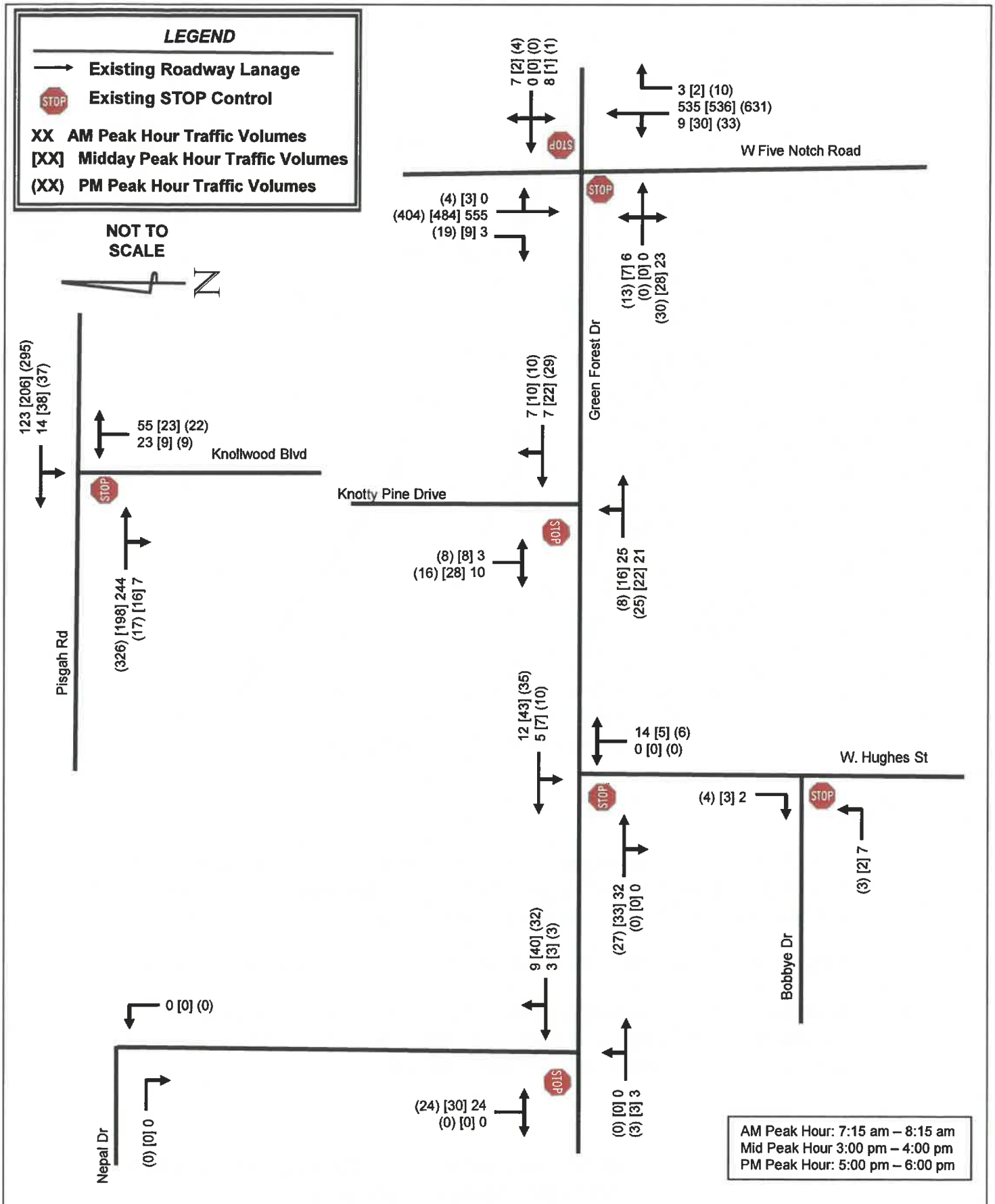
1. Volume-weighted average delay for all vehicles entering the intersection.

As would be expected with addition of background growth, the analyses shown in Table 9 shows some increases in delay as compared to the Existing Condition, however, the intersection and its approaches are projected to continue operating within their respective LOS standards with the existing intersection geometry.

No-Build Left-Turn Lane Analysis (West Five Notch Road at Green Forrest Drive)

As noted previously, the southbound approach of West Five Notch Road currently has a right turn lane and previous analysis for the Existing Conditions showed that a left-turn lane is warranted for the northbound West Five Notch Road approach to Green Forest Drive and therefore, typically considered a "system" improvement.

While it would be expected that, after the addition of background growth, the left-turn lane would continue to be warranted. The analysis was performed with the updated No-Build Condition volumes that project the percentage of left-turns during the morning and evening peak hour to be 1.7% and 5.0%, respectively. This analysis is shown in shown in Figure 6 and reveal that, as expected, a left-turn lane continues to be warranted for the northbound West Five Notch Road approach to Green Forest Drive.



ISM Infrastructure Systems Management, LLC	*McKie Property Traffic Impact Analysis*	**2024 No-Build Traffic Volumes**	**Figure 5**
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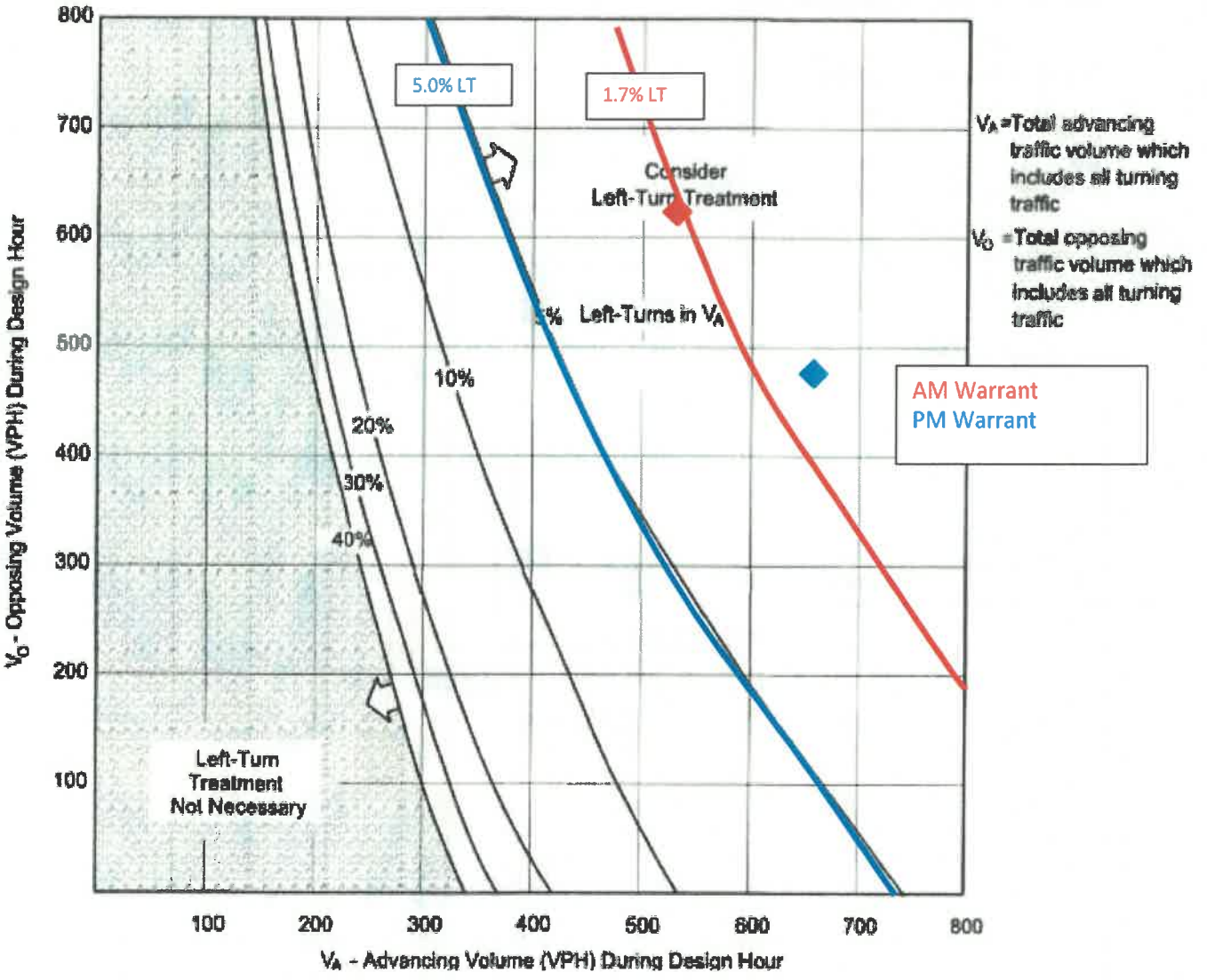


Instructions:

1. *The family of curves represents the percent of left turns in the advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.*

2. *Read V_A and V_O into the chart and locate the intersection of the two volumes.*

3. *Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is warranted. If the point is to the left of the line, then a left-turn lane is not warranted based on traffic volumes.*

VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON TWO-LANE HIGHWAYS (45 mph)

Because this improvement is necessary to address background deficiencies, it is considered a "system improvement." "System" improvements are those required to mitigate existing, or background deficiencies not associated with traffic generated by the proposed development not typically considered to be the whole responsibility of the developer.

Additionally, as noted previously, this intersection is outside of the ½ mile "impact area" defined by Table 8-1 NADC and, while this lane is not needed to achieve the LOS standard, *8.7.2 Mitigation, part (c)* states: "Roadways and intersections within the project site and on all roads and streets along its boundary that operate or are projected to operate below the adopted LOS, without project related site-generated traffic, need not to be improved to the adopted LOS by the proposed development."

Analysis was performed for the 2024 No-Build traffic conditions with the warranted left-turn lane is presented in Table 10.

Table 10
2024 No-Build Intersection Operations with Warranted Left-turn Lane

Intersection	A.M. Peak Hour		Midday Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
West Five Notch Rd at Green Forest Dr	**A**	**1.2**	**A**	**1.2**	**A**	**1.2**
- northbound left-turn	A	9.2	A	8.9	A	8.5
- southbound left-turn	A	0.0	A	8.9	A	9.0
- eastbound approach	C	19.6	C	19.8	C	19.4
- westbound approach	D	28.0	C	21.9	C	17.3

1. Volume-weighted average delay for all vehicles entering the intersection.

As shown above, the addition of the northbound left-turn lane at the intersection of West Five Notch Road and Green Forest Drive only results in a slight improvement in delay. Therefore, careful consideration should be given to the cost-benefit of such an improvement prior to implementation.

As noted previously, it is also worth noting that it is likely that the closure of West Hugh Street has some influence on this analysis. Given that most of the traffic entering the existing development from West Five Notch Road originates from the east towards Georgia Avenue and West Hugh Street intersects Georgia Avenue, removing the closure of West Hugh Street and allowing this connection would potentially provide relief to the intersection as well.

While removing the closure of West Hugh Street would provide additional connectivity and route options which are typically sought in an urban environment, however the reasoning for this closure is unknown and removing it could increase traffic along West Hugh Street and impact the quality of life for those residents as well. Therefore, careful consideration and study beyond the scope of this study should be performed prior to such a change to help determine if it is desired or if additional mitigation, such as traffic calming, would be needed.

PROJECT TRAFFIC PROJECTIONS

MPRD is a proposed 167-unit development to be located on a 86.72-acre tract that is located in the midst of the existing Knollwood, Lynhurst, and Highlands subdivisions in North Augusta, South Carolina with a projected build-out of 2024. Access to the development is currently proposed at two existing stub-out roadways: Bobbye Drive and Napal Drive.

An estimate of traffic that will be generated by the development was made based on trip generation characteristics for similar land uses nationwide. The trip generation rates used in this study were taken from the 10th edition of the Institute of Transportation Engineers' (ITE) Trip Generation report utilizing the following land-uses: *ITE Land Use 210 – Single-Family Detached Housing* and *220 – Multifamily Housing (Low Rise).*

Table 11 presents a summary of the projected trip generation for the MPRD.

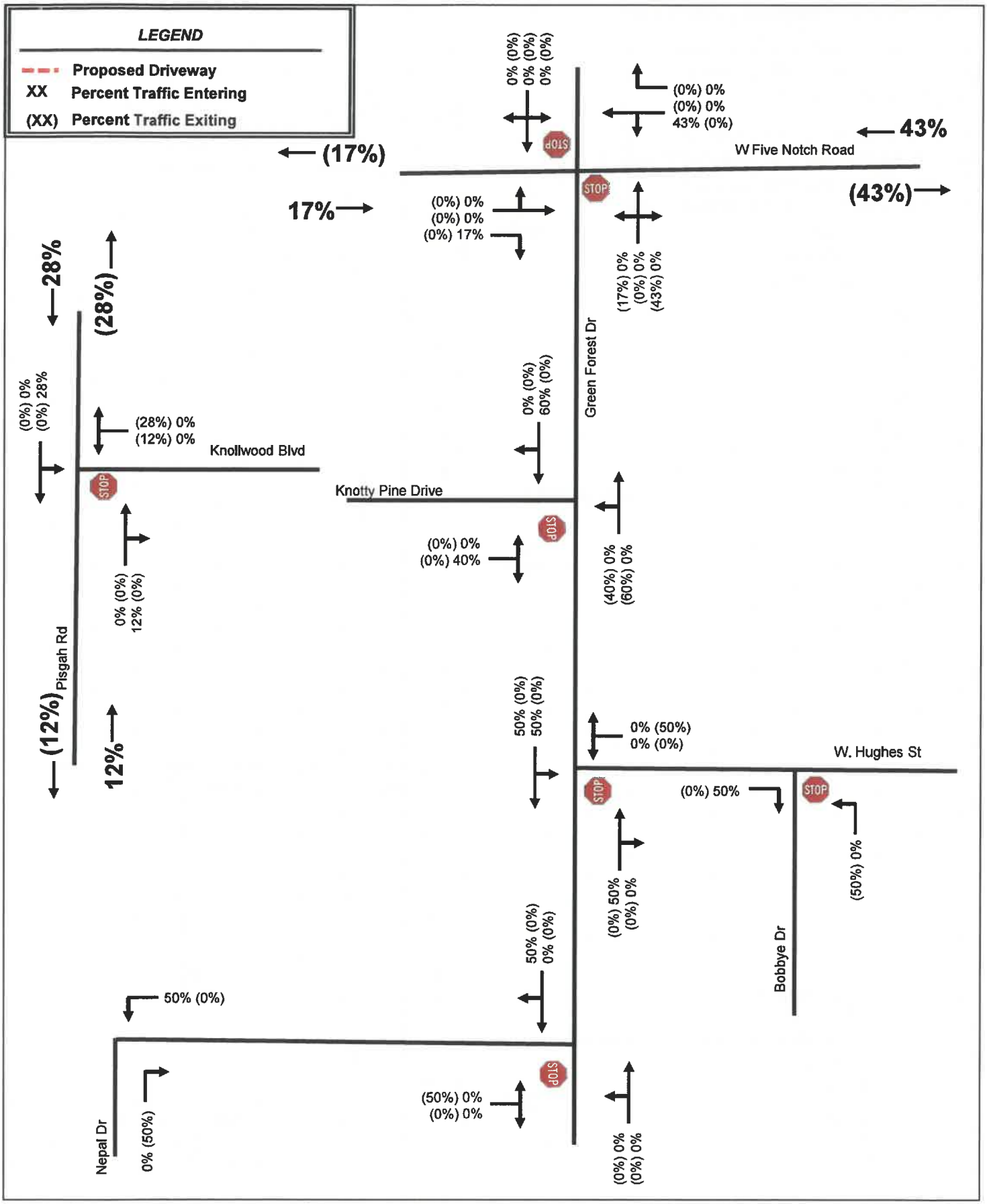
Table 11
Trip Generation

Land Use	Size	AM Peak Hour			Midday Peak Hour			PM Peak Hour			24-hour
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	2-way
210 - Single-Family Detached	97	19	55	74	43	30	73	62	37	99	1,011
220 - Multifamily Low Rise	70	8	34	42	20	13	33	27	16	43	488
Total	**167**	**27**	**89**	**116**	**63**	**43**	**106**	**89**	**43**	**142**	**1,499**

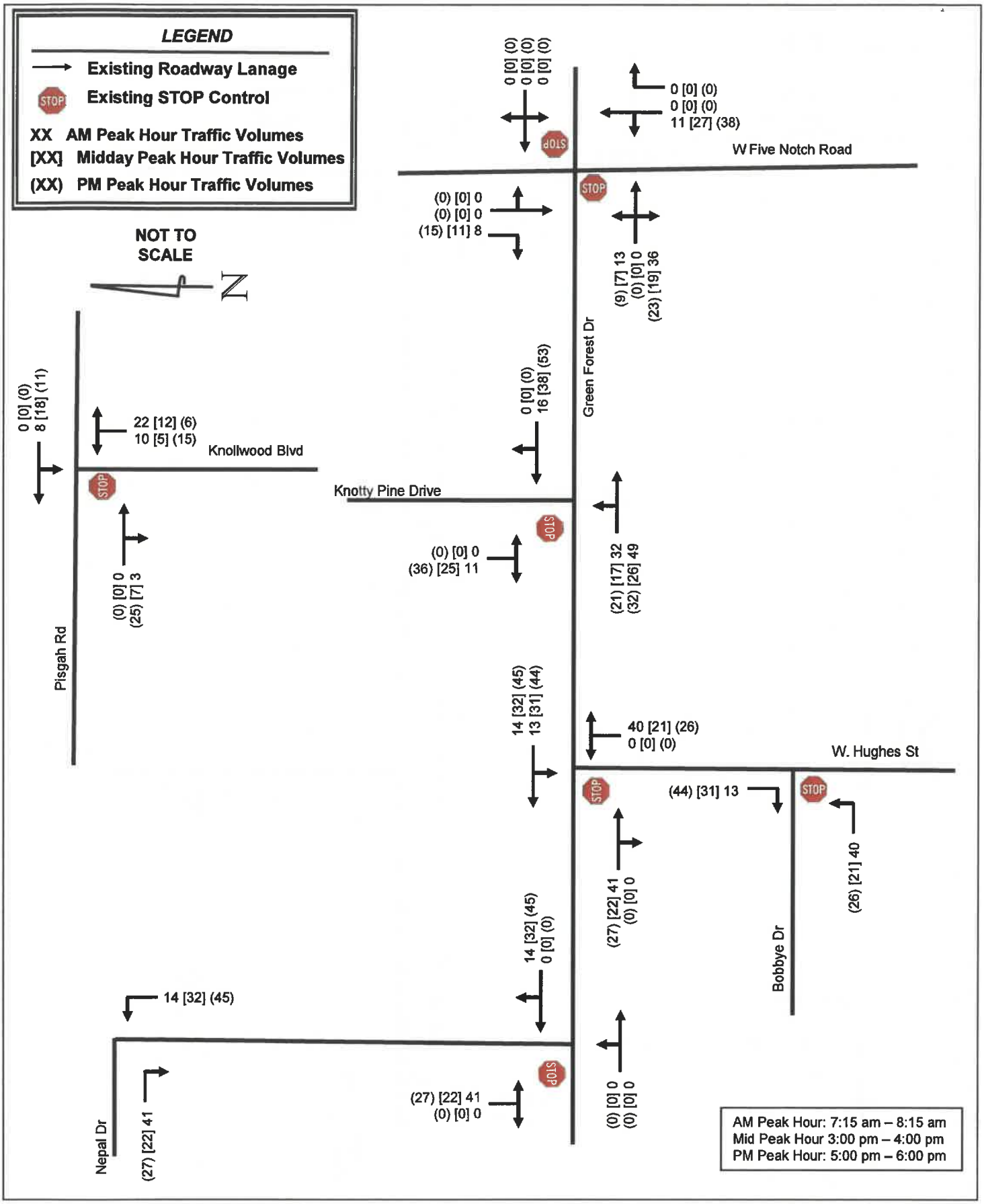
Trip Distribution and Traffic Assignment

Trip distribution describes the direction drivers will be going to and coming from when they turn into and depart from the development. Typically, this type of development draws from the local area, and therefore, it is believed that using the existing travel patterns in the area will most closely approximate the trip distribution for this site.

To establish existing traffic patterns, the directions from which vehicles approach and depart the study network intersections. This exercise resulted in the trip distribution shown in Figure 7. The projected traffic that will be generated by this project was assigned to the study area based on this distribution and are shown in Figure 8.



