

**Town of Boone
Public Hearing
6:00 PM, Mar. 27, 2023
WebEx**

This meeting will be held via WebEx. Individuals who wish to watch the meeting or speak during public comment can do so through WebEx either online or by phone. Please email jane.shook@townofboone.net or call 828-268-6960 and you will be provided with an invite to the meeting. All requests for participation must be completed by 5:00 PM on the day of the meeting. Staff will moderate the WebEx session to ensure all participants have an opportunity to speak. Individuals who require user assistance registering or joining the WebEx meeting can call 828-268-6960 for support.

I. Call to Order - Town Council

II. Call to Order - Planning Commission

III. Moment of Silence

IV. Approval of Public Hearing Minutes

January 23, 2023 Public Hearing Meeting Minutes

V. Public Hearing Guidelines for Each Case Presented

- A. Presentation of Case by Staff/Applicant*
- B. Questions by Town Council and Planning Commission*
- C. Public Comment*
- D. Discussion/Questions by Town Council and Planning Commission*
- E. Public Hearing for Case is Closed*

VI. Case PL06365-122822 Cole, Robert - General Use Zoning Map Amendment

Case PL06365-122822 Application Information

Case PL06365-122822 Supplemental Information

Case PL06365-122822 Staff Report

VII. Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map Amendment

Case PL06330-120922 Application Information

Case PL06330-120922 Neighborhood Meeting Information

Case PL06330-120922 Parking Demand Analysis

Case PL06330-120922 Traffic Impact Analysis

Case PL06330-120922 Site Plans

Case PL06330-120922 Building Elevations

Case PL06330-120922 Staff Report

VIII. Adjournment of Town Council

PLANNING COMMISSION MEETING

IX. Public Comment

X. Approval of Planning Commission Meeting Minutes

January 23, 2023 Planning Commission Meeting Minutes

XI. Planning Commission Consideration of Cases Heard at Public Hearing

XII. Other Matters

XIII. Adjournment of Planning Commission

**TOWN COUNCIL AND PUBLIC HEARING MINUTES
MONDAY, JANUARY 23, 2023, 6:00 PM
VIA WEBEX SOFTWARE**

COUNCIL MEMBERS: Mayor Pro Tem Edie Tugman, Todd Carter (joined at 6:10 p.m.), Dalton George, Becca Nenow, and Virginia Roseman

PLANNING COMMISSION MEMBERS: Elizabeth Shay-Chair, Eric Plaag-Vice-Chair, Chris Behrend, Scott Boyd, John Tippet, Frank Veno, and Smith Warren

PLANNING STAFF PRESENT: Jane Shook-Director of Planning and Inspections, Stacey Miller-Deputy Director of Planning & Inspections & Chief Building Inspector, KC Banner-Building Inspector (joined at 6:42 p.m.), Darrell Pulliam-Building Inspector (joined at 7:10 p.m.), and Brenda Henson-Board Secretary

OTHER TOWN STAFF AND REPRESENTATIVES PRESENT: Allison Meade-Town Attorney

Call to Order

Mayor Pro Tem Tugman called the Town Council to order at 6:04 p.m. Chair Shay called the Planning Commission to order at 6:04 p.m.

Moment of Silence

A moment of silence was observed.

Approval of Meeting Minutes

Council Member George made a motion to approve the November 28, 2022, Public Hearing minutes as written. The motion was seconded by Council Member Nenow.

Vote: Aye – 4
Nay – None
Absent – 1 (Carter)

The motion passed.

Vice-Chair Plaag made a motion to approve the November 28, 2022, Public Hearing minutes as written. The motion was seconded by Commission Member Behrend.

Vote: Aye – All
Nay – None

The motion passed.

PUBLIC HEARING

Case PL05781-061322 Signs – UDO Text Amendment

The Town of Boone has proposed amendments to UDO Article 26 Signs and Article 34 Definitions to revise and modernize sign regulations. Numerous changes have been made to the regulations in order to be compliant with statutory requirements, case law, and the need to modernize the language.

Ms. Jane Shook, Director of Planning & Inspections, referred to the Ordinance found on page 23 of the meeting packet. She noted that the reference to Article 23 should be changed to Article 26. Ms. Shook also pointed out any dates referenced in the ordinance would need to be updated to the right dates prior to adoption.

Council Member Carter joined the meeting at 6:10 p.m.

Ms. Shook referred to section 26.04.04 on packet page 49 regarding abandoned signs. She asked for direction regarding the removal of abandoned signs. Vice-Chair Plaag suggested that the copy element be removed within ninety days, but allow the sign structure to be retained for up to two years. He felt this would allow a new tenant ample time to reuse the sign structure.

Ms. Shook then referred to section 26.05.01(H) on packet page 50 regarding inflatable signs. She noted that previously inflatable signs were allowed because a local business used to erect an inflatable in support of Project Graduation. Ms. Shook asked if this type of sign should continue to be allowed or be prohibited.

Vice-Chair Plaag felt that inflatable signs should be prohibited.

Council Member Carter stated that inflatables were used at numerous events and felt there should be some type of allowance for temporary inflatables. He felt they should strive for the balance of being a friend to businesses while protecting the character of Boone.

Ms. Meade suggested a possible allowance of inflatables for events, with limits.

Vice-Chair Plaag suggested that the number of temporary inflatable permits could be limited, as well as the length of time they would be allowed to be displayed.

Ms. Shook directed everyone to packet page 45 which contained the current UDO language regarding inflatable signs.

Ms. Meade noted that the law did not allow a distinction between for profit and not for profit when it came to signage. She stated that they could distinguish between commercial and non-commercial.

Council Member George suggested there could be a month long event. If inflatables were allowed, he did not feel that the inflatable should be allowed to stay up for the duration of the month long event.

Ms. Shook stated that some of the previous language could be put back in the proposed text to allow inflatable signs with limitations.

Ms. Shook referred to section 26.06.01(D) on packet page 53 regarding building identification signs. She explained that this was for signs that were etched or built in to a building's façade. Ms. Shook stated she wanted to have a discussion on if there should be a cap on size and inserted 5% and highlighted it for discussion. Council Member Roseman stated she was okay with the building identification sign proposal. Some others were a little unsure about allowing such a permanent sign.

Ms. Shook stated that the proposed language in section 26.06.01(F)(2) regarding fence wraps came directly from state law.

Ms. Shook pointed out an error on packet page 54 in section 26.06.01(M)(3) regarding political signs in the public right of way. The proposed language stated that signs must be removed within 48 hours after the election. Ms. Shook stated this should be revised to state that signs must be removed within 10 days after the election to be consistent with statutory language. Ms. Meade added that the language for political signs came directly from state law. She added that temporary political signs were allowed in the public right of way by state law.

Ms. Shook referred to section 26.06.01(O) regarding real estate signs. She noted that section 26.06.01(O)(5)(a-d) regarding open house signage should be removed because this would be addressed under temporary signs.

Ms. Shook then referred to section 26.06.01(Q)(1)(c-d) on packet page 55 regarding temporary sign regulations. She stated that c and d should be combined to state, "Except as provided at subsection 26.06.01(M) Political Signs, temporary signs are not permitted in public right of way. In addition,

temporary signs, regardless of whether or not in a public right of way, are not permitted within 11 feet of edge of pavement of any roadway or alley.”

Mayor Pro Tem Tugman expressed concern with temporary signs blocking the sight triangle.

Vice-Chair Plaag suggested that language be included in the real estate and political sign sections regarding sight triangle requirements.

Ms. Shook referred to section 26.06.01(Q)(2)(a)(i) regarding on-premises advertising temporary signs. She suggested the proposed text be revised to state, “Each tenant in a multi-tenant development is only allowed to display a freestanding temporary sign in compliance with this section if their building fronts the street the sign is located on. The sign must be placed on the tenant’s parcel or in the development’s common area.”

Council Member Roseman suggested that temporary signs be limited to a display time of seven consecutive days per month. There was discussion about display time limits, and Ms. Shook reminded everyone that the regulations needed to be something enforceable by staff.

Off-premises advertising temporary signs in section 26.06.01(Q)(3) were discussed. Ms. Shook stated it was the intent to allow these signs to be placed 48 hours before an event and removed 48 hours after. Ms. Meade felt that only one sign should be allowed per property. Ms. Shook stated that the current sign ordinance allowed up to 12 off- premises community event signs. She explained that the proposed text could allow as many signs as someone could get property owner permission for.

Ms. Meade suggested that the area at the corner of 321/Blowing Rock Road and Hwy 105 could become a public forum area where all signs could be placed.

Ms. Shook referred to section 26.06.01(Q)(4)(a) regarding noncommercial message temporary signs. She noted the proposed language would require these signs to be placed no closer than 11 feet from the edge of the pavement. There was discussion regarding topography and a possible inability to meet the requirement of 11 feet from the edge of the pavement. Ms. Meade stated some more work could be done on the proposed language.

Ms. Shook asked how everyone felt about feather banners. Vice-Chair Plaag felt they were too distracting and likened them to the wavy air signage.

Council Member Carter stated he was okay with feather banners. He felt it was just vertical space versus horizontal space.

Council Member Roseman stated she was also okay with feather banners, but felt they should have a height restriction.

Ms. Shook noted the time and asked how everyone would like to proceed. Vice-Chair Plaag stated there were a lot of areas that still needed some work or wordsmithing. He preferred that Town Council make the decision to have staff work on the language and bring the revisions back to a future public hearing.

Mayor Pro Tem Tugman called a break in the meeting from 8:36 p.m. until 8:43 p.m.

Ms. Shook referred to section 26.07.01(D) on packet page 57 regarding window signage. Vice-Chair Plaag suggested a revision to state that mullions and muntins were not considered an element that divides window area. He also felt that neon and lighting inside windows should be limited.

Ms. Shook stated that regulating interior window signage would create additional enforcement actions for staff.

Ms. Meade suggested, if window signage was prohibited, that the signage should not be grandfathered. Instead, a date of compliance should be established.

Ms. Shook referred to section 26.07.02(A) on packet page 58 regarding freestanding sign height. She noted that option #2 would allow the height of the sign to be computed as the distance from the base of the sign at normal grade to the top of the highest attached component of the sign.

Ms. Shook then referred to section 26.07.07 on packet page 60 regarding changeable/digital copy. She stated that the proposed text would allow changeable/digital copy in all commercial zoning districts. Ms. Shook noted that the current sign ordinance allowed copy to change every 60 minutes while the proposed text would allow the copy to change every 60 seconds.

There was discussion regarding the frequency of changeable copy. Council Member Carter felt it was somewhat extreme to go from allowing changeable copy every 60 minutes to every 60 seconds.

Council Member Roseman stated there were numerous signs around town that changed more often than once an hour. She felt that only allowing the copy to change every hour was absurd. Council Member Roseman suggested that the copy be allowed to change every 2.5 to 5 minutes. Council Members Nenow and Carter stated they would be okay with five minutes. Mayor Pro Tem Tugman stated she did not want Boone to become a mini Las Vegas, but would grudgingly agree to a five-minute interval of copy change.

Ms. Shook referred to the table in section 26.08.05(E) on packet page 68 regarding monument signs, particularly in the B1 Downtown Interface. She noted that the Interface was a transitional area into downtown. Ms. Shook suggested a possible six-foot height allowance instead of the four feet that was proposed.

Ms. Shook reminded everyone that Mr. Graydon Eggers and Mr. Skip Greene had appeared at the November public hearing to request changes to allow them to replace the monument sign at First Baptist Church that was removed due to road construction.

Vice-Chair Plaag suggested a reduction in maximum square footage to 24 square feet with a six feet height limitation.

Ms. Meade suggested the possibility of having a flexible allowance based on street frontage.

Mayor Pro Tem Tugman felt the proposed sign size for the Downtown Interface was too large.

Ms. Shook shared a photo of the sign that was removed in front of First Baptist Church, a sign that was located on the corner parking lot of First Baptist Church, and the zoning map showing the boundaries of the Downtown Core and Interface.

Vice-Chair Plaag noted that, based on the zoning map, the property where the First Baptist Church was located was in the Downtown Core. The property the church owned containing the parking lot across the street was in the Downtown Interface.

Ms. Shook expressed concern that there could be some confusion or miscommunication between staff and Mr. Eggers regarding the appropriate zoning of the church's property.

Vice-Chair Plaag suggested that staff provide sign measurements and photo examples of signs at the next meeting.

Next meeting dates were discussed. It was noted that the DFI meeting had been rescheduled to February 20, 2023 at 1:00 p.m. A special public hearing date was set for March 20, 2023 at 6:00 p.m. via WebEx to continue discussion of the UDO text amendment for signs. Ms. Shook noted that the next regularly scheduled public hearing would be on March 27, 2023 at 6:00 p.m.

Adjournment of Town Council

Council Member Carter made a motion to adjourn the Town Council at 10:13 p.m. The motion was seconded by Council Member George.

Vote: Aye – All
Nay – None

The motion passed.

Edie Tugman, Mayor Pro Tem

Brenda Henson, Board Secretary

Elizabeth Shay, Planning Commission Chair

Continuation of Planning Commission Meeting

Public Comment

There was no additional public comment made.

Approval of Planning Commission Meeting Minutes

Vice-Chair Plaag wished to amend the November 28, 2022 Planning Commission meeting minutes in the last paragraph of page 15. He asked that the word compliant be changed to complaint.

Vice-Chair Plaag then made a motion to approve the November 28, 2022 Planning Commission meeting minutes as amended. Commission Member Behrend seconded the motion.

Vote: Aye – All
Nay – None

The motion passed.

Adjournment of Planning Commission

Vice-Chair Plaag made a motion to adjourn the meeting at 10:15 p.m. Commission Member Behrend seconded the motion.

Vote: Aye – All
Nay – None

The motion passed.

Elizabeth Shay, Planning Commission Chair

Brenda Henson, Board Secretary

DRAFT

Communication: January 23, 2023 Public Hearing Meeting Minutes (Approval of Public Hearing Minutes)

General Use Zoning Map Amendment Application

Town of Boone Planning & Inspections Department

680 W. King Street, Suite C ♦ Boone, North Carolina 28607

Phone (828) 268-6960 ♦ Fax (828) 268-6961 ♦ Email: planning@townofboone.net ♦ www.townofboone.net



A. Required to be Submitted at Time of Application

Notes: It is recommended that applicants schedule a meeting with Planning & Inspections Staff prior to application submittal.

Failure to provide the info required on this application may delay the review and scheduling of the requested hearing.

- ☐ Property Owner Authorization for all property included in the request. See Section D.
- ☐ Deed(s) of all property to be included in the request,
- ☐ Both a digital and a hard copy of a written metes and bound legal description with accompanying survey map for a request that would rezone only a portion of a tax parcel or requests for multiple zoning districts.
- ☐ Permit Fee (See Planning & Inspections Fee Schedule)

Each application is allowed two (2) reviews. The 1st review of the submitted information and a 2nd review if revisions or supplemental information is required based upon the 1st review. Each subsequent review after the 2nd review will be charged at 50% of the original fees charged for the application. These fees shall be paid at the time of resubmittal.

B. Property Information

Street Address: 190 Chestnut Dr.

Watauga County Parcel Identification Number:

2910398092000

Existing Zoning District(s): R-1

Proposed Zoning District(s): R-3

Adjacent Land Uses: N: R-1

E: B-3

S: B-3

W: R-1 Across St.

Are there any existing variances or special use permits granted to the property?

☐ Yes ☒ No ☐ Unknown

If yes, describe:

Total Land Area: 0.17 acre

C. Property Owner Information

Name: Robert + Carissa Cole

Complete Mailing Address (Street, City, Zip):

86 Sovereign Ln Fairview, NC 28730

Phone Number:

828-207-4383

Email Address:

rob@logangate.com

Preferred Method of Contact for Written/Response Documents (select one): ☐ Mail or ☒ Email

D. Applicant Signature and Property Owner Authorization

By signing this form you are certifying that this application and any attached information are accurate. Failure to provide accurate information or failure to provide any requested information may result in delays to permit processing.

Robert A. Cole

Property Owner (Print)

[Signature]

Property Owner (Signature)

12/20/22

Date

Official Use Only				
Permit Name: Cole, Robert - Gen. Use Zoning Map Amendment				
Permit Number: PL06365-122822				
Date: 12-28-2022	Fee: \$374.00	Receipt Number: 522576	Method of Payment: ☐ Cash ☒ Check Number: 2276	Paid By: Robert Cole

Official Use Only - Hearing/Decision Information

Public Hearing Meeting Date: 03-27-2023

PC Meeting Date: 11

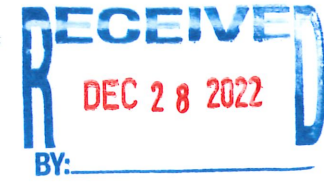
TC Meeting Date: 04-12-2023 or 04-26-2023

Date of APO Mailed Notification: _____

Date of Posted Notification: _____

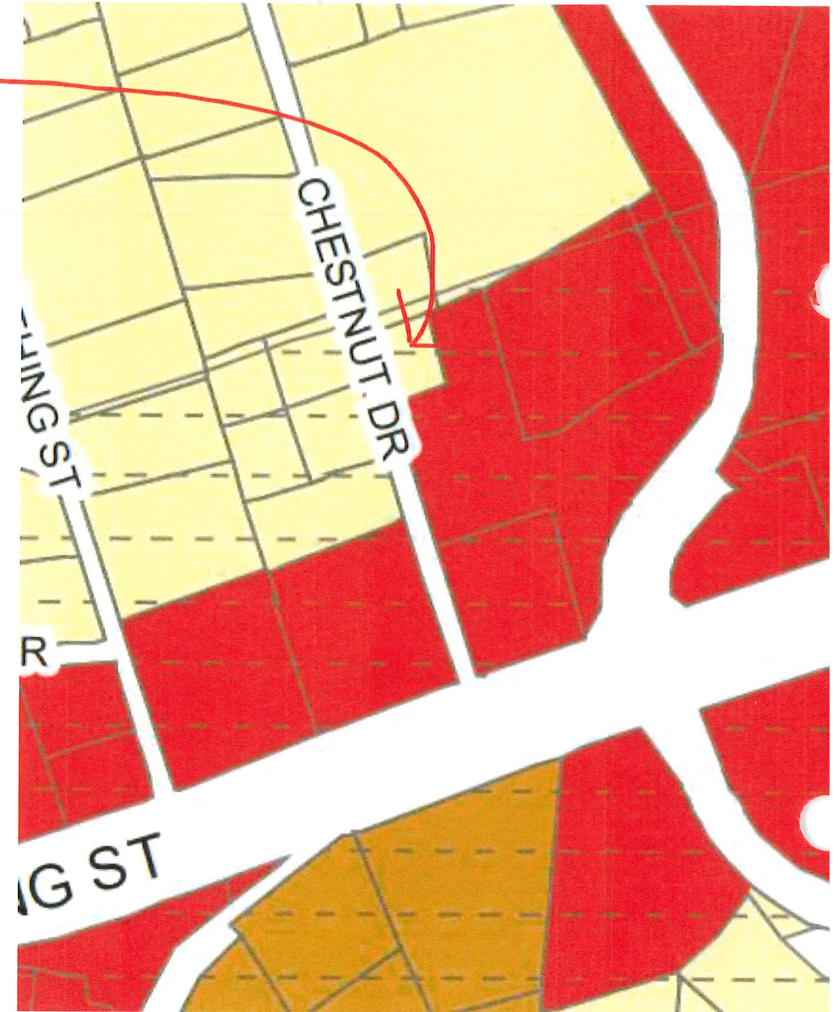
Request Approved: ☐ Yes ☐ No If yes, date request sent to GIS: _____

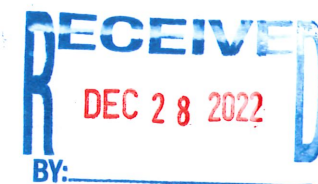
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Subject Property 190 Chestnut Dr.

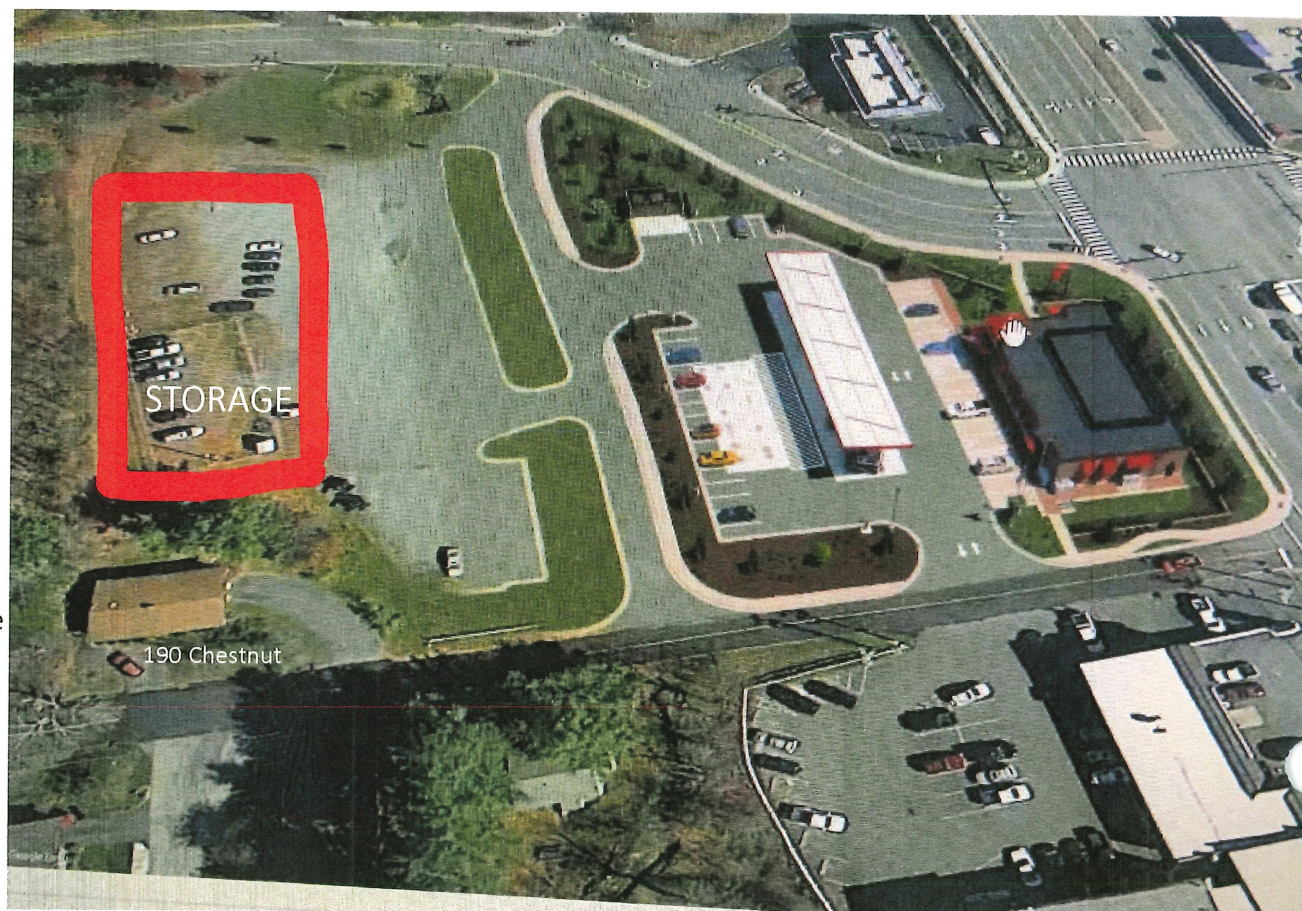
Requesting change from R-1 to R-3
No property or building changes proposed

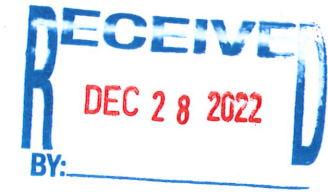




What Has Changed?

- * To the East: Commercial Parking Lot to 50' tall, 4 story, 135,000 sq ft Storage Facility
- * **New Bypass Road** from Chestnut to New Market Boulevard with 2,200+ cars per day
- * To the South: Approved 24/7 Sheets Gas Station **facing neighborhood** instead of E. Kings Street;
2,000+ visitors per day visible from residence



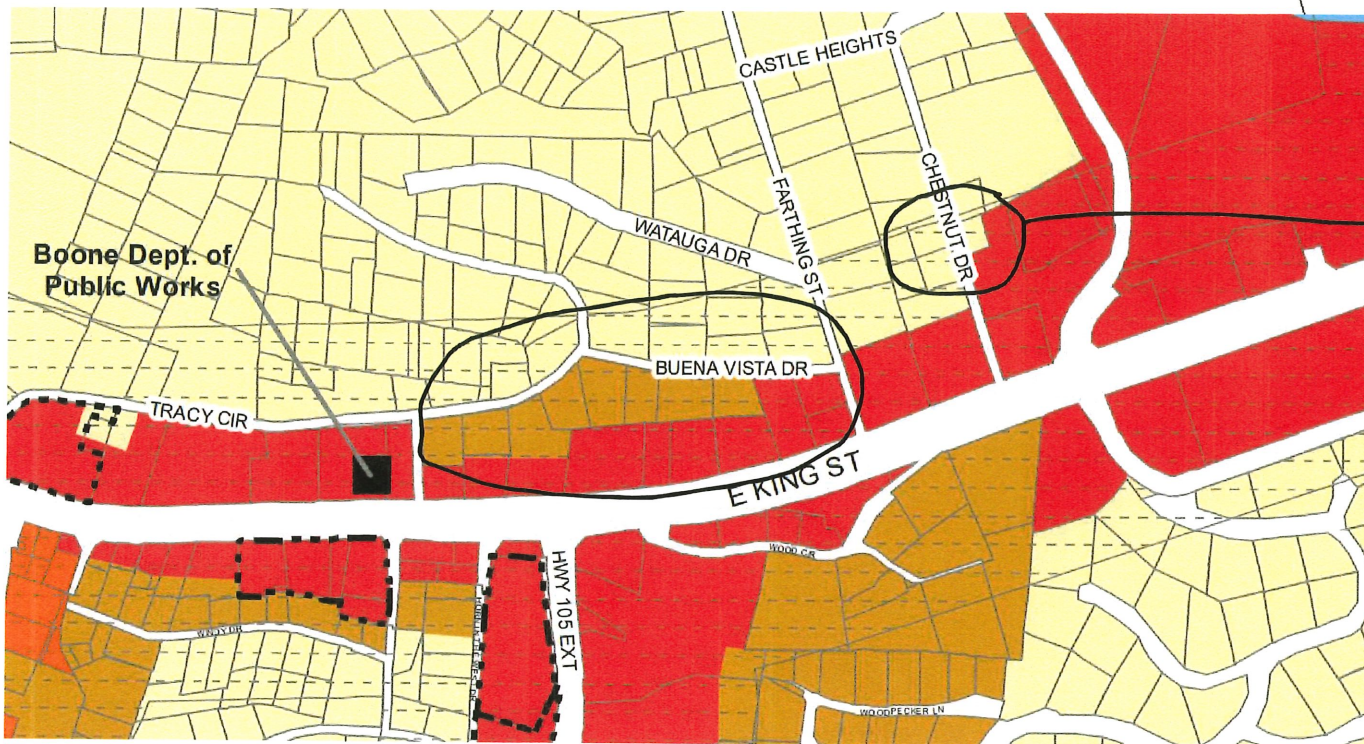


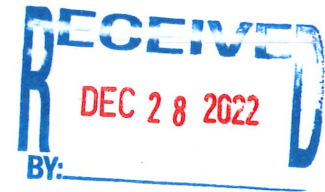
To the West: R-1 Property Across the Street on Maple St
Transitional Housing Precedent

B-3 Commercial Property E King St.

R-3 Housing Buena Vista Dr & Tracy Circle

R-1 Housing Directly Across the Street





In Conclusion

- Awarded via Special Permit Request due to proximity to my R-1 House a 4 story Storage Facility, along with Bypass Rd.
- Awarded via Special Permit Request due to proximity to my R-1 House a 24/7, 2,000+ customers a day Sheets Gas Station.
- 190 Chestnut is the only Property that borders the Commercial Property and therefore would negate any R-3 Creep.
- Chestnut Dr is a Transitional Zone Barrier to Properties to the West.

With all these approvals and changes surrounding subject property, I ask that you make one more approval and grant 190 Chestnut Dr. R-3 zoning.



Request

Robert Cole has submitted a General Use Zoning Map Amendment to request to rezone 190 Chestnut Drive (Watauga County PIN: 2910-39-8092-000) from R1 Single Family Residential to R3 Multi-Family Residential. The subject property is outlined in green on the map above.

General Use Zoning Map Amendment Guidance

Pursuant to UDO Subsection 9.07.01, in deciding whether to adopt a proposed amendment to the UDO, the central issue before the Council is whether the proposed amendment advances the public health, safety, or welfare. All other issues are irrelevant, and all information related to other issues at the public hearing may be declared irrelevant by the Mayor and be excluded. In particular, when considering proposed general use map amendments, the Council shall not consider any representations made by the petitioner that if the change is granted the rezoned property will be used for only one of the possible range of uses permitted in the requested classification. Rather, the Council shall consider whether the entire range of permitted uses in the requested classification is more appropriate than the range of uses in the existing classification. The Council shall only consider the impact of the proposed change on the public at large.

Zoning Analysis

Address: 190 Chestnut Drive
Watauga Co. PIN: 2910-39-8092-000
Use: 1.01
Size: 0.17 acres
Jurisdiction: Town of Boone
Access: Chestnut Drive
Viewshed: No
Watershed: No
SFHA: No
Steep Slope: Yes
Existing Zoning: R1 Single Family Residential

Pursuant to UDO Subsection 14.05.01, the R1 Single Family Residential District is established to provide a low-density living area consisting only of single-family dwelling units and other related uses necessary for a sound neighborhood. The regulations for this district are designed to stabilize and encourage a comfortable, healthy, safe, aesthetically pleasing and pleasant living environment for family life that promotes peaceful quiet enjoyment sheltered from incompatible and disruptive activities.

Proposed Zoning; R3 Multiple-Family Residential

Pursuant to UDO Subsection 14.10.01, the R3 Multiple-Family Residential District is established to provide a high-density area consisting of three or more dwelling units per lot plus limited service use. The regulations for this district are intended to secure for the persons who reside there a comfortable, healthy, safe, aesthetically pleasing and pleasant environment in which to live, sheltered from incompatible and disruptive activities that properly belong in nonresidential districts.

	Adjacent Zoning	Adjacent Land Use (Watauga Co. Tax Data)
North	R1, Single Family Residential	Vacant Land
East	B3, General Business	Future Storage Facility
South	B3 General Business	Future Storage Facility
West	R1, Single Family Residential	Single Family Dwelling Units

Excerpt of ARTICLE 14 ZONING DISTRICTS REGULATIONS

Below are excerpts from UDO Article 4 and Appendix B regarding the districts, uses, intensity and height for the R1 Single-Family Residential District and R3 Multiple Family Residential.

B1.01 Complete Table of Principal Uses

Use #	Specific Use	R1	R3	Reference
1.0 Household Living				
1.01	Single-Family Dwelling	P		
1.02	Manufactured Home "Class A"			15.01
1.03	Manufactured Home "Class B"			15.01
1.04	Manufactured Home "Class C"			
1.05	Manufactured Home Park			15.02
1.06	Duplex (one duplex building per lot)		P	
1.07	Duplex (more than one duplex building per lot)		L	15.03
1.08	Townhouse (up to 30 bedrooms)		L ^{T50}	15.03
1.09	Townhouse (31-100 bedrooms)		L ^{T75}	15.03
1.10	Townhouse (> 100 bedrooms)		L ¹²⁵	15.03
1.11	Multi-Family Dwelling (up to 30 bedrooms)		L ^{T125}	15.03
1.12	Multi-Family Dwelling (31-100 bedrooms)		L ^{T200}	15.03
1.13	Multi-Family Dwelling (> 100 bedrooms)		L ^{T300}	15.03
1.14	Multi-Family Dwelling in Mixed Use (up to 30 bedrooms)			15.04
1.15	Multi-Family Dwelling in Mixed Use (31-100 bedrooms)			15.04
1.16	Multi-Family Dwelling in Mixed Use (> 100 bedrooms)			15.04
1.17	Adult Living Community		p ^{T300}	
2.0 Group Living				
2.01	Family Care Home	L	L	15.06
2.02	Family Care Institutions			15.07
2.03	Halfway House, Category 1			15.07
2.04	Halfway House, Category 2			15.07
2.05	Residential Care Facility			
2.06	Fraternity or Sorority Dwelling		S ^{T300}	15.09
2.07	Boarding House		L	15.10
3.0 Transient Living				
3.01	Home for Survivors of Domestic Violence	L		15.11
3.02	Shelter for Homeless, Category 1		L ^{T50}	15.12
3.03	Shelter for Homeless, Category 2		L ^{T300}	15.12

Use #	Specific Use	R1	R3	Reference
3.04	Bed and Breakfast, Category 1	S ^{T50}		15.13
3.05	Bed and Breakfast, Category 2			15.13
3.06	Vacation Rental		L ^{T75}	15.14
3.07	Homestay Rental	L	L	15.05
3.08	Motel			
3.09	Hotel, Small			
3.10	Hotel, Large			
3.11	Hotel, extended stay			
4.0 Institutional				
4.01	Airport/Landing Strip			15.15
4.02	Heliport			
4.03	Funeral Home Establishment			
4.04	Cemetery	P	P	
4.05	Post Office			
4.06	Post Office, Distribution			
4.07	Animal Sanctuary			
5.0 Government Uses				
5.01	Government Cultural Facility			
5.02	Government Neighborhood Cultural Facility, Indoor Activity Only	S		
5.03	Government Neighborhood Cultural Facility, Includes Outdoor Activity			
5.04	Recreation Facility, Category 1		P	
5.05	Recreation Facility, Category 2	P		
5.06	Recreation Facility, Category 3	S	P	
5.07	Event Venue, Category 1		P	
5.08	Event Venue, Category 2		S	
5.09	Event Venue, Category 3			
5.10	Landfill			
5.11	Solid Waste Processing			
5.12	Police Substation	P		
5.13	Utility Facility, Town	L		15.16
5.14	Utility Facility, Government, Neighborhood	L	P	15.16
5.15	Utility Facility, Government, Regional		L	15.16
5.16	Government Facility		L	
6.0 Non-Government Utility Facility				
6.01	Utility Facility, Neighborhood	L	L	15.16
6.02	Utility Facility, Regional			15.16
7.0 Wireless Communication				
7.01	Small Wireless Collocation	L	L	15.18
7.02	Wireless Facility Collocation on Existing Wireless Support Structure or Utility Pole	L	L	15.17
7.03	Stealth Wireless Facility Attached to Existing Building or Structure	L	L	15.17
7.04	Non-stealth Wireless Facility Attached to Existing Building or Structure			15.17
7.05	Non-stealth Wireless Facility Collocation on Electrical Transmission Towers	L	L	15.17
7.06	Stealth Wireless Support Structure	S/L	L	15.17
7.07	Non-stealth Wireless Support Structure		L	15.17

Use #	Specific Use	R1	R3	Reference
7.08	Emergency Response Communication Antenna	P	P	
8.0 Assembly				
8.01	Religious Assembly, Category 1	P	P	
8.02	Religious Assembly, Category 2	pT125	pT125	
8.03	Religious Assembly, Category 3			
8.04	Club/Lodge, Category 1			
8.05	Club/Lodge Which Does Not Serve Alcohol			
9.0 Education				
9.01	Public colleges and universities			
9.02	Private colleges and universities			
9.03	Trade school			
9.04	High school			
9.05	Elementary school			
9.06	Boarding school			
9.07	College- or university-operated community enterprise			15.63
9.08	College- or university-operated child daycare center			15.19
10.0 Daycare				
10.01	Child Daycare, Large		L	15.19
10.02	Child Daycare Center			15.19
10.03	Adult Daycare, Large		L	15.19
10.04	Adult Daycare Center			15.19
10.05	All Other Daycare			
11.0 General Sales and Service				
11.01	Kennel			15.20
11.02	Veterinary Office/Hospital with Outdoor Kennels			15.20
11.03	Veterinary Office/Hospital without Outdoor Kennels			
11.04	Financial Institution ≤ 5,000 ft ²			
11.05	Financial Institution > 5,000 ft ²			
11.06	Restaurant ≤ 2,500 ft ² open to the public during 10 pm – 6 am			
11.07	Other Restaurants ≤ 2,500 ft ²			
11.08	Restaurant > 2,500 ft ² open to the public during 10 pm – 6 am			
11.09	Other Restaurants > 2,500 ft ²			
11.10	Restaurant ≤ 3,500 ft ² open to the public during 10 pm-6 am			
11.11	Other Restaurants ≤ 3,500 ft ²			
11.12	Bar			
11.13	ABC Store			
11.14	Personal Service Establishment open to the public during 10 pm-6 am			
11.15	Other Personal Service Establishments			
11.16	Retail Store up to 5,000 ft ²			
11.17	Retail Store more than 5,000 but less than 25,000 ft ²			
11.18	Retail Store 25,000 ft ² and greater			15.21
11.19	Reserved			
11.20	Business or Professional Office open to the public during 10 pm - am			

Use #	Specific Use	R1	R3	Reference
11.21	Other Business or Professional Office			
11.22	Medical Office, Category 1			
11.23	Medical Office, Category 2			
11.24	Medical Office, Category 3			
11.25	Medical Office, Category 4			
11.26	Hospital			
11.27	Medical Emergency Response			
11.28	Open Air Market, Recurring			15.22
11.29	Vehicle Sales and Service			15.23
11.30	Equipment Sales and Service			15.24
11.31	Moped Sales and Service			
11.32	Boat or Marine Craft Sales and Service			15.25
11.33	Impound Lot/Towing Service			15.26
11.34	Gas Station			
11.35	Car Wash			
11.36	Seasonal Retail Activities and Amusements			
11.37	Electric-Vehicle Charging Station			15.65
12.0 Recreation & Entertainment Uses				
12.01	Indoor Shooting Range			15.27
12.02	Outdoor Shooting Range			
12.03	Indoor Theater			
12.04	Outdoor Theater			
12.05	Event Venue, Category 1			
12.06	Event Venue, Category 2			
12.07	Event Venue, Category 3			
12.08	Campground and Recreational Vehicle Park			15.28
12.09	Coliseum			
12.10	Recreation Facility, Category 1			
12.11	Recreation Facility, Category 2			
12.12	Recreation Facility, Category 3			
12.13	Racetrack			
13.0 Agriculture				
13.01	Garden, Community	L		15.29
13.02	Garden, Residential	L		15.30
13.03	Agricultural Operation Excluding Livestock			
13.04	Agricultural Operation Including Livestock			
13.05	Swine Farm			
13.06	Confined Animal Feeding Operation (CAFO)			
13.07	Custom Slaughterhouse			
13.08	Other Slaughterhouse			
13.09	Forestry	L	L	15.31
14.0 Manufacturing				
14.01	Microbrewery			15.32

Communication: Case PL06365-122822 Staff Report (Case PL06365-122822 Cole, Robert - General Use Zoning Map Amendment)

Use #	Specific Use	R1	R3	Reference
14.02	Brewpub			15.32
14.03	Brewery/Distillery			15.33
14.04	Brewery/Distillery, Other			15.34
14.05	Winery Associated with a Vineyard			15.35
14.06	Winery			15.35
14.07	Winery, Other			
14.08	Extraction of Earth Materials			
14.09	Machine/Welding Shop			15.37
14.10	Manufacturing, Other			15.38
15.0 Parking				
15.01	Parking Lot			15.39
15.02	Parking Structure		L ^{T125}	15.40
15.03	Park and Ride Lots			15.39
16.0 Storage				
16.01	Self-Storage Facilities			15.41
16.02	Outdoor Storage			15.42
16.03	Warehouse			
16.04	Fuel Storage Facility			
16.05	Chemical Storage Facility			
17.0 Transportation				
17.01	Passenger Terminals			
17.02	Trucking or freight terminal ≤ 10,000 ft ²			
17.03	Trucking or freight terminal > 10,000 ft ²			
18.0 Waste Related Uses				
18.01	Recycling Drop-off Station			15.42
18.02	Recycling and Salvage			15.42
18.03	Junkyard			
18.04	Private Landfill			
19.0 Particular Activities Which Pose Particular Concern About Public Health				
19.01	Electronic and Internet Gaming			15.43
19.02	Adult Establishments			15.44

B1.02 Complete Table of Accessory Uses

Use #	Accessory Use	R1	R3	Reference
A-1	Secondary suite	L	L	15.45
A-2	Home occupation	L	L	15.46
A-3	Accessory dwelling unit		L	15.47
A-4	Drive-through			15.48
A-5	Outdoor display			15.49
A-6	Outdoor storage			15.50
A-7	Outdoor dining			15.51
A-8	Automated teller machine (ATM)			

Use #	Accessory Use	R1	R3	Reference
A-9	Automated teller machine (ATM), freestanding		L	15.52
A-10	Produce stand			15.53
A-11	Poultry	L	L	15.54
A-12	Livestock, small	L	L	15.55
A-13	Livestock, large			15.56
A-14	Bees	L	L	15.57
A-15	Garden, residential	L	L	15.58
A-16	Satellite receiving antennas less than 1 meter in diameter	P	P	
A-17	Satellite receiving antennas less than 2 meters in diameter			
A-18	Satellite receiving antennas 2 meters and greater in diameter			
A-19	Helistop			
A-20	Swimming pools, spas, and hot tubs	L	L	15.59
A-21	Caretaker's residence			15.60
A-22	Vehicular gate	L	L	15.61
A-23	Vehicle washing station		P	
A-24	Chemical storage facility			
A-25	Open air market, accessory	L	L	15.22
A-26	Daycare, small	P	P	
A-27	Limited structure to enable recreational use of open rooftops		L ^{T300}	14.03.07(G) 14.19.06(H)(8)(d)
A-28	Solar Energy System	L	L	15.64
A-29	Electric-Vehicle Charging Station	L	L	15.65

B1.03 Complete Table of Temporary Uses

Use #	Temporary Use	R1	R3	Reference
T-1	Temporary family care structure	L	L	15.62
T-2	Temporary construction or repair dwelling	L	L	15.62
T-3	Temporary construction trailer	L	L	15.62
T-4	Temporary mobile medical unit			15.62
T-5	Temporary classroom			15.62
T-6	Temporary portable storage containers	L	L	15.62
T-7	Temporary staging			15.62
T-8	Temporary non-fixed site event venue			15.62
T-9	Carrier on wheels (cow)	L	L	15.62
T-10	Yard sales	L	L	15.62
T-11	Itinerant merchant/peddler	L	L	15.62
T-12	Open air market, temporary			15.62
T-13	Temporary Use 9.01 Public Colleges and Universities			15.62

Communication: Case PL06365-122822 Staff Report (Case PL06365-122822 Cole, Robert - General Use Zoning Map Amendment)

Excerpt of B1.04 Complete Intensity Table

Zoning District	Minimum Gross Land Area	Minimum Lot Width	Minimum Street Frontage	Minimum Livability Space Ratio* (LSR)	Minimum Setbacks	
					Street	Interior
Residential Zoning Districts						
R1	8,000 sq. ft.	70 ft.	56 ft.	.53	20 ft.	14 ft.
R3	20,000 sq. ft.	80 ft.	64 ft.	.40	20 ft.	13 ft.

Excerpt of B1.05 Complete Building Height Table

Zone	Height Limitation
R1, R1A, RR, R2, R4, RA	3 stories
R3	3 stories

Excerpt of B1.06 Complete Occupancy Table

Occupancy Regulation	Zoning District
One family or up to 2 unrelated Note: a dwelling occupied by a family (but not unrelated persons) may also have one (1) roomer.	R1 Single-Family Residential R1S Small Home Residential R1A Single-Family Residential with Accessory Dwelling RR Residential Rehabilitation R2 Two-Family Residential R4 Two-Family Residential/Manufactured Housing R5 55+ Housing Residential RA Residential Agriculture MH Manufactured Housing B1 Downtown Interface B1 Downtown Core B2 Neighborhood Business O/I Office Institutional E2 Educational
One family or up to 4 unrelated Note: a dwelling occupied by a family (but not unrelated persons) may also have one (1) roomer.	R3 Multiple-Family B3 General Business M1 Manufacturing

2006 COMPREHENSIVE PLAN ANALYSIS**1.1 OVERALL OBJECTIVES FOR THE BOONE COMPREHENSIVE PLAN (p. 15):**

The following objectives, which have not been listed in any particular order of importance, are deliberately broad in scope and less specific than either a policy statement or an implementation action.

Economic Development: Acknowledge the area's natural beauty, university, and medical center presence as the Town's greatest assets for economic development and jobs creation. Treat them accordingly.

Community Appearance and Community Character: Blend the built environment with the natural, scenic, and historic character of a High-Country small town. Especially discourage commercial strip development, cluttered signage, and "cheap" apartment buildings.

Open Space: Integrate open space and greenways into the urban fabric of the Town. Preserve the countryside by discouraging suburban sprawl. Avoid development in floodplains, on ridgetops, and on steep slopes.

Environmental Quality: Address and monitor growth factors and activities that contribute to water, air, light, and noise pollution.

Trees: Conserve existing trees and plant new trees, especially hardwoods.

Automobile Transportation: Maximize the efficiency of existing facilities, but not at the expense town and neighborhood character and livability. Build or expand transportation facilities and parking areas as needed, but with care. Work to reduce auto dependency, use, and congestion.

Bikeways: Implement the planned system of bikeways as a legitimate transportation alternative. Unify with greenways and other pedestrian facilities where possible.

Mass Transit: Enhance and support the mass transit system as an effective alternative to the congestion created by the individual automobile.

Pedestrian Movement: Encourage a system of sidewalks, paths, crosswalks and compact development patterns which make it easy to get around Boone on foot.

Infrastructure: Engage in long range planning for water and sewer systems, stormwater runoff, natural gas, and other utility systems. Place overhead utilities underground whenever feasible.

Public Safety: Maintain a high level of policing and fire protection and plan the expansion of public safety services to coincide with projected population increases and identified needs.

Energy and Waste: Reduce waste generation, and the consumption of energy and water. Develop area recycling programs to the fullest. Encourage an anti-litter consciousness among residents and visitors.

University: Emphasize cooperative planning among the Town, County, and University.

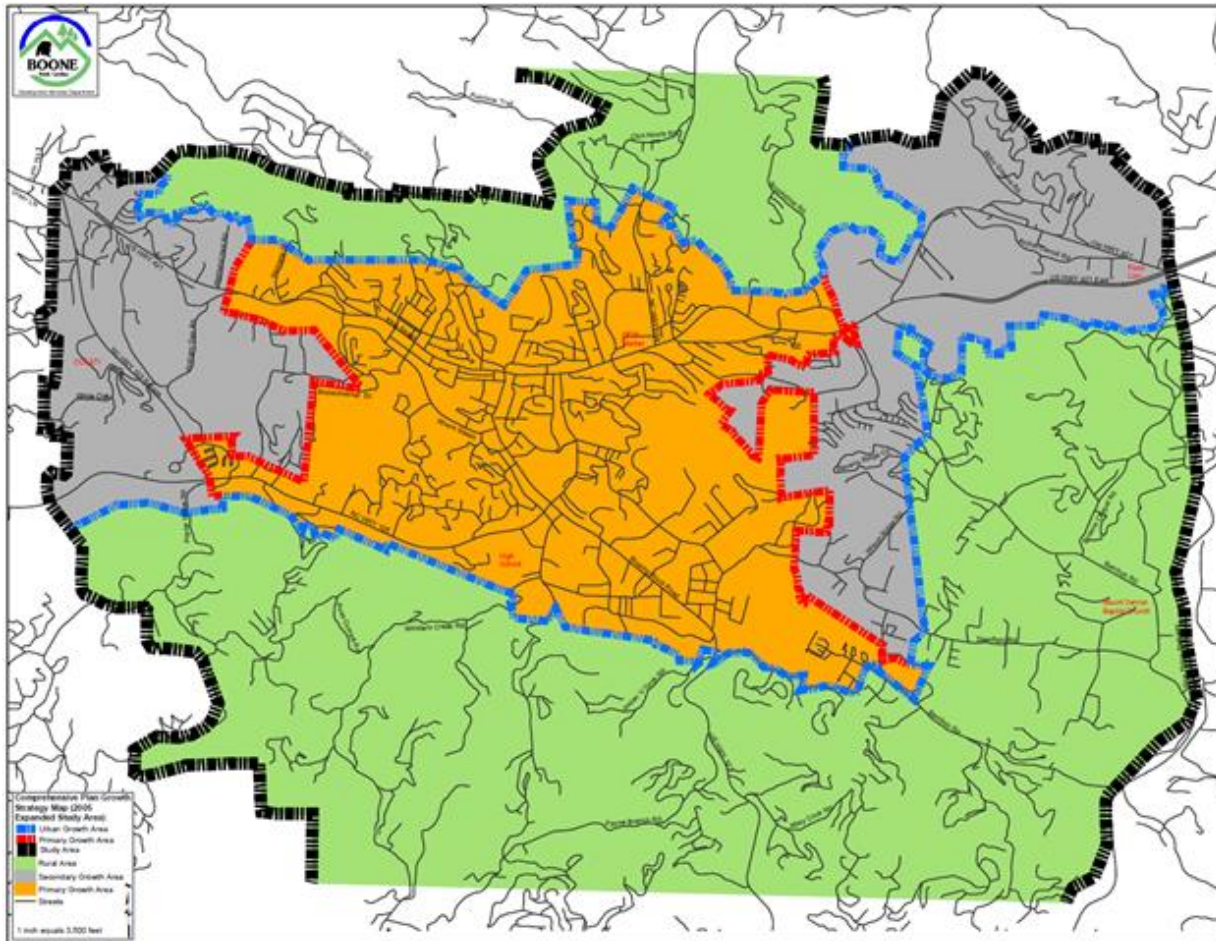
Downtown: Support and enhance the cultural and historic significance of downtown Boone, and affirm its appealing, pedestrian orientation.

Recreation: Strive for additional public recreation facilities, especially sports fields, greenways and indoor recreation centers.

Neighborhoods: Ensure the livability of neighborhoods, especially through land use and traffic planning.

Public Involvement: Encourage active public involvement and volunteerism to expand the effectiveness of community planning and action.

1.2 GROWTH STRATEGY MAP (p. 17):



The property is located within the **Primary Growth Area**. The Primary Growth Area is that portion of the urban growth area where urban level or facilities are already in place or can be provided most cost effectively. This is the area where near term growth and development is to be especially encouraged.

The Secondary Growth Area is that portion of the urban growth area where urban level services can be provided, but on a lower priority basis than in the primary growth area.

Additionally, for comparison, the Rural Area is that portion of the planning study area that is influenced by urban area growth forces, but within which urban level development should be strongly discouraged. Urban level services and associated development densities should not be planned for this area, except in case by case evaluations of major economic development projects.

Staff has reviewed land use and comprehensive plan policies, and listed those policies and actions which in staff's opinion have a bearing on the request. Council should review these policies carefully. Each member may make his or her own interpretation as to the relevance of each and which carry the most weight.

2.1 Economy

2.1.1 Economic Development

- A. The Town shall protect and enhance a high quality of life, image, cultural amenities, and natural beauty as the most effective, long-term component of an economic development strategy.

2.2 Infrastructure

2.2.2 Utilities

- A. Extensions of water and/or sewer services that could result in scattered, non-directed development and costly provision of other urban services shall be prohibited.
- B. Water and sewer services shall be concentrated within the limits of a geographically defined Urban Growth Area. The Primary Growth Area shall receive first priority for the provision or enhancement of water and sewer services.
- C. The Town shall consider the highest level of participation in the cost of providing water and sewer services within the Primary Growth Area with the next highest level of participation considered for the Secondary Growth Area.
- D. Water and sewer services shall not be extended to properties in the Rural Area (outside the Urban Growth Area). Exceptions to this policy may include the provision of services to other local governments, cooperative agreements on major economic development initiatives, and extensions needed to address imminent public health problems or related environmental hazards.
- E. The Town shall employ incentives to encourage a concentration of intense urban type development within the Urban Growth Area.
- F. Area-wide cooperation and support shall be sought in bringing in alternative utility services to the Boone Area.
- G. Long range planning for a possible stormwater collection and treatment system shall be supported, including the development of financial and regulatory strategies.

...

2.3 Community

- A. Urban type development within the Urban Growth Area shall meet appropriate Town standards.
- B. Properly planned, mixed use developments that promote efficient provision of public services shall be encouraged within the Urban Growth Area.
- C. Funding for outside agencies and organizations serving the citizens of Boone shall continue to receive support consistent with area service needs and Town budget constraints.
- D. Coordinated inter-governmental and university-town planning for urban area land use and development, transportation, utilities, recycling, environmental management, law enforcement, education, recreation, tourism and economic development shall be encouraged.

2.3.2 Community Character

- A. The identification, restoration and active use of structures, buildings, monuments, and neighborhoods of historic or architectural significance shall be encouraged as a means of enhancing their economic and cultural value to the planning area.
- B. Multiple and appropriate adaptive reuse of historic resources shall be encouraged.
- C. Wise development of the tourism potential of the area's architectural, historic, scenic and natural resources shall be encouraged.
- D. The destruction of significant architectural, historic, scenic, natural and archaeological resources in the planning area shall be discouraged.

- E. New development, redevelopment and rehabilitation of structures and sites shall occur in a manner which is consistent with the neighborhood and architectural context of the immediate area, and supportive, whenever possible, of Boone's original community character as a High Country small town.

2.3.3 Housing & Neighborhoods

- A. The protection and rehabilitation of viable neighborhoods shall be encouraged to insure their continued existence as a major housing source and as a reflection of the area's image as an attractive, highly livable community.
- B. Street system designs which discourage through traffic on purely local streets while allowing for free circulation within the neighborhood shall be encouraged.
- C. Proposed residential development which would expose residents to harmful effects of incompatible development or to environmental hazards shall be prohibited.
- D. Innovative and flexible land planning and development practices shall be encouraged to create livable developments which better safeguard land, water, energy and historic resources.
- E. Factors in determining preferred locations for high density residential development shall include: close proximity to the university, employment or shopping centers; access to major thoroughfares and the transit system; the availability of public services and facilities; and compatibility with adjacent land uses.
- F. The affordable housing needs of area residents, particularly elderly and low to moderate income residents, shall be recognized in Town policies and actions regarding residential development.
- G. Compact, full-service neighborhoods, offering opportunities for living, working, shopping, and gathering places, shall be encouraged in newly planned developments, as well as for redeveloping areas.
- H. The overall housing unit density for proposed infill residential development or redevelopment should be compatible with the average density of existing areas.

...

Certificate of Mailing

I, Brenda Henson, certify that individual notices meeting the requirements of Article 9 of the Town of Boone UDO were placed in the mail (first class) on March 6, 2023.

/s/ Brenda Henson

Brenda Henson, Administrative Support Specialist

Certification of Posting

I, Darrell Pulliam, certify that the subject property was posted as required in Article 9, Subsection 9.03.03(C) of the Town of Boone UDO on March 6, 2023.

/s/ Darrell Pulliam

Darrell Pulliam, Building Inspector

PLANNING COMMISSION REPORT

Per NCGS 160D-604(b), subsequent to initial adoption of a zoning regulation, all proposed amendments to the zoning regulation or zoning map shall be submitted to the Planning Commission for review and comment. If no written report is received from the Planning Commission within 30 days of referral of the amendment to that board, the Town Council may act on the amendment without the Planning Commission report. The Town Council is not bound by the recommendations, if any, of the Planning Commission. Per NCGS 160D-604(d), when conducting a review of proposed zoning text or map, the Planning Commission shall advise and comment on whether the proposed action is consistent with any comprehensive plan that has been adopted and any other officially adopted plan that is applicable. The Planning Commission shall provide a written recommendation to the governing board that addresses plan consistency and other matters as deemed appropriate by the Planning Commission, but a comment by the Planning Commission that a proposed amendment is inconsistent with the comprehensive plan shall not preclude consideration or approval of the proposed amendment by the governing board.

Motion and vote: The proposed amendment to the Town's zoning map ☐is OR ☐is not consistent with the Town's comprehensive plan and any other adopted plan(s) of the Town that are applicable because:

Note 1

The Planning Commission recommends ☐approval OR ☐denial of the proposed amendment to the Town's Zoning map and believes ☐approval OR ☐denial **of Ordinance PL06365-122822** is reasonable and in the public interest because:

Note 2

Note 1: describe elements of controlling land use plans and how the amendment is or is not consistent.

Note 2: briefly explain why, factors may include (i) the size, physical conditions, and other attributes of the area proposed to be rezoned, (ii) the benefits and detriments to the landowners, the neighbors, and the surrounding community, (iii) the relationship between the current actual and permissible development on the tract and adjoining areas and the development that would be permissible under the proposed amendment; (iv) why the action taken is in the public interest; and (v) any changed conditions warranting the amendment.

TOWN COUNCIL ACTION – Adoption of Ordinance

Per NCGS 160D-605, when adopting or rejecting any zoning text or map amendment, the Town Council shall approve a brief statement describing whether its action is consistent or inconsistent with an adopted comprehensive plan. The requirement for a plan consistency statement may also be met by a clear indication in the minutes of the governing board that at the time of action on the amendment the governing board was aware of and considered the planning board's recommendations and any relevant portions of an adopted comprehensive plan. If a zoning map amendment is adopted and the action was deemed inconsistent with the adopted plan, the zoning amendment shall have the effect of also amending any future land-use map in the approved plan, and no additional request or application for a plan amendment shall be required. A plan amendment and a zoning amendment may be considered concurrently.

Motion and vote: The proposed amendment to the Town's zoning map ☐is OR ☐is not consistent with the Town's comprehensive plan and any other adopted plan(s) of the Town that are applicable because:

Note 1: describe elements of controlling land use plans and how the amendment is or is not consistent.

Note 1

The Town Council ☐approves OR ☐denies the proposed amendment to the Town's Zoning map and believes ☐approval OR ☐denial of Ordinance PL06365-122822 is reasonable and in the public interest because:

Note 2: briefly explain why, factors may include (i) the size, physical conditions, and other attributes of the area proposed to be rezoned, (ii) the benefits and detriments to the landowners, the neighbors, and the surrounding community, (iii) the relationship between the current actual and permissible development on the tract and adjoining areas and the development that would be permissible under the proposed amendment; (iv) why the action taken is in the public interest; and (v) any changed conditions warranting the amendment.

Note 2

Ordinance PL06365-122822

WHEREAS, pursuant to N.C. Gen. Stat. §160D-601, the Town may amend its zoning map after giving proper public notice and holding a public hearing; and

WHEREAS, the Planning Commission has received the request to amend the Official Zoning Map of the Town of Boone, North Carolina to zone the parcel identified below to R3 Multiple-Family.

Address: 190 Chestnut Drive

Watauga County PIN: 2910-39-8092-000

Property Owner: Robert Cole

WHEREAS, in accordance with the procedures set forth in the Town of Boone Unified Development Ordinance, the Commission and Council met to consider the proposed amendment on March 27, 2023; and

WHEREAS, this Town Council has reviewed these written recommendations of the Town of Boone Planning Commission; and

WHEREAS, in accordance with North Carolina General Statutes and with the provisions set forth in Article 9 of the Town of Boone Unified Development Ordinance, the Town of Boone duly advertised and held a public hearing to consider the proposed amendment.

NOW, THEREFORE, BE IT ORDAINED BY THE BOONE TOWN COUNCIL THAT:

- SECTION 1.** The Boone Town Council hereby approves and adopts the modifications to the Town Zoning Map as set forth herein.
- SECTION 2.** All provisions of any Town ordinance in conflict with this ordinance are hereby repealed to the extent of such conflict.
- SECTION 3.** This Ordinance shall be effective immediately upon its adoption by Town Council.

Adopted this the __th day of April, 2023.

The Honorable Tim Futrelle, Mayor

Attest:

Nicole Harmon, Town Clerk

Communication: Case PL06365-122822 Staff Report (Case PL06365-122822 Cole, Robert - General Use Zoning Map Amendment)

Conditional District Zoning Map Amendment Application

Town of Boone Planning & Inspections Department
680 W. King Street, Suite C • Boone, North Carolina 28607

Phone (828) 268-6960 • Fax (828) 268-6961 • Email: planning@townofboone.net • www.townofboone.net



A. Required to be Submitted at Time of Application (check all that apply)

Note: A pre-application meeting is required prior to application submittal.

