CONDITIONAL ZONING APPLICATION

TOWN OF CHAPEL HILL
Planning Department
405 Martin Luther King Jr. Blvd.
(919) 968-2728 *fax* (919) 969-2014
www.townofchapelhill.org

Parcel Identifier Number (PIN): 9788-27-9700/9667,9788-37-0647/0721/0680/0549 Date: 10-28-2021 REVISED

Section A: Project Information

Project Name: Rosemary/Columbia Hotel

Property Address: 110 West Rosemary Street Zip Code: 27514

Use Groups (A, B, and/or C): B Existing Zoning District: OI and R-3

Project Description: 130-135 room hotel with +/- 40 parking spaces on site

Section B: Applicant, Owner, and/or Contract Purchaser Information

Applicant Information (to whom correspondence will be mailed):

Name: Chapel Hill Ventures LLC, a Florida Limited LIabiltiy Company Attn: John Sandlin and Ed Small

Address: c/o Clarendon Properties, 107 Stokley Drive, Suite 100

City: Wilmington State: NC Zip Code: 28403

Phone: 910-256-4841 Email: esmall@smarthotelsgroup.com / jsandlin@clarendonnc.com

The undersigned applicant hereby certifies that, to the best of their knowledge and belief, all information supplied with this application and accurate.

Signature: Date:

Owner/Contract Purchaser Information:

☒ **Owner** ☐ **Contract Purchaser**

Name: KW RC Properties LLC

Address: PO Box 15108

City: Wilmington State: NC Zip Code: 28408

Phone: Email:

The undersigned applicant hereby certifies that, to the best of their knowledge and belief, all information supplied with this application and accurate.

Signature: Date:

Click here for application submittal instructions.

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The undersigned applicant hereby certifies that, to the best of their knowledge and belief, all information supplied with this application and accurate.

Signature: [signature] Date: 11/5/21

Owner/Contract Purchaser Information:

☒ **Owner** ☐ **Contract Purchaser**

Name: KW RC Properties LLC

Address: PO Box 15108

City: Wilmington State: NC Zip Code: 28408

Phone: Email:

The undersigned applicant hereby certifies that, to the best of their knowledge and belief, all information supplied with this application and accurate.

Signature: Date:

Click here for application submittal instructions.

CONDITIONAL ZONING APPLICATION

TOWN OF CHAPEL HILL
Planning Department
405 Martin Luther King Jr. Blvd.
(919) 968-2728 *fax* (919) 969-2014
www.townofchapelhill.org

Parcel Identifier Number (PIN): 9788-27-9700/9667,--37-0535/0647/0721/0680/0549 Date: 9-24-2020

Section A: Project Information

Project Name: Rosemary/Columbia Hotel

Property Address: 108 West Rosemary Street Zip Code: 27514

Use Groups (A, B, and/or C): B Existing Zoning District: OI and R-3

Project Description: 125-140 room hotel with +/- 80 parking spaces on site

Section B: Applicant, Owner, and/or Contract Purchaser Information

Applicant Information (to whom correspondence will be mailed):

Name: Coulter Jewell Thames PA, Attn: Wendi Ramsden

Address: 111 WEst Main Street

City: Durham State: NC Zip Code: 27517

Phone: 919-682-0368 Email: wramsden@cjtpa.com

The undersigned applicant hereby certifies that, to the best of their knowledge and belief, all information supplied with this application and accurate.

Signature: Wendi Ramsden Date: 9.24.2020

Owner/Contract Purchaser Information:

☐ **Owner** ☒ **Contract Purchaser**

Name: Smart Olympia Carolina LLC, Attn Ed Small (9788-27-9667/9700,--37-0680/0549/0721/0647)

Address: 20600 Chagrin Blvd, Suite 705

City: Shaker Heights State: Ohio Zip Code: 44122

Phone: Email: esmall@smarthotelsgroup.com

The undersigned applicant hereby certifies that, to the best of their knowledge and belief, all information supplied with this application and accurate.

Signature: SMART OLYMPIA CAROLINA LLC Ed Small, President Date: 9/24/2020

Click here for application submittal instructions.

CONDITIONAL ZONING APPLICATION

TOWN OF CHAPEL HILL
Planning Department
405 Martin Luther King Jr. Blvd.
(919) 968-2728 *fax* (919) 969-2014
www.townofchapelhill.org

Parcel Identifier Number (PIN): 9788-27-9700/9667,9788-37-0647/0721/0680/0549 Date: 10-26-2021 REVISED

Section A: Project Information

Project Name: Rosemary/Columbia Hotel

Property Address: 110 West Rosemary Street Zip Code: 27514

Use Groups (A, B, and/or C): B Existing Zoning District: OI and R-3

Project Description: 125-140 room hotel with +/- 40 parking spaces on site

Section B: Applicant, Owner, and/or Contract Purchaser Information

Applicant Information (to whom correspondence will be mailed):

Name: Chapel Hill Ventures LLC, a Florida Limited LIabiltiy Company Attn: John Sandlin and Ed Small

Address: c/o Clarendon Properties, 107 Stokley Drive, Suite 100

City: Wilmington State: NC Zip Code: 28403

Phone: 910-256-4841 Email: esmall@smarthotelsgroup.com / jsandlin@clarendonnc.com

The undersigned applicant hereby certifies that, to the best of their knowledge and belief, all information supplied with this application and accurate.

Signature: Date:

Owner/Contract Purchaser Information:

☒ **Owner** ☐ **Contract Purchaser**

Name: KW RC Properties LLC

Address: PO Box 15108

City: Wilmington State: NC Zip Code: 28408

Phone: Email:

The undersigned applicant hereby certifies that, to the best of their knowledge and belief, all information supplied with this application and accurate.

Signature: KW RC PROPERTIES LLC by K - G Walk Date: 10/26/21

Click here for application submittal instructions.

CONDITIONAL ZONING APPLICATION

TOWN OF CHAPEL HILL
Planning Department
405 Martin Luther King Jr. Blvd.
(919) 968-2728 *fax* (919) 969-2014
www.townofchapelhill.org

Parcel Identifier Number (PIN): 9788-37-0535 / 9788-37-0577 Date: 5-20-2021

Section A: Project Information

Project Name: Rosemary/Columbia Hotel

Property Address: 110 West Rosemary Street Zip Code: 27514

Use Groups (A, B, and/or C): B Existing Zoning District: OI and R-3

Project Description: 125-140 room hotel with +/- 70 parking spaces on site

Section B: Applicant, Owner, and/or Contract Purchaser Information

Applicant Information (to whom correspondence will be mailed):

Name: Chapel Hill Ventures LLC, a Florida Limited Liability Company Attn: John Sandlin and Ed Small

Address: c/o Clarendon Properties , 107 Stokley Drive, Suite 100

City: Wilmington State: NC Zip Code: 28403

Phone: 910-256-4841 Email: esmall@smarthotelsgroup.com / jsandlin@clarendonnc.com

The undersigned applicant hereby certifies that, to the best of their knowledge and belief, all information supplied with this application and accurate.

Signature: _____ Date: _____

Owner/Contract Purchaser Information:

☒ **Owner** ☐ **Contract Purchaser**

Name: Town of Chapel Hill

Address: 405 Martin Luther King Jr Blvd

City: Chapel Hill State: NC Zip Code: 27514

Phone: _____ Email: _____

The undersigned applicant hereby certifies that, to the best of their knowledge and belief, all information supplied with this application and accurate.

Signature: Maurice Jones Date: 5-24-21

Click here for application submittal instructions.

Conditional Rezoning applications are reviewed by staff, Planning Commission, and Town Council. The application is part of an open public process that enables Town Council to discuss and decide on the key issues of a rezoning proposal. If a rezoning is approved, the applicant may then submit a detailed final plan application to staff for compliance review with the technical development standards and with the Council rezoning approval.

The establishment of a Conditional Zoning District shall be consistent with the Land Use Plan in the Comprehensive Plan. A proposed Conditional Zoning District is deemed consistent if the proposed District will be located in conformance with an adopted small area plan and/or in one of the following Land Use Categories:

- Medium Residential
- High Residential
- Commercial
- Mixed Use, Office/Commercial Emphasis
- Mixed Use, Office Emphasis
- Town/Village Center
- Institutional
- Office
- University
- Development Opportunity Area
- Light Industrial Opportunity Area

If the proposed conditional zoning districts is located in a Low Residential or a Rural Residential Land Use Category, the Town Council must approve a Land Use Plan amendment prior to proceeding.

SIGNED CONDITIONS: All conditions shall be in writing, prepared by the owner of the property or an attorney and must be signed by all property owners and contract purchasers, if applicable. The Town Attorney may require additional signatures if necessary and will determine whether or not the conditions statement is legally sufficient. Within thirty (30) days after receipt of the conditions the Planning Division Manager will notify the applicant of any deficiencies in the conditions statement or if any additional information is needed. The applicant may make changes to the written conditions statement provided it is submitted at least thirty (30) prior to Planning Commission meeting or thirty (30) days prior to Town Council public hearing.

RECORDATION OF CONDITIONS: After a rezoning has been approved by the Town Council, the conditions statement shall be recorded with the Register of Deeds Office. After a rezoning has been approved by Town Council and recorded by the Register of Deeds Office, the conditions may not be amended except through a new rezoning application.

Section A: Project Information

Use Type: *(check/list all that apply)*

☐ Office/Institutional ☐ Residential ☐ Mixed-Use ☒ Other: _____

Overlay District: *(check all that apply)*

☐ Historic District ☒ Neighborhood Conservation District ☐ Airport Hazard Zone

Section B: Land Area

Net Land Area (NLA): Area within zoning lot boundaries		NLA=	48,110.70	sq. ft.
Choose one, or both, of the following (a or b), not to exceed 10% of NLA	a) Credited Street Area (total adjacent frontage) x ½ width of public right-of-way	CSA=	4,811.07	sq. ft.
	b) Credited Permanent Open Space (total adjacent frontage) x ½ public or dedicated open space	COS=		sq. ft.
TOTAL: NLA + CSA and/or COS = Gross Land Area (not to exceed NLA + 10%)		GLA=	56,921.77	sq. ft.

Section C: Special Protection Areas, Land Disturbance, and Impervious Area

Special Protection Areas: *(check all those that apply)*

☐ Jordan Buffer ☐ Resource Conservation District ☐ 100 Year Floodplain ☐ Watershed Protection District

Land Disturbance	**Total (sq. ft.)**
Area of Land Disturbance (Includes: Footprint of proposed activity plus work area envelope, staging area for materials, access/equipment paths, and all grading, including off-site clearing)	63,200 sf
Area of Land Disturbance within RCD	0
Area of Land Disturbance within Jordan Buffer	0

Impervious Areas	**Existing (sq. ft.)**	**Demolition (sq. ft.)**	**Proposed (sq. ft.)**	**Total (sq. ft.)**
Impervious Surface Area (ISA)	PROJECT AREA 50,164 sf	42,981 sf	max 46,544 sf	max 53,727 sf
Impervious Surface Ratio: Percent Impervious Surface Area of Gross Land Area (ISA/GLA)%	74%			75%
If located in Watershed Protection District, % of impervious surface on 7/1/1993	n/a	n/a	n/a	n/a

Section D: Dimensions

Dimensional Unit (sq. ft.)	Existing (sq. ft.)	Demolition (sq. ft.)	Proposed (sq. ft.)	Total (sq. ft.)
Number of Buildings	2 demo, 1 new	2,939 sf	92,500 sf	92,500 sf
Number of Floors	1-2		4-5	
Recreational Space	n/a			

Residential Space				
Dimensional Unit (sq. ft.)	**Existing (sq. ft.)**	**Demolition (sq. ft.)**	**Proposed (sq. ft.)**	**Total (sq. ft.)**
Floor Area (all floors – heated and unheated)				
Total Square Footage of All Units				
Total Square Footage of Affordable Units				
Total Residential Density				
Number of Dwelling Units				
Number of Affordable Dwelling Units				
Number of Single Bedroom Units				
Number of Two Bedroom Units				
Number of Three Bedroom Units				

Non-Residential Space *(Gross Floor Area in Square Feet)*					
Use Type	**Existing**	**Proposed**	**Uses**	**Existing**	**Proposed**
Commercial					
Restaurant			**# of Seats**		
Government					
Institutional					
Medical					
Office					
Hotel	0	92,500	**# of Rooms**	0	up to 135
Industrial					
Place of Worship			**# of Seats**		
Other					

Dimensional Requirements		Required by Ordinance	Existing	Proposed
Setbacks (minimum)	Street	0	n/a	4'
	Interior (neighboring property lines)	8'	n/a	43.5'
	Solar (northern property line)	11'	n/a	29'
Height (maximum)	Primary	40'	n/a	53' Rose, 42' Col
	Secondary	50'	n/a	65'
Streets	Frontages	12'	25'-56.34'	127.55'/111.35'
	Widths	15'	25'-56.34'	127.55'/111.35'

Section F: Adjoining or Connecting Streets and Sidewalks

Note: For approval of proposed street names, contact the Engineering Department.

Street Name	Right-of-Way Width	Pavement Width	Number of Lanes	Existing Sidewalk*	Existing Curb/Gutter
West Rosemary	38'	38'	2	☒ Yes	☒ Yes
North Columbia	100'	64'	5	☒ Yes	☒ Yes

List Proposed Points of Access (Ex: Number, Street Name):

*If existing sidewalks do not exist and the applicant is adding sidewalks, please provide the following information:

Sidewalk Information			
Street Names	**Dimensions**	**Surface**	**Handicapped Ramps**
W Rosemary replacement	5'-16' var	concrete and brick pavers	☒ Yes ☐ No ☐ N/A
S Columbia partial replacement	5'	concrete and brick pavers	☒ Yes ☐ No ☐ N/A

Section G: Parking Information

Parking Spaces	Minimum	Maximum	Proposed
Regular Spaces	0	117	35-37
Handicap Spaces	0	5	2-3
Total Spaces	0	122	40
Loading Spaces			2 car loading
Bicycle Spaces	9.33	n/a	10
Surface Type	ashpalt and concrete		

Section H: Landscape Buffers

Location (North, South, Street, Etc.)	Minimum Width	Proposed Width	Alternate Buffer	Modify Buffer
West	20'	5'-20'(north)	☒ Yes	☒ Yes
North	10'	6'	☐ Yes	☒ Yes
East (N Columbia Street)	no buffer req'd	n/a	☐ Yes	☐ Yes
South (W Rosemary Street)	no buffer req'd	n/a	☐ Yes	☐ Yes

Section I: Land Use Intensity

Existing Zoning District:
Proposed Zoning Change *(if any)*:

Zoning – Area – Ratio			Impervious Surface Thresholds			Minimum and Maximum Limitations	
Zoning District(s)	**Floor Area Ratio (FAR)**	**Recreation Space Ratio (RSR)**	**Low Density Residential (0.24)**	**High Density Residential (0.50)**	**Non-Residential (0.70)**	**Maximum Floor Area (MFA) = FAR x GLA**	**Minimum Recreation Space (MSR) = RSR x GLA**
TC-2	1.97					104,256 sf	
TOTAL							
RCD Streamside	n/a	0.01					
RCD Managed	n/a	0.019					
RCD Upland	n/a						

Section J: Utility Service

Check all that apply:

Water	☒ OWASA	☐ Individual Well	☐ Community Well	☐ Other
Sewer	☒ OWASA	☐ Individual Septic Tank	☐ Community Package Plant	☐ Other
Electrical	☒ Underground	☐ Above Ground		
Telephone	☒ Underground	☐ Above Ground		
Solid Waste	☐ Town	☒ Private		

CONDITIONAL ZONING APPLICATION SUBMITTAL REQUIREMENTS

TOWN OF CHAPEL HILL
Planning Department

The following must accompany your application. Failure to do so will result in your application being considered incomplete. For assistance with this application, please contact the Chapel Hill Planning Department (Planning) at (919) 968-2728 or at planning@townofchapelhill.org.

	Application fee (including Engineering Review fee) (refer to fee schedule)	Amount Paid $
X	**Pre-application meeting** –with appropriate staff	
X	**Digital Files –** provide digital files of all plans and documents	
X	**Recorded Plat or Deed of Property**	
X	**Project Fact Sheet**	
yes	**Traffic Impact Statement** – completed by Town's consultant (or exemption)	
	Description of Public Art Proposal, if applicable	
X	**Statement of Justification**	
X	**Response to Community Design Commission and Town Council Concept Plan comments, if applicable**	
n/a	**Affordable Housing Proposal, if applicable**	
X	**Statement of Consistency with Comprehensive Plan or request to amend Comprehensive Plan**	
X	**Mailing list of owners of property within 1,000 feet perimeter of subject property** (see GIS notification tool)	
	Mailing fee for above mailing list (mailing fee is double due to 2 mailings)	Amount Paid $
X	**Written Narrative describing the proposal, including proposed land uses and proposed conditions**	
n/a	**Resource Conservation District, Floodplain, & Jordan Buffers Determination** – necessary for all submittals	
n/a	**Jurisdictional Wetland Determination – if applicable**	
n/a	**Resource Conservation District Encroachment Exemption or Variance (determined by Planning)**	
n/a	**Jordan Buffer Authorization Certificate or Mitigation Plan Approval (determined by Planning)**	
n/a	**Reduced Site Plan Set (reduced to 8.5" x 11")**	

Stormwater Impact Statement (1 copy to be submitted)

a) Written narrative describing existing & proposed conditions, anticipated stormwater impacts and management structures and strategies to mitigate impacts
b) Description of land uses and area (in square footage)
c) Existing and proposed impervious surface area in square feet for all subareas and project area
d) Ground cover and uses information
e) Soil information (classification, infiltration rates, depth to groundwater and bedrock)
f) Time of concentration calculations and assumptions
g) Topography (2-foot contours)
h) Pertinent on-site and off-site drainage conditions
i) Upstream and/or downstream volumes
j) Discharges and velocities
k) Backwater elevations and effects on existing drainage conveyance facilities
l) Location of jurisdictional wetlands and regulatory FEMA Special Flood Hazard Areas
m) Water quality volume calculations
n) Drainage areas and sub-areas delineated
o) Peak discharge calculations and rates (1, 2, and 25-year storms)
p) Hydrographs for pre- & post-development without mitigation, post-development with mitigation
q) Volume calculations and documentation of retention for 2-year storm

r) 85% TSS removal for post-development stormwater runoff
s) Nutrient loading calculations
t) BMP sizing calculations
u) Pipe sizing calculations and schedule (include HGL & EGL calculations and profiles)

Plan Sets (10 copies to be submitted no larger than 24" x 36")

Plans should be legible and clearly drawn. All plan set sheets should include the following:

- Project Name
- Legend
- Labels
- North Arrow (North oriented toward top of page)
- Property boundaries with bearing and distances
- Scale (Engineering), denoted graphically and numerically
- Setbacks
- Streams, RCD Boundary, Jordan Riparian Buffer Boundary, Floodplain, and Wetlands Boundary, where applicable
- Revision dates and professional seals and signatures, as applicable

Cover Sheet

a) Include Project Name, Project fact information, PIN, and Design Team

Area Map

a) Project name, applicant, contact information, location, PIN, & legend
b) Dedicated open space, parks, greenways
c) Overlay Districts, if applicable
d) Property lines, zoning district boundaries, land uses, project names of site and surrounding properties, significant buildings, corporate limit lines
e) Existing roads (public & private), rights-of-way, sidewalks, driveways, vehicular parking areas, bicycle parking, handicapped parking, street names
f) 1,000' notification boundary

Existing Conditions Plan

a) Slopes, soils, environmental constraints, existing vegetation, and any existing land features
b) Location of all existing structures and uses
c) Existing property line and right-of-way lines
d) Existing utilities & easements including location & sizes of water, sewer, electrical, & drainage lines
e) Nearest fire hydrants
f) Nearest bus shelters and transit facilities
g) Existing topography at minimum 2-foot intervals and finished grade
h) Natural drainage features & water bodies, floodways, floodplain, RCD, Jordan Buffers & Watershed boundaries

Detailed Site Plan

a) Existing and proposed building locations
b) Description & analysis of adjacent land uses, roads, topography, soils, drainage patterns, environmental constraints, features, existing vegetation, vistas (on and off-site)
c) Location, arrangement, & dimension of vehicular parking, width of aisles and bays, angle of parking, number of spaces, handicapped parking, bicycle parking. Typical pavement sections & surface type.
d) Location of existing and proposed fire hydrants
e) Location and dimension of all vehicle entrances, exits, and drives
f) Dimensioned street cross-sections and rights-of-way widths
g) Pavement and curb & gutter construction details
h) Dimensioned sidewalk and tree lawn cross sections
i) Proposed transit improvements including bus pull-off and/or bus shelter
j) Required landscape buffers (or proposed alternate/modified buffers)
k) Required recreation area/space (including written statement of recreation plans)
l) Refuse collection facilities (existing and proposed) or shared dumpster agreement
m) Construction parking, staging, storage area, and construction trailer location
n) Sight distance triangles at intersections
o) Proposed location of street lights and underground utility lines and/or conduit lines to be installed
p) Easements
q) Clearing and construction limits
r) Traffic Calming Plan – detailed construction designs of devices proposed & associated sign & marking plan

Stormwater Management Plan

a) Topography (2-foot contours)
b) Existing drainage conditions
c) RCD and Jordan Riparian Buffer delineation and boundary (perennial & intermittent streams; note ephemeral streams on site)
d) Proposed drainage and stormwater conditions
e) Drainage conveyance system (piping)
f) Roof drains
g) Easements
h) BMP plans, dimensions, details, and cross-sections
i) Planting and stabilization plans and specifications

Landscape Protection Plan

a) Rare, specimen, and significant tree survey within 50 feet of construction area
b) Rare and specimen tree critical root zones
c) Rare and specimen trees proposed to be removed
d) Certified arborist tree evaluation, if applicable
e) Significant tree stand survey
f) Clearing limit line
g) Proposed tree protection/silt fence location
h) Pre-construction/demolition conference note
i) Landscape protection supervisor note
j) Existing and proposed tree canopy calculations, if applicable

Planting Plan

a) Dimensioned and labeled perimeter buffers
b) Off-site buffer easement, if applicable
c) Landscape buffer and parking lot planting plan (including planting strip between parking and building, entryway planting, and 35% shading requirement

Steep Slope Plan

a) Classify and quantify slopes 0-10%, 10-15%, 15-25%, and 25% and greater
b) Show and quantify areas of disturbance in each slope category
c) Provide/show specialized site design and construction techniques

Grading and Erosion Control Plan

a) Topography (2-foot contours)
b) Limits of Disturbance
c) Pertinent off-site drainage features
d) Existing and proposed impervious surface tallies

Streetscape Plan, if applicable

a) Public right-of-way existing conditions plan
b) Streetscape demolition plan
c) Streetscape proposed improvement plan
d) Streetscape proposed utility plan and details
e) Streetscape proposed pavement/sidewalk details
f) Streetscape proposed furnishing details
g) Streetscape proposed lighting detail

Solid Waste Plan

a) Preliminary Solid Waste Management Plan
b) Existing and proposed dumpster pads
c) Proposed dumpster pad layout design
d) Proposed heavy duty pavement locations and pavement construction detail
e) Preliminary shared dumpster agreement, if applicable

Construction Management Plan

a) Construction trailer location
b) Location of construction personnel parking and construction equipment parking
c) Location and size of staging and materials storage area
d) Description of emergency vehicle access to and around project site during construction
e) Delivery truck routes shown or noted on plan sheets

Energy Management Plan

a) Description of how project will be 20% more energy efficient than ASHRAE standards
b) Description of utilization of sustainable forms of energy (Solar, Wind, Hydroelectric, and Biofuels)
c) Participation in NC GreenPower program
d) Description of how project will ensure indoor air quality, adequate access to natural lighting, and allow for proposed utilization of sustainable energy
e) Description of how project will maintain commitment to energy efficiency and reduced carbon footprint over time
f) Description of how the project's Transportation Management Plan will support efforts to reduce energy consumption as it affects the community

Exterior Elevations

a) An outline of each elevation of the building, including the finished grade line along the foundation (height of building measured from mean natural grade)

Rosemary / Columbia Hotel

110 W Rosemary Street

Conditional Zoning Application 10 November 2021

PROJECT NARRATIVE

This is a request for review of a Conditional Zoning application by the Town of Chapel Hill.