ISM Infrastructure Systems Management, LLC	*McKie Property Traffic Impact Analysis*	**Trip Distribution**	**Figure 7**
			Page 19



ISM Infrastructure Systems Management, LLC	*McKie Property Traffic Impact Analysis*	**Site Generated Traffic Volumes**	**Figure 8**
			Page 20

FUTURE CONDITIONS

Future Conditions represents traffic conditions at full build-out of MPRD. Future traffic volumes are made up of the 2024 No-Build Traffic volumes, presented previously in Figure 5, plus the site generated volumes shown in Figure 8. The resultant Future traffic volumes are shown in Figure 9.

These volumes were used to analyze the Future traffic conditions surrounding the site with existing intersection geometry. The results of this analysis are presented in Table 12.

Table 12
Future Intersection Operations with Existing Geometry

Intersection	A.M. Peak Hour		Midday Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
West Five Notch Rd at Green Forest Dr	**A**	**3.0**	**A**	**2.5**	**A**	**2.5**
- northbound left-turn	A	9.2	A	9.1	A	8.7
- southbound left-turn	A	0.0	A	8.9	A	9.0
- eastbound approach	D	29.4	D	27.5	D	25.7
- westbound approach	D	34.1	D	25.8	C	19.3
Green Forest Dr at Knotty Pine Dr.	**A**	**3.6**	**A**	**3.8**	**A**	**3.1**
- northbound left-turn	A	7.4	A	7.5	A	7.5
- eastbound approach	A	8.9	A	9.4	A	9.4
Pisgah Rd at Knollwood Blvd.	**A**	**3.0**	**A**	**1.9**	**A**	**1.5**
- southbound left-turn	A	9	A	7.8	A	8.3
- westbound approach	B	11.4	B	10.8	B	12.5

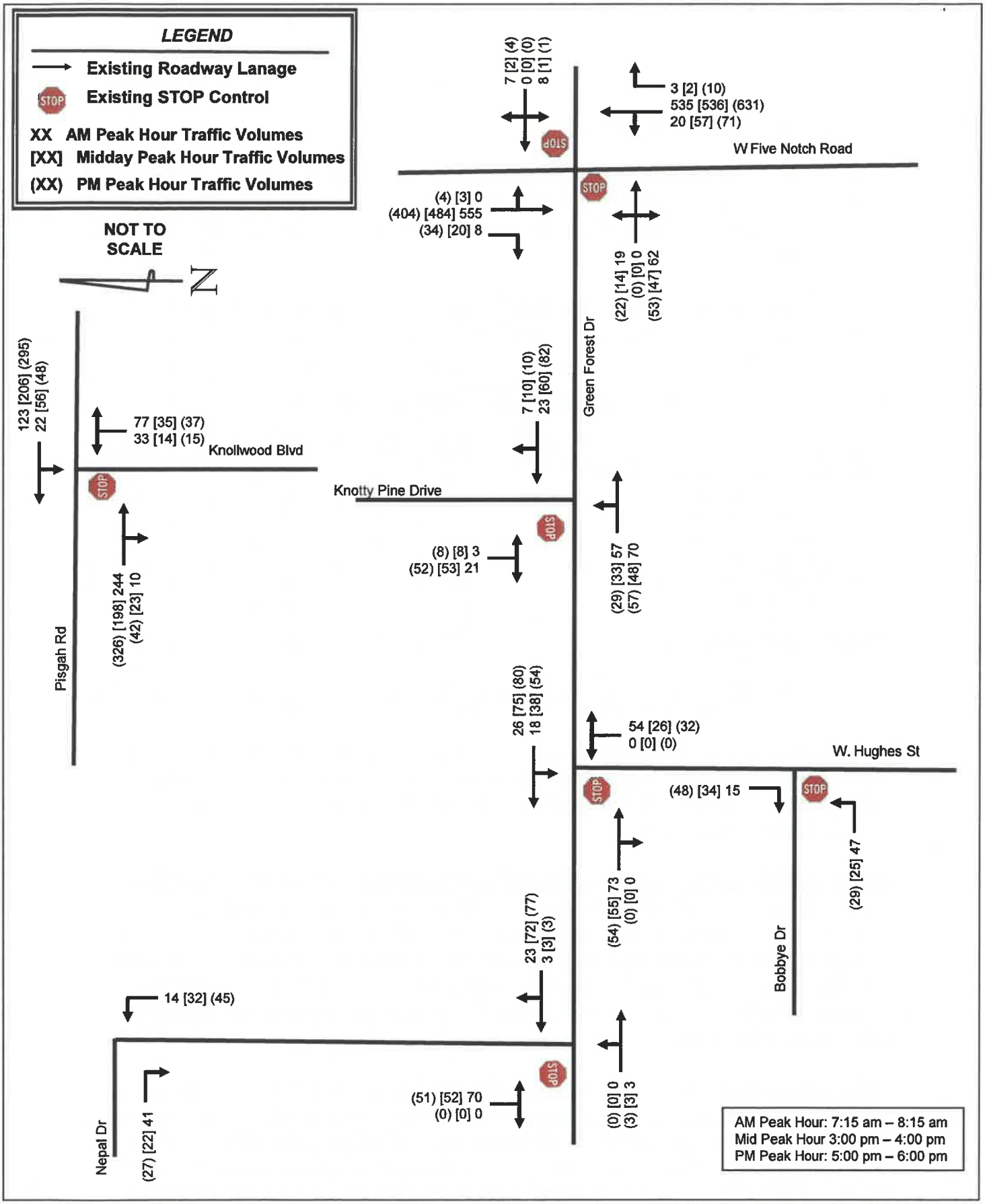
1. Volume-weighted average delay for all vehicles entering the intersection.

As would be expected with addition of development traffic, the analyses shown in Table 9 shows some increases in delay as compared to the No-Build Condition, however, the intersection and its approaches are projected to continue operating within their respective LOS standards with the existing intersection geometry.

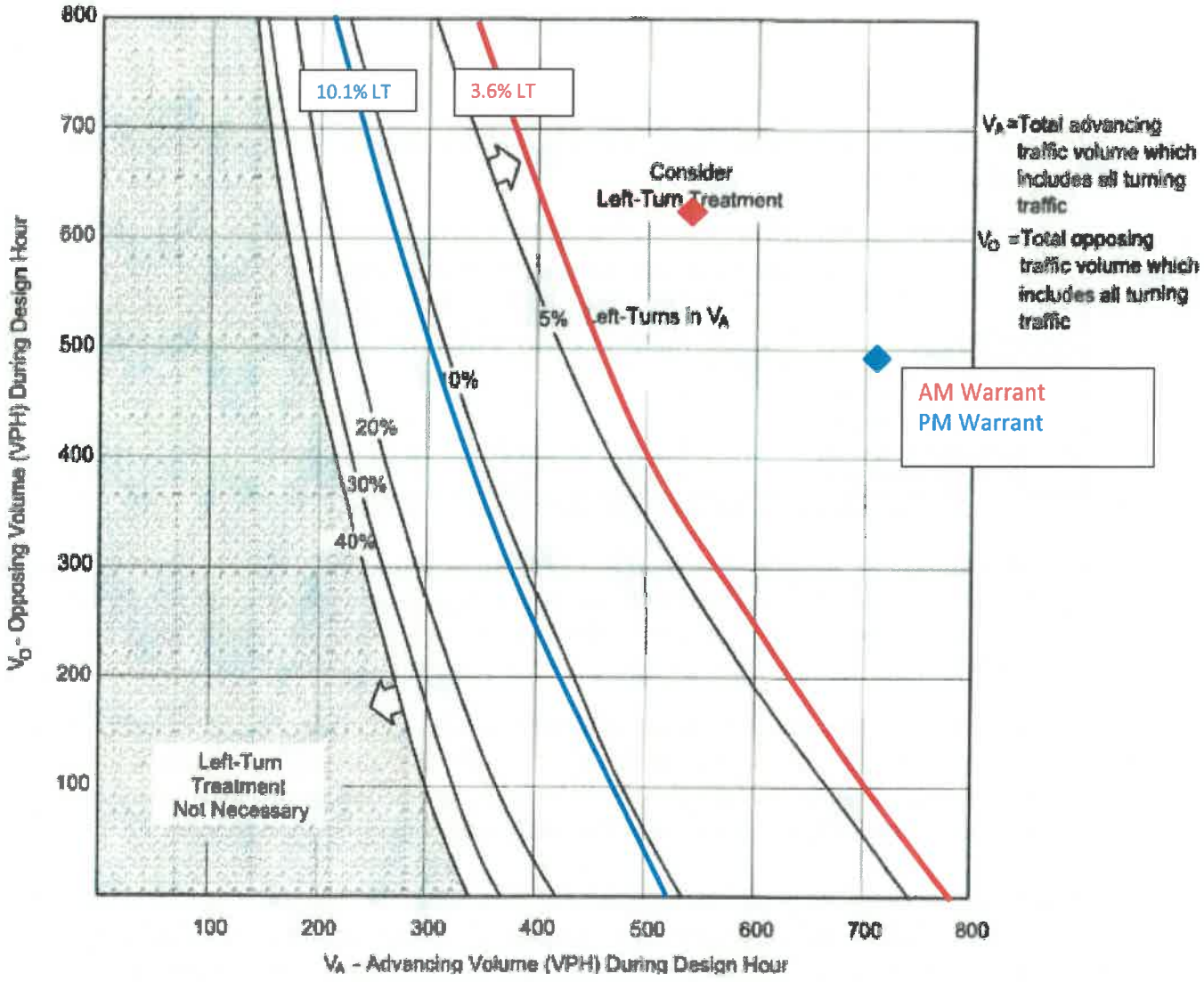
Future Left-Turn Lane Analysis (West Five Notch Road at Green Forrest Drive)

As noted previously, the southbound approach of West Five Notch Road currently has a right turn lane and previous analysis for the Existing and No-Build Conditions showed that a left-turn lane is warranted for the northbound West Five Notch Road approach to Green Forest Drive and is, therefore, typically considered a "system" improvement. "System" improvements are those required to address existing or background deficiencies and typically not considered the responsibility of a developer.

While it would be expected that, after the addition of traffic from MPRD, the left-turn lane would continue to be warranted, the analysis was performed with the updated Future Condition volumes that project the percentage of left-turns during the morning and evening peak hour are 3.6% and 10.1%, respectively. This analysis is shown in Figure 10 and reveals that, as expected, a left-turn lane is warranted for the northbound West Five Notch Road approach to Green Forest Drive.



ISM Infrastructure Systems Management, LLC	*McKie Property Traffic Impact Analysis*	**Future Traffic Volumes**	**Figure 9**
			Page 22



Instructions:

1. *The family of curves represents the percent of left turns in the advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.*

2. *Read V_A and V_O into the chart and locate the intersection of the two volumes.*

3. *Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is warranted. If the point is to the left of the line, then a left-turn lane is not warranted based on traffic volumes.*

VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON TWO-LANE HIGHWAYS (45 mph)

Analysis was performed for the Future traffic conditions with the warranted left-turn lane is presented in Table 12.

Table 12
Future Intersection Operations with Warranted Left-turn Lane

Intersection	A.M. Peak Hour		Midday Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
West Five Notch Rd at Green Forest Dr	**A**	**3.0**	**A**	**2.5**	**A**	**2.4**
- northbound left-turn	A	9.2	A	9.1	A	8.5
- southbound left-turn	A	0.0	A	8.7	A	9.0
- eastbound approach	D	29.2	D	26.9	C	24.8
- westbound approach	D	34.1	D	25.2	C	19.0

1. Volume-weighted average delay for all vehicles entering the intersection.

As shown above, the addition of the northbound left-turn lane at the intersection of West Five Notch Road and Green Forest Drive only results in a slight improvement in delay. Therefore, careful consideration should be given to the cost-benefit of such an improvement prior to implementation.

As noted previously this lane is necessary to address existing and background deficiencies and is therefore considered a "system improvement." "System" improvements are those required to mitigate existing, or background deficiencies not associated with traffic generated by the proposed development not typically considered to be the whole responsibility of the developer.

Additionally, as noted previously, this intersection is outside of the ½ mile "impact area" defined by Table 8-1 NADC and, while this lane is not needed to achieve the LOS standard, *8.7.2 Mitigation, part (c)* states: "Roadways and intersections within the project site and on all roads and streets along its boundary that operate or are projected to operate below the adopted LOS, without project related site-generated traffic, need not to be improved to the adopted LOS by the proposed development."

Moreover, it is likely that the closure of West Hugh Street has some influence on this analysis. Given that most of the traffic entering the existing development from West Five Notch Road originates from the east towards Georgia Avenue and West Hugh Street intersects Georgia Avenue, removing the closure of West Hugh Street and allowing this connection would potentially provide relief to the intersection as well.

While removing the closure of West Hugh Street would provide additional connectivity and route options which are typically sought in an urban environment, however the reasoning for this closure is unknown and removing it could increase traffic along West Hugh Street and impact the quality of life for those residents as well. Therefore, careful consideration and study beyond the scope of this study should be performed prior to such a change to help determine if it is desired or if additional mitigation, such as traffic calming, would be needed.

STUDY FINDINGS

This report analyzed the traffic impact of the proposed McKie Property residential development (MPRD), a proposed 167-unit development to be located on a 86.72-acre tract that is located in the midst of the existing Knollwood, Lynhurst, and Highlands subdivisions in North Augusta, South Carolina with a projected build-out of 2024. Access to the development is currently proposed at two existing stub-out roadways: Bobbye Drive and Napal Drive.

This study considers the impact of the development on operations of the intersections of West Five Notch Road at Green Forest Drive, Green Forest Drive at Knotty Pine Drive, and Pisgah Road at Knollwood Boulevard during the morning, midday (after school), and evening peak hours to determine any mitigation necessary to alleviate existing or projected deficiencies based on the adopted LOS standard of LOS D.

Peak period turning movement counts were collected at the intersections of West Five Notch Road at Green Forest Drive and Green Forest Drive at Knotty Pine Drive on Thursday, January 28, 2021 for the morning peak period between 7:00 am and 9:00 am; the midday (after school) peak period from 2:00 pm to 4:00 pm; and the evening peak period from 5:00 pm to 7:00 pm.

From these data, the peak hour volumes for the intersections were found to occur between 7:15 am and 8:15 am for the morning peak hour; between 3:00 pm and 4:00 pm for the midday (after school) peak hour; and between 5:00 pm and 6:00 pm for the evening peak hour.

Traffic volumes for the intersection of Pisgah Road and Knollwood Boulevard were estimated utilizing existing AADT and count data as well as ITE Trip Generation.

To estimate and adjust traffic volumes resulting from the impact of the on-going school closures for the CoViD-19 pandemic, a 12% growth factor was applied to raw traffic volumes in accordance with SC DOT guidance.

Existing Condition

Analysis of the Existing Conditions showed that both intersections are operating within the LOS Standard with their existing geometries. However, an evaluation of the traffic volumes under this condition in accordance with section *9.5 Auxiliary Turn Lanes* of the SC DOT Roadway Design Manual (March 2017), showed that a northbound left-turn lane is warranted from West Five Notch Road onto Green Forest Drive based on these volumes.

Analysis results that included this left-turn lane showed only a slight improvement in delay resulting from the inclusion of this lane. Therefore, careful consideration should be given to the cost-benefit of such an improvement prior to implementation.

It should be noted that because this lane is needed based on existing volumes, it would be considered a "system" improvement. System improvements are those required to address existing or background deficiencies and typically not considered the responsibility of a developer.

Additionally, as noted previously, this intersection is outside of the ½ mile "impact area" defined by Table 8-1 NADC and, while this lane is not needed to achieve the LOS standard, *8.7.2 Mitigation, part (c)* states: "Roadways and intersections within the project site and on all roads and streets along its boundary that operate or are projected to operate below the adopted LOS, without project related site-generated traffic, need not to be improved to the adopted LOS by the proposed development."

2024 No-Build Condition

Utilizing historic traffic volume data as well as population projections for the surrounding area, , a 1.5% annual growth rate was projected for the area and applied to the existing traffic volumes for a period of three years to project 2024 No-Build traffic volumes for the study network.

Analysis of the 2024 No-Build Condition showed that both intersections are projected to operate within the LOS Standard with existing geometry. However, as in the Existing Condition, an evaluation of the traffic volumes under this condition in accordance with section *9.5 Auxiliary Turn Lanes* of the SC DOT Roadway Design Manual (March 2017), showed that a northbound left-turn lane is warranted from West Five Notch Road onto Green Forest Drive based on these volumes.

Analysis results that included this left-turn lane showed only a slight improvement in delay resulting from the inclusion of this lane. Therefore, careful consideration should be given to the cost-benefit of such an improvement prior to implementation.

Once again, it should be noted that because this lane is needed based on existing volumes, it would be considered a "system" improvement. System improvements are those required to address existing or background deficiencies and typically not considered the responsibility of a developer.

Additionally, as noted previously, this intersection is outside of the ½ mile "impact area" defined by Table 8-1 NADC and, while this lane is not needed to achieve the LOS standard, *8.7.2 Mitigation, part (c)* states: "Roadways and intersections within the project site and on all roads and streets along its boundary that operate or are projected to operate below the adopted LOS, without project related site-generated traffic, need not to be improved to the adopted LOS by the proposed development."

Future Conditions

Traffic expected to be generated by MPRD was estimated using ITE Trip Generation: *ITE Land Use 210 – Single-Family Detached Housing* and *ITE Land Use 220 – Multifamily Housing (Low Rise)*. Based on this methodology, the development is expected to generate 1,499 daily trips with 116 occurring during the morning peak hour, 106 occurring during the midday peak hour, and 142 occurring during the evening peak hour.

These volumes were distributed to the study network based on existing travel patterns and added to the 2024 No-Build traffic volumes to estimate the Future traffic volumes after build-out of the development. These volumes were used to analyze the Future Conditions, which showed that, after build-out of the development, both intersections will continue to operate within the LOS Standard.

Moreover, as was the case in the Existing and 2024 No-Build Conditions, a left-turn lane was warranted based on traffic volumes for the northbound West Five Notch Road approach to Green Forest Drive after the addition of traffic from MPRD.

Analysis results that included this left-turn lane showed only a slight improvement in delay resulting from the inclusion of this lane. Therefore, careful consideration should be given to the cost-benefit of such an improvement prior to implementation.

However, as mentioned previously, this lane is warranted in both the Existing and 2024 No-Build Condition without traffic from the development and is therefore considered a "system" improvement. System improvements are those required to address existing or background deficiencies and typically not considered the responsibility of a developer.

Additionally, as noted previously, this intersection is outside of the ½ mile "impact area" defined by Table 8-1 NADC and, while this lane is not needed to achieve the LOS standard, *8.7.2 Mitigation, part (c)* states: "Roadways and intersections within the project site and on all roads and streets along its boundary that operate or are projected to operate below the adopted LOS, without project related site-generated traffic, need not to be improved to the adopted LOS by the proposed development."

Other Considerations

It was noted in the study that that the closure of West Hugh Street likely has influence on traffic operations of the intersection of West Five Notch Road and Green Forest Drive. This due to the fact that most of the traffic entering the existing development from West Five Notch Road originates from the east towards Georgia Avenue and West Hugh Street intersects Georgia Avenue.

Removing the closure of West Hugh Street would provide additional connectivity and route options which are typically sought in an urban environment, however the reasoning for this closure is unknown and removing it could increase traffic along West Hugh Street and impact the quality of life for those residents as well. Therefore, careful consideration and study beyond the scope of this study should be performed prior to such a change to help determine if it is desired or if additional mitigation, such as traffic calming, would be needed.