Failure to provide the information required on this application may delay the review and scheduling of the requested hearing.

- ☐ Digital copies of all paper submittal documents (may be emailed to planning@townofboone.net)
- ☐ 6 paper copies of complete site plans meeting the requirements of Town of Boone Unified Development Ordinance (UDO) Appendix A (max. size 30" x 42")
- ☐ Deed(s) of all property to be included in the request
- ☐ Both a digital and a hard copy of a written metes and bound legal description with accompanying survey map for a request that would rezone only a portion of a tax parcel or requests for multiple zoning districts.
- ☐ Property Owner Authorization. If you are not the property owner, you will need to provide documentation of property owner authorization to apply for this permit.
- ☐ Permit Fee (See Planning & Inspections Fee Schedule). Each application is allowed two (2) reviews. The 1st review of the submitted information and a 2nd review if revisions or supplemental information is required based upon the 1st review. Each subsequent review after the 2nd review will be charged at 50% of the original fees charged for the application. These fees shall be paid at the time of resubmittal.

B. Requested Hearing – See latest published Meeting Schedule for dates

Date of requested hearing: 01/23/2023

C. Property Information (Project Location)

Street Address:

2920-09-6331-000, 2920-09-7251-000

Watauga County Parcel Identification Number(s):

2920-09-6177-000

D. Property Owner Information

Name:

ANDREA K. BROWN

Complete Mailing Address (Street, City, Zip):

2366 RIDGE RD, BOONE, NC 28607

Phone Number:

704-367-5010

Email Address:

ANDREA.FINNEY1117@GMAIL.COM

E. Applicant Information

Name:

RAKEN SHAH

Company:

MANJA HOSPITALITY BOONE, LLC

Complete Mailing Address (Street, City, Zip):

1110 Meadowview Drive, Boone, NC 28607

Phone Number:

(336)-681-2553

Email Address:

JAY@SHAH-CORP.COM

Preferred Method of Contact for Written/Response Documents (select one): ☐ Mail or ☒ Email

F. Detailed Description of Project

Spring Hill Suites by Marriott - 104 Rooms

G. Project Cost

Project Cost:

18 MM

H. Development Information

Is the development subject to a previous Special Use Permit? ☐ Yes ☐ No ☒ Unknown

If yes, please describe: _____

Are there any other variances granted that impact the property? ☐ Yes ☐ No ☒ Unknown

If yes, please describe: _____

Are there any other variances requested with this development? ☐ Yes ☒ No

If yes, please describe: _____

I. District/Use Information

Existing Zoning District:

R3

Proposed Zoning District(s):

B3

Existing Land Use(s):

Proposed Land Use(s) (Specific Use # from UDO Section 15.07 Required):

J. Site Information (Include information for additional buildings on a separate sheet)

Building Footprint Square Footage:	Current: <u>NA</u>	Proposed: <u>15,500</u>
Total Building Square Footage (all floors):	Current: <u>NA</u>	Proposed: <u>63,000</u>
Number of Stories	Current: <u>NA</u>	Proposed: <u>4</u>
Building Height:	Current: <u>NA</u>	Proposed: <u>54'</u>
Number of Units:	Current: <u>NA</u>	Proposed: <u>104 Guest Rooms</u>
Number of Bedrooms:	Current: <u>NA</u>	Proposed: <u>104</u>

K. Environmental Information

Total Land Area: 2.89 ☐ Sq. Feet or ☒ Acres

Disturbed Area: 2.50 ☐ Sq. Feet or ☒ Acres

Viewshed: Is development occurring within the Viewshed Protection District? ☐ Yes ☒ No ☐ Unknown

Is development occurring on slopes in excess of 30%? ☒ Yes ☐ No ☐ Unknown

Slope:

Is development occurring on slopes in excess of 50%? ☐ Yes ☒ No ☐ Unknown

Is the property located within a designated Water Supply Watershed Area? ☐ Yes ☒ No ☐ Unknown

Watershed:

If yes, please select: ☐ WS-II-CA ☐ WS-IV-PA ☐ WS-IV-CA

Stream/River: Is there a stream or river on or near the property? ☒ Yes ☐ No

SFHA: Is the property located within the Special Flood Hazard Area? ☒ Yes ☐ No ☐ Unknown

Impervious Area: What is the existing impervious area in the development? 0 ☐ sq. feet ☐ acres
What is the proposed impervious area in the development? ~2 ☐ sq. feet ☒ acres

L. Design Professional Information

Designer is an: ☐ Architect ☒ Engineer ☐ Owner ☐ Other: _____
Name: KORY HEDRICK Company: K2 ENGINEERING, PLLC
Complete Mailing Address (Street, City, Zip): 704-728-4020 Email Address: khedrick@k2engineering.com
Phone Number: 1315 Bedlington DR NW, CHARLOTTE, NC 28269

Additional Designer Information: If additional designers are involved beyond the 1 listed, please provide additional info on a separate sheet

M. Brownfields Agreement Notification

1. Does the applicant have or is the applicant planning to enter into a Brownfields Agreement with the NC Brownfields Program? ☐ Yes ☒ No (If yes, please answer question #2 below.)
2. Anticipated date for the first year of partial exclusion of property taxes: _____

N. Applicant Signature and Property Owner Authorization

I hereby certify that I am authorized to submit this application; that all information is correct and complete; and all work will comply with all applicable State and local laws, ordinances, and regulations. I will ensure that the Planning and Inspections Department is notified of any changes in the approved plans and specifications for the project permitted herein.

Roxen Shen

Applicant (Print)

Roxen Shen

Applicant (Signature)

12/6/22
Date

Andrea K. Brown

Property Owner (Print)

Property Owner (Signature)

Date

Official Use Only

Permit Name: <u>Spring Hill Suites - Cond. District Zoning Map Amendment</u>				
Permit Number: <u>PL06330-120922</u>				
Date: <u>12-9-22</u>	Fee: <u>\$842.00</u>	Receipt Number: <u>522537</u>	Method of Payment: ☐ Cash ☒ Check Number: <u>1027</u>	Paid By: <u>Mansa Hospitality Boi</u>

Official Use Only - Hearing/Decision Information

Public Hearing Meeting Date: _____

PC Meeting Date: _____

TC Meeting Date: _____

Date of APO Mailed Notification: _____

Date of Posted Notification: _____

Request Approved: ☐ Yes ☐ No If yes, date request sent to GIS: _____

S:\FORMS\PI_Forms_Current\Planning Forms\CD2MapAmend_10202020.docx



Jay Shah <jay@shah-corp.com>

FW: FW: Finney PSA Amendment Executed 120522

1 message

Mike Chatham <mchatham@mpvre.com>

Tue, Dec 6, 2022 at 5:02 PM

To: "Jay@shah-corp.com" <Jay@shah-corp.com>, "Raken@shah-corp.com" <Raken@shah-corp.com>

Cc: Chelsea Reynolds <chelsea@vstolcre.com>, Rani Hussami <rani@vstolcre.com>

Please confirm that the statement below from the property owner will suffice.

Thanks,

Mike

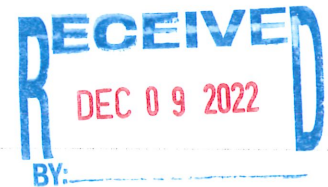
Michael Chatham

Commercial Real Estate Broker NC/SC

T 704.367.5010 | M 704.906.0303 | vCard

MPV PROPERTIES | 2400 South Boulevard | Suite 300 | Charlotte, NC 28203 | mpvre.com

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**From:** Andrea Finney <andreafinney1117@gmail.com>**Sent:** Tuesday, December 6, 2022 4:57 PM**To:** Mike Chatham <mchatham@mpvre.com>**Subject:** Re: FW: Finney PSA Amendment Executed 120522

I, Andrea Finney (Andrea K Brown) am granting Mansa hospitality Boone LLC to apply for Conditional District Zoning Map Amendment of parcel

2920-09-6177-000

On Tue, Dec 6, 2022 at 3:18 PM Mike Chatham <mchatham@mpvre.com> wrote:

CONDITIONAL DISTRICT ZONING MAP AMENDMENT

COMMUNITY MEMBERS FEED BACK MEETING

Parcel ID # 2920-09-6177-000

Meeting Date – December 13th, 2022

Table of context

1. Copy of Notice to the adjoining community members
2. USPS mail confirmation
3. Meeting Sign-In-Sheet
4. Meeting Minutes

NOTICE TO INTERESTED PARTIES OF
COMMUNITY MEETING

Subject: Community Meeting -- Rezoning Petition filed by Mansa Hospitality Boone, LLC to rezone Parcel ID # 2920-09-6177-000 in Town of Boone

Date and Time of Meeting: Tuesday, December 13th, 2022, at 4:00pm.

Place of Meeting: TownePlace Suites by Marriott – 1110 Meadowview Drive, Boone, NC 28607

Mansa Hospitality, LLC (the "Petitioner") is proposing an approximately 100 rooms SpringHill Suites by Marriott on the Parcels (2920-09-6331-000 (B3), 2920-09-7251-000 (B3), 2920-09-6177-000 (R3), and 2920-07-7187-000 (B3)). One of the parcels (2920-09-6177-000) is zoned R3. Attached is the map showing current zoning of the parcels. In the attached drawing, the parcels in red are zoned appropriately and a parcel in the yellow is inappropriately zoned for a hotel development.

In accordance with the requirements of the Town of Boone Zoning Ordinance, the Petitioner will hold a Community Meeting prior to the Public Hearing on this Rezoning Petition for the purpose of discussing this rezoning proposal with nearby property owners and organizations. The Town of Boone Planning Commission's records indicate that you are either a representative of a registered neighborhood organization or an owner of property that adjoins, is located across the street from, or is near the Site.

Accordingly, we give you notice that representatives of the Petitioner will hold a Community Meeting regarding this Rezoning Petition on Tuesday, December 13th, 2022, at 4pm. The Petitioner's representatives look forward to sharing this rezoning proposal with you and to answering any questions you may have with respect to this Rezoning Petition.

In the meantime, should you have any questions or comments about this matter, please call Jay Shah at jay@shah-corp.com or 828-386-1717

Date Mailed: 11/18/2022



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Estimated Delivery Date Mon 11/21/2022			
Certified Mail®			\$4.00
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Return Receipt			\$3.25
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Total			\$7.85
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Boone, NC 28607			
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 North Wilkesboro, NC 28659
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 Tracking #:

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 Charlotte, NC 28277
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 Clerk: 04

Conditional District Zoning Map Amendment

Community Members Feedback Meeting

Parcel ID: 2920-09-6177-000

Date: 12/13/2022

Time: 4:00pm EST

Name	Address	Phone	Email
Julia E. Mike Boone	Boone, NC	828-773-5106 773 6585	maggiecyclsmike@yahoo.com julia.rowland1973@gmail.com

Conditional District Zoning Map Amendment | MINUTES

Meeting date | time Date | Time | Meeting location Location

Meeting called by	Mansa Hospitality Boone, LLC
Type of meeting	Community Feed Back
Facilitator	Jay Shah
Note taker	Serena Patel
Timekeeper	Christopher Andrews

FEED BACK

1. - Julia & Mike Boone (Magic Cycles) - own a business across from the site. were very excited and supportive of the project. See good development on that side of the town.
 - were impressed by the building design and site layout.
2. - had stayed at the tps and had good experience.
 - supportive of additional development for the Town.

3.

4.

5.

G.S. § 10B-41 NOTARIAL CERTIFICATE FOR
ACKNOWLEDGMENT

MECKLENBURG County, North Carolina

I certify that the following person(s) personally appeared before me this day, each
acknowledging to me that he or she signed the foregoing document:

JAYMIN R. SHAH — Jaymin R. Shah
Name(s) of principal(s)

Date: DEC 15, 2022



Joydeep Patel
Official Signature of Notary

JOYDEEP PATEL, Notary Public
Notary's printed or typed name

My commission expires: FEB 9, 2026

OPTIONAL

This certificate is attached to a _____, signed by _____
Title/Type of Document Name of Principal Signer(s)

on _____, and includes _____ pages.
Date # of pages

6.0 Parking Demand

Parking Required Per Boone UDO

The Town of Boone Unified Development Ordinance (UDO), updated in 2014, provides typical requirements for parking for a number of land uses. These rates, found in Article 24, is shown in Table 6.1. The Boone UDO addresses residential land uses in terms of a minimum parking required.

Mixed-Use Multi-Family Maximum Parking Required

As shown in Table 6.1, the Boone UDO requires 1.25 space per rentable room, plus 10 per 1000 ft² of restaurant/ lounge, plus 20 per 1000 ft² per meeting/ banquet room.

Table 6.1 – Required Parking by Uses

Residential Land Uses	Minimum Parking Required
3.06 Vacation Rental	
2.02 Family Care Institutions 2.03-2.04 Halfway House 2.05 Residential Care Facility 2.06 Fraternity or Sorority Dwelling 3.02-3.03 Shelter for Homeless	1 space/4 1 space/4 beds Residential care facilities-plus one space for every two Staff members
2.07 Boarding Housing 3.04-3.05 Bed and Breakfast 3.08 Motel 3.09-3.11 Hotel	1.25 space/rentable room, plus 10 per 1000 ft ² of restaurant/lounge, plus 20 per 1000 ft ² per meeting/banquet room

Existing Parking Demand

DAVENPORT conducted a parking demand at a similar hotel in Boone, TownePlace Suites, to compare the demand to the proposed hotel. The TownePlace Suites is a 92-room hotel with 96 parking spaces. The proposed hotel will have a meeting and lobby amenities that is only reserved for use of guest. Existing parking demand was measured by collecting parking occupancy counts. These were collected on Friday and Saturday of January 28 and 29, 2023. Per TownePlace Suites by Marriott staff, peak demand typically occurs on weekends as opposed to weekdays. These count dates were considered representative of typical parking demand. On these days the hotel had 90 occupied rooms on Friday and 79 occupied rooms on Saturday. As noted in the table, there was a charter bus present that encompassed 17 of the occupied rooms.

The field-based counts involved counting the number of occupied parking spaces at 1-hour intervals from 3 pm to 9 pm on Friday and 8 am to 9 pm on Saturday.

Table 6.2 and 6.3 illustrate the number of vehicles that were present during the data collection.

Table 6.2 - Occupancy Counts										
Location	Capacity	FRIDAY								MAX
		Time of Arrival	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	
1110 Meadowview Dr (TownePlace Suites)	96	17	23	32	34	36	48	52	36	52
% Occupied		18%	24%	33%	35%	38%	50%	54%	38%	54%

*Note: One charter bus was on site during data collection that occupied 6 parking spaces.

Table 6.3 - Occupancy Counts															
Location	SATURDAY														
	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	MAX
1110 Meadowview Dr (TownePlace Suites)	14	33	42	32	22	20	21	20	27	35	38	40	47	64	64
% Occupied	15%	34%	44%	33%	23%	21%	22%	21%	28%	36%	40%	42%	49%	67%	67%

*Note: One charter bus was on site during data collection that occupied 6 parking spaces.

The results indicated that peak demand occurred at approximately 8:00 pm on Friday and 9:00 pm on Saturday. At the maximum capacity during the parking count, 67% of the spaces were occupied. The hotel had 86% of occupancy on Saturday.

Future Parking Demand

The SpringHill Suites will have 104 rooms with 108 parking spaces. Based on the similar hotel, TownePlace Suites, with the rate of 1.13 and the maximum spaces occupied at TownPlace Suites, 72 parking spaces would be needed for this hotel. In worst case scenario that the charter bus represented 17 vehicles based on the rooms booked, 92 spaces would be needed for SpringHill Suites. Therefore, the 108 parking spaces will be able to accommodate the parking demand.

SpringHill Suites by Marriott

Boone, NC

PREPARED FOR: Shah Corporation

Original: January 20, 2023

Revised: February 27, 2023

PROJECT # 220105



TRANSPORTATION IMPACT ANALYSIS

Celebrating
20
YEARS



DAVENPORT



Transportation Impact Analysis

SpringHill Suites by Marriott Boone, NC

Prepared for Shah Corporation

Original: January 20, 2023

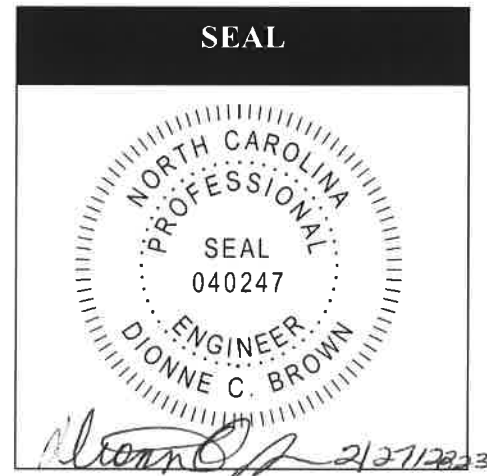
Revised: February 27, 2023

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Drafting/Graphics by: Fatimah Al Alshaik,

Reviewed by: Dionne Brown, P.E.

Sealed by: Dionne Brown, P.E.



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EXECUTIVE SUMMARY

SpringHill Suites by Marriott Development is located on the southwest corner of the US Highway 421/221 and Bub Teems Road intersection in Boone, NC. It will consist of 104-room hotel. One full movement access point is proposed on US Highway 421. The expected build-out year for this development is 2025. Information regarding the property was provided by K2 Engineering.

DAVENPORT was retained to determine the potential traffic impacts of this development and to identify transportation improvements that may be required to accommodate the impacts of the new development traffic.

The Transportation Impact Analysis (TIA) was performed based on the scope agreed upon with NCDOT and Town of Boone. This site has a trip generation potential of 704 daily trips, 45 trips in the AM peak hour, and 49 trips in the PM peak hour.

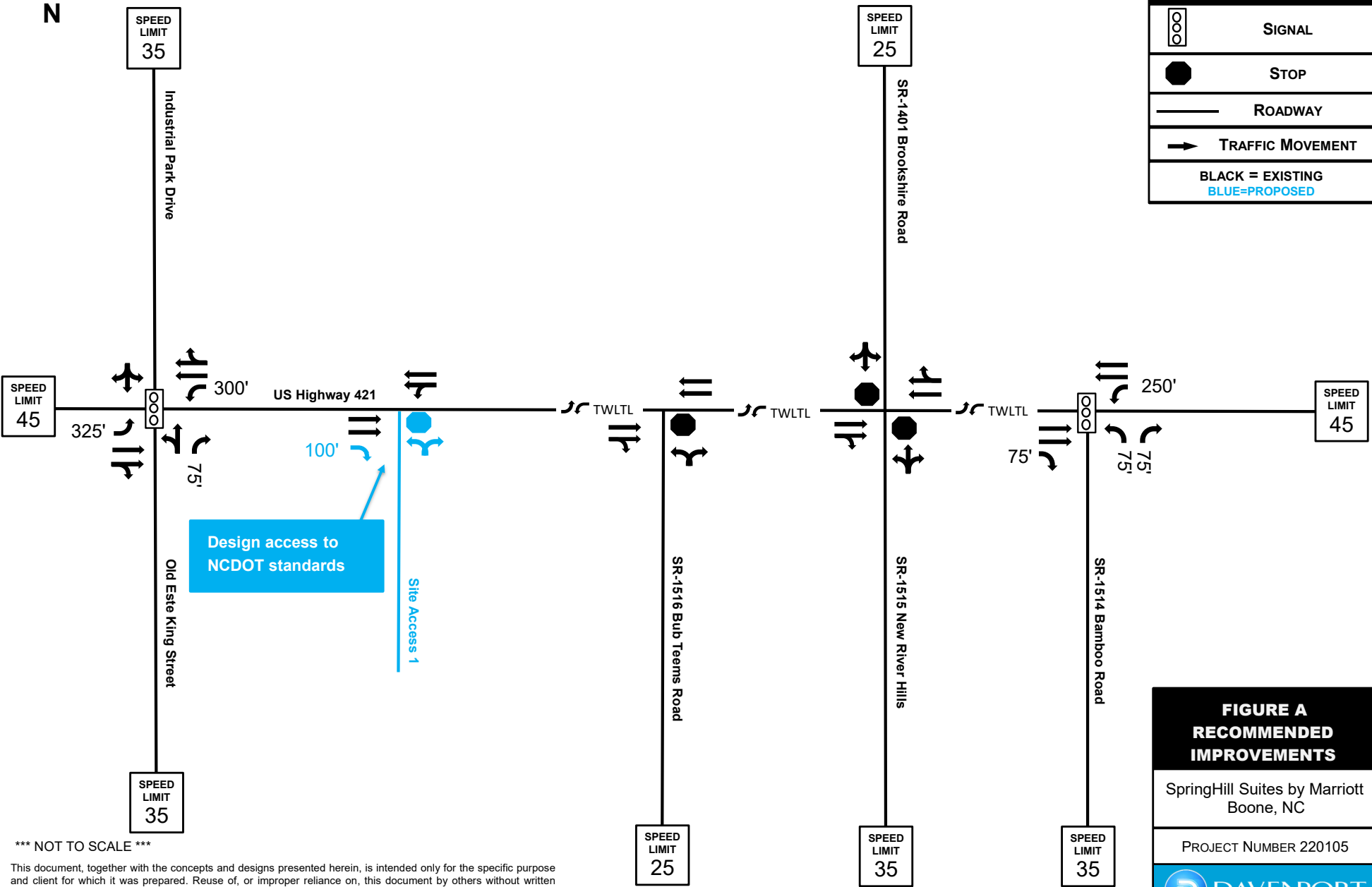
Based on the capacity analysis, recommendations have been given where necessary to mitigate the impacts of future traffic. Improvements are summarized in Table A and Figure A.

In conclusion, this study has determined the potential traffic impacts of this development. Recommendations have been given to accommodate these impacts. The analysis indicates that with the recommended improvements in place, the proposed site is not expected to have a detrimental effect on transportation capacity and mobility in the study area. The recommendations in Figure A and in Table A should be constructed to comply with applicable NCDOT Policy on Street and *Driveway Access to North Carolina Highways* and local standards.

Table A – Recommended Improvements	
INTERSECTION	RECOMMENDATIONS
US Highway 421 and Old East King Street /Industrial Park Drive	No improvements recommended.
US Highway 421 and Bub Teems Road	No improvements recommended.
US Highway 421 and New River Hills/ Brookshire Road	No improvements recommended.
US Highway 421 and Bamboo Road	No improvements recommended.
US Highway 421 and Site Access 1	- Provide an eastbound right turn lane of 100 feet of storage and appropriate taper - Design site drive according to applicable NCDOT and local standards.



LEGEND	
	SIGNAL
	STOP
	ROADWAY
	TRAFFIC MOVEMENT
BLACK = EXISTING BLUE=PROPOSED	



**FIGURE A
RECOMMENDED
IMPROVEMENTS**

SpringHill Suites by Marriott
Boone, NC

PROJECT NUMBER 220105

*** NOT TO SCALE ***

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*A minimum of 4 vehicles per hour is analyzed for each movement per NCDOT Congestion Management Guidelines

1.0 Introduction

SpringHill Suites by Marriott Development is located on the southwest corner of the US Highway 421/221 and Bub Teems Road intersection in Boone, NC. It will consist of 104-room hotel. One full movement access point is proposed on US Highway 421. The expected build-out year for this development is 2025. Information regarding the property was provided by K2 Engineering.

A conceptual site plan is shown in Figure 1, and a site location map and a vicinity map are provided in Figures 2A and 2B, respectively. All figures are provided in the Appendix.

DAVENPORT was retained to determine the potential traffic impacts of this development and to identify transportation improvements that may be required to accommodate the impacts of the new development traffic. The following intersections are included in the study:

1. US 421 at Old East King (signalized)
2. US 421 at Bub Teems Road (unsignalized)
3. US 421 at Brookshire Road/ New River Hills (unsignalized)
4. US 421 at Bamboo Road (signalized)
5. US 421 at Site Access

These intersections were analyzed during the AM and PM peaks for the following conditions:

- 2022 Existing Conditions
- 2025 Future No Build Conditions
- 2025 Future Build Conditions
- 2025 Future Build Conditions + Improvements

The Transportation Impact Analysis (TIA) was performed based on the scope agreed upon with the Town of Boone and North Carolina Department of Transportation (NCDOT). It was conducted according to the standards and best practices of the transportation engineering profession.

2.0 Existing Conditions

2.1 Inventory

Table 2.1 presents a summary of the study area roadway conditions. Figure 3 shows the existing lane geometry.

Table 2.1 - Street Inventory						
Facility Name	Route #	AADT (vpd)	Typical Cross Section	Pavement Width	Speed Limit (MPH)	Maintained By
US Highway 421	US 421	40,500	5-lane undivided	12-foot lanes	45	NCDOT
Old East King Street	N/A	Not reported	2-lane undivided	11-foot lanes	35	Town of Boone
Bub Teems Road	SR 1516	Not reported	2-lane undivided	12-foot lanes	25	NCDOT
Brookshire Road	SR 1401	Not reported	2-lane undivided	12-foot lanes	25	NCDOT
New River Hills	SR 1515	200	2-lane undivided	11-foot lanes	35	NCDOT
Bamboo Road	SR 1514	11,000	2-lane undivided	12-foot lanes	35	NCDOT

2.2 Existing Traffic Volumes

Turning movement counts for this project were collected by DAVENPORT when schools were in session. Table 2.2 contains the location, dates, and times these counts were conducted. The traffic volumes were not balanced between some of the study intersections since the existing driveways and land uses account for the imbalance. Additionally, a minimum of four vehicles per hour were assigned to all movements, per NCDOT Congestion Management standards. The existing AM and PM peak hour volumes are shown in Figure 4. Traffic count data are provided in the Appendix.

Table 2.2 - Traffic Volume Data		
Count Location	Date Taken	Hours
US 421 at Old East King Street (signalized)	Wednesday, November 30, 2022	7-9 AM, 4-6 PM
US 421 at Bub Teems Road (unsignalized)	Wednesday, November 30, 2022	7-9 AM, 4-6 PM
US 421 at Brookshire Road/ New River Hills (unsignalized)	Wednesday, November 30, 2022	7-9 AM, 4-6 PM
US 421 at Bamboo Road (signalized)	Wednesday, November 30, 2022	7-9 AM, 4-6 PM

3.0 Approved Development and Committed Improvements

3.1 *Approved Developments*

Approved developments are developments that have been recently approved in the area but are not yet constructed. Per the Town of Boone, there is one approved developments to consider for this study site, The Collection. A 48 apartments development is currently under construction off of US 421 to the west of the proposed development. This development will be in the place by 2025 ; therefore, the site trips were incorporated into the analysis. More information can be found in the appendix.

3.2 *Committed Improvements*

Committed improvements are improvements that are planned by NCDOT, Town of Boone, or that are associated with a prior approved development in the area but are not yet constructed. Per the approved scoping document, there are no committed improvements to be included in this study.

4.0 Methodology

4.1 *Base Assumptions and Standards*

In general, the analysis for this project was conducted utilizing commonly accepted NCDOT standards. Table 4.1 contains a summary of the base assumptions.

Table 4.1 - Assumptions	
Annual Growth Rate	1%
Analysis Software	Synchro/SimTraffic
Lane Widths	12 feet
Peak Hour Factor	0.90
Truck Percentage	2%

4.2 *Future No Build Volumes*

The 2025 future no build traffic volumes were computed by applying a one percent (1%) compounded annual growth rate to the 2022 existing traffic volumes. Figure 6 shows 2025 future no build traffic volumes for AM and PM peaks.

4.3 Trip Generation

The proposed development will contain a hotel. The trip generation potential of this site was projected based on the 11th Edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual* and guidance from NCDOT Congestion Management on the selection of appropriate variables. Table 4.2 presents the results.

4.4 Trip Distribution and Assignment

Site trips for this proposed development were distributed based on the existing traffic patterns and engineering judgment. The primary trip distribution model is shown in Figure 5. The directional distribution for new primary site trips, as agreed upon with the reviewing agencies, is:

- 55% entering and exiting from the Eastbound of US Highway 421
- 35% entering and exiting from the Westbound of US Highway 421
- 10% entering and exiting from Bamboo Road

4.5 Future Build Volumes

Site trip volumes were added to the future no build volumes to compute the 2025 Future Build volumes. Site trips are shown in Figure 7 and Future Build volumes are shown in Figure 8.

Table 4.2 - ITE 11th Edition Trip Generation									
Average Weekday Driveway Volumes					24 Hour Two-Way	AM Peak Hour		PM Peak Hour	
Land Use	ITE Land Use Code	Size		Data Source	Volume	Enter	Exit	Enter	Exit
Hotel	310	104	Room	Adjacent- Equation	704	25	20	25	24
Total Primary Trips					704	25	20	25	24

5.0 Capacity Analysis

5.1 Level of Service Evaluation Criteria

The Transportation Research Board's *Highway Capacity Manual* (HCM) utilizes a term "level of service" (LOS) to measure how traffic operates in intersections and on roadway segments. There are six levels of service ranging from A to F as shown in Table 5.1. Level of service "A" represents low-volume traffic operations and level of service "F" represents high-volume, oversaturated traffic operations. Synchro traffic modeling software is used to determine the LOS and delay for study intersections. Synchro analysis worksheet reports are provided in the Appendix.

Table 5.1 – Highway Capacity Manual			
Levels of Service and Control Delay Criteria			
Signalized Intersection		Unsignalized Intersection	
Level of Service	Control Delay Per vehicle (seconds)	Level of Service	Delay Range (seconds)
A	≤ 10	A	≤ 10
B	> 10 and ≤ 20	B	> 10 and ≤ 15
C	> 20 and ≤ 35	C	> 15 and ≤ 25
D	> 35 and ≤ 55	D	> 25 and ≤ 35
E	> 55 and ≤ 80	E	> 35 and ≤ 50
F	> 80	F	> 50

5.2 Queueing Evaluation

A queueing analysis was performed using Synchro and SimTraffic simulation, based on a minimum 10-minute seeding, a 60-minute recording period, and 10 runs. The maximum SimTraffic queues and 95th-percentile Synchro queues are provided, along with the turn lane lengths. Synchro and SimTraffic queue reports are provided in the Appendix.

5.3 Level of Service and Queueing Results

The results of the capacity and queue analyses are discussed by intersection in the following paragraphs. The LOS, delay, and queue results are summarized in Tables 5.2 to 5.11.

US 421 at Old East King Street (signalized)

The overall intersection operates at LOS B in existing conditions in both peak hours. Under future no build conditions, the intersection is expected to operate at LOS B in both peak hours. Under future build conditions, the intersection will operate at LOS B in both peak hours. No improvements are recommended.

US 421 at Bub Teems Road (unsignalized)

The approaches operate at LOS C in existing, future no build, and future build scenarios for AM and LOS C in existing, future no build. However, LOS D in future build scenarios PM peak hours. No improvements are recommended.

US 421 at Brookshire Road/ New River Hills (unsignalized)

The approaches operate at LOS F in existing, future no build, and in future build scenarios for AM. LOS F PM peak hours. Site traffic is reflected in the eastbound through and westbound through, but not the northbound or southbound movements. The latter two movements operate at LOS F in existing, future no build, and in future build scenarios for during all scenarios, but no site traffic makes these movements. Therefore, no improvements are recommended.

US 421 at Bamboo Road (signalized)

The approaches operate at LOS C in existing, future no build, and future build scenarios for AM and PM peak hours. No improvements are recommended.

US 421 at Site Access 1 (unsignalized)

Under future build conditions and future build improvement, the minor street approach is expected to operate at LOS D in the AM peak and in the PM peak hours. The need for left and right turn lanes were reviewed based on the NCDOT Policy on Street and Driveway Access to North Carolina Highways. US 421 has an existing two-way left turn lane that will accommodate the left turn volume. Based on project volumes, the right turn lane was not warranted; however, based on AADT on US 421, an eastbound right turn lane of 100 feet of storage with appropriate deceleration and taper is recommended. The site access should be designed in accordance with applicable NCDOT standards.

Access on Bub Teems Road

Due to the existing Bub Teems Road elevation and site topography, a driveway access from Bub Teems to the site is not feasible. The cross-sections shown in the appendix and the grading plans illustrate that a driveway access would exceed 50% grade if provided. A driveway with these grades would be unpractical and dangerous. Therefore, a single driveway access point onto US 421 was chosen for this site.

Table 5.2 - US Highway 421 and Old Este King Street /Industrial Park Drive

Scenario	LOS	Level of Service per Movement & by Approach (delay in seconds/vehicle)			
		Eastbound	Westbound	Northbound	Southbound
AM Peak Hour					
2022 Existing	B (11.9)	A (6.4)	A (4.4)	E (77.2)	F (84.2)
2025 Future No-Build	B (11.7)	A (6.8)	A (3.9)	E (76.6)	F (85.1)
2025 Future Build	B (11.8)	A (6.9)	A (4.1)	E (76.3)	F (85.1)
2025 Future Build with Improvements	B (11.8)	A (6.9)	A (4.1)	E (76.3)	F (85.1)
PM Peak Hour					
2022 Existing	B (14.1)	A (9.8)	A (5.7)	E (60.6)	F (92.2)
2025 Future No-Build	B (14.9)	B (10.5)	A (6.6)	E (60.1)	F (92.0)
2025 Future Build	B (14.8)	B (10.5)	A (6.5)	E (60.4)	F (93.1)
2025 Future Build with Improvements	B (14.8)	B (10.5)	A (6.5)	E (60.4)	F (93.1)

Table 5.3 - US Highway 421 and Bub Teems Road

Scenario	LOS of Worst Approach	Level of Service per Movement & by Approach (delay in seconds/vehicle)			
		Eastbound	Westbound	Northbound	Southbound
AM Peak Hour					
2022 Existing	C (17.4) NB Approach	A (0.0)	A (0.0)	C (17.4)	
2025 Future No-Build	C (18.8) NB Approach	A (0.0)	A (0.0)	C (18.8)	
2025 Future Build	C (19.1) NB Approach	A (0.0)	A (0.0)	C (19.1)	
2025 Future Build with Improvements	C (19.1) NB Approach	A (0.0)	A (0.0)	C (19.1)	
PM Peak Hour					
2022 Existing	C (23.5) NB Approach	A (0.0)	A (0.1)	C (23.5)	
2025 Future No-Build	C (25.5) NB Approach	A (0.0)	A (0.2)	D (25.5)	
2025 Future Build	D (25.8) NB Approach	A (0.0)	A (0.2)	D (25.8)	
2025 Future Build with Improvements	D (25.8) NB Approach	A (0.0)	A (0.2)	D (25.8)	

Table 5.4 - US Highway 421 and New River Hills/ Brookshire Road

Scenario	LOS of Worst Approach	Level of Service per Movement & by Approach (delay in seconds/vehicle)			
		Eastbound	Westbound	Northbound	Southbound
AM Peak Hour					
2022 Existing	F (229.4) SB Approach	A (0.2)	A (0.0)	F (119.0)	F (229.4)
2025 Future No-Build	(\$544.7) SB Approach	A (0.2)	A (0.0)	F (744)	F (\$544.7)
2025 Future Build	F (\$658.5) SB Approach	A (0.2)	A (0.0)	F (286.5)	F (\$658.5)
2025 Future Build with Improvements	F (\$658.5) SB Approach	A (0.2)	A (0.0)	F (286.5)	F (\$658.5)
PM Peak Hour					
2022 Existing	F (352.9) SB Approach	A (0.2)	A (0.1)	F (243.5)	F (352.9)
2025 Future No-Build	F (\$788.4) SB Approach	A (0.2)	A (0.1)	F (\$518)	F (\$788.4)
2025 Future Build	F (\$867.4) SB Approach	A (0.2)	A (0.1)	F (\$617.3)	F (\$867.4)
2025 Future Build with Improvements	F (\$867.4) SB Approach	A (0.2)	A (0.1)	F (\$617.3)	F (\$867.4)

Table 5.5 - US Highway 421 and Bamboo Road

Scenario	LOS	Level of Service per Movement & by Approach (delay in seconds/vehicle)			
		Eastbound	Westbound	Northbound	Southbound
AM Peak Hour					
2022 Existing	C (21.6)	B (14.2)	B (13.5)	E (69.7)	
2025 Future No-Build	C (22.6)	B (15.0)	B (15.4)	E (67.7)	
2025 Future Build	C (23.0)	B (15.4)	B (16.0)	E (67.0)	
2025 Future Build with Improvements	C (23.0)	B (15.4)	B (16.0)	E (67.0)	
PM Peak Hour					
2022 Existing	C (31.4)	A (9.0)	A (7.1)	F (146.1)	
2025 Future No-Build	C (33.1)	A (9.0)	A (8.0)	F (155.1)	
2025 Future Build	C (33.2)	A (9.1)	A (8.1)	F (155.6)	
2025 Future Build with Improvements	C (33.2)	A (9.1)	A (8.1)	F (155.6)	

Table 5.6 -US Highway 421 and Site Access 1

Scenario	LOS of Worst Approach	Level of Service per Movement & by Approach (delay in seconds/vehicle)			
		Eastbound	Westbound	Northbound	Southbound
AM Peak Hour					
2025 Future Build	D (22.6) NB Approach	A (0.0)	A (1.5)	D (22.6)	
2025 Future Build with improvement	D (22.5) NB Approach	A (0.0)	A (1.5)	D (22.5)	
PM Peak Hour					
2025 Future Build	D (30.8) NB Approach	A (0.0)	A (0.6)	D (30.8)	
2025 Future Build with improvement	D (30.8) NB Approach	A (0.0)	A (0.6)	D (30.8)	

Table 5.7 - Queue Results
AM Peak Hour Queues

Scenario	US Highway 421 and Old Este King Street /Industrial Park Drive								
2022 Existing	EBL	EBT	EBTR	WBL	WBT	WBTR	NBLT	NBR	SBLTR
Max Queue (ft)	69	116	162	158	92	101	1587	104	564
95th Percentile Queue (ft)	13	164	-	m45	195	-	59	285	69
Storage Bay (ft)	325'	FULL	FULL	300'	FULL	FULL	FULL	75'	FULL
2025 Future No Build	EBL	EBT	EBTR	WBL	WBT	WBTR	NBLT	NBR	SBLTR
Max Queue (ft)	92	91	139	117	89	129	1573	174	807
95th Percentile Queue (ft)	13	182	-	m48	195	-	64	289	76
Storage Bay (ft)	325'	FULL	FULL	300'	FULL	FULL	FULL	75'	FULL
2025 Future Build	EBL	EBT	EBTR	WBL	WBT	WBTR	NBLT	NBR	SBLTR
Max Queue (ft)	51	158	117	178	158	191	1581	175	851
95th Percentile Queue (ft)	13	188	-	m48	186	-	64	288	76
Storage Bay (ft)	325'	FULL	FULL	300'	FULL	FULL	FULL	75'	FULL
2025 Future Build with Improvements	EBL	EBT	EBTR	WBL	WBT	WBTR	NBLT	NBR	SBLTR
Max Queue (ft)	66	73	116	113	87	106	1585	175	873
95th Percentile Queue (ft)	13	188	-	m48	186	-	64	288	76
Storage Bay (ft)	325'	FULL	FULL	300'	FULL	FULL	FULL	75'	FULL
PM Peak Hour Queues									
Scenario	US Highway 421 and Old Este King Street /Industrial Park Drive								
2022 Existing	EBL	EBT	EBTR	WBL	WBT	WBTR	NBLT	NBR	SBLTR
Max Queue (ft)	26	94	118	69	-		22	114	351
95th Percentile Queue (ft)	18	412	-	m19	225		35	158	191
Storage Bay (ft)	325'	FULL	FULL	300'	FULL		FULL	75'	FULL
2025 Future No Build	EBL	EBT	EBTR	WBL	WBT	WBTR	NBLT	NBR	SBLTR
Max Queue (ft)	50	134	142	48	74	88	1588	174	1210
95th Percentile Queue (ft)	20	451	-	m18	m342	-	40	161	201
Storage Bay (ft)	325'	FULL	FULL	300'	FULL	FULL	FULL	75'	FULL
2025 Future Build	EBL	EBT	EBTR	WBL	WBT	WBTR	NBLT	NBR	SBLTR
Max Queue (ft)	49	178	138	87	92	111	1585	174	1195
95th Percentile Queue (ft)	19	446	-	m18	m 330	-	40	163	202
Storage Bay (ft)	325'	FULL	FULL	300'	FULL	FULL	FULL	75'	FULL
2025 Future Build with Improvements	EBL	EBT	EBTR	WBL	WBT	WBTR	NBLT	NBR	SBLTR
Max Queue (ft)	24	108	94	48	23	44	87	60	628
95th Percentile Queue (ft)	19	446	-	m18	m 330	-	40	163	202
Storage Bay (ft)	325'	FULL	FULL	300'	FULL	FULL	FULL	75'	FULL
#: 95th percentile volume exceeds capacity, queue may be longer m: volume for 95th percentile queue is metered by upstream signal									

Table 5.8 - Queue Results
AM Peak Hour Queues

Scenario	US Highway 421 and Bub Teems Road					
2022 Existing	EBT	EBTR	WBULT	WBLT	WBT	NBLR
Max Queue (ft)				53		47
95th Percentile Queue (ft)				0		3
Storage Bay (ft)				FULL		FULL
2025 Future No Build	EBT	EBTR	WBULT	WBLT	WBT	NBLR
Max Queue (ft)				31		49
95th Percentile Queue (ft)				0		5
Storage Bay (ft)				FULL		FULL
2025 Future Build	EBT	EBTR	WBULT	WBLT	WBT	NBLR
Max Queue (ft)				52		27
95th Percentile Queue (ft)				0		5
Storage Bay (ft)				FULL		FULL
2025 Future Build with Improvements	EBT	EBTR	WBULT	WBLT	WBT	NBLR
Max Queue (ft)				-		27
95th Percentile Queue (ft)				0		5
Storage Bay (ft)				FULL		FULL
PM Peak Hour Queues						
Scenario	US Highway 421 and Bub Teems Road					
2022 Existing	EBT	EBTR	WBULT	WBLT	WBT	NBLR
Max Queue (ft)			29			27
95th Percentile Queue (ft)			3			5
Storage Bay (ft)			FULL			FULL
2025 Future No Build	EBT	EBTR	WBULT	WBLT	WBT	NBLR
Max Queue (ft)		55	113		103	28
95th Percentile Queue (ft)		-	3		-	5
Storage Bay (ft)		FULL	FULL		FULL	FULL
2025 Future Build	EBT	EBTR	WBULT	WBLT	WBT	NBLR
Max Queue (ft)	274	296	74			27
95th Percentile Queue (ft)	-	-	3			5
Storage Bay (ft)	FULL	FULL	FULL			FULL
2025 Future Build with Improvements	EBT	EBTR	WBULT	WBLT	WBT	NBLR
Max Queue (ft)			29	-		26
95th Percentile Queue (ft)			-	3		5
Storage Bay (ft)			FULL	FULL		FULL
#: 95th percentile volume exceeds capacity, queue may be longer m: volume for 95th percentile queue is metered by upstream signal						

Table 5.9 - Queue Results
AM Peak Hour Queues

Scenario US Highway 421 and New River Hills/ Brookshire Road						
2022 Existing	EBLT	EBTR	WBLT	WBTR	NBLTR	SBLTR
Max Queue (ft)	44		29	18	30	74
95th Percentile Queue (ft)	3		0	-	30	73
Storage Bay (ft)	FULL		FULL	FULL	FULL	FULL
2025 Future No Build	EBLT	EBTR	WBLT	WBTR	NBLTR	SBLTR
Max Queue (ft)	80		47	18	51	53
95th Percentile Queue (ft)	3		0	-	53	105
Storage Bay (ft)	FULL		FULL	FULL	FULL	FULL
2025 Future Build	EBLT	EBTR	WBLT	WBTR	NBLTR	SBLTR
Max Queue (ft)	62	44	91		30	74
95th Percentile Queue (ft)	3		0		55	113
Storage Bay (ft)	FULL		FULL		FULL	FULL
2025 Future Build with Improvements	EBLT	EBTR	WBLT	WBTR	NBLTR	SBLTR
Max Queue (ft)	45		74	72	51	53
95th Percentile Queue (ft)	3		0	-	55	113
Storage Bay (ft)	FULL		FULL	FULL	FULL	FULL
PM Peak Hour Queues						
Scenario US Highway 421 and New River Hills/ Brookshire Road						
2022 Existing	EBLT	EBTR	WBLT	WBTR	NBLTR	SBLTR
Max Queue (ft)	112	69	-		-	74
95th Percentile Queue (ft)	3	-	0		40	143
Storage Bay (ft)	FULL	FULL	FULL		FULL	FULL
2025 Future No Build	EBLT	EBTR	WBLT	WBTR	NBLTR	SBLTR
Max Queue (ft)	161	197	72		70	162
95th Percentile Queue (ft)	5	-	0		63	190
Storage Bay (ft)	FULL	FULL	FULL		FULL	FULL
2025 Future Build	EBLT	EBTR	WBLT	WBTR	NBLTR	SBLTR
Max Queue (ft)	195	216	157	129	51	294
95th Percentile Queue (ft)	5	-	0		65	193
Storage Bay (ft)	FULL	FULL	FULL		FULL	FULL
2025 Future Build with Improvements	EBLT	EBTR	WBLT	WBTR	NBLTR	SBLTR
Max Queue (ft)	39		72		68	111
95th Percentile Queue (ft)	5		0		65	193
Storage Bay (ft)	FULL		FULL		FULL	FULL
#: 95th percentile volume exceeds capacity, queue may be longer m: volume for 95th percentile queue is metered by upstream signal						

Table 5.10 - Queue Results
AM Peak Hour Queues

Scenario	US Highway 421 and Bamboo Road						
2022 Existing	EBUT	EBT	EBR	WBL	WBT	NBL	NBR
Max Queue (ft)		154	-	193	224	175	280
95th Percentile Queue (ft)		141	130	136	263	#648	176
Storage Bay (ft)		FULL	75'	25'	FULL	75'	75'
2025 Future No Build	EBUT	EBT	EBR	WBL	WBT	NBL	NBR
Max Queue (ft)		229	175	247	399	174	386
95th Percentile Queue (ft)		140	127	140	278	#675	181
Storage Bay (ft)		FULL	75'	25'	FULL	75'	75'
2025 Future Build	EBUT	EBT	EBR	WBL	WBT	NBL	NBR
Max Queue (ft)		241	174	349	400	175	365
95th Percentile Queue (ft)		136	123	140	281	#684	181
Storage Bay (ft)		FULL	75'	25'	FULL	75'	75'
2025 Future Build with Improvements	EBUT	EBT	EBR	WBL	WBT	NBL	NBR
Max Queue (ft)		254	175	189	277	174	260
95th Percentile Queue (ft)		136	123	140	281	#684	181
Storage Bay (ft)		FULL	75'	25'	FULL	75'	75'
PM Peak Hour Queues							
Scenario	US Highway 421 and Bamboo Road						
2022 Existing	EBUT	EBT	EBR	WBUL	WBT	NBL	NBR
Max Queue (ft)	272	306	175	138	162	174	235
95th Percentile Queue (ft)	-	243	128	76	139	#402	#582
Storage Bay (ft)	FULL	FULL	75'	25'	FULL	75'	75'
2025 Future No Build	EBUT	EBT	EBR	WBUL	WBT	NBL	NBR
Max Queue (ft)	423	441	175	199	276	174	354
95th Percentile Queue (ft)	-	275	135	80	147	#423	#604
Storage Bay (ft)	FULL	FULL	75'	25'	FULL	75'	75'
2025 Future Build	EBUT	EBT	EBR	WBUL	WBT	NBL	NBR
Max Queue (ft)	422	467	175	180	198	174	363
95th Percentile Queue (ft)	-	279	137	83	149	#432	#604
Storage Bay (ft)	FULL	FULL	75'	25'	FULL	75'	75'
2025 Future Build with Improvements	EBUT	EBT	EBR	WBUL	WBT	NBL	NBR
Max Queue (ft)	340	345	175	75	140	174	271
95th Percentile Queue (ft)	-	279	137	83	149	#432	#604
Storage Bay (ft)	FULL	FULL	75'	25'	FULL	75'	75'

#: 95th percentile volume exceeds capacity, queue may be longer
m: volume for 95th percentile queue is metered by upstream signal

Table 5.11 - Queue Results
AM Peak Hour Queues

Scenario	US Highway 421 and Site Access 1		
2025 Future Build	WBLT	WBT	NBLR
Max Queue (ft)	53		53
95th Percentile Queue (ft)	3		8
Storage Bay (ft)	FULL		FULL
2025 Future Build with improvement	WBLT	WBT	NBLR
Max Queue (ft)	53		45
95th Percentile Queue (ft)	3		8
Storage Bay (ft)	FULL		FULL

PM Peak Hour Queues

Scenario	US Highway 421 and Site Access 1		
2025 Future Build	WBLT	WBT	NBLR
Max Queue (ft)	95	38	72
95th Percentile Queue (ft)	3		15
Storage Bay (ft)	FULL		FULL
2025 Future Build with improvement	WBLT	WBT	NBLR
Max Queue (ft)	27		30
95th Percentile Queue (ft)	3		15
Storage Bay (ft)	FULL		FULL

#: 95th percentile volume exceeds capacity, queue may be longer
 m: volume for 95th percentile queue is metered by upstream signal

6.0 Parking Demand

Parking Required Per Boone UDO

The Town of Boone Unified Development Ordinance (UDO), updated in 2014, provides typical requirements for parking for a number of land uses. These rates, found in Article 24, is shown in Table 6.1. The Boone UDO addresses residential land uses in terms of a minimum parking required.

Mixed-Use Multi-Family Maximum Parking Required

As shown in Table 6.1, the Boone UDO requires 1.25 space per rentable room, plus 10 per 1000 ft² of restaurant/ lounge, plus 20 per 1000 ft² per meeting/ banquet room.

Table 6.1 – Required Parking by Uses

Residential Land Uses	Minimum Parking Required
3.06 Vacation Rental	
2.02 Family Care Institutions 2.03-2.04 Halfway House 2.05 Residential Care Facility 2.06 Fraternity or Sorority Dwelling 3.02-3.03 Shelter for Homeless	1 space/4 1 space/4 beds Residential care facilities-plus one space for every two Staff members
2.07 Boarding Housing 3.04-3.05 Bed and Breakfast 3.08 Motel 3.09-3.11 Hotel	1.25 space/rentable room, plus 10 per 1000 ft ² of restaurant/lounge, plus 20 per 1000 ft ² per meeting/banquet room

Existing Parking Demand

DAVENPORT conducted a parking demand at a similar hotel in Boone, TownePlace Suites, to compare the demand to the proposed hotel. The TownePlace Suites is a 92-room hotel with 96 parking spaces. The proposed hotel will have a meeting and lobby amenities that is only reserved for use of guest. Existing parking demand was measured by collecting parking occupancy counts. These were collected on Friday and Saturday of January 28 and 29, 2023. Per TownePlace Suites by Marriott staff, peak demand typically occurs on weekends as opposed to weekdays. These count dates were considered representative of typical parking demand. On these days the hotel had 90 occupied rooms on Friday and 79 occupied rooms on Saturday. As noted in the table, there was a charter bus present that encompassed 17 of the occupied rooms.

The field-based counts involved counting the number of occupied parking spaces at 1-hour intervals from 3 pm to 9 pm on Friday and 8 am to 9 pm on Saturday.

Table 6.2 and 6.3 illustrate the number of vehicles that were present during the data collection.

Table 6.2 - Occupancy Counts										
Location	Capacity	FRIDAY								MAX
		Time of Arrival	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	
1110 Meadowview Dr (TownePlace Suites)	96	17	23	32	34	36	48	52	36	52
% Occupied		18%	24%	33%	35%	38%	50%	54%	38%	54%

*Note: One charter bus was on site during data collection that occupied 6 parking spaces.

Table 6.3 - Occupancy Counts															
Location	SATURDAY														
	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	MAX
1110 Meadowview Dr (TownePlace Suites)	14	33	42	32	22	20	21	20	27	35	38	40	47	64	64
% Occupied	15%	34%	44%	33%	23%	21%	22%	21%	28%	36%	40%	42%	49%	67%	67%

*Note: One charter bus was on site during data collection that occupied 6 parking spaces.

The results indicated that peak demand occurred at approximately 8:00 pm on Friday and 9:00 pm on Saturday. At the maximum capacity during the parking count, 67% of the spaces were occupied. The hotel had 86% of occupancy on Saturday.

Future Parking Demand

The SpringHill Suites will have 104 rooms with 108 parking spaces. Based on the similar hotel, TownePlace Suites, with the rate of 1.13 and the maximum spaces occupied at TownPlace Suites, 72 parking spaces would be needed for this hotel. In worst case scenario that the charter bus represented 17 vehicles based on the rooms booked, 92 spaces would be needed for SpringHill Suites. Therefore, the 108 parking spaces will be able to accommodate the parking demand.

7.0 Summary and Conclusion

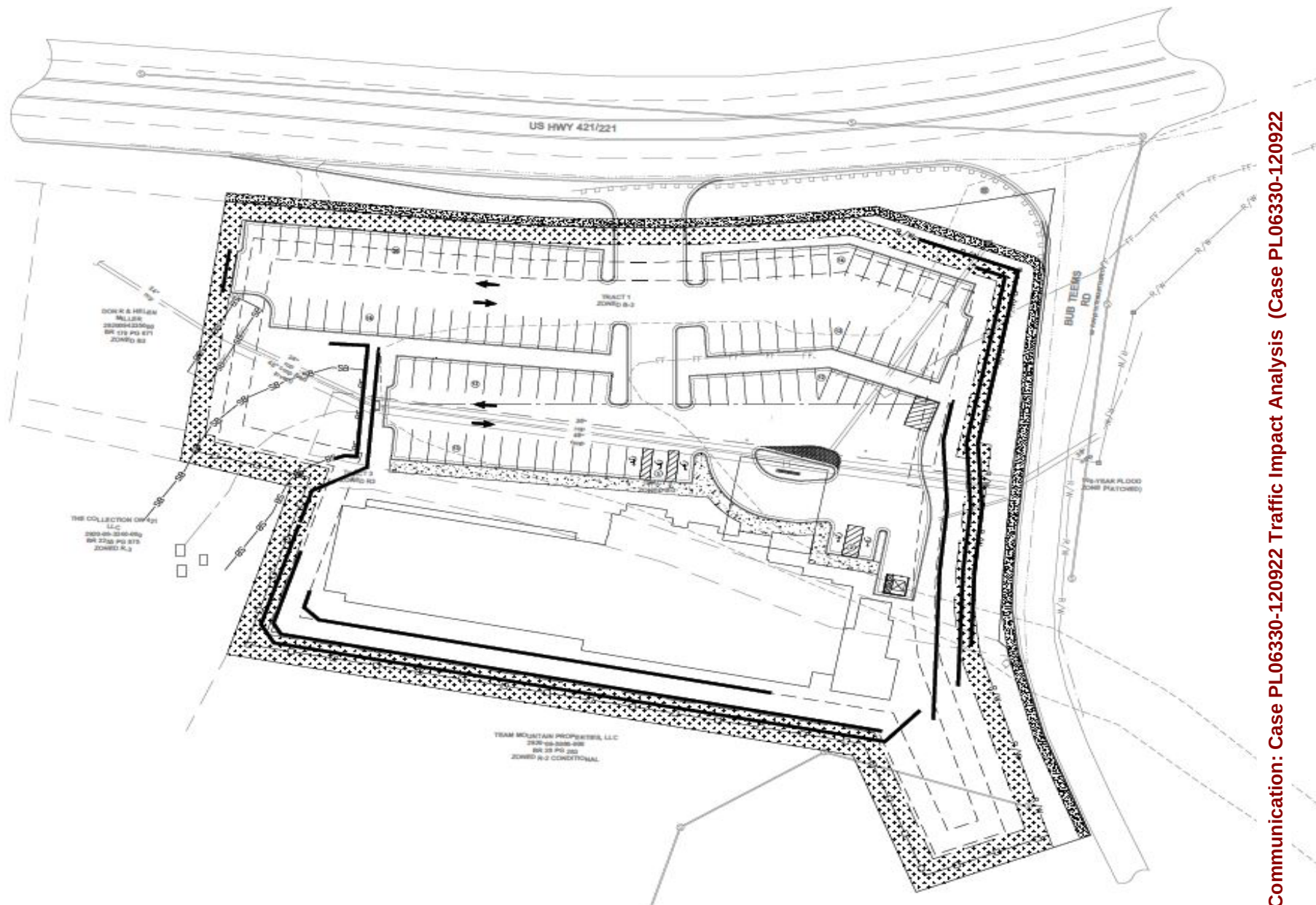
The SpringHill Suites by Marriott Development is located on the southwest corner of the US Highway 421/221 and Bub Teems Road intersection in Boone, NC. It will consist of 104-room hotel. One full movement access point is proposed on US Highway 421. The expected build-out year for this development is 2025. Information regarding the property was provided by K2 Engineering

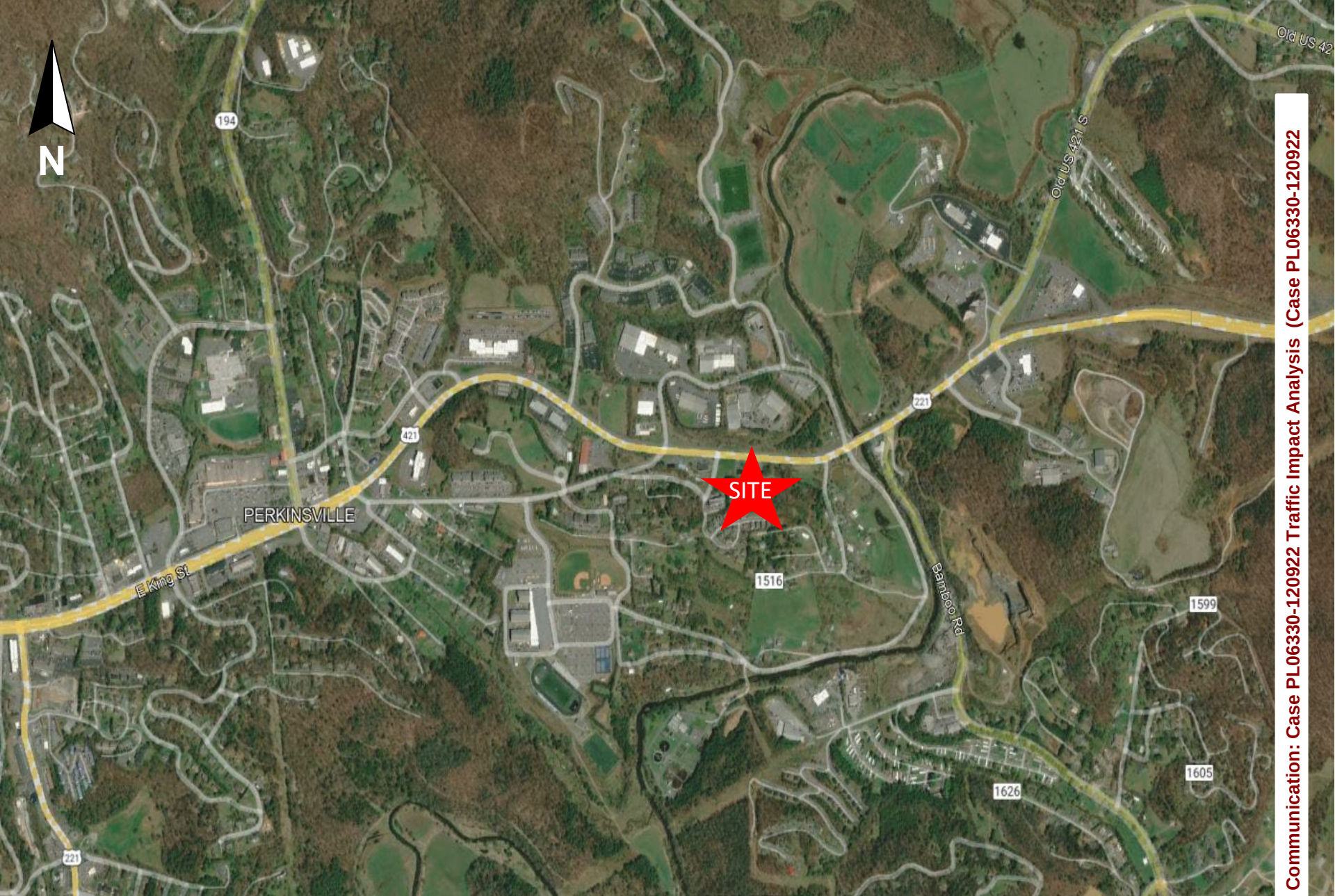
The Transportation Impact Analysis (TIA) was performed based on the scope agreed upon with Town of Boone and NCDOT. This site has a trip generation potential of 704 daily trips, 45 trips in the AM peak hour, and 49 trips in the PM peak hour.