Introduction

The proposed Rosemary / Columbia Hotel project will redevelop a site currently dominated by surface parking and non-descript single story commercial buildings, and redevelop it with a high quality, extended stay hotel in downtown Chapel Hill. The project involves the redevelopment of 7 contiguous parcels in a generally L-shaped configuration: 3 parcels on the north side of West Rosemary, 2 on North Columbia, 1 on Pritchard Avenue, and 1 landlocked parcel with no street address. The project will involve removal of 4 surface parking lots, a small brick building, and a 2-story wood structure. The parcels will be recombined, then subdivided to accommodate a land swap between the developer and the Town. The final address is expected to be 110 West Rosemary Street. The main drive entry and lobby area and public space entries will all be accessible from that frontage as well as from N Columbia Street.

The project will be a 130-135-room, 4 to 5-story hotel with approximately 40 on-site parking spaces. Most will be structured in an under-building deck space, but there will be 5 surface spaces accommodated along the west drive for ride share, and short term parking for check-in and loading. There will also be space on Town land behind Old Town Hall for handicap parking and/or a service vehicle. The hotel will be targeted to extended stay visitors to Chapel Hill, and the facilities are proposed to include public spaces and a rooftop bar. Additional guest common areas will include a business center, guest dining area, meeting rooms, fitness center, and an outdoor recreational area. The hotel's public spaces and common areas will incorporate custom-designed elements that authentically reflect the hotel's downtown Chapel Hill location. These spaces will be accessible from W Rosemary Street.

The proposal includes a land swap with the Town of Chapel Hill to provide a single parcel with a usable building envelope. The land currently owned by the Town is a 7,847 sf narrow parcel at 110 W Rosemary with a 16 space gravel parking lot. The trade would include that narrow parcel becoming part of the hotel project, and an approximately 8,887 sf portion of land fronting Pritchard Avenue and containing a 2-story wood frame house to be deeded to the Town. The project would also include improvements to the driveway behind the Historic Town Hall building and preparation of the lot beside that building to be used as a Town green space or pocket park.

The intent is to end up with an L-shaped parcel zoned TC-2-CZD for the hotel development, and significant enhancement of the Town-owned site around the Historic Town Hall building for the

Town to program. It would also result in the retention of the house on Pritchard which would be owned by the Town.

The project was submitted as a Concept Plan and reviewed by Town staff, the Community Design Commission, and Town Council in September and October 2019. Applicant responses to comments made at those meetings are attached to this application.

Site Description

The site consists of 6 parcels, totaling 49,151 sf. A seventh parcel fronting W Rosemary is currently owned by the Town and will be part of a land swap with a subdivided parcel fronting Pritchard Avenue, for a total of 56,998 sf. The project assumes and requires a parcel exchange with the Town in order to develop the hotel while including an appropriate buffer to the adjacent neighborhood to the north, and enhancing the space around the historic Town Hall building with improvements including a pocket park. In the parcel exchange process, the Town would convey the surface parking lot located at 110 W Rosemary Street to the Developer, and the Developer would convey to the Town a parcel of comparable size comprising the majority portion of the 208 Pritchard Avenue parcel, including a house of historic construction. Post-land swap, the hotel parcel will total 48,111 sf, and the Town-owned homesite on Pritchard will be 8,887 sf. The 8,180 sf pocket park parcel is owned by the Town and will continue to be owned by the Town. The hotel developer intends to develop that site as a small park, and once constructed the park would be maintained and programmed by the Town.

The site is completely developed in small commercial buildings and gravel parking lots. All existing improvements will be removed, except for the home and associated site improvements on the Pritchard property.

The project site located at the edge of the Northside neighborhood, and is bounded by West Rosemary Street to the south, the Historic Town Hall to the southeast, North Columbia Street to the east, a law office to the north, and residential rental properties to the northwest.

The site is fairly flat on the south half, but slopes down approximately 10’ along the land toward N Columbia. The project will take advantage of this grade change to provide access along the northern property line to a lower level under building parking and service areas.

Site Access and Circulation

The site is currently accessed via three driveways on W Rosemary and two driveways on N Columbia. The proposed configuration will be a single access point on W Rosemary, with a two-way circulation pattern toward an access onto N Columbia, and toward the under-building parking spaces. This driveway will provide access to the service area at the northwest corner of the building, and will also act as the fire lane.

There will be a short driveway just north of the Historic Town Hall building which will allow for two way traffic, with a right-in / right-out only circulation pattern. This driveway will allow access to the back of Historic Town Hall, and will also allow access to the upper under-building parking level and the driveway to the north.

This will result in the reduction of access points on W Rosemary and provide for a safer pedestrian experience along that frontage.

Per the Town of Chapel Hill LUMO, there is no required parking in the TC zone, but this use will require parking spaces. The under-building parking levels will accommodate approximately 35 parking spaces. There will be 5 surface short term parking spaces west of the building for ride share vehicles and guest loading/check-in. Overflow will be arranged at nearby parking decks via negotiations with the Town and adjacent property owners.

The project is within walking distance of downtown amenities and the UNC campus. The sidewalk in front of the hotel project will be improved with areas between building and back of curb designed to meet the West Rosemary design guidelines, and there will be ample pedestrian circulation routing within the site.

Building Orientation and Site Layout
The proposed L-shaped hotel will have a public presence on W Rosemary Street, which will have access to the hotel lobby and the public spaces. On the top floor of the Rosemary-facing wing will be a rooftop terrace inviting visitors and residents to enjoy the downtown view. The south wing will contain all the public spaces as well as hotel rooms. The FLUM calls for 4 stories at the street on this section of W Rosemary, allowing heights up to 6 stories within the site. This wing is 4 stories facing Rosemary Street, with an outdoor rooftop bar over the 4th story. The building transitions to 5 stories behind that public bar area.

The Columbia-facing wing will contain hotel rooms in 4 stories over the main level parking deck. There will also be a rooftop terrace on the eastern end of this wing for the use of hotel guests. That terrace will face north, east, and south, and will step back at the top floor so that the height on S Columbia is only 4 stories with a rooftop amenity space for guests, and also transitions to 5 stories away from the street. The Columbia wing will also contain lower level parking and hotel services such as trash collection and laundry.

Environmental and Landscaping
The 1.1 acre site contains few trees and is mostly impervious. The redevelopment will include a small amount of additional impervious. There will be new landscaping in the buffers and within the site. There are no stream buffer or RCD zones on the site.

Stormwater
The existing site currently does not have any stormwater treatment. The proposed redevelopment will comply with the current stormwater quality and quantity regulations. The project will comply with all sedimentation and erosion control requirements utilizing on- and offsite protection measures during construction.

Utilities
The project site is currently served by OWASA water and sewer services. The new hotel facility will utilize existing water mains on W Rosemary and sewer mains on N Columbia Street. Additional fire hydrants will be installed as necessary. Existing overhead electric services on site will be removed and relocated underground.

Outline of Modifications requested

The following is list of Modifications to the LUMO that are being requested as part of this Conditional Zoning Application:

1. *Per LUMO section 5.6, landscape buffers would be required on the western and northern property lines of the project.*

   There are 3 property lines/landscape buffers required on this project. A Modification to regulations is requested to allow reduction of landscape buffers as follows:

   a) The required northeastern landscape buffer is a 10' width. This is the stretch of property line north of the project driveway. This project is requesting a modification to reduce that to 6', including elimination of canopy trees and reduction of the understory and shrub requirements prorated to 60% of the total requirement.
   Justification: The property to the north is also a commercial use, and we propose to install a fence and smaller maturing landscaping at the property line to help screen these two non-residential uses from each other.

   b) The required buffer between the hotel and the residential parcel to the northwest (210 Pritchard) is 20'. We are asking to have this buffer width averaged. The full plant quantity and breakdown is proposed for this space.
   Justification: The turning area on the fire lane around the hotel building extends into the buffer area at the southeast corner. The applicant proposes all evergreen plantings at this corner in addition to an opaque fence to screen the hotel use from the residential property and will plant the full quantity of screening material in the buffer zone.

   An alternate buffer is requested to allow reduction of landscape buffer widths as follows:

   c) The required buffer between the hotel and the 208 Pritchard parcel is 20'. We are asking to have this buffer reduced to 7' and to allow an opaque fence between the hotel use and the residential use.
   Justification: The hotel building has been moved eastward so that it is now 48' from the residential property lines. In order to allow for an efficient and economically viable size hotel and for fire and emergency access that meet the State Fire Code, the fire lane extends into the buffer area. Some landscaping will be provided on the hotel side of the property line and will include the addition of a fence. There will also be some plantings between the driveway and the hotel building in this area.

These buffer reductions are requested on this urban parcel in order to give the site an urban identity and to allow for wide fire lanes to meet State Fire Codes.

2. *Per LUMO section 5.9.6(c), entrance drives shall be bordered by an 8' wide landscape strip and a 5' wide landscape strip is required between the exterior wall of the building and any parking area.* A Modification to regulations is requested to allow reduction of these entry and parking lot landscape strips as follows:

Along the north entry drive from N Columbia Street, we are requesting to average the two requirements in landscape areas that are 6' wide north of the drive and 12' wide south of the drive.
Justification: This fire code requires separation between the fire lane and the building so a wider space is required south of the driveway. The wider buffer on one side also provides enough space for a layered effect giving more depth to the planting pallet.

3. *Per LUMO Appendix B section 1.4, Maximum primary building height in the TC-2 zone of the NCD is 40', and maximum secondary building height is 50'.*

A modification to regulations is requested to allow a secondary height of 65'as the project is on the edge of the NCD zone and across from similarly sized buildings. The project proposes to encroach beyond the secondary building height and solar setbacks of the LUMO for properties within the Northside Conservation District. More specifically, the top floor of the building along portions of both the Rosemary and Columbia wings would encroach beyond this height limit.
Justification: The TC zone on adjacent blocks allows for heights up to 90'. The hotel is 65' at the street, but does consider the residential uses to the north and northwest by notching out the top floor in that corner to create a transition zone between the residential use and the TC zone across Rosemary which will allow for much taller development. The method specified in the ordinance to calculate building height measures the base from the mean ground elevation, meaning that along Rosemary Street the building elevation is measured from 6' below grade, meaning that the pedestrian impression of height in this area is a 4-story building on the Rosemary frontage, with a rooftop bar at the street, and a building that rises to 5 stories as it steps back from the street. Again, on Columbia, that wing is lower at the street frontage and steps back to 5 stories with rooftop use. In this way the building design is following the intent of the West Rosemary guidelines.

Rosemary/Columbia Hotel

Conditional Zoning Application 28 October 2021

06.01.2021 REVISED

STATEMENT OF JUSTIFICATION

The project site is an irregular group of 7 parcels adding up to a little over 1 acre with frontage on both W Rosemary Street and S Columbia Street. The site is located at the central north part of downtown Chapel Hill and wraps around the Historic Town Hall site. The parcel development will be affected by the West Rosemary Development Guide, by the Northside Neighborhood Conservation District document, the Land Use Management Ordinance, and by the Town's overall design guidelines as defined in the Design Manual.

The rezoning is warranted due to changing conditions in this area. The small commercial buildings and surface gravel parking lots are a remnant of decades past where the majority of downtown development happened on Franklin Street. But the development in the past decade of multi-use projects, and the influx of residential uses in the downtown have created an environment where Rosemary Street is an extension of the Franklin Street corridor.

We believe the proposed development is consistent with the goals outlined for the area in the 2020 Comprehensive Plan.

West Rosemary Development Guide

The West Rosemary Development Guide was adopted by the Town in May 2017. The project meets the intent of this plan.

Northside Neighborhood Conservation District

The Northside NCD plan was adopted by the Chapel Hill Town Council in early 2004, with amendments in early 2012. It is a set of land use regulations applied to the development of properties within the district. The proposed development parcel is located at the southeast corner of this district which in this area is bounded by Rosemary Street and South Columbia Street. The proposed hotel project aims to provide an edge to the downtown zone by eliminating the opportunity for off-street vehicular connections into the neighborhood and by improving the pedestrian experience on both West Rosemary and South Columbia streets. The proposed hotel project will not create public amenity space adjacent to the residential neighborhood and will not be targeting the student

population. The project locates service elements like dumpsters into the building and off the street. The project will utilize under building parking and shared parking agreement with the Town and commercial property neighbors to mitigate overflow parking within the neighborhood. Further, the project proposes to remove large surface parking lots from the neighborhood and replace them with green space in the form of a pocket park accessible from both W Rosemary Street and via a short sidewalk, from Columbia Street.

Rosemary/Columbia Hotel

Conditional Zoning Application 28 October 2021

09.24.2020 REV 06.01.2021

STATEMENT OF CONSISTENCY WITH COMPREHENSIVE PLAN

2020 PLAN

The proposed Rosemary/Columbia Hotel project is being designed to comply with the Town's 2020 Comprehensive Plan. We believe the development will meet the 6 goals identified.

- **A Place for Everyone**

The proposed hotel project will provide hotel rooms and public gathering amenities in a site that has the potential to serve as a Gateway to downtown Chapel Hill. It will provide full time and part time employment opportunities, and will complement and support business, retail and dining uses already existing downtown. The project will include enhancement of Rosemary Street and Columbia Street for pedestrians, and will enhance the space around the historic Town Hall by creating a public park (to be owned by the Town) adjacent to it. The hotel will include meeting space available for rent, and a rooftop food and beverage amenity open to the public with a dedicated entrance at the first floor. The hotel will offer extended stay accommodations not currently available in downtown Chapel Hill. (PFE.5)

- **Community Prosperity and Engagement**

The Rosemary/Columbia Hotel development is proposed 130-135 guest rooms and is anticipated to operate with a staff of approximately 30 FTE employees. The developer will collaborate with Empowerment Inc and others to promote hiring from adjacent neighborhoods. The project will increase revenues for the town by creating employment opportunities, generating occupancy taxes, increasing the real estate taxes generated by the project site, and by bringing visitors to downtown Chapel Hill who will support local businesses and the university. It will provide hotel accommodations, meeting spaces for downtown businesses and neighborhood groups, a rooftop terrace for public gathering, and a public pocket park. The park is proposed to include elements that figuratively and literally connect to the Northside neighborhood's masonry heritage. (CPE.1, CPE.2)

- **Getting Around**

The hotel project will be located within walking distance of all the downtown businesses, and also within walking distance to the UNC campus. It is located at a principal intersection that serves as an entryway into downtown, and resides on multiple bus lines so that many non-car transportation alternatives are available. (GA.1, GA.6) Bicycle parking will be available on site for employees and guests.

The project proposes to improve the pedestrian experience on W Rosemary Street and S Columbia Street by the improvement of the sidewalk, reduction of driveway curb cuts to one on W Rosemary and two on S Columbia, addition of street plantings, and the creation of a public park between the new hotel and the adjacent historic Town Hall building. The design team and developer will continue to work with the Town's Urban Designer to explore the possibility of incorporating bike/scooter rental at the park perimeter. (GA.2)

- **Good Places, New Spaces**

The proposed hotel project will provide a pedestrian friendly vibrant space for visitors and residents. It will provide a space for people to work and socialize. (GPNS.2) It will be an infill project in the downtown area, located where underutilized commercial and surface parking infrastructure currently exists, and will provide active interior and exterior spaces. (GPNS.1, GPNS.8) The project will improve the pedestrian experience on W Rosemary street by enlarging the sidewalk, reducing curb cuts in this area from three to one, and adding street-side plantings and a public park / green space.

- **Nurturing Our Community**

The proposed hotel project will redevelop land that is currently mostly surface gravel parking lot. The project will be designed to reflect local architecture that supports the historic Town Hall building, and the addition of public amenities including a rooftop food and beverage amenity and a pocket park adjacent to the historic Town Hall that will enhance the opportunity to repurpose that local historic structure.

The West Rosemary Hotel project is being developed by Chapel Hill Ventures LLC, which is committed to support local businesses and environmentally responsible practices. (NOC.1) The project will efficiently use the site by incorporating parking under the multi-story building (minimizing visibility from the public right-of-way), thereby reducing the impervious footprint. The developer will also enter into agreements to utilize offsite shared parking opportunities with the Town, privately owned parking facilities, or both. The project will meet Town standards in the treatment of stormwater runoff. (NOC.2)

- **Town and Gown Collaboration**

The project will provide a hotel with local flavor located in downtown Chapel Hill within walking distance of the UNC campus. Public and common areas will incorporate elements that authentically reflect the hotel's downtown Chapel Hill location. The project will enhance the W Rosemary / S Columbia intersection adjacent to campus, provide a rooftop gathering amenity that can be used before and after university events, and accommodate campus visitors at the hotel. Chapel Hill Ventures LLC's affiliate, Smart Hotels LLC, specializes in projects that serve both campus and community. (TGC.6)

WEST ROSEMARY DEVELOPMENT GUIDE

The West Rosemary Development Guide was adopted by the Town May 2017.

The proposed project meets the intent of the guidelines in the following ways:

- The building height transitions from the street frontages down toward the residential uses to the north.
- The massing at the northwest corner has been articulated and reduced to reduce the visual massing nearest the residential uses.
- The northwest corner of the site which juts north into the neighborhood, will not have any vertical development, thereby retaining an open area between the neighborhood homes and the hotel building.
- The building steps up from public right-of-way at both Rosemary and Columbia Streets.
- The building architectural design and materials will reflect local spirit
- The non-residential uses increase daytime activity
- The project provides public green spaces and meeting spaces
- The project improves the pedestrian experience and increases pedestrian safety along the street frontage
- The project includes enhancement of the historic Town Hall building setting
- The project incorporates many of the sustainability recommendations such as a higher density and more efficient use of the land, non-surface parking, and promotion of alternative forms of transit.
- The project provides sufficient space and improved and continuous sidewalks for pedestrians along Rosemary and Columbia Streets.
- The project's utility infrastructure, refuse, and parking will be screened or located below the building to minimize visibility from the public right-of-way.
- The project proposes pedestrian scale massing at the sidewalks, variety in the upper cornice heights, and visual breaks in the façade.

Additionally, the project does not encourage negative intrusion into the Northside neighborhood:

- The use is not geared toward student housing
- The project does not increase pedestrian access from W Rosemary Street into the residential neighborhood
- The project directs vehicular traffic toward W Rosemary and S Columbia Streets and not toward the smaller residential streets.

Rosemary/Columbia Hotel

Conditional Zoning Application 10 November 2021

RESPONSE TO COMMENTS FROM COMMUNITY DESIGN COMMISSION

The concept plan was original presented to the COMMUNTIY DESIGN COMMISSION for a courtesy review on AUGUST 27, 2019. The formal presentation was made on OCTOBER 22, 2019.

Present were CDC Board Members Chris Berndt, Sue Lyons, Polly Van der Velde, Susana Dancy, Ted Hoskins, Megan Patnaik, John Weis.

Ed Small, the developer's representative, started the presentation and made introductions. Jared Martinson, the architect, went over the program, the Concepts and the key questions

The project was presented as approximately 140 rooms and 80 parking spaces in a 4-5 story building fronting West Rosemary Street. Primary vehicular entry would be from W Rosemary Street with secondary access from S Columbia Street. The project would include a green space adjacent to the Historic Town Hall fronting West Rosemary Street.
Jared specifically asked the board to comment on these four elements:

1. Hotel use
2. Rezoning to allow the proposed FAR and hotel use
3. Height of 5 stories
4. Property exchange.

Questions from board:

Ted Hoskins - wanted to clarify that the property swap is needed to make the project feasible. Ed Small - yes, and the Town gets additional benefits such as the pocket park.
How does the extra height get allowed? Jared Martinson - through a rezoning to TC-2. The west wing has a larger penetration out of the allowed building envelope – why not make the Columbia St wing larger?