APPENDIX

TRAFFIC DATA

Infrastructure Systems Management, LLC

Tel 706-836-5160

1557 Broad Street
Augusta, GA 30904

www.ismllc-engr.com
scassell@ismllc-engr.com

ISM

All Traffic Data Services

www.alltrafficdata.net

Site Code: 1
Station ID: 1
KNOTTY PINE DRIVE WEST OF
GREEN FOREST DRIVE
Latitude: 0' 0.0000 Undefined
Longitude: 0' 0.0000 Undefined

Start Time	28-Jan-21 Thu	EB		Hour Totals		WB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	2			1	5				
12:15		1	1			0	6				
12:30		0	3			0	5				
12:45		0	3	1	9	0	0	1	16	2	25
01:00		0	5			0	2				
01:15		0	4			0	4				
01:30		0	1			0	7				
01:45		0	3	0	13	0	4	0	17	0	30
02:00		0	0			0	1				
02:15		0	1			0	6				
02:30		0	1			0	3				
02:45		0	7	0	9	0	6	0	16	0	25
03:00		0	5			0	5				
03:15		0	7			0	4				
03:30		0	12			0	5				
03:45		0	10	0	34	1	12	1	26	1	60
04:00		0	3			0	2				
04:15		0	5			1	0				
04:30		0	6			1	11				
04:45		0	5	0	19	0	6	2	19	2	38
05:00		0	6			0	6				
05:15		0	3			0	6				
05:30		1	5			2	5				
05:45		1	6	2	20	1	2	3	19	5	39
06:00		0	5			0	5				
06:15		2	2			1	3				
06:30		2	4			3	5				
06:45		0	4	4	15	1	5	5	18	9	33
07:00		2	1			5	8				
07:15		5	2			8	6				
07:30		2	2			8	0				
07:45		3	0	12	5	7	5	28	19	40	24
08:00		3	5			6	3				
08:15		4	2			4	1				
08:30		1	1			2	0				
08:45		3	0	11	8	2	2	14	6	25	14
09:00		0	3			3	1				
09:15		3	0			1	0				
09:30		3	1			2	2				
09:45		1	0	7	4	3	0	9	3	16	7
10:00		3	0			4	0				
10:15		1	0			1	1				
10:30		2	0			2	0				
10:45		4	0	10	0	5	0	12	1	22	1
11:00		3	0			3	1				
11:15		3	0			1	0				
11:30		3	1			2	0				
11:45		3	0	12	1	2	0	8	1	20	2
Total		59	137			83	161			142	298
Percent		30.1%	69.9%			34.0%	66.0%			32.3%	67.7%
Grand Total		59	137			83	161			142	298
Percent		30.1%	69.9%			34.0%	66.0%			32.3%	67.7%
ADT		ADT 440		AADT 440							

All Traffic Data Services

www.alltrafficdata.net

Site Code: 2
Station ID: 2
GREEN FOREST DRIVE SOUTH OF
KNOTTY PINE DRIVE
Latitude: 0' 0.0000 Undefined
Longitude: 0' 0.0000 Undefined

Start Time	28-Jan-21 Thu	NB		Hour Totals		SB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		1	7			1	4				
12:15		0	3			1	3				
12:30		0	6			0	2				
12:45		0	7	1	23	0	4	2	13	3	36
01:00		0	3			0	8				
01:15		0	2			0	5				
01:30		0	5			0	1				
01:45		0	6	0	16	0	2	0	16	0	32
02:00		0	3			0	3				
02:15		0	6			0	3				
02:30		0	7			0	5				
02:45		0	1	0	17	0	8	0	19	0	36
03:00		0	5			0	10				
03:15		0	6			0	8				
03:30		0	7			0	11				
03:45		0	15	0	33	0	15	0	44	0	77
04:00		0	8			0	6				
04:15		1	6			1	11				
04:30		0	5			0	14				
04:45		0	7	1	26	0	9	1	40	2	66
05:00		3	9			0	11				
05:15		4	5			0	4				
05:30		3	6			0	13				
05:45		2	6	12	26	0	12	0	40	12	66
06:00		3	7			1	13				
06:15		1	0			0	9				
06:30		5	4			2	5				
06:45		5	3	14	14	1	7	4	34	18	48
07:00		6	7			2	1				
07:15		8	3			5	3				
07:30		7	4			2	9				
07:45		8	3	29	17	4	4	13	17	42	34
08:00		14	3			5	4				
08:15		5	1			8	9				
08:30		2	0			1	1				
08:45		3	2	24	6	5	1	19	15	43	21
09:00		4	1			3	5				
09:15		5	1			5	0				
09:30		7	1			3	3				
09:45		5	1	21	4	4	2	15	10	36	14
10:00		8	2			7	1				
10:15		3	0			2	1				
10:30		7	0			6	3				
10:45		4	2	22	4	3	0	18	5	40	9
11:00		4	0			5	1				
11:15		3	0			5	0				
11:30		4	0			5	0				
11:45		1	1	12	1	4	0	19	1	31	2
Total		136	187			91	254			227	441
Percent		42.1%	57.9%			26.4%	73.6%			34.0%	66.0%
Grand Total		136	187			91	254			227	441
Percent		42.1%	57.9%			26.4%	73.6%			34.0%	66.0%
ADT		ADT 668		AADT 668							

All Traffic Data Services

www.alltrafficdata.net

Site Code: 3
Station ID: 3
GREEN FOREST DRIVE
SOUTH OF W FIVE NOTCH ROAD
Latitude: 0' 0.0000 Undefined
Longitude: 0' 0.0000 Undefined

Start Time	28-Jan-21 Thu	NB Morning	NB Afternoon	Hour Totals Morning	Hour Totals Afternoon	SB Morning	SB Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		1	10			2	5				
12:15		1	6			1	8				
12:30		0	10			0	6				
12:45		0	12	2	38	0	5	3	24	5	62
01:00		0	6			0	7				
01:15		1	6			0	8				
01:30		0	10			0	7				
01:45		0	8	1	30	1	2	1	24	2	54
02:00		2	1			0	3				
02:15		0	3			0	7				
02:30		0	8			0	9				
02:45		0	3	2	15	0	8	0	27	2	42
03:00		0	4			0	10				
03:15		0	8			0	9				
03:30		0	13			0	9				
03:45		0	9	0	34	0	11	0	39	0	73
04:00		0	11			0	11				
04:15		0	11			1	17				
04:30		0	9			1	18				
04:45		1	11	1	42	1	13	3	59	4	101
05:00		3	13			3	14				
05:15		6	7			2	9				
05:30		4	19			1	15				
05:45		8	16	21	55	4	15	10	53	31	108
06:00		7	5			3	15				
06:15		8	5			3	8				
06:30		8	11			4	11				
06:45		11	1	34	22	5	9	15	43	49	65
07:00		4	8			3	8				
07:15		11	6			3	8				
07:30		8	12			3	12				
07:45		7	4	30	30	6	10	15	38	45	68
08:00		14	3			10	7				
08:15		7	3			6	5				
08:30		6	0			3	1				
08:45		5	5	32	11	5	3	24	16	56	27
09:00		7	0			3	2				
09:15		9	1			6	2				
09:30		15	0			2	2				
09:45		8	1	39	2	9	3	20	9	59	11
10:00		7	3			6	1				
10:15		7	0			3	3				
10:30		14	0			8	3				
10:45		6	2	34	5	8	2	25	9	59	14
11:00		5	0			6	2				
11:15		4	0			4	0				
11:30		9	1			12	0				
11:45		6	1	24	2	6	0	28	2	52	4
Total		220	286			144	343			364	629
Percent		43.5%	56.5%			29.6%	70.4%			36.7%	63.3%
Grand Total		220	286			144	343			364	629
Percent		43.5%	56.5%			29.6%	70.4%			36.7%	63.3%
ADT		ADT 993		AADT 993							

All Traffic Data Services

www.alltrafficdata.net

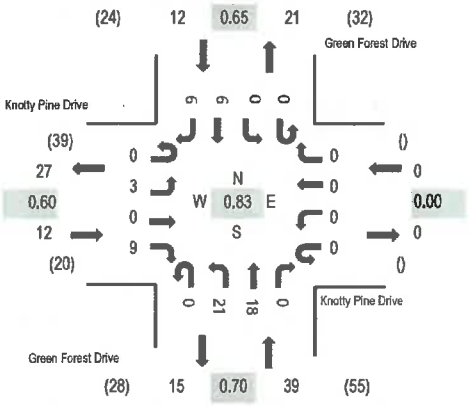
Site Code: 4
Station ID: 4
W FIVE NOTCH ROAD SOUTH OF
GREEN FOREST DRIVE
Latitude: 0' 0.0000 Undefined
Longitude: 0' 0.0000 Undefined

Start Time	28-Jan-21 Thu	NB		Hour Totals		SB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		7	82			7	87				
12:15		7	79			4	89				
12:30		2	73			5	85				
12:45		4	72	20	306	1	96	17	357	37	663
01:00		2	84			1	74				
01:15		2	109			2	78				
01:30		1	96			3	84				
01:45		0	99	5	388	1	81	7	317	12	705
02:00		3	92			3	98				
02:15		2	106			2	86				
02:30		2	82			0	138				
02:45		3	114	10	394	4	99	9	421	19	815
03:00		2	105			1	89				
03:15		2	149			2	102				
03:30		0	113			4	129				
03:45		1	93	5	460	2	134	9	454	14	914
04:00		4	94			4	109				
04:15		3	141			6	94				
04:30		4	129			13	93				
04:45		3	128	14	492	10	71	33	367	47	859
05:00		8	141			26	98				
05:15		15	143			34	100				
05:30		8	145			29	102				
05:45		10	141	41	570	30	93	119	393	160	963
06:00		17	122			42	97				
06:15		22	93			51	82				
06:30		31	115			61	71				
06:45		67	100	137	430	66	65	220	315	357	745
07:00		80	79			120	46				
07:15		110	72			130	54				
07:30		121	65			161	63				
07:45		109	62	420	278	107	61	518	224	938	502
08:00		92	66			122	62				
08:15		57	49			109	33				
08:30		50	33			71	27				
08:45		57	41	256	189	108	21	410	143	666	332
09:00		63	28			77	24				
09:15		44	27			71	30				
09:30		45	20			64	14				
09:45		52	24	204	99	81	16	293	84	497	183
10:00		52	20			79	18				
10:15		51	16			64	8				
10:30		59	19			68	14				
10:45		70	6	232	61	79	10	290	50	522	111
11:00		73	12			64	10				
11:15		61	8			60	10				
11:30		64	8			96	8				
11:45		76	8	274	36	75	3	295	31	569	67
Total		1618	3703			2220	3156			3838	6859
Percent		30.4%	69.6%			41.3%	58.7%			35.9%	64.1%
Grand Total		1618	3703			2220	3156			3838	6859
Percent		30.4%	69.6%			41.3%	58.7%			35.9%	64.1%
ADT		ADT 10,697		AADT 10,697							

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

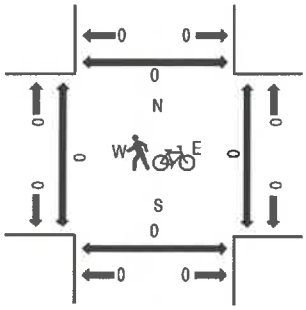
Location: #1 Green Forest Drive & Knotty Pine Drive AM
Date: Thursday, January 28, 2021
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Knotty Pine Drive Eastbound				Knotty Pine Drive Westbound				Green Forest Drive Northbound				Green Forest Drive Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	2	0	0	0	0	0	0	0	5	1	0	0	0	2	0	10	54	0	0	0	0
7:15 AM	0	1	0	4	0	0	0	0	0	4	5	0	0	0	1	4	19	63	0	0	0	0
7:30 AM	0	1	0	1	0	0	0	0	0	6	3	0	0	0	1	1	13	57	0	0	0	0
7:45 AM	0	0	0	2	0	0	0	0	0	5	2	0	0	0	2	1	12	50	0	0	0	0
8:00 AM	0	1	0	2	0	0	0	0	0	6	8	0	0	0	2	0	19	45	0	0	0	0
8:15 AM	0	1	0	2	0	0	0	0	0	3	2	0	0	0	5	0	13		0	0	0	0
8:30 AM	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	2	6		1	0	0	0
8:45 AM	0	0	0	2	0	0	0	0	0	0	3	0	0	0	1	1	7		1	0	0	0

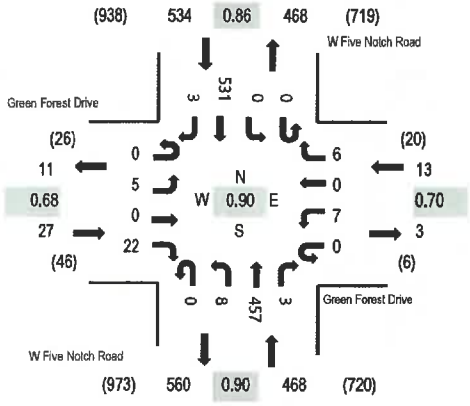
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	3	0	9	0	0	0	0	0	21	18	0	0	0	6	6	63
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	3	0	9	0	0	0	0	0	21	18	0	0	0	6	6	63

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

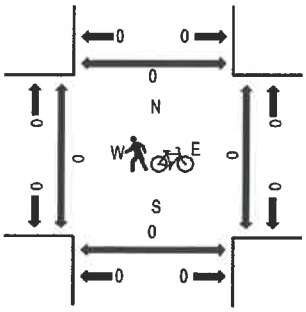
Location: #2 W Five Notch Road & Green Forest Drive AM
Date: Thursday, January 28, 2021
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Green Forest Drive Eastbound				Green Forest Drive Westbound				W Five Notch Road Northbound				W Five Notch Road Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	4	0	0	0	0	0	0	85	0	0	0	120	2	211	1,029	0	0	0	0
7:15 AM	0	2	0	4	0	3	0	0	0	2	126	0	0	0	150	0	289	1,042	0	0	0	0
7:30 AM	0	2	0	3	0	1	0	2	0	2	122	2	0	0	154	1	289	925	0	0	0	0
7:45 AM	0	1	0	5	0	2	0	2	0	4	118	0	0	0	108	0	240	763	0	0	0	0
8:00 AM	0	0	0	10	0	1	0	2	0	0	89	1	0	0	119	2	224	695	0	0	0	0
8:15 AM	0	0	0	5	0	0	0	2	0	4	54	0	0	3	103	1	172		0	0	0	0
8:30 AM	0	0	0	4	0	1	0	4	0	2	50	0	0	0	65	1	127		0	0	0	0
8:45 AM	0	3	0	3	0	0	0	0	0	4	53	0	0	0	108	1	172		0	0	0	0

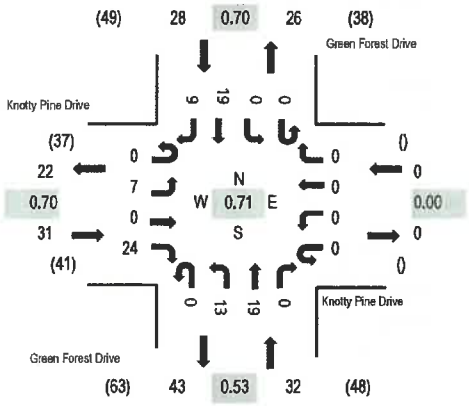
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	5	0	22	0	7	0	6	0	8	429	3	0	0	521	3	1,004
Mediums	0	0	0	0	0	0	0	0	0	0	28	0	0	0	10	0	38
Total	0	5	0	22	0	7	0	6	0	8	457	3	0	0	531	3	1,042

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

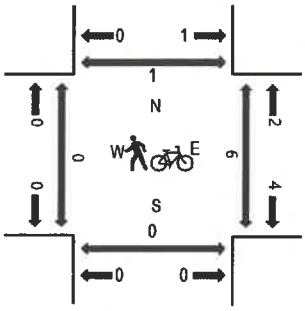
Location: #1 Green Forest Drive & Knotty Pine Drive PM
Date: Thursday, January 28, 2021
Peak Hour: 03:00 PM - 04:00 PM
Peak 15-Minutes: 03:45 PM - 04:00 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Knotty Pine Drive Eastbound				Knotty Pine Drive Westbound				Green Forest Drive Northbound				Green Forest Drive Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
2:00 PM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	3	0	5	47	0	0	0	0
2:15 PM	0	0	0	2	0	0	0	0	0	4	2	0	0	0	2	2	12	59	0	0	0	0
2:30 PM	0	1	0	0	0	0	0	0	0	2	5	0	0	0	5	1	14	66	0	0	0	0
2:45 PM	0	3	0	4	0	0	0	0	0	1	0	0	0	0	4	4	16	75	1	0	0	0
3:00 PM	0	0	0	5	0	0	0	0	0	2	3	0	0	0	5	2	17	91	0	1	0	0
3:15 PM	0	1	0	7	0	0	0	0	0	1	5	0	0	0	2	3	19		0	2	0	1
3:30 PM	0	6	0	5	0	0	0	0	0	1	5	0	0	0	5	1	23		0	2	0	0
3:45 PM	0	0	0	7	0	0	0	0	0	9	6	0	0	0	7	3	32		0	1	0	0

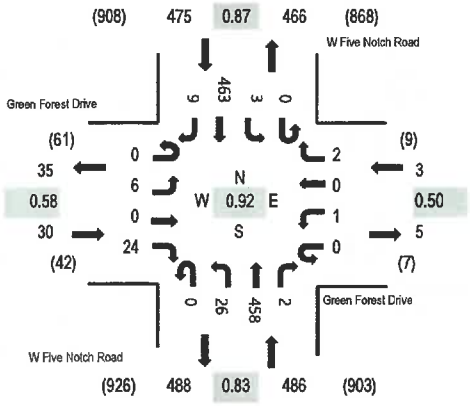
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	7	0	24	0	0	0	0	0	13	19	0	0	0	19	9	91
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	7	0	24	0	0	0	0	0	13	19	0	0	0	19	9	91

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

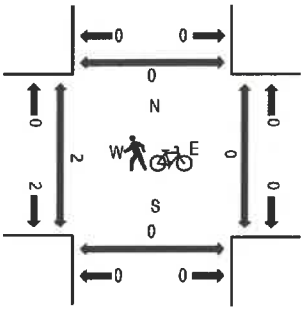
Location: #2 W Five Notch Road & Green Forest Drive PM
Date: Thursday, January 28, 2021
Peak Hour: 03:00 PM - 04:00 PM
Peak 15-Minutes: 03:15 PM - 03:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Green Forest Drive Eastbound				Green Forest Drive Westbound				W Five Notch Road Northbound				W Five Notch Road Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
2:00 PM	0	1	0	1	0	3	0	0	0	3	97	1	0	0	95	1	202	868	0	0	0	0
2:15 PM	0	0	0	2	0	0	0	1	0	4	97	0	0	0	92	3	199	882	0	0	0	0
2:30 PM	0	1	0	5	0	0	0	1	0	3	93	0	0	0	139	4	246	953	2	0	0	0
2:45 PM	0	0	0	2	0	1	0	0	0	7	111	1	0	0	98	1	221	965	0	0	0	0
3:00 PM	0	0	0	3	0	0	0	0	0	7	108	0	0	0	97	1	216	994	0	0	0	0
3:15 PM	0	3	0	2	0	0	0	1	0	6	146	0	0	2	108	2	270		0	0	0	0
3:30 PM	0	2	0	11	0	0	0	1	0	6	109	1	0	0	126	2	258		0	0	0	0
3:45 PM	0	1	0	8	0	1	0	0	0	7	95	1	0	1	132	4	250		2	0	0	0

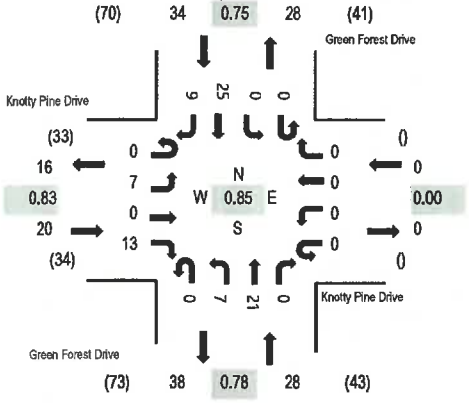
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	6	0	24	0	1	0	2	0	26	442	2	0	3	448	9	963
Mediums	0	0	0	0	0	0	0	0	0	0	16	0	0	0	15	0	31
Total	0	6	0	24	0	1	0	2	0	26	458	2	0	3	463	9	994

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

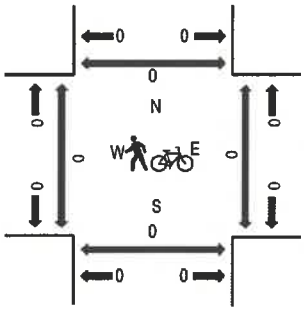
Location: #1 Green Forest Drive & Knotty Pine Drive PM
Date: Thursday, January 28, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles In Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Knotty Pine Drive Eastbound				Knotty Pine Drive Westbound				Green Forest Drive Northbound				Green Forest Drive Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
5:00 PM	0	2	0	2	0	0	0	0	0	3	6	0	0	0	9	2	24	82	0	0	0	0
5:15 PM	0	2	0	3	0	0	0	0	0	3	2	0	0	0	3	3	16	82	0	0	0	0
5:30 PM	0	0	0	5	0	0	0	0	0	1	7	0	0	0	6	2	21	78	0	0	0	0
5:45 PM	0	3	0	3	0	0	0	0	0	0	6	0	0	0	7	2	21	70	0	0	0	0
6:00 PM	0	0	0	4	0	0	0	0	0	3	4	0	0	0	10	3	24	65	0	0	0	0
6:15 PM	0	0	0	2	0	0	0	0	0	1	0	0	0	0	7	2	12		0	1	0	0
6:30 PM	0	3	0	1	0	0	0	0	0	1	3	0	0	0	3	2	13		0	0	0	0
6:45 PM	0	2	0	2	0	0	0	0	0	2	1	0	0	0	6	3	16		0	0	0	0