In conclusion, this study has determined the potential traffic impacts of this development. Improvements provide an eastbound right turn lane of 100 feet of storage and appropriate taper are recommended to accommodate the impacts of new development traffic. Table 7.1 summarizes the recommended improvements, which are also reflected in Figure 9. With the recommended improvements in place, the anticipated transportation impacts of the proposed development can be accommodated.

Table 7.1 – Summary of Recommended Improvements	
INTERSECTION	RECOMMENDATIONS
US Highway 421 and Old East King Street /Industrial Park Drive	No improvements recommended
US Highway 421 and Bub Teems Road	No improvements recommended
US Highway 421 and New River Hills/ Brookshire Road	No improvements recommended.
US Highway 421 and Bamboo Road	No improvements are recommended.
US Highway 421 and Site Access 1	- Provide an eastbound right turn lane of 100 feet of storage and appropriate taper - Design site drive according to applicable NCDOT and local standards.

FIGURES



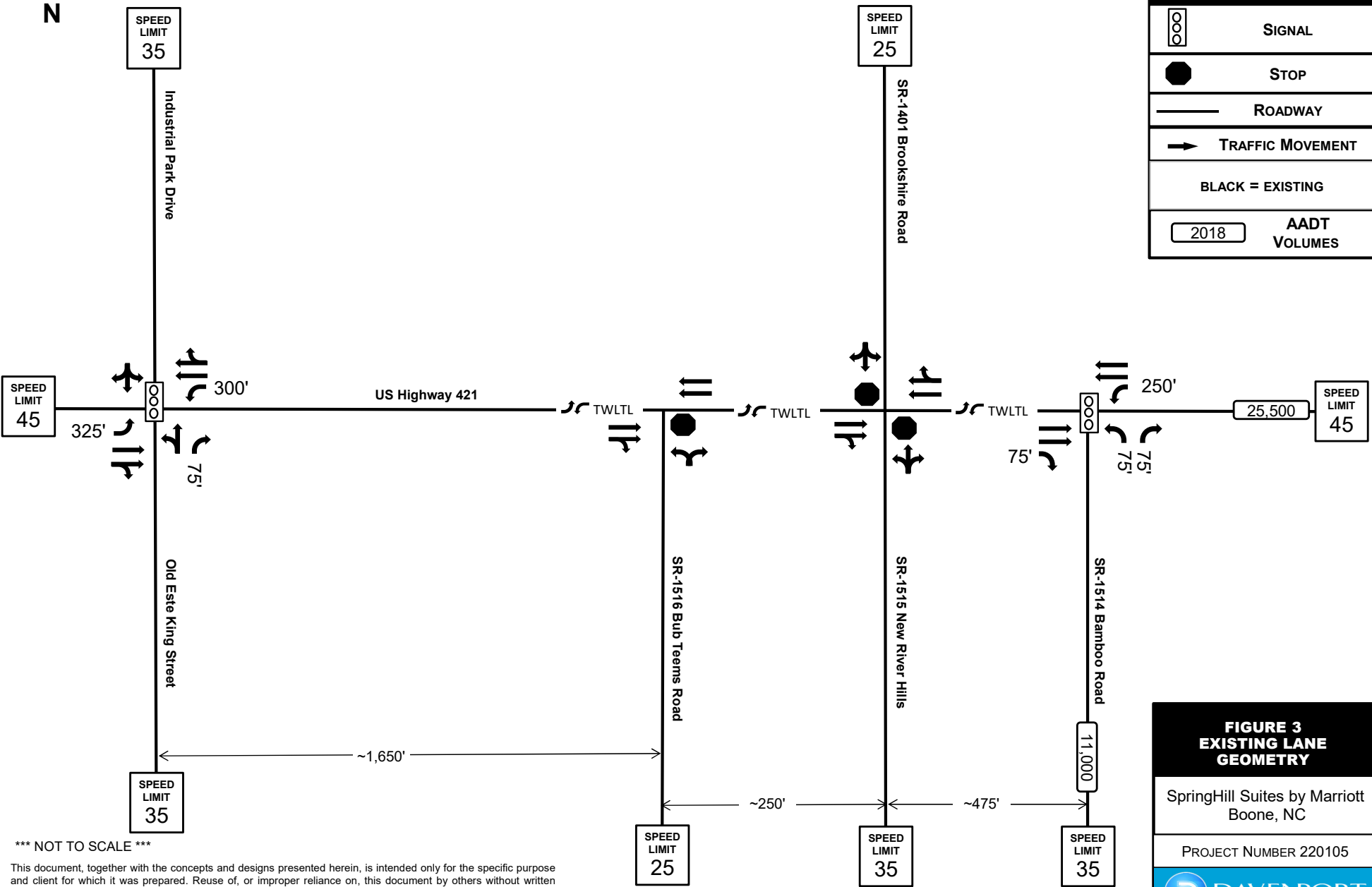


Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922





LEGEND	
	SIGNAL
	STOP
	ROADWAY
	TRAFFIC MOVEMENT
BLACK = EXISTING	
	AADT VOLUMES



**FIGURE 3
EXISTING LANE
GEOMETRY**

SpringHill Suites by Marriott
Boone, NC

PROJECT NUMBER 220105

*** NOT TO SCALE ***

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*A minimum of 4 vehicles per hour is analyzed for each movement per NCDOT Congestion Management Guidelines

LEGEND	
	SIGNAL
	STOP
	ROADWAY
	TRAFFIC MOVEMENT
BLACK = EXISTING	
AM / PM PEAKS	

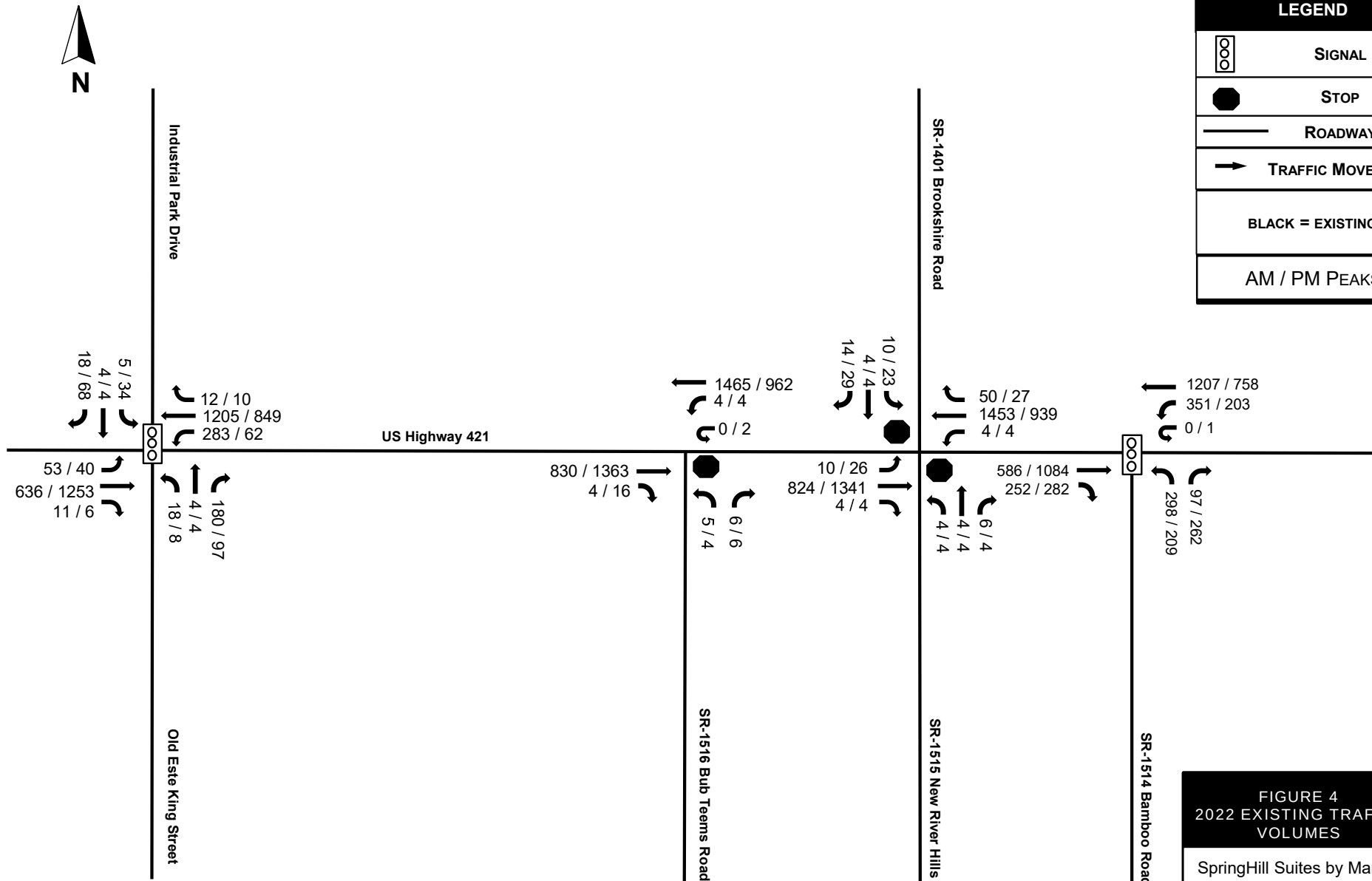


FIGURE 4
2022 EXISTING TRAFFIC VOLUMES

SpringHill Suites by Marriott
Boone, NC

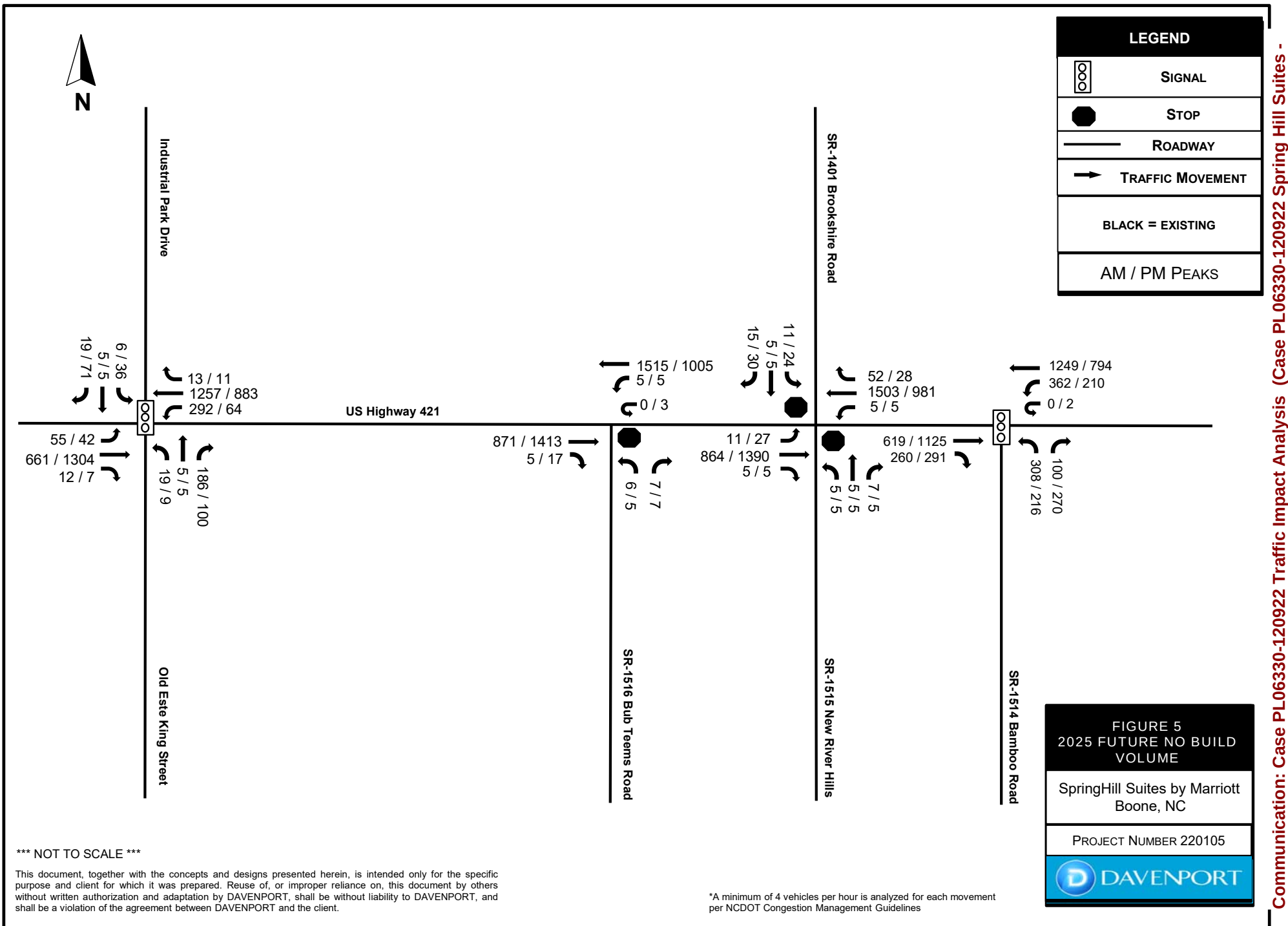
PROJECT NUMBER 220105

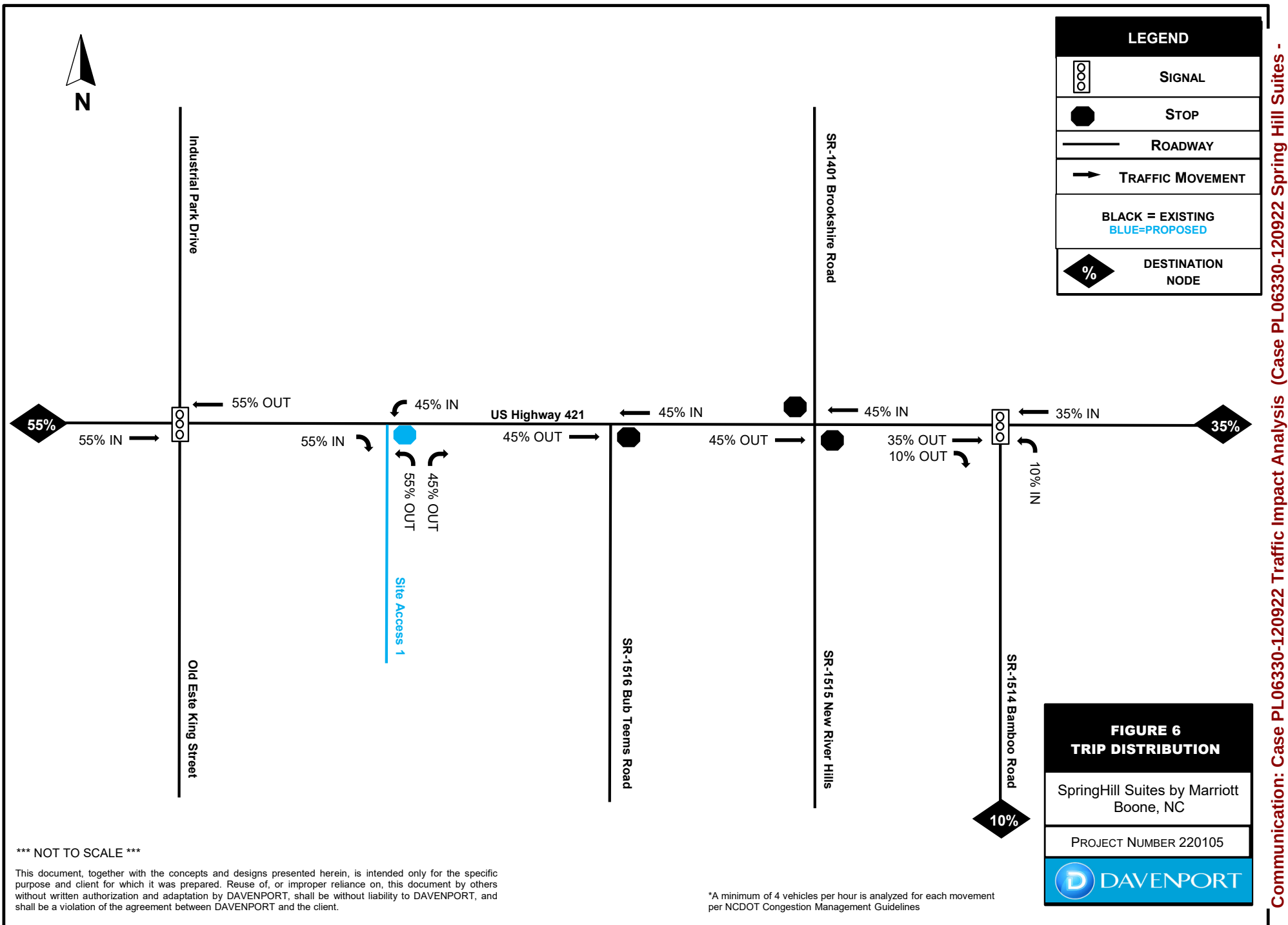


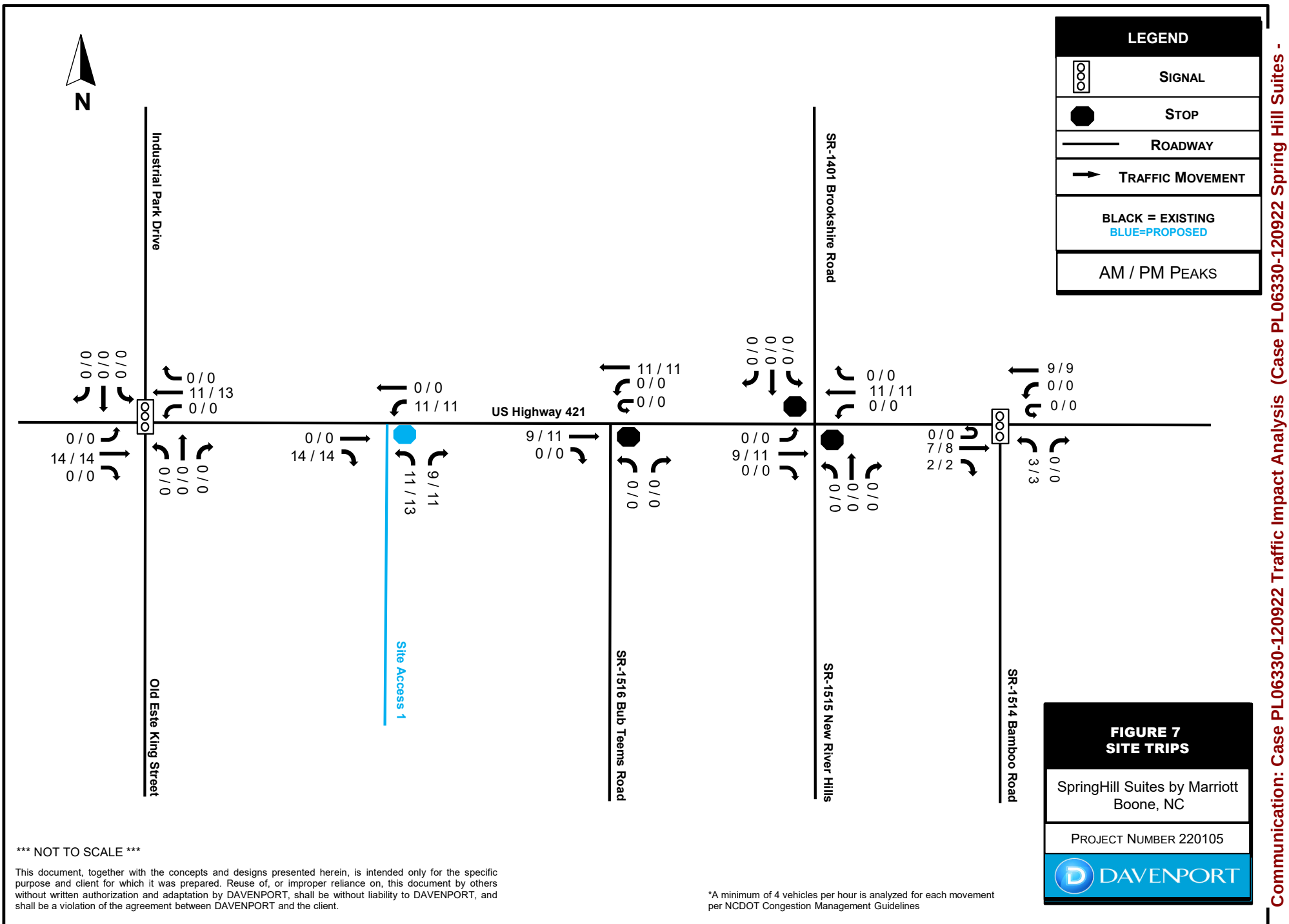
*** NOT TO SCALE ***

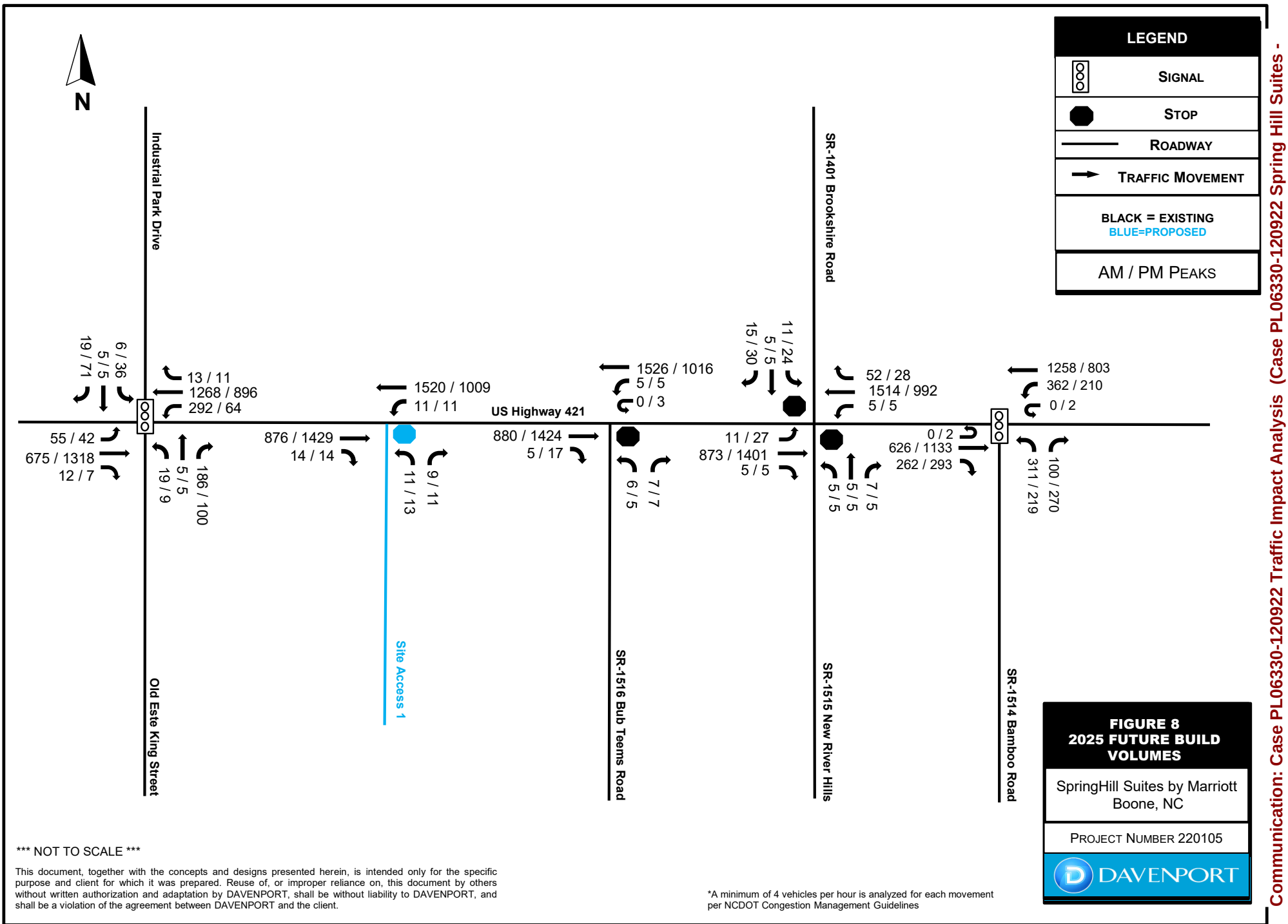
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*A minimum of 4 vehicles per hour is analyzed for each movement per NCDOT Congestion Management Guidelines



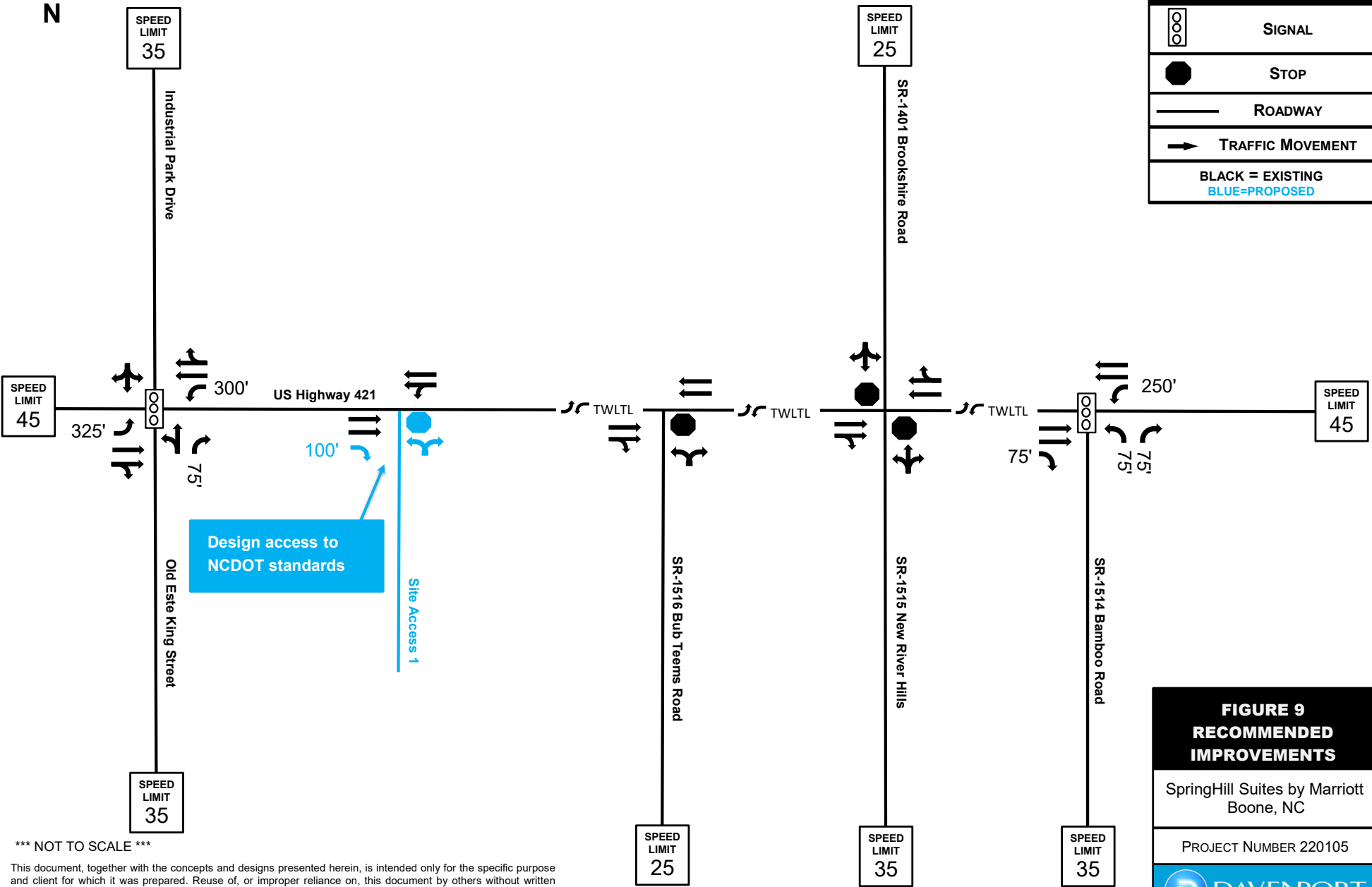








LEGEND	
	SIGNAL
	STOP
	ROADWAY
	TRAFFIC MOVEMENT
BLACK = EXISTING BLUE=PROPOSED	



*** NOT TO SCALE ***

This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse of, or improper reliance on, this document by others without written authorization and adaptation by DAVENPORT, shall be without liability to DAVENPORT, and shall be a violation of the agreement between DAVENPORT and the client.

*A minimum of 4 vehicles per hour is analyzed for each movement per NCDOT Congestion Management Guidelines

**FIGURE 9
RECOMMENDED
IMPROVEMENTS**

SpringHill Suites by Marriott
Boone, NC

PROJECT NUMBER 220105

Appendix

Approved Scoping Documents



NCDOT Traffic Impact Analysis Need Screening / Scoping Request



TIA Need
Screening



TIA
Scoping



TIA
Submittal

A Traffic Impact Analysis (TIA) may be required for developments based on the site trip generation estimates, site context, or at the discretion of the NCDOT District Engineer. The Applicant or the TIA Consultant shall submit this form along with the site plan to the District Engineer to determine the TIA need and, if a TIA is required, initiate the TIA scoping process. Without an approved scope, the TIA is incomplete and will be rejected until the study is revised to conform to NCDOT's TIA requirements.

Project Name: Springfield Suites Us 421 Development **Previous Name:** If Applicable _____
Location: Boone, NC **County:** _____ **Municipality:** _____
Project Description: 104-room hotel on the southwest corner of the US Highway 421/221 and Bub Teems Road

Project Contact: Applicant
 Company Name Shah Corporation
 Contact Person Jay Shah
 Phone Number 336-681-2553
 Email jay@shah-corp.com
 Mailing Address _____

TIA Consultant
 DAVENPORT
 Dionne Brown
 919-948-3289
 DBrown@davenportworld.com
 4600 Marriott Drive, Suite 340 | Raleigh, _____

Site Plan Prepared By: K2 Engineering
 See site plan/vicinity map requirements on page 2.
Parcel Size: 1.511 Acre(s)

Site Plan Date: 11/07/2022
Anticipated Build-Out Year: 2024

Weekday Site Trip Generation - Do NOT adjust for mode split, pass-by, internal capture, or diverted trips.

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
310	Hotel	104	Room	704	Adj. Street	25	20	45	25	24	49	ITE Equat
Total												

Refer to the current [NCDOT Congestion Management Capacity Analysis Guidelines](#) for acceptable trip calculation methods and data sources.

**Explain local or other data sources, if used: _____

- ☐ The estimated site trips meet NCDOT's TIA trip threshold of 3,000 daily trips.
- ☐ The estimated site trips meet the municipal TIA trip threshold of _____
- ☐ This project is located in a known [STIP](#) and/ or local CIP project # _____
- ☐ This project includes a rezoning request.



NCDOT Traffic Impact Analysis Need Screening / Scoping Request

TIA Need
Screening



TIA
Scoping



TIA
Submittal



- ☐ The proposed site access is located within 1,000 feet of an interchange.
- ☐ The Applicant requests for a new or modified control-of-access break.
- ☐ The Applicant requests for a new or modified median break.

Applicant's Signature

Print Name

Date

Site Plan/Vicinity Map Requirement for TIA Need Screening: While the site plan may not be finalized during the TIA scoping stage, the graphic representation of the proposed development shall provide adequate details on the development scope and context. More specifically, the site plan/map shall clearly show the location and type of each access point, spacing to adjacent and opposing driveways or intersections, internal street network, proposed buildings/parcels with their anticipated uses and sizes at full build-out and, if applicable, any nearby interstate, US, NC or Secondary Roads (SR).

Project Name: Springfield Suites Us 421 Development **Project Reference Number:** 220105

- ☐ **A TIA is Required by the Local Government.** In addition, the study area is expected to include NCDOT maintained transportation facilities.
- ☐ **A TIA is Required by NCDOT,** per the [Policy on Street and Driveway Access to North Carolina Highways](#).

If either or both of the boxes above are checked, the Applicant/TIA Consultant is hereby requested to fill out as much as possible of the following TIA scoping checklist, and return it along with the supporting documents to NCDOT prior to the scoping meeting.

- ☐ **A TIA is NOT required.** This decision is based on the development information presented above. Changes in the development plan will require re-evaluation of the TIA need, and may necessitate a TIA. The Applicant should inform the District Engineer of any significant changes in a timely fashion to avoid delays or rejections of the driveway permit / encroachment agreement applications.



NCDOT Traffic Impact Analysis Need Screening / Scoping Request



TIA Need
Screening



TIA
Scoping



TIA
Submittal

Additional Comments:

The TIA need decision is made by the NCDOT Division _____ District _____ on _____.

NCDOT District Representative's Signature

Email concurrence may be used in lieu of the signature.

Print Name



NCDOT TIA Scoping Checklist



Project Name: Springfield Suites Us 421 Development

TIA Scoping Date: 12/1/2022

☒ **TIA Need Screening Forms are Attached.** Project Reference #: 220105 Decision Date: _____

☒ **Site Plan and Access**

☒ Provide a site plan illustrating site access, internal and external roadways, buildings and land uses.

Refer to NCDOT's [Policy on Street and Driveway Access to North Carolina Highways](#) pages 14 and 15 for site plan requirements.

☒ Identify site access.

New Access	On Road	Access Type		Driveway Spacing		
	Road Name	Permitted Movements	Traffic Control	Distance (ft)	Direction	Nearest Intersection / Access
Access A	US Highway 421	Conventional Full-Mvmt	2-Way Stop	275	East	Bub Teems Road
Access B						
Access C						
Access D						
Access E						
Access F						
Access G						
Access H						
Existing Access	Existing Intersection of		Access	Proposed Interconnectivity (If Applicable)		
	Road A	Road B	Modification	Connector #	Road Connected	Adjacent Development
Access 1			Please Select	Connector 1		
Access 2				Connector 2		
Access 3				Connector 3		
Access 4				Connector 4		

☐ Additional access clarifications and provisions (e.g., proposed control-of-access or median breaks, modifications of existing access, loading/unloading area access, bike/pedestrian accommodation).

☐

Proposed K-12 School Site

- ☐ NCDOT [MSTA School Traffic Calculator](#) for Select School Type shall be used.
- ☐ Peak Hour Factors (PHFs) shall be adjusted/weighted for new school trips (0.5 PHF by default).
- ☐ Internal school circulation analysis is required, and should be submitted in advance or concurrent with the TIA submittal.
- ☐ Clarify traffic operation plans (e.g. traffic circulation pattern, pedestrian access, drop-off/pick-up zone location and configuration, queue storage area and, if applicable, staggered start times).



NCDOT TIA Scoping Checklist

TIA Need
Screening



TIA
Scoping



TIA
Submittal



☒ Trip Generation

The TIA Consultant shall prepare trip generation estimates following the current [NCDOT Congestion Management Capacity Analysis Guidelines](#), and submit the calculation sheets and supporting information to the District Engineer for approval prior to capacity analysis.

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
310	Hotel	104	Room	704	Adj. Street	25	20	45	25	24	49	ITE Equati
Unadjusted Site Trips												
Internal Capture Trips (Attach Calculation Sheets)												Please Sel
Internal Capture % of Unadjusted Site Trips				%		%			%			
LUC	Proposed Land Use	Any Internal Trips?		Pass-By % of External Trips								
310	Hotel	Yes - Adjust External Trips		%		%			%			Please Sel
				%		%			%			
				%		%			%			
				%		%			%			
				%		%			%			
Pass-By Trips (Attach Calculation Sheets)												
Adjacent Street Volumes												Please Sel
Non-Pass-By Primary Trips												
Diverted Trips, if Applicable and Justifiable												Please Sel

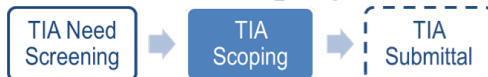
**Explain local or other data sources, if used:

☐ Existing Site Trip Information for Redevelopment Projects (Attach separate sheets as needed)

ITE LUC	Existing Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
					Please Select							Please Sel
Total Existing Site Trips												



NCDOT TIA Scoping Checklist



☒ Trip Distribution

- ☐ Trip distribution diagrams are submitted concurrently with this document (attach separate sheets).
- ☒ Trip distribution diagrams will be submitted separately, along with supporting information, to the District Engineer for review and approval prior to capacity analysis. The trip distribution shall be based on the current and anticipated traffic patterns, as well as instructions noted below.

If required by the District Engineer, the following additional diagrams shall also be submitted:

- ☐ Mixed-Use Developments (separate diagrams for residential, commercial, and office trips)
- ☐ Inter-Development Trips (if 'internal' trips cross public streets)
- ☐ Pass-By Trips
- ☐ Diverted Trips
- ☐ Each Analysis Period

☐ Mode Split

- ☐ Provide Data Source and Justification

Mode Period	Auto		
AM Peak	%	%	%
PM Peak	%	%	%
Daily	%	%	%
	%	%	%

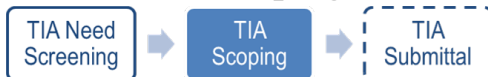
- ☐ Identify proper infrastructure and accommodation for other modes of travel.

☒ Analysis Peak Periods:

- ☒ Weekday AM Peak 7-9
- ☒ Weekday PM Peak 4-6
- ☐ Weekday Midday Peak _____
- ☐ Weekday PM School Peak _____
- ☐ Weekend _____ Peak _____
- ☐ Other _____



NCDOT TIA Scoping Checklist



☒ Study Area Intersections and Data Collection

The study area shall include the site access intersections (both new and existing) identified under “Site Plan and Access” on page 1, as well as the following external and, if applicable, internal intersections.

External Intersection	Intersection of		Traffic Control	Intersection Turning Movement Counts			Notes
	Road A	Road B		New / Existing	Date of Counts	Growth Adjustment	
#1	US Highway 421	Old East King	Signal	Require New Counts			
#2	US Highway 421	Bub Teems Road	2-Way Stop	Require New Counts			
#3	US Highway 421	Brookshire	2-Way Stop	Require New Counts			
#4	US Highway 421	Bamboo Road	Signal	Require New Counts			
#5	US Highway 421	Site Access 1	2-Way Stop	Require New Counts			
#6							
#7							
#8							
#9							
#10							
#11							
#12							

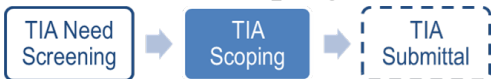
Internal Intersection	Intersection of		Access Type		Intersection Spacing		
	Road A	Road B	Traffic Control	Permitted Movements	Distance (ft)	Direction	Nearest Intersec
#101			Please Select	Please Select		Please Select	
#102							
#103							
#104							
#105							

The following data will be collected:

- ☒ New traffic turning movement counts in ☒ 15-min intervals ☐ 5-min intervals (near schools)
 Unless otherwise noted above, new traffic counts shall be collected at the existing study intersections during the analysis periods. Weekday counts shall avoid Mondays, Fridays, holidays, school breaks, road closures, and major weather events.
- ☐ To account for the impact of existing and/or proposed school traffic, PHFs will be adjusted for:
 intersections numbered: _____
 and access points numbered: _____
- ☐ Traffic Forecast Data for TIP: _____
- ☒ Roadway/Intersection Configuration & Traffic Control
- ☒ Traffic Signal Phasing & Timing Data
- ☐ Crash Data: _____ Period: _____
- ☐ Other: _____



NCDOT TIA Scoping Checklist



☒ Future Year Conditions

☒ Project Build-Out Year: 2024

☒ Future Analysis Year(s): 2024

☐ Identify below any funded/committed future transportation improvements, as well as any approved but incomplete developments near the site.

Funded STIP / Local CIP Project	Project Description		Year Complete
Nearby Approved Development	Location	Future Land Use (exclude any completed phases)	Committed Improvements

☐ Annual Growth Factor: 1 %

Justification/Data Source:

☐ Local Comprehensive Transportation Plan Compliance

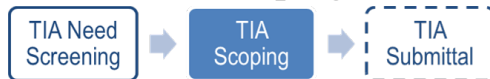
☐ Identify Applicable Local Transportation Planning Documents

☐ Identify Applicable Roadways inside the Study Area

Road Name	Classification	Speed Limit	Proposed Cross-Section	Proposed Right-of-Way	Compliance Requirements	Affect Stuc Intersection



NCDOT TIA Scoping Checklist



☒ Study Method

The traffic analysis shall follow the current [NCDOT Congestion Management Capacity Analysis Guidelines](#), [Policy on Street and Driveway Access to North Carolina Highways](#), and use the current approved version of analysis software (e.g. Synchro/SimTraffic, HCS, Sidra Intersection, TransModeler).

The study shall include the following analysis scenarios for each analysis period.

1. Existing Conditions
2. Future No-Build Conditions (existing + background growth + approved developments + committed or funded improvements)
3. Future Build Conditions (future no-build + site trips)
4. Future Build with Improvements Conditions (future build traffic with improvements to mitigate the proposed development's impacts) and, if applicable:
- ☐ 5. TIP Design Year Analysis _____
- ☐ 6. Alternative Access Scenario (without proposed control-of-access or median break / modification)

The following additional analysis/outputs should be provided as warranted:

- ☐ Signal Warrant Analysis for accesses/intersections _____
- ☐ Multi-Modal Level of Service Analysis
- ☐ School Loading Zone Traffic Simulation
- ☐ Phasing Analysis (scope separately as needed)
- ☐ Safety/Crash Analysis
- ☐ Control-of-Access Modification Justification
- ☐ Median Break / Modification Justification
- ☐ Other _____

☒ Submittals

In addition to the hardcopies required below, the TIA Consultant shall provide the District Engineer and, if required, the local government an electronic copy of the study documents, including the latest site plan, figures and appendices, in searchable PDF files and the original traffic analysis files (e.g., Synchro, HCS).

To expedite review, the NCDOT electronic submittals shall also be delivered concurrently to:

- ☐ Div. Traffic Engr ☐ Regional Traffic Engr ☐ Congestion Management ☐ Other _____

Submittals	NCDOT		Local Government	
	Electronic	Hardcopy	Electronic	Hardcopy
Trip Generation & Distribution	Required		Please Select	
Draft TIA Report	Required			
Final Sealed TIA Report	Required			

- ☐ **Additional Comments** (municipal TIA requirements, approved variations from NCDOT guidelines)



NCDOT TIA Submittal Checklist



Submittal: Trip Generation & Distribution Document Date: _____
Project Name: Springfield Suites Us 421 Previous Name: If Applicable _____
NCDOT Division: 11 District: _____ County: _____ Municipality: _____
TIA Consultant: Davenport Submitted By: Dionne Brown
Phone Number: (919) 948-3289 Email: Dbrown@Davenportworld.Com
TIA Scoping Checklist Approval Date: _____ Unadjusted Daily Site Trips: 704

- ☒ The approved TIA Scoping Checklist is included in this submittal.
- ☒ LOS D or better is expected at all study intersections after proposed mitigations.
- ☒ The study report is sealed by a NC Professional Engineer with expertise in traffic engineering.
- ☒ This study has identified all known deficiencies with and without the proposed development.
- ☒ This study has identified mitigation measures to adequately accommodate the site trips.

Explain here if any of the boxes above are unchecked:

The undersigned affirms that, except for the deviations noted below, the TIA submittal conforms to the current [NCDOT Congestion Management Capacity Analysis Guidelines](#), [Policy on Street and Driveway Access to North Carolina Highways](#), and the TIA Scoping Checklist approved by the NCDOT District Office. The undersigned also acknowledges that the TIA will be rejected if the deviations and justifications are not properly documented and approved by NCDOT.

Deviations and Justifications (e.g., changes in site plan, development schedule, site trip and off-site trip estimates, study area, data collection, analysis period and method. Attached separate sheets if needed.)



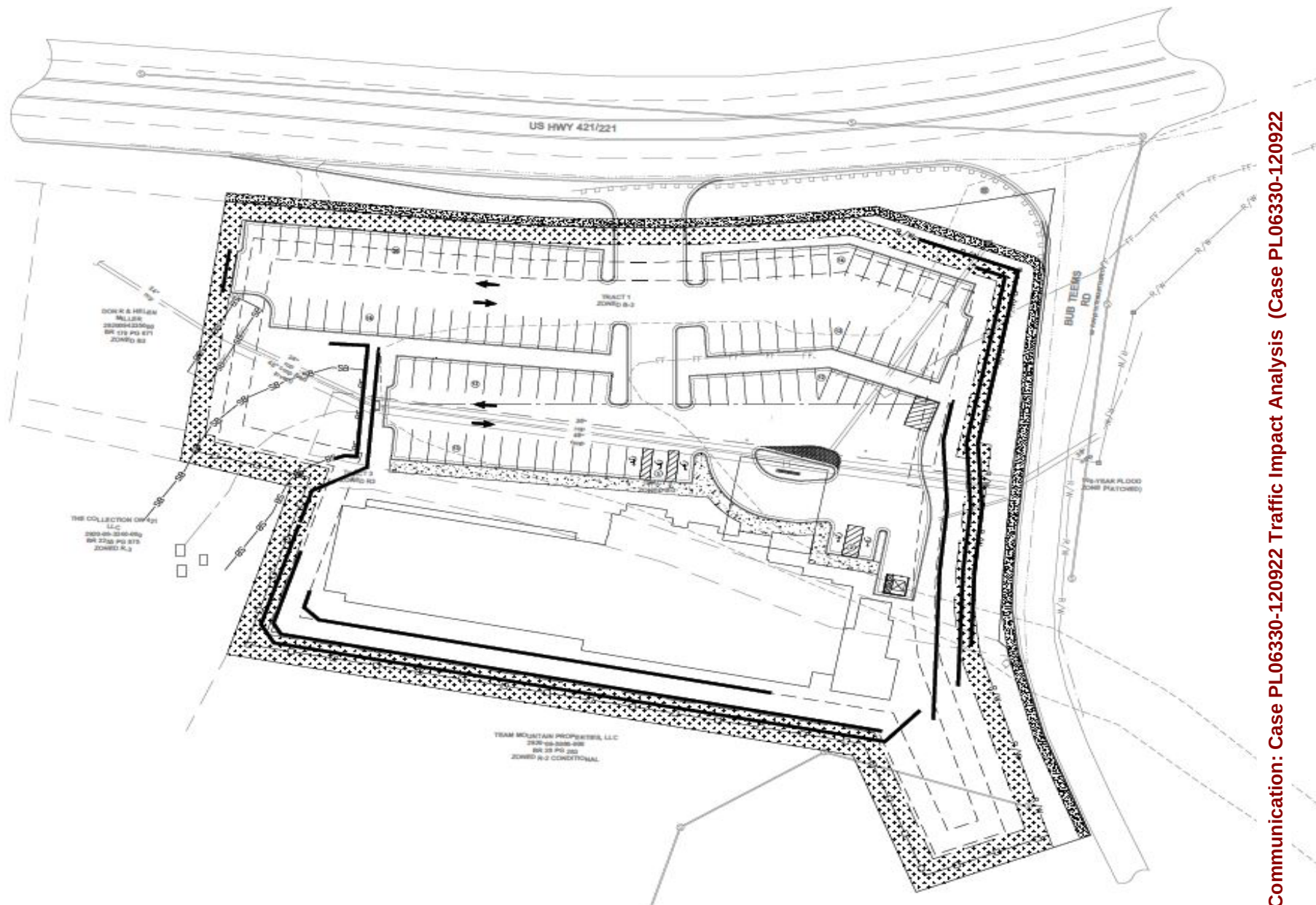
NCDOT TIA Submittal Checklist

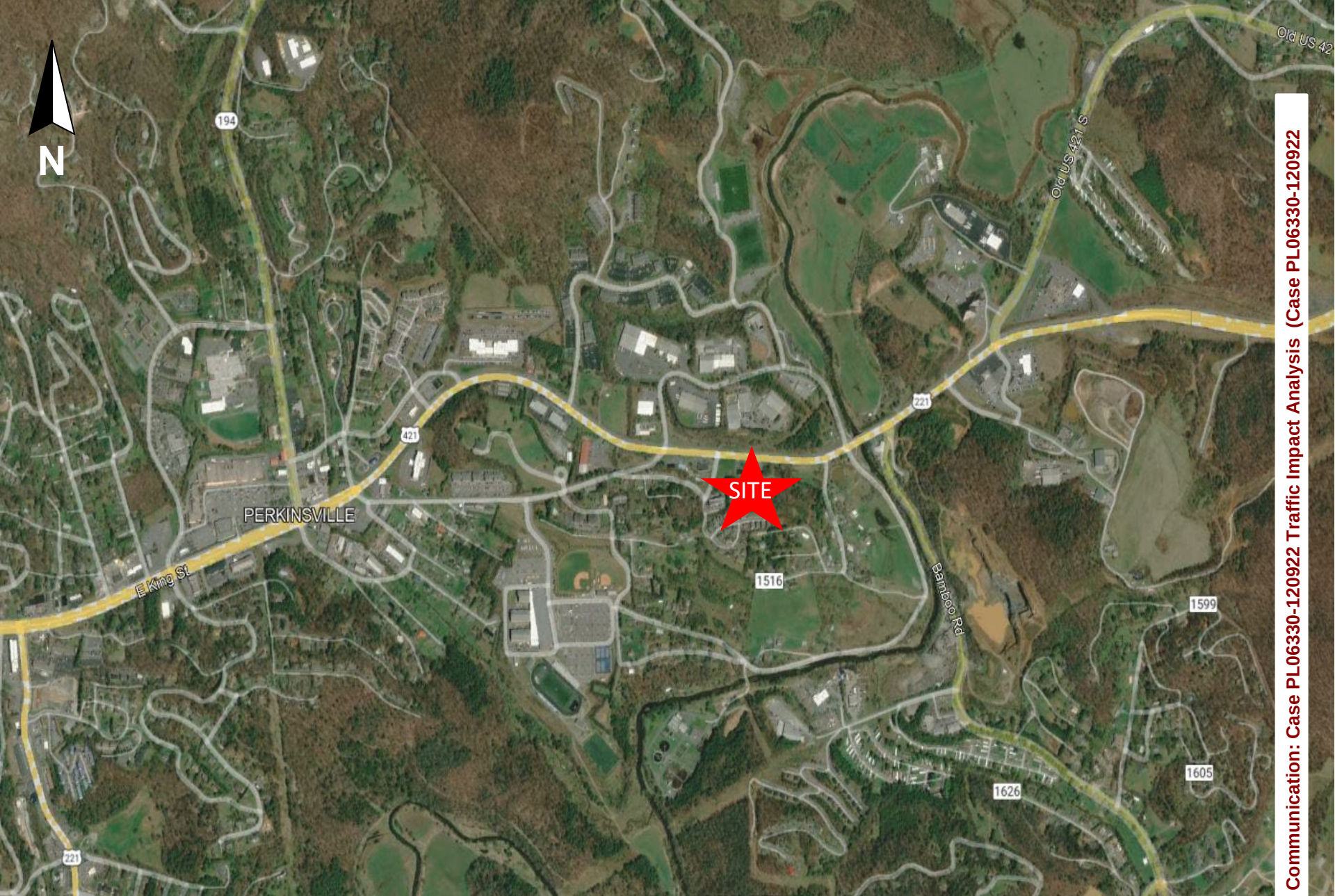


TIA Consultant's Signature
(Professional Engineer of TIA Record)

Dionne Brown
Print Name

Date

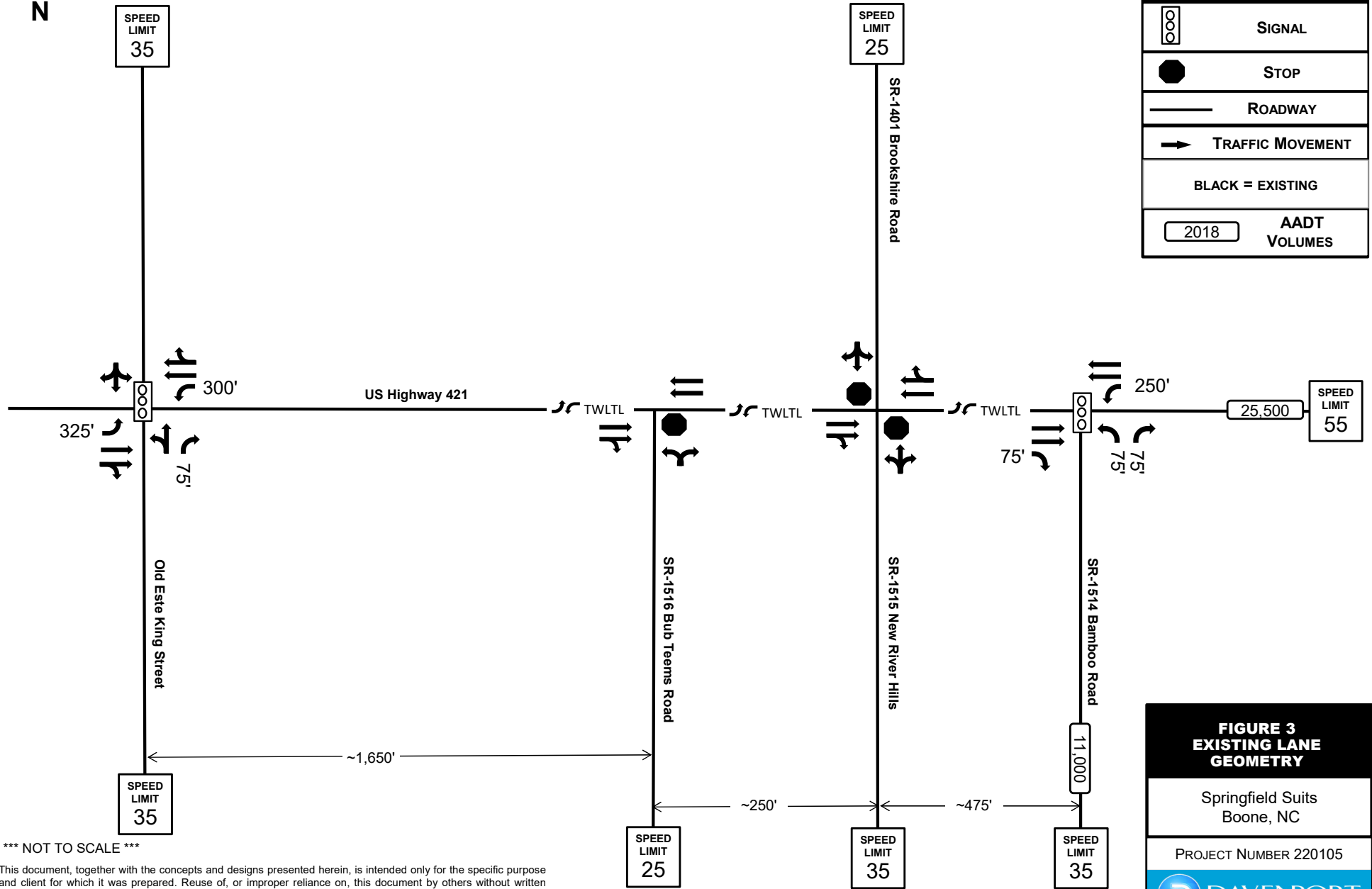




Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922



Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922



*** NOT TO SCALE ***

This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse of, or improper reliance on, this document by others without written authorization and adaptation by DAVENPORT, shall be without liability to DAVENPORT, and shall be a violation of the agreement between DAVENPORT and the client.

*A minimum of 4 vehicles per hour is analyzed for each movement per NCDOT Congestion Management Guidelines

Query

Filter

DATA SOURCE:

Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:

310



LAND USE GROUP:

(300-399) Lodging

LAND USE:

310 - Hotel

LAND USE SUBCATEGORY:

All Sites

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Rooms

TIME PERIOD:

Weekday

TRIP TYPE:

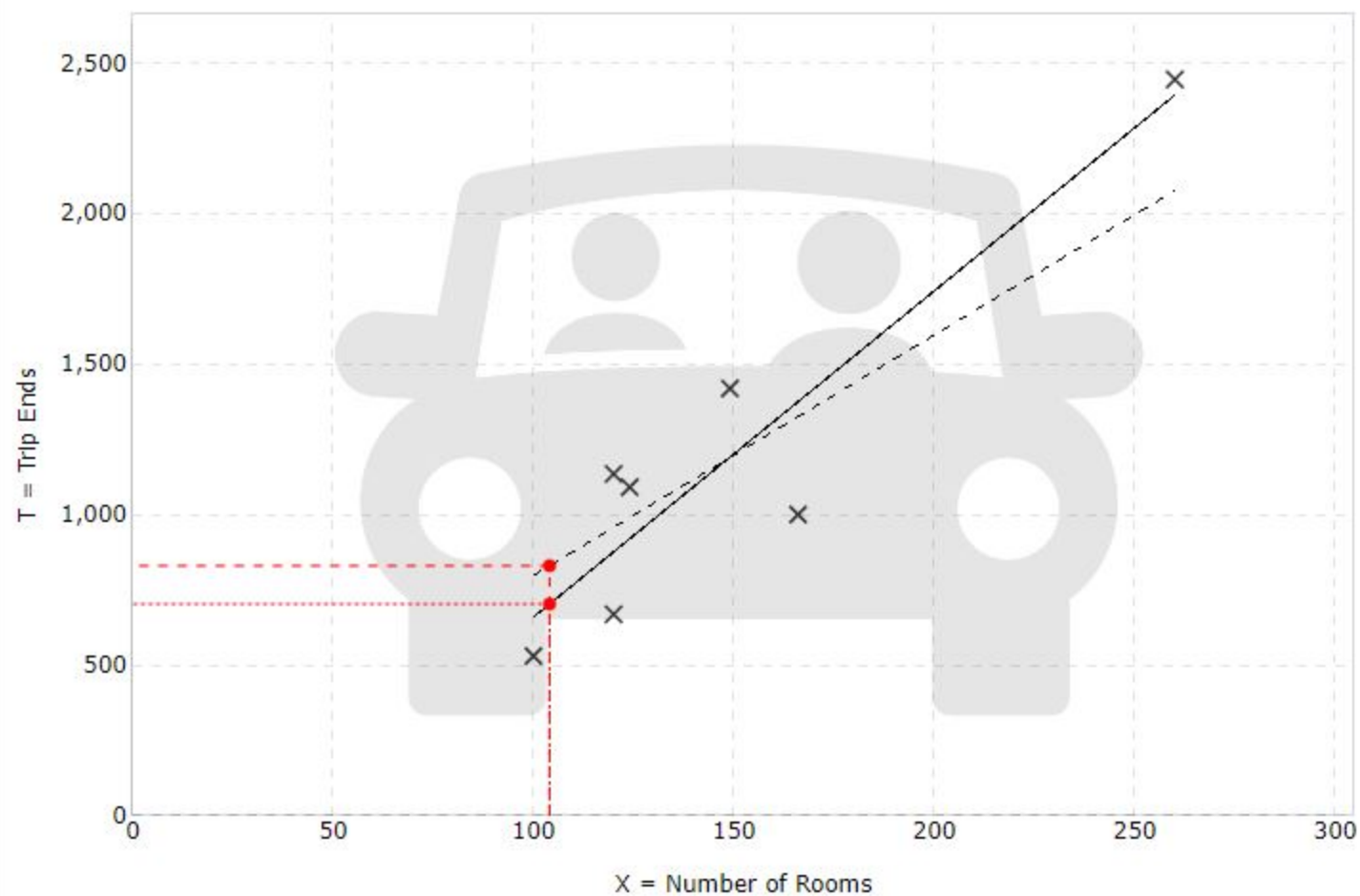
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

104

Calculate

Data Plot and Equation



Reset Zoom

Restore

X Study Site

— Fitted Curve

- - - Average Rate

DATA STATISTICS

Land Use:

Hotel (310) [Click for Description and Data Plot](#)

Independent Variable:

Rooms

Time Period:

Weekday

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

7

Avg. Num. of Rooms:

148

Average Rate:

7.99

Range of Rates:

5.31 - 9.53

Standard Deviation:

1.92

Fitted Curve Equation:

 $T = 10.84(X) - 423.51$ R^2 :

0.85

Directional Distribution:

50% entering, 50% exiting

Calculated Trip Ends:

Average Rate: 831 (Total), 415 (Entry), 416 (Exit)

Fitted Curve: 704 (Total), 352 (Entry), 352 (Exit)

Query

Filter

DATA SOURCE:

Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:

310



LAND USE GROUP:

(300-399) Lodging

LAND USE :

310 - Hotel

LAND USE SUBCATEGORY:

All Sites

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Rooms

TIME PERIOD:

Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:

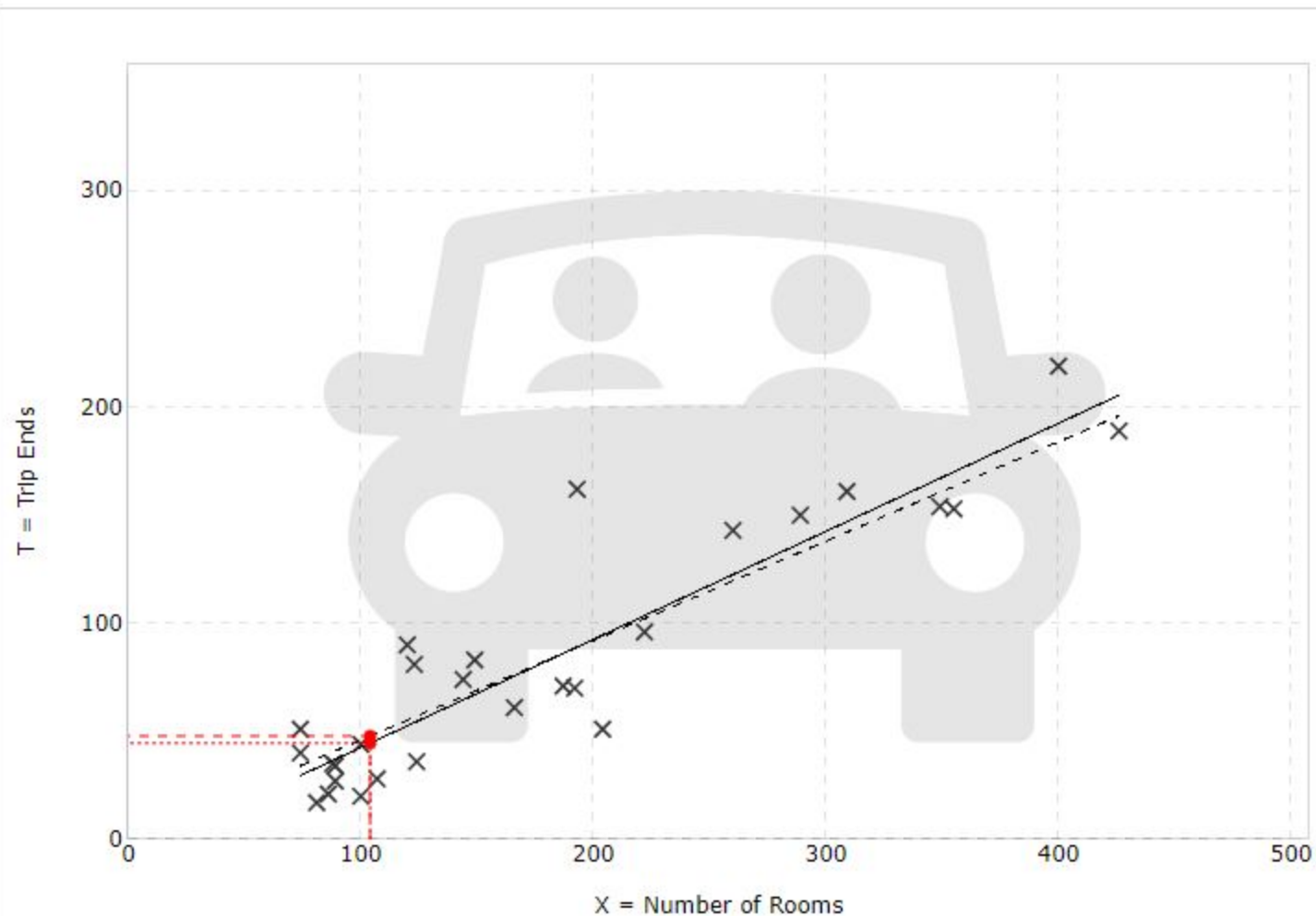
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

104

Calculate

Data Plot and Equation



Reset Zoom

Restore

X Study Site

— Fitted Curve

- - - Average Rate

DATA STATISTICS

Land Use:

Hotel (310) [Click for Description and Data Plots](#)

Independent Variable:

Rooms

Time Period:

Weekday

Peak Hour of Adjacent Street Traffic

One Hour Between 7 and 9 a.m.