Susana Dancy - Who is your typical customer? Ed S - Parents coming in, researchers, med center collaboration, etc. Because it's so close to UNC campus, they would expect the most obvious mode of transportation for guests to be walking. An average stay would be 3 to 5 days, but some transient and some longer stays up to a month would be expected.

Sue Lyons – Asked if Smart Hotels is a brand. Ed S – No, they develop hotels with a local flavor and are not a specific brand.
Asked of Smart hotels does student housing – Ed S – no.
Asked about the raised portion of the roof on S Columbia. Ed Smart – it is public space for the hotel guests. The rooftop restaurant-bar overlooking W Rosemary is a public space, but the guests would have more private outdoor common space on the S Columbia wing.

Megan Patnaik – Asked if the TIA was done. Jared M – Not yet.
Why did the hotel get bigger between August and October? – Jared M – A level was removed from the Columbia Street wing to reduce the perceived height and mass of the building from that viewpoint.
Would the hotel still be economically viable if the building stayed within the allowed envelope? Jared M – unknown
Note: The TIA was done for the CZ submittal and did not identify significant impacts from this project alone. No off site improvements were recommended.

Polly Van der Velde – Have we spoken with the Northside neighbors? Jared M – we're working to schedule a meeting with them in early December. *Note: The design team met with Northside neighborhood residents and representatives at Hargraves Center on Dec 19 2019. We have had additional virtual meetings with the neighbors and several meetings and discussions with Empowerment Inc. We anticipate a virtual meeting with the Jackson Center.*

Response from board:

Ted Hoskins
-Feels extended stay hotel is the most complementary fit to the other hotels nearby which are more of an average 1-2 night stay.
-Likes what he sees
-Would support a taller wing on S Columbia Street to get the massing away from the Northside neighborhood
RESPONSE: The hotel program proposes to offer extended stay accommodations. Since the CDC meeting, the project design has evolved to reduce the Rosemary Street wing from a 5-7 story height to the current 4-5 story height. The Rosemary and Columbia wings are more in balance and include building stepbacks from both streets. The hotel building has been shifted east to increase the separation from the adjacent residential property line.

Susana Dancy
-The hotel has a residential feel. Could the hotel be 2 or 3 buildings? The current layout feels like a motor inn.
-Would put the taller element at the street and shorter at the neighborhood. Can the height be articulated? Maybe up to 8 stories in some places? Or put the parking deck in the center and have the hotel wings come out from that central block.

-Parking is too dominant, and surface parking seems inappropriate, particularly at the center of town
-Would a brick wall or gates around the park help create the edge to help define the historic spot
-The Columbia wing will be a terminated vista as you are walking and driving south, so it needs to be really special. Feels that wing could be larger to reduce the massing near the Pritchard side.
-Can the parking structure on S Columbia be turned into a space with pedestrian uses on the street? Concerned about activating this frontage.
RESPONSE: The size of the site and the operational requirements do not allow for multiple buildings. Surface parking at the front and rear have been removed giving the project a more urban feel. The northwest corner has been articulated with a setback and terrace to reduce the building mass adjacent to the residential uses. The design team and developer have been working with the Town's Urban Designer, Brian Peterson to refine the project design. The pocket park will activate the space between the hotel and the Historic Town Hall, and will include Chapel Hill stone walls to define the space, tie into older town design elements, and provide opportunities to connect to Northside's masonry heritage. The development team is continuing to explore options for enhancing the Columbia elevation.

Chris Berndt
-Note that NCD regulations apply.
-Would like to see north and west views
-Would like to see the building step down to the neighborhood behind
-Not sure about rezoning R3 to TC 2
-208 Pritchard is very historic. What will happen to it?
-What are Town's long range plans for Historic Town Hall
-There were formerly some plans for MLK right of way. Where do those stand?
-Would like to see the under-building parking lowered completely underground
RESPONSE: Building elevations illustrating massing, heights, and solar setbacks are included with the Conditional Zoning submittal and include north and west views. The building section closest to the neighborhood had been reduced in height and mass by articulating the northwest corner with a setback and terrace. The upper story will be clad in a dark material to reduce its visual impact.
The 208 Pritchard house will be deeded to the Town.
All but a few of the project's on-site parking spaces will be located in a parking structure located below the Columbia guestroom wing.

Sue Lyons
-Likes the roof garden at the AC Hotel and would like to see something similar here.
-Likes the pocket park.
-Supportive of 4-5 stories. But would prefer the west wing remain under 5 stories.
-Supportive of the property exchange so that the Pritchard house will remain and be owned by the Town.
-She lives across from the project and she and her neighbors are excited about the possibility of improvement at that corner

-Doesn't like the access behind the Historic Town Hall building and would prefer it be completely surrounded by green space.
-Appreciates the larger setback on W Rosemary between August and October.
RESPONSE: The access drive between the Historic Town Hall building and the hotel has been reduced so that it is now only 20' wide and traversing along the north side of Historic Town Hall. The entire space along the Rosemary frontage between that building and the new hotel structure will be a public park.

Megan Patnaik
-There is an important opportunity for placemaking around the Historic Town Hall. Appreciates the pocket park and how a green space will set off that historic building.
-Does not like the parking lot next to the pocket park. Would like all the parking to go underground.
-Would like to create more building facade and less parking on both Columbia and Rosemary to make it feel "cozier" and provide a better street façade
-Concerned about the 52" pecan tree on the Pritchard Street parcel.
-All 4 sides need to be "architecturally superior".
-The Northside NCD was well thought out and hard-fought so she would like to see a response to that in the Rosemary wing, while still keeping an urban edge.
RESPONSE: The surface parking beside the park has been removed.
Hotel construction and land disturbance will remain outside of all but a few feet of the root protection zone for the indicated pecan tree.

Polly Van der Velde
-Likes the proposal to improve grounds at the Historic Town Hall
-Looking for sustainable components like the green roof at the AC Hotel
-She does not like the architecture of the Durham Hotel.
-Would prefer a more elegant building with fewer / more expensive rooms
RESPONSE: The improvements to the grounds around the Historic Town Hall remain in the project.
This hotel will be designed to complement its Chapel Hill location.

John Weis
-Likes the look of their Hilton Garden Inn in Durham
-Feels redevelopment of this space presents a tremendous opportunity and likes what's being proposed in this project.
-Likes how the project sets off but celebrates the Historic Town Hall and feels the green space helps reinforce this
-There is a cupola on top of the Historic Town Hall building. Can the new building frame that element?
-Feels the two 5-story wings nicely frame the Historic Town Hall building, but would like the hotel wings to have larger setbacks so the cupola is visible.
-This use is better than the existing public surface parking, but advocates for under building parking
-Would like to see the building/surface area be more of an urban streetscape

-Feels the 5 story option for the hotel is a better fit with the Northside Community than the taller 7-story option.
RESPONSE: All but a few parking spaces have been moved into the parking deck which is located beneath the building. The remaining area is green space and the park will occupy all the space fronting Rosemary St between the hotel and the Historic Town Hall.

The Chair, Susanna Dancy, noted that these comments are not an endorsement or discouragement of the project but a summary of their comments.

TECHNICAL MEMORANDUM - DRAFT

HNTB

To
Judy Johnson
Town of Chapel Hill

From
Craig Scheffler, P.E., PTOE
HNTB North Carolina, P.C.

Cc
HNTB Project File

Subject
W. Rosemary Street Hotel – TIA Update

Date
11/04/2021

Per Town of Chapel Hill (Town) request related to the proposed 108 W. Rosemary Street Hotel redevelopment project, HNTB has completed a transportation impact analysis (TIA) update to address proposed Applicant changes to on-site access, parking, and vehicular circulation. This technical memorandum addresses the changes and how they affect estimated site trip distribution, traffic assignment, and 2023 estimated Build-out Year+1 peak hour operational analysis conditions in the project study area.

Unless noted specifically in this technical memorandum, all 2020 base year and 2023 No-Build scenario assumptions remain unchanged from information provided in the original *West Rosemary Street Hotel - Transportation Impact Analysis* completed and submitted to the Town of Chapel Hill and the North Carolina Department of Transportation (NCDOT) by HNTB North Carolina, PC in May 2021.

Trip Distribution/Assignment Changes

The 108 W. Rosemary Street Hotel Redevelopment project study area is shown on **Figure 1** in ***Appendix A*** (which contains all the referenced figures in this technical memorandum). The study area for this TIA update remains the same as the original TIA. **Figure 2** shows an updated site plan, which has the following changes to access, parking, and circulation from the original TIA and the site plan originally analyzed for that study:

- The access to W. Rosemary Street is shown as a full movement driveway. In the original TIA, it was an "enter only" one-way driveway. The driveway has also been shifted to the west along W. Rosemary Street further from the NC 86 signalized intersection.
- Similar to the original TIA, there are two access points proposed along NC 86 (Martin Luther King Jr. Blvd). However, the northern most access driveway, originally slated to have full access, is now shown as a full access entry and right-turn only exit. The southern driveway, originally designated to be an "exit-only" one-way driveway, is now shown as a right-turn in/right-turn out only (RIRO) driveway.

- Internal connectivity of the driveways has also changed in relation to their access to two levels of structured parking. In the updated site plan, the W. Rosemary access (upper) driveway will serve drop-off and short-term check-in/check-out functions at the hotel entrance and connect to the northernmost (lower) driveway for access into the lower level of parking and connection to NC 86. The NC 86 RIRO driveway will serve only the upper level of parking.

These access changes are expected to produce some differences in trip distribution to/from each driveway when compared to the previous site plan and original TIA assumptions. **Figure 3** shows the estimated trip distribution for the revised site plan and access configuration. The driveway percentage assumptions are based on external study area network traffic patterns and the most proximal and direct means of accessing the site and on-site parking facilities. **Figure 4** shows the resulting estimated site traffic assignment for the three weekday peak hours analyzed. Trip generation values from the original TIA remain unchanged for this TIA update, as the size of the hotel (number of rooms) is assumed to remain constant (maximum of 145 from the original TIA).

It is important to note that some site traffic may utilize the short-term parking for check-in functions and circle the site, make an external trip onto NC 86 heading northbound and ultimately park in the upper level parking deck. These potential "internal" trip scenarios were not included in site trip distribution/assignment estimates but would likely not cause substantial additional traffic impacts. ***Appendix B*** contains detailed spreadsheet peak hour traffic volume results for the 2023 revised Build Scenarios, information from the 2020 base year, and 2023 No-Build Condition analyses that are used in calculations of the 2023 Build Scenario traffic volumes. The projected 2023 Build Scenario traffic volumes are shown in **Figure 5.**

2023 Build-Out Year+1 Capacity Analysis Results

Revised 2023 Build (With Site) Scenario capacity analyses were conducted using Synchro models created for the original TIA study. The pertinent changes made to the models are the following:

- 2023 peak hour traffic volumes were adjusted for the driveway intersections and adjacent NC 86 & Rosemary Street intersection, due to site traffic assignment changes.
- Driveway links were adjusted for proposed access laneage, turning movement changes, and location changes based on updated site plan data.

No other changes were made to the Synchro analysis models. Revised and re-optimized signal timings and any other background improvement assumptions made in the original TIA were also included in this analysis. Capacity analysis results, highlighting Level-of-Service (LOS), vehicular delay, and estimated 95th percentile queue information is shown in **Table 1** for the 2023 Build Scenario. **Table 2** provides a summary comparison between the 2023 Build Scenario results, 2020 base year, and 2023 No-Build Scenario results from the original TIA. ***Appendix C*** contains Synchro signalized capacity analysis output summary reports and ***Appendix D*** contains the two-way stop-controlled Synchro HCM 6 output summaries for the site driveway intersections.

Table 1. Capacity Analysis Results – 2023 Build Scenario

Intersections / Lane Groups	LOS			Avg Vehicular Delay (seconds/vehicle)			95th Percentile Queue Length (ft)			Future Storage (ft)
	AM	NN	PM	AM	Noon	PM	AM	Noon	PM	
W. Rosemary St & N. Church Street	B	B	B	10.0	10.0	14.7				
EB LT-THRU-RT	A	A	B	6.7	6.7	10.6	150	150	250	
WB LT-THRU-RT	A	A	A	4.4	2.9	8.0	100	m50	m225	
NB LT-THRU-RT	C	C	D	25.5	33.2	36.4	75	75	m100	
SB LT-THRU-RT	C	C	C	24.9	25.0	26.1	75	50	100	
NC 86 (Martin Luther King, Jr. Blvd) & N. Columbia Street / North Street	B	B	B	11.0	16.5	18.7				
EB LT-THRU-RT	***E***	***E***	***E***	***57.4***	***63.3***	***68.9***	100	125	175	
WB LT-THRU	D	***E***	***E***	54.4	***62.4***	***67.4***	25	100	175	
WB RT	***E***	***E***	***E***	***55.2***	***62.9***	***69.8***	50	**100**	**175**	50
NB LT	A	A	A	4.5	7.0	6.7	m25	m25	m25	150
NB THRU-RT	A	A	A	3.4	6.3	6.8	50	m100	m100	
SB LT	A	B	B	8.7	10.5	17.1	75	75	75	75
SB THRU-RT	A	B	B	8.9	10.2	14.2	225	175	300	
W. Rosemary Street & NC 86 (N. Columbia Street)	C	C	D	25.9	32.9	40.5				
EB LT	D	C	***F***	39.7	33.1	***134.8***	**150**	**150**	**#400**	100
EB THRU-RT	D	C	C	35.8	28.0	35.0	300	275	375	
WB LT	D	D	***E***	38.7	50.3	***63.8***	50	150	**#250**	150
WB THRU-RT	***E***	***E***	***E***	***60.5***	***75.3***	***79.0***	225	#525	#550	
NB LT	B	B	A	14.7	16.6	5.5	m25	m50	m25	75
NB THRU-RT	B	C	B	17.8	24.6	13.1	150	150	m150	
SB LT	B	C	C	15.4	20.2	26.4	75	75	75	150
SB THRU	B	C	C	18.5	21.8	27.5	175	125	175	
SB RT	A	B	B	7.6	10.5	19.4	75	50	125	400
Franklin Street & NC 86 (Columbia Street)	C	D	***E***	30.8	41.3	***61.3***				
EB LT	***F***	***E***	***F***	***83.2***	***73.9***	***172.4***	150	175	**#400**	250
EB THRU-RT	C	C	C	24.6	34.6	32.9	150	225	250	
WB LT	***E***	***F***	***F***	***79.7***	***83.2***	***95.0***	125	**150**	**175**	125
WB THRU	C	D	***F***	24.4	45.1	***94.3***	#175	#550	#775	
WB RT	A	B	B	10.0	18.5	17.1	25	100	75	
NB LT	***F***	***F***	***E***	***84.1***	***100.3***	***78.6***	m50	125	m50	475
NB THRU-RT	C	C	C	21.4	28.0	34.8	225	75	m75	
SB LT	***F***	***F***	***F***	***92.5***	***87.1***	***100.7***	100	100	**m#175**	125
SB THRU-RT	C	C	D	25.5	31.1	43.7	75	125	#450	
W. Rosemary St & Site Dr 1 (Upper Driveway – Full Access)	N/A	N/A	N/A	N/A	N/A	N/A				
EB LT	A	A	A	8.2	8.4	9.0	0	0	0	
SB LT-RT	C	C	C	15.9	17.2	24.7	25	25	25	**40**
NC 86 (N. Columbia St) & Site Dr 2 (Lower – Full Access In / RT Out)	N/A	N/A	N/A	N/A	N/A	N/A				
EB RT	B	B	B	14.3	11.9	13.5	25	25	25	**60**
NB LT	B	B	B	13.2	12.0	14.6	25	0	25	**100**
NC 86 (N. Columbia Street) & Site Driveway 3 (RIRO Only)	N/A	N/A	N/A	N/A	N/A	N/A				
EB RT	B	B	B	13.3	11.9	13.5	25	0	25	**100**

N/A => Not Applicable, i.e. movement is non-existent or overall intersection values are not reported for unsignalized intersections
BOLD/ITALICS – Movement or overall intersection is over Town TIA Guidelines threshold capacity ***BLUE*** – Applicant Proposed Access
PURPLE – Maximum Queue May Exceed Storage Bay Distance m – Volume for 95th percentile queue is metered by upstream signal
– 95th percentile volume exceeds capacity; queue may be longer (queue shown is maximum after 2 cycles)

Table 2. LOS and Delay (Seconds/Vehicle) Summary

Intersections	Peak Hour	2020 Base Year LOS	2020 Base Year Delay	2023 No-Build LOS	2023 No-Build Delay	2023 Build LOS	2023 Build Delay
W. Rosemary Street & N. Church Street	AM	B	11.5	B	10.0	B	10.0
	NOON	A	9.8	A	9.9	B	10.0
	PM	B	16.5	B	14.4	B	14.7
NC 86 (Martin Luther King, Jr. Blvd) & N. Columbia Street / North Street	AM	C*	15.1*	B	11.0	B	11.0
	NOON	B*	14.6*	B	16.5	B	16.5
	PM	***F****	***85.5****	B	18.7	B	18.7
W. Rosemary Street & NC 86 (N. Columbia Street)	AM	C	26.5	C	25.6	C	25.9
	NOON	C	31.5	C	32.0	C	32.9
	PM	C	34.3	D	37.8	D	40.5
Franklin Street & NC 86 (N. Columbia Street)	AM	D	36.0	C	30.8	C	30.8
	NOON	D	44.4	D	41.2	D	41.3
	PM	D	53.0	***E***	***60.0***	***E***	***61.3***
W. Rosemary Street & Site Driveway 1 (Upper Driveway – Full Access)	AM	N/A	N/A	N/A	N/A	C*	15.9
	NOON	N/A	N/A	N/A	N/A	C*	17.2
	PM	N/A	N/A	N/A	N/A	C*	24.7
NC 86 (N. Columbia Street) & Site Driveway 2 (Lower Driveway – Full Access In / Right-Turn Out Only)	AM	N/A	N/A	N/A	N/A	B*	14.3
	NOON	N/A	N/A	N/A	N/A	B*	12.0
	PM	N/A	N/A	N/A	N/A	B*	14.6
NC 86 (N. Columbia Street) & Site Driveway 3 (RIRO Only)	AM	N/A	N/A	N/A	N/A	B*	13.3
	NOON	N/A	N/A	N/A	N/A	B*	11.9
	PM	N/A	N/A	N/A	N/A	B*	13.5

BOLD/ITALICS – Critical Movement or Overall Intersection Requires Mitigation Per Town TIA Guidelines

* - Worst-Case LOS/Delay for Unsignalized/Stop-Controlled Critical Movement

As shown in **Tables 1 and 2**, the proposed access changes do not cause any substantial differences from operational analysis data reported in the original TIA. The background committed network improvements from the E. Rosemary Street Parking Deck and Office Building projects, along with the W. Franklin Street Lane Reallocation project, which are assumed complete for 2023 No-Build and Build Scenarios, serve to mitigate some operational issues at existing study area intersections. The one intersection experiencing overall LOS and delay deficiencies in the 2023 No-Build PM peak hour scenario (NC 86 & Franklin Street) has limited options for adding capacity. The impacts of the proposed 108 W. Franklin Hotel site traffic are marginal (an increase of one second per vehicle in overall delay). Site driveway intersection operations are all LOS C or better for all of the three peak hours analyzed.

As shown in **Table 1**, there are some potential queue spillback issues at several study area intersections where an individual turning movement is expected to experience lengthy delays that may prevent it from being fully served in one traffic signal cycle. Additional monitoring and adjustment of cycle splits may be necessary to address this issue.

Revised Access Analysis

Revised plans for vehicular site access include the following three proposed site driveway connections to adjacent roadway facilities:

- One full access (upper) driveway is proposed along W. Rosemary Street approximately 200 feet west of the signalized intersection with NC 86 (N. Columbia Street). This driveway will serve the hotel entrance and short-term parking adjacent to the entrance.
- A connecting driveway aisle along the back side of the proposed hotel is to provide a connection to NC 86, approximately 225 feet north of the signalized intersection with W. Rosemary Street. This (lower) driveway access is proposed to be full access entry with exiting movements onto NC 86 limited to right-turns out only. This driveway will provide direct access to the lower level of structured parking and to the hotel entrance/short-term parking on the adjacent side of the hotel building.
- A second driveway along NC 86, located approximately 100 feet south of the lower driveway, is proposed for RIRO movement access to the upper level of structured parking only.

Driveway throat lengths, as shown on the revised site concept plans, should provide adequate distance (approximately 50 feet or more as a minimum) between traffic turning movements at the intersection and internal driveway operations that are related to parking and/or access to the proposed structured parking upper and lower levels.

Driveway distances from the signalized intersection at W. Rosemary Street and NC 86 (N. Columbia Street) are acceptable (200 and 125 feet, respectively), based on recommendations of 100 foot minimum corner clearance as set forth in the 2003 *NCDOT Policy on Street and Driveway Access to North Carolina Highways.* Additionally, the requirement of 100 foot minimum along collector streets (for the driveway along W. Rosemary Street), as required in the 2017 *Town of Chapel Hill Public Works Engineering Design Manual,* is met. The W. Rosemary Street driveway also has 150 feet of separation between it and Pritchard Avenue to the west. The RIRO driveway along NC 86 would not meet the Town spacing requirement for arterial facilities (150 feet minimum). Individual driveway spacing between each driveway and adjacent driveways meets the 50 foot minimum driveway spacing requirement in the Town Design Manual.

Conclusions/Recommendations

Figure 6 shows all planned, committed, and necessary recommended improvements for the project study area based on the 2023 Build Scenario operations analysis results and revised site plan provided by the Applicant.

Planned Improvements

The Town of Chapel Hill *W. Franklin Street Lane Reallocation* project, as described in the original TIA, is assumed to be complete by 2023 for this analysis. In addition to laneage reconfigurations, it was assumed that signal timings along the Franklin Street corridor would be re-optimized.