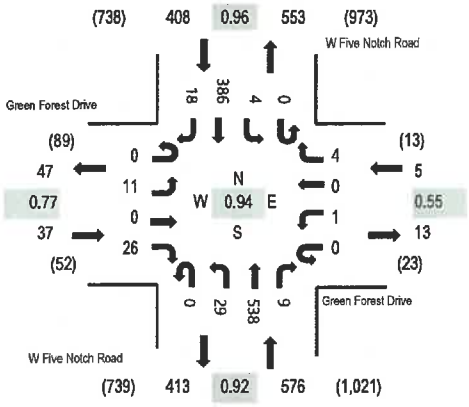
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	7	0	13	0	0	0	0	0	7	21	0	0	0	25	9	82
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	7	0	13	0	0	0	0	0	7	21	0	0	0	25	9	82

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

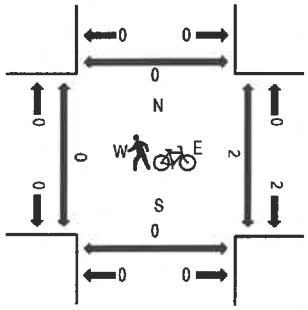
Location: #2 W Five Notch Road & Green Forest Drive PM
Date: Thursday, January 28, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Green Forest Drive Eastbound				Green Forest Drive Westbound				W Five Notch Road Northbound				W Five Notch Road Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
5:00 PM	0	2	0	6	0	0	0	0	0	5	135	2	0	1	98	7	256	1,026	0	0	0	0
5:15 PM	0	3	0	3	0	0	0	1	0	6	136	2	0	1	99	4	255	1,018	0	0	0	0
5:30 PM	0	4	0	7	0	1	0	3	0	8	145	3	0	2	97	4	274	948	0	2	0	0
5:45 PM	0	2	0	10	0	0	0	0	0	10	122	2	0	0	92	3	241	867	0	0	0	0
6:00 PM	0	2	0	2	0	0	0	2	0	13	121	1	0	2	102	3	248	798	0	0	0	0
6:15 PM	1	2	0	0	0	3	0	2	0	4	85	2	0	1	83	2	185		0	0	0	0
6:30 PM	0	2	0	3	0	1	0	0	0	9	108	1	0	2	66	1	193		0	0	0	0
6:45 PM	0	2	0	1	0	0	0	0	0	7	94	0	0	1	65	2	172		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	11	0	26	0	1	0	4	0	29	537	9	0	4	383	18	1,022
Mediums	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	4
Total	0	11	0	26	0	1	0	4	0	29	538	9	0	4	386	18	1,026

TRAFFIC VOLUME WORKSHEETS

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Pisgah Road at Knollwood Boulevard

North Augusta, SC
January 28 2021 rev June 2021

AM Peak

	Eastbound				Wesbound				Northbound				Southbound				Intersection
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
Raw Counts	**0**	**0**	**0**	**0**	**22**	**0**	**52**	**74**	**0**	**208**	**6**	**214**	**15**	**102**	**0**	**117**	**405**
Covid Adjustment	12%	12%	12%		12%	12%	12%		12%	12%	12%		12%	12%	12%		
Ajusted Existing	**0**	**0**	**0**	**0**	**25**	**0**	**58**	**83**	**0**	**233**	**7**	**240**	**17**	**114**	**0**	**131**	**454**
PHF	0.60		0.60	0.60	0.70	0.70	0.70		0.70	0.70		0.70		0.65	0.65	0.65	
Growth	1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		
Years Growth	3	3	3		3	3	3		3	3	3		3	3	3		
Background Growth	**0**	**0**	**0**	**0**	**26**	**0**	**61**	**87**	**0**	**244**	**7**	**251**	**18**	**119**	**0**	**137**	**475**
Site Generated	**0**	**0**	**0**	**0**	**10**	**0**	**22**	**32**	**0**	**0**	**3**	**3**	**8**	**0**	**0**	**8**	**43**
Future	**0**	**0**	**0**	**0**	**36**	**0**	**83**	**119**	**0**	**244**	**10**	**254**	**26**	**119**	**0**	**145**	**518**

Midday Peak

	Eastbound				Wesbound				Northbound				Southbound				Intersection
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
Existing	**0**	**0**	**0**	**0**	**9**	**0**	**22**	**31**	**0**	**167**	**15**	**182**	**34**	**174**	**0**	**208**	**421**
Covid Adjustment	12%	12%	12%		12%	12%	12%		12%	12%	12%		12%	12%	12%		
Ajusted Existing	**0**	**0**	**0**	**0**	**10**	**0**	**25**	**35**	**0**	**187**	**17**	**204**	**38**	**195**	**0**	**233**	**472**
PHF	0.70		0.70	0.70					0.53	0.53		0.83		0.70	0.70	0.70	
Growth	1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		
Years Growth	3	3	3		3	3	3		3	3	3		3	3	3		
Background Growth	**0**	**0**	**0**	**0**	**10**	**0**	**26**	**36**	**0**	**196**	**18**	**214**	**40**	**204**	**0**	**244**	**494**
Site Generated	**0**	**0**	**0**	**0**	**5**	**0**	**12**	**17**	**0**	**0**	**7**	**7**	**18**	**0**	**0**	**18**	**42**
Future	**0**	**0**	**0**	**0**	**15**	**0**	**38**	**53**	**0**	**196**	**25**	**221**	**58**	**204**	**0**	**262**	**536**

PM Peak

	Eastbound				Wesbound				Northbound				Southbound				Intersection
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
Existing	**0**	**0**	**0**	**0**	**9**	**0**	**21**	**30**	**0**	**278**	**15**	**293**	**35**	**248**	**0**	**283**	**606**
Covid Adjustment	12%	12%	12%		12%	12%	12%		12%	12%	12%		12%	12%	12%		
Ajusted Existing	**0**	**0**	**0**	**0**	**10**	**0**	**24**	**34**	**0**	**311**	**17**	**328**	**39**	**278**	**0**	**317**	**679**
PHF	0.83	0.83	0.83	0.78					0.78	0.78	0.78	0.78		0.75	0.75	0.75	
Growth	1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		
Years Growth	3	3	3		3	3	3		3	3	3		3	3	3		
Background Growth	**0**	**0**	**0**	**0**	**10**	**0**	**25**	**35**	**0**	**325**	**18**	**343**	**41**	**291**	**0**	**332**	**710**
Site Generated	**0**	**0**	**0**	**0**	**6**	**0**	**15**	**21**	**0**	**0**	**25**	**25**	**11**	**0**	**0**	**11**	**57**
Future	**0**	**0**	**0**	**0**	**16**	**0**	**40**	**56**	**0**	**325**	**43**	**368**	**52**	**291**	**0**	**343**	**767**

Green Forest Drive at Knotty Pine Drive

North Augusta, SC
January 28 2021 rev June 2021

AM Peak

	Eastbound				Wesbound				Northbound				Southbound				Intersection
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
Raw Counts	**3**		**9**	**12**				**0**	**21**	**18**		**39**		**6**	**6**	**12**	**63**
Covid Adjustment	12%	12%	12%		12%	12%	12%		12%	12%	12%		12%	12%	12%		
Ajusted Existing	**3**	**0**	**10**	**13**	**0**	**0**	**0**	**0**	**24**	**20**	**0**	**44**	**0**	**7**	**7**	**14**	**71**
PHF	0.60		0.60	0.60	0.70	0.70	0.70		0.70	0.70		0.70		0.65	0.65	0.65	
Growth	1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		
Years Growth	3	3	3		3	3	3		3	3	3		3	3	3		
Background Growth	**3**	**0**	**10**	**13**	**0**	**0**	**0**	**0**	**25**	**21**	**0**	**46**	**0**	**7**	**7**	**14**	**73**
Site Generated	**0**	**0**	**11**	**11**	**0**	**0**	**0**	**0**	**32**	**49**	**0**	**81**	**0**	**16**	**0**	**16**	**108**
Future	**3**	**0**	**21**	**24**	**0**	**0**	**0**	**0**	**57**	**70**	**0**	**127**	**0**	**23**	**7**	**30**	**181**

Midday Peak

	Eastbound				Wesbound				Northbound				Southbound				Intersection
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
Existing	**7**		**24**	**31**				**0**	**13**	**19**		**32**		**19**	**9**	**28**	**91**
Covid Adjustment	12%	12%	12%		12%	12%	12%		12%	12%	12%		12%	12%	12%		
Ajusted Existing	**8**	**0**	**27**	**35**	**0**	**0**	**0**	**0**	**15**	**21**	**0**	**36**	**0**	**21**	**10**	**31**	**102**
PHF	0.70		0.70	0.70					0.53	0.53		0.83		0.70	0.70	0.70	
Growth	1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		
Years Growth	3	3	3		3	3	3		3	3	3		3	3	3		
Background Growth	**8**	**0**	**28**	**36**	**0**	**0**	**0**	**0**	**16**	**22**	**0**	**38**	**0**	**22**	**10**	**32**	**106**
Site Generated	**0**	**0**	**25**	**25**	**0**	**0**	**0**	**0**	**17**	**26**	**0**	**43**	**0**	**38**	**0**	**38**	**106**
Future	**8**	**0**	**53**	**61**	**0**	**0**	**0**	**0**	**33**	**48**	**0**	**81**	**0**	**60**	**10**	**70**	**212**

PM Peak

	Eastbound				Wesbound				Northbound				Southbound				Intersection
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
Existing	**7**		**13**	**20**				**0**	**7**	**21**		**28**		**25**	**9**	**34**	**1,026**
Covid Adjustment	12%	12%	12%		12%	12%	12%		12%	12%	12%		12%	12%	12%		
Ajusted Existing	**8**	**0**	**15**	**23**	**0**	**0**	**0**	**0**	**8**	**24**	**0**	**32**	**0**	**28**	**10**	**38**	**93**
PHF	0.83	0.83	0.83	0.78					0.78	0.78	0.78	0.78		0.75	0.75	0.75	
Growth	1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		
Years Growth	3	3	3		3	3	3		3	3	3		3	3	3		
Background Growth	**8**	**0**	**16**	**24**	**0**	**0**	**0**	**0**	**8**	**25**	**0**	**33**	**0**	**29**	**10**	**39**	**96**
Site Generated	**0**	**0**	**36**	**36**	**0**	**0**	**0**	**0**	**21**	**32**	**0**	**53**	**0**	**53**	**0**	**53**	**142**
Future	**8**	**0**	**52**	**60**	**0**	**0**	**0**	**0**	**29**	**57**	**0**	**86**	**0**	**82**	**10**	**92**	**238**

West Five Notch Road at Green Forest Drive

North Augusta, SC
January 28 2021 rev June 2021

AM Peak

	Eastbound				Wesbound				Northbound				Southbound				Intersection
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
Raw Counts	**5**	**0**	**22**	**27**	**7**	**0**	**6**	**13**	**8**	**457**	**3**	**468**	**0**	**531**	**3**	**534**	**1042**
Covid Adjustment	12%	12%	12%		12%	12%	12%		12%	12%	12%		12%	12%	12%		
Ajusted Existing	**6**	**0**	**25**	**31**	**8**	**0**	**7**	**15**	**9**	**512**	**3**	**524**	**0**	**595**	**3**	**598**	**1168**
PHF	0.68	0.68	0.68	0.68	0.70	0.70	0.70		0.90	0.90	0.90	0.81	0.86	0.86	0.86	0.86	
Growth	1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		
Years Growth	3	3	3		3	3	3		3	3	3		3	3	3		
Background Growth	**6**	**0**	**26**	**32**	**8**	**0**	**7**	**15**	**9**	**535**	**3**	**547**	**0**	**622**	**3**	**625**	**1,219**
Site Generated	**13**	**0**	**36**	**49**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**11**	**0**	**0**	**5**	**5**	**65**
Future	**19**	**0**	**62**	**81**	**8**	**0**	**7**	**15**	**20**	**535**	**3**	**558**	**0**	**622**	**8**	**630**	**1,284**

Midday Peak

	Eastbound				Wesbound				Northbound				Southbound				Intersection
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
Existing	**6**	**0**	**24**	**30**	**1**	**0**	**2**	**3**	**26**	**458**	**2**	**486**	**3**	**463**	**9**	**475**	**994**
Covid Adjustment	12%	12%	12%		12%	12%	12%		12%	12%	12%		12%	12%	12%		
Ajusted Existing	**7**	**0**	**27**	**34**	**1**	**0**	**2**	**3**	**29**	**513**	**2**	**544**	**3**	**519**	**10**	**532**	**1113**
PHF	0.58	0.58	0.58	0.58	0.50	0.50	0.50		0.83	0.83	0.83	0.83	0.87	0.87	0.87	0.87	
Growth	1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		
Years Growth	3	3	3		3	3	3		3	3	3		3	3	3		
Background Growth	**7**	**0**	**28**	**35**	**1**	**0**	**2**	**3**	**30**	**536**	**2**	**568**	**3**	**543**	**10**	**556**	**1,162**
Site Generated	**7**	**0**	**19**	**26**	**0**	**0**	**0**	**0**	**27**	**0**	**0**	**27**	**0**	**0**	**11**	**11**	**64**
Future	**14**	**0**	**47**	**61**	**1**	**0**	**2**	**3**	**57**	**536**	**2**	**595**	**3**	**543**	**21**	**567**	**1,226**

PM Peak

	Eastbound				Wesbound				Northbound				Southbound				Intersection
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
Existing	**11**	**0**	**26**	**37**	**1**	**0**	**4**	**5**	**29**	**538**	**9**	**576**	**4**	**386**	**18**	**408**	**1,026**
Covid Adjustment	12%	12%	12%		12%	12%	12%		12%	12%	12%		12%	12%	12%		
Ajusted Existing	**12**	**0**	**29**	**41**	**1**	**0**	**4**	**5**	**32**	**603**	**10**	**645**	**4**	**432**	**20**	**456**	**1147**
PHF	0.77	0.77	0.77	0.77	0.55	0.55	0.55		0.92	0.92	0.92	0.81	0.96	0.96	0.96	0.96	
Growth	1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		1.50%	1.50%	1.50%		
Years Growth	3	3	3		3	3	3		3	3	3		3	3	3		
Background Growth	**13**	**0**	**30**	**43**	**1**	**0**	**4**	**5**	**33**	**631**	**10**	**674**	**4**	**452**	**21**	**477**	**1,199**
Site Generated	**9**	**0**	**23**	**32**	**0**	**0**	**0**	**0**	**38**	**0**	**0**	**38**	**0**	**0**	**15**	**15**	**85**
Future	**22**	**0**	**53**	**75**	**1**	**0**	**4**	**5**	**71**	**631**	**10**	**712**	**4**	**452**	**36**	**492**	**1,284**

EXISTING INTERSECTION OPERATIONS

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ISM

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	6	0	25	8	0	7	9	512	3	0	595	3
Future Vol, veh/h	6	0	25	8	0	7	9	512	3	0	595	3
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	-	-	-	-	-	-	-	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	70	70	70	90	90	90	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	37	11	0	10	10	569	3	0	692	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1288	1284	692	1301	1284	569	695	0	0	572	0	0
Stage 1	692	692	-	589	589	-	-	-	-	-	-	-
Stage 2	596	592	-	712	695	-	-	-	-	-	-	-
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	141	165	444	138	165	522	901	-	-	1001	-	-
Stage 1	434	445	-	494	495	-	-	-	-	-	-	-
Stage 2	490	494	-	423	444	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	137	162	444	125	162	522	901	-	-	1001	-	-
Mov Cap-2 Maneuver	137	162	-	125	162	-	-	-	-	-	-	-
Stage 1	427	445	-	486	487	-	-	-	-	-	-	-
Stage 2	473	486	-	388	444	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.6	25.8	0.2	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	901	-	-	310	194	1001	-	-
HCM Lane V/C Ratio	0.011	-	-	0.147	0.11	-	-	-
HCM Control Delay (s)	9	0	-	18.6	25.8	0	-	-
HCM Lane LOS	A	A	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.4	0	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	10	24	20	7	7
Future Vol, veh/h	3	10	24	20	7	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	70	70	65	65
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	17	34	29	11	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	114	17	22	0	-	0
Stage 1	17	-	-	-	-	-
Stage 2	97	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	882	1062	1593	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	927	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	863	1062	1593	-	-	-
Mov Cap-2 Maneuver	863	-	-	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	927	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1593	-	1008	-	-
HCM Lane V/C Ratio	0.022	-	0.021	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	58	233	7	17	114
Future Vol, veh/h	25	58	233	7	17	114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	63	253	8	18	124

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	413	253	0	0	261	0
Stage 1	253	-	-	-	-	-
Stage 2	160	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	595	786	-	-	1303	-
Stage 1	789	-	-	-	-	-
Stage 2	869	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	586	786	-	-	1303	-
Mov Cap-2 Maneuver	586	-	-	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	856	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	713	1303	-
HCM Lane V/C Ratio	-	-	0.127	0.014	-
HCM Control Delay (s)	-	-	10.8	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↰	↱		↰	↱
Traffic Vol, veh/h	7	0	27	1	0	2	29	513	2	3	519	10
Future Vol, veh/h	7	0	27	1	0	2	29	513	2	3	519	10
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	-	-	-	-	-	-	-	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	50	50	50	83	83	83	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	47	2	0	4	35	618	2	3	597	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1294	1293	597	1320	1302	618	608	0	0	620	0	0
Stage 1	603	603	-	688	688	-	-	-	-	-	-	-
Stage 2	691	690	-	632	614	-	-	-	-	-	-	-
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	139	163	503	134	161	489	970	-	-	960	-	-
Stage 1	486	488	-	436	447	-	-	-	-	-	-	-
Stage 2	435	446	-	468	483	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	132	153	503	116	151	489	970	-	-	960	-	-
Mov Cap-2 Maneuver	132	153	-	116	151	-	-	-	-	-	-	-
Stage 1	459	486	-	412	422	-	-	-	-	-	-	-
Stage 2	408	421	-	423	481	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.8	20.7	0.5	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	970	-	-	319	236	960	-	-
HCM Lane V/C Ratio	0.036	-	-	0.184	0.025	0.004	-	-
HCM Control Delay (s)	8.8	0	-	18.8	20.7	8.8	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.1	0	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	27	15	21	21	10
Future Vol, veh/h	8	27	15	21	21	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	53	53	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	39	28	40	30	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	133	37	44	0	-	0
Stage 1	37	-	-	-	-	-
Stage 2	96	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	861	1035	1564	-	-	-
Stage 1	985	-	-	-	-	-
Stage 2	928	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	846	1035	1564	-	-	-
Mov Cap-2 Maneuver	846	-	-	-	-	-
Stage 1	967	-	-	-	-	-
Stage 2	928	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	3.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1564	-	985	-	-
HCM Lane V/C Ratio	0.018	-	0.051	-	-
HCM Control Delay (s)	7.3	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	25	187	17	38	195
Future Vol, veh/h	10	25	187	17	38	195
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	27	203	18	41	212

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	497	203	0	0	221	0
Stage 1	203	-	-	-	-	-
Stage 2	294	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	532	838	-	-	1348	-
Stage 1	831	-	-	-	-	-
Stage 2	756	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	514	838	-	-	1348	-
Mov Cap-2 Maneuver	514	-	-	-	-	-
Stage 1	831	-	-	-	-	-
Stage 2	730	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	710	1348	-
HCM Lane V/C Ratio	-	-	0.054	0.031	-
HCM Control Delay (s)	-	-	10.4	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑	↱		↑	↱
Traffic Vol, veh/h	12	0	29	1	0	4	32	603	10	4	432	20
Future Vol, veh/h	12	0	29	1	0	4	32	603	10	4	432	20
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	-	-	-	-	-	-	-	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	55	55	55	92	92	92	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	0	38	2	0	7	35	655	11	4	450	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1192	1194	450	1213	1204	655	471	0	0	666	0	0
Stage 1	458	458	-	725	725	-	-	-	-	-	-	-
Stage 2	734	736	-	488	479	-	-	-	-	-	-	-
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	164	187	609	159	184	466	1091	-	-	923	-	-
Stage 1	583	567	-	416	430	-	-	-	-	-	-	-
Stage 2	412	425	-	561	555	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	154	176	609	143	174	466	1091	-	-	923	-	-
Mov Cap-2 Maneuver	154	176	-	143	174	-	-	-	-	-	-	-
Stage 1	553	564	-	395	408	-	-	-	-	-	-	-
Stage 2	385	403	-	523	552	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.1	16.5	0.4	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1091	-	-	327	321	923	-	-
HCM Lane V/C Ratio	0.032	-	-	0.163	0.028	0.005	-	-
HCM Control Delay (s)	8.4	0	-	18.1	16.5	8.9	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	15	8	24	28	10
Future Vol, veh/h	8	15	8	24	28	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	78	78	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	18	10	31	37	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	95	44	50	0	-	0
Stage 1	44	-	-	-	-	-
Stage 2	51	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	905	1026	1557	-	-	-
Stage 1	978	-	-	-	-	-
Stage 2	971	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	899	1026	1557	-	-	-
Mov Cap-2 Maneuver	899	-	-	-	-	-
Stage 1	971	-	-	-	-	-
Stage 2	971	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1557	-	978	-	-
HCM Lane V/C Ratio	0.007	-	0.028	-	-
HCM Control Delay (s)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	24	311	17	39	278
Future Vol, veh/h	10	24	311	17	39	278
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	75	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	26	338	18	42	302