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

28

Avg. Num. of Rooms:

182

Average Rate:

0.46

Range of Rates:

0.20 - 0.84

Standard Deviation:

0.14

Fitted Curve Equation:

 $T = 0.50(X) - 7.45$ R^2 :

0.84

Directional Distribution:

56% entering, 44% exiting

Calculated Trip Ends:

Average Rate: 48 (Total), 27 (Entry), 21 (Exit)

Fitted Curve: 45 (Total), 25 (Entry), 20 (Exit)

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922)

Query

Filter

DATA SOURCE:

Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:

310



LAND USE GROUP:

(300-399) Lodging

LAND USE :

310 - Hotel

LAND USE SUBCATEGORY:

All Sites

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Rooms

TIME PERIOD:

Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:

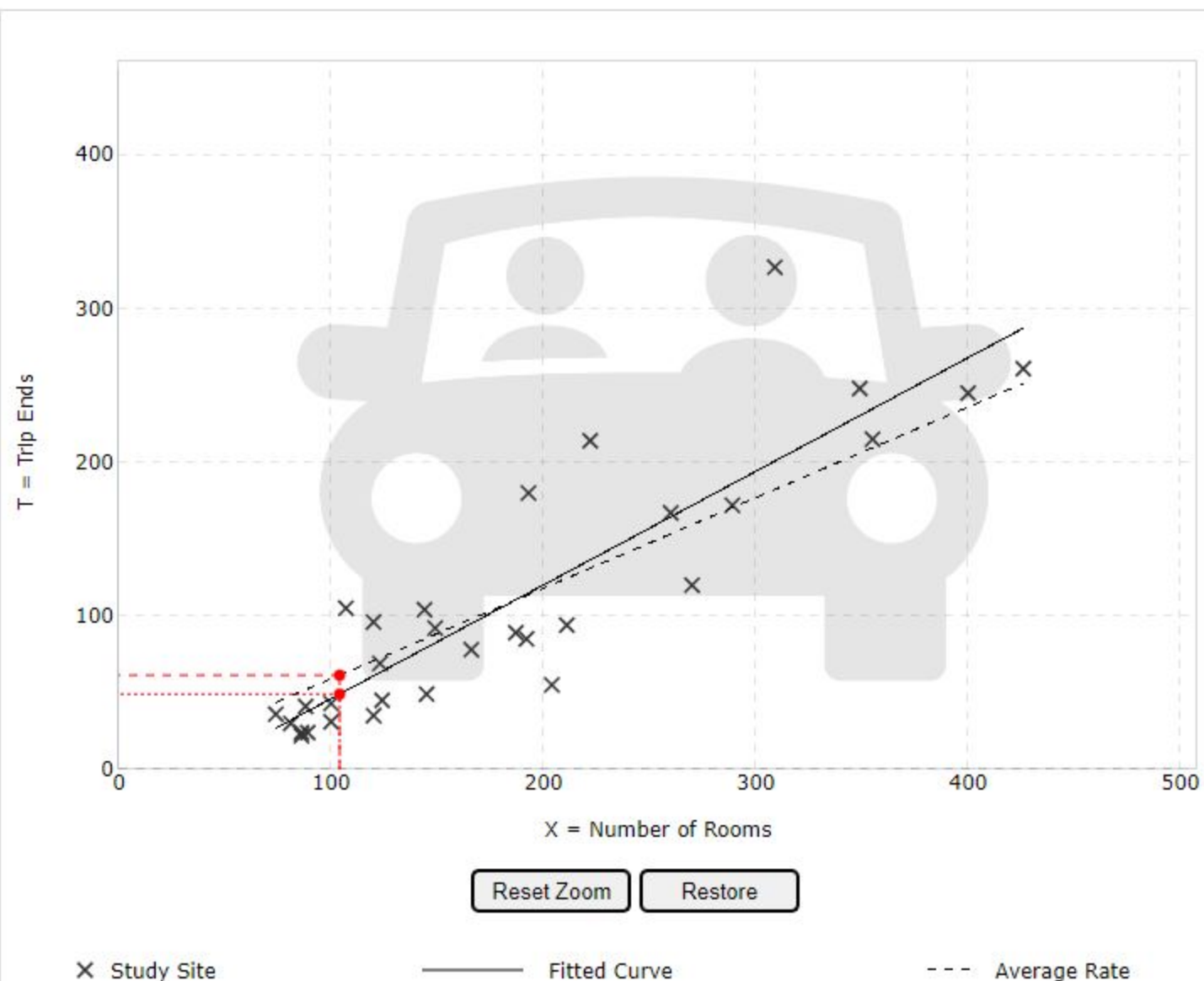
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

104

Calculate

Data Plot and Equation



DATA STATISTICS

Land Use:

Hotel (310) [Click for Description and Data Plot](#)

Independent Variable:

Rooms

Time Period:

Weekday

Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

31

Avg. Num. of Rooms:

186

Average Rate:

0.59

Range of Rates:

0.26 - 1.06

Standard Deviation:

0.22

Fitted Curve Equation:

 $T = 0.74(X) - 27.89$ R^2 :

0.78

Directional Distribution:

51% entering, 49% exiting

Calculated Trip Ends:

Average Rate: 61 (Total), 31 (Enter), 30 (Exit)

Fitted Curve: 49 (Total), 25 (Enter), 24 (Exit)

Packet Pg. 101

Capacity Analysis Synchro Worksheets

Existing Conditions

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	636	11	283	1205	12	18	4	180	5	4	18
Future Volume (vph)	53	636	11	283	1205	12	18	4	180	5	4	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	300		0	0		75	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.999				0.850		0.910	
Flt Protected	0.950			0.950				0.960			0.990	
Satd. Flow (prot)	1770	3529	0	1770	3536	0	0	1788	1583	0	1678	0
Flt Permitted	0.179			0.360				0.851			0.924	
Satd. Flow (perm)	333	3529	0	671	3536	0	0	1585	1583	0	1566	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1507			1666			1630			1251	
Travel Time (s)		22.8			25.2			31.8			24.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	59	707	12	314	1339	13	20	4	200	6	4	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	719	0	314	1352	0	0	24	200	0	30	0
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	6			2			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	13.7	18.7		13.3	18.7		13.7	13.7	13.3	13.2	13.2	
Total Split (s)	15.0	120.0		15.0	120.0		30.0	30.0	15.0	30.0	30.0	
Total Split (%)	9.1%	72.7%		9.1%	72.7%		18.2%	18.2%	9.1%	18.2%	18.2%	
Maximum Green (s)	8.3	113.3		8.7	113.3		23.3	23.3	8.7	23.8	23.8	
Yellow Time (s)	3.0	4.6		3.0	4.6		4.6	4.6	3.0	3.7	3.7	
All-Red Time (s)	3.7	2.1		3.3	2.1		2.1	2.1	3.3	2.5	2.5	
Lost Time Adjust (s)	-1.7	-1.7		-1.3	-1.7			-1.7	-1.3		-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	0.2	0.2	0.2	0.2	
Time Before Reduce (s)	0.0	20.0		0.0	20.0		0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	
Act Effect Green (s)	144.1	125.5		143.1	138.1			9.7	29.5		9.6	
Actuated g/C Ratio	0.87	0.76		0.87	0.84			0.06	0.18		0.06	
v/c Ratio	0.16	0.27		0.45	0.46			0.26	0.71		0.33	
Control Delay	2.3	6.7		3.2	4.7			80.8	76.7		84.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	2.3	6.7		3.2	4.7			80.8	76.7		84.2	

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 Existing AM
DAVENPORT

Synchro 11 Report
Page 1

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A		A	A			F	E		F	
Approach Delay		6.4			4.4			77.2			84.2	
Approach LOS		A			A			E			F	
Queue Length 50th (ft)	5	114		36	143			25	204		32	
Queue Length 95th (ft)	13	164		m45	195			59	285		69	
Internal Link Dist (ft)		1427			1586			1550			1171	
Turn Bay Length (ft)	325			300					75			
Base Capacity (vph)	380	2684		698	2959			240	282		237	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.16	0.27		0.45	0.46			0.10	0.71		0.13	

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 14 (8%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 11.9

Intersection LOS: B

Intersection Capacity Utilization 58.1%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 100: Old Este King Street /Industrial Park Drive & US Highway 421

		
Ø1	Ø2 (R)	Ø4
15 s	120 s	30 s
		
Ø5	Ø6 (R)	Ø8
15 s	120 s	30 s

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	830	4	4	1465	5	6
Future Vol, veh/h	830	4	4	1465	5	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	922	4	4	1628	6	7

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	926
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	734
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	734
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	302	-	-	734	-
HCM Lane V/C Ratio	0.04	-	-	0.006	-
HCM Control Delay (s)	17.4	-	-	9.9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↔			↔	
Traffic Vol, veh/h	10	824	4	4	1453	50	4	4	6	10	4	14
Future Vol, veh/h	10	824	4	4	1453	50	4	4	6	10	4	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	916	4	4	1614	56	4	4	7	11	4	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1670	0	0	920	0	0	1757	2618	460	2132	2592	835
Stage 1	-	-	-	-	-	-	940	940	-	1650	1650	-
Stage 2	-	-	-	-	-	-	817	1678	-	482	942	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	381	-	-	738	-	-	54	24	548	28	25	311
Stage 1	-	-	-	-	-	-	283	340	-	103	155	-
Stage 2	-	-	-	-	-	-	337	150	-	534	340	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	381	-	-	738	-	-	39	21	548	21	22	311
Mov Cap-2 Maneuver	-	-	-	-	-	-	39	21	-	21	22	-
Stage 1	-	-	-	-	-	-	266	320	-	97	142	-
Stage 2	-	-	-	-	-	-	285	138	-	489	320	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	119	229.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	46	381	-	-	738	-	-	40
HCM Lane V/C Ratio	0.338	0.029	-	-	0.006	-	-	0.778
HCM Control Delay (s)	119	14.7	-	-	9.9	-	-	229.4
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0	-	-	2.9

Lanes, Volumes, Timings
400: SR-1514 Bamboo Road & US Highway 421

02/07/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	588	252	351	1207	298	97
Future Volume (vph)	588	252	351	1207	298	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		75	250		75	75
Storage Lanes		1	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.357		0.950	
Satd. Flow (perm)	3539	1583	665	3539	1770	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	35	
Link Distance (ft)	485			1260	1217	
Travel Time (s)	7.3			19.1	23.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	653	280	390	1341	331	108
Shared Lane Traffic (%)						
Lane Group Flow (vph)	653	280	390	1341	331	108
Turn Type	NA	Perm	D.P+P	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	2			8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	12.0	12.0	7.0	12.0	7.0	7.0
Minimum Split (s)	18.8	18.8	12.7	18.8	11.9	11.9
Total Split (s)	120.0	120.0	15.0	120.0	30.0	30.0
Total Split (%)	72.7%	72.7%	9.1%	72.7%	18.2%	18.2%
Maximum Green (s)	113.2	113.2	9.3	113.2	25.1	25.1
Yellow Time (s)	5.4	5.4	3.3	5.4	3.0	3.0
All-Red Time (s)	1.4	1.4	2.4	1.4	1.9	1.9
Lost Time Adjust (s)	-1.8	-1.8	-0.7	-1.8	0.1	0.1
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	1.0	6.0	1.0	1.0
Minimum Gap (s)	4.5	4.5	0.2	3.0	0.2	0.2
Time Before Reduce (s)	20.0	20.0	0.0	20.0	0.0	0.0
Time To Reduce (s)	40.0	40.0	0.0	40.0	0.0	0.0
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effect Green (s)	96.8	96.8	111.2	116.2	38.8	38.8
Actuated g/C Ratio	0.59	0.59	0.67	0.70	0.24	0.24
v/c Ratio	0.31	0.30	0.72	0.54	0.80	0.29
Control Delay	14.3	14.1	17.5	12.3	73.2	58.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	14.1	17.5	12.3	73.2	58.9

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 Existing AM
DAVENPORT

Synchro 11 Report
Page 7

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings
400: SR-1514 Bamboo Road & US Highway 421

02/07/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
LOS	B	B	B	B	E	E
Approach Delay	14.2			13.5	69.7	
Approach LOS	B			B	E	
Queue Length 50th (ft)	153	125	159	362	331	94
Queue Length 95th (ft)	141	130	136	263	#648	176
Internal Link Dist (ft)	405			1180	1137	
Turn Bay Length (ft)		75	250		75	75
Base Capacity (vph)	2466	1103	545	2788	415	371
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.25	0.72	0.48	0.80	0.29

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 21.6

Intersection LOS: C

Intersection Capacity Utilization 64.7%

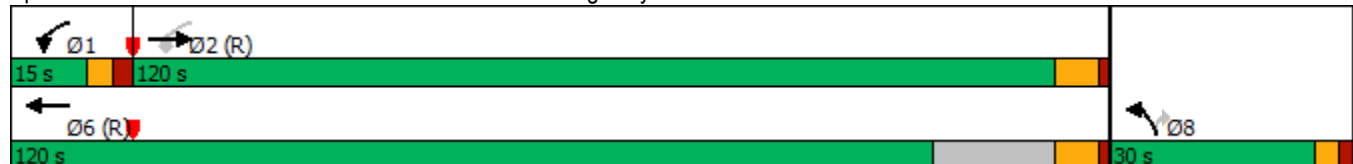
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 400: SR-1514 Bamboo Road & US Highway 421



Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	1253	6	62	849	10	8	4	97	34	4	68
Future Volume (vph)	40	1253	6	62	849	10	8	4	97	34	4	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	300		0	0		75	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.998				0.850		0.913	
Flt Protected	0.950			0.950				0.967			0.984	
Satd. Flow (prot)	1770	3536	0	1770	3532	0	0	1801	1583	0	1673	0
Flt Permitted	0.274			0.155				0.754			0.888	
Satd. Flow (perm)	510	3536	0	289	3532	0	0	1405	1583	0	1510	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1507			1666			1630			1251	
Travel Time (s)		22.8			25.2			31.8			24.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	1392	7	69	943	11	9	4	108	38	4	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	1399	0	69	954	0	0	13	108	0	118	0
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	6			2			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	13.7	18.7		13.3	18.7		13.7	13.7	13.3	13.2	13.2	
Total Split (s)	15.0	120.0		15.0	120.0		30.0	30.0	15.0	30.0	30.0	
Total Split (%)	9.1%	72.7%		9.1%	72.7%		18.2%	18.2%	9.1%	18.2%	18.2%	
Maximum Green (s)	8.3	113.3		8.7	113.3		23.3	23.3	8.7	23.8	23.8	
Yellow Time (s)	3.0	4.6		3.0	4.6		4.6	4.6	3.0	3.7	3.7	
All-Red Time (s)	3.7	2.1		3.3	2.1		2.1	2.1	3.3	2.5	2.5	
Lost Time Adjust (s)	-1.7	-1.7		-1.3	-1.7			-1.7	-1.3		-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	0.2	0.2	0.2	0.2	
Time Before Reduce (s)	0.0	20.0		0.0	20.0		0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	
Act Effect Green (s)	132.7	123.4		131.7	125.8			18.3	31.6		18.3	
Actuated g/C Ratio	0.80	0.75		0.80	0.76			0.11	0.19		0.11	
v/c Ratio	0.09	0.53		0.23	0.35			0.08	0.36		0.71	
Control Delay	3.6	10.0		4.2	5.8			63.9	60.2		92.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	3.6	10.0		4.2	5.8			63.9	60.2		92.2	

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 Existing PM
DAVENPORT

Synchro 11 Report
Page 1

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	B		A	A			E	E		F	
Approach Delay		9.8			5.7			60.6			92.2	
Approach LOS		A			A			E			F	
Queue Length 50th (ft)	7	301		9	126			13	103		125	
Queue Length 95th (ft)	18	412		m19	225			35	158		191	
Internal Link Dist (ft)		1427			1586			1550			1171	
Turn Bay Length (ft)	325			300					75			
Base Capacity (vph)	489	2644		323	2692			212	319		228	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.09	0.53		0.21	0.35			0.06	0.34		0.52	

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 14 (8%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 14.1

Intersection LOS: B

Intersection Capacity Utilization 66.1%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 100: Old Este King Street /Industrial Park Drive & US Highway 421

	Ø1		Ø2 (R)		Ø4
15 s		120 s			30 s
	Ø5		Ø6 (R)		Ø8
15 s		120 s			30 s

Intersection							
Int Delay, s/veh	0.1						
Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations	↑↑				↑↑	↑↑	
Traffic Vol, veh/h	1363	16	2	4	962	4	6
Future Vol, veh/h	1363	16	2	4	962	4	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	1514	18	2	4	1069	4	7

Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	1532	1532	0	2070	766
Stage 1	-	-	-	-	-	1523	-
Stage 2	-	-	-	-	-	547	-
Critical Hdwy	-	-	6.44	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.52	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	150	430	-	47	345
Stage 1	-	-	-	-	-	166	-
Stage 2	-	-	-	-	-	544	-
Platoon blocked, %	-	-			-		
Mov Cap-1 Maneuver	-	-	262	262	-	44	345
Mov Cap-2 Maneuver	-	-	-	-	-	128	-
Stage 1	-	-	-	-	-	166	-
Stage 2	-	-	-	-	-	508	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	23.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	206	-	-	262	-
HCM Lane V/C Ratio	0.054	-	-	0.017	-
HCM Control Delay (s)	23.5	-	-	19.1	-
HCM Lane LOS	C	-	-	C	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection												
Int Delay, s/veh	9.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↕			↕	
Traffic Vol, veh/h	26	1341	4	4	939	27	4	4	4	23	4	29
Future Vol, veh/h	26	1341	4	4	939	27	4	4	4	23	4	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1490	4	4	1043	30	4	4	4	26	4	32
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1073	0	0	1494	0	0	2082	2631	747	1871	2618	537
Stage 1	-	-	-	-	-	-	1550	1550	-	1066	1066	-
Stage 2	-	-	-	-	-	-	532	1081	-	805	1552	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	645	-	-	445	-	-	31	23	355	44	24	488
Stage 1	-	-	-	-	-	-	119	173	-	237	297	-
Stage 2	-	-	-	-	-	-	499	292	-	342	173	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	645	-	-	445	-	-	18	17	355	27	17	488
Mov Cap-2 Maneuver	-	-	-	-	-	-	18	17	-	27	17	-
Stage 1	-	-	-	-	-	-	87	127	-	174	290	-
Stage 2	-	-	-	-	-	-	449	286	-	239	127	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.1			243.5			\$ 352.9		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	26	645	-	-	445	-	-	49				
HCM Lane V/C Ratio	0.513	0.045	-	-	0.01	-	-	1.27				
HCM Control Delay (s)	243.5	10.8	-	-	13.2	-	-	\$ 352.9				
HCM Lane LOS	F	B	-	-	B	-	-	F				
HCM 95th %tile Q(veh)	1.6	0.1	-	-	0	-	-	5.7				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Lanes, Volumes, Timings
400: SR-1514 Bamboo Road & US Highway 421

02/07/2023

								
Lane Group	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations		↑↑	↑		↑	↑↑	↑	↑
Traffic Volume (vph)	1	1084	282	1	203	758	209	262
Future Volume (vph)	1	1084	282	1	203	758	209	262
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75		250		75	75
Storage Lanes	0		1		1		1	0
Taper Length (ft)	100				100		100	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Frt			0.850					0.850
Flt Protected					0.950		0.950	
Satd. Flow (prot)	0	3539	1583	0	1770	3539	1770	1583
Flt Permitted		0.955			0.189		0.950	
Satd. Flow (perm)	0	3380	1583	0	352	3539	1770	1583
Right Turn on Red			No					No
Satd. Flow (RTOR)								
Link Speed (mph)		45				45	35	
Link Distance (ft)		492				1260	1217	
Travel Time (s)		7.5				19.1	23.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	1204	313	1	226	842	232	291
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	1205	313	0	227	842	232	291
Turn Type	Perm	NA	Perm	custom	D.P+P	NA	Prot	Perm
Protected Phases		2			1	6	8	
Permitted Phases	2		2	1	2			8
Detector Phase	2	2	2	1	1	6	8	8
Switch Phase								
Minimum Initial (s)	12.0	12.0	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	18.8	18.8	18.8	12.7	12.7	18.8	11.9	11.9
Total Split (s)	120.0	120.0	120.0	15.0	15.0	120.0	30.0	30.0
Total Split (%)	72.7%	72.7%	72.7%	9.1%	9.1%	72.7%	18.2%	18.2%
Maximum Green (s)	113.2	113.2	113.2	9.3	9.3	113.2	25.1	25.1
Yellow Time (s)	5.4	5.4	5.4	3.3	3.3	5.4	3.0	3.0
All-Red Time (s)	1.4	1.4	1.4	2.4	2.4	1.4	1.9	1.9
Lost Time Adjust (s)		-1.8	-1.8		-0.7	-1.8	0.1	0.1
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	6.0	1.0	1.0	6.0	1.0	1.0
Minimum Gap (s)	4.5	4.5	4.5	0.2	0.2	3.0	0.2	0.2
Time Before Reduce (s)	20.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0
Time To Reduce (s)	40.0	40.0	40.0	0.0	0.0	40.0	0.0	0.0
Recall Mode	C-Min	C-Min	C-Min	None	None	C-Min	None	None
Act Effect Green (s)		115.9	115.9		125.0	130.0	25.0	25.0
Actuated g/C Ratio		0.70	0.70		0.76	0.79	0.15	0.15
v/c Ratio		0.51	0.28		0.66	0.30	0.87	1.22
Control Delay		9.4	7.5		14.2	5.2	97.1	185.1
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0
Total Delay		9.4	7.5		14.2	5.2	97.1	185.1

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 Existing PM
DAVENPORT

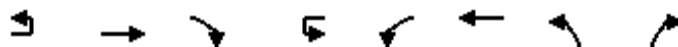
Synchro 11 Report
Page 7

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings

400: SR-1514 Bamboo Road & US Highway 421

02/07/2023



Lane Group	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
LOS		A	A		B	A	F	F
Approach Delay		9.0				7.1	146.1	
Approach LOS		A				A	F	
Queue Length 50th (ft)		206	52		52	117	249	~383
Queue Length 95th (ft)		243	128		76	139	#402	#582
Internal Link Dist (ft)		412				1180	1137	
Turn Bay Length (ft)			75		250		75	75
Base Capacity (vph)		2374	1112		354	2788	268	239
Starvation Cap Reductn		0	0		0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0
Reduced v/c Ratio		0.51	0.28		0.64	0.30	0.87	1.22

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBT, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.22

Intersection Signal Delay: 31.4

Intersection LOS: C

Intersection Capacity Utilization 79.7%

ICU Level of Service D

Analysis Period (min) 15

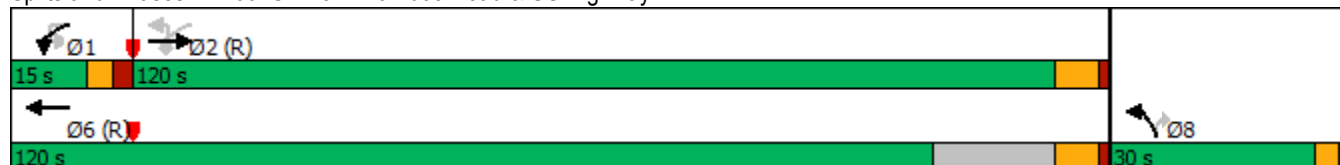
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 400: SR-1514 Bamboo Road & US Highway 421



Future No Build Conditions

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	661	12	292	1257	13	19	5	186	6	5	19
Future Volume (vph)	55	661	12	292	1257	13	19	5	186	6	5	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	300		0	0		75	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.999				0.850		0.917	
Flt Protected	0.950			0.950				0.963			0.990	
Satd. Flow (prot)	1770	3529	0	1770	3536	0	0	1794	1583	0	1691	0
Flt Permitted	0.166			0.348				0.831			0.921	
Satd. Flow (perm)	309	3529	0	648	3536	0	0	1548	1583	0	1573	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1507			1666			1630			1251	
Travel Time (s)		22.8			25.2			31.8			24.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	61	734	13	324	1397	14	21	6	207	7	6	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	747	0	324	1411	0	0	27	207	0	34	0
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	6			2			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	13.7	18.7		13.3	18.7		13.7	13.7	13.3	13.2	13.2	
Total Split (s)	15.0	120.0		15.0	120.0		30.0	30.0	15.0	30.0	30.0	
Total Split (%)	9.1%	72.7%		9.1%	72.7%		18.2%	18.2%	9.1%	18.2%	18.2%	
Maximum Green (s)	8.3	113.3		8.7	113.3		23.3	23.3	8.7	23.8	23.8	
Yellow Time (s)	3.0	4.6		3.0	4.6		4.6	4.6	3.0	3.7	3.7	
All-Red Time (s)	3.7	2.1		3.3	2.1		2.1	2.1	3.3	2.5	2.5	
Lost Time Adjust (s)	-1.7	-1.7		-1.3	-1.7			-1.7	-1.3		-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	0.2	0.2	0.2	0.2	
Time Before Reduce (s)	0.0	20.0		0.0	20.0		0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	
Act Effect Green (s)	143.8	124.6		142.8	137.9			9.9	30.4		9.8	
Actuated g/C Ratio	0.87	0.76		0.87	0.84			0.06	0.18		0.06	
v/c Ratio	0.18	0.28		0.47	0.48			0.29	0.71		0.37	
Control Delay	2.5	7.1		3.5	4.0			81.8	75.9		85.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	2.5	7.1		3.5	4.0			81.8	75.9		85.1	

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 FNB AM
DAVENPORT

Synchro 11 Report
Page 1

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A		A	A			F	E		F	
Approach Delay		6.8			3.9			76.6			85.1	
Approach LOS		A			A			E			F	
Queue Length 50th (ft)	6	122		19	183			29	211		36	
Queue Length 95th (ft)	13	182		m48	195			64	289		76	
Internal Link Dist (ft)		1427			1586			1550			1171	
Turn Bay Length (ft)	325			300					75			
Base Capacity (vph)	359	2665		684	2954			234	291		238	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.17	0.28		0.47	0.48			0.12	0.71		0.14	

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 14 (8%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 11.7

Intersection LOS: B

Intersection Capacity Utilization 60.6%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 100: Old Este King Street /Industrial Park Drive & US Highway 421

										
Ø1	Ø2 (R)		Ø5	Ø6 (R)		Ø4	Ø8			
15 s	120 s		15 s	120 s		30 s	30 s			

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	871	5	5	1515	6	7
Future Vol, veh/h	871	5	5	1515	6	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	968	6	6	1683	7	8

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	974	0	1825
Stage 1	-	-	-	-	971
Stage 2	-	-	-	-	854
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	704	-	68
Stage 1	-	-	-	-	328
Stage 2	-	-	-	-	377
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	704	-	59
Mov Cap-2 Maneuver	-	-	-	-	177
Stage 1	-	-	-	-	328
Stage 2	-	-	-	-	328

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	275	-	-	704	-
HCM Lane V/C Ratio	0.053	-	-	0.008	-
HCM Control Delay (s)	18.8	-	-	10.2	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection												
Int Delay, s/veh	8.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↔			↔	
Traffic Vol, veh/h	11	864	5	5	1503	52	5	5	7	11	5	15
Future Vol, veh/h	11	864	5	5	1503	52	5	5	7	11	5	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	960	6	6	1670	58	6	6	8	12	6	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1728	0	0	966	0	0	1837	2727	483	2218	2701	864
Stage 1	-	-	-	-	-	-	987	987	-	1711	1711	-
Stage 2	-	-	-	-	-	-	850	1740	-	507	990	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	361	-	-	709	-	-	47	20	530	24	21	297
Stage 1	-	-	-	-	-	-	265	324	-	94	144	-
Stage 2	-	-	-	-	-	-	322	140	-	516	323	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	361	-	-	709	-	-	25	14	530	13	15	297
Mov Cap-2 Maneuver	-	-	-	-	-	-	25	14	-	13	15	-
Stage 1	-	-	-	-	-	-	246	301	-	87	108	-
Stage 2	-	-	-	-	-	-	216	105	-	463	300	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	244	\$ 544.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	30	361	-	-	709	-	-	25
HCM Lane V/C Ratio	0.63	0.034	-	-	0.008	-	-	1.378
HCM Control Delay (s)	244	15.3	-	-	10.1	-	-	\$ 544.7
HCM Lane LOS	F	C	-	-	B	-	-	F
HCM 95th %tile Q(veh)	2.1	0.1	-	-	0	-	-	4.2

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lanes, Volumes, Timings
400: SR-1514 Bamboo Road & US Highway 421

02/07/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Traffic Volume (vph)	621	260	362	1249	308	100
Future Volume (vph)	621	260	362	1249	308	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		75	250		75	75
Storage Lanes		1	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.336		0.950	
Satd. Flow (perm)	3539	1583	626	3539	1770	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	35	
Link Distance (ft)	492			1260	1217	
Travel Time (s)	7.5			19.1	23.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	690	289	402	1388	342	111
Shared Lane Traffic (%)						
Lane Group Flow (vph)	690	289	402	1388	342	111
Turn Type	NA	Perm	D.P+P	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	2			8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	12.0	12.0	7.0	12.0	7.0	7.0
Minimum Split (s)	18.8	18.8	12.7	18.8	11.9	11.9
Total Split (s)	120.0	120.0	15.0	120.0	30.0	30.0
Total Split (%)	72.7%	72.7%	9.1%	72.7%	18.2%	18.2%
Maximum Green (s)	113.2	113.2	9.3	113.2	25.1	25.1
Yellow Time (s)	5.4	5.4	3.3	5.4	3.0	3.0
All-Red Time (s)	1.4	1.4	2.4	1.4	1.9	1.9
Lost Time Adjust (s)	-1.8	-1.8	-0.7	-1.8	0.1	0.1
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	1.0	6.0	1.0	1.0
Minimum Gap (s)	4.5	4.5	0.2	3.0	0.2	0.2
Time Before Reduce (s)	20.0	20.0	0.0	20.0	0.0	0.0
Time To Reduce (s)	40.0	40.0	0.0	40.0	0.0	0.0
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effect Green (s)	94.2	94.2	109.5	114.5	40.5	40.5
Actuated g/C Ratio	0.57	0.57	0.66	0.69	0.25	0.25
v/c Ratio	0.34	0.32	0.77	0.57	0.79	0.29
Control Delay	15.1	14.8	21.6	13.6	70.9	58.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	14.8	21.6	13.6	70.9	58.1

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 FNB AM
DAVENPORT

Synchro 11 Report
Page 7

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings
400: SR-1514 Bamboo Road & US Highway 421

02/07/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
LOS	B	B	C	B	E	E
Approach Delay	15.0			15.4	67.7	
Approach LOS	B			B	E	
Queue Length 50th (ft)	206	159	171	395	340	96
Queue Length 95th (ft)	140	127	140	278	#675	181
Internal Link Dist (ft)	412			1180	1137	
Turn Bay Length (ft)		75	250		75	75
Base Capacity (vph)	2466	1103	520	2788	434	388
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.26	0.77	0.50	0.79	0.29

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 22.6

Intersection LOS: C

Intersection Capacity Utilization 66.8%

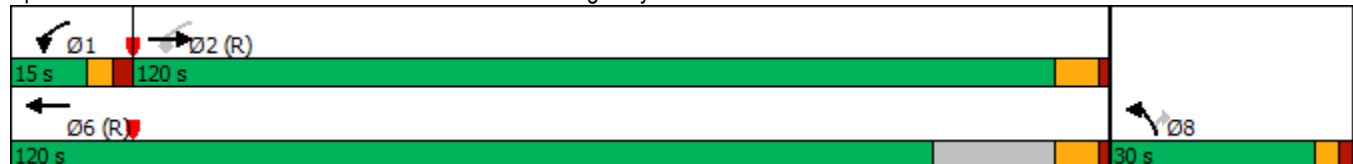
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 400: SR-1514 Bamboo Road & US Highway 421



Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1304	7	64	883	11	9	5	100	36	5	71
Future Volume (vph)	42	1304	7	64	883	11	9	5	100	36	5	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	300		0	0		75	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.998				0.850		0.915	
Flt Protected	0.950			0.950				0.970			0.984	
Satd. Flow (prot)	1770	3536	0	1770	3532	0	0	1807	1583	0	1677	0
Flt Permitted	0.261			0.142				0.757			0.887	
Satd. Flow (perm)	486	3536	0	265	3532	0	0	1410	1583	0	1512	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1507			1666			1630			1251	
Travel Time (s)		22.8			25.2			31.8			24.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	47	1449	8	71	981	12	10	6	111	40	6	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	1457	0	71	993	0	0	16	111	0	125	0
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	6			2			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	13.7	18.7		13.3	18.7		13.7	13.7	13.3	13.2	13.2	
Total Split (s)	15.0	120.0		15.0	120.0		30.0	30.0	15.0	30.0	30.0	
Total Split (%)	9.1%	72.7%		9.1%	72.7%		18.2%	18.2%	9.1%	18.2%	18.2%	
Maximum Green (s)	8.3	113.3		8.7	113.3		23.3	23.3	8.7	23.8	23.8	
Yellow Time (s)	3.0	4.6		3.0	4.6		4.6	4.6	3.0	3.7	3.7	
All-Red Time (s)	3.7	2.1		3.3	2.1		2.1	2.1	3.3	2.5	2.5	
Lost Time Adjust (s)	-1.7	-1.7		-1.3	-1.7			-1.7	-1.3		-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	0.2	0.2	0.2	0.2	
Time Before Reduce (s)	0.0	20.0		0.0	20.0		0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	
Act Effect Green (s)	132.0	122.7		131.0	125.0			19.0	32.3		19.0	
Actuated g/C Ratio	0.80	0.74		0.79	0.76			0.12	0.20		0.12	
v/c Ratio	0.10	0.55		0.25	0.37			0.10	0.36		0.72	
Control Delay	3.8	10.7		4.6	6.7			63.7	59.6		92.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	3.8	10.7		4.6	6.7			63.7	59.6		92.0	

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 FNB PM
DAVENPORT

Synchro 11 Report
Page 1

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	B		A	A			E	E		F	
Approach Delay		10.5			6.6			60.1			92.0	
Approach LOS		B			A			E			F	
Queue Length 50th (ft)	8	330		9	137			16	105		132	
Queue Length 95th (ft)	20	451		m18	m342			40	161		201	
Internal Link Dist (ft)		1427			1586			1550			1171	
Turn Bay Length (ft)	325			300					75			
Base Capacity (vph)	469	2628		304	2676			215	326		231	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.10	0.55		0.23	0.37			0.07	0.34		0.54	

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 14 (8%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 14.9

Intersection LOS: B

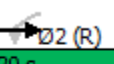
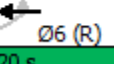
Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 100: Old Este King Street /Industrial Park Drive & US Highway 421

 Ø1	 Ø2 (R)	 Ø4
15 s	120 s	30 s
 Ø5	 Ø6 (R)	 Ø8
15 s	120 s	30 s

HCM 6th TWSC
200: SR-1516 Bub Teems Road & US Highway 421

02/07/2023

Intersection							
Int Delay, s/veh	0.2						
Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations	↑↑				↑↑	↑↑	
Traffic Vol, veh/h	1413	17	3	5	1005	5	7
Future Vol, veh/h	1413	17	3	5	1005	5	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	1570	19	3	6	1117	6	8

Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	1589	1589	0	2157	795
Stage 1	-	-	-	-	-	1580	-
Stage 2	-	-	-	-	-	577	-
Critical Hdwy	-	-	6.44	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.52	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	138	409	-	41	330
Stage 1	-	-	-	-	-	155	-
Stage 2	-	-	-	-	-	525	-
Platoon blocked, %	-	-			-		
Mov Cap-1 Maneuver	-	-	232	232	-	37	330
Mov Cap-2 Maneuver	-	-	-	-	-	118	-
Stage 1	-	-	-	-	-	155	-
Stage 2	-	-	-	-	-	471	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	25.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	189	-	-	232	-
HCM Lane V/C Ratio	0.071	-	-	0.024	-
HCM Control Delay (s)	25.5	-	-	21.1	-
HCM Lane LOS	D	-	-	C	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection												
Int Delay, s/veh	21.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↕			↕	
Traffic Vol, veh/h	27	1390	5	5	981	28	5	5	5	24	5	30
Future Vol, veh/h	27	1390	5	5	981	28	5	5	5	24	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	1544	6	6	1090	31	6	6	6	27	6	33
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1121	0	0	1550	0	0	2167	2740	775	1953	2728	561
Stage 1	-	-	-	-	-	-	1607	1607	-	1118	1118	-
Stage 2	-	-	-	-	-	-	560	1133	-	835	1610	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	619	-	-	424	-	-	26	20	341	38	20	471
Stage 1	-	-	-	-	-	-	109	163	-	221	281	-
Stage 2	-	-	-	-	-	-	480	276	-	328	162	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	619	-	-	424	-	-	11	12	341	~ 17	12	471
Mov Cap-2 Maneuver	-	-	-	-	-	-	11	12	-	~ 17	12	-
Stage 1	-	-	-	-	-	-	71	106	-	143	270	-
Stage 2	-	-	-	-	-	-	420	266	-	198	105	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.1			\$ 518			\$ 788.4		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	17	619	-	-	424	-	-	31				
HCM Lane V/C Ratio	0.98	0.048	-	-	0.013	-	-	2.115				
HCM Control Delay (s)	\$ 518	11.1	-	-	13.6	-	-	\$ 788.4				
HCM Lane LOS	F	B	-	-	B	-	-	F				
HCM 95th %tile Q(veh)	2.5	0.2	-	-	0	-	-	7.6				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined					*: All major volume in platoon			

Lanes, Volumes, Timings
400: SR-1514 Bamboo Road & US Highway 421

02/07/2023

								
Lane Group	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations		↑↑	↑		↑	↑↑	↑	↑
Traffic Volume (vph)	2	1125	291	2	210	794	216	270
Future Volume (vph)	2	1125	291	2	210	794	216	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75		250		75	75
Storage Lanes	0		1		1		1	0
Taper Length (ft)	100				100		100	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Frt			0.850					0.850
Flt Protected					0.950		0.950	
Satd. Flow (prot)	0	3539	1583	0	1770	3539	1770	1583
Flt Permitted		0.954			0.177		0.950	
Satd. Flow (perm)	0	3376	1583	0	330	3539	1770	1583
Right Turn on Red			No					No
Satd. Flow (RTOR)								
Link Speed (mph)		45				45	35	
Link Distance (ft)		492				1260	1217	
Travel Time (s)		7.5				19.1	23.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	1250	323	2	233	882	240	300
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	1252	323	0	235	882	240	300
Turn Type	Perm	NA	Perm	custom	D.P+P	NA	Prot	Perm
Protected Phases		2			1	6	8	
Permitted Phases	2		2	1	2			8
Detector Phase	2	2	2	1	1	6	8	8
Switch Phase								
Minimum Initial (s)	12.0	12.0	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	18.8	18.8	18.8	12.7	12.7	18.8	11.9	11.9
Total Split (s)	120.0	120.0	120.0	15.0	15.0	120.0	30.0	30.0
Total Split (%)	72.7%	72.7%	72.7%	9.1%	9.1%	72.7%	18.2%	18.2%
Maximum Green (s)	113.2	113.2	113.2	9.3	9.3	113.2	25.1	25.1
Yellow Time (s)	5.4	5.4	5.4	3.3	3.3	5.4	3.0	3.0
All-Red Time (s)	1.4	1.4	1.4	2.4	2.4	1.4	1.9	1.9
Lost Time Adjust (s)		-1.8	-1.8		-0.7	-1.8	0.1	0.1
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	6.0	1.0	1.0	6.0	1.0	1.0
Minimum Gap (s)	4.5	4.5	4.5	0.2	0.2	3.0	0.2	0.2
Time Before Reduce (s)	20.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0
Time To Reduce (s)	40.0	40.0	40.0	0.0	0.0	40.0	0.0	0.0
Recall Mode	C-Min	C-Min	C-Min	None	None	C-Min	None	None
Act Effect Green (s)		115.9	115.9		125.0	130.0	25.0	25.0
Actuated g/C Ratio		0.70	0.70		0.76	0.79	0.15	0.15
v/c Ratio		0.53	0.29		0.71	0.32	0.90	1.26
Control Delay		9.3	7.6		18.1	5.3	101.5	198.0
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0
Total Delay		9.3	7.6		18.1	5.3	101.5	198.0

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 FNB PM
DAVENPORT

Synchro 11 Report
Page 7

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings
400: SR-1514 Bamboo Road & US Highway 421

02/07/2023



Lane Group	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
LOS		A	A		B	A	F	F
Approach Delay		9.0				8.0	155.1	
Approach LOS		A				A	F	
Queue Length 50th (ft)		140	68		55	124	258	~403
Queue Length 95th (ft)		275	135		80	147	#423	#604
Internal Link Dist (ft)		412				1180	1137	
Turn Bay Length (ft)			75		250		75	75
Base Capacity (vph)		2370	1111		339	2788	268	239
Starvation Cap Reductn		0	0		0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0
Reduced v/c Ratio		0.53	0.29		0.69	0.32	0.90	1.26

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.26

Intersection Signal Delay: 33.1

Intersection LOS: C

Intersection Capacity Utilization 82.3%

ICU Level of Service E

Analysis Period (min) 15

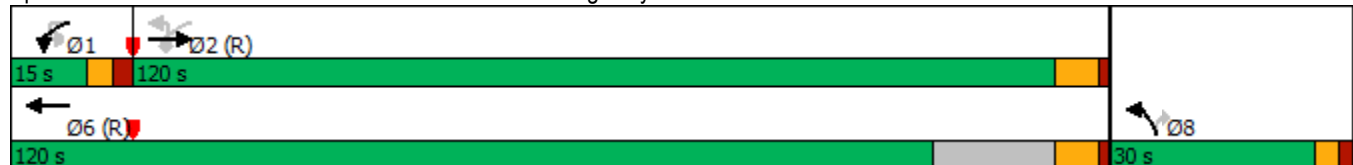
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 400: SR-1514 Bamboo Road & US Highway 421



Future Build Conditions

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	675	12	292	1268	13	19	5	186	6	5	19
Future Volume (vph)	55	675	12	292	1268	13	19	5	186	6	5	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	300		0	0		75	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.999				0.850		0.917	
Flt Protected	0.950			0.950				0.963			0.990	
Satd. Flow (prot)	1770	3529	0	1770	3536	0	0	1794	1583	0	1691	0
Flt Permitted	0.164			0.342				0.831			0.921	
Satd. Flow (perm)	305	3529	0	637	3536	0	0	1548	1583	0	1573	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1507			1099			1630			1251	
Travel Time (s)		22.8			16.7			31.8			24.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	61	750	13	324	1409	14	21	6	207	7	6	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	763	0	324	1423	0	0	27	207	0	34	0
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	6			2			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	13.7	18.7		13.3	18.7		13.7	13.7	13.3	13.2	13.2	
Total Split (s)	15.0	120.0		15.0	120.0		30.0	30.0	15.0	30.0	30.0	
Total Split (%)	9.1%	72.7%		9.1%	72.7%		18.2%	18.2%	9.1%	18.2%	18.2%	
Maximum Green (s)	8.3	113.3		8.7	113.3		23.3	23.3	8.7	23.8	23.8	
Yellow Time (s)	3.0	4.6		3.0	4.6		4.6	4.6	3.0	3.7	3.7	
All-Red Time (s)	3.7	2.1		3.3	2.1		2.1	2.1	3.3	2.5	2.5	
Lost Time Adjust (s)	-1.7	-1.7		-1.3	-1.7			-1.7	-1.3		-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	0.2	0.2	0.2	0.2	
Time Before Reduce (s)	0.0	20.0		0.0	20.0		0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	
Act Effect Green (s)	143.8	124.5		142.8	137.9			9.9	30.5		9.8	
Actuated g/C Ratio	0.87	0.75		0.87	0.84			0.06	0.18		0.06	
v/c Ratio	0.18	0.29		0.48	0.48			0.29	0.71		0.37	
Control Delay	2.5	7.3		3.8	4.1			81.8	75.6		85.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	2.5	7.3		3.8	4.1			81.8	75.6		85.1	

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 Future build AM
DAVENPORT

Synchro 11 Report
Page 1

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A		A	A			F	E		F	
Approach Delay		6.9			4.1			76.3			85.1	
Approach LOS		A			A			E			F	
Queue Length 50th (ft)	6	125		22	176			29	211		36	
Queue Length 95th (ft)	13	188		m48	186			64	288		76	
Internal Link Dist (ft)		1427			1019			1550			1171	
Turn Bay Length (ft)	325			300					75			
Base Capacity (vph)	356	2664		677	2954			234	292		238	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.17	0.29		0.48	0.48			0.12	0.71		0.14	

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 14 (8%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 11.8

Intersection LOS: B

Intersection Capacity Utilization 60.9%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 100: Old Este King Street /Industrial Park Drive & US Highway 421

										
Ø1	Ø2 (R)		Ø5	Ø6 (R)		Ø4		Ø8		
15 s	120 s		15 s	120 s		30 s		30 s		

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	880	5	5	1526	6	7
Future Vol, veh/h	880	5	5	1526	6	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	978	6	6	1696	7	8

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	984	0	1841
Stage 1	-	-	-	-	981
Stage 2	-	-	-	-	860
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	698	-	67
Stage 1	-	-	-	-	324
Stage 2	-	-	-	-	375
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	698	-	57
Mov Cap-2 Maneuver	-	-	-	-	173
Stage 1	-	-	-	-	324
Stage 2	-	-	-	-	320

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	270	-	-	698	-
HCM Lane V/C Ratio	0.053	-	-	0.008	-
HCM Control Delay (s)	19.1	-	-	10.2	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection												
Int Delay, s/veh	10.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↕			↕	
Traffic Vol, veh/h	11	873	5	5	1514	52	5	5	7	11	5	15
Future Vol, veh/h	11	873	5	5	1514	52	5	5	7	11	5	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	970	6	6	1682	58	6	6	8	12	6	17
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1740	0	0	976	0	0	1853	2749	488	2235	2723	870
Stage 1	-	-	-	-	-	-	997	997	-	1723	1723	-
Stage 2	-	-	-	-	-	-	856	1752	-	512	1000	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	358	-	-	703	-	-	46	20	526	23	20	295
Stage 1	-	-	-	-	-	-	262	320	-	92	142	-
Stage 2	-	-	-	-	-	-	319	138	-	513	319	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	358	-	-	703	-	-	21	13	526	~ 11	13	295
Mov Cap-2 Maneuver	-	-	-	-	-	-	21	13	-	~ 11	13	-
Stage 1	-	-	-	-	-	-	243	297	-	85	97	-
Stage 2	-	-	-	-	-	-	194	94	-	460	296	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			286.5			\$ 658.5		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	27	358	-	-	703	-	-	22				
HCM Lane V/C Ratio	0.7	0.034	-	-	0.008	-	-	1.566				
HCM Control Delay (s)	286.5	15.4	-	-	10.2	-	-	\$ 658.5				
HCM Lane LOS	F	C	-	-	B	-	-	F				
HCM 95th %tile Q(veh)	2.2	0.1	-	-	0	-	-	4.5				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Lanes, Volumes, Timings
400: SR-1514 Bamboo Road & US Highway 421

02/07/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Traffic Volume (vph)	626	262	362	1258	311	100
Future Volume (vph)	626	262	362	1258	311	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		75	250		75	75
Storage Lanes		1	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.331		0.950	
Satd. Flow (perm)	3539	1583	617	3539	1770	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	35	
Link Distance (ft)	496			1260	1217	
Travel Time (s)	7.5			19.1	23.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	696	291	402	1398	346	111
Shared Lane Traffic (%)						
Lane Group Flow (vph)	696	291	402	1398	346	111
Turn Type	NA	Perm	D.P+P	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	2			8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	12.0	12.0	7.0	12.0	7.0	7.0
Minimum Split (s)	18.8	18.8	12.7	18.8	11.9	11.9
Total Split (s)	120.0	120.0	15.0	120.0	30.0	30.0
Total Split (%)	72.7%	72.7%	9.1%	72.7%	18.2%	18.2%
Maximum Green (s)	113.2	113.2	9.3	113.2	25.1	25.1
Yellow Time (s)	5.4	5.4	3.3	5.4	3.0	3.0
All-Red Time (s)	1.4	1.4	2.4	1.4	1.9	1.9
Lost Time Adjust (s)	-1.8	-1.8	-0.7	-1.8	0.1	0.1
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	1.0	6.0	1.0	1.0
Minimum Gap (s)	4.5	4.5	0.2	3.0	0.2	0.2
Time Before Reduce (s)	20.0	20.0	0.0	20.0	0.0	0.0
Time To Reduce (s)	40.0	40.0	0.0	40.0	0.0	0.0
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effect Green (s)	93.4	93.4	108.8	113.8	41.2	41.2
Actuated g/C Ratio	0.57	0.57	0.66	0.69	0.25	0.25
v/c Ratio	0.35	0.32	0.78	0.57	0.78	0.28
Control Delay	15.5	15.2	22.6	14.0	70.0	57.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	15.2	22.6	14.0	70.0	57.7

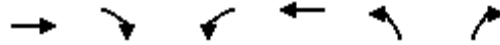
Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 Future build AM
DAVENPORT

Synchro 11 Report
Page 7

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings
400: SR-1514 Bamboo Road & US Highway 421

02/07/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
LOS	B	B	C	B	E	E
Approach Delay	15.4			16.0	67.0	
Approach LOS	B			B	E	
Queue Length 50th (ft)	210	166	174	405	344	95
Queue Length 95th (ft)	136	123	140	281	#684	181
Internal Link Dist (ft)	416			1180	1137	
Turn Bay Length (ft)		75	250		75	75
Base Capacity (vph)	2466	1103	514	2788	442	395
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.26	0.78	0.50	0.78	0.28

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 23.0

Intersection LOS: C

Intersection Capacity Utilization 67.1%

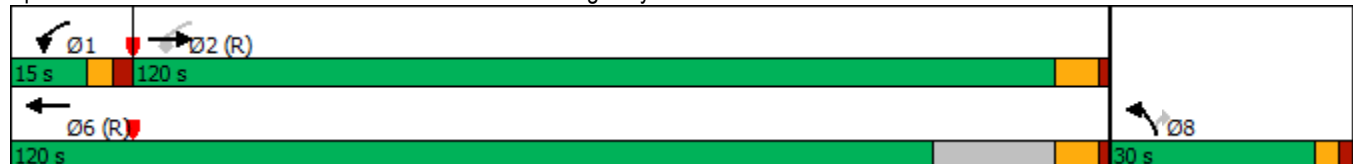
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 400: SR-1514 Bamboo Road & US Highway 421



Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Vol, veh/h	876	14	11	1520	11	9
Future Vol, veh/h	876	14	11	1520	11	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	973	16	12	1689	12	10

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	989	0	1850	495
Stage 1	-	-	-	-	981	-
Stage 2	-	-	-	-	869	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	695	-	66	520
Stage 1	-	-	-	-	324	-
Stage 2	-	-	-	-	371	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	695	-	48	520
Mov Cap-2 Maneuver	-	-	-	-	155	-
Stage 1	-	-	-	-	324	-
Stage 2	-	-	-	-	267	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	22.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	227	-	-	695	-
HCM Lane V/C Ratio	0.098	-	-	0.018	-
HCM Control Delay (s)	22.6	-	-	10.3	1.4
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1318	7	64	896	11	9	5	100	36	5	71
Future Volume (vph)	42	1318	7	64	896	11	9	5	100	36	5	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	300		0	0		75	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.998				0.850		0.915	
Flt Protected	0.950			0.950				0.970			0.984	
Satd. Flow (prot)	1770	3536	0	1770	3532	0	0	1807	1583	0	1677	0
Flt Permitted	0.256			0.139				0.752			0.887	
Satd. Flow (perm)	477	3536	0	259	3532	0	0	1401	1583	0	1512	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1507			1099			1630			1251	
Travel Time (s)		22.8			16.7			31.8			24.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	47	1464	8	71	996	12	10	6	111	40	6	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	1472	0	71	1008	0	0	16	111	0	125	0
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	6			2			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	13.7	18.7		13.3	18.7		13.7	13.7	13.3	13.2	13.2	
Total Split (s)	15.0	120.0		15.0	120.0		30.0	30.0	15.0	30.0	30.0	
Total Split (%)	9.1%	72.7%		9.1%	72.7%		18.2%	18.2%	9.1%	18.2%	18.2%	
Maximum Green (s)	8.3	113.3		8.7	113.3		23.3	23.3	8.7	23.8	23.8	
Yellow Time (s)	3.0	4.6		3.0	4.6		4.6	4.6	3.0	3.7	3.7	
All-Red Time (s)	3.7	2.1		3.3	2.1		2.1	2.1	3.3	2.5	2.5	
Lost Time Adjust (s)	-1.7	-1.7		-1.3	-1.7			-1.7	-1.3		-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	0.2	0.2	0.2	0.2	
Time Before Reduce (s)	0.0	20.0		0.0	20.0		0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	
Act Effect Green (s)	132.2	122.9		131.2	125.2			18.8	32.1		18.8	
Actuated g/C Ratio	0.80	0.74		0.80	0.76			0.11	0.19		0.11	
v/c Ratio	0.10	0.56		0.25	0.38			0.10	0.36		0.73	
Control Delay	3.7	10.7		4.7	6.7			64.1	59.9		93.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	3.7	10.7		4.7	6.7			64.1	59.9		93.1	

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 Future build PM
DAVENPORT

Synchro 11 Report
Page 1

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	B		A	A			E	E		F	
Approach Delay		10.5			6.5			60.4			93.1	
Approach LOS		B			A			E			F	
Queue Length 50th (ft)	8	335		9	140			16	105		132	
Queue Length 95th (ft)	19	446		m18	m330			40	163		202	
Internal Link Dist (ft)		1427			1019			1550			1171	
Turn Bay Length (ft)	325			300					75			
Base Capacity (vph)	463	2633		300	2680			212	324		229	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.10	0.56		0.24	0.38			0.08	0.34		0.55	

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 14 (8%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 14.8

Intersection LOS: B

Intersection Capacity Utilization 68.3%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 100: Old Este King Street /Industrial Park Drive & US Highway 421

Ø1	Ø2 (R)		Ø4
15 s	120 s		30 s
Ø5	Ø6 (R)		Ø8
15 s	120 s		30 s

Intersection							
Int Delay, s/veh	0.2						
Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations	↑↑				↑↑	↑	
Traffic Vol, veh/h	1424	17	3	5	1016	5	7
Future Vol, veh/h	1424	17	3	5	1016	5	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	1582	19	3	6	1129	6	8

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1601
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.44	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.52	2.22
Pot Cap-1 Maneuver	-	136	405
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	229	229
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	186	-	-	229	-
HCM Lane V/C Ratio	0.072	-	-	0.024	-
HCM Control Delay (s)	25.8	-	-	21.3	-
HCM Lane LOS	D	-	-	C	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection												
Int Delay, s/veh	24											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↕			↕	
Traffic Vol, veh/h	27	1401	5	5	992	28	5	5	5	24	5	30
Future Vol, veh/h	27	1401	5	5	992	28	5	5	5	24	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	1557	6	6	1102	31	6	6	6	27	6	33
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1133	0	0	1563	0	0	2186	2765	782	1972	2753	567
Stage 1	-	-	-	-	-	-	1620	1620	-	1130	1130	-
Stage 2	-	-	-	-	-	-	566	1145	-	842	1623	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	612	-	-	419	-	-	25	19	337	37	19	467
Stage 1	-	-	-	-	-	-	107	160	-	217	277	-
Stage 2	-	-	-	-	-	-	476	272	-	325	160	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	612	-	-	419	-	-	10	11	337	~ 16	11	467
Mov Cap-2 Maneuver	-	-	-	-	-	-	10	11	-	~ 16	11	-
Stage 1	-	-	-	-	-	-	67	100	-	136	266	-
Stage 2	-	-	-	-	-	-	416	261	-	189	100	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.1			\$ 617.3			\$ 867.4		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	15	612	-	-	419	-	-	29				
HCM Lane V/C Ratio	1.111	0.049	-	-	0.013	-	-	2.261				
HCM Control Delay (s)	\$ 617.3	11.2	-	-	13.7	-	-	\$ 867.4				
HCM Lane LOS	F	B	-	-	B	-	-	F				
HCM 95th %tile Q(veh)	2.6	0.2	-	-	0	-	-	7.7				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Lanes, Volumes, Timings
400: SR-1514 Bamboo Road & US Highway 421