Background Committed Improvements

The *E. Rosemary Street Parking Deck and Office Building Transportation Impact Analysis* (HNTB, October 2020) had the following as necessary improvements for that study, which have specific impacts on study area intersections listed on the following page. These were considered complete by the 2023 analysis year.

- Re-optimize the NC 86 & Rosemary Street intersection to provide adequate green time for Rosemary Street movements westbound and reduce queuing near the proposed parking deck.

- At the NC 86 & North Street/N. Columbia Street intersection – add a westbound right-turn pocket on North Street and monitor the intersection for signalization. This intersection was assumed to be signalized for all 2023 No-Build and Build scenario analyses for this study.

Applicant Committed Improvements

Based on the revised preliminary site plan and supporting development information provided, there are no proposed external transportation-related improvements adjacent to the West Rosemary Street Hotel – other than the proposed locations and turning movement restrictions at the three site access driveways along the W. Rosemary Street and NC 86 frontage.

Necessary Improvements

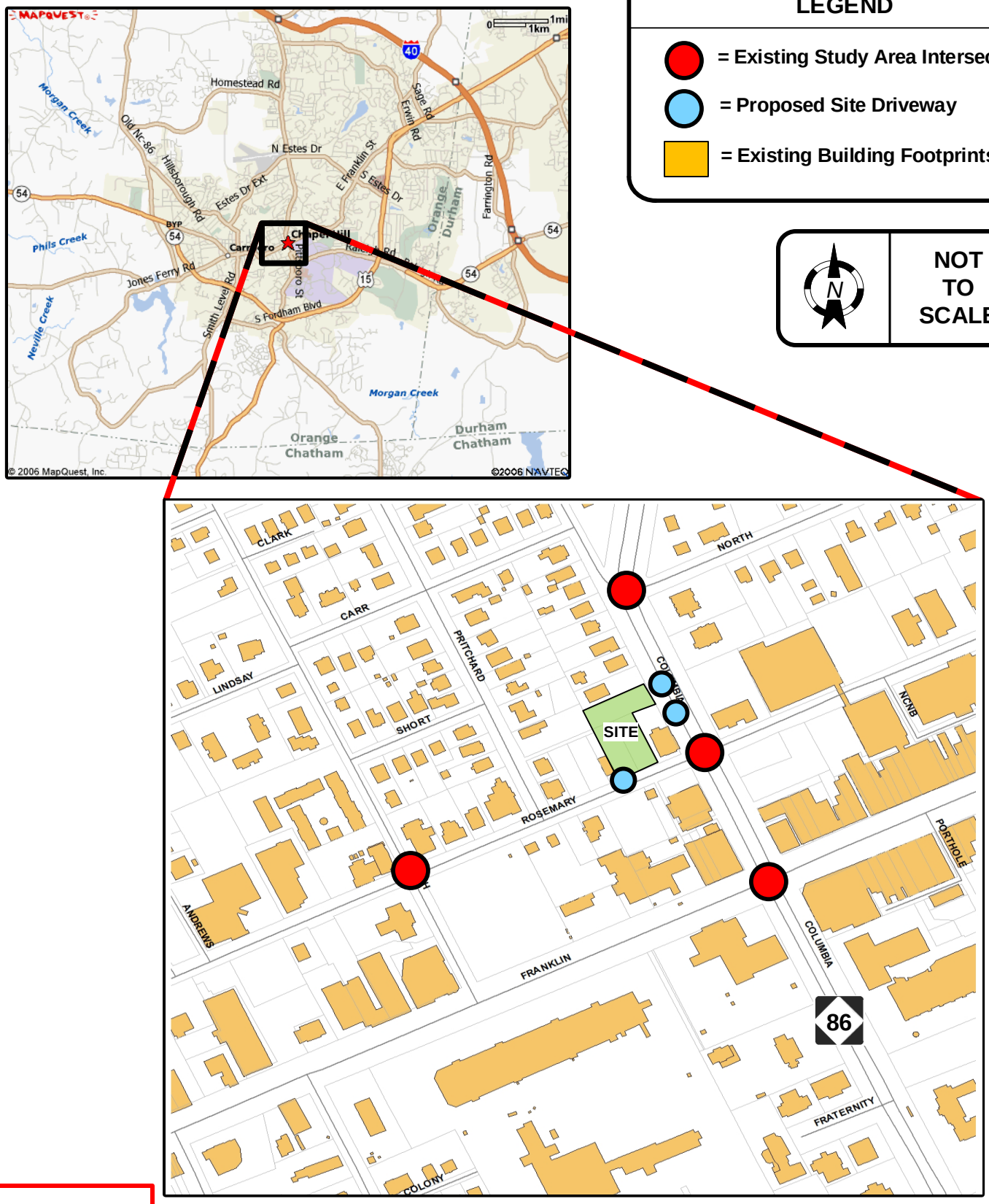
Similar to the findings in the initial TIA, based on the 2023 design year peak hour intersection capacity analyses, only one study area intersection is expected to be over capacity (overall LOS E or F) in any of the three weekday peak hours studied. The intersection of NC 86 (Columbia Street) and Franklin Street is expected to operate at an overall LOS E in the PM peak hour – with or without site-related traffic from the W. Rosemary Street Hotel project. Due to right-of-way limitations, providing additional capacity improvements at this location is not feasible and the traffic signal operations will need to be monitored to mitigate queuing issues, regardless of whether or not the W. Rosemary Street Hotel project is constructed.

2023 Build Scenario queue analysis results indicate that 95th percentile "worst-case" peak hour queues at the NC 86 and Rosemary Street intersection may exceed the proposed driveway access separation distances for the NC 86 RIRO driveway and the W. Rosemary Street full access driveway. Exiting traffic may face longer delays than what is predicted in the Synchro capacity analysis results in some instances, primarily in the PM peak hour.

- One recommended improvement, unrelated to intersection capacity analyses results, is to construct a mountable raised concrete "pork chop" island to limit left-turns out at the proposed Full Access In/Right-Turn Out Only (Lower) site driveway along NC 86 (N. Columbia Street).

- Another recommended improvement is to provide internal wayfinding signage to structured parking areas, particularly for vehicles on-site needing to access the upper level parking garage. These vehicles need to be directed around the rear of the building and make the exiting right-turn onto NC 86 and subsequent right-turn into the upper level RIRO driveway for access into the upper parking level. This maneuver cannot occur if these vehicles initially exit onto W. Rosemary Street.

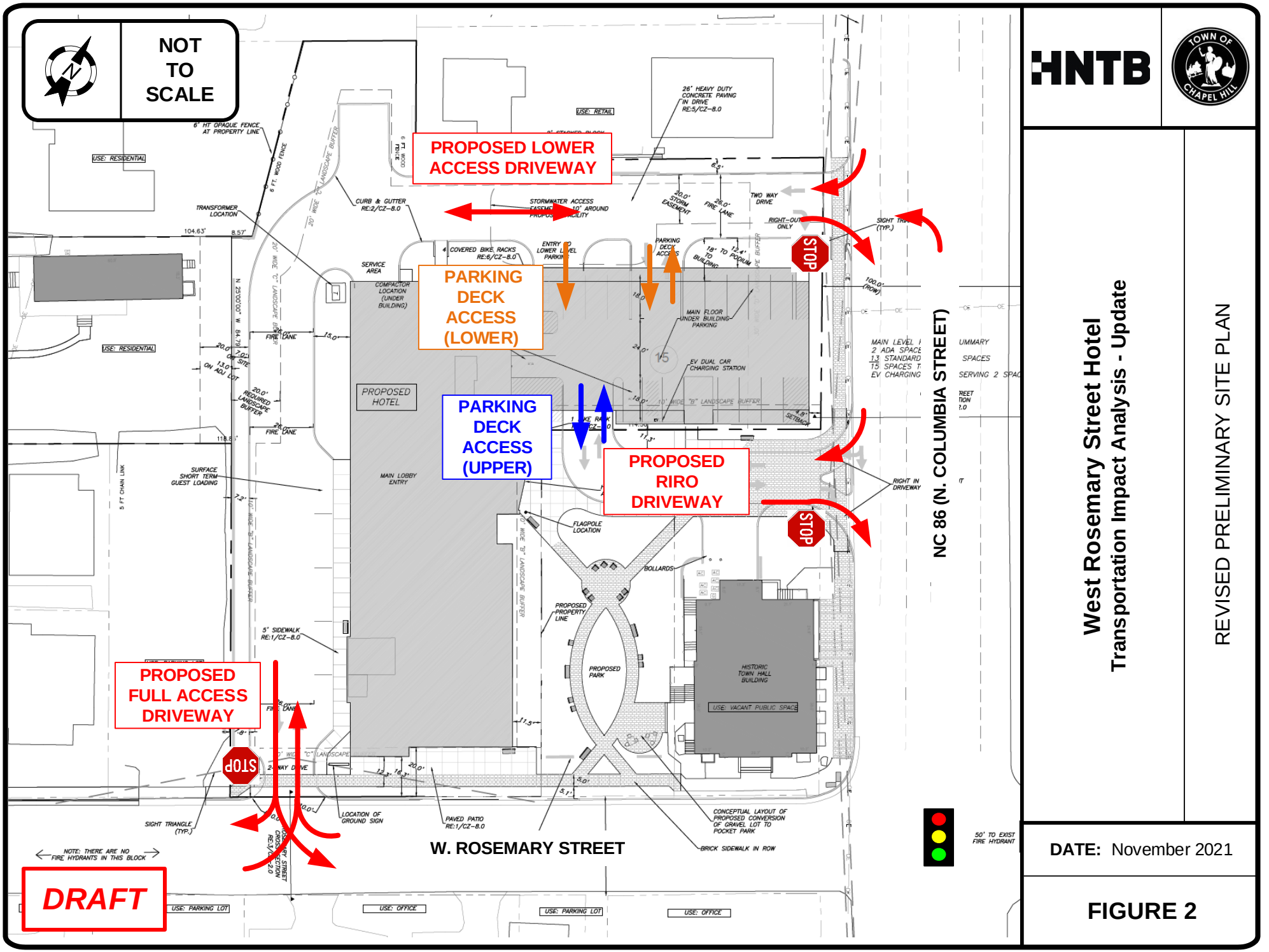
Appendix A – Figures



DRAFT

Source: Town of Chapel Hill GIS Files

HNTB	TOWN OF CHAPEL HILL	**West Rosemary Street Hotel** **Transportation Impact Analysis - Update** SITE LOCATION MAP	**DATE:** November 2021 **FIGURE 1**



HNTB

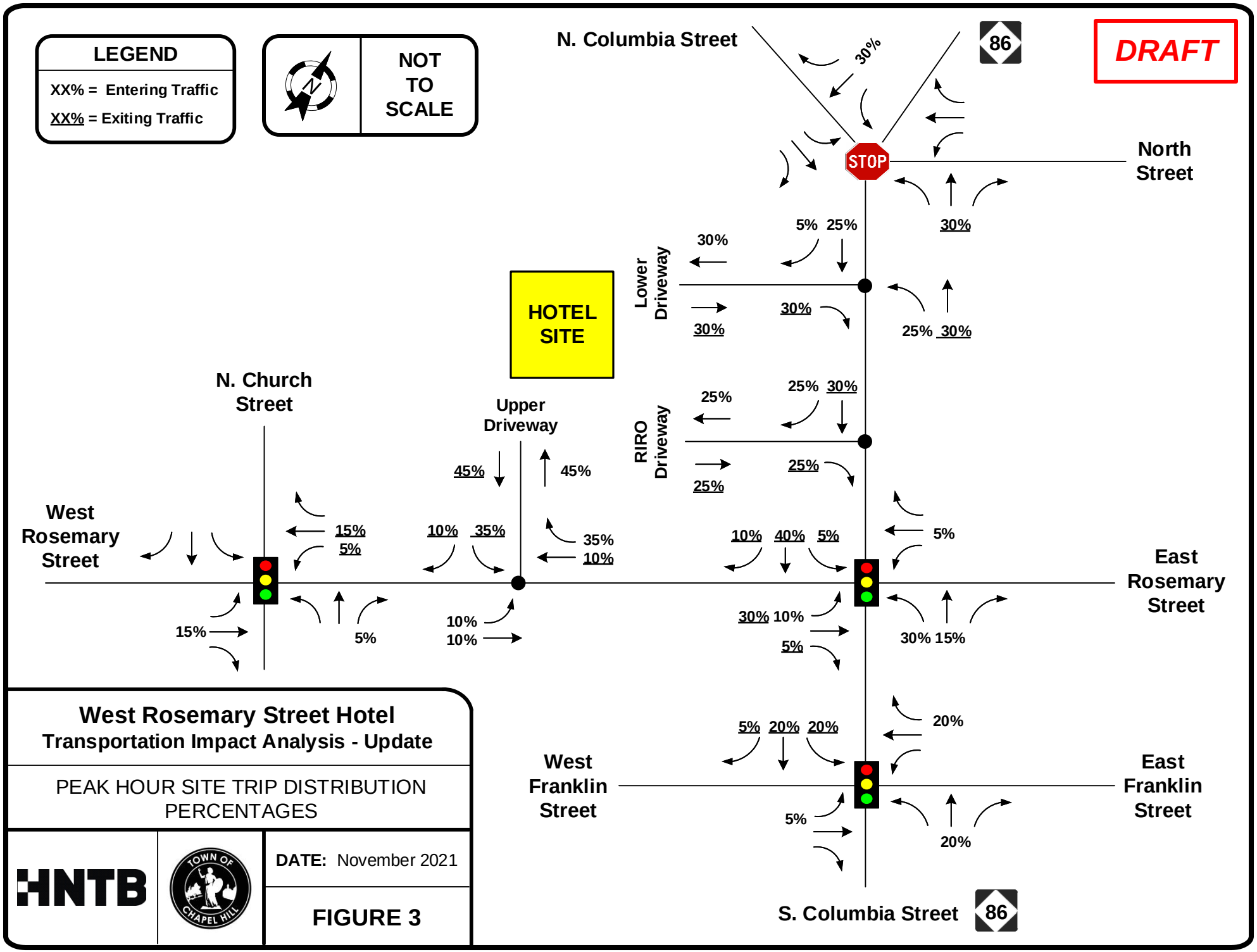
TOWN OF CHAPEL HILL

West Rosemary Street Hotel
Transportation Impact Analysis - Update

REVISED PRELIMINARY SITE PLAN

DATE: November 2021

FIGURE 2



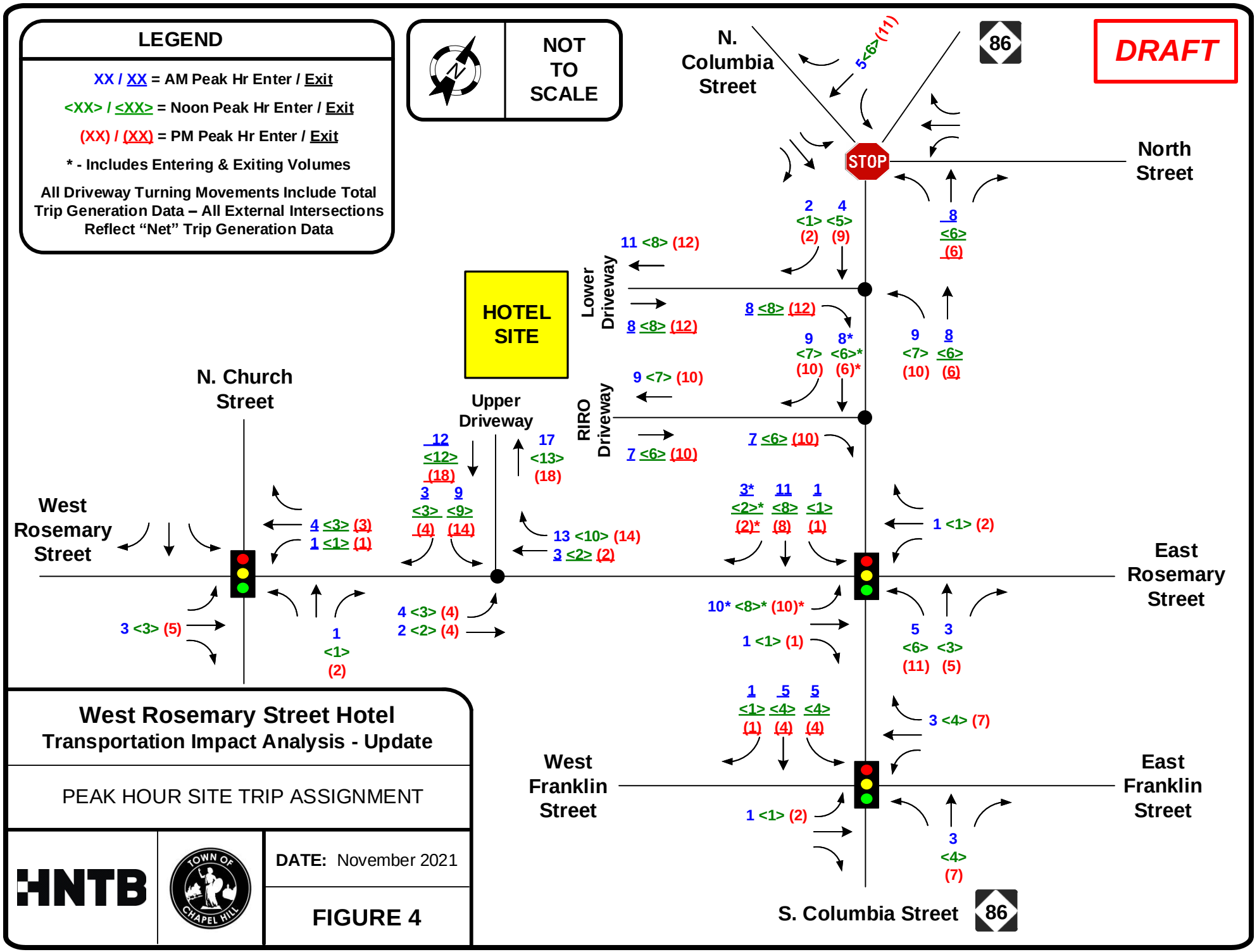
West Rosemary Street Hotel
Transportation Impact Analysis - Update