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	724	338	0	0	356	0
Stage 1	338	-	-	-	-	-
Stage 2	386	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	393	704	-	-	1203	-
Stage 1	722	-	-	-	-	-
Stage 2	687	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	376	704	-	-	1203	-
Mov Cap-2 Maneuver	376	-	-	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	658	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	560	1203	-
HCM Lane V/C Ratio	-	-	0.066	0.035	-
HCM Control Delay (s)	-	-	11.9	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

EXISTING INTERSECTION OPERATIONS WITH SYSTEM IMPROVEMENTS

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ISM

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	6	0	25	8	0	7	9	512	3	0	595	3
Future Vol, veh/h	6	0	25	8	0	7	9	512	3	0	595	3
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	-	-	-	-	-	-	150	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	70	70	70	90	90	90	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	37	11	0	10	10	569	3	0	692	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1288	1284	692	1301	1284	569	695	0	0	572	0	0
Stage 1	692	692	-	589	589	-	-	-	-	-	-	-
Stage 2	596	592	-	712	695	-	-	-	-	-	-	-
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	141	165	444	138	165	522	901	-	-	1001	-	-
Stage 1	434	445	-	494	495	-	-	-	-	-	-	-
Stage 2	490	494	-	423	444	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	137	163	444	125	163	522	901	-	-	1001	-	-
Mov Cap-2 Maneuver	137	163	-	125	163	-	-	-	-	-	-	-
Stage 1	429	445	-	489	490	-	-	-	-	-	-	-
Stage 2	475	489	-	388	444	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.6	25.8	0.2	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	901	-	-	310	194	1001	-	-
HCM Lane V/C Ratio	0.011	-	-	0.147	0.11	-	-	-
HCM Control Delay (s)	9	-	-	18.6	25.8	0	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.4	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑	↱		↰	↱
Traffic Vol, veh/h	7	0	27	1	0	2	29	513	2	3	519	10
Future Vol, veh/h	7	0	27	1	0	2	29	513	2	3	519	10
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	-	-	-	-	-	-	150	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	50	50	50	83	83	83	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	47	2	0	4	35	618	2	3	597	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1294	1293	597	1320	1302	618	608	0	0	620	0	0
Stage 1	603	603	-	688	688	-	-	-	-	-	-	-
Stage 2	691	690	-	632	614	-	-	-	-	-	-	-
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	139	163	503	134	161	489	970	-	-	960	-	-
Stage 1	486	488	-	436	447	-	-	-	-	-	-	-
Stage 2	435	446	-	468	483	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	134	156	503	118	154	489	970	-	-	960	-	-
Mov Cap-2 Maneuver	134	156	-	118	154	-	-	-	-	-	-	-
Stage 1	469	486	-	420	431	-	-	-	-	-	-	-
Stage 2	416	430	-	423	481	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.7	20.5	0.5	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	970	-	-	321	239	960	-	-
HCM Lane V/C Ratio	0.036	-	-	0.183	0.025	0.004	-	-
HCM Control Delay (s)	8.8	-	-	18.7	20.5	8.8	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑	↱		↰	↱
Traffic Vol, veh/h	12	0	29	1	0	4	32	603	10	4	432	20
Future Vol, veh/h	12	0	29	1	0	4	32	603	10	4	432	20
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	-	-	-	-	-	-	100	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	55	55	55	92	92	92	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	0	38	2	0	7	35	655	11	4	450	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1192	1194	450	1213	1204	655	471	0	0	666	0	0
Stage 1	458	458	-	725	725	-	-	-	-	-	-	-
Stage 2	734	736	-	488	479	-	-	-	-	-	-	-
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	164	187	609	159	184	466	1091	-	-	923	-	-
Stage 1	583	567	-	416	430	-	-	-	-	-	-	-
Stage 2	412	425	-	561	555	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	157	180	609	145	177	466	1091	-	-	923	-	-
Mov Cap-2 Maneuver	157	180	-	145	177	-	-	-	-	-	-	-
Stage 1	564	564	-	403	416	-	-	-	-	-	-	-
Stage 2	393	411	-	523	552	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18	16.5	0.4	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1091	-	-	331	323	923	-	-
HCM Lane V/C Ratio	0.032	-	-	0.161	0.028	0.005	-	-
HCM Control Delay (s)	8.4	-	-	18	16.5	8.9	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.1	0	-	-

2024 No-Build Intersection Operations

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ISM

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↰	↱		↰	↱
Traffic Vol, veh/h	6	0	26	8	0	7	9	535	3	0	622	3
Future Vol, veh/h	6	0	26	8	0	7	9	535	3	0	622	3
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	-	-	-	-	-	-	-	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	70	70	70	90	90	90	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	38	11	0	10	10	594	3	0	723	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1344	1340	723	1358	1340	594	726	0	0	597	0	0
Stage 1	723	723	-	614	614	-	-	-	-	-	-	-
Stage 2	621	617	-	744	726	-	-	-	-	-	-	-
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	129	153	426	126	153	505	877	-	-	980	-	-
Stage 1	417	431	-	479	483	-	-	-	-	-	-	-
Stage 2	475	481	-	407	430	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	125	150	426	113	150	505	877	-	-	980	-	-
Mov Cap-2 Maneuver	125	150	-	113	150	-	-	-	-	-	-	-
Stage 1	410	431	-	471	475	-	-	-	-	-	-	-
Stage 2	458	473	-	370	430	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.6	28.1	0.2	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	877	-	-	293	177	980	-	-
HCM Lane V/C Ratio	0.011	-	-	0.161	0.121	-	-	-
HCM Control Delay (s)	9.2	0	-	19.6	28.1	0	-	-
HCM Lane LOS	A	A	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.4	0	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	10	25	21	7	7
Future Vol, veh/h	3	10	25	21	7	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	70	70	65	65
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	17	36	30	11	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	119	17	22	0	-	0
Stage 1	17	-	-	-	-	-
Stage 2	102	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	877	1062	1593	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	922	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	857	1062	1593	-	-	-
Mov Cap-2 Maneuver	857	-	-	-	-	-
Stage 1	983	-	-	-	-	-
Stage 2	922	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1593	-	1006	-	-
HCM Lane V/C Ratio	0.022	-	0.022	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	61	244	7	18	119
Future Vol, veh/h	26	61	244	7	18	119
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	66	265	8	20	129

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	434	265	0	0	273	0
Stage 1	265	-	-	-	-	-
Stage 2	169	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	579	774	-	-	1290	-
Stage 1	779	-	-	-	-	-
Stage 2	861	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	569	774	-	-	1290	-
Mov Cap-2 Maneuver	569	-	-	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	846	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	699	1290	-
HCM Lane V/C Ratio	-	-	0.135	0.015	-
HCM Control Delay (s)	-	-	11	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↰	↱		↰	↱
Traffic Vol, veh/h	7	0	28	1	0	2	30	536	2	3	543	10
Future Vol, veh/h	7	0	28	1	0	2	30	536	2	3	543	10
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	-	-	-	-	-	-	-	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	50	50	50	83	83	83	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	48	2	0	4	36	646	2	3	624	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1351	1350	624	1378	1359	646	635	0	0	648	0	0
Stage 1	630	630	-	718	718	-	-	-	-	-	-	-
Stage 2	721	720	-	660	641	-	-	-	-	-	-	-
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	127	150	485	122	149	472	948	-	-	938	-	-
Stage 1	470	475	-	420	433	-	-	-	-	-	-	-
Stage 2	419	432	-	452	469	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	120	140	485	105	139	472	948	-	-	938	-	-
Mov Cap-2 Maneuver	120	140	-	105	139	-	-	-	-	-	-	-
Stage 1	442	473	-	395	407	-	-	-	-	-	-	-
Stage 2	391	407	-	405	467	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.9	22	0.5	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	948	-	-	302	218	938	-	-
HCM Lane V/C Ratio	0.038	-	-	0.2	0.028	0.004	-	-
HCM Control Delay (s)	8.9	0	-	19.9	22	8.9	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.1	0	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	28	16	22	22	10
Future Vol, veh/h	8	28	16	22	22	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	53	53	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	40	30	42	31	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	140	38	45	0	-	0
Stage 1	38	-	-	-	-	-
Stage 2	102	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	853	1034	1563	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	922	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	836	1034	1563	-	-	-
Mov Cap-2 Maneuver	836	-	-	-	-	-
Stage 1	964	-	-	-	-	-
Stage 2	922	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	3.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1563	-	982	-	-
HCM Lane V/C Ratio	0.019	-	0.052	-	-
HCM Control Delay (s)	7.3	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	26	196	18	40	204
Future Vol, veh/h	10	26	196	18	40	204
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	28	213	20	43	222

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	521	213	0	0	233	0
Stage 1	213	-	-	-	-	-
Stage 2	308	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	516	827	-	-	1335	-
Stage 1	823	-	-	-	-	-
Stage 2	745	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	497	827	-	-	1335	-
Mov Cap-2 Maneuver	497	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	717	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	698	1335	-
HCM Lane V/C Ratio	-	-	0.056	0.033	-
HCM Control Delay (s)	-	-	10.5	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↰	↱		↰	↱
Traffic Vol, veh/h	13	0	30	1	0	4	33	631	10	4	452	21
Future Vol, veh/h	13	0	30	1	0	4	33	631	10	4	452	21
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	-	-	-	-	-	-	-	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	55	55	55	92	92	92	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	39	2	0	7	36	686	11	4	471	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1246	1248	471	1268	1259	686	493	0	0	697	0	0
Stage 1	479	479	-	758	758	-	-	-	-	-	-	-
Stage 2	767	769	-	510	501	-	-	-	-	-	-	-
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	151	173	593	145	171	447	1071	-	-	899	-	-
Stage 1	568	555	-	399	415	-	-	-	-	-	-	-
Stage 2	395	411	-	546	543	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	142	162	593	129	161	447	1071	-	-	899	-	-
Mov Cap-2 Maneuver	142	162	-	129	161	-	-	-	-	-	-	-
Stage 1	537	552	-	377	392	-	-	-	-	-	-	-
Stage 2	367	388	-	507	540	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.5	17.4	0.4	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1071	-	-	303	299	899	-	-
HCM Lane V/C Ratio	0.033	-	-	0.184	0.03	0.005	-	-
HCM Control Delay (s)	8.5	0	-	19.5	17.4	9	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	16	8	25	29	10
Future Vol, veh/h	8	16	8	25	29	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	78	78	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	19	10	32	39	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	98	46	52	0	-	0
Stage 1	46	-	-	-	-	-
Stage 2	52	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	901	1023	1554	-	-	-
Stage 1	976	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	895	1023	1554	-	-	-
Mov Cap-2 Maneuver	895	-	-	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	970	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1554	-	976	-	-
HCM Lane V/C Ratio	0.007	-	0.03	-	-
HCM Control Delay (s)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	25	325	18	41	291
Future Vol, veh/h	10	25	325	18	41	291
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	75	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	27	353	20	45	316

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	759	353	0	0	373	0
Stage 1	353	-	-	-	-	-
Stage 2	406	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	374	691	-	-	1185	-
Stage 1	711	-	-	-	-	-
Stage 2	673	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	357	691	-	-	1185	-
Mov Cap-2 Maneuver	357	-	-	-	-	-
Stage 1	711	-	-	-	-	-
Stage 2	642	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	545	1185	-
HCM Lane V/C Ratio	-	-	0.07	0.038	-
HCM Control Delay (s)	-	-	12.1	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

2024 No-Build Intersection Operations with System Improvements

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Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑	↱		↰	↱
Traffic Vol, veh/h	6	0	26	8	0	7	9	535	3	0	622	3
Future Vol, veh/h	6	0	26	8	0	7	9	535	3	0	622	3
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	-	-	-	-	-	-	150	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	70	70	70	90	90	90	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	38	11	0	10	10	594	3	0	723	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1344	1340	723	1358	1340	594	726	0	0	597	0	0
Stage 1	723	723	-	614	614	-	-	-	-	-	-	-
Stage 2	621	617	-	744	726	-	-	-	-	-	-	-
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	129	153	426	126	153	505	877	-	-	980	-	-
Stage 1	417	431	-	479	483	-	-	-	-	-	-	-
Stage 2	475	481	-	407	430	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	125	151	426	114	151	505	877	-	-	980	-	-
Mov Cap-2 Maneuver	125	151	-	114	151	-	-	-	-	-	-	-
Stage 1	412	431	-	474	478	-	-	-	-	-	-	-
Stage 2	460	476	-	370	430	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.6	28	0.2	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	877	-	-	293	178	980	-	-
HCM Lane V/C Ratio	0.011	-	-	0.161	0.12	-	-	-
HCM Control Delay (s)	9.2	-	-	19.6	28	0	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.4	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑	↱		↔	↱
Traffic Vol, veh/h	7	0	28	1	0	2	30	536	2	3	543	10
Future Vol, veh/h	7	0	28	1	0	2	30	536	2	3	543	10
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	-	-	-	-	-	-	150	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	50	50	50	83	83	83	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	48	2	0	4	36	646	2	3	624	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1351	1350	624	1378	1359	646	635	0	0	648	0	0
Stage 1	630	630	-	718	718	-	-	-	-	-	-	-
Stage 2	721	720	-	660	641	-	-	-	-	-	-	-
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	127	150	485	122	149	472	948	-	-	938	-	-
Stage 1	470	475	-	420	433	-	-	-	-	-	-	-
Stage 2	419	432	-	452	469	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	122	144	485	106	143	472	948	-	-	938	-	-
Mov Cap-2 Maneuver	122	144	-	106	143	-	-	-	-	-	-	-
Stage 1	452	473	-	404	417	-	-	-	-	-	-	-
Stage 2	400	416	-	405	467	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.8	21.9	0.5	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	948	-	-	304	219	938	-	-
HCM Lane V/C Ratio	0.038	-	-	0.199	0.027	0.004	-	-
HCM Control Delay (s)	8.9	-	-	19.8	21.9	8.9	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑	↱		↰	↱
Traffic Vol, veh/h	13	0	30	1	0	4	33	631	10	4	452	21
Future Vol, veh/h	13	0	30	1	0	4	33	631	10	4	452	21
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	-	-	-	-	-	-	100	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	55	55	55	92	92	92	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	39	2	0	7	36	686	11	4	471	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1246	1248	471	1268	1259	686	493	0	0	697	0	0
Stage 1	479	479	-	758	758	-	-	-	-	-	-	-
Stage 2	767	769	-	510	501	-	-	-	-	-	-	-
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	151	173	593	145	171	447	1071	-	-	899	-	-
Stage 1	568	555	-	399	415	-	-	-	-	-	-	-
Stage 2	395	411	-	546	543	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	144	166	593	131	164	447	1071	-	-	899	-	-
Mov Cap-2 Maneuver	144	166	-	131	164	-	-	-	-	-	-	-
Stage 1	549	552	-	385	401	-	-	-	-	-	-	-
Stage 2	376	397	-	507	540	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.4	17.3	0.4	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1071	-	-	305	302	899	-	-
HCM Lane V/C Ratio	0.033	-	-	0.183	0.03	0.005	-	-
HCM Control Delay (s)	8.5	-	-	19.4	17.3	9	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.1	0	-	-

FUTURE CONDITION INTERSECTION OPERATIONS

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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	19	0	62	8	0	7	20	535	3	0	622	3
Future Vol, veh/h	19	0	62	8	0	7	20	535	3	0	622	3
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	-	-	-	-	-	-	-	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	70	70	70	90	90	90	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	0	91	11	0	10	22	594	3	0	723	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1368	1364	723	1408	1364	594	726	0	0	597	0	0
Stage 1	723	723	-	638	638	-	-	-	-	-	-	-
Stage 2	645	641	-	770	726	-	-	-	-	-	-	-
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	124	148	426	116	148	505	877	-	-	980	-	-
Stage 1	417	431	-	465	471	-	-	-	-	-	-	-
Stage 2	461	469	-	393	430	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	118	142	426	89	142	505	877	-	-	980	-	-
Mov Cap-2 Maneuver	118	142	-	89	142	-	-	-	-	-	-	-
Stage 1	401	431	-	447	453	-	-	-	-	-	-	-
Stage 2	435	451	-	309	430	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29.4	34.1	0.3	0
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	877	-	-	264	145	980	-	-
HCM Lane V/C Ratio	0.025	-	-	0.451	0.148	-	-	-
HCM Control Delay (s)	9.2	0	-	29.4	34.1	0	-	-
HCM Lane LOS	A	A	-	D	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.2	0.5	0	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	21	57	70	23	7
Future Vol, veh/h	3	21	57	70	23	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	70	70	65	65
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	35	81	100	35	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	303	41	46	0	-	0
Stage 1	41	-	-	-	-	-
Stage 2	262	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	689	1030	1562	-	-	-
Stage 1	981	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	651	1030	1562	-	-	-
Mov Cap-2 Maneuver	651	-	-	-	-	-
Stage 1	927	-	-	-	-	-
Stage 2	782	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	3.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1562	-	960	-	-
HCM Lane V/C Ratio	0.052	-	0.042	-	-
HCM Control Delay (s)	7.4	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	83	244	10	26	119
Future Vol, veh/h	36	83	244	10	26	119
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	90	265	11	28	129

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	450	265	0	0	276	0
Stage 1	265	-	-	-	-	-
Stage 2	185	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	567	774	-	-	1287	-
Stage 1	779	-	-	-	-	-
Stage 2	847	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	554	774	-	-	1287	-
Mov Cap-2 Maneuver	554	-	-	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	828	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	1.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	691	1287	-
HCM Lane V/C Ratio	-	-	0.187	0.022	-
HCM Control Delay (s)	-	-	11.4	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↰	↱		↰	↱
Traffic Vol, veh/h	14	0	47	1	0	2	57	536	2	3	543	21
Future Vol, veh/h	14	0	47	1	0	2	57	536	2	3	543	21
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	-	-	-	-	-	-	-	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	50	50	50	83	83	83	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	0	81	2	0	4	69	646	2	3	624	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1417	1416	624	1467	1438	646	648	0	0	648	0	0
Stage 1	630	630	-	784	784	-	-	-	-	-	-	-
Stage 2	787	786	-	683	654	-	-	-	-	-	-	-
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	115	137	485	106	133	472	938	-	-	938	-	-
Stage 1	470	475	-	386	404	-	-	-	-	-	-	-
Stage 2	385	403	-	439	463	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	104	121	485	80	117	472	938	-	-	938	-	-
Mov Cap-2 Maneuver	104	121	-	80	117	-	-	-	-	-	-	-
Stage 1	416	473	-	342	358	-	-	-	-	-	-	-
Stage 2	338	357	-	364	461	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.5	25.8	0.9	0
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	938	-	-	263	179	938	-	-
HCM Lane V/C Ratio	0.073	-	-	0.4	0.034	0.004	-	-
HCM Control Delay (s)	9.1	0	-	27.5	25.8	8.9	0	-
HCM Lane LOS	A	A	-	D	D	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.8	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	53	33	48	60	10
Future Vol, veh/h	8	53	33	48	60	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	53	53	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	76	62	91	86	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	308	93	100	0	-	0
Stage 1	93	-	-	-	-	-
Stage 2	215	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	684	964	1493	-	-	-
Stage 1	931	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	654	964	1493	-	-	-
Mov Cap-2 Maneuver	654	-	-	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	821	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	3.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1493	-	908	-	-
HCM Lane V/C Ratio	0.042	-	0.096	-	-
HCM Control Delay (s)	7.5	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	38	196	25	58	204
Future Vol, veh/h	15	38	196	25	58	204
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	41	213	27	63	222