02/07/2023

								
Lane Group	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations		↑↑	↑		↑	↑↑	↑	↑
Traffic Volume (vph)	2	1133	293	2	210	803	219	270
Future Volume (vph)	2	1133	293	2	210	803	219	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75		250		75	75
Storage Lanes	0		1		1		1	0
Taper Length (ft)	100				100		100	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Frt			0.850					0.850
Flt Protected					0.950		0.950	
Satd. Flow (prot)	0	3539	1583	0	1770	3539	1770	1583
Flt Permitted		0.954			0.175		0.950	
Satd. Flow (perm)	0	3376	1583	0	326	3539	1770	1583
Right Turn on Red			No					No
Satd. Flow (RTOR)								
Link Speed (mph)		45				45	35	
Link Distance (ft)		496				1260	1217	
Travel Time (s)		7.5				19.1	23.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	1259	326	2	233	892	243	300
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	1261	326	0	235	892	243	300
Turn Type	Perm	NA	Perm	custom	D.P+P	NA	Prot	Perm
Protected Phases		2			1	6	8	
Permitted Phases	2		2	1	2			8
Detector Phase	2	2	2	1	1	6	8	8
Switch Phase								
Minimum Initial (s)	12.0	12.0	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	18.8	18.8	18.8	12.7	12.7	18.8	11.9	11.9
Total Split (s)	120.0	120.0	120.0	15.0	15.0	120.0	30.0	30.0
Total Split (%)	72.7%	72.7%	72.7%	9.1%	9.1%	72.7%	18.2%	18.2%
Maximum Green (s)	113.2	113.2	113.2	9.3	9.3	113.2	25.1	25.1
Yellow Time (s)	5.4	5.4	5.4	3.3	3.3	5.4	3.0	3.0
All-Red Time (s)	1.4	1.4	1.4	2.4	2.4	1.4	1.9	1.9
Lost Time Adjust (s)		-1.8	-1.8		-0.7	-1.8	0.1	0.1
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	6.0	1.0	1.0	6.0	1.0	1.0
Minimum Gap (s)	4.5	4.5	4.5	0.2	0.2	3.0	0.2	0.2
Time Before Reduce (s)	20.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0
Time To Reduce (s)	40.0	40.0	40.0	0.0	0.0	40.0	0.0	0.0
Recall Mode	C-Min	C-Min	C-Min	None	None	C-Min	None	None
Act Effect Green (s)		115.9	115.9		125.0	130.0	25.0	25.0
Actuated g/C Ratio		0.70	0.70		0.76	0.79	0.15	0.15
v/c Ratio		0.53	0.29		0.72	0.32	0.91	1.26
Control Delay		9.4	7.7		18.8	5.3	103.4	198.0
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0
Total Delay		9.4	7.7		18.8	5.3	103.4	198.0

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 Future build PM
DAVENPORT

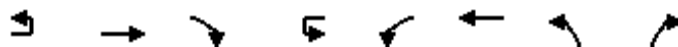
Synchro 11 Report
Page 7

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings

400: SR-1514 Bamboo Road & US Highway 421

02/07/2023



Lane Group	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
LOS		A	A		B	A	F	F
Approach Delay		9.1				8.1	155.6	
Approach LOS		A				A	F	
Queue Length 50th (ft)		153	74		55	126	262	~403
Queue Length 95th (ft)		279	137		83	149	#432	#604
Internal Link Dist (ft)		416				1180	1137	
Turn Bay Length (ft)			75		250		75	75
Base Capacity (vph)		2370	1111		336	2788	268	239
Starvation Cap Reductn		0	0		0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0
Reduced v/c Ratio		0.53	0.29		0.70	0.32	0.91	1.26

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.26

Intersection Signal Delay: 33.2

Intersection LOS: C

Intersection Capacity Utilization 82.8%

ICU Level of Service E

Analysis Period (min) 15

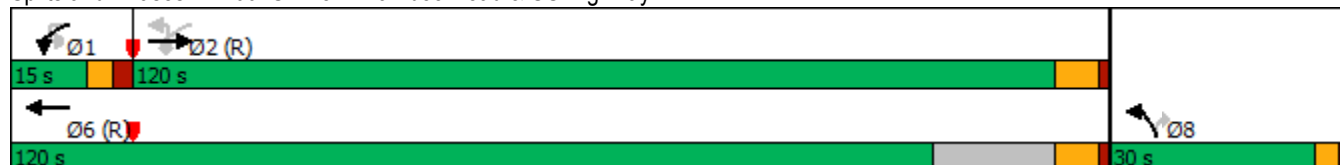
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 400: SR-1514 Bamboo Road & US Highway 421



Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	1429	14	11	1009	13	11
Future Vol, veh/h	1429	14	11	1009	13	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1588	16	12	1121	14	12

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	1604	0	2181	802
Stage 1	-	-	-	-	1596	-
Stage 2	-	-	-	-	585	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	404	-	39	327
Stage 1	-	-	-	-	152	-
Stage 2	-	-	-	-	520	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	404	-	36	327
Mov Cap-2 Maneuver	-	-	-	-	117	-
Stage 1	-	-	-	-	152	-
Stage 2	-	-	-	-	479	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	30.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	166	-	-	404	-
HCM Lane V/C Ratio	0.161	-	-	0.03	-
HCM Control Delay (s)	30.8	-	-	14.2	0.5
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Future Build Conditions with Improvements

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	675	12	292	1268	13	19	5	186	6	5	19
Future Volume (vph)	55	675	12	292	1268	13	19	5	186	6	5	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	300		0	0		75	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.999				0.850		0.917	
Flt Protected	0.950			0.950				0.963			0.990	
Satd. Flow (prot)	1770	3529	0	1770	3536	0	0	1794	1583	0	1691	0
Flt Permitted	0.164			0.342				0.831			0.921	
Satd. Flow (perm)	305	3529	0	637	3536	0	0	1548	1583	0	1573	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1507			1099			1630			1251	
Travel Time (s)		22.8			16.7			31.8			24.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	61	750	13	324	1409	14	21	6	207	7	6	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	763	0	324	1423	0	0	27	207	0	34	0
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	6			2			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	13.7	18.7		13.3	18.7		13.7	13.7	13.3	13.2	13.2	
Total Split (s)	15.0	120.0		15.0	120.0		30.0	30.0	15.0	30.0	30.0	
Total Split (%)	9.1%	72.7%		9.1%	72.7%		18.2%	18.2%	9.1%	18.2%	18.2%	
Maximum Green (s)	8.3	113.3		8.7	113.3		23.3	23.3	8.7	23.8	23.8	
Yellow Time (s)	3.0	4.6		3.0	4.6		4.6	4.6	3.0	3.7	3.7	
All-Red Time (s)	3.7	2.1		3.3	2.1		2.1	2.1	3.3	2.5	2.5	
Lost Time Adjust (s)	-1.7	-1.7		-1.3	-1.7			-1.7	-1.3		-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	0.2	0.2	0.2	0.2	
Time Before Reduce (s)	0.0	20.0		0.0	20.0		0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	
Act Effect Green (s)	143.8	124.5		142.8	137.9			9.9	30.5		9.8	
Actuated g/C Ratio	0.87	0.75		0.87	0.84			0.06	0.18		0.06	
v/c Ratio	0.18	0.29		0.48	0.48			0.29	0.71		0.37	
Control Delay	2.5	7.3		3.8	4.1			81.8	75.6		85.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	2.5	7.3		3.8	4.1			81.8	75.6		85.1	

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 Imp-Future build AM
DAVENPORT

Synchro 11 Report
Page 1

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A		A	A			F	E		F	
Approach Delay		6.9			4.1			76.3			85.1	
Approach LOS		A			A			E			F	
Queue Length 50th (ft)	6	125		22	176			29	211		36	
Queue Length 95th (ft)	13	188		m48	186			64	288		76	
Internal Link Dist (ft)		1427			1019			1550			1171	
Turn Bay Length (ft)	325			300					75			
Base Capacity (vph)	356	2664		677	2954			234	292		238	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.17	0.29		0.48	0.48			0.12	0.71		0.14	

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 14 (8%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 11.8

Intersection LOS: B

Intersection Capacity Utilization 60.9%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 100: Old Este King Street /Industrial Park Drive & US Highway 421

										
Ø1	Ø2 (R)		Ø5	Ø6 (R)		Ø4		Ø8		
15 s	120 s		15 s	120 s		30 s		30 s		

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	880	5	5	1526	6	7
Future Vol, veh/h	880	5	5	1526	6	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	978	6	6	1696	7	8

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	984	0	1841
Stage 1	-	-	-	-	981
Stage 2	-	-	-	-	860
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	698	-	67
Stage 1	-	-	-	-	324
Stage 2	-	-	-	-	375
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	698	-	57
Mov Cap-2 Maneuver	-	-	-	-	173
Stage 1	-	-	-	-	324
Stage 2	-	-	-	-	320

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	270	-	-	698	-
HCM Lane V/C Ratio	0.053	-	-	0.008	-
HCM Control Delay (s)	19.1	-	-	10.2	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection												
Int Delay, s/veh	10.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↕			↕	
Traffic Vol, veh/h	11	873	5	5	1514	52	5	5	7	11	5	15
Future Vol, veh/h	11	873	5	5	1514	52	5	5	7	11	5	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	970	6	6	1682	58	6	6	8	12	6	17
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1740	0	0	976	0	0	1853	2749	488	2235	2723	870
Stage 1	-	-	-	-	-	-	997	997	-	1723	1723	-
Stage 2	-	-	-	-	-	-	856	1752	-	512	1000	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	358	-	-	703	-	-	46	20	526	23	20	295
Stage 1	-	-	-	-	-	-	262	320	-	92	142	-
Stage 2	-	-	-	-	-	-	319	138	-	513	319	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	358	-	-	703	-	-	21	13	526	~ 11	13	295
Mov Cap-2 Maneuver	-	-	-	-	-	-	21	13	-	~ 11	13	-
Stage 1	-	-	-	-	-	-	243	297	-	85	97	-
Stage 2	-	-	-	-	-	-	194	94	-	460	296	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			286.5			\$ 658.5		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	27	358	-	-	703	-	-	22				
HCM Lane V/C Ratio	0.7	0.034	-	-	0.008	-	-	1.566				
HCM Control Delay (s)	286.5	15.4	-	-	10.2	-	-	\$ 658.5				
HCM Lane LOS	F	C	-	-	B	-	-	F				
HCM 95th %tile Q(veh)	2.2	0.1	-	-	0	-	-	4.5				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Lanes, Volumes, Timings
400: SR-1514 Bamboo Road & US Highway 421

02/07/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Traffic Volume (vph)	626	262	362	1258	311	100
Future Volume (vph)	626	262	362	1258	311	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		75	250		75	75
Storage Lanes		1	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.331		0.950	
Satd. Flow (perm)	3539	1583	617	3539	1770	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	35	
Link Distance (ft)	496			1260	1217	
Travel Time (s)	7.5			19.1	23.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	696	291	402	1398	346	111
Shared Lane Traffic (%)						
Lane Group Flow (vph)	696	291	402	1398	346	111
Turn Type	NA	Perm	D.P+P	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	2			8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	12.0	12.0	7.0	12.0	7.0	7.0
Minimum Split (s)	18.8	18.8	12.7	18.8	11.9	11.9
Total Split (s)	120.0	120.0	15.0	120.0	30.0	30.0
Total Split (%)	72.7%	72.7%	9.1%	72.7%	18.2%	18.2%
Maximum Green (s)	113.2	113.2	9.3	113.2	25.1	25.1
Yellow Time (s)	5.4	5.4	3.3	5.4	3.0	3.0
All-Red Time (s)	1.4	1.4	2.4	1.4	1.9	1.9
Lost Time Adjust (s)	-1.8	-1.8	-0.7	-1.8	0.1	0.1
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	1.0	6.0	1.0	1.0
Minimum Gap (s)	4.5	4.5	0.2	3.0	0.2	0.2
Time Before Reduce (s)	20.0	20.0	0.0	20.0	0.0	0.0
Time To Reduce (s)	40.0	40.0	0.0	40.0	0.0	0.0
Recall Mode	C-Min	C-Min	None	C-Min	None	None
Act Effect Green (s)	93.4	93.4	108.8	113.8	41.2	41.2
Actuated g/C Ratio	0.57	0.57	0.66	0.69	0.25	0.25
v/c Ratio	0.35	0.32	0.78	0.57	0.78	0.28
Control Delay	15.5	15.2	22.6	14.0	70.0	57.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	15.2	22.6	14.0	70.0	57.7

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 Imp-Future build AM
DAVENPORT

Synchro 11 Report
Page 7

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings
400: SR-1514 Bamboo Road & US Highway 421

02/07/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
LOS	B	B	C	B	E	E
Approach Delay	15.4			16.0	67.0	
Approach LOS	B			B	E	
Queue Length 50th (ft)	210	166	174	405	344	95
Queue Length 95th (ft)	136	123	140	281	#684	181
Internal Link Dist (ft)	416			1180	1137	
Turn Bay Length (ft)		75	250		75	75
Base Capacity (vph)	2466	1103	514	2788	442	395
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.26	0.78	0.50	0.78	0.28

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 23.0

Intersection LOS: C

Intersection Capacity Utilization 67.1%

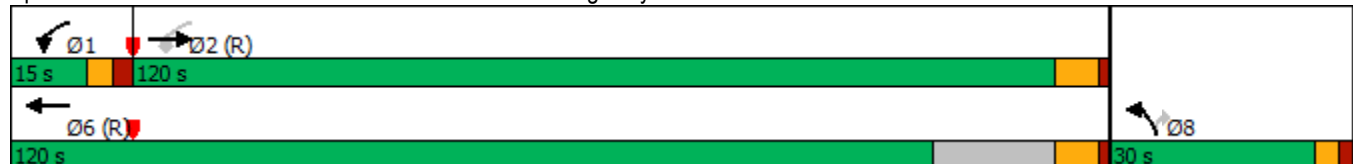
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 400: SR-1514 Bamboo Road & US Highway 421



Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑	↑	
Traffic Vol, veh/h	876	14	11	1520	11	9
Future Vol, veh/h	876	14	11	1520	11	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	973	16	12	1689	12	10

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	989
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	695
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	695
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	22.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	228	-	-	695	-
HCM Lane V/C Ratio	0.097	-	-	0.018	-
HCM Control Delay (s)	22.5	-	-	10.3	1.4
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	1318	7	64	896	11	9	5	100	36	5	71
Future Volume (vph)	42	1318	7	64	896	11	9	5	100	36	5	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	300		0	0		75	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.998				0.850		0.915	
Flt Protected	0.950			0.950				0.970			0.984	
Satd. Flow (prot)	1770	3536	0	1770	3532	0	0	1807	1583	0	1677	0
Flt Permitted	0.256			0.139				0.752			0.887	
Satd. Flow (perm)	477	3536	0	259	3532	0	0	1401	1583	0	1512	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1507			1099			1630			1251	
Travel Time (s)		22.8			16.7			31.8			24.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	47	1464	8	71	996	12	10	6	111	40	6	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	1472	0	71	1008	0	0	16	111	0	125	0
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	6			2			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	13.7	18.7		13.3	18.7		13.7	13.7	13.3	13.2	13.2	
Total Split (s)	15.0	120.0		15.0	120.0		30.0	30.0	15.0	30.0	30.0	
Total Split (%)	9.1%	72.7%		9.1%	72.7%		18.2%	18.2%	9.1%	18.2%	18.2%	
Maximum Green (s)	8.3	113.3		8.7	113.3		23.3	23.3	8.7	23.8	23.8	
Yellow Time (s)	3.0	4.6		3.0	4.6		4.6	4.6	3.0	3.7	3.7	
All-Red Time (s)	3.7	2.1		3.3	2.1		2.1	2.1	3.3	2.5	2.5	
Lost Time Adjust (s)	-1.7	-1.7		-1.3	-1.7			-1.7	-1.3		-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	0.2	3.0		0.2	3.0		0.2	0.2	0.2	0.2	0.2	
Time Before Reduce (s)	0.0	20.0		0.0	20.0		0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	40.0		0.0	40.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	
Act Effect Green (s)	132.2	122.9		131.2	125.2			18.8	32.1		18.8	
Actuated g/C Ratio	0.80	0.74		0.80	0.76			0.11	0.19		0.11	
v/c Ratio	0.10	0.56		0.25	0.38			0.10	0.36		0.73	
Control Delay	3.7	10.7		4.7	6.7			64.1	59.9		93.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	3.7	10.7		4.7	6.7			64.1	59.9		93.1	

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 Future build PM
DAVENPORT

Synchro 11 Report
Page 1

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings

100: Old Este King Street /Industrial Park Drive & US Highway 421

02/07/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	B		A	A			E	E		F	
Approach Delay		10.5			6.5			60.4			93.1	
Approach LOS		B			A			E			F	
Queue Length 50th (ft)	8	335		9	140			16	105		132	
Queue Length 95th (ft)	19	446		m18	m330			40	163		202	
Internal Link Dist (ft)		1427			1019			1550			1171	
Turn Bay Length (ft)	325			300					75			
Base Capacity (vph)	463	2633		300	2680			212	324		229	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.10	0.56		0.24	0.38			0.08	0.34		0.55	

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 14 (8%), Referenced to phase 2:EBWB and 6:EBWB, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 14.8

Intersection LOS: B

Intersection Capacity Utilization 68.3%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 100: Old Este King Street /Industrial Park Drive & US Highway 421

Ø1	Ø2 (R)		Ø4
15 s	120 s		30 s
Ø5	Ø6 (R)		Ø8
15 s	120 s		30 s

Intersection							
Int Delay, s/veh	0.2						
Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations	↑↑				↑↑	↑↑	
Traffic Vol, veh/h	1424	17	3	5	1016	5	7
Future Vol, veh/h	1424	17	3	5	1016	5	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	1582	19	3	6	1129	6	8

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1601
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.44	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.52	2.22
Pot Cap-1 Maneuver	-	136	405
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	229	229
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	186	-	-	229	-
HCM Lane V/C Ratio	0.072	-	-	0.024	-
HCM Control Delay (s)	25.8	-	-	21.3	-
HCM Lane LOS	D	-	-	C	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection												
Int Delay, s/veh	24											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↕			↕	
Traffic Vol, veh/h	27	1401	5	5	992	28	5	5	5	24	5	30
Future Vol, veh/h	27	1401	5	5	992	28	5	5	5	24	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	1557	6	6	1102	31	6	6	6	27	6	33
Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	1133	0	0	1563	0	0	2186	2765	782	1972	2753	567
Stage 1	-	-	-	-	-	-	1620	1620	-	1130	1130	-
Stage 2	-	-	-	-	-	-	566	1145	-	842	1623	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	612	-	-	419	-	-	25	19	337	37	19	467
Stage 1	-	-	-	-	-	-	107	160	-	217	277	-
Stage 2	-	-	-	-	-	-	476	272	-	325	160	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	612	-	-	419	-	-	10	11	337	~ 16	11	467
Mov Cap-2 Maneuver	-	-	-	-	-	-	10	11	-	~ 16	11	-
Stage 1	-	-	-	-	-	-	67	100	-	136	266	-
Stage 2	-	-	-	-	-	-	416	261	-	189	100	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	0.2		0.1		\$ 617.3		\$ 867.4					
HCM LOS					F		F					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	15	612	-	-	419	-	-	29				
HCM Lane V/C Ratio	1.111	0.049	-	-	0.013	-	-	2.261				
HCM Control Delay (s)	\$ 617.3	11.2	-	-	13.7	-	-	\$ 867.4				
HCM Lane LOS	F	B	-	-	B	-	-	F				
HCM 95th %tile Q(veh)	2.6	0.2	-	-	0	-	-	7.7				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Lanes, Volumes, Timings
400: SR-1514 Bamboo Road & US Highway 421

02/07/2023



Lane Group	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations		↑↑	↑		↑	↑↑	↑	↑
Traffic Volume (vph)	2	1133	293	2	210	803	219	270
Future Volume (vph)	2	1133	293	2	210	803	219	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75		250		75	75
Storage Lanes	0		1		1		1	0
Taper Length (ft)	100				100		100	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Frt			0.850					0.850
Flt Protected					0.950		0.950	
Satd. Flow (prot)	0	3539	1583	0	1770	3539	1770	1583
Flt Permitted		0.954			0.175		0.950	
Satd. Flow (perm)	0	3376	1583	0	326	3539	1770	1583
Right Turn on Red			No					No
Satd. Flow (RTOR)								
Link Speed (mph)		45				45	35	
Link Distance (ft)		496				1260	1217	
Travel Time (s)		7.5				19.1	23.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	1259	326	2	233	892	243	300
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	1261	326	0	235	892	243	300
Turn Type	Perm	NA	Perm	custom	D.P+P	NA	Prot	Perm
Protected Phases		2			1	6	8	
Permitted Phases	2		2	1	2			8
Detector Phase	2	2	2	1	1	6	8	8
Switch Phase								
Minimum Initial (s)	12.0	12.0	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	18.8	18.8	18.8	12.7	12.7	18.8	11.9	11.9
Total Split (s)	120.0	120.0	120.0	15.0	15.0	120.0	30.0	30.0
Total Split (%)	72.7%	72.7%	72.7%	9.1%	9.1%	72.7%	18.2%	18.2%
Maximum Green (s)	113.2	113.2	113.2	9.3	9.3	113.2	25.1	25.1
Yellow Time (s)	5.4	5.4	5.4	3.3	3.3	5.4	3.0	3.0
All-Red Time (s)	1.4	1.4	1.4	2.4	2.4	1.4	1.9	1.9
Lost Time Adjust (s)		-1.8	-1.8		-0.7	-1.8	0.1	0.1
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	6.0	6.0	6.0	1.0	1.0	6.0	1.0	1.0
Minimum Gap (s)	4.5	4.5	4.5	0.2	0.2	3.0	0.2	0.2
Time Before Reduce (s)	20.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0
Time To Reduce (s)	40.0	40.0	40.0	0.0	0.0	40.0	0.0	0.0
Recall Mode	C-Min	C-Min	C-Min	None	None	C-Min	None	None
Act Effect Green (s)		115.9	115.9		125.0	130.0	25.0	25.0
Actuated g/C Ratio		0.70	0.70		0.76	0.79	0.15	0.15
v/c Ratio		0.53	0.29		0.72	0.32	0.91	1.26
Control Delay		9.4	7.7		18.8	5.3	103.4	198.0
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0
Total Delay		9.4	7.7		18.8	5.3	103.4	198.0

Scenario 1 220105 Springfield Suites 7:33 pm 12/03/2022 Future build PM
DAVENPORT

Synchro 11 Report
Page 7

Communication: Case PL06330-120922 Traffic Impact Analysis (Case PL06330-120922 Spring Hill Suites - Conditional District Zoning Map

Lanes, Volumes, Timings

400: SR-1514 Bamboo Road & US Highway 421

02/07/2023



Lane Group	EBU	EBT	EBR	WBU	WBL	WBT	NBL	NBR
LOS		A	A		B	A	F	F
Approach Delay		9.1				8.1	155.6	
Approach LOS		A				A	F	
Queue Length 50th (ft)		153	74		55	126	262	~403
Queue Length 95th (ft)		279	137		83	149	#432	#604
Internal Link Dist (ft)		416				1180	1137	
Turn Bay Length (ft)			75		250		75	75
Base Capacity (vph)		2370	1111		336	2788	268	239
Starvation Cap Reductn		0	0		0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0
Reduced v/c Ratio		0.53	0.29		0.70	0.32	0.91	1.26

Intersection Summary

Area Type: Other

Cycle Length: 165

Actuated Cycle Length: 165

Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.26

Intersection Signal Delay: 33.2

Intersection LOS: C

Intersection Capacity Utilization 82.8%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 400: SR-1514 Bamboo Road & US Highway 421



Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	1429	14	11	1009	13	11
Future Vol, veh/h	1429	14	11	1009	13	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1588	16	12	1121	14	12

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	1604	0	2181	802
Stage 1	-	-	-	-	1596	-
Stage 2	-	-	-	-	585	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	404	-	39	327
Stage 1	-	-	-	-	152	-
Stage 2	-	-	-	-	520	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	404	-	36	327
Mov Cap-2 Maneuver	-	-	-	-	117	-
Stage 1	-	-	-	-	152	-
Stage 2	-	-	-	-	479	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	30.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	166	-	-	404	-
HCM Lane V/C Ratio	0.161	-	-	0.03	-
HCM Control Delay (s)	30.8	-	-	14.2	0.5
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Queueing Analysis SimTraffic Worksheets

Queuing and Blocking Report

Scenario 1

Intersection: 100: Old Este King Street /Industrial Park Drive & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	LTR
Maximum Queue (ft)	69	116	162	158	92	101	1587	104	564
Average Queue (ft)	20	44	54	61	18	26	1096	15	285
95th Queue (ft)	51	94	111	106	63	85	2115	64	525
Link Distance (ft)		1465	1465		1591	1591	1573		1200
Upstream Blk Time (%)							51		
Queuing Penalty (veh)							0		
Storage Bay Dist (ft)	325			300				75	
Storage Blk Time (%)							99	1	
Queuing Penalty (veh)							178	0	

Intersection: 200: SR-1516 Bub Teems Road & US Highway 421

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	53	47
Average Queue (ft)	3	4
95th Queue (ft)	21	23
Link Distance (ft)	194	1137
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 300: SR-1515 New River Hills/SR-1401 Brookshire Road & US Highway 421

Movement	EB	WB	WB	NB	SB
Directions Served	LT	LT	TR	LTR	LTR
Maximum Queue (ft)	44	29	18	30	74
Average Queue (ft)	5	2	1	5	24
95th Queue (ft)	24	13	6	23	59
Link Distance (ft)	194	393	393	1488	1014
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report

Scenario 1

Intersection: 400: SR-1514 Bamboo Road & US Highway 421

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	L	T	T	L	R
Maximum Queue (ft)	154	140	193	214	224	175	280
Average Queue (ft)	80	79	95	128	101	123	101
95th Queue (ft)	132	136	148	201	191	189	235
Link Distance (ft)	393	393		1244	1244		1152
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			250			75	
Storage Blk Time (%)		10				29	3
Queuing Penalty (veh)		26				28	9

Network Summary

Network wide Queuing Penalty: 242

Queuing and Blocking Report

Existing PM

Intersection: 100: Old Este King Street /Industrial Park Drive & US Highway 421

Movement	EB	EB	EB	WB	NB	NB	SB
Directions Served	L	T	TR	L	LT	R	LTR
Maximum Queue (ft)	26	94	118	69	22	114	351
Average Queue (ft)	10	70	87	31	8	88	242
95th Queue (ft)	30	128	161	63	21	130	356
Link Distance (ft)		1465	1465		1573		1200
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	325			300		75	
Storage Blk Time (%)						9	
Queuing Penalty (veh)						1	

Intersection: 200: SR-1516 Bub Teems Road & US Highway 421

Movement	WB	NB
Directions Served	ULT	LR
Maximum Queue (ft)	29	27
Average Queue (ft)	6	5
95th Queue (ft)	25	23
Link Distance (ft)	194	1137
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 300: SR-1515 New River Hills/SR-1401 Brookshire Road & US Highway 421

Movement	EB	EB	SB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	112	69	74
Average Queue (ft)	35	14	47
95th Queue (ft)	104	59	74
Link Distance (ft)	194	194	1014
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report

Existing PM

Intersection: 400: SR-1514 Bamboo Road & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	UL	T	T	L	R
Maximum Queue (ft)	272	306	175	138	162	155	174	235
Average Queue (ft)	223	227	105	95	100	78	121	167
95th Queue (ft)	303	325	246	141	174	151	220	275
Link Distance (ft)	399	399			1244	1244		1151
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			75	250			75	
Storage Blk Time (%)		44					28	19
Queuing Penalty (veh)		124					72	39

Network Summary

Network wide Queuing Penalty: 236

Queuing and Blocking Report

FNB AM

Intersection: 100: Old Este King Street /Industrial Park Drive & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	LTR
Maximum Queue (ft)	92	91	139	117	89	129	1573	174	807
Average Queue (ft)	25	43	45	58	25	44	1129	23	427
95th Queue (ft)	55	75	95	102	69	108	2080	109	824
Link Distance (ft)		1465	1465		1591	1591	1573		1200
Upstream Blk Time (%)							54		
Queuing Penalty (veh)							0		
Storage Bay Dist (ft)	325			300				75	
Storage Blk Time (%)							100	2	
Queuing Penalty (veh)							186	1	

Intersection: 200: SR-1516 Bub Teems Road & US Highway 421

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	31	49
Average Queue (ft)	1	13
95th Queue (ft)	10	39
Link Distance (ft)	194	1137
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 300: SR-1515 New River Hills/SR-1401 Brookshire Road & US Highway 421

Movement	EB	WB	WB	NB	SB
Directions Served	LT	LT	TR	LTR	LTR
Maximum Queue (ft)	80	47	18	51	53
Average Queue (ft)	5	2	1	16	20
95th Queue (ft)	30	18	6	40	50
Link Distance (ft)	194	399	399	1488	1014
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report

FNB AM

Intersection: 400: SR-1514 Bamboo Road & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	R	L	T	T	L	R
Maximum Queue (ft)	126	229	175	247	353	399	174	386
Average Queue (ft)	86	96	17	105	147	124	137	156
95th Queue (ft)	123	162	102	184	257	244	209	335
Link Distance (ft)	399	399			1244	1244		1151
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			75	250			75	
Storage Blk Time (%)		15		0	1		35	5
Queuing Penalty (veh)		38		1	3		35	15

Network Summary

Network wide Queuing Penalty: 277

Queuing and Blocking Report

FNB PM

Intersection: 100: Old Este King Street /Industrial Park Drive & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	LTR
Maximum Queue (ft)	50	134	142	48	74	88	1588	174	1210
Average Queue (ft)	18	64	68	22	14	16	679	24	1074
95th Queue (ft)	45	130	137	48	53	63	1621	100	1467
Link Distance (ft)		1465	1465		1591	1591	1573		1200
Upstream Blk Time (%)							9		69
Queuing Penalty (veh)							0		0
Storage Bay Dist (ft)	325			300				75	
Storage Blk Time (%)							77	0	
Queuing Penalty (veh)							77	0	

Intersection: 200: SR-1516 Bub Teems Road & US Highway 421

Movement	EB	WB	WB	NB
Directions Served	TR	ULT	T	LR
Maximum Queue (ft)	55	113	103	28
Average Queue (ft)	2	11	6	8
95th Queue (ft)	18	59	44	27
Link Distance (ft)	1591	194	194	1137
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 300: SR-1515 New River Hills/SR-1401 Brookshire Road & US Highway 421

Movement	EB	EB	WB	NB	SB
Directions Served	LT	TR	LT	LTR	LTR
Maximum Queue (ft)	161	197	72	70	162
Average Queue (ft)	33	30	13	17	84
95th Queue (ft)	100	116	51	52	157
Link Distance (ft)	194	194	399	1488	1014
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		1			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report

FNB PM

Intersection: 400: SR-1514 Bamboo Road & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	UL	T	T	L	R
Maximum Queue (ft)	423	441	175	199	206	276	174	354
Average Queue (ft)	275	292	116	95	111	93	122	141
95th Queue (ft)	421	443	251	153	196	185	185	254
Link Distance (ft)	399	399			1244	1244		1151
Upstream Blk Time (%)	3	4						
Queuing Penalty (veh)	20	28						
Storage Bay Dist (ft)			75	250			75	
Storage Blk Time (%)		50					22	21
Queuing Penalty (veh)		145					60	45

Network Summary

Network wide Queuing Penalty: 376

Queuing and Blocking Report
Future build AM

Intersection: 100: Old Este King Street /Industrial Park Drive & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	LTR
Maximum Queue (ft)	51	158	117	178	158	191	1581	175	851
Average Queue (ft)	23	60	55	71	18	22	1143	27	491
95th Queue (ft)	41	113	95	133	80	97	2085	123	818
Link Distance (ft)		1465	1465		1033	1033	1573		1200
Upstream Blk Time (%)							55		
Queuing Penalty (veh)							0		
Storage Bay Dist (ft)	325			300				75	
Storage Blk Time (%)							96	3	
Queuing Penalty (veh)							179	1	

Intersection: 200: SR-1516 Bub Teems Road & US Highway 421

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	52	27
Average Queue (ft)	5	13
95th Queue (ft)	27	34
Link Distance (ft)	194	1135
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 300: SR-1515 New River Hills/SR-1401 Brookshire Road & US Highway 421

Movement	EB	EB	WB	NB	SB
Directions Served	LT	TR	LT	LTR	LTR
Maximum Queue (ft)	62	44	91	30	74
Average Queue (ft)	8	1	7	15	28
95th Queue (ft)	32	15	41	37	64
Link Distance (ft)	194	194	403	1489	1014
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report

Future build AM

Intersection: 400: SR-1514 Bamboo Road & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	R	L	T	T	L	R
Maximum Queue (ft)	222	241	174	349	400	367	175	365
Average Queue (ft)	107	109	17	134	163	150	139	170
95th Queue (ft)	165	178	103	265	302	285	199	364
Link Distance (ft)	403	403			1244	1244		1150
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			75	250			75	
Storage Blk Time (%)		23		1	3		37	4
Queuing Penalty (veh)		60		5	10		37	11

Intersection: 500: Site Access 1 & US Highway 421

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	53	53
Average Queue (ft)	5	20
95th Queue (ft)	28	45
Link Distance (ft)	502	978
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 303

Queuing and Blocking Report
Future build PM

Intersection: 100: Old Este King Street /Industrial Park Drive & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	LTR
Maximum Queue (ft)	49	178	138	87	92	111	1585	174	1195
Average Queue (ft)	15	58	53	29	18	23	698	43	1100
95th Queue (ft)	39	140	126	65	65	80	1672	151	1370
Link Distance (ft)		1465	1465		1033	1033	1573		1200
Upstream Blk Time (%)							13		70
Queuing Penalty (veh)							0		0
Storage Bay Dist (ft)	325			300				75	
Storage Blk Time (%)							88	2	
Queuing Penalty (veh)							88	0	

Intersection: 200: SR-1516 Bub Teems Road & US Highway 421

Movement	EB	EB	WB	NB
Directions Served	T	TR	ULT	LR
Maximum Queue (ft)	274	296	74	27
Average Queue (ft)	20	25	8	10
95th Queue (ft)	133	148	39	30
Link Distance (ft)	502	502	194	1135
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 300: SR-1515 New River Hills/SR-1401 Brookshire Road & US Highway 421

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	195	216	157	129	51	294
Average Queue (ft)	56	50	15	9	16	89
95th Queue (ft)	157	170	73	57	41	222
Link Distance (ft)	194	194	403	403	1489	1014
Upstream Blk Time (%)	1	2				
Queuing Penalty (veh)	5	12				
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Queuing and Blocking Report

Future build PM

Intersection: 400: SR-1514 Bamboo Road & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	UL	T	T	L	R
Maximum Queue (ft)	422	467	175	180	198	179	174	363
Average Queue (ft)	298	317	139	80	112	91	107	162
95th Queue (ft)	460	475	254	137	180	159	181	308
Link Distance (ft)	403	403			1244	1244		1150
Upstream Blk Time (%)	7	10						
Queuing Penalty (veh)	47	68						
Storage Bay Dist (ft)			75	250			75	
Storage Blk Time (%)		54					21	21
Queuing Penalty (veh)		157					56	47

Intersection: 500: Site Access 1 & US Highway 421

Movement	WB	WB	NB
Directions Served	LT	T	LR
Maximum Queue (ft)	95	38	72
Average Queue (ft)	10	1	15
95th Queue (ft)	49	13	45
Link Distance (ft)	502	502	978
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 481

Queuing and Blocking Report

Imp-Future build AM

Intersection: 100: Old Este King Street /Industrial Park Drive & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	LTR
Maximum Queue (ft)	66	73	116	113	87	106	1585	175	873
Average Queue (ft)	28	42	45	54	17	26	1272	17	523
95th Queue (ft)	58	80	88	89	56	81	2102	103	876
Link Distance (ft)		1465	1465		1034	1034	1573		1200
Upstream Blk Time (%)							64		
Queuing Penalty (veh)							0		
Storage Bay Dist (ft)	325			300				75	
Storage Blk Time (%)							100		
Queuing Penalty (veh)							186		

Intersection: 200: SR-1516 Bub Teems Road & US Highway 421

Movement	NB
Directions Served	LR
Maximum Queue (ft)	27
Average Queue (ft)	7
95th Queue (ft)	26
Link Distance (ft)	1135
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 300: SR-1515 New River Hills/SR-1401 Brookshire Road & US Highway 421

Movement	EB	WB	WB	NB	SB
Directions Served	LT	LT	TR	LTR	LTR
Maximum Queue (ft)	45	74	72	51	53
Average Queue (ft)	5	8	2	14	27
95th Queue (ft)	21	43	24	39	49
Link Distance (ft)	194	403	403	1489	1014
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report

Imp-Future build AM

Intersection: 400: SR-1514 Bamboo Road & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	R	L	T	T	L	R
Maximum Queue (ft)	228	254	175	189	243	277	174	260
Average Queue (ft)	100	113	23	108	161	145	138	120
95th Queue (ft)	169	198	119	161	237	234	190	232
Link Distance (ft)	403	403			1244	1244		1150
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			75	250			75	
Storage Blk Time (%)		18			0		38	8
Queuing Penalty (veh)		46			0		38	25

Intersection: 500: Site Access 1 & US Highway 421

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	53	45
Average Queue (ft)	7	16
95th Queue (ft)	32	37
Link Distance (ft)	502	965
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 295

Queuing and Blocking Report
Future build PM

Intersection: 100: Old Este King Street /Industrial Park Drive & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	LTR
Maximum Queue (ft)	24	108	94	48	23	44	87	60	628
Average Queue (ft)	5	82	68	23	5	9	40	35	432
95th Queue (ft)	21	107	109	48	20	38	82	63	678
Link Distance (ft)		1465	1465		1033	1033	1573		1200
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325			300				75	
Storage Blk Time (%)							3	0	
Queuing Penalty (veh)							3	0	

Intersection: 200: SR-1516 Bub Teems Road & US Highway 421

Movement	WB	NB
Directions Served	ULT	LR
Maximum Queue (ft)	29	26
Average Queue (ft)	6	5
95th Queue (ft)	25	22
Link Distance (ft)	194	1135
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 300: SR-1515 New River Hills/SR-1401 Brookshire Road & US Highway 421

Movement	EB	WB	NB	SB
Directions Served	LT	LT	LTR	LTR
Maximum Queue (ft)	39	72	68	111
Average Queue (ft)	18	25	23	85
95th Queue (ft)	45	76	72	117
Link Distance (ft)	194	403	1489	1014
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

Future build PM

Intersection: 400: SR-1514 Bamboo Road & US Highway 421

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	UT	T	R	UL	T	T	L	R
Maximum Queue (ft)	340	345	175	75	140	94	174	271
Average Queue (ft)	209	229	105	65	91	68	133	201
95th Queue (ft)	331	346	246	82	154	110	190	270
Link Distance (ft)	403	403			1244	1244		1150
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			75	250			75	
Storage Blk Time (%)		46					24	25
Queuing Penalty (veh)		135					64	55

Intersection: 500: Site Access 1 & US Highway 421

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	27	30
Average Queue (ft)	9	15
95th Queue (ft)	28	36
Link Distance (ft)	502	978
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 257

Turning Movement Counts



DAVENPORT

John Davenport Engineering Inc.
119 Brookstown
PH-1
Winston Salem, North Carolina, United States 27101
(336)744-1636 dbrown@davenportworld.com

Count Name: US Highway 421
at Old East King Street
Site Code: 2201053
Start Date: 11/30/2022
Page No: 1

Turning Movement Data

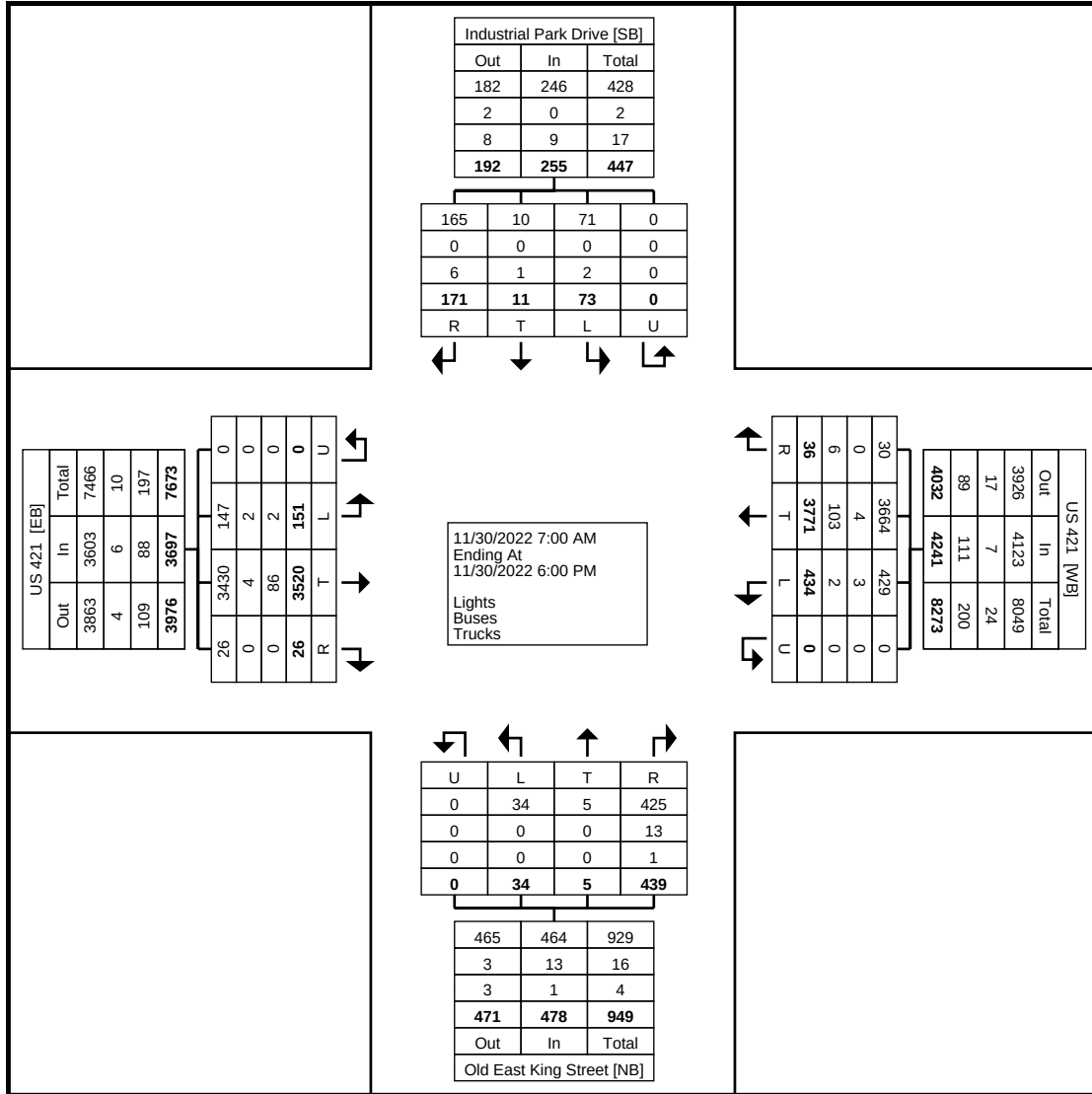
Start Time	Industrial Park Drive Southbound					US 421 Westbound					Old East King Street Northbound					US 421 Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
7:00 AM	2	0	2	0	4	4	172	11	0	187	6	0	0	0	6	0	96	7	0	103	300
7:15 AM	2	0	0	0	2	4	233	12	0	249	8	0	0	0	8	0	136	11	0	147	406
7:30 AM	4	2	1	0	7	3	329	31	0	363	15	0	0	0	15	0	154	12	0	166	551
7:45 AM	3	0	2	0	5	2	302	70	0	374	43	0	2	0	45	3	176	12	0	191	615
Hourly Total	11	2	5	0	18	13	1036	124	0	1173	72	0	2	0	74	3	562	42	0	607	1872
8:00 AM	2	1	1	0	4	4	298	110	0	412	59	0	5	0	64	4	167	18	0	189	669
8:15 AM	9	1	1	0	11	3	276	72	0	351	63	3	11	0	77	4	139	11	0	154	593
8:30 AM	6	1	3	0	10	1	260	10	0	271	27	0	3	0	30	0	153	5	0	158	469
8:45 AM	9	0	0	0	9	2	267	3	0	272	3	0	1	0	4	0	135	7	0	142	427
Hourly Total	26	3	5	0	34	10	1101	195	0	1306	152	3	20	0	175	8	594	41	0	643	2158
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	27	4	17	0	48	0	190	12	0	202	43	0	2	0	45	2	287	7	0	296	591
4:15 PM	21	0	8	0	29	2	206	10	0	218	20	1	0	0	21	1	287	8	0	296	564
4:30 PM	11	0	2	0	13	1	200	16	0	217	21	0	1	0	22	4	279	4	0	287	539
4:45 PM	14	0	7	0	21	1	213	16	0	230	13	0	0	0	13	1	281	11	0	293	557
Hourly Total	73	4	34	0	111	4	809	54	0	867	97	1	3	0	101	8	1134	30	0	1172	2251
5:00 PM	26	1	14	0	41	0	204	12	0	216	24	0	3	0	27	1	346	8	0	355	639
5:15 PM	14	1	4	0	19	2	211	13	0	226	31	0	2	0	33	1	343	6	0	350	628
5:30 PM	14	0	9	0	23	7	221	21	0	249	32	1	3	0	36	3	283	15	0	301	609
5:45 PM	7	0	2	0	9	0	189	15	0	204	31	0	1	0	32	2	258	9	0	269	514
Hourly Total	61	2	29	0	92	9	825	61	0	895	118	1	9	0	128	7	1230	38	0	1275	2390
Grand Total	171	11	73	0	255	36	3771	434	0	4241	439	5	34	0	478	26	3520	151	0	3697	8671
Approach %	67.1	4.3	28.6	0.0	-	0.8	88.9	10.2	0.0	-	91.8	1.0	7.1	0.0	-	0.7	95.2	4.1	0.0	-	-
Total %	2.0	0.1	0.8	0.0	2.9	0.4	43.5	5.0	0.0	48.9	5.1	0.1	0.4	0.0	5.5	0.3	40.6	1.7	0.0	42.6	-
Lights	165	10	71	0	246	30	3664	429	0	4123	425	5	34	0	464	26	3430	147	0	3603	8436
% Lights	96.5	90.9	97.3	-	96.5	83.3	97.2	98.8	-	97.2	96.8	100.0	100.0	-	97.1	100.0	97.4	97.4	-	97.5	97.3
Buses	0	0	0	0	0	0	4	3	0	7	13	0	0	0	13	0	4	2	0	6	26
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.1	0.7	-	0.2	3.0	0.0	0.0	-	2.7	0.0	0.1	1.3	-	0.2	0.3
Trucks	6	1	2	0	9	6	103	2	0	111	1	0	0	0	1	0	86	2	0	88	209
% Trucks	3.5	9.1	2.7	-	3.5	16.7	2.7	0.5	-	2.6	0.2	0.0	0.0	-	0.2	0.0	2.4	1.3	-	2.4	2.4



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Count Name: US Highway 421
at Old East King Street
Site Code: 2201053
Start Date: 11/30/2022
Page No: 2



Turning Movement Data Plot



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Count Name: US Highway 421
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Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

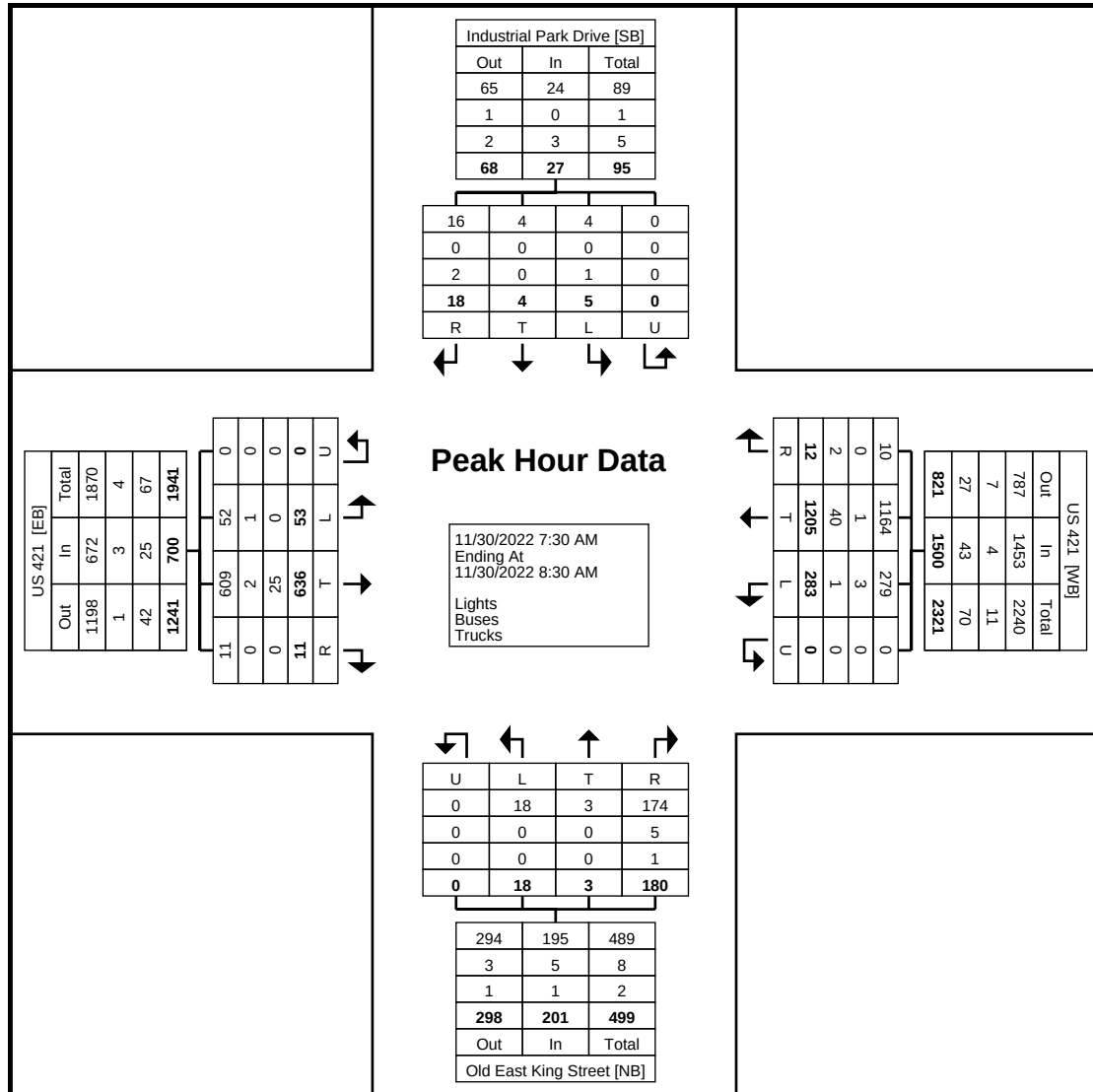
Start Time	Industrial Park Drive Southbound					US 421 Westbound					Old East King Street Northbound					US 421 Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
7:30 AM	4	2	1	0	7	3	329	31	0	363	15	0	0	0	15	0	154	12	0	166	551
7:45 AM	3	0	2	0	5	2	302	70	0	374	43	0	2	0	45	3	176	12	0	191	615
8:00 AM	2	1	1	0	4	4	298	110	0	412	59	0	5	0	64	4	167	18	0	189	669
8:15 AM	9	1	1	0	11	3	276	72	0	351	63	3	11	0	77	4	139	11	0	154	593
Total	18	4	5	0	27	12	1205	283	0	1500	180	3	18	0	201	11	636	53	0	700	2428
Approach %	66.7	14.8	18.5	0.0	-	0.8	80.3	18.9	0.0	-	89.6	1.5	9.0	0.0	-	1.6	90.9	7.6	0.0	-	-
Total %	0.7	0.2	0.2	0.0	1.1	0.5	49.6	11.7	0.0	61.8	7.4	0.1	0.7	0.0	8.3	0.5	26.2	2.2	0.0	28.8	-
PHF	0.500	0.500	0.625	0.000	0.614	0.750	0.916	0.643	0.000	0.910	0.714	0.250	0.409	0.000	0.653	0.688	0.903	0.736	0.000	0.916	0.907
Lights	16	4	4	0	24	10	1164	279	0	1453	174	3	18	0	195	11	609	52	0	672	2344
% Lights	88.9	100.0	80.0	-	88.9	83.3	96.6	98.6	-	96.9	96.7	100.0	100.0	-	97.0	100.0	95.8	98.1	-	96.0	96.5
Buses	0	0	0	0	0	0	1	3	0	4	5	0	0	0	5	0	2	1	0	3	12
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.1	1.1	-	0.3	2.8	0.0	0.0	-	2.5	0.0	0.3	1.9	-	0.4	0.5
Trucks	2	0	1	0	3	2	40	1	0	43	1	0	0	0	1	0	25	0	0	25	72
% Trucks	11.1	0.0	20.0	-	11.1	16.7	3.3	0.4	-	2.9	0.6	0.0	0.0	-	0.5	0.0	3.9	0.0	-	3.6	3.0



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Count Name: US Highway 421
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Site Code: 2201053
Start Date: 11/30/2022
Page No: 4



Turning Movement Peak Hour Data Plot (7:30 AM)



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Count Name: US Highway 421
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Site Code: 2201053
Start Date: 11/30/2022
Page No: 5

Turning Movement Peak Hour Data (4:45 PM)

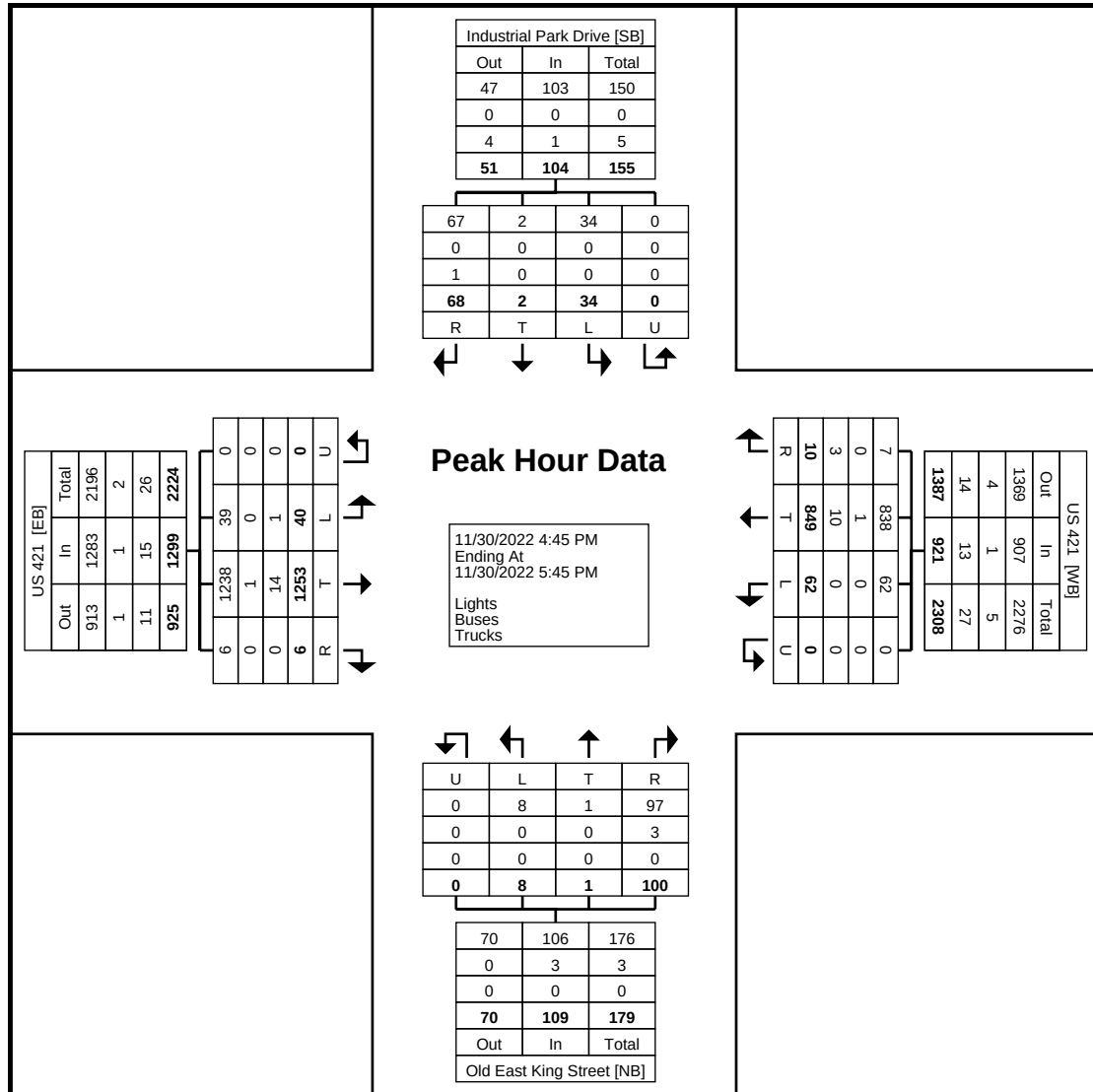
Start Time	Industrial Park Drive Southbound					US 421 Westbound					Old East King Street Northbound					US 421 Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
4:45 PM	14	0	7	0	21	1	213	16	0	230	13	0	0	0	13	1	281	11	0	293	557
5:00 PM	26	1	14	0	41	0	204	12	0	216	24	0	3	0	27	1	346	8	0	355	639
5:15 PM	14	1	4	0	19	2	211	13	0	226	31	0	2	0	33	1	343	6	0	350	628
5:30 PM	14	0	9	0	23	7	221	21	0	249	32	1	3	0	36	3	283	15	0	301	609
Total	68	2	34	0	104	10	849	62	0	921	100	1	8	0	109	6	1253	40	0	1299	2433
Approach %	65.4	1.9	32.7	0.0	-	1.1	92.2	6.7	0.0	-	91.7	0.9	7.3	0.0	-	0.5	96.5	3.1	0.0	-	-
Total %	2.8	0.1	1.4	0.0	4.3	0.4	34.9	2.5	0.0	37.9	4.1	0.0	0.3	0.0	4.5	0.2	51.5	1.6	0.0	53.4	-
PHF	0.654	0.500	0.607	0.000	0.634	0.357	0.960	0.738	0.000	0.925	0.781	0.250	0.667	0.000	0.757	0.500	0.905	0.667	0.000	0.915	0.952
Lights	67	2	34	0	103	7	838	62	0	907	97	1	8	0	106	6	1238	39	0	1283	2399
% Lights	98.5	100.0	100.0	-	99.0	70.0	98.7	100.0	-	98.5	97.0	100.0	100.0	-	97.2	100.0	98.8	97.5	-	98.8	98.6
Buses	0	0	0	0	0	0	1	0	0	1	3	0	0	0	3	0	1	0	0	1	5
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	-	0.1	3.0	0.0	0.0	-	2.8	0.0	0.1	0.0	-	0.1	0.2
Trucks	1	0	0	0	1	3	10	0	0	13	0	0	0	0	0	0	14	1	0	15	29
% Trucks	1.5	0.0	0.0	-	1.0	30.0	1.2	0.0	-	1.4	0.0	0.0	0.0	-	0.0	0.0	1.1	2.5	-	1.2	1.2



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Site Code: 2201053
Start Date: 11/30/2022
Page No: 6



Turning Movement Peak Hour Data Plot (4:45 PM)



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Count Name: US Highway 421
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Site Code: 2201054
Start Date: 11/30/2022
Page No: 1