PEAK HOUR SITE TRIP DISTRIBUTION PERCENTAGES

HNTB

DATE: November 2021

FIGURE 3


LEGEND
XX / XX = AM Peak Hr Enter / Exit
<XX> / <XX> = Noon Peak Hr Enter / Exit
(XX) / (XX) = PM Peak Hr Enter / Exit
* - Includes Entering & Exiting Volumes
All Driveway Turning Movements Include Total Trip Generation Data – All External Intersections Reflect "Net" Trip Generation Data
NOT TO SCALE
DRAFT
N. Columbia Street
86
STOP
North Street
HOTEL SITE
Lower Driveway
RIRO Driveway
Upper Driveway
N. Church Street
West Rosemary Street
East Rosemary Street
West Franklin Street
East Franklin Street
S. Columbia Street
5 <6> (11)
2 <1> (2)
4 <5> (9)
8 <6> (6)
11 <8> (12)
8 <8> (12)
9 <7> (10)
8* <6>* (6)*
7 <6> (10)
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1 <1> (2)
4 <3> (4)
2 <2> (4)
3* <2>* (2)*
11 <8> (8)
1 <1> (1)
10* <8>* (10)*
5 <6> (11)
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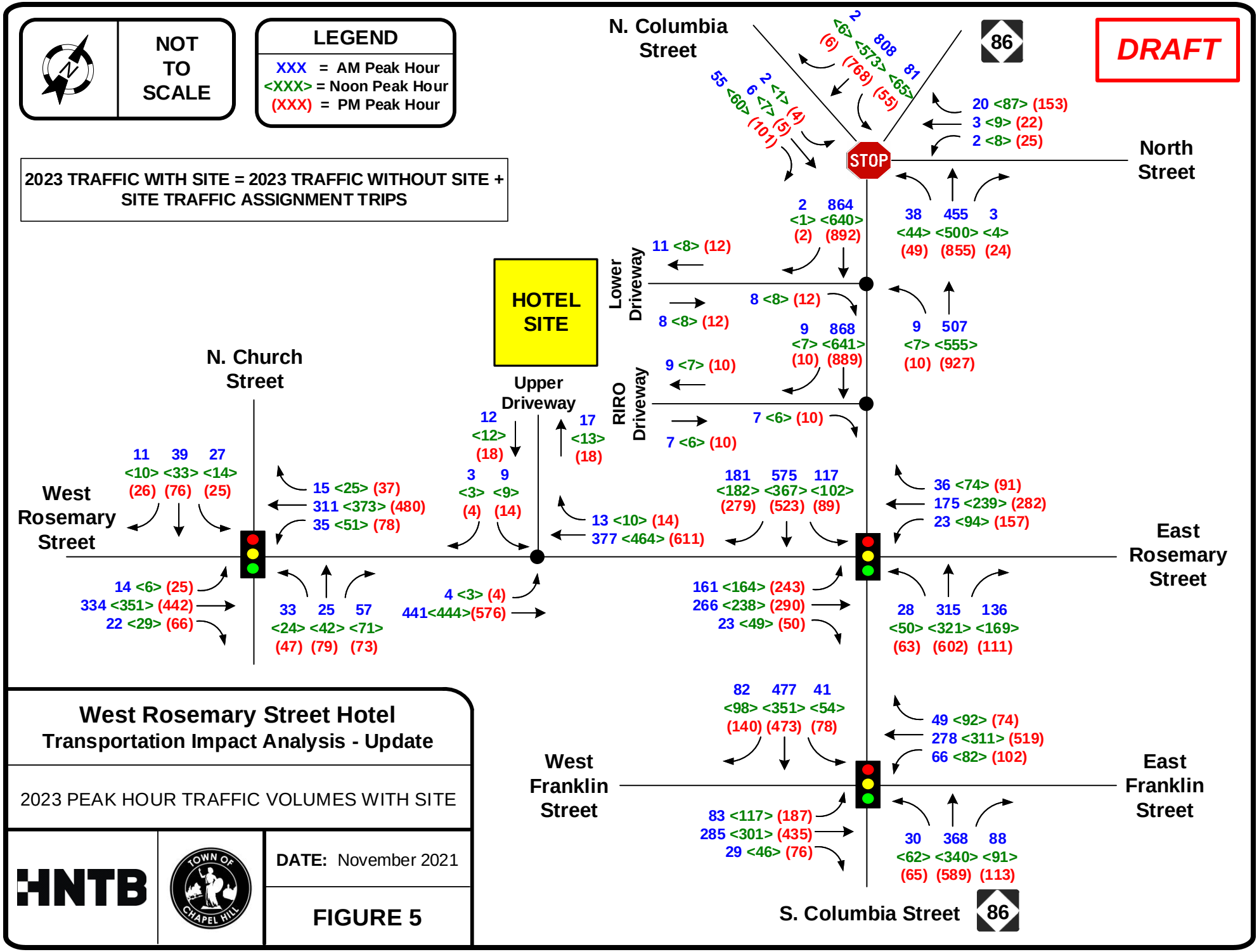
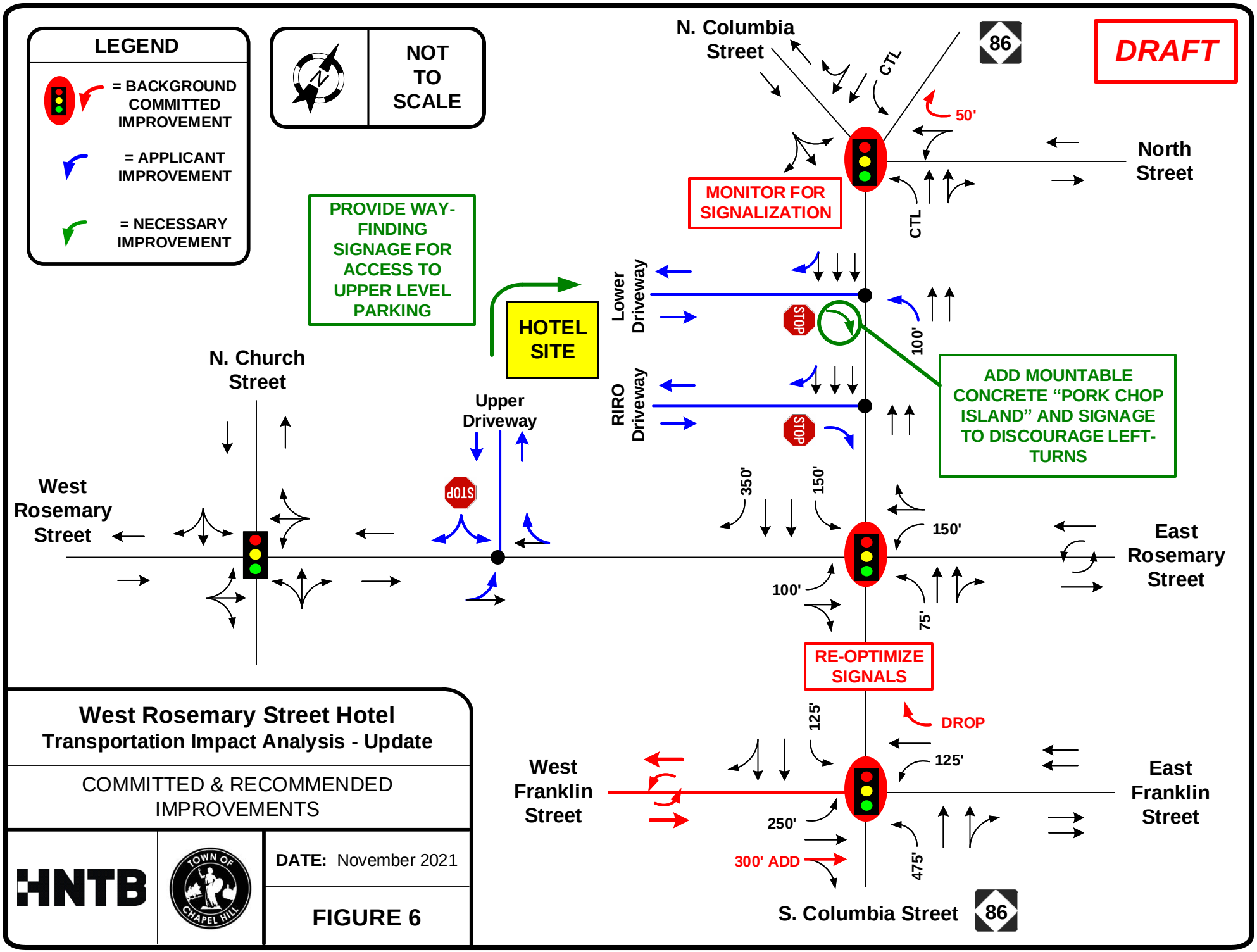
3 <4> (7)
West Rosemary Street Hotel
Transportation Impact Analysis - Update
PEAK HOUR SITE TRIP ASSIGNMENT
HNTB
TOWN OF CHAPEL HILL
DATE: November 2021
FIGURE 4


NOT TO SCALE
LEGEND
XXX = AM Peak Hour
<XXX> = Noon Peak Hour
(XXX) = PM Peak Hour
DRAFT
2023 TRAFFIC WITH SITE = 2023 TRAFFIC WITHOUT SITE + SITE TRAFFIC ASSIGNMENT TRIPS
N. Columbia Street
86
STOP
North Street
HOTEL SITE
Lower Driveway
RIRO Driveway
Upper Driveway
N. Church Street
West Rosemary Street
East Rosemary Street
West Franklin Street
East Franklin Street
S. Columbia Street
West Rosemary Street Hotel
Transportation Impact Analysis - Update
2023 PEAK HOUR TRAFFIC VOLUMES WITH SITE
HNTB
TOWN OF CHAPEL HILL
DATE: November 2021
FIGURE 5



West Rosemary Street Hotel

Transportation Impact Analysis - Update

COMMITTED & RECOMMENDED IMPROVEMENTS

HNTB

TOWN OF CHAPEL HILL

DATE: November 2021

FIGURE 6

Appendix B - Traffic Volume Development Scenarios

W. Rosemary Street Hotel Trip Generation Summary

New Trips

	Land Use	LUC Code	Density	Daily			AM Peak Hour			Noon Peak Hour			PM Peak Hour		
				Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Transit/Bike/Ped	Hotel	310	145 rooms	605	605	1,210	39	28	67	30	26	56	42	41	83
5%	Transit/Ped/Bike Reduction			30	30	60	2	1	3	2	1	3	2	2	4
	Gross New Vehicular Trips Added to Network			**575**	**575**	**1,150**	**37**	**27**	**64**	**28**	**25**	**53**	**40**	**39**	**79**

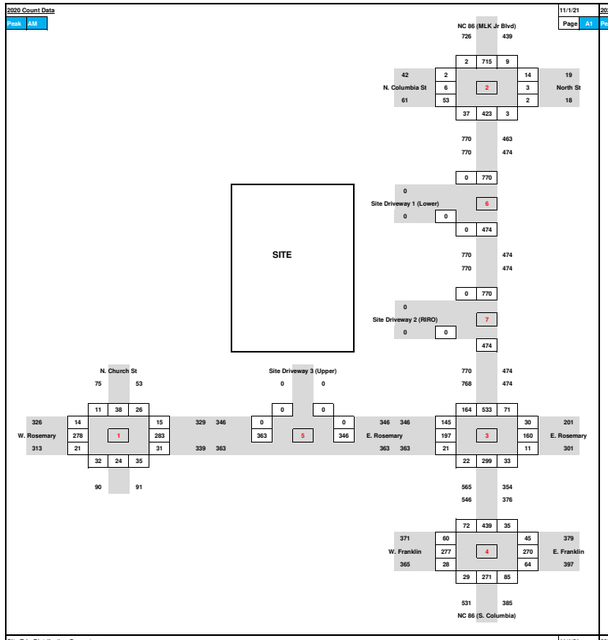
Existing Trips

Land Use	LUC Code	Density	Daily			AM Peak Hour			Noon Peak Hour			PM Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
N. Columbia (Private Lot)	-	50	50	50	100	10	0	10	3	1	3	1	9	9
W. Rosemary (Private Lot)	-	25	25	25	50	5	0	5	1	0	2	0	4	5
W. Rosemary (Town Lot)	-	17	52	52	104	5	1	5	4	3	7	3	7	10
Existing Vehicular Trips on the Network			**127**	**127**	**254**	**20**	**1**	**20**	**8**	**4**	**11**	**4**	**20**	**24**
		NET TRIPS	***448***	***448***	***896***	***17***	***26***	***44***	***20***	***21***	***42***	***36***	***19***	***55***

private rate/space	1	1	0.2	0	0.05	0.01	0.01	0.17
public rate/space	3.05	3.05	0.27	0.03	0.23	0.18	0.19	0.42

2020 Count Data

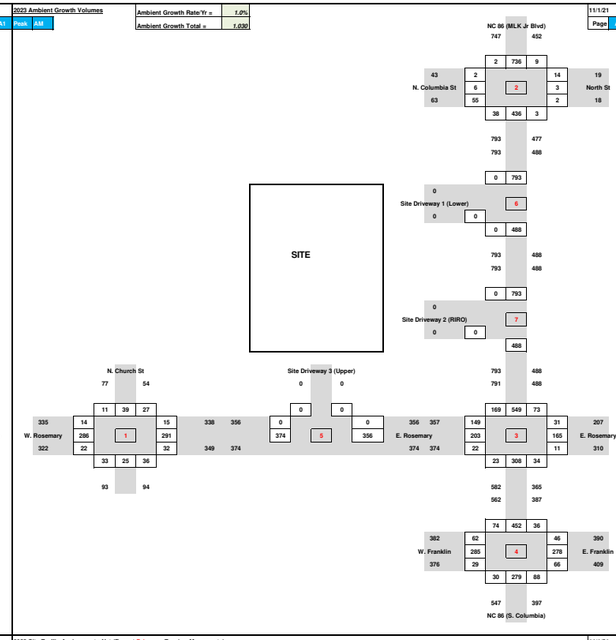
Peak AM | 11/1/21 | Page A1



2022 Ambient Growth Volumes

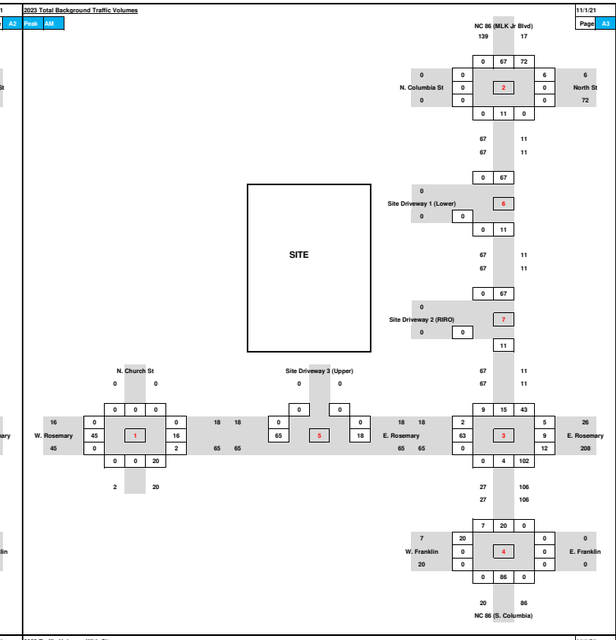
Peak AM | 11/1/21 | Page A2

Ambient Growth Rate/Yr =	1.0%
Ambient Growth Total =	1.030



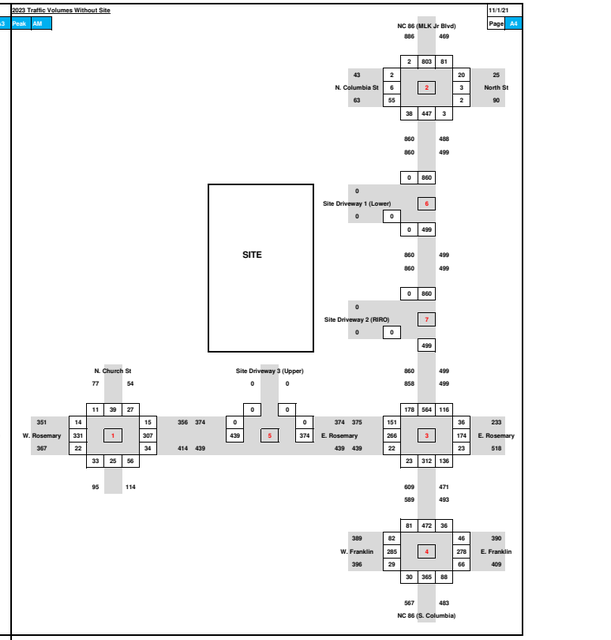
2023 Total Background Traffic Volumes

Peak AM | 11/1/21 | Page A3



2023 Traffic Volumes Without Site

Peak AM | 11/1/21 | Page A4

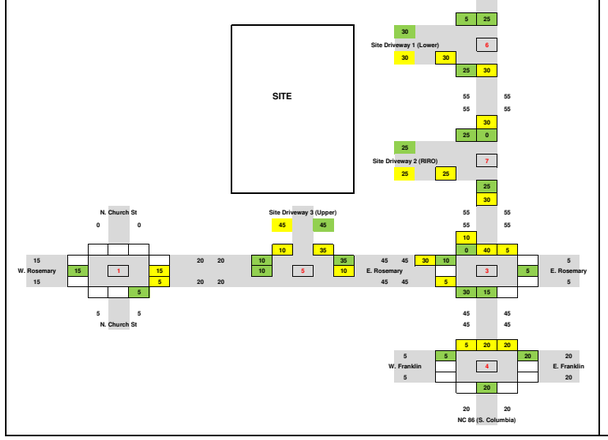


Site Trip Distribution Percentages

Peak AM | 11/1/21 | Page A5

External Check Enter 100 Exit 100

Internal Check Enter 100 Exit 100



2022 Site Traffic Assignment - Net (Except Driveway Turning Movements)

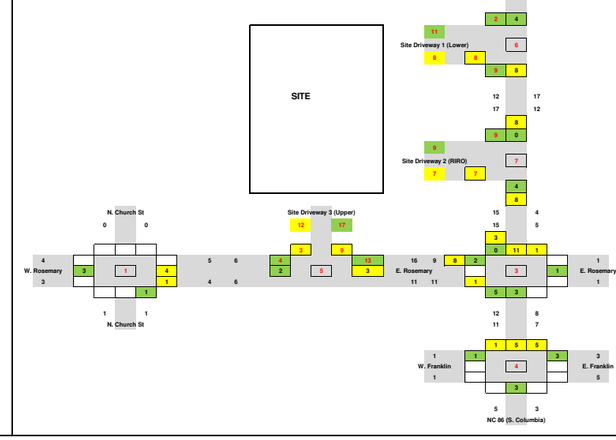
Peak AM | 11/1/21 | Page A6

External Check Enter 17 Exit 25

Internal Check Enter 37 Exit 27

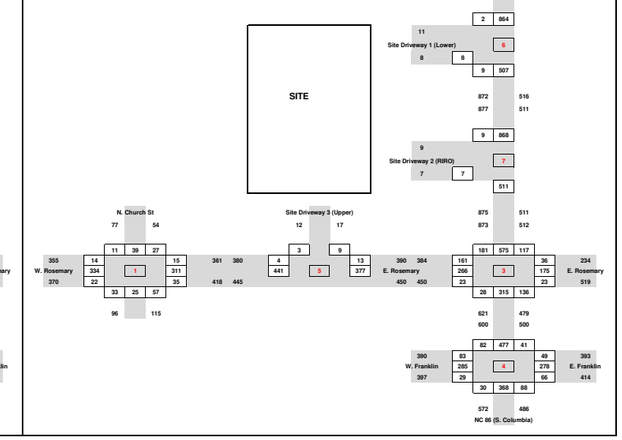
Trip Generation	Enter	17
Net New	Exit	26

Trip Generation	Enter	37
Total	Exit	27

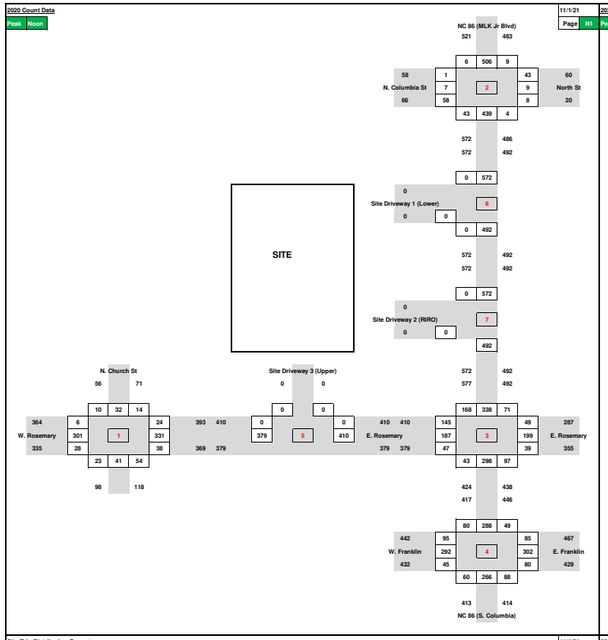


2022 Traffic Volumes With Site

Peak AM | 11/1/21 | Page A7

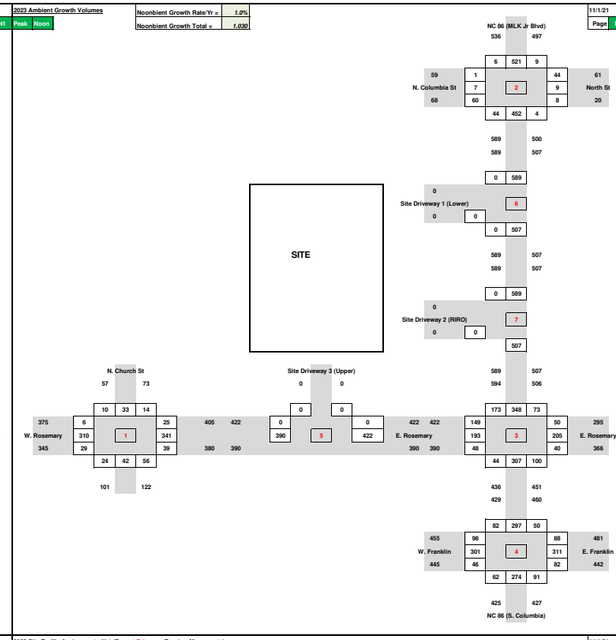


2020 Count Data — Peak Noon — 11/1/21 — Page N1



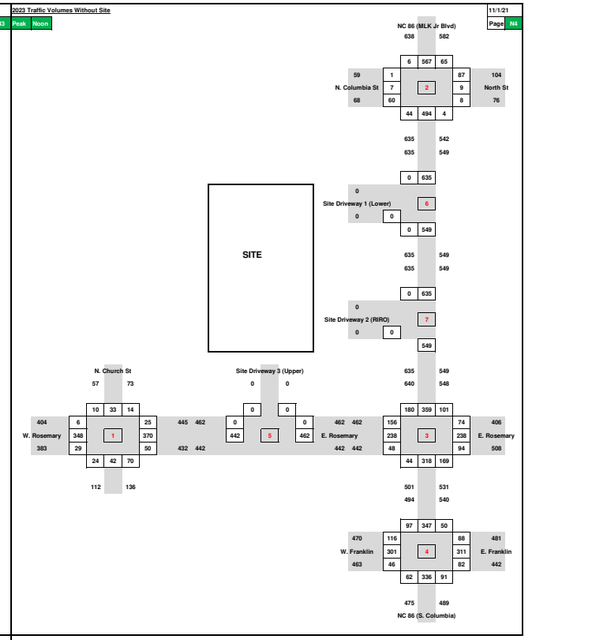
2023 Ambient Growth Volumes — Peak Noon — 11/1/21 — Page N2

Nonambient Growth Rate/Yr = 1.0%
Nonambient Growth Total = 1.030



2023 Total Background Traffic Volumes — Peak Noon — 11/1/21 — Page N3

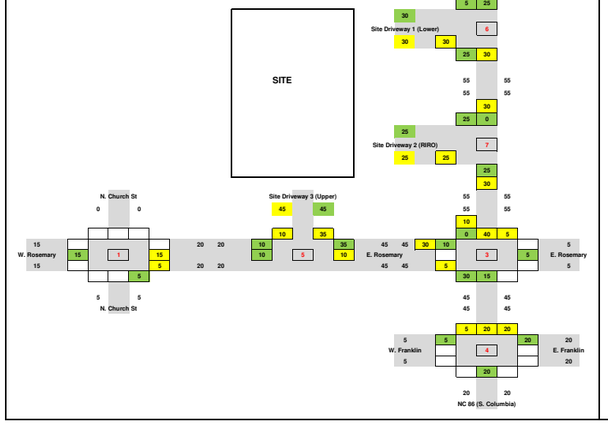
2023 Traffic Volumes Without Site — Peak Noon — 11/1/21 — Page N4



Site Trip Distribution Percentages — Peak Noon — 11/1/21 — Page N5

External Check Enter 100 Exit 100

Internal Check Enter 100 Exit 100



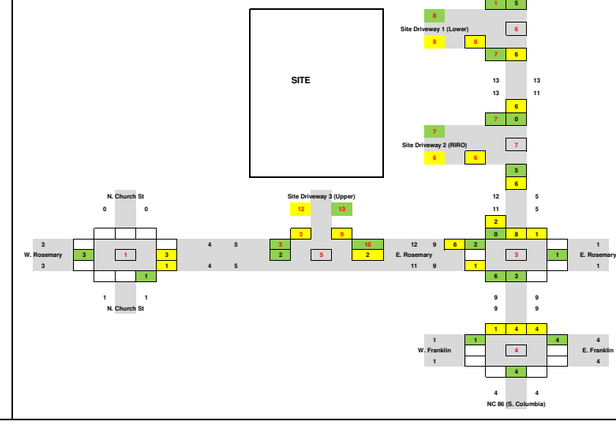
2023 Site Traffic Assignment - Net (Except Driveway Turning Movements) — Peak Noon — 11/1/21 — Page N6