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	561	213	0	0	240	0
Stage 1	213	-	-	-	-	-
Stage 2	348	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	489	827	-	-	1327	-
Stage 1	823	-	-	-	-	-
Stage 2	715	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	463	827	-	-	1327	-
Mov Cap-2 Maneuver	463	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	676	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	676	1327	-
HCM Lane V/C Ratio	-	-	0.085	0.048	-
HCM Control Delay (s)	-	-	10.8	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↰	↱		↰	↱
Traffic Vol, veh/h	22	0	53	1	0	4	71	631	10	4	452	36
Future Vol, veh/h	22	0	53	1	0	4	71	631	10	4	452	36
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	-	-	-	-	-	-	-	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	55	55	55	92	92	92	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	0	69	2	0	7	77	686	11	4	471	38

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1328	1330	471	1373	1357	686	509	0	0	697	0	0
Stage 1	479	479	-	840	840	-	-	-	-	-	-	-
Stage 2	849	851	-	533	517	-	-	-	-	-	-	-
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	132	155	593	123	149	447	1056	-	-	899	-	-
Stage 1	568	555	-	360	381	-	-	-	-	-	-	-
Stage 2	356	376	-	531	534	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	117	136	593	98	131	447	1056	-	-	899	-	-
Mov Cap-2 Maneuver	117	136	-	98	131	-	-	-	-	-	-	-
Stage 1	500	552	-	317	336	-	-	-	-	-	-	-
Stage 2	309	331	-	467	531	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.7	19.3	0.9	0.1
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1056	-	-	270	261	899	-	-
HCM Lane V/C Ratio	0.073	-	-	0.361	0.035	0.005	-	-
HCM Control Delay (s)	8.7	0	-	25.7	19.3	9	0	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.6	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	52	29	57	82	10
Future Vol, veh/h	8	52	29	57	82	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	78	78	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	63	37	73	109	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	263	116	122	0	-	0
Stage 1	116	-	-	-	-	-
Stage 2	147	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	726	936	1465	-	-	-
Stage 1	909	-	-	-	-	-
Stage 2	880	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	707	936	1465	-	-	-
Mov Cap-2 Maneuver	707	-	-	-	-	-
Stage 1	885	-	-	-	-	-
Stage 2	880	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	2.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1465	-	897	-	-
HCM Lane V/C Ratio	0.025	-	0.081	-	-
HCM Control Delay (s)	7.5	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	40	325	43	52	291
Future Vol, veh/h	15	40	325	43	52	291
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	75	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	43	353	47	57	316

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	783	353	0	0	400	0
Stage 1	353	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	362	691	-	-	1159	-
Stage 1	711	-	-	-	-	-
Stage 2	656	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	340	691	-	-	1159	-
Mov Cap-2 Maneuver	340	-	-	-	-	-
Stage 1	711	-	-	-	-	-
Stage 2	617	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	539	1159	-
HCM Lane V/C Ratio	-	-	0.111	0.049	-
HCM Control Delay (s)	-	-	12.5	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.2	-

FUTURE CONDITION INTERSECTION OPERATIONS WITH SYSTEM IMPROVEMENTS

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ISM

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	19	0	62	8	0	7	20	535	3	0	622	3
Future Vol, veh/h	19	0	62	8	0	7	20	535	3	0	622	3
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	-	-	-	-	-	-	150	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	70	70	70	90	90	90	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	0	91	11	0	10	22	594	3	0	723	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1368	1364	723	1408	1364	594	726	0	0	597	0	0
Stage 1	723	723	-	638	638	-	-	-	-	-	-	-
Stage 2	645	641	-	770	726	-	-	-	-	-	-	-
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	124	148	426	116	148	505	877	-	-	980	-	-
Stage 1	417	431	-	465	471	-	-	-	-	-	-	-
Stage 2	461	469	-	393	430	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	119	144	426	89	144	505	877	-	-	980	-	-
Mov Cap-2 Maneuver	119	144	-	89	144	-	-	-	-	-	-	-
Stage 1	407	431	-	453	459	-	-	-	-	-	-	-
Stage 2	441	457	-	309	430	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29.2	34.1	0.3	0
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	877	-	-	265	145	980	-	-
HCM Lane V/C Ratio	0.025	-	-	0.45	0.148	-	-	-
HCM Control Delay (s)	9.2	-	-	29.2	34.1	0	-	-
HCM Lane LOS	A	-	-	D	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.2	0.5	0	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑	↱		↰	↱
Traffic Vol, veh/h	14	0	47	1	0	2	57	536	2	3	543	21
Future Vol, veh/h	14	0	47	1	0	2	57	536	2	3	543	21
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	-	-	-	-	-	-	150	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	50	50	50	83	83	83	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	0	81	2	0	4	69	646	2	3	624	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1417	1416	624	1467	1438	646	648	0	0	648	0	0
Stage 1	630	630	-	784	784	-	-	-	-	-	-	-
Stage 2	787	786	-	683	654	-	-	-	-	-	-	-
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	115	137	485	106	133	472	938	-	-	938	-	-
Stage 1	470	475	-	386	404	-	-	-	-	-	-	-
Stage 2	385	403	-	439	463	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	107	126	485	83	122	472	938	-	-	938	-	-
Mov Cap-2 Maneuver	107	126	-	83	122	-	-	-	-	-	-	-
Stage 1	435	473	-	357	374	-	-	-	-	-	-	-
Stage 2	354	373	-	364	461	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.9	25.2	0.9	0
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	938	-	-	268	184	938	-	-
HCM Lane V/C Ratio	0.073	-	-	0.392	0.033	0.004	-	-
HCM Control Delay (s)	9.1	-	-	26.9	25.2	8.9	0	-
HCM Lane LOS	A	-	-	D	D	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.8	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑	↱		↰	↱
Traffic Vol, veh/h	22	0	53	1	0	4	71	631	10	4	452	36
Future Vol, veh/h	22	0	53	1	0	4	71	631	10	4	452	36
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	-	-	-	-	-	-	150	-	200	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	55	55	55	92	92	92	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	0	69	2	0	7	77	686	11	4	471	38

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1328	1330	471	1373	1357	686	509	0	0	697	0	0
Stage 1	479	479	-	840	840	-	-	-	-	-	-	-
Stage 2	849	851	-	533	517	-	-	-	-	-	-	-
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	132	155	593	123	149	447	1056	-	-	899	-	-
Stage 1	568	555	-	360	381	-	-	-	-	-	-	-
Stage 2	356	376	-	531	534	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	122	143	593	102	137	447	1056	-	-	899	-	-
Mov Cap-2 Maneuver	122	143	-	102	137	-	-	-	-	-	-	-
Stage 1	527	552	-	334	353	-	-	-	-	-	-	-
Stage 2	325	349	-	467	531	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.8	19	0.9	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1056	-	-	278	267	899	-	-
HCM Lane V/C Ratio	0.073	-	-	0.35	0.034	0.005	-	-
HCM Control Delay (s)	8.7	-	-	24.8	19	9	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.5	0.1	0	-	-

Department of Planning and Development

North Augusta
South Carolina's Riverfront

Project Staff Report
ZV20-009 North Augusta Middle School Sign
Prepared by: Kuleigh Baker
Meeting Date: October 7, 2021

SECTION 1: PROJECT SUMMARY

Project Name	North Augusta Middle School Electronic Reader board
Applicant	Aiken County Public Schools
Address/Location	725 Old Edgefield Road
Parcel Numbers	013-09-01-001
Total Development Size	± 17.43 acres
Existing Zoning	P, Public Use
Overlay	N/A
Variance Requested	NADC Article 13, Signs; Section 13.8.3.L.i. and 13.8.3.L.ii. Signage Allowed for Non-Residential Districts and Uses, Electronic Reader boards district and sign area

SECTION 2: BOARD OF ZONING APPEALS CONSIDERATION

Per NADC § 18.4.5.4.2, the Board of Zoning Appeals shall hear and decide appeals for variances from the requirements of Article 3, Zoning Districts, and Article 13, Signs, when strict application of the regulations would result in unnecessary hardship.

A variance may be granted in an individual case of unnecessary hardship if the Board of Zoning Appeals makes and explains in writing, all of the following:

1. An unnecessary hardship exists;
2. There are extraordinary and exceptional conditions pertaining to the particular piece of property;
3. The conditions do not generally apply to other property in the vicinity;
4. Because of the conditions, the application of this Chapter to the particular piece of property would effectively prohibit or unreasonably restrict the utilization of the property; and
5. The authorization of a variance will not be of substantial detriment to adjacent property or to the public good, and the character of the district will not be harmed by the granting of the variance. Harm to the character of the district may include structures

that are significantly out of scale, and the creation or potential for the creation of excessive noise, light, traffic or incompatible late night activity. (Rev. 12-1-08; Ord. 2008-18)

6. In the approval of an application for a variance from the provisions of Article 13, Signs, regulating the size, height, appearance, or location of a sign, the Board of Zoning Appeals shall also find that no alternative signage solution that complies with the provisions of Article 13 is available and would provide adequate visibility, recognition and understanding.
7. The Board of Zoning Appeals may not grant a variance the effect of which would be:
    a. To allow the establishment of a use not otherwise permitted in a zoning district.
    b. To extend physically a nonconforming use of land.
    c. To change zoning district boundaries shown on the official zoning map.
8. If the unnecessary hardship is self-imposed by the applicant the variance should not be granted.
9. The fact that property may be utilized more profitably, should a variance be granted, shall not be considered grounds for a variance.
10. In granting a variance, the Board of Zoning Appeals may attach to it such conditions regarding the location, character, or other features of the proposed building, structure, or use as the Board may consider advisable to promote the public health, safety, or general welfare.

Based on these findings of fact, the Board of Zoning Appeals may approve, approve with conditions, or deny the request.

SECTION 3: PUBLIC NOTICE

Per NADC Table 5-1, 6. Variance, the application and description were advertised via a public notice describing the variance request and advertising the scheduled date of the Board of Zoning Appeals hearing in *The Star* and www.northaugusta.net on September 22, 2021. A written notice of the variance request and scheduled date of the Board of Zoning Appeals hearing was mailed to the owners of property within 200 feet of the subject property on September 22, 2021. The property was posted with the required public notice on September 22, 2021.

SECTION 4: SITE HISTORY

The project site is an existing middle school located on Old Edgefield Road. The school is zoned P, Public Use and primarily services the surrounding residential district. On April 16, 2009, the Planning Commission recommended that City Council approve rezoning the property to P, Public Use. The school was rezoned from R-10, Medium Lot, Single-Family Residential to P, Public Use and the official zoning map was amended on May 18, 2009. In August of 2009, the Planning Commission approved a building addition with the condition that any stadium style lighting must minimize glare and illumination on the nearby residential properties.

The City approved a sign permit in November of 2014 to erect an 8 ft tall, 50 sf changeable copy sign. The applicant requests a variance to allow for a 10 ft tall, 38 sf sign with a 23 sf electronic reader board to replace the previous sign.

SECTION 5: EXISTING SITE CONDITIONS

	Existing Land Use	Future Land Use	Zoning
Subject Parcel	Middle School	Low Density Residential	P, Public Use
North	Residential	Low Density Residential	R-10, Medium Lot Single-Family Residential
South	Commercial/Residential	Low Density Residential	R-10, Medium Lot Single-Family Residential/ NC, Neighborhood Commercial
East	Residential	Low Density Residential	R-10, Medium Lot Single-Family Residential
West	Residential/Public Park	Low Density Residential/ Parks, Recreation, Open Space, and Conservation	P, Public Use/ R-10, Medium Lot Single-Family Residential/ NC, Neighborhood Commercial

Access – The site currently has access from Old Edgefield Road and Crestview Drive.

Topography –The property elevation is terraced and slopes slightly from the North to South. The school building is located on the upper levels, with the athletic field located on the lower.

Utilities – Water and sewer service are existing.

Floodplain – The property is not located within a federally designated floodplain.

Drainage Basin – The property falls within the Waterworks basin. The basin drains areas from Knox Avenue, parts of downtown including North Augusta Elementary School, and the communities along Old Edgefield Road. Stormwater from Old Edgefield Road flows through the basin Along Atomic Road to pipes down Buena Vista and Mealing Avenue. From there they converge with the main channel at the Municipal Building. The preliminary physical stream assessments for Water Works basin indicate that this stream channel is currently not effective at transporting current loads of stormwater during heavy storm events. The City has implemented a capital improvement project to improve storm sewers and roads in an effort to eliminate flooding that results during heavy rainfalls. Overall sampling results indicate that the water quality at the outfall of this basin (below the River Golf Club ponds) is good. During storm events, the data shows increased levels of pollutants making it to the river from higher elevations along the channel.

SECTION 6: STAFF EVALUATION AND ANALYSIS

The applicant requests a variance to allow for a 10 ft tall, 38 sf sign with a 23 sf electronic reader board within the P, Public Use Zoning District. Section 13.8.3.L.i. states that electronic reader boards shall be used only in the Office Commercial (OC), General Commercial (GC), Thoroughfare Commercial (TC), and Industrial (IND) districts. Section 13.8.3.L.ii. Signage Allowed for Non-Residential Districts and Uses states Electronic Reader boards shall not exceed 50% of the sign area of which it is a part. The applicant has proposed a sign area of approximately 60% of the total sign area.

However, Section 3.6.4.1., Public Use District, Purpose states the purpose of the district is to provide suitable locations for land and structures in the city of North Augusta used exclusively by the city of North Augusta, Aiken County, the State of South Carolina, the United States, or other governmental jurisdictions and their instrumentalities; and as such shall be used in accordance with such regulations as may be prescribed by the government or instrumentality thereof using the property.

Furthermore, Section 3.6.4.5.2 Development Standards states uses within the P, Public Use District, are not subject to the dimensional standards of §3.5. However, such uses are subject to the landscaping standards of Article 10, and the parking standards of Article 12.

Following is analysis required by NADC §5.1.4.5.b (Staff commentary is bulleted):

1. An unnecessary hardship exists;
   - The applicant states that the proposed sign meets the needs for the school to communicate important information to students, parents, and the public and that signs of a similar size with reader boards have not been rejected at any school location by other jurisdictions.

2. There are extraordinary and exceptional conditions pertaining to the particular piece of property;
   - The applicant states that schools typically fall within residential environments but that the current code does not address its role in the character of the surrounding neighborhoods.

3. The conditions do not generally apply to other property in the vicinity;
   - The applicant states that the school is unique in its service to the community. Unlike a business advertising services for a profit, the electronic reader board will be used to improve communications between the school, its students, and their parents.

4. Because of the conditions, the application of this Chapter to the particular piece of property would effectively prohibit or unreasonably restrict the utilization of the property; and
   - The applicant states that the NADC does not directly address school signage. Their argument is that prohibiting an electronic reader board would unreasonably limit the amount of information the school is able to transmit through signage. They state that the overall sign area proposed is smaller than that allowed by the code and otherwise meets the intent of the code if the electronic reader board is accepted.

5. The authorization of a variance will not be of substantial detriment to adjacent property or to the public good, and the character of the district will not be harmed by the granting of the variance. Harm to the character of the district may include structures that are significantly out of scale, and the creation or potential for the creation of excessive noise, light, traffic or incompatible late night activity. (Rev. 12-1-08; Ord. 2008-18)
   - The applicant states that the proposed sign will not hinder any other property's signage and that the location will not create excessive noise, light, traffic, or late night activity as it is screened by a hill, vegetation, and commercial entities.

- Staff notes the electronic reader board creates the potential for nighttime light pollution but that the majority of residences are located beyond direct view of the sign location on the NAMS property.

6. In the approval of an application for a variance from the provisions of Article 13, Signs, regulating the size, height, appearance, or location of a sign, the Board of Zoning Appeals shall also find that no alternative signage solution that complies with the provisions of Article 13 is available and would provide adequate visibility, recognition and understanding.
   - Electronic reader board signs are allowed in certain zoning districts (i.e. Office Commercial (OC), General Commercial (GC), Thoroughfare Commercial (TC), and Industrial (IND) districts) but cannot exceed 50% of the sign area. The applicant requests a reader board occupying 60% of the total sign area. The applicant states that the cost to maintain a non-standard sign is significantly higher and would lead to the need for additional training by operators.

7. The Board of Zoning Appeals may not grant a variance the effect of which would be:
   a To allow the establishment of a use not otherwise permitted in a zoning district.
      - Signs are allowed in public zoning.
   b To extend physically a nonconforming use of land.
      - The variance does not extend a physically nonconforming use of land.
   c To change zoning district boundaries shown on the official zoning map.
      - The application does not propose a change to the zoning district boundaries.

8. If the unnecessary hardship is self-imposed by the applicant the variance should not be granted.
   - The applicant states the location and use of the property warrant the variance request.

9. The fact that property may be utilized more profitably, should a variance be granted, shall not be considered grounds for a variance.
   - Staff recognizes that the property is operated as a public school and the request is not based on profitability of the land.

10. In granting a variance, the Board of Zoning Appeals may attach to it such conditions regarding the location, character, or other features of the proposed building, structure, or use as the Board may consider advisable to promote the public health, safety, or general welfare.

- This variance, if granted, will apply only to this property and the sign details as submitted. Should the sign need to be replaced, it should meet the requirements of the sign code in place at that time or request another variance, if applicable.
- Staff recommends limiting the hours of operation of the sign so that the reader board is not operated between the hours of 10 p.m. and 6 a.m. The sign would be expected to follow all the regulated colors, refresh and other regulations of the sign code. Any limitations to hours of operation should be specified by the Board as part of the case order.
- Staff is open to suggestions for other conditions from the Board.

SECTION 7: ATTACHMENTS

1) Aerial
2) Topography
3) Current Zoning
4) Future Land Use
5) Site Photos
6) Public Notice
7) Application Materials

cc. Ron Wade, Signs Unlimited of SC; via email
Aiken County Public Schools; via email

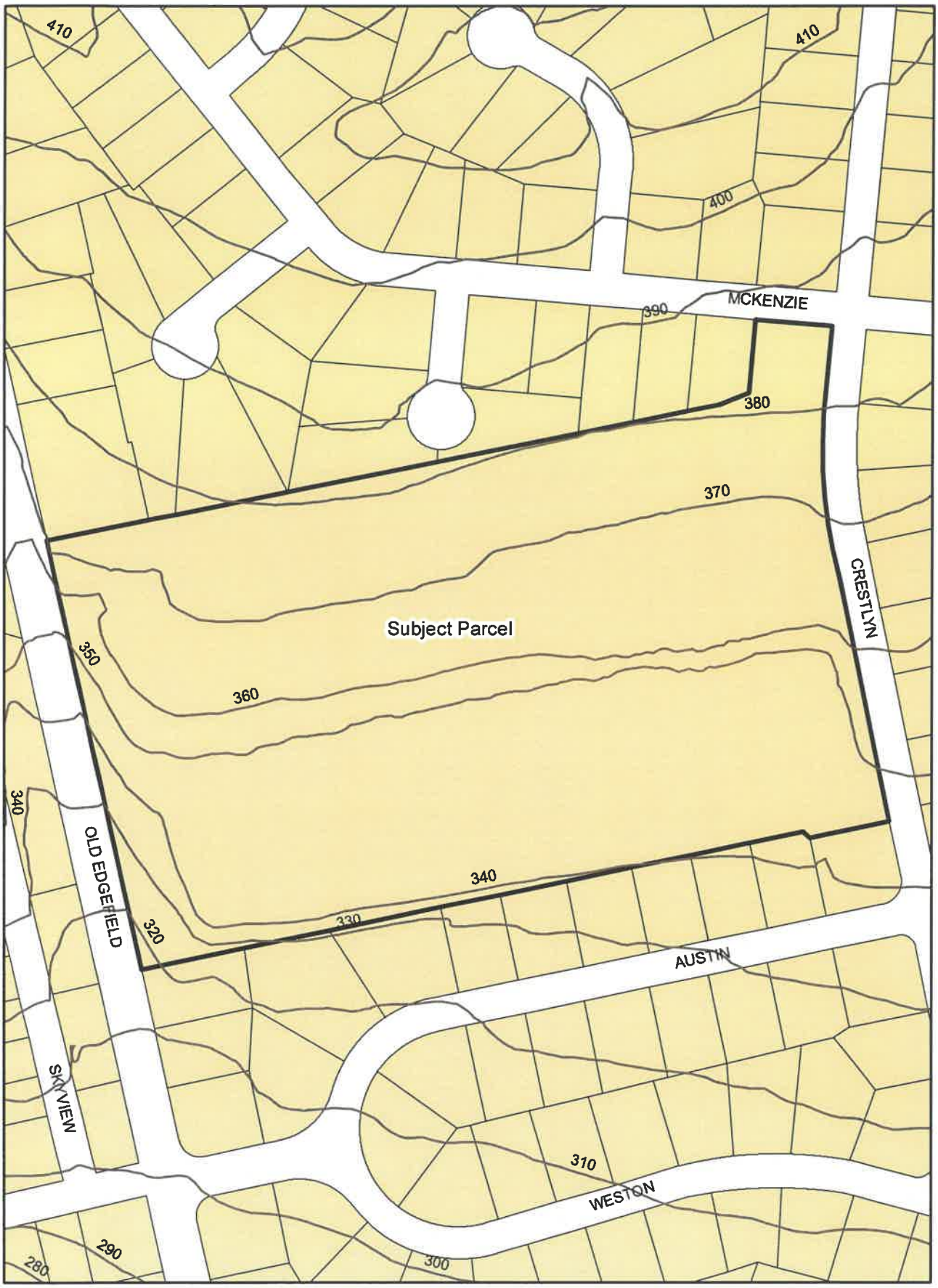
North Augusta
South Carolina's Riverfront