Turning Movement Data

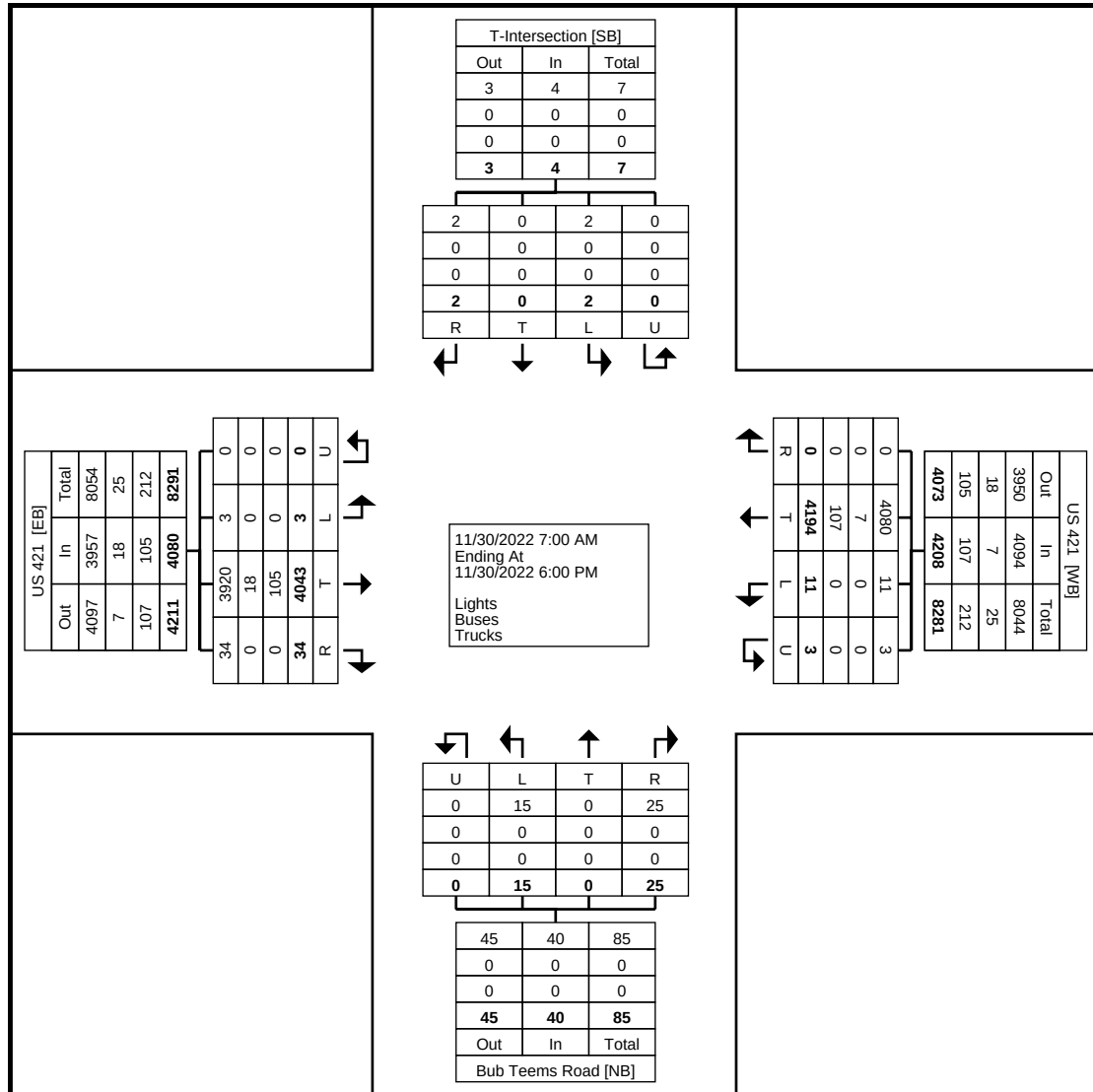
Start Time	T-Intersection Southbound					US 421 Westbound					Bub Teems Road Northbound					US 421 Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
7:00 AM	0	0	0	0	0	0	186	0	0	186	1	0	0	0	1	0	114	0	0	114	301
7:15 AM	0	0	1	0	1	0	240	1	0	241	1	0	1	0	2	2	140	0	0	142	386
7:30 AM	0	0	0	0	0	0	333	0	0	333	1	0	3	0	4	0	171	0	0	171	508
7:45 AM	0	0	0	0	0	0	381	0	0	381	3	0	1	0	4	2	215	0	0	217	602
Hourly Total	0	0	1	0	1	0	1140	1	0	1141	6	0	5	0	11	4	640	0	0	644	1797
8:00 AM	1	0	0	0	1	0	380	1	0	381	0	0	0	0	0	1	225	0	0	226	608
8:15 AM	0	0	0	0	0	0	338	1	0	339	2	0	1	0	3	0	219	1	0	220	562
8:30 AM	0	0	0	0	0	0	266	0	0	266	2	0	2	0	4	0	182	0	0	182	452
8:45 AM	0	0	0	0	0	0	257	0	0	257	0	0	2	0	2	0	147	0	0	147	406
Hourly Total	1	0	0	0	1	0	1241	2	0	1243	4	0	5	0	9	1	773	1	0	775	2028
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	0	0	0	0	204	1	0	205	4	0	0	0	4	2	354	0	0	356	565
4:15 PM	0	0	0	0	0	0	215	1	0	216	0	0	0	0	0	5	305	2	0	312	528
4:30 PM	0	0	0	0	0	0	207	1	0	208	3	0	3	0	6	3	301	0	0	304	518
4:45 PM	1	0	0	0	1	0	225	1	1	227	2	0	0	0	2	3	307	0	0	310	540
Hourly Total	1	0	0	0	1	0	851	4	1	856	9	0	3	0	12	13	1267	2	0	1282	2151
5:00 PM	0	0	1	0	1	0	235	0	1	236	1	0	0	0	1	3	399	0	0	402	640
5:15 PM	0	0	0	0	0	0	218	1	0	219	1	0	0	0	1	4	355	0	0	359	579
5:30 PM	0	0	0	0	0	0	251	3	0	254	3	0	2	0	5	8	315	0	0	323	582
5:45 PM	0	0	0	0	0	0	258	0	1	259	1	0	0	0	1	1	294	0	0	295	555
Hourly Total	0	0	1	0	1	0	962	4	2	968	6	0	2	0	8	16	1363	0	0	1379	2356
Grand Total	2	0	2	0	4	0	4194	11	3	4208	25	0	15	0	40	34	4043	3	0	4080	8332
Approach %	50.0	0.0	50.0	0.0	-	0.0	99.7	0.3	0.1	-	62.5	0.0	37.5	0.0	-	0.8	99.1	0.1	0.0	-	-
Total %	0.0	0.0	0.0	0.0	0.0	0.0	50.3	0.1	0.0	50.5	0.3	0.0	0.2	0.0	0.5	0.4	48.5	0.0	0.0	49.0	-
Lights	2	0	2	0	4	0	4080	11	3	4094	25	0	15	0	40	34	3920	3	0	3957	8095
% Lights	100.0	-	100.0	-	100.0	-	97.3	100.0	100.0	97.3	100.0	-	100.0	-	100.0	100.0	97.0	100.0	-	97.0	97.2
Buses	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	18	0	0	18	25
% Buses	0.0	-	0.0	-	0.0	-	0.2	0.0	0.0	0.2	0.0	-	0.0	-	0.0	0.0	0.4	0.0	-	0.4	0.3
Trucks	0	0	0	0	0	0	107	0	0	107	0	0	0	0	0	0	105	0	0	105	212
% Trucks	0.0	-	0.0	-	0.0	-	2.6	0.0	0.0	2.5	0.0	-	0.0	-	0.0	0.0	2.6	0.0	-	2.6	2.5



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Count Name: US Highway 421
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Site Code: 2201054
Start Date: 11/30/2022
Page No: 2





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Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

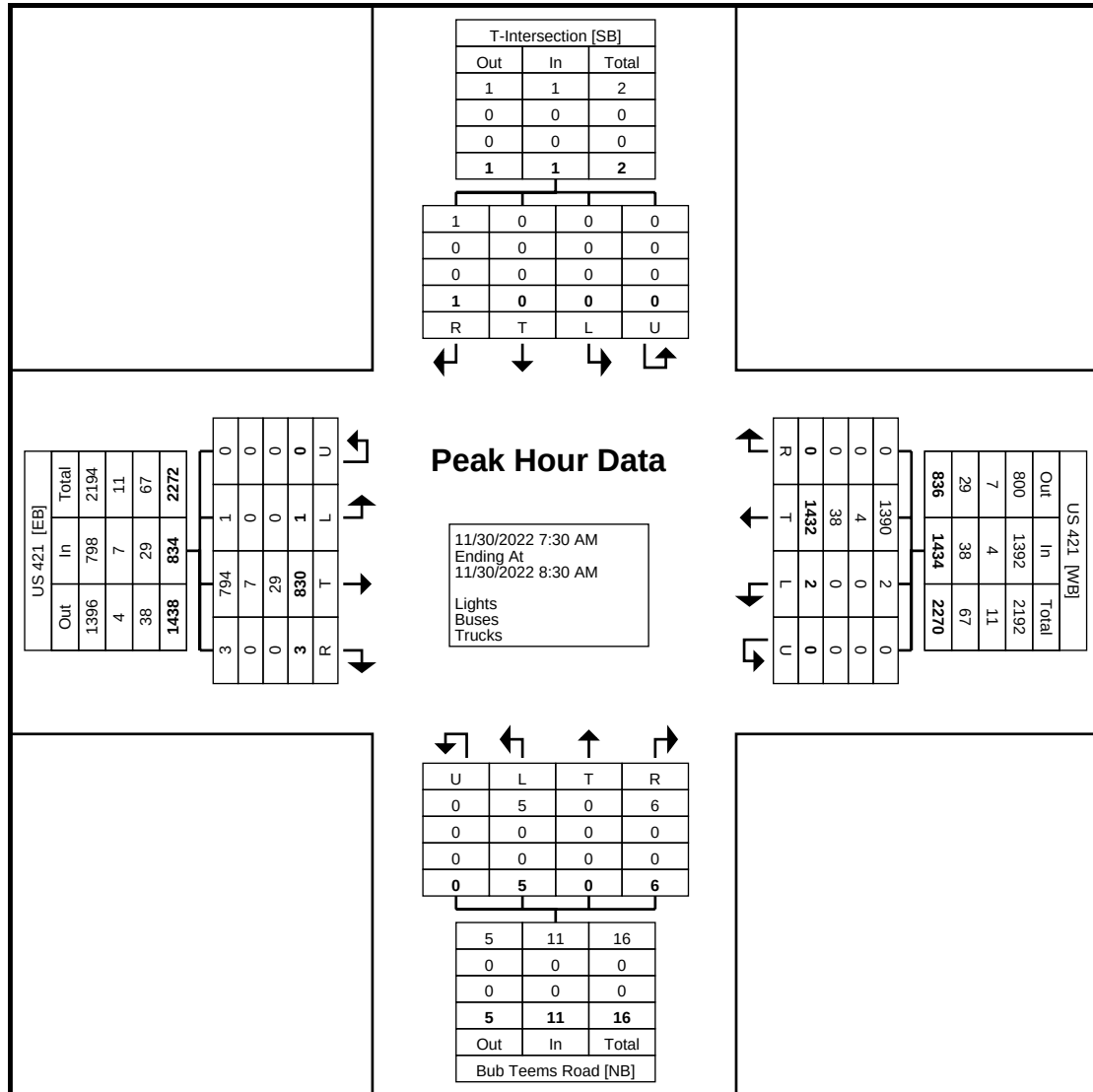
Start Time	T-Intersection Southbound					US 421 Westbound					Bub Teems Road Northbound					US 421 Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
7:30 AM	0	0	0	0	0	0	333	0	0	333	1	0	3	0	4	0	171	0	0	171	508
7:45 AM	0	0	0	0	0	0	381	0	0	381	3	0	1	0	4	2	215	0	0	217	602
8:00 AM	1	0	0	0	1	0	380	1	0	381	0	0	0	0	0	1	225	0	0	226	608
8:15 AM	0	0	0	0	0	0	338	1	0	339	2	0	1	0	3	0	219	1	0	220	562
Total	1	0	0	0	1	0	1432	2	0	1434	6	0	5	0	11	3	830	1	0	834	2280
Approach %	100.0	0.0	0.0	0.0	-	0.0	99.9	0.1	0.0	-	54.5	0.0	45.5	0.0	-	0.4	99.5	0.1	0.0	-	-
Total %	0.0	0.0	0.0	0.0	0.0	0.0	62.8	0.1	0.0	62.9	0.3	0.0	0.2	0.0	0.5	0.1	36.4	0.0	0.0	36.6	-
PHF	0.250	0.000	0.000	0.000	0.250	0.000	0.940	0.500	0.000	0.941	0.500	0.000	0.417	0.000	0.688	0.375	0.922	0.250	0.000	0.923	0.938
Lights	1	0	0	0	1	0	1390	2	0	1392	6	0	5	0	11	3	794	1	0	798	2202
% Lights	100.0	-	-	-	100.0	-	97.1	100.0	-	97.1	100.0	-	100.0	-	100.0	100.0	95.7	100.0	-	95.7	96.6
Buses	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	7	0	0	7	11
% Buses	0.0	-	-	-	0.0	-	0.3	0.0	-	0.3	0.0	-	0.0	-	0.0	0.0	0.8	0.0	-	0.8	0.5
Trucks	0	0	0	0	0	0	38	0	0	38	0	0	0	0	0	0	29	0	0	29	67
% Trucks	0.0	-	-	-	0.0	-	2.7	0.0	-	2.6	0.0	-	0.0	-	0.0	0.0	3.5	0.0	-	3.5	2.9



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Start Date: 11/30/2022
Page No: 4



Turning Movement Peak Hour Data Plot (7:30 AM)



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Site Code: 2201054
Start Date: 11/30/2022
Page No: 5

Turning Movement Peak Hour Data (5:00 PM)

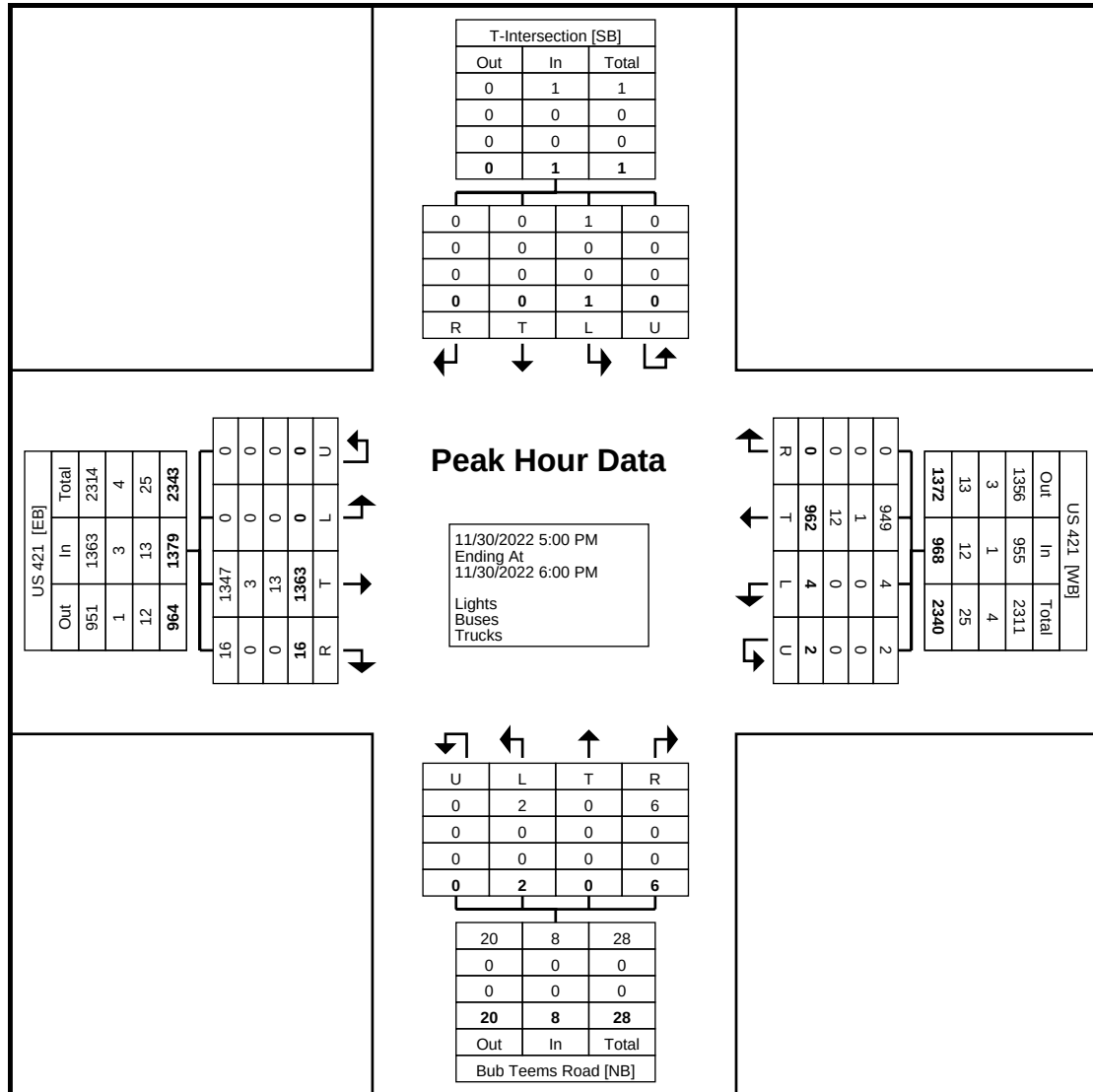
Start Time	T-Intersection Southbound					US 421 Westbound					Bub Teems Road Northbound					US 421 Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
5:00 PM	0	0	1	0	1	0	235	0	1	236	1	0	0	0	1	3	399	0	0	402	640
5:15 PM	0	0	0	0	0	0	218	1	0	219	1	0	0	0	1	4	355	0	0	359	579
5:30 PM	0	0	0	0	0	0	251	3	0	254	3	0	2	0	5	8	315	0	0	323	582
5:45 PM	0	0	0	0	0	0	258	0	1	259	1	0	0	0	1	1	294	0	0	295	555
Total	0	0	1	0	1	0	962	4	2	968	6	0	2	0	8	16	1363	0	0	1379	2356
Approach %	0.0	0.0	100.0	0.0	-	0.0	99.4	0.4	0.2	-	75.0	0.0	25.0	0.0	-	1.2	98.8	0.0	0.0	-	-
Total %	0.0	0.0	0.0	0.0	0.0	0.0	40.8	0.2	0.1	41.1	0.3	0.0	0.1	0.0	0.3	0.7	57.9	0.0	0.0	58.5	-
PHF	0.000	0.000	0.250	0.000	0.250	0.000	0.932	0.333	0.500	0.934	0.500	0.000	0.250	0.000	0.400	0.500	0.854	0.000	0.000	0.858	0.920
Lights	0	0	1	0	1	0	949	4	2	955	6	0	2	0	8	16	1347	0	0	1363	2327
% Lights	-	-	100.0	-	100.0	-	98.6	100.0	100.0	98.7	100.0	-	100.0	-	100.0	100.0	98.8	-	-	98.8	98.8
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
% Buses	-	-	0.0	-	0.0	-	0.1	0.0	0.0	0.1	0.0	-	0.0	-	0.0	0.0	0.2	-	-	0.2	0.2
Trucks	0	0	0	0	0	0	12	0	0	12	0	0	0	0	0	0	13	0	0	13	25
% Trucks	-	-	0.0	-	0.0	-	1.2	0.0	0.0	1.2	0.0	-	0.0	-	0.0	0.0	1.0	-	-	0.9	1.1



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Start Date: 11/30/2022
Page No: 6





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(336)744-1636 dbrown@davenportworld.com

Count Name: US Highway 421
at Brookshire Road
Site Code: 2201052
Start Date: 11/30/2022
Page No: 1

Turning Movement Data

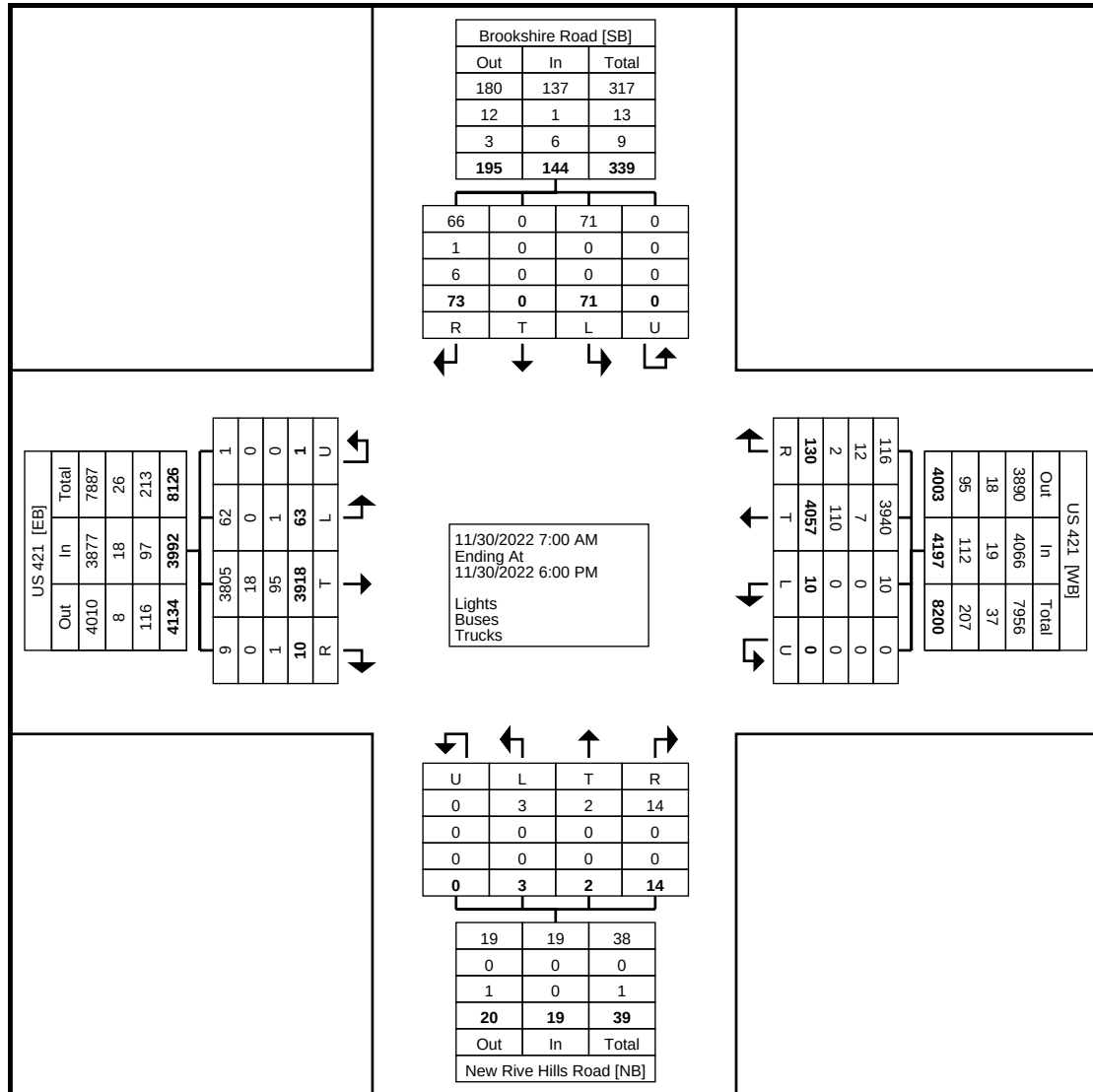
Start Time	Brookshire Road Southbound					US 421 Westbound					New Rive Hills Road Northbound					US 421 Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
7:00 AM	0	0	1	0	1	5	183	1	0	189	0	0	1	0	1	0	113	0	0	113	304
7:15 AM	2	0	0	0	2	5	246	0	0	251	0	0	0	0	0	0	143	2	0	145	398
7:30 AM	2	0	3	0	5	11	364	1	0	376	1	0	0	0	1	0	173	0	0	173	555
7:45 AM	1	0	2	0	3	12	367	0	0	379	1	1	0	0	2	1	213	1	0	215	599
Hourly Total	5	0	6	0	11	33	1160	2	0	1195	2	1	1	0	4	1	642	3	0	646	1856
8:00 AM	2	0	3	0	5	16	381	1	0	398	2	0	0	0	2	0	211	5	0	216	621
8:15 AM	9	0	2	0	11	11	336	0	0	347	2	0	0	0	2	1	206	4	0	211	571
8:30 AM	1	0	4	0	5	6	261	1	0	268	1	0	0	0	1	2	180	4	0	186	460
8:45 AM	2	0	7	0	9	10	258	0	0	268	1	0	1	0	2	0	134	3	0	137	416
Hourly Total	14	0	16	0	30	43	1236	2	0	1281	6	0	1	0	7	3	731	16	0	750	2068
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	5	0	3	0	8	10	203	1	0	214	2	0	0	0	2	1	340	2	0	343	567
4:15 PM	8	0	9	0	17	7	209	2	0	218	0	0	1	0	1	0	291	6	1	298	534
4:30 PM	7	0	10	0	17	7	200	1	0	208	2	0	0	0	2	1	290	4	0	295	522
4:45 PM	3	0	2	0	5	6	225	0	0	231	0	0	0	0	0	1	300	4	0	305	541
Hourly Total	23	0	24	0	47	30	837	4	0	871	4	0	1	0	5	3	1221	16	1	1241	2164
5:00 PM	9	0	9	0	18	5	204	0	0	209	0	0	0	0	0	3	391	7	0	401	628
5:15 PM	6	0	2	0	8	9	215	1	0	225	2	0	0	0	2	0	338	10	0	348	583
5:30 PM	11	0	10	0	21	7	219	1	0	227	0	0	0	0	0	0	307	5	0	312	560
5:45 PM	5	0	4	0	9	3	186	0	0	189	0	1	0	0	1	0	288	6	0	294	493
Hourly Total	31	0	25	0	56	24	824	2	0	850	2	1	0	0	3	3	1324	28	0	1355	2264
Grand Total	73	0	71	0	144	130	4057	10	0	4197	14	2	3	0	19	10	3918	63	1	3992	8352
Approach %	50.7	0.0	49.3	0.0	-	3.1	96.7	0.2	0.0	-	73.7	10.5	15.8	0.0	-	0.3	98.1	1.6	0.0	-	-
Total %	0.9	0.0	0.9	0.0	1.7	1.6	48.6	0.1	0.0	50.3	0.2	0.0	0.0	0.0	0.2	0.1	46.9	0.8	0.0	47.8	-
Lights	66	0	71	0	137	116	3940	10	0	4066	14	2	3	0	19	9	3805	62	1	3877	8099
% Lights	90.4	-	100.0	-	95.1	89.2	97.1	100.0	-	96.9	100.0	100.0	100.0	-	100.0	90.0	97.1	98.4	100.0	97.1	97.0
Buses	1	0	0	0	1	12	7	0	0	19	0	0	0	0	0	0	18	0	0	18	38
% Buses	1.4	-	0.0	-	0.7	9.2	0.2	0.0	-	0.5	0.0	0.0	0.0	-	0.0	0.0	0.5	0.0	0.0	0.5	0.5
Trucks	6	0	0	0	6	2	110	0	0	112	0	0	0	0	0	1	95	1	0	97	215
% Trucks	8.2	-	0.0	-	4.2	1.5	2.7	0.0	-	2.7	0.0	0.0	0.0	-	0.0	10.0	2.4	1.6	0.0	2.4	2.6



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Site Code: 2201052
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Page No: 2



Turning Movement Data Plot



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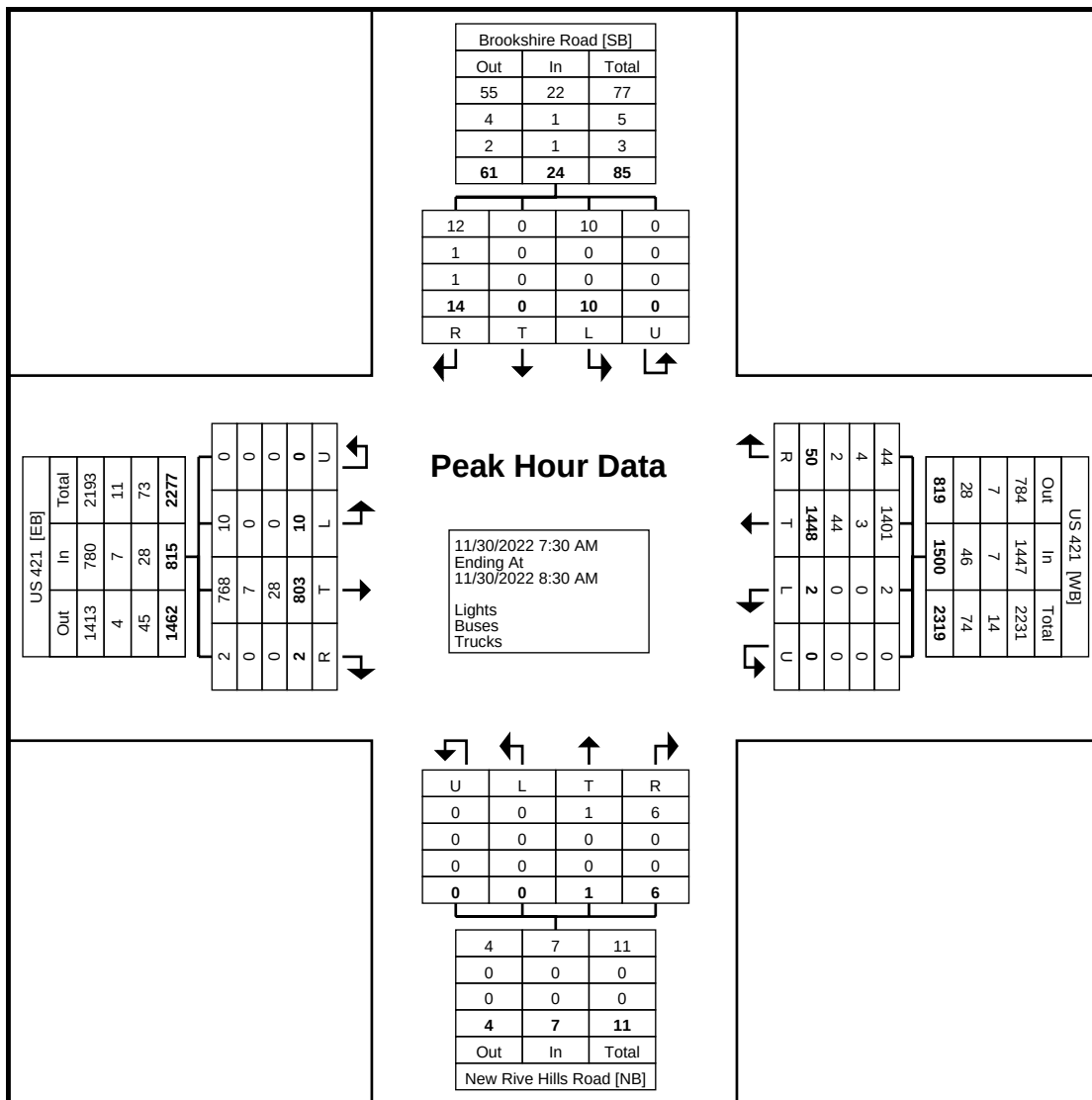
Count Name: US Highway 421
at Brookshire Road
Site Code: 2201052
Start Date: 11/30/2022
Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Brookshire Road Southbound					US 421 Westbound					New Rive Hills Road Northbound					US 421 Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
7:30 AM	2	0	3	0	5	11	364	1	0	376	1	0	0	0	1	0	173	0	0	173	555
7:45 AM	1	0	2	0	3	12	367	0	0	379	1	1	0	0	2	1	213	1	0	215	599
8:00 AM	2	0	3	0	5	16	381	1	0	398	2	0	0	0	2	0	211	5	0	216	621
8:15 AM	9	0	2	0	11	11	336	0	0	347	2	0	0	0	2	1	206	4	0	211	571
Total	14	0	10	0	24	50	1448	2	0	1500	6	1	0	0	7	2	803	10	0	815	2346
Approach %	58.3	0.0	41.7	0.0	-	3.3	96.5	0.1	0.0	-	85.7	14.3	0.0	0.0	-	0.2	98.5	1.2	0.0	-	-
Total %	0.6	0.0	0.4	0.0	1.0	2.1	61.7	0.1	0.0	63.9	0.3	0.0	0.0	0.0	0.3	0.1	34.2	0.4	0.0	34.7	-
PHF	0.389	0.000	0.833	0.000	0.545	0.781	0.950	0.500	0.000	0.942	0.750	0.250	0.000	0.000	0.875	0.500	0.942	0.500	0.000	0.943	0.944
Lights	12	0	10	0	22	44	1401	2	0	1447	6	1	0	0	7	2	768	10	0	780	2256
% Lights	85.7	-	100.0	-	91.7	88.0	96.8	100.0	-	96.5	100.0	100.0	-	-	100.0	100.0	95.6	100.0	-	95.7	96.2
Buses	1	0	0	0	1	4	3	0	0	7	0	0	0	0	0	0	7	0	0	7	15
% Buses	7.1	-	0.0	-	4.2	8.0	0.2	0.0	-	0.5	0.0	0.0	-	-	0.0	0.0	0.9	0.0	-	0.9	0.6
Trucks	1	0	0	0	1	2	44	0	0	46	0	0	0	0	0	0	28	0	0	28	75
% Trucks	7.1	-	0.0	-	4.2	4.0	3.0	0.0	-	3.1	0.0	0.0	-	-	0.0	0.0	3.5	0.0	-	3.4	3.2



Count Name: US Highway 421
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Start Date: 11/30/2022
Page No: 4



Turning Movement Peak Hour Data Plot (7:30 AM)



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Count Name: US Highway 421
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Page No: 5

Turning Movement Peak Hour Data (4:45 PM)

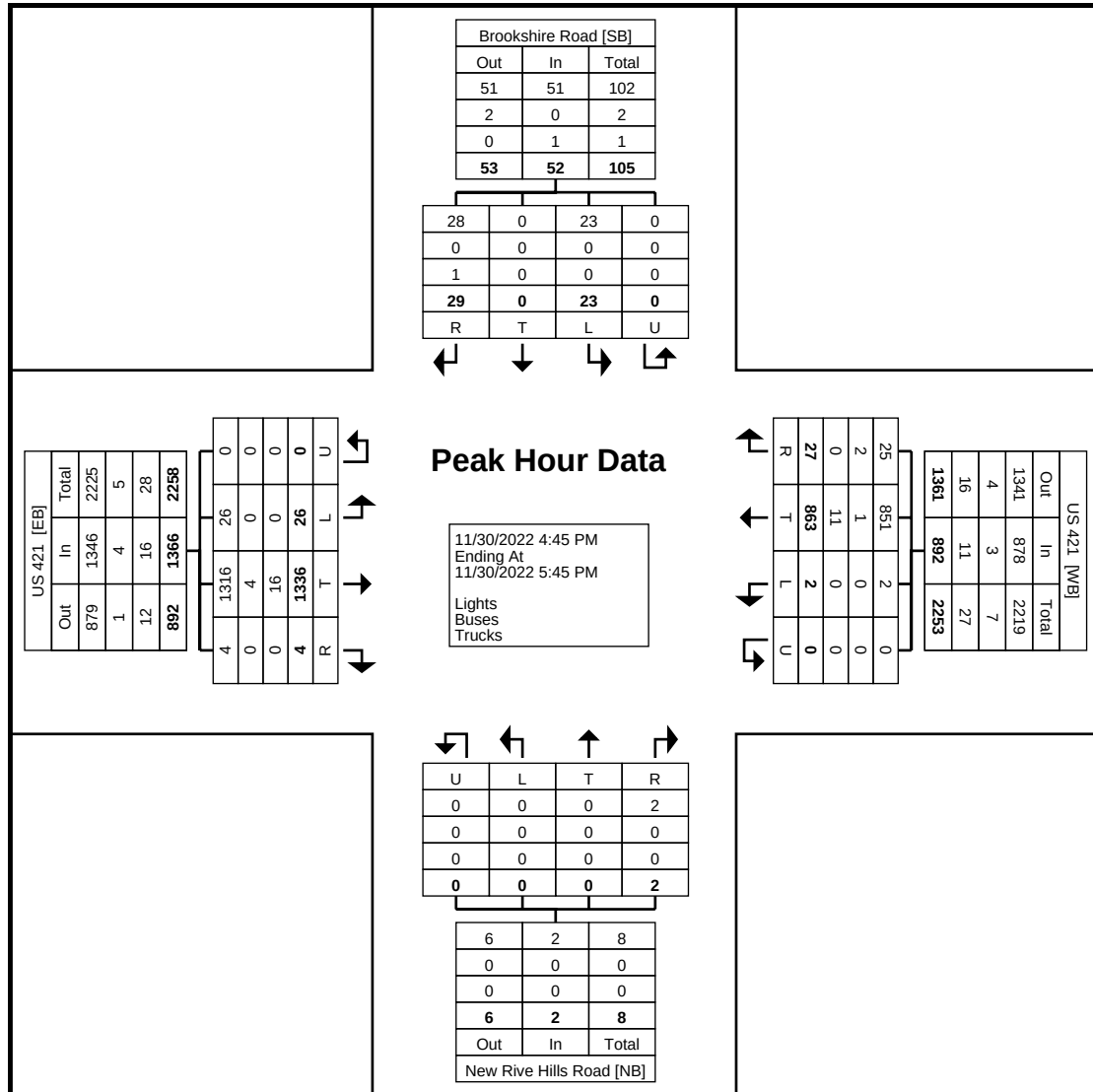
Start Time	Brookshire Road Southbound					US 421 Westbound					New Rive Hills Road Northbound					US 421 Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
4:45 PM	3	0	2	0	5	6	225	0	0	231	0	0	0	0	0	1	300	4	0	305	541
5:00 PM	9	0	9	0	18	5	204	0	0	209	0	0	0	0	0	3	391	7	0	401	628
5:15 PM	6	0	2	0	8	9	215	1	0	225	2	0	0	0	2	0	338	10	0	348	583
5:30 PM	11	0	10	0	21	7	219	1	0	227	0	0	0	0	0	0	307	5	0	312	560
Total	29	0	23	0	52	27	863	2	0	892	2	0	0	0	2	4	1336	26	0	1366	2312
Approach %	55.8	0.0	44.2	0.0	-	3.0	96.7	0.2	0.0	-	100.0	0.0	0.0	0.0	-	0.3	97.8	1.9	0.0	-	-
Total %	1.3	0.0	1.0	0.0	2.2	1.2	37.3	0.1	0.0	38.6	0.1	0.0	0.0	0.0	0.1	0.2	57.8	1.1	0.0	59.1	-
PHF	0.659	0.000	0.575	0.000	0.619	0.750	0.959	0.500	0.000	0.965	0.250	0.000	0.000	0.000	0.250	0.333	0.854	0.650	0.000	0.852	0.920
Lights	28	0	23	0	51	25	851	2	0	878	2	0	0	0	2	4	1316	26	0	1346	2277
% Lights	96.6	-	100.0	-	98.1	92.6	98.6	100.0	-	98.4	100.0	-	-	-	100.0	100.0	98.5	100.0	-	98.5	98.5
Buses	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	0	4	0	0	4	7
% Buses	0.0	-	0.0	-	0.0	7.4	0.1	0.0	-	0.3	0.0	-	-	-	0.0	0.0	0.3	0.0	-	0.3	0.3
Trucks	1	0	0	0	1	0	11	0	0	11	0	0	0	0	0	0	16	0	0	16	28
% Trucks	3.4	-	0.0	-	1.9	0.0	1.3	0.0	-	1.2	0.0	-	-	-	0.0	0.0	1.2	0.0	-	1.2	1.2



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Page No: 6



Turning Movement Peak Hour Data Plot (4:45 PM)



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Count Name: US 421 and
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Site Code: 2201051
Start Date: 11/30/2022
Page No: 1

Turning Movement Data

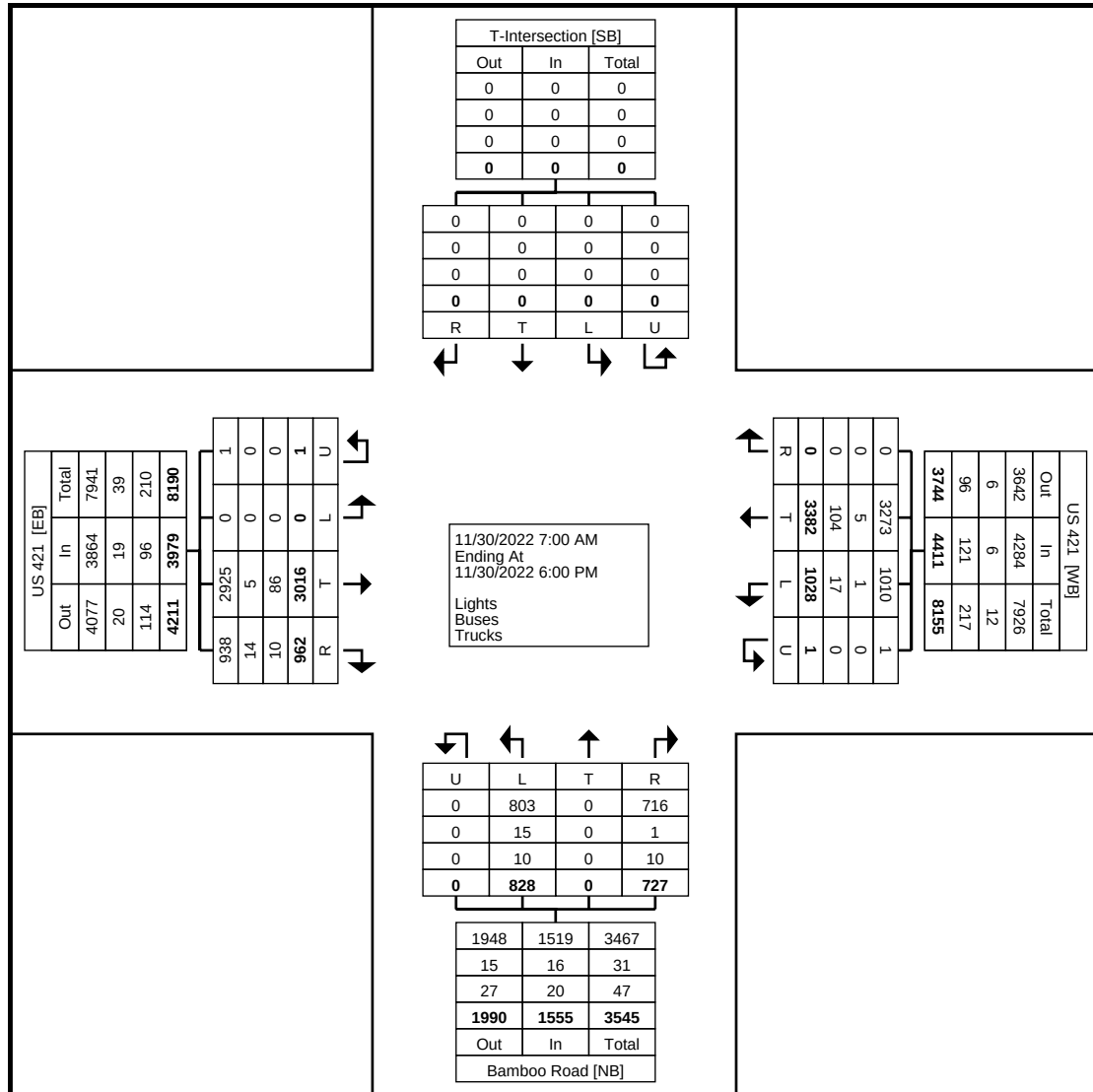
Start Time	T-Intersection Southbound					US 421 Westbound					Bamboo Road Northbound					US 421 Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
7:00 AM	0	0	0	0	0	0	160	53	0	213	33	0	26	0	59	21	101	0	0	122	394
7:15 AM	0	0	0	0	0	0	201	78	0	279	32	0	47	0	79	25	111	0	0	136	494
7:30 AM	0	0	0	0	0	0	299	99	0	398	25	0	74	0	99	59	117	0	0	176	673
7:45 AM	0	0	0	0	0	0	315	93	0	408	29	0	69	0	98	57	159	0	0	216	722
Hourly Total	0	0	0	0	0	0	975	323	0	1298	119	0	216	0	335	162	488	0	0	650	2283
8:00 AM	0	0	0	0	0	0	304	76	0	380	18	0	94	0	112	59	133	0	0	192	684
8:15 AM	0	0	0	0	0	0	289	83	0	372	25	0	61	0	86	77	127	0	0	204	662
8:30 AM	0	0	0	0	0	0	218	79	0	297	27	0	44	0	71	57	126	0	0	183	551
8:45 AM	0	0	0	0	0	0	220	69	0	289	42	0	45	0	87	41	103	0	0	144	520
Hourly Total	0	0	0	0	0	0	1031	307	0	1338	112	0	244	0	356	234	489	0	0	723	2417
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	0	0	0	0	168	50	0	218	50	0	40	0	90	86	267	0	0	353	661
4:15 PM	0	0	0	0	0	0	187	50	0	237	70	0	32	0	102	66	236	0	0	302	641
4:30 PM	0	0	0	0	0	0	159	42	0	201	67	0	44	0	111	64	240	0	0	304	616
4:45 PM	0	0	0	0	0	0	175	61	0	236	85	0	59	0	144	64	227	0	1	292	672
Hourly Total	0	0	0	0	0	0	689	203	0	892	272	0	175	0	447	280	970	0	1	1251	2590
5:00 PM	0	0	0	0	0	0	170	48	0	218	51	0	47	0	98	75	339	0	0	414	730
5:15 PM	0	0	0	0	0	0	167	45	1	213	64	0	54	0	118	71	269	0	0	340	671
5:30 PM	0	0	0	0	0	0	191	49	0	240	62	0	49	0	111	72	249	0	0	321	672
5:45 PM	0	0	0	0	0	0	159	53	0	212	47	0	43	0	90	68	212	0	0	280	582
Hourly Total	0	0	0	0	0	0	687	195	1	883	224	0	193	0	417	286	1069	0	0	1355	2655
Grand Total	0	0	0	0	0	0	3382	1028	1	4411	727	0	828	0	1555	962	3016	0	1	3979	9945
Approach %	0.0	0.0	0.0	0.0	-	0.0	76.7	23.3	0.0	-	46.8	0.0	53.2	0.0	-	24.2	75.8	0.0	0.0	-	-
Total %	0.0	0.0	0.0	0.0	0.0	0.0	34.0	10.3	0.0	44.4	7.3	0.0	8.3	0.0	15.6	9.7	30.3	0.0	0.0	40.0	-
Lights	0	0	0	0	0	0	3273	1010	1	4284	716	0	803	0	1519	938	2925	0	1	3864	9667
% Lights	-	-	-	-	-	-	96.8	98.2	100.0	97.1	98.5	-	97.0	-	97.7	97.5	97.0	-	100.0	97.1	97.2
Buses	0	0	0	0	0	0	5	1	0	6	1	0	15	0	16	14	5	0	0	19	41
% Buses	-	-	-	-	-	-	0.1	0.1	0.0	0.1	0.1	-	1.8	-	1.0	1.5	0.2	-	0.0	0.5	0.4
Trucks	0	0	0	0	0	0	104	17	0	121	10	0	10	0	20	10	86	0	0	96	237
% Trucks	-	-	-	-	-	-	3.1	1.7	0.0	2.7	1.4	-	1.2	-	1.3	1.0	2.9	-	0.0	2.4	2.4



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Page No: 2



Turning Movement Data Plot



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Count Name: US 421 and
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Turning Movement Peak Hour Data (7:30 AM)

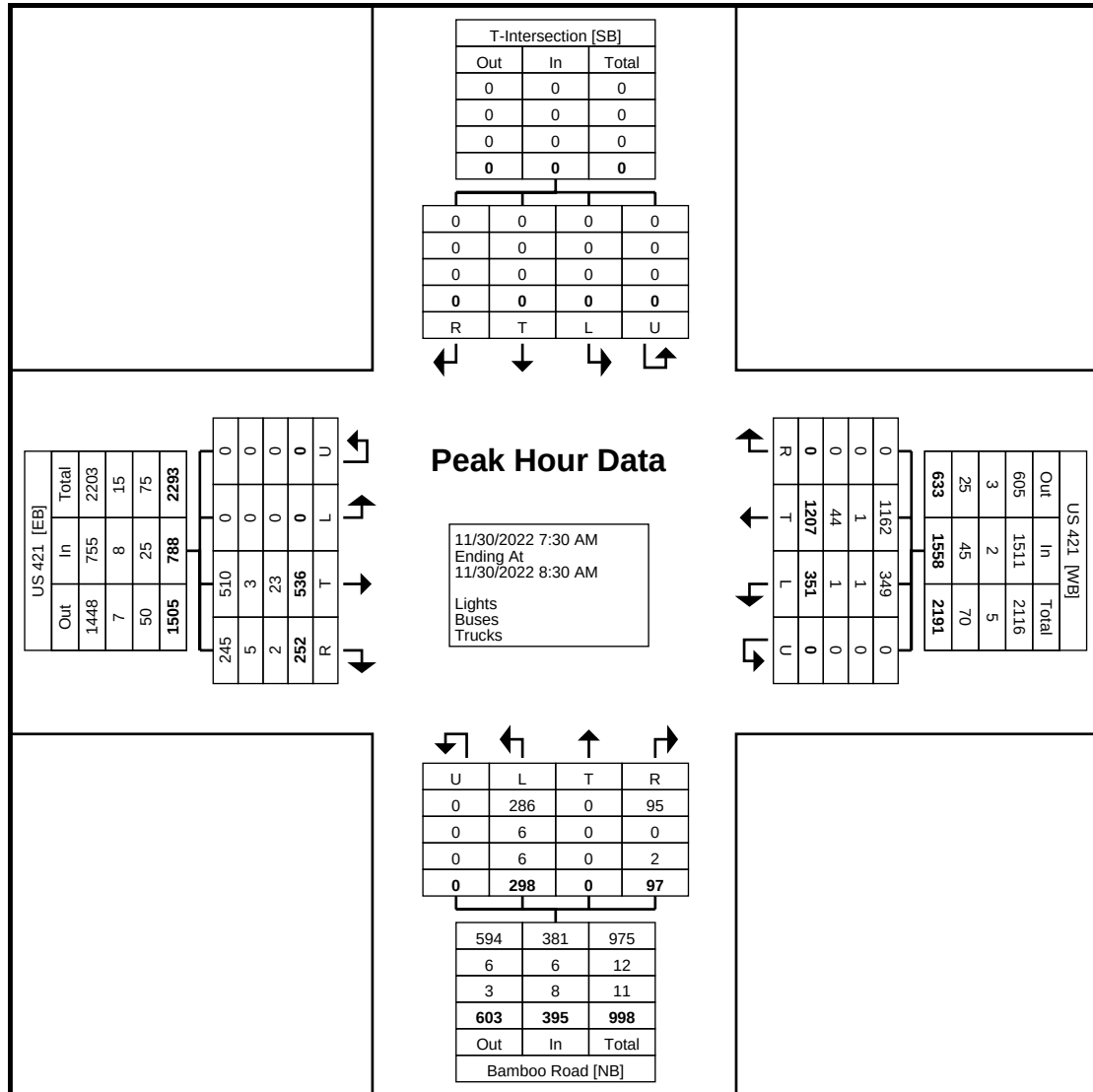
Start Time	T-Intersection Southbound					US 421 Westbound					Bamboo Road Northbound					US 421 Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
7:30 AM	0	0	0	0	0	0	299	99	0	398	25	0	74	0	99	59	117	0	0	176	673
7:45 AM	0	0	0	0	0	0	315	93	0	408	29	0	69	0	98	57	159	0	0	216	722
8:00 AM	0	0	0	0	0	0	304	76	0	380	18	0	94	0	112	59	133	0	0	192	684
8:15 AM	0	0	0	0	0	0	289	83	0	372	25	0	61	0	86	77	127	0	0	204	662
Total	0	0	0	0	0	0	1207	351	0	1558	97	0	298	0	395	252	536	0	0	788	2741
Approach %	0.0	0.0	0.0	0.0	-	0.0	77.5	22.5	0.0	-	24.6	0.0	75.4	0.0	-	32.0	68.0	0.0	0.0	-	-
Total %	0.0	0.0	0.0	0.0	0.0	0.0	44.0	12.8	0.0	56.8	3.5	0.0	10.9	0.0	14.4	9.2	19.6	0.0	0.0	28.7	-
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.958	0.886	0.000	0.955	0.836	0.000	0.793	0.000	0.882	0.818	0.843	0.000	0.000	0.912	0.949
Lights	0	0	0	0	0	0	1162	349	0	1511	95	0	286	0	381	245	510	0	0	755	2647
% Lights	-	-	-	-	-	-	96.3	99.4	-	97.0	97.9	-	96.0	-	96.5	97.2	95.1	-	-	95.8	96.6
Buses	0	0	0	0	0	0	1	1	0	2	0	0	6	0	6	5	3	0	0	8	16
% Buses	-	-	-	-	-	-	0.1	0.3	-	0.1	0.0	-	2.0	-	1.5	2.0	0.6	-	-	1.0	0.6
Trucks	0	0	0	0	0	0	44	1	0	45	2	0	6	0	8	2	23	0	0	25	78
% Trucks	-	-	-	-	-	-	3.6	0.3	-	2.9	2.1	-	2.0	-	2.0	0.8	4.3	-	-	3.2	2.8



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Site Code: 2201051
Start Date: 11/30/2022
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Turning Movement Peak Hour Data (4:45 PM)

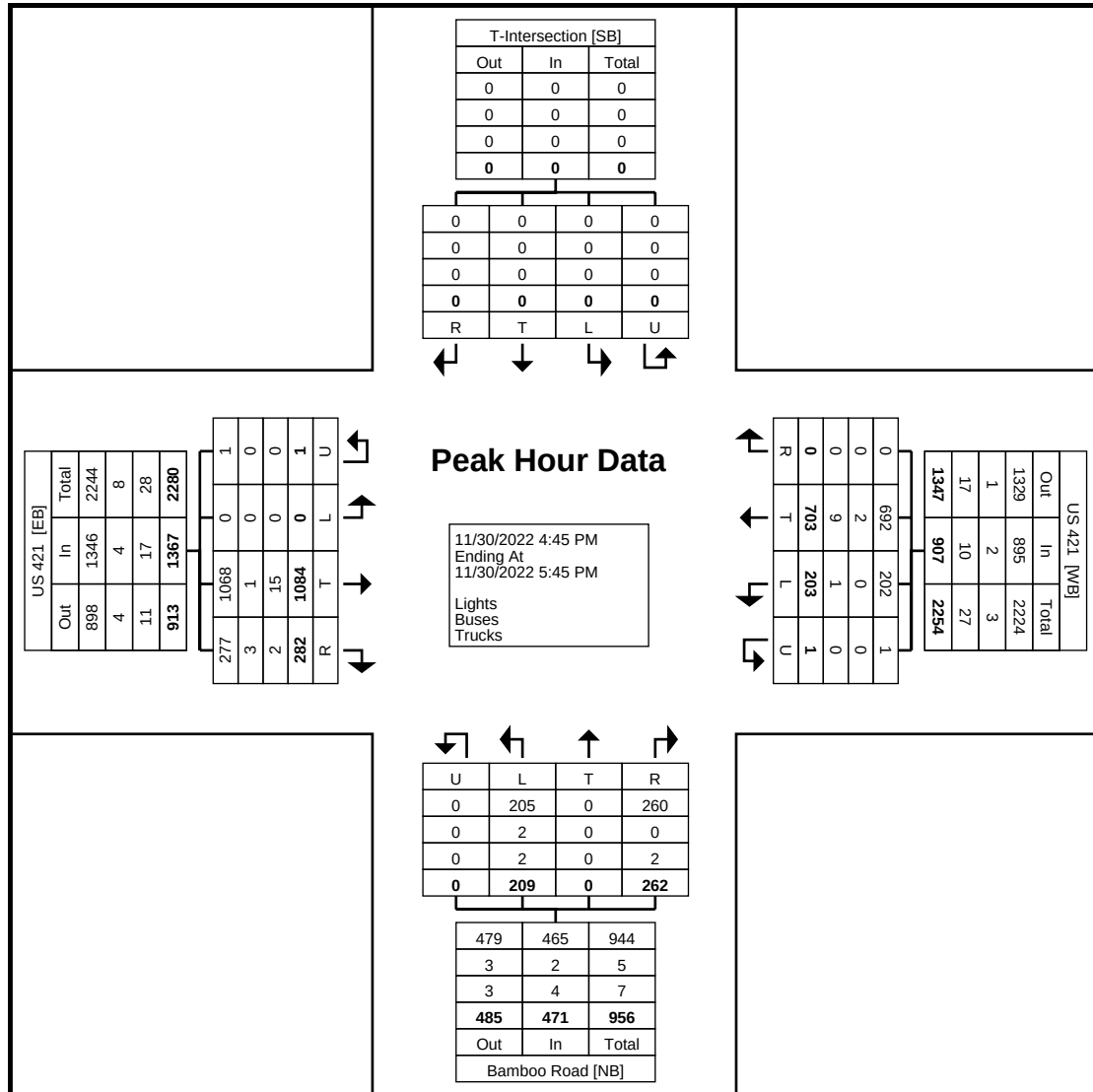
Start Time	T-Intersection Southbound					US 421 Westbound					Bamboo Road Northbound					US 421 Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
4:45 PM	0	0	0	0	0	0	175	61	0	236	85	0	59	0	144	64	227	0	1	292	672
5:00 PM	0	0	0	0	0	0	170	48	0	218	51	0	47	0	98	75	339	0	0	414	730
5:15 PM	0	0	0	0	0	0	167	45	1	213	64	0	54	0	118	71	269	0	0	340	671
5:30 PM	0	0	0	0	0	0	191	49	0	240	62	0	49	0	111	72	249	0	0	321	672
Total	0	0	0	0	0	0	703	203	1	907	262	0	209	0	471	282	1084	0	1	1367	2745
Approach %	0.0	0.0	0.0	0.0	-	0.0	77.5	22.4	0.1	-	55.6	0.0	44.4	0.0	-	20.6	79.3	0.0	0.1	-	-
Total %	0.0	0.0	0.0	0.0	0.0	0.0	25.6	7.4	0.0	33.0	9.5	0.0	7.6	0.0	17.2	10.3	39.5	0.0	0.0	49.8	-
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.920	0.832	0.250	0.945	0.771	0.000	0.886	0.000	0.818	0.940	0.799	0.000	0.250	0.825	0.940
Lights	0	0	0	0	0	0	692	202	1	895	260	0	205	0	465	277	1068	0	1	1346	2706
% Lights	-	-	-	-	-	-	98.4	99.5	100.0	98.7	99.2	-	98.1	-	98.7	98.2	98.5	-	100.0	98.5	98.6
Buses	0	0	0	0	0	0	2	0	0	2	0	0	2	0	2	3	1	0	0	4	8
% Buses	-	-	-	-	-	-	0.3	0.0	0.0	0.2	0.0	-	1.0	-	0.4	1.1	0.1	-	0.0	0.3	0.3
Trucks	0	0	0	0	0	0	9	1	0	10	2	0	2	0	4	2	15	0	0	17	31
% Trucks	-	-	-	-	-	-	1.3	0.5	0.0	1.1	0.8	-	1.0	-	0.8	0.7	1.4	-	0.0	1.2	1.1



DAVENPORT

John Davenport Engineering Inc.
119 Brookstown
PH-1
Winston Salem, North Carolina, United States 27101
(336)744-1636 dbrown@davenportworld.com

Count Name: US 421 and
Bamboo Road
Site Code: 2201051
Start Date: 11/30/2022
Page No: 6