External Check Enter 20 Exit 20

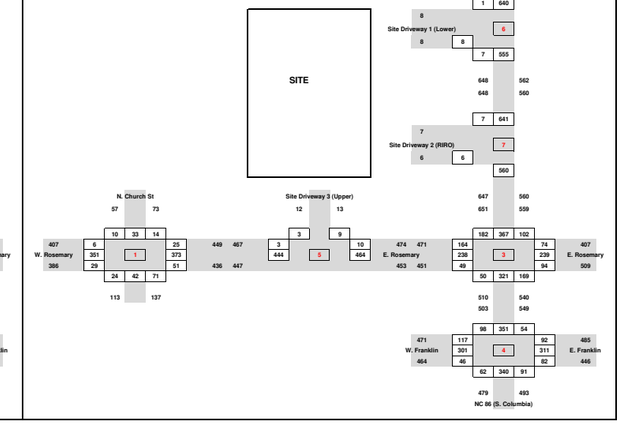
Internal Check Enter 28 Exit 28

Trip Generation	Enter	20
Net New	Exit	21

Trip Generation	Enter	28
Total	Exit	25



2023 Traffic Volumes With Site — Peak Noon — 11/1/21 — Page N7

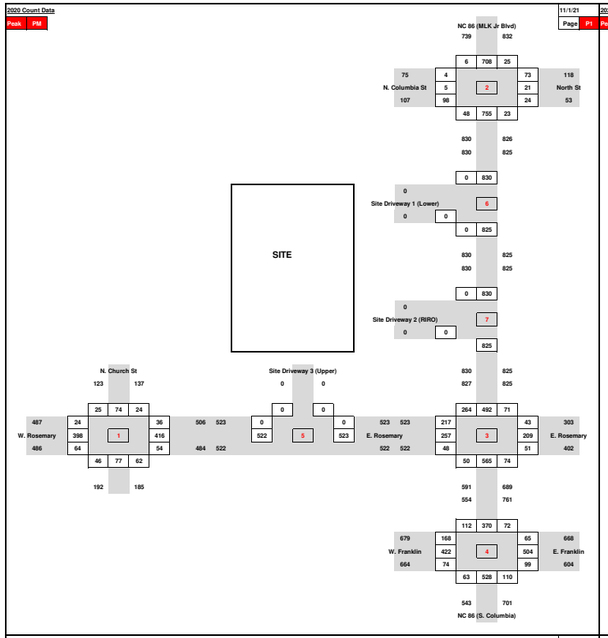


2020 Count Data

Peak PM

11/1/21

Page P1



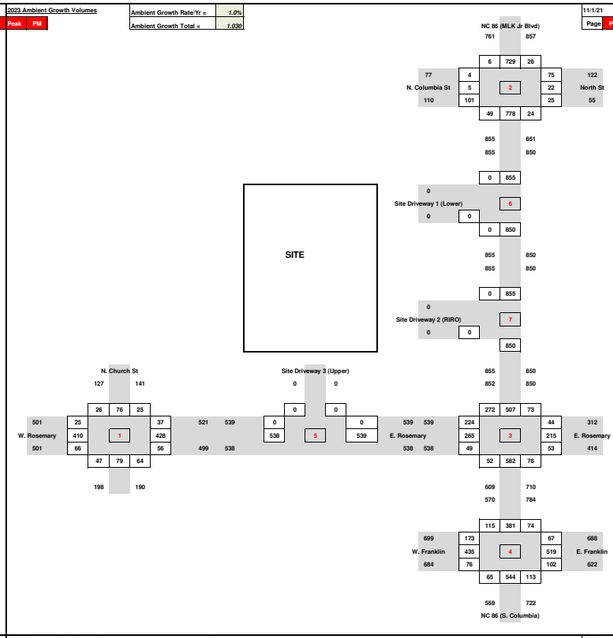
2023 Ambient Growth Volumes

Peak PM

Ambient Growth Rate/Yr =	1.0%
Ambient Growth Total =	1.030

11/1/21

Page P2



2023 Total Background Traffic Volumes

Peak PM

11/1/21

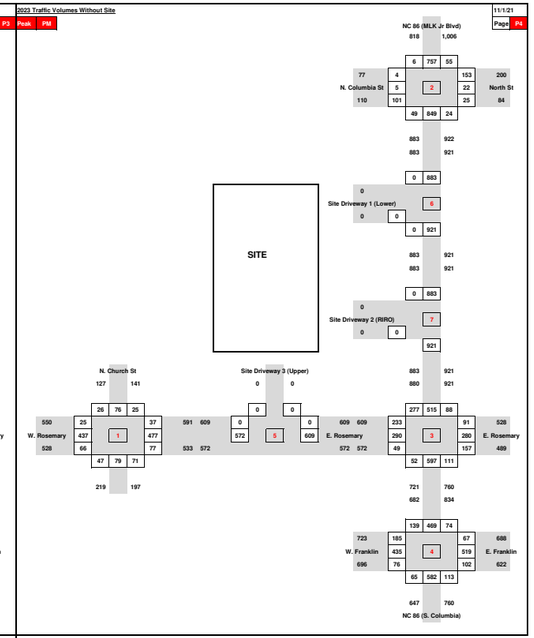
Page P3

2023 Traffic Volumes Without Site

Peak PM

11/1/21

Page P4



Site Trip Distribution Percentages

Peak PM

11/1/21

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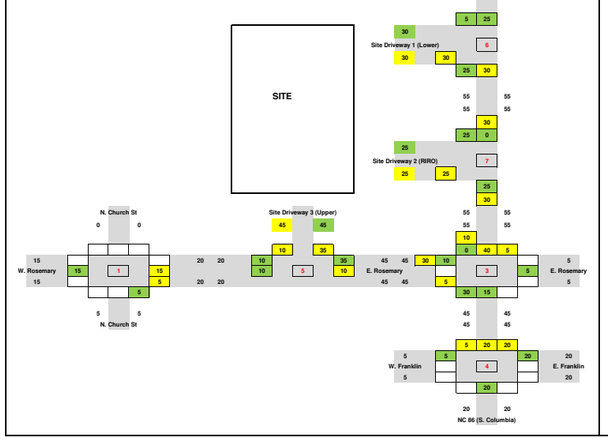
External Check Enter 100 Exit 100

Internal Check Enter 100 Exit 100



2023 Site Traffic Assignment - Net (Except Driveway Turning Movements)

Peak PM

11/1/21

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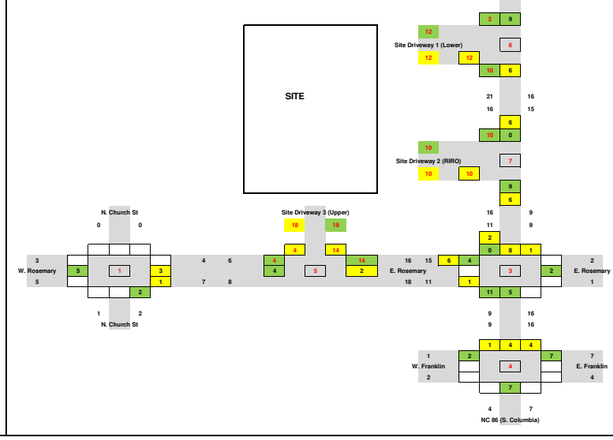
External Check Enter 36 Exit 20

Internal Check Enter 40 Exit 40

Trip Generation	Enter	36
Net New	Exit	19

Trip Generation	Enter	40
Total	Exit	39



2022 Traffic Volumes With Site

Peak PM

11/1/21

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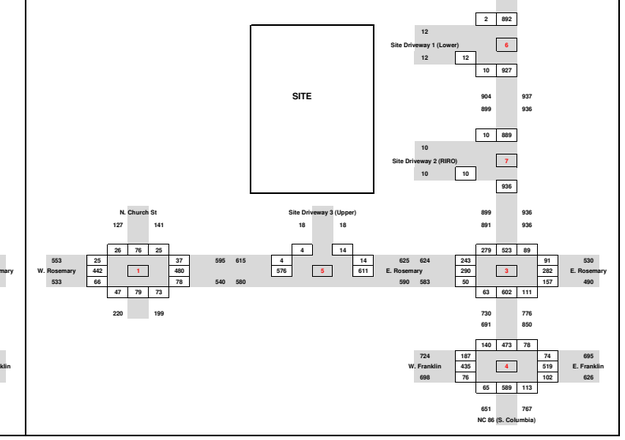
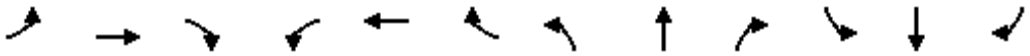


Appendix C – Synchro Signalized Capacity Analysis Output

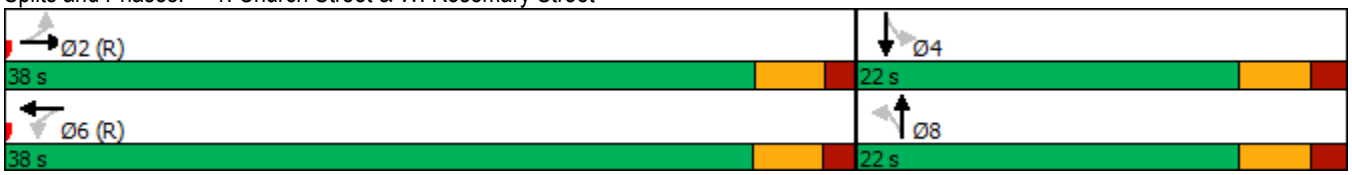


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	334	22	35	311	15	33	25	57	27	39	11
Future Volume (vph)	14	334	22	35	311	15	33	25	57	27	39	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	14	12	12	12	12	12	12	12
Grade (%)		1%			-1%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99			0.95			0.97	
Frt		0.992			0.994			0.933			0.981	
Flt Protected		0.998			0.995			0.986			0.983	
Satd. Flow (prot)	0	1736	0	0	1738	0	0	1477	0	0	1602	0
Flt Permitted		0.983			0.940			0.898			0.861	
Satd. Flow (perm)	0	1709	0	0	1638	0	0	1331	0	0	1377	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		964			551			379			430	
Travel Time (s)		32.9			18.8			10.3			11.7	
Confl. Peds. (#/hr)	20		17	17		20	21		31	31		21
Peak Hour Factor	0.86	0.86	0.86	0.89	0.89	0.89	0.84	0.84	0.84	0.72	0.72	0.72
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	16	388	26	39	349	17	39	30	68	38	54	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	430	0	0	405	0	0	137	0	0	107	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	19.0	19.0		20.0	20.0		19.0	19.0		19.0	19.0	
Total Split (s)	38.0	38.0		38.0	38.0		22.0	22.0		22.0	22.0	
Total Split (%)	63.3%	63.3%		63.3%	63.3%		36.7%	36.7%		36.7%	36.7%	
Maximum Green (s)	33.5	33.5		33.4	33.4		17.1	17.1		17.1	17.1	
Yellow Time (s)	3.1	3.1		3.1	3.1		3.2	3.2		3.2	3.2	
All-Red Time (s)	1.4	1.4		1.5	1.5		1.7	1.7		1.7	1.7	
Lost Time Adjust (s)		0.5			0.4			0.1			0.1	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Flash Dont Walk (s)	5.0	5.0		6.0	6.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		42.0			42.0			11.4			11.4	
Actuated g/C Ratio		0.70			0.70			0.19			0.19	
v/c Ratio		0.36			0.35			0.54			0.41	
Control Delay		6.7			4.4			25.5			24.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		6.7			4.4			25.5			24.9	
LOS		A			A			C			C	
Approach Delay		6.7			4.4			25.5			24.9	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)		61			20			45			34	
Queue Length 95th (ft)		130			82			58			52	
Internal Link Dist (ft)		884			471			299			350	
Turn Bay Length (ft)												
Base Capacity (vph)		1195			1145			377			390	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.36			0.35			0.36			0.27	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 7 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 10.0		Intersection LOS: B	
Intersection Capacity Utilization 54.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Church Street & W. Rosemary Street

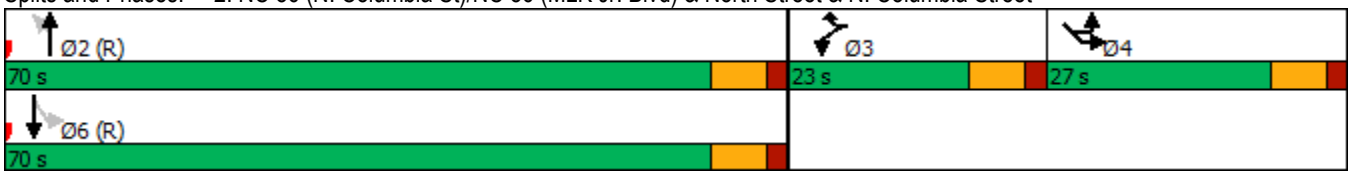


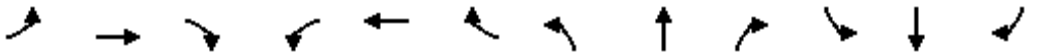
Lane Group	WBL	WBR	WBR2	NBL	NBT	NBR	SBL	SBT	SBR	SEL2	SEL	SER
Lane Configurations												
Traffic Volume (vph)	2	3	20	38	455	3	81	808	2	2	6	55
Future Volume (vph)	2	3	20	38	455	3	81	808	2	2	6	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)	2%				-5%			5%			-3%	
Storage Length (ft)	0	50		0		0	70		0		0	0
Storage Lanes	1	1		1		0	1		0		1	0
Taper Length (ft)	25			25			25				25	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor				1.00	1.00		0.99	1.00				
Frt	0.873		0.850		0.999						0.883	
Flt Protected	0.992			0.950			0.950				0.993	
Satd. Flow (prot)	1481	0	1381	1729	3454	0	1676	3352	0	0	1566	0
Flt Permitted	0.992			0.283			0.466				0.993	
Satd. Flow (perm)	1481	0	1381	515	3454	0	817	3352	0	0	1566	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)	20				35			35			25	
Link Distance (ft)	263				235			2108			715	
Travel Time (s)	9.0				4.6			41.1			19.5	
Confl. Peds. (#/hr)				1		15	15		1			
Peak Hour Factor	0.48	0.48	0.48	0.93	0.93	0.93	0.89	0.89	0.89	0.76	0.76	0.76
Heavy Vehicles (%)	10%	10%	10%	7%	7%	7%	5%	5%	5%	8%	8%	8%
Adj. Flow (vph)	4	6	42	41	489	3	91	908	2	3	8	72
Shared Lane Traffic (%)			39%									
Lane Group Flow (vph)	26	0	26	41	492	0	91	910	0	0	83	0
Turn Type	Prot		Prot	Perm	NA		Perm	NA		Prot	Prot	
Protected Phases	3		3		2			6		4	4	
Permitted Phases				2			6					
Detector Phase	3		3	2	2		6	6		4	4	
Switch Phase												
Minimum Initial (s)	7.0		7.0	10.0	10.0		10.0	10.0		7.0	7.0	
Minimum Split (s)	14.0		14.0	17.0	17.0		17.0	17.0		14.0	14.0	
Total Split (s)	23.0		23.0	70.0	70.0		70.0	70.0		27.0	27.0	
Total Split (%)	19.2%		19.2%	58.3%	58.3%		58.3%	58.3%		22.5%	22.5%	
Maximum Green (s)	16.0		16.0	63.0	63.0		63.0	63.0		20.0	20.0	
Yellow Time (s)	5.0		5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0		-2.0	-2.0	-2.0		-2.0	-2.0			-2.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0		5.0	5.0			5.0	
Lead/Lag	Lead		Lead							Lag	Lag	
Lead-Lag Optimize?	Yes		Yes							Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None		None	C-Max	C-Max		C-Max	C-Max		None	None	
Act Effct Green (s)	10.3		10.3	87.6	87.6		87.6	87.6			13.7	
Actuated g/C Ratio	0.09		0.09	0.73	0.73		0.73	0.73			0.11	
v/c Ratio	0.21		0.22	0.11	0.20		0.15	0.37			0.47	
Control Delay	54.4		55.2	4.5	3.4		8.7	8.9			57.4	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0			0.0	

Lane Group	WBL	WBR	WBR2	NBL	NBT	NBR	SBL	SBT	SBR	SEL2	SEL	SER
Total Delay	54.4		55.2	4.5	3.4		8.7	8.9			57.4	
LOS	D		E	A	A		A	A			E	
Approach Delay	54.8				3.5			8.9			57.4	
Approach LOS	D				A			A			E	
Queue Length 50th (ft)	19		20	4	27		23	148			61	
Queue Length 95th (ft)	25		26	m10	38		55	225			90	
Internal Link Dist (ft)	183				155			2028			635	
Turn Bay Length (ft)			50				70					
Base Capacity (vph)	222		207	376	2522		596	2448			287	
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	0.12		0.13	0.11	0.20		0.15	0.37			0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 56 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 11.0		Intersection LOS: B	
Intersection Capacity Utilization 59.1%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: NC 86 (N. Columbia St)/NC 86 (MLK Jr. Blvd) & North Street & N. Columbia Street



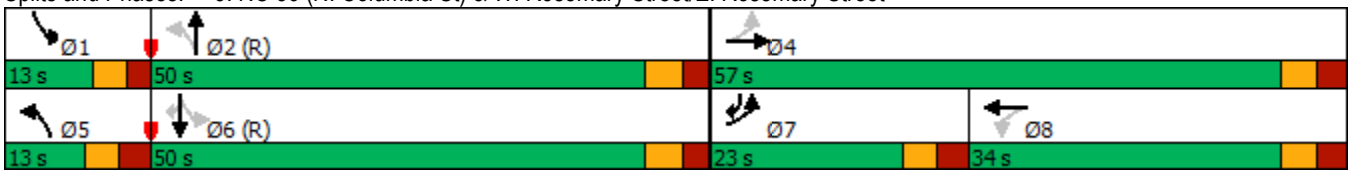


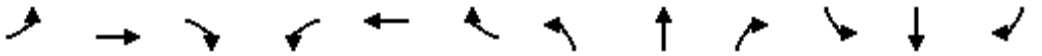
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	266	23	23	175	36	28	315	136	117	575	181
Future Volume (vph)	161	266	23	23	175	36	28	315	136	117	575	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	12	13	12	12	12	9	10	12	12	9	11
Grade (%)		1%			1%			-2%			8%	
Storage Length (ft)	100		0	150		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	0.99	1.00		0.99	1.00		0.98	0.96		0.95		0.91
Frt		0.988			0.974			0.955				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1426	1643	0	1585	1617	0	1355	2572	0	1485	2673	1285
Flt Permitted	0.273			0.558			0.355			0.387		
Satd. Flow (perm)	406	1643	0	917	1617	0	497	2572	0	577	2673	1169
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		206			461			353			135	
Travel Time (s)		7.0			15.7			9.6			3.7	
Confl. Peds. (#/hr)	12		16	16		12	19		34	34		19
Peak Hour Factor	0.86	0.86	0.86	0.90	0.90	0.90	0.90	0.90	0.90	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	9%	9%	9%	5%	5%	5%
Adj. Flow (vph)	187	309	27	26	194	40	31	350	151	133	653	206
Shared Lane Traffic (%)												
Lane Group Flow (vph)	187	336	0	26	234	0	31	501	0	133	653	206
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8		5	2		1	6	7
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		8	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	10.0		7.0	10.0	7.0
Minimum Split (s)	13.0	31.0		32.0	32.0		13.0	23.0		13.0	22.0	13.0
Total Split (s)	23.0	57.0		34.0	34.0		13.0	50.0		13.0	50.0	23.0
Total Split (%)	19.2%	47.5%		28.3%	28.3%		10.8%	41.7%		10.8%	41.7%	19.2%
Maximum Green (s)	17.2	51.0		28.0	28.0		7.2	44.2		7.9	44.2	17.2
Yellow Time (s)	3.0	3.2		3.2	3.2		3.0	3.3		3.0	3.3	3.0
All-Red Time (s)	2.8	2.8		2.8	2.8		2.8	2.5		2.1	2.5	2.8
Lost Time Adjust (s)	-0.8	-1.0		-1.0	-1.0		-0.8	-0.8		-0.1	-0.8	-0.8
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	3.0		1.0	3.0	1.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	None
Walk Time (s)		7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		18.0		19.0	19.0			10.0			9.0	
Pedestrian Calls (#/hr)		0		0	0			0			0	
Act Effct Green (s)	42.8	42.8		21.7	21.7		61.5	53.7		65.1	59.5	75.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.36	0.36		0.18	0.18		0.51	0.45		0.54	0.50	0.63
v/c Ratio	0.66	0.57		0.16	0.80		0.10	0.44		0.35	0.49	0.27
Control Delay	39.7	35.8		38.7	60.5		14.7	17.7		15.4	18.5	7.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.1	0.0
Total Delay	39.7	35.8		38.7	60.5		14.7	17.8		15.4	18.5	7.6
LOS	D	D		D	E		B	B		B	B	A
Approach Delay		37.2			58.4			17.6			15.8	
Approach LOS		D			E			B			B	
Queue Length 50th (ft)	112	214		15	152		7	69		41	127	34
Queue Length 95th (ft)	140	284		40	221		m19	141		65	153	56
Internal Link Dist (ft)		126			381			273			55	
Turn Bay Length (ft)	100			150			75					
Base Capacity (vph)	297	711		221	390		312	1151		379	1324	772
Starvation Cap Reductn	0	0		0	0		0	118		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	52	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.63	0.47		0.12	0.60		0.10	0.48		0.35	0.51	0.27