Aerial Map
Application ZV21-009
Parcel Number 013-09-01-001
725 Old Edgefield Rd
Approximately 17.43 acres

N
W E
S

150 75 0 150 Feet

Date: 9/20/2021



North Augusta
South Carolina's Riverfront

Topography Map
Application ZV21-009
Parcel Number 013-09-01-001
725 Old Edgefield Rd
Approximately 17.43 acres

N
W E
S

150 75 0 150 Feet

Date: 9/20/2021

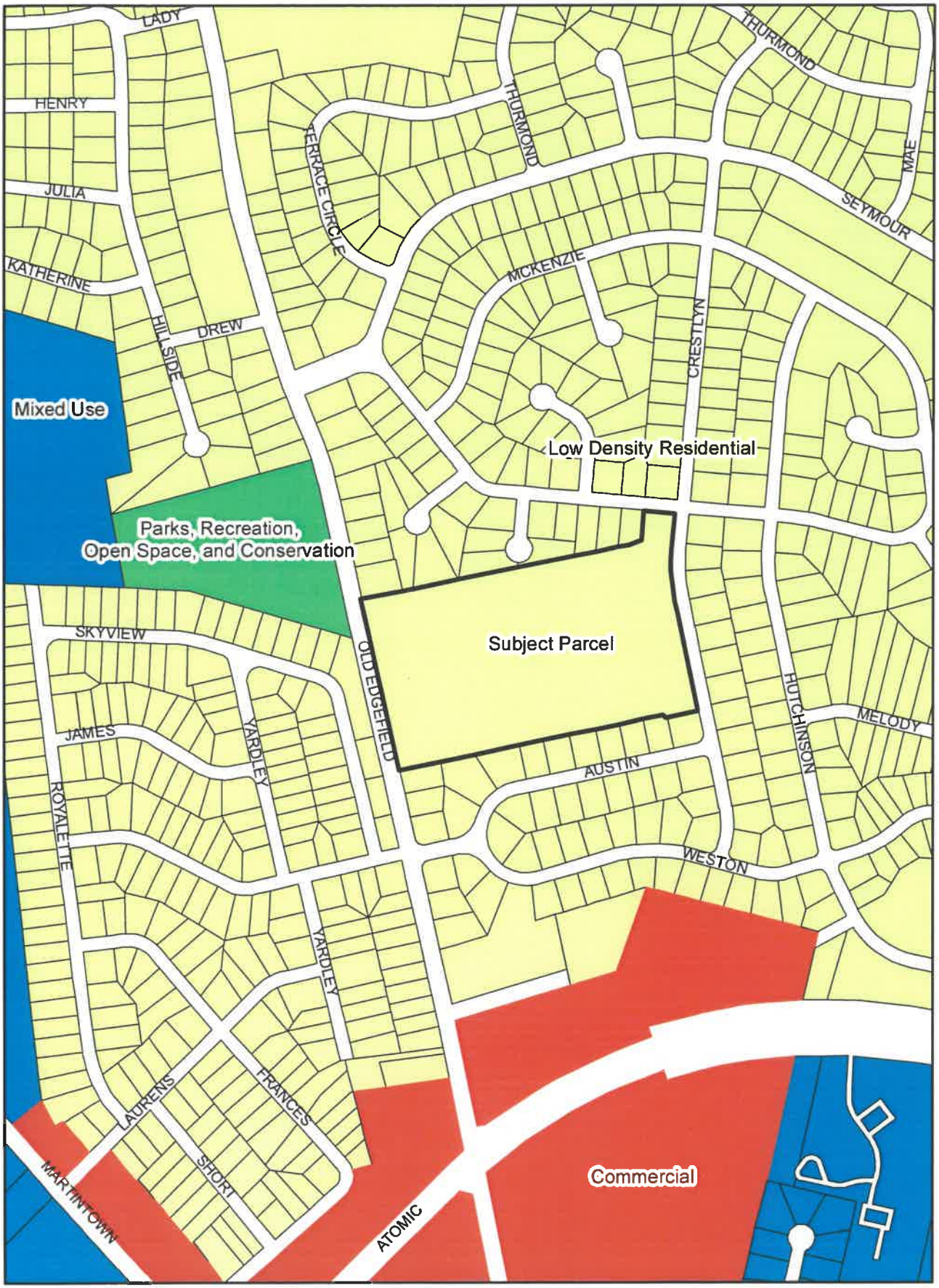
North Augusta
South Carolina's Riverfront

Zoning Map
Application ZV21-009
Parcel Number 013-09-01-001
725 Old Edgefield Rd
Approximately 17.43 acres
Zoned P, Public Use

N
W E
S

150 75 0 150 Feet

Date: 9/20/2021



North Augusta
South Carolina's Riverfront

Future Land use Map
Application ZV21-009
Parcel Number 013-09-01-001
725 Old Edgefield Rd
Approximately 17.43 acres
Low Density Residential

N
W E
S

380 190 0 380 Feet

Date: 9/20/2021

City of
North Augusta, South Carolina
Board of Zoning Appeals

PUBLIC HEARING NOTICE

The North Augusta Board of Zoning Appeals will hold a public hearing at its regular monthly meeting beginning at 7:00 PM on October 7, 2021 in the Council Chambers, North Augusta Municipal Center, 100 Georgia Avenue, North Augusta, South Carolina, to receive public input on the following application:

ZV21-009-A request by North Augusta Middle School for a variance at 725 Old Edgefield Road Hwy, TMP 013-09-01-001 from NADC Section 13.8.3.L which does not allow an electronic message center (EMC) in a P, Public Use zoning district and message center is limited to 50% of the sign area to allow an EMC in the P, Public Use zoning district and allow the message center area to be 60% of the sign area.

Documents related to the applications will be available for public inspection after September 30, 2021 in the offices of the Department of Planning and Development on the second floor of the Municipal Center, 100 Georgia Avenue, North Augusta, South Carolina and online at www.northaugusta.net. All residents and property owners interested in expressing a view on these cases are encouraged to attend or provide written comments to planning@northaugusta.net

CITIZEN ASSISTANCE: Individuals needing special assistance or a sign interpreter to participate in the meeting are asked to please notify the Department of Planning and Development at 803-441-4221 at least 48 hours prior to the meeting.

Notice of Appeal

Please type or print all information

North Augusta
South Carolina's Riverfront

Staff Use Only

Application Number ZV21-009 **Date Received** 08/26/2021

Review Fee #250.00 **Date Paid** 08/26/2021

1. **Project Name** North Augusta Middle Sch.

   Project Address/Location 735 Old Edgefield Rd

   Total Project Acreage 17.43 **Current Zoning** P-Public Use

   Tax Parcel Number(s) 013-09-01-001

2. **Applicant/Owner Name** Aiken Cty Schools **Applicant Phone** 803-648-0431

   Mailing Address Aiken Cty Public Schs Facilities Construction 61 Givens ST Aiken SC

   City Aiken **ST** SC **Zip** 29805 **Email** WRobertson@acpsd.NET

3. **Is there a Designated Agent for this project?** ✓ **Yes** ____ **No**
   If Yes, attach a notarized Designation of Agent form. (required if Applicant is not property owner)

4. **Engineer/Architect/Surveyor** ~~Signs Unlimited of S.C~~ **License No.** ____

   Firm Name Signs Unlimited of SC **Firm Phone** 803-438-1200

   Firm Mailing Address 1584 Whiting Way

   City Lugoff **ST** SC **Zip** 29078 **Email** tqqsigns@gmail.com

   Signature Ron Wade **Date** 8-26-2021

5. Is there any recorded restricted covenant or other private agreement that is contrary to, conflicts with or prohibits the use or activity on the property that is the subject of the application?
   (Check one.) ____ yes ✓ no

6. In accordance with Section 5.1.2.3 of the North Augusta Development Code, I hereby request the City of North Augusta review the attached project plans. The documents required by the City of North Augusta, as outlined in Appendix B of the North Augusta Development Code, are attached for the City's review for completeness. The applicant acknowledges that all documents required by the City must be correct and complete to initiate the compliance review process by the City.

Ron Wade
Applicant or Designated Agent Signature

8-26-2021
Date

Ron Wade
Print Applicant or Agent Name

North Augusta
South Carolina's Riverfront

DEPARTMENT OF PLANNING & DEVELOPMENT
100 Georgia Avenue
North Augusta, SC 29841-3843
TEL (803) 441-4221
FAX (803) 441-4232

RECEIPT

Project Number: ZV21-009

725 Old Edgefield Road
NORTH AUGUSTA, SC 29841

VARIANCE

Receipt Number: PD01748

Fee Description	Fee Amount
BZA - VARIANCE	$ 250.00

Total Fees Paid: **$ 250.00**

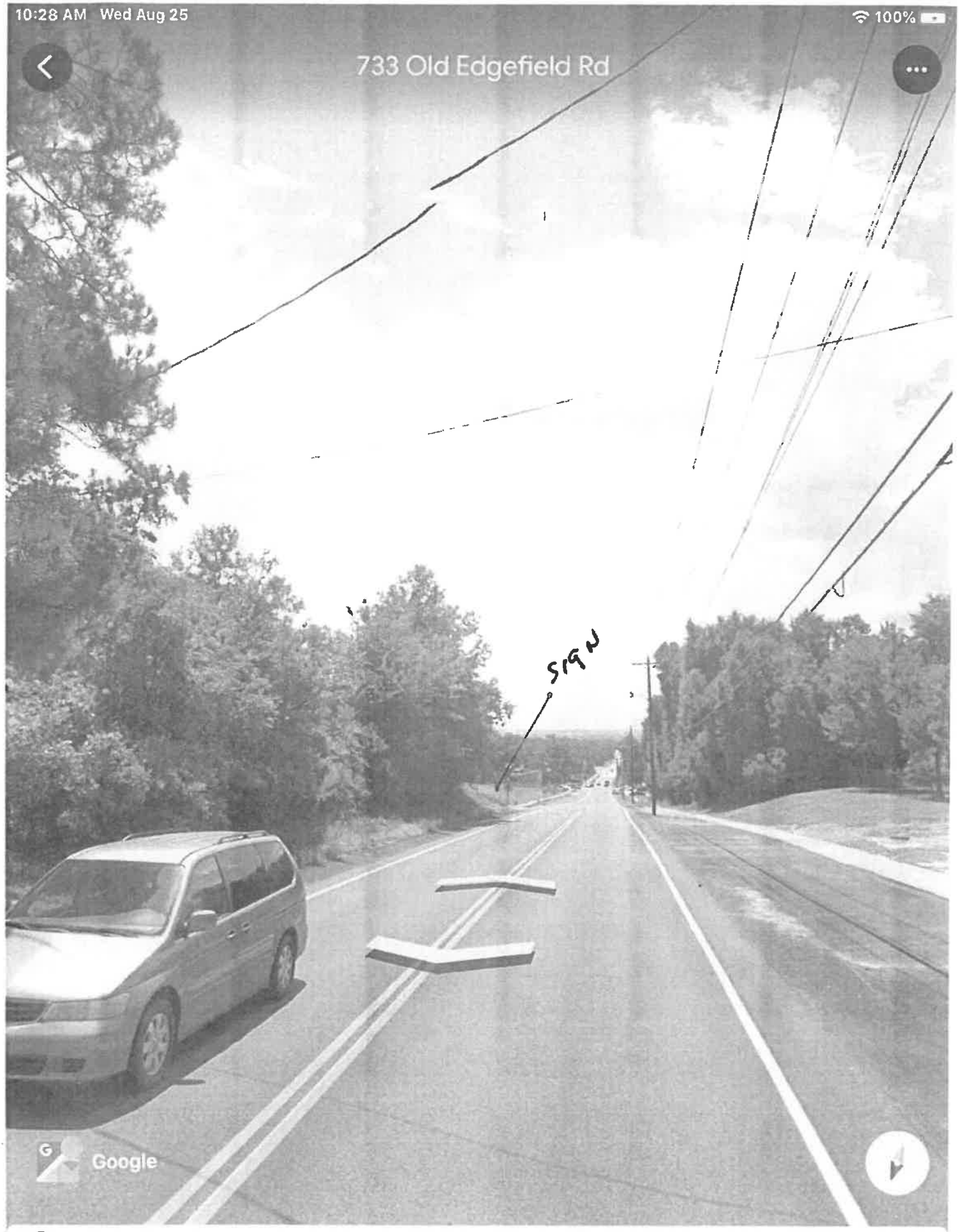
Date Paid: Thursday, August 26, 2021
Paid By: Ron Wade
Pay Method: CASH
Received By: SH


SIGN Location


ummerfield park
SIGN
Immanuel Baptist Church
3D


ummerfield park
SIGN LOCATION
Immanuel Baptist Church
3D


10:28 AM Wed Aug 25
100%
733 Old Edgefield Rd
Sign
Google
Google
© 2021 Google (33°30'00"N 81°57'10"W) 370 ft


10:28 AM Wed Aug 25
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733 Old Edgefield Rd
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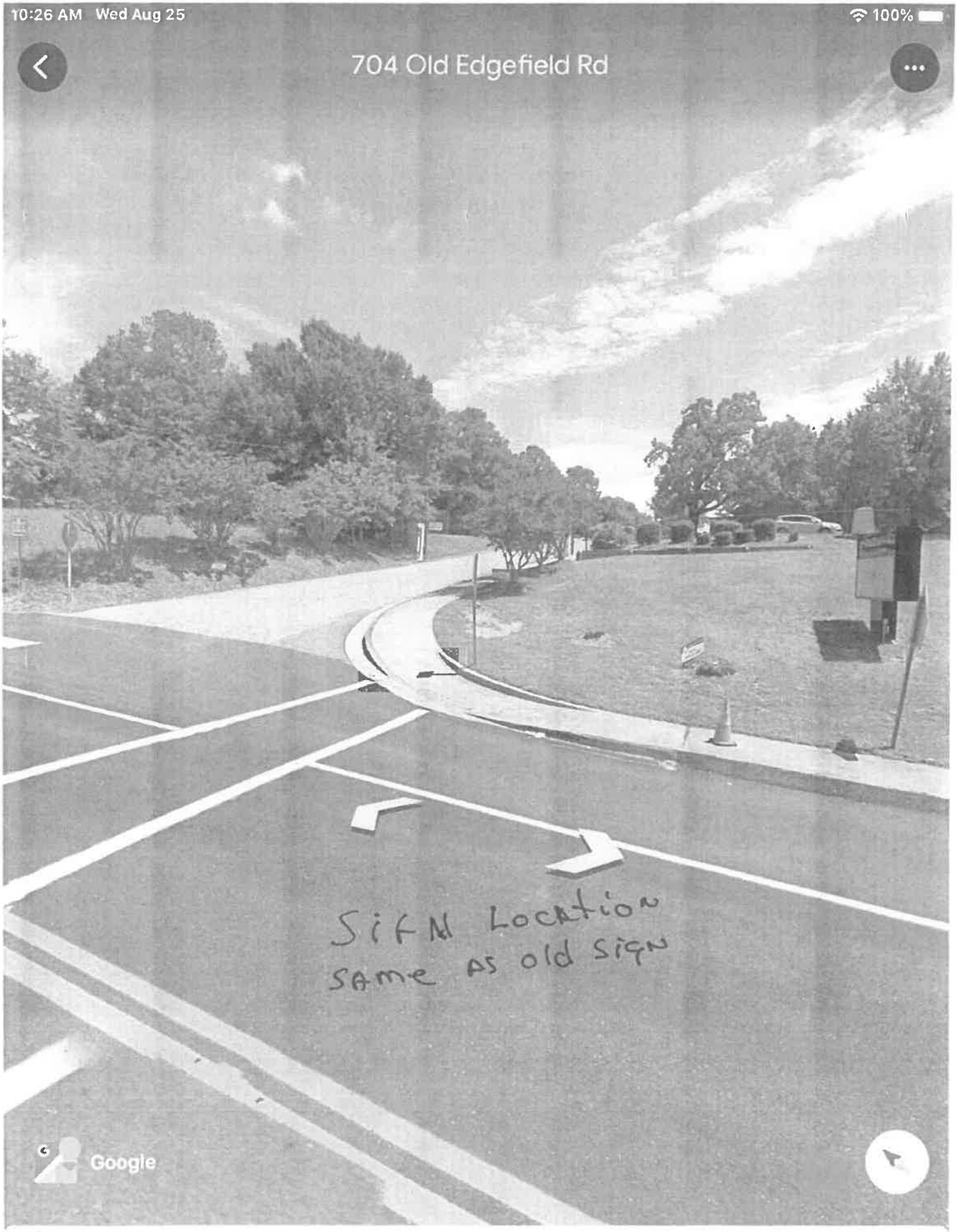
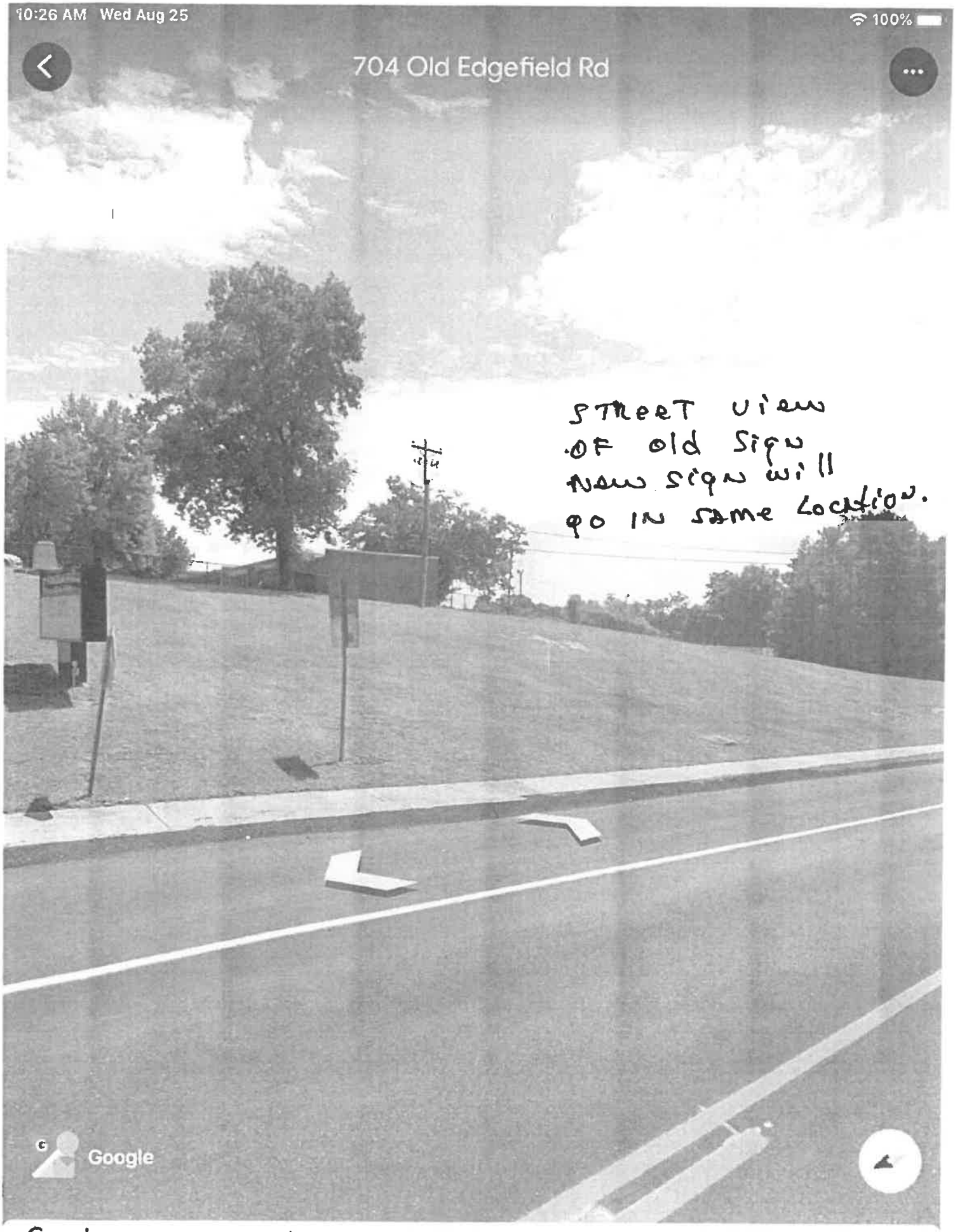
Google
Google
© 2021 Google (33°30'00"N 81°57'10"W) 370 ft