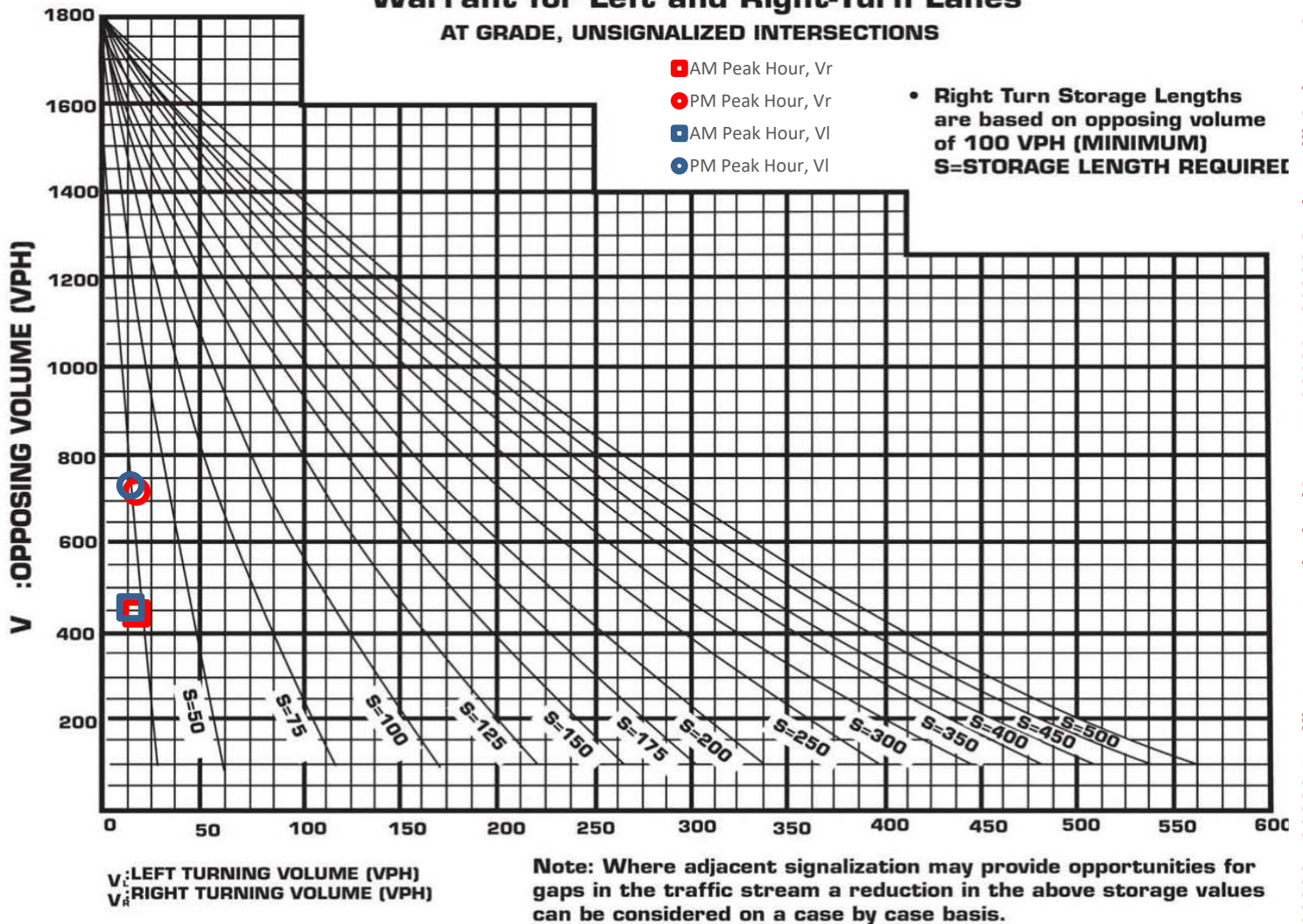


Supporting Documentation

Peak Hour	Volumes		Peak Hour	Volumes	
	Opposing	Lefts		Opposing	Rights
AM	452	11	AM	438	14
PM	729	11	PM	715	14

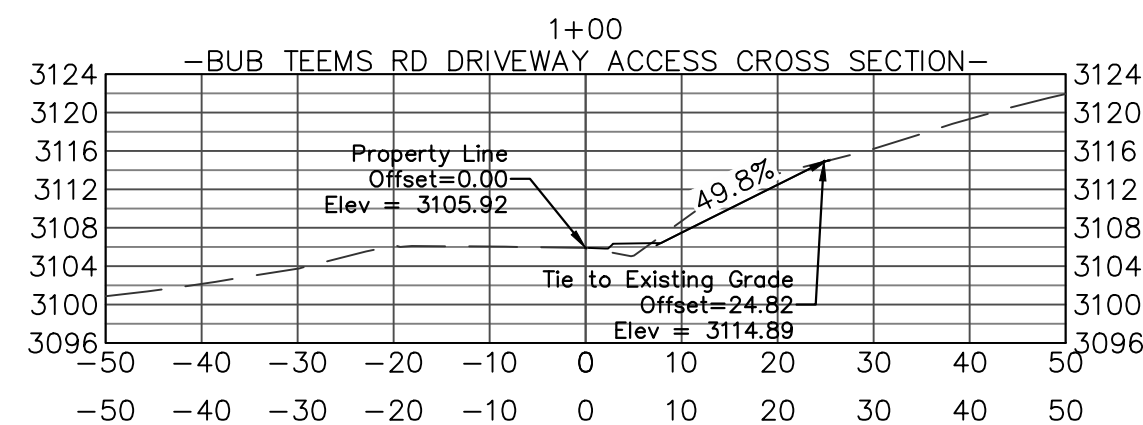
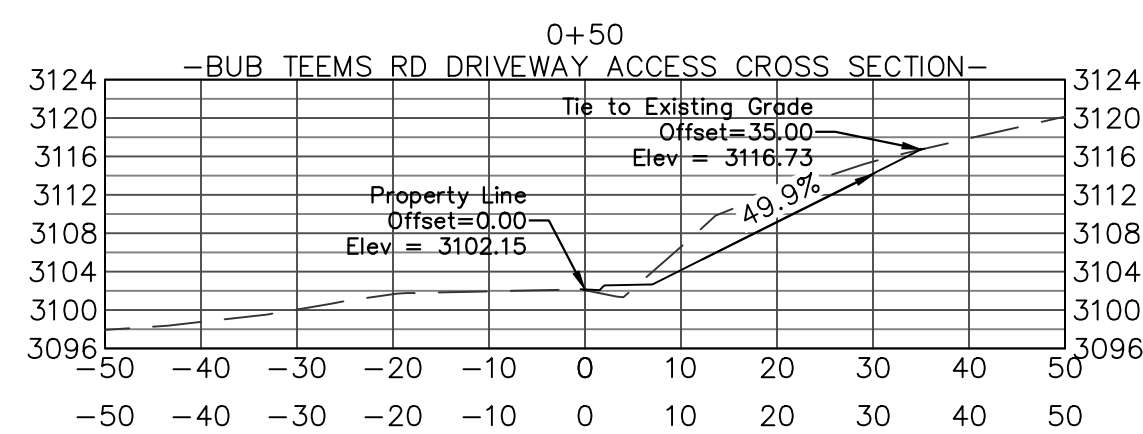
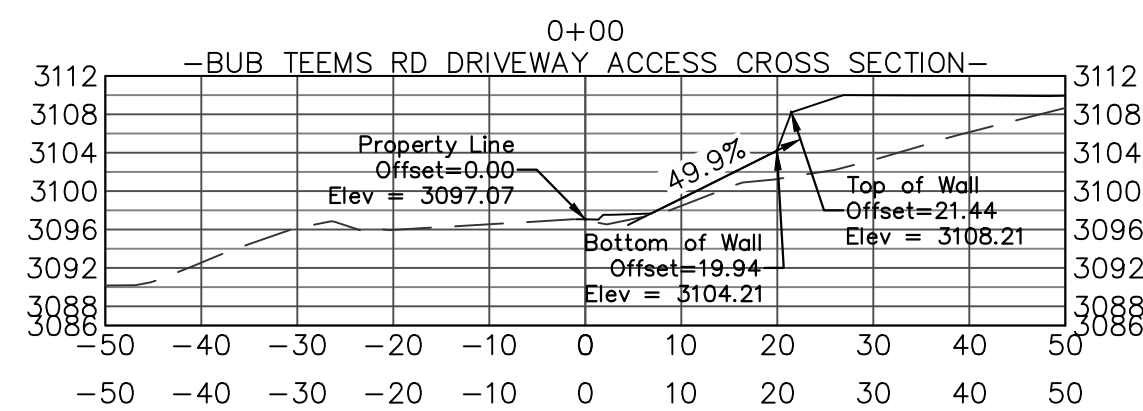
Warrant for Left and Right-Turn Lanes

AT GRADE, UNSIGNALIZED INTERSECTIONS



TURN LANE WARRANT SUMMARY

US HIGHWAY 421 AT SITE ACCESS



TOPOGRAPHIC INFEASIBILITY NARRATIVE

DUE TO THE EXISTING BUB TEEMS ROAD ELEVATION AND SITE TOPOGRAPHY, A DRIVEWAY ACCESS FROM BUB TEEMS TO THE SITE IS NOT FEASIBLE. THE CROSS-SECTIONS SHOWN TO THE LEFT AND THE GRADING PLAN SHOWN ABOVE ILLUSTRATE THAT A DRIVEWAY ACCESS WOULD EXCEED 50% GRADE IF PROVIDED. A DRIVEWAY WITH THESE GRADES WOULD BE UNPRACTICAL AND DANGEROUS. THEREFORE A SINGLE DRIVEWAY ACCESS POINT ONTO US HIGHWAY 421 WAS CHOSEN FOR THIS SITE.

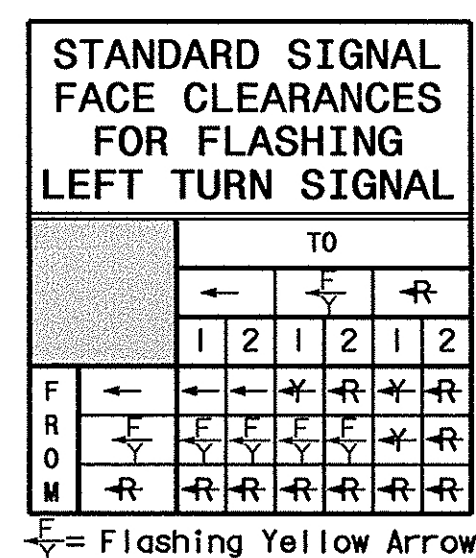
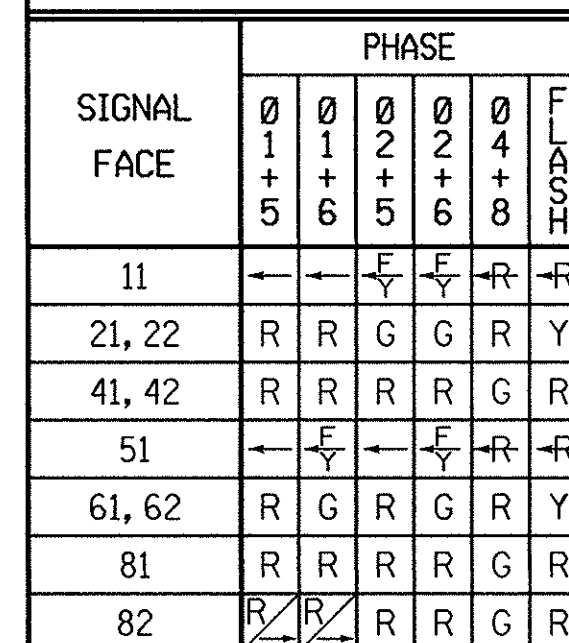
**SPRINGHILL SUITES
BY MARIOT
US HWY 421 S & BUB TEEMS RD
BOONE, NC**

NO.	DATE	BY	DESCRIPTION

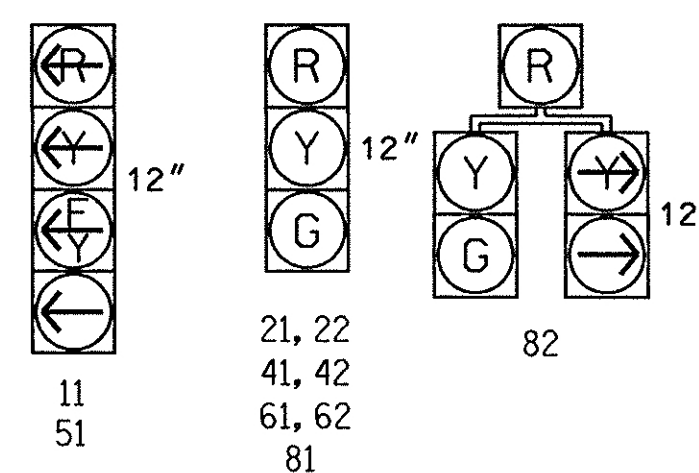
BUB TEEMS ROAD DRIVEWAY ACCESS TOPOGRAPHIC INFEASIBILITY EXHIBIT	MJS DRAWN BY FEBRUARY 2023	1" = 20' SCALE 20231123
	DATE	PROJ. #

SHEET NO.
EX-002

2070L LOOP & DETECTOR INSTALLATION



All Heads L.E.D.



INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP
1A	6X40	0	2-4-2	Y	1	Y	Y	—	—	15	—
					6	Y	Y	Y	—	3	—
1B	6X40	0	2-4-2	Y	1	Y	Y	—	—	15	—
2A/S18	6X6	300	5	Y	2	Y	Y	—	—	—	Y
2B/S19	6X6	300	5	Y	2	Y	Y	—	—	—	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	—	—	5	—
					5	Y	Y	—	—	15	—
5A	6X40	0	2-4-2	Y	2	Y	Y	Y	—	3	—
6A/S20	6X6	300	5	Y	6	Y	Y	—	—	—	Y
6B/S21	6X6	300	5	Y	6	Y	Y	—	—	—	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	—	—	3	—

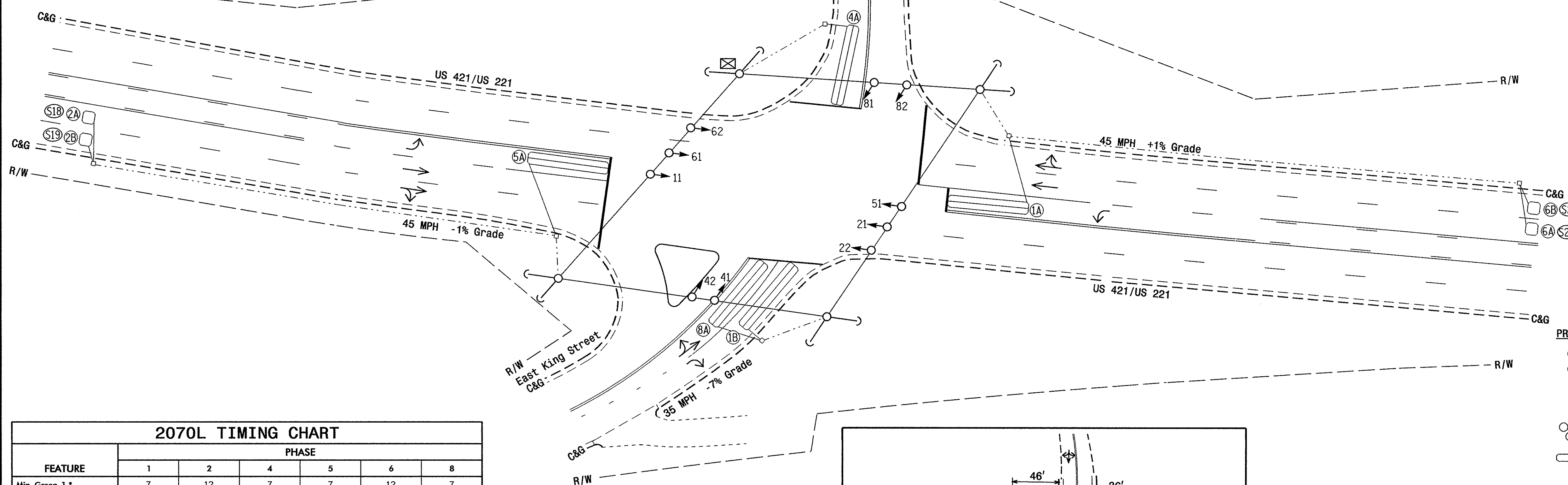
5 Phase
Fully Actuated
US 421 (King Street) Closed Loop System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Closed loop system data: Controller Asset #: 1422.

PHASING DIAGRAM DETECTION LEGEND

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



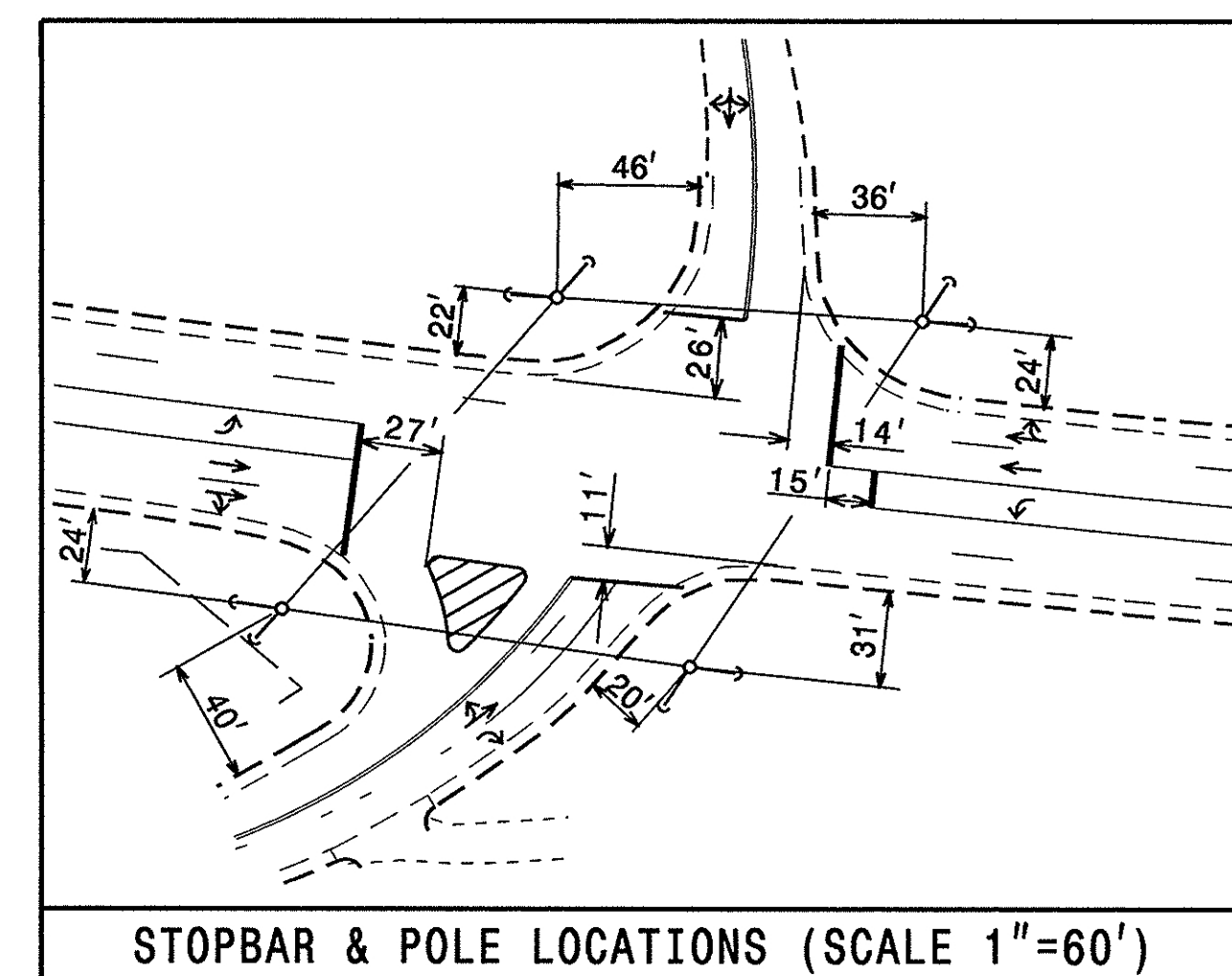
2070L TIMING CHART

2070L TIMING CHART						
FEATURE	PHASE					
	1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	6.0	2.0	2.0	6.0	2.0
Max Green 1 *	15	120	30	15	120	30
Yellow Clearance	3.0	4.6	3.7	3.0	4.6	4.6
Red Clearance	3.3	2.1	2.5	3.7	2.1	2.1
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	1.5	-
Max Variable Initial *	-	34	-	-	34	-
Time Before Reduction *	-	20	-	-	20	-
Time To Reduce *	-	40	-	-	40	-
Minimum Gap	-	3.0	-	-	3.0	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON

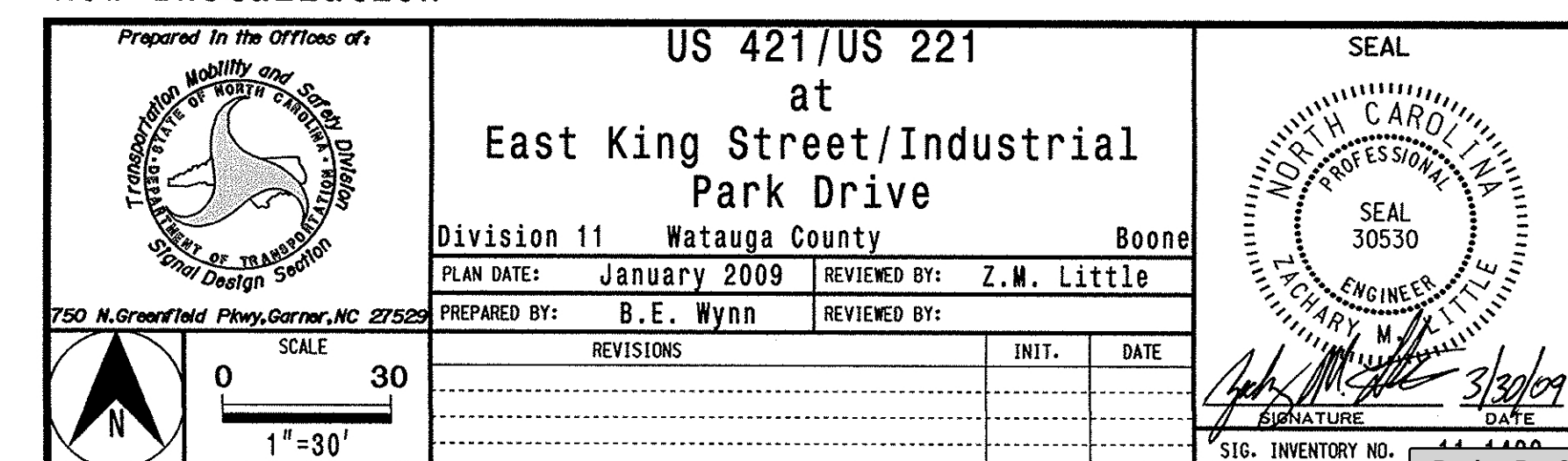
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

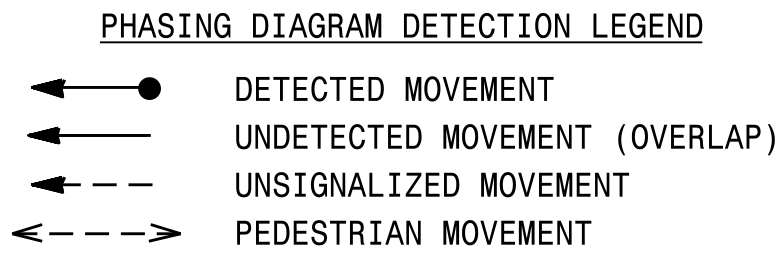
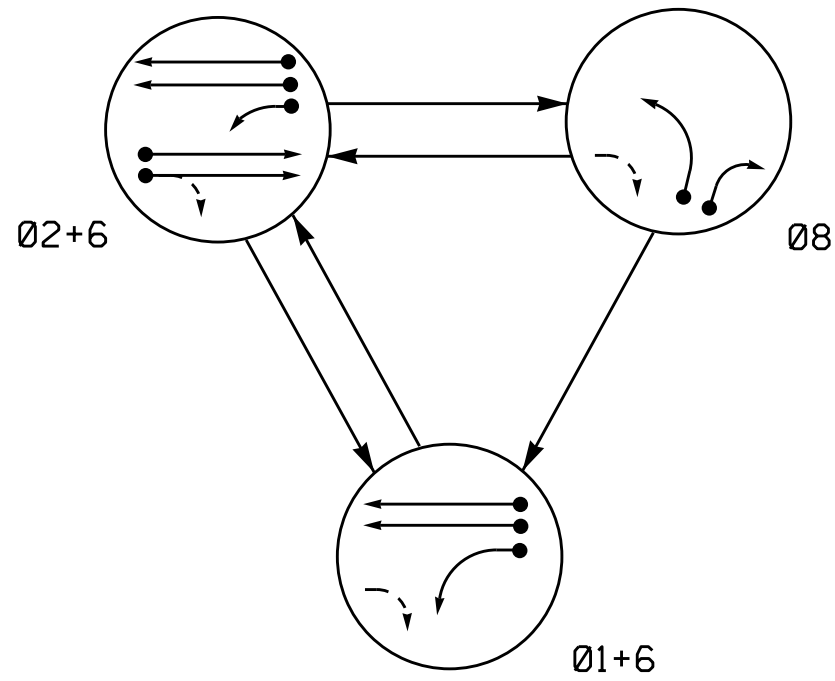
- | PROPOSED | | EXISTING |
|----------|-------------------------------|----------|
| | Traffic Signal Head | |
| | Modified Signal Head | N/A |
| | Sign | |
| | Pedestrian Signal Head | |
| | Signal Pole with Guy | |
| | Signal Pole with Sidewalk Guy | |
| | Inductive Loop Detector | |
| | Controller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



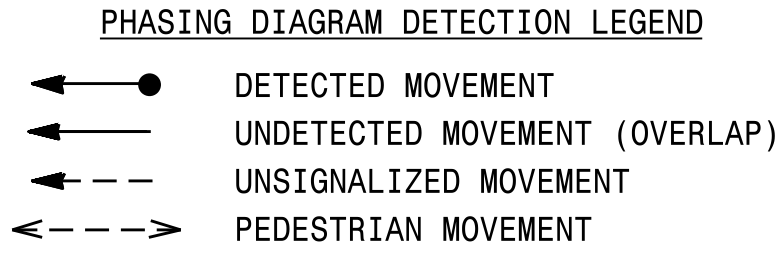
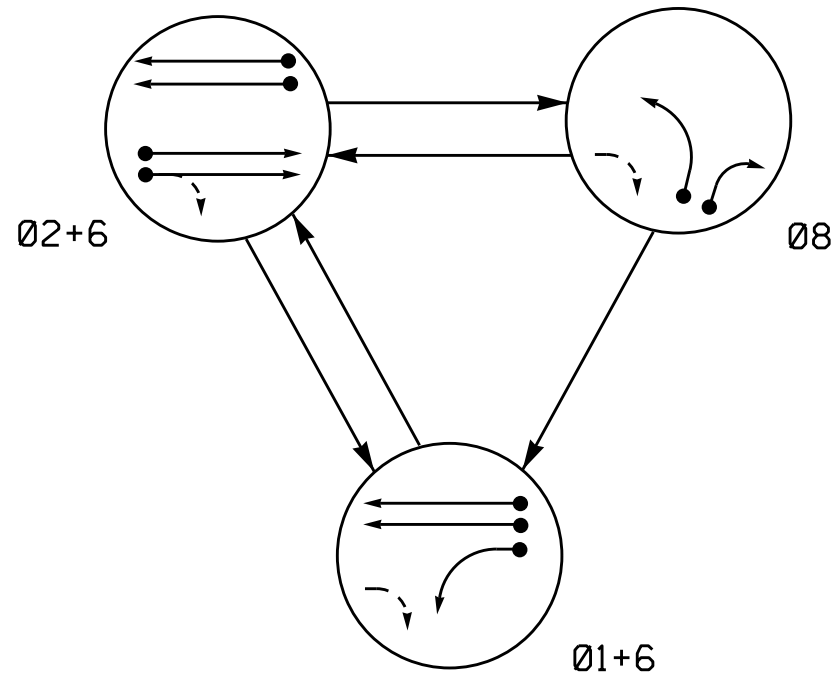
New Installation



NORMAL PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



NORMAL PHASING

TABLE OF OPERATION				
SIGNAL FACE	PHASE			
	Ø 1 + 6	Ø 2 + 6	Ø 8	FLASH
11	←	→	←	→
21,22	R	G	R	Y
61,62	G	G	R	Y
81,82,83	R	R	G	R

ALTERNATE PHASING

TABLE OF OPERATION				
SIGNAL FACE	PHASE			
	Ø 1 + 6	Ø 2 + 6	Ø 8	FLASH
11	←	→	←	→
21,22	R	G	R	Y
61,62	G	G	R	Y
81,82,83	R	R	G	R

2070L LOOP & DETECTOR INSTALLATION												
INDUCTIVE LOOPS						DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	15*	-	-
					6**	Y	Y	Y	-	3	-	-
2A/S22	6X6	385	5	-	2	Y	Y	-	-	-	Y	-
2B/S23	6X6	385	5	-	2	Y	Y	-	-	-	Y	-
6A/S24	6X6	300	5	-	6	Y	Y	-	-	-	Y	-
6B/S25	6X6	300	5	-	6	Y	Y	-	-	-	Y	-
8A	6X60	0	2-4-2	-	8	Y	Y	-	-	3	-	-
8B	6X50	0	2-4-2	-	8	Y	Y	-	-	15	-	-

* Remove delay during Alternate Phasing.
** Disable phase 6 call during Alternate Phasing.

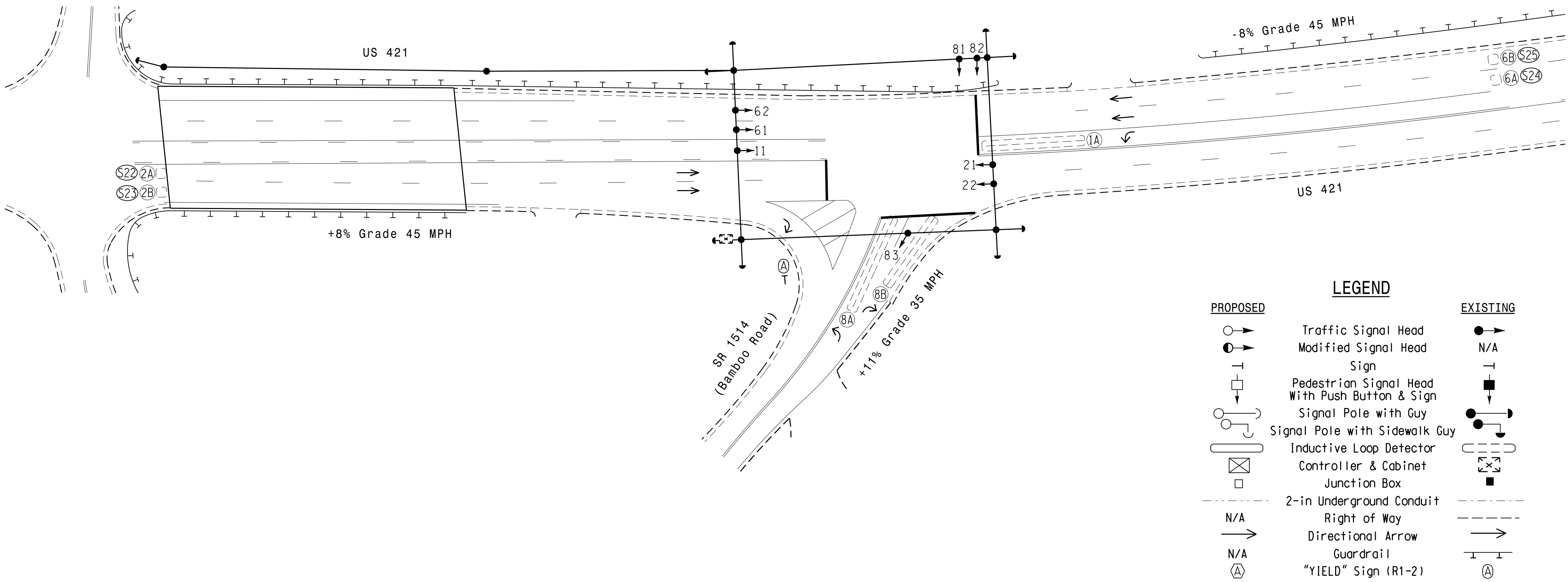
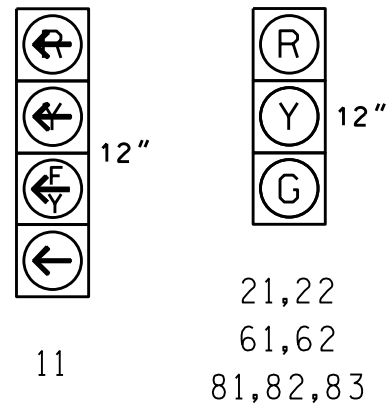
3 Phase
Fully Actuated
US 421 (King Street) CLS

NOTES

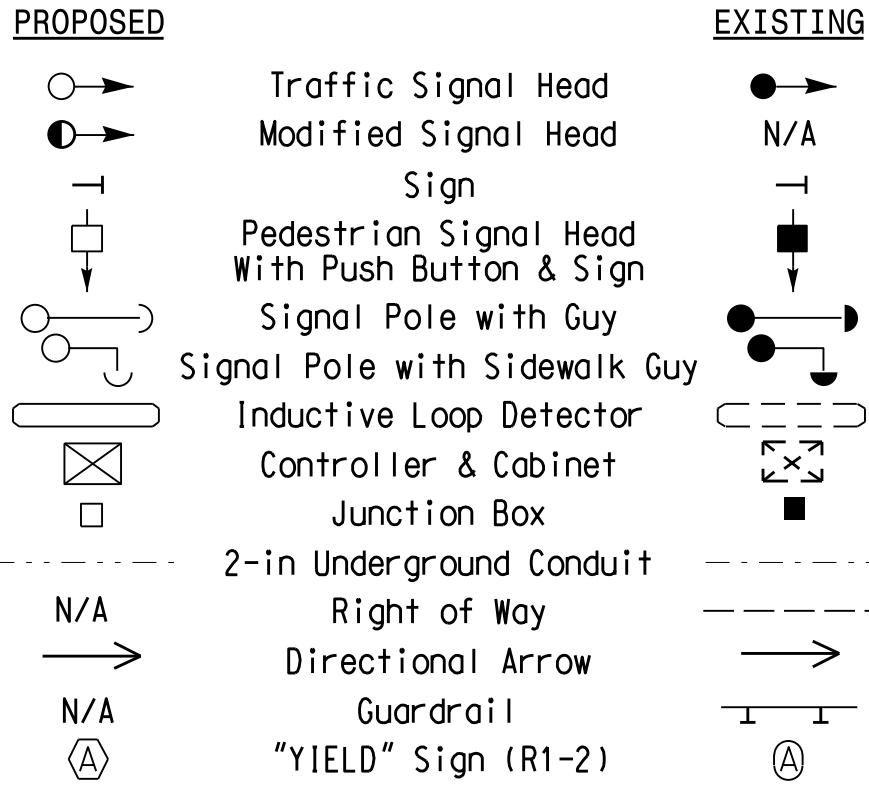
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 may be lagged.
- Set all detector units to presence mode.
- Pavement markings are existing.
- Closed loop system data: Controller Asset #1055.

SIGNAL FACE I.D.

All Heads L.E.D.



LEGEND



2070L TIMING CHART				
FEATURE	PHASE			
	1	2	6	8
Min Green 1 *	7	12	12	7
Extension 1 *	1.0	6.0	6.0	1.0
Max Green 1 *	15	120	120	30
Yellow Clearance	3.3	5.4	5.4	3.0
Red Clearance	2.4	1.4	1.4	1.9
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	1.5	1.5	-
Max Variable Initial *	-	43	34	-
Time Before Reduction *	-	20	20	-
Time To Reduce *	-	40	40	-
Minimum Gap	-	4.5	3.0	-
Recall Mode	-	MIN RECALL	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

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

Signal Upgrade

Prepared In the Offices of:

Transportation Mobility and Safety Division

DEPARTMENT OF TRANSPORTATION

Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

North Arrow

SCALE 0 40 1"=40'

US 421 at SR 1514 (Bamboo Road)

Division 11 Watauga County near Boone

PLAN DATE: September 2014 REVIEWED BY: Z.M. Little

PREPARED BY: C.L. Sweeney REVIEWED BY:

REVISIONS

INIT. DATE

SIG. INVENTORY NO.

Seal of North Carolina Professional Engineer

SEAL 030530

ENGINEER ZACHARY W. LITTLE

DocuSign by: Zachary W. Little 10/3/2014

0021EFD04F5341F... DATE 10/3/2014

Packet Pg. 205

PROJECT LOCATION

INDUSTRIAL PARK DR

BROOKVIEW RD

US HWY 421 S

OLD EAST KING ST

NORTH HAMILTON RD

WILSON RD

US HWY 421 S

US HWY 421 S

NTS

N.O. GRID
NAD 83(11)

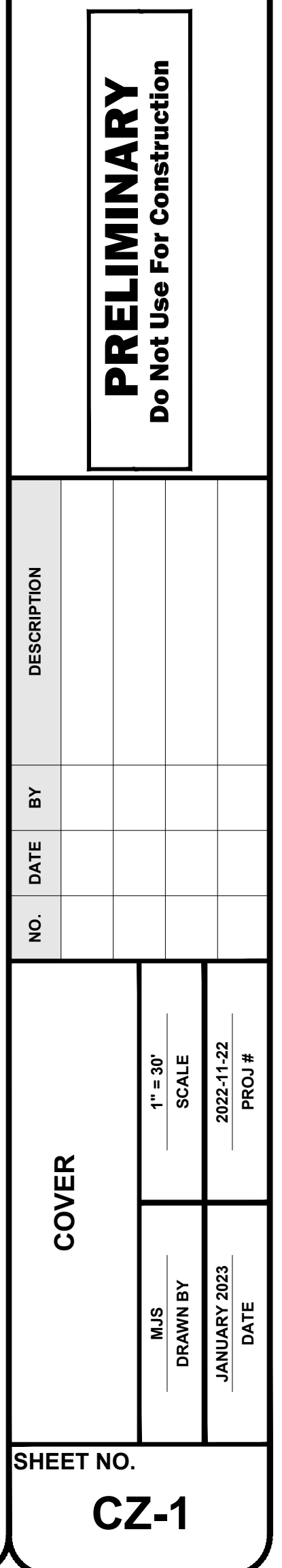
DEVELOPER
SHAH-CORP
JAY SHAH
336-681-2553

CIVIL DESIGNER
K2 ENGINEERING NC, PLLC
WILL P. SCOTT, PE
980-800-6160

ARCHITECT
BASE-4
CARLOS GUILLÉN
850-659-7781



SHEET NUMBER	SHEET TITLE
CZ-1	COVER
CZ-2	PROJECT NOTES
CZ-3	SITE PLAN
CZ-4	FIRE ACCESS PLAN
CZ-5	GRADING & DRAINAGE PLAN



FIRE PROTECTION NOTES

- 1. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING LOCATION, SIZE, AND TYPE OF ALL EXISTING PIPES AT TIE-IN POINTS, PRIOR TO ORDERING NEW PIPE OR FITTINGS.
- 2. THE SPRINKLER CONTRACTOR SHALL NOT CALCULATE FOR SPRINKLER SUBMITTAL ABOVE 90% AVAILABLE WATER. NO VALVE PITS OR BUILDING ENTRY FOR SHUT OFF. PROVIDE KNOX BOX SECURITY SYSTEM FOR FIRE DEPARTMENT ENTRY. COORDINATE LOCATION OF KNOX BOX, FDC, AND PIV WITH FIRE MARSHALL.
- 3. THE SPRINKLER CONTRACTOR SHALL CONFIRM SIZE, MATERIAL, AND LOCATION OF ALL FIRE AND FDC LINES.
- 4. AN RPZ DETECTOR SHALL BE LOCATED ON THE FIRE LINE INSIDE AN ABOVE GROUND HEATED ENCLOSURE. THE SPRINKLER CONTRACTOR SHALL PROVIDED MIKE TRIVETT, TOWN OF BOONE'S BACKFLOW PREVENTION COORDINATOR (828-268-6250), WITH SPECIFICATIONS FOR RPZ DETECTOR.
- 5. THE FIRE DEPARTMENT CONNECTION (FDC) SHALL BE LOCATED A MAXIMUM OF 100' FROM FIRE HYDRANTS. FDC SHALL BE PROPERLY MARKED.
- 6. THE MAIN STRUCTURE ADDRESS NUMBER HEIGHT SHALL BE 8" OF CONTRASTING COLOR TO THE BUILDING WITH THE LOCATION TO BE DETERMINED BY THE BOONE FIRE DEPARTMENT. ADDITIONAL REQUIREMENTS ARE POSSIBLE UPON REVIEW OF BUILDING PLANS.

BICYCLE PARKING NOTES

ALL BICYCLE PARKING FACILITIES SHALL MEET THE REQUIREMENTS OF THE TOWN OF BOONE'S UNIFIED DEVELOPMENT ORDINANCE. IN PARTICULAR, BICYCLE PARKING FACILITIES SHALL BE CONSTRUCTED OF MATERIALS OF SUFFICIENT STRENGTH TO SIGNIFICANTLY RESIST THEIR DISPLACEMENT OR REMOVAL, AND THEY SHALL BE SECURELY ANCHORED IN CONCRETE OR OTHER EQUIVALENT MATERIAL OR SYSTEM OF SUFFICIENT STRENGTH TO SIGNIFICANTLY RESIST REMOVAL. BICYCLE PARKING FACILITIES SHALL SUPPORT BICYCLES IN A STABLE POSITION WITHOUT DAMAGE TO WHEELS, FRAME OR OTHER COMPONENTS AND ALLOW FOR THE USE OF EITHER A CABLE, U-SHAPED, OR SIMILAR LOCK TO SECURE BOTH WHEELS OF THE BICYCLE. NO LESS THAN 4" SHALL BE PROVIDED BETWEEN RACKS.

EXAMPLES OF ACCEPTABLE FACILITIES:



SIGNAGE NOTES

- 1. ALL SIGNAGE SHALL BE PERMITTED SEPARATELY.

GENERAL NOTES

- 1. SITE IS ZONED B3, GENERAL BUSINESS DISTRICT.
- 2. SUBJECT PROPERTY IS LOCATED WITHIN ZONE XX PER FEMA FLOODMAPS.
- 3. PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL LOCATED ALL UNDERGROUND UTILITIES VIA 811.
- 4. ALL PROPOSED UTILITIES SHALL BE UNDERGROUND.
- 5. CONTACT NEW RIVER LIGHT & POWER FOR POWER SERVICE (282-264-3671)
- 6. 24" CONCRETE CURB AND GUTTER (NCDOT STD. 846.01) SHALL BE USED AS SHOWN ON PLAN
- 7. PARKING SPACE DIMENSIONS ARE TO FACE OF CURB.
- 8. ALL DIMENSIONS ARE TO BACK OF CURB, FACE OF BUILDING, OR CENTERLINE UNLESS NOTED OTHERWISE.
- 9. THE CONTRACTOR/PROPERTY OWNER IS RESPONSIBLE FOR ANY DAMAGE TO THE WATER & SEWER MAINS IN THE CONSTRUCTION AREA UNTIL CONSTRUCTION IS COMPLETE.
- 10. ALL ROOFTOP EQUIPMENT SHALL BE SCREENED OR OTHERWISE PLACED OUT OF VIEW FROM ADJACENT STREETS.
- 11. ALL UTILITIES INCLUDING BUT NOT LIMITED TO HVAC UNITS AND METERS SHALL BE SCREENED FROM ADJACENT PROPERTIES AND PUBLIC STREETS PER SECTION 25.02 OF THE TOWN OF BOONE'S UNIFIED DEVELOPMENT ORDINANCE AND SHALL BE A MATERIAL OTHER THAN CHAIN LINK FENCE.
- 12. ALL CURB RAMPS SHALL BE BROOM FINISHED PERPENDICULAR TO SLOPE.
- 13. ALL CURB RAMPS SHALL HAVE A 1:12 MAXIMUM SLOPE IN THE DIRECTION OF TRAVEL AND 2% MAXIMUM CROSS SLOPE.
- 14. IT IS THE INTENT OF THE CONTRACT DOCUMENTS TO COMPLY WITH ALL PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).
- 15. REFER TO ARCHITECTURAL PLANS FOR ACTUAL BUILDING DIMENSIONS AND INFORMATION.
- 16. ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- 17. CONTRACTOR SHALL FURNISH AND INSTALL ALL PAVEMENT MARKINGS AS SHOWN ON THE PLANS. INSTALLATION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST NCDOT STANDARDS AND SPECIFICATIONS.
- 18. THESE CONDITIONAL REZONING PLANS ARE CONCEPTUAL IN NATURE. PLANS ARE SUBJECT TO CHANGE DURING THE DEVELOPMENT OF CONSTRUCTION DRAWINGS. GENERAL LAND USE INTENT IS SHOWN ON THESE DRAWINGS AND CHANGES COULD INCLUDE BUT ARE NOT LIMITED TO WALL LOCATION AND HEIGHT, PROPOSED PIPING, UTILITY LOCATIONS, AND BUILDING LAYOUT.

WATER MAIN & SERVICE NOTES

- 1. ALL UNDERGROUND UTILITIES SHALL BE FIELD LOCATED BY CONTRACTOR PRIOR TO EXCAVATION.
- 2. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING LOCATION, SIZE & TYPE OF ALL EXISTING PIPES AT TIE-IN POINTS, PRIOR TO ORDERING NEW PIPE OR FITTINGS.
- 3. THE WATER SERVICE SHALL BE 4" SDR 13.5 PVC UNLESS OTHERWISE SPECIFIED.
- 4. ALL WATER MAINS AND SERVICES SHALL HAVE A MINIMUM 3' COVER UNLESS OTHERWISE SPECIFIED.
- 5. ALL VALVES SHALL BE RESILIENT-SEAT DUCTILE IRON GATE VALVES.
- 6. COORDINATE LOCATION OF ALL NEW TAPS & METERS WITH TOWN OF BOONE UTILITY DEPARTMENT (828-268-6250).
- 7. CONCRETE THRUST BLOCKING SHALL BE PROVIDED AT ALL BENDS AND FITTINGS FOR MAINS AND SERVICES 4" IN DIAMETER AND GREATER.
- 8. ALL BENDS AND TEES SHALL BE RESTRAINED JOINT AND HAVE THRUST BLOCKING.
- 9. HYDRANT LOCATORS SHALL BE ADDED TO ALL FIRE HYDRANTS IN THE PROJECT AREA FOR IDENTIFICATION DURING INCLEMENT WEATHER.
- 10. THE PLUMBING ENGINEER SHALL CONFIRM SIZE, MATERIAL, AND LOCATION OF ALL WATER SERVICES. SPRINKLER CONTRACTOR SHALL CONFIRM SIZE, MATERIAL AND LOCATION OF ALL FIRE AND FDC LINES.
- 11. THE PLUMBING CONTRACTOR AND SPRINKLER CONTRACTOR SHALL COORDINATE WITH MIKE TRIVETT AT TOWN OF BOONE UTILITY DEPARTMENT REGARDING BACKFLOW PREVENTION REQUIREMENT PRIOR TO CONSTRUCTION (282-268-6250).
- 12. THE CONTRACTOR/PROPERTY OWNER IS RESPONSIBLE FOR ANY DAMAGE TO THE WATER MAINS IN THE CONSTRUCTION AREA UNTIL CONSTRUCTION IS COMPLETE.

WATER METER NOTES

- 1. THE WATER METER SHALL BE LOCATED OUTSIDE THE BUILDING IN INDIVIDUAL METER VAULT.
- 2. COORDINATE TAPS AND METERS WITH TOWN OF BOONE UTILITY DEPARTMENT (828-268-6250).
- 3. WATER METER SHALL BE 3" WITH A BYPASS.
- 4. WATER METER BOX TO BE SUPPLIED BY THE TOWN OF BOONE AND SHALL INSTALLED IN A TRAFFIC RATED VAULT.

BACKFLOW PREVENTION NOTES

- 1. AN RPZ DETECTOR IS REQUIRED FOR THE FIRE LINE INTO THE BUILDING. THE RPZ DETECTOR SHALL BE LOCATED IN AN ABOVE GROUND HEATED IN ENCLOSURE OUTSIDE THE BUILDING.
- 2. A REDUCED PRESSURE PRINCIPLE ASSEMBLY (RP) IS REQUIRED ON THE NEW DOMESTIC WATER SERVICE LINE ENTERING THE BUILDING. THE RP SHALL BE LOCATED IN AN ABOVE GROUND HEATED ENCLOSURE OUTSIDE THE BUILDING.
- 3. THE SPRINKLER CONTRACTOR AND THE PLUMBING ENGINEER SHALL PROVIDE MIKE TRIVETT, TOWN OF BOONE BACKFLOW PREVENTION COORDINATOR (282-268-6250), WITH SPECIFICATIONS FOR THE RP AND RPZ DETECTOR.

SANITARY SEWER NOTES

- 1. CONTRACTOR SHALL LOCATED ALL UNDERGROUND UTILITIES PRIOR TO EXCAVATION.
- 2. NEW SANITARY SEWER SERVICES SHALL BE 6" SCH. 40 PVC, CONSTRUCTED ACCORDING TO NC BUILDING CODE UNLESS SHOWN OTHERWISE.
- 3. THE PLUMBING ENGINEER SHALL CONFIRM SIZE, MATERIAL, AND LOCATION OF ALL SEWER SERVICES.
- 4. THE CONTRACTOR/PROPERTY OWNER IS RESPONSIBLE FOR ANY DAMAGE TO THE SEWER MAINS IN THE CONSTRUCTION AREA UNTIL CONSTRUCTION IS COMPLETE.
- 5. THE TOWN OF BOONE SHALL MAKE TAP INTO EXISTING MANHOLE. CONTACT TOWN OF BOONE UTILITY DEPARTMENT TO COORDINATE (828-268-6250).



1315 BEDLINGTON DR. NW
CHARLOTTE, NC 28269
FIRM LICENSE #: P-2488

SPRINGHILL SUITES
BY MARRIOT
US HWY 421 S & BUB TEEMS RD
BOONE, NC

PRELIMINARY
Do Not Use For Construction

DESCRIPTION		BY	DATE	NO.

PROJECT NOTES	MJS DRAWN BY JANUARY 2023 DATE	NTS SCALE 2022-11-22 PROJ. #

SHEET NO.
CZ-2

SITE DATA

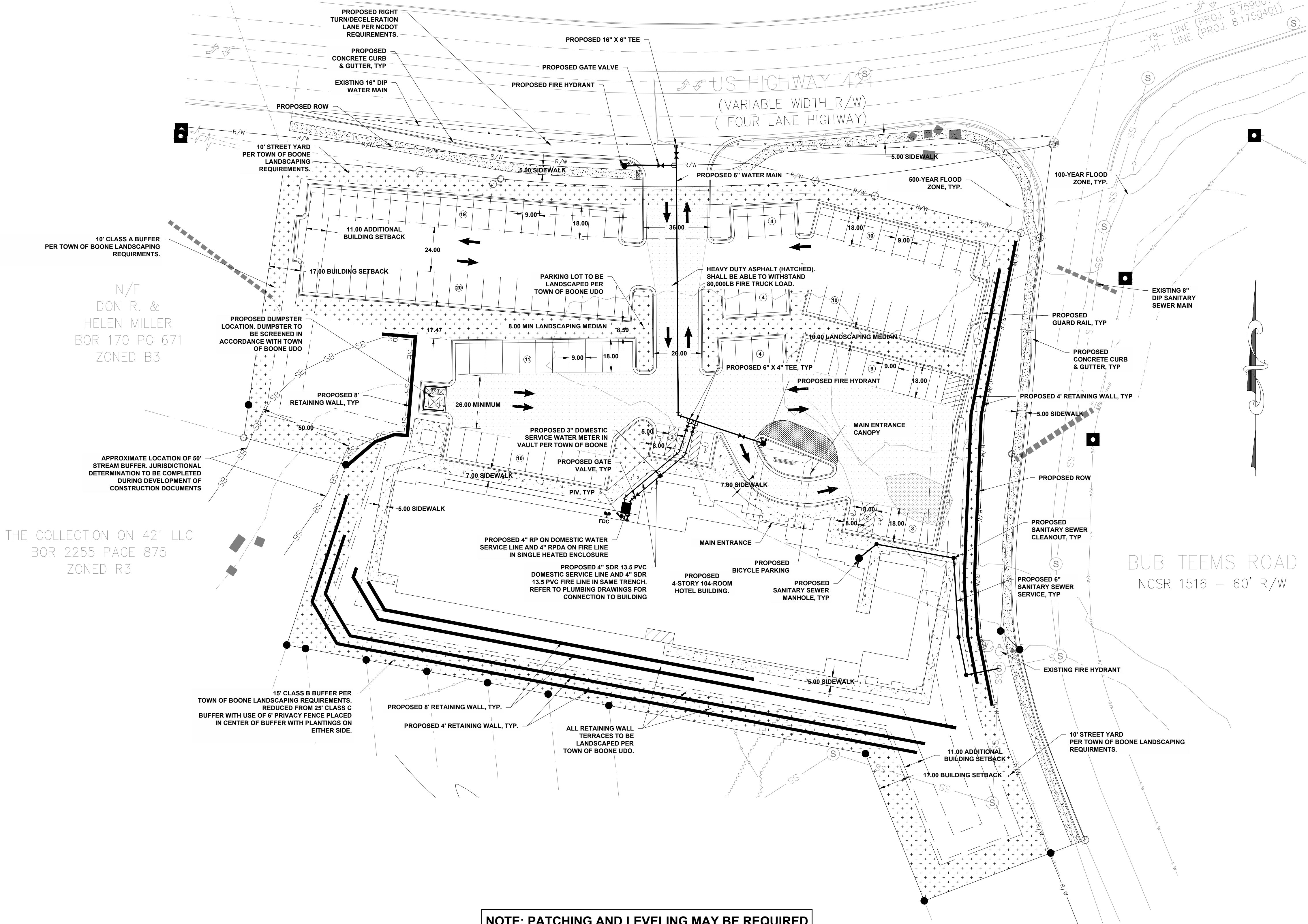
PIN:	2920-09-6331-000 2920-09-7251-000 2920-09-6177-000 2920-09-7187-000
EXISTING ZONING:	B3, R3
PROPOSED ZONING:	B3
EXISTING USE:	VACANT LAND
PROPOSED USE:	104-ROOM HOTEL
TOTAL SITE AREA:	2.81 ACRES
TOTAL IMPERVIOUS AREA:	1.68 ACRES (60%)
TOTAL LIVABILITY SPACE:	1.13 ACRES (40%)
PARKING:	103 STANDARD 5 HANDICAP 108 TOTAL PARKING
MIN SETBACKS:	ALONG STREETS: 20' INTERIOR: 17'
BUILDING HEIGHT	
ADDITIONAL SETBACK:	11'
MAX PERMITTED BUILDING HEIGHT:	56' (4-STORY)
PROPOSED BUILDING HEIGHT:	56' (4-STORY)

SITE PLAN NOTES

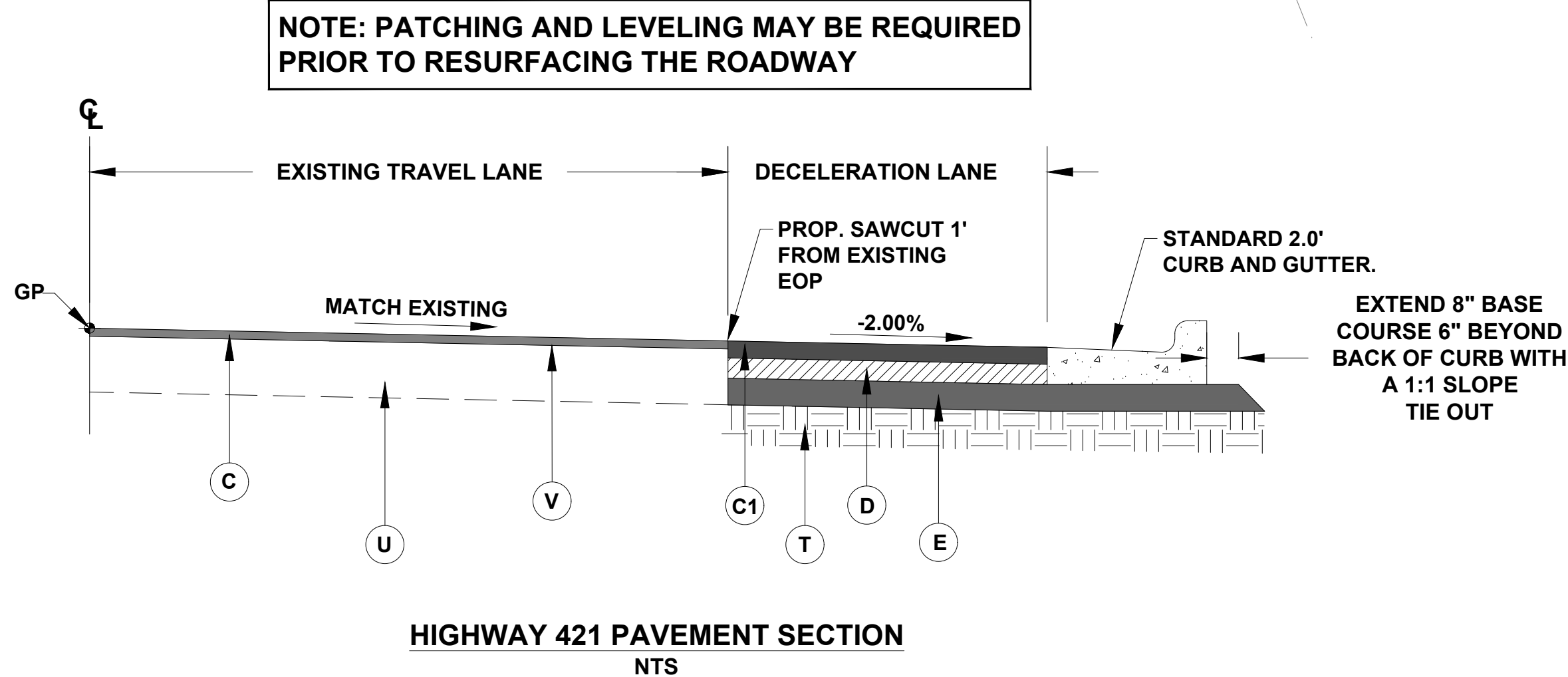
1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD AND IMMEDIATELY NOTIFY THE ENGINEER AND OWNER OF ANY DISCREPANCIES.
2. ALL DIMENSIONS ARE AT 90 DEGREES UNLESS NOTED OTHERWISE.
3. ALL DIMENSIONS ARE TO BACK OF CURB, FACE OF BUILDING, OR CENTERLINE UNLESS NOTED OTHERWISE.
4. LOT DIMENSIONS ARE APPROXIMATE. REFERENCE RECORD PLAT FOR EXACT DIMENSIONS.
5. ALL CURB RAMPS SHALL BE BROOM FINISHED PERPENDICULAR TO SLOPE.
6. ALL CURB RAMPS SHALL HAVE A 1:12 MAXIMUM SLOPE IN THE DIRECTION OF TRAVEL AND 2% MAXIMUM CROSS SLOPE.
7. IT IS THE INTENT OF THE CONTRACT DOCUMENTS TO COMPLY WITH ALL PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).
8. REFER TO ARCHITECTURAL PLANS FOR ACTUAL BUILDING DIMENSIONS AND INFORMATION.
9. ANY FIRE APPARATUS ACCESS ROADS MUST BE CAPABLE OF SUPPORTING 80,000 LBS AND SHALL PROVIDE 20' CLEAR FOR FIRE TRUCK ACCESS.
10. ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
11. CONTRACTOR SHALL FURNISH AND INSTALL ALL PAVEMENT MARKINGS AS SHOWN ON THE PLANS. INSTALLATION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST NCDOT STANDARDS AND SPECIFICATIONS.
12. THESE CONDITIONAL REZONING PLANS ARE CONCEPTUAL IN NATURE. PLANS ARE SUBJECT TO CHANGE DURING THE DEVELOPMENT OF CONSTRUCTION DRAWINGS. GENERAL LAND USE INTENT IS SHOWN ON THESE DRAWINGS AND CHANGES COULD INCLUDE BUT ARE NOT LIMITED TO WALL LOCATION AND HEIGHT, PROPOSED PIPING, UTILITY LOCATIONS, AND BUILDING LAYOUT.