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 41 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 25.9		Intersection LOS: C	
Intersection Capacity Utilization 65.8%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: NC 86 (N. Columbia St) & W. Rosemary Street/E. Rosemary Street



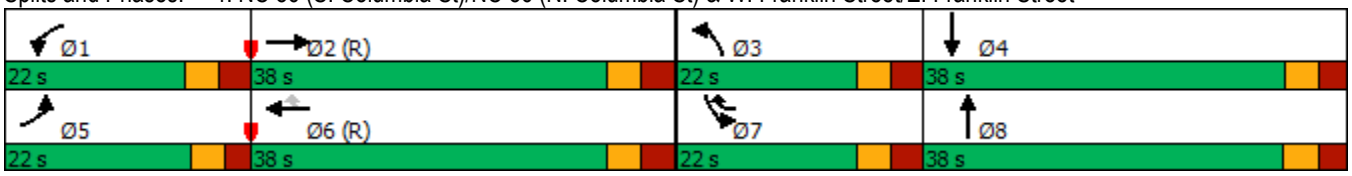


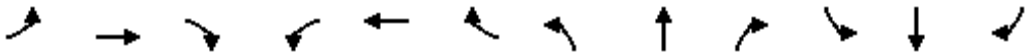
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	285	29	66	278	49	30	368	88	41	477	82
Future Volume (vph)	83	285	29	66	278	49	30	368	88	41	477	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	12	13	10	10	13	9	10	10	9	9	11
Grade (%)		3%			1%			-2%			3%	
Storage Length (ft)	250		0	125		0	475		0	125		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.87	0.99		0.95		0.79	0.97	0.97		0.92	0.99	
Frt		0.986				0.850		0.971			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1372	2980	0	1410	1484	1397	1342	2615	0	1346	2595	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1192	2980	0	1344	1484	1100	1300	2615	0	1237	2595	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		457			941			981			353	
Travel Time (s)		15.6			32.1			26.8			9.6	
Confl. Peds. (#/hr)	125		49	49		125	29		98	98		29
Peak Hour Factor	0.80	0.80	0.80	0.87	0.87	0.87	0.93	0.93	0.93	0.85	0.85	0.85
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	10%	10%	10%	7%	7%	7%
Adj. Flow (vph)	104	356	36	76	320	56	32	396	95	48	561	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	392	0	76	320	56	32	491	0	48	657	0
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases						6						
Detector Phase	5	2		1	6	7	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	15.0	28.2		15.0	28.2	15.0	15.0	28.0		15.0	28.1	
Total Split (s)	22.0	38.0		22.0	38.0	22.0	22.0	38.0		22.0	38.0	
Total Split (%)	18.3%	31.7%		18.3%	31.7%	18.3%	18.3%	31.7%		18.3%	31.7%	
Maximum Green (s)	16.6	31.8		16.1	31.8	16.1	16.1	32.1		16.1	32.3	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.3		3.0	3.1	
All-Red Time (s)	2.4	3.2		2.9	3.2	2.9	2.9	2.6		2.9	2.6	
Lost Time Adjust (s)	-0.4	-1.2		-0.9	-1.2	-0.9	-0.9	-0.9		-0.9	-0.7	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	3.0		1.0	3.0	1.0	1.0	2.0		1.0	2.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Ped		None	Ped	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		15.0			15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	12.6	51.3		11.2	47.3	56.9	8.6	33.1		9.6	36.6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.10	0.43		0.09	0.39	0.47	0.07	0.28		0.08	0.30	
v/c Ratio	0.72	0.31		0.58	0.55	0.10	0.33	0.68		0.45	0.83	
Control Delay	83.2	24.6		79.7	24.4	10.0	84.1	21.4		92.5	25.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.2	
Total Delay	83.2	24.6		79.7	24.4	10.0	84.1	21.4		92.5	25.5	
LOS	F	C		E	C	A	F	C		F	C	
Approach Delay		36.9			31.9			25.2			30.0	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	83	96		62	95	12	18	187		36	158	
Queue Length 95th (ft)	129	139		111	#173	20	m42	202		77	74	
Internal Link Dist (ft)		377			861			901			273	
Turn Bay Length (ft)	250			125			475			125		
Base Capacity (vph)	194	1273		199	585	631	190	772		190	807	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	8	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.54	0.31		0.38	0.55	0.09	0.17	0.64		0.25	0.82	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 30.8		Intersection LOS: C	
Intersection Capacity Utilization 65.0%		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.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: NC 86 (S. Columbia St)/NC 86 (N. Columbia St) & W. Franklin Street/E. Franklin Street





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	351	29	51	373	25	24	42	71	14	33	10
Future Volume (vph)	6	351	29	51	373	25	24	42	71	14	33	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	14	12	12	12	12	12	12	12
Grade (%)		1%			-1%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99			0.92			0.95	
Frt		0.990			0.992			0.930			0.976	
Flt Protected		0.999			0.994			0.991			0.988	
Satd. Flow (prot)	0	1712	0	0	1746	0	0	1458	0	0	1562	0
Flt Permitted		0.994			0.920			0.928			0.915	
Satd. Flow (perm)	0	1703	0	0	1610	0	0	1329	0	0	1423	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		964			557			379			430	
Travel Time (s)		32.9			19.0			10.3			11.7	
Confl. Peds. (#/hr)	22		24	24		22	75		39	39		75
Peak Hour Factor	0.88	0.88	0.88	0.93	0.93	0.93	0.92	0.92	0.92	0.64	0.64	0.64
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	7	399	33	55	401	27	26	46	77	22	52	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	439	0	0	483	0	0	149	0	0	90	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	19.0	19.0		20.0	20.0		19.0	19.0		19.0	19.0	
Total Split (s)	43.0	43.0		43.0	43.0		22.0	22.0		22.0	22.0	
Total Split (%)	66.2%	66.2%		66.2%	66.2%		33.8%	33.8%		33.8%	33.8%	
Maximum Green (s)	38.5	38.5		38.4	38.4		17.1	17.1		17.1	17.1	
Yellow Time (s)	3.1	3.1		3.1	3.1		3.2	3.2		3.2	3.2	
All-Red Time (s)	1.4	1.4		1.5	1.5		1.7	1.7		1.7	1.7	
Lost Time Adjust (s)		0.5			0.4			0.1			0.1	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Flash Dont Walk (s)	5.0	5.0		6.0	6.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		46.2			46.2			12.1			12.1	
Actuated g/C Ratio		0.71			0.71			0.19			0.19	
v/c Ratio		0.36			0.42			0.60			0.34	
Control Delay		6.7			2.9			33.2			25.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		6.7			2.9			33.2			25.0	
LOS		A			A			C			C	
Approach Delay		6.7			2.9			33.2			25.0	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)		67			24			56			31	
Queue Length 95th (ft)		140			m50			70			43	
Internal Link Dist (ft)		884			477			299			350	
Turn Bay Length (ft)												
Base Capacity (vph)		1211			1145			347			372	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.36			0.42			0.43			0.24	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 23 (35%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 10.0		Intersection LOS: A	
Intersection Capacity Utilization 74.6%		ICU Level of Service D	
Analysis Period (min) 15			

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

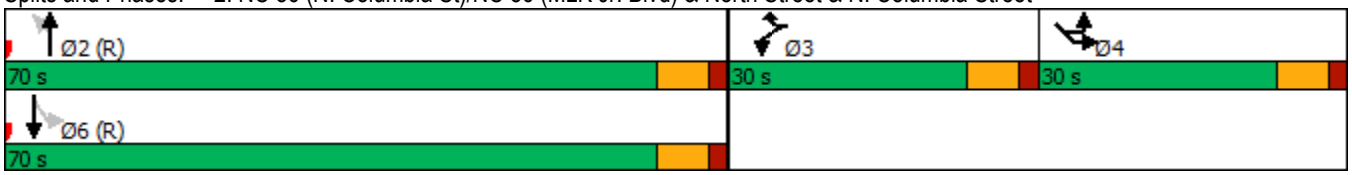
Splits and Phases: 1: Church Street & W. Rosemary Street

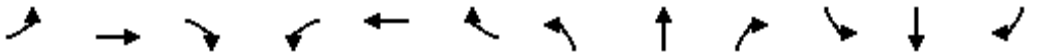
Lane Group	WBL	WBR	WBR2	NBL	NBT	NBR	SBL	SBT	SBR	SEL2	SEL	SER
Lane Configurations												
Traffic Volume (vph)	8	9	87	44	500	4	65	573	6	1	7	60
Future Volume (vph)	8	9	87	44	500	4	65	573	6	1	7	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)	2%				-5%			5%			-3%	
Storage Length (ft)	0	50		0		0	70		0		0	0
Storage Lanes	1	1		1		0	1		0		1	0
Taper Length (ft)	25			25			25				25	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.98			1.00	1.00		0.98	1.00			1.00	
Frt	0.873		0.850		0.999			0.998			0.880	
Flt Protected	0.992			0.950			0.950				0.994	
Satd. Flow (prot)	1564	0	1489	1729	3453	0	1676	3345	0	0	1562	0
Flt Permitted	0.992			0.374			0.434				0.994	
Satd. Flow (perm)	1564	0	1489	679	3453	0	752	3345	0	0	1560	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)	20				35			35			25	
Link Distance (ft)	264				239			2108			715	
Travel Time (s)	9.0				4.7			41.1			19.5	
Confl. Peds. (#/hr)			8	6		41	41		6	8		
Peak Hour Factor	0.75	0.75	0.75	0.93	0.93	0.93	0.87	0.87	0.87	0.75	0.75	0.75
Heavy Vehicles (%)	2%	2%	2%	7%	7%	7%	5%	5%	5%	8%	8%	8%
Adj. Flow (vph)	11	12	116	47	538	4	75	659	7	1	9	80
Shared Lane Traffic (%)			41%									
Lane Group Flow (vph)	71	0	68	47	542	0	75	666	0	0	90	0
Turn Type	Prot		Prot	Perm	NA		Perm	NA		Prot	Prot	
Protected Phases	3		3		2			6		4	4	
Permitted Phases				2			6					
Detector Phase	3		3	2	2		6	6		4	4	
Switch Phase												
Minimum Initial (s)	7.0		7.0	10.0	10.0		10.0	10.0		7.0	7.0	
Minimum Split (s)	14.0		14.0	17.0	17.0		17.0	17.0		14.0	14.0	
Total Split (s)	30.0		30.0	70.0	70.0		70.0	70.0		30.0	30.0	
Total Split (%)	23.1%		23.1%	53.8%	53.8%		53.8%	53.8%		23.1%	23.1%	
Maximum Green (s)	23.0		23.0	63.0	63.0		63.0	63.0		23.0	23.0	
Yellow Time (s)	5.0		5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0		-2.0	-2.0	-2.0		-2.0	-2.0			-2.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0		5.0	5.0			5.0	
Lead/Lag	Lead		Lead							Lag	Lag	
Lead-Lag Optimize?	Yes		Yes							Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None		None	C-Max	C-Max		C-Max	C-Max		None	None	
Act Effct Green (s)	13.4		13.4	86.8	86.8		86.8	86.8			14.8	
Actuated g/C Ratio	0.10		0.10	0.67	0.67		0.67	0.67			0.11	
v/c Ratio	0.44		0.44	0.10	0.24		0.15	0.30			0.51	
Control Delay	62.4		62.9	7.0	6.3		10.5	10.2			63.3	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0			0.0	

Lane Group	WBL	WBR	WBR2	NBL	NBT	NBR	SBL	SBT	SBR	SEL2	SEL	SER
Total Delay	62.4		62.9	7.0	6.3		10.5	10.2			63.3	
LOS	E		E	A	A		B	B			E	
Approach Delay	62.7				6.4			10.3			63.3	
Approach LOS	E				A			B			E	
Queue Length 50th (ft)	57		57	9	58		21	112			72	
Queue Length 95th (ft)	85		86	m19	m84		52	173			102	
Internal Link Dist (ft)	184				159			2028			635	
Turn Bay Length (ft)			50				70					
Base Capacity (vph)	300		286	453	2305		501	2232			300	
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	0.24		0.24	0.10	0.24		0.15	0.30			0.30	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 66 (51%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 52.7%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: NC 86 (N. Columbia St)/NC 86 (MLK Jr. Blvd) & North Street & N. Columbia Street



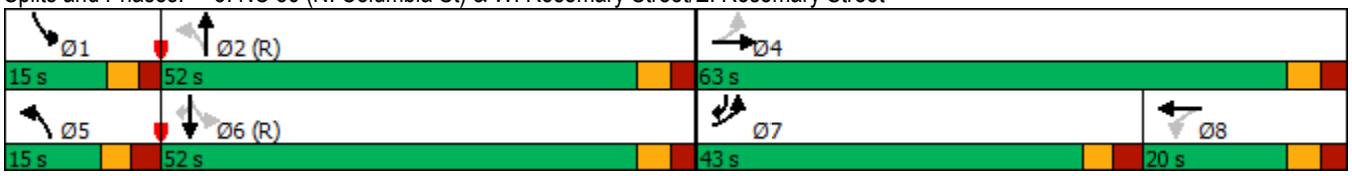


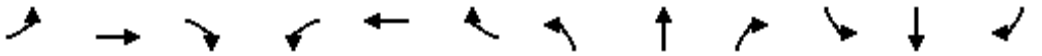
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	238	48	94	239	74	50	321	169	102	367	182
Future Volume (vph)	164	238	48	94	239	74	50	321	169	102	367	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	12	13	12	12	12	9	10	12	12	9	11
Grade (%)		1%			1%			-2%			8%	
Storage Length (ft)	100		0	150		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	0.97	0.99		0.96	0.98		0.86	0.83		0.82		0.66
Frt		0.975			0.965			0.948				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1426	1606	0	1585	1575	0	1355	2202	0	1485	2673	1285
Flt Permitted	0.183			0.564			0.458			0.363		
Satd. Flow (perm)	267	1606	0	902	1575	0	561	2202	0	466	2673	850
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		200			456			353			133	
Travel Time (s)		6.8			15.5			9.6			3.6	
Confl. Peds. (#/hr)	53		41	41		53	80		129	129		80
Peak Hour Factor	0.88	0.88	0.88	0.85	0.85	0.85	0.98	0.98	0.98	0.86	0.86	0.86
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	9%	9%	9%	5%	5%	5%
Adj. Flow (vph)	186	270	55	111	281	87	51	328	172	119	427	212
Shared Lane Traffic (%)												
Lane Group Flow (vph)	186	325	0	111	368	0	51	500	0	119	427	212
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8		5	2		1	6	7
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		8	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	10.0		7.0	10.0	7.0
Minimum Split (s)	13.0	31.0		32.0	32.0		13.0	23.0		13.0	22.0	13.0
Total Split (s)	43.0	63.0		20.0	20.0		15.0	52.0		15.0	52.0	43.0
Total Split (%)	33.1%	48.5%		15.4%	15.4%		11.5%	40.0%		11.5%	40.0%	33.1%
Maximum Green (s)	37.2	57.0		14.0	14.0		9.2	46.2		9.9	46.2	37.2
Yellow Time (s)	3.0	3.2		3.2	3.2		3.0	3.3		3.0	3.3	3.0
All-Red Time (s)	2.8	2.8		2.8	2.8		2.8	2.5		2.1	2.5	2.8
Lost Time Adjust (s)	-0.8	-1.0		-1.0	-1.0		-0.8	-0.8		-0.1	-0.8	-0.8
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	3.0		1.0	3.0	1.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	None
Walk Time (s)		7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		18.0		19.0	19.0			10.0			9.0	
Pedestrian Calls (#/hr)		0		0	0			0			0	
Act Effct Green (s)	58.0	58.0		32.9	32.9		56.3	48.1		58.8	51.4	71.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.45	0.45		0.25	0.25		0.43	0.37		0.45	0.40	0.55
v/c Ratio	0.62	0.45		0.49	0.92		0.17	0.61		0.42	0.40	0.40
Control Delay	33.1	28.0		50.3	75.3		16.6	23.7		20.2	21.8	10.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.9		0.0	0.0	0.0
Total Delay	33.1	28.0		50.3	75.3		16.6	24.6		20.2	21.8	10.5
LOS	C	C		D	E		B	C		C	C	B
Approach Delay		29.8			69.5			23.9			18.4	
Approach LOS		C			E			C			B	
Queue Length 50th (ft)	89	212		73	277		14	83		33	85	47
Queue Length 95th (ft)	133	271		144	#521		m28	148		51	103	48
Internal Link Dist (ft)		120			376			273			53	
Turn Bay Length (ft)	100			150			75					
Base Capacity (vph)	457	716		228	398		312	814		291	1055	711
Starvation Cap Reductn	0	0		0	0		0	121		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.41	0.45		0.49	0.92		0.16	0.72		0.41	0.40	0.30

Intersection Summary			
Area Type:	CBD		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 54 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 32.9		Intersection LOS: C	
Intersection Capacity Utilization 72.6%		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.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: NC 86 (N. Columbia St) & W. Rosemary Street/E. Rosemary Street



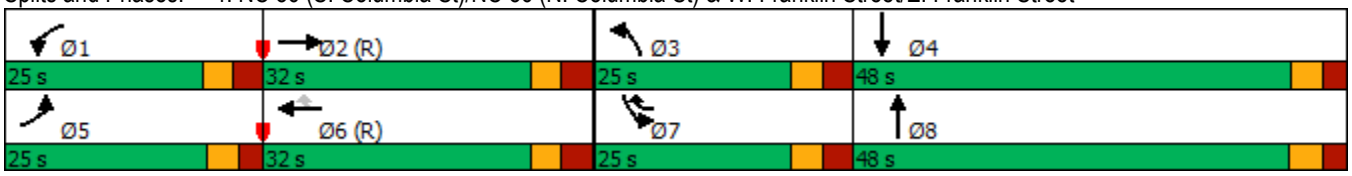


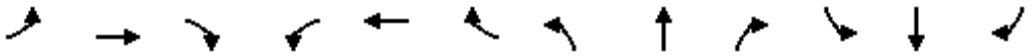
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	301	46	82	311	92	62	340	91	54	351	97
Future Volume (vph)	117	301	46	82	311	92	62	340	91	54	351	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	12	13	10	10	13	9	10	10	9	9	11
Grade (%)		3%			1%			-2%			3%	
Storage Length (ft)	250		0	125		0	475		0	125		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.80	0.96		0.82		0.67	0.83	0.92		0.81	0.92	
Frt		0.980				0.850		0.968			0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1372	2854	0	1437	1512	1423	1342	2491	0	1346	2403	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1097	2854	0	1179	1512	947	1119	2491	0	1096	2403	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		457			941			981			353	
Travel Time (s)		15.6			32.1			26.8			9.6	
Confl. Peds. (#/hr)	251		248	248		251	117		321	321		117
Peak Hour Factor	0.80	0.80	0.80	0.87	0.87	0.87	0.93	0.93	0.93	0.85	0.85	0.85
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	10%	10%	10%	7%	7%	7%
Adj. Flow (vph)	146	376	58	94	357	106	67	366	98	64	413	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	146	434	0	94	357	106	67	464	0	64	527	0
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases						6						
Detector Phase	5	2		1	6	7	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	15.0	28.2		15.0	28.2	15.0	15.0	28.0		15.0	28.1	
Total Split (s)	25.0	32.0		25.0	32.0	25.0	25.0	48.0		25.0	48.0	
Total Split (%)	19.2%	24.6%		19.2%	24.6%	19.2%	19.2%	36.9%		19.2%	36.9%	
Maximum Green (s)	19.6	25.8		19.1	25.8	19.1	19.1	42.1		19.1	42.3	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.3		3.0	3.1	
All-Red Time (s)	2.4	3.2		2.9	3.2	2.9	2.9	2.6		2.9	2.6	
Lost Time Adjust (s)	-0.4	-1.2		-0.9	-1.2	-0.9	-0.9	-0.9		-0.9	-0.7	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	3.0		1.0	3.0	1.0	1.0	2.0		1.0	2.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Ped		None	Ped	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		15.0			15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	17.9	52.4		13.0	47.5	58.6	11.3	33.6		11.0	35.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.14	0.40		0.10	0.37	0.45	0.09	0.26		0.08	0.28	
v/c Ratio	0.78	0.38		0.66	0.65	0.23	0.58	0.72		0.57	0.79	
Control Delay	73.9	34.6		83.2	45.1	18.5	100.3	28.0		87.1	31.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.1	
Total Delay	73.9	34.6		83.2	45.1	18.5	100.3	28.0		87.1	31.1	
LOS	E	C		F	D	B	F	C		F	C	
Approach Delay		44.5			46.5			37.1			37.2	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	121	135		72	259	33	58	72		56	105	
Queue Length 95th (ft)	158	217		139	#533	82	107	66		95	104	
Internal Link Dist (ft)		377			861			901			273	
Turn Bay Length (ft)	250			125			475			125		
Base Capacity (vph)	224	1150		221	552	565	206	823		207	794	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	19	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.65	0.38		0.43	0.65	0.19	0.33	0.56		0.31	0.68	

Intersection Summary	
Area Type:	CBD
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 41.3	Intersection LOS: D
Intersection Capacity Utilization 66.4%	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: 4: NC 86 (S. Columbia St)/NC 86 (N. Columbia St) & W. Franklin Street/E. Franklin Street