10:26 AM Wed Aug 25
100%
704 Old Edgefield Rd
SIGN Location
same as old sign
Google
Google
© 2021 Google (33°29'57"N 81°57'09"W) 349 ft

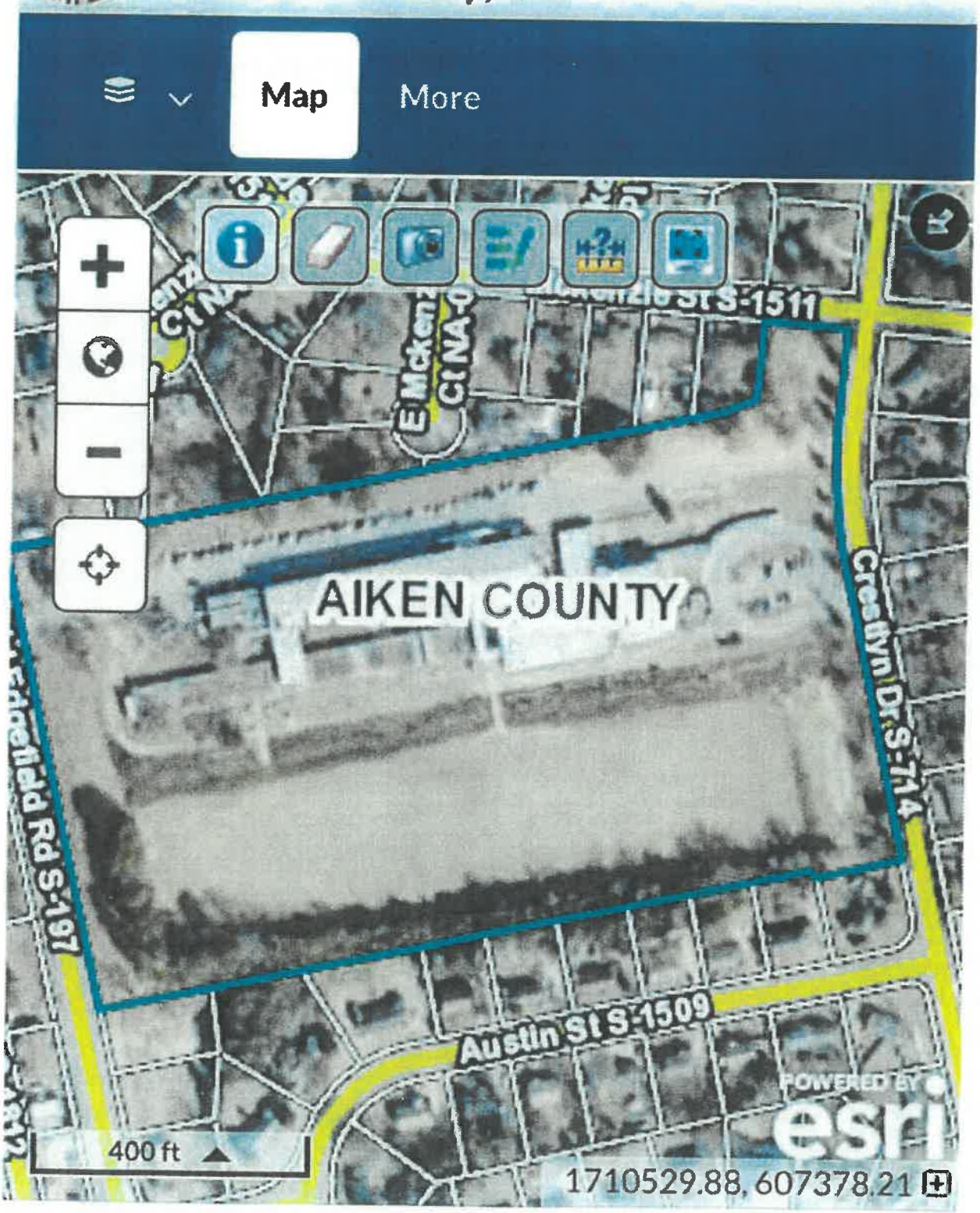

10:26 AM Wed Aug 25
100%
704 Old Edgefield Rd
SIGN Being Replaced
NOTE NOT 50/50
SIGN IS NOT BUT
A couple OF YEARS old
Google
Google
© 2021 Google (33°29'57"N 81°57'09"W) 349 ft


10:26 AM Wed Aug 25
100%
704 Old Edgefield Rd
STREET VIEW OF OLD SIGN NEW SIGN WILL GO IN SAME LOCATION.
Google
Google
© 2021 Google (33°29'57"N 81°57'09"W) 349 ft

AA neidercorp.com

property line

Aiken County, SC



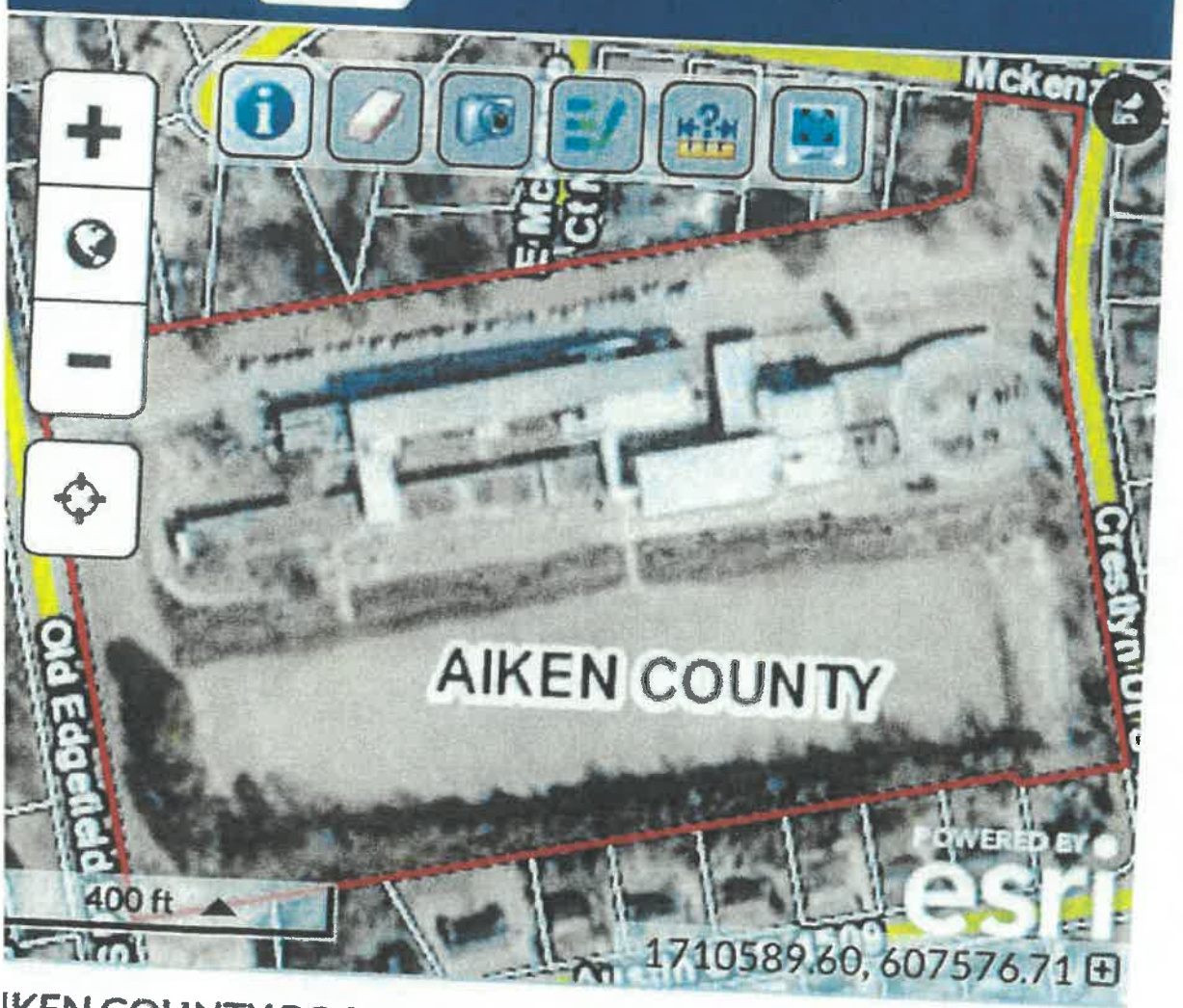
E

◀ Mail 11:23 AM 29%

AA neidercorp.com

Aiken County, SC

Map More



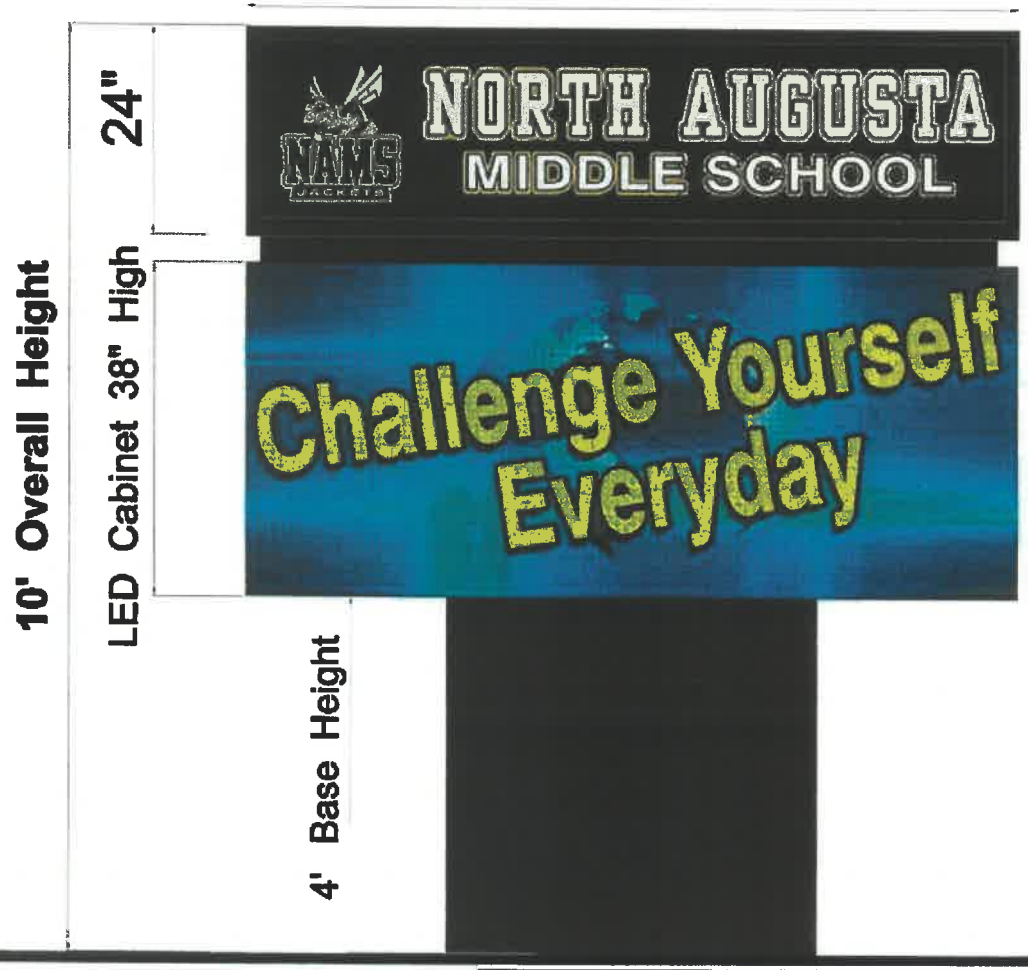
IKEN COUNTY BOARD OF EDUCATION
25 OLD EDGEFIELD RD

E

NEW LED SIGN PACKAGE COMPLETE TURN-KEY

SIGNS unlimited
Your Complete Sign Fabrication Company
1584 Whiting Way Lugoff, SC 29078
803-438-1200
www.signsunlimitedsc.com

LED Cabinet 88" Wide



Includes:

24" x 88" Header ID sign with Lexan faces, full color digital print with school name and logos.

38" x 88" 16mm RGB 60X140 Real Pixel Matrix
Full Color LED with Video
Time and Temp Probe
Auto Dimming Sensors
Laptop Computer with Software & Training
HD Wireless Radio Communication (line of site) Cloud based
Requires 120volt single circuit

Turn-Key with installation
On-Site training of computer operation and software

Name: North Augusta Middle School	Contact: Aiken County School District		Date: 5-3-21		
Complete LED Sign Package	Type: New LED Sign	Plans		Scale: NONE	
North Augusta, South Carolina	Note: Approval Signature_____		Date_____		

City of North Augusta Variance Application:

Section H:

Section 13.8.3L of the NA Development Code (NADC) regulations electronic center.

Situation: Sign is not in compliance with zoning having an electronic center. and 50/50 sign area.

Request: That the proposed sign be granted due the following reasons. Aiken County School Board has been very aggressive at replacing the old signage with newer signs. The sign design has been the upper sign to have the school's name with internal LED lights and the bottom sign to have a LED Electronic Message Center. This program has been going on for the past couple of years with well over twenty – five locations that have been done. Most of the signs have been the size of the one proposed for North Augusta Middle School, which is smaller overall that the sign being replaced. Some locations have had bigger ones for various reasons. The proposed sign has been the most common size. The proposed sign meets the needs for the school. The Electronic Message Center (EMC) provides the Students, Parents, and Public important information on school meetings, activities, and in some cases emergency information for safety of the students, and parents. The old sign that has been in place is limited to number of message's and requires manual changing of the message; this is also a problem due to having enough lettering for a manual sign. It also offers no security from someone changing the message.

One of the goals has been to have a system that is cost effective and offers quality. The School Board puts the signs out for bid with the requirements. This sign has automatic light censuring, which adjust the brightness of the sign at night to be much less than that of daytime use.

The combination of the two signs and their size have been widely accepted over the school district. This size and combination have not been rejected at any of the locations by a town, city, or county government.

The Code Section 13.8.3.I of the NADC regulates electronic readerboards and states:

i. Shall be used only in the Office Commercial (OC), General Commercial (GC), Thoroughfare Commercial (TC), and Industrial (IND) districts.
Shall not exceed 50% of the sign area of which it is a part.

ii. Must have a dark or black background.

iii. Shall not display any animation, scrolling, flashing, or the appearance of animation or other prohibited sequence of lighting.

iv. Electronic Readerboards are prohibited in the Neighborhood Preservation Overlay

Charges or Situation:

North Augusta Middle School is within a Public Use (P) zoning district and therefore an electronic readerboard is not allowed in (i).
Reply: School District has installed over 25 plus signs in the district and not the first city, or town has rejected their effort. NAMS sign shouldn't bother anyone. Across the street is a park and woods. The south portion of the lot on Old Edgefield Road has a Car Wash next to it and across the street are businesses. At the very backside of the property is a neighborhood which can't been seen at all due to the school being between the sign location and a hill. The north side of the property is a neighborhood that is blocked due to the hill and trees. See pictures.

Also, the readerboard portion exceeded 50% of the sign area in violation of (ii). Sign was installed without approved permitting.
Reply: Permitting had been started. One form was turned in but had to re due permit because sign company received incorrect form. The sign was installed in error before the permit was completed. This was a mix up with a misunderstanding that correct form was not used and the sign had not been approved. The sign being replaced did not have an EMC but a manual message center. The sign wasn't but a few years old but also was not 50/50 as required by code. See picture of old sign.

City of North Augusta Variance Application:

Section I:

Section 13.8.3L of the NA Development (NADC) regulations electronic center.

Situation: Hardships of code. Not being able to upgrade sign to Electronic Message Center (EMC) and not staying with a standard size sign. The 50/50 size is not necessary for a school. Old sign was not 50/50. See picture of old sign and rendering of new sign.

Request: To accept the size sign proposed and the use of an EMC.

City of North Augusta Variance Application:

Section: J:

Section 13.8.3L of the NA Development (NADC) regulations electronic center.

Hardship of the code is size and no Electronic Message Center (EMC)

Hardship in not being able to standardize and use an Electronic Message Center (EMC) sign. Lack of being able to communicate multiple messages to students, parents, and the public; in addition, inability to post messages quickly, such as emergency information. The EMC can be programed to show messages and to schedule messages for showing. EMC don't require for sign to have lettering like manual signs. This eliminates the letters from being lost, broken, having enough of the right letters for a message, and from anyone changing the message on the manual sign. Manual sign must have an individual to go to the sign and put each message on the sign. Sign is hard to read and usually limited to one message. EMC messaging is fast and can be programed to run by changing message wirelessly, in addition sign can be programmed to run messages at different scheduled times. Programing Code rules like no video, scrolling can be programed not to run. The sign would provide information as stated and has a high readability over the manual sign which is the purpose of any sign.

City of North Augusta Variance Application:

Section: K

Section 13.8.3L of the NA Development (NADC) regulations electronic center.

The main reason for not applying to other property in the area is that this is a school that serves the area and the community. It is not a business, using a sign for advertising for profit, and services. The EMC is to be used to inform students, parents, and the public to improve communications.

City of North Augusta Variance Application:

Section: I

Section 13.8.3L of the NA Development (NADC) regulations electronic center

The code does not address schools. Many of the schools are in a neighborhood environment. This location is not any different than most. The fact that the EMC is a programmable sign most situations can be worked out for the acceptance of the sign as mentioned in other sections. The size restriction of 50/50 makes it harder to control cost of the signs and the operation of the EMC. The size of the proposed sign is smaller. The need to have the school's name the same size as the EMC would take up more space that is not needed for the school's name, and cost would be higher.

City of North Augusta Variance Application:

Section: M

Section 13.8.3L of the NA Development (NADC) regulations electronic center

The proposed sign would not be a harmful to the public in anyway, nor to the local adjacent property owners (they more than likely can't see the sign). The proposed sign is smaller than the old sign. The proposed sign has a smaller footprint but higher readability over the old sign and can show more messages with ability to message faster than a manual reader board.

NAMS sign shouldn't bother anyone. Across the street is a park and woods. The south portion of the lot on Old Edgefield Road has a Car Wash next to it and across the street are businesses. At the very backside of the property is a neighborhood which can't been seen at all due to the school being between the sign location and a hill. The north side of the property is a neighborhood that is blocked due to the hill and trees. See pictures.

The fact that the EMC sign automatically censoress lighting making adjustment mostly at night to be dimmer, it should not be of any bother. In addition, the sign gives a much cleaner look. The public in most cases have accepted EMC signs in a positive manner when they understand its purpose and programming ability. This modern tool and the school upgrade help to draw new families to the area.

City of North Augusta Variance Application:

Section: N

Section 13.8.3L of the NA Development (NADC) regulations electronic center

All or part of the codes for the EMC can be meet where EMC'S are allowed. No scrolling, flashing, video, and the sign has a black face already.
The size 50/50 is something that can be met by making the ID portion (school name) larger. However, it is the request that it remains the same to keep size as a standard. This helps with cost and maintenance in addition to training operators.

City of North Augusta Variance Application:

Section O:

Section 13.8.3L of the NA Development (NADC) regulations electronic center

The objective is to upgrade the signs at the Aiken County Schools to have an ID sign with the school's name and to have an Electronic Message Center (EMC). Most of the schools have a sign that has the ID and a manual message center. The EMC is the key to the project. The EMC as stated in the previous sections can provide multiple messages and scheduling that a manual sign has limited ability. The ID sign provides a modern fresh look for the school and community. The two signs together provide a modern, informative solutions for identification of the school's name with internal LED lighting, which provides lower operational costs. The Electronic Message Sign provides superior read ability to a modern approach for multiple messaging to the public, students, and parents that the current sign does not have. These signs will help provide more up to date information, providing a safer environment for our schools and students.

In addition, the old sign did not have an EMC, but also did not meet the 50/50 size requirement. Change in the way we communicate is ongoing. Therefore, the request is being asked that the design and need to go to electronic messaging be granted. Most communities seem to approve other government locations request if they are reasonable. North Augusta seems to have done so in the past and hopefully will in this request as well.