GENERAL NOTES

1. ALL IMPROVEMENTS AND CONSTRUCTION SHALL BE IN STRICT COMPLIANCE WITH SPECIFICATIONS AND CONSTRUCTION DOCUMENTS AND WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL GUIDELINES.
2. THE CONTRACTOR IS RESPONSIBLE TO VERIFY THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED FROM ALL REGULATORY AUTHORITIES AND SHALL BE THOROUGHLY FAMILIAR WITH CONDITIONS OF SAID PERMITS AND INSPECTION REQUIREMENTS PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES.
3. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE AND INSTALL ALL ITEMS PER DRAWINGS AND SPECIFICATIONS.
4. CONTRACTOR IS RESPONSIBLE FOR ALL FINAL QUANTITIES PER DRAWINGS AND SPECIFICATIONS. ANY QUANTITIES PROVIDED BY K2 ENGINEERING NC, PLLC ARE PROVIDED FOR CONVENIENCE ONLY AND SHALL NOT BE CONSIDERED ABSOLUTE.
5. THE CONTRACTOR SHALL EXAMINE AND BECOME FAMILIAR WITH ALL CONTRACT DOCUMENTS IN THEIR ENTIRETY. SURVEY THE PROJECT AND BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND SCOPE OF WORK. ALL COSTS SUBMITTED SHALL BE BASED ON THOROUGH KNOWLEDGE OF ALL WORK AND MATERIALS REQUIRED. ANY DISCREPANCY AND/OR UNCERTAINTY AS TO WHAT MATERIAL OR PRODUCT IS TO BE USED, SHALL BE VERIFIED WITH THE OWNER OR ENGINEER.
6. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL UNDERGROUND UTILITIES, PIPES, STRUCTURES, AND LINE RUNS IN THE FIELD PRIOR TO CONSTRUCTION. ANY DAMAGE TO NEW AND EXISTING UTILITIES ARE TO BE REPAIRED IMMEDIATELY AT NO ADDITIONAL EXPENSE TO THE OWNER. K2 ENGINEERING NC, PLLC ASSUMES NO RESPONSIBILITY FOR ANY UTILITIES NOT SHOWN ON THE PLANS.
7. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND OWNER OF ANY FIELD DISCREPANCIES OF DIMENSIONS, QUANTITIES, OR EXISTING CONDITIONS VS THE CONTRACT DOCUMENTS.
8. THE CONTRACTOR SHALL MAINTAIN THE SITE IN A MANNER THAT PROTECTS WORKMEN AND THE PUBLIC FROM INJURY.
9. THE CONTRACTOR SHALL MAINTAIN EACH STREAM, CREEK, OR BACKWASH CHANNEL IN AN UNOBSTRUCTED STATE AND SHALL REMOVE FROM THE CHANNEL BANKS OF THE STREAM ALL DEBRIS, LOGS, TIMBER, JUNK AND OTHER ACCUMULATIONS.
10. K2 ENGINEERING NC, PLLC SHALL NOT BE IN CONTROL OR CHARGE OF, AND SHALL NOT BE RESPONSIBLE FOR ACTUAL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES, OR SAFETY PRECAUTIONS IN CONNECTION WITH THE WORK, OR FOR THE ACTS OR OMISSIONS OF CONTRACTORS OR ANY OTHER PERSONS NOT UNDER THE EMPLOYMENT OF K2 ENGINEERING NC, PLLC.
11. ALL EXISTING WORK OR LANDSCAPING NOT SHOWN TO BE ALTERED OR REMOVED SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION. THE CONTRACTOR SHALL BEAR THE TOTAL EXPENSE FOR, AND SHALL REPAIR ANY DAMAGE TO EXISTING CONDITIONS. REPAIRS SHALL BE EQUAL TO OR BETTER THAN CONDITION PRIOR TO CONSTRUCTION.
12. THE CONTRACTOR SHALL EMPLOY, AS REQUIRED BY GOVERNING AUTHORITIES, AN APPROVED TESTING LABORATORY TO CONDUCT ALL REQUIRED CONSTRUCTION MATERIALS TESTING TO INSURE COMPLIANCE WITH THE PLANS, STANDARDS, AND CODES.
13. ALL ELEVATIONS ARE IN REFERENCE TO THE BENCHMARK WHICH MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO BREAKING GROUND.
14. ALL PUBLIC STREETS SHALL REMAIN OPEN AND UNOBSTRUCTED TO TRAFFIC AT ALL TIMES UNLESS OTHERWISE NOTED.
15. THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL DURING CONSTRUCTION PER LOCAL STANDARDS.
16. THESE CONDITIONAL REZONING PLANS ARE CONCEPTUAL IN NATURE. PLANS ARE SUBJECT TO CHANGE DURING THE DEVELOPMENT OF CONSTRUCTION DRAWINGS. GENERAL LAND USE INTENT IS SHOWN ON THESE DRAWINGS AND CHANGES COULD INCLUDE BUT ARE NOT LIMITED TO WALL LOCATION AND HEIGHT, PROPOSED PIPING, UTILITY LOCATIONS, AND BUILDING LAYOUT.



PAVEMENT SCHEDULE	
C	PROP. VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVG. RATE OF 112 LBS PER SQ YD PER 1" DEPTH. PLACED IN LAYERS NOT LESS THAN 1.5" OR GREATER THAN 2" IN DEPTH.
C1	PROP. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVG. RATE OF 168 LBS PER SQ YD IN EACH OF TWO LAYERS.
D	PROP. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVG. RATE OF 456 LBS PER SQ YD
E	PROP. 8" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVG. RATE OF 456 LBS PER SQ YD IN EACH OF TWO LAYERS.
T	COMPACTED EARTH MATERIAL (100% STANDARD PROCTOR - ASTM D-698)
U	EXISTING PAVEMENT
V	VARIABLE DEPTH MILLING 0"-3.0"

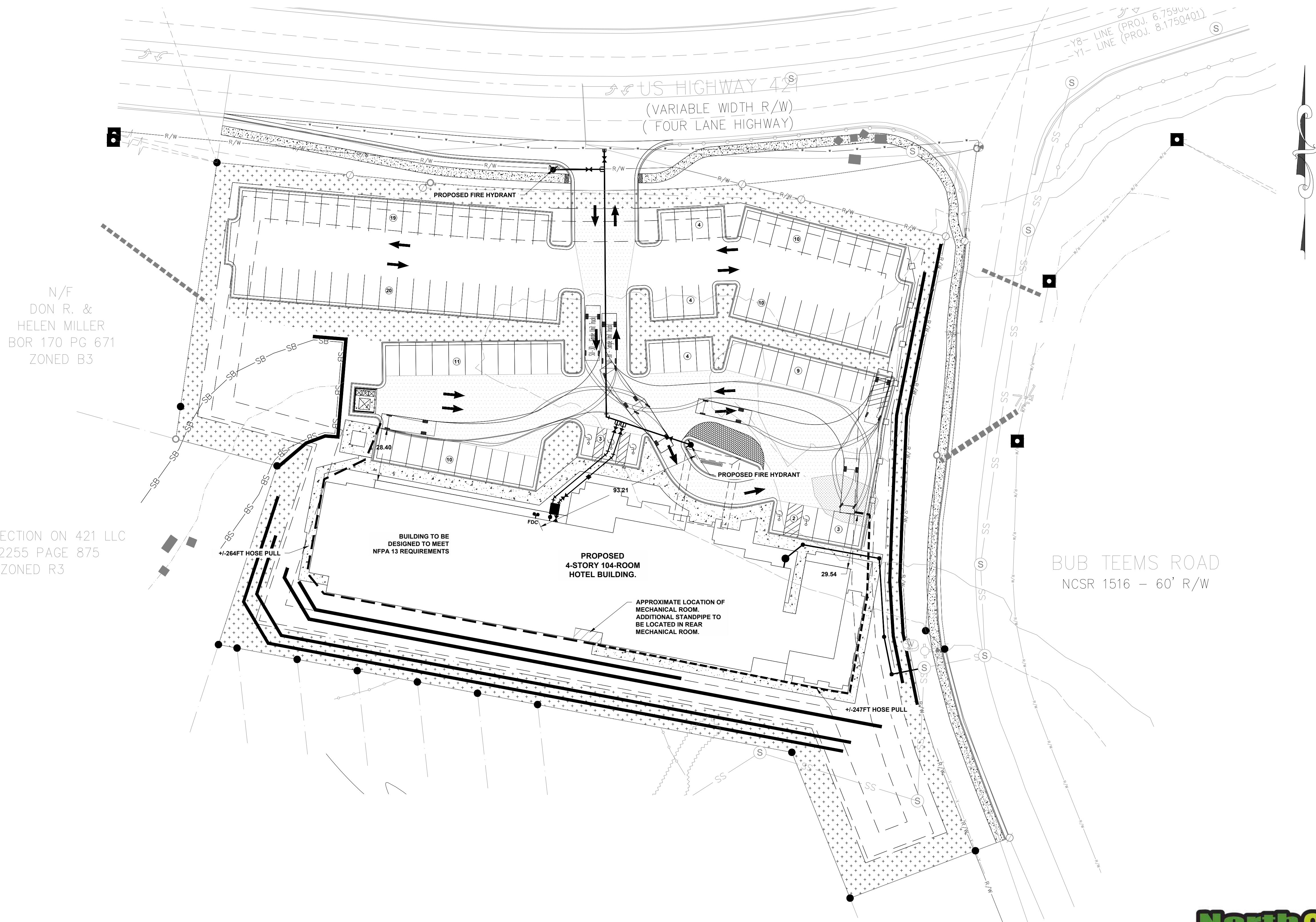


1. THE CONTRACTOR IS FULLY RESPONSIBLE FOR CONTACTING APPROPRIATE PARTIES AND ASSURING THAT EXISTING UTILITIES ARE LOCATED PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR PLACING BARRICADES USING FLAG MEN, ETC. AS NECESSARY TO INSURE SAFETY TO THE PUBLIC.
3. ALL PAVEMENT CUTS, CONCRETE, OR ASPHALT ARE TO BE REPLACED ACCORDING TO STANDARDS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION AND LOCAL UTILITY SPECIFICATIONS.
4. SHORING WILL BE ACCORDING TO OSHA TRENCHING STANDARDS PART 1926 SUBPART P, OR AS AMENDED.

NO.	DATE	BY	DESCRIPTION

SITE PLAN	MJS DRAWN BY	1" = 30' SCALE
	JANUARY 2023 DATE	2023-11-22 PROJ. #

SHEET NO.
CZ-3



N/F
DON R. &
HELEN MILLER
BOR 170 PG 671
ZONED B3

THE COLLECTION ON 421 LLC
BOR 2255 PAGE 875
ZONED R3



1. THE CONTRACTOR IS FULLY RESPONSIBLE FOR CONTACTING APPROPRIATE PARTIES AND ASSURING THAT EXISTING UTILITIES ARE LOCATED PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR PLACING BARRICADES USING FLAG MEN, ETC. AS NECESSARY TO INSURE SAFETY TO THE PUBLIC.
3. ALL PAVEMENT CUTS, CONCRETE, OR ASPHALT ARE TO BE REPLACED ACCORDING TO STANDARDS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION AND LOCAL UTILITY SPECIFICATIONS.
4. SHORING WILL BE ACCORDING TO OSHA TRENCHING STANDARDS PART 1926 SUBPART P, OR AS AMENDED.

1315 BEDLINGTON DR. NW
CHARLOTTE, NC 28269
FIRM LICENSE #: P-2488

**SPRINGHILL SUITES
BY MARRIOTT**

**US HWY 421 S & BUB TEEMS RD
BOONE, NC**

PRELIMINARY
Do Not Use For Construction

NO.	DATE	BY	DESCRIPTION

FIRE ACCESS PLAN

MJS
DRAWN BY
JANUARY 2023
DATE

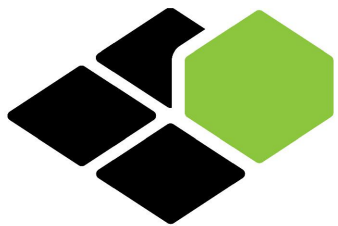
1" = 30'
SCALE
2022-11-22
PROJ. #

SHEET NO.
CZ-4



2 RIGHT SIDE ELEVATION
3/32" = 1'-0"

LEGEND-EXTERIOR FINISHES			
MARK	MTL-BRAND	FINISH-COLOR	IMAGE
01	EIFS	SW-7022 ALPACA	
02	LAP SIDING	SW-6495 GREAT FALLS	
03	EIFS	SW-7062 ROCK BOTTOM	
04	PAINT	SW-7062 ROCK BOTTOM	
05	ELDORADO STONE	MOUNTAIN LEDGE-DURANGO	

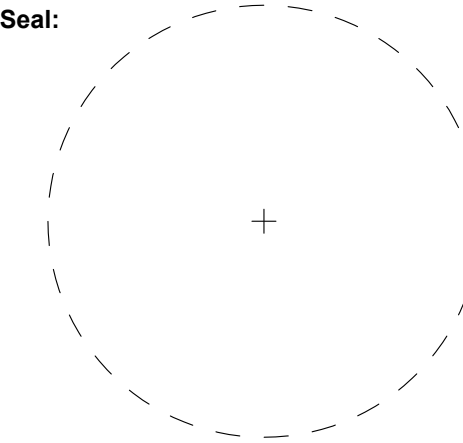


BASE4

Architects | Engineers | Designers

Base 4 2901 Clint Moore Rd, #114
BOCA RATON, FL 33496
888.901.8008 www.base-4.com

Seal:



Owner:

JAY SHA

5000 Mackay Rd.
Greensboro, NC 27407
jay@shah-corp.com
336.681.2553

PROJECT INFORMATION:

SPRINGHILL SUITES®
MARRIOTT

BOONE, NC

ISSUE NO.	DELTA	ISSUE DATE	DESCRIPTIO

CURRENT ISSUE:

PROGRESS SET

CURRENT ISSUE DATE:

2022.01.20

DRAWN BY:

HA

CHECKED BY:

MK/SE

PROJECT #:

B4-271-220

SHEET NAME:

ELEVATIONS

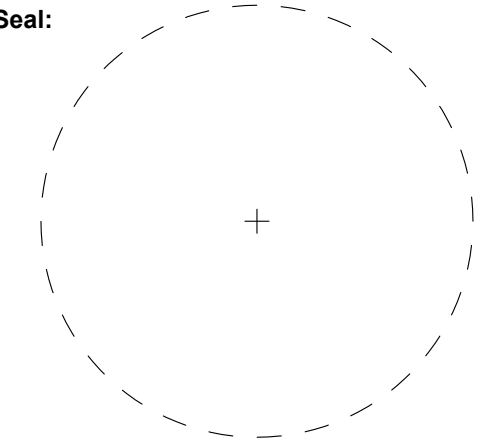
SHEET NUMBER:

A-5.1



2 LEFT SIDE ELEVATION
3/32" = 1'-0"

LEGEND-EXTERIOR FINISHES			
MARK	MTL-BRAND	FINISH-COLOR	IMAGE
01	EIFS	SW-7022 ALPACA	
02	LAP SIDING	SW-6495 GREAT FALLS	
03	EIFS	SW-7062 ROCK BOTTOM	
04	PAINT	SW-7062 ROCK BOTTOM	
05	ELDORADO STONE	MOUNTAIN LEDGE-DURANGO	



Owner:

JAY SHA

5000 Mackay Rd.
Greensboro, NC 27407
jay@shah-corp.com
336.681.2553

PROJECT INFORMATION:

SPRINGHILL SUITES[®]
MARRIOTT

BOONE, NC

ISSUE NO.	DELTA	ISSUE DATE	DESCRIPTIO

CURRENT ISSUE:

PROGRESS SET

CURRENT ISSUE DATE: 2022.01.20

DRAWN BY: HA

CHECKED BY: MK/SE

PROJECT #: B4-271-220

SHEET NAME:

ELEVATIONS

SHEET NUMBER:

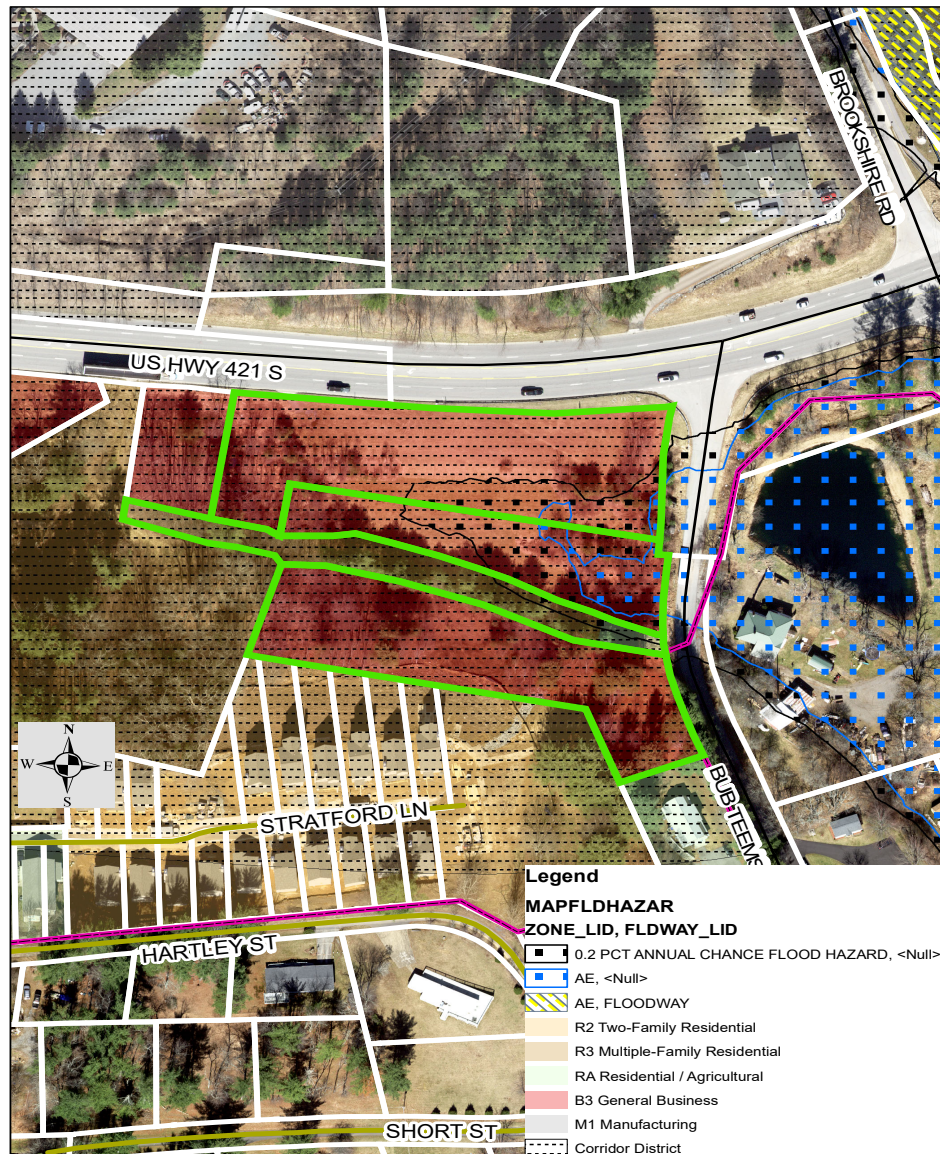
A-5.2



1 REAR ELEVATION
3/32" = 1'-0"



Staff Report
Public Hearing
March 27, 2023
Case PL06330-120922 Spring Hill Suites Conditional District Zoning Map Amendment



Request

Mansa Hospitality Boone, LLC has submitted a Conditional District Zoning Map Amendment petition to rezone four parcels of property located at and near the intersection of US 421 South and Bub Teems Road (Watauga County PINs: 2920-09-6331-000, 2920-09-7251-000, 2920-09-6177-000 and 2920-09-7187-000) from B3 General Business and RA Residential/Agricultural to B3 General Business with a site-specific plan to develop a 104-room hotel (Use 3.10 – Hotel Large). The subject property is outlined in blue on the map above.

Parcel Information

Property Owners Information:	Andrea K Brown (3 Parcels) Carefree Property Company LLC (1 Parcel)
Watauga County PIN:	2920-09-6331-000 2920-09-7251-000 2920-09-6177-000 2920-09-7187-000
Address:	TBD. Applicant proposes site to be accessed from US 421 South.
Use:	Vacant
Size:	2.81 acres
Jurisdiction:	Town of Boone
Access:	US 421 South.
Corridor District:	Yes. Applicant is requesting access from protected corridor (US 421 South).
Viewshed:	No
Watershed:	No
Special Flood Hazard:	Yes. A portion of the site along Bub Teems Road is within the Special Flood Hazard Area although not within the AE Floodway.
Steep Slope:	Yes
Transitional Zone:	Yes
Phasing:	No
Vesting:	2 years
Current Zoning:	<u>B3 General Business</u> The B3 General Business District is primarily intended to accommodate a wide range of office, restaurant, retail, service, and multi-family residential uses in a mixed-use environment. The regulations for this district are intended to create a comfortable, healthy, safe, aesthetically pleasing, and pleasant environment for all appropriate uses. <u>RA Residential/Agricultural</u> The RA Residential/Agricultural District is established as a district in which the principal use of the land is for low density residential and agricultural purposes. Low-density commercial and service uses which serve the day-to-day convenience needs of the surrounding area are permissible so long as the uses are of such nature as to minimize conflicts with the area they serve. These districts are intended to ensure that residential development not having access to public water supplies and dependent upon septic tanks for sewage disposal will occur at a sufficiently low density to provide a healthful environment. The regulations for this district are intended to create a comfortable, healthy, safe, aesthetically pleasing, and pleasant environment for all appropriate uses.

Parcel ID	Current Zoning
2920-09-6331-000	B3 General Business
2920-09-7251-000	B3 General Business
2920-09-6177-000	R3 Multi-Family Residential/RA Residential/Agricultural
2920-09-7187-000	B3 General Business

Corridor Overlay District

The corridor districts are established overlay districts intended to protect the main thoroughfares through Town.

Proposed Zoning: Conditional District B3 General Business

Current Use: Currently Vacant

Proposed Use: 3.10 Hotel, Large

“A commercial lodging establishment containing twenty-one (21) or more guest rooms offered to the general public for transient overnight accommodations. The establishment also may contain ancillary facilities or services such as restaurants, bars, coffee shops, exercise rooms, swimming pools, spas and meeting rooms. This definition shall not include extended stay hotels.”

	Adjacent Zoning	Adjacent Land Use
North	M1 Manufacturing	Vacant/Retail
West	R3 Multi-Family Residential	Multi-Family Residential (currently under construction)
South	R2 Two-Family Residential RA Residential/Agriculture	Single-Family Residential
East	Not zoned (Outside Town Limits)	Single-Family Residential

Process Analysis

The applicant is requesting approval for Conditional District B3 General Business zoning with a site-specific development plan for Use 3.10, Hotel, Large, which is allowed by right in the B3 zoning district subject to a 200-foot transitional zone. The applicant is proposing a 104-unit Spring Hill Suites hotel.

Pursuant to UDO Subsection **14.01.02(C)** a Conditional District (CD) is a zoning district “in which the use and development of a property pursuant to a site-specific development plan is approved through the legislative process pursuant to UDO Article 9. A CD utilizes a proposed general use zoning district, is limited to the authorized uses and development standards mandated within that district, and may be subjected to conditions that make the development more desirable.”

A site specific development plan is defined in **UDO Article 34** as “A plan which has been submitted to the Town by a landowner that describes with certainty the type and intensity of a use for a specific parcel or parcels of property, and includes the boundaries of the site; significant topographical and other natural features effecting development of the site; the location on the site of the proposed buildings, structures, and other improvements;

the dimensions, including height, of the proposed buildings and other structures; and the location of all existing and proposed infrastructure on the site, including water, sewer, roads, and pedestrian walkways.”

See below for details on the applicant’s compliance with the Conditional District procedural requirement for a neighborhood meeting as set forth in **UDO Subsection 9.09.02** and the development’s overall compliance with UDO standards specific to the development:

Compliance with UDO Subsection 9.09.02 Neighborhood Meeting:

- A.** The applicant shall conduct a neighborhood meeting prior to the submission of the application for a Conditional District Zoning Map Amendment. This meeting will allow the applicant to explain the proposed development and to be informed of the concerns of the neighborhood and surrounding property owners.
- B.** A meeting notice must be mailed to property owners within 300’ of the development at least 25 days prior to the meeting in accordance with Subsection 1.13.02 herein. A copy of the notice shall also be provided to the Planning Department. The notice shall contain a summary of the proposed development, the applicants contact information, the date, time, and location of the meeting.
- C.** The meeting must be held at an accessible and convenient location and time in light of available options. Upon coordination through the Planning Department, the meeting may be held at Town Council Chambers if that location is available.
- D.** At the meeting, the petitioner, at a minimum, shall present all the following information:
 - 1. Contact information of the parties involved in the ownership, design, and development of the property;
 - 2. The location of the property and general information on the current conditions of the site;
 - 3. Proposed use(s) and site development;
 - 4. Any preliminary plans or renderings, if available; and
- E.** The applicant shall provide the Administrator with a summary report of the meeting which includes a list of all attendees and details the meeting including all concerns expressed by attendees and commitments made by the petitioner. This report shall be included in the staff report.

Staff Note: The applicant held the required neighborhood meeting on December 13, 2022. A recap of the meeting is included in the board packet. The applicant lists 2 attendees having attended the meeting.

Zoning District Analysis

Intensity Regulations: The applicant has demonstrated compliance with the land use intensity requirements set forth in UDO Subsection 14.21.03 B3 Development Standards.

Required (for B-3) for Entire Development	Proposed	Compliance
Minimum Gross Land Area: 5,000 sq. ft.	2.81 acres (approximately 122,400 sq. ft.)	Yes
Minimum Livability Space Ratio: 0.27 or 33,048 sq. ft.	1.13 acres (49,220 sq. ft.) or 0.40	Yes

Building Height: The applicant has demonstrated compliance with the requirements set forth in UDO Subsection 14.21.03(F) which allows for a maximum of 3 stories/45 feet primary height or 4 stories/56 feet secondary. The applicant has indicated that the proposed building

will be at the maximum secondary height of four stories and 56 feet and has provided for 11 feet of additional setbacks as required.

Parking:

Vehicular: The applicant has submitted a parking demand analysis documenting that 108 parking spaces will be sufficient for the development. *(Staff note – This information is on pages 15-16 of the TIA study).* UDO 24.01.09 requires 1.25 space/rentable room, plus 10 per 1000 ft² of restaurant/lounge, plus 20 per 1000 ft² per meeting/banquet room (or 150 spaces for this development) as the minimum parking for use 3.10.

UDO 24.01.09 states: “Minimums and maximums may be adjusted by the permit-issuing authority when the applicant provides reliable and persuasive evidence (which may include but is not necessarily limited to a parking demand analysis prepared by a qualified engineer) demonstrating that the minimum parking required per the provisions of this Article would result in excess and unnecessary parking for the development, or that maximum parking allowed per the provisions of this Article is inadequate to meet the parking needed for the development.

A. Without limiting the generality of the foregoing, the permit-issuing authority may allow deviations from the parking requirements set forth herein when it finds that: 1. A residential development is irrevocably oriented toward the elderly; 2. A business is primarily oriented to walk-in trade.

B. Whenever the permit-issuing authority allows or requires a deviation from the presumptive parking requirements set forth herein, it shall enter on the face of the permit the parking requirement that it imposes and the reasons for allowing or requiring the deviation.

Bicycle Parking: Per UDO 24.09.01, use 3.10 requires 2 short-term and 2 long-term bicycle parking spaces. The site plans demonstrate compliance.

Motorcycle Parking: Per UDO 24.10.02, the proposed development requires 2 motorcycle parking spaces. The current site plan is not compliant. Compliance will be finalized during the Zoning Permit process.

Appearance:

The building elevations and lighting plan have not fully demonstrated compliance to meet the minimum requirements of the Town of Boone Unified Development Ordinance. The rear elevation, if it is deemed publicly visible from the adjoining residential properties will require additional features be added to comply with UDO 25.01.01 and 25.02.02. A complete review (including staff’s determination of the public visibility of the rear elevation) will be performed during the zoning permit approval process. Since the property adjoins several residential parcels, the lighting plan will be of the utmost importance.

Landscape Standards:

The applicant has demonstrated compliance with the landscape standards required by UDO Article 31. The applicant has presented a Class C landscape buffer adjoining the single-family residential properties to the South, a Class B landscape buffer adjoining the multi-family development to the west (currently under construction) and standard 10-foot street yard buffers. The details of the buffers including numbers and types of plantings will be reviewed during the zoning permit approval process.

- Land Disturbance:** The grading, stormwater and erosion control standards appear to be in compliance based upon the information submitted. The applicant will be required to submit details during zoning review demonstrating full compliance. The development will necessitate the applicant's obtaining an NCG01 Construction Stormwater Discharge Permit from NCDEQ. The Town's Environmental Planner (or designee) will perform periodic inspections during development. The applicant is proposing an increase in impervious area as substantially all of the site is currently vegetative.
- Sidewalks:** UDO Subsection 23.08.01 requires sidewalks along the length of public streets for all new office, institutional, commercial and industrial development. The applicant is proposing new sidewalks along both 421 and Bub Teems Road. The remaining requirements of UDO 23.08 appear to be met.
- Traffic Impact Analysis:** A traffic impact analysis was performed by Davenport Engineering of Winston-Salem. The engineer's conclusion is that no geometric improvements will be required other than a right turn lane into the development from US 421 South. The entire TIA is included in the board packet. Town Staff and NCDOT participated in the scoping of the TIA.
- Corridor District:** **UDO 14.40.04 states the following:** "If any street(s) or road(s) other than the thoroughfare(s) protected by this Ordinance is (are) available for access to any parcel, tract or development, access must be taken from the alternate street(s)."
- a. If the alternate street access is not adequate to serve the parcel, tract or development, a single access point to the regulated thoroughfare may be allowed."
- The applicant has included a statement from the traffic engineer (located on Page 6 of the TIA) stating "Due to the existing Bub Teems Road elevation and site topography, a driveway access from Bub Teems to the site is not feasible. The cross-sections shown in the appendix and the grading plans illustrate that a driveway access would exceed 50% grade if provided. A driveway with these grades would be impractical and dangerous. Therefore, a single driveway access point onto US 421 was chosen for this site."
- This statement meets the intent of UDO 14.04.04.
- Transitional Zone:** Pursuant to UDO Subsection 6.02.02, transitional zones are established for the purpose of creating special protections for residents of protected districts from the potential adverse impacts of certain potentially incompatible nearby development, based upon the legislative finding that the general requirements of this ordinance have not been sufficient to protect the residents of such protected districts from the adverse consequences of such developments and that the variety of circumstances which may need to be ameliorated in the face of such development are not amenable to a "one size fits all" approach.
- Since the proposed development is within 200 feet of protected residentially zoned properties, the applicant will need to show the permit issuing authority (Town Council) that the planned development will effectively and to the greatest degree reasonably possible, mitigate the impacts of the proposed development upon the protected district, including but not limited to:
- a. Noise impacts;
 - b. Light impacts; and
 - c. Any other predictable negative effect, including but not limited to:
 - i. Negative visual effects;
 - ii. Negative traffic effects; and

iii. Negative health effects.

Because of the variable topography and characteristics of particular tracts of land within the town's zoning jurisdiction, the solutions incorporated into the development plan by the applicant must be tailored to specifically address the characteristics of the particular location in relation to the protected district. Only if an applicant can demonstrate by clear and convincing evidence that the normal requirements of the ordinance are themselves sufficient to protect the protected district may the application be approved without additional measures being incorporated into the site-specific development plan.

The affected residential parcels include 17 lots in Hampton Estates as well as 218 Bub Teems Road.

Note: The Board may deny the application if the requirements of this section are not met, or it may place reasonable conditions on the development, in addition to such conditions as may otherwise be reasonably imposed, specifically designed to mitigate the potential impacts identified herein.

Special Flood Hazard Area Analysis

A portion of the property is located within the Special Flood Hazard Area as noted above. Pursuant to **UDO Article 30**, the Special Flood Hazard Areas are those identified under the Cooperating Technical State (CTS) agreement between the State of North Carolina and FEMA in its Flood Insurance Study (FIS) and its accompanying Flood Insurance Rate Maps (FIRM), for Watauga County dated December 3, 2009.

There is a small area on the eastern side of the site located within the Zone AE (the "100-year flood area"). Land disturbance and vertical construction are permitted in the AE zone; however, any residential structures must be elevated 2 feet above base flood elevation and an elevation certificate from a duly qualified land surveyor will be required upon the completion of construction. No structures are proposed for this portion of the site. Land disturbance is proposed as portions of the parking lot and portions of the landscape buffer will be within Zone AE.

ANALYSIS BY OTHER TOWN STAFF

Utilities Division (Utility Services Technician)

Approved.

Services Division (Facilities Maintenance Superintendent)

Approved.

Fire Department (Fire Marshal)

Approved with conditions. Details of the fire protection equipment will be finalized during the Zoning and Building Permit reviews.

NCDOT

NCDOT has reviewed and approved Traffic Impact Analysis and the site plans.

CONFORMITY TO ADOPTED PLANS

COMPREHENSIVE PLAN UPDATE

1.1 Overall Objectives for the Boone Comprehensive Plan (p. 15):

The following objectives, which have not been listed in any particular order of importance, are deliberately broad in scope and less specific than either a policy statement or an implementation action.

Economic Development: Acknowledge the area's natural beauty, university, and medical center presence as the Town's greatest assets for economic development and jobs creation. Treat them accordingly.

Community Appearance and Community Character: Blend the built environment with the natural, scenic, and historic character of a High Country small town. Especially discourage commercial strip development, cluttered signage, and "cheap" apartment buildings.

Open Space: Integrate open space and greenways into the urban fabric of the Town. Preserve the countryside by discouraging suburban sprawl. Avoid development in floodplains, on ridgetops, and on steep slopes.

Environmental Quality: Address and monitor growth factors and activities that contribute to water, air, light, and noise pollution.

Trees: Conserve existing trees and plant new trees, especially hardwoods.

Automobile Transportation: Maximize the efficiency of existing facilities, but not at the expense town and neighborhood character and livability. Build or expand transportation facilities and parking areas as needed, but with care. Work to reduce auto dependency, use, and congestion.

Bikeways: Implement the planned system of bikeways as a legitimate transportation alternative. Unify with greenways and other pedestrian facilities where possible.

Mass Transit: Enhance and support the mass transit system as an effective alternative to the congestion created by the individual automobile.

Pedestrian Movement: Encourage a system of sidewalks, paths, crosswalks and compact development patterns which make it easy to get around Boone on foot.

Infrastructure: Engage in long range planning for water and sewer systems, stormwater runoff, natural gas, and other utility systems. Place overhead utilities underground whenever feasible.

Public Safety: Maintain a high level of policing and fire protection and plan the expansion of public safety services to coincide with projected population increases and identified needs.

Energy and Waste: Reduce waste generation, and the consumption of energy and water. Develop area recycling programs to the fullest. Encourage an anti-litter consciousness among residents and visitors.

University: Emphasize cooperative planning among the Town, County, and University.

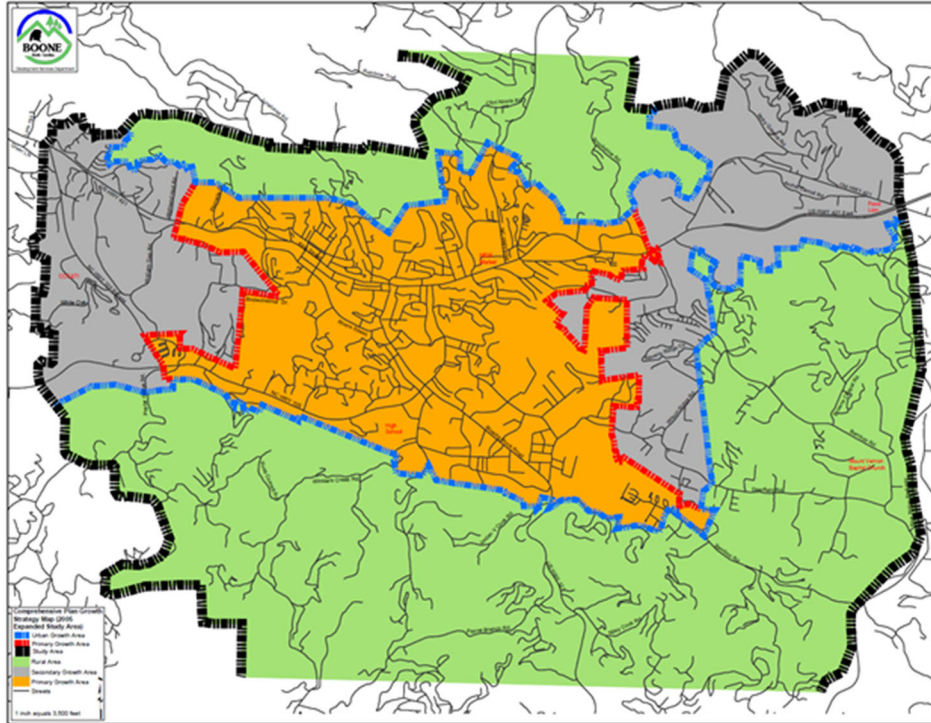
Downtown: Support and enhance the cultural and historic significance of downtown Boone, and affirm its appealing, pedestrian orientation.

Recreation: Strive for additional public recreation facilities, especially sports fields, greenways and indoor recreation centers.

Neighborhoods: Ensure the livability of neighborhoods, especially through land use and traffic planning.

Public Involvement: Encourage active public involvement and volunteerism to expand the effectiveness of community planning and action.

1.2 Growth Strategy Map (p. 17): The property is located within Primary Growth Area.



The property is located within the Primary Growth area. The Primary Growth Area is that portion of the urban growth area where urban level or facilities are already in place or can be provided most cost effectively. This is the area where near term growth and development is to be especially encouraged.

The Secondary Growth Area is that portion of the urban growth area where urban level services can be provided, but on a lower priority basis than in the primary growth area.

Additionally, for comparison, the Rural Area is that portion of the planning study area that is influenced by urban area growth forces, but within which urban level development should be strongly discouraged. Urban level services and associated development densities should not be planned for this area, except in case by case evaluations of major economic development projects.

Staff has reviewed land use and comprehensive plan policies, and listed those policies which in staff's opinion have a bearing on the request. The Commission and Council should review these policies carefully. Each member may make his or her own interpretation as to the relevance of each and which carry the most weight thereby shaping their overall recommendation. See below:

2.1 Economy

...

2.1.1 Economic Development

- A. The Town shall protect and enhance a high quality of life, image, cultural amenities, and natural beauty as the most effective, long term component of an economic development strategy.
- C. The Town shall encourage the development of a well-balanced tourism trade as a primary element of the area's economic future. Investments in services, facilities, and proper growth management shall be employed in furtherance of this objective.

- D. Economic development efforts shall encourage the revitalization and reuse of currently unused or underutilized structures, sites and infrastructure in appropriately located areas.
- K. Boone shall identify and provide services consistent with the needs of the area's growing retiree population.

...

2.2.2 Utilities

- A. Extensions of water and/or sewer services that could result in scattered, non-directed development and costly provision of other urban services shall be prohibited.
- B. Water and sewer services shall be concentrated within the limits of a geographically defined Urban Growth Area. The Primary Growth Area shall receive first priority for the provision or enhancement of water and sewer services.
- C. The Town shall employ incentives to encourage a concentration of intense urban type development within the Urban Growth Area.

...

2.2.5 Environmental Health

- C. Development activities in the 100-year floodplain or near lakes or streams shall be carefully controlled. If development must occur, low intensity uses such as open space, recreation and adequately buffered agricultural or forestry activities shall be preferred.
- D. Runoff and drainage from development activities shall be of a quality and quantity as near to natural conditions as possible, with special emphasis given to critical watershed areas.
- E. Development which preserves the natural features of the site, including existing topography, streams and significant trees and vegetation, shall be reflected in the Town's Development Standards.
 - E.1 Consider the use of innovative zoning techniques such as density bonuses and transfer of development rights in exchange for preservation of significant environmental features.
- F. Recognizing the economic and environmental costs of commercial and residential stormwater runoff, innovative stormwater management techniques such as permeable sidewalks, driveways, and parking areas shall be encouraged.

2.3 THE COMMUNITY

- A. Urban type development within the Urban Growth Area shall meet appropriate Town standards.

2.3.1 Community Appearance

- A. Measures to improve the effectiveness of grading, landscaping and buffering standards for new and existing developments shall be encouraged.
- B. The significance of street trees in providing visual relief, summer cooling, improved air quality and livability shall be recognized through public policies and actions to encourage their planting and maintenance.

2.3.2 Community Character

- A. The identification, restoration and active use of structures, buildings, monuments, and neighborhoods of historic or architectural significance shall be encouraged as a means of enhancing their economic and cultural value to the planning area.
- C. Wise development of the tourism potential of the area's architectural, historic, scenic and natural resources shall be encouraged.

- D. The destruction of significant architectural, historic, scenic, natural and archaeological resources in the planning area shall be discouraged.
- E. New development, redevelopment and rehabilitation of structures and sites shall occur in a manner which is consistent with the neighborhood and architectural context of the immediate area, and supportive, whenever possible, of Boone's original community character as a High Country small town.

2.3.3 Housing & Neighborhoods

- A. The protection and rehabilitation of viable neighborhoods shall be encouraged to insure their continued existence as a major housing source and as a reflection of the area's image as an attractive, highly livable community.
- B. Street system designs which discourage through traffic on purely local streets while allowing for free circulation within the neighborhood shall be encouraged.
- C. Proposed residential development which would expose residents to harmful effects of incompatible development or to environmental hazards shall be prohibited.
- D. Innovative and flexible land planning and development practices shall be encouraged to create livable developments which better safeguard land, water, energy and historic resources.
- E. Factors in determining preferred locations for high density residential development shall include: close proximity to the university, employment or shopping centers; access to major thoroughfares and the transit system; the availability of public services and facilities; and compatibility with adjacent land uses.
- F. The affordable housing needs of area residents, particularly elderly and low to moderate income residents, shall be recognized in Town policies and actions regarding residential development.
- G. Compact, full service neighborhoods, offering opportunities for living, working, shopping, and gathering places, shall be encouraged in newly planned developments, as well as for redeveloping areas.
- H. The overall housing unit density for proposed infill residential development or redevelopment should be compatible with the average density of existing areas.

...

Certificate of Mailing

I, Brenda Henson, certify that individual notices meeting the requirements of Article 9 of the Town of Boone UDO were placed in the mail (first class) on March 2, 2023.

/s/ Brenda Henson

Brenda Henson, Administrative Support Specialist

Certification of Posting

I, Brandon Wise, certify that the subject property was posted as required in Article 9, Subsection 9.03.03(B)(2) of the Town of Boone UDO on March 3, 2023.

/s/ Brandon Wise

Brandon Wise, Environmental Planner

Conditions of Approval

Please see the applicant's attachments. Staff has reviewed the application as presented for compliance with UDO standards. The following conditions are automatically included and a part of any approval.

1. Where there is a conflict between the application information and the plans (dated June 28, 2022 plus page C-007 updated as received September 8, 2022) the plans shall control. Insignificant deviations may be permitted to comply with the requirements of the UDO.
2. Any commitments and representations concerning the proposed project made by the applicant or its (his or her) representatives at the public hearing shall also become a condition of the permit, and a basis for a stop work order and/or permit revocation if violated.
3. The applicant shall submit the necessary applications, plans, details and specifications which meet the requirements of the Town Code, UDO, Building Code and any other applicable plans for review and approval necessary to issue Zoning and Building Permits.

Any other conditions agreed upon ...

PLANNING BOARD REPORT/RECOMMENDATIONS

Per NCGS 160D-604(b), subsequent to initial adoption of a zoning regulation, all proposed amendments to the zoning regulation or zoning map shall be submitted to the Planning Commission for review and comment. If no written report is received from the Planning Commission within 30 days of referral of the amendment to that board, the Town Council may act on the amendment without the Planning Commission report. The Town Council is not bound by the recommendations, if any, of the Planning Commission. Per NCGS 160D-604(d), when conducting a review of proposed zoning text or map, the Planning Commission shall advise and comment on whether the proposed action is consistent with any comprehensive plan that has been adopted and any other officially adopted plan that is applicable. The Planning Commission shall provide a written recommendation to the governing board that addresses plan consistency and other matters as deemed appropriate by the Planning Commission, but a comment by the Planning Commission that a proposed amendment is inconsistent with the comprehensive plan shall not preclude consideration or approval of the proposed amendment by the governing board.

Vote 1: The proposed amendment to the Town's zoning map ☐is OR ☐is not consistent with the Town's comprehensive plan and any other adopted plan(s) of the Town that are applicable because:

Note 1

Vote 2: The Planning Commission recommends ☐approval OR ☐denial of Ordinance PL06330-120922 and believes ☐approval OR ☐denial is reasonable and in the public interest because:

Note 2

Note 1: describe elements of controlling land use plans and how the amendment is or is not consistent.

Note 2: briefly explain why, factors may include (i) the size, physical conditions, and other attributes of the area proposed to be rezoned, (ii) the benefits and detriments to the landowners, the neighbors, and the surrounding community, (iii) the relationship between the current actual and permissible development on the tract and adjoining areas and the development that would be permissible under the proposed amendment; (iv) why the action taken is in the public interest; and (v) any changed conditions warranting the amendment.

TOWN COUNCIL ACTION -- Adoption of Ordinance

Per NCGS 160D-605, when adopting or rejecting any zoning text or map amendment, the Town Council shall approve a brief statement describing whether its action is consistent or inconsistent with an adopted comprehensive plan. The requirement for a plan consistency statement may also be met by a clear indication in the minutes of the governing board that at the time of action on the amendment the governing board was aware of and considered the planning board's recommendations and any relevant portions of an adopted comprehensive plan. If a zoning map amendment is adopted and the action was deemed inconsistent with the adopted plan, the zoning amendment shall have the effect of also amending any future land-use map in the approved plan, and no additional request or application for a plan amendment shall be required. A plan amendment and a zoning amendment may be considered concurrently.

Vote 1: The proposed amendment to the Town's zoning map ☐is OR ☐is not consistent with the Town's comprehensive plan and any other adopted plan(s) of the Town that are applicable because:

Note 1

Vote 2: The Town Council ☐approves OR ☐denies Ordinance PL05764-060822 and believes ☐approval OR ☐denial is reasonable and in the public interest because:

Note 2

Note 1: describe elements of controlling land use plans and how the amendment is or is not consistent.

Note 2: briefly explain why, factors may include (i) the size, physical conditions, and other attributes of the area proposed to be rezoned, (ii) the benefits and detriments to the landowners, the neighbors, and the surrounding community, (iii) the relationship between the current actual and permissible development on the tract and adjoining areas and the development that would be permissible under the proposed amendment; (iv) why the action taken is in the public interest; and (v) any changed conditions warranting the amendment.

Ordinance PL06330-120922

WHEREAS, pursuant to N.C. Gen. Stat. §160D-601, the Town may amend its zoning map after giving proper public notice and holding a public hearing; and

WHEREAS, the Planning Commission and Town Council has received the request to amend the Official Zoning Map of the Town of Boone, North Carolina to rezone the property below from R3 Multiple Family Residential to R1 Single-Family Residential with a site-specific development plan for Use 1.01 Single Family Dwelling and the development of a 15-lot architecturally integrated major subdivision:

Address: TBD US 421 South
 Watauga County PINs: 2920-09-6331-000
 2920-09-7251-000
 2920-09-6177-000
 2920-09-7187-000
 Property Owner(s): Andrea Kay Brown (3 parcels)
 Carefree Property Company, LLC (1 parcel)
 Zoning: CD B3 General Business

WHEREAS, the Boone Town Council held a duly-noticed public hearing March 27, 2023 with respect to this rezoning request; and

WHEREAS, the Boone Town Council has taken into full consideration any information offered at the public hearing; and

WHEREAS, this Town Council has reviewed the written recommendations of the Town of Boone Planning Commission; and

NOW, THEREFORE, BE IT RESOLVED as follows:

- SECTION 1.** The Boone Town Council hereby approves and adopts the modifications to the Town Zoning Map as set forth herein.
- SECTION 2.** All provisions of any Town ordinance in conflict with this ordinance are hereby repealed to the extent of such conflict.
- SECTION 3.** This Ordinance shall be effective immediately upon its adoption by Town Council.

Adopted this the __th day of April, 2023.

 The Honorable Tim Futrelle, Mayor

Attest:

 Nicole Harmon, Town Clerk

**TOWN COUNCIL AND PUBLIC HEARING MINUTES
MONDAY, JANUARY 23, 2023, 6:00 PM
VIA WEBEX SOFTWARE**

COUNCIL MEMBERS: Mayor Pro Tem Edie Tugman, Todd Carter (joined at 6:10 p.m.), Dalton George, Becca Nenow, and Virginia Roseman

PLANNING COMMISSION MEMBERS: Elizabeth Shay-Chair, Eric Plaag-Vice-Chair, Chris Behrend, Scott Boyd, John Tippet, Frank Veno, and Smith Warren

PLANNING STAFF PRESENT: Jane Shook-Director of Planning and Inspections, Stacey Miller-Deputy Director of Planning & Inspections & Chief Building Inspector, KC Banner-Building Inspector (joined at 6:42 p.m.), Darrell Pulliam-Building Inspector (joined at 7:10 p.m.), and Brenda Henson-Board Secretary

OTHER TOWN STAFF AND REPRESENTATIVES PRESENT: Allison Meade-Town Attorney

Call to Order

Mayor Pro Tem Tugman called the Town Council to order at 6:04 p.m. Chair Shay called the Planning Commission to order at 6:04 p.m.

Moment of Silence

A moment of silence was observed.

Approval of Meeting Minutes

Council Member George made a motion to approve the November 28, 2022, Public Hearing minutes as written. The motion was seconded by Council Member Nenow.

Vote: Aye – 4
Nay – None
Absent – 1 (Carter)

The motion passed.

Vice-Chair Plaag made a motion to approve the November 28, 2022, Public Hearing minutes as written. The motion was seconded by Commission Member Behrend.

Vote: Aye – All
Nay – None

The motion passed.

PUBLIC HEARING

Case PL05781-061322 Signs – UDO Text Amendment

The Town of Boone has proposed amendments to UDO Article 26 Signs and Article 34 Definitions to revise and modernize sign regulations. Numerous changes have been made to the regulations in order to be compliant with statutory requirements, case law, and the need to modernize the language.

Ms. Jane Shook, Director of Planning & Inspections, referred to the Ordinance found on page 23 of the meeting packet. She noted that the reference to Article 23 should be changed to Article 26. Ms. Shook also pointed out any dates referenced in the ordinance would need to be updated to the right dates prior to adoption.

Council Member Carter joined the meeting at 6:10 p.m.

Ms. Shook referred to section 26.04.04 on packet page 49 regarding abandoned signs. She asked for direction regarding the removal of abandoned signs. Vice-Chair Plaag suggested that the copy element be removed within ninety days, but allow the sign structure to be retained for up to two years. He felt this would allow a new tenant ample time to reuse the sign structure.

Ms. Shook then referred to section 26.05.01(H) on packet page 50 regarding inflatable signs. She noted that previously inflatable signs were allowed because a local business used to erect an inflatable in support of Project Graduation. Ms. Shook asked if this type of sign should continue to be allowed or be prohibited.

Vice-Chair Plaag felt that inflatable signs should be prohibited.

Council Member Carter stated that inflatables were used at numerous events and felt there should be some type of allowance for temporary inflatables. He felt they should strive for the balance of being a friend to businesses while protecting the character of Boone.

Ms. Meade suggested a possible allowance of inflatables for events, with limits.

Vice-Chair Plaag suggested that the number of temporary inflatable permits could be limited, as well as the length of time they would be allowed to be displayed.

Ms. Shook directed everyone to packet page 45 which contained the current UDO language regarding inflatable signs.

Ms. Meade noted that the law did not allow a distinction between for profit and not for profit when it came to signage. She stated that they could distinguish between commercial and non-commercial.

Council Member George suggested there could be a month long event. If inflatables were allowed, he did not feel that the inflatable should be allowed to stay up for the duration of the month long event.

Ms. Shook stated that some of the previous language could be put back in the proposed text to allow inflatable signs with limitations.

Ms. Shook referred to section 26.06.01(D) on packet page 53 regarding building identification signs. She explained that this was for signs that were etched or built in to a building's façade. Ms. Shook stated she wanted to have a discussion on if there should be a cap on size and inserted 5% and highlighted it for discussion. Council Member Roseman stated she was okay with the building identification sign proposal. Some others were a little unsure about allowing such a permanent sign.

Ms. Shook stated that the proposed language in section 26.06.01(F)(2) regarding fence wraps came directly from state law.

Ms. Shook pointed out an error on packet page 54 in section 26.06.01(M)(3) regarding political signs in the public right of way. The proposed language stated that signs must be removed within 48 hours after the election. Ms. Shook stated this should be revised to state that signs must be removed within 10 days after the election to be consistent with statutory language. Ms. Meade added that the language for political signs came directly from state law. She added that temporary political signs were allowed in the public right of way by state law.

Ms. Shook referred to section 26.06.01(O) regarding real estate signs. She noted that section 26.06.01(O)(5)(a-d) regarding open house signage should be removed because this would be addressed under temporary signs.

Ms. Shook then referred to section 26.06.01(Q)(1)(c-d) on packet page 55 regarding temporary sign regulations. She stated that c and d should be combined to state, "Except as provided at subsection 26.06.01(M) Political Signs, temporary signs are not permitted in public right of way. In addition,

temporary signs, regardless of whether or not in a public right of way, are not permitted within 11 feet of edge of pavement of any roadway or alley.”

Mayor Pro Tem Tugman expressed concern with temporary signs blocking the sight triangle.

Vice-Chair Plaag suggested that language be included in the real estate and political sign sections regarding sight triangle requirements.

Ms. Shook referred to section 26.06.01(Q)(2)(a)(i) regarding on-premises advertising temporary signs. She suggested the proposed text be revised to state, “Each tenant in a multi-tenant development is only allowed to display a freestanding temporary sign in compliance with this section if their building fronts the street the sign is located on. The sign must be placed on the tenant’s parcel or in the development’s common area.”

Council Member Roseman suggested that temporary signs be limited to a display time of seven consecutive days per month. There was discussion about display time limits, and Ms. Shook reminded everyone that the regulations needed to be something enforceable by staff.

Off-premises advertising temporary signs in section 26.06.01(Q)(3) were discussed. Ms. Shook stated it was the intent to allow these signs to be placed 48 hours before an event and removed 48 hours after. Ms. Meade felt that only one sign should be allowed per property. Ms. Shook stated that the current sign ordinance allowed up to 12 off- premises community event signs. She explained that the proposed text could allow as many signs as someone could get property owner permission for.

Ms. Meade suggested that the area at the corner of 321/Blowing Rock Road and Hwy 105 could become a public forum area where all signs could be placed.

Ms. Shook referred to section 26.06.01(Q)(4)(a) regarding noncommercial message temporary signs. She noted the proposed language would require these signs to be placed no closer than 11 feet from the edge of the pavement. There was discussion regarding topography and a possible inability to meet the requirement of 11 feet from the edge of the pavement. Ms. Meade stated some more work could be done on the proposed language.

Ms. Shook asked how everyone felt about feather banners. Vice-Chair Plaag felt they were too distracting and likened them to the wavy air signage.

Council Member Carter stated he was okay with feather banners. He felt it was just vertical space versus horizontal space.

Council Member Roseman stated she was also okay with feather banners, but felt they should have a height restriction.

Ms. Shook noted the time and asked how everyone would like to proceed. Vice-Chair Plaag stated there were a lot of areas that still needed some work or wordsmithing. He preferred that Town Council make the decision to have staff work on the language and bring the revisions back to a future public hearing.

Mayor Pro Tem Tugman called a break in the meeting from 8:36 p.m. until 8:43 p.m.

Ms. Shook referred to section 26.07.01(D) on packet page 57 regarding window signage. Vice-Chair Plaag suggested a revision to state that mullions and muntins were not considered an element that divides window area. He also felt that neon and lighting inside windows should be limited.

Ms. Shook stated that regulating interior window signage would create additional enforcement actions for staff.

Ms. Meade suggested, if window signage was prohibited, that the signage should not be grandfathered. Instead, a date of compliance should be established.

Ms. Shook referred to section 26.07.02(A) on packet page 58 regarding freestanding sign height. She noted that option #2 would allow the height of the sign to be computed as the distance from the base of the sign at normal grade to the top of the highest attached component of the sign.

Ms. Shook then referred to section 26.07.07 on packet page 60 regarding changeable/digital copy. She stated that the proposed text would allow changeable/digital copy in all commercial zoning districts. Ms. Shook noted that the current sign ordinance allowed copy to change every 60 minutes while the proposed text would allow the copy to change every 60 seconds.

There was discussion regarding the frequency of changeable copy. Council Member Carter felt it was somewhat extreme to go from allowing changeable copy every 60 minutes to every 60 seconds.

Council Member Roseman stated there were numerous signs around town that changed more often than once an hour. She felt that only allowing the copy to change every hour was absurd. Council Member Roseman suggested that the copy be allowed to change every 2.5 to 5 minutes. Council Members Nenow and Carter stated they would be okay with five minutes. Mayor Pro Tem Tugman stated she did not want Boone to become a mini Las Vegas, but would grudgingly agree to a five-minute interval of copy change.

Ms. Shook referred to the table in section 26.08.05(E) on packet page 68 regarding monument signs, particularly in the B1 Downtown Interface. She noted that the Interface was a transitional area into downtown. Ms. Shook suggested a possible six-foot height allowance instead of the four feet that was proposed.

Ms. Shook reminded everyone that Mr. Graydon Eggers and Mr. Skip Greene had appeared at the November public hearing to request changes to allow them to replace the monument sign at First Baptist Church that was removed due to road construction.

Vice-Chair Plaag suggested a reduction in maximum square footage to 24 square feet with a six feet height limitation.

Ms. Meade suggested the possibility of having a flexible allowance based on street frontage.

Mayor Pro Tem Tugman felt the proposed sign size for the Downtown Interface was too large.

Ms. Shook shared a photo of the sign that was removed in front of First Baptist Church, a sign that was located on the corner parking lot of First Baptist Church, and the zoning map showing the boundaries of the Downtown Core and Interface.

Vice-Chair Plaag noted that, based on the zoning map, the property where the First Baptist Church was located was in the Downtown Core. The property the church owned containing the parking lot across the street was in the Downtown Interface.

Ms. Shook expressed concern that there could be some confusion or miscommunication between staff and Mr. Eggers regarding the appropriate zoning of the church's property.

Vice-Chair Plaag suggested that staff provide sign measurements and photo examples of signs at the next meeting.

Next meeting dates were discussed. It was noted that the DFI meeting had been rescheduled to February 20, 2023 at 1:00 p.m. A special public hearing date was set for March 20, 2023 at 6:00 p.m. via WebEx to continue discussion of the UDO text amendment for signs. Ms. Shook noted that the next regularly scheduled public hearing would be on March 27, 2023 at 6:00 p.m.

Adjournment of Town Council

Council Member Carter made a motion to adjourn the Town Council at 10:13 p.m. The motion was seconded by Council Member George.

Vote: Aye – All
Nay – None

The motion passed.

Edie Tugman, Mayor Pro Tem

Brenda Henson, Board Secretary

Elizabeth Shay, Planning Commission Chair

Continuation of Planning Commission Meeting

Public Comment

There was no additional public comment made.

Approval of Planning Commission Meeting Minutes

Vice-Chair Plaag wished to amend the November 28, 2022 Planning Commission meeting minutes in the last paragraph of page 15. He asked that the word compliant be changed to complaint.

Vice-Chair Plaag then made a motion to approve the November 28, 2022 Planning Commission meeting minutes as amended. Commission Member Behrend seconded the motion.

Vote: Aye – All
Nay – None

The motion passed.

Adjournment of Planning Commission

Vice-Chair Plaag made a motion to adjourn the meeting at 10:15 p.m. Commission Member Behrend seconded the motion.

Vote: Aye – All
Nay – None

The motion passed.

Elizabeth Shay, Planning Commission Chair

Brenda Henson, Board Secretary

DRAFT