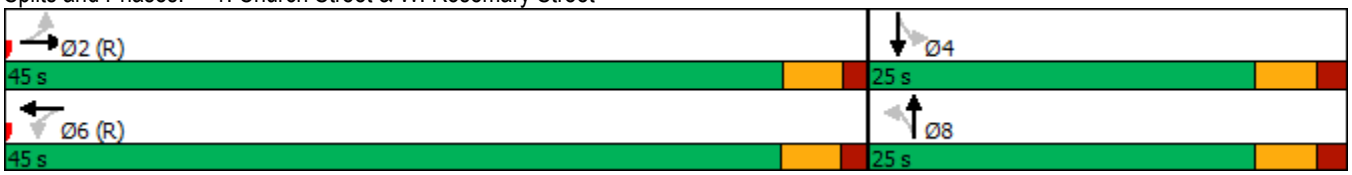


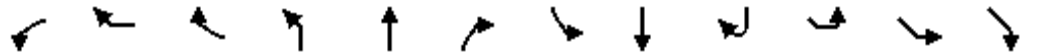
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	442	66	78	480	37	47	80	73	24	76	26
Future Volume (vph)	24	442	66	78	480	37	47	80	73	24	76	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	14	12	12	12	12	12	12	12
Grade (%)		1%			-1%			0%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			0.99			0.93			0.95	
Frt		0.983			0.992			0.951			0.972	
Flt Protected		0.998			0.994			0.988			0.991	
Satd. Flow (prot)	0	1711	0	0	1755	0	0	1503	0	0	1558	0
Flt Permitted		0.965			0.875			0.908			0.923	
Satd. Flow (perm)	0	1652	0	0	1537	0	0	1343	0	0	1433	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		964			549			379			430	
Travel Time (s)		32.9			18.7			10.3			11.7	
Confl. Peds. (#/hr)	40		37	37		40	62		43	43		62
Peak Hour Factor	0.95	0.95	0.95	0.97	0.97	0.97	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	25	465	69	80	495	38	52	88	80	26	82	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	559	0	0	613	0	0	220	0	0	136	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	19.0	19.0		20.0	20.0		19.0	19.0		19.0	19.0	
Total Split (s)	45.0	45.0		45.0	45.0		25.0	25.0		25.0	25.0	
Total Split (%)	64.3%	64.3%		64.3%	64.3%		35.7%	35.7%		35.7%	35.7%	
Maximum Green (s)	40.5	40.5		40.4	40.4		20.1	20.1		20.1	20.1	
Yellow Time (s)	3.1	3.1		3.1	3.1		3.2	3.2		3.2	3.2	
All-Red Time (s)	1.4	1.4		1.5	1.5		1.7	1.7		1.7	1.7	
Lost Time Adjust (s)		0.5			0.4			0.1			0.1	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Flash Dont Walk (s)	5.0	5.0		6.0	6.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		44.2			44.2			15.8			15.8	
Actuated g/C Ratio		0.63			0.63			0.23			0.23	
v/c Ratio		0.54			0.63			0.73			0.42	
Control Delay		10.6			8.0			36.4			26.1	
Queue Delay		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		10.6			8.0			36.4			26.1	
LOS		B			A			D			C	
Approach Delay		10.6			8.0			36.4			26.1	
Approach LOS		B			A			D			C	
Queue Length 50th (ft)		121			144			94			49	
Queue Length 95th (ft)		231			m223			m90			91	
Internal Link Dist (ft)		884			469			299			350	
Turn Bay Length (ft)												
Base Capacity (vph)		1042			969			383			409	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.54			0.63			0.57			0.33	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 20 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 92.2%		ICU Level of Service F	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 1: Church Street & W. Rosemary Street



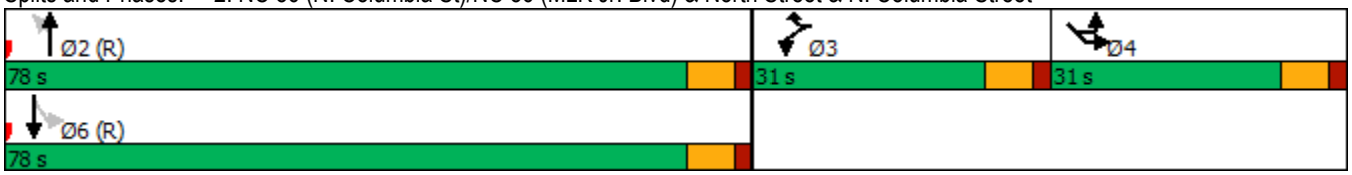


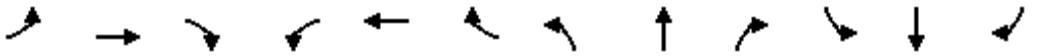
Lane Group	WBL	WBR	WBR2	NBL	NBT	NBR	SBL	SBT	SBR	SEL2	SEL	SER
Lane Configurations												
Traffic Volume (vph)	25	22	153	49	855	24	55	768	6	4	5	101
Future Volume (vph)	25	22	153	49	855	24	55	768	6	4	5	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)	2%				-5%			5%			-3%	
Storage Length (ft)	0	50		0		0	70		0		0	0
Storage Lanes	1	1		1		0	1		0		1	0
Taper Length (ft)	25			25			25				25	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor				1.00	1.00		0.99	1.00			1.00	
Frt	0.887		0.850		0.996			0.999			0.875	
Flt Protected	0.988			0.950			0.950				0.996	
Satd. Flow (prot)	1616	0	1489	1796	3573	0	1709	3413	0	0	1601	0
Flt Permitted	0.988			0.278			0.217				0.996	
Satd. Flow (perm)	1616	0	1489	525	3573	0	388	3413	0	0	1599	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)	20				35			35			25	
Link Distance (ft)	246				232			2108			715	
Travel Time (s)	8.4				4.5			41.1			19.5	
Confl. Peds. (#/hr)				7		32	32		7	8		
Peak Hour Factor	0.87	0.87	0.87	0.83	0.83	0.83	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	3%	3%	3%	5%	5%	5%
Adj. Flow (vph)	29	25	176	59	1030	29	63	873	7	4	5	110
Shared Lane Traffic (%)			36%									
Lane Group Flow (vph)	117	0	113	59	1059	0	63	880	0	0	119	0
Turn Type	Prot		Prot	Perm	NA		Perm	NA		Prot	Prot	
Protected Phases	3		3		2			6		4	4	
Permitted Phases				2			6					
Detector Phase	3		3	2	2		6	6		4	4	
Switch Phase												
Minimum Initial (s)	7.0		7.0	10.0	10.0		10.0	10.0		7.0	7.0	
Minimum Split (s)	14.0		14.0	17.0	17.0		17.0	17.0		14.0	14.0	
Total Split (s)	31.0		31.0	78.0	78.0		78.0	78.0		31.0	31.0	
Total Split (%)	22.1%		22.1%	55.7%	55.7%		55.7%	55.7%		22.1%	22.1%	
Maximum Green (s)	24.0		24.0	71.0	71.0		71.0	71.0		24.0	24.0	
Yellow Time (s)	5.0		5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0		-2.0	-2.0	-2.0		-2.0	-2.0			-2.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0		5.0	5.0			5.0	
Lead/Lag	Lead		Lead							Lag	Lag	
Lead-Lag Optimize?	Yes		Yes							Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None		None	C-Max	C-Max		C-Max	C-Max		None	None	
Act Effct Green (s)	17.9		17.9	89.4	89.4		89.4	89.4			17.7	
Actuated g/C Ratio	0.13		0.13	0.64	0.64		0.64	0.64			0.13	
v/c Ratio	0.57		0.59	0.18	0.46		0.26	0.40			0.59	
Control Delay	67.4		69.8	6.7	6.2		17.1	14.2			68.9	
Queue Delay	0.0		0.0	0.0	0.5		0.0	0.0			0.0	

Lane Group	WBL	WBR	WBR2	NBL	NBT	NBR	SBL	SBT	SBR	SEL2	SEL	SER
Total Delay	67.4		69.8	6.7	6.8		17.1	14.2			68.9	
LOS	E		E	A	A		B	B			E	
Approach Delay	68.5				6.8			14.4			68.9	
Approach LOS	E				A			B			E	
Queue Length 50th (ft)	102		104	10	95		23	193			104	
Queue Length 95th (ft)	155		160	m12	m96		64	291			164	
Internal Link Dist (ft)	166				152			2028			635	
Turn Bay Length (ft)			50				70					
Base Capacity (vph)	300		276	335	2282		247	2180			297	
Starvation Cap Reductn	0		0	0	735		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	0.39		0.41	0.18	0.68		0.26	0.40			0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 61 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: NC 86 (N. Columbia St)/NC 86 (MLK Jr. Blvd) & North Street & N. Columbia Street



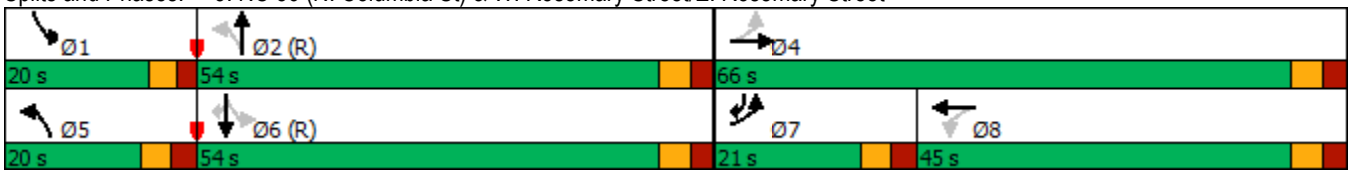


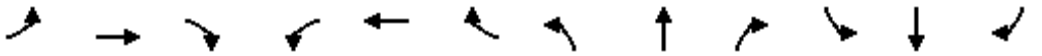
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	243	290	50	157	282	91	63	602	111	89	523	279
Future Volume (vph)	243	290	50	157	282	91	63	602	111	89	523	279
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	12	13	12	12	12	9	10	12	12	9	11
Grade (%)		1%			1%			-2%			8%	
Storage Length (ft)	100		0	150		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.99		0.96	0.98		0.95	0.94				0.73
Frt		0.978			0.963			0.977				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1426	1614	0	1585	1571	0	1420	2718	0	1514	2725	1310
Flt Permitted	0.168			0.533			0.312			0.194		
Satd. Flow (perm)	252	1614	0	858	1571	0	441	2718	0	309	2725	952
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		207			461			353			137	
Travel Time (s)		7.1			15.7			9.6			3.7	
Confl. Peds. (#/hr)	49		36	36		49	59		83	83		59
Peak Hour Factor	0.88	0.88	0.88	0.94	0.94	0.94	0.83	0.83	0.83	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Adj. Flow (vph)	276	330	57	167	300	97	76	725	134	109	638	340
Shared Lane Traffic (%)												
Lane Group Flow (vph)	276	387	0	167	397	0	76	859	0	109	638	340
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8		5	2		1	6	7
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		8	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	10.0		7.0	10.0	7.0
Minimum Split (s)	13.0	31.0		32.0	32.0		13.0	23.0		13.0	22.0	13.0
Total Split (s)	21.0	66.0		45.0	45.0		20.0	54.0		20.0	54.0	21.0
Total Split (%)	15.0%	47.1%		32.1%	32.1%		14.3%	38.6%		14.3%	38.6%	15.0%
Maximum Green (s)	15.2	60.0		39.0	39.0		14.2	48.2		14.9	48.2	15.2
Yellow Time (s)	3.0	3.2		3.2	3.2		3.0	3.3		3.0	3.3	3.0
All-Red Time (s)	2.8	2.8		2.8	2.8		2.8	2.5		2.1	2.5	2.8
Lost Time Adjust (s)	-0.8	-1.0		-1.0	-1.0		-0.8	-0.8		-0.1	-0.8	-0.8
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	3.0		1.0	3.0	1.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	None
Walk Time (s)		7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)		18.0		19.0	19.0			10.0			9.0	
Pedestrian Calls (#/hr)		0		0	0			0			0	
Act Effct Green (s)	58.7	58.7		37.7	37.7		65.9	56.9		66.7	57.3	73.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.42	0.42		0.27	0.27		0.47	0.41		0.48	0.41	0.52
v/c Ratio	1.15	0.57		0.72	0.94		0.28	0.78		0.48	0.57	0.63
Control Delay	134.8	35.0		63.8	79.0		5.5	10.8		26.4	24.2	19.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	2.3		0.0	3.3	0.0
Total Delay	134.8	35.0		63.8	79.0		5.5	13.1		26.4	27.5	19.4
LOS	F	C		E	E		A	B		C	C	B
Approach Delay		76.5			74.5			12.5			24.8	
Approach LOS		E			E			B			C	
Queue Length 50th (ft)	~205	285		123	334		7	126		33	140	98
Queue Length 95th (ft)	#378	367		#236	#541		m7	m140		67	153	116
Internal Link Dist (ft)		127			381			273			57	
Turn Bay Length (ft)	100			150			75					
Base Capacity (vph)	239	703		245	448		327	1104		285	1115	539
Starvation Cap Reductn	0	0		0	0		0	134		0	107	0
Spillback Cap Reductn	0	0		0	0		0	0		0	367	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.15	0.55		0.68	0.89		0.23	0.89		0.38	0.85	0.63

Intersection Summary			
Area Type:	CBD		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 54 (39%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 40.5		Intersection LOS: D	
Intersection Capacity Utilization 84.3%		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.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: NC 86 (N. Columbia St) & W. Rosemary Street/E. Rosemary Street



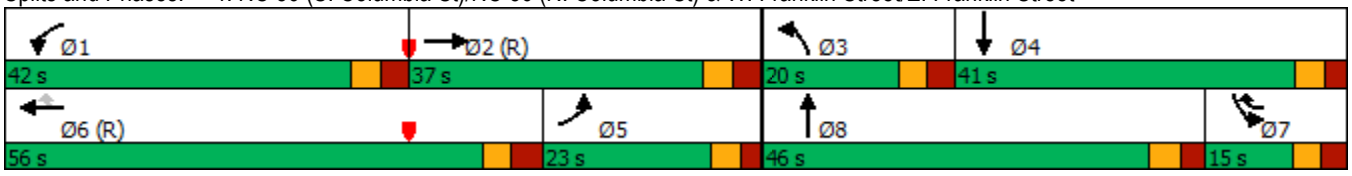


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	187	435	76	102	519	74	65	589	113	78	473	140
Future Volume (vph)	187	435	76	102	519	74	65	589	113	78	473	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	12	13	10	10	13	9	10	10	9	9	11
Grade (%)		3%			1%			-2%			3%	
Storage Length (ft)	250		0	125		0	475		0	125		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.87	0.96		0.87		0.68	0.91	0.97		0.93	0.95	
Frt		0.978				0.850		0.976			0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1412	2934	0	1479	1557	1465	1380	2697	0	1385	2535	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1224	2934	0	1289	1557	997	1261	2697	0	1288	2535	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		461			941			981			353	
Travel Time (s)		15.7			32.1			26.8			9.6	
Confl. Peds. (#/hr)	193		152	152		193	67		108	108		67
Peak Hour Factor	0.87	0.87	0.87	0.84	0.84	0.84	0.90	0.90	0.90	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	4%	4%	4%
Adj. Flow (vph)	215	500	87	121	618	88	72	654	126	83	503	149
Shared Lane Traffic (%)												
Lane Group Flow (vph)	215	587	0	121	618	88	72	780	0	83	652	0
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases						6						
Detector Phase	5	2		1	6	7	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	15.0	28.2		15.0	28.2	15.0	15.0	28.0		15.0	28.1	
Total Split (s)	23.0	37.0		42.0	56.0	15.0	20.0	46.0		15.0	41.0	
Total Split (%)	16.4%	26.4%		30.0%	40.0%	10.7%	14.3%	32.9%		10.7%	29.3%	
Maximum Green (s)	17.6	30.8		36.1	49.8	9.1	14.1	40.1		9.1	35.3	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.3		3.0	3.1	
All-Red Time (s)	2.4	3.2		2.9	3.2	2.9	2.9	2.6		2.9	2.6	
Lost Time Adjust (s)	-0.4	-1.2		-0.9	-1.2	-0.9	-0.9	-0.9		-0.9	-0.7	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lag	Lag		Lead	Lead	Lag	Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	1.0	3.0		1.0	3.0	1.0	1.0	2.0		1.0	2.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Ped		None	Ped	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		15.0			15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	18.0	53.4		15.9	51.3	61.0	11.5	41.0		9.7	41.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.13	0.38		0.11	0.37	0.44	0.08	0.29		0.07	0.30	
v/c Ratio	1.19	0.53		0.72	1.08	0.19	0.64	0.99		0.86	0.86	
Control Delay	172.4	32.9		95.0	94.3	17.1	78.6	20.9		100.7	41.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	13.9		0.0	1.9	
Total Delay	172.4	32.9		95.0	94.3	17.1	78.6	34.8		100.7	43.7	
LOS	F	C		F	F	B	E	C		F	D	
Approach Delay		70.3			86.2			38.5			50.1	
Approach LOS		E			F			D			D	
Queue Length 50th (ft)	~237	187		104	~637	34	53	95		78	316	
Queue Length 95th (ft)	#384	243		163	#756	62	m44	m52		m#168	#444	
Internal Link Dist (ft)		381			861			901			273	
Turn Bay Length (ft)	250			125			475			125		
Base Capacity (vph)	181	1118		390	570	469	147	789		98	756	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	34	
Spillback Cap Reductn	0	0		0	0	0	0	38		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	1.19	0.53		0.31	1.08	0.19	0.49	1.04		0.85	0.90	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 16 (11%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.19			
Intersection Signal Delay: 61.3		Intersection LOS: E	
Intersection Capacity Utilization 87.5%		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.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: NC 86 (S. Columbia St)/NC 86 (N. Columbia St) & W. Franklin Street/E. Franklin Street



Appendix D – Synchro TWSC Capacity Analysis Output

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	441	377	13	9	3
Future Vol, veh/h	4	441	377	13	9	3
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, %	-	1	-1	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	490	419	14	10	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	433	0	-	0	924	426
Stage 1	-	-	-	-	426	-
Stage 2	-	-	-	-	498	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1127	-	-	-	299	628
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	611	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1127	-	-	-	298	628
Mov Cap-2 Maneuver	-	-	-	-	298	-
Stage 1	-	-	-	-	656	-
Stage 2	-	-	-	-	611	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1127	-	-	-	343
HCM Lane V/C Ratio	0.004	-	-	-	0.039
HCM Control Delay (s)	8.2	0	-	-	15.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	9	507	864	2
Future Vol, veh/h	0	8	9	507	864	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-5	5	-
Peak Hour Factor	90	90	90	90	88	90
Heavy Vehicles, %	2	2	2	9	5	2
Mvmt Flow	0	9	10	563	982	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	492	984	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	447	398	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	447	398	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	398	-	447	-	-
HCM Lane V/C Ratio	0.025	-	0.02	-	-
HCM Control Delay (s)	14.3	-	13.2	-	-
HCM Lane LOS	B	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	7	0	511	868	9
Future Vol, veh/h	0	7	0	511	868	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-5	5	-
Peak Hour Factor	92	90	92	90	88	90
Heavy Vehicles, %	2	2	2	9	5	2
Mvmt Flow	0	8	0	568	986	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	498	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	443	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	443	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	443	-	-
HCM Lane V/C Ratio	-	0.018	-	-
HCM Control Delay (s)	-	13.3	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	444	464	10	9	3
Future Vol, veh/h	3	444	464	10	9	3
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, %	-	1	-1	-	0	-
Peak Hour Factor	90	92	92	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	483	504	11	10	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	515	0	-	0	999	510
Stage 1	-	-	-	-	510	-
Stage 2	-	-	-	-	489	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1051	-	-	-	270	563
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	616	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1051	-	-	-	269	563
Mov Cap-2 Maneuver	-	-	-	-	269	-
Stage 1	-	-	-	-	601	-
Stage 2	-	-	-	-	616	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	17.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1051	-	-	-	309
HCM Lane V/C Ratio	0.003	-	-	-	0.043
HCM Control Delay (s)	8.4	0	-	-	17.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	7	555	640	1
Future Vol, veh/h	0	8	7	555	640	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-5	5	-
Peak Hour Factor	90	90	90	98	86	90
Heavy Vehicles, %	2	2	2	9	5	2
Mvmt Flow	0	9	8	566	744	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	373	745	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	533	519	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	533	519	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	519	-	533	-	-
HCM Lane V/C Ratio	0.015	-	0.017	-	-
HCM Control Delay (s)	12	-	11.9	-	-
HCM Lane LOS	B	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	6	0	560	641	7
Future Vol, veh/h	0	6	0	560	641	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-5	5	-
Peak Hour Factor	90	90	92	98	86	90
Heavy Vehicles, %	2	2	2	9	5	2
Mvmt Flow	0	7	0	571	745	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	377	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	530	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	530	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	530	-	-
HCM Lane V/C Ratio	-	0.013	-	-
HCM Control Delay (s)	-	11.9	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	576	611	14	14	4
Future Vol, veh/h	4	576	611	14	14	4
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, %	-	1	-1	-	0	-
Peak Hour Factor	90	92	92	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	626	664	16	16	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	680	0	-	0	1306	672
Stage 1	-	-	-	-	672	-
Stage 2	-	-	-	-	634	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	912	-	-	-	176	456
Stage 1	-	-	-	-	508	-
Stage 2	-	-	-	-	529	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	912	-	-	-	175	456
Mov Cap-2 Maneuver	-	-	-	-	175	-
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	529	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	24.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	912	-	-	-	203
HCM Lane V/C Ratio	0.005	-	-	-	0.099
HCM Control Delay (s)	9	0	-	-	24.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	12	10	927	892	2
Future Vol, veh/h	0	12	10	927	892	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-5	5	-
Peak Hour Factor	90	90	90	83	88	90
Heavy Vehicles, %	2	2	2	4	3	2
Mvmt Flow	0	13	11	1117	1014	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	508	1016	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	437	385	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	437	385	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.5	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	385	-	437	-	-
HCM Lane V/C Ratio	0.029	-	0.031	-	-
HCM Control Delay (s)	14.6	-	13.5	-	-
HCM Lane LOS	B	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	10	0	936	889	10
Future Vol, veh/h	0	10	0	936	889	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-5	5	-
Peak Hour Factor	90	90	92	83	88	90
Heavy Vehicles, %	2	2	2	4	3	2
Mvmt Flow	0	11	0	1128	1010	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	511	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	435	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	435	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	435	-	-
HCM Lane V/C Ratio	-	0.026	-	-
HCM Control Delay (s)	-	13.